Instruction manual

H425 EKO-D MAX KOMBI
H435 EKO-D MAX KOMBI
H442 EKO-D MAX KOMBI
H450 EKO-D MAX KOMBI

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1. INTRODUCTION

Dear Customer,

We appreciate that you have chosen a product from our product range and become one of our customers. We hope that you are content with our product. We hope that our product serves you reliably and for a long time. All employees of our company contribute to this. Please read the operating instructions thoroughly and please do not hesitate to ask any questions that you may have, we will be happy to advise you on the boiler's operation

2. BOILER CHARACTERITICS

Name: Combined boiler H4 EKO-D MAX KOMBI for wood and wood pellets

Types: **H425 EKO-D MAX KOMBI**

H435 EKO-D MAX KOMBI

H442 EKO-D MAX KOMBI

H450 EKO-D MAX KOMBI

The H4xx EKO-D MAX KOMBI series steel hot water boiler is designed and surface-treated for floor and central heating of family houses or suitable production plants with a maximum hydrostatic heating water height of 20 m. The H4xx EKO-D MAX KOMBI boiler is designed for solid fuel combustion, i.e., pieces of wood or wooden pellets. Combustion of other substances or materials is not permitted. The boiler must be connected to a chimney corresponding to the boiler output and with the required minimum draft according to the operating instructions.

For proper boiler operation, in addition to expert installation, care must be taken to ensure that the boiler is properly serviced and regularly cleaned, as described below in these Instructions. This boiler was certified by the Engineering Test Institute in Brno according to ČSN EN 303-5 and meets the strictest criteria for solid fuel combustion as it is classified in the highest emission class and also meets the Ecodesign standard.

3. TECHNICAL DESCRIPTION

H4xx EKO-D MAX KOMBI boilers are designed for burning wood and wood pellets (the operation of both types of fuel at the same time is prohibited). They are manufactured in several sizes according to their maximum output, from 25 to 55 kW. The control system of these boilers allows you to control all the regulatory elements of heating systems. The control unit is equipped with many advanced functions that ensure the adaptation of the boiler to the customer's requirements. In addition, it allows the connection of many additional devices that simplify the operation of the boiler and add other superior functions.

The boiler is operated when heated with wood with a negative pressure at the flue gas outlet thanks to the exhaust fan, which draws air through the primary and secondary air flaps into the loading chamber, nozzle, boiler exchanger and then into the flue gas path. When heating with pellets, ALL PRIMARY AND SECONDARY AIR FLAPS ON THE BOILER must be CLOSED so that air does not leak from these flaps into the surrounding environment due to the air being admitted from the pressure fan from the burner into the hopper. The boiler operates without condensation under all conditions, so there are no demands on the flue gas path that would require protection against air condensation.

Inside is a refractory concrete nozzle that passes the flame into the rear part of the boiler, the exchanger, and then into the chimney. An exhaust fan is located at the outlet of the boiler flue gas path, which ensures ideal combustion under almost all conditions. This is controlled by the boiler control unit. In automatic pellet mode with the burner inserted in the door, the boiler is designed for burning wood pellets, which are transported to the burner from the hopper by an external feeder. The burner is mounted on a rotating movable mechanism mounted on the boiler.

The boiler is not allowed to be operated on both fuels at the same time. It must never be fired with wood if the burner is inserted into the upper loading door of the boiler and it must never be fired with pellets if there is wood in the upper chamber! Igniting wood with a pellet burner is not allowed! When firing with wood, the burner opening cover must be inserted into the loading door.

The combustion air supply is ensured by primary dampers (on the left and right sides of the boiler) and a secondary (in front of the boiler) damper. The primary dampers ensure the correct boiler performance, while the secondary damper regulates the residual oxygen in the boiler so that combustion is ideal with the lowest possible emissions of carbon monoxide and nitrogen oxides.

On the front of the boiler you will find the loading and cleaning doors. Make sure that these are tightly closed during boiler operation. When burning wood in gasification boilers, a large amount of smoke is produced, which accumulates in the loading chamber under the loading door during the combustion process and gradually exits through the nozzle into the boiler exchanger. Therefore, do not open any of the doors during the combustion process until only a red-hot layer of embers remains in the boiler from the loaded fuel, on which you can then add new fuel. More about the heating method in the chapters "Lighting up", "Operation", "Adding fuel", "Extinguishing".

On the side of the boiler you will find a rod that controls the exhaust flap, which ensures the extraction of smoke from the hopper so that when the loading door is opened, smoke does not escape into the room. There is no reason to open the loading door during the combustion process, it is better to wait until the wood has burned to a residual red-hot layer that does not produce smoke. Then you can simply open the loading door and add new fuel. More information in the chapter "Adding fuel".

The side walls inside the combustion chamber are fitted with cover spacer plates that protect the boiler walls from harmful substances that are produced during combustion. These cover plates are removable during combustion, but must always be inserted in the boiler.

The combustion chamber is located under the refractory nozzle. This is the place where the flame from the combustion chamber goes down, where the entire combustion process is completed. The combustion chamber is lined with fireclay bricks that capture and burn off the residual amount of dust particles that would otherwise end up in the air. You can access the combustion chamber by opening the lower door. You can also sweep the remaining ash out of the boiler through this.

All doors must be closed during boiler operation. If you leave any of the doors open, then flue gases will leak into the room, which can cause damage to health or property.

Behind the combustion chamber is the boiler's tubular exchanger, equipped with flue gas turbulators to reduce the chimney temperature and the amount of dust particles in the air. The boiler is very simple in design, but still meets the strictest emission standards

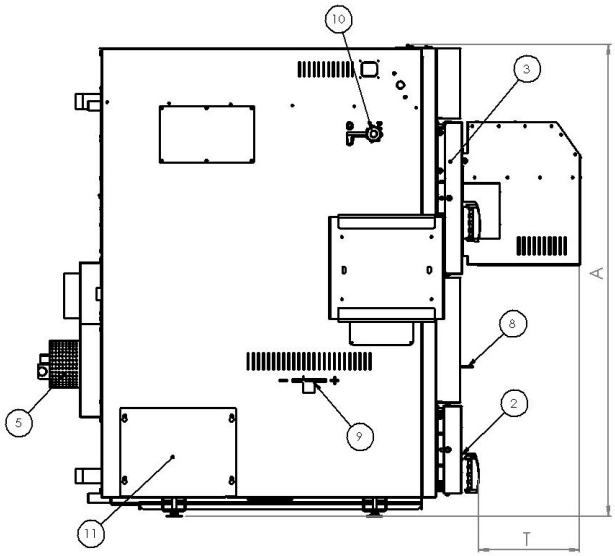
4. TECHNICAL PARAMETERS

Technicac parameters		Boiler type			
	unit	H425 EKO-D MAX KOMBI	H435 EKO-D MAX KOMBI	H442 EKO-D MAX KOMBI	H450 EKO-D MAX KOMBI
Nominal thermal output WOOD	[kW]	25	35	42	55
Nominal thermal output PELLETS	[kW]	25	35	42	50
Power range PELLETS	[kW]	7,3 - 25,7	10,5 - 35	12,6 - 42	14,6 - 50,6
Exchanger area	[m^2]	4,6	4,6	4,6	5,2
Efficiency WOOD	[%]	90,5	89,5	89,1	90

Efficiency PELLETS	[%]	92,8	92,4	92	91,9
Required operating draft WOOD	[mbar]	0,12	0,19	0,17	0,18
Required operating draft PELLETS	[mbar]	0,10	0,10	0,10	0,10
Weight	[kg]	513	510	510	570
Ecodesign		yes	yes	yes	yes
Class according to ČSN EN 303-5+A1:2023 (WOOD/PELLETS)		5/5	5/5	5/5	5/5
Water volume	[litry]	165	165	165	181
Flue pipe diameter	[mm]	130	130	130	130
Fuel consumption WOOD	[kg/hod]	6,03	8,9	10,8	12,5
Fuel consumption PELLETS (min. output / nominal output)	[kg/hod]	1,69 / 5,73	2,43 / 7,8	2,89 / 9,46	3,35 / 11,39
Heating water temperature range	[°C]	65 - 80	65 - 80	65 - 80	65 - 80
Fuel shaft volume	[litry]	137	170	170	201
Filling hole dimensions (h x w)	[cm]	40x34	40 x 45	40 x 45	40 x 45
Max. log length	[cm]	53	53	53	53
Burning length at nominal output WOOD	[hod]	> 4	> 4	> 4	> 4
Flue gas temperature nominal output WOOD	[°C]	109,6	133	153	140
Flue gas temperature min. output / nominal output PELLETS	[°C]	58 / 87	62 / 95	66 / 104	71 / 112
Maximum overpressure of heating water	[MPa]	0,2	0,2	0,2	0,2
Test overpressure of heating water	[MPa]	0,4	0,4	0,4	0,4
Warranty fuel WOOD		Dry wood, calorific value 15 - 17 MJ/kg, diameter 80 - 150 mm, humidity 10 - 20 %			
Warranty fuel PELLETS		Wood pellets, Ø 6mm, l = 35mm, humidity max 12%			
Flue mass flow WOOD	[kg/s]	0,0153	0,0246	0,0293	0,031
Flue mass flow PELLETS	[kg/s]	0,0169	0,0241	0,0289	0,0344
Electrical protection	IP	20	20	20	20
Nominal electrical input WOOD	[W]	29	44	42	42
Maximum electrical input WOOD	[W]	52	52	52	52
Min. electrical input /nominal power PELLETS	[W]	57 / 40	44/ 78	47/ 100	50 / 120
Maximum electrical input PELLETS	[W]	529	535	555	565
Standby electrical input	[W]	5	5	5	5
Recommended storage tank size *[1]	[litry]	1500-3000	1500-3000	2000-4000	2000-4000
Power supply	[A/V/Hz]	2 x 230V 50 Hz			
Hydraulic loss of the boiler at Δ T = 20 K	[mbar]	5,556	5,556	7,989	7,533
Hydraulic loss of the boiler at Δ T = 10 K	[mbar]	22,18	22,18	31,21	26,07
Noise emissions WOOD	dB	42,3 ± 3,2			
Noise emissions PELLETS LWA	dB	65,4 ± 3,2			

*[1] The actual size of the storage tank must be designed by the designer.

Fuel consumption is directly dependent on the quality and type of fuel used, as well as maintaining the cleanliness of the internal heat exchange surfaces of the boiler. The smaller the chopped wood, the greater the boiler output, but the burning time per one filling is shortened. Conversely, if we need less power, we can use thicker wood to extend burning time per one filling. The position of the primary and secondary air flaps and the speed of the fan also affect the burning time.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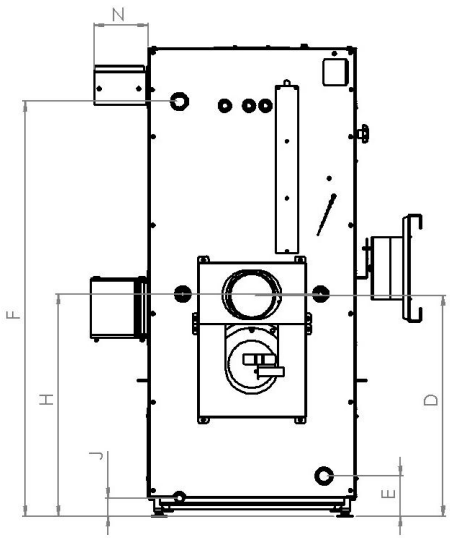
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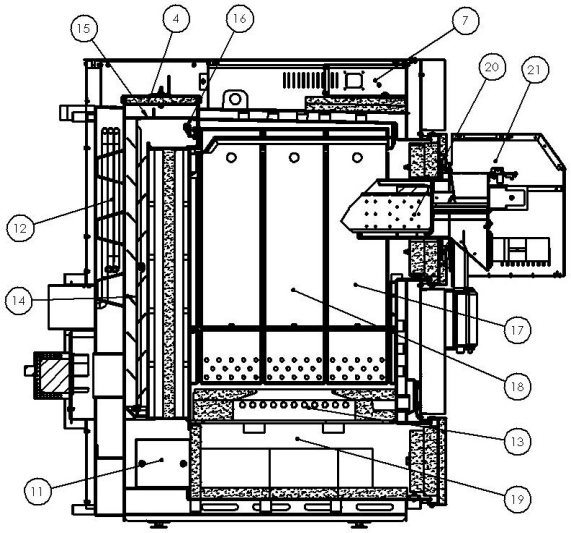
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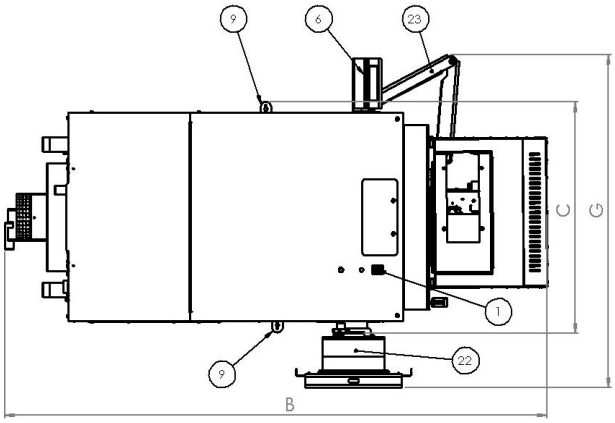
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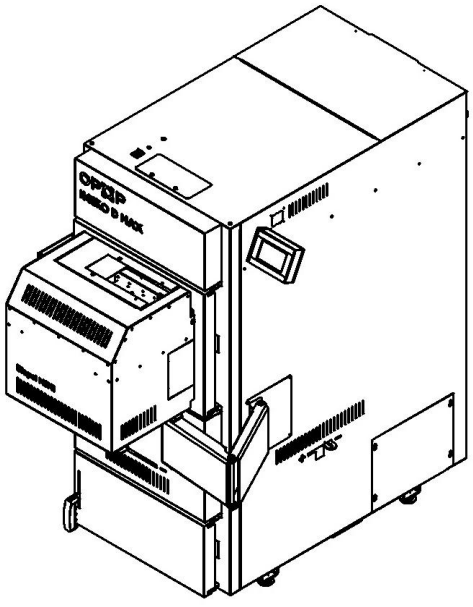
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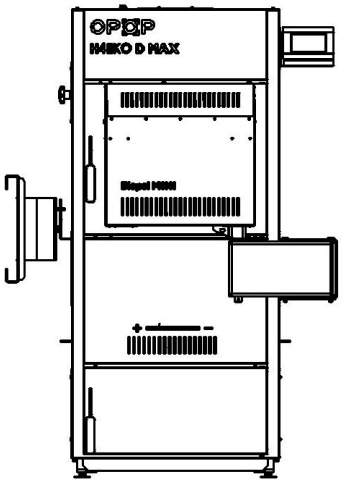
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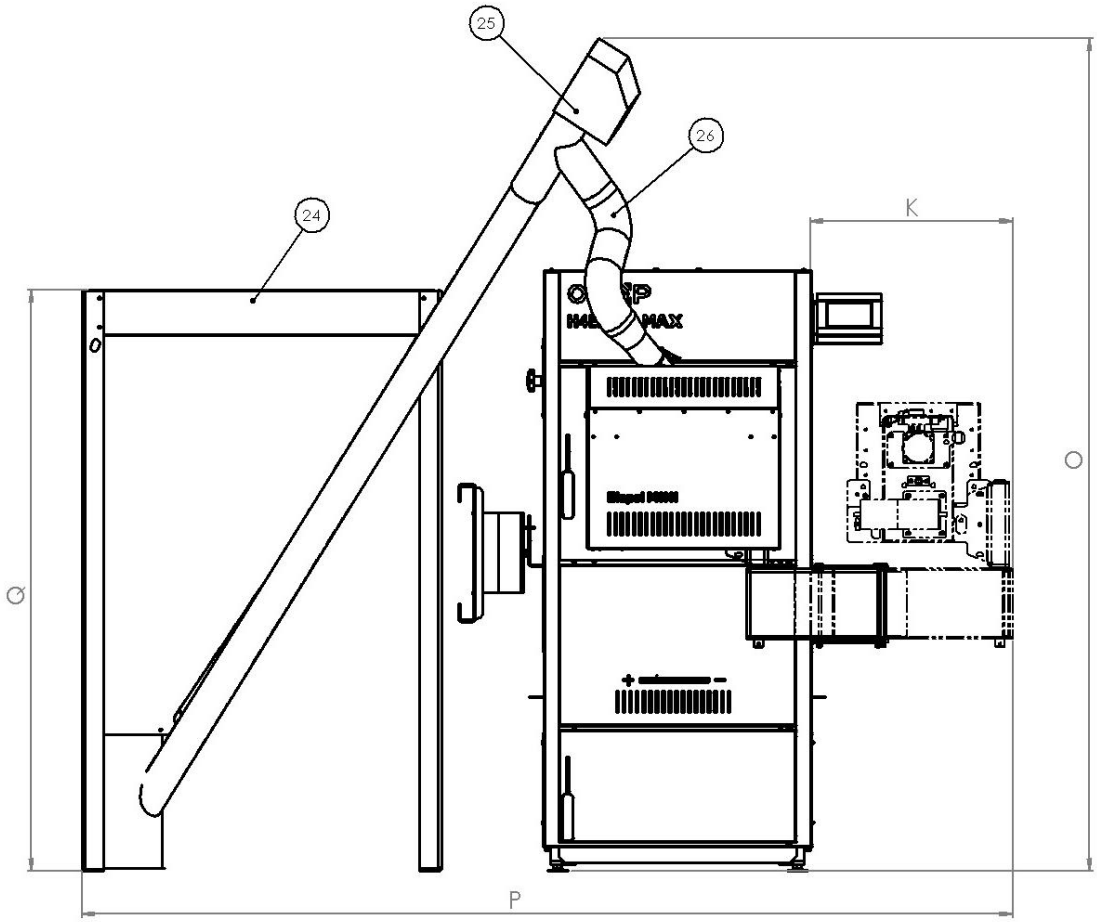
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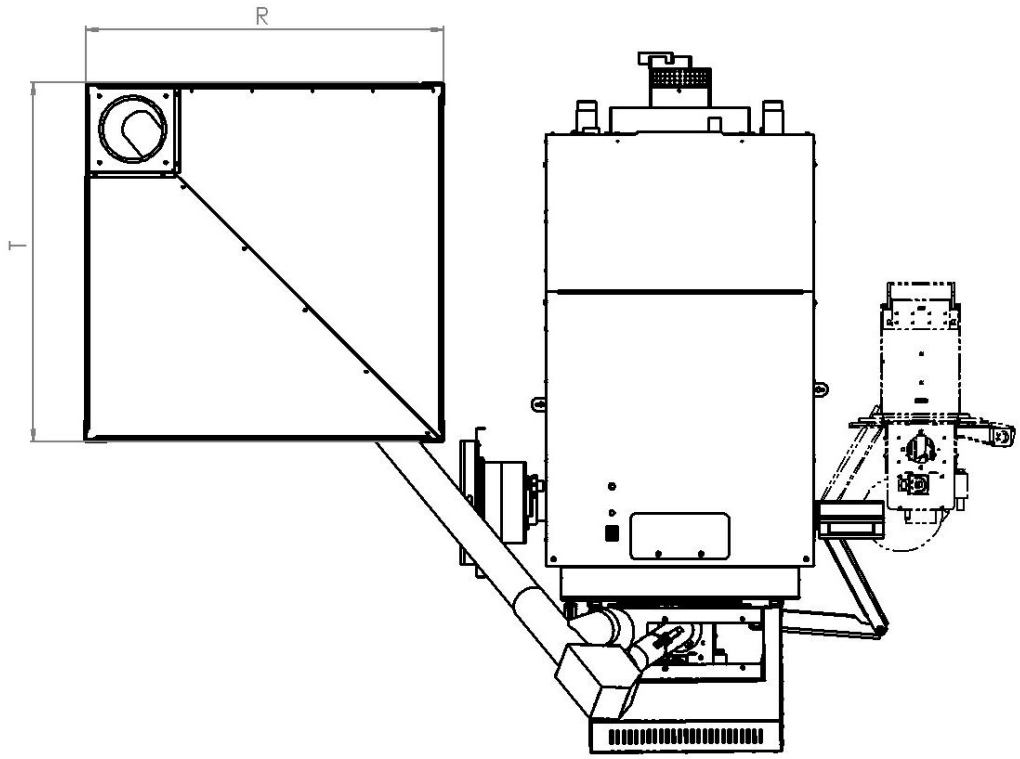
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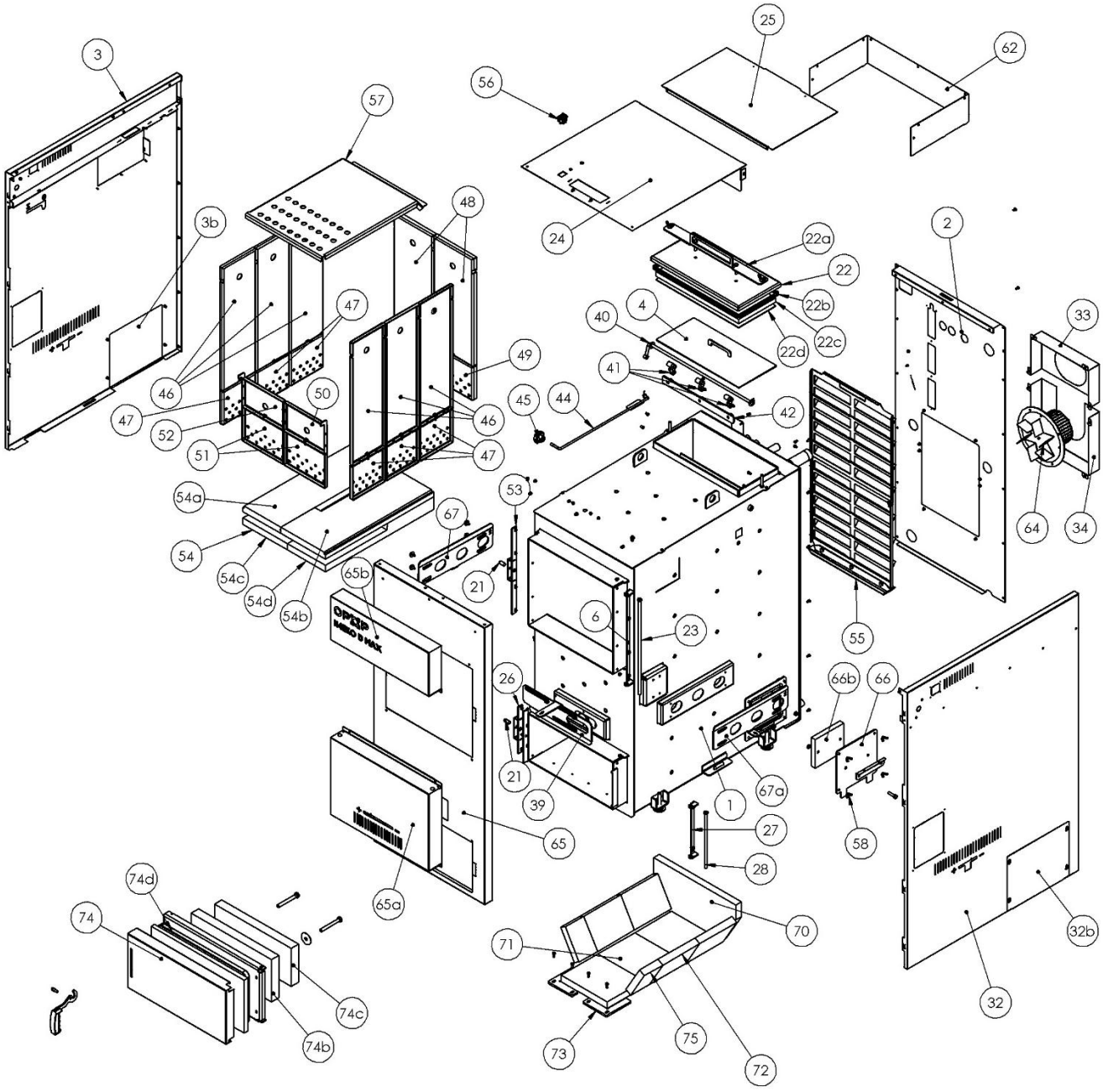
Technical parameters		Boiler type			
	Unit	H425 EKO-D MAX KOMBI	H435 EKO-D MAX KOMBI	H442 EKO-D MAX KOMBI	H450 EKO-D MAX KOMBI
Outlet / inlet pipe (external thread)		G1 1/4"	G1 1/4"	G1 1/4"	G1 1/4"
Cooling loop connection (internal thread)		G 1/2"	G 1/2"	G 1/2"	G 1/2"
Drain and fill connection (internal thread)		G 1/2"	G 1/2"	G 1/2"	G 1/2"
A - total boiler height	(mm)	1373	1373	1373	1513
B - total boiler depth	(mm)	1575	1575	1575	1613
C - boiler width	(mm)	684	684	684	684
D - flue location	(mm)	638	638	638	638
E - inlet water pipe location	(mm)	116	116	116	116
F - outlet water pipe location	(mm)	1199	1199	1199	1199
H - cooling loop location	(mm)	643	643	643	783
J - drain valve location	(mm)	111	111	111	111
K - distance between the arm mechanism and the boiler	(mm)	410	410	410	410
N - display holder width	(mm)	168	168	168	168
O - height including external feeder	(mm)	1877	1877	1877	1877
P - total boiler width including accessories	(mm)	2095	2095	2095	2095
Q - hopper height	(mm)	1311	1311	1311	1311
R - hopper width	(mm)	807	807	807	807
S - hopper depth	(mm)	807	807	807	807
T - burner cover depth	(mm)	483	483	483	483
Boiler body wall thickness (water/flames)	(mm)	5	5	5	5
Boiler body wall thickness (water)	(mm)	3	3	3	3

úpzition	Name of part
1	Main switch
2	Ashtray door
3	Loading door
4	Cleaning door
5	Exhaust fan
6	Display
7	Control unit
8	Secondary air regulation
9	Primary air regulation
10	Smoke damper control
11	Cleaning hole
12	Cooling loop
13	Heat-resistant concrete nozzle
14	Flue gas damper
15	Cleaning damper

pozition	Name of part
16	Smoke damper
17	Displacement plates for the hopper
18	Loading chamber
19	Combustion chamber
20	Burner
21	Burner cover
22	Door seal
23	Arm mechanism
24	Pellet hopper
25	External feeder
26	Feeder hose

5. SPARE PARTS LIST

H425, H435, H442 EKO-D MAX KOMBI

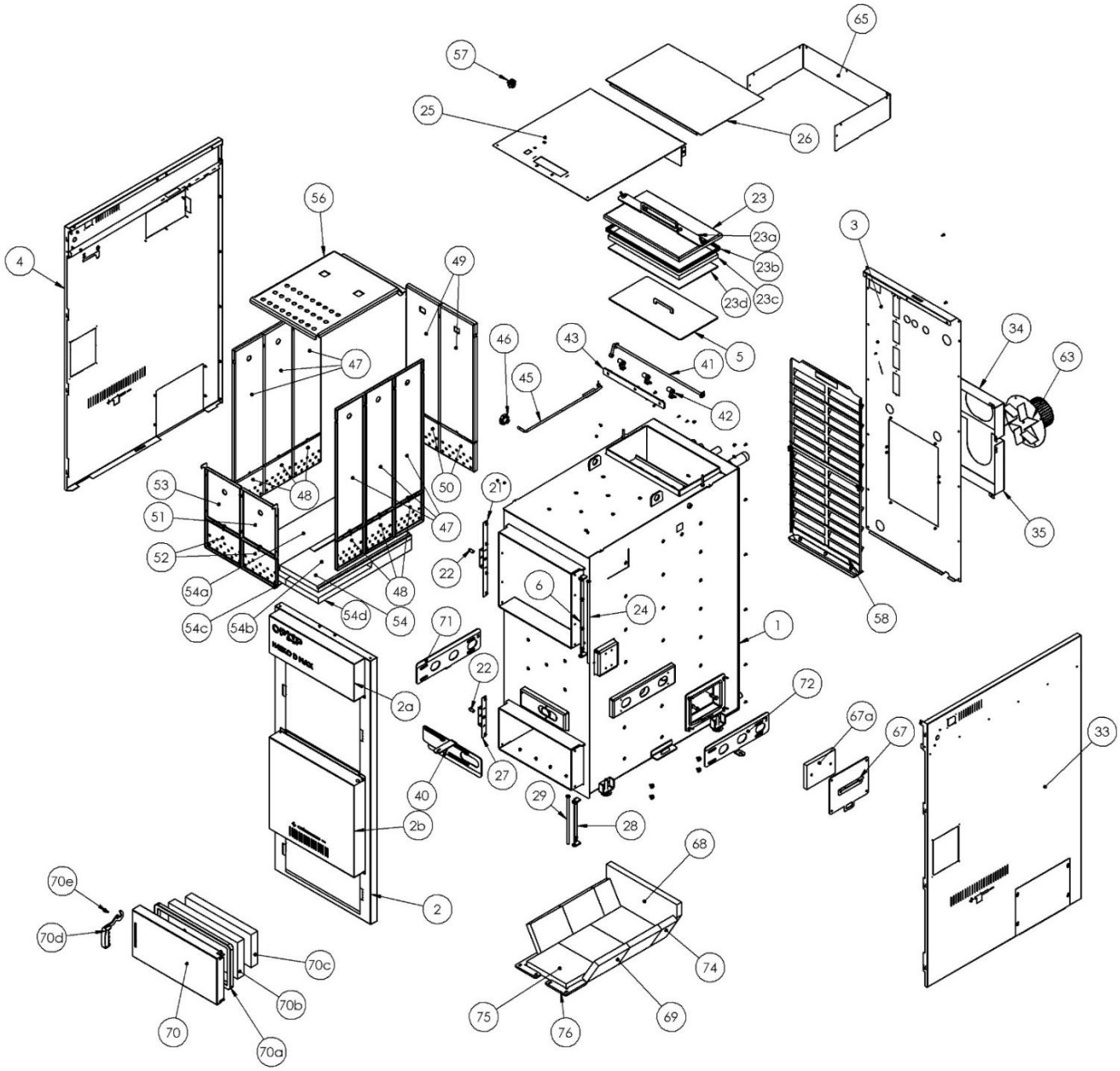


H425, H435, H442 EKO-D MAX KOMBI

Name			Ordering number	Pozition
Boiler weldment H425, H435, H442 EKO-D MAX				1
Ash door H425,H435,H442 EKO-D MAX (incl. hinge)			ND7002713A	74
Rear ashtray door insulation (GRENAMAT)			ND577866	74b
Front ashtray door insulation (GRENAMAT)			ND5771000	74c
Ashtray door insulation 20x20 (1180mm) - (CORD)			NDPO435D	74a
Cleaning door H425,H435,H442 EKO-D MAX			ND7002751	22
Cleaning door pressure strip			ND3654530	22a
Cleaning door insulation (GRENAMAT)			ND577874	22c
Cleaning door cover sheet			ND3633056	22d
Cleaning door insulation 10x10 (1320mm) - (CORD)			NDC435D	22b
Right side cover H425,H435,H442 EKO-D MAX			ND7002756B	32
Left side cover H425,H435,H442 EKO-D MAX			ND7002752B	3
Cleaning door flap H425,H435,H442 EKO-D MAX			ND7002750	4
Top cover H425,H435,H442 EKO-D MAX			ND7002709B	24
Front cover H425,H435,H442 EKO-D MAX			ND7003051	65
Middle front cover			ND3655004A	65a
Front cover with logo			ND7003039	65b
Turbulator with tray H425,H435,H442 EKO-D MAX			ND7002755A	55
Ash door pin			ND7002712	28
Firing door pin			ND7002702	23
Front door lock			ND7002719	53
Ash door lock			ND7002711	26
Movable flap			ND7001919A	42
Rotating handle (3 pcs per boiler)			ND7001906	41
Flap lever-S			ND7002718	40
Flap rod			ND7002716	44
Firing compartment cover I (6 pcs)			ND3654604B ND3654876	46
Firing compartment cover II (2 pcs)			ND3654609A	48
Firing compartment cover III (1 pc)			ND3654608	50
Cover of the stoking area III (1pc bent mirror-like)			ND3654608zrc	52
Spacer plate with air vents I (6pcs)			ND3654565A ND 3654877	47
Spacer plate with air vents II (2pcs)			ND3654568	49
Spacer plate with air vents III (2pcs)			ND3654567	51
Upper flue gas plate (1pc)			ND3654621A ND3654878	57
Rear wiring cover			ND3654969B	62
Rear cover			ND3655003A	2
Rear upper cover			ND3654605	25
Exhaust fan box			ND3653977A	33
Exhaust fan box II			ND3653978A	34
Side ashtray door (2pcs per boiler)			ND7003154	66
Side door insulation (Grenamat) (2pcs per boiler)			ND5771001	66b
Primary control plate			ND3654610A	67
Primary control plate (mirror version)			ND3654610Azrc	67a
Secondary control plate			ND3655010A	39
Ashtray door hinge			ND3654555	27
Stoking door hinge			ND3654531	6
Hand wheel star H4 EKO-D			NDHVEZDH4EKOD	45

Nozzle fitting complete - refractory concrete H425 - H455 EKO-D MAX			ND7002792	54
Nozzle fitting upper left - refractory concrete H425 - H455 EKO-D MAX			ND577888	54a
Top right nozzle fitting - refractory concrete H425 - H455 EKO-D MAX			ND577887	54b
Bottom left nozzle fitting - refractory concrete H425 - H455 EKO-D MAX			ND577890	54c
Bottom right nozzle fitting - refractory concrete H425 -H455 EKO-D MAX			ND577889	54d
Rear fitting - refractory concrete			ND577994	70
Lower fireclay fitting			ND577292	71
Slanting fireclay fitting			ND577277	72
Fireclay stop			ND3633407	73
Rear inclined fireclay fitting			ND577275	75
Handle pin 2			ND214400	21
Exhaust fan H425 - H455 EKO-D MAX			NDVT2055EKOD	64
Main switch H4 EKO D			NDHLVYP	56
STB safety sensor			NDCIDLOSTB	-

H450 EKO D MAX KOMBI

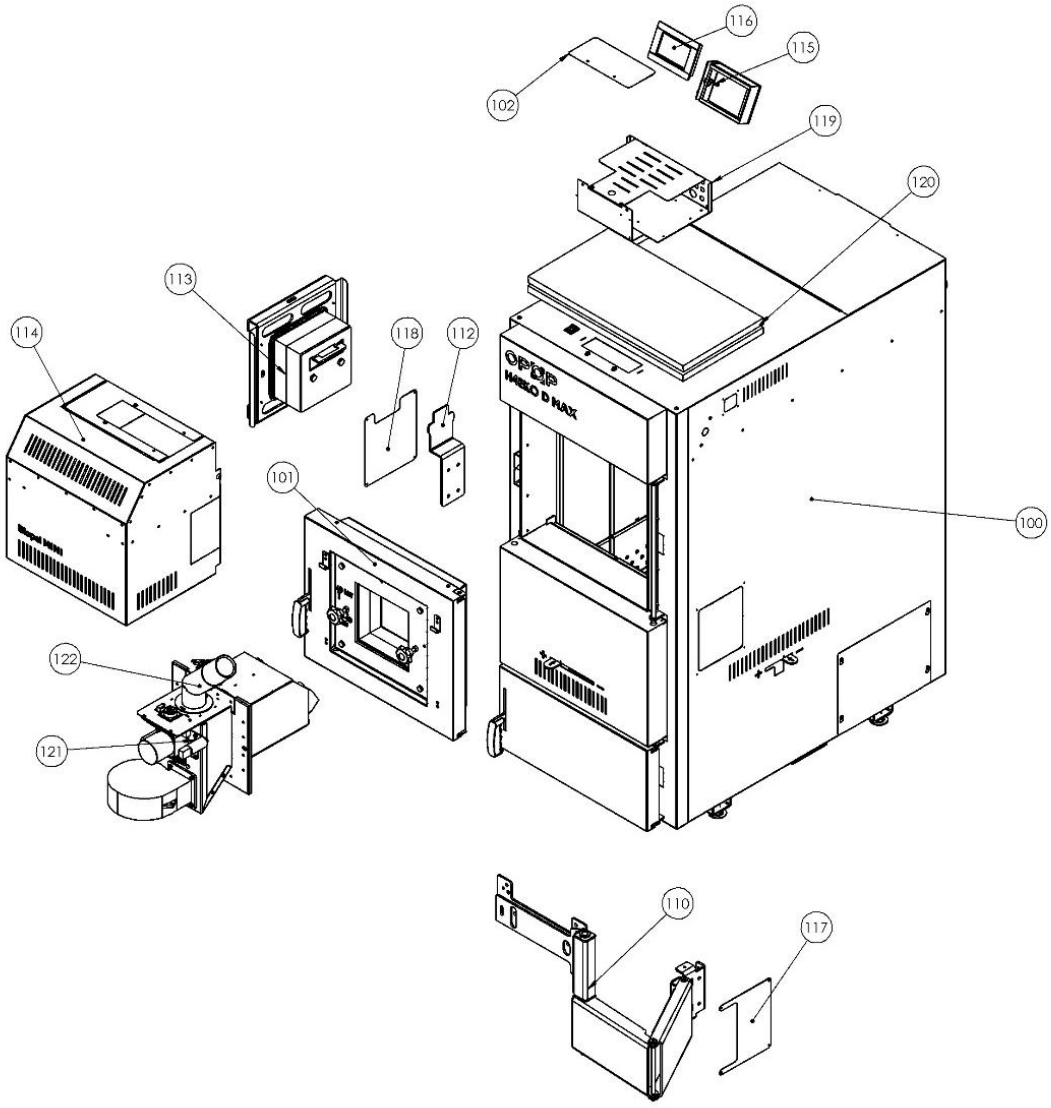


H450 EKO-D MAX KOMBI

			Ordering number	pozition
Boiler weldment H449, H455 EKO-D MAX				1
Ash door H449, H455 EKO-D MAX (incl. hinge)			ND7002713A	70
Ash door insulation (GRENAMAT)			ND577866	70b
Ash door front insulation (GRENAMAT)			ND5771000	70c
Handle pin			ND214401	70e
Handle			NDMADLOH455D	70d
Ash door insulation 20x20 (1180mm) - (CORD)			NDPO455D	70a
Cleaning door H449, H455 EKO-D MAX			ND7002705	23
Cleaning door pressure strip			ND3654530	23a
Cleaning door insulation (GRENAMAT)			ND577864	23c
Cleaning door cover sheet			ND3633015	23d
Cleaning door insulation 10x10 (1320mm) - (CORD)			NDC455D	23b
Right side cover H449, H455 EKO-D MAX			ND7002763A	33
Left side cover H449, H455 EKO-D MAX			ND7002708A	4
Cleaning door flap H449, H455 EKO-D MAX			ND7002704	5
Top cover H449, H455 EKO-D MAX			ND7002709A	25
Front cover H449, H455 EKO-D MAX			ND7003075A	2
Front cover with logo			ND7003039	2a
Middle front cover			ND3655035	2b
Turbulator with tray H449, H455 EKO-D MAX			ND7002771A	58
Ash door pin			ND7002712	28
Firing door pin			ND7002702	24
Front door lock			ND7002719	21
Ash door lock			ND7002711	27
Movable flap			ND7001919A	43
Rotating handle (3 pcs per boiler)			ND7001906	42
Flap lever-S			ND7002718	41
Flap rod			ND7002716	45
Firing compartment cover I (6 pcs)			ND3654559B	47
Firing compartment cover II (2 pcs)			ND3654561B	49
Firing compartment cover III (1 pc)			ND3654560	51
Firing compartment cover III (1 pc mirror-bent)			ND3654560zrc	53
Spacer plate with air vents I (6 pcs)			ND3654565A	48
Spacer plate with air vents II (2 pcs)			ND3654568	50
Spacer plate with air vents III (2 pcs)			ND3654567	52
Upper flue gas plate (1 pc)			ND3654621C	56
Cable cover			ND3654954A	65
Rear cover			ND3654940A	3
Rear top cover			ND3654550	26
Exhaust fan box			ND3653977A	34
Exhaust fan box II			ND3653978A	35
Side ashtray door (2 pcs per boiler)			ND7003148	67
Side door insulation (Grenamat) (2 pcs per boiler)			ND577997	67a
Primary control plate			ND3654610A	71
Primary control plate (mirror version)			ND3654610zrc	72
Secondary control plate			ND3655010A	40
Ashtray door hinge			ND3654555	28
Additional door hinge			ND3654531	6
Hand wheel star H4 EKO			NDHVEZDH4EKOD	46
Nozzle fitting complete - refractory concrete H425 - H455 EKO-D MAX			ND7002792	54
Nozzle fitting upper left - refractory concrete H425 - H455 EKO-D MAX			ND577888	54a
Top right nozzle fitting - refractory concrete H425 - H455 EKO-D MAX			ND577887	54b
Bottom left nozzle fitting - refractory concrete H425 - H455 EKO-D MAX			ND577890	54c

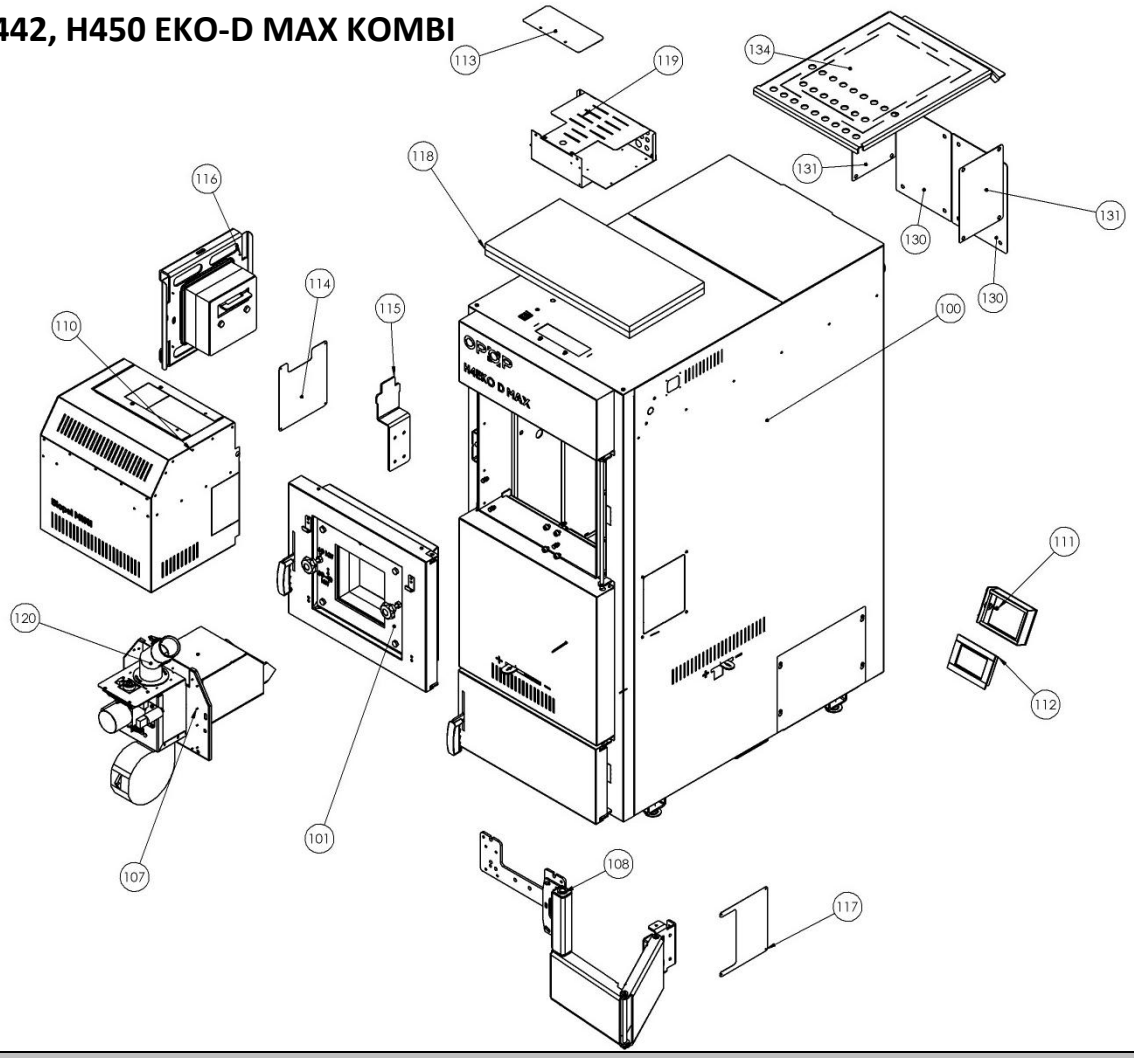
Bottom right nozzle fitting - refractory concrete H425 - H455 EKO-D MAX			ND577889	54d
Rear fitting - refractory concrete			ND577994	68
Lower fireclay fitting			ND577292	76
Slanting fireclay fitting			ND577277	69
Fireclay stop			ND3633407	77
Rear inclined fireclay fitting			ND577275	75
Handle pin 2			ND214400	22
Fan H425 - H455 EKO-D MAX			NDVT2055EKOD	63
Main switch H4 EKO D			NDHLVYP	57
STB safety sensor			NDCIDLOSTB	-

H425 EKO-D MAX KOMBI



H425 EKO-D MAX KOMBI				
			Ordeiting number	**position**
H425 EKO-D MAX				100
Front door assembly			ND 7003025	101
Cover plate			ND 3632286	102
Arm mechanism				110
Hanger			ND 3655125	112
Door seal			ND 7003112	113
Burner cover 30.40kW			ND 7002817	114
Mini cabinet assembly			ND 7002964	115
Biopeel V9 MINI Kombi display				116
Pantograph cover			ND 3633376	117
Hanger cover			ND 3633377	118
OPOP v9 H4 EKO-D Max control unit				119
Insulation for upper electronics (2pcs)			ND 577973	120
Biopel burner 30kW,				121
Biopeel Mini clip feeder			ND 7002655C	122

H435, H442, H450 EKO-D MAX KOMBI



H435, H442, H450 EKO-D MAX KOMBI				
			Ordering numebr	**position**
H449 EKO-D MAX, H455 EKO-D MAX **H435, H442 EKO-D MAX**				100
Front door assembly			ND 7003025	101
Biopel burner 40kW (H435,H442)				109
Biopel burner 60 kW (H450)				110
Arm mechanism			ND 7002817	113
Burner cover 30,40kW			ND 7002964	114
Box assembly for MINI				115
Biopeel V9 MINI Kombi display			ND 3632286	116
Cover plate			ND 3633377	117
Hanger cover			ND 3655125	118
Hanger			ND 7003112	119
Door seal			ND 3633376	120
Pantograph cover			ND 7002655C	121
Biopeel Mini clip feeder			ND 577973	122
Insulation for upper electronics (2x)				123
OPOP v9 H4 EKO-D Max control unit			ND 3633502	130
Cover plate - rear			ND 3633503	131
Cover plate - side			ND 3655331	134

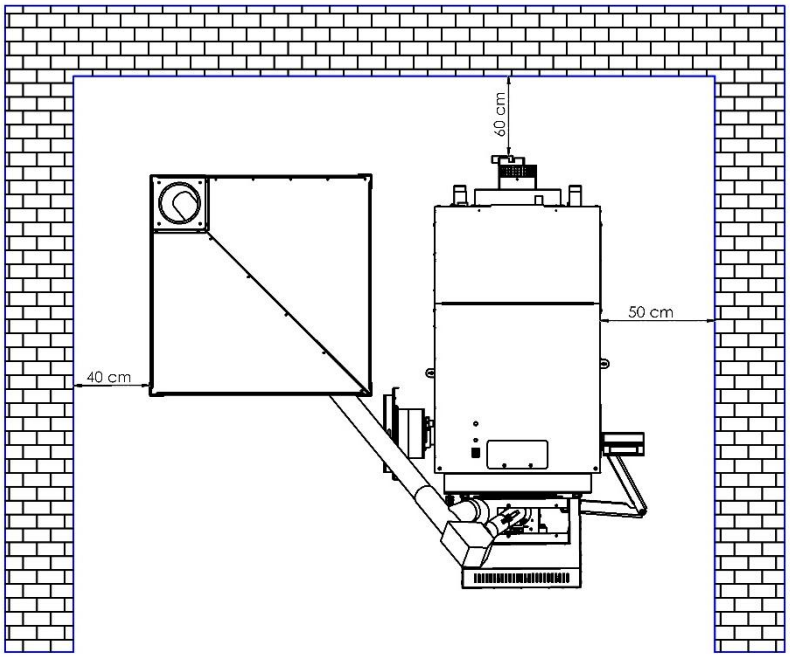
6. BOILER INSTALATION

The solid fuel boiler may only be installed by a company with a valid authorisation to install it or by authorised personnel from our company. The list is available at opop.cz or you can request it by telephone at 571 675 589. An installation project must be prepared according to the valid regulations.

Boiler placement

The boiler must be installed in a separate boiler room, specially adapted for heating. The boiler room must have sufficient space for installation and boiler maintenance. Sufficient circulation of fresh air for combustion must be ensured, the chimney design must ensure adequate draft for the type of boiler and must be in accordance with the construction criteria set forth in these Instructions and in the binding regulations. Never install the boiler in open spaces or balconies, in areas occupied by people such as kitchen, living room, bathroom, bedroom, in areas where explosive and flammable materials are present

recommended dimensions for boiler room location



Install the boiler on a concrete base made of flame retardant material or on a fireproof substrate.

There should be free space around the boiler visible in the figure on the right. During the boiler's installation and operation, a safe distance of 200 mm from the flammable materials of flammability class B, C_1 and C_2 (according to ČSN 06 1008) must be observed.

For lightly flammable materials of flammability class C_3, which quickly burn and burn themselves after removing the ignition source (e.g., paperboard, cardboard, bitumen and tar paper, wood and fibreboard, plastics, floor coverings), the safety distance doubles to 400 mm.

The safe distance must also be doubled if the flammability class of the building material is not proven.

Installation of heating system pipes

The hot water system must be implemented in accordance with ČSN 06 0310:2006 (Central heating, design and installation), ČSN 06 0830:2006 (Safety equipment for central heating and domestic water heating), ČSN 07 7401 (Water and steam for thermal energy equipment with a working steam pressure of up to 8 MPa, ČSN EN 303-5+A1 (Central heating boilers - Part 5: Central heating boilers for solid fuels with manual or automatic delivery, with a nominal output of up to 500 kW. Only water treated to the values according to ČSN 07 7401: 1992 can be used to fill or top up the system with water. The water must be clear, colorless, free of suspended substances, oils and chemically aggressive impurities and must not be acidic (pH must be higher than 7.2). The water hardness must not exceed 1 mmol/l and the Ca2+ concentration must not exceed 0.3 mmol/l.

The boiler must be installed in combination with the buffer tank.

Drain valve installation

A ½" nozzle is welded to the boiler at the back of the boiler, into which the drain valve is screwed. After filling the system with water, it is necessary to close the valve!

Chimney connection

The boiler may only be installed to the chimney according to ČSN 73 4201:2002. The connection of the hot water boiler must only be carried out with the approval of a chimney sweep organisation.

The boiler must be connected to a separate chimney flue which has sufficient draft for virtually any operating conditions.

The chimney draft is always lower at the time of increased humidity, mist and the heated chimney head on which the hot sun has been shining for a long time.

The flue path piping mounted on the boiler must be firmly assembled and mounted to prevent accidental or spontaneous release. We recommend that the flue from the boiler to the chimney is no longer than 1 m and that it rises towards the chimney; recommended slope of at least 5% (3°). The connection is recommended to be direct – no more than one bend.

The boiler and flue must comply with the fire regulations ČSN 06 1008:1997 (Fire safety of heating equipment), ČSN EN 13501-1:2007 (Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests) and may be installed at a safe distance of 400 mm from flammable materials. The safe distance must also be observed when the flammability class of a flammable substance is not proved.

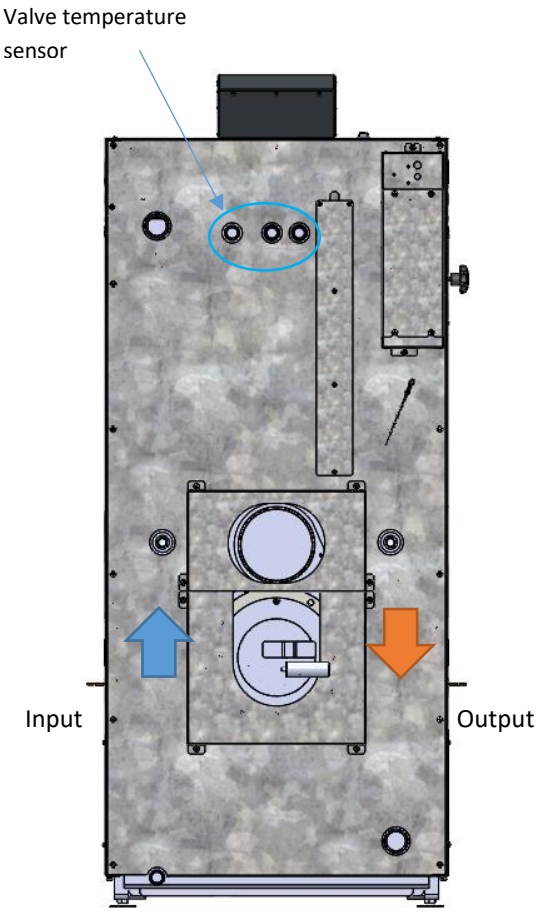
7. COOLING LOOP ASSEMBLY

The H4xx EKO-D MAX KOMBI boiler is, in accordance with the requirements of ČSN EN 303-5:+A1 and Government Regulation 26/2003 Coll., equipped with a safety heat exchanger for removing excess heat, which must ensure that the highest water temperature in the boiler is not exceeded, i.e. 110°C. This safety heat exchanger is designed so that it is controlled by a safety drain valve at the inlet. This valve can be ordered from us at any time so that installation on the cooling loop nozzles is as simple as possible.

Operation principle

Insert the safety valve sensor into the sink on the upper side of the boiler. The sensor reads the boiler water temperature. If the boiler water temperature increases to 95°C (TS 130), the boiler automatically opens and discharges water into the built-in heat exchanger to remove heat and prevent the boiler from overheating. After the boiler's water has cooled down, the valve automatically closes until it stops the cold water inflow to the safety heat exchanger. This activity can be repeated several times, depending on the amount of fuel in the filling shaft or on the duration of reduced heat consumption through the heating system

- The drain relief valve must always be connected to the water inlet to the cooling loop so that the cooling loop is not under constant service water pressure
- If the recommended cooling loop connection to the boiler in accordance with the operating instructions is not adhered to, the cooling loop may be pressurised and consequently cause leaks.
- For the valve's correct operation, it must be ensured that the valve is connected to a permanent cooling water source of at least 2 bar (preferably a public water supply) at a temperature of around 15°C
- Check the correct valve function annually at minimum

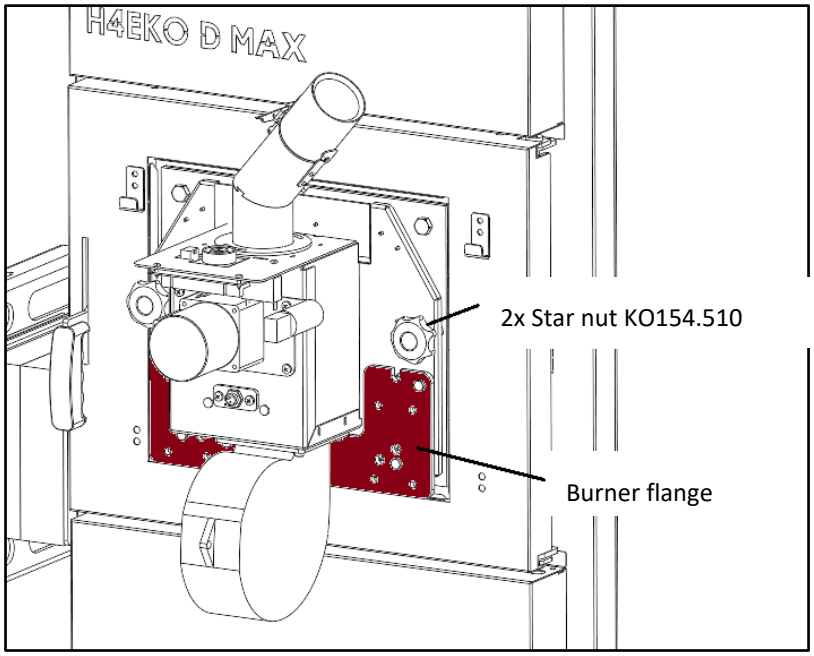

Valve temperature
sensor
Input
Output

8. MOUNTING THE BURNER, BURNER ARM AND DISPLAY HOLDER

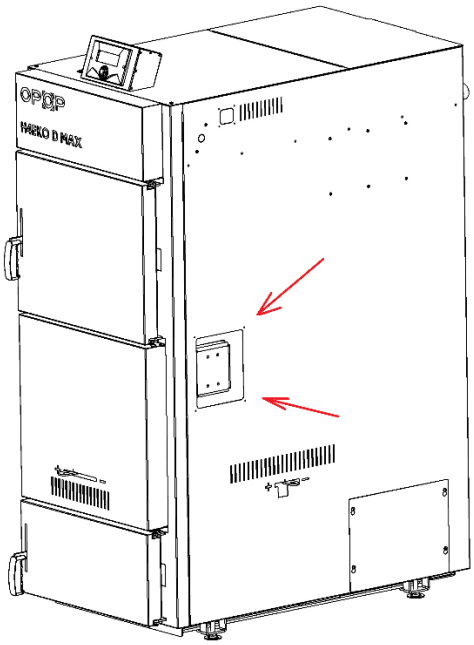
Before assembling the burner, it is first necessary to choose which side the arm mechanism should open. The type and size of the burner always depends on the size of the boiler. The method of assembling the burner is therefore different depending on the size of the burner and the boiler. The entire assembly can be summarized in the main points listed below:

a) **Assembling the burner and the burner arm**

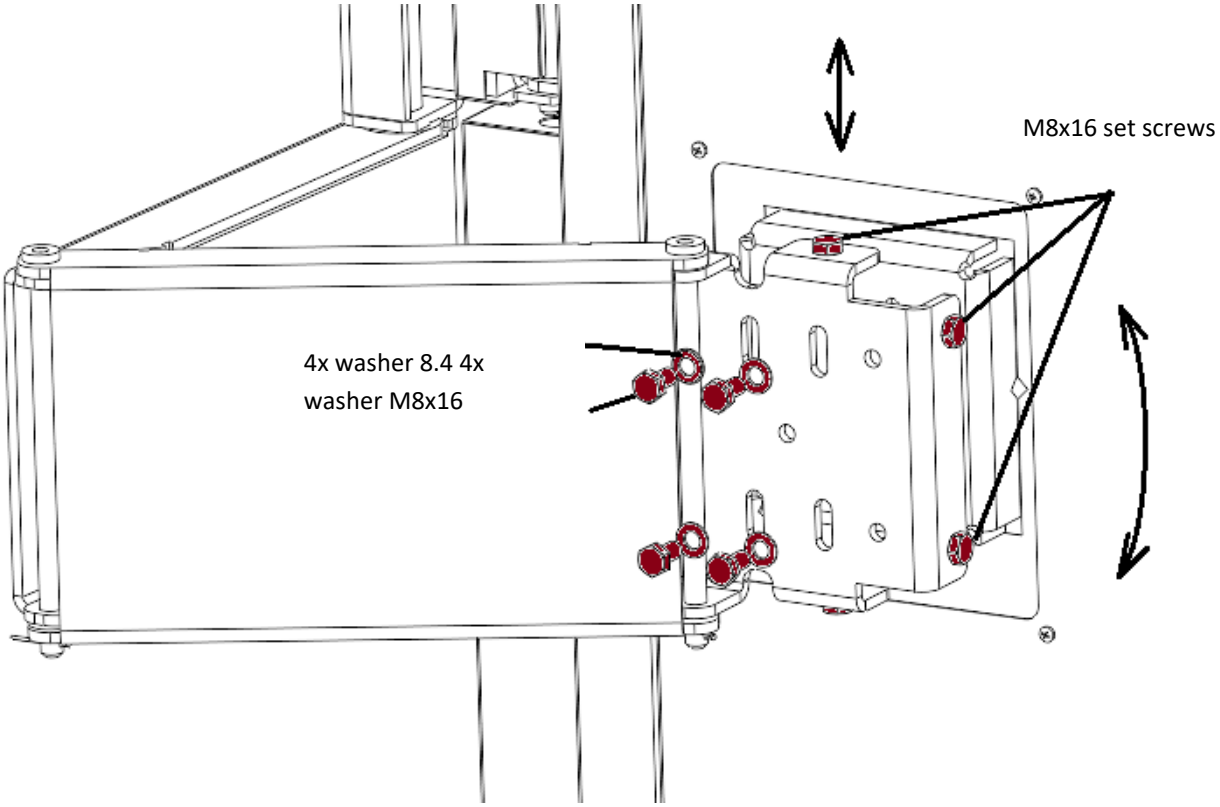
1) Prepare all the parts and unpack the arm mechanism from the foil.
2) Check whether the burner flange is mounted on the burner using the M6x25 screw together with the nut.
3) Insert the burner into the hole in the stoking door, ideally use a washer of about 5 mm. Screw it in with star nuts.



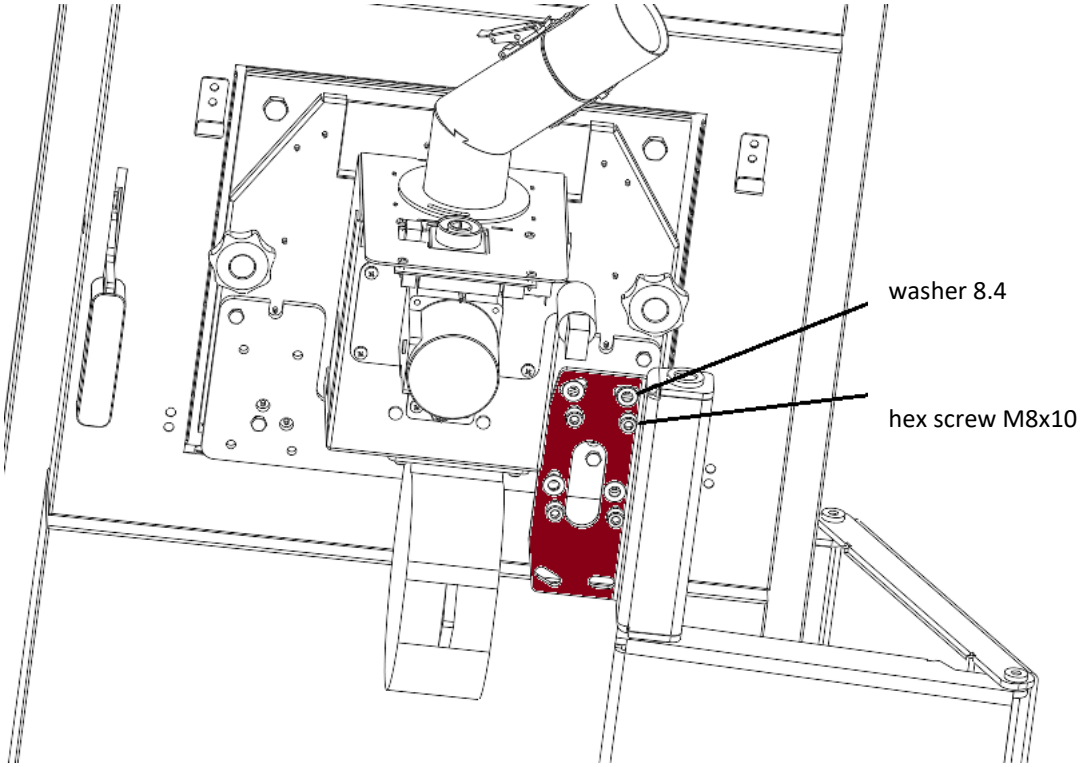
4) Pry off the frames on the side shells of the boiler using a hammer and a sharp screwdriver .



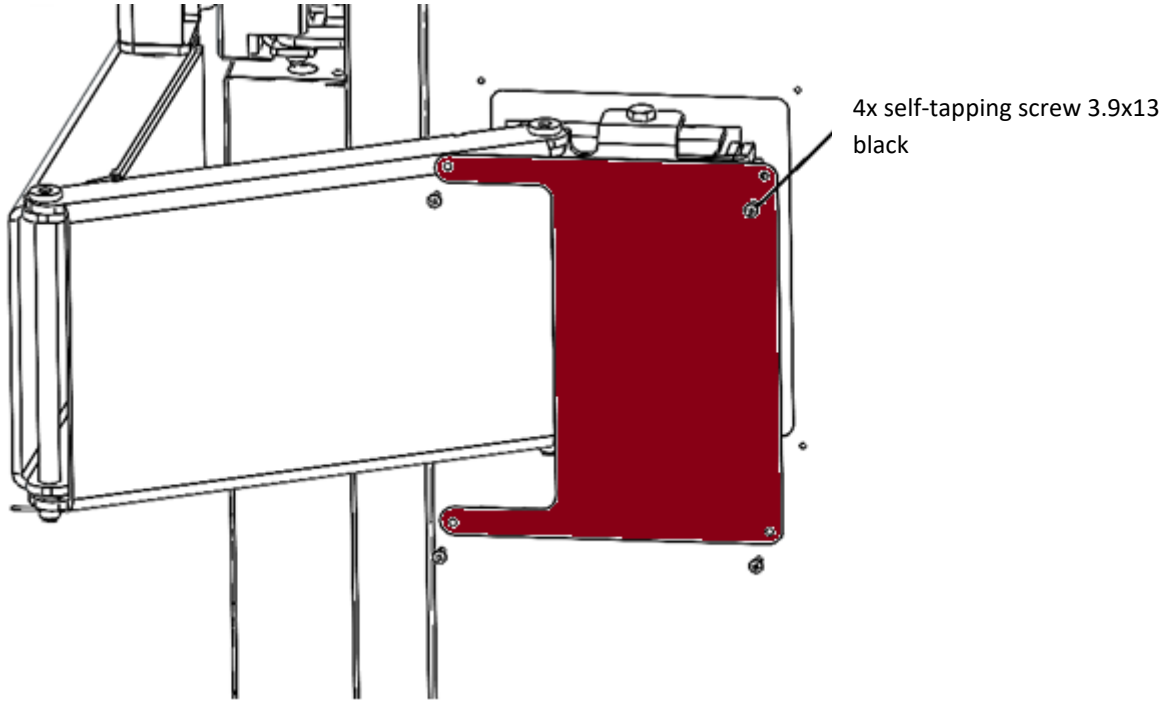
5) Attach the side arm mechanism to the side where the loading door hinges are using screws (4x) M8x16 + (4x) washers 8.4, do not tighten yet and align it so that it is with the loading door using a spirit level, use the screws on the back and top or bottom. Adjust the height so that the holes for connecting the burner are visible, see point 6.



6) Next, attach the arm mechanism to the specified side of the burner using the supplied screws (4x) M8x10 + (4x) washers 8.4. Check the door opening - be careful, the door can be opened by about 90°.

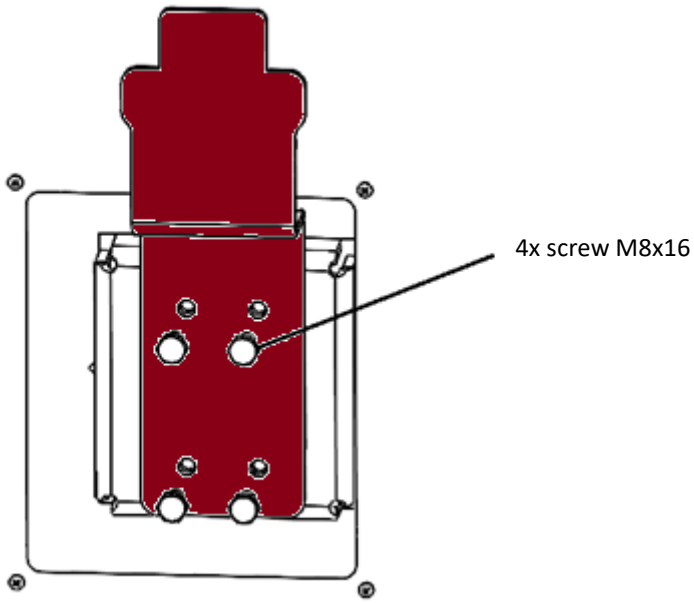


7) After mounting and testing the arm, cover the hole with a cover plate using (4x) 3.9x13 self-tapping screws with a cross head

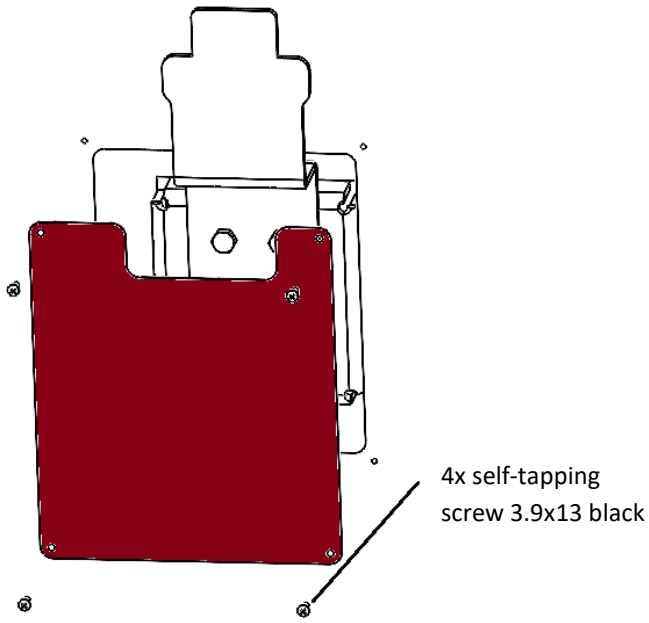


b) Mounting the loading door seal holder

1. Screw the loading door seal holder into the prepared hole on the opposite side using (4x) M8x16.

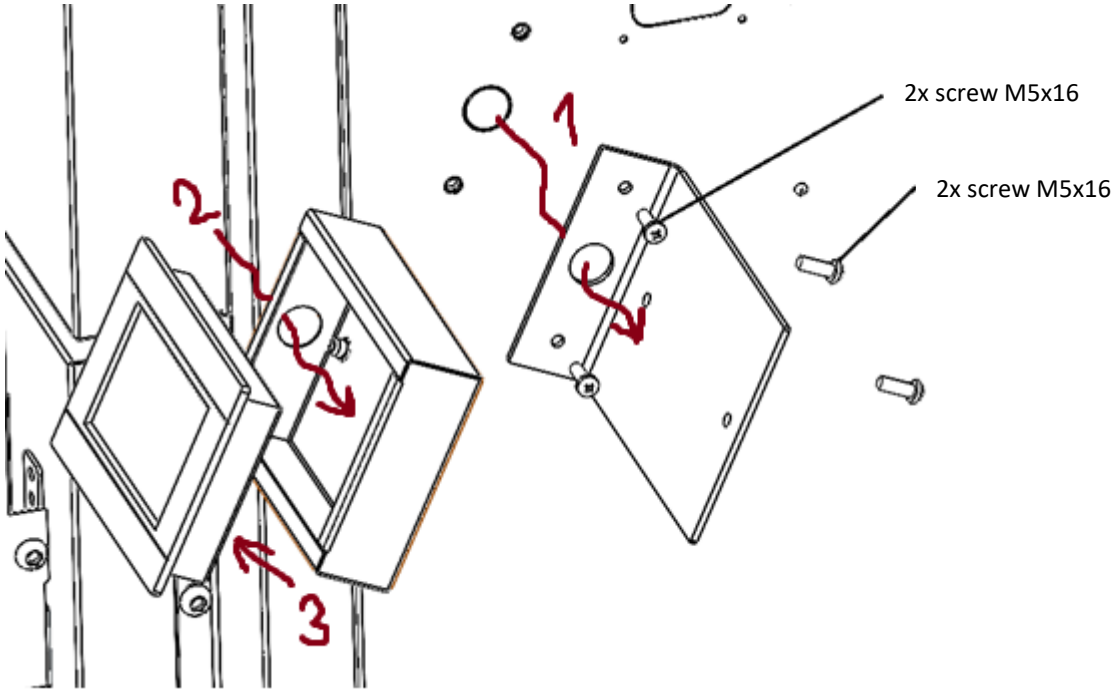


2. After tightening the screw, mount the cover plate using (4x) 3.9x13 self-tapping screws with a cross head



c) Mounting the display holder

1. Thread the display cable through the center hole, screw the display holder using two M5x16 cross head screws.
2. Thread the display cable through the hole in the display frame again and screw it in using two M5x16 cross head screws.
3. Connect the display cable to the display and insert it into the frame.



9. ASSEMBLY OF THE HOPPER AND EXTERNAL FEEDER

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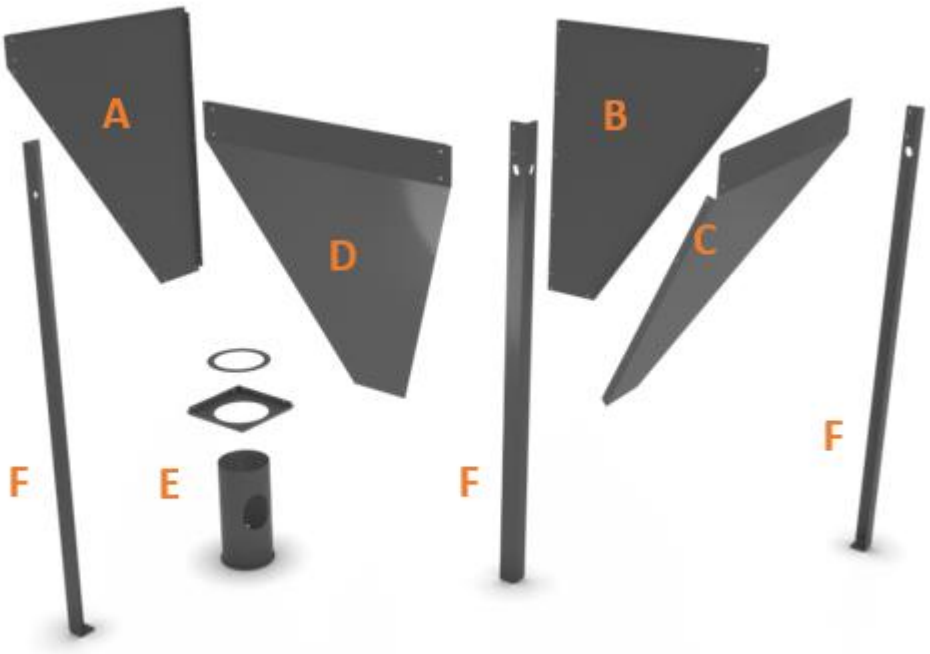
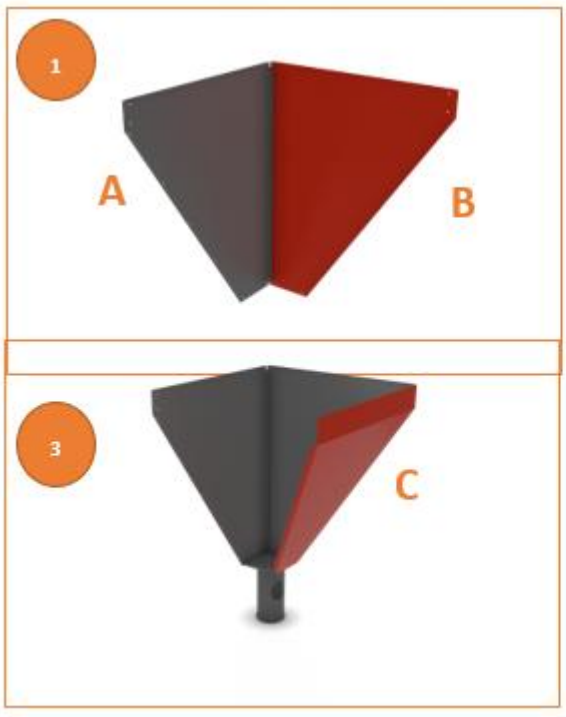
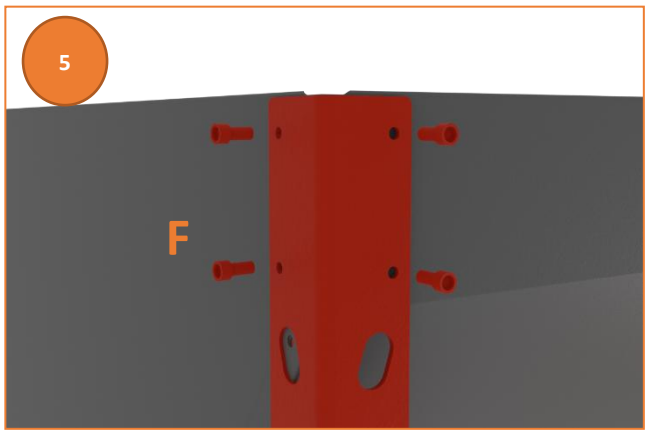
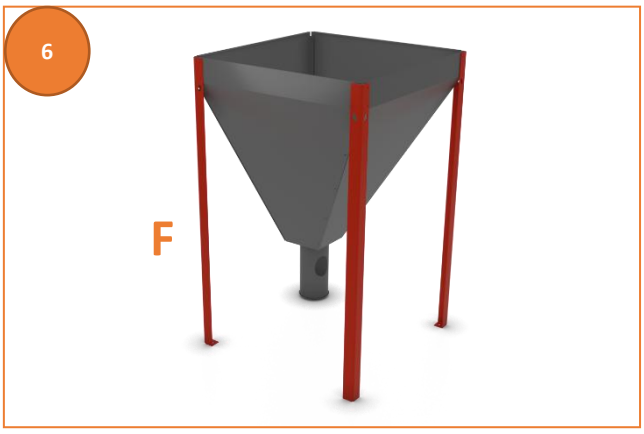
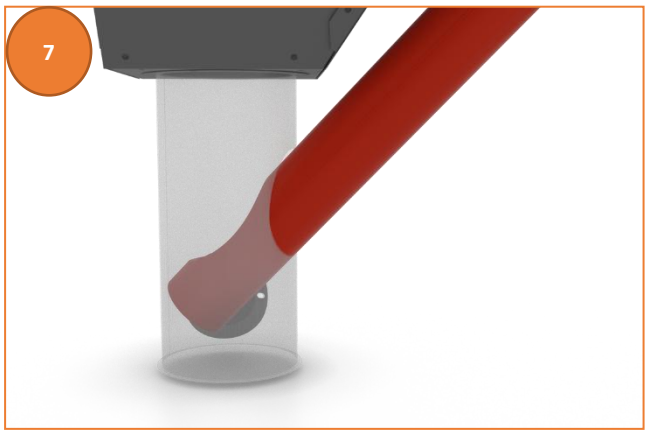










The external hopper consists of 4 main sheets A, B, C, D, which you gradually connect together. Start by connecting the A and B plates, see picture 1.

Then attach the square frame of the chimney E to the A, B plates. Then pass the E through the frame and secure with four screws and the last square frame with a round hole, see picture 2.

Continue by connecting the side plates C and D. Continuously or after the main plates A, B, C, D are assembled, attach the legs F to the assembly. Attach them using 4 screws for each leg separately.

Once the hopper is assembled, stand it on its legs and move it to the boiler. Then insert the 2.5m external feeder into the hopper cylinder with hole, see picture 7. The external hopper cylinder can be rotated. Therefore, turn it so that the hole for the feeder is facing the burner. After inserting the feeder into the cylinder, adjust the position of the hopper and feeder again so that the feeder outlet is above the burner.

Attach the feeder to the hopper using a chain and hook so that the angle of the feeder from the ground is between 45-55°. This ensures the expected fuel dosing.

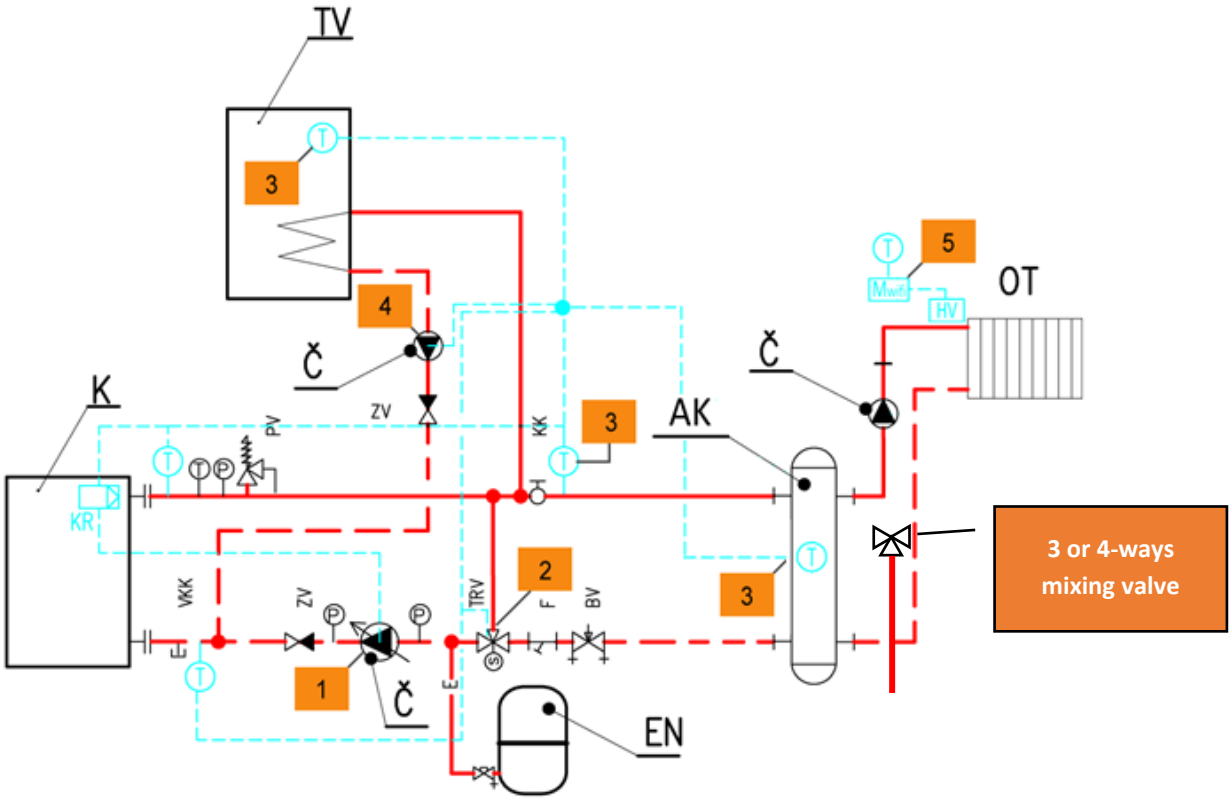
.

If the boiler room space does not allow the feeder to be installed at a given angle, it is absolutely necessary to perform the Feeder Calibration in the installation settings. After the feeder calibration, check the pellet burning and adjust the fan speed in the Coefficients menu in the installation settings so that the flame does not smoke.

Make sure that the feeder outlet is as high as possible above the burner so that after connecting the burner and feeder using a PVC hose, the hose does not sag to such an extent that the pellets could get stuck in the hose.

10. HYDRAULIC DIAGRAMS

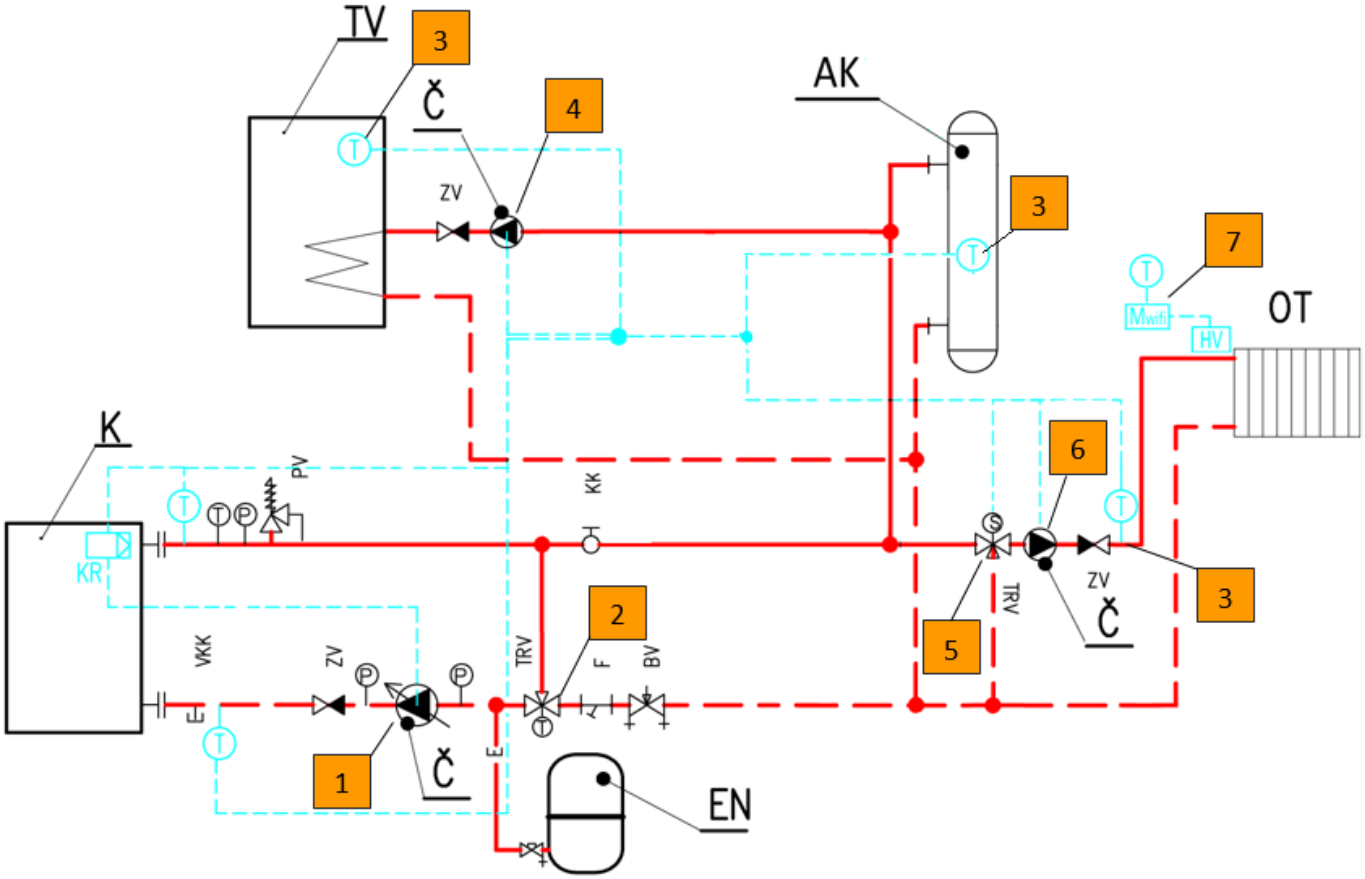
CONNECTION WITH 1 HEATING CIRCUIT, MIXING VALVE, BUFFER TANK



No	Part	Type / Component / Description	Electrical connector	Order number
1	CH pump	Primary circuit pump	CH pump	-
2	Mixing valve 1	3- or 4-way mixing valve (connected to 431N module)	Valve	-
3	KTY temperature sensors	KTY mixing valve 1 sensor	Valve sens.	345718000020
		KTY hot water sensor	DHW sens.	
		KTY buffer tank sensor	Buffer sens.	
4	DHW pump	Domestic hot water pump	DHW pump	-
5	Wireless radiator head control	Wifi8 module (for 1 building)	-	358120400020
		Wifi8 zone sensor (for 1 zone / room), (1 module = up to 8 zones / rooms)	-	358120400040
		Wifi8 valve head (for 1 radiator), (1 zone = up to 6 heads)	-	358120400030

PIPING LEGEND		DEVICE LEGEND		FITTINGS LEGEND	
	HEATING WATER SUPPLY PIPE 75/55°C	K	Automatic pellet boiler		
	RETURN HEATING WATER PIPES 75/55°C	ZP	Pellet hopper	KK	BALL VALVE
E	EXPANSION PIPE	TV	Indirect fired hot water cylinder	F	FILTER
	SOLAR CIRCUIT FEED PIPE	Č	Circulator pump for heating water	TRS	HW THERMOSTATIC TEMPERATURE CONTROLLER
	SOLAR CIRCUIT RETURN PIPE	EN	Expansion vessel	ZV	Non-return valve
E	EXPANSION PIPE	HVDT	HYDRAULIC DYNAMIC PRESSURE EQUALISER	PV	CHECK VALVE
		SK	SOLAR COLLECTOR	BV	BALANCING VALVE
		SČ	SOLAR CIRCULATOR PUMP	T	THERMOMETER
		EN-S	SOLAR EXPANSION VESSEL	P	PRESSURE GAUGE
		OT	HYDRAULIC CIRCUIT FOR HEATING ELEMENTS	VKK	DRAIN BALL VALVE
		PDL	HYDRAULIC CIRCUIT FOR FLOOR HEATING	SUR	BALL VALVE WITH LOCKING FOR EN

CONNECTION WITH 1 HEATING CIRCUIT, MIXING AND THERMOSTATIC VALVE, BUFFER TANK

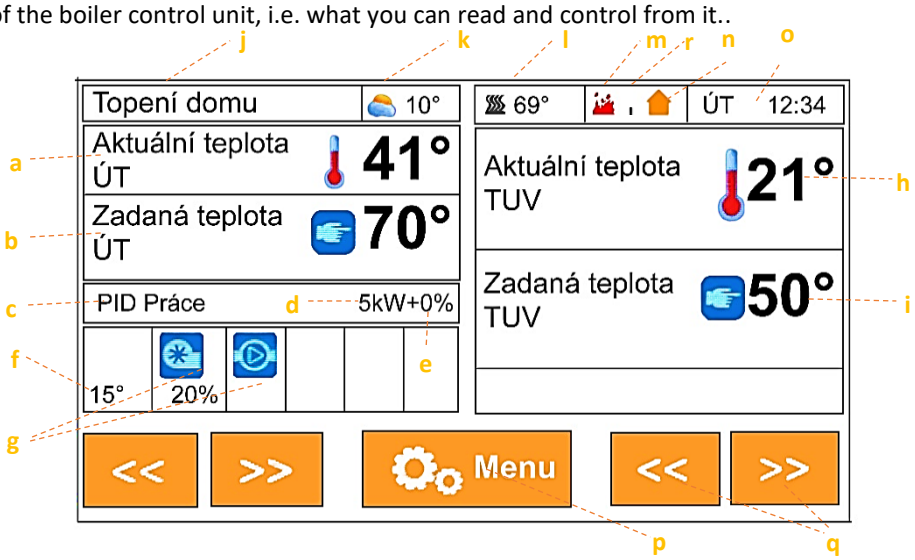


No	Part	Type / Component / Description	Electrical connector	Order number
1	CH pump	Primary circuit pump	CH pump	-
2	Thermostatic valve	3-way thermostatic valve	-	-
3	KTY temperature sensors	KTY mixing valve 1 sensor	Valve 1 sens.	345718000020
		KTY hot water sensor	DHW sens.	
		KTY buffer tank sensor	Buffer sens.	
4	DHW pump	Domestic hot water pump	DHW pump	-
5	Mixing valve 1	3- or 4-way mixing valve	Valve 1	-
6	Valve 1 pump	Pump	Valve pump	-
7	Wireless radiator head control	Wifi8 module (for 1 building)	-	358120400020
		Wifi8 zone sensor (for 1 zone / room), (1 module = up to 8 zones / rooms)	-	358120400040
		Wifi8 valve head (for 1 radiator), (1 zone = up to 6 heads)	-	358120400030

PIPING LEGEND		DEVICE LEGEND		FITTINGS LEGEND	
———	HEATING WATER SUPPLY PIPE 75/55°C	K	Automatic pellet boiler	KK	BALL VALVE
- - - - -	RETURN HEATING WATER PIPES 75/55°C	ZP	Pellet hopper	F	FILTER
—E—	EXPANSION PIPE	TV	Indirect fired hot water cylinder	TRS	HW THERMOSTATIC TEMPERATURE CONTROLLER
	SOLAR CIRCUIT FEED PIPE	Č	Circulator pump for heating water	ZV	Non-return valve
_ _ _ _ _	SOLAR CIRCUIT RETURN PIPE	EN	Expansion vessel	PV	CHECK VALVE
—E—	EXPANSION PIPE	HVDT	HYDRAULIC DYNAMIC PRESSURE EQUALISER	BV	BALANCING VALVE
		SK	SOLAR COLLECTOR	T	THERMOMETER
		SČ	SOLAR CIRCULATOR PUMP	P	PRESSURE GAUGE
		EN-S	SOLAR EXPANSION VESSEL	VKK	DRAIN BALL VALVE
		OT	HYDRAULIC CIRCUIT FOR HEATING ELEMENTS	SUR	BALL VALVE WITH LOCKING FOR EN
		PDL	HYDRAULIC CIRCUIT FOR FLOOR HEATING		

11. CONTROL UNIT

Basic control is intuitive thanks to the touch screen, which simplifies the entire operation. Below, read the basic description of the main panel of the boiler control unit, i.e. what you can read and control from it..



Main panel of H4EKO-D MAX KOMBI control unit

a) CH temperature measured by the CH sensor connected to the well on the outlet pipe at the rear of the boiler.
b) Entered CH temperature, set in the Main menu of the unit. Standard 65-80°C.
c) Current boiler operating mode – Heating, PID work or extinguishing.
d) Current power in kW
e) Combustion correction made using the functions in the Coefficients item in the Installation menu.
f) Temperature of the internal feeder in the burner, standard in the range of 15-55°C.
g) Panel displaying the operation of electrical components, such as the fan, feeders, pumps and additional devices.
h) DHW temperature measured by the DHW sensor connected to the “DHW sens.” output in the External boiler socket.
i) Entered DHW temperature, set in the Main menu of the unit. Works if the DHW pump is activated in the Main settings,
j) Operating modes. Display of the pump operating mode, according to the Operating modes setting in the Main settings.
k) Outdoor temperature, measured by the outdoor sensor connected to the “Weather sens.” output in the External boiler socket.
l) Flue gas temperature, measured by the Flue gas temperature sensor. Standardly in the range of 70-110°C, depending on the boiler output.
m) Flame detection by the photosensor. If the icon is displayed, the photosensor detects a flame in the boiler.

n) Display of the room thermostat operation, if it was activated in the Installation menu, Room thermostat.
o) Current date and time, set in the Main settings.
p) Menu button, to enter the boiler unit menu.
q) Changing the display of the main panel, displaying various information about the operation of the boiler and its additional devices.
r) Detection of operating errors – use the arrows to scroll right / left through the DPCH panel, which informs the customer about non-standard boiler operation states. After pressing the panel, the history of operations will be displayed, where you can learn how to solve specific problems.

12. THE CONTROL UNIT'S BASIC FUNCTIONS

The control unit controls the water circulation pump (CHP), the domestic hot water pump (DHW), the secondary circuit circulation pump, the mixing valve pumps 1 and 2. Furthermore, the mixing valve, the accumulation tank and the exhaust fan.

It is also possible to control two additional mixing valves using the 431N modules. In this type of controller, the fan speed is determined based on the measurement of the boiler temperature and the flue gas temperature, measured at the boiler outlet. The fan operates continuously and its speed directly depends on the current boiler temperature, the flue gas temperature and the difference between these parameters and the set temperature.

1. Main page

During normal operation of the controller, the main page is displayed on the graphic display. The relevant display panels are displayed according to the current operating mode. By pressing the pulse converter knob, the user goes to the first level menu. The first four options of this menu are displayed on the display.

The display of other options is achieved by turning the converter knob. To select a given function, press the inverter control. We proceed similarly when changing parameters. In order for the change to take place, it is necessary to confirm it. This is achieved by pressing the inverter control at the CONFIRM inscription.

If the user does not want to make any changes to the given function, press the inverter control at the CANCEL inscription. To leave the menu, the EXIT button must be used.

2. Ignition / Extinguishing

With this function, the user can easily heat/extinguish the boiler. After the initial loading and ignition of the fuel, he selects the Ignition function, which automatically regulates the pressure and exhaust fans. After achieving the optimal parameters of the CH and flue gas temperatures, the boiler smoothly switches to the operating mode. After the boiler switches to the operating mode, the display shows the information Work instead of the information Ignition.

Ignition procedure:

- In the control unit menu, first select whether you want to heat with pellets or wood. The item in the pellet heating menu is marked "Heating with pellets". If this button is on, pressing the "Ignition" button will start ignition the pellets. If the "Heating with pellets" button is off, pressing the "Ignition" button will start the exhaust fan and operation with wood.
- Activate the "Heating with pellets" button for heating with pellets. Then press "Ignition".
- Deactivate the "Heating with pellets" button for heating with wood. Then press "Ignition".

When operating with pellets, both fans, the pressure and exhaust, work simultaneously. When operating with wood, only the exhaust fan works.

Keep in mind that when operating with wood, it is necessary to first remove the pellet burner and close the opening in the door after the burner. Then you can load the boiler with wood, turn on "Ingition" (the "Heating with pellets" button is deactivated).

If you are using an electromotive mixing valve with the boiler for the so-called return protection, then the return temperature can now be set separately for pellet heating and wood heating.

- For wood heating we recommend: 65°C

- For pellet heating we recommend: 55°C

3. Manual operation

For the user's convenience, the controller is equipped with the Manual operation function. In this function, each operating device (fan, UT pump, DHW pump, additional pump - circulation or valve) is switched on and off independently of the others and each active mixing valve can be closed, opened or stopped in a given position.

By pressing the pulse converter control, the drive of the selected device starts. The device will run until the pulse converter is pressed again.

Additionally, the Fan power option is available, where the user has the option to set any fan speed in manual operation.

4. Pump operating modes

In this function, one of the four boiler operating modes is activated according to the user's requirements.

- **House heating** – In this option, the controller enters the CH heating mode. The pump will start operating above the pump switch-on temperature (factory set to 38°C). The pump stops running below this temperature (minus hysteresis 2°C).
- **Boiler priority** – In this mode, the boiler pump (DHW) is first turned on and operates until the set DHW temperature has been reached. Once it is reached, the DHW pump is switched off and the CH pump is activated. The CH pump runs all the time until the DHW temperature drops below the set temperature by the DHW hysteresis value. Then the CH pump switches off and the DHW pump switches on (the pumps run alternately). In this mode, the fan and feeder operation is limited by a maximal boiler temperature to 62°C to prevent the boiler from overheating.

  ATTENTION: The boiler must have check valves installed on the circulation of the CH and DHW pumps. The valve on the DHW pump prevents the hot water from being sucked out.
- **Parallel pumps**

  In this mode, both pumps start operating simultaneously when the pump switch-on temperature is reached. This temperature can be different for each pump, depending on the setting by the user. This means that one pump can be switched on before the other, but when the two set temperature limits are exceeded, the pumps will run simultaneously. The CH pump is operating continuously and the DHW pump switches off after the set DHW temperature has been reached; on the contrary, it will be switched on when the temperature falls below the set temperature reduced by the set DHW hysteresis value.
- **Summer mode**

  In this option, the CH pump is switched off and the DHW pump switches on when the set switch-on temperature is reached. It will operate continuously until the temperature drops to the switch-on temperature reduced by the DHW hysteresis value or if this condition is met: (boiler temperature) + 2°C ≤ (DHW temperature).

  In the summer mode, only the set boiler temperature is set, which is also the set DHW temperature.

5. Time settings

Select the current time so that the functions that work with the current time work properly.

6. Date settings

Select the current date so that the functions that work with the current date work properly.

7. Installation menu

All fixtures that are connected to the boiler are activated and adjusted there. See the next chapter of these Instructions for a description of the Installation menu.

8. Language choice

Use this function to select the language version of the controller.

9. Factory settings

The controller is factory adjusted to be operational. However, it is necessary to adapt the settings to the specific operating conditions and needs. It is possible to return to the factory settings at any time. Selecting the factory settings clears the boiler setting values entered by the user (written in the menu) in favour of the settings entered by the boiler manufacturer. From this point on, the user can re-set their own parameters.

10. Programme information

With this function, the user can verify the programme version of the controller.

11. Display settings

Changing the display brightness and the power saving mode, i.e., the time after which the display brightness decreases so that it is not excessively worn.

13. INSTALLATION MENU

1. Valve settings, built-in valve

Activation and adjustment of the mixing valve. The supply voltage of the valve is 230V. Connection to the 'Valve' output in the boiler control unit.

- **Valve status, On/Off** – This function allows the valve to be temporarily taken out of service.
- **Set temperature on the valve** – This setting sets the temperature in circulation maintained by the mixing valve.
- **Temperature control** – This parameter determines the frequency of measurement (control) of the temperature of the water downstream of the valve in the CH or DHW installation. If the sensor detects a temperature change (deviation from the set temperature), then the electric valve opens or closes by the necessary distance to reach the set temperature again.
- **Opening time** – This function sets the time for the valve's full opening, i.e., the time needed to open the valve from 0% to 100%. This time must be determined in accordance with the valve servo motor used (indicated on the data plate).
- **Valve type** – Use this option to select the type of valve: CH or floor. This setting will change the maximum possible temperature that can be set on the valve.
- **Unit stroke** – This function determines the percentage unit stroke for opening the valve, i.e., by a maximum of what percentage the valve can be opened or closed at one time (maximum valve movement in one measurement cycle).
- **Minimum opening** – This function sets the valve's minimum opening value. The valve will not close below this value.
- **Equithermal regulation** – This function requires the installation of an outdoor sensor. The sensor must be positioned in such a way that it is not exposed to direct sunlight and other undesirable atmospheric effects. In order for the valve to work properly, the set temperature (after the valve) is determined for four possible outdoor temperatures.
- **Return protection** – The valve can keep the return water to the boiler above the specified limit. Until this is exceeded, the valve is closed. After reaching the minimum return water temperature, the valve opens and adjusts its position according to the set temperature on the valve.

  Return temperature can be adjusted individually for heaing with pellets and for heating with wood.

  - For heating with wood we reccomend : 65°C
  - For heating with pellets we reccomend: 55°C

- **Boiler protection** – If the CH temperature is exceeded above the specified limit in this function, the mixing valve opens and releases overheated water into the heating system to protect the boiler from high temperature.
- **Opening direction** – Select the valve's opening direction according to the electrical connection of the 2 phases of the valve in the boiler control unit.
- **Valve pump setting** – This function allows the user to select the pump operating mode. The pump is switched on:
    - *Always* (the pump operates continuously, independently of temperature);
    - *Above the switch-on limit* (the pump switches on above the set switch-on temperature). If the pump is to be switched on above the switch-on limit, it is necessary to determine the temperature of the pump switch-on limit (boiler temperature, measured on the CH sensor).
- **Valve type** – This function allows the user to set the boiler protection against water that is too cold returning from the main circulation (water returning from the heating system to the boiler), which can cause low-temperature corrosion of the boiler. The return protection works in such a way that if the return water temperature is too low, the valve is closed until the short circulation of the boiler reaches the corresponding temperature. The function also protects the boiler from dangerously high return temperature by preventing boiling water. When this function is enabled, the user sets the minimum and maximum permissible return temperature.
- **Room regulation reduction** – This function is only active in cooperation with the room controller (standard or RT10). After the room controller reaches the set temperature in the apartment (it indicates room heating), the valve closes to lower the temperature behind the valve by the temperature set in this function.
- **OPOP (RT10) controller operation** – This option is active only in cooperation with the OPOP (RT10) room controller and allows to choose an option of the controller's cooperation with the mixing valve:
    - *Temperature reduction* – in this mode the RT10 room controller, after heating the apartment to the set temperature, reduces the set temperature of the valve by the value of Room regulation reduction.
    - *Dynamic changes* – in this mode, the RT10 room controller, after heating the apartment to the set temperature, works according to the following settings:
- **Set valve temperature change** – This setting determines how much the valve temperature decreases or increases when the room temperature changes per unit. The function is closely related to the Room temperature difference parameter.
- **Temperature control** – How often the position of the valve is adjusted based on the change in the current temperature on the valve.
- **Calibration** – Calibration of the valve so that the unit records the limit positions on the valve. The valve opens and closes automatically. Wait for the calibration to complete and then continue to adjust other valve functions if necessary.
- **Room temperature difference** – This setting determines the unit change in the current room temperature (within 0.1°C) at which the above-described change in the valve temperature occurs.

    Example:
    Setting: Room temperature difference 0.5°C
    Setting: Changing the set valve temperature of 1°C
    Setting: Set valve temperature 40°C
    Setting: Set room controller temperature 23°C

    Case 1: If the room temperature rises to 23.5°C (by 0.5°C), the valve closes at the set temperature of 39°C (by 1°C).
    Case 2: If the room temperature drops to 22°C (by 1°C), the valve is set to the set temperature of 42°C (by 2°C).

2. **Valve settings, Valve 1 and 2** – This function allows the user to select settings for the operation of the additional mixing valve. In order for the valve to work properly and in accordance with the user's requirements, it is necessary to configure it by setting the relevant parameters (similar to the main valve). The detailed setting of the additional valves is provided in the instructions for the 431N module which allows the control of these additional valves.
3. **Temperature reduction by thermostat –** If the room thermostat is activated, this item can be used to adjust by how many degrees the set CH temperature of the boiler should be reduced to reduce the boiler output or deactivate the fan to achieve this reduced CH temperature.
4. **Internet module**

The Internet module is a device that allows remote control of the boiler operation via the Internet or local network. The user checks the status of all boiler installation devices on the monitor of a home computer. The operation of each device is shown in the form of animation. The module is a standard part of the boiler.

5. Room thermostat – With this function the user can select the corresponding type of room controller. The user may select between standard controller (traditional two-position) and OPOP/TECH (RT10) controller.

When the OPOP/TECH controller is connected, the user has the possibility to control and change the set CH, DHW and mixing valve temperatures. All boiler controller alarms are also displayed. When working with the mixing valve, the user can see the current outdoor temperature on the display panel with valve parameters.

ATTENTION: No external voltage must be connected to the outputs of the room controller. Otherwise, the controller may be destroyed.

- *CH pump control* – after the room controller signals heating, the CH pump is switched off.
- *Boiler control* – after the room controller signals reaching the heating temperature, the temperature drops to the set temperature.

6. Operation algorithm – Activation or deactivation of PID mode. In PID mode, the boiler unit modulates the fan speed. The closer the temperature is to the set temperature, the lower the speed of the fan. If the PID mode is deactivated, then the fan only runs at a fixed speed without modulation. Once the CH temperature is reached, the fan is deactivated.

7. Parameters of the AKU tank – Heating of the accumulation tank is carried out by means of a temperature sensor inserted into the sink in the buffer tank. If the buffer tank heating is activated, the corresponding temperature sensor must also be connected, otherwise there will be an alarm message.

a. *Set temperature* – Enter the desired temperature in the buffer tank measured by the temperature sensor.

b. *DHW function* – If the hot water cylinder is connected to the system and this is controlled by the DHW pump connected to the boiler unit, you can choose whether to use this DHW heating in the case of a heated buffer tank. Depending on the hydraulic connection, we recommend consulting with the installer.

8. Pump switch-on temperature – This option is used to set the switch-on temperature of the CH pump (it is the temperature measured at the water outlet from the boiler) and the DHW pump. The pump starts to work above this temperature. Pump is switched off after the boiler temperature drops below the switch-on temperature (minus hysteresis 2°C).

9. **DHW hysteresis** – This option is used to set the hysteresis of the set DHW temperature. It is the maximum difference between the set temperature (i.e., the selected DHW temperature at which the pump shuts off) and the temperature at which it starts working again.

Example:
The set temperature is 55°C and the hysteresis is 5°C.
Upon reaching the set temperature of 55°C, the DHW pump is switched off and the CH pump is switched on.
When the temperature drops to 50°C, the DHW pump is switched on again.

10. **Auxiliary pump** – The user has the option of connecting an auxiliary pump: circulator or valve pump. Depending on the pump selection, the settings need to be configured correctly.
The user here sets the daily cycle and pump breaks for 30 minutes. To facilitate setting these parameters, there is a possibility of copying the selected time interval to other days. Once the operating plan has been established, it is necessary to set the working time and pump shutdown time during the activity in the previously selected time interval. If necessary, it is also possible to quickly erase the current settings, thus making it easier to set new time intervals.

11. **Rotary switch sensitivity** – With this setting we can determine the impulse controller's sensitivity, which detects the correct fan speed and protects it against damage, in levels from 1 to 3 (where 1 means the highest sensitivity).

12. External sensor calibration – Correction of the outdoor sensor is performed during installation or after a longer operating time of the controller if the displayed temperature differs from the actual one. Control range: -10 to +10°C.

13. **Boiler DHW disinfection** – Thermal disinfection involves raising the temperature to the required disinfection temperature, i.e., at least 60°C throughout the DHW circulation. The purpose of DHW disinfection is the destruction of Legionella pneumophila, which causes a weakening of the immunity of the organism.

    After switching this function on (only in boiler priority mode), the boiler will heat until the disinfection temperature specified by the user has been reached. The disinfection time parameter specifies the duration of the disinfection (e.g.: 10 minutes). After that, the boiler returns to normal operating mode.

    Once the disinfection is switched on, the disinfection temperature must be reached until the disinfection time is reached. Otherwise, the function is automatically deactivated.

14. **Factory settings –** Resets the installation menu items to factory settings.
15. **PID supervision –** In case of reaching the set CH temperature, the boiler enters the so-called supervision mode. In this mode, the fan is deactivated to prevent power build-up. Attention: The boiler must be installed with a buffer tank so as not to overheat the water in the heating system and the boiler.
16. **Display contrast –** Change of the font saturation on the boiler control unit display.

14. THE CONTROL UNIT'S BASIC SETTINGS

When commissioning the boiler, it's necessary to select the correct boiler output. The power is set by the technician installing the boiler in the control unit's Service Menu. Ensure that the boiler output is set correctly so that the fan speed matches your boiler output.

The maximum boiler temperature can be set by pressing the navigation key and selecting 'CH temperature'. This temperature will be maintained by the boiler and the fan will be deactivated after the CH temperature is reached.

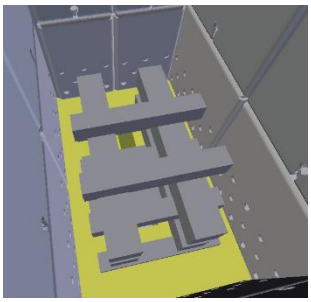
Boiler performance is affected by external factors such as chimney draft, primary and secondary flaps, fan speed, fuel type, correct or incorrect power output calculated by the designer. Therefore, the set CH temperature may be exceeded. For this reason, it's necessary to install it with a buffer tank.

The maximum DHW temperature, if DHW heating is activated, can be set by pressing the navigation key in the 'DHW temperature' item. You activate the DHW heating in the 'Pump operating modes' settings. If you activate the DHW heating, make sure that the DHW sensor is connected, otherwise there will be an alarm message.

15. INGNITING IN REGIME WOOD

Before starting up, always check that the primary and secondary air dampers are open in the correct position!

The wood in the boiler burns through the refractory nozzle. Place small pieces of wood and chips on the nozzle so that the nozzle is permeable and the flame can pass through the nozzle. Use paper or a solid lighter to light the fire.



Správné uložení dřeva pro zátop

Starting up procedure:

- In the control unit menu, first select whether you want to heat with pellets or wood. The item in the pellet heating menu is marked "Heating with pellets". If the "Heating with pellets" button is off, pressing the "Ignition" button will start the exhaust fan and operation with wood.
- Therefore, deactivate the "Heating with pellets" button for heating with wood. Then press "Ignition".

When operating with wood, only the exhaust fan works.

Please note that when operating with wood, it is necessary to first remove the pellet burner and plug the hole in the door after the burner. Then you can load the boiler with wood, turn on "Fire-up" (the "pellet heating" button is deactivated).

If you use an electromotive mixing valve with the boiler for so-called return protection, then the return temperature can now be set separately for pellet heating and wood heating.

- For wood heating, we recommend: 65°C

- For pellet heating, we recommend: 55°C

Now you must wait for the wood to burn out and then close the loading door. The boiler will automatically switch to "Operation" mode after the temperature in the chimney has increased. When this happens, confirm the transition to "Operation" mode with the navigation button. Now the boiler will work to achieve the CH temperature you set by modulating the fan speed.

16. INGNITION IN PELLET REGIME

Before heating, always check that the primary and secondary air dampers are closed to prevent smoke from entering the room when lighting the pellets!

Ignition procedure:

- - In the control unit menu, first select whether you want to heat with pellets or wood. The item in the pellet heating menu is marked "Heating with pellets". If this button is on, pellet ignition will start after pressing "Ignition". If the "Heating with pellets" button is off, after pressing the "Ignition" button, the exhaust fan and operation with lump wood will start.
- - Activate the "Heating with pellets" button for pellet heating. Then press "Ignition".

When operating with pellets, both fans, the pressure and exhaust, work simultaneously.

If you use an electromotive mixing valve with the boiler for so-called return protection, then the return temperature can now be set separately for pellet heating and wood heating.

- For wood heating we recommend: 65°C
- For pellet heating we recommend: 55°C

17. OPERATION

In operation, the boiler is controlled according to the CH temperature you set, and also the flue gas temperature. If the flue gas temperature drops below 45°C, the display shows the request for adding fuel.

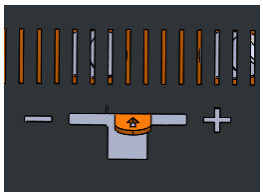
The fan operates until the set CH temperature is reached. Then, the fan will be deactivated. The boiler temperature may continue to rise, depending on the chimney draft and the opening of the primary air flaps.

The correct setting of the primary and secondary air dampers is marked with a line above the damper rod. This setting ensures the required boiler output and ideal combustion emissions. Only provided that the required chimney draft is maintained and the fuel has a moisture content of up to 15%.

If you want the fuel in the boiler to burn longer, you can close the primary air dampers on the sides of the boiler. The dampers can never be closed 100%, as burning fuel always requires at least a minimum supply of air for proper combustion.

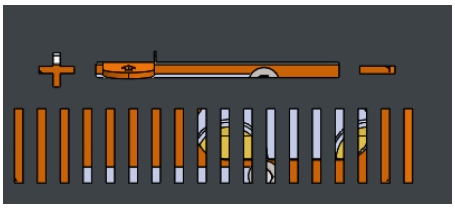
during combustion, there is accumulation of fumes in the filling shaft. Therefore, never open the filling door during burning. Wait for the chimney temperature to drop below 60°C, leaving only the hot layer that forms the smallest amount of smoke in the filling chamber. After that, then you can add more fuel.

The primary air flaps on the side of the boiler affect the boiler output. The figure shows the setting to achieve the desired boiler output. By closing the flaps, you reduce the boiler output and extend the burning time. The position of the flaps must be identical on both sides, otherwise the wood in the filling chamber will burn unevenly.



(+) – open flap position (-) – closed flap position (still allows air supply to the boiler)

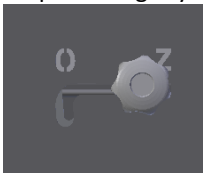
The secondary air flap is located in the front of the boiler. It blows combustion air directly into the nozzle and improves the quality of fuel and gas combustion. The flap's ideal position is indicated by a line above the flap rod. There is no need to change the flap position during burning. In general, if you close the primary flaps, you can close the secondary flap at the same proportion so that the combustion quality is as good as possible. While in the closed position, the flap still allows air to be drawn into the nozzle.



18. FUEL LOADING

Fuel is added to the boiler at a time when only a hot layer of wood remains in the filling shaft and all large pieces are burned. It happens according to the current flue gas temperature displayed at the top right of the display. The standard combustion temperature is above 100°C. If the flue gas temperature drops below about 50°C, only the hot layer remains in the boiler and the boiler is ready for adding new fuel inside.

before opening the filling door, move the suction flap rod to the open position and wait for 20 seconds. Opening the flap ensures that the residual smoke is drawn directly into the chimney. After that, the filling door can be opened slightly to see if all the smoke is sucked out and then open the door slowly.



Add new fuel onto the hot layer. Use gloves because the hot layer is really hot. After adding the wood, close the filling door and remember to move the suction flap rod to the closed position.

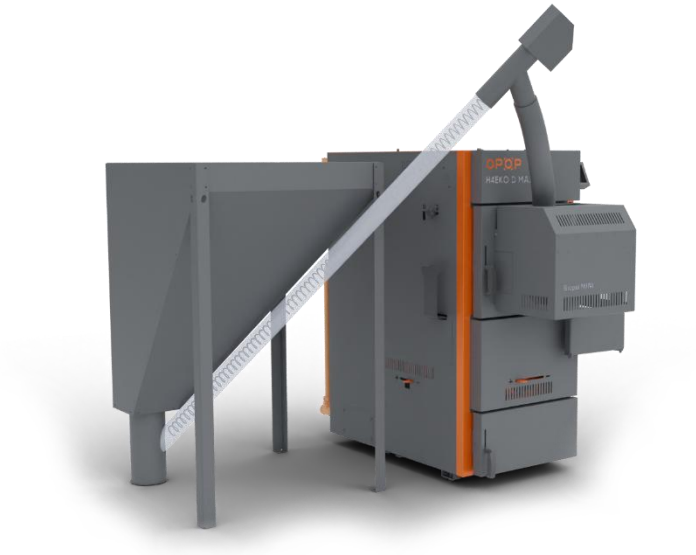
Never leave the suction flap rod in the open position during the boiler operation. Otherwise, the fuel in the filling shaft will burn upwards, not through the nozzle. This may cause damage to the metal parts in the filling shaft or damage to the suction flap. Not to mention that all of your heat would have fled to the chimney before it was transferred to the water.

19. EXTINCTION

The boiler is extinguished when the flue gas temperature drops below 45°C and the user does not add more fuel. The fan stays in the deactivated position, there is the Extinction word shown on the display.

The boiler can be extinguished manually at any by entering 'Extinction' in the menu. This will deactivate the fan but be careful – if there is still fuel in the filling shaft, it will still burn according to the natural chimney draft. Similarly, combustion products will still accumulate in the boiler. Therefore, even after extinguishing, when opening the door, follow the instructions in the Adding fuel section. If you open the filling door too quickly without an open suction flap, the smoke will escape into the room.

20. IGNITION IN PELLET REGIME



After inserting the burner into the boiler, it is always necessary to close the primary and secondary air dampers. Otherwise, the flue gases created by the burner may exit through the primary and secondary air openings and cause a fire!

- Pressing the ignition button starts the automatic ignition of pellets on the grate. The maximum time is set to 12 minutes, during which time the boiler will go through several operating states:
- Pre-ventilation – cleaning the grate using a fan, factory setting (hereinafter referred to as TN) = 30 seconds.
- Subsoil time – dosing pellets to the feeder, the internal feeder in the burner works once long enough to move all the pellets to the burner grate. TN = 12 – 15 seconds
- Fan delay – preheating of the ignition cartridge before starting the fan. TN = 30 seconds
- Fan speed 1 – fan speed during the first 6 minutes of ignition. The fan operates at low speed to create a flame and not cool the ignition cartridge. TN: 3-8%.
- Fan speed 2 _ fan speed during the second 6min of ignition. The maximum ignition cycle is 12min. If the pellets do not ignite during the first 6min, the fan increases its speed to create a flame. The standard ignition time is 3-6min. TN: 5-16%.
- Ignition delay - the flame has been created, the photosensor detects light, followed by flame stabilization. If the flame detection by the photosensor is stable, the boiler switches to PID operation (normal operation), if the flame detection by the photosensor is not stable, the boiler remains in the Ignition phase until the flame is large enough. If it goes out, a second Ignition follows (maximum another 12min).
- The output from the Heating phase can be:
    - Transition to PID operation – normal boiler operation, or

  - Alarm message – Heating error, pellets could not be ignited for some reason. The boiler tries Heating 2 times before declaring this error state. More information can be found in the chapter Operating and error messages.
- PID operation: normal boiler operation, indicated by the current boiler output and fan speed in %, which coincide with the percentage expression of the current output. The following operating states occur in PID operation:
- Min output – the boiler starts its operation in the lower half of the output spectrum, i.e. 0-50% of the maximum output. The reason is to ensure that the small flame after ignition is not suffocated by a large amount of pellets. TN = 1-50% of the maximum output, depending on the boiler type.
- Max output – the boiler gradually increases its output up to the maximum, i.e. 100%. This can take 5 to 15 minutes, depending on the boiler type. Modulation is then influenced by the set and measured CH temperature.
- PID modulation – After approaching the set CH temperature, the boiler starts modulating the output so as to maintain the set temperature within the limits given by the factory settings in the Service menu. The set boiler temperature can be exceeded by 5°C. This is also the modulation range in which the boiler tries to maintain the CH temperature so as not to have to switch to the Extinguishing phase if the Set temperature is exceeded by 5°C or more.
- The output from the heating phase can be:
  - Switch to Extinguishing – the set CH temperature is exceeded by 5°C
  - Continuous PID operation – the set CH temperature is not exceeded by 5°C due to downward power modulation. The boiler remains in PID operation and maintains the CH temperature at the set level due to upward and downward power modulation.
  - Thermostat off – the room thermostat forces the transition from PID operation to Extinguishing, since the room temperature has been reached.
- Extinguishing: the phase that the boiler enters when it warms up to the set CH temperature + 5°C, thanks to the room thermostat that does not give a heating instruction. During the Extinguishing phase, the following operating states occur:
- Cleaning – the first phase of extinguishing. The photosensor still detects the flame in the boiler, so the boiler tries to burn it by deactivating the external feeder and increasing its fan speed to 70%. This lasts for a set time or until there is no longer a flame in the boiler.
- Cooling - After all the remaining pellets on the grate have burned out, the photosensor no longer detects light, so the boiler enters the second phase of extinguishing, which is cooling. The fan speed is 100%. The grate is cooled by the fan to prevent its deformation. The grate can deform, only without fresh air supply, so the fan cools it. TN = 5-15min depending on the boiler type.
- After the end of the Extinguishing phase, the unit reports "Paused". This is a standby mode, when the boiler waits for conditions that will reactivate the Heating phase. This situation occurs in the event of a decrease in the measured CH temperature by 15°C or when there is an instruction to heat from the room thermostat.

i After the end of the Extinguishing phase, the unit reports "Paused". This is a standby mode, when the boiler waits for conditions that will reactivate the Heating phase. This situation occurs in the event of a decrease in the measured CH temperature by 15°C or when there is an instruction to heat from the room thermostat.

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IGNITION / EXTINGUISHING

This function is used to activate and deactivate the boiler. If the boiler is deactivated, then you will see the inscription Ignition here. After pressing and confirming it, the boiler will enter the automatic pellet ignition mode. After about 5 minutes, it will

ignite and switch to the so-called PID operation. If the boiler is activated, i.e. in PID operation or Ignition, then you will see the inscription Extinguishing here. After pressing and confirming it, the boiler will enter the Extinguishing mode. The feeders will stop feeding fuel and the fan will increase the fan speed to clean and cool the grate. This takes 5-15 minutes depending on the size of the burner. Then the boiler will turn off and remain deactivated until the Heating button is pressed.

MAIN SETTINGS

This setting contains user functions that adjust the operation of the boiler, but at the same time do not affect the operation of the boiler and additional devices important for their proper function.

1. Set CH temperature	Select the central heating temperature (maximum boiler temperature). We recommend setting it in the range of 60-80°C. A higher temperature is better for the correct operation of the boiler and its long service life	60–80°C
2. Set DHW temperature	Select the desired service water temperature. DHW is activated only if the DHW sensor is connected to the "DHW sensor" output in the External socket and if the operating mode in the Main settings is correctly selected.	45–70°C

3. Burner cleaning	Activates the fan to clean the burner grate. The fan regularly increases its speed to clean the burner grate.	
3.1 Cleaning time	Time between cleaning. Larger burner / more frequent cleaning required. 6-15min	6-15min
3.2 Fan operating time	Cleaning time. Larger burner / longer cleaning required. 10-20s	10-20s
3.3 Blowing intensity	Fan speed during cleaning. Larger burner / faster speed required. Be careful of high speed during cleaning. High speed (especially during low boiler output) can cause extinction (no flame after cleaning). High speed can also cause unburned pellets to fall into the ash pan. Reduce the fan speed if any of these situations occur.	50-100%.

4. Operating modes	Operating mode of the CH and DHW pumps connected to the external socket. Select which of the pumps is switched on and off at any time. Attention: the CH and DHW pumps operate according to this mode only if the current CH temperature is higher than 40°C. This is set in the Service menu, Pump switch-on temperature. The activated pump is marked on the Main Panel with the 
4.1 House heating *1	Only the central heating pump operates. The pump switch-on temperature is set to 40°C. The DHW pump is deactivated.
4.2 DHW priority *2	The DHW pump has priority over the CH pump. When the DHW temperature is reached - the DHW pump is deactivated and the CH pump is switched on for heating the house. When the DHW drops below the DHW Hysteresis - the CH pump is deactivated and the DHW pump is switched on again until the DHW temperature reaches the required value.
4.3 Parallel pumps *2	Both CH and DHW pumps work simultaneously for heating both the house and the heater. .

4.4 Summer mode *2	Only the DHW pump is activated for heating the water heater. .

*1 Connection of the CH pump to the "CH pump" output in the control unit.

*2 Connection of the DHW pump to the "DHW pump" output in the control unit.

5. Tank filled	You specify that the pellet hopper has been filled. If Tank Calibration was performed in the Installation menu, 100% pellet level will be displayed on the main panel of the unit. To correctly display the fuel quantity indicator, it is first necessary to calibrate the fuel consumption in the Tank Calibration function in the Installation menu.

6. Weekly boiler program	Allows weekly adjustment of the CH temperature during each hour, every day of the week. By + - 20°C. If one of the modes is activated, the current temperature reduction is then displayed on the Main Panel under the Set CH temperature.
6.1 Mode 1 (Mon-Sun)	Activates Mode 1.
66.2 Mode 2 (Mon-Fri) (Sat-Sun)	Activates Mode 2.
6.3 Mode 1	settings Select the desired CH temperature adjustments for Mode 1.
6.4 Mode 2	settings Select the desired CH temperature adjustments for Mode 2

7. Alarm history	Display of the history of alarm and operating messages.

8. Disinfection	Temperature disinfection works in cooperation with DHW heating and can only be activated if the DHW pump is activated in the Main settings, Operating modes. Thermal disinfection increases the set DHW temperature to the minimum value required for successful disinfection (min. 60°C) in the entire DHW circuit.

9.1 Display settings	Change all settings related to the settings of the main display of the v9 MINI unit, such as display brightness, display saving, etc.
9.2 Main display	Display of different types of main panels (display of main data on the display)..
9.2.1 Panel display	Display for the end user.
9.2.1.1 Manufacturer panel	Display for the installer
9.2.1.2 Display brightness	Change the display brightness for better visibility of the displayed displays.
9.3 Display economy mode	Select the brightness in the display economy mode to save energy consumption
9.4 Burn out time	Select how long it will take for the display to go into power saving mode if the user does not use it for this period.
9.5 Alarm sound	Activates/deactivates the sound when an alarm is reported.
9.6 Button sound	Activates/deactivates the sound when the touch screen is pressed.
9.7 Program update	Forcefully updates the program in the v9 MINI control unit. The standard way to update the program in the control unit and external socket is described in the Firmware update chapter.

10. Factory settings	Reset user-changed values of the Main settings to factory values.

11. Program information	Current program version. Attention: There are two types of program (firmware) – for the v9 MINI display and for the control unit. For more information on uploading a new program, see the Firmware update chapter.

.The items in the Main menu do not have a significant impact on the operation of the boiler. Even so, if you are unsure about the settings of any of the functions, we recommend that you consult a certified installer or a representative of OPOP spol. s.r.o. We will be happy to help you explain all items, not only the Main but also other settings in the control unit.

The following is the Installation menu, which is intended for the Installer to set the combustion process and activate additional devices. This menu is not secured by a code, therefore it can also be modified by the boiler owner, in any case we recommend that you consult the settings changes with a certified installer or a representative of the manufacturer.

INSTALLATION MENU

In the installation menu, the installer and the user can activate and modify the operation of additional devices and also correct the combustion process.

1. Coefficients	Items that are intended to correct the flame using the fan and pellet feeder, for the minimum and maximum boiler output. All corrections are set to 0 from the factory. The user can lower this number (-); (lower fan speed or smaller amount of pellets fed), or increase this number (+); (higher fan speed or larger amount of pellets fed). The adjusted coefficients are displayed on the main panel at the power indicator (feeder coefficient) and at the fan speed indicator (fan coefficient).
1.1 Fan coefficient max	This function is responsible for changing the fan speed in normal boiler operation. Only the maximum speed value changes.
1.2 Fan coefficient min	This function is responsible for changing the fan speed in normal boiler operation. Only the minimum speed value changes.
1.3 Min. feeder coefficient	This function adjusts the pellet loading, or the feeder running time, which is stored in the service menu. You change the feeder running times and feeder breaks for the minimum boiler output.
1.4 Max. Feeder coefficient	This function adjusts the pellet loading, or rather the feeder operating time, which is stored in the service menu. You change the feeder operating times and feeder breaks for maximum boiler output.

2. Feeder calibration*1	Allows you to measure the output of the external feeder to automatically calculate the pellet dosing in relation to the boiler output. The unit automatically ensures that the required amount of pellets is supplyied into the burner, corresponding to the real boiler output, which is displayed on the unit's main panel. This ensures simpler boiler settings. The installer then only adjusts the fan speed for ideal combustion, not the amount of fuel, which is adjusted automatically.

2.1 Fuel calorific value	It is stated in MJ/kg of pellets. It has a fundamental influence on the amount of pellets burned. You can find this information on the pellet packaging or ask the pellet manufacturer.
2.2 Tank contents	Enter the size of the pellet tank. The main panel then shows how much fuel is left in the tank.
2.3 Fuel weight	Enter the amount of pellets in grams, weighed using the "Start weighing" function. From this value, the pellet dosing is calculated automatically using the boiler control unit. The boiler will then have adequate power according to the heating circuit requirements.
2.4 Start weighing	Activate the external feeder for 5 minutes. Before activating the function, tie a bag to the output of the external feeder so that the pellets can fall into the bag. Then activate this function. The feeder will deactivate itself after 5 minutes. Then weigh the contents of the bag on a table scale and enter the number in grams in the "Fuel weight" function and you are done.

*1 If you activate the Feeder Calibration, you can edit the Max boiler output in the Main menu. Please note that this option is only active when the Feeder Calibration is activated and properly set.

3. Manual operation	Here it is possible to force start all electrical components connected to the boiler, including all additional devices.

4. Room thermostat	Activate the selected type of room thermostat. Select Standard thermostat, which operates on an open/closed circuit basis, or RT10 OPOP room thermostat. The fact that the room thermostat has been activated is shown by the marks.  An orange mark means that the thermostat is giving the boiler a heating instruction. A red mark means that the thermostat is not giving the heating instruction..
4.1 Standard Thermostat 1 *1	Voltage-free thermostat operating on a closed/open circuit basis. An open circuit means that the boiler is instructed to switch to the Extinguishing phase, i.e. an instruction to stop heating. A closed circuit means that the boiler is instructed to switch to the Ignition phase and PID operation, i.e. an instruction to heat. The house icon on the Main Panel flashes if the circuit has been closed and the thermostat is therefore giving the instruction to heat.
4.2 Standard Thermostat 2 *1	Voltage-free thermostat operating on a closed/open circuit basis. An open circuit means that the boiler is instructed to switch to the Extinguishing phase, i.e. an instruction to stop heating. A closed circuit means that the boiler is instructed to switch to the Ignition phase and PID operation, i.e. an instruction to heat. The house icon on the Main Panel flashes if the circuit has been closed and the thermostat is therefore giving the instruction to heat.
4.3 OPOP controller *2	RT10 room thermostat, connected to the RS output inside the External socket on the front of the boiler..
4.4 Ignition function	If this function is activated, the boiler responds to the instruction from the room thermostat by immediately switching off/on. If this function is deactivated, the boiler responds to the instruction not to heat from the room thermostat by lowering the Set CH temperature by the value set in the Temperature reduction according to thermostat function. This solution is advantageous for heating systems with a large volume of water in the system, when complete deactivation of the boiler would mean a large drop in temperature in the system and a long reheating
4.5 CH pump - room thermostat	The CH pump is started and deactivated together with the boiler based on the instruction from the room thermostat. If the boiler is switched off, the CH pump is switched off and vice versa..
4.6 Temperature reduction according to thermostat	The boiler responds to the instruction to switch off from the room thermostat by reducing the CH temperature by a specified limit. If the item Ognition function is deactivated, then in this item you set how many °C the Set CH temperature should be reduced so that the boiler

	operates at a lower temperature and thus saves fuel by automatic power modulation downwards..

*1 Connect the standard thermostat 1, 2 to the output "Room reg 1,2 and Com" in the control unit.

*2 Connect the OPOP regulator (type RT10) to one of the data RS outputs in the control unit.

5. Lambda *	Regulation of residual oxygen in the boiler using a lambda probe	
5.1 First update time	Delay of the first control intervention. During this time, the lambda probe is waiting for preheating. After automatic heating, it is necessary to wait approximately 5 minutes for the flame to stabilize, then the lambda probe starts adjusting the combustion process.	5min.
5.2 Update time	Correction period, how often the control intervention and O2 adjustment in the boiler occurs. The recommended time is 3-5min. The larger the burner, the longer the time must be	3-5min.
5.3 Oxygen jump	Correction factor for pellet dosing in %. How large is 1 control intervention in pellet feeding. Regulation will take place according to the time set in the Update time function.	2%
5.4 Fan jump ventilátoru	Correction factor for fan speed in %. How large is 1 control intervention in fan speed. Regulation will take place according to the time set in the Update time function.	2%
5.5 Sum	Should the correction factor (oxygen jump, fan jump) be added at each Update time only after the specified O2 is reached?	Yes
5.6 Min. change	Set the low level of the correction range. The unit will not go lower than this limit when trying to achieve the desired O2. If the Sum function is activated. If the Lambda probe interferes with the operation of the external feeder and fan to such an extent that it reduces the maximum boiler output, then the value set in this function is too high. It is necessary to bring it closer to 0% so that the Lambda probe cannot interfere with the boiler output so much. The Lambda probe is only intended to correct the flame, not to maintain the set value of unburned oxygen in the boiler by forcibly reducing or increasing the boiler output..	-10%
5.7 Max. change	Set the upper level of the correction range. The unit will not go higher than this limit when trying to achieve the required O2. If the Sum function is activated. If the Lambda probe interferes with the operation of the external feeder and fan to such an extent that it reduces the maximum boiler output, then the value set in this function is too high. It is necessary to bring it closer to 0% so that the Lambda probe cannot interfere with the boiler output so much. The lambda probe is only intended to correct the flame, not to maintain the set value of unburned oxygen in the boiler by forcedly reducing or increasing the boiler output.	+10%
5.8 Lambda 100%	Required O2 in % for maximum boiler output. Keep in mind that the lambda probe itself has a certain tolerance of measured values, which is + - 1%. The boiler control unit is therefore able to maintain the required oxygen in the boiler within 1 – 1% of the set value. We are also talking about the average value of oxygen maintained in the boiler throughout its operation. Short-term deviations of oxygen from the set value are absolutely normal, due to external factors such as changes in chimney draft, performing burner cleaning by increasing the fan speed (Burner Cleaning function in the Main Settings), etc.	Depending on the burner size
5.9 Lambda 1%	Required O2 in % for minimum boiler output. The boiler control unit is therefore able to maintain the required oxygen in the boiler within 1 – 1% of the set value. We are also talking about the average value of oxygen maintained in the boiler	Depending on the

	throughout its operation. Short-term deviations of oxygen from the set value are completely normal, due to external factors such as changes in chimney draft, performing burner cleaning by increasing the fan speed (Burner Cleaning function in the Main Settings), etc. According to the burner size	burner size

* Connecting the Lambda probe to one of the RS data outputs in the control unit.

7. Compressor cleaning 1 *2	Compressor cleaning can be used to clean the burner.	On state	Off state
7.1 On	When on, the compressor always cleans after the extinguishing phase and also during PID work according to the time set in the Pause time function. After cleaning during PID operation, the light will be lost (the photosensor does not detect the flame) and the boiler will switch to the Ignition mode after a set time. This time is 20s without a flame set in the Service menu, in the Operation control function..	On	
7.2 Off	When deactivated, the compressor cleans only after extinguishing and does not clean during PID operation.		Off
7.3 Cleaning time	Total cleaning time by the compressor. We recommend between 1-3 min. the larger the burner, the longer the cleaning time. During this time, the solenoid valve opens and closes regularly according to the values set in the Opening time and Cycle time functions. When set to On, it is necessary to complete the total Cleaning time before automatic heating occurs again so that the compressor does not blow out the pellet dose for auto. Heating. Therefore, the Cleaning time setting is maximum 1min.	1min	3min
7.4 Opening time	Opening of the solenoid valve. Time of one cleaning period. We recommend between 1-2 s.	2s	2s
7.5 Cycle time	Time required for compressor to re-pressurize so that the valve can open again and clean again. Recommended is 20s.	25s	20s
7.6 Pause time	Pause time between cleaning. Recommended between 10 and 20 hours. This time is only valid if cleaning is during PID operation, i.e. if the compressor is On..	10-24h	Not considered*1

* The compressor in the Off setting only works after the Extinguishing phase (when off). Therefore, we do not consider the Pause time.

* Connection of the compressor solenoid valve to one of the outputs "Compressor 1, 2 or 2" in the control unit.

8. Built-in valve 1, 2 *1	Ovlád Control of the mixing valve for one heating circuit.	
8.1 Turn off valve	Deactivate the mixing valve if you do not want to use it at the moment.	
8.2 Turn on valve	Activate the mixing valve.	
8.3 Set valve temperature *2	Enter the desired temperature that the mixing valve should maintain. The maximum adjustable temperature on the mixing valve is given by the function Mixing valve type	selectable

8.4 Calibration	Calibrate the valve used so that it opens and closes up to the limit positions. This calibration is automatic.	
8.5 Unit step	The size of one step for each change in the valve position. This step is performed regularly, according to the time set in the function Pause in measurement.	1-20%
8.6 Minimum opening	Set the minimum opening so that a minimum flow of water is ensured in the heating system even if there is no heating demand (valve temperature is reached). If you want to prevent water from flowing into the system when the valve temperature is reached, then set 0%.	0-5%
8.7 Opening time	How long does it take for the valve to move from one limit position to another. Closed - open. It also depends on the valve type..	120s
8.8 Measurement pause	Pause between changing the valve position. The unit measures the valve temperature at the set interval and changes the valve position.	30s
8.9 Mixing valve type	Select the valve type according to the type of heating system. The setting changes the maximum possible valve temperature so as not to damage the heating system used.	
8.9.1 CH valve	Central heating valve. The maximum temperature on the valve should be 85°C.	50-85°C
8.9.2 Floor valve	Floor valve, the maximum temperature of which can be 55°C, so as not to damage the floor heating..	10-55°C
8.10 Weather compensation *4	Change of valve temperature according to the outdoor sensor. The temperature on the valve will be automatically adjusted according to the values set in this function. The lower the outdoor temperature, the higher the desired valve temperature should be. Attention: the outdoor sensor must be connected, otherwise an error message will occur..	
8.10.1 Heating curve	Setting of valve temperatures according to the outdoor temperature, measured by the outdoor sensor. The temperature on the valve will be automatically adjusted according to the set values.	optional
8.11 Room thermostat	Activate control of the mixing valve using the room thermostat. The valve can respond to an instruction from the thermostat by lowering/increasing the set valve temperature, or it closes/opens according to an instruction from the room thermostat.	
8.11.1 Regulation without thermostat	The room thermostat is deactivated. It has no effect on boiler control.	
8.11.2 RS controller reduction	The RT10 room thermostat reduces the temperature on the valve according to the set level in the Temperature reduction by thermostat function..	
8.11.3 RS controller proportional	The RT10 controller closes or opens the valve according to the current heating demand.	
8.11.4 Standard thermostat	Activation of standard thermostat 1 or 2.	
8.11.5 Temperature reduction by thermostat	Enter the temperature by which the set temperature on the valve will be reduced if the RS reduction controller function has been activated.	
8.11.6 Room temperature difference	Hysteresis of the re-command to heat from the room thermostat. How much the room temperature should drop before the room thermostat issues a heating command..	

8.11.7 Changing the set temperature	If Standard thermostat 1 or 2 is connected and activated, we can set the temperature drop on the valve by a given level if there is no heating instruction from the room thermostat.	
8.12 Proportionality coefficient	Coefficient of temperature measurement and heating status update. How often the thermostat checks the temperature and adjusts the valve mode according to the current situation.	
8.13 Opening direction	Change the opening/closing direction of the mixing valve..	
8.13.1 Left	The mixing valve moves from right to left when opening.	
8.13.2 Right	The mixing valve moves from left to right when opening.	
8.14 Selecting the CH sensor	Select the sensor that functions as the CH sensor. Linked to the Boiler protection function..	
8.14.1 CH sensor	Central heating sensor (boiler temperature). The sensor must be connected, otherwise an alarm message will appear	
8.14.2 Additional sensor 1 *6	The sensor must be connected if you activate it. Otherwise an error message will appear.	
8.15 Boiler protection	The mixing valve opens to protect the boiler from overheating if the CH temperature exceeds the set limit.	
8.15.1 Max. temperature	Set the maximum allowed boiler temperature. If it is higher, the valve opens to cool the boiler and reduce the temperature in the boiler.	85°C
8.16 Return protection *3	The mixing valve primarily maintains the minimum temperature of the return water to the boiler, so as to protect it against low-temperature corrosion. Attention: the return water sensor must be connected to the external socket on the front of the boiler, otherwise an error message will appear.	
8.16.1 Off	The return protection function is deactivated..	
8.216.2 On	The return protection function is activated. The valve will be closed until the valve temperature exceeds the value set in the Min. return temp. function.	
8.16.3 Min. return temp.	Set the minimum return water temperature that the mixing valve will primarily maintain. We recommend between 45 and 65°C. It depends on the maximum CH temperature. The difference should not be higher than 20°C. The smallest return water temperature is 50°C..	55°C
8.17 Valve pump *5	Activation and setting of the pump Valve 1 and 2.	
8.17.1 Always on	The pump is always off, regardless of the valve temperature.	
8.17.2 Always off	The pump is always off, regardless of the valve temperature.	
8.17.3 On above limit	The pump is switched on above the set temperature. Linked to the function Switch-on temp..	
8.17.4 Switch-on temp	Set pump switch-on temperature. Linked to the function Switched above limit..	
8.18 Factory settings	Reset to factory settings. All user settings of the valve will be deleted.	

*1 Connect Mixing valve 1 or 2 to the outputs “Valve 1” or “Valve 2” in the control unit.

*2 Connect Valve sensor 1 or 2 to the outputs “Val.1 sens.” or “Val.2 sens.” in the control unit.

*3 Connect Return water sensor to the output “Return sens.” in the control unit.

*4 Connect External sensor to the output “External sens.” in the control unit.

*5 Connect Valve pump 1 or 2 to the outputs “Valve 1 pump” or “Valve 2 pump” in the control unit.

*6 Connect Additional sensor 1 to the output "C1 and Gnd." in the control unit.

9. Valve 1, 2 (431N) *	With the help of additional modules 431N, you can control another mixing valve. This can be connected to the boiler control unit via the 431N module. For more information on this additional device, contact your certified plumbing company or directly the representative of OPOP spol. s.r.o.

*1 Connect Mixing valve 1 or 2 to the RS data outputs in the control unit, via additional 431N modules.

10. Accumulation tank parameters*	Set the method of heating the accumulation tank.
10.1 Accumulation tank	In this submenu, you activate or deactivate the heating of the accumulation tank.
10.1.1 Off	Deactivation of the accumulation tank heating
10.1.2 On	Activation of the accumulation tank heating.
10.2 DHW function	Activation of DHW heating using the storage tank..
10.2.1 From the storage tank	DHW heating is carried out using the storage tank.
10.2.2 From the boiler	DHW heating is carried out using the DHW pump
10.3 Upper set temperature	Enter the maximum temperature in the upper part of the storage tank..
10.4 Lower set temperature	Enter the maximum temperature in the lower part of the storage tank..

* Connect the sensors for heating the storage tank to the outputs "C1" and "C2" in the control unit.

11. Additional pump *	Activation and setting of the additional pump..
11.1 Device type	Select the type of pump. For what purpose will it be used
11.1.1 Pump off	Deactivation of the additional pump
11.1.2 CH pump - room thermostat	The CH pump is switched on at a central heating temperature higher than 40°C. This value can be changed in the Service menu.
11.1.3 DHW pump	The DHW pump will be switched on according to the set parameters DHW temperature (Main settings) and DHW hysteresis (Service menu).
11.1.4 Circulation pump	The circulation pump has a set switching temperature in the functions Max. temperature, Min. temperature, Selection of the sensor that the pump controls..
11.1.5 Floor pump	The floor pump works in the same way as the circulation pump, with the difference that its maximum switching temperature is lowered so as not to damage the floor heating. You can set the switching temperatures in the functions Max. temperature, Min. temperature and Selection of the sensor that the pump controls.

11.2 Max. temperature	Maximum temperature at which the Circulation or Floor pump is switched on.
11.3 Min. temperature	Minimum temperature at which the Circulation or Floor pump is switched on.
11.4 Sensor selection	Select the sensor according to which the Circulation or Floor sensor is controlled. Attention: if you activate a sensor that is not connected to the external socket on the front of the boiler, an error message will be generated
11.4.1 CH sensor	CH sensor connected to the CH sensor output.
11.4.2 DHW sensor	DHW sensor connected to the DHV sensor output.
11.4.3 Valve sensor 1	Valve sensor 1 connected to the Valve1 sensor output.
11.4.5 Valve sensor 2	Valve sensor 2 connected to the Valve2 sensor output..
11.4.6 Return sensor	Return sensor connected to the Return sensor output..
11.4.7 Weather sensor	Outdoor temperature sensor connected to the Weather sensor output.
11.4.8 Additional sensor 1	Additional sensor C1 connected to the C1 sensor output.
11.4.9 Additional sensor 2	Additional sensor C2 connected to the C2 sensor output.

* Connect the Additional pump to the “Additional pump” output in the control unit

12. Ethernet Module *	Internet module enabling connection of the boiler to the OPOP online server and ensuring online remote management of your boiler.
12.1 Switch off the module	Deactivation of the module.
12.2 Switch on the module	Activation of the module.
12.3 Registration	Get a registration number for registering your boiler to the OPOP online server.
12.4 DHCP	Used for automatic configuration of computers connected to a computer network.
12.5 IP address	identifies the network interface in a computer network
12.6 IP mask	A network mask is a number that in computer science describes the division of a computer network into subnetworks
12.7 Gateway address	The name of an active device (network node) that has the highest position in a computer network. A gateway connects two networks operating with different communication protocols. It also performs the function of a router, which is why we rank it above the router in the sequence of network devices.
12.8 DNS address	A hierarchical domain name system that is implemented by DNS servers and a protocol of the same name, by which they exchange information. Its main task and the reason for its creation are the mutual conversions of domain names and IP addresses of network nodes.
12.9 MAC address	It is a unique identifier of a network device used by various protocols of the second (connection) layer

12.10 Module version	Sw version of the Internet module, which is part of the External boiler socket.

* Connect your modem/router to the external socket on the boiler using an RJ45 cable.

14. Cascade *	The cascade controller is an additional module that allows you to control up to 4 boilers simultaneously, as if they were only one. You then use the power of individual boilers only when necessary. The boilers are connected to the cascade controller using an RS data cable.
14.1 Operating mode	Select one of two types of control, using the CH temperature or using an outdoor temperature sensor.
14.1.1 Weather-compensated regulation	Switching individual boilers based on the outdoor temperature. Select the outdoor temperature based on which the boilers are switched. The lower the temperature, the more activated boilers.
14.1.2 Modulation	Switching individual boilers based on the set CH temperature not being reached within a given time. Connected to the Boiler switch-on temperature and Waiting time functions.
14.2 Number of boilers	Select the total number of boilers connected to the cascade controller.
14.3 Hysteresis	Hysteresis ensures that the boiler is switched on again if the maximum CH temperature has been reached. After the CH temperature has dropped by the value specified in this function, the boiler is reactivated.
14.4 Lower efficiency limit	The lowest boiler temperature level. If the temperature does not exceed the specified limit for the interval set in the Waiting time function, the next boiler is switched on.
14.5 Switch-on temperature of 3 boilers	Temperature at which the given boiler is switched on.
14.6 Switch-on temperature of 2 boilers	Temperature at which the given boiler is switched on.
14.7 Switch-on temperature of 1 boiler	Temperature at which the given boiler is switched on.
14.8 Waiting time	How long it will take before the next boiler is activated if the specified temp. is not reached within the given time.
14.9 Version	Current version of the Cascade controller.

* Connection of the Cascade controller to one of the RS data outputs in the control unit.

15. Exhaust fan *	Activates the exhaust fan, which increases the chimney draft to the prescribed level so that smoke does not escape. Connects to the external socket using an RS data cable.
15.1 Operating minimum of the fan	Minimum fan speed.
15.2 Operating maximum of the fan	Maximum fan speed.
15.3 Version	Current version of the Exhaust fan.

* Connection of the Exhaust fan to one of the RS data outputs in the control unit.

16. Vacuum feeder *	The vacuum feeder transports pellets over longer distances. From large silos to the hopper at the boiler.	
16.1 Operating time	Set how long the vacuum feeder will be in operation each day. During this time, the pellet hopper at the boiler should be filled. 30 minutes to 1 hour is usually sufficient time to completely fill the hopper. We recommend that you practically check how long it takes for the hopper to be filled using the Vacuum Feeder and set the exact time in this function. This will prevent the control unit from trying to start the vacuum feeder when the hopper is already full. This saves the electrical switch on the vacuum container flap.	30min - 1hour
16.2 Switch-on time	Enter when during the day the vacuum feeder should start. It will work until the time set in the Operating time function expires.	optional
16.3 Switch-on time 2	If you use a higher-output boiler, it is possible that it will be necessary to start the feeder twice a day. Here you can set the time for the second start of the vacuum feeder during the day. It will work until the time set in the Operating time function expires.	optional
16.4 Opening time	Vacuum feeder running time. It lasts until the vacuum container is filled. Recommended from 80 to 200s depending on the length of the hoses transporting pellets from the silo to the hopper. Longer connection, longer Opening time.	80-200s
16.5 Break time	After filling the vacuum container using the Opening time function, the lid feeder is temporarily switched off so that the pellets fall into the hopper and the entire suction cycle can then be repeated. We recommend a setting of 20s.	20s

* Connect the Vacuum feeder to the “Vacuum” output in the control unit.

17. Solar control *	Connect an external device controlling solar collectors to activate/deactivate the boiler in case there is/ no demand for heating by the boiler, but by solar collectors. The device must have a potential-free contact, switching the boiler on/off.
17.1 Solar control (NO)	Normally open.
17.2 Solar control (NC)	Normally closed.

* Connect the device controlling solar heating to the “Solar a Com” output in the control unit.

18.1 Heating block *	Blocks boiler start-up (ignition) if the outdoor temperature measured by the outdoor sensor is higher than the one set in the Set temperature function. Attention: the outdoor sensor must be connected, otherwise an error message will occur.
18.2 Set temp.	A higher outdoor temperature than the set one will force the boiler to switch off. Attention: do not forget to calibrate the Outdoor sensor in case it does not measure correctly in the Outdoor temperature correction function in the Installation menu.

* Ignition block works in cooperation with the External sensor, which you must connect to the “External sens.” output in the control unit.

19. Outdoor temperature correction *	Correct the temperature measured by the outdoor sensor. The length of the supply cable affects the measured value. When connecting the Outdoor sensor, we recommend measuring the real temperature and then setting the correction so that the temperature displayed on the Main panel corresponds to the real value. The temperature measured by the Outdoor sensor is marked on the Main panel with the 
19.1 Correction value	Outdoor temperature correction mark. Change it so that it corresponds to the real temperature.

19.2 Averaging time	Time How often the measured value is stored in memory and averaged to determine the average outdoor temperature over time.	30-100s

* Connection of the outdoor sensor to the "External sensor" output in the control unit.

21. Clock setting *	Setting the current time.
22. Date setting *	Setting the current date.

* Important for online functions, Weekly boiler program, and for Alarm history.

23. Factory settings	Do you want to reset all settings made by the user in the installation menu to the factory values?

SERVICE MENU

The service menu is used to set the operation of the feeders and the fan speed in all operating states of the boiler. This menu is secured by an access code, since changes to these parameters can have a fundamental impact on the correct operation of the boiler. Therefore, changes in this menu should only be made by a certified installer with a valid authorization from OPOP s.r.o.

1. Pellet settings	Changes the feeder settings and fan speed at max and min boiler output in all 3 phases of boiler operation (ignition, operation, extinguishing).	
1.1 Ignition parameters	Change parameters for the automatic Ignition phase.	
1.1.1 Blowing time	Burner grate cleaning time before pellet dosing for Ignition. Connected with the Blow-through speed and Ignition delay functions.	30s
1.1.2 Blowing speed	Fan speed when cleaning the burner. Connected with the Blow-through time function.	100%
1.1.3 Loading time	Amount of pellets for automatic igniton. It is recommended in the range of 12-18s depending on the burner type. Too few or too many pellets can cause too long or unsuccessful igniton.	12-16s
1.1.4 Ignition delay	During this time, the external feeder will not be in operation to prevent the pellets supplied for automatic igniton from blowing away. Connected with the Blow-through time function.	30s
1.1.5 Feeding time	Operation of the internal feeder in the burner during ignition. The internal feeder feeds the residual amount of pellets from the rear of the burner to the grate at regular intervals. Linked to the Feed Pause function.	5s
1.1.6 Feeding pause	Feed pause of the internal burner feeder. How long the internal feeder stands before the next batch. Linked to the Feed Time function.	100-300s
1.1.7 Fan speed	Fan speed during the first half of the automatic ignition. The fan has a lower speed to create heat, from which a fire subsequently arises. Linked to the Heater Protection function. The correct fan speed is related to the burner size, for more information read the Factory Settings chapter.	1-8%
1.1.8 Fan speed 2	Fan speed in the second half of the ignition. If a flame was not created during the first half of the ignition cycle, the fan increases its speed to create it. Linked to the Heater Protection function. The correct fan speed is related to the burner size, for more information read the Factory Settings chapter.	3-16%

1.1.9 Heater protection	Maximum duration of one ignition cycle. During this cycle, the fan speed is stepped according to the Fan Speed and Fan Speed 2 settings. If no heating occurs, the external feeder will feed half the amount of pellets set in the Loading time and attempt 2 ignitions. If no flame is produced within the time set in this function, an error message will be generated and the boiler will be switched off. If this time reaches 0 and despite this the pellets fail to ignite, the feeders feed a second, half-dose of fuel (half the value set in the Loading time function. Then a second ignition attempt is made. If the time interval reaches 0 again without a real flame (the photosensor does not detect light higher than the value set in the Ignition brightness function), then the “Failed ignition” alarm is announced..	12min
1.1.10 Heating brightness	Photosensor sensitivity. You can see the real detection of the amount of light in the lower left corner after entering this function. If there is no flame in the boiler, the set number must be higher than the number detected by the photosensor in the lower left corner. If ignition occurs, the photosensor detects the flame, the light level increases and exceeds the set limit. At that moment, the transition from ignition to PID operation occurs.	38
1.1.11 Fan delay	Ignition cartridge preheating. After activating ignition, the fan is deactivated for a set time so that the ignition the cartridge did not cool down. After the ignition cartridge has heated up, the fan will start. When this happens after the activation of the heating is determined by this function.	30s
1.1.12 Min. heater output	Here you can reduce the supply voltage of the ignition cartridge. With the standard ignition cartridge supplied by OPOP, we recommend leaving the original settings.	0
1.2 Operating parameters	Operating parameters of the external feeder and fan during the so-called PID operation.	
1.2.1 Minimum output	Setting the operation, pause of the external feeder and fan speed for the minimum boiler output. Make sure that the flame is large enough to prevent incorrect flame detection or its extinction.	
1.2.1.1 Maximum feeder pause	Feeder operation pause at minimum boiler output. Depends on the boiler size.	7-25s
1.2.1.2 Min. feeder operation	Feeder operation during minimum boiler output. Depends on the boiler size.	1-3s
1.2.1.3 Min. fan speed Operation	Fan speed during minimum boiler output. Depends on the boiler size.	5-30%
1.2.2 Maximum output	Setting the operation, pause of the external feeder and fan speed for the maximum boiler output. Make sure the flame is large enough to ensure efficient combustion with fine ash. At the same time, check the flue gas temperature, which should be within the limits given by the boiler size. Check the manual for the correct flue gas temperature. If it is too high at maximum boiler output, correct the combustion. The flue gas temperature is displayed on the main panel next to the	
1.2.2.1 Maximum feeder operation	Feeder operation during maximum boiler output. It depends on the boiler size.	1-8s
1.2.2.2 Min. feeder pause	Feeder operation pause at maximum boiler output. It depends on the boiler size.	7-25s
1.2.2.3 Max. fan speed Operation	Fan speed during maximum boiler output. It depends on the boiler size.	10-70%

1.2.3 Cleaning time	Forced boiler shutdown and cleaning using the Extinguishing Phase. The boiler is turned off after a time interval and the Extinguishing Phase is carried out so that the grate is cleaned. Subsequently, automatic re-ignition occurs. We recommend using it only for high burner outputs, 100-200kW. We recommend setting 20h. The factory setting is 0h 0min which means this function is disabled.	0-20h
1.2.4 Operation control	How often the photosensor detects light. If the photosensor does not detect a flame for a specified period of time during PID operation, it will automatically switch to the Ignition phase. The recommended setting is from 20-50s. For larger burners, this time may be longer.	20-50s
1.3 Extinguishing parameters	Extinguishing phase and operation of feeders and fans in this operating state. Varies depending on the size of the burner.	
1.3.1 Fan speed	Fan speed during the first part of the extinguishing phase - when the flame is still detected in the boiler by the photosensor. At that time, we want to burn the remaining pellets before the second cleaning and cooling phase occurs. The recommended setting is 50-80%. We want to burn the pellets quickly, but we do not want the fan speed to be too high, which would cause unburned pellets to fall into the ash pan.	50-80%
1.3.2 Feeding time	Operation of the internal feeder in the burner during the extinguishing phase. The feeder feeds the remaining pellets to the grate. Connected to the Feed Pause function.	5s
1.3.3 Feeding pause	Pause in the operation of the internal burner feeder. Connected to the Feeding time function.	10-100s
1.3.4 Extinguishing time	Maximum extinguishing time when the photosensor detects the flame. If it does not extinguish and the photosensor still detects the flame for the set time, the boiler goes into the ignition mode and then into the subsequent extinguishing. This is a safety feature so that the boiler does not turn off if there is still a flame in the boiler.	5-10min
1.3.5 Delay time	The second phase of the extinguishing cycle when the remaining pellets on the grate have burned out and the photosensor no longer detects light. At that moment, the fan speed increases to 100%. The goal is to clean and cool the grate so that it does not twist. The recommended value is 5-15min depending on the size of the burner.	5-15min

2. Max. flue gas temperature	If the temperature at the flue outlet increases to the set value, the boiler output is reduced to prevent the maximum flue gas temperature from being exceeded. The flue gas temperature is displayed on the main panel next to the	220°C
3. Feeder alarm temperature	Maximum temperature of the internal feeder in the burner. If it is too high, an error message will be generated. Ensure that the burner/boiler/flue pipe and chimney are cleaned thoroughly. Pay attention to the correct position of the grate and the correct setting of the combustion process. Otherwise, there is a risk of overheating the burner.	85°C
4. Priority temp.		62°C
5. CH pump start alarm	Activation of the CH pump during an alarm message. The pump ensures the circulation of superheated water in the boiler until the CH temperature drops below the specified limit.	85°C
6. Pump start temperature	CH boiler temperature, when the pumps are switched on. If the temperature is lower than the set limit, the pumps are inactive. This is to protect the boiler against low-temperature corrosion.	40°C

7. Boiler alarm temperature	Maximum CH temperature. If the temperature is higher than the set limit, an error message will be generated.	93°C
8. Internal feeder coefficient	Extension of the operation of the internal burner feeder. The internal feeder must work for a longer time compared to the external feeder to deliver all the pellets to the burner grate. The recommended setting is 100-150%.	100-200%
9. Blowing	Factory fan setting. No need to change, setting for the manufacturer only.	
10. Min. boiler temperature	Minimum boiler temperature. If the temperature does not exceed this limit for a set time, an error message will be generated. Connected to the Temperature supervision function.	30-45°C
11. Increase pulses	Changing the modulation step during PID operation. The higher the number, the greater the change in power over time. The smaller the number, the smaller the change in power over time. This directly affects how quickly the PID modulation responds to a temperature change to maintain the specified CH temperature.	0-20
12. Supervision temperature	If the temperature does not exceed the value set in the Min. boiler temperature function for this set time, an error message will be generated.	5°C
13. Boiler hysteresis	CH temperature minus Boiler hysteresis means the CH temperature level when the boiler is switched on again. CH temperature = 75°C, Boiler hysteresis = 15°C. the boiler will be switched on automatically when the CH temperature drops below 60°C.	5-15°C
14. DHW hysteresis	DHW temperature minus DHW hysteresis means the temperature level in the boiler when the DHW pump/valve is reactivated. DHW temperature = 60°C, DHW hysteresis = 10°C. The DHW pump/valve will be reactivated automatically when the DHW temperature drops below 50°C	5-10°C
15. Disinfection	Forced increase of DHW temperature to eliminate bacteria in the hot water boiler.	
15.1 Disinfection temperature	Select the DHW temperature to which the entire DHW system should be heated.	75°C
15.2 Disinfection time	How long the DHW temperature will remain heated to a higher level.	10min
15.3 Max. disinfection heating time	The maximum time for which the Disinfection function can be activated. If the DHW temperature does not increase to the value set in the Disinfection temperature function by this time, the control unit deactivates the Disinfection function and returns to normal operation.	20min
16. Min. temperature alarm	The minimum CH (boiler) temperature that must be reached within the time interval (set in the Min. temperature time function) in order to prevent the "Temperature does not increase" alarm from being issued.	30°C
17. Min. temperature time	Time for how long the CH (boiler) temperature must be higher than the value set in the Min. temperature alarm function. If the CH temperature is lower during this time interval after ignition, the "Temperature does not increase" alarm will be issued.	30min
16. Factory settings	Resets all settings in the Service menu to their factory values.	

LANGUAGE SELECTION

1. Choosing the language is easy via its own menu in the main menu of the v9 MINI display. When you first turn on the control unit, a request to select the language appears on the display. If you miss this option (the time interval is 30s), then you can change the language to Czech at any time using this menu. In English, the language selection is called "Language selection". You can recognize it in the menu by the image of the flags. After selecting the language, it is immediately loaded into the control unit.

OPERATING AND ERROR MESSAGES

Below is a list of frequently asked questions that we encounter. They relate to both installation and operation of the boiler. Read these questions carefully, they can help you solve specific situations that you may encounter.

1. Alarm: Damaged feeder sensor

This is a protective sensor on the burner. Check the sensor connection in the burner PCB and in the control unit in the "Feeder sens." output.

2. Alarm: CH sensor fault

CH sensor connected to output “CH sens.” It is damaged or not connected.

3. Alarm: DHW sensor fault

DHW sensor connected to output “DHW sens.” It is damaged or not connected and one of the functions that needs it for correct operation is activated.

4. Alarm: CH temperature too high

CH temperature measured by CH sensor exceeded 93°C, i.e. the value set in the Max boiler temperature function in the Service menu.

5. Alarm: DHW temperature too high

DHW temperature measured by DHW sensor exceeded the maximum value set in the Set DHW temperature function in the Main settings.

6. Alarm: Thermal sensor open

The thermal sensor is not connected or is defective. Check the contact in the control unit.

7. Alarm: Return sensor damaged

The return sensor was activated in the Built-in mixing valve 1 or 2 settings, but is defective or has not been connected to the output in the control unit called “Return sens.”.

8. Alarm: Temperature sensor C1-C4 damaged

The temperature sensor was activated, but has not been connected to the unit to the appropriate output.

9. Alarm: Mixing valve sensor failure

The built-in mixing valve 1 or 2 has been activated, but the valve 1 or 2 sensor has not been connected to the control unit to the output “Valve 1, 2 sensor.”

10. Alarm: 3 ignitions in 30 min

The boiler ignites too often. Check the correctness of the flame detection by the photosensor after Ignition. If the photosensor does not see light, the boiler switches to normal operation.

11. Message: No communication with room thermostat

The RT10 room thermostat was not connected, but is activated. Check the thermostat settings.

12. Message: No communication with Lambda probe

The Lambda probe was not connected, or is incorrectly activated. Check the Lambda settings in the Installation menu, Lambda and check the Lambda probe connection.

13. Message: Temperature reached

The boiler was switched off by reaching the CH temperature.

14. Message: DHW heated

The DHW temperature was reached. The DHW pump was switched off.

15. Alarm: Outdoor sensor fault

The outdoor temperature sensor was activated in the settings for the built-in mixing valve 1 or 2, but is not connected to the external boiler socket to the "Weather sens." output.

16. Alarm: Damaged Mosfet sensor

The Mosfet component is responsible for regulating the fan speed and has probably overheated. Check the supply voltage, which should not be higher than 240V. If everything is fine, then the fan is stuck or rubbing. Check the operation of the fan and the functionality of the start-up fan, which is located on the burner.

17. Alarm: Mosfet temperature too high or Incorrect air flow

The temperature on the component measuring the speed and current consumption of the fan is too high. Check the operation of the fan and the fan start-up capacitor, whether they are fine.

18. Feeder temperature too high

The temperature in the burner has exceeded 80°C. Check the correct placement of the grate, the operation of the internal feeder using manual operation in the Installation menu. Check the patency of the flue gas paths.

19. Alarm: Unsuccessful ignition

The ignition cartridge is defective, or the ignition process is set incorrectly. Make sure that after the flame is formed, it is detected by the photosensor.

20. Alarm: Temperature does not increase

If the CH temperature does not exceed 30°C within 30 minutes after heating, an error condition is declared. Set in the service menu, in the functions Min. temperature alarm, Min. temperature time.

SOLUTIONS TO SPECIFIC SITUATIONS

Below is a list of frequently asked questions that we encounter. They relate to both installation and operation of the boiler. Read these questions carefully, they can help you solve specific situations that you may encounter.

1. Incorrect flame at max output:
    a. Flame extension: Service menu, Feeder settings, Work
        i. Max feed work – set a longer feeder run time
        ii. Min feed break – set a shorter feed break pause
    b. Flame shortening: Service menu, Feeder settings, Work
        i. Max feed work – set a shorter feed run time
        ii. Min feed break – set a longer feed pause
    c. Air quantity reduction: Service menu, Feeder settings, Work
        i. Max vent output – set a lower number
    d. Air quantity increase: Service menu, Feeder settings, Work
        i. Max vent power – set a higher number

i With these changes you can adjust the flame size and thus the combustion quality. After the ignition phase, wait 10 minutes until the burner reaches maximum power and then make changes.

2. Incorrect flame at minimum power:

    a. Reduce boiler power to minimum:

i Wait until the CH temperature is close to the set value, or set the same values in the Service menu, Feeder settings, Work, for min and max power. Example:

        i. Service menu: Feeder settings, Work, for min and max power:
        I. Max feed work = 2s (value for max power)
        II. Min feed work = 2s (value for min power)
        III. Max feed break = 10s (value for min power)
        IV. Min feed break = 10s (value for max power)

i Now the same values are set for feeder operation at minimum and maximum power. Wait 10 minutes for the flame to stabilize and make any corrections, see below.

    b. Flame extension: Service menu, Feeder settings, Work
        i. Min feed work – set a higher feeder run number
        ii. Max feed break – set a shorter feeder break time
    c. Flame shortening: Service menu, Feeder settings, Work
        i. Min feed work – set a lower feeder run number
        ii. Max feed break – set a longer feed break.
    d. Air reduction: Service menu, Feeder settings, Work
        i. Min fan speed operation – set a lower number
    e. Air increase: Service menu, Feeder settings, Work
        i. Min fan speed operation – set a higher number

i It is important that the flame is stable during minimum power and there is no risk of it going out during boiler operation.

3. Unburned pellets in the ash pan:
    a. Reduce fan speed: Service menu, Feeder settings, Work
        i. Max fan power – set a lower number
    b. Reduce feeder run time: Service menu, Feeder settings, Work

i. Max feed work – set a lower number
ii. Min feed break – set a higher number

4. Long or unsuccessful ignition:

a. High chimney draft - Chimney draft is the main factor that can affect the ignition cycle time. This time is standardly 4 to 6 minutes. Chimney draft higher than 15Pa negatively affects the resulting ignition time. The solution is to install a draft stabilizer. Also keep in mind that the higher the boiler output, the greater the likelihood of affecting the ignition time.

i We recommend installing a draft stabilizer for each boiler. It is also necessary to set the draft stabilizer as specified in the boiler parameter table – chimney draft.

b. Amount of pellets on the grate: Service menu, Feeder settings, Ignition
i. Dose time – set a higher or lower number. The pellets should cover the opening of the ignition cartridge, which is above the grate, but in general, the fewer pellets on the grate during ignition, the faster the ignition cycle itself.

c. Incorrect fan speed: Service menu, Feeder settings, Ignition
i. Fan speed 1/2 – set a lower or higher speed. A trained installation company knows the recommended values.

5. The photosensor does not see the flame:

a. Sensitivity: Service menu, Feeder settings, Ignition
i. Brightness – set a lower number for higher sensitivity and vice versa. The minimum number should be around 30. If it were lower, you risk that the photosensor would see ambient light without there being a flame in the boiler.

b. Bad contact in the burner socket
i. If the display shows the message Feeder sensor damaged, it means that the socket on the burner is incorrectly connected or damaged. Check the inside of both sockets on the burner.

c. No light during ignition
i. The flame is too small or the pellets are blocking the flame detection in the burner. You must extend the running time of the internal feeder so that none remain in the burner and all are transported to the burner grate.

6. Failed SW update:

a. USB must be formatted in FAT32 file system
b. or the file on USB is corrupted.

i We recommend reformatting the USB and uploading the file for the update. Or replace the USB key with another one.

7. No PID regulation:

a. The CH sensor or flue gas sensor is not connected.
b. The flue gas temperature is higher than 170°C.
c. PID regulation is affected by the rate of temperature change over time, therefore it is likely that each system will react differently.

8. Lambda probe reduces boiler output:

a. Change the modulation range in the Installation menu, Lambda. The factory setting is -15 to +15. This range must be reduced.
b. Leakage in the flue pipe joints and in the lambda probe well. False air is being sucked in, the lambda tries to adjust it.

9. The lambda probe worsens the combustion quality:
   a. If the flame is consistently large and dark after activating the Lambda probe (i.e. not enough combustion air), then this means that the Lambda probe measures a large amount of excess air and tries to reduce it to the set limit by adding fuel or reducing the fan speed.
   b. The reason may be a leak in some part of the flue, boiler or in the opening for the Lambda probe. These leaks allow additional air to enter the boiler, which the Lambda probe tries to eliminate in the aforementioned way. The only place where air enters the boiler should be the burner fan.
   c. Also reduce the modulation range that the Lambda probe can make in the items Min. change and Max. change in the Installation menu, Lambda.

10. Data changed on the Internet will only be uploaded to the boiler after a long time:
   a. By default, with a good internet connection, it takes 1 minute to upload data from the Internet to the boiler unit
   b. If data is uploaded, e.g. in 10 or more minutes it means that the internet connection is bad or one of the additional devices is activated and not plugged into the external socket: RT10 room thermostat, Lambda probe, 431N module. Plug in these additional devices or deactivate them in the settings of the given additional device.

11. After removing the cause of the alarm, it will appear again
   a. The unit has a fixed detection of possible alarms set to 15s. If you remove the cause of the alarm after the last detection, this alarm may appear again even after deactivating the cause. After re-confirmation, the alarm will no longer appear if the cause of the alarm has really been removed.

12 Failed synchronization
   a. The unit synchronizes data with the control unit when starting.
   b. If synchronization fails, then the cause is inconsistent SW in the display and control unit. Upload the latest SW version to both devices.

13. Clogged burner grate:
   a. Clogged grate with unburned pellets, too much ash on the grate.
   b. Too long external feeder dosing time. Reduce Max. feeder coefficient in the Coefficients function in the Installation menu. After some time, adjust the value in Max. feeder coefficient again.
   c. Low fan speed. Increase Fan coefficient max. in the Coefficients function in the Installation menu.
   d. Wrong type of pellets, which are not 100% wood, the type of wood does not matter.
   e. High moisture in the pellets, the pellets only burn on the surface and do not burn further.
   f. Wrong position of the grate in the burner, clogged holes in the burner grate.
   g. Lower than required chimney draft
   h. Large amount of dust in the pellets.

14. High temperature of the internal burner feeder:
   a. Displayed in the lower left corner of the main panel of the v9 MINI unit.
   b. The standard value is up to 50°C.
   c. Possible causes are:
      i. Clogged grate due to poor combustion or wrong type of fuel.
      ii. Incorrect position of grate in burner, clogged holes in burner grate.
      iii. Lower than required chimney draft
      iv. Clogged boiler or flue gas path
   d. There is a risk of backfire into the rear of the burner, it is necessary to arrange for the condition to be corrected.

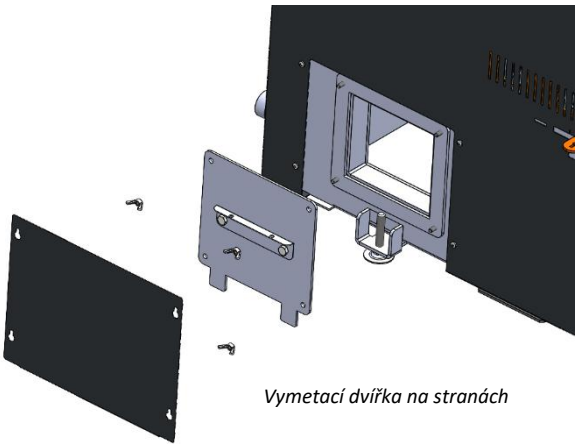
21. MAINTENENCE

The boiler must be cleaned regularly. Not only the loading and combustion chamber, but also the boiler exchanger. The table below contains the recommended intervals for manual cleaning of the boiler, burner and flue. Keep in mind that the intervals listed are only basic recommendations that may differ from the actual requirement for regular cleaning. The frequency of regular cleaning is determined primarily by the quality of the combustion process, the type and quality of pellets, the level of

dust and moisture in the pellets, chimney draft, etc. Therefore, always check the rate of clogging of the boiler at short intervals during the first months of its operation so that you can determine for yourself how often the boiler, burner and flue gas path need to be cleaned based on the real situation. Follow the instructions below to keep your boiler in the best possible condition.

	weekly	monthly	quarterly	annually
cleaning the combustion chamber	•			
cleaning the burner grate	•			
cleaning the boiler exchanger		•		
checking combustion		•		
cleaning the photosensor		•		
checking the door for leaks			•	
cleaning the entire burner			•	
cleaning the feeder				•
cleaning the hopper				•
flue and chimney				•

1. Loading chamber: open the loading door and either sweep the residual ash through the nozzle so that it falls down into the combustion chamber or vacuum it up with an ash vacuum cleaner. Clean the side shields in the hopper shaft with a scraper if necessary.
2. Combustion chamber: open the lower door and rake all ash out of the combustion chamber. Before closing, check the correct position of all fireclay bricks so that they do not block the exhaust of fumes from the combustion chamber to the boiler exchanger.
3. 3. Boiler exchanger: remove the cleaning door in the upper part of the boiler. Underneath it you will find a shielding flap, which you should also remove. Also remove the turbulators and clean them. Now you can clean the walls of the boiler exchanger using the scraper and brush supplied with the boiler. After cleaning the exchanger, it is necessary to return everything to its original place. Residual ash falls into the lower part of the exchanger, under the boiler partitions. You can either vacuum this ash with an ash vacuum cleaner with a longer attachment so that you can get under the partitions. If you do not have an ash vacuum cleaner, then use the sweeping plug on both sides of the boiler, which is used to remove residual ash from the boiler exchanger, see point 4.



Vymetací dvířka na stranách

4. Sweeping plug (depending on the boiler type): There is a small sweeping plug in the lower part of the boiler (left and right) that is used to remove ash that has fallen under the boiler exchanger. First remove the cover plate on the side casing of the boiler and then unscrew the 2 wing nuts so that you can remove the plug. Use the cleaning tool to scoop the ash out onto a shovel, or use a vacuum cleaner.

5. Exhaust fan: before the season, we recommend unscrewing the exhaust fan and sweeping out the ash that has accumulated behind the fan in the spiral housing. Carefully brush the fan impeller with a brush and check its attachment; it must not wobble. If it is not firmly attached, tighten the lock nut that holds the impeller on the fan shaft.

6. Once (or twice) per season, check the flue gas duct for patency and clean it using the sweeping hole that should be located on the flue gas duct.

7. The burner grate is removable and requires regular cleaning. During the first weeks of operation, monitor how often ash forms on the grate and scrape it off regularly using the cleaning tool. Only perform this operation when the boiler is deactivated (extinguished).

Ask your installation company for a thorough explanation of how to clean the boiler and burner so that the boiler is operated in accordance with the instructions. Regular cleaning of the boiler, burner and flue gas path will ensure maximum boiler efficiency and low fuel consumption during boiler operation.

After cleaning, do not forget to return the boiler to its original condition. That is, close all doors, screw back the sweeper plug, fix the fan airtight and make sure that all components (fireclay, cover plates in the hopper shaft, turbulators, shielding flap) are in the correct place.

22. RISK ANALYSIS

Residual risks and their prevention. The risks arising from boiler operation under conditions of expected use and logically foreseeable misuse have been minimized by available technical means. Despite the implemented design and technical measures, certain residual risks resulting from the risk analysis remain during boiler operation, which are given by the technological process at various stages of the equipment's service life.

These are mainly risks arising from the boiler operator's inattention and failure to comply with safety principles during operation. In order to further reduce risks and ensure higher efficiency of safety protection, we draw attention to the possible emergence of certain residual risks that cannot be eliminated by any technical solution.

Source of risk		
Transport means – lorry, technician's passenger car	Restrictions on the movement of workers (neighbours, family members) and machines at the place where the equipment will be unloaded from a lorry or car	Pre-define the unloading area and draw attention of the employee (neighbours, family members) to this fact
Handling truck, forklift truck, lorry arm or other means by which the equipment will be moved	There is a risk of injury or damage being caused by parts of the equipment that are being moved	Thoroughly consider the strategy of unloading and transporting individual parts of the equipment to the place where the equipment is temporarily stored or assembled
Equipment storage, whether in an assembled or dismantled state	Collisions of people, machines, vehicles, etc. with stored parts of the equipment. Water condensation in the wiring and consequent injury to the technician or damage to the equipment	Mark the storage space appropriately or secure and mark it where appropriate. The area must be dry so that moisture does not get into the wiring
Risks when placing the boiler at a designated location and assembling it		
Source of risk		

Handling truck, forklift truck or other means by which the equipment will be moved	There is a risk of injury or damage being caused by parts of the equipment that are being moved	Take extra caution if your staff or you are to help our technicians
Assembly	Injuries caused by a drill, angle grinder and common tools that technicians will use. For example, hammer, screwdriver, file, etc. Fall of one of the equipment components.	If your staff or you help our technicians, have proper protective equipment. For example, safety goggles, work gloves, etc. Be extremely cautious during the entire work
Risks in normal mode of the boiler and its accessories		
Source of risk		
Boiler body	Burns by hot door (filling, cleaning, ashpan) when opened, hand or face burns at the moment of opening	Only open doors with protective gloves, the doors are in direct contact with flue gases and can reach temperatures up to 400°C. Open the door so that any escape of hot flue gases does not hit any part of the body. The danger takes a few seconds before the pressure inside combustion chamber becomes stable
Combustion chamber	Hand injuries, burns from hot firebricks. Removal of ash from the combustion chamber.	Only handle the firebricks in protective gloves intended for this purpose and in the cold state of the firebricks. Only dump ash at designated locations. The ash may still be hot so only store it at designated locations
Risk during maintaining the boiler and its accessories		
Source of risk		
Combustion chamber	Burns, inhalation of dust, eye contact with dust	If the boiler is not shut down for a long time, its parts may be still hot, so use protective gloves. When cleaning the combustion chamber, use goggles and a respirator. The recommended downtime is 4 hours.
Thermal risks		
The boiler must not be exposed to higher operating pressure than prescribed		
It's forbidden to overheat the boiler		
The boiler must be protected against low-temperature corrosion by appropriate connection with automatic return temperature valve		
Only the prescribed fuel can be burned in the boiler		
It's forbidden to store combustibles near the boiler		
Risks associated with fuel handling		

Particulate matter is emitted when handling the fuel. Therefore, the operator should use appropriate protective equipment according to the degree of dustiness
Since this is a fuel, the relevant fire regulations must be followed and a suitable fire extinguisher must be available
Ergonomic risks
The boiler must be in a horizontal position in the boiler room
All doors, lids and cover must be properly closed during boiler operation
Source of risk

Electrical hazards		
source of danger	risk effect	elimination of danger
Arc Electromagnetic phenomena Electrostatic phenomena Live parts Insufficient distance from live parts under high voltage Overload Parts that have become live during a fault Short circuit Thermal radiation	Burns Chemical effects Effects on medical implants Death by electrocution Fall, ejection Fire Splash of molten particles Electric shock	All electrical parts are covered so that it is not possible for the user to come into contact with these devices. The devices are safely hidden under the casing, without removing which it is impossible to come into contact with the electric current. The casing is firmly fixed so that it cannot be removed without the use of tools.
EMC		
source of danger	risk effect	elimination of danger
Low-frequency electromagnetic radiation High-frequency electromagnetic radiation	Effects on reproductive ability Genetic changes Headache, insomnia, etc.	All electrical components are manufactured according to applicable standards to prevent electromagnetic interference or other effects caused by this radiation.

23. MEASURES IN CASE OF FAILURE

Alarm message	Description
Damaged flue gas sensor	Automatic igniting is not possible because the transition between igniting and operation is based on the flue gas temperature. You can ignite the boiler manually in Manual mode. Check for an adequate connection of the flue gas sensor or, if the connection is OK, replace the sensor.
Damaged buffer tank sensor	The buffer tank sensor is a KTY type. Check the buffer tank sensor connection. Be careful when extending the sensor cable. The standard resistance at room temperature is 2 kΩ. If you extend the sensor too much, the resistance characteristic changes and an alarm message occurs. Replace the sensor if the connection and resistance characteristics are OK.
Damaged CH sensor	The boiler output water sensor is a KTY type. Check its connection. Replace the sensor with a new one if the connection is OK.

Damaged DHW sensor	The DHW sensor is a KTY type. Check the DHW sensor connection. Be careful when extending the sensor cable. The standard resistance at room temperature is 2 kΩ. If you extend the sensor too much, the resistance characteristic changes and an alarm message occurs. Replace the sensor if the connection and resistance characteristics are OK.
Damaged MOSFET sensor 1 MOSFET temperature too high	The MOSFET transistor is the component responsible for changing the speed of the exhaust fan. The standard temperature on this component does not exceed 50°C. If the temperature is too high, there will be an alarm message. Check the exhaust fan's operation, remove it, clean it and try again. If the problem persists, call the OPOP service.
Damaged equithermal valve sensor Damaged outdoor sensor of built-in valve	If you connect an outdoor temperature sensor, it is possible to control the mixing valve equithermally. To adjust the set temperature on the valve according to the outside temperature. Before activating this function, make sure that the outdoor sensor is properly connected. Otherwise, an alarm message will occur. If the sensor cable is too long it can cause a change in resistance characteristics and an alarm message can occur.
Damaged valve return sensor	The return sensor is a KTY type. Check the return sensor connection. Be careful when extending the sensor cable. The standard resistance at room temperature is 2 kΩ. If you extend the sensor too much, the resistance characteristic changes and an alarm message occurs. Replace the sensor if the connection and resistance characteristics are OK.
Damaged valve sensor	If you activate the mixing valve, make sure the valve sensor is connected. Otherwise, an alarm message will occur. Be careful when extending the sensor cable. The standard resistance at room temperature is 2 kΩ. If you extend the sensor too much, the resistance characteristic changes and an alarm message occurs. Replace the sensor if the connection and resistance characteristics are OK.
Failed igniting	The maximum ignition phase time is 30 minutes. If the flue gas temperature does not exceed 80°C or the CH temperature does not exceed 40°C by that time, an alarm message will occur.
Module not found	If the boiler is connected to the Internet via opop.emodul.eu, it may happen that the connection to the router is not detected during registration. In this case, make sure that the Internet cable connection is OK, that you are registering according to the instructions. If problems persist, ask your ISP to unlock the communication port 2000 on your router or call the OPOP service.
Temperature does not rise Temperature does not increase	If the boiler is in operation for more than 30 minutes and the CH temperature has not exceeded the minimum limit by that time, an alarm message will occur. Make sure that the boiler is filled with water, that the CH sensor is properly positioned in the water inlet on the back of the boiler. Alternatively, call the OPOP service.
Floor temperature too high	If you activate an additional pump, one of this pump's functions is floor heating. Before activating the additional pump, first connect the sensor. The sensor is a KTY type. Be careful when extending the sensor cable. The standard resistance at room temperature is 2 kΩ. If you extend the sensor too much, the resistance characteristic changes and an alarm message occurs. Replace the sensor if the connection and resistance characteristics are OK.
Disconnected safety thermostat	If the room thermostat is activated but is not connected, this error state will be announced. Make sure that the thermostat is properly connected, functional and connected to the power supply.
Incorrect fan Fan: Damaged bearings Fan: Blowing shaft obstruction	If a higher current consumption is generated on the fan, this alarm message may occur. Check the fan's cleanliness and proper fan propeller attachment. The propeller must not be deformed in any way. Check the area of the spiral cabinet behind the exhaust fan, which must be clean and without ash deposition. Also check the operation of the fan, no grind can be heard. If the problems persist, call the OPOP service.
No communication with Internet No communication with GSM No communication with thermostat	If any of these accessories are activated but not physically connected, an alarm message will occur. Check for correct connection and accessory settings. Alternatively, call the OPOP service.
Low fuel level	In the event of a flue gas temperature drop, information regarding the empty filling shaft is displayed. This happens when the flue gas temperature drops below 48°C in the Operation mode. At this time, it's possible to add new fuel to the hot layer. If the temperature drops even more, below 35°C, Extinction will be announced and the boiler (fan) switches off.
Valve 1 temperature too high	If the temperature on the mixing valve is higher than 85°C, an alarm message will occur. Ensure that the boiler is properly connected to ensure that its output corresponds to the heat loss of the building. In accordance with the law, the boiler must be operated with a buffer tank to store excess heat.

CH temperature too high	The maximum CH temperature is controlled by two sensors, namely the CH sensor (KTY type) and the STB sensor (safety sensor). Both sensors are located at the back of the boiler. If the CH temperature exceeds 85°C, the CH sensor will sound an alarm. If the CH temperature continues to rise, the fan power is deactivated by means of the STB safety sensor at a temperature above 90°C. In this case, after cooling the boiler, it is necessary to press the button on the STB sensor at the back of the boiler to put the boiler back into operation. Make sure that the system and the boiler have water, the pumps work properly and the boiler is installed with the buffer tank according to the law. Alternatively, call the OPOP service.

- In terms of safety and economy of operation, the appliance must be operated according to the Instructions.
- The boiler may be left unattended, provided that the power is set so that it cannot overheat the system (reduced operation) or if it is equipped with a regulated and operable combustion air draft controller, however, the operator must check it occasionally.

During operation, some parts of the boiler (filling, cleaning and ashpan doors, flue) can be heated to a higher temperature, causing burns when touched. Therefore, use the protective gloves.

- The boiler may only be operated by adults who are familiar with these Instructions. Keeping children unattended near the appliance is inadmissible.
- It's forbidden to use flammable liquids for igniting in the appliance and in any way increase its rated output (thermal overload) during operation.
- The user may only carry out routine maintenance or replace spare parts. Do not interfere with the boiler design, change its function or leave the damaged product in operation.

Certainly, during the first and even subsequent heating intervals, excessive air condensation on the boiler surfaces may occur; a dark fluid may appear in the ashpan section. This is due to the low water temperature in the boiler (below the condensing point of 65°C) and the low flue gas temperature. The condensing will cease after partial settling of combustion products on the walls and after igniting above 65°C. This is not a boiler leak. Each boiler is thoroughly tested with overpressure and the possibility of leakage is virtually eliminated.

The boiler is tarred:

- At low chimney draught. If it is permanently low, it is removable only by a structural modification. If it is temporarily low, it is due to weather conditions
- With wet fuel
- When the reduced operation is permanent at a low temperature below the air condensing point of the flue gas, i.e., 65°C
- Incorrect boiler size due to heat losses of heated space
- In case of improper handling.

When burning wet or damp fuel, nominal output may not be achieved, the boiler becomes excessively clogged, covered with dew and tarred. This results in considerable economic losses, which are reflected in increased fuel consumption and reduced boiler life.

The formation of condensate or tar in the upper half of the hopper is a common phenomenon in boilers gasifying wood. Combustion air is not supplied to the upper part of the hopper chamber so that the wood burns down gradually and not all the wood in the hopper burns at once. This is a common phenomenon occurring in all wood gasification boilers.

You can reduce this condensation in the hopper by using dry wood with a moisture content below 15%, by operating the boiler at its maximum output without throttling and long-term operation in supervision mode, and by splitting the logs into pieces with a diameter of 10 cm or smaller. This creates a higher hot layer that dries out any condensate.

Due to the condensate, spacer plates are installed in the hopper, which separate the hopper and the wood from the boiler plate in order to protect the boiler plate against this condensate.

There are several important principles that need to be observed to ensure that the boiler function is safe and economical.

- Operator's conscientiousness
- Adequate chimney draft
- Clean boiler (draughts and vents)
- Tight boiler – properly installed and sealed cleaning, filling and ashpan door
- Correct boiler output selection for a given heated building
- Properly dried fuel

AVERAGE WOOD MOISTURE CONTENT IN %

Drying time	Yard wood stored in bulk		Yard wood stored under a protective roof 3 months after cutting		50 cm long logs, stored under a protective roof 3 months after chopping	50 cm long logs, stored under a protective roof immediately after chopping
	G	K	G	K	K	K
0*	75	78	76	78	78	76
3 months	48	62	48	61	61	40
6 months	37	46	32	45	35	29
9 months	33	38	27	37	28	28
1 year	36	35	26	33	27	27
1.5 years	18	27	18	21	17	16
2 years	16	24	16	17	14	13
2.5 years	15	24	15	18	14	13

*Initial humidity K - round logs G - quarter logs

24. ENERGY EFFICIENCY

I.	II.	III.	IV.	V.	VI.
Supplier's name or trade mark	Supplier's model identifier	Energy efficiency class	Rated heat output in kW	Energy efficiency index	Seasonal space heating energy efficiency in %
OPOP s.r.o.	**H425 EKO-D MAX KOMBI**	**A+**	**25**	**117**	**80**
OPOP s.r.o.	**H435 EKO-D MAX KOMBI**	**A+**	**35**	**117**	**80**
OPOP s.r.o.	**H442 EKO-D MAX KOMBI**	**A+**	**42**	**118**	**77**
OPOP s.r.o.	**H450EKO-D MAX KOMBI**	**A+**	**50**	**118**	**80**

25. IDENTIFICATION MARKS

Model identification mark: **H425 EKO-D MAX KOMBI**					
Condensing boiler:	No	Solid fuel co-generation boiler:	No	Combined boiler:	yes
Fuel adding mode: Manual	Manual: The boiler should be operated with a DHW cylinder of at least x (*) litres / Automatic: It is recommended that the boiler be operated with a DHW cylinder of at least x (**) litres				

Fuel	Preferred fuel (one only):	Other suitable fuel:
Wood logs, moisture content ≤ 25%	yes	no
Wood chips, moisture content 15–35%	no	no
Wood chips, moisture content > 35%	no	no
Pressed wood in the form of pellets or briquettes	no	yes
Sawdust, moisture content ≤ 50%	no	no
Other wood biomass	no	no
Non-wood biomass	no	no
Bituminous coal	no	no
Lignite (including briquettes)	no	no
Coke	no	no
Anthracite	no	no
Fossil fuel briquettes	no	no
Other fossil fuel	no	no
Briquettes from biomass (30–70%) and fossil fuels	no	no
Other mix of biomass and fossil fuels	no	no

Features when using the preferred fuel:	
Seasonal indoor space heating energy efficiency ηs [%]:	**80**
Energy efficiency index (EEI):	**118**
Energy efficiency class:	**A+**

Name	Designation	Value	Unit
Useful heat output			
At rated heat output	Pn(***)	**25,0**	kW
At [30%] rated heat output if applicable	Pp	Not relevant	kW
Solid fuel co-generation boilers: Electrical efficiency			
At rated heat output	ηel,n		%

Name	Designation	Value	Unit
Useful efficiency			
At rated heat output	ηn	**83,6**	%
At [30%] rated heat output if applicable	ηp	Not relevant	%
Auxiliary electricity consumption			
At rated heat output	elmax	**0,052**	kW
At [30%] rated heat output if applicable	elmin	Not relevant	kW
Built-in secondary emission reduction device if applicable		Not relevant	kW
In standby mode	PSB	**0,004**	kW

Contact details	**OPOP s.r.o.** , Zašovská 750, Valašské Meziříčí, 757 01

(*) Tank volume = 45 × Pr × (1 – 2.7/Pr) or 300 litres, whichever is higher; Pr expressed in kW

(**) Tank volume = 20 × Pr; Pr expressed in kW

(***) For preferred fuel, Pn equals Pr

Model identification mark: **H435 EKO-D MAX KOMBI**					
Condensing boiler:	No	Solid fuel co-generation boiler:	No	Combined boiler:	yes
Fuel adding mode: Manual	Manual: The boiler should be operated with a DHW cylinder of at least x (*) litres / Automatic: It is recommended that the boiler be operated with a DHW cylinder of at least x (**) litres				

Fuel	Preferred fuel (one only):	Other suitable fuel:
Wood logs, moisture content ≤ 25%	yes	no
Wood chips, moisture content 15–35%	no	no
Wood chips, moisture content > 35%	no	no
Pressed wood in the form of pellets or briquettes	no	yes
Sawdust, moisture content ≤ 50%	no	no
Other wood biomass	no	no
Non-wood biomass	no	no
Bituminous coal	no	no
Lignite (including briquettes)	no	no
Coke	no	no
Anthracite	no	no
Fossil fuel briquettes	no	no
Other fossil fuel	no	no
Briquettes from biomass (30–70%) and fossil fuels	no	no
Other mix of biomass and fossil fuels	no	no

Features when using the preferred fuel:	
Seasonal indoor space heating energy efficiency ηs [%]:	**77**
Energy efficiency index (EEI):	**114**
Energy efficiency class:	**A+**

Name	Designation	Value	Unit
Useful heat output			
At rated heat output	Pn(***)	**35,0**	kW
At [30%] rated heat output if applicable	Pp	Not relevant	kW
Solid fuel co-generation boilers: Electrical efficiency			
At rated heat output	ηel,n		%

Name	Designation	Value	Unit
Useful efficiency			
At rated heat output	ηn	**80,6**	%
At [30%] rated heat output if applicable	ηp	Not relevant	%
Auxiliary electricity consumption			
At rated heat output	elmax	**0,052**	kW
At [30%] rated heat output if applicable	elmin	Not relevant	kW
Built-in secondary emission reduction device if applicable		Not relevant	kW
In standby mode	PSB	**0,004**	kW

Kontaktní údaje	**OPOP s.r.o**. , Zašovská 750, Valašské Meziříčí, 757 01

(*) Tank volume = 45 × Pr × (1 – 2.7/Pr) or 300 litres, whichever is higher; Pr expressed in kW
(**) Tank volume = 20 × Pr; Pr expressed in kW
(***) Pro preferované palivo se Pn rovná Pr

Model identification mark **H442 EKO-D MAX KOMBI**					
Condensing boiler:	No	Solid fuel co-generation boiler:	No	Combined boiler:	yes
Fuel adding mode: Manual	Manual: The boiler should be operated with a DHW cylinder of at least x (*) litres / Automatic: It is recommended that the boiler be operated with a DHW cylinder of at least x (**) litres				

Fuel	Preferred fuel (one only):	Other suitable fuel:
Wood logs, moisture content ≤ 25%	yes	no
Wood chips, moisture content 15–35%	no	no
Wood chips, moisture content > 35%	no	no

Pressed wood in the form of pellets or briquettes	no	yes
Sawdust, moisture content ≤ 50%	no	no
Other wood biomass	no	no
Non-wood biomass	no	no
Bituminous coal	no	no
Lignite (including briquettes)	no	no
Coke	no	no
Anthracite	no	no
Fossil fuel briquettes	no	no
Other fossil fuel	no	no
Briquettes from biomass (30–70%) and fossil fuels	no	no
Other mix of biomass and fossil fuels	no	no

Features when using the preferred fuel:

Seasonal indoor space heating energy efficiency ηs [%]:	**77**
Energy efficiency index (EEI):	**113**
Energy efficiency class:	**A+**

Name	Designation	Value	Unit
Useful heat output			
At rated heat output	Pn(***)	**42,0**	kW
At [30%] rated heat output if applicable	Pp	Not relevant	kW
Solid fuel co-generation boilers: Electrical efficiency			
At rated heat output	ηel,n		%

Name	Designation	Value	Unit
Useful efficiency			
At rated heat output	ηn	**80,5**	%
At [30%] rated heat output if applicable	ηp	Not relevant	%
Auxiliary electricity consumption			
At rated heat output	elmax	**0,052**	kW
At [30%] rated heat output if applicable	elmin	Not relevant	kW
Built-in secondary emission reduction device if applicable		Not relevant	kW
In standby mode	PSB	**0,04**	kW

Kontaktní údaje	**OPOP s.r.o**. , Zašovská 750, Valašské Meziříčí, 757 01

(*) Tank volume = 45 × Pr × (1 – 2.7/Pr) or 300 litres, whichever is higher; Pr expressed in kW

(**) Tank volume = 20 × Pr; Pr expressed in kW

(***) For preferred fuel, Pn equals Pr

Model identification mark: **H450 EKO-D MAX KOMBI**

Condensing boiler:	No	Solid fuel co-generation boiler:	No	Combined boiler:	yes
Fuel adding mode: Manual	Manual: The boiler should be operated with a DHW cylinder of at least x (*) litres / Automatic: It is recommended that the boiler be operated with a DHW cylinder of at least x (**) litres				

Fuel	Preferred fuel (one only):	Other suitable fuel:
Wood logs, moisture content ≤ 25%	yes	no
Wood chips, moisture content 15–35%	no	no
Wood chips, moisture content > 35%	no	no
Pressed wood in the form of pellets or briquettes	no	yes
Sawdust, moisture content ≤ 50%	no	no
Other wood biomass	no	no
Non-wood biomass	no	no

Bituminous coal	no	no
Lignite (including briquettes)	no	no
Coke	no	no
Anthracite	no	no
Fossil fuel briquettes	no	no
Other fossil fuel	no	no
Briquettes from biomass (30–70%) and fossil fuels	no	no
Other mix of biomass and fossil fuels	no	no

Features when using the preferred fuel:	
Seasonal indoor space heating energy efficiency ηs [%]:	**78**
Energy efficiency index (EEI):	**115**
Energy efficiency class:	**A+**

Name	Designation	Value	Unit
Useful heat output			
At rated heat output	Pn(***)	**55,0**	kW
At [30%] rated heat output if applicable	Pp	Not relevant	kW
Solid fuel co-generation boilers: Electrical efficiency			
At rated heat output	ηel,n		%

Name	Designation	Value	Unit
Useful efficiency			
At rated heat output	ηn	**81,3**	%
At [30%] rated heat output if applicable	ηp	Not relevant	%
Auxiliary electricity consumption			
At rated heat output	elmax	**0,052**	kW
At [30%] rated heat output if applicable	elmin	Not relevant	kW
Built-in secondary emission reduction device if applicable		Not relevant	kW
In standby mode	PSB	**0,004**	kW

Kontaktní údaje	**OPOP s.r.o.** , Zašovská 750, Valašské Meziříčí, 757 01

(*) Tank volume = 45 × Pr × (1 – 2.7/Pr) or 300 litres, whichever is higher; Pr expressed in kW

(**) Tank volume = 20 × Pr; Pr expressed in kW

(***) For preferred fuel, Pn equals Pr

26. REGULATIONS AND STANDARDS

ČSN 06 0310 – Central heating. Design and assembly.

ČSN 06 0830 – Safety devices for central heating and service water heating

ČSN 06 1008 – Fire safety of local appliances and heat sources (heaters up to 50 kW)

ČSN 07 0245 – How water and low-pressure steam boilers. Hot water boilers up to 50 kW.

Technical requirements:

ČSN 07 7401 – Water and steam for thermal energy devices with operating excess pressure up to 8Mpa

ČSN EN 13 501-1+A1 – Classification of construction products and structures.

Part 1: Classification in accordance with the fire reaction tests.

ČSN 73 0831 – Fire safety of constructions. Gathering areas.

ČSN 73 4201 – Chimneys and flues. Design, implementation and connection of fuel appliances.

ČSN 73 4210 – Implementation of chimneys and flues and connection of fuel appliances

ČSN EN 303-5+A1 - Central heating boilers - Part 5: Central heating boilers fired by solid fuels, with manual or automatic delivery, of a nominal heat output not exceeding 500 kW163/2002 Coll. – Government Decree

26/2003 Coll. – Government Decree

185/2001 Coll. – Waste Act

477/2001 Coll. – Packaging Act

34/1996 Coll. – Consumer Protection Act

27. WASTE DISPOSAL

Packaging materials (paper and wood) can be burned in the boiler. PP tape, unburned remains and ash shall be disposed of as communal waste. At the end of the boiler's life, dispose of its body and grates as metal waste. Insulation material shall be taken to an appropriate collection point.

Wooden laths are designed for one-time use and cannot be reused as such. Their removal is governed by Act No 185/2001 Coll., on waste and amending certain other acts, as amended. Used packaging material complies with the requirements for packages specified by Act No 477/2001 Coll., on packages and amending certain other acts, as amended.

28. WARRANTY TERMS AND CONDITIONS

Níže uvedené body je nutné splnit nejenom pro splnění záručních podmínek, ale také pro zajištění správnosti instalace z pohledu platných norem, bezpečnosti a z pohledu zajištění bezproblémového chodu kotle.

The following points must be met not only in order to meet the warranty terms and conditions, but also to ensure correct installation in terms of applicable standards, safety and ensuring the boiler's smooth operation.

1. The OPOP boilers may only be installed by a company with a valid authorisation to carry out such installation and maintenance. An installation project must be prepared according to the valid regulations.
2. The heating system must be filled with water that meets the requirements of ČSN 07 7401 and especially its hardness must not exceed the required parameters. The use of antifreeze mixtures is not recommended by the manufacturer.
3. Connecting the boiler to the system must be done in accordance with applicable regulations and standards.
4. The boiler must be connected to the chimney vent according to ČSN 73 4201:1989.
5. The flue gas path must be checked by a chimney sweep before installing the boiler. Require an inspection report covering the basic parameters of the flue gas path, including the chimney diameter, its length and chimney draft.
6. The flue should not be longer than one metre and should be fitted with a cleaning opening. The flue can only be longer if the chimney draft has been measured and registered not further than 30 cm from the boiler and if it meets the minimum operating draft; see the Technical Parameters chapter.
7. The OPOP boiler must be installed in a separate boiler room, specially adapted for heating. The boiler room must have sufficient space for the boiler's installation and maintenance. There must be sufficient circulation of fresh air for combustion.
8. Never install the boiler in open spaces or balconies, in areas occupied by people such as kitchen, living room, bathroom, bedroom, in areas where explosive and flammable materials are present.
9. Install the boiler on a concrete base made of fire-resistant material or on a surface with a support made of fire-resistant material.
10. A minimum handling space should be provided around the boiler, namely: 60 cm from the rear and from the sides, 100 cm from the front of the boiler and hopper.
11. When installing and operating the boiler, it's necessary to keep a safe distance of 200 mm from flammable materials. Do not place any flammable material at this distance or less from the boiler.
12. It is forbidden to store fuel behind the boiler or next to the boiler within a distance smaller than 800 mm.
13. It is forbidden to store the fuel between two boilers in the boiler room.

14. It is necessary to use only the guaranteed fuel specified in the instructions for a given boiler.
15. The manufacturer is not responsible for the quality of the fuel, in terms of combustion quality, the amount of ash or the frequency of boiler cleaning, because these facts are only influenced by external influences such as fuel quality, dust and moisture in the fuel, chimney draft or the correct setting of the combustion process by the installer, or subsequently after the boiler is handed over by the customer.
16. It is forbidden to use flammable liquids (petrol, alcohol, etc.) for igniting in the boiler.
17. It is forbidden to overheat the boiler in any way during operation.
18. If there is a risk of flammable vapours or gases entering the boiler room or during works in which there is a temporary risk of fire or explosion (gluing of floor coverings, painting with flammable paints, etc.), the boiler must be shut down in time before the work begins.
19. The boiler, including the flue, must be thoroughly cleaned after the end of the heating season. The boiler room must be kept clean and dry.
20. It is forbidden to interfere with the boiler design and wiring.
21. The manufacturer is not responsible for damage caused by the product's improper adjustment or improper operation.
22. Parts subject to wear are not covered by the standard warranty period. These parts are understood as: ashpan rope seal, grenamine and fireclay plate. However, these parts perform their function for a long time if the boiler and its components are operated in accordance with the instructions.
23. The manufacturer is not responsible for the rust formed on the boiler and its components, as this is always and only due to external influences, such as humidity in the room, fuel or due to improper installation without protection of the boiler against low-temperature corrosion.
24. The boiler must be protected against low return water temperature by a valve that prevents cold water from entering the boiler. The minimum acceptable return water temperature is specified by the manufacturer at **65°C.**
25. The manufacturer is not responsible for the condensation of cold air in the flue gas path, as this must be prevented by proper installation of the flue gas path and proper setting of the combustion process in the boiler.
26. The manufacturer is not responsible for the escape of smoke from the boiler into the room if it is caused by low chimney draught, improper installation of the boiler or incorrect setting of the combustion process or mechanical damage to the boiler components.
27. The manufacturer is not responsible for damage to parts caused by handling, transport, incorrect adjustment or improper use or other external fault which is not directly related to the function of individual components of the boiler.
28. The installation of the boiler, boiler attachments and its correct setting and start is always the installation company's responsibility who carried out the sale of the boiler to the end customer.
29. **H4EKO-D MAX KOMBI boilers must be installed only with an accumulation tank.**

29. WARRANTY CARD

For hot water boilers

H425 EKO-D MAX KOMBI, H435 EKO-D MAX KOMBI, H442 EKO-D MAX KOMBI, H450 EKO-D MAX KOMBI

Manufacturer: OPOP s.r.o., Valašské Meziříčí

Tel.: 571 675 589

Dispatch date from the plant:_____

The user is obliged to have a professional service company to put the equipment into operation, to conduct regular maintenance and repairs. This warranty card includes quality and completeness certificate. This warranty card shall contain a certificate of quality and completeness. The manufacturer confirms that the product has been inspected and that its design complies with the technical conditions and ČSN EN 303-5+A1:2023. We provide a quality, design and workmanship warranty for the boiler for the duration of 24 months from the date of its sale to the given consumer, but no longer than 30 months from the moment of releasing the product from production facility; under the warranty conditions, we will correct all defects demonstrably caused by faulty material, faulty design or faulty production as soon as possible and at our own expense, provided that:

- The boiler is in normal technical conditions pursuant to the Instructions and is operated pursuant to the Instructions.
- The boiler is connected to a chimney flue in accordance with ČSN 73 4201:1989
- The boiler has not been mechanically damaged by force (no unauthorised intervention has been conducted with the exception of interventions permitted in the Instructions)
- Chimney draft according to ČSN EN 303-5+A1:2023 corresponds to the value stated in this standard (or the values specified in these Instructions according to the type of boiler)
- The customer, when exercising their warranty claim, submits this duly completed warranty card
- All manufacturer's instructions for using pressurised expansion containers are met
- If the consumer does not sell the product within the above stated warranty period, the consumer shall bear all responsibility for any product defect
- Expenses related to the processing of a warranty claim shall be covered by the consumer
- The filling door insulation and the fireclay place are considered consumables that cannot be covered by this warranty in case of damage

When reporting a defect, it's always necessary to present this warranty card, give the exact address and indicate the circumstances under which the defect occurred. The method and place of repair will be decided in our company.

TK date_____ Date of sale_____

For a steel weldment – we guarantee its permanent tightness as standard for two years from the date of release from the production plant. The above-standard 60-month guarantee is guaranteed if the heating system has not used a pressurised expansion vessel, the required temperature range of the heating water is ensured and the leak is due to poor quality material or welding work. To accept the warranty claim of a leaking steel weldment, it must be clearly demonstrated that the water in the boiler has not formed due to condensation of cold air, but due to the leakage of the weldment. The warranty claim cannot be accepted in the event of faults caused by the operator or when the boiler is connected to a heating system that does not meet the basic operating conditions of the boiler. If the warranty claim is accepted within the extended warranty period, we will hand over the replacement weldment by LTL transport or personal collection of the user. If the defective weldment is not returned to the production plant within 30 days from the date of sending or handing over the replacement weldment, the user will be charged the full amount of the weldment, including the cost of transporting the new weldment.

The replaced weldment is covered by warranty of 24 months from the date of takeover within the extended warranty period, i.e., 60 months. The boiler weldment is sprayed with black, water-dilutable paint, which may result in peeling of this paint. The peeling paint does not affect the function of the boiler. This colour is burned after the first heating.

Procedure for making a complaint:

1. The end user shall submit to the seller a confirmed warranty certificate, with information on the date of installation and an invoice or delivery note from the purchase of the boiler.

2. Report the exact address, or telephone number, and state the circumstances under which the incident occurred.

3. The manufacturer's service technician shall notify the method of handling the complaint:

a) by sending the complained-about part for replacement

b) if it is impossible to proceed according to point a), the manufacturer has the right to determine the method of performing the repair in cooperation with the installation company or contractual service partner.

c) the user is obliged to enable the repair according to point b)

d) if the user does not allow access to perform the repair, the manufacturer considers this complaint to be terminated

e) in the event of irreparability of the defect, the user has the right to replace the defective part

f) in the event of an unjustified complaint, i.e. failure to confirm the defect or leak of the weld by the service worker, the claimant will be charged for the costs associated with the inspection and travel to the user

g) in the event of sending a heavily contaminated or mechanically damaged boiler to the manufacturing company, the manufacturing company will clean it, the costs associated with cleaning the boiler will be charged to the user

30. DECLARATION OF CONFORMITY

DRAFT ORIGINAL EC AND EU DECLARATION OF CONFORMITY

according to Directive 2006/42/EC of the European Parliament and of the Council (Government Regulation No. 176/2008 Coll.)
according to Directive 2014/35/EC of the European Parliament and of the Council (Government Regulation No. 118/2016 Coll.)
according to Directive 2014/30/EC of the European Parliament and of the Council (Government Regulation No. 117/2016 Coll.)

Manufacturer: OPOP s.r.o.
Zašovská 750, 757 01 Valašské Meziříčí, Czech Republic
IČO: 14091704, DIČ: CZ14091704

Equipment: HOT WATER BOILER WITH AUTOMATIC FUEL SUPPLY FOR WOOD PELLETS OR MANUAL SUPPLY OF WOOD

Type designation:H425 EKO D-MAX KOMBI, H435 EKO D-MAX KOMBI, H442 EKO D-MAX KOMBI,
H450 EKO D-MAX KOMBI

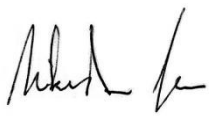
Equipment description: The steel hot water boiler of the H4xx EKO-D MAX KOMBI series is designed for multi-storey and central heating of family houses or suitable production facilities by its design and surface treatment

Meets the requirements of:
Directive 2006/42/EC (Government Decree No. 176/2008 Coll.)
Directive 2014/35/EU (Government Regulation No. 118/2016 Coll.)
Directive 2014/30/EU (Government Regulation No. 117/2016 Coll.)
Commission Regulation (EU) No. 2015/1189, Annex II, Article 1, Commission Regulation (EU) No. 2015/1187
The manufacturer also declares that it has taken measures to ensure the compliance of all products placed on the market with the technical documentation, with the essential requirements for the product and with the approved type.
List of harmonized standards used in the conformity assessment:
ČSN EN 15036-1:2007, ČSN EN 15456:2008, ČSN EN 303-5+A1:2023, ČSN EN 60335-1 ed. 3:2012, ČSN EN 60335-2-102 ed. 2:2016, ČSN EN 61000-3-3 ed. 3:2014, ČSN EN 62233:2008, ČSN EN IEC 61000-3-2 ed. 5:2019, ČSN EN IEC 61000-6-2 ed. 4:2019, ČSN EN IEC 61000-6-3 ed. 3:2021, ČSN EN ISO 11202:2010, ČSN EN ISO 13857:2022, ČSN EN ISO 3746:2011, ČSN EN ISO 14120:2017, ČSN ISO 1819:1993, ČSN 06 1008:1997, Act No. 34/1996 Coll. § 9 to 11, 13, Act No. 185/2001 Coll. on waste § 10, Act No. 477/2001 Coll. on packaging § 6.

List of issued certificates AND CERTIFICATES:(Strojírenský zkušební ústav, s.p., Hudcova 56b, 621 00 Brno, IČO: 00001490)
B-00933-24, O-B-00006-24, EMC-B-01039-24, LVD-B-01038-24, MD-B-01138-24
This declaration of conformity is the original EC and EU declaration of conformity.
Last two digits of the year in which the CE marking was affixed to the product: 24

In Valašské Meziříčí on 26.4.2024

Mikuda Jan — ing. Michal Dostál – executive director



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Person authorized to draw up the declaration of conformity

.....

Identification of the person authorized to sign on behalf of the manufacturer

OPOP, s r. o.

Zašovská 750

757 01 Valašské Meziříčí

Bank:

UNI CREDIT BANK, č. účtu: 1008228004/2700

IČO: 14091704, DIČ: CZ14091704

Telefon: sales department: 571 675 589, sekretariat: 571 611 250, production: 571 675 405

Purchase department: 571 675 114, financial department: 571 675 472

Fax. 571 611 225

10/2024