

# ARTEL<sup>®</sup>

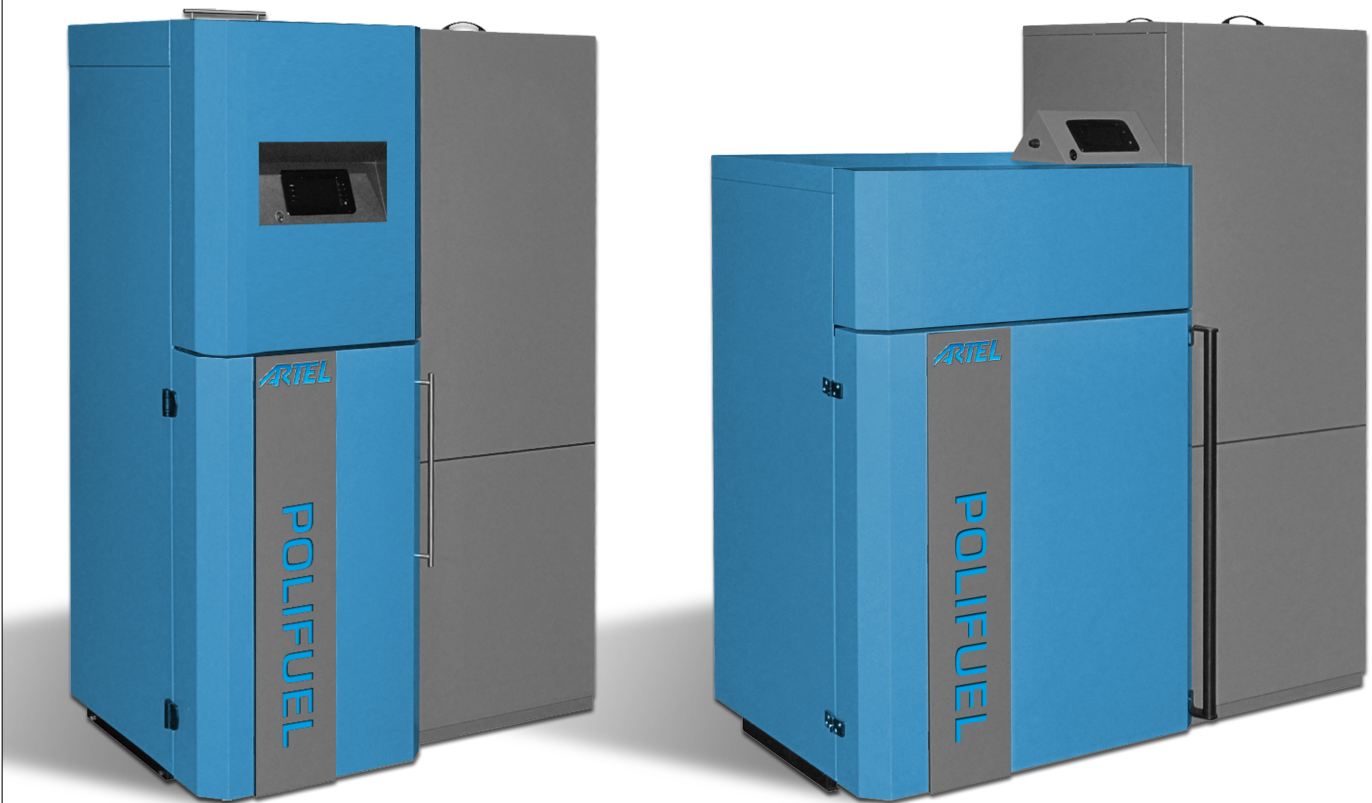
## CLIMA & ENERGIA

AMG S.p.A. - S. Vito di Leguzzano - VICENZA - ITALY

### 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**

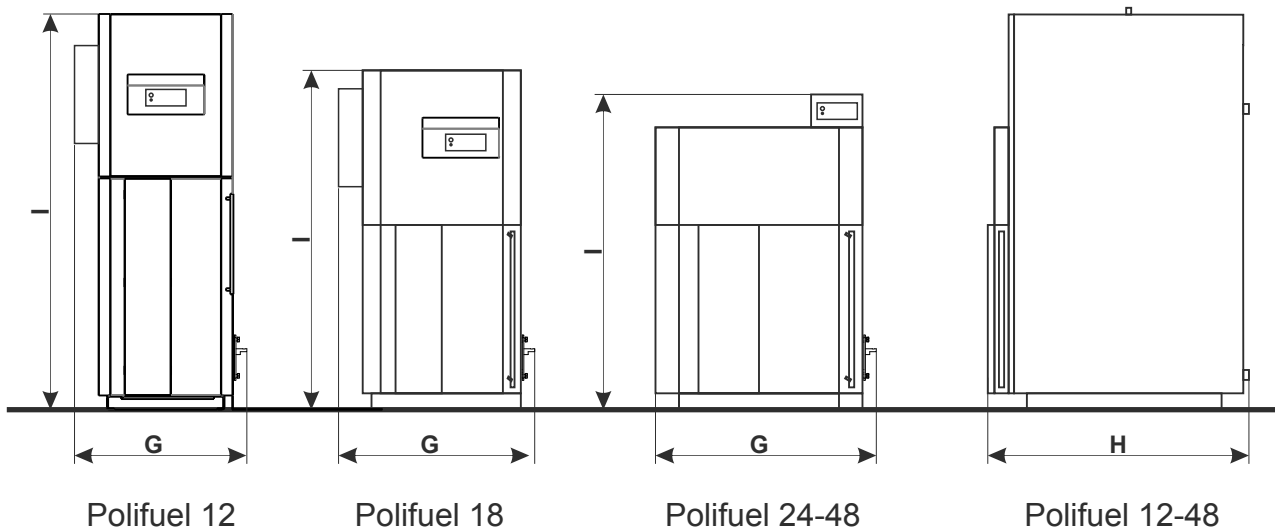
*Polifuel 12-48*

## TECHNICAL INFORMATION

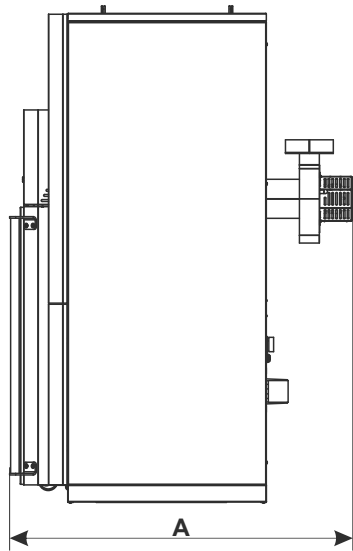
Type	Polifuel 12	Polifuel 18	Polifuel 24	Polifuel 36	Polifuel 48	
Nominal heat output (kW)	12	18	24	36	48	
Heat output range (kW)	3,6-12	5,4-18	7,2-24	10,8-36	14,4-48	
Boiler class	5	5	5	5	5	
Required chimney underpressure (mbar)	0,05	0,05	0,05	0,05	0,05	
Water amount in boiler (lit.)	78	76	100	108	135	
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	wood pellets					
Fuel moisture content (%)	max. 12 %					
Fuel size (mm)	fi 6x50					
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					
Volume of ash boxes (left / right) (lit.)	single 8,7	7 / 8,7	8,7 / 8,7	13 / 19,6	13 / 19,6	
Required minimum accumulation next to boiler	by EN 303-5, point 4.2.5					
Auxiliary power requirements at Q <sub>nom</sub> (W)	1050	1050	1050	1100	1100	
Auxiliary power requirements at Q <sub>min</sub> (W)						
Supply voltage (V~)	220					
Frequency (Hz)	50					
Boiler body dimensions	Lenght (A) (mm)	1105	1105	1080	1160	1175
	Width (B) (mm)	1200	1420	1400	1485	1485
	Height (C) (mm)	1560	1560	1560	1560	1560
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)	150		150	160	160	
Dimension D (mm)	1515	150	1140	1160	1310	
Dimension E (mm)	135	1040	130	120	115	
Dimension F (mm)	555	125	495	555	555	
Boiler connections	Flow and return pipe (male thread)	1"	5/4"	5/4"	5/4"	5/4"
	Charge/discharge (female thread)	1/2"	1"	1/2"	1/2"	1/2"
Heating appliance running	1/2" with fan					
Heating appliance running	under non-condensing conditions					

### Dimensions of the boiler to enter the room

	Polifuel 12	Polifuel 18	Polifuel 24	Polifuel 36	Polifuel 48
Width (G)	650	880	880	965	965
Depth (H)	765	765	735	795	795
Height (I)	1565	1275	1345	1345	1495

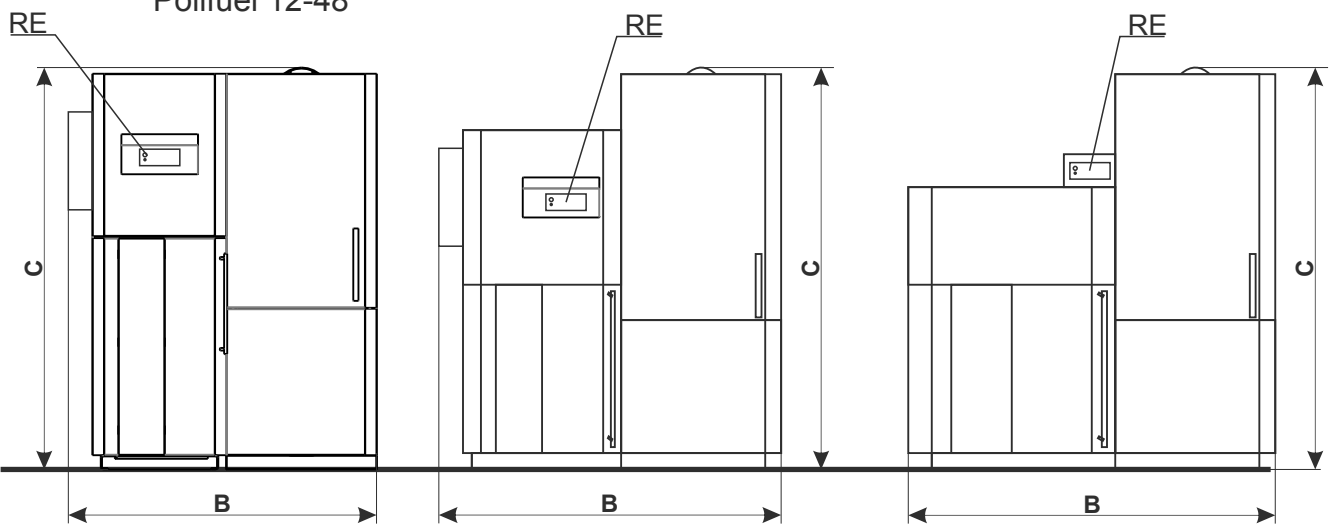


## Dimensions and basic parts of the boiler



Polifuel 12-48

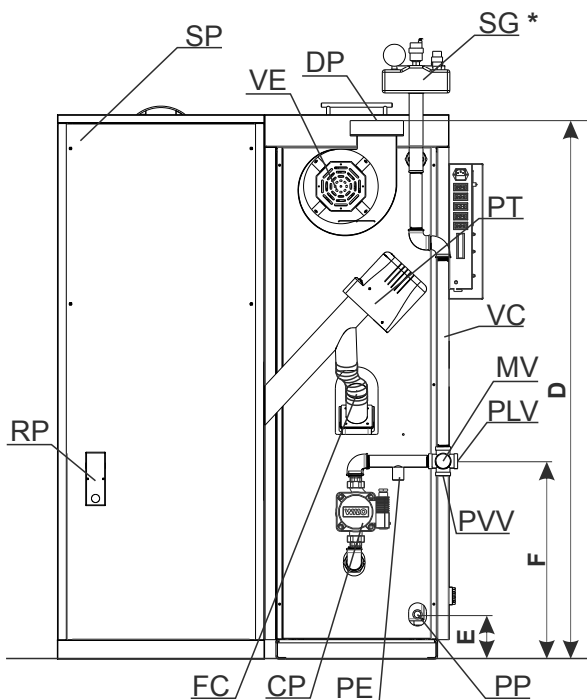
- PLV - Boiler flow
- PVV - Boiler return
- PP - Charge / Discharge
- DP - Flue gas tube
- VE - Fan (fan output can be mounted in any directions)
- SP - Pellet tank
- PT - Pellet feeder
- RE - Boiler control unit
- MV - 4-way motor mixing valve
- RP - Pellet level sensor
- SG - Safety ventilation group (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)



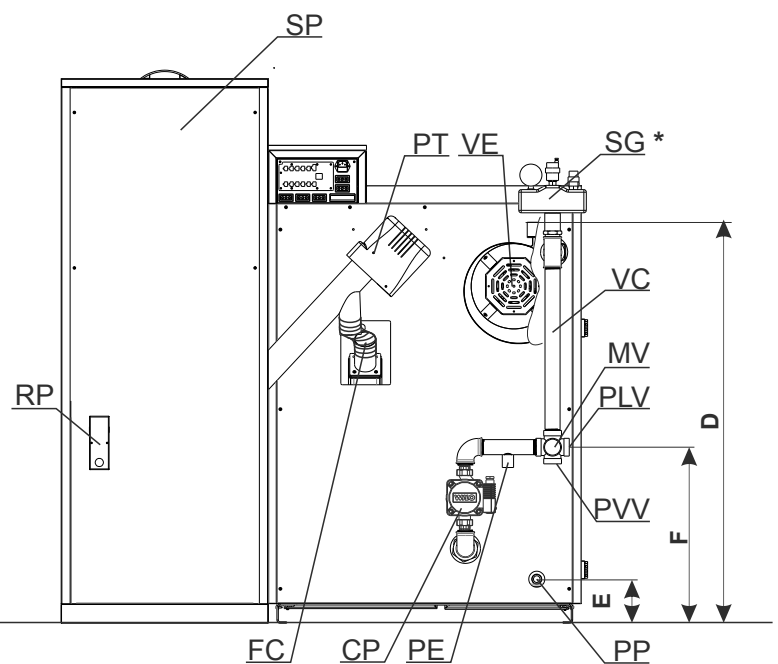
Polifuel 12

Polifuel 18

Polifuel 24-48



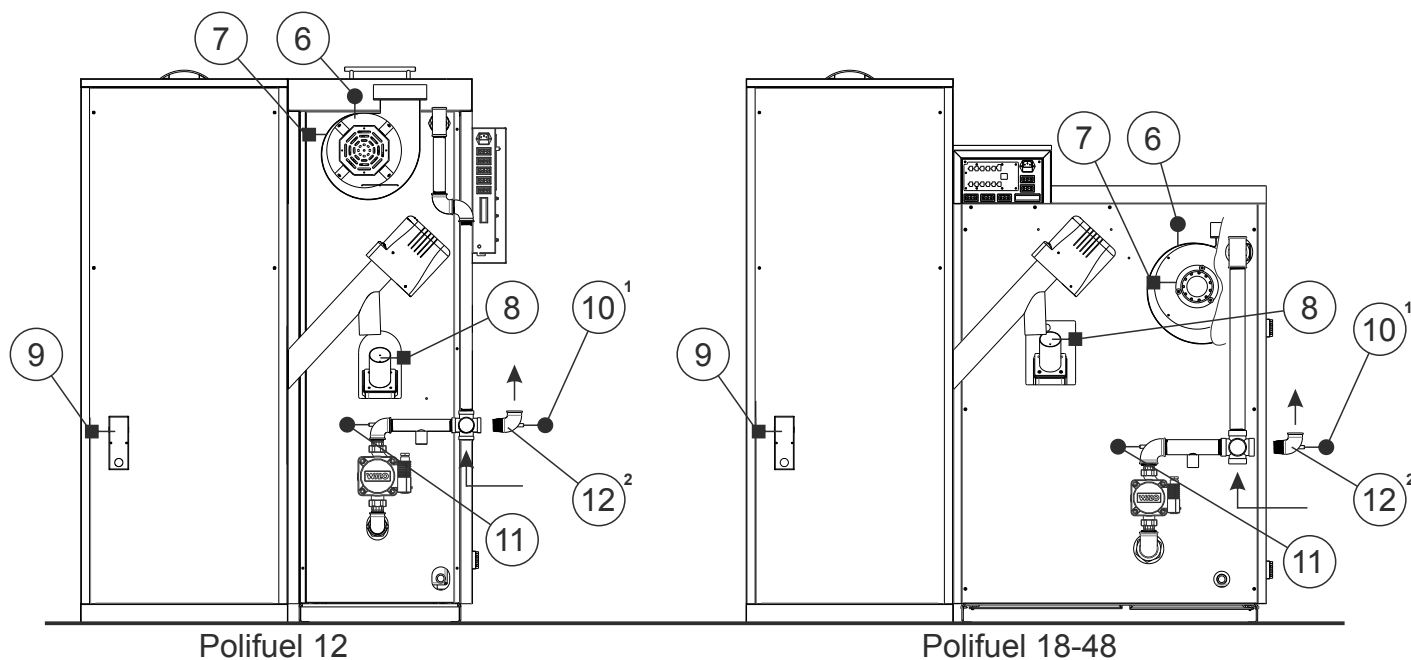
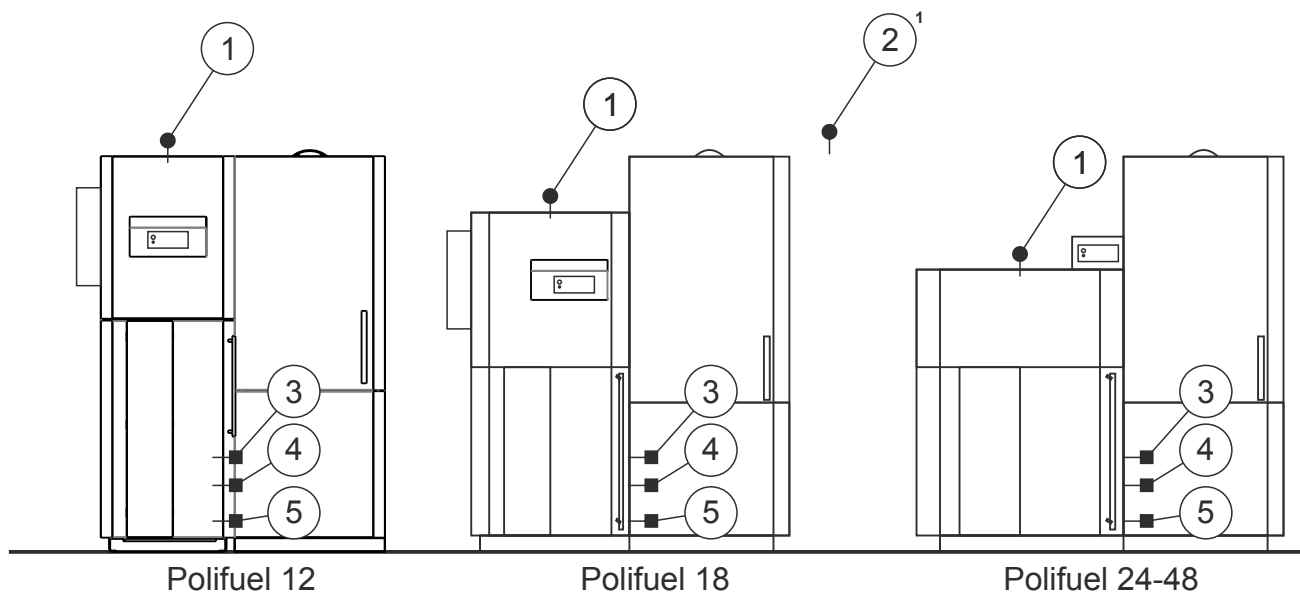
Polifuel 12



Polifuel 18-48

## Basic parts and sensors

- ① - Boiler sensor (NTC 5k)
- ② - DHW sensor (NTC 5k)<sup>1</sup>
- 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 sensor (NTC 5k)<sup>1</sup>
- ⑪ - Return sensor (NTC 5k)
- ⑫ - Elbow with socket for sensor<sup>2</sup>



<sup>1</sup> Depending on the configuration can be used as: PTV sensor, flow sensor, the sensor accumulation tank (CAS), hydraulic crossover (HS)

<sup>2</sup> Obligatory installation



### 1.0. INTRODUCTION

The **Polifuel** 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 Polifuel. 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 be performed 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).

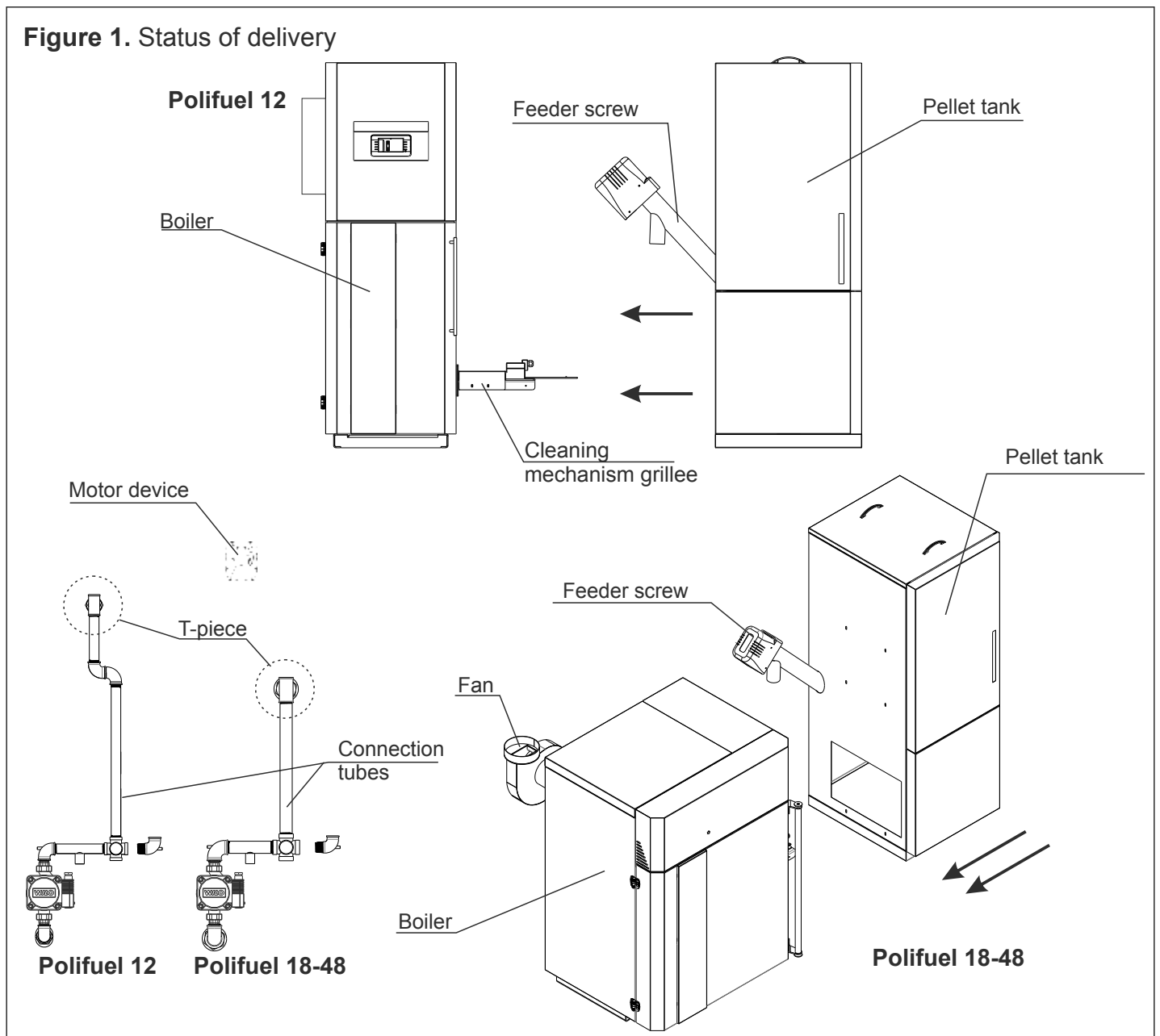
Ensure sufficient supply of fresh air in the installation room when heating. The air must be replaced at least 0.8 times an hour through constant and reliable room venting. Fresh air may have to be provided from outside if the windows and doors in the room where the boiler is installed are well sealed or if this room contains other equipment, such as extractor hoods, clothes dryer, fan etc.

## 1.4. STATUS OF DELIVERY

### Equipment is delivered separately:

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. Motor device (requires installation on the 4-way mixing valve)

Figure 1. Status of delivery



For ease of handling, transport and import of boiler, Polifuel 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.
- **Motor device** - set the motor device 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

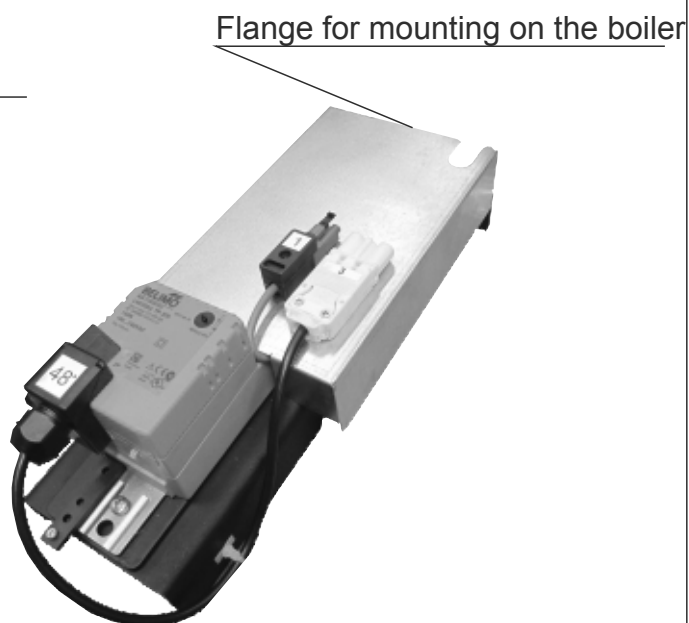
Slika 2. Mounting components



Flange for mounting on the boiler

Fan

(Fan output can be mounted in any directions)

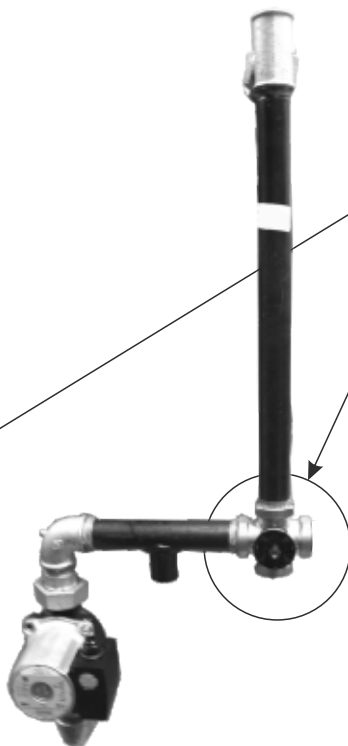


Flange for mounting on the boiler

Mechanism for grating cleaning



Connection tube Polifuel 12



Connection tube Polifuel 18-48



4-way mixing valve



Motor device for 4-way mixing valve



Flange for mounting fan



Flange for mounting mechanism for self-cleaning

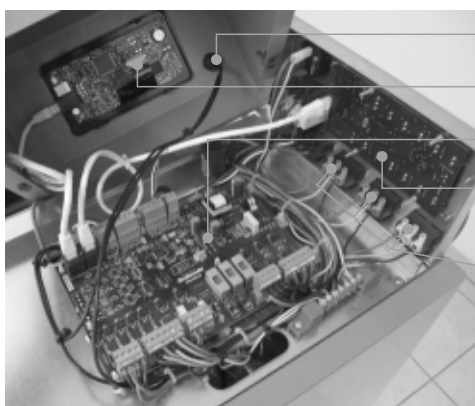


Position of pellet tank

Position of mechanism for grating cleaning

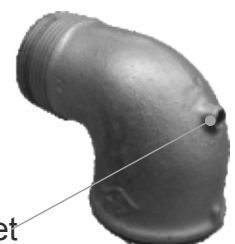


Protection cover  
Pellet level sensor  
Plastic pad  
Mounted position (be sure to attach the cable with cable ties)



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

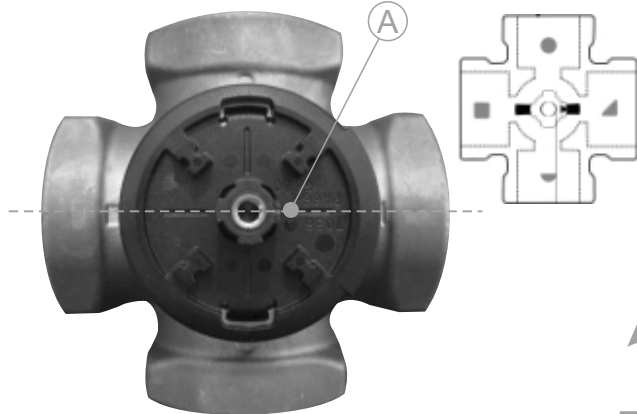
Elbow with socket for sensor



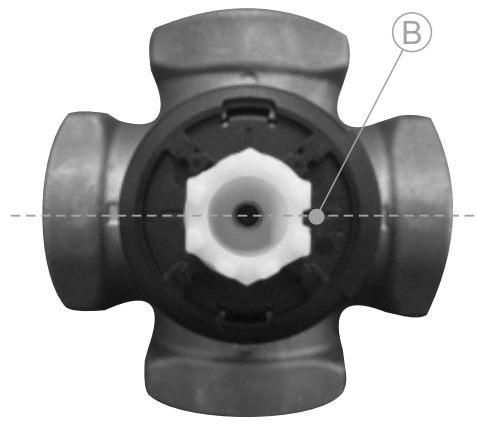
Socket

### 1.5.2. Installation of motor device (THE FIRST ASSEMBLY)

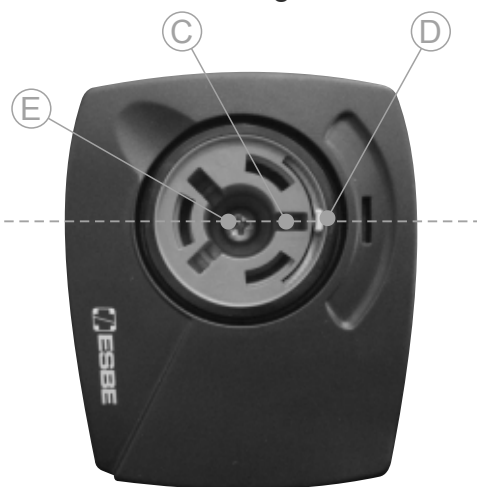
1. Set valve clapper so that it is horizontal position (designation must be on the right side "A")



2. Put clutch of motor device (designation must be on the right side "B")



3. Set motor device on the valve as shown in figure (moving part of motor device must be in a horizontal position; Green delimiter "C" must be in the center of the handle slot "D")



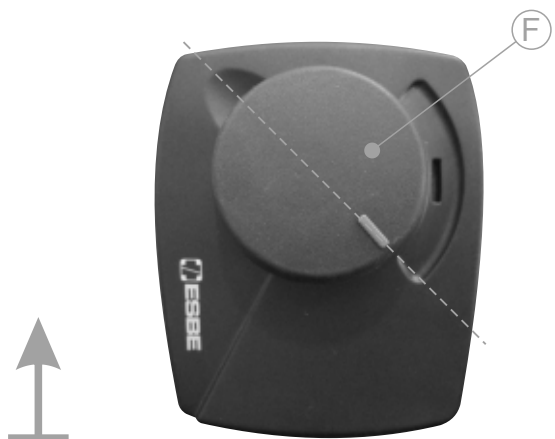
4. Set screw for fastening motor device "E"



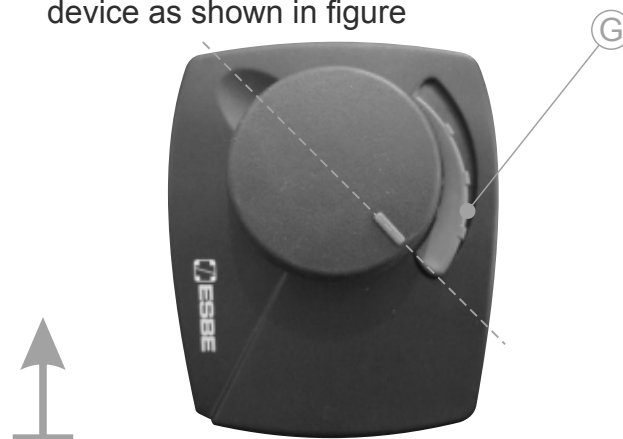
5. Tighten the screw to secure the motor device (when the screw is tightened, the movable part of the device is rotated to the right down to the end position)



6. Set lever "F" to drive



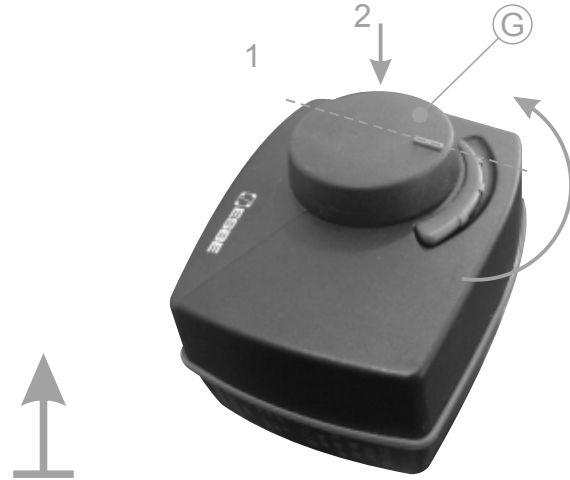
7. Set the designation of openness "G" on device as shown in figure



8. Handle position "H"  
Position UP - Manual operation



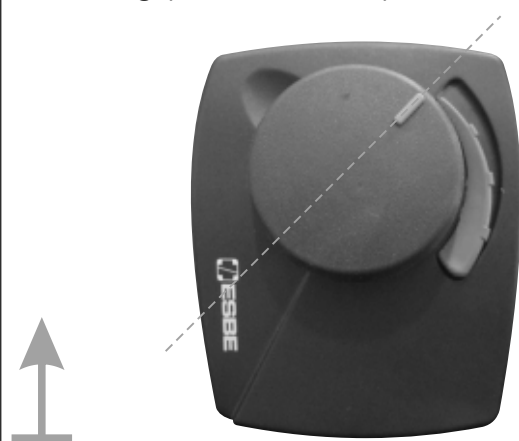
9. Turning the handle "G" so that it can be set in the DOWN position - automatic operation



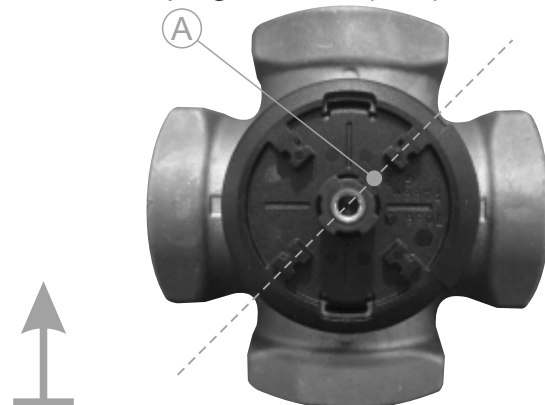
### 1.5.3. INSTALLATION OF MOTOR DEVICE (IF THE BOILER IS WORKED)

If the boiler is worked motor device 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.

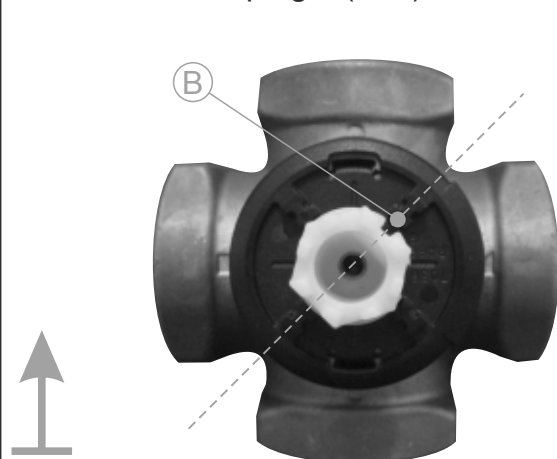
1. Device position when the boiler is not working (valve is closed)



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 motor device before assembly, designation on the clutch "B" is at the top right (45 °)



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



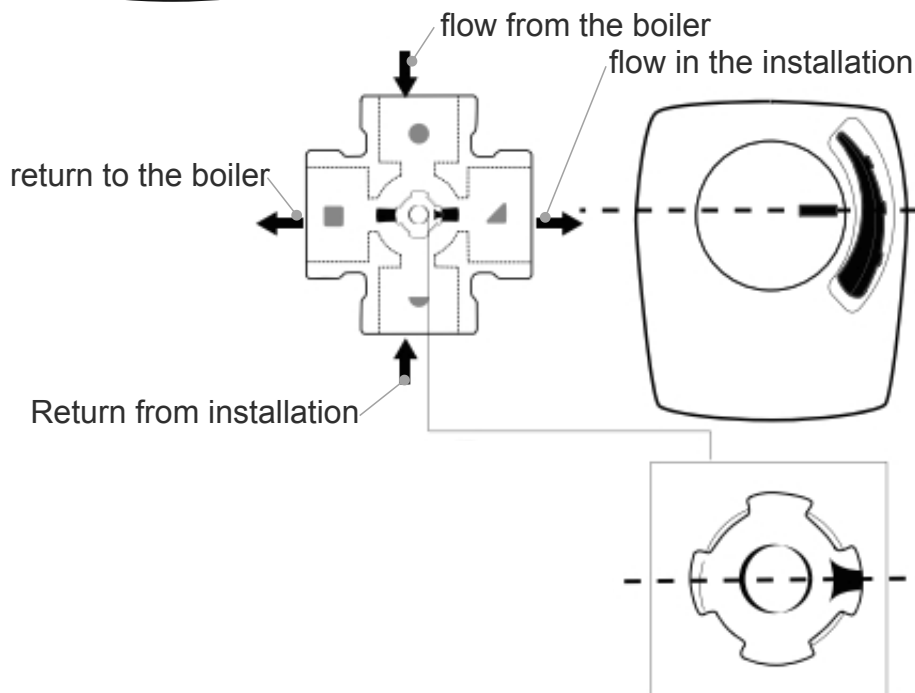
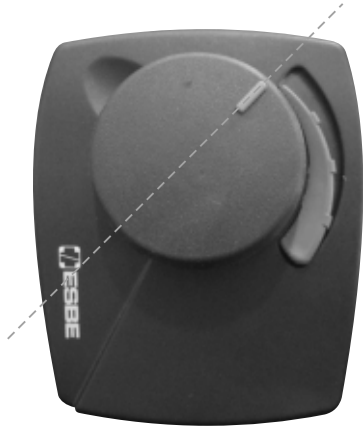
5. Tighten the screw to secure the motor device (when the screw is tightened, the movable part of the device is rotated to the right down to the end position)



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

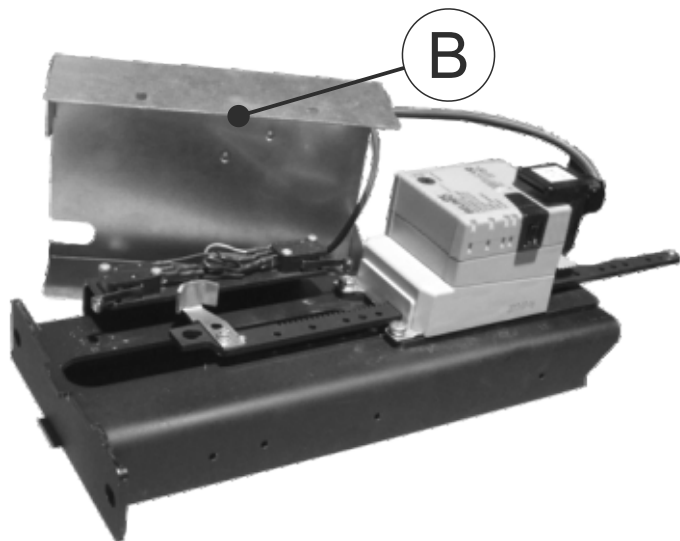
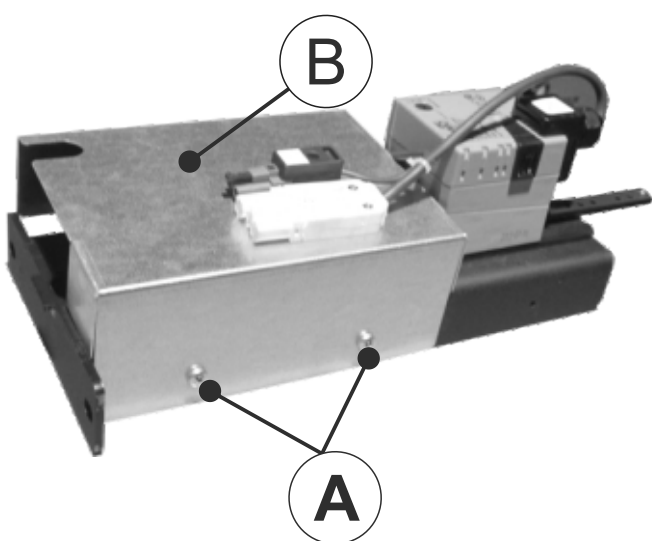


7. Device position in the DOWN position - automatically work; boiler ready for operation

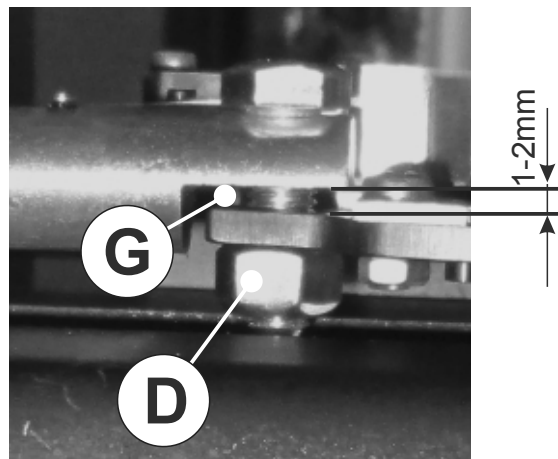
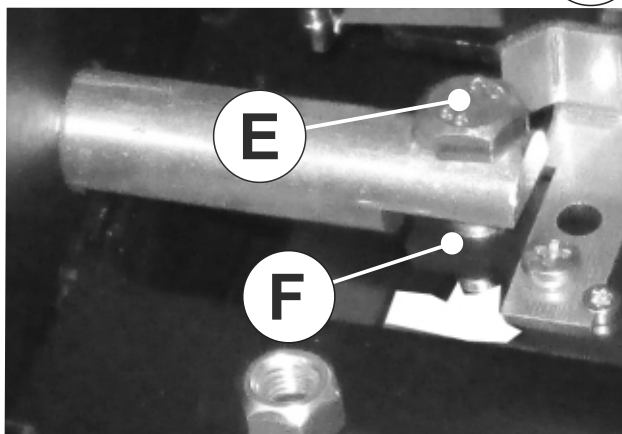
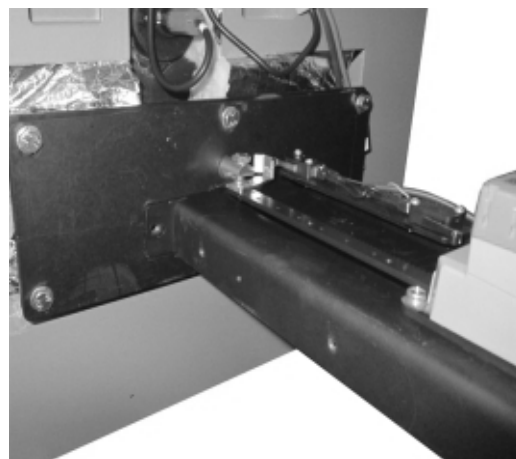
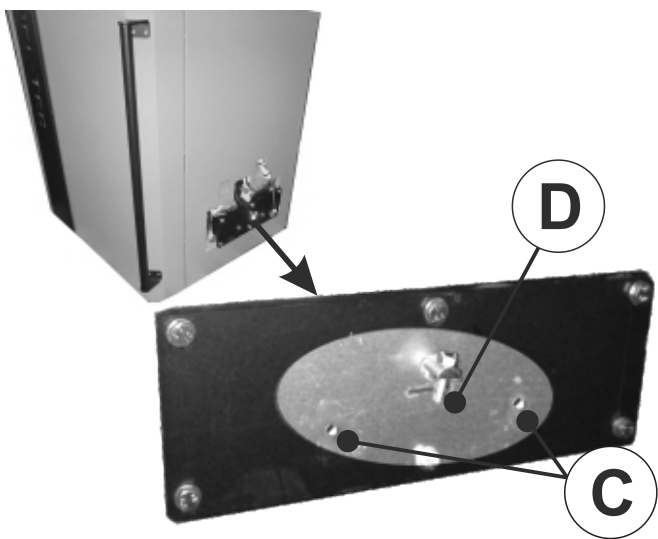




1. Remove the two screws (A), cover (B) of the grate cleaning mechanism and remove cover carefully not to damage cables.

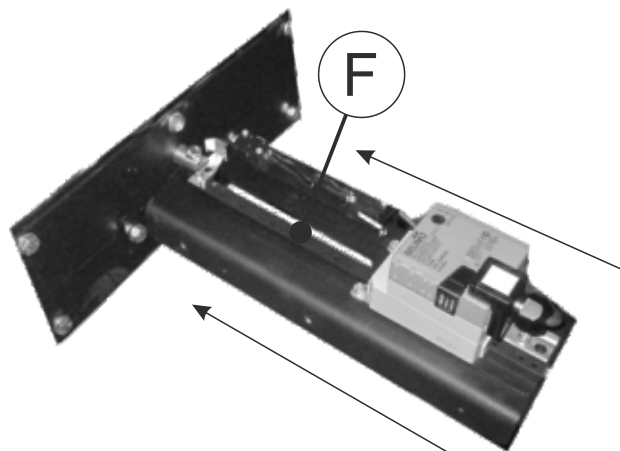
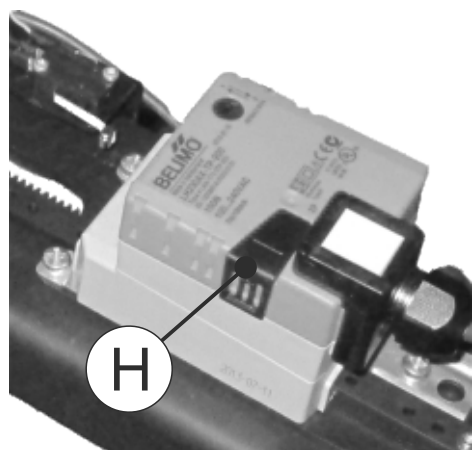


2. Remove the two screws (C) and the stop nut (D). Carefully set the grate cleaning mechanism to the boiler, fasten with screws (C) and set the screw (E) into the jagged track, set the stop nut on the screw (F) (tighten the stop nut so that there is 1-2 mm space (G)).

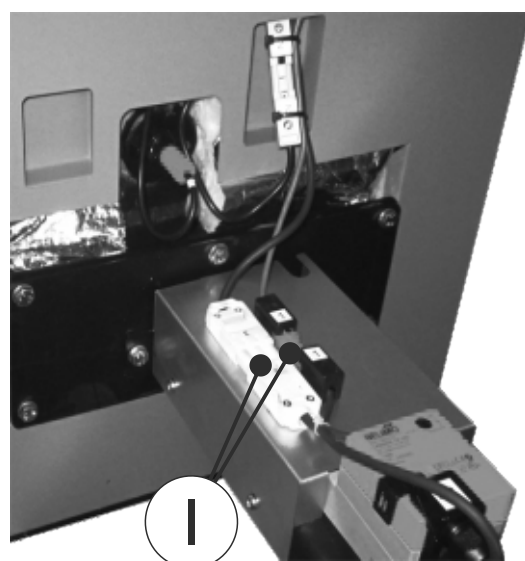
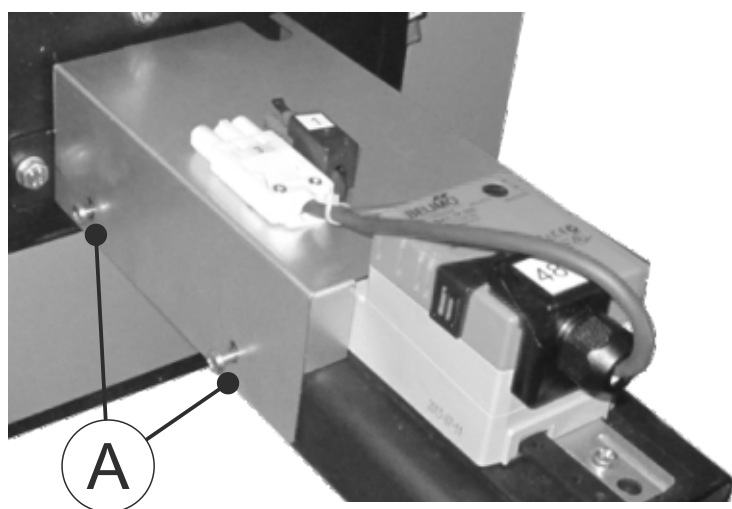
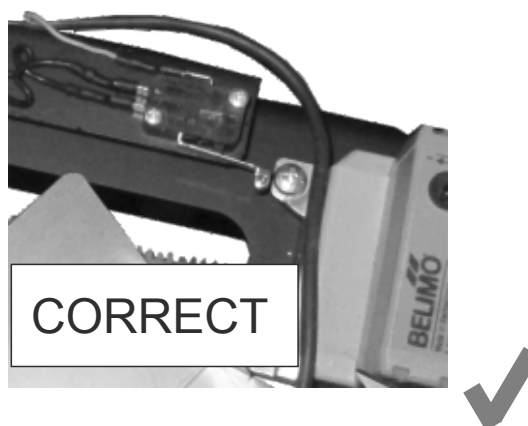


## Installation of a mechanism for grate cleaning

3. Press and hold the motor clutch (A) and slide the jagged track (F) in the boiler 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 (I) 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 which control unit monitor position of grate. If grate at given moment is not on provided place, control unit receive 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 Polifuel. 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<sup>3</sup>) or in basement spaces. Recommended properties of pellets for firing in Polifuel boilers are the following:

- heating value  $\geq$  **5 kWh/kg** (18 MJ/kg)
- diameter  $\leq$  **6 mm**
- max. moisture content  $\leq$  **12 %**
- max. dust content  $\leq$  **1,5 %**.

## 2.0. BOILER POSITIONING AND ASSEMBLY

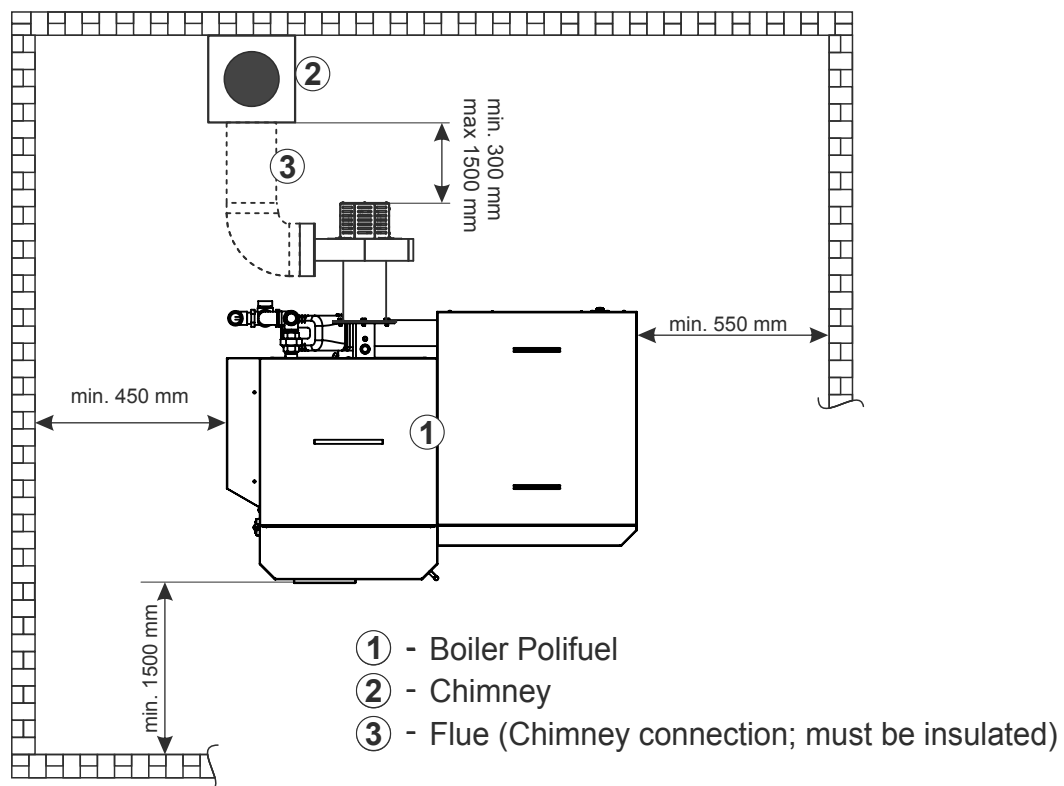
Boiler positioning, assembly and building in must be performed by a qualified person. We recommend that boiler is placed on a concrete base with height of 50 to 100 mm above the floor. Boiler room must be frost-proof and well ventilated. Boiler has to be positioned so that it can be properly connected 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 Polifuel



## 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  $\text{cm}^2$   
Q - boiler output in kW

### 3.0. CONNECTION TO THE CHIMNEY

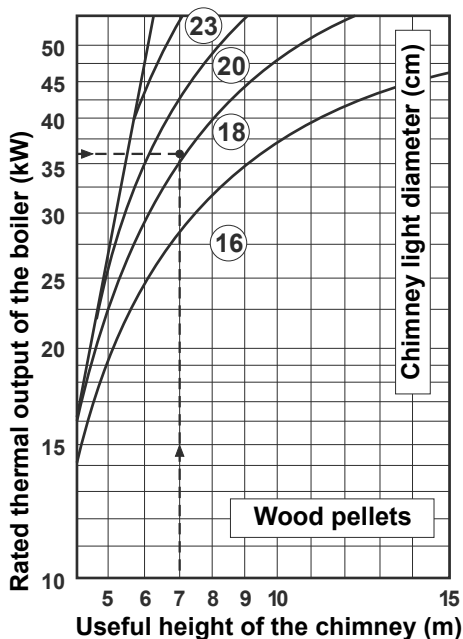
Properly dimensioned and built chimney is the main condition for safe and economical functioning of the boiler. The thermal insulation of the chimney has to be done properly, it has to be absolutely gas-proof and smooth. On its lower part there has to be built in the opening for cleaning with the door. 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 than the temperature of their condensation 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 dimensioned by "diagram for chimney selection" and maximum permitted length of connection flue gas tube between connection on fan and chimney is 2000 mm and minimum light diameter 100 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 considering of exit point from fan. Connection flue gas tube must have openings for cleaning through which is possible to clean entire length 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 from 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 Polifuel



**Chimney dimensioning example:  
for boiler Polifuel 36**

Boiler heat output: **36 kW**

Fuel: **wood pellets**

Required usable chimney height: **7 m**

Required chimney light  
diameter: **20 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 **Polifuel** can be built in closed and open central heating systems. In both cases boiler can be fired with wood chips. 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.

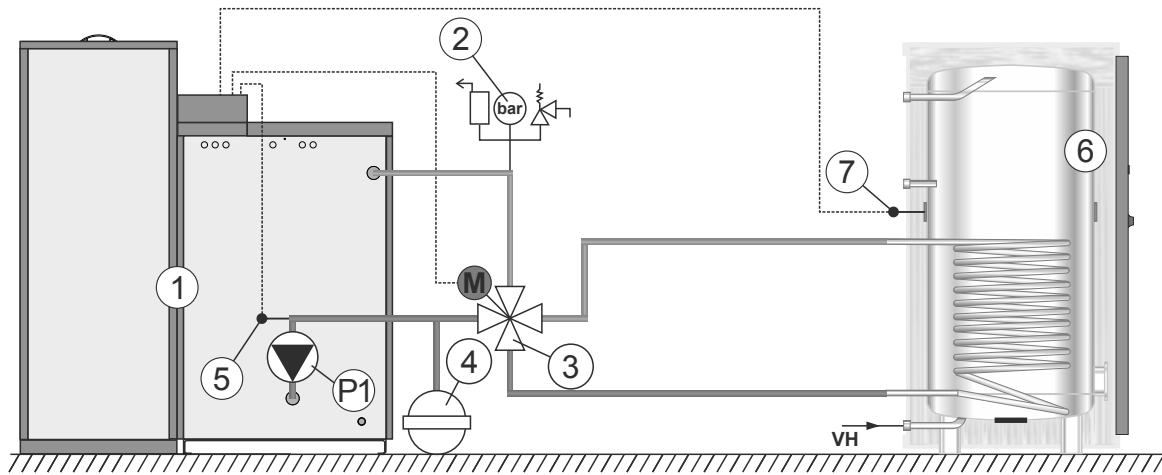
#### **4.1.1. CONNECTION TO OPEN HEATING SYSTEM**

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.

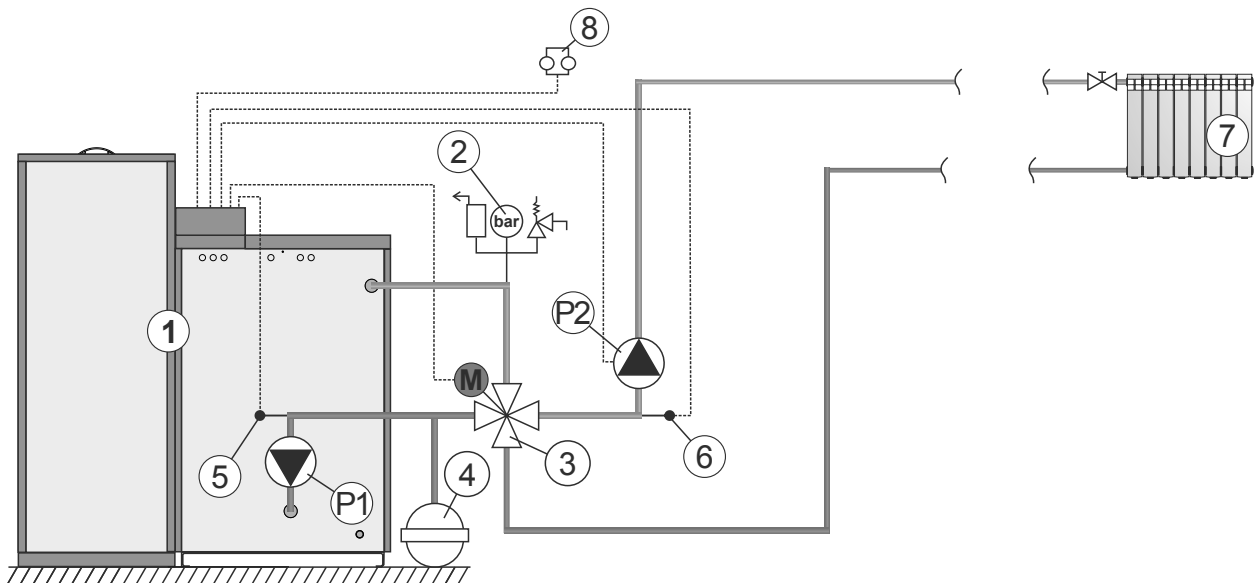
**Scheme 1. Configuration PTV**



- 1 - Boiler Polifuel
- 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

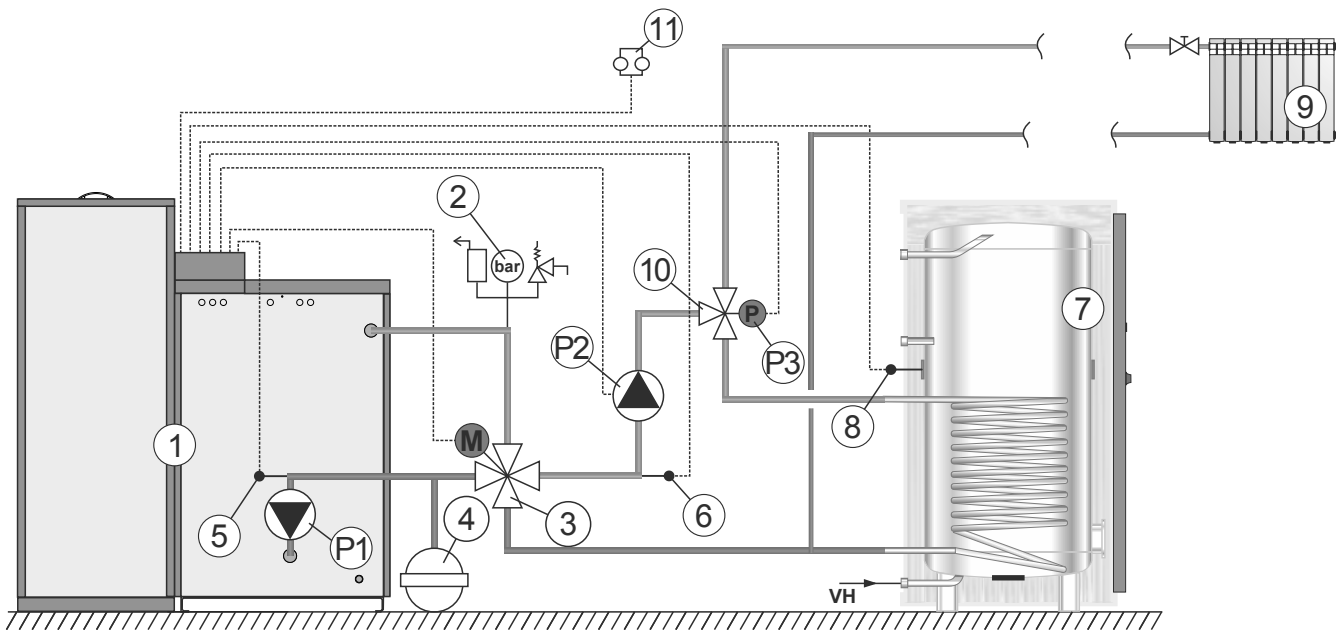
**Scheme 2. Configuration DKG**



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

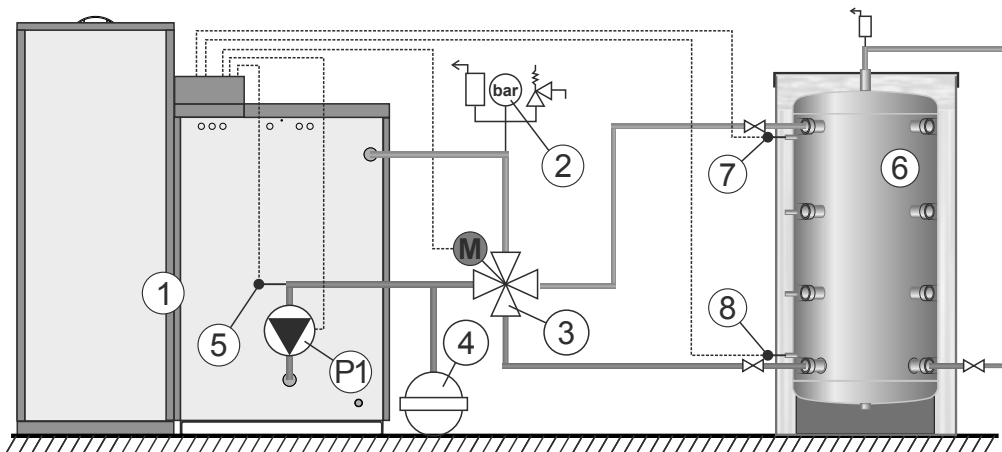
- 5 - Return flow sensor
- 6 - Flow sensor
- 7 - Heating circuit
- 8 - Room thermostat

**Scheme 3. Configuration DKG || PTV**



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

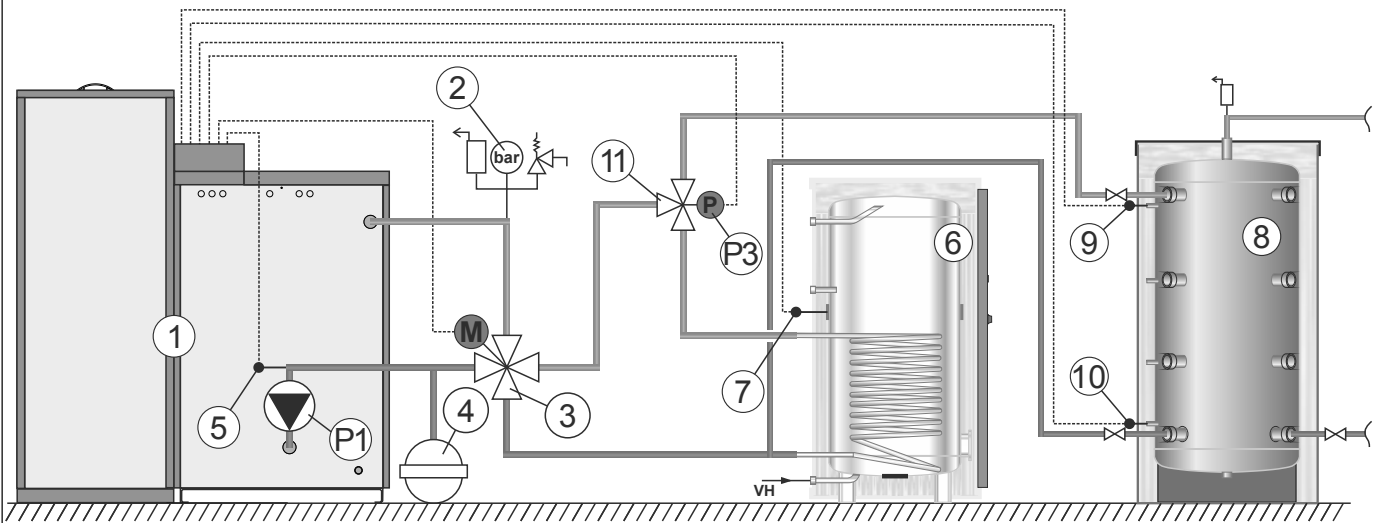
**Scheme 4. Configuration AKU**



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



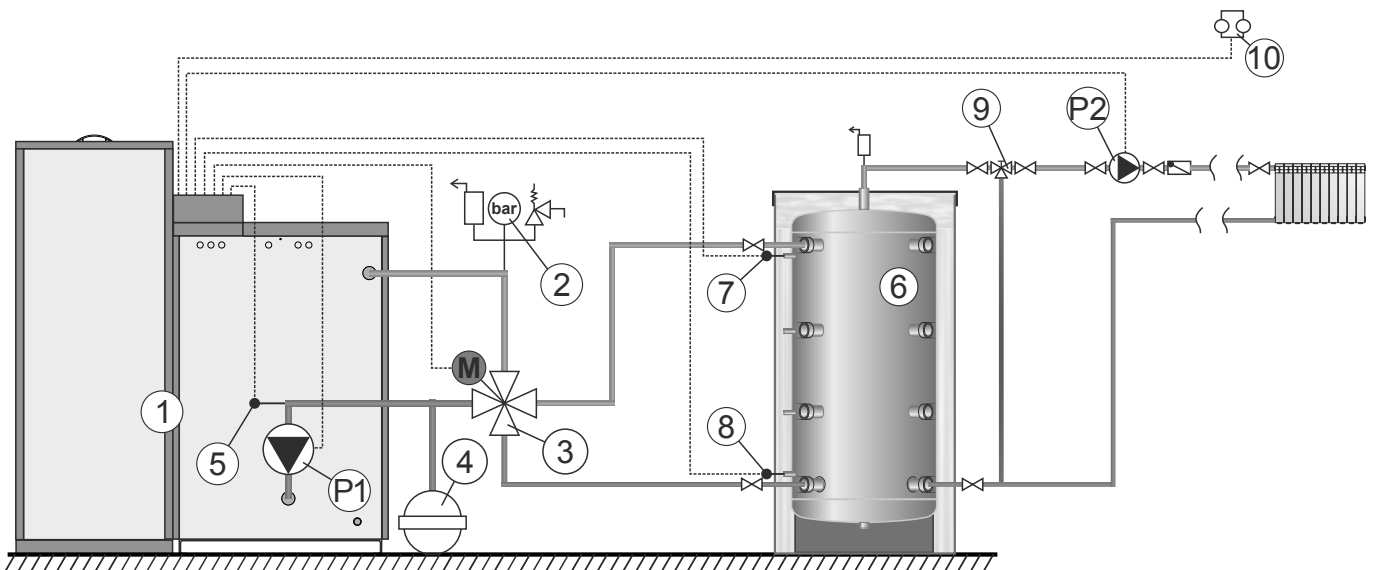
**Scheme 5. Configuration PTV || AKU**



- 1 - Boiler Polifuel
- 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 - 3-way diverter valve

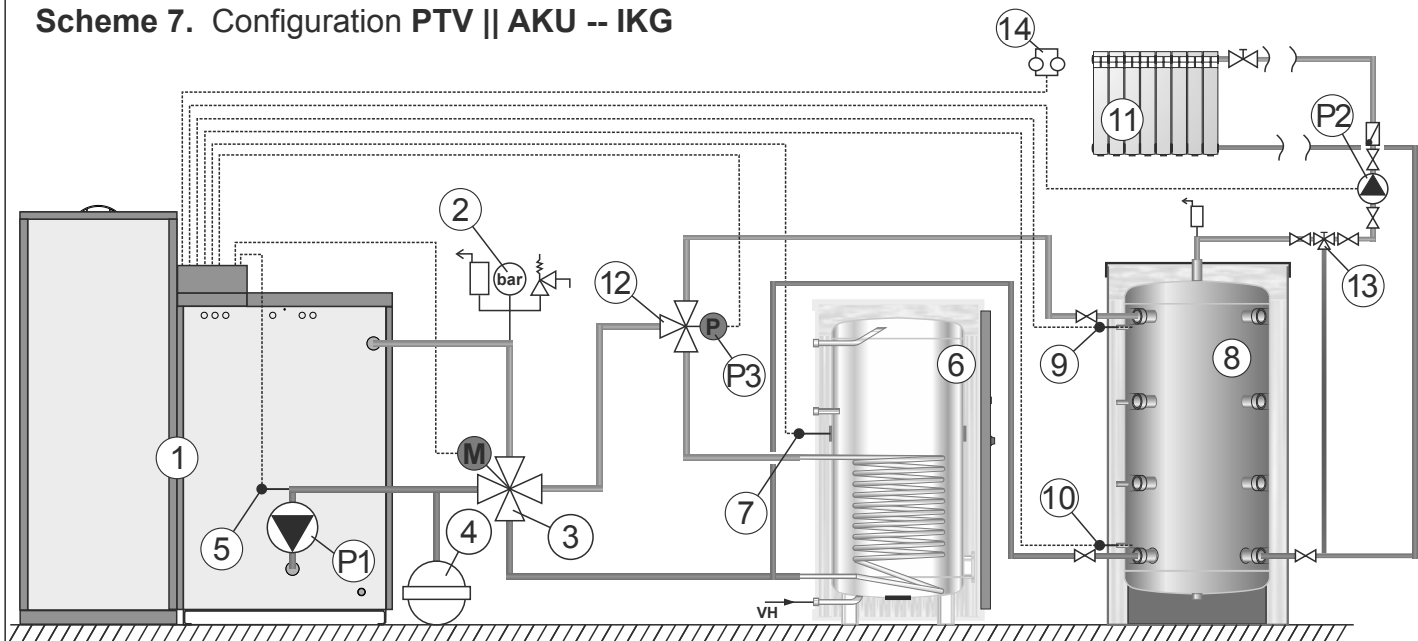
**Scheme 6. Configuration AKU -- IKG**



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

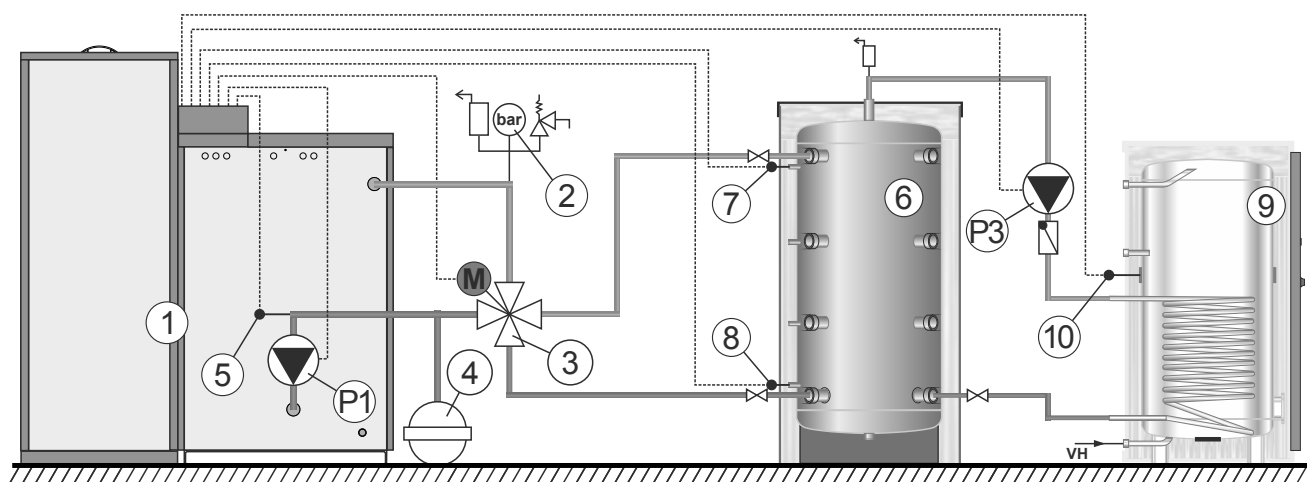
- 6 - Accumulation tank CAS
- 7 - Accumulation tank sensor CAS 1 (upper)
- 8 - Accumulation tank sensor CAS 2 (lower)
- 9 - 3-way manual mixing valve
- 10 - Room thermostat

**Scheme 7. Configuration PTV || AKU -- IKG**



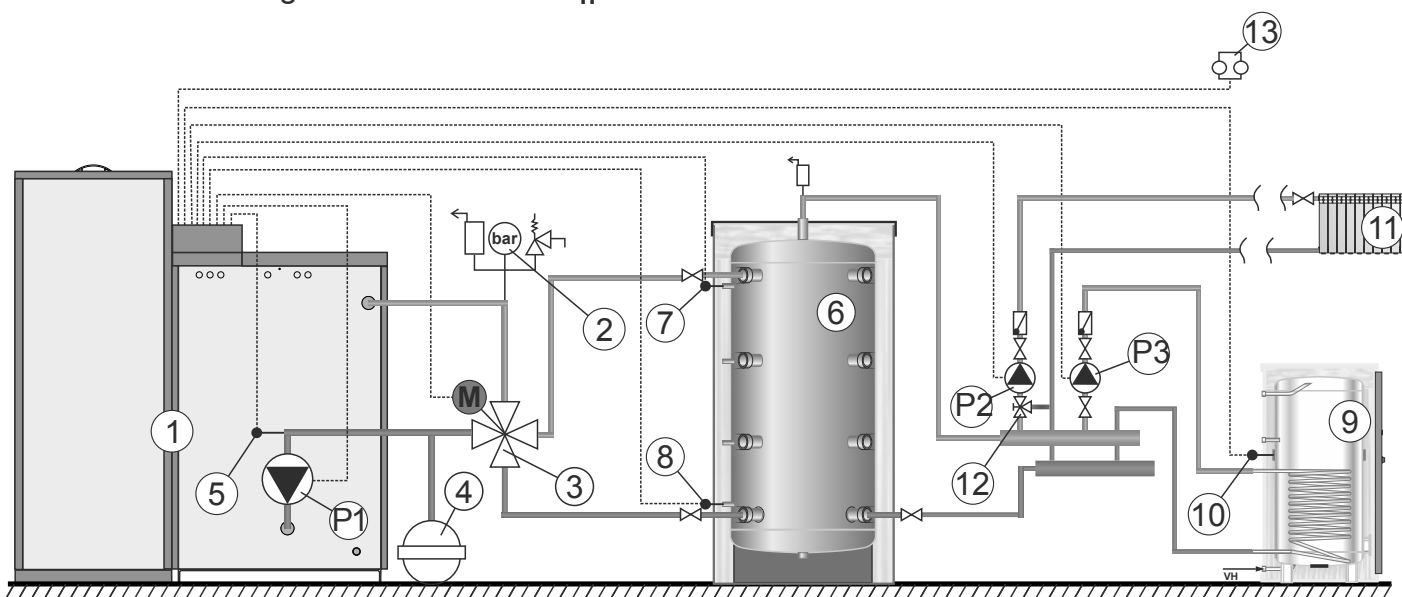
- |                                    |   |
|------------------------------------|---|
| 1 - Boiler Polifuel                | 8 - Accumulation tank CAS                   |
| 2 - Air self-venting group 2,5 bar | 9 - Accumulation tank sensor CAS 1 (upper)  |
| 3 - Motor 4-ways mixing valve      | 10 -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

**Scheme 8. Configuration AKU -- PTV**



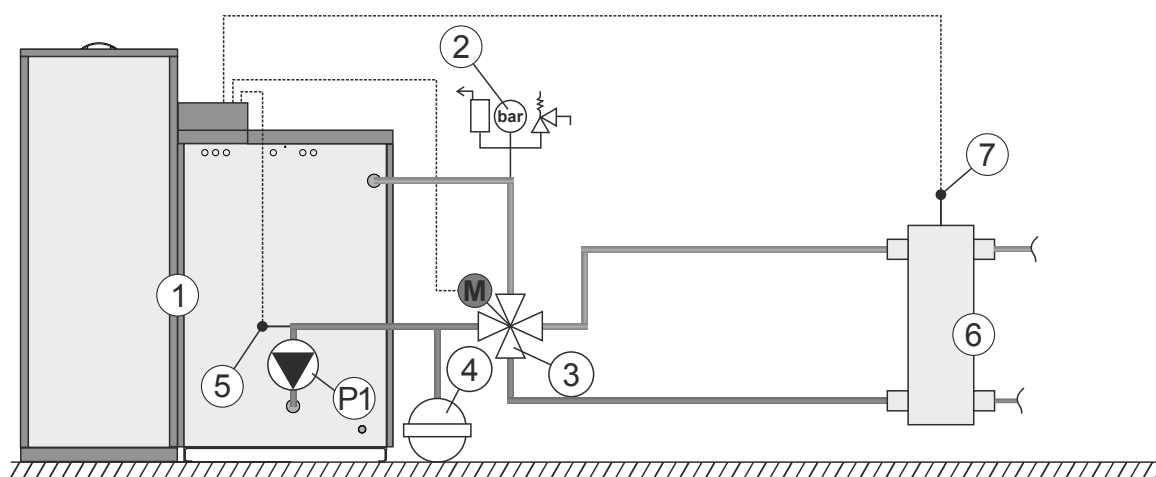
- |                                    |  |
|------------------------------------|--|
| 1 - Boiler Polifuel                | 6 - Accumulation tank CAS                  |
| 2 - Air self-venting group 2,5 bar | 7 - Accumulation tank sensor CAS 1 (upper) |
| 3 - Motor 4-ways mixing valve      | 8 - Accumulation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

**Scheme 9. Configuration AKU -- IKG || PTV**



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

**Scheme 10. Configuration HS**



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

## 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 Polifuel.

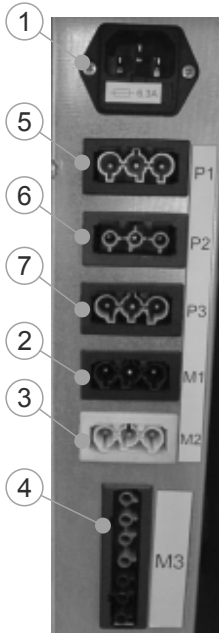


### CAUTION:

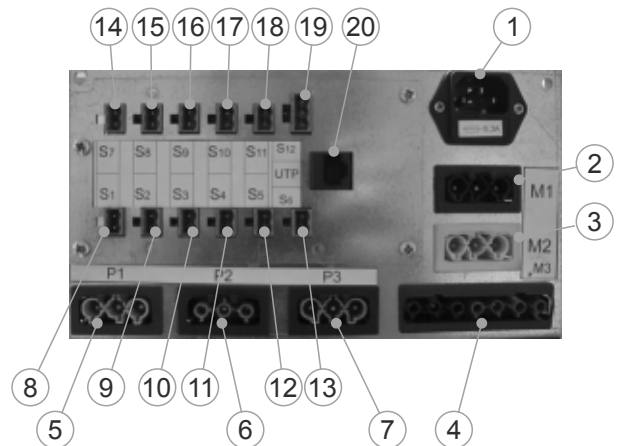
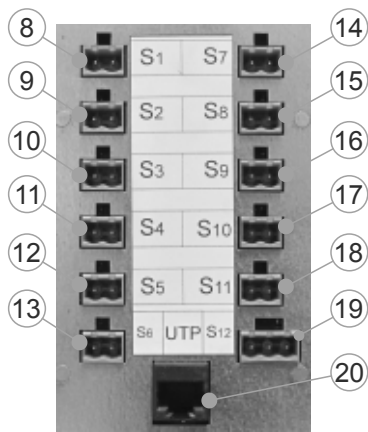
When connecting any electrical part be sure to unplug the boiler at the main switch and disconnect the power supply.

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

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

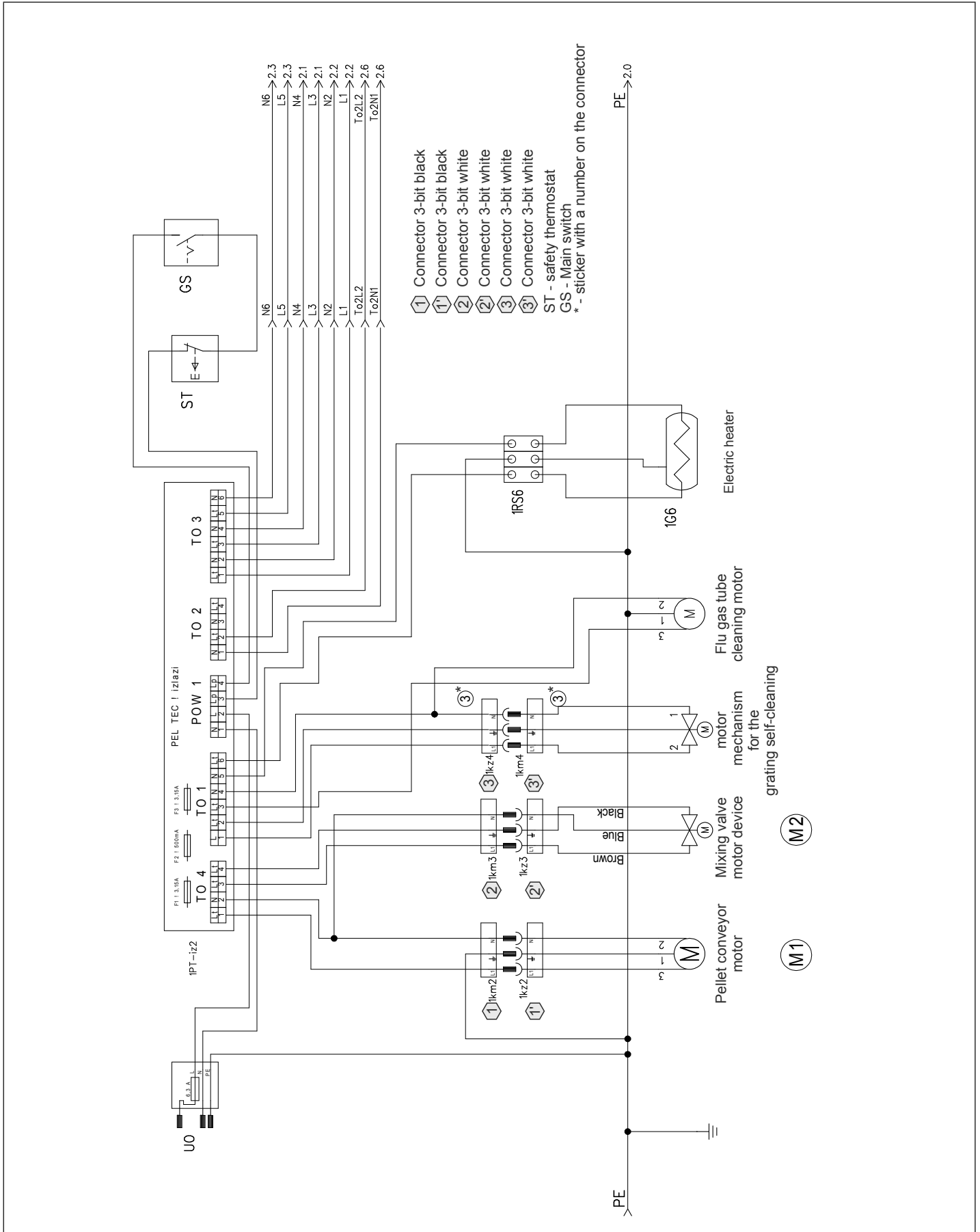


Polifuel 12,18

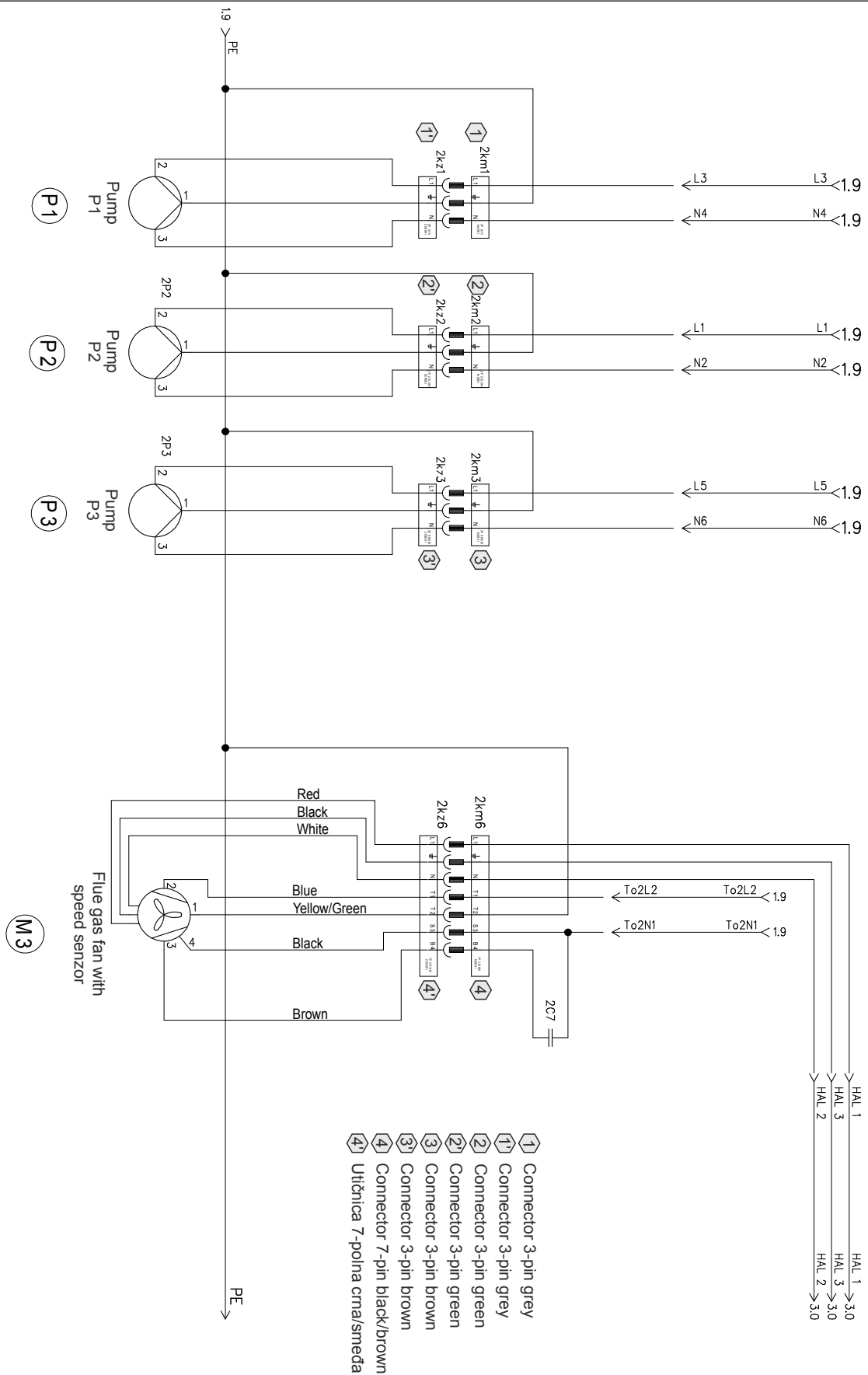


Polifuel 24-48

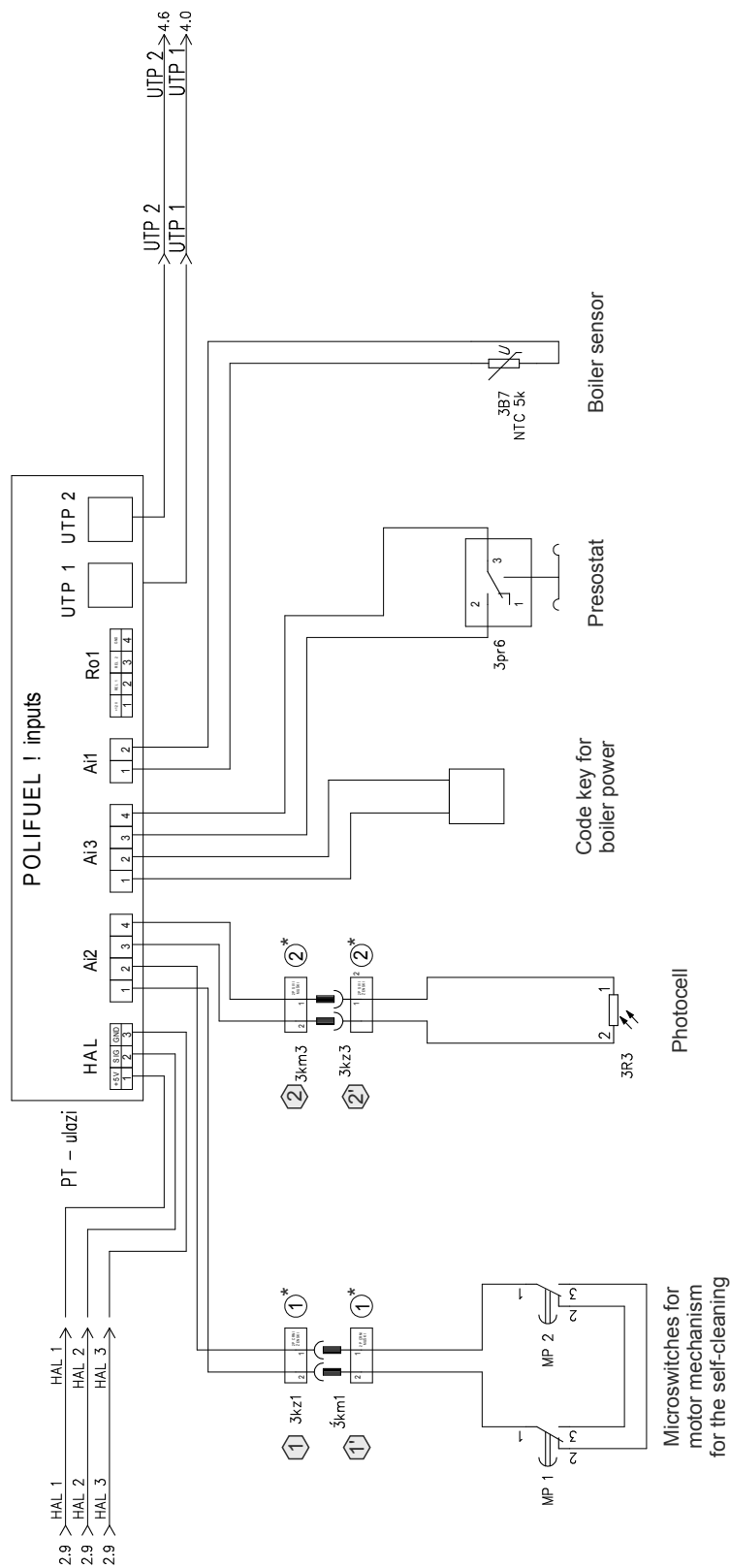
## 5.1. ELECTRICAL SCHEME OUTPUTS 1



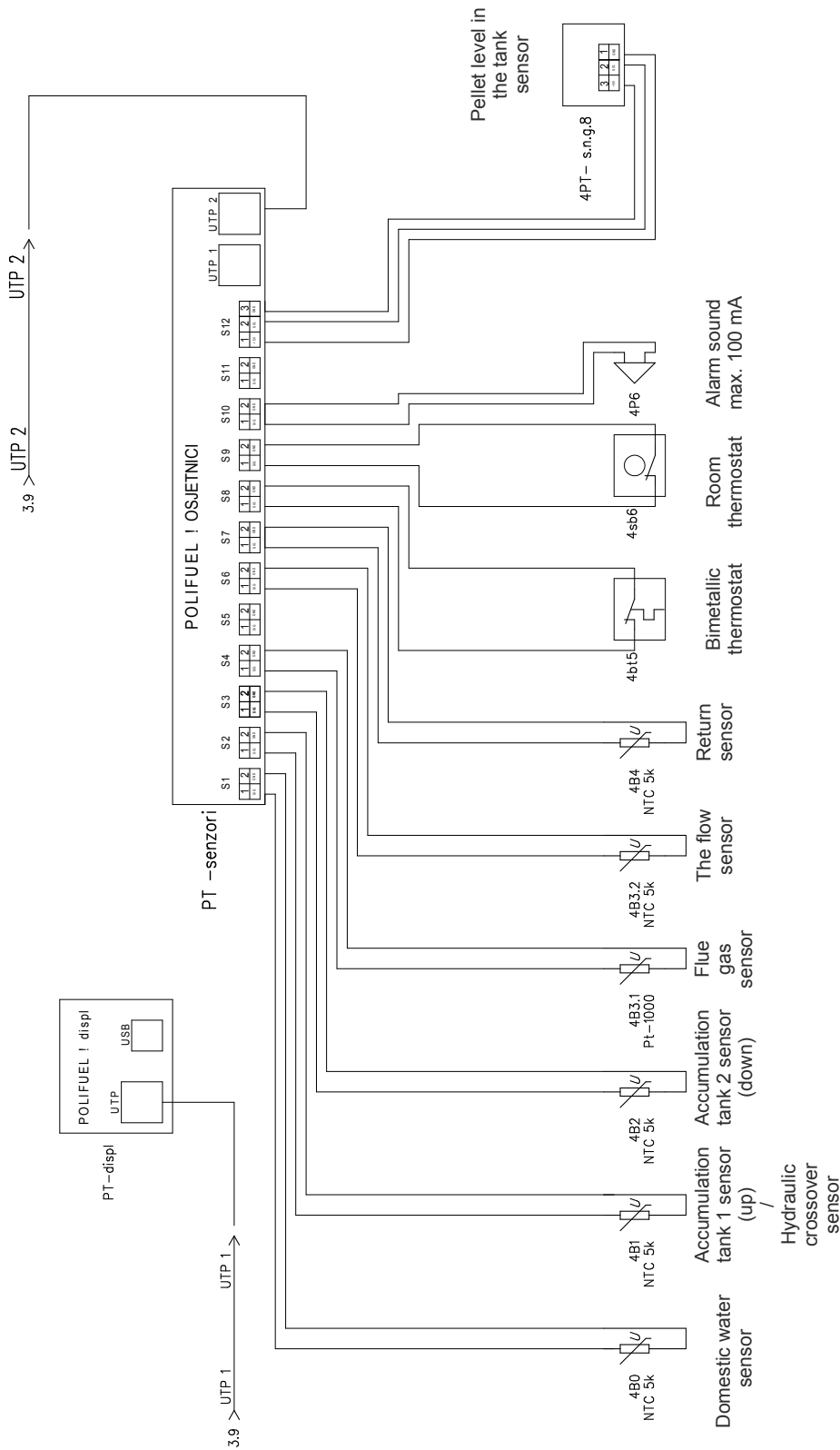
## 5.2. ELECTRICAL SCHEME OUTPUTS 2



### 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 a 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 Polifuel digital control unit where is explained initial startup.

**Note:**

The start up has to be done by the person authorized on behalf of AMG S.p.A. 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 a 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 check if the boiler doors and cover door are closed (Figure 4).

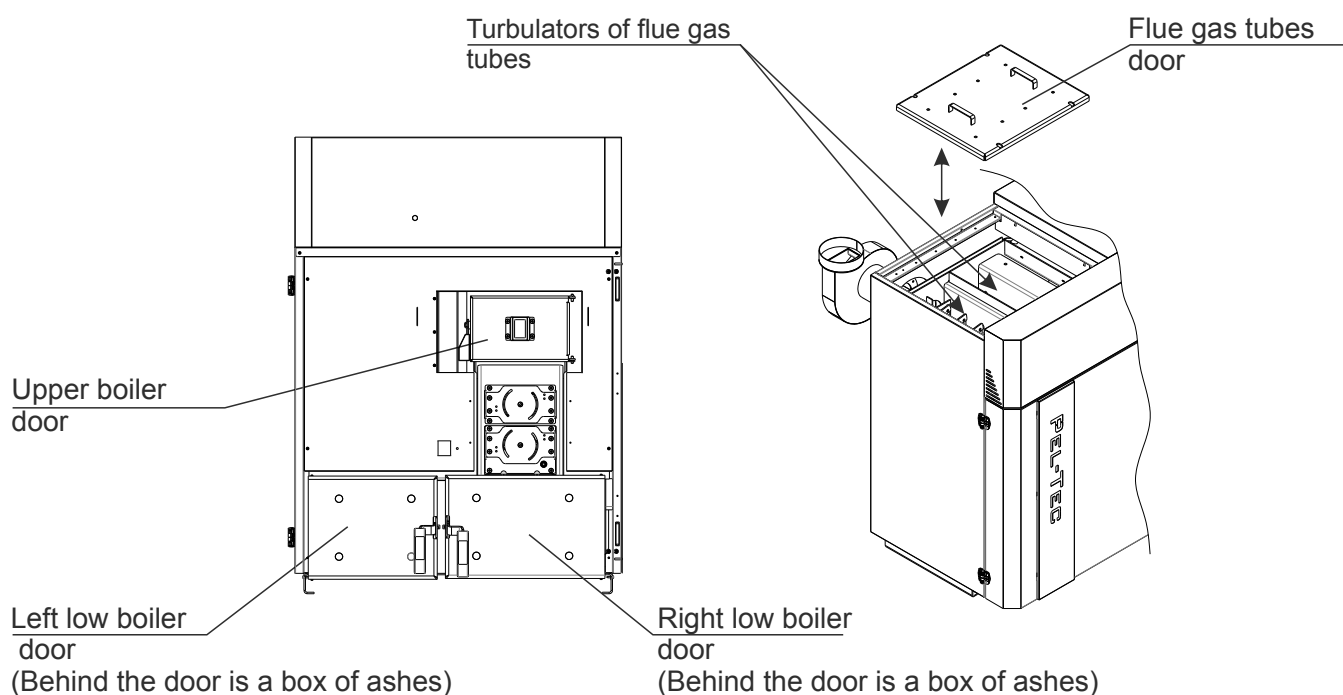
### If you smell flue gas:

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



**Flue gas can lead to life-threatening poisoning!**

**Slika 4.** Polifuel 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

**PROTECTIVE GLOVES ARE OBLIGATORY!**

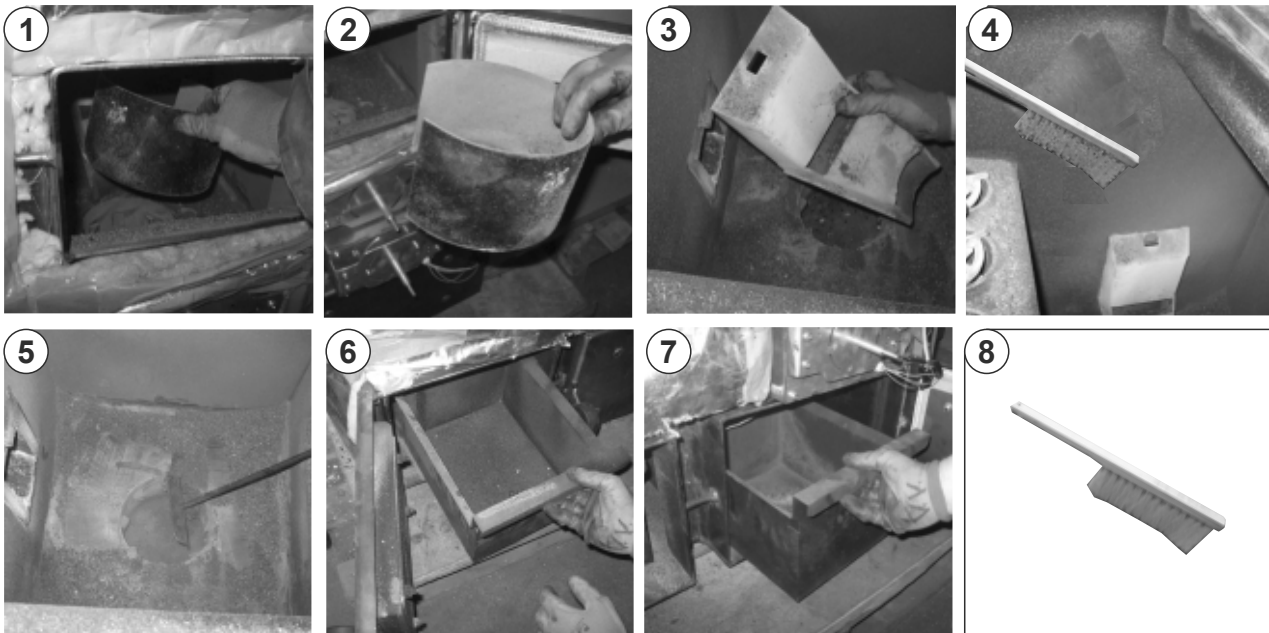


Protective gloves must be used!

Ash remaining in boiler after solid fuel firing should be disposed into metal containers with a cover. First, main switch at boiler control unit has to be turned off.

Flue gas chamber should be cleaned once at year. Fan box should be cleaned as required. Fan blades should be cleaned as required. Ash tray in the lower boiler part should be cleaned after spent 400-600 kg of pellets. Checking of all control and safety elements once per year by authorised service man / fitter is recommended.

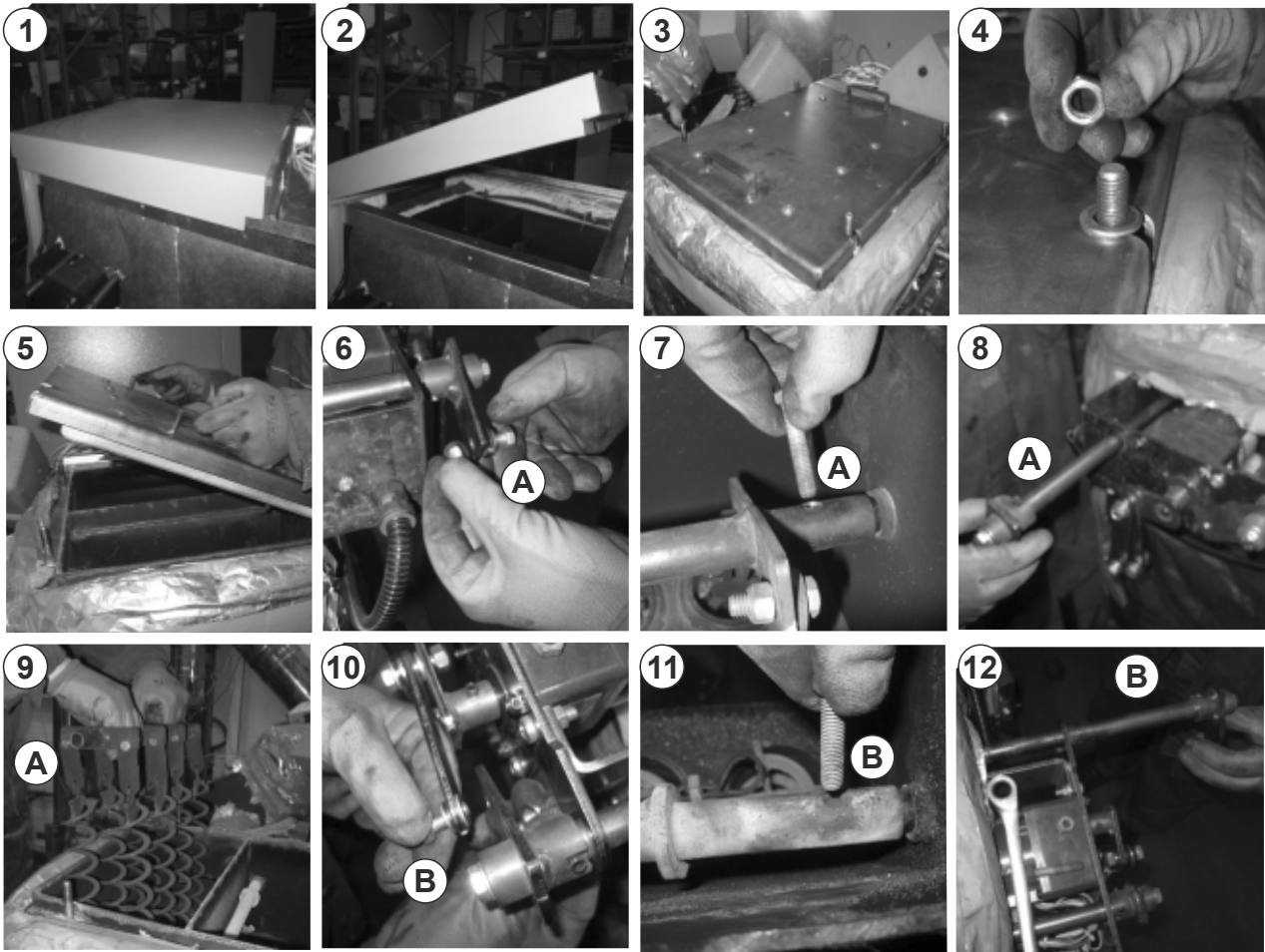
Firebox should be cleaned after spent 400-600 kg of pellets, depend of pellet quality.



- 1, 2 - Take out part from the firebox
- 3 - Take out part from the firebox
- 4 - Scrape soot from the exchange surface with scraper
- 5 - Drag ash to the ash box
- 6, 7 - Take out and empty ashboxes
- 8 - Cleaning tools - scraper and brushes

**This actions need to be taken after fired every two tanks of the pellet!**

## 7.1. EXTRACTION OF TURBULATORS



Procedure of extracting turbulators:

- 1 - Casing cover
- 2 - Remove the casing cover
- 3 - Flue outlet cover
- 4 - Unscrew the 4 screws which hold top boiler door
- 5 - Remove flue outlet cover
- 6 - Unscrew the lever "A" from the cleaning mechanism
- 7 - Unscrew the screw "A" which hold turbulator axle with cleaning mechanism
- 8 - Pull out axle "A"
- 9 - Take out turbulators "A"
  
- 10 - Unscrew the other lever "B" from the cleaning mechanism
- 11 - Unscrew the screw "B" which hold turbulator axle with cleaning mechanism
- 12 - Pull out axle "B"
- 13 - Take out turbulators "B"

**Note:**


Place turbulator back in the same way but in the reverse order!

## Cleaning intervals

---

The reasons for recommending a regular, components maintenance service and the necessary maintenance intervals:

Part of Polifuel	Cleaning interval
Ash boxes (Figure 4)	Discharge after spent 400-600 kg of pellets
Cleaning of exchanging surfaces	Once a year
Cleaning a places over exchanging flue gas tubes (Figure 5)	
Cleaning of pellet tank	
Photocell	

	<p><b>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.</b></p> <ol style="list-style-type: none"><li><b>1. Electric heater</b></li><li><b>2. Failure on distribution power box with digital boiler control unit</b></li><li><b>3. Fan failure</b></li><li><b>4. Pellet feeder Motor failure</b></li><li><b>5. Temperature sensors failure</b></li><li><b>6. Photocell failure</b></li></ol>
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**Every seven years to call an authorized service provider for routine maintenance and control.**





