



## **CENTRAL HEATING BOILER PELLE**

Installation and user instructions



## Technical specification

Thermal rated power	20 kW
Operating pressure	up to 2.5 bar
Test pressure	3.25 bar
Max. temperature of boiler water	up to 95°C
Power efficiency	over 0.9
Water space	0.165 m <sup>3</sup>
Weight (empty)	145 kg
Fuel	light fuel oil, gas, wood pellets
Boiler external dimensions	1500 x 635 x 600 mm
Assembly set:	a boiler including control and protection devices, gauges, an ash pan, installation and user instructions
Chimney draft (in case of pellet burner)	from 4 till 8 Pa
Cross-section of the chimney	120 x 240 mm or Ø 200 mm

## Installation instruction

The boiler must be installed in a boiler room with a floor made of non-combustible materials meeting the requirements of EPN 10.8 set forth for boiler houses and boiler rooms. The boiler may be lifted only supported from the bottom frame.

Connect the exit/return water pipe located on the boiler with a heating system by means of a quaternary mixer or a special collector.

Connect the fire tube with the chimney with a smoke flue as short as possible, with an angle upwards.

The boiler is suitable to be used with closed and open fuel systems and for heating water with appropriate distribution/regulation system supplying floor heating and city water.

A burner to be selected according to recommendations of the specialised sales company will be installed on the furnace door [1] (see the scheme) following the installation instructions of the burner. The standard opening in the furnace door is meant for the pellet burner. For installing an oil burner, use an intermediate plate with a special opening [2].

When installing the boiler "Pressurised equipment safety regulations" and decrees and instructions related to these have to be followed.

Problems occurring during assembly of the boiler, equipment and devices have to be solved in cooperation with a heat engineering specialist.

After installation we recommend to conduct a boiler test to determine suitable operation regimes and thermal efficiency.

## **User instruction**

The boiler is designed to burn wood pellets or light fuel oil. The boiler operates without permanent monitoring by the operator.

The boiler is equipped with an automatic pellet or fuel oil burner used in accordance with the burner user instructions.

In order to ensure maximum efficiency, the boiler is designed to be used with turbolators [4]. Selection of turbolators is made based on the chimney structure and draft (see recommendations).

Water operation pressure must not exceed 2.5 bars.

### **Control and protection devices, gauges**

**Switch [5]** – switching it on energises power equipment of the boiler.

**Operation thermostat [6]** – turning the handle from 0 position to the position of the boiler water temperature activates the burner. From the point of view of efficiency we recommend using boiler water temperature 90° C.

**The safety switch in the boiler connection circle** has to be 6A for oil and gas burners and 10A for pellet burners.

The red **indicator lamp [7]** switches on when the boiler operation is stopped and the maximum temperature thermostat is activated.

**Furnace door limit switch [8]** – stops operation of the burner when the furnace door is opened.

**Maximum temperature thermostat [9]** – stops operation of the burner, when the boiler water temperature achieves the value of 95°C. Operation of the burner can be continued when the water temperature has lowered and the thermostat has been manually reset to the operation position.

**Safety valve [10]** – opens, when the water pressure in the boiler exceeds 2.5 bars. To ensure operational order of the safety valve open it manually from the handle.

**Manometer [11]** – shows the pressure of boiler water.

**Boiler water thermometer [12]** shows water temperature in the boiler.

**Flue gas thermometer [13]** shows flue-gas temperature exiting from the boiler.

**Supply plug [14]** is meant for connecting the power system of the boiler with power network. It has to be connected in a socket with three-pin earthing and with a fixed neutral.

**Burner connection plug [15]** is assembled with the burner.

### **Maintenance of the boiler equipped with a pellet burner**

In case of burning pellets, move a rapper lever [16] to clean the fire tube and turbolators. This may be done when the boiler is operating. Turbolators have to be cleaned approx. once per month. To ensure normal operation of the boiler clean the grate and furnace of the burner and empty the ash pan [3] approx. after burning of 500 kg of pellets. For this procedure you have to stop the boiler.

We recommend carrying out more thorough maintenance of the boiler once per month. **The boiler has to be stopped for this.** To clean heating elements open the upper hatch [17], shake off loose ash deposited on the turbolators, remove axes of the rapper, pull out the turbolators and clean with a brush. First push soot and ash deposited in the flue-gas chamber down through the pipes into the furnace and thereafter remove ash deposited in the fire tubes with a special brush. In connection with cleaning the furnace, clean the grate of the burner and empty the ash pan.

When burning pellets, the boiler has also to be cleaned in case the temperature has exceeded over 230°C or the draft has weakened remarkably.

In order to ensure normal operation of the burner follow the recommendations and instructions of the manufacturer.

In the end of the winter heating season the boiler has to be thoroughly cleaned to avoid sintering of soot on the heating elements.

When burning light oil, clean the boiler once per year after the end of the heating season.

The possessor of the boiler is responsible for **safe operation of the boiler**, and is obliged to:

- ensure that the boiler room is clean and in order;
- ensure that the connection joint of the boiler and the chimney meets the requirements;
- ensure that the chimney is in order.

**It is absolutely forbidden to:**

- heat the boiler with no water inside;
- to fill a hot boiler with water, which has been left dry;
- to store combustible materials in the boiler room

## Electrical connections

The device can be connected to the power outlet only by a qualified electrician. Use a flexible cable with a cross-section of  $3/5 \times 1.5\text{mm}^2$ . The device is designed to be connected to 230 V power outlet. Use a fuse with a minimum value of 10 A.

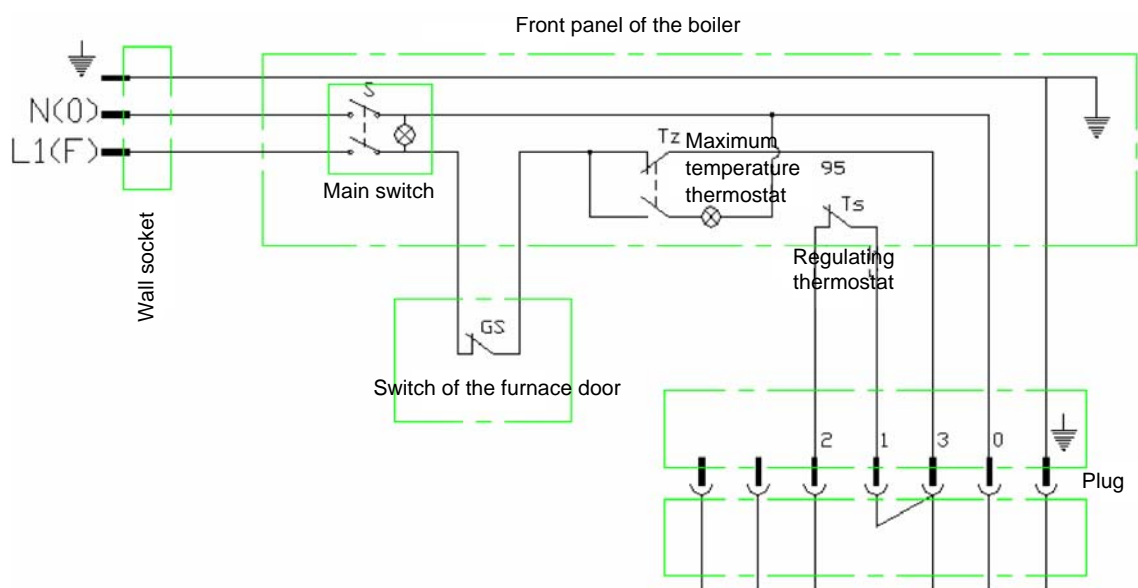
Colours of cables:

Neutral conductor – blue

Phase conductor – black

Earthing – yellow / green

Principle circuit diagram of the boiler:



## Recommendations for the choice of a turbolator

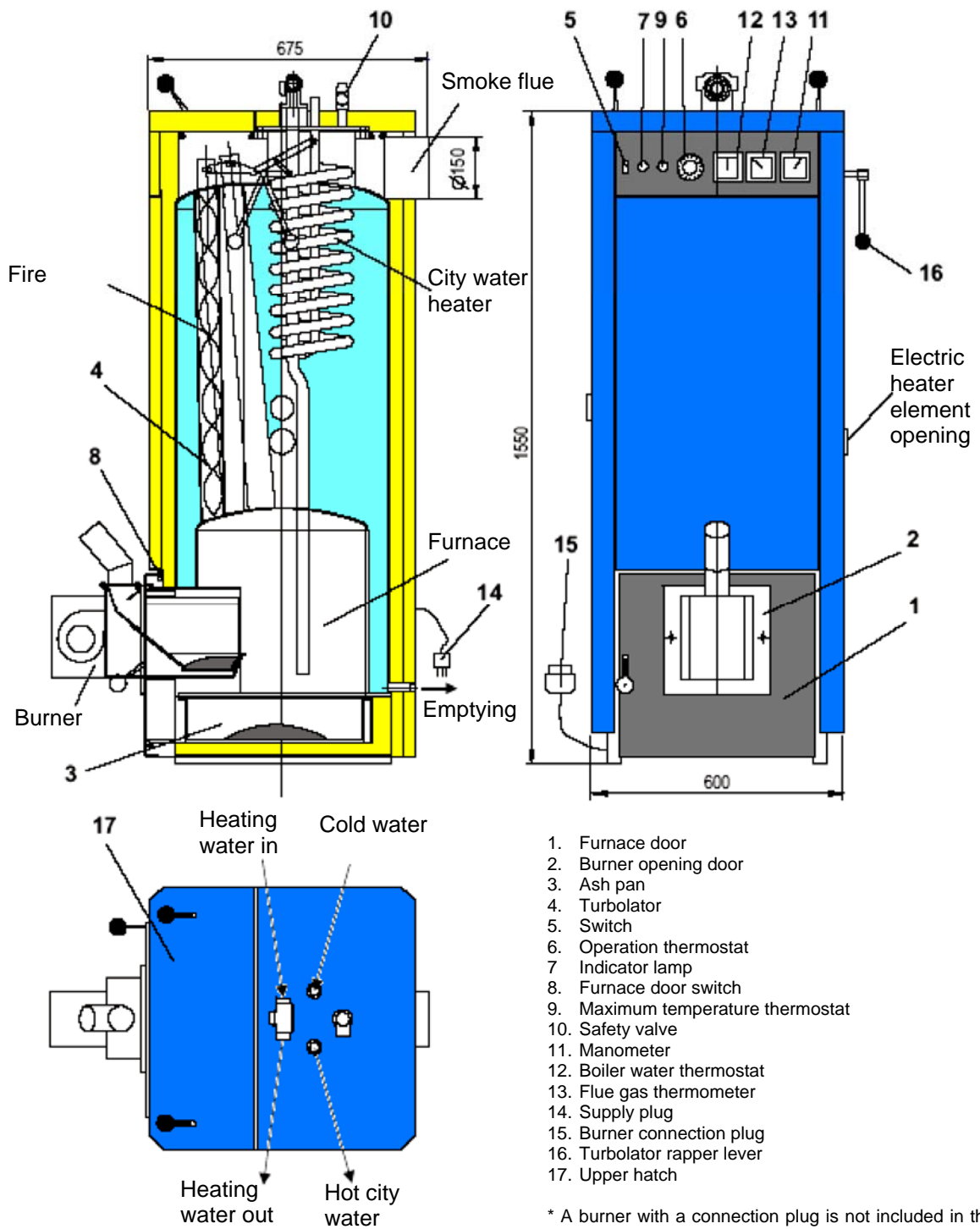
As turbolators in “Malle” and “Pelle” convection tubes are the main sources of aerodynamic resistance, it is reasonable to choose these based on consumer’s chimney parameters.

A “Pelle” boiler with a pellet burner and a turbolator no. requires draft of the chimney 10 Pa (1 mmVs) in output value of 20 kW and 20 Pa in output value of 30 kW. In case of bigger draft more powerful turbolators are recommended. As draft of the chimney depends on very many factors, it is always recommended to measure it and to choose proper turbolators according to the measuring result.

The following table is necessary for making the preliminary choice of the turbolators and is of help to the boiler installer. Turbochargers are manufactured in four different aerodynamic resistance values. The bigger the number of the turbolator, the bigger is the resistance value. A turbolator with bigger resistance value ensures bigger efficiency of the boiler.

CHIMNEY		USED FUEL	
		OIL	PELLETS
		TURBOLATOR NO.	
1-storey building	<b>Half brick flue</b> 14 x 14 cm	2	1
	<b>Full brick flue</b> 14 x 27 cm	3	2
2-storey building	<b>Half brick flue</b> 14 x 14 cm	3	1
	<b>Full brick flue</b> 14 x 27 cm	4	2

In case draft of the boiler provided with a turbolator based on this table is not sufficient, use a turbolator with a smaller number.



A scheme of the central-heating boiler STI20TPV "Pelle"