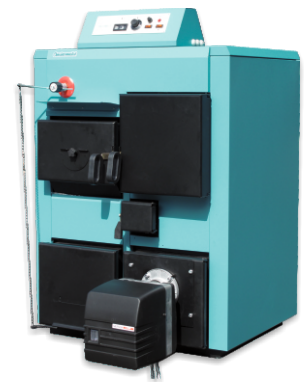


TECHNICAL INSTRUCTIONS



for installation, use and maintenance
of hot water boiler
and installation of additional equipment



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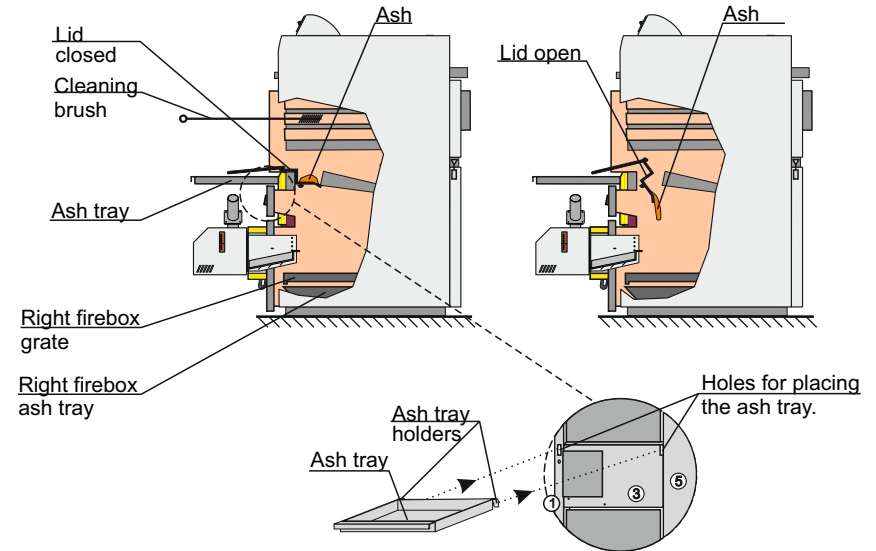
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Technical data

TYPE	CentroPlus 25		
	Wood	Pellets	Oil
Nominal heat output (kW)	25	25	25
Heat output range (kW)	15-25	7,5-25	7,4-25
Boiler class	1	3	-
Required chimney underpressure (Pa)	17		
Water amount in boiler (lit.)	175		
Exhaust gas temperature at nominal heat output (°C)	205	170	115
Exhaust gas temperature at minimum heat output (°C)	160	95	95
Exhaust mass flow at nominal heat output (kg/s)	0,029	0,015	0,012
Exhaust mass flow at minimum heat output (kg/s)	0,030	0,005	0,007
Standby heat losses (kW)	0,631		
Boiler resistance on water side at nominal output (mbar)	10	10	10
Combustion period at nominal output (h)	2	34	-
Fuel type	solid fuel	pellets	oil
Maximum heat input (kW)	26,9		
Fuel moisture content (%)	12-20	max. 12	-
Fuel size (mm)	max. 500x150x150	φ 6 x max. 50	-
Firebox volume /tank volume (l)	79	330	-
Wood feeding opening AxB (mm)	320x220	-	-
Combustion chamber dimensions (mm)	561x600x420	571x320x378	571x320x378
Combustion chamber volume (l)	141	69	69
Combustion chamber type	underpressure	overpressure	overpressure
Required minimum accumulation next to boiler (lit./kW)	by EN 303-5 point 4.2.5		
Electrical power input (W)	250		
Temp. and press. of water from water supply line into heat exchanger (°/bar)	10-15 °C, 2 bar		
Supply voltage (V~)	230		
Frequency (Hz)	50		
Current type	~		
Boiler dimensions with casing	Length (A)	(mm)	1070
	Width (B)	(mm)	915
	Height (C)	(mm)	1260
Boiler body mass (kg)	419		
Total mass - (boiler with casing and accessories) (kg)	464		
Max. operating overpressure (bar)	2,5		
Max. operating temperature (°C)	90		
Uptake tube – external diameter (mm)	150		
Boiler connections	Flow and return pipe (male thread) (R)	5/4"	
	Charge/discharge (female thread) (R)	1/2"	
	Heat exchanger connector (male thread) (R)	3/4"	
	Connector of exchanger sensor (female thread) (R)	1/2"	

Total system dimensions		Solid	Solid / oil	Solid / pellets
		25 kW	25 kW	25 kW
Total length (D)	(mm)	1070	1350	1350
Total width (E)	(mm)	915	915	1545
Total height (F)	(mm)	1260	-	1545
Height incl. control unit (G)	(mm)	-	1335	1375

Figure 9. - Right firebox



- When cleaning uptake tubes of the right firebox, an ash tray has to be placed below the upper right door.
- Ash tray holders have to be put into holes on side ① and ③.

Ash tray in the lower boiler part should be cleaned as required. Before firing, upper lid should be returned to its position, close the grate on lower door and check supply of primary air on lower door.

Right firebox and equipment for pellet firing:

- Care should be taken of:
- Ash amount in ash trash and to empty it as required;
 - Deposits in boiler firebox and to clean it as required;
 - Deposit at burner grate and to clean it as required;
 - Ash amount in the ash box on the boiler back side and to empty it as required (page 6, ZP)

Cleaning:

First, main switch at boiler control unit has to be turned off.

The right firebox can be cleaned through upper and lower boiler door (page 6).

Ash box should be placed below upper boiler door into prepared holes (Figure 9). Open upper boiler door, take turbulators out and clean uptake tube (flue gas pipe) using supplied brush. After that, lift the right firebox lid (Figure 9) so that ash and deposits fall on the right firebox grate. Open lower door (with burner on it) and clean the right firebox grate, empty ash tray and clean the burner grate.

It is recommended to clean the burner and boiler firebox after one pellet tank is consumed (approx. 200 kg).

Intervals between cleaning can be increase or decrease in relation to the recommended ones, as needed, and it depends on quality of used pellets (see 8.2.1) and turning on/off frequency of the burner. For maintenance and cleaning of equipment for pellet firing see Technical instructions for use and maintenance of Cm Pelet-set for boilers CentroPlus and CentroPlus-B (fired with solid fuel and wooden pellets) and Technical instructions for pellet tank and screw feeder.

10.3. SOLID FUEL / EL FUEL OIL FIRED BOILER

Checking of all control and safety elements, and oil burner with pertaining equipment by a certified serviceman / fitter is recommended once per year.

Solid fuel burner:

First, main switch at boiler control unit has to be turned off. Spaces below grate, firebox and uptake tubes have to be cleaned every day. Uptake tubes are cleaned through upper door, but it is necessary first to remove the lid located between the middle and upper register (upper lid). Opening for cleaning of uptake chamber (see page 5) is located on the back boiler side through which, after lid is removed, deposits generated during boiler operation and cleaning can be removed.

Ash tray in the lower boiler part should be cleaned as required. Before firing, upper lid should be returned to its position, close the grate on lower door and check supply of primary air on lower door.

The right firebox and set for firing with EL fuel oil:

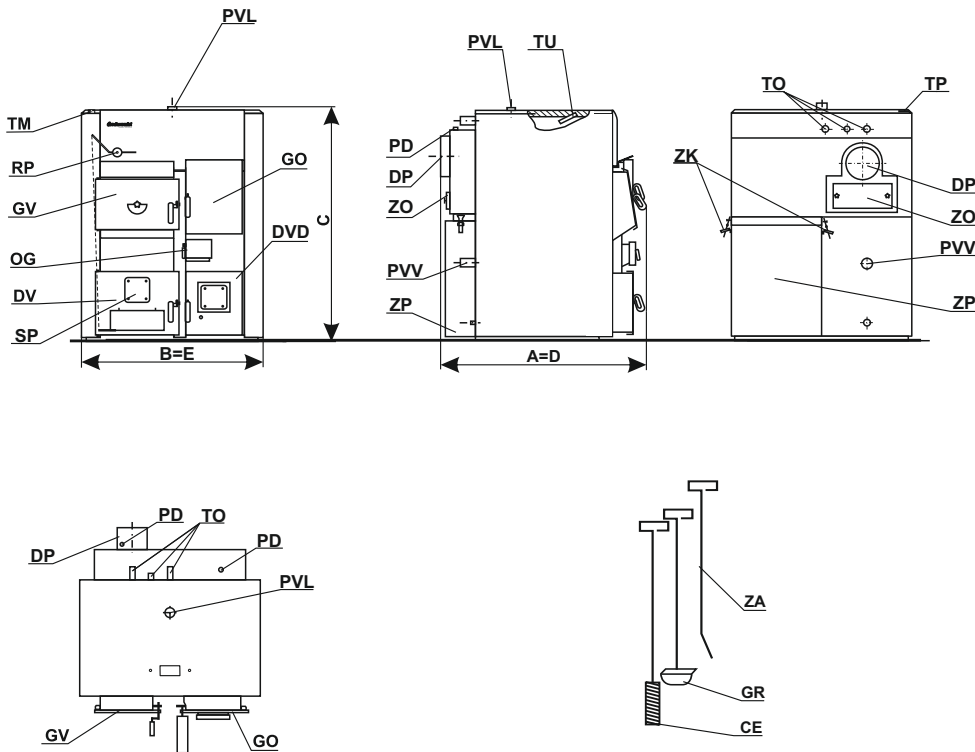
First, main switch at boiler control unit has to be turned off. The right boiler firebox has to be thoroughly cleaned at least once per year through upper and lower boiler door. An ash tray has to be placed into prepared holes (Figure 9) below the boiler door. Open the upper boiler door, remove turbulators and clean uptake tubes by supplied brush. Then lift the right firebox lid (Figure 9) so that ash and deposits fall to the bottom of the right firebox. Open upper boiler door and clean the bottom of the right fire box. The back ash tray located on the back boiler side, (page 5, ZP) has to be emptied as well.

Technical data

TYPE	CentroPlus 35		
	Wood	Pellets	Oil
Nominal heat output (kW)	35	35	35
Heat output control range (kW)	25-35	10,5-35	10-35
Boiler class	1	3	-
Required chimney underpressure (Pa)	19		
Water amount in boiler (lit.)	190		
Exhaust gas temperature at nominal heat output (°C)	240	160	135
Exhaust gas temperature at minimum heat output (°C)	195	85	105
Exhaust mass flow at nominal heat output (kg/s)	0,03	0,018	0,017
Exhaust mass flow at minimum heat output (kg/s)	0,032	0,007	0,01
Standby heat losses (kW)			
Boiler resistance on water side at nominal output (mbar)	15	15	15
Combustion period at nominal output (h)	2	24	-
Fuel type	solid fuel	pellets	oil
Maximum heat input (kW)			
Fuel moisture content (%)	12-20	max. 12	-
Fuel size (mm)	max. 500x150x150	φ 6 x max. 50	-
Firebox volume / tank volume (l)	104	330	-
Wood feeding opening AxB (mm)	420x220	-	-
Combustion chamber dimensions (mm)	571x600x420	571x320x380	571x320x380
Combustion chamber volume (l)	143	70	70
Combustion chamber type	underpressure	overpressure	overpressure
Required minimum accumulation next to boiler (lit./kW)	by EN 303-5 point 4.2.5		
Electrical power input (W)	250		
Temp. and press. of water from water supply line into heat exchanger (°/bar)	10-15 °C, 2 bar		
Supply voltage (V~)	230		
Frequency (Hz)	50		
Current type	~		
Boiler dimensions with casing	Lenght (A) (mm)	1070	
	Width (B) (mm)	1015	
	Height (C) (mm)	1260	
Boiler body mass (kg)	422		
Total mass - (boiler with casing and accessories) (kg)	476		
Max. operating overpressure (bar)	2,5		
Max. operating temperature (°C)	90		
Uptake tube - external diameter (mm)	160		
Boiler connections	Flow and return pipe (male thread) (R)	5/4"	
	Charge/discharge (female thread) (R)	1/2"	
	Heat exchanger connector (male thread) (R)	3/4"	
	Connector of exchanger sensor (female thread) (R)	1/2"	

Total system dimensions	Solid	Solid / oil	Solid / pellets
	35 kW	35 kW	35 kW
Total length (D) (mm)	1070	1350	1350
Total width (E) (mm)	1015	1015	1645
Total height (F) (mm)	1260	-	1545
Height incl. control unit (G) (mm)	-	1335	1375

Solid fuel



LEGEND: DESCRIPTION OF BOILER SYMBOLS FOR SOLID FUEL, SOLID FUEL/WOODEN PELLETS, SOLID FUEL/ EL FUEL OIL

- | | |
|--------------------------------|--|
| CE - Cleaning brush | OG - Inspection opening |
| DP - Chimney connection | PC - Plastic flexible pipe |
| DV - Left firebox lower door | PD - Connection for flue gas measurement |
| DVD - Right firebox lower door | PP - Pellet burner CPPL |
| GO - Right firebox upper door | PR - pellet control unit CPREG |
| GR - Scraper | PS - pellet tank CPSP |
| GV - Left firebox upper door | PT - pellet feeder CPPT |
| MS - Micro switch | |

Draught controller (such as CALEFFI 529 500, ESBE C 20/25) has to be set for solid fuel firing so that the boiler temperature, at normal burning, does not exceed 85 - 90°C, and does not fall below 65°C. Fuel with max. 25 % moisture can be used. Circulation pump switch must be turned on (Figure 5, pos.3) during boiler operation. Check if globe valves toward heating bodies are open. If you are sure that energy from boiler will be consumed, made firing up:

- Put small pieces of wood (chips), crumpled paper, then again pieces of wood (chips), close upper boiler door and ignite chips and paper through lower door.
- After chips blaze up, close lower boiler door and put, through upper boiler door, some relatively dry smaller pieces of wood, close upper boiler door, wait until logs fully blaze up, and fill the firebox with logs, and make fine tuning of draught controller and monitor its operation during the whole period of combustion of one firebox charge.
- Check whether heating system pump turns on/off at approx. 68°C.

For adding fuel into firebox, the door has to be firstly kept slightly open (about 1 cm) 3 to 5 seconds, and then fully open it.

At oil firing check whether movable parts of the right firebox are placed to foreseen positions (the right firebox lid and turbulators in flue gases tubes) - Figure 7. Remove the grate and ash tray from the right firebox. Check whether all boiler openings are closed tightly. For proper boiler operation it is necessary to set the burner and control unit EKO-CK/CKB correctly, depending on the boiler size, required output and temperature.

10.0. BOILER MAINTENANCE AND CLEANING

Ash remaining in boiler after solid fuel firing should be disposed into metal containers with a cover. Protective gloves must be used (see Figure 8).

10.1. SOLID FUEL FIRED BOILER (EQUIPMENT FOR WOODEN PELLETS AND OIL IS NOT BUILT IN YET)

Spaces under the grate, firebox and uptake tubes have to be clean on daily basis. Uptake (flue gas) tubes are cleaned through upper door, but it is necessary first to remove a lid located between the middle and upper register (upper lid). Opening for uptake chamber cleaning (see page 4) is located on the back boiler side through which, after lid is taken out, deposits generated during boiler operation and cleaning can be removed. Ash tray in the lower boiler part should be cleaned as required. Before firing, return upper lid to its position, close the grate on lower door and check supply of primary air at lower door. Checking of all control and safety elements once per year by authorised serviceman/fitter is recommended.

10.2. SOLID FUEL / WOODEN PELLET FIRED BOILER

Checking of all control and safety elements once per year by authorised serviceman/fitter is recommended.

Firebox for solid fuel firing:

First, main switch at boiler control unit has to be turned off. Spaces under the grate, firebox and uptake tubes have to be clean on daily basis. Uptake tubes are cleaned through upper door, but it is necessary first to remove the lid located between the middle and upper register (upper lid). Opening for cleaning of uptake chamber (see page 6) is located on the back boiler side through which, after lid is removed, deposits generated during boiler operation and cleaning can be removed.

9.2. BOILER FIRED WITH SOLID FUEL / WOODEN PELLETS

Check whether boiler control unit CPREG is connected to power supply and whether heating and sanitary water pumps are connected through boiler control unit CPREG. Also check whether the boiler and equipment are built in and connected in accordance with these Technical instructions including all points from 1.0 to 8.0. Check whether chimney meet requirements under point 4 therein. Check whether boiler room meets all requirements therein.

At firing with solid fuel check if fuel fulfils all requirements therein (max. 25% moisture). Check whether movable parts of the left firebox are placed to foreseen positions (lid - door protection, lid - registers, lower door grate and ash tray) - Figure 6. Draught controller (such as CALEFFI 529 500, ESBE C 20/25) has to be set for solid wood firing so that the boiler temperature, at normal burning, does not exceed 85 - 90°C, and does not fall below 65°C. During firing of solid fuel, boiler control unit CPREG must be turned on (main switch in position 1). Check if globe valves toward heating bodies are open. If you are sure that energy from boiler will be consumed, made firing up:

- Put small pieces of wood, crumpled paper, then again pieces of wood (chips), close upper boiler door and ignite chips and paper through the lower door.
- After chips blaze up, close lower boiler door and put, through upper boiler door, some smaller pieces of wood, close upper boiler door, wait until logs fully blaze up, and fill the firebox with logs, and make fine tuning of draught controller and monitor its operation during the whole period of combustion of one firebox charge.
- Check whether heating system pump turn on/off at approx. 68°C.
- Train user how to use boiler.

For adding fuel into firebox, the door has to be firstly kept slightly open (about 1 cm) 3 to 5 seconds, and then fully open it.

At firing with pellets, it is necessary to check whether movable parts of the right fire box are placed to foreseen positions (right firebox lid, burner grate, right firebox grate, right firebox ash tray, turbulators in flue gas tubes and back ash tray) - Figure 7. Check whether all parts of pellet firing set are properly assembled and installed. Check whether boiler control unit CPREG is connected to power supply and whether all openings at boiler are closed tightly. For proper boiler operation to select pellets having properties given in point 8.2.1. For detailed description see Technical instructions for start up and setting of Cm Pelet set for boiler CentroPlus and CentroPlus-B (fired with solid fuel and wooden).

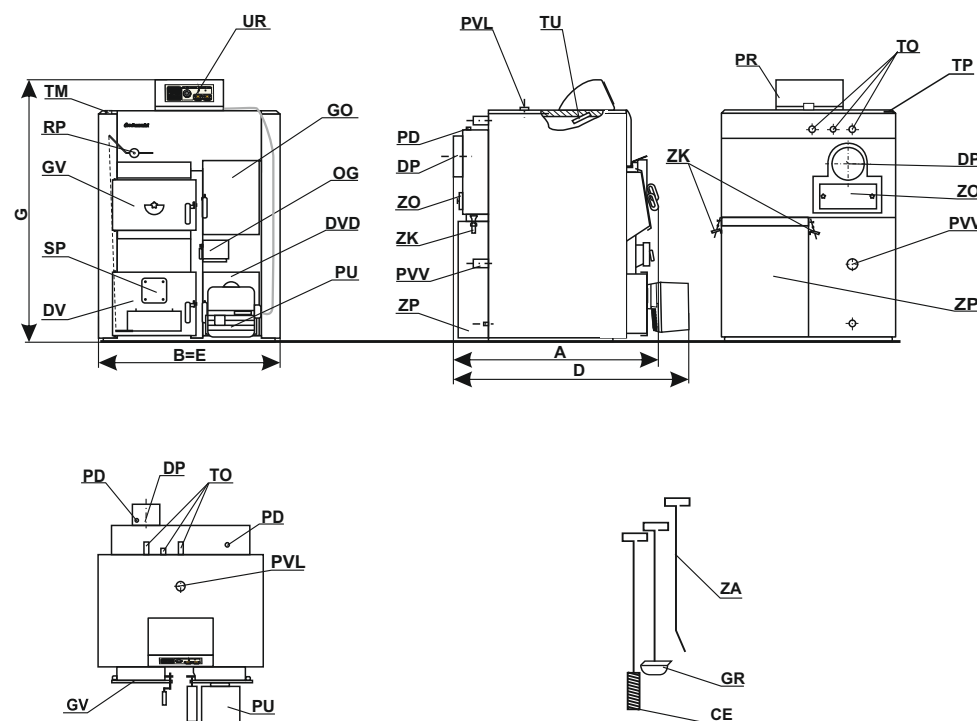
9.3. BOILER FIRED WITH SOLID FUEL/ EL FUEL OIL

Check if boiler control unit EKO-CK/CKB is connected to power supply and whether heating pump is connected through boiler control unit EKO-CK/CKB and pump thermostat.

Check whether boiler and equipment are installed and connected according to these technical instructions from point 1.0 to 8. Check whether chimney meets requirements set in point 4 herein. Check whether boiler room meets all requirements set in instructions.

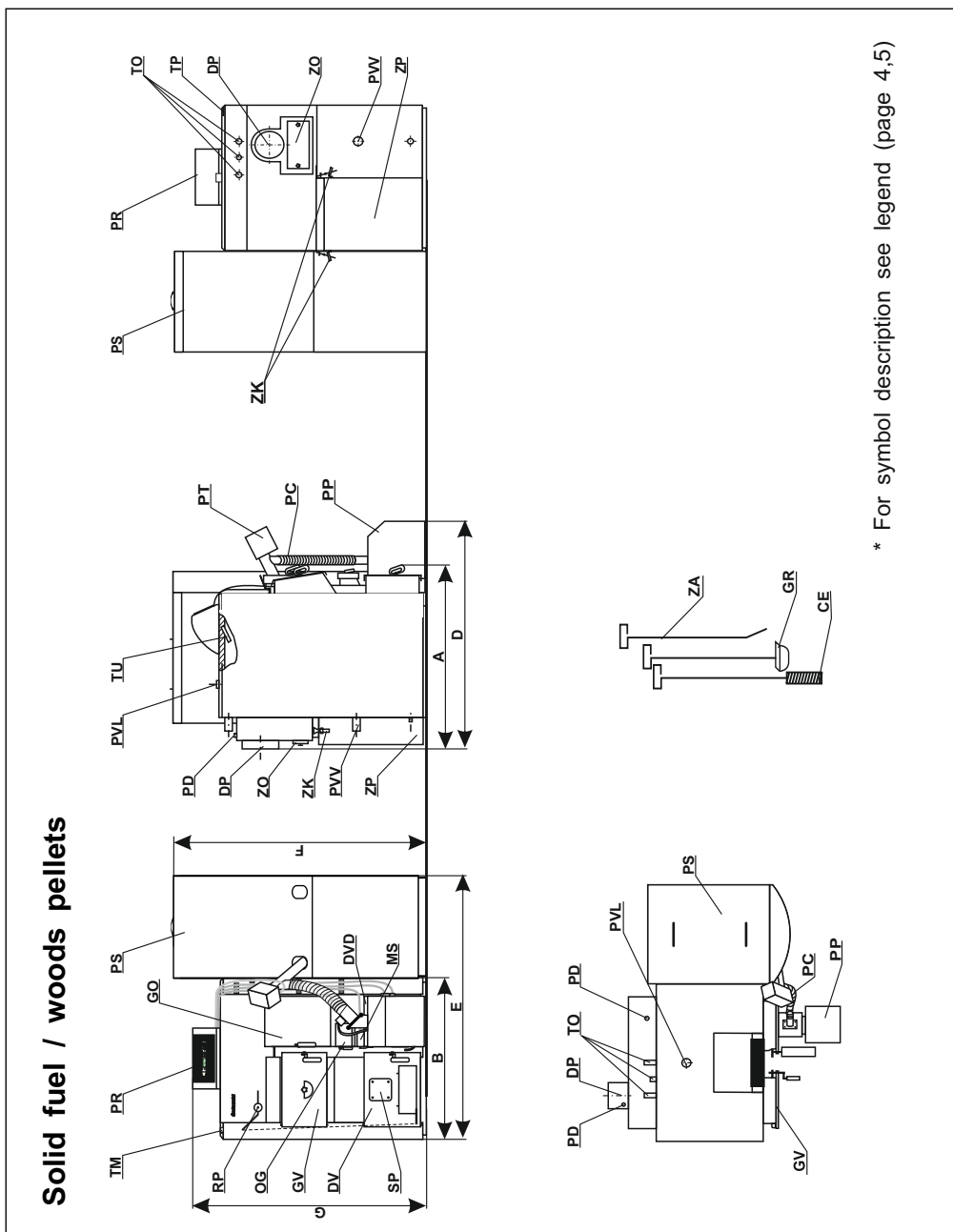
At firing with solid wood it has to be checked whether fuel meet all requirements set in instructions. Check whether movable parts of the left fire box are placed to foreseen positions (lid - door protection, lid - registers, lower door grate and ash tray) (Figure 6).

Solid fuel / Oil



PU - oil burner
 PVL - inlet line
 PVV - outlet line
 RP - draught controller (such as CALEFFI 529 500 or ESBE C 20/25)
 SP - blind plate
 TM - thermometer
 TO - thermal protection connectors
 TP - Socket of the pump thermostat

TU - sensor sleeve
 UR - oil-control unit EKO-CK/CKB
 ZA - poker
 ZK - back ash tray holder
 ZO - cleaning opening
 ZP - back ash box



Solid fuel / woods pellets

- After chips blaze up, close lower boiler door and put, through upper boiler door, some relatively dry smaller logs, close upper boiler door, wait until logs fully blaze up, and fill the firebox with logs, and make fine tuning of draught controller and monitor its operation during the whole period of combustion of one firebox charge.
- Check whether heating system pump turn on/off at approx. 68 °C.
- Train user how to use boiler.

For adding fuel into firebox, the door has to be firstly kept slightly open (about 1 cm) 3 to 5 seconds, and then full open it.

At oil firing check whether movable parts of the right firebox are placed to foreseen positions (the right firebox lid and turbulators in flue gases tubes), Figure 7. Remove the grate and ash tray from the right firebox. Check whether all boiler openings are closed tightly. Start-up of oil burner must be done by a certified serviceman.

9.0 BOILER USE

Boiler must not be used in flammable and explosive environment. It must not be used by children or disabled persons (either physically or mentally), as well as by person without knowledge or experience, unless they are under control or trained by a person responsible for their safety. Children must be supervised in the vicinity of the product. Protective gloves must be used (Figure 8).

9.1 SOLID FUEL FIRING (EQUIPMENT FOR WOODEN PELLETS OR OIL HAS NOT BEEN BUILT IN YET)

At firing with solid fuel it is necessary to check whether movable parts of the left firebox are placed to foreseen positions (lid - door protection, lid - registers, lower door grate and ash tray) - Figure 6. Draught controller (such as CALEFFI 529 500, ESBE C 20/25) has to be set for solid wood firing so that the boiler temperature, at normal burning, does not exceed 85 - 90°C, and does not fall below 65°C. Fuel with max. 25% moisture content may be used.

Check if globe valves toward heating bodies are open. If you are sure that energy from boiler will be consumed, made firing up for one filling of the firebox:

- Put small pieces of wood (chips), crumpled paper, then again chips, close upper boiler door and ignite chips and paper through lower door.
- After chips blaze up, close lower boiler door and put, through upper boiler door, some relatively dry smaller pieces of wood, close upper boiler door, wait until wood pieces fully blaze up, and make fine tuning of draught controller and monitor its operation during the whole period of combustion of one firebox charge.
- Check whether heating system pump turn on/off at approx. 68°C.

For adding fuel into firebox, the door has to be firstly kept slightly open (about 1 cm) 3 to 5 seconds, and then fully open it.

Start up

- Check whether heating system pump turn on/off at approx. 68 °C.
- Train user how to use boiler.

For adding fuel into firebox, the door has to be firstly kept slightly open (about 1 cm) 3 to 5 seconds, and then full open it.

At firing with pellets, it is necessary to check whether movable parts of the right fire box are placed to foreseen positions (right firebox lid, grate of burner, right firebox grate, ash tray of the right firebox, turbulators in flue gas tubes and back ash tray) - Figure 7.

Check whether all parts of pellet firing set are properly assembled and installed. Check whether boiler control unit CPREG is connected to power supply and whether all openings at boiler are closed tightly. For proper boiler operation it is necessary to set correctly control unit CPREG according to the boiler size and required output and to select pellets having properties given in point 8.2.1. Detailed description is given in Technical instructions for start up and setting of Cm Pelet set for boilers CentroPlus and CentroPlus-B (fired with solid fuel and wooden pellets) and Technical instruction for pellet tank and screw feeder supplied with equipment for firing of wooden pellets.

8.2.1. PROPERTIES OF WOODEN PELLETS

Wooden pellets are used as fuel in boilers with built-in pellet burner CPPL.

Wooden pellets are bio-fuel made of wooden wastes. Pellets can be packed in different packaging: in bags (15 kg or 1000 kg), or as bulk in large (underground) tanks (4 - 15 m³) or in basement spaces. Recommended properties of pellets for firing in CentroPlus boilers are the following:

- heating value ≥ 5 kWh/kg (18 MJ/kg)
- diameter = 6 mm
- max. moisture content = 12 %
- max. dust content = 1,5 %.

8.3. BOILER FIRED WITH SOLID FUEL/ EL FUEL OIL

Check if boiler control unit EKO-CK/CKB is connected to power supply and whether heating pump is connected through boiler control unit EKO-CK/CKB and pump thermostat (Scheme 5). Check whether boiler and equipment are installed and connected in accordance with these technical instructions from point 1.0 to 8.0. Check whether chimney meets requirements set in point 4 herein.

At firing with solid fuel it is necessary to check whether boiler room meets all requirements herein. Check whether fuel meets all requirements set herein (max. 25 % moisture). Check whether movable parts of the left firebox are placed to foreseen positions (lid – door protection, lid - registers, lower door grate and ash tray) – Figure 6. Draught controller (such as CALEFFI 529 500, ESBE C 20/25) has to be set for solid wood firing so that the boiler temperature, at normal burning, does not exceed 85 - 90°C, and does not fall below 65°C. Circulation pump switch must be turned on (Figure 5, pos.3) during boiler operation. Check if globe valves toward heating bodies are open.

If you are sure that energy from boiler will be consumed, made firing up for one filling of the firebox:

- Put small pieces of wood (chips), crumpled paper, then again pieces of wood (chips). Close upper boiler door and ignite chips and paper through lower door.

General, boiler description, boiler delivery, required additional equipment

1.0. GENERAL

Hot water boiler **CentroPlus** is of modern design, made of proofed high-quality materials, welded by state-of-the art technology and meets all requirements for connection to central heating system.

1.1. BOILER DESCRIPTION

Steel hot water boiler **CentroPlus** involves two separate combustion chambers inside the common boiler's water chamber. The left combustion chamber, intended for solid fuel firing, has large heating area and small resistance, and large door enable simple feeding of big-size fuel. The right combustion chamber, intended for wooden pellet or liquid fuel firing, is characterised with 3-passes flue gas system with turbulator and large heating area which ensures high boiler utilisation rate, and large water volume in boiler enables longer burner work and reduces number of burner turning on and extends burner's life time. Boiler cleaning is very simply and can be done from the front and back side. Depending on built-in additional equipment, there are three modes of boiler utilisation:

- **solid fuel firing**
- **solid fuel and wooden pellet firing**,
- **solid fuel and EL fuel oil firing** .

Boiler is supplied without the above mentioned additional equipment which has to be ordered additionally, according to preferences. Additional equipment is supplied in a separate packing, and it is installed onto boiler at boiler room after boiler is installed (connected) to central heating installation.

1.2. DELIVERY OF CentroPlus BOILER

For easier transport and positioning into boiler room, boiler CentroPlus is not supplied with built-in thermal insulation and casing but separately as follows:

- **the boiler body with boiler door is delivered on a wooden pallet (with lid of the left firebox door, lid of the right firebox register, ash trays, left and right firebox grates and turbulators);**
- **in board box with boiler casing, thermal insulation, thermometer, draught controller (such as CALEFFI 529 500 or ESBE C 20/25), back ash box, cleaning accessories (accessories holder, brush, scraper and poker), protective box for extension for pellet burner and set of screws and snappers.**

1.3. OBLIGATORY ADDITIONAL EQUIPMENT OF BOILER CentroPlus INSTALLED TO CLOSED CENTRAL HEATING SYSTEM

- **Thermal shut off valve (such as CALEFFI 543 513)-1 piece**

1.4. ADDITIONAL EQUIPMENT of Boiler CentroPlus

Depending on preferred boiler utilisation mode, appropriate additional equipment has to be built in:

1) Additional equipment for solid fuel / wooden pellet firing:

- pellet burner CPPL-35, digital boiler control unit CPREG for pellet burner CPPL-35;
- pellet tank CPSP;
- pellet feeder CPPT 14-35.

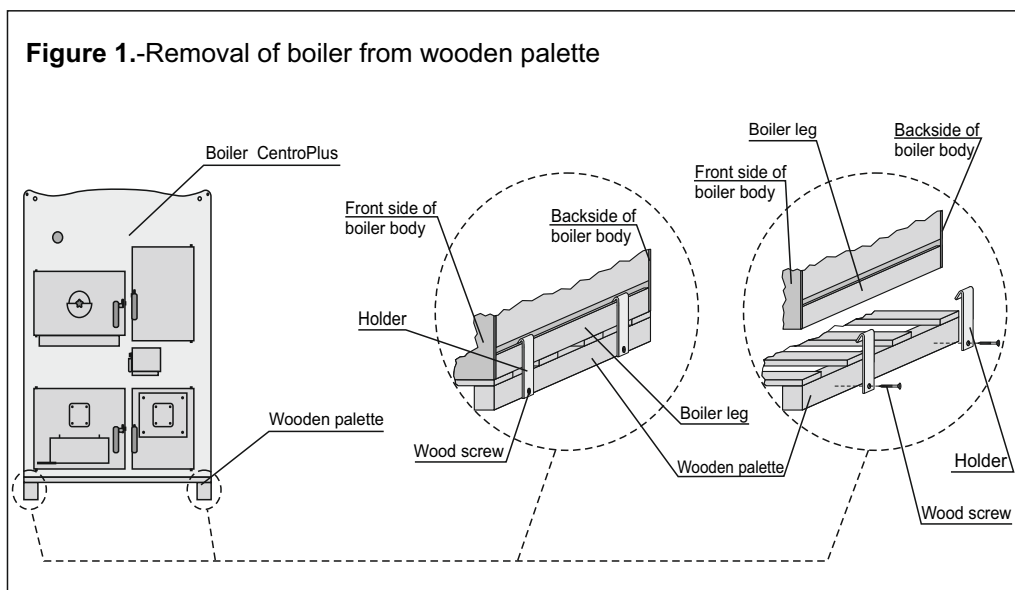
2) Additional equipment solid fuel / EL fuel oil firing:

- boiler control EKO-CK/CKB for oil burner;
- oil burner with appertaining equipment.

2.0. BOILER / ADDITIONAL EQUIPMENT POSITIONING AND ASSEMBLY

Boiler body is delivered on a wooden pallet to which it is fixed with four holders. Before placing boiler body onto its location in the boiler room, it should be removed from palette (Figure 1). Boiler positioning and assembly and building in of additional equipment must be performed by a qualified person. We recommend that boiler is placed on a concrete base having height of 50 to 100 mm above the floor. Boiler room must be frost-proof and well ventilated. Boiler has to be positioned so that it can be properly connected to the chimney (see point 4.0) and simultaneously, enabling tending of boiler and additional equipment, control during operation, and cleaning and maintenance (see Figure 4a). Boiler casing should be assembled according to instructions (Figure 2).

Figure 1.-Removal of boiler from wooden palette



8.1. SOLID FUEL FIRING (EQUIPMENT FOR WOODEN PELLETS OR OIL HAS NOT BEEN BUILT IN YET)

At firing with solid fuel it is necessary to check whether movable parts of the left firebox are placed to foreseen positions (lid - door protection, lid - registers, lower door grate and ash tray) - Figure 6. Draught controller (such as CALEFFI 529 500, ESBE C 20/25) has to be set for solid wood firing so that the boiler temperature, at normal burning, does not exceed 85 - 90°C, and does not fall below 65°C.

Check if globe valves toward heating bodies are open. If you are sure that energy from boiler will be consumed, made firing up for one filling of the firebox:

- Put (max. 25 % moisture) small pieces of wood (chips), crumpled paper, then again pieces of wood (chips), close upper boiler door and ignite chips and paper through the lower door.
- After chips blaze up, close lower boiler door and put, through upper boiler door, some relatively dry smaller logs (max. 25 % moisture), close upper boiler door, wait until logs fully blaze up, and fill the firebox with logs, and make fine tuning of draught controller and monitor its operation during the whole period of combustion of one firebox charge.
- Check whether heating system pump turn on/off at approx. 68 °C.
- Train user how to use boiler.

For adding fuel into firebox, the door has to be firstly kept slightly open (about 1 cm) 3 to 5 seconds, and then fully open it.

8.2. BOILER FIRED WITH SOLID FUEL / WOODEN PELLETS

Start up of pellet firing must be done by a certified serviceman. Check whether boiler control unit CPREG is connected to power supply and whether heating and sanitary water pumps are connected through boiler control unit CPREG. Also check whether the boiler and equipment are built in and connected in accordance with these Technical instructions including all points from 1.0 to 8.0. Check whether chimney meet requirements under point 4 therein.

At firing with solid fuel it is necessary to check whether boiler room meets all requirements therein. Check if fuel fulfils all requirements therein (max. 25 % moisture). Check whether movable parts of the left firebox are placed to foreseen positions (lid - door protection, lid - registers, lower door grate and ash tray) - Figure 6. Draught controller (such as CALEFFI 529 500, ESBE C 20/25) has to be set for solid wood firing so that the boiler temperature, at normal burning, does not exceed 85 - 90°C, and does not fall below 65°C. During firing of solid fuel, boiler control unit CPREG must be turned on (main switch in position 1).

Check if globe valves toward heating bodies are open.

If you are sure that energy from boiler will be consumed, made firing up for one filling of the firebox:

- Put small pieces of wood (chips), crumpled paper, then again chips, close upper boiler door and ignite chips and paper through the lower door.
- After chips blaze up, close lower boiler door and put, through upper boiler door, some smaller logs, close upper boiler door, wait until logs fully blaze up, and fill the firebox with logs, and make fine tuning of draught controller and monitor its operation during the whole period of combustion of one firebox charge.

8.0. START UP

Check whether boiler and equipment are installed and connected in accordance with these Technical instructions including all points from 1.0 to this 8.0. Check whether chimney meets requirements of point 4 therein. Check whether boiler room meets all requirements therein. Check if fuel fulfils all requirements therein. Check whether the boiler and the entire heating system are filled with water and vented. Check whether safety elements have been correctly installed and in proper working order (see previous points of instructions). Check whether uptake duct is sealed and thermally insulated. Boiler must not be used in flammable and explosive environment. It must not be used by children or disabled persons (either physically or mentally), as well as by person without knowledge or experience, unless they are under control or trained by a person responsible for their safety.

Figure 6. Movable parts of left firebox

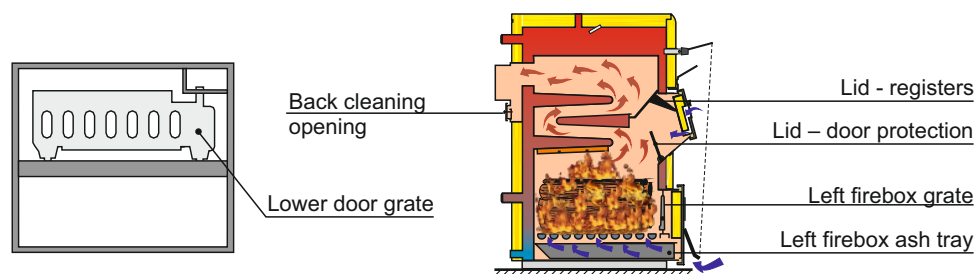


Figure 7. Movable parts of right firebox

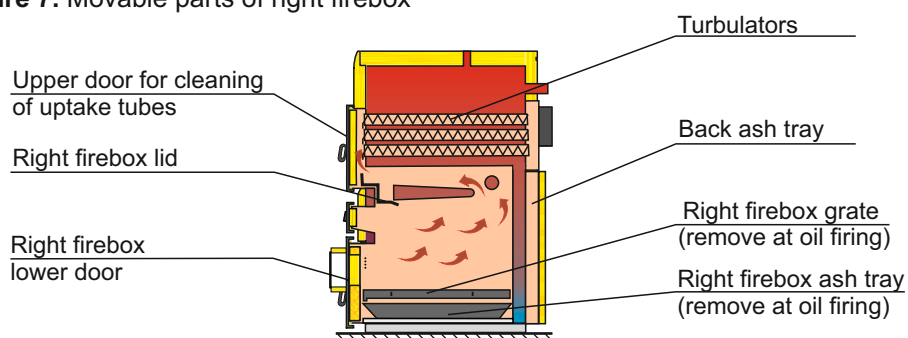


Figure 8. Protective gloves

Protective gloves are obligatory!



2.1. SOLID FUEL FIRED BOILER (EQUIPMENT FOR WOODEN PELLETS AND OIL IS NOT BUILT IN YET)

Draught controller should be installed to the boiler left side (such as CALEFFI 529 500, ESBE C 20/25) and connect it by a chain to the moving lid at the boiler lower door. Electrical connector and heating pump should be connected according to electrical diagram (Diagram 4).

2.2. SOLID FUEL/WOODEN PELLETS FIRED BOILER

Install draught controller to the boiler left side (such as CALEFFI 529 500, ESBE C 20/25) and connect it by a chain to the movable lid at the boiler lower door. Install CPPL burner onto the right lower door. Install pellet controller unit CPREG to the casing cover. Install a micro switch to the casing above the right lower door. Place pellet tank CPSP with feeder CPPT next to the boiler right side. Detailed description of installation of pellet equipment is presented in Technical instructions for start up and setting of Cm Pelet set for boilers CentroPlus and CentroPlus-B (fired with solid fuel and wooden pellets) and Technical instructions for pellet tank and screw feeder supplied with equipment for firing of wooden pellets.

2.3. SOLID FUEL / OIL FUEL FIRED BOILER

Install draught controller to the boiler left side (such as CALEFFI 529 500, ESBE C 20/25) and connect it by a chain to the movable lid at the boiler lower door. Remove blind plate from the ceramic socket for oil burner on the right lower door. Install oil burner to the opening of ceramic plate and connect it to fuel supply. Install boiler control unit EKO-CK/CKB for oil burner to the casing plate and connect it to burner, electrical connection and heating pump according to electrical diagram 5. At firing with pellets take out right firebox grate and right firebox ash tray.

2.3.1. INSTALLATION OF OIL BURNER TO BOILER

Installation diagram of oil burner to boiler

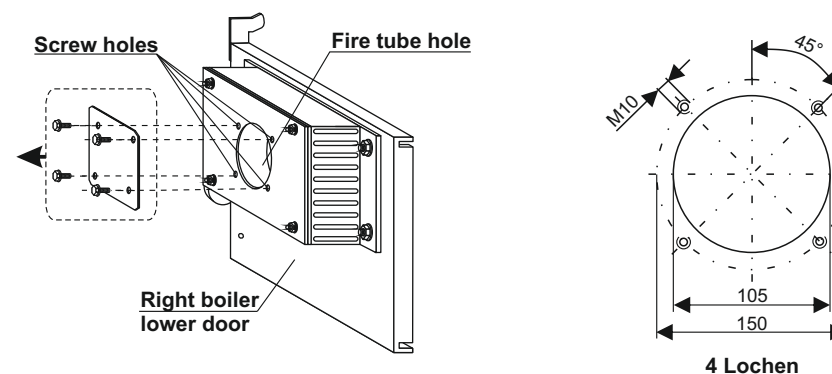
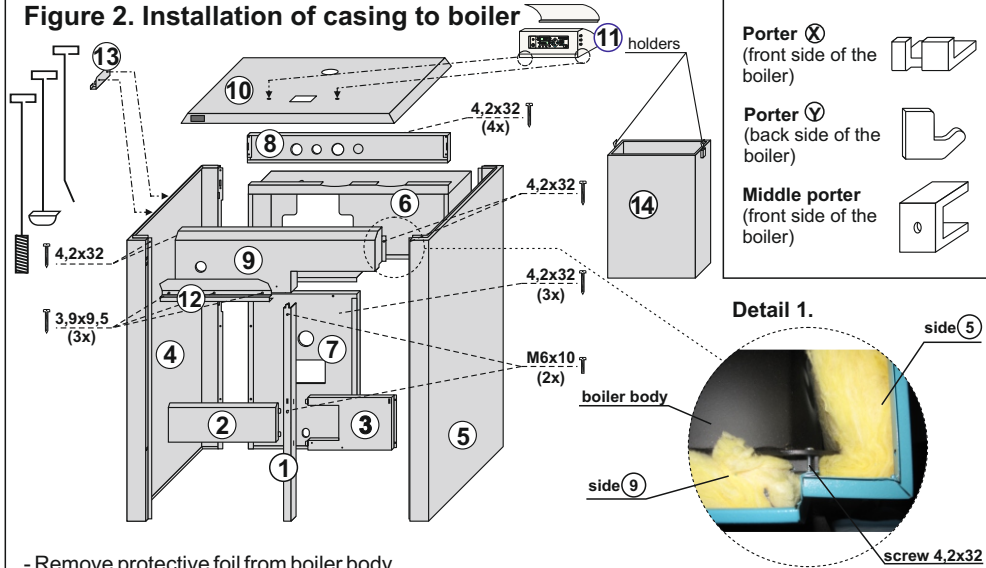


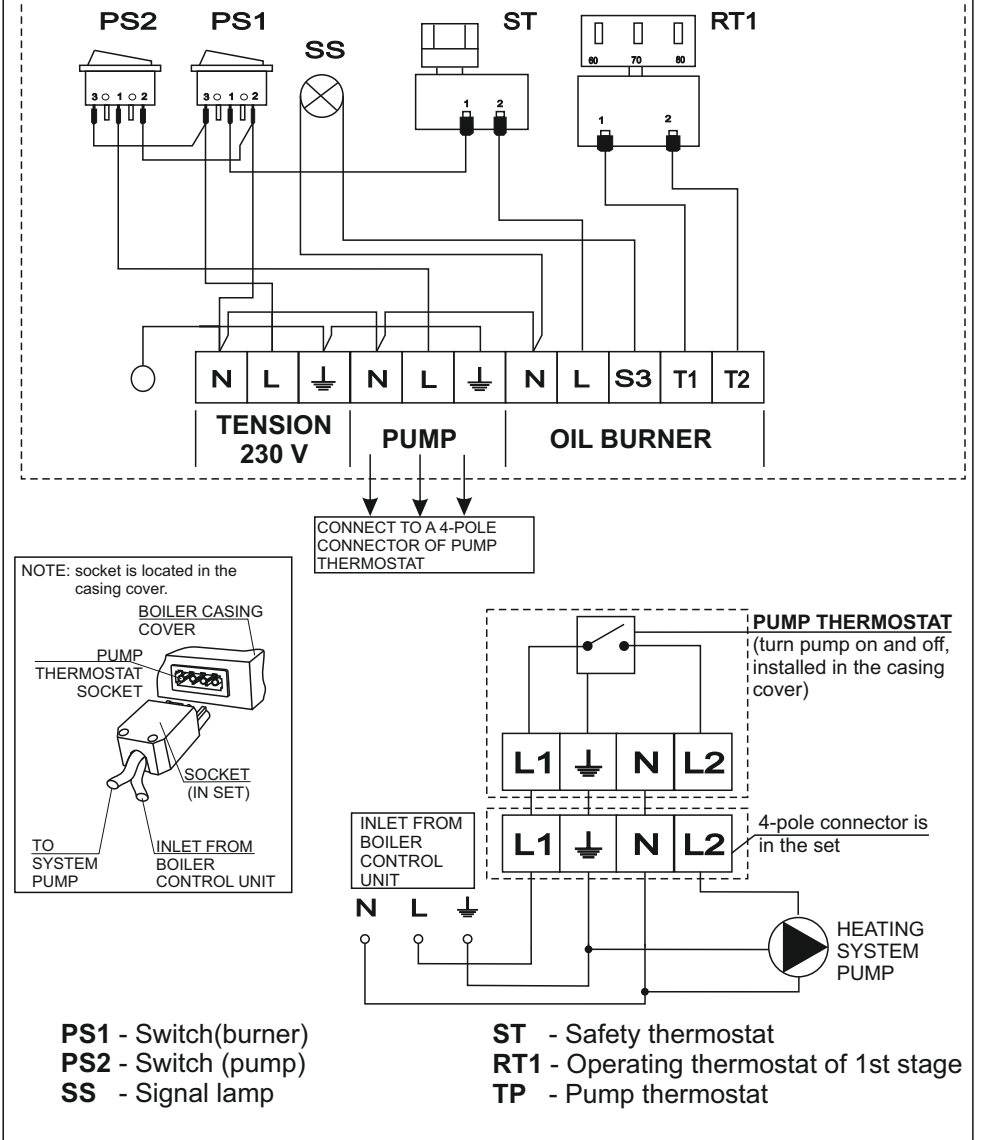
Figure 2. Installation of casing to boiler



- Remove protective foil from boiler body.
- Place side ① on two central supports and fix it by two M6 x 10 mm screws.
- Place side ② into grooves on side ① and push it onto left lower support X.
- Place side ③ into grooves on side ① and push it onto right lower support X.
- Push side ⑨ on side ① and to left and right upper support X.
- Place lateral left side ④ on two back left supports Y and then put it on two front left supports X so that side ② and side ⑨ are linked.
- Fix side ⑨ and side ④ to the boiler body using screw 4,2 x 32 in direction from boiler toward casing (Detail 1).
- Place lateral right side ⑤ on two back right supports Y and then put in two front right supports X so that side ③ and side ⑨ are linked.
- Fix side ⑨ and side ⑤ to the boiler body using screw 4,2 x 32 in direction from boiler toward casing (Detail 1).
- Place side ⑥ to uptake box and push it and fix into grooves on lateral sides ④ and ⑤.
- Fix side ⑧ to lateral left side ④ and lateral right side ⑤ using four screws 4,2 x 32 mm so that side ⑥ is also embraced.
- Put side ⑦ on back central support and fix it onto lateral left sides ④ and side ⑥ using three screws 4,2 x 32 mm.
- Put cover ⑩ onto boiler.
- Pull control sensors through opening in cover ⑩ (pellet control unit CPREG or boiler control unit EKO-CK/CKB are included in additional equipment if it has been purchased, and if not, skip this step and proceed to the next step of installation) and push it into sensor sleeve from the top boiler side.
- Tighten (half way) sheet-metal screws 4,2 x 15 mm in prepared openings in casing ⑩ cover and put boiler control ⑪ so that it is latched onto screws.
- Fix protective sheet ⑫ onto side ⑨ using three screws 3,9 x 9,5 mm.
- Drill two holes on lateral left side ④ and fix holder of cleaning accessories ⑬ onto lateral left side ④ using two screws 3,9 x 9,5 mm.
- Place back ash tray ⑭ on the back boiler side below the uptake chamber onto prepared holders using two snaps (see page 5, pos. ZP and ZK) which have to be adjusted so that tray rests well.

Scheme 5. Electrical diagram of boiler control unit EKO - CK / CKB for solid fuel / oil fuel and pump thermostat

Electrical diagram of boiler control unit EKO - CK / CKB for solid fuel / oil fuel



7.0. CONNECTING BOILER TO ELECTRICAL INSTALLATIONS

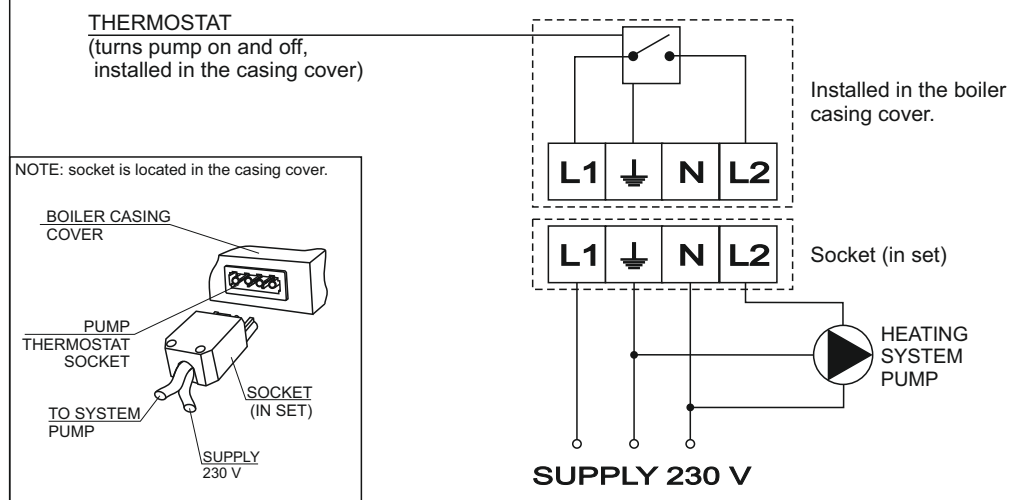
All electrical works must be performed by a certified professional in accordance with valid national and European standards.

A device for switching of all power supply poles must be installed in electrical installation in accordance with the national regulations on electrical installations.

7.1. BOILER FIRED WITH SOLID FUEL (EQUIPMENT FOR WOODEN PELLETS OR OIL HAS NOT BEEN BUILT IN YET)

Heating system pump must be connected through a socket located on the back boiler side (page 4) which is connected to the pump thermostat (Scheme 4).

Scheme 4. Electrical connecting diagram for solid fuel firing



7.2. BOILER FIRED WITH SOLID FUEL / WOODEN PELLETS

In this type of firing equipment, socket on the back boiler side (page 6), which is connected to pump thermostat is not used. For instructions on electrical connecting of boiler control unit CPREG see Technical instructions for use and maintenance of Cm Pelet-set for boilers CentroPlus and CentroPlus-B fired with solid fuel and wooden pellets supplied with equipment for wooden pellets firing.

7.3. BOILER FIRED WITH SOLID FUEL / EL FUEL OIL

Power source is connected through terminal strip located below the panel of main boiler control unit EKO-CK/CKB and the pump thermostat connector placed at the back boiler side. Scheme 5 shows connecting procedure.

3.0. MAKE UP AIR OPENING

Each boiler room **must be equipped with an opening** for supply of make up air which is dimensioned in accordance with boiler output (minimum opening area according to the below shown equation). Such opening must be protected with a net or grate. All installation works have to be performed in accordance with valid national and European standards. Boiler must not operate in flammable and explosive environment.

$$A = 6,02 \cdot Q$$

A - opening area in cm²
Q - boiler output in kW

4.0. CONNECTION TO CHIMNEY

Properly dimensioned and built chimney is a precondition for safe boiler operation and heating efficiency. A chimney must be thermally insulated, gas-tight and smooth. Cleaning door must be made in the lower part of a chimney. Chimney made of bricks must include 3 layers with central insulation layer made of mineral wool. Thickness of thermal insulation should be min. 30 mm of chimneys is built against to interior wall, and min. 50 mm if it is built on the outer side. **Internal dimensions of the chimney light diameter depend on chimney height and boiler output and they have to be selected in accordance with diagram shown in Figure 4.** The chimney usable height is the measure from connection spot of smoke pipe to the chimney top. As these boilers can be fired with solid fuel at any time, chimney has to be selected according to the solid fuel diagram. Fuel gas temperature at the chimney exist must be min. 30°C higher than condensation temperature of combustion gases. Selection and building of a chimney must be made by a professional. Required maximum distance from boiler to chimney is 1000 mm, and minimum distance is 500 mm. Uptake tube must be installed at an angle (min. 5°) with a gradient from chimney to boiler (Figure 3). In order to prevent condensate from chimney to enter the boiler, uptake tube must be placed 10 mm deeper into chimney. Connecting uptake tube between boiler and chimney **must be thermally insulated** with a mineral wool layer having thickness of 30 to 50 mm. All installation works must be made in accordance with valid national and European standards.

Figure 3. Possible ways of connections of boilers CentroPlus to chimney

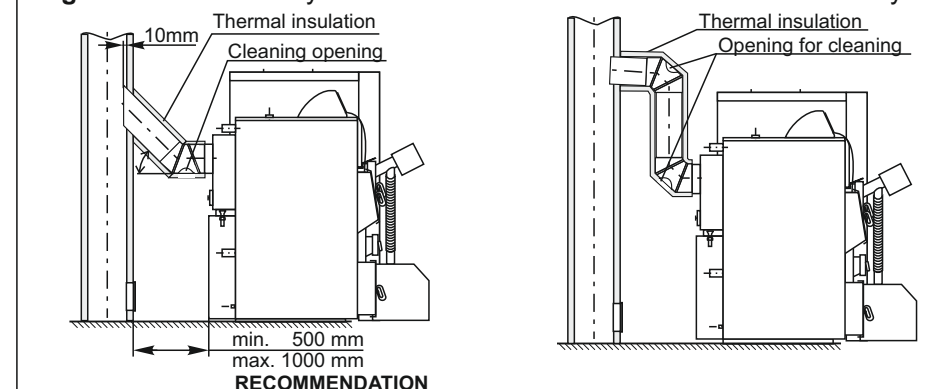
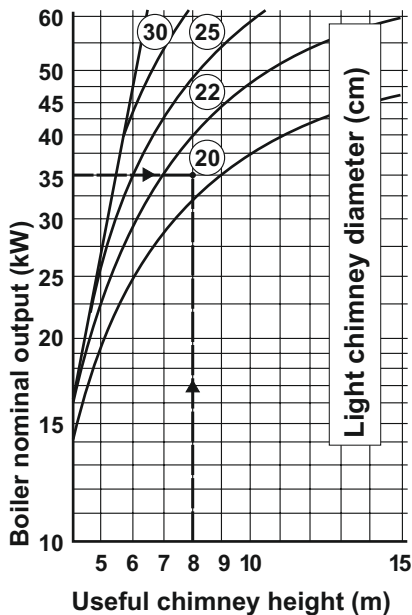


Figure 4. Chimney dimensioning for boilers CentroPlus



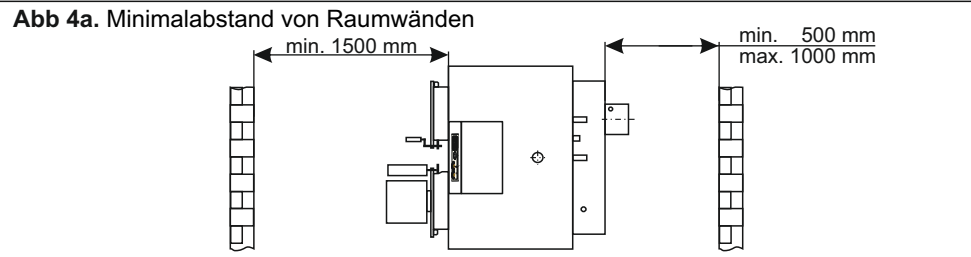
An example of selection of a chimney:

- Boiler heat output: **35 kW**
- Fuel: **wood, wooden pellets, EL fuel oil**
- Required usable chimney height: **H = 8 m**
- Required chimney light diameter: **20 cm**
- **Usable chimney height** - chimney height from connection spot of smoke pipe to the chimney top.
- **Light chimney diameter** - interior chimney diameter.

5.0. BOILER INSTALLATION TO CENTRAL HEATING SYSTEM

All installation works must be made in accordance with valid national and European standards.

Boiler CentroPlus can be built to closed and open central heating systems. In both cases boiler can be fired with solid fuel, wooden pellets or EL fuel oil. Installation has to be made, in according to technical standards, by a professional who will be responsible for proper boiler operation. Before connecting boiler to central heating system, the system has to be flushed to remove impurities remaining after system installation. It prevents boiler overheating, noise within the system, disturbances at a pump and mixing valve. Boiler should always be connected to central heating system by connectors, never by welding. Figure 4a. shows safe distances required for boiler cleaning and maintenance.



6.3.1. SOLID FUEL FIRING

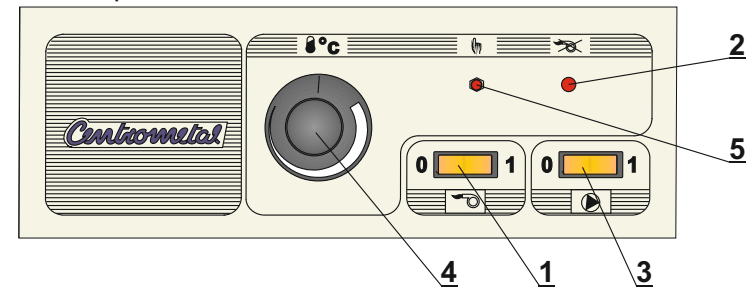
Temperature in boiler is controlled by a draught controller (such as CALEFFI 529 500, ESBE C 20/25) which is installed on the front left side of boiler (see page 4). The draught controller chain should be adjusted so that, at normal combustion, temperature does not exceed temperature of 85 to 90°C (air opening fully closed) and does not fall below 65°C. When solid fuel is fired, the heating pump switch operation (Figure 5, pos.3) at boiler control unit EKO-CK/CKB must be ON.

6.3.2. EL FUEL OIL FIRING

Temperature in boiler is controlled by boiler control EKO-CK/CKB built in boiler cover (see page 5). On boiler control unit EKO-CK/CKB the burner must be turned on (Figure 5, pos.1) and control thermostat should be set to preferred temperature in boiler (70-90°C).

6.3.3. BOILER CONTROL solid fuel/EL fuel oil

Figure 5. Control panel of boiler control unit EKO CK/CKB



1. BURNER SWITCH

Switch with signal lamp for burner switching on and off.

2. BURNER SIGNAL LAMP

If there are some faults in burner operation, this lamp will turn on.

3. SWITCH FOR PUMP OF CENTRAL HEATING SYSTEM

Switch with signal lamp for pump switching on and off.

4. CONTROL THERMOSTAT OF BOILER

Control range of boiler temperature (35 - 90°C), control is made by button rotation.

5. SAFETY THERMOSTAT

It stops the burner if temperature in boiler exceeds 98°C protecting system against damage.

To restart the burner, the following should be done:

- Wait until boiler temperature falls below 70°C.
- Push button, pos. 5, Figure 5.

If frequent interruptions in boiler operation continue, call a professional for checking.

6.0. CONTROL OF BOILER TEMPERATURE

6.1. SOLID FUEL FIRING (EQUIPMENT FOR WOODEN PELLETS OR OIL HAS NOT BEEN BUILT IN YET)

Boiler temperature is controlled by a draught controller (such as CALEFFI 529 500, ESBE C 20/25), which is installed on the front left side of boiler (see page 4). The draught controller chain should be adjusted so that, at normal combustion, temperature does not exceed temperature of 85 to 90°C (air opening fully closed) and does not fall below 65°C. Pump of heating system and sanitary water should be connected through a socket on the boiler back side (page 4) which is connected to the pump thermostat (Scheme 4).

6.2. BOILER FIRED WITH SOLID FUEL AND WOODEN PELLETS

Pump of heating system and sanitary water should be connected to boiler control unit CPREG which control pump operation and protects boiler against subcooling.

6.2.1. SOLID FUEL FIRING

Temperature in boiler is controlled by a draught controller (such as CALEFFI 529 500, ESBE C 20/25) which is installed on the front left side of boiler (see page 4). The draught controller chain should be adjusted so that, at normal combustion, temperature does not exceed temperature of 85 to 90°C (air opening fully closed) and does not fall below 65°C. When solid fuel is fired, boiler control unit CPREG must be turned on (at main switch) to ensure proper pump operation and to enable reading of boiler temperature and sanitary water temperature. For detailed description of boiler control unit CPREG see Technical instructions for use and maintenance of boiler control unit and boiler CentroPlus and CentroPlus-B fired with solid fuel and wooden pellets supplied with wooden pellet firing set.

6.2.2. WOODEN PELLET FIRING

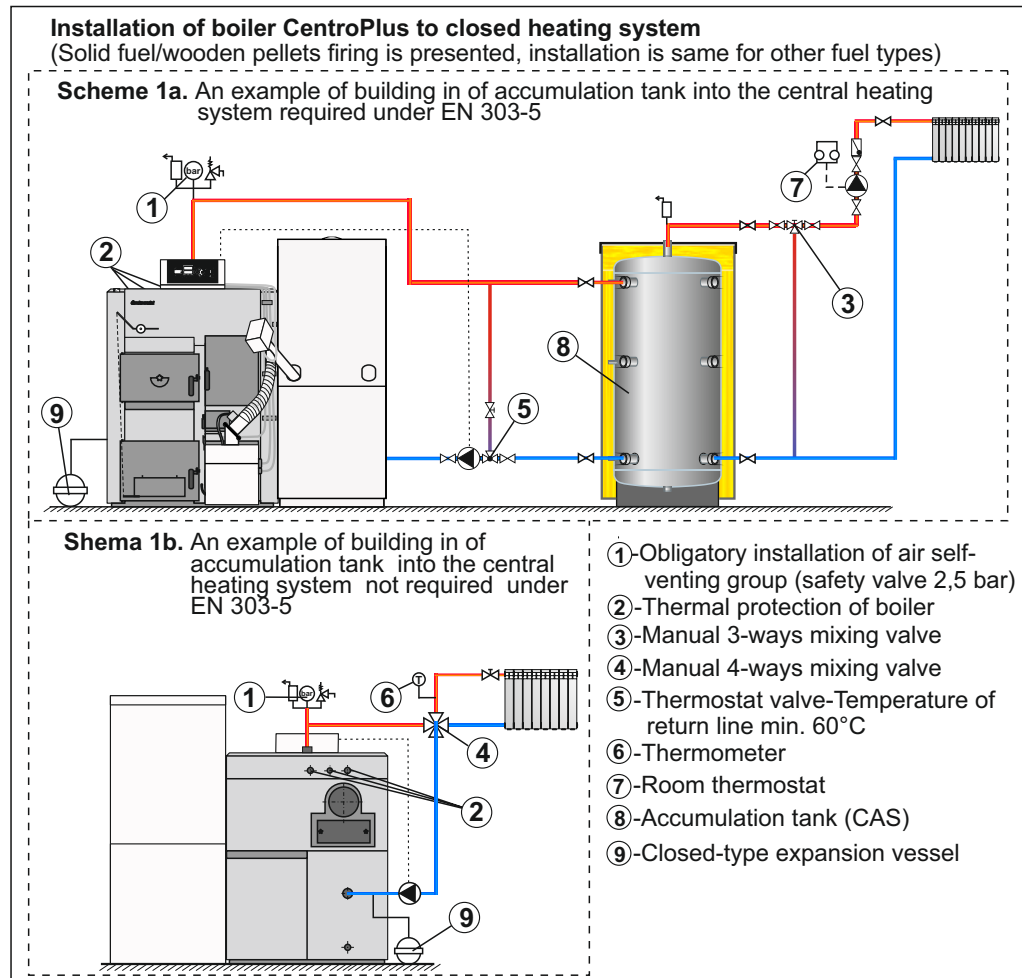
Temperature in boiler is controlled by a digital boiler control unit CPREG built in the boiler cover (see page 6). Pump of heating system and sanitary water should be connected to boiler control unit CPREG which controls pump operation and protects boiler against subcooling. For detailed description of boiler control unit CPREG see Technical instructions for use and maintenance of Cm Pelet-set for boilers CentroPlus and CentroPlus-B (fired with solid fuel and wooden pellets) supplied with wooden pellet firing set.

6.3. BOILER FIRED WITH SOLID FUEL AND EL FUEL OIL

Heating system pump should be connected through the pump thermostat to boiler control unit according to scheme 5 which (if pump switch is in position 1) turns the pump on if temperature in boiler exceeds 68°C and turns the pump off if temperature in boiler falls below 68°C to protect boiler against subcooling.

5.1. BOILER INSTALLATION TO CLOSED HEATING SYSTEM

In closed heating system (as in example shown in Scheme 1a and 1b) it is **obligatory** to build in certified safety valve with opening pressure of 2,5 bar, minimum seat diameter of 15 mm, minimum inlet connection of 1/2", minimum exit connection of 3/4" and a membrane expansion vessel with professional rules and any valve must not be located between safety valve and expansion vessel and boiler. In all boiler types the heating pump **must be** connected according to electric diagram relevant for specific boiler use (point 7 in these instructions) so that the heating pump switching on and off would depend on water temperature in the boiler. If boiler is connected to the heating system under Diagram 1b it is recommended that the environment temperature control is made by a 4-ways manual mixing valve.



5.1.1. BOILER THERMAL PROTECTION - CentroPlus

According to European EN standards, boiler thermal protection **must be** installed in closed heating system. Boiler is factory prepared for installation of thermal protection. Heat exchanger is built into boiler at factory, and thermal safety valve ② is installed according to scheme 2. In case of any damage of boiler installed in the closed heating system due to its overheating, and boiler or system are not equipped with any thermal protection at all, or do not have properly installed thermal protection, guarantee will not be applied.

IMPORTANT:

Thermal protection must be connected to the water supply installation of the premises supplied from the water supply line and not from hydrophor. Namely, in case of failure of power supply, boiler could be overheated, and then hydrophor is not able to ensure required water supply.

THERMAL FUSE:

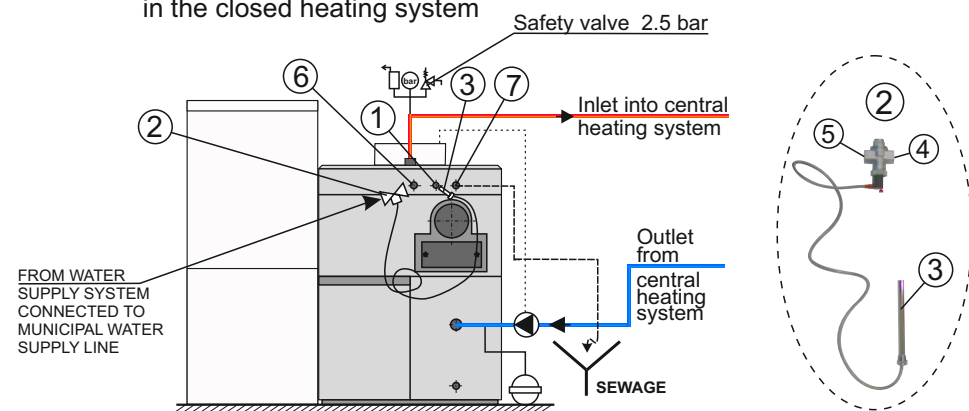
Thermal fuse for boiler CentroPlus consists of a **heat exchanger** which is factory built in boiler, and **thermal valve** ② (such as CALEFFI 543 513) (see Scheme 2.).

Part ② is installed into prepared connector (male thread 3/4") in the upper back side of boiler.

INSTALLATION (under Scheme 2.)

- Thermal valve ② is installed onto prepared connector (male thread 3/4") ⑥
- Connector ⑤ (female thread 3/4") of thermal valve should be connected to connector of heat exchanger factory built into boiler ⑦ (male thread 3/4").
- Thermal valve connector ④ (female thread 3/4") should be connected to cold sanitary water supply.
- Connector of heat exchanger ③ should be connected sewage system.
- Tighten thermal valve sensor (male thread 1/2") into coupling ① (female thread 1/2")

Scheme 2. Installation of thermal protection of boiler CentroPlus 25/35 installed in the closed heating system



* Position of thermal valve after installation:
(valve head downward)

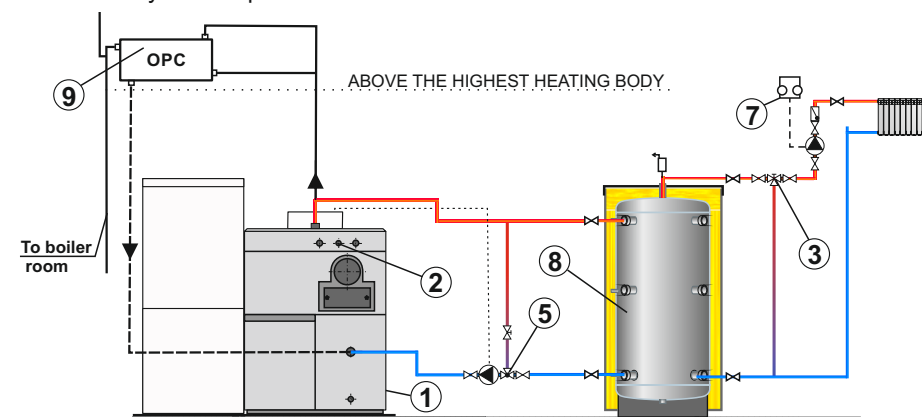


5.2. BOILER INSTALLATION TO OPEN HEATING SYSTEM

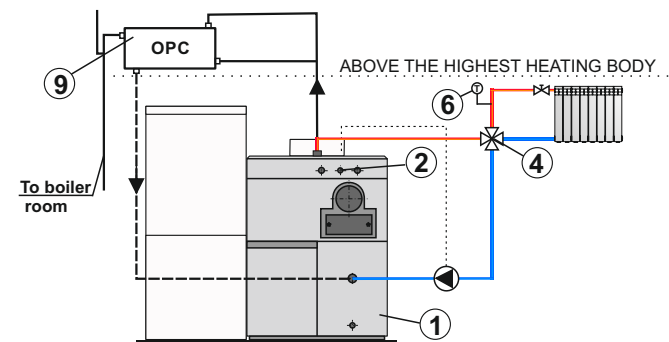
If boiler is installed in an open central heating system, it is recommended that system is made according to Scheme 3a or 3b. In open system it is necessary to put an open expansion vessel above the height of the highest heating body. If expansion vessel is located in a room without heating, it should be insulated.

Example of installation of boiler CentroPlus in an open heating system
(Solid fuel/wooden pellets firing is presented, installation is same for other fuel types)

Scheme 3a. An example when building in of accumulation tank into the central heating system required under EN 303-5



Scheme 3b. An example when building in of accumulation tank into the central heating system is not required under EN 303-5-5



- | | |
|---|-----------------------------|
| ①-boiler CentroPlus | ⑥-thermometer |
| ②-close tightly | ⑦-room thermostat |
| ③-manual 3-ways mixing valve | ⑧-accumulation tank (CAS) |
| ④-manual 4-ways mixing valve | ⑨-open expansion vessel OPC |
| ⑤-thermostat valve-ensures temperature in return pipe min. 60°C | |