

## Operating, installation and maintenance instructions

PanAqua II 30-closed (PanAqua 80-5-Z)

PanAqua II 25-closed (PanAqua 71-5-Z)

PanAqua II 20-closed (PanAqua 68-3-Z)

PanAqua II 15-closed (PanAqua 62-2-Z)

Wood burning thermo-fireplaces for  
closed heating systems



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## **General information**

The range of PanAqua thermo-fireplaces have been developed by Technical Tüzeléstechnikai Kft. to produce hot water for heating systems. The fireplace is recommended for hardwood combustion in order to achieve the best possible efficiency.

It may only be installed according to the instructions of the manual and in observance of the applicable standards. Installation may only be performed by qualified professionals.

Prior to commissioning, the appropriate priming of the water space and the heating system must be checked as well as the cold water supply to the safety heat exchanger. The tightness of the smoke flues must be verified.

### **1. Technical description**

The fireplace is made of welded sheet metal with a ceramic glass door. The heat resistance of the ceramic glass is up to 700 °C. The water system is composed of the water jacket in the sidewalls of the fireplace and the steel tubes placed in the flame area. The walls of the water system and the fireplace connecting with fire are 5 mm thick, made of P265GH steel plate. The bottom of the fireplace is covered with 3 cm thick fireclay bricks with the ashtray likewise placed here with a cast iron grill above it. Connections of the fireplace are composed of the following: heating inlet and return pipe of size G1" (2 units). The inlet pipe stubs have been placed on top of the fireplace with the return connections found at the bottom of the sidewall. The heating stubs can be found on both the left and right sides, enabling a more flexible connection to the heating network with the unused stubs duly sealed. An internally threaded ¾" thermostat connection can be found on top of the fireplace body with two further ½" connections for the safety heat exchanger and a sleeve pipe. The exit pipe for the combustion products has been placed on top of the fireplace. The inlet orifices for the primary air have been placed at the bottom of the fireplace with the regulator below the door in the form of a slide valve, opening to a full cross section of 23 cm<sup>2</sup> from the fully closed position. While operating the fireplace, the fresh air replenishment of the room must be ensured.

The fireplaces have been rated into the best boiler class of the MSZ EN 303-5 standard.

The fireplaces have been rated by TÜV Rheinland as pressure equipment, certificate number: H/B1 11 0942; permissible operational pressure: 1.5 bar.

The fireplace must be protected from too low return water temperature, as this results in sooting and a shortened lifespan of the fireplace. An ESBE VTC500 type valve is advised for boiler protection. (figures 2 and 3)

### **2. Technical data:**

Recommended wood species: beech, oak, alder and locust. The length of the billets should match the length of the fireplace. The moisture content of the wood should be between 12-20%. Under ideal storage conditions, wood harvested in winter will season to this stage after one year, with the seasoning time for the summer harvest being one and a half years. Softwood may also be used to fire the fireplace, but larger volumes of fuel are required in this case. When firing softwoods (coniferous species), more intensive flames are produced and the fireplace and the glass door experience more sooting due to the resin content of the wood.

It is forbidden to burn garden offcuts, agricultural plant wastes, energy grasses, wood chips, pellet, charcoal and any type of coal in the fireplace.

**Overloading the fireplace may damage the entire system beyond repair!**

<b>Technical data</b>					
<b>Type (width - number of pipes)</b>	<b>Unit of measure</b>	<b>PAII30Z 80-5-Z</b>	<b>PAII25Z 71-5-Z</b>	<b>PAII20Z 68-3-Z</b>	<b>PAII15Z 62-3-Z</b>
Nominal capacity	kW	30	25	20	15
Smoke gas temperature at nominal capacity	°C	230	230	230	230
Efficiency	%	80	80	80	80
Lowest thermal efficiency	kW	15	12	10	7
Smoke gas temperature at lowest capacity	°C	185	185	185	185
Maximum inlet water temperature	°C	90	90	90	90
Maximum temperature difference	°C	20	20	20	20
Lowest return water temperature	°C	60	60	60	60
Maximum operational pressure P <sub>s</sub>	bar	1.5	1.5	1.5	1.5
Test pressure	bar	3	3	3	3
Flow resistance	mbar	0.2	0.2	0.2	0.2
Overall dimensions					
Depth	mm	537	537	537	537
Width	mm	800	710	680	620
Height	mm	955	955	855	855
Fireplace weight	kg	137	107	96	89
Capacity					
Volume of water	l	56	51	42	39
Fireplace connections					
Fireplace inlet and return water connection	G	1"	1"	1"	1"
Diameter of dip sleeve	mm	14	14	14	14
Thermostat connection	R	3/4"	3/4"	3/4"	3/4"
Safety heat exchanger connection to cold water grid	R	1/2"	1/2"	1/2"	1/2"
Maximum cold water temperature for safety heat exchanger	°C	20	20	20	20
Safety heat exchanger water pressure	bar	3-5	3-5	3-5	3-5
Combustion product exhaust connection	mm	200	200	200	150
Required chimney draught	Pa	10.0-15.0	10.0-15.0	10.0-15.0	10.0-15.0
	mbar	0.10-0.15	0.10-0.15	0.10-0.15	0.10-0.15

Table 1

## 2.1 Warning!

The operating equipment must be fitted with appropriate protection at the place of installation against exceeding the permissible limit values (internal excess pressure and temperature) according to the effective European regulations (The Pressure Equipment Directive (97/23/EC)) and the corresponding national regulations. In accordance with this, the equipment must be installed with a pressure limiter (safety valve) and a device preventing overheating of the pressurised structural elements or equivalent technical solutions, with the installation technician (the technician implementing the heating system) being responsible for professional installation. The manufacturer will not be held liable for damages resulting from improper installation! The construction of a boiler protection circuit is a condition of warranty! Diagonal connection is strongly recommended.

## 3. Installation

The installation of the fireplace must be performed by a qualified professional. The surface temperature of the fireplace cover may not exceed 60 °C.

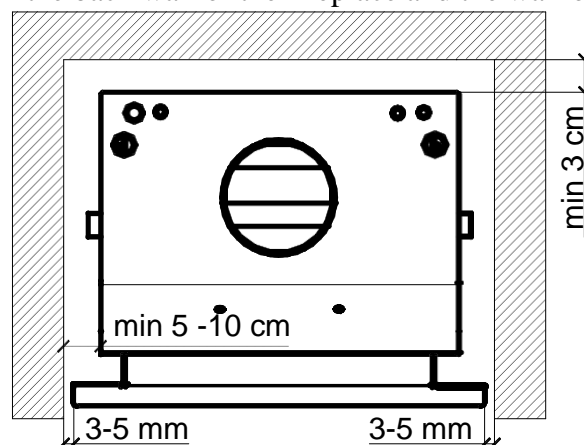
The materials used to build the fireplace may be rated as non combustible and all combustible materials must be properly isolated from high temperature zones.

### 3.1. Base

Before commencing construction the fireplace being loaded onto the base must be taken into account. If no separate base is built, the bottom of the fireplace cover will serve as the base. The base must be suitably hard, non combustible and solid.

### 3.2. Sidewall

A minimum of a 3-5 mm gap must be left between the fireplace and the sidewall at the front surface; from the side of the fireplace towards the wall a minimum of a 5 cm gap must be kept and a minimum of 10 cm upon connection of the heating return pipe. A minimum of a 3 cm gap is necessary between the back wall of the fireplace and the wall of the room.



On the connection side of the return pipe a minimum distance of 10 cm is necessary!

Figure 1 Top view installation drawing

### 3.3 Upper edge

If the upper edge is made of wood, it must be properly insulated and kept at a minimal distance of 10 cm from the fireplace. The fireplace insert is not to bear the load of any fireplace cover element, as the omission of the thermal expansion gap may severely damage the fireplace and the cover as well.

### 3.4. Safety heat exchanger

The fireplace may be connected to a closed heating system and is therefore fitted with a safety heat exchanger to dissipate the excess heat. The safety heat exchanger is placed at the back of the fireplace into the water space. The coil pipe is made of ½" steel pipe. The connections are on the top of the fireplace. The heat exchanger is connected to the water grid; it is forbidden to build a shut off valve into the inlet pipe. Its operation is ensured by an unpowered thermal spill-valve. Recommended types: Honeywell TS130-3/4A or Honeywell TS131-3/4A and Regulas JBV1. Apart from these, it is also obligatory to incorporate a standard heating system safety valve. Recommended types: Giacomini R 140R and Honeywell SM120-1/2Z, max. pressure: 1.5 bar (see 4.)

## 4. Safety regulations

The fireplace must be installed by a qualified technician. The manufacturer's operational and installation instructions must be observed. The operator is responsible for the proper operation of the fireplace.

The chimney standards can be found in "Hungarian Standards".

- The chimney must conform to the requirements of the effective standards.
  - It is forbidden to narrow the chimney flue upwards.
  - It must be possible to clean the chimney safely.
  - It is strictly PROHIBITED to connect a solid fuel fired equipment to a gas-operated chimney!
  - If permanent condensation is inevitable, the chimney flue must be lined with a chemically resistant and watertight inner lining.
  - Thermally insulated (acid resistant on the inside) fitted chimneys must be given preference.
- It is forbidden to store combustible materials directly under the fireplace!**  
**It is not permitted to place or use combustible materials near the device!**

## 5. Installation manual

The diameter of the chimney determines the size of the fireplace to build in.

The smoke flue connection height of the fireplace may not be below 1.5 m, but may be placed anywhere above this height, but the type of cladding must be taken into account or if it is not yet known, it is advisable to place it approximately 2 m high.

The air required for combustion must be adequately provided.

## 6. Operational regulations

### 6.1. Ignition

Warning: Oil derivatives such as petrol, diesel oil, etc. may not be used for ignition; only kindling wood and paper are advised.

Ignition should be done with the help of kindling wood and paper. The kindling wood should be stacked into a pile with the paper placed underneath it and ignited. When the wood is safely burning, put a load of firewood billets in the fireplace. The volume of firewood should be proportionate to the desired heating capacity, but it may not exceed the maximum value!

The primary air regulator slide valve and the butterfly valve must both be fully open upon ignition. The positions of the primary air and the butterfly valve are indicated. The door will not open when the butterfly valve is closed.

### 6.2. Heating

After the first ignition it is recommended to carefully heat up the fireplace; for this reason, use only one third or at most half of the nominal wood volume for the first few occasions. This procedure is also recommended for the varnish of the fireplace to burn in.

With this thermal break-in, a long lifespan of the fireplace may be achieved. In case of fireplaces connected to central heating, care must be taken for the firing to be even. The system must be protected against freezing. If no other automatic heating equipment is operated, it is advisable to prime the heating system with an antifreeze fluid mixture.

Fuel consumption					
At nominal capacity					
Type		<b>PAII30Z 80-5</b>	<b>PAII25Z 71-5</b>	<b>PAII20Z 68-3</b>	<b>PAII15Z 62-3</b>
Average fuel consumption per hour:	kg/h	8.5-9.5	7-8	6-7	4-5
Maximum length of billets:	cm	40	40	35	30
Maximum loading height:	cm	30	30	25	25

Table 2

### 6.3. Heating at nominal capacity

The hourly wood requirement for nominal capacity is shown in the table above. It is advisable to load 1-2 hours of wood and to burn it with appropriate regulation. The billets must be placed in layers across in heights of 2-3 layers.

### 6.4. Heating at low capacity

The fireplace may operate at low capacity with a fully closed air regulator. The primary air regulation slide valve and the butterfly valve are in closed position.

### 6.5. Refuelling

New billets must be loaded when the embers are glowing and no longer burning with flames.

When refuelling, open the smoke flap valve and slightly open the fireplace door and wait 5-10 minutes. This is necessary in order to safely guide away the smoke gas. If the fireplace door is opened fast, smoke may flow back into the room.

When firing the fireplace, the billets must be loaded so as to prevent them from sliding back towards the door as they burn. Before opening the fireplace door make sure there is no billet in the direct proximity of the door or leaning against it. If the platform in front of the fireplace door is made of a combustible material (parquetry, strip flooring, etc.) an ember tray must be placed in front of the fireplace.

## **7. Cleaning the combustion chamber and the chimney**

### **7.1. Daily tasks:**

Cold ash should be removed from the combustion chamber. This may be done using household utensils or a purpose developed ash Hoover. Care must be taken to only clean ash from a cold fireplace. Ash still glowing should not be removed from the combustion chamber. Extinguishing fire with water or choking the embers is strictly forbidden as this is dangerous and may damage the fireplace. Such activities greatly reduce the lifespan of the fireplace.

### **7.2. Soot removal**

The combustion chamber periodically requires soot removal and cleaning. Soot removal may only be performed if the fireplace has cooled down completely. For reasons of safety, the cleaning utensils should not be made of plastic. No specially designed tools are necessary.

The grill and the ember tray should be cleaned with a wire brush to remove stuck dirt.

A special cleaning fluid should be used for the glass of the door. It is forbidden to clean hot glass! It is also forbidden to clean the glass using scraping tools.

### **7.3. Chimney**

The building must have a completely separate chimney for this device. It should under no circumstances be connected into a common chimney with other heating equipment! It is strictly forbidden to connect the fireplace or any other solid fuel fired equipment to a chimney of a gas heated equipment. Only a qualified professional should attempt to clean the chimneys of the building!

The fireplace must be directly connected with gap-free joints to the chimney, strongly attached to the wall. The corresponding regulations must be strictly observed when connecting the chimney.

## **8. Operation and supervision**

The fireplace may only be operated by persons above 18 years of age who has read and acknowledged the maintenance manual. When firing up the fireplace, the contents of point 6.1. must be observed. No additives or other materials may be used to boost combustion while firing.

Minors should not be allowed to approach the fireplace without supervision, especially the glass door.

It is forbidden to place flammable materials within the safety distance from the fireplace door. The safety distance is 1.5 metres.

The user must regularly check the priming of the heating system with water. Apart from regular cleaning no maintenance works need to be performed on the equipment.



## 9. Standards:

MSZ EN 303-5:2000	Heating boilers. Solid fuel fired, manually or automatically fed heating boilers up to 300 kW nominal thermal capacity.
MSZ EN 14336:2005	Heating systems of buildings. Implementation and commissioning of water heating systems
MSZ EN 1443:2003	Combustion product exhaust equipment. General requirements.
MSZ EN 1457/ A1:2003	Combustion product exhaust equipment. Ceramic pipe liners. Requirements and tests.
MSZ EN 13384-1	Combustion product exhaust equipment. Thermal and flow technology dimensioning process.
MSZ EN 12953-3	Design of boilers with large water spaces.
Decree 9/2001.(IV.5.) of the Ministry of Economic Affairs of the design checks by EC according to module B1 of the 97/23 EC directive	

## 10. Connection drawings

Protection of the fireplace against excessive burning and/or power outage is ensured by a safety cooling circuit.

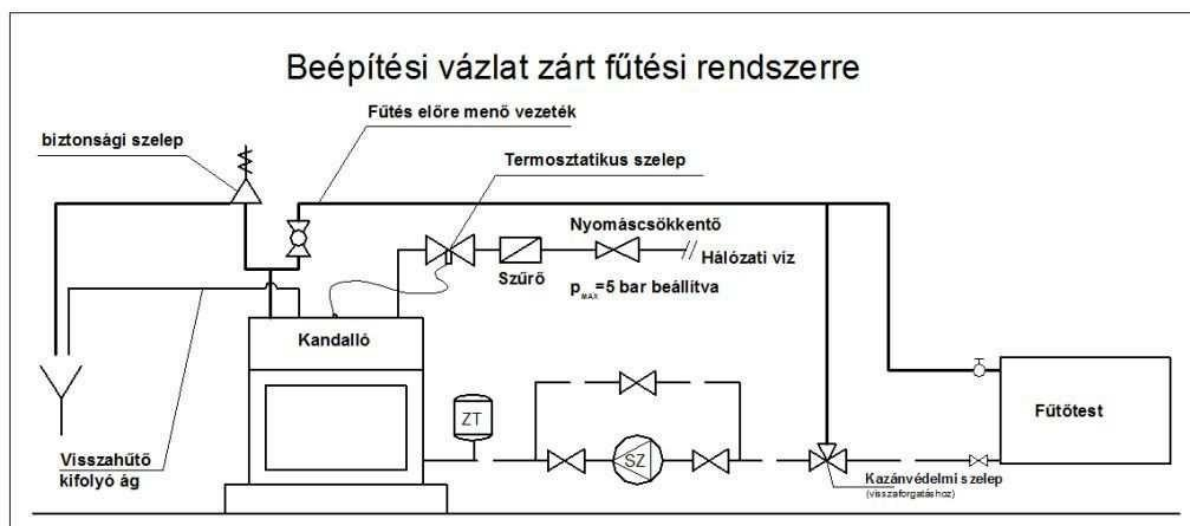


Figure 2

The more favourable efficiency of the heating system may be achieved by incorporating a puffer tank; this drawing shown on Figure 3.

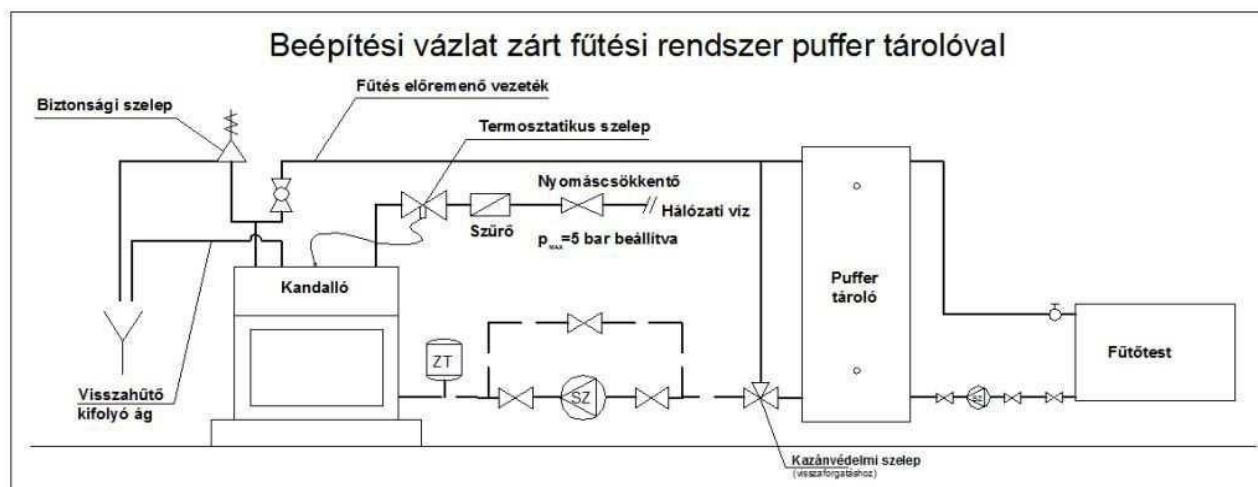
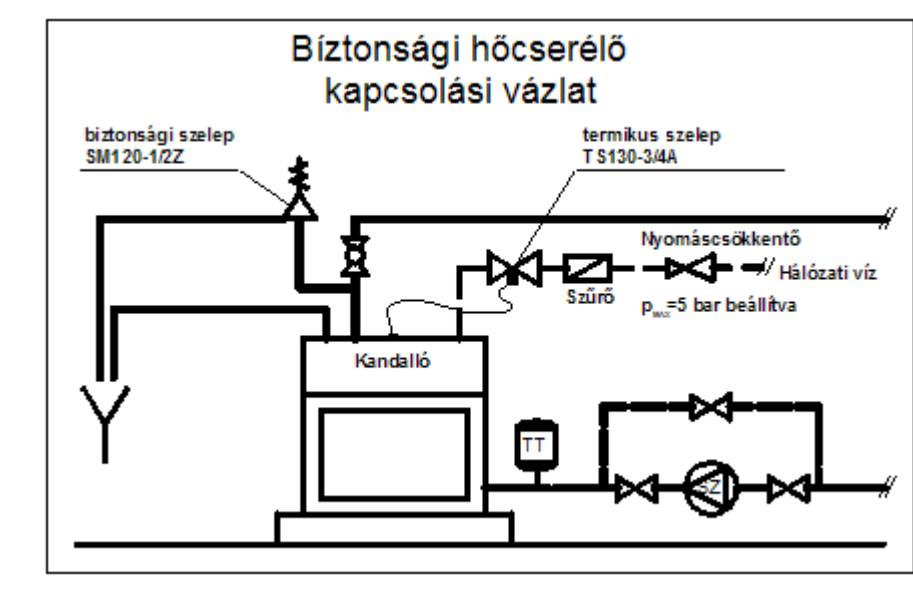


Figure 3

Schematic drawing of the safety heat exchanger with the recommended safety assemblies



Thermal valve with Honeywell TS type valve

Figure 4

## 11. Overall dimensions and connections

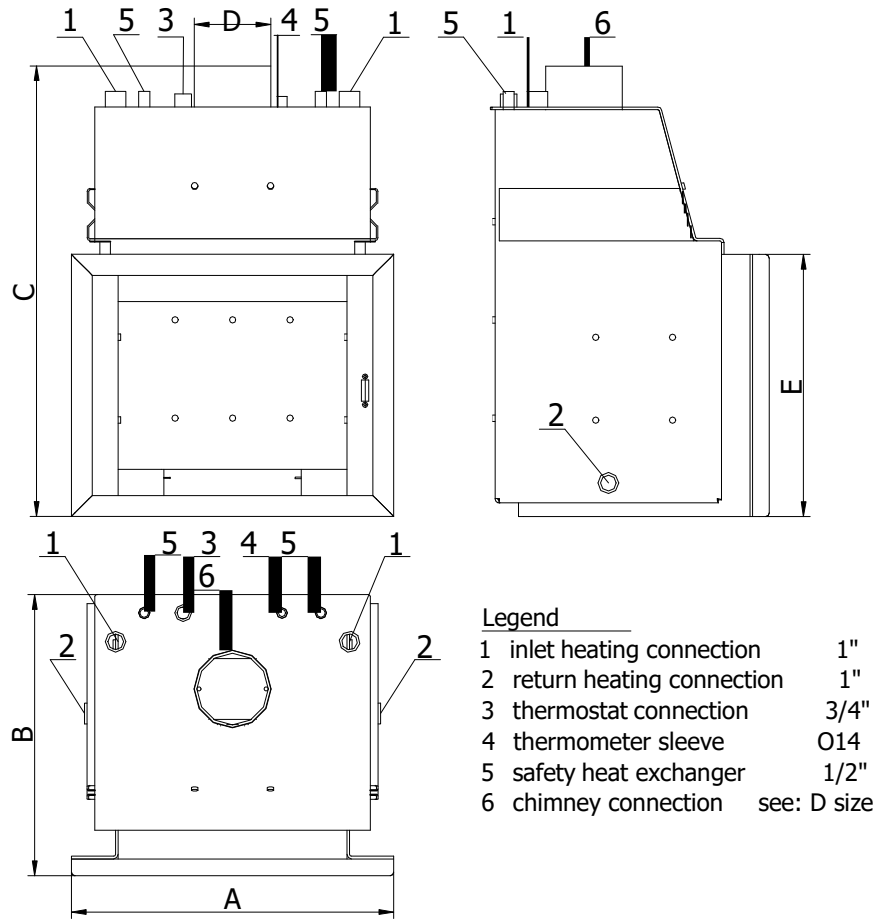


Figure 5  
PanAqua closed water space overall dimensions and connections

Overall dimensions (mm)					
		Type			
Cod	Description	PA30Z	PA25Z	PA20Z	PA15Z
<b>A</b>	width	800	710	680	620
<b>B</b>	depth	537	537	537	537
<b>C</b>	height	955	955	855	855
<b>D</b>	chimney connection	200	200	200	150
<b>E</b>	Frame height	550	550	500	500

Table 3