Centrometal
HEATING TECHNIQUE

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CE

TECHNICAL INSTRUCTIONS

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

THE FIRST START-UP MUST BE DONE BY AUTHORIZED PERSON OTHERWISE PRODUCT WARRANTY IS NOT VALID

PelTec 12-48

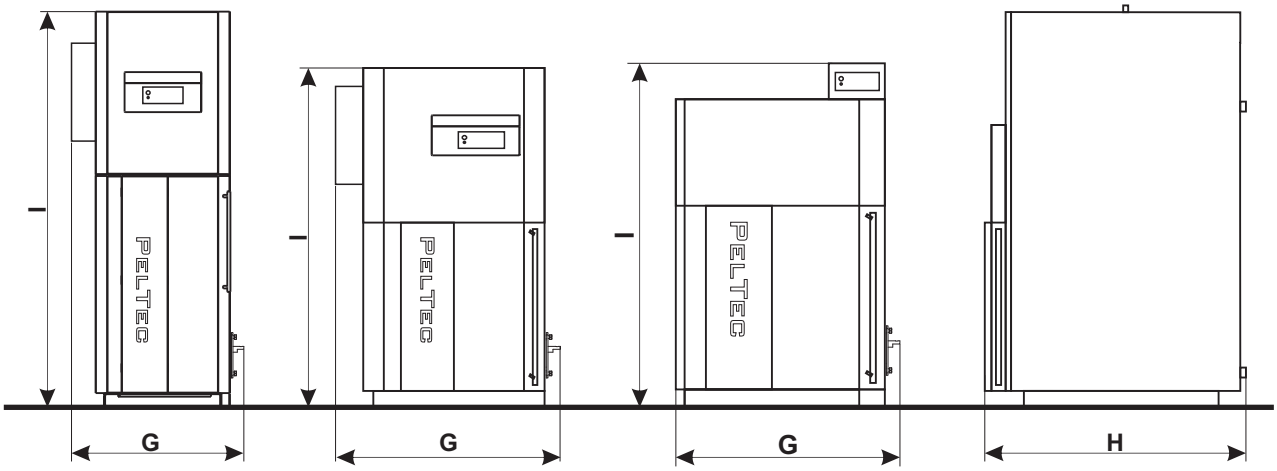
TUPLT- 5 -2015-ENG

TECHNICAL INFORMATION

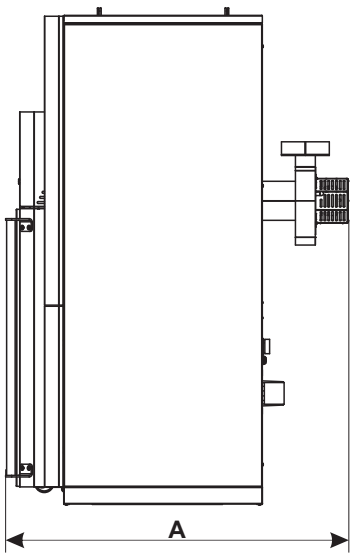
Tip			PelTec 12	PelTec 18	PelTec 24	PelTec 36	PelTec 48
Nominal heat output		(kW)	12	18	24	36	48
Heat output range		(kW)	3,6-12	5,4-18	7,2-24	10,8-36	14,4-48
Boiler class			5	5	5	5	5
Required chimney underpressure		(mbar)	0,05	0,05	0,05	0,05	0,05
Water amount in boiler		(lit.)	78	76	100	108	135
Exhaust gas temperature at nominal heat output		(°C)	120	120	120	120	120
Exhaust gas temperature at minimal heat output		(°C)	100	100	100	100	100
Exhaust mass flow at nominal heat output		(kg/s)	0,0131	0,0164	0,0197	0,031	0,041
Exhaust mass flow at minimal heat output		(kg/s)	0,0005	0,0029	0,0052	0,0092	0,0131
Combustion period		(h)	-	-	-	-	-
Min. inlet water tem. at the boiler supply water connection		(°C)	-	-	-	-	-
Setting range for temperature controller		(°C)	65-90	65-90	65-90	65-90	65-90
Minimal return temp.at boiler return tapping		(°C)	> 0°C				
Standby heat losses		(W)					
Boiler resistance on water side at nominal output		(mbar)	5	9	13	10	14
Fuel type			C1, wood pellets				
Fuel moisture content		(%)	maximum 12 %				
Fuel size		(mm)	fi 6 x 50				
Firebox volume		(lit.)	0,942	1,59	1,59	2,56	2,56
Combustion chamber dimensions		(mm)	465x300x300	650x300x300	650x300x300	620x385x385	770x385x385
Combustion chamber volume		(lit.)	41,85	58,5	58,5	91,90	114,13
Combustion chamber type			underpressure				
Pellet tank volume		(lit.)	340				
Required minimum accumulation next to boiler			by EN 303-5, point 4.2.5				
Auxiliray power requirements at Q_N		(W)	1050	1050	1050	1100	1100
Auxiliray power requirements at Q_{min}		(W)					
Supply voltage		(V~)	220				
Frequency		(Hz)	50				
Boiler body dimensions	Lenght (A)	(mm)	1105	1105	1080	1160	1145
	Width (B)	(mm)	1200	1420	1400	1485	1470
	Height (C)	(mm)	1560	1560	1560	1560	1550
Total mass - (boiler with tank and feeder screw)		(kg)	328	349	402	455	478
Max. operating overpressure		(bar)	2,5				
Test pressure		(bar)	5				
Max. operating temperature		(°C)	90				
Flue gas tube - external diameter		(mm)	130	130	130	150	150
Dimension D**/D***		(mm)	1515 / 1235	1040 / 765	1140 / 855	1160 / 855	1310 / 995
Dimension E		(mm)	135	125	130	120	115
Dimension F		(mm)	555	510	495	555	555
Boiler connections	Flow and return pipe (male thread)	(R)	1"	1"	5/4"	5/4"	5/4"
	Charge/discharge (female thread)	(R)	1/2"	1/2"	1/2"	1/2"	1/2"
Heating appliance running					with fan		
Heating appliance running			under non-condensing conditions				

** possible way of installing the fan (output is directed up) *** possible way of installing the fan (output is directed sideways)

Dimensions of the boiler to enter the room	PelTec 12	PelTec 14	PelTec 24	PelTec 36	PelTec 48
Width (G)	650	880	880	965	965
Depth (H)	765	765	735	795	795
Height (I)	1565	1275	1345	1345	1495

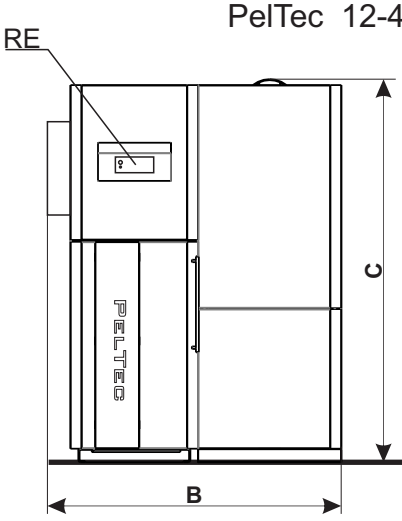


PelTec 12 PelTec 18 PelTec 24-48 PelTec 12-48

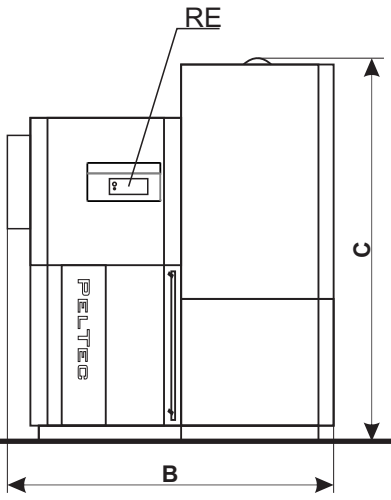


PelTec 12-48

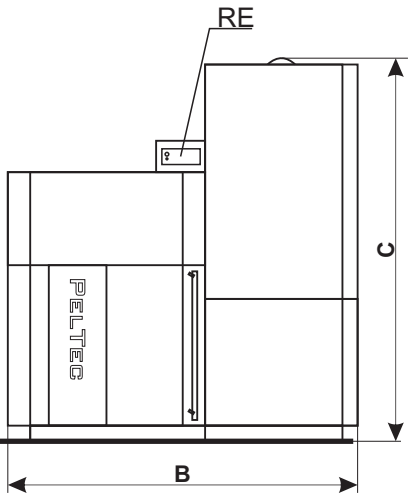
PLV - Boiler flow
PVV - Boiler return
PP - Charge / Discharge
DP - Flue gas tube
VE - Fan (fan output can be mounted in any directions)
SP - Pellet tank
PT - Pellet feeder
RE - Boiler control unit
MV - 4-way motor mixing valve
RP - Pellet level sensor
SG* - Safety ventilation group (not included in delivery)
VC - Connecting tubes
PE - Connection for expansion vessel
FC - Flexible PVC tube
CP - Circulation pump (mandatory set on the speed 3)



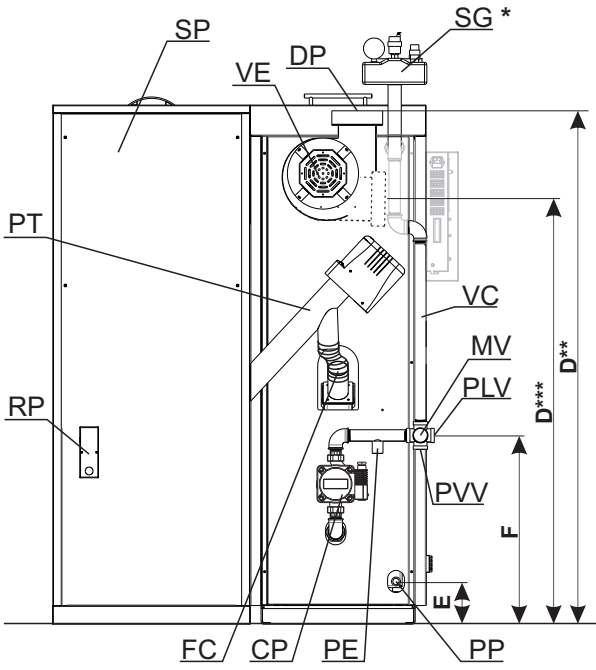
PelTec 12



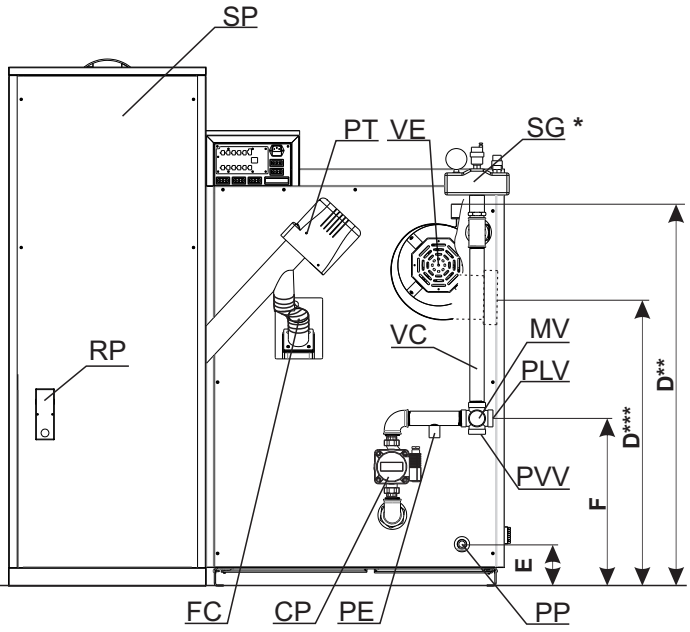
PelTec 18



PelTec 24-48



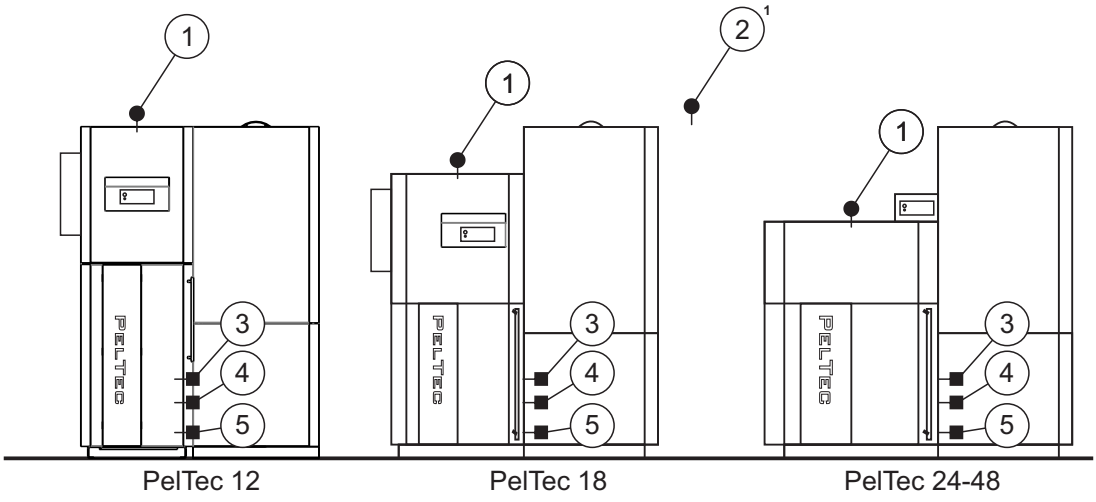
PelTec 12

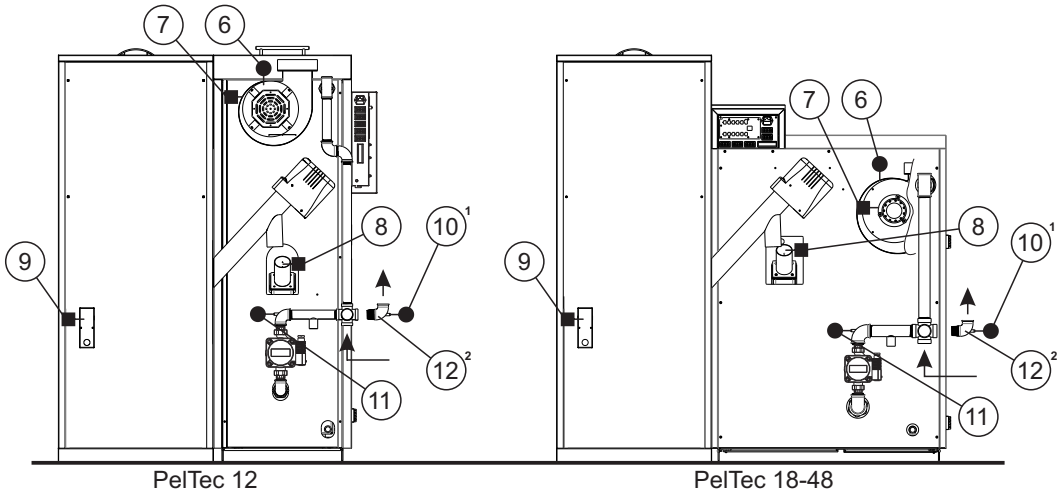


PelTec 18-48

* not included in delivery
** possible way of installing the fan (output is directed up) *** possible way of installing the fan (output is directed sideways)

① - Boiler sensor (NTC 5k)
② - DHW sensor (NTC 5k)[1]
③ - Presostat
④ - Photocell
⑤ - Electric heater
⑥ - Flue gas sensor (Pt 1000)
⑦ - Fan speed sensor
⑧ - PVC tube bimetal sensor
⑨ - Pellet level in the tank
⑩ - Flow temperature sensor (NTC 5k)[1]
⑪ - Return sensor (NTC 5k)
⑫ - Elbow with socket for sensor [2]





[1] Depending on the configuration can be used as: DHW sensor, flow temperature sensor, accumulation tank sensor (CAS), hydraulic crossover (CRO)
[2] Obligatory installation

ADDITIONAL EQUIPMENT

CAL - alarm box (speaker/LED)

GSM Alarm modul for mobile network

CMNET modul for boiler cascade

CM2K modul for regulation 2 heating circuits

1.0. INTRODUCTION

The **PelTec** has a modern construction and design and is made out of the controlled materials of high quality, welded with most modern technology and is approved and tested under EN 303 - 5 norm and fulfil all special request for the connection on the installation of a central heating system.

1.1. BOILER DESCRIPTION

Steel hot water boiler are engineered for wood pellet firing. In the boiler is installed the burner for wood pellet firing with the automatic firing and automatic self-cleaning function which enables the reliable operation also with the low quality wood pellets. The function of the automatic cleaning flue gas tubes provides the unifying exchange of the heat and high and unifying level of boiler efficiency. Digital boiler controller in a basic construction offers also the possibility of control with the additional equipment likes lambda probe or level control of the wood pellets in the pellet tank. The pellet tank is the integral part of the boiler. The boiler is delivered in pieces due to the easier transport into the boiler room.

1.2. SAFETY PRECAUTIONS

The boiler and related accessories are state of the art and meet all applicable safety regulations. The control unit, wiring chamber, el. heater, safety cut-out STB thermostat, fan, grid cleaning mechanism, flue gas tubes cleaning mechanism and pellet supply mechanism are integrated into the PelTec . They are operate at a voltage of 230 V AC. Improper installation or repair can pose the danger of life-threatening electric shock. Installation may beperformed only by appropriately qualified technicians.

Caution symbols:
Please take careful note of the following symbols in this Operating Manual.

	**This symbol indicates measures for protection against accidents and warning for the user and / or exposed persons.**

1.3. IMPORTANT INFORMATIONS

All local regulations, including those referring to national and European standards need to be complied with when installing the appliance.
The boiler must not be modified unless using the tested original accessories we provide or if the work is undertaken by our Customer Service.
Only fit original spare parts. These can be obtained from your customer service partner or directly from ourselves. European standards need to be complied with when installing the appliance.
Regular care and cleaning of the appliance, flue gas outlets, connecting piece and flue.

 **CAUTION:**

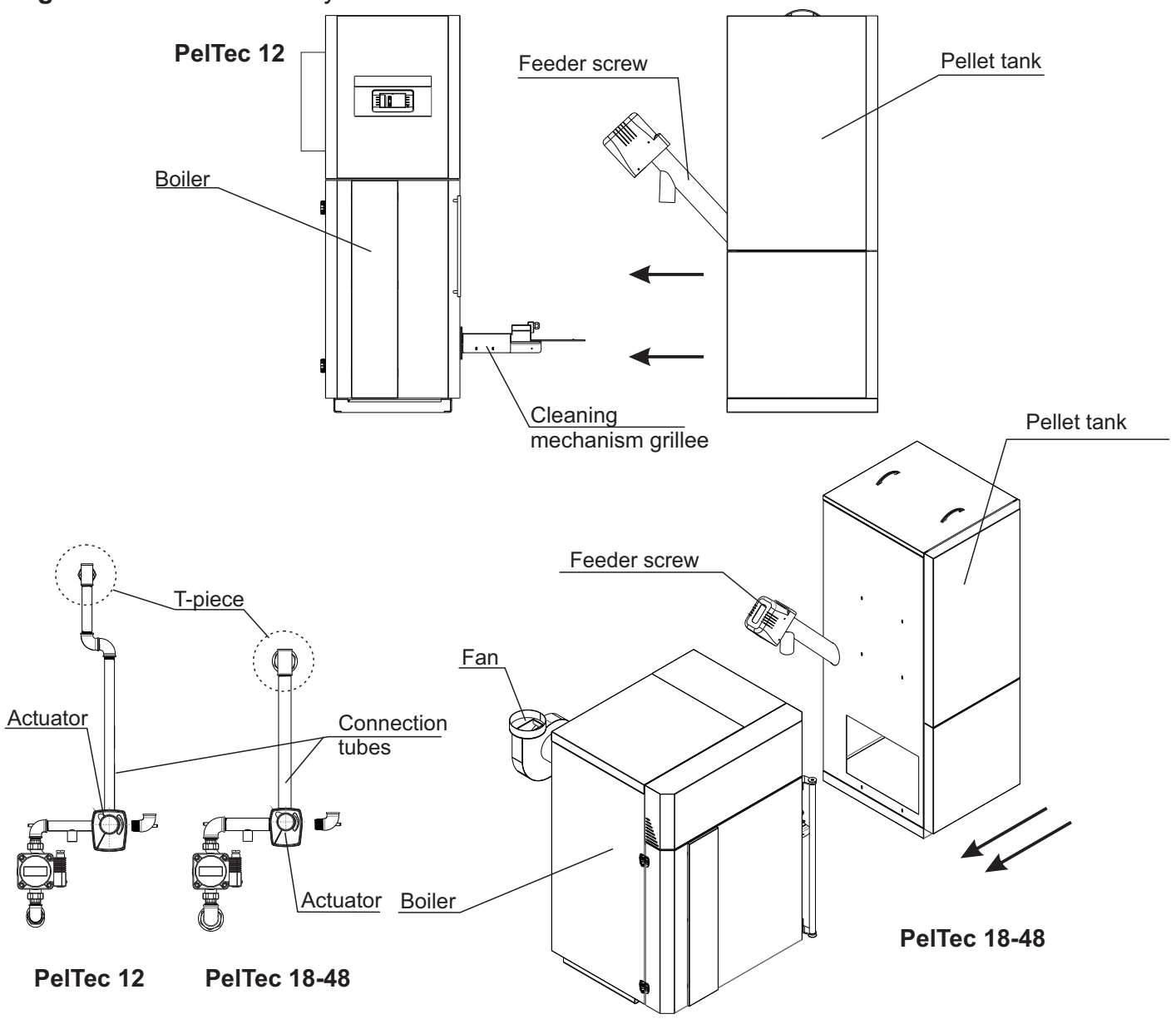
The flue may block if the boiler is heated again after a long period of it not being used. Before starting the boiler, have the flue checked by a specialist (chimney sweep).
Ensure sufficient supply of fresh air in the installation room when heating. The air must be replaced at least 0.8 times an hour through constant and reliable room venting. Fresh air may have to be provided from outside if the windows and doors in the room where the boiler is installed are well sealed or if this room contains other equipment, such as extractor hoods, clothes dryer, fan etc.

1.4. STATUS OF DELIVERY

Equipment is delivered seperately:

1. Boiler with planking and thermal insulation
2. Pellet tank in a cardboard box (the parts need to be mounted, see instructions for mounting the pellet tank)
3. Feeder screw with a flexible PVC tube (should be placed in the pellet tank)
4. Grating cleaning mechanism (requires installation on the boiler)
5. Fan (requires installation on the boiler)
6. Connection tubes with holenders, 4-way mixing valve and circulation pump (need to be mounted on boiler, **Mandatory** set the pump on the speed 3.)
7. Actuator (requires installation on the 4-way mixing valve)

Figure 1. Status of delivery



For ease of handling, transport and import of boiler, PelTec is delivered in parts that need be mounted on the boiler when the boiler is in the boiler room. These parts need to be installed on the boiler:

- Fan - mount on the back of boiler, is obligatory to use the flange gaskets fan, fastened using M8 bolts and nuts. Plug-connector for power supply fan and the fan tachometer in the back of the control box. Fan output can be mounted in any directions.

- Mechanism for grating cleaning - mount on the right side of the boiler (in this side is pellet tank), must be fastened using M8 bolts and nuts. After assembly, it is necessary to attach the lever burner grid with gear motor trail. Plug-in two cables with connectors (motor and microswitches).

- Connection tubes - mount connecting tube with 4-way mixing valve to the boiler so that the T-piece is in the upper side. On the upper connector of the T-piece incorporate safety ventilation group. On the back of boiler were prepared two holenders for mounting connection tubes (connection tubes with 4-way mixing valve). Be sure to use the seal for holenders. Set return temperature sensor in the elbow with a socket for the sensor between the 4-way mixing valve and the boiler. It is obligatory using the included thermal paste. Plug-in return flow sensor on the back of the box control. Connect the pump cable with connector to the back of the control box. **Mandatory** set the pump on the speed 3.

- Elbow with socket for the flow sensor -must necessarily be installed after 4-way mixing valve on the flow of the installation. Set flow sensor in the socket for sensor. It is obligatory using the included thermal paste. Plug-in return flow sensor on the back of the box control.

- Actuator - set the Actuator to the 4-way mixing valve. Plug-in the power connector on the back of the control box.

- Pellet level in the tank sensor - mount this sensor on the back side inside of the pellet tank (see page 9). First set the plastic glass distance for sensor. After that, put the sensor on this glass. Attach the sensor and the plastic distance with 4 screws supplied. Attach protective cover. Plug-in the cable with connector of the pellet level sensor on the back of the box control.

- Pellet tank - mount pellet tank according installation manual for mounting pellet tank. Set up pellet transporter in the pellet tank. Place the pellet tank to the boiler and set PVC tube to conveyor and tube supply on the boiler. Set up the PVC tube so as to allow the smooth falling pellet into the burner. If necessary, cut the PVC tube to the required length. Plug-in the power connector on the back of the control box.

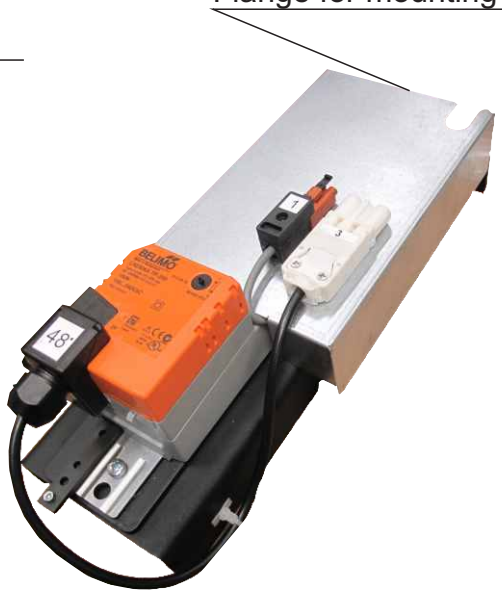
NOTE: check the tightness of connection tubes. Fasten connections binding tubes if necessary, so that a good seal.

1.5. MOUNTING COMPONENTS

Slika 2. Mounting components

Fan

(Fan output can be mounted in any directions)



Mechanism for grating cleaning

Connection tube
PelTec 12

Connection tube
PelTec18-48

4-way mixing valve

Actuator for 4-way mixing valve

Flange for mounting fan

Flange for mounting mechanism for self-cleaning

Position of pellet tank

Position of mechanism for grating cleaning

Protection cover
Pellet level sensor
Plastic pad
Mounted position (be sure to attach the cable with cable ties

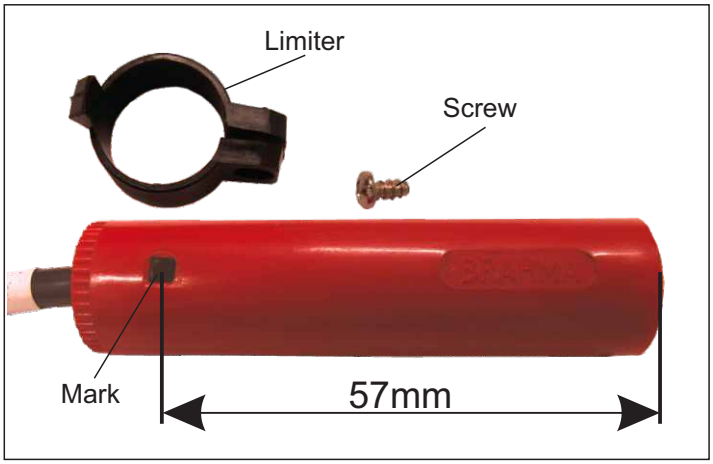
The main switch
Display
The main electronic board
Electronic board inputs
Connectors for pump / diverter valve

Elbow with socket for sensor

Socket

⚠	**Before first startup, be sure to set the photocell to the position as on Figure 3, otherwise the boiler will not work properly!**

The photocell should not be set too deep or too shallow in the box. So, limiter determines the proper depth of photocell position. Make sure the limiter is set to black mark. Black mark should be barely visible (see image below).



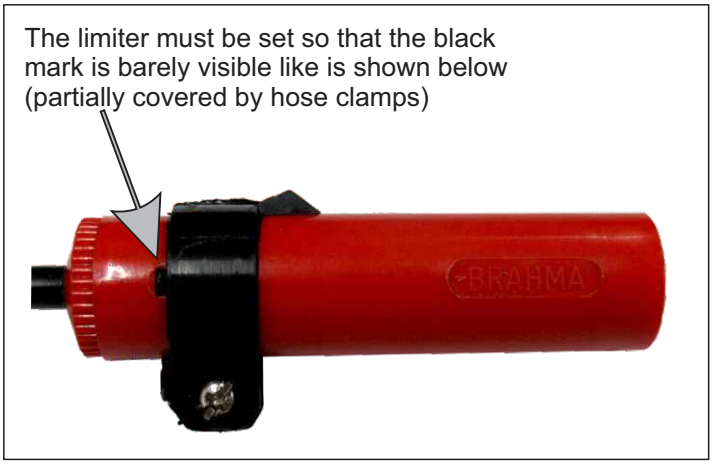


Figure 1. Photocell position on delivery

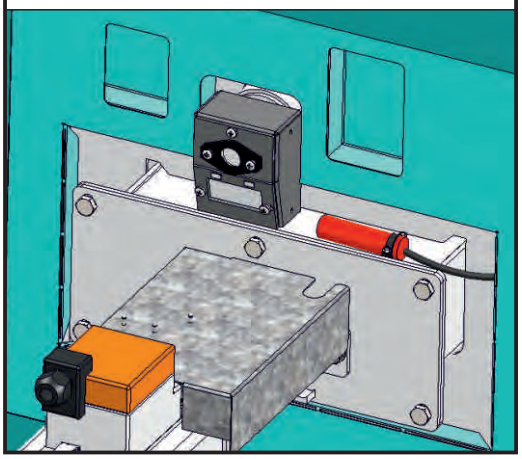


Figure 2. Carefully put the photocell until the plastic holder

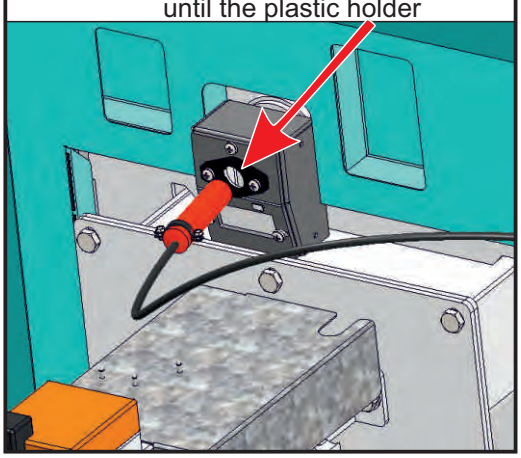
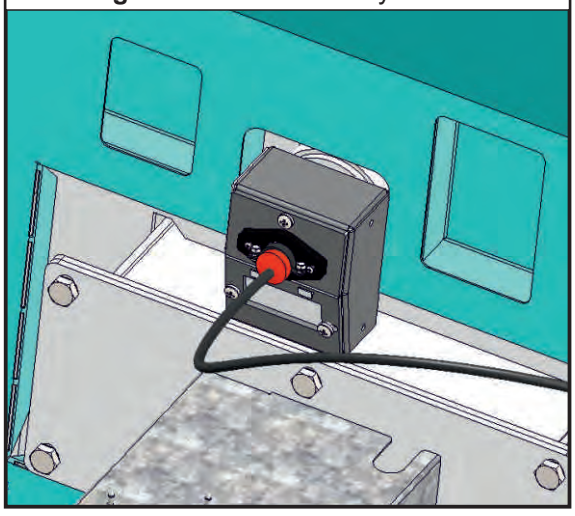


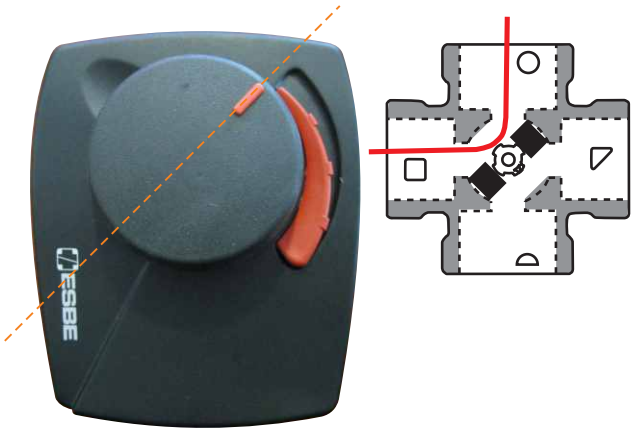
Figure 3. Photocell ready to work



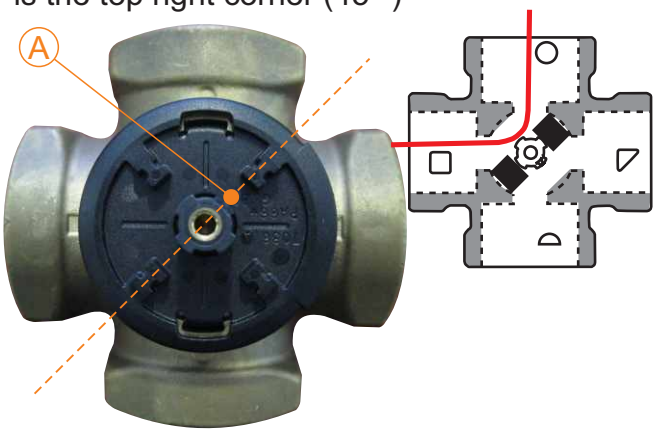
1.5.1. INSTALLATION OF ACTUATOR (IF THE BOILER IS WORKED)

If the boiler is worked Actuator may be removed only when the boiler is switched off. When the boiler is switched off motor-driven closes 4-way mixing valve and is in the position as shown in Figure 1 below.

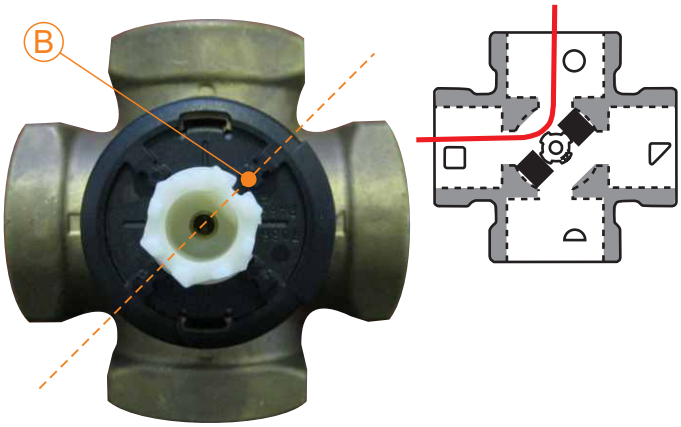
1. Device position when the boiler is not working (valve is closed)



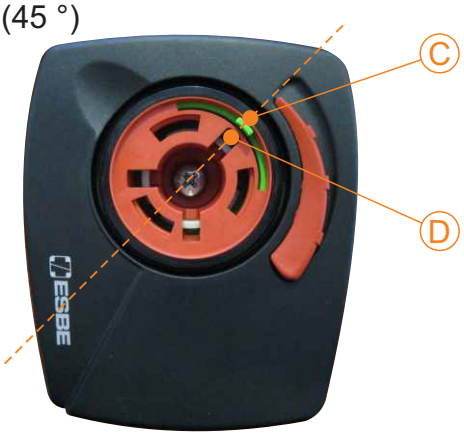
2. Valve position when the boiler is not working (valve is closed); designation on the axle" A" is the top right corner (45 °)



3. Designation position on clutch of Actuator before assembly, designation on the clutch "B" is at the top right (45 °)



4. Set the Actuator as shown below (the movable part of the devicemust be turned so that green delimiter" C" is aligned with the groove of the handle" D" and is in the top right corner (45 °)

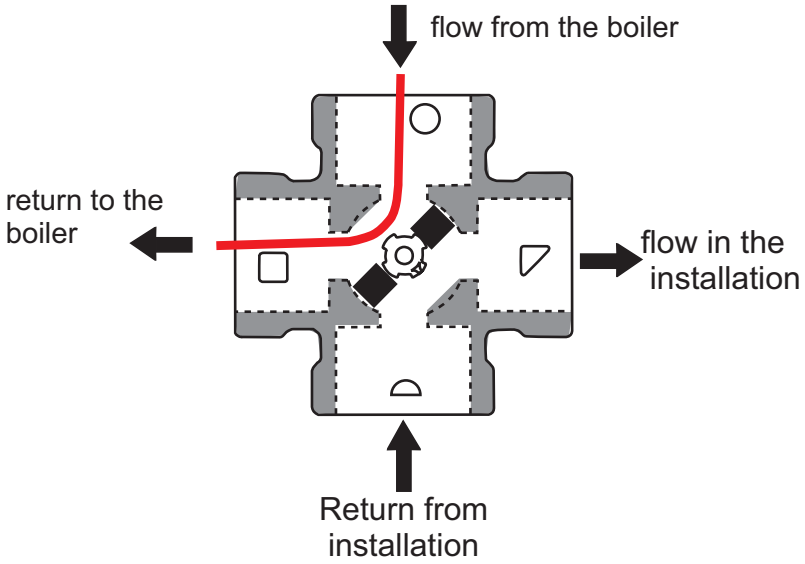


5. Tighten the screw to secure the Actuator (when the screw is tightened, the movable part of the device is rotated to the right down to the end position)

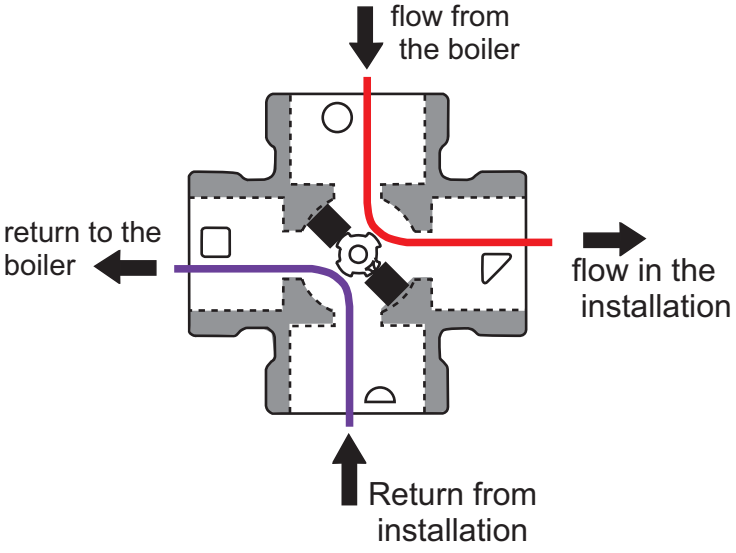
6. Set the device handle, rotate the left until it reaches the beneficial position, so that can be set in position DOWN - - Automatic operation

7.Device position in the DOWN position - automatically work; boiler ready for operation

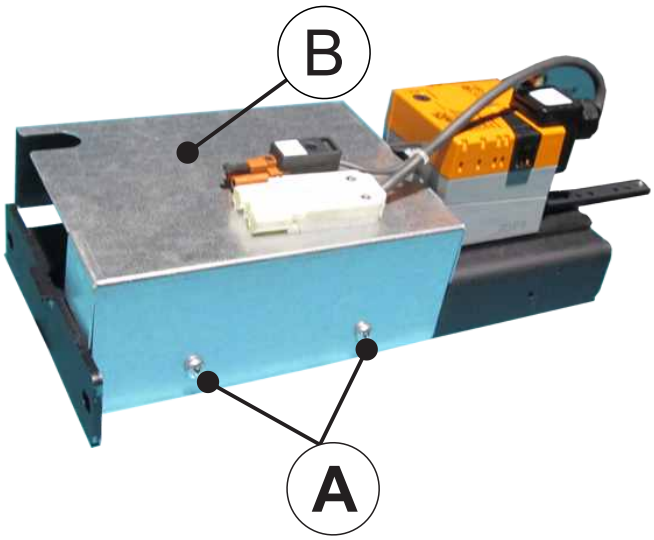
Valve is 100% closed

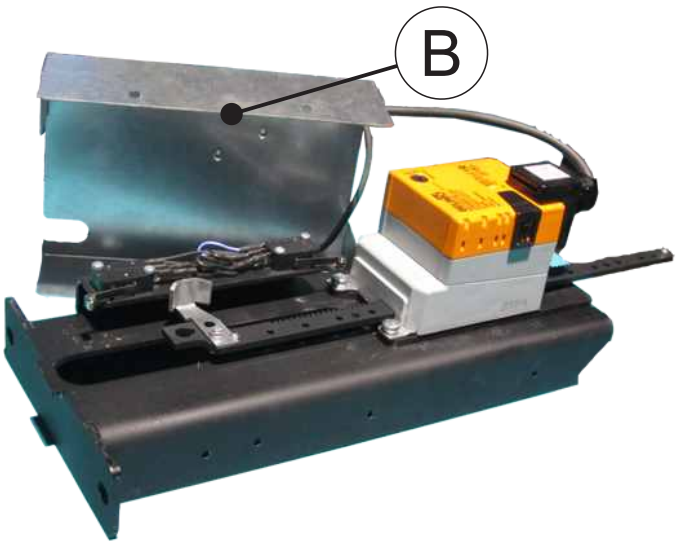


Valve is 100% opened

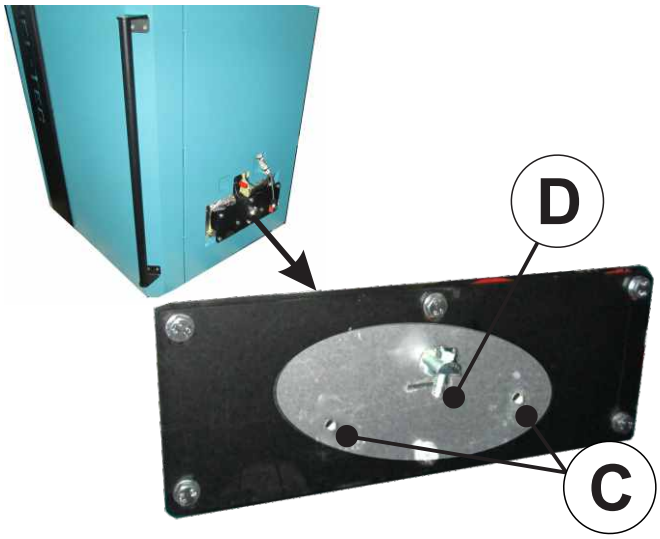


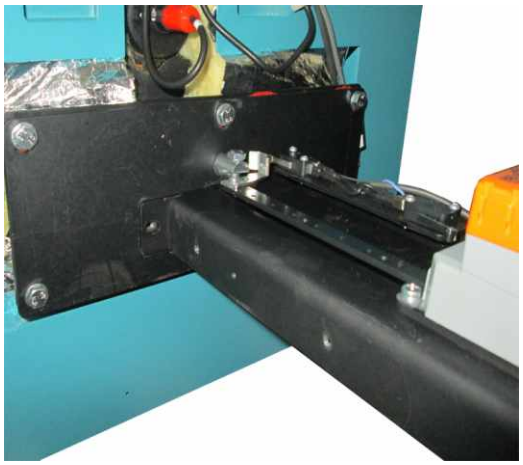
1. Remove the two screws (A), cover (B) of the grate cleaning mechanism and remove cover carefully not to damage cables.

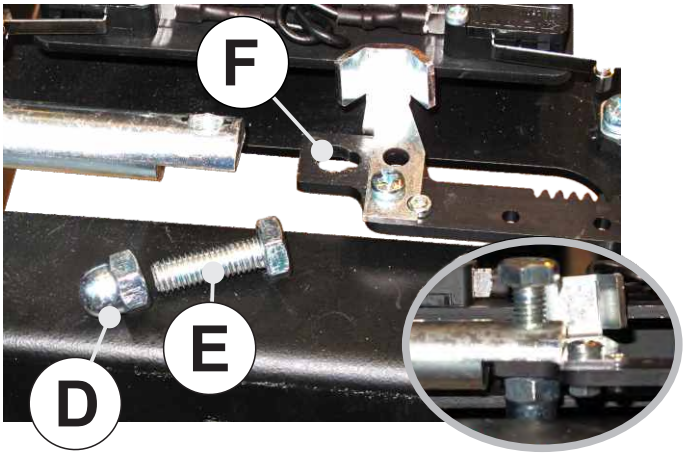


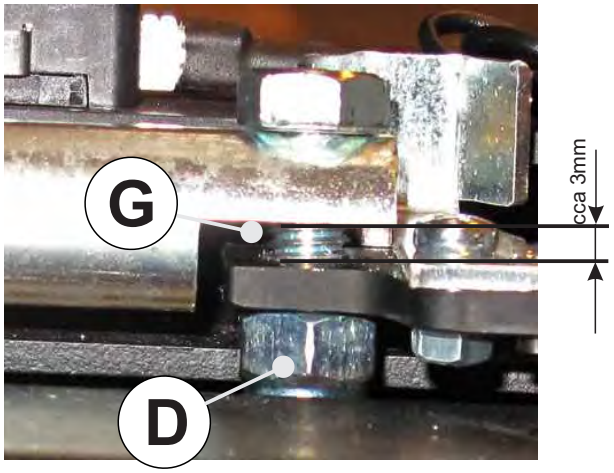


2. Remove the two screws (C) and the nut (D). Carefully set the grate cleaning mechanism to the boiler, fasten with screws (C) and set the screw (E) into the jagged track (F), set the nut (D) on the screw and tighten. Free space (G) is required for the proper functioning of the mechanism.

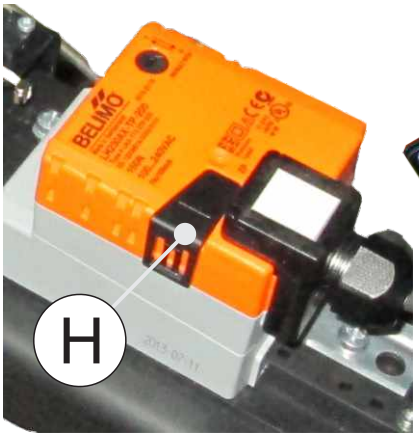


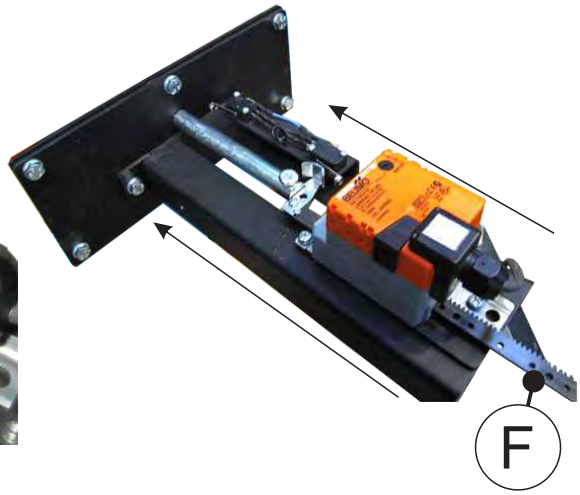


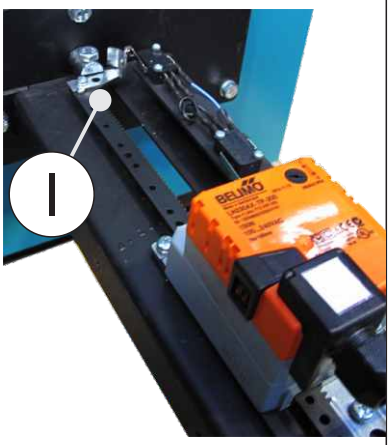




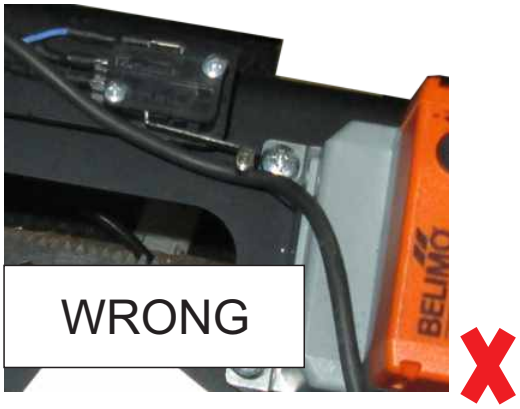
3. Press and hold the motor clutch (A) and slide the jagged track (F) in the boiler (I) and release the motor clutch

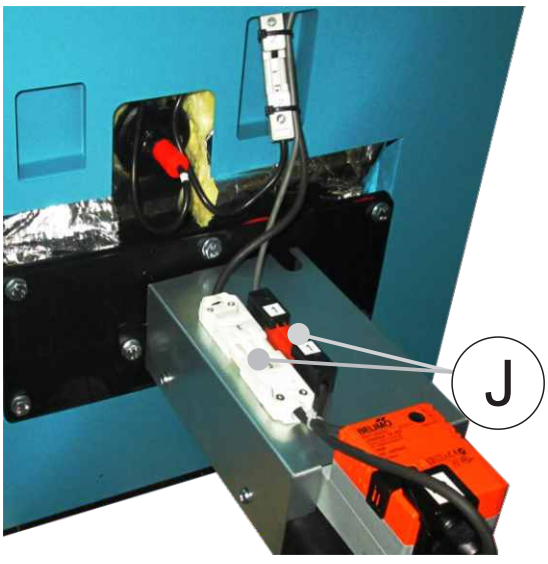






4. Before lowering the cover, place cable so that cable doesn't disturbing the microswitch and jagged track. Carefully set the cover and tighten with the screws (A). Connect the connectors (J) so they have a good contact.





1.6. SAFETY ELEMENTS

Boiler have a few safety elements:

- Bimetal thermostat built on the burner pellet feeding tube. If the bimetal set temperature (80°C) is exceeded, pellet feeding is stopped, the burner shuts down and the error E3 appears on the control unit (LED diode switches on).

- If there is no flame (the built in photo-cell does not detect the flame within set time), control stops the burner operation and error E2 is displayed or it goes to blowing off and error E6 is

- Displayed (LED diode switched on).Control unit has a built in protective function which protects the boiler against overheating. If temperature in the boiler exceeds 93°C, regardless heating or sanitary water is needed the boiler pump and/or the sanitary water turns on and works until temperature in the boiler falls below 93°C.

- The fan has a built-in RPM counter and, if regulation is informed that the fan does not operate in accordance with the requirement interrupts the process display fan error

- Drive for grate linear move have in-built two switches by wich control unit monitor position of grate. If grate at given moment is not on provided place, control unit recieve information that grate is not on provided place and interrupt proces and display information about grate error.

- Flue gas connection have in-built sensor for flue gas temperature meassuring. If flue gas tube temperature is over 250°C, control unit interrupt proces and display information about too high flue gas temperature.

When temperature in the boiler exceeds 110°C (+0°C / - 9°C), power supply is turned off by the safety thermostat (via control unit).

Thermal protection built in coils of the fan electric motor at the burner and the screw feeder motor, protects them against overheating caused by failure or locking.

A flexible tube connecting the pellet burner and pellet tank is made of plastic material reinforced with metal wire which, in case of back flame from the burner to the tank, melts and prevents flame to penetrate to the pellet tank.

1.6. FUEL

Only wood pellets are used as fuel in PelTec. 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 m^3) or in basement spaces. Recommended properties of pellets for firing in PelTec boilers are the following:

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

2.0. BOILER POSITIONING AND ASSEMBLY

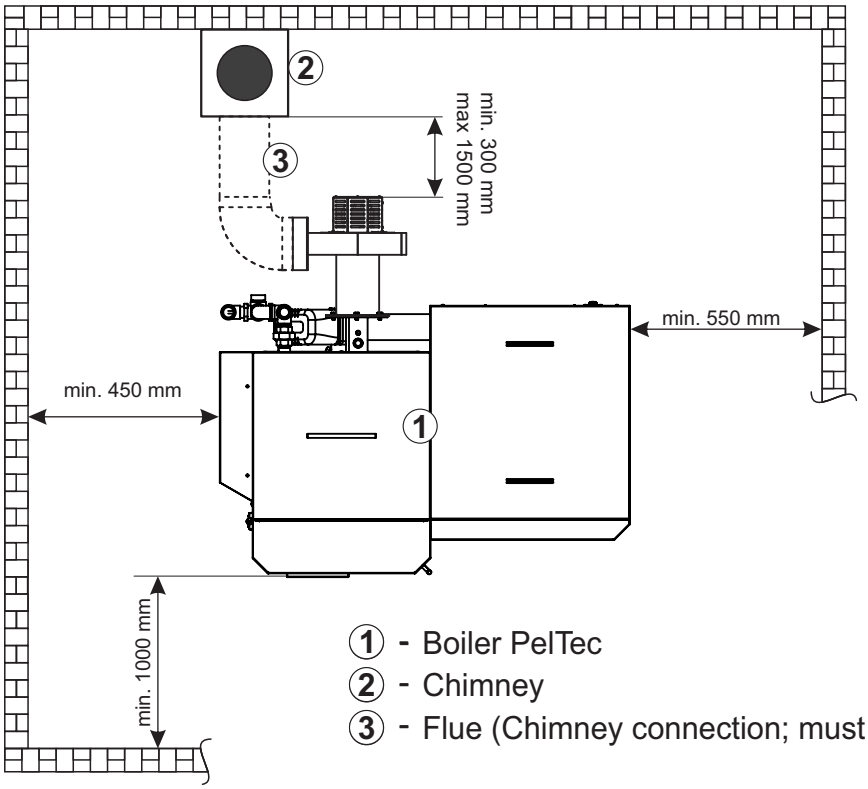
Boiler positioning, assembly and building in must be performed by a qualified person. We recommend that boiler is placed on a concrete base with height of 50 to 100 mm above the floor. Boiler room must be frost-proof and well ventilated. Boiler has to be positioned so that it can be properly connected to the chimney (see Figure 2) and simultaneously, enabling tending of boiler and additional equipment, control during operation, cleaning and maintenance.

WARNING!

Flammable items must not be placed on the boiler and within the minimum distances shown in Figure 1.

2.1. MINIMUM DISTANCE FROM THE ROOM WALLS

Figure 3. Minimum distance from the room walls for PelTec



① - Boiler PelTec
② - Chimney
③ - Flue (Chimney connection; must be insulated)

2.2. OPENING FOR FRESH AIR (FRESH AIR SUPPLY)

Each boiler room **must be equipped with an opening** for supply of fresh 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.

$$A = 6{,}02 \times Q$$

A - opening area in cm^2
Q - boiler output in kW

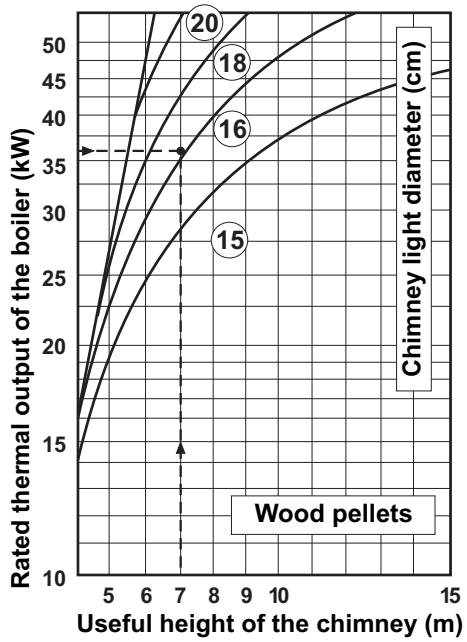
3.0. CONNECTION TO THE CHIMNEY

IProperly dimensioned and built chimney is the main condition for safe and economical functioning of the boiler. The thermal insulation of the chimney has to be done properly, it has to be absolutely gas-proof and smooth. On its lower part there has to be built in the opening for cleaning with the door. An brick-layed chimney has to have three layers with an insulation of 30 mm in the middle, if the chimney is built inside the house (i.e. inside the heated area), or an insulation of 50 mm if it is built outside the house (i.e. outside the heated area). The flue gas temperature has to be at least 30°C higher then the temprerature of their consdensation point. The choice and the construction of the chimney has to be performed by the authorized person. Inside dimensions of the chimney intersection selected in accordance with diagram for chimney selection, they depend of its height and of the capacity of the boiler.

Chimney must be dimenensioned by "diagram for chimney selection" and maximum permetted lenght of connection flue gas tube between connection on fan and chimney is 2000 mm and minimum light diameter xx0 mm with maximum two 90° bends. Connection flue gas tube can be mounted horizontally or at any angle which allows to gas, on his way to chimney, a constant increase of height with condidering of exit point from fan. Connection flue gas tube must have openings for cleaning through which is possible to clean entire lenght of flue gas tube or must ensure easy removal part of flue gas tube which allow complete cleaning of connection flue gas tube. To prevent entry of condensate form chimney into the boiler, flue gas tube must be mounted 10 mm deeper into the chimney. Connection flue gas tube between fan and chimney must be insulated with 30-50 mm mineral wool.

The chimney must be resistant against flue condensate!

Figure 4. Dimensioning of the chimney for PelTec



Chimney dimensioning example: for boiler PelTec 36

Boiler heat output: ***36 kW***
Fuel: ***wood pellets***

Required usable chimney height: ***7 m***

Required chimney light diameter: ***18 cm***

4.0. INSTALLATION

All local regulations, including those referring to national and European standards need to be complied with when installing the appliance.

4.1. CONNECTION TO CENTRAL HEATING SYSTEM

All installation work must be made in accordance with valid national and European standards.
Boiler **PelTec** can be built in closed and open central heating systems. In both cases boiler can be fired with wood pellets. 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 1. shows safe distances required for boiler cleaning and maintenance.

4.1.1. CONNECTION TO OPEN HEATING SYSTEM

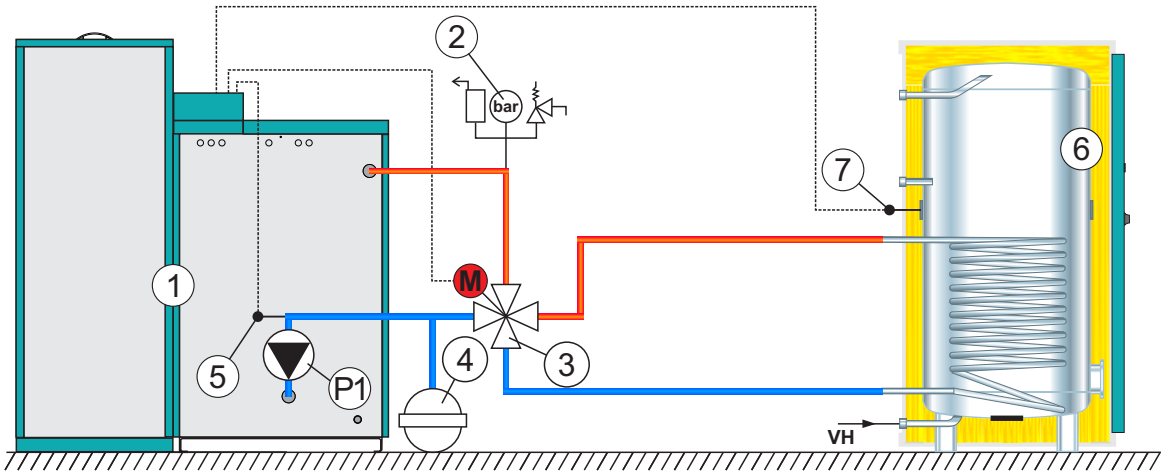
In open system it is necessary to put an open expansion vessel min. 0,5 m above the height of the highest heating body. If expansion vessel is located in a room without heating, it should be insulated. The system pump could be connected on the inline or back line of the boiler.

4.1.2. CONNECTION TO CLOSED HEATING SYSTEM

In closed heating system it is **obligatory** to build in certified safety valve with opening pressure of 2,5 bar and a membrane expansion vessel. Safety valve and expansion vessel must be built in accordance with professional rules and between safety valve and expansion vessel and boiler must not be any valve. Schemes for possible configurations are on following pages.

Scheme 1. Configuration **DHW**

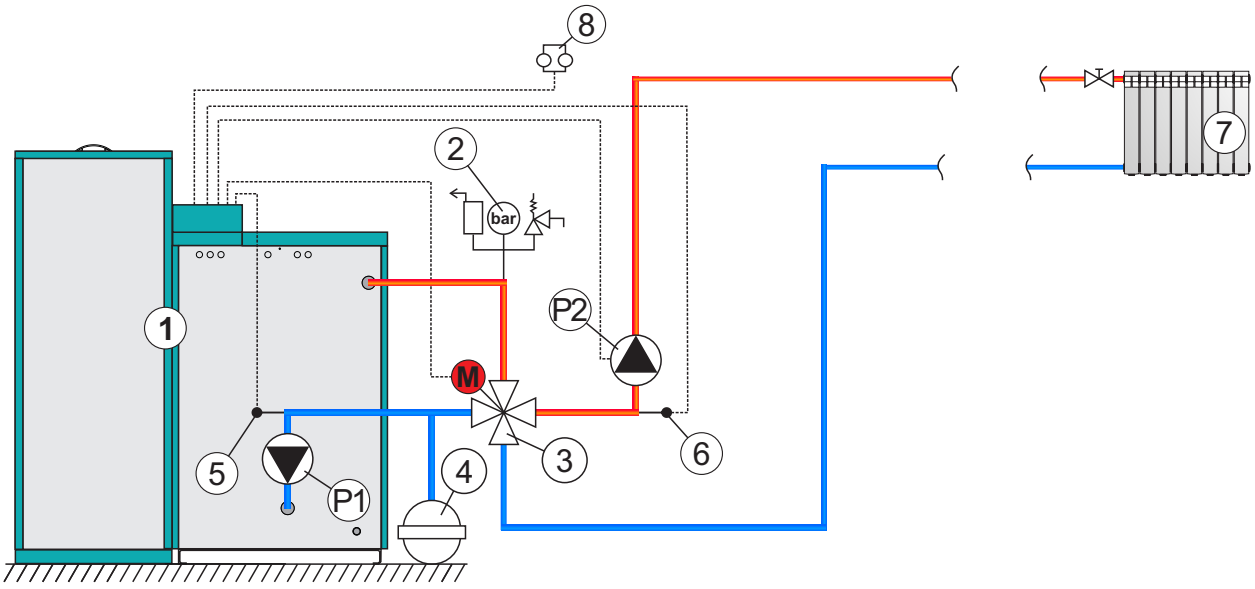
Required sensors: - return flow temp. sensor
- DHW sensor



1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - DHW tank
7 - DHW sensor

Scheme 2. Configuration **DHC**

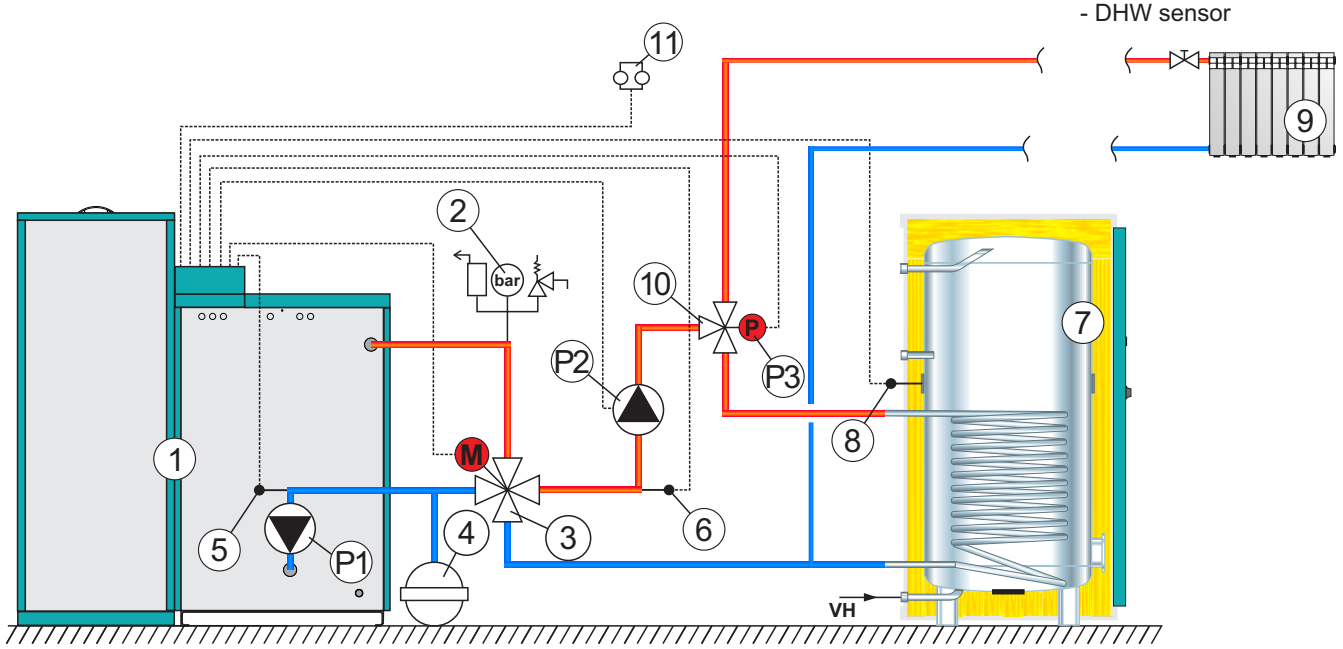
Required sensors: - return flow temp. sensor
- flow temperature sensor



1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - Flow temperature sensor
7 - Heating circuit
8 - Room thermostat

Scheme 3. Configuration **DHC || DHW**

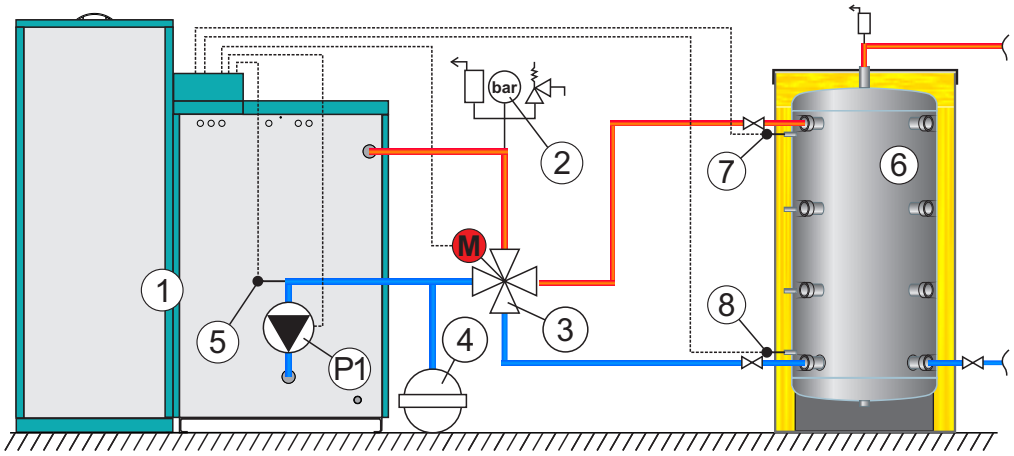
Required sensors: - return flow temp. sensor
- flow temperature sensor
- DHW sensor



1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - Flow sensor
7 - DHW tank
8 - DHW tank sensor
9 - Heating circuit
10 - 3-way diverter valve
11 - Room thermostat

Scheme 4. Configuration **BUF**

Required sensors: - return flow temp. sensor
- accumulation tank sensor (upper)
- accumulation tank sensor (lower)

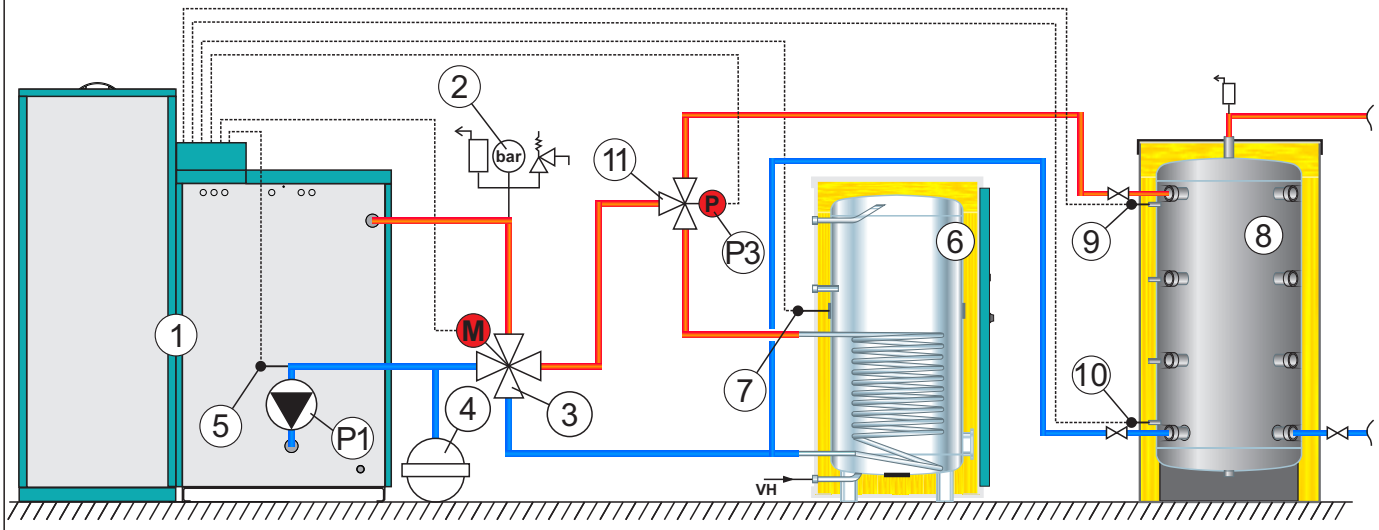


1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Back flow sensor
6 - Accumulation tank CAS
7 - Accumulation tank sensor CAS 1 (upper)
8 - Accumulation tank sensor CAS (lower)

NOTE:
In this configuration is possible to upgrade up to 4 unit "CM2K-P module for regulation 2 heating circuits“.

Scheme 5. Configuration **DHW || BUF**

Required sensors: - return flow temp. sensor
- DHW tank sensor
- accumulation tank sensor (upper)
- accumulation tank sensor (lower)

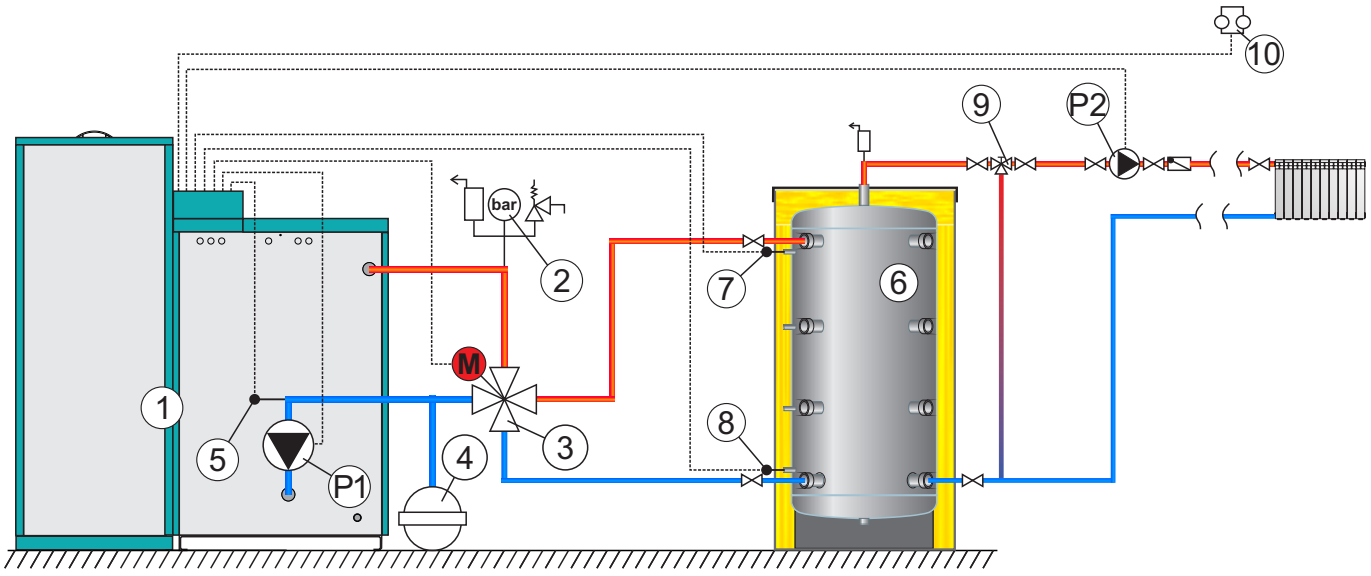


1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - DHV tank
7 - DHW tank sensor
8 - Accumulation tank CAS
9 - Accumulation tank sensor CAS 1 (upper)
10 - Accumulation tank sensor CAS 2 (lower)
11 - 3-way diverter valve

NOTE:
In this configuration is possible to upgrade up to 4 unit "CM2K-P module for regulation 2 heating circuits“.

Scheme 6. Configuration **BUF -- IHC**

Required sensors: - return flow temp. sensor
- accumulation tank sensor (upper)
- accumulation tank sensor (lower)

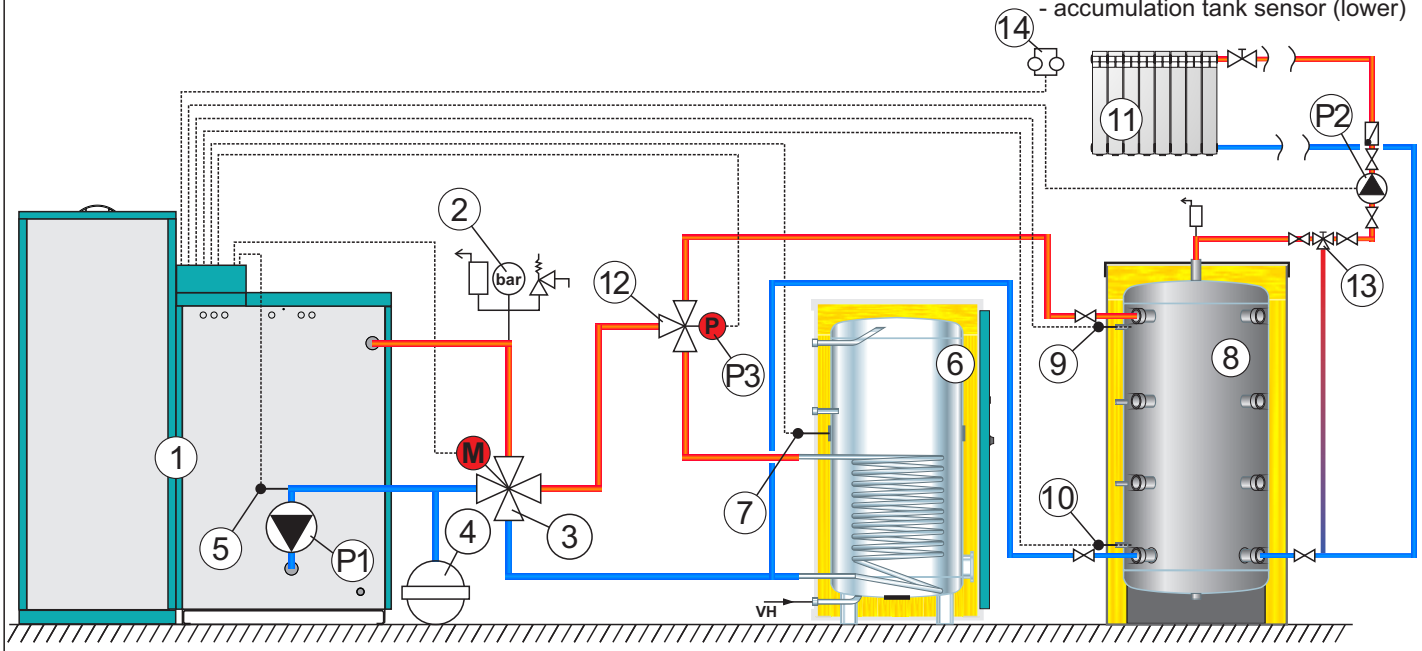


1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - Accumulation tank CAS
7 - Accumulation tank sensor CAS 1 (upper)
8 - Accumulation tank sensor CAS 2 (lower)
9 - 3-way manual mixing valve
10 - Room thermostat

NOTE:
In this configuration is possible to upgrade up to 4 unit "CM2K-P module for regulation 2 heating circuits“.

Scheme 7. Configuration **DHW || BUF -- IHC**

Required sensors: - return flow temp. sensor
- DHW tank sensor
- accumulation tank sensor (upper)
- accumulation tank sensor (lower)

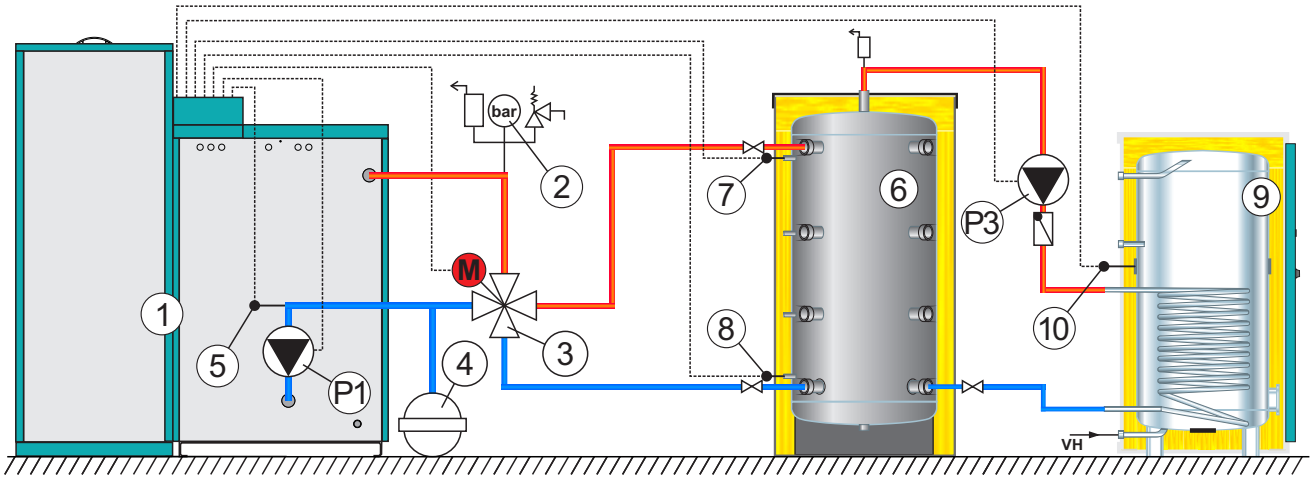


1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - DHV tank
7 - DHV tank sensor
8 - Accumulation tank CAS
9 - Accumulation tank sensor CAS 1 (upper)
10 - Accumulation tank sensor CAS 2 (lower)
11 - Heating circuit
12 - 3-way diverter valve
13 - 3-way manual mixing valve
14 - Room thermostat

NOTE:
In this configuration is possible to upgrade up to 4 unit "CM2K-P module for regulation 2 heating circuits".

Scheme 8. Configuration **BUF -- DHW**

Required sensors: - return flow temp. sensor
- DHW tank sensor
- accumulation tank sensor (upper)
- accumulation tank sensor (lower)

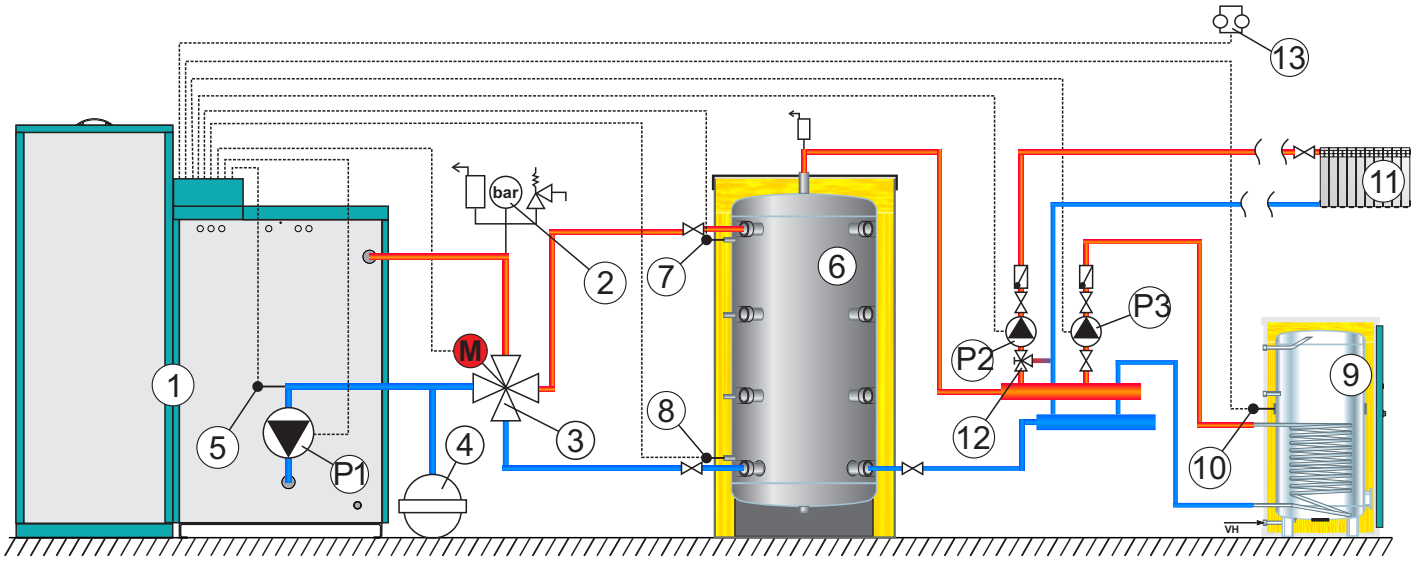


1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - Accumulation tank CAS
7 - Accumulation tank sensor CAS 1 (upper)
8 - Accumulation tank sensor CAS 2 (lower)
9 - DHV tank
10 - DHV tank sensor

NOTE:
In this configuration is possible to upgrade up to 4 unit "CM2K-P module for regulation 2 heating circuits".

Scheme 9. Configuration **BUF -- IHC || DHW**

Required sensors: - return flow temp. sensor
- DHW tank sensor
- accumulation tank sensor (upper)
- accumulation tank sensor (lower)

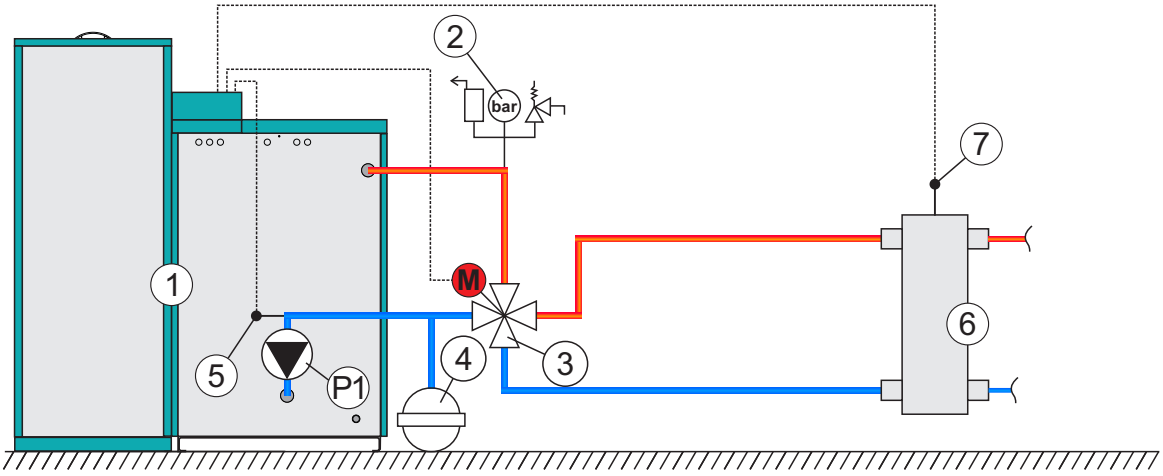


1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - Accumulation tank CAS
7 - Accumulation tank sensor CAS 1 (upper)
8 - Accumulation tank sensor CAS 2 (lower)
9 - DHV tank
10 - DHV tank sensor
11 - Heating circuit
12 - 3-way manual mixing valve
13 - Room thermostat

NOTE:
In this configuration is possible to upgrade up to 4 unit "CM2K-P module for regulation 2 heating circuits".

Scheme 10. Configuration **CRO**

Required sensors: - return flow temp. sensor
- hydraulic crossover sensor



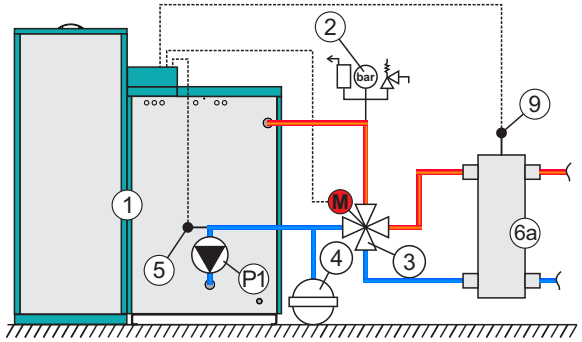
1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - Hydraulic crossover
7 - Hydraulic crossover sensor

NOTE:
In this configuration is possible to upgrade up to 4 unit "CM2K-P module for regulation 2 heating circuits".

NOTE: USED ONLY IN CASCADES AND EXTERNAL CONTROL

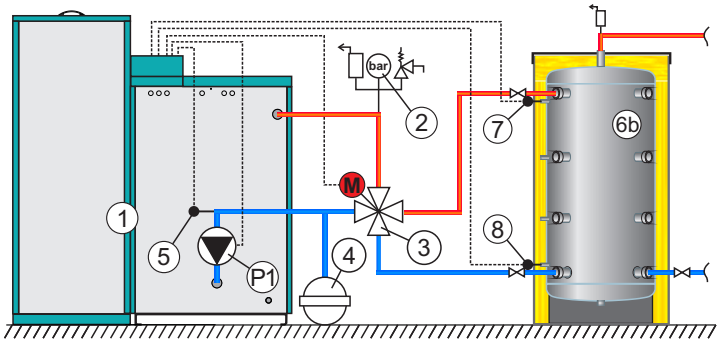
Scheme 11. Configuration **CRO / BUF**

Version 1: (display shows 1 temperature, eg hidraulic crossover)



1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor

Version 2: (Display shows 2 temperatures (eg. accumulation tank)



6a - Hydraulic crossover
6b - Accumulation tank
7 - Accumulation tank sensor 1 (upper)
8 - Accumulation tank sensor 2 (lower)
9 - Hydraulic crossover sensor

Possible control:

- manually (ON/OFF)
- by scheduled starting times
- by external controller(START/STOP)**
- by cascade manager *
- by external controller (start/stop) + cascade manager**

Required sensors:
- return flow temp. sensor
- hydraulic crossover sensor (only in version 1)
- accumulation tank sensor (upper)(only in version 2)
- accumulation tank sensor (lower)

Imposible control:
- by room thermostat

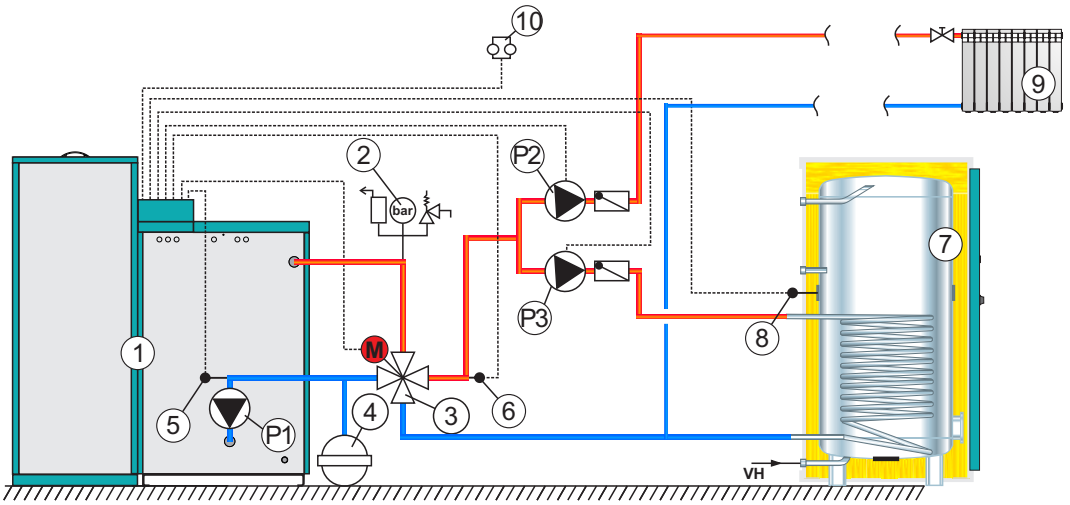
***Note: Connecting the sensor 9 (version 1) and 7,8 (version 2) is not required because these temperatures are only informative, if sensors are not connected, regulation will show temperature " - °C". The boiler regulation will not report any error even if the sensors are defective.**

****Additional equipment.**

NOTE: In this configuration is possible to upgrade up to 4 unit "CM2K-P module for regulation 2 heating circuits".

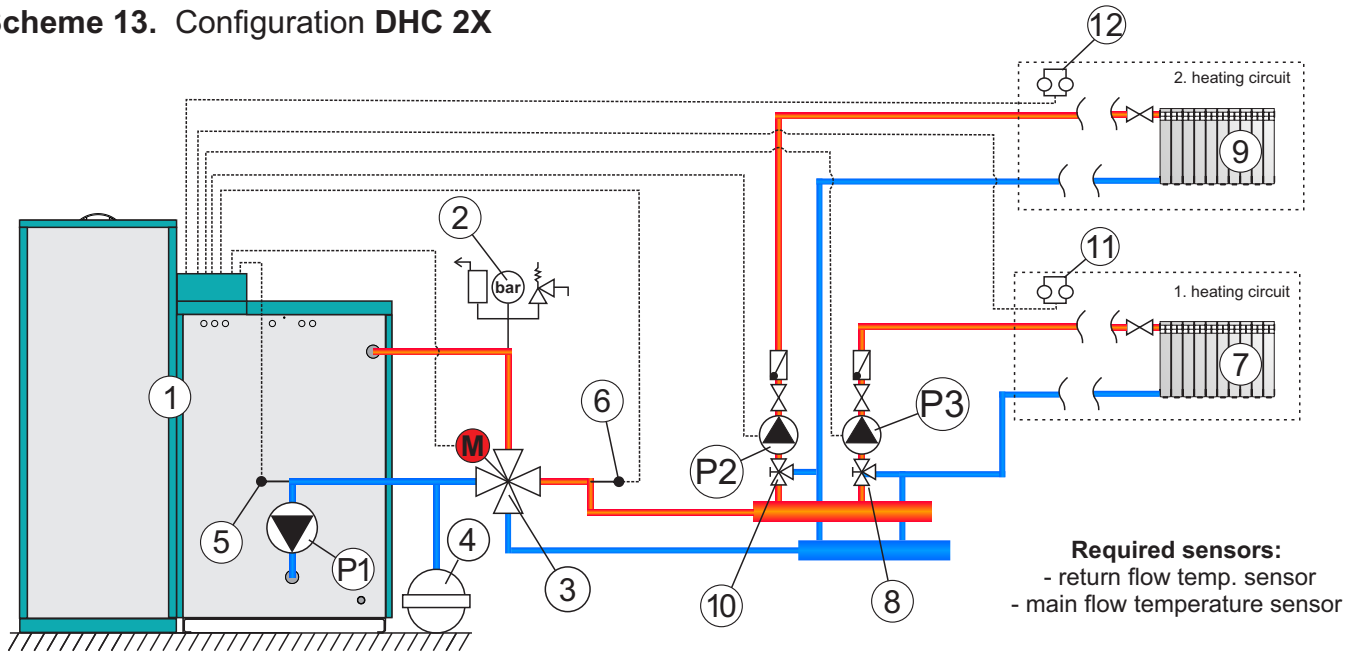
Scheme 12. Configuration **DHC || DHW(2)**

Required sensors:
- return flow temp. sensor
- flow temperature sensor
- DHW sensor



1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vesse
5 - Return flow sensor
6 - Flow sensor
7 - DHW tank
8 - DHW tank sensor
9 - Heating circuit
10 - Room thermostat

Scheme 13. Configuration **DHC 2X**

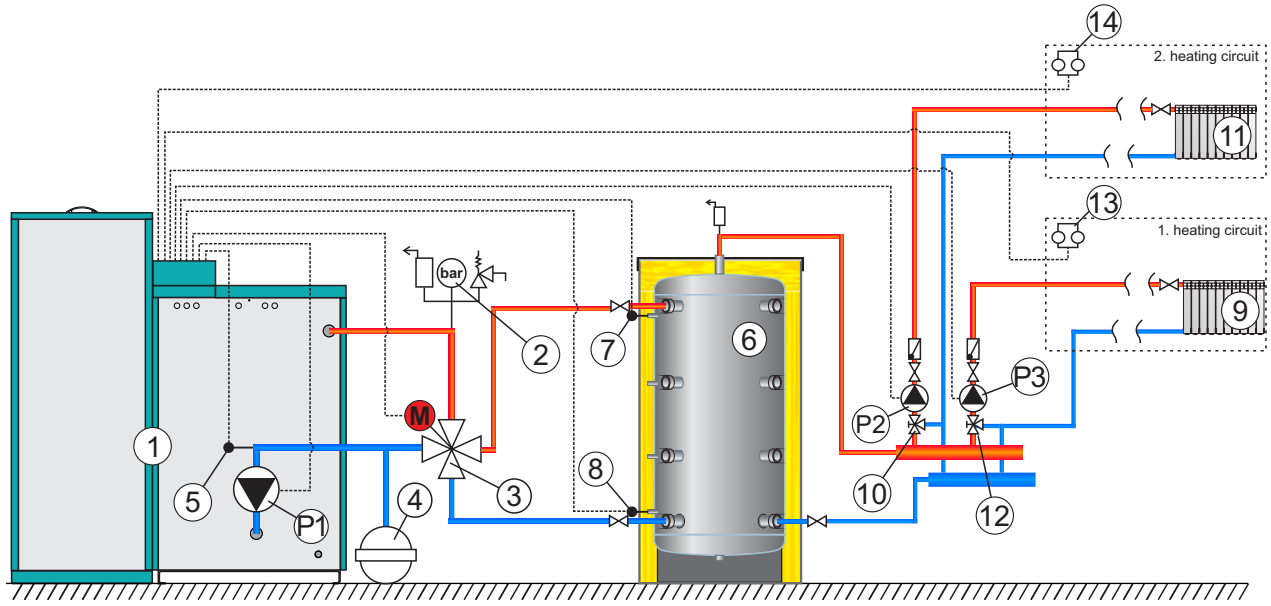


Required sensors:
- return flow temp. sensor
- main flow temperature sensor

1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - Main flow temperature sensor
7 - Heating circuit 1
8 - 3-way manual mixing valve 1.circuit
9 - Heating circuit 2
10 - 3-way manual mixing valve 2.circuit
11- Room thermostat 1. circuit
12- Room thermostat 2. circuit

Shema 14. Configuration **BUF--IHCX2**

Required sensors:
- return flow temp. sensor
- accumulation tank sensor (upper)
- accumulation tank sensor (lower)

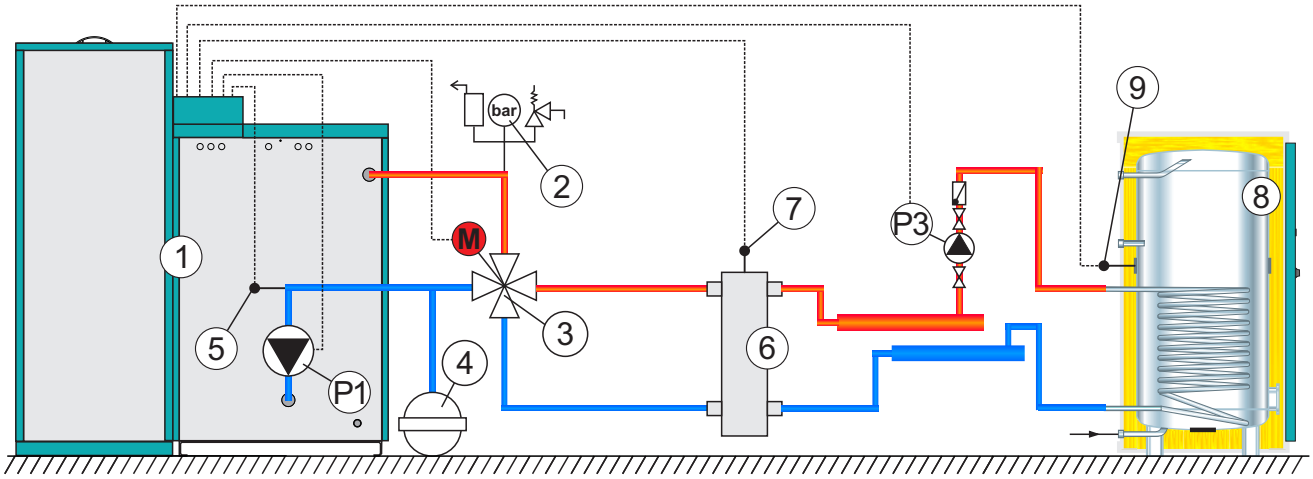


1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - Accumulation tank CAS
7 - Accumulation tank sensor CAS 1 (upper)
8 - Accumulation tank sensor CAS 1 (lower)
9 - Heating circuit 1
10 - 3-way manual mixing valve 1.circuit
11- Heating circuit 2
12- 3-way manual mixing valve 2.circuit
13- Room thermostat 1. circuit
14- Room thermostat 2. circuit

NOTE:
In this configuration is possible to upgrade up to 4 unit "CM2K-P module for regulation 2 heating circuits“.

Scheme 15. Configuration **CRO -- DHW**

Required sensors: - return flow temp. sensor
- DHW tank sensor
- hydraulic crossover sensor



1 - Boiler PelTec
2 - Air self-venting group 2,5 bar
3 - Motor 4-ways mixing valve
4 - Closed type expansion vessel
5 - Return flow sensor
6 - Hydraulic crossover
7 - Hydraulic crossover sensor
8 - DHW tank
9 - DHW tank sensor

NOTE:
In this configuration is possible to upgrade up to 4 unit "CM2K-P module for regulation 2 heating circuits“.

5.0. ELECTRICAL CONNECTIONS

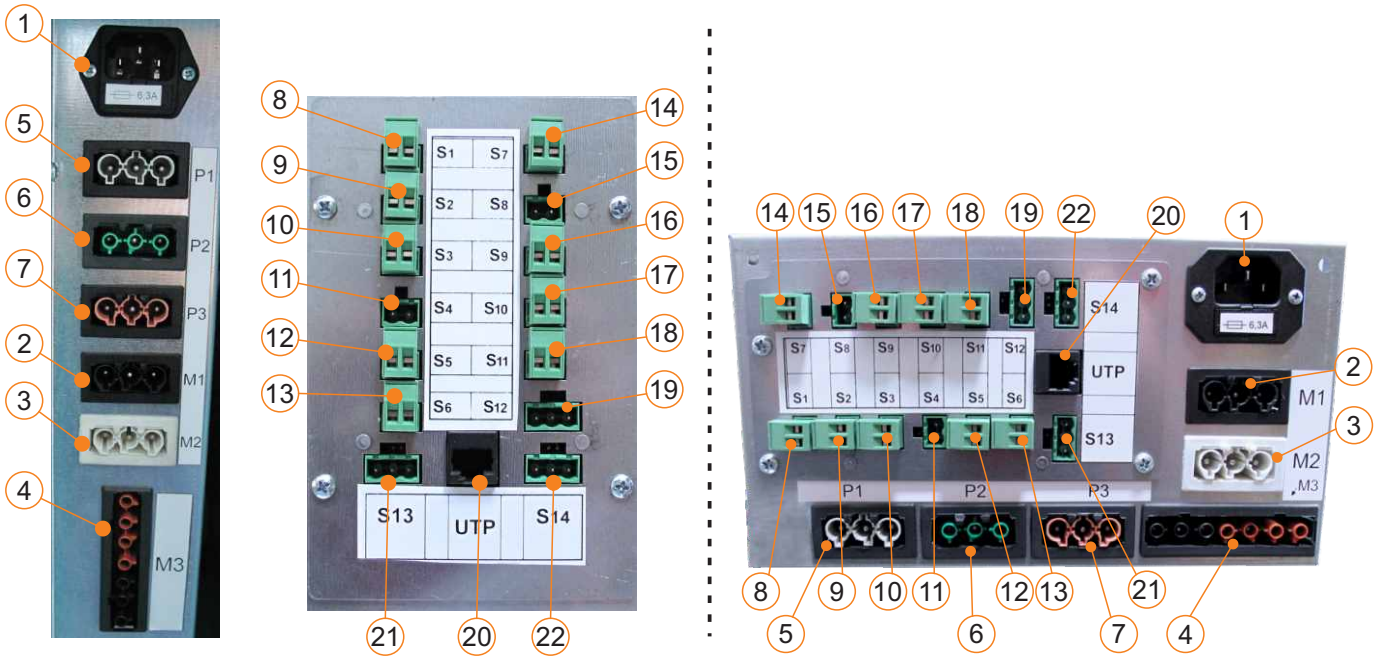
All electrical works must be performed by a certified professional in accordance with valid national and European standards. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard. A device for switching of all power supply poles must be installed in electrical installation in accordance with the national regulations on electrical installations. Pump of heating system should be connected to boiler control unit PelTec .

CAUTION:

When connecting any electrical part be sure to unplug the boiler at the main switch and disconnect the power supply.

Figure 5. Connectors for power supply, el. components and sensors

1. SUPPLY
2. M1 - Pellet feeder
3. M2 - Actuator for 4-way mixing valve
4. M3 - Fan
5. P1 - Heating pump
6. P2 - Domestic water pump
7. P3 - Tank pump
8. S1 - Sanitary water sensor
   Room thermostat 2.circuit
9. S2 - Accumulation tank 1 sensor (up) / Hydraulic crossover sensor
10. S3 - Accumulation tank 2 sensor (down)
11. S4 - Flue gas sensor
12. S5 - Outside temp. sensor
13. S6 - Flow sensor
14. S7 - Return sensor
15. S8 - PVC tube bimetal sensor
16. S9 - Room thermostat / External control
17. S10 - Alarm (output 1)
18. S11 - Alarm (output 2, option)
19. S12 - Pellet level in the tank sensor
20. - UTP connector
21. - Reserve
22. - Reserve

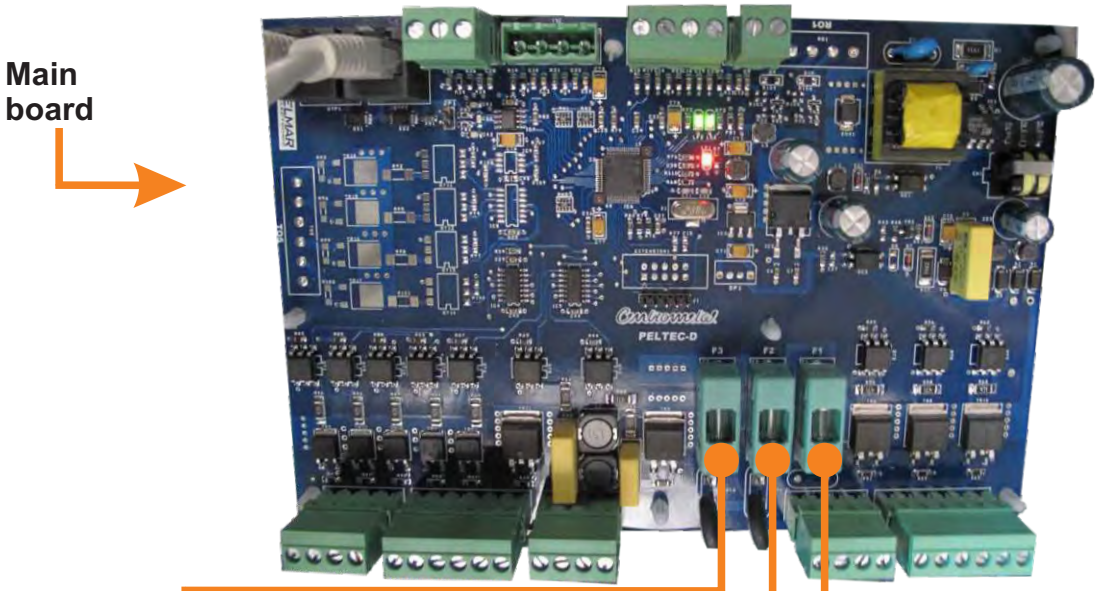


PelTec 12,18 PelTec 24-48

If heating system contains DHW, on the connector S1 is connected hot water sensor,
and if the heating system contains 2 heating circuit, on the connector S1 is connected the room thermostat.

Note: It is obligatory mount the sensor in the socket for sensors using thermal paste

5.1. FUSES



Mark: F3
Fuse: 3,15 A

Mark: F2
Fuse: 500 mA

Mark: F1
Fuse: 3,15 A

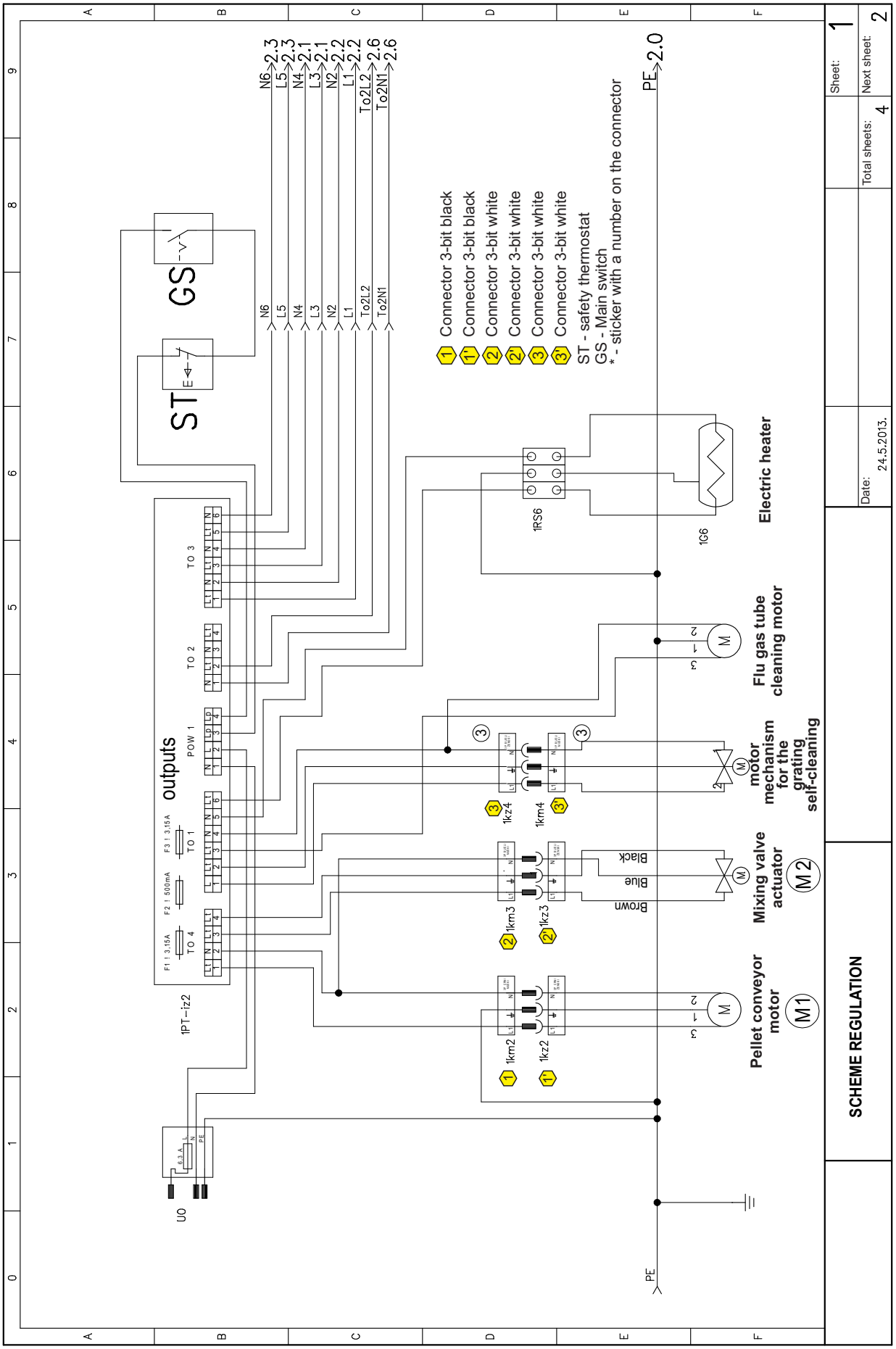
MARK	FUSE	DEVICES
F1	fast acting fuse 3,15 A	- all pumps - regulation (power supply)
F2	fast acting fuse 500 mA	- all other devices who are not on the F1 and F3 (motor mechanism for the grating self-cleaning, pellet conveyor motor, flue gas tube cleaning motor...)
F3	fast acting fuse 3,15 A	- heater - fan

Note:
Be sure to use fast acting fuses!

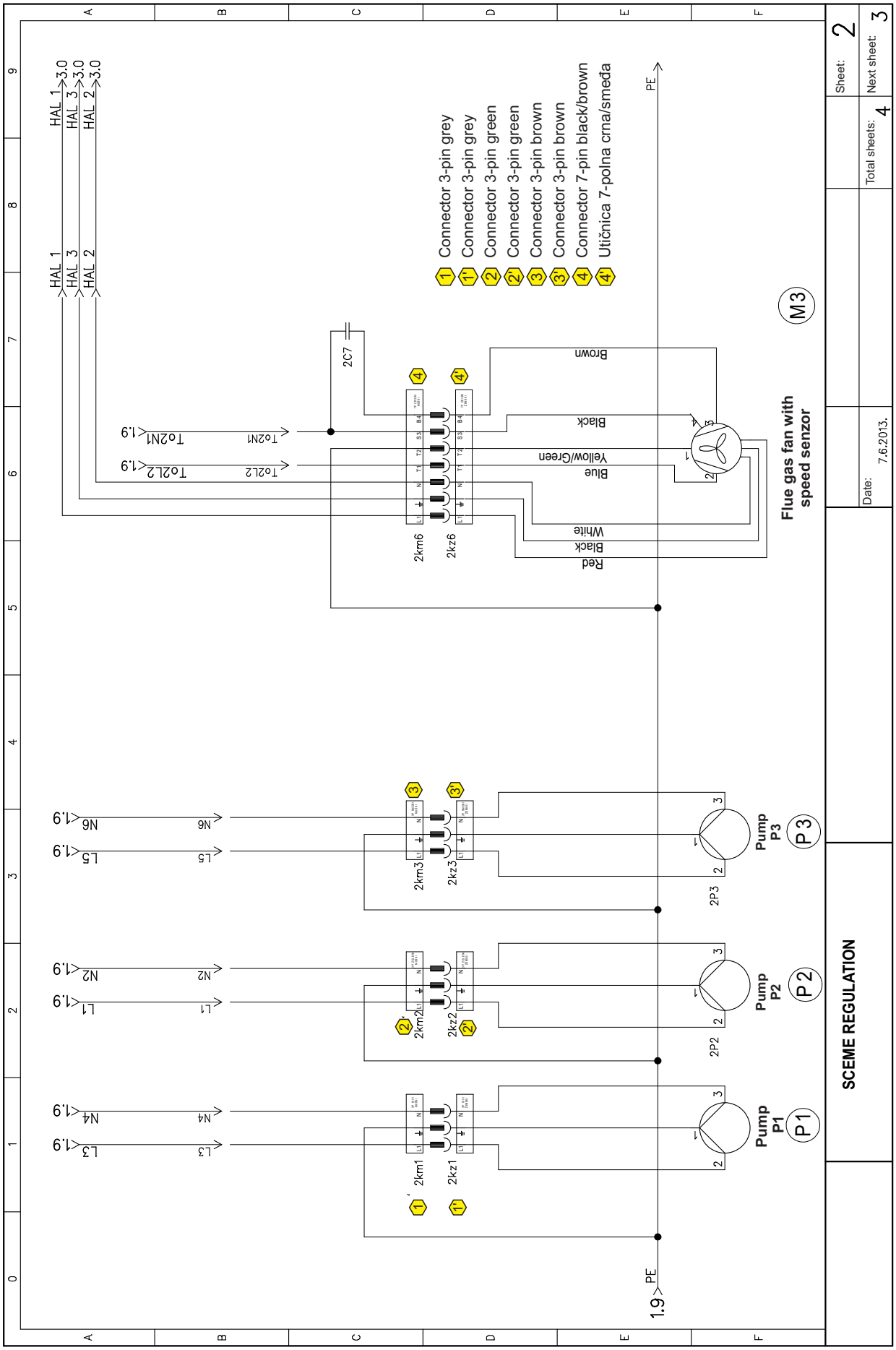
IMPORTANT:

When replacing a fuse, be sure turn off the boiler at the main switch and unplug the power cord.

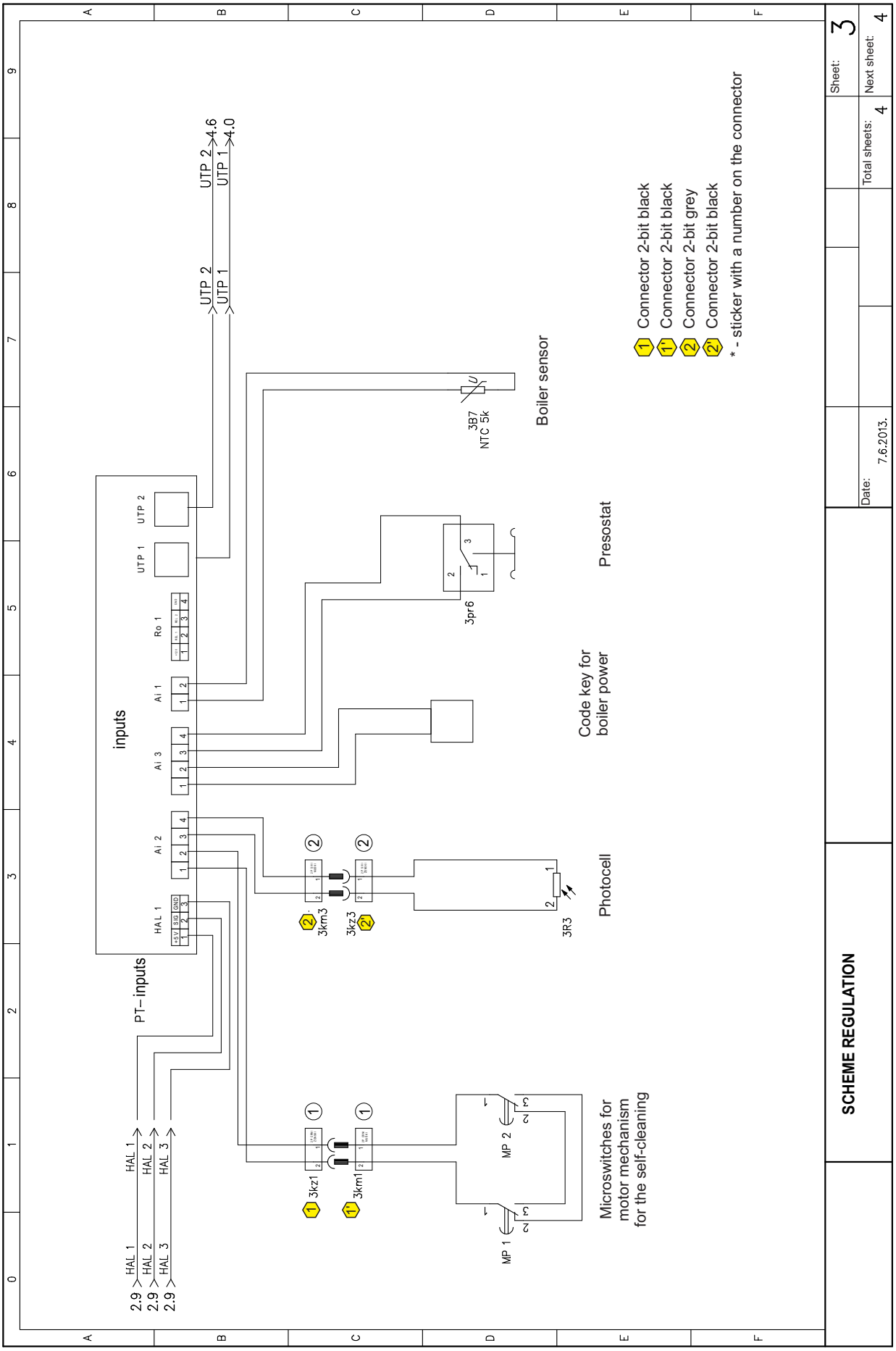
5.1. ELECTRICAL SCHEME OUTPUTS 1



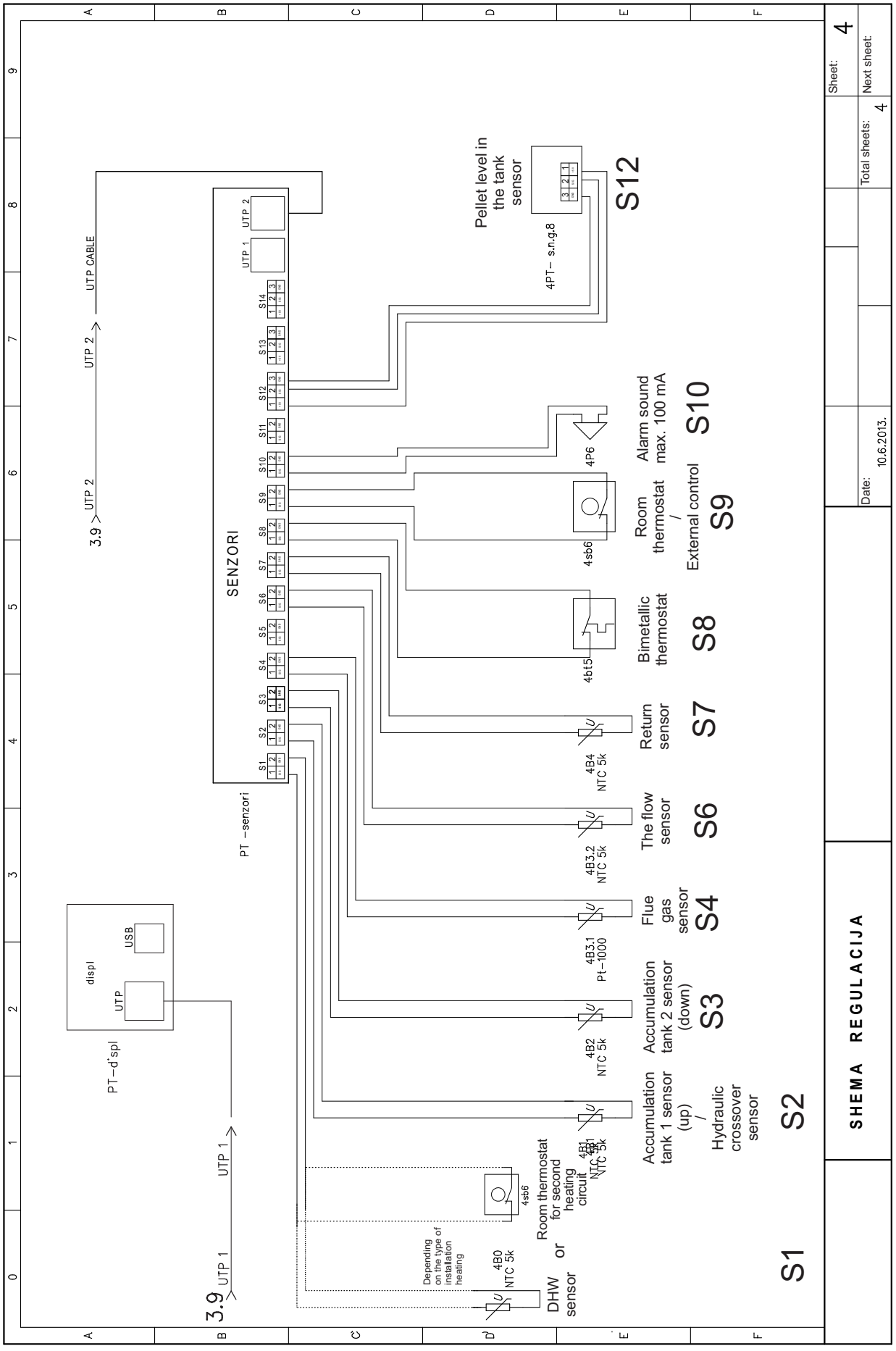
5.2. ELECTRICAL SCHEME OUTPUTS 2



5.3. ELECTRICAL SCHEME INPUTS



5.4. ELECTRICAL SCHEME SENSORS



6.0. OPERATING THE SYSTEM

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 s person responsible for their safety.

Children must be supervised in the vicinity of the product. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified.

6.1. SAFETY INSTRUCTIONS FOR THE INSTALLATION ROOM

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

6.2. INITIAL STARTUP

See technical instructions for PelTec digital control unit where is explained initial startup.

Note:

The start up has to be done by the authorized person, otherwise the warranty for this product is not valid and the product must not be used.

Note:

If condensation escapes during the initial heatup phase, this does not indicate a fault.

If this occurs, clean up using a cleaning rag.

6.3. FILLING / REFILLING PELLET TANK WITH FUEL

CAUTION:

Use only permitted pellets!

6.4. 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 s person responsible for their safety. Children must be supervised in the vicinity of the product. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard. Protective gloves are obligatory.
Check whether boiler and equipment are installed and connected in accordance with these Technical instructions. Check whether chimney meets requirements of point 3.0 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.

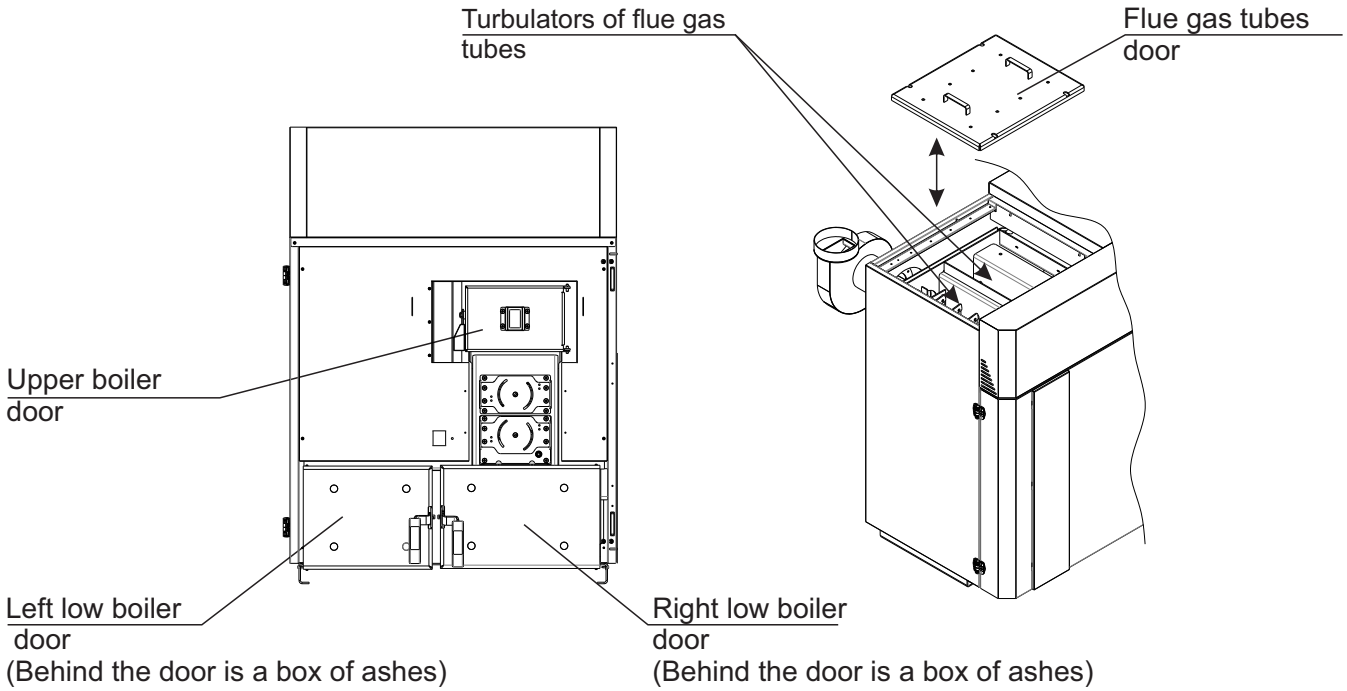
Note:
Before every use chech if the boiler doors and cover door are closed (Figure 4).

If you smell flue gas:

- shut down the heating system
- Ventilate the boiler room
- Close all doors leading to the living space

Flue gas can lead to life-threating poisoning!

Slika 4. PelTec boiler door



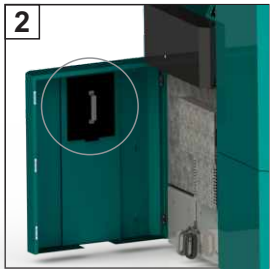
7.0. CLEANING AND MAINTENANCE

Every millimeter of soot on the exchange surfaces and in the flues means about 5 % more fuel consumption. A clean boiler saves fuel and protects the environment.
Save fuel – always clean the boiler in good time!

PROTECTIVE GLOVES ARE OBLIGATORY!!

Cleaning interval	Boiler type	Description
After spent 150-250 kg of pellets	12kW	Discharge ash boxes
After spent 250-350 kg of pellets	18kW	Discharge ash boxes
After spent 300-450 kg of pellets	24kW	Discharge ash boxes
After spent 400-600 kg of pellets	36-48kW	Discharge ash boxes

Emptying the ash box:



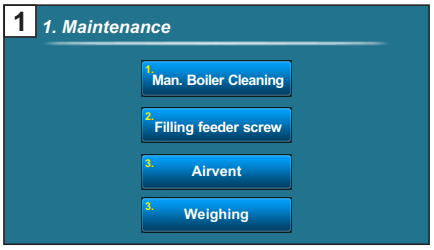
1. Take out ash boxes.
2. For carrying ash boxes, use a protective cover which is located on the inside of front door. For boilers 18,24, 36 and 48 kW take out one by one box in order to use the same cover (Figure 2).
3. Attach the cover to the 3 holes (Figure 3.4) .
4. Put the cover and ash box back to original position.

IMPORTANT! The ash can be disposed of only in a metal container!

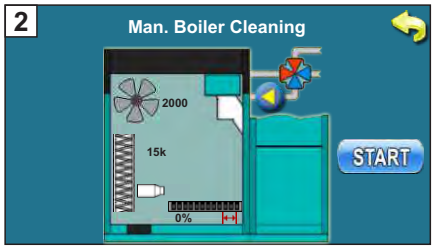
Cleaning interval	Boiler type	Description
At least once per year (This procedure is very simple and is recommends even more often)	12-48 kW	Cleaning of exchanging surfaces (above the burner)

Claning of exchanging surfaces (above the burner)

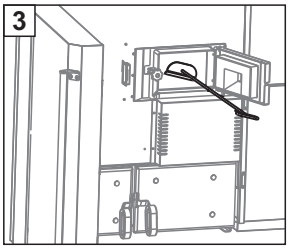
1



2



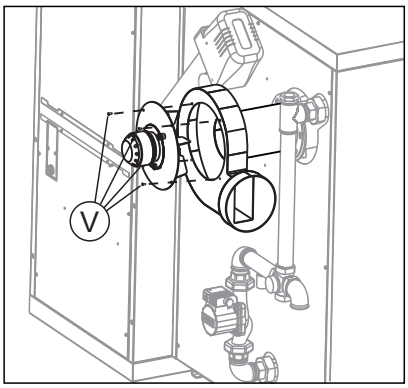
3

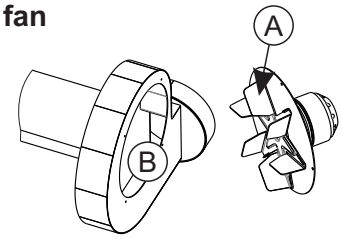


1 - Press the "maintenance" on the regulation and then "Boiler Cleaning".
2 - Press "START" (it will start the fan and it will open a grate.)
3 - By using scraper, brush or vacuum cleaner, through the door clean exchanging surfaces
4 - After you finish cleaning, press "back" ( ) on regulation to control the boiler back to normal mode and close the front door of the boiler.

Cleaning interval	Boiler type	Description
When needed	12-48 kW	Cleaning the blades and box of the fan

Cleaning the blades and box of the fan

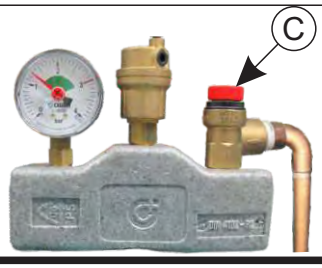




6

1. Switch off the boiler and disconnect from electric. power.
2. Pull out the 7 pin connector (Figure 6) from boiler control unit. Then unscrew four screws (V) and remove the fan, clean the fan blades (A), check the condition of the fan box (B) and clean it when is necessary by using vacuum cleaner or remove it from the boiler and clean thoroughly.
3. Set back the fan into original position and secure it with screws, then connect 7-pin connector on the M3 (see page 24, figure 5) and connect the power supply to the boiler.

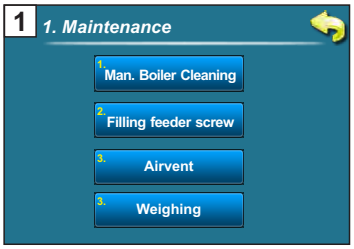
Cleaning interval	Boiler type	Description
Every 6 months	12-48 kW	Check the correctness of security valve

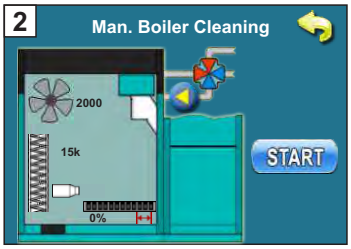


Checking the correctness of security valve

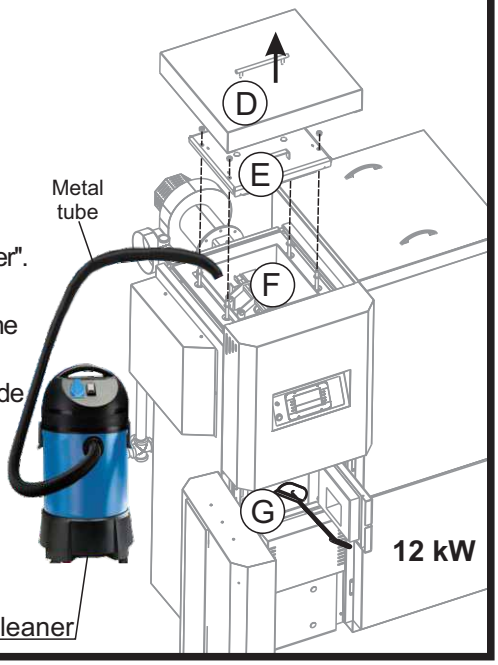
By briefly turning the cap of safety valve (C) check whether water coming out from the safety valve. If no water comes out after several repeated checks, then is necessary to replace the safety valve.

Cleaning interval	Boiler type	Description
At least once per year	12 kW	Cleaning of exchanging surfaces (around the entire boiler)

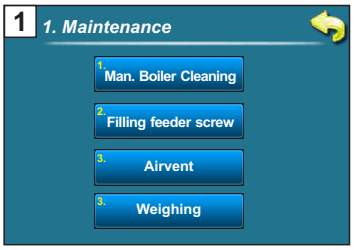


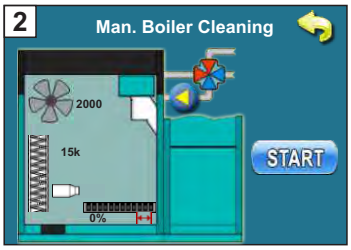


1. Press "Maintenance" on the regulation and then "Cleaning the boiler".
2. Press "START" (it will start the fan and it will open a grate.)
3. Lift the top cover (D), then unscrew the four screws and remove the upper door (E).
4. By using scraper, brush and vacuum cleaner, through the upper side and trough the front door clean exchanging surfaces(F,G).
5. When you have finished cleaning, set upper door back to original position and tighten them well, then set the top cover back to position and close the front door of the boiler. Then press "back" on the regulation ( ) to return boiler to normal mode.

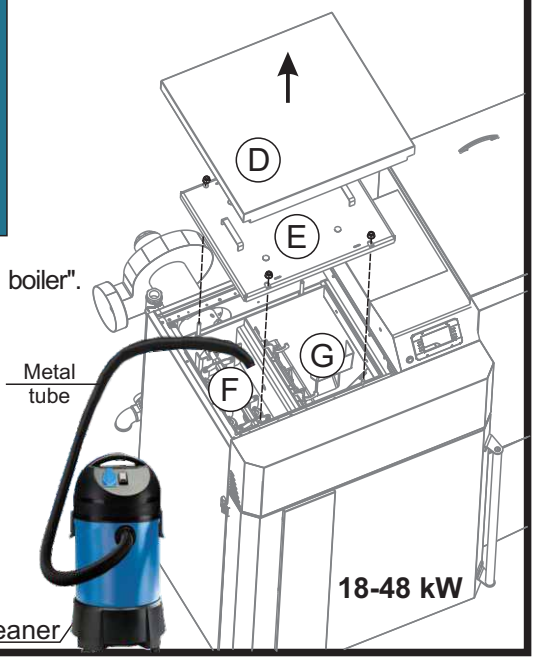


Cleaning interval	Boiler type	Description
At least once per year	18-48 kW	Cleaning of exchanging surfaces (around the entire boiler)





1. Press "Maintenance" on the regulation and then "Cleaning the boiler".
2. Press "START" (it will start the fan and it will open a grate.)
3. Lift the top cover (D), then unscrew the four screws and remove the upper door (E).
4. By using scraper, brush and vacuum cleaner, through the upper side clean exchanging surfaces(F,G).
5. When you have finished cleaning, set upper door back to original position and tighten them well, then set the top cover back to position. Then press "back" on the regulation ( ) to return boiler to normal mode.

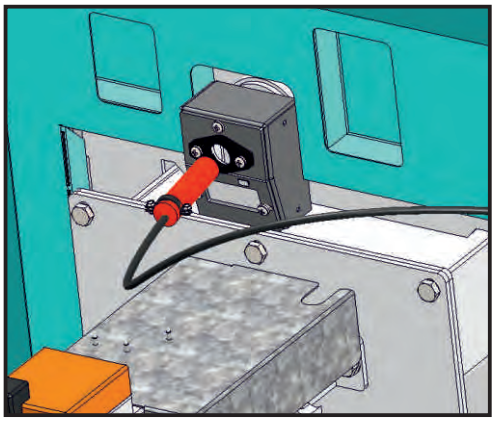


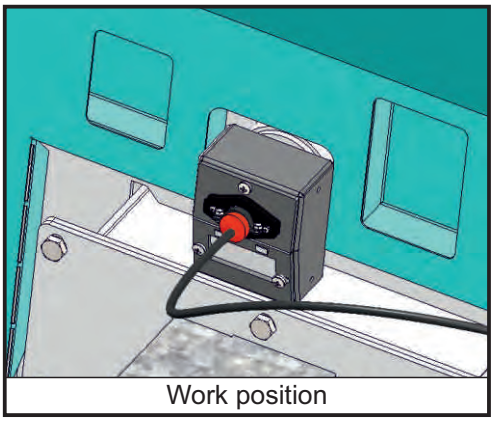
Cleaning interval	Boiler type	Description
At least once a year (or if you have problems with the ignition)	18-48 kW	Photocell cleaning

Dirty photocell which can result error in ignition or flame dissapear error

Valid photocell

Carefully remove the photocell from the box and then gently with a cotton swab clean the body and lens of photocell. After cleaning, carefully return photocell to work position.





Work position

Cleaning interval	Boiler type	Description
At least once per year	12-48 kW	Cleaning and checking the flue installation sealing

Cleaning and checking the flue installation sealing

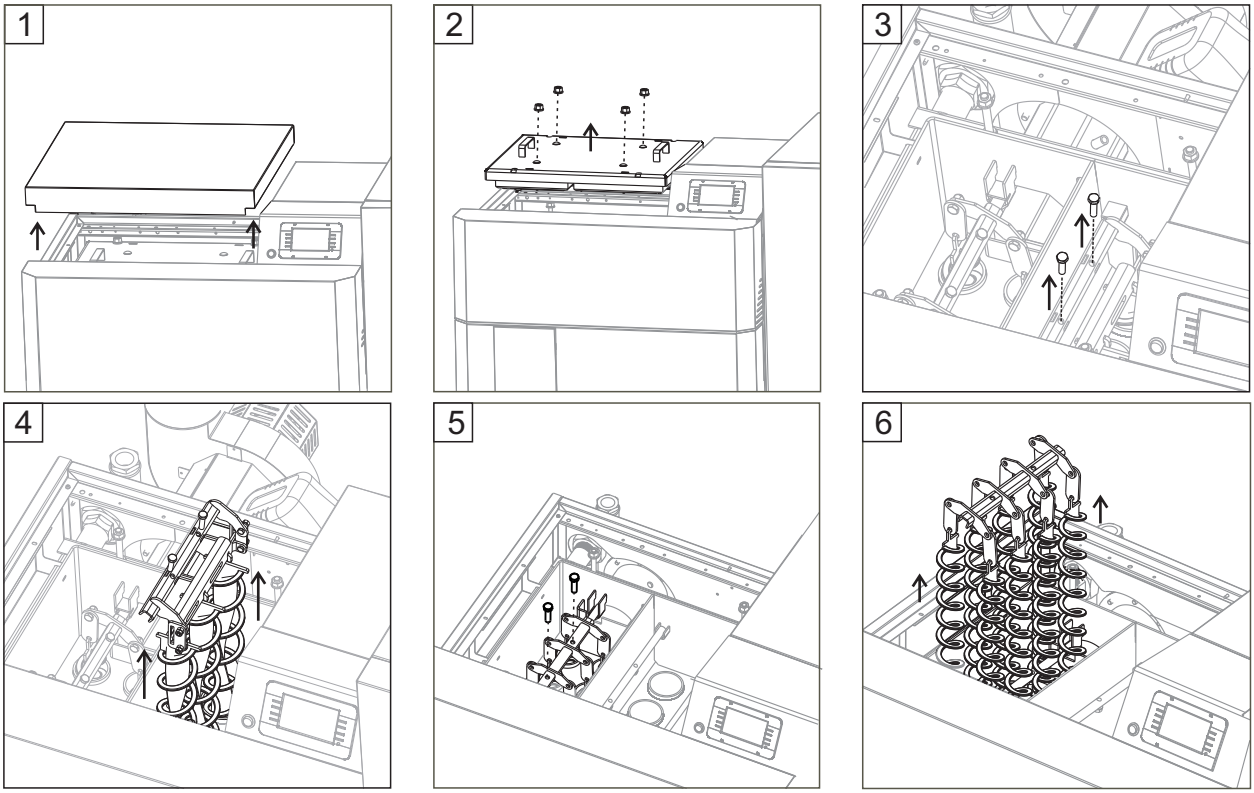
Clean flue installation between the boiler and the chimney through the revision openings for cleaning or if not incorporated revision opened by removing the flue installation. After cleaning, inspect flue installation good sealing and seal it if the seal is not satisfactory.

The ecological rules and standards must be applied for disposal of changed spare parts, wrapping material, all parts of the boiler after it's expire.

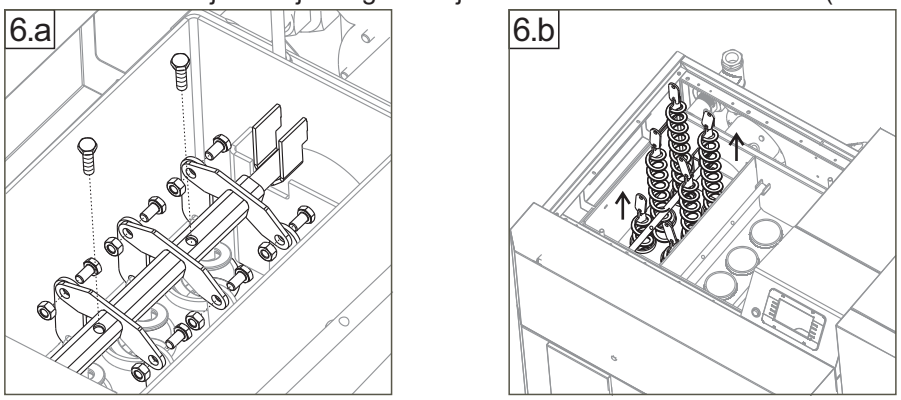
1. **Electric heater**
2. **Failure on distribution power box with digital boiler control unit**
3. **Fan failure**
4. **Pellet feeder Motor failure**
5. **Temperature sensors failure**
6. **Photocell failure**

Every seven years to call an authorized service provider for routine maintenance and control.

7.1. EXTRACTION OF TURBULATORS



6.a i 6.b Samo u slučaju da nije moguće odjednom izvaditi sve turbulatore (korak 6)



1 - Remove the casing cover.
2 - Unscrew the 4 srews and remove the flue ducts door.
3,4 - Unscrew the 2 srews and lift turbulators (first pass) with bracket as shown in picture.
5 - Unscrew the 2 srews from carrier on second pass.
6 - Remove all turbulators with carrier. (If you can't remove all turbulators together, then unscrew all screws on all turbulators (6.a) and remove turbulators one by one (6b).

NOTE:
Place turbulators back in the same way but in the reverse order!
There are 1 or 2 sets of turbulators (depending on the model of boiler)

PROTECTIVE GLOVES ARE OBLIGATORY!

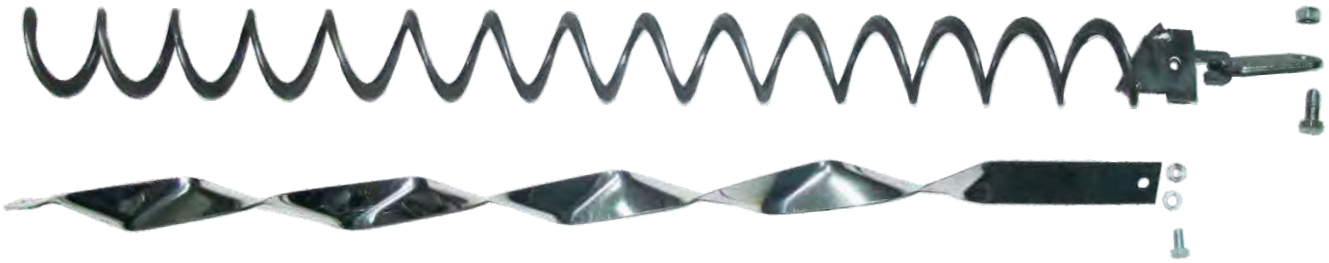
7.2. EXTRACTION OF HELICAL METAL PLATE FROM SECOND PASS TURBULATORS

For extracting of helical metal plate from turbulators is neccessary to unscrew nut and pull out helical metal plate from the bottom. With this action the flue gas temperature (in boiler work) will be increased but if there si no other solution for chimney condensation prevention (reduction to acceptable level) that procedure is neccessary.

PROTECTIVE GLOVES ARE OBLIGATORY!!

Turbulatior with helial metal plate

Extracted helical metal plate



This procedure should do only authorized serviceman!

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