



PYRO THERM

STEEL HOT-WATER GASIFYING BOILERS FOR BURNING LUMP WOOD

PYRO THERM 15 | PYRO THERM 20 | PYRO THERM 25 | PYRO THERM 30



- warranty up to 4 years (warranty and post-warranty service)



- can be used even after 2024



- sheet thickness 5 mm



- ecodesign and boiler class 5



- high efficiency

Original user manual

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Introduction

SLOKOV kovo a.s. thanks you for the decision to use one of the PYRO THERM wood-fired boilers, for which the manufacturer has issued a declaration of conformity in accordance with § 13, paragraph 2 of Act No. 22/1997 Coll. and § 13, paragraph 1 of Government Regulation No. 163/2002 Coll., as amended by Government Regulation 312/2005 Coll.

Important Notice

Careful study of the user manual will give you information about the design, handling and safe operation of the boiler.

After unpacking the boiler, check the completeness of the delivery. Check that the size of the boiler corresponds to the intended use.

The PYRO THERM hot-water boiler uses a cooling loop and safety valve to remove surplus heat (e.g. in the event of a circulation pump failure). This valve can be purchased as a separate boiler accessory.

If you find any fault with the boiler, take the boiler out of operation and have the fault rectified by a specialist company. For proper function, safety and long-term operation, ensure regular professional inspection and maintenance of the boiler at least once a year. This will protect your investment. Only original parts may be used for repairs. In the event of defects caused by improper installation, non-compliance with regulations, standards or operating instructions during assembly and operation, the manufacturer is not responsible for these defects, and they are not covered by the warranty.

Boiler use, fuel

Steel, hot-water PYRO THERM boilers are a heat source good for heating apartments, family houses, businesses and similar buildings with a heat loss of 15-30 kW. The heating system must have a pressure expansion tank and forced heating water circulation, with a maximum overpressure of 200 kPa. PYRO THERM boilers are designed to burn dry wood with a maximum moisture content of up to 20%, i.e. logs up to a diameter of 100 mm and length 330 mm or 500 mm (depending on the size of the boiler), or split wood with or without bark. The manufacturer recommends storing the fuel lengthwise in the loading shaft so that the fuel burns and slides off smoothly. Increased operator supervision is necessary for “misshapen” logs.

In addition to professional installation, the proper working of the boiler depends on the necessary chimney draught and correct operation.

Description of the boiler

The boiler consists of welded steel sheets. The interior space is divided into a loading shaft, combustion chamber and an exchanger through which the gases flow to the flue pipe. The loading shaft is in the upper part of the boiler, and the bottom of the loading shaft is a nozzle that directs the flame down into the combustion chamber. To ensure perfect combustion, secondary air is fed through the nozzle into the flame. The flue gases flow from the combustion chamber through the tubular heat exchanger and fan into the chimney.

For ease of loading the fuel, the boiler has a large feed door that, when opened, automatically opens the flue gas vent. This ensures the flue gas is removed from the space around the door during loading. In addition, when the door is opened, the speed of the fan increases to the maximum, so that almost all the smoke released during loading is sucked into the chimney.

Main dimensions of boiler

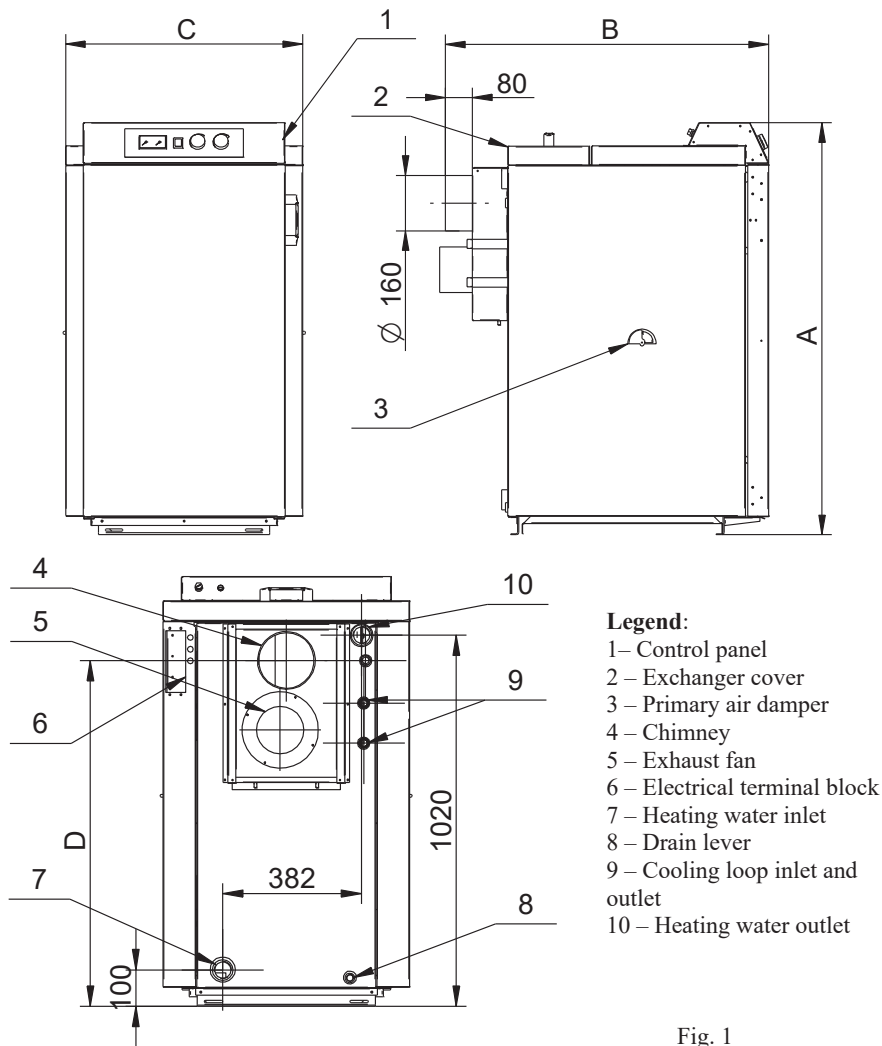


Fig. 1

Boiler type PYRO THERM			15	20	25	30
Boiler height	A	mm	1185			
Boiler depth	B	mm	930	930	1130	1130
Boiler width	C	mm	680			
Flue axis height	D	mm	950			
Depth of the loading shaft	E	mm	400		600	
Flue throat diameter (external)		mm	160			
Heating water inlet and outlet			Socket G1 1/2" female thread			

Schematic cross-section of the PYRO THERM boiler

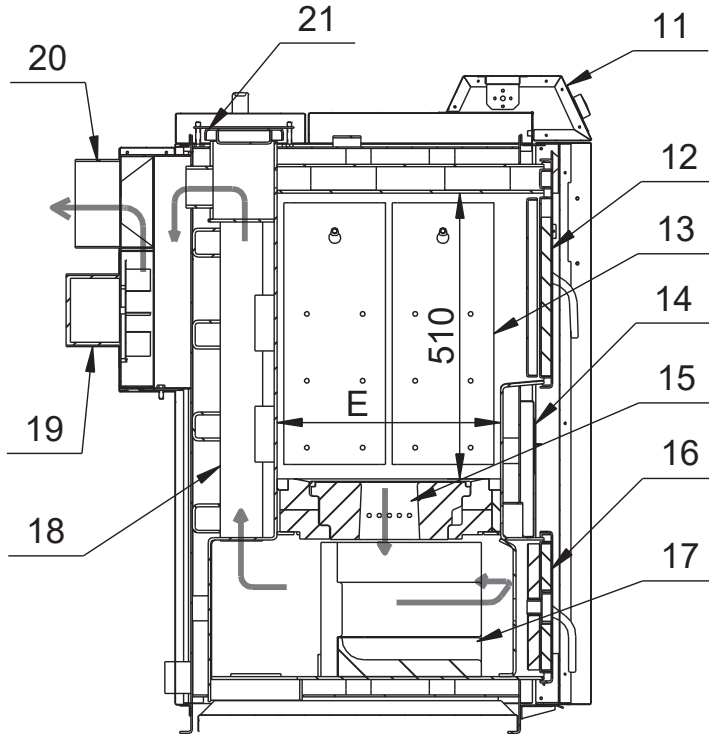


Fig. 2

Legend:

- | | |
|------------------------------|-----------------------------|
| 11 – Control panel | 17 – Combustion chamber |
| 12 – Feed door | 18 – Tubular heat exchanger |
| 13 – Fuel shaft | 19 – Exhaust fan |
| 14 – Secondary air supply | 20 – Flue pipe |
| 15 – Fuel shaft ceramics | 21 – Exchanger cover |
| 16 – Combustion chamber door | |

Composition of ceramics in the PYRO THERM boiler

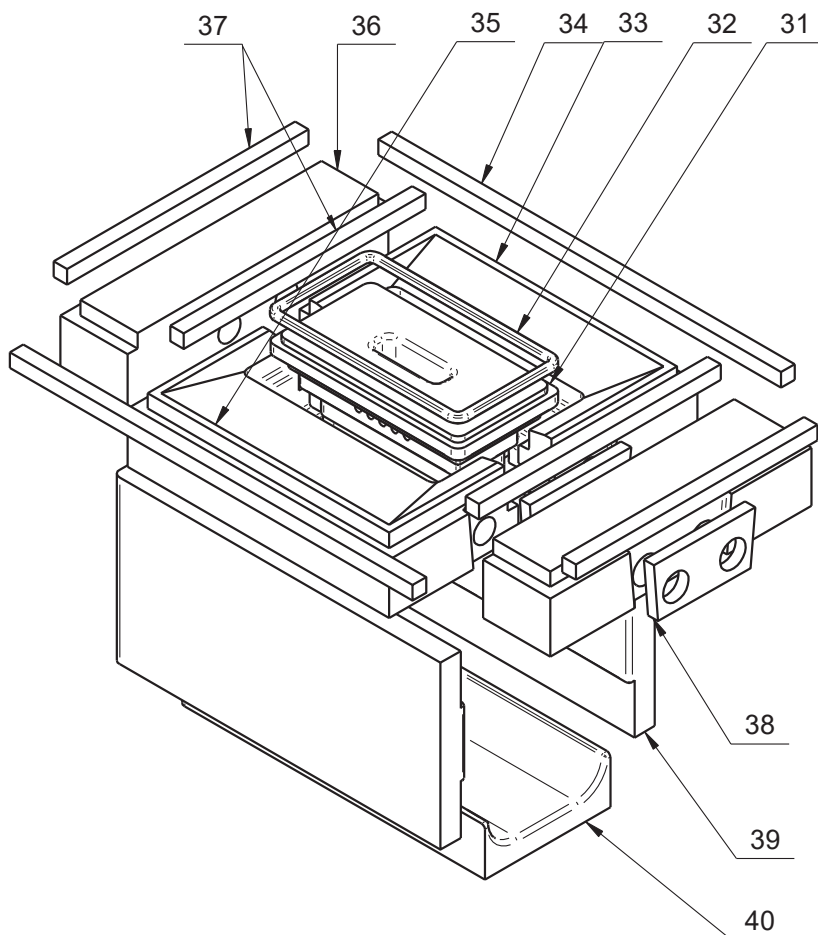
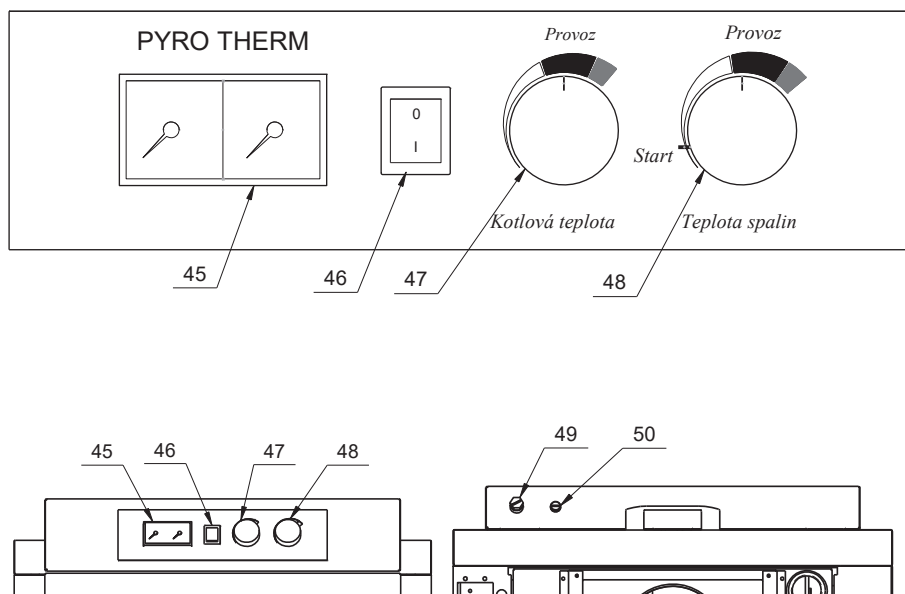


Fig. 3

- | | |
|--------------------------------|---|
| 31 – Nozzle | 36 – Demarcation cube front, rear (only for 25.30 kW) |
| 32 – Nozzle sealing cord 10x10 | 37 – Sealing cord front rear 20x20 |
| 33 – Right side of the nozzle | 38 – Secondary air seal |
| 34 – Side sealing cord 20x20 | 39 – Combustion chamber side |
| 35 – Left side of the nozzle | 40 – Combustion chamber bottom |

When ordering spare parts, the type of boiler must be specified.

Boiler control panel



Front view of the control panel

Rear view of the control panel

Fig. 4

Legend

- 45 – Thermomanometer
- 46 – Main switch
- 47 – Boiler thermostat – for setting the required water temperature
- 48 – Flue gas thermostat – for setting the cut-off temperature of the fan when the fuel is burnt out
- 49 – The emergency thermostat switches off the fan if the temperature exceeds 100 °C
- 50 – Fuse (glass 2A)

Specifications

PYRO THERM boiler	MJ	15	20	25	30
Rated output	kW	15	20	25	30
Boiler efficiency	%	89.5	89	89.7	89.2
Burning time at rated output of wood/coal	hours	2			
Operating draught	Pa	15	18	16	18
Boiler hydraulic loss	mbar	1.1	1.5	1.6	1.9
Mass flow of flue gas	g/sec.	9	12	16	18
Fuel consumption	kg/hour	3.6	5.0	6.5	7.4
Flue gas temperature at rated output	°C	130	168	145	157
Temperature control range	°C	70-90			
Lowest water inlet temperature to the boiler	°C	60			
Overpressure for safety valve with exp. vessel	bar	2			
Maximum operating overpressure	bar	2			
Boiler water volume	l	75	75	95	95
Volume of fuel shaft and firebox	l	70	70	105	105
Size of filling hole	mm	400x335			
Boiler weight	kg	325	325	375	375
Boiler class	-	5			
	-	ecodesign	ecodesign	ecodesign	ecodesign
Energy efficiency class		A ⁺			
Heating surface	m ²	2.2	2.2	2.7	2.7
Electrical supply	W	31	32	32	33
Maximum electrical supply	W	60	60	60	60
Log length	mm	330	330	500	500
Fuel		Dry wood chips with a moisture content of up to 20%			

Heating water tank – storage tank

PYRO THERM boilers are classified in class 5 according to ČSN EN 303-5. According to this standard, boilers must be connected to a storage tank, which is used to remove excess heat. The need to remove excess heat to the storage tank arises mainly in transitional periods, when the building's heat demand is less than the nominal output of the boiler.

The minimum volume of the storage tank can be calculated according to the following formula:

$$V_{SP} = 15T_B \times Q_N \left(1 - 0,3 \frac{Q_H}{Q_{MIN}} \right)$$

V_{SP} volume of the storage tank in liters

Q_N nominal heat output, in kW

T_B combustion time, including

PYRO THERM

Q_H heat load of buildings, in kW

Q_{min} minimum heat output, in kW (for these boilers it is equal to the nominal output)

The table shows an example of the minimum size of the storage tank in liters depending on the heat loss of the building and the type of boiler according to the ČSN EN 303-5 standard. The calculation is made for burning wood.

Boiler type	Heat loss of the building				
	10 kW	15 kW	20 kW	25 kW	30 kW
PYRO THERM 15	360 l	320 l	-	-	-
PYRO THERM 20	510 l	470 l	420 l	-	-
PYRO THERM 25	660 l	620 l	570 l	525 l	-
PYRO THERM 30	810 l	770 l	720 l	670 l	630 l

Boiler accessories

Basic:

- Installation, operation and maintenance manual for boilers 1
- Warranty card 1
- Filling and draining tap 1
- Cleaning tools – brush with handle + spike 1

Special accessories (can be purchased additionally):

- WATTS STS 20 cooling valve (BVTs cooling valve 1.3m)

Supplied spare parts (to order)

Position	Name
19	Exhaust fan
31	Nozzle (fired concrete)
32	Nozzle sealing cord 10x10-850
33	Right side of the nozzle (fired concrete)
34	Fuel shaft sealing cord 20x20 length according to boiler type
35	Left side of the nozzle (fired concrete)
36	Demarcation cube (only for 25kW, 30kW outputs)
37	Fuel shaft sealing cord shorter 20x20-360
38	Secondary air seal
39	Side of the combustion chamber (dimensions according to the type of boiler)
40	Bottom of the combustion chamber (dimensions according to the type of boiler)
-	Upper and lower door sealing cord
-	exchanger cover sealing cord

Special requirements for spare parts in agreement with the manufacturer. When ordering, state the type of boiler, its size, serial number and year of manufacture. Spare parts and accessories for boilers can be ordered from the service technician who fitted the boiler, or directly from the manufacturer at the address:

SLOKOV kovo a.s.

Kovodělská 794, 696 85 Moravský Písek

phone + 518 387 606,607 phone/fax 518 387 605

variant@slovakov.cz

Boiler Installation

The boiler may only be installed by a professional company with a valid license for this activity. The boiler fitting project must be prepared according to applicable regulations.

During the fitting and use of the boiler, the provisions of ČSN 06 1008 must be observed in particular.

The installation of the boiler must comply with applicable regulations, standards and the user manual.

The manufacturer is not responsible for damage caused by incorrect installation.

Choosing the right boiler size

Choosing the right boiler size, i.e. size of its thermal output, is a very important condition for the economical operation and proper working of the boiler. The boiler must be chosen so that its rated output corresponds to the heat losses of the heated building and the size of the storage tank.

Choosing a boiler with too large a nominal output (oversizing) results in increased tarring and condensation of the boiler. It is advisable to design the output of the boiler and the size of the storage tank according to the heat loss of the building.

Location of the boiler

Location of the boiler with regard to fire regulations.

1. Placement on a floor made of non-combustible material
 - the boiler must be placed on a non-flammable, heat-insulating pad exceeding the floor plan of the boiler on all sides by 30 mm.
 - if the boiler is located in a basement, it is recommended to place it on a plinth with a height of at least 50 mm. The boiler must stand horizontally.
2. Safe distance from flammable materials
 - the smallest permissible distance of the boiler and flue from combustible materials (see detailed specifications in ČSN EN 13 501-1+A1:2010) during the installation and operation of the boiler must be at least 400 mm.

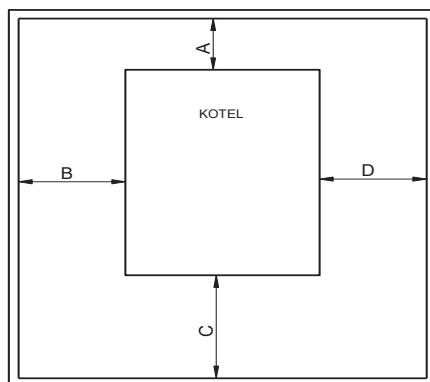


Fig. 5 Location of the boiler in the boiler room

Location of the boiler in relation to the required handling space:

Dimension	Value
A	300 mm
B	500 mm
C	700 mm
D	500 mm

- Basic environment AA5 / AB5 according to ČSN 33 2000-1 ed.2:2009.
- In front of the boiler (dimension C), a handling space of min. 700 mm must be left.
- Minimum distance between the back of the boiler and the wall (dimension A) 300 mm.
- On the right side of the boiler (dimension D), a gap of at least 500 mm.
- On the left side of the boiler (dimension B), a gap of at least 500 mm.
- The minimum dimensions defining the location of the boiler in the boiler room can be adjusted, although this will reduce effective and convenient maintenance and operation, and keeping in mind that safety and fire regulations must not be violated (ČSN EN 13 501-1+A1:2010).

Fuel location:

- Storing fuel near the boiler at a distance of less than 400 mm is prohibited.
- The manufacturer recommends maintaining a minimum distance of 1,000 mm between the boiler and the fuel. It is advisable to place the fuel in a different room than the one where the boiler is installed.
- Fuel must be stored in a dry place.

A permanent air supply for combustion must be provided to the room in which the boiler is located. The consumption is 45-60 m³/hour, depending on the boiler output (this corresponds to an air access opening of 200-300 cm²).

Connection to the heating system

The PYRO THERM boiler is intended for systems with forced circulation. To reduce the condensation of flue gases and increase the service life of the boiler, it is necessary to ensure the protection of the boiler return. This means installing a device on the boiler return to ensure that the temperature of the water returning to the boiler does not fall below 60 °C to 65 °C. For this purpose, a three-way thermostatic valve or a three-way motor-operated valve can be used. Furthermore, a storage tank must be connected to the system to ensure the operation of the boiler is optimal (operation at rated output). The storage tank is charged so that nothing further is added to the boiler and the boiler is allowed to go out, thus the heat from the storage tank heats the building.

The connection of the boiler to the heating loop is shown schematically in the picture in the appendix, see below. The circulation pump for the boiler loop is controlled by an externally attached thermostat measuring the temperature of the heating water and the flue gas thermostat (not part of the boiler). The advantage of this design is that the boiler pump is also switched off when the fuel is used up. There are two ways to connect the hot water storage tank, with variant 2 enabling independent charging of the storage tank. The heat pump is controlled via the room thermostat and the storage tank thermostat (the pump turns off when the tank cools down). The heating loop is also fitted with a thermostatic three-way valve, but in this case adjustable. It maintains a set temperature in the radiators even during the gradual cooling of the storage tank.

For the heat transfer medium, use clean water that meets the requirements of ČSN 07 7401 and, in particular, its hardness must not exceed the required parameters.

Recommended values		
Hardness	mmol/l	1
Ca ²⁺	mmol/l	0.3
concentration of total Fe + Mn	mg/l	(0.3)*

*) recommended value

As a liquid with a low freezing point and anti-corrosion effects, FRITERM can be used for passive boiler protection.

Connecting the boiler to the flue

Fasten the flue pipes to the exhaust pipe using a rivet with a diameter of 5 mm.

The flue should be as short as possible, with an upward slope from the boiler.

The flue, attached only in the exhaust pipe and fitted to the boiler outlet, must be firmly assembled and installed to prevent it from accidentally or spontaneously becoming dislodged; the pipe outlet should not be longer than 1.5 m and with no elbows if possible. All parts of the flue must be made of non-combustible materials. For solid fuels, flues must be made up of pipes inserted into each other in the direction of the flue gas flow.

Connecting the boiler to the chimney

The boiler must be connected to the chimney vent according to ČSN 73 4201 and with the approval of the chimney company.

A boiler in a central heating system can only be connected to a separate chimney vent with the correct chimney draught, which is a basic prerequisite for good boiler function.

Chimney draught significantly affects boiler output, efficiency, consumption and boiler life.

Device for removing surplus heat

The boiler is equipped with a cooling circuit, which protects the boiler against overheating when properly connected. A safety valve connected to the cooling loop (WATS STS 200, BVTS 1.3m) will let water from the water supply system into the cooling loop if the water temperature in the boiler rises above 95 °C, in which case the excess energy will be absorbed and drained off.

The drainage of water from the cooling loop needs to be done in such a way that the water flowing through the loop can be seen. This is in case of early detection of a faulty safety valve that would let water through during normal boiler operation.

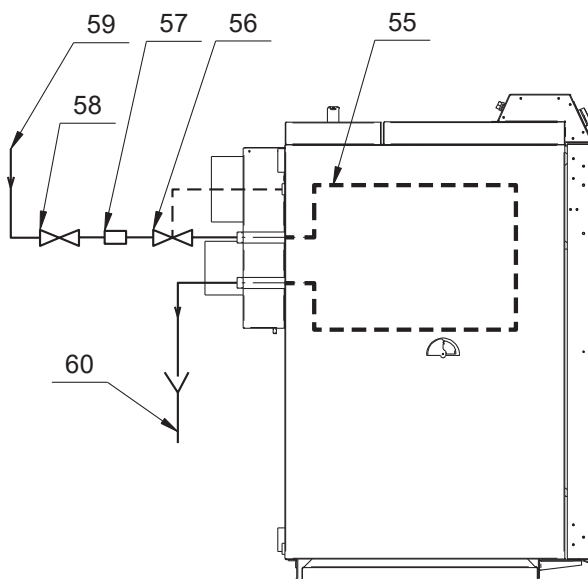


Fig. 5 Connecting the safety valve to the PYRO THERM boiler

Legend:

- 55 – Cooling loop built into the boiler
- 56 – Safety valve WATTS STS 20 or BVTS 1.3
- 57 – Filter
- 58 – Valve
- 59 – Connection to the water supply system
- 60 – Discharge to waste

Heating

To be checked:

- the volume of water in the heating system
- the tightness of the heat exchanger cover pos. 21
- the position of the fired concrete fittings of the combustion chamber
- exhaust operation (by turning on the main switch and turning the flue gas thermostat to the start position, the fan will start spinning)

Put several coarser wood chips crosswise in the loading chamber nozzle to maintain a gap between them and prevent the nozzle from clogging. Then place additional chips on top of them lengthwise with the nozzle. Put paper, or solid ignition material, on the layer prepared in this way. Turn on the main switch for the boiler and set the flue gas temperature thermostat to the start position (the fan will start). Now light the paper or the ignition material, which we add some chips to. Leave the feed door slightly ajar for a while so that the chips can better ignite. At the same time, fully open (100%) the primary air dampers on the side of the boiler. Once the small chips in the boiler begin burning, add coarser chips to the ignition pile. Fuel is then added to the ignition layer prepared in this manner.

After the fuel begins to burn, turn the flue gas temperature thermostat back to the operation position. If this action turns off the fan, return the thermostat to the start position and wait for the boiler to warm up some more. There is no rush to turn the flue gas thermostat to the operation position (readjustment can only be performed during the next loading). The task of the flue gas temperature thermostat is to switch off the fan when the fuel is burnt out.

After burning up the fuel and heating the boiler to a temperature of approximately 50 to 70 °C, close the primary air dampers halfway (50%).

Service and operation of the boiler

Regulating the combustion (primary) air is carried out with the damper pos. 3 from the side of the boiler (right and left), as described above. This means that air is fully used for heating up and then halfway after the fuel is burned. The opening of the primary air can be adjusted slightly according to the draft conditions. Secondary air pos. 14 is set according to the size of the boiler according to the following picture. This means that the secondary air damper is opened so that it faces the mark of the given boiler size.

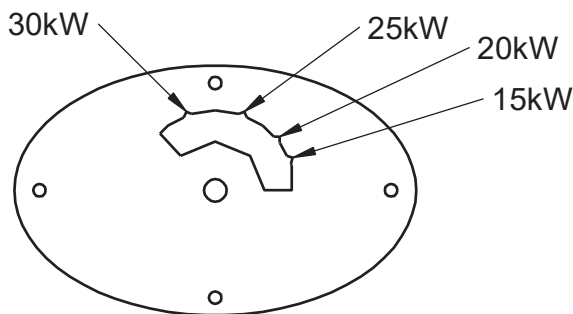


Fig. 6

The temperature of the heating water (boiler temperature) is regulated by the boiler thermostat pos. 47, which turns off the fan when the boiler temperature reaches the desired value. The optimal temperature of the boiler water is 85 °C (temperature of charging the storage tank). The boiler is also equipped with a flue gas thermostat pos. 48 (flue gas temperature). It is used to switch off the fan once the fuel is burned up. When igniting, this thermostat needs to be set to the start position. If we leave the flue gas thermostat in the start position throughout the operation of the boiler, the fan will not be turned off after the fuel has burned up. Conversely, if the flue gas thermostat is set to too high a temperature, it may happen that if the fan is turned off by the boiler thermostat, the flue gas will cool below the set value and the fan will no longer start. The optimal position of the thermostat needs to be fine-tuned according to local conditions. A lower cut-off temperature for the flue gas thermostat is preferred.

When adding new fuel to the loading shaft, slightly open the door to allow the smoke to be sucked out of the shaft, and then open the door fully and add fuel. For better extraction of flue gases during loading, the fan speed (power) is automatically increased when the door is opened.

The boiler may only be used up to the nominal output of the boiler. The boiler and the heating system should be dimensioned so that there is no continuous operation with an inlet water temperature lower than 65 °C – dew point.

If the boiler works in this mode for a long time, its service life will become reduced and the boiler and chimney heavily clogged and tarred, causing insufficient draught and further deterioration of efficiency. In the same way, strong tarring occurs when there is minimal heat extraction from the boiler. The boiler quickly heats up to the required temperature, but then the boiler thermostat switches off the fan, and if the fan is switched off for a long time (no heat extraction), a large amount of tar forms on the walls of the boiler. It is therefore recommended to use the capacity of the storage tank to the maximum and not add more when charging the tank to a temperature of 85 °C (90 °C).

Note:

Use the prescribed fuel to guarantee easy operation and compliance with rated power.

The manufacturer does not recommend under any circumstances the burning of sawdust, which significantly reduces the service life of the boiler.

Permitted repairs:

The user can only replace basic spare parts (reinforced concrete fittings, sealing cords) himself. Only the manufacturer, installation and service organization is authorized to carry out repairs on a larger scale.

Cleaning and maintenance

After prolonged heating, soot and ash settle on the walls, which reduces the efficiency of the boiler. The amount of soot and possible tarring of the boiler depends on the operation of the boiler, the type of fuel used, the size of the chimney draught and the temperature of the water leaving the boiler. The boiler is cleaned about twice a month, depending on the need and operating conditions.

In general, cleaning the boiler can be divided into several stages:

- 1) Once a week, after the fuel has burned up, remove the ash from the loading shaft and combustion chamber.
- 2) Once a month, clean the tubular exchanger of the boiler with a brush. After cleaning the tubes, pull out the hot concrete fittings of the combustion chamber from the boiler

(through the lower door) and sweep the ash from the cleaned tubulars out of the boiler. If the tubular heat exchanger is not too clogged, collect the ash from behind the combustion chamber as well.

- 3) After the end of the season, clean the boiler thoroughly. Clean the tubular heat exchanger, the combustion chamber including the refractory concrete fittings, remove the cover plates from the walls of the loading shaft, scrape the tar from the walls of the loading shaft and unscrew the lid of the spiral fan housing and clean the area around the fan blades. If necessary, also dismantle the fan. The lid for cleaning the spiral housing of the fan is located below the fan.

When cleaning, it is recommended to check the condition of the refractory concrete fittings. Replace damaged refractory bricks with new ones. Small cracks in the refractory concrete fittings that do not increase further are no reason to replace them.

Boiler operation

The boiler may only be operated by adults familiar with the function of the boiler and its operation. The operator of the boiler must follow the user manual and may only start up the boiler, set the temperature on the thermal output regulator, shut down the boiler and check its operation. Familiarization with the function and operation of the boiler must be carried out by a service engineer after commissioning. It is inadmissible to leave children unattended near a boiler that is in operation. Interventions in the appliance that could endanger the health of the operator or other persons are not permitted.

The boiler may be operated at a maximum of 90 °C and must be under occasional supervision. The use of flammable liquids for heating up and increasing the boiler's rated output in any way during operation (overload) is prohibited. Do not store or throw any flammable objects near the loading and ash drawer openings. All ash must be placed in non-flammable containers with lids.

Under circumstances leading to the danger of the temporary formation of flammable gases or vapors during work that could cause a temporary danger of fire or explosion (e.g. gluing linoleum, PVC, etc.), the boiler must be taken out of operation in time before such danger arises.

Boiler dewing and tarring

During the first few firings, water will condense on the walls of the boiler and flow down. This sweating of the boiler walls can lead to the assumption that the boiler is leaking. Sweating will disappear after ash settles on the walls of the inner shell, which is about the 2nd to 4th time the boiler is fired up. Even when heating at a lower output – at a low flue gas temperature and low water temperature in the boiler – condensate will form on the walls inside the boiler, which trickles into the ash and soot compartment.

Since the dew point of the flue gas is about 65 °C, condensate will only form when the flue gas cools down in the boundary layer on the walls of the boiler with a temperature lower than 65 °C. If there is dew in the loading shaft, it means that the fuel is too wet. In this case, condensate may trickle into the ash compartment even at a water temperature in the boiler higher than 65 °C. Boiler tarring occurs under similar conditions – low output, low temperature – and also with poorly adjusted combustion (little secondary air).

Only when the tar is soft can it be scraped off the walls of the boiler with the supplied scraper. This is at a water temperature in the boiler of around 90 °C. This temperature can be quickly

reached by turning off the radiators. The most suitable fuel for this performance is soft wood, which burns out quickly.

Notice

If the pressure expansion vessel is to extend the life of the boiler, low-temperature corrosion of the flue gas passages must be eliminated by maintaining the boiler temperature above the dew point by about 65 °C, using a mixing device. If low-temperature corrosion is not eliminated, the boiler corrodes from the flue gas side, and the pressure expansion vessel in most cases will shorten the life of the boiler due to pressure and dynamic stress on the boiler walls. The pressure expansion vessel may be installed by an authorized organization with a valid license according to Decree No. 18/79 Coll., or No. 23/79 Coll. §4.

Boiler operation safety

When operating the boiler, all relevant safety regulations must be observed, especially ČSN 06 1008 Fire safety of local appliances and heat sources.

The PYRO THERM boiler must not be used for purposes other than those specified in this manual.

The surface of the boiler may only be cleaned with normal non-flammable cleaning agents. Objects made of flammable materials must not be placed on the appliance or at a distance less than a safe distance from it.

No flammable material (wood, paper, diesel and other flammable materials) may be stored in the room where the boiler is located. The smallest permissible distance between the external contours of the boiler and the flue gas outlet from highly and moderately flammable materials (which, after ignition without the supply of additional thermal energy, will extinguish themselves - flammability level B, C1, C2) must be at least 100 mm.

The smallest distance from easily flammable materials (they burn and burn out after ignition - flammability level C3) must be at least 200 mm. A distance of 200 mm must be observed even if the degree of flammability of the material is not proven. Detailed data on the degree of flammability of building materials are given in ČSN 73 0823.

Use protective equipment like gloves during work related to the maintenance, operation and cleaning of the boiler

Repairs

The operator of the boiler may only carry out repairs consisting of the simple replacement of a part, such as the replacement of sealing cords, fireproof bricks, cover plates, etc. Other possible defects may only be rectified by the manufacturer or authorized service. The manufacturer provides warranty service throughout the Czech Republic. Only original parts may be used for repairs.

Defects and their elimination

Symptoms of defect	Probable cause of defect	How to remove the defect
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1. The nominal output of the boiler cannot be reached	Leaking around the fan cleaning door	Tighten the wing nuts of the cleaning door, or replace the seal
	Leakage around the heat exchanger lid	Check the function of the sealing cords and correct their location or replace them
	Insufficient draft in the chimney	Ensure the inspection of the draught of the chimney and its adjustment if needs be.
	The fuel has a low calorific value	Use prescribed fuel with sufficient calorific value, especially at low outside temperatures
2. The boiler output cannot be regulated.	Leakage of the dampers for primary air supply	Tighten the screw of the primary air damper
	Excessive draft in the chimney	Close the exhaust damper in the chimney flue or ensure that the chimney draft is checked and adjusted as necessary
		Have the thermostat replaced
	Defective boiler thermostat (the thermostat does not switch off the fan)	
3. High temperature in the boiler and at the same time low water temperature in the radiators. The water in the boiler is boiling.	High hydraulic resistance of the heating system.	Clean the system by flushing or checking the circulation pump.
	Excessive draft in the chimney	Reduce the draft by using the exhaust chimney damper
4. The boiler cannot be switched on (not even the light on the switch)	Overheating of the boiler and activation of the emergency thermostat	Press the emergency thermostat button. If the condition persists, the cause of overheating must be sought elsewhere
	Blown boiler fuse	Replace the fuse. If the condition persists, look for the cause

In other cases, it is necessary to ensure the rectification of possible defects and malfunctions through the boiler manufacturer, or by a service organization.

Disposal of packaging

Dispose of the packaging through a group of secondary raw materials or use a controlled waste dump managed by the relevant municipal authority.

Disposal of products after the end of their useful life

Dispose of the product (boiler) via a recycling center or use a controlled waste dump managed by the relevant municipal authority.

Safety and other regulations

The following standards and regulations apply to the design, installation, operation and maintenance of the boiler:

A) for the heating system

ČSN EN 303-5:2013 Boilers for central heating - Part 5: Boilers for central heating using solid fuels, with manual or automatic delivery, with a nominal heat output of no more than 500 kW - Terminology, requirements, testing and marking

ČSN 06 0310:2014 Thermal systems in buildings – Design and assembly

ČSN 06 0830:2014 Thermal systems in buildings – Safety equipment

ČSN 07 7401:1992 Water and steam for thermal energy devices with working pressure of steam up to 8 MPa

B) for fire regulations

ČSN 06 1008:1997 Fire safety of thermal equipment

ČSN EN 13 501-1+A1:2010 Fire classification of building products and structures of buildings - Part 1: Classification according to the results of reaction to fire tests

C) on the chimney

ČSN 73 4201:2010 Chimneys and flues - Design, implementation and connection of fuel appliances

Warranty

Customers are advised that the commissioning and servicing of all SLOKOV kovo a.s. boilers may be carried out only by professional installation organizations. Otherwise, no warranty claim will not be recognized. Any possible claim must be made immediately after the defect is discovered. The manufacturer reserves the right to any changes made as part of the technical improvement of the products. The length of the warranty provided is stated in the warranty card supplied as a basic accessory of the boiler and is conditioned by strict adherence to this assembly operating manual and the professional installation of the boiler. The buyer makes any claims in writing to the seller or directly to the manufacturer.

Address for making any claims:

SLOKOV kovo a.s.

Kovodělská 794

696 85 Moravský Písek

Residual risks and their prevention

The risks arising from the operation of the boiler under the conditions of expected use and logically foreseeable incorrect use have been minimized by available technical means.

Despite the implemented design and technical measures, certain residual risks remain during the operation of the boiler resulting from the analysis of the risks that are given by the technological process at various stages of the life of the equipment.

These are mainly risks arising from the inattention of the operator of the boiler and non-compliance with safety principles during operation.

In order to further reduce risks and ensure greater effectiveness of security protection, we point out the possible emergence of certain residual risks that cannot be eliminated by any technical solution.

Thermal hazards

- adequate attention must be paid when operating the boiler due to possible burn injuries from heat sources

Risks caused from handling fuel

- because it involves a fuel, the relevant fire regulations must be followed and a suitable fire extinguisher must be available

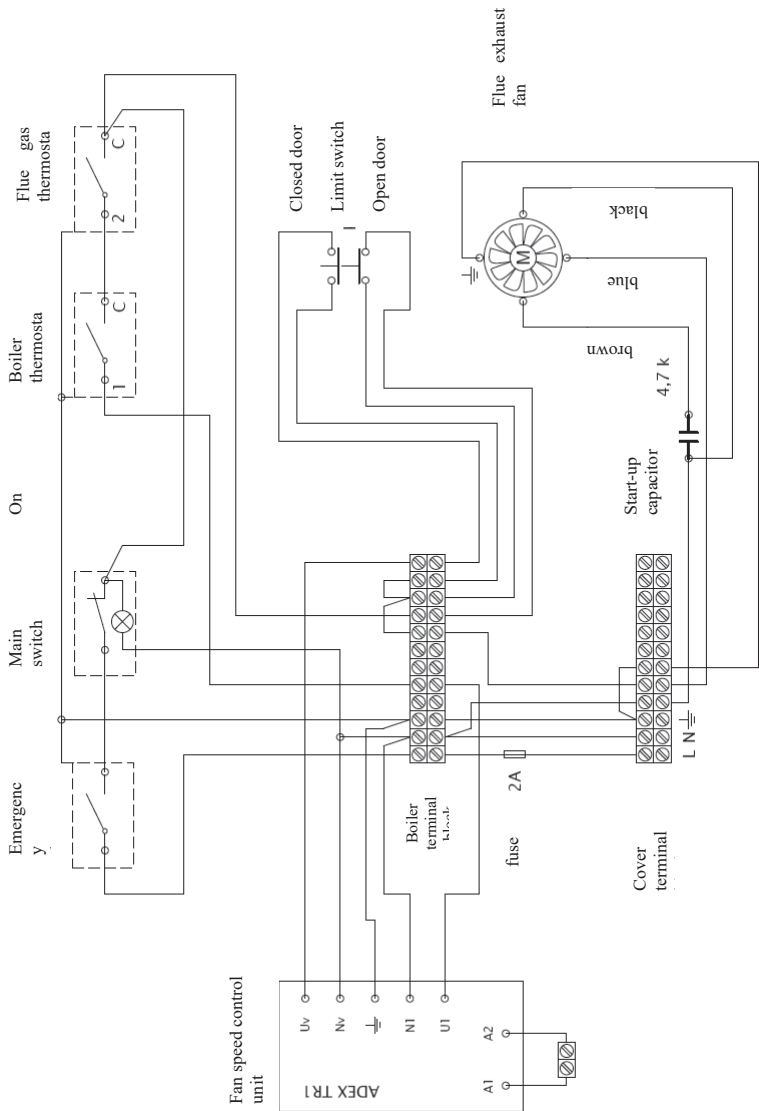
Ergonomic risks

the boiler may only be operated by adults who are properly familiar with the contents of the installation, user and maintenance manual

- in case of any non-standard behavior of the boiler during operation, and not other faults, the boiler must
be taken out of service, disconnected from the mains and a service technician called.

Attachments:

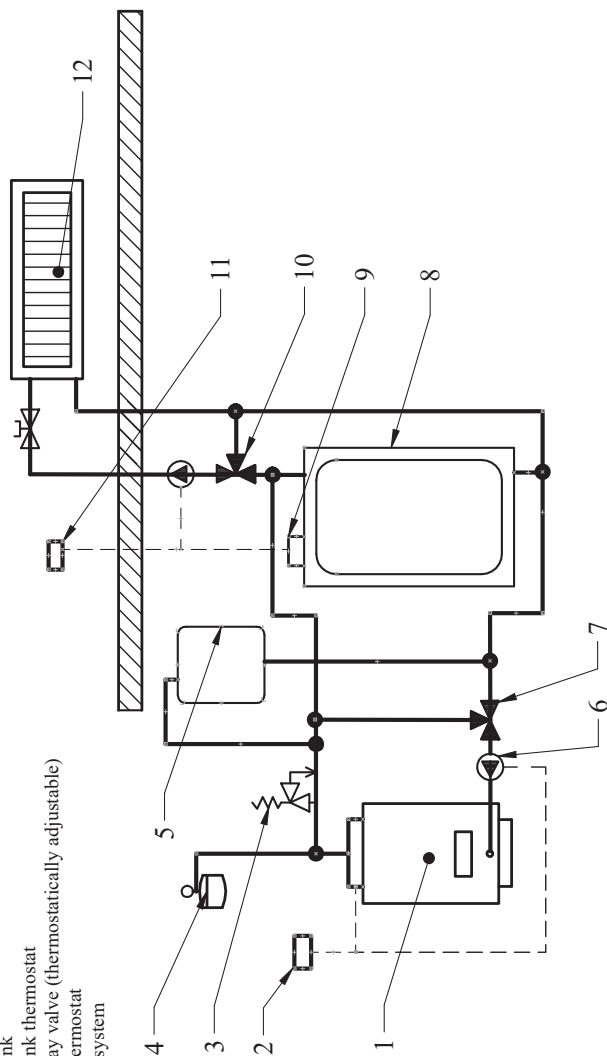
Electrical wiring diagram of the boiler in the basic version



Connecting boiler to heating system option 1

Each connection has its own specifics and principles that must be followed when connecting. The installation company should know these principles.

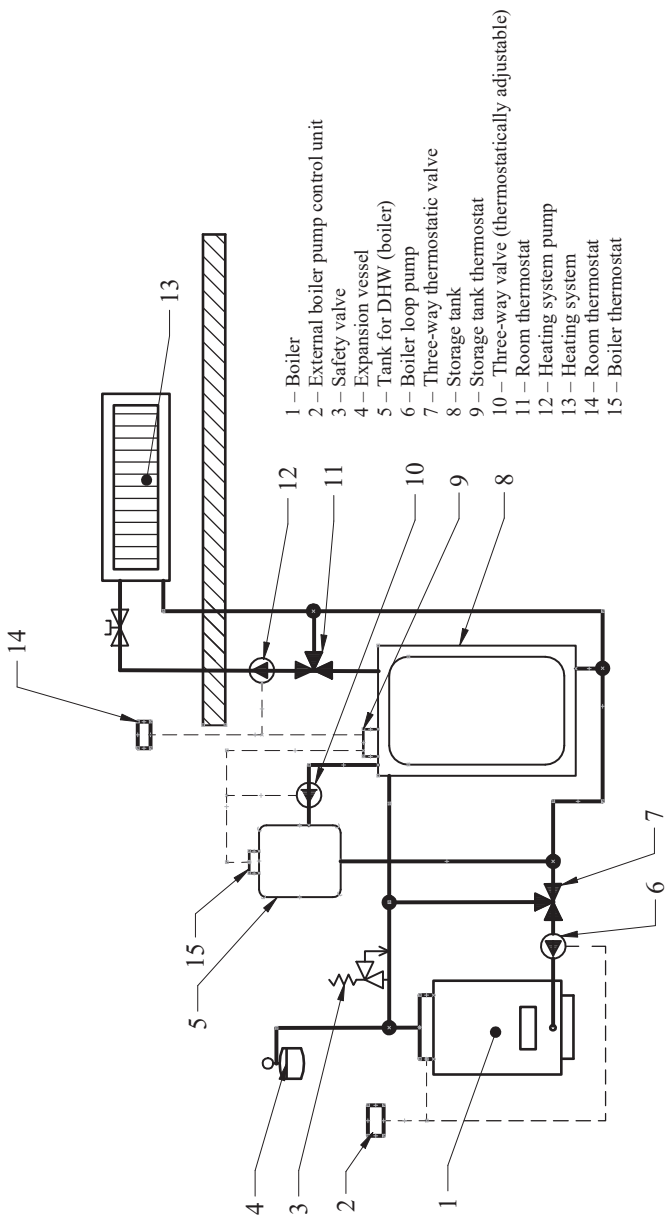
- 1 – Boiler
- 2 – External boiler pump control unit
- 3 – Safety valve
- 4 – Expansion vessel
- 5 – Tank for DHW (boiler)
- 6 – Boiler loop pump
- 7 – Three-way thermostatic valve
- 8 – Storage tank
- 9 – Storage tank thermostat
- 10 – Three-way valve (thermostatically adjustable)
- 11 – Room thermostat
- 12 – Heating system



The connection with the storage tank makes it possible to accumulate excess heat in the storage tank for later heating.

Connecting boiler to heating system option 2

Each connection has its own specifics and principles that must be followed when connecting. The installation company should know these principles.



The connection with the storage tank makes it possible to accumulate excess heat in the storage tank for later heating.

Technical parameters of solid fuel boilers according to directive 2015/1187

Technical parameters of solid fuel boilers and solid fuel cogeneration boilers							
Identification mark of the model: PYRO THERM 15							
Loading mode: Manual: the boiler should be operated with a hot water tank with a volume of at least 560 litres							
Condensing boiler: no							
Solid fuel cogeneration boiler: no				Combined boiler: no			
Fuel				Preferred fuel (only one):		Other suitable fuel(s):	
Wooden logs, moisture content $\leq 25\%$				Yes		-	
Wood chips, moisture content 15-35%				No		No	
Wood chips, moisture content $> 35\%$				No		No	
Pressed wood in the form of pellets or briquettes				No		No	
Sawdust, moisture content $\leq 50\%$				No		No	
Other wood biomass				No		No	
Non-wood biomass				No		No	
Black coal				No		No	
Lignite (including briquettes)				No		No	
Coke				No		No	
Anthracite				No		No	
Briquettes from a mixture of fossil fuels				No		No	
Other fossil fuel				No		No	
Briquettes from a mixture of biomass (30-70%) and fossil fuels				No		No	
Different mixture of biomass and fossil fuels				No		No	
Properties when operating on preferred fuel:							
Seasonal energy efficiency of indoor space heating η_s [%]				79			
Energy Efficiency Index (EEI):				116			
Name	Designation	Value	Unit	Name	Designation	Value	Unit
Useful thermal output				Useful efficiency			
At rated thermal output	Pn	15	kW	At rated thermal output	η_n	82.3	%
At 30% rated heat output	Pp	-	kW	At 30% rated heat output, if applicable	η_p	-	%
Solid fuel cogeneration boilers: Electrical efficiency				Consumption of auxiliary electrical energy			
				At rated thermal output	elmax	0.03	kW
				At 30% rated heat output, if applicable	elmin	-	kW
At rated output	$\eta_{el,n}$	-	%	Built-in secondary emission reduction device, if applicable	-		kW
				In standby mode	PSB	0	kW
Contact details				Name and address of supplier			
SLOKOV kovo a.s.		Billing address:		Kovodělská 794,	696 85 Moravský Písek		
		Manufacturing plant:		Kovodělská 794,	696 85 Moravský Písek		
				www.slokov.cz	variant@slokov.cz		

Technical parameters of solid fuel boilers and solid fuel cogeneration boilers

Identification mark of the model: PYRO THERM 20									
Loading mode: Manual: the boiler should be operated with a hot water tank with a volume of at least 800 litres									
Condensing boiler: no									
Solid fuel cogeneration boiler: no				Combined boiler: no					
Fuel				Preferred fuel (only one):		Other suitable fuel(s):			
Wooden logs, moisture content ≤25%				Yes		-			
Wood chips, moisture content 15-35%				No		No			
Wood chips, moisture content > 35%				No		No			
Pressed wood in the form of pellets or briquettes				No		No			
Sawdust, moisture content ≤ 50%				No		No			
Other wood biomass				No		No			
Non-wood biomass				No		No			
Black coal				No		No			
Lignite (including briquettes)				No		No			
Coke				No		No			
Anthracite				No		No			
Briquettes from a mixture of fossil fuels				No		No			
Other fossil fuel				No		No			
Briquettes from a mixture of biomass (30-70%) and fossil fuels				No		No			
Different mixture of biomass and fossil fuels				No		No			
Properties when operating on preferred fuel:									
Seasonal energy efficiency of indoor space heating η_s [%]				78					
Energy Efficiency Index (EEI):				114					
Name		Designation	Value	Unit	Name		Designation	Value	Unit
Useful thermal output									
At rated thermal output		Pn	20	kW	At rated thermal output		η_n	81	%
At 30% rated heat output		Pp	-	kw	At 30% rated heat output, if applicable		η_p	-	%
Solid fuel cogeneration boilers: Electrical efficiency				Consumption of auxiliary electrical energy					
				At rated thermal output		elmax	0.03	kW	
At rated output		Del,n	-	%	At 30% rated heat output, if applicable		elmin	-	kW
					Built-in secondary emission reduction device, if applicable		-	kW	
					In standby mode		PSB	0	kW
Contact details				Name and address of supplier					
SLOKOV kovo a.s.			Billing address:		Kovodělská 794,		696 85 Moravský Písek		
			Manufacturing plant:		Kovodělská 794,		696 85 Moravský Písek		
					www.slokov.cz		variant@slokov.cz		

Technical parameters of solid fuel boilers and solid fuel cogeneration boilers

Identification mark of the model: PYRO THERM 25							
Loading mode: Manual: the boiler should be operated with a hot water tank with a volume of at least 1000 liters							

PYRO THERM

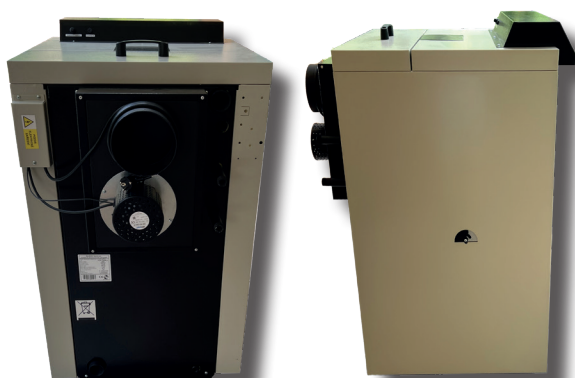
Condensing boiler: no				Combined boiler: no			
Solid fuel cogeneration boiler: no				Combined boiler: no			
Fuel				Preferred fuel (only one):		Other suitable fuel(s):	
Wooden logs, moisture content <25%				Yes		-	
Wood chips, moisture content 15-35%				No		No	
Wood chips, moisture content > 35%				No		No	
Pressed wood in the form of pellets or briquettes				No		No	
Sawdust, moisture content ≤ 50%				No		No	
Other wood biomass				No		No	
Non-wood biomass				No		No	
Black coal				No		No	
Lignite (including briquettes)				No		No	
Coke				No		No	
Anthracite				No		No	
Briquettes from a mixture of fossil fuels				No		No	
Other fossil fuel				No		No	
Briquettes from a mixture of biomass (30-70%) and fossil fuels				No		No	
Different mixture of biomass and fossil fuels				No		No	
Properties when operating on preferred fuel:							
Seasonal energy efficiency of indoor space heating η_s [%]				78			
Energy Efficiency Index (EED):				115			
Name	Designation	Value	Unit	Name	Designation	Value	Unit
Useful thermal output							
At rated thermal output	Pn	25	kW	At rated thermal output	η_n	81.5	%
At 30% rated heat output	Pp	-	kw	At 30% rated heat output, if applicable	η_p	-	%
Solid fuel cogeneration boilers: Electrical efficiency				Consumption of auxiliary electrical energy			
				At rated thermal output	elmax	0.03	kW
At rated output	$\eta_{el,n}$	-	%	At 30% rated heat output, if applicable	elmin	-	kW
				Built-in secondary emission reduction device, if applicable		-	kW
				In standby mode	PSB	0	kW
Contact details				Name and address of supplier			
SLOKOV kovo a.s.		Billing address:		Kovodělská 794, 696 85 Moravský Písek			
		Manufacturing plant:		Kovodělská 794, 696 85 Moravský Písek			
				www.slokov.cz variant@slokov.cz			

Technical parameters of solid fuel boilers and solid fuel cogeneration boilers

Identification mark of the model: PYRO THERM 30	
Loading mode: Manual: the boiler should be operated with a hot water tank with a volume of at least 1250 liters	
Condensing boiler: no	
Solid fuel cogeneration boiler: no	
Combined boiler: no	
Fuel	Preferred fuel (only one):
	Other suitable fuel(s):

PYRO THERM

Wooden logs, moisture content ≤25%				Yes				-
Wood chips, moisture content 15-35%				No				No
Wood chips, moisture content > 35%				No				No
Pressed wood in the form of pellets or briquettes				No				No
Sawdust, moisture content ≤ 50%				No				No
Other wood biomass				No				No
Non-wood biomass				No				No
Black coal				No				No
Lignite (including briquettes)				No				No
Coke				No				No
Anthracite				No				No
Briquettes from a mixture of fossil fuels				No				No
Other fossil fuel				No				No
Briquettes from a mixture of biomass (30-70%) and fossil fuels				No				No
Different mixture of biomass and fossil fuels				No				No
Properties when operating on preferred fuel:								
Seasonal energy efficiency of indoor space heating η_s [%]				78				
Energy Efficiency Index (EEI):				114				
Name	Designation	Value	Unit	Name	Designation	Value	Unit	
Useful thermal output				Useful efficiency				
At rated thermal output		P _n	30	kW	At rated thermal output		η_n	81.1 %
At 30% rated heat output		P _p	-	kw	At 30% rated heat output, if applicable		η_p	- %
Solid fuel cogeneration boilers: Electrical efficiency				Consumption of auxiliary electrical energy				
At rated thermal output				el _{max}	0.03		kW	
At 30% rated heat output, if applicable				el _{min}	-		kW	
At rated output	$\eta_{el,n}$	-	%	Built-in secondary emission reduction device, if applicable		-		kW
In standby mode				PSB	0		kW	
Contact details				Name and address of supplier				
SLOKOV kovo a.s.		Billing address:		Kovodělská 794,		696 85 Moravský Písek		
		Manufacturing plant:		Kovodělská 794,		696 85 Moravský Písek		
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