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PANTHER P Automatic Boiler Operator's Manual

Dear Customer,

Thank you for purchasing this brown coal - 2 walnut, PANTHER type automatic boiler made by KOVARSON s.r.o.

The boiler you have purchased underwent comprehensive testing by our employees, and so we are confident that you will be satisfied with our product. To avoid any issues, we recommend carefully reading the installation manual for the boiler prior to use.

Should you have any questions, do not hesitate to contact our service technicians, who will always support you in quickly resolving any issues.

Warmest regards,

KOVARSON s.r.o.

Contents

1. Using the boiler - features

The PANTHER boiler is designed to provide ecological and energy-saving heating for households, companies and medium-large buildings using solid fuels with automatic control and minimum demands in terms of operating the boiler, and can also be used for heating warm water.

Features of the boiler:
− emissions class 4 !
– high efficiency
− cast iron body made by a well-known Czech manufacturer
− long service life
− versatile burner
− FUZZY LOGIC control system
− high-capacity tank with right and left versions
– state of the art control unit with touch panel

2. Technical specifications

Table 1 Dimensions, technical parameters

Boiler model		**PANTHER P 20**	**PANTHER P 25**	**PANTHER P 30**	**PANTHER P 35**
Number of cells	units	**4**	**5**	**6**	**7**
Weight	kg	358	399	442	485
Water area capacity	l	36.2	40.9	45.6	50.3
Smoke nozzle diameter	mm	160	160	160	160
Tank capacity	dm^3	290	290	290	290
Boiler dimensions	mm	see fig. 1			
Dimensions of the tank filling hole	mm	370x335	370x335	370x335	370x335
Boiler class per EN 303-5		4	4	4	4
Maximum operating water pressure	bar	4			
Test operating water pressure	bar	8			
Recommended operating temperature of heating water	°C	60 - 85			
Minimum temperature of return water	°C	60			
Regulator temperature range	°C	50-85			
Hydraulic loss at ΔT= 20/10K	mbar	50	75	100	125
Noise level	dB	less than 50 dBa			
Chimney flue with active fuel gas ventilator and nominal power output	Pa	20	20	20	20
Boiler connections - heating water	DN	G 2"			
- return water	DN	G 2"			
Filling, emptying	DN	G 1/2"			
Input voltage	V	230			
Power input (ventilator + motor)	W	170	170	170	170
Electrical protection	-	IP20	IP20	IP20	IP20

Table 2 Heat parameters of the boiler for wooden pellet burning

Boiler model		**PANTHER P 20**	**PANTHER P 25**	**PANTHER P 30**	**PANTHER P 35**
Number of cells	units	**4**	**5**	**6**	**7**
Nominal power output	kW	20	25	30	35
Minimum power output	kW	6	7.5	9	10.5
Fuel consumption at nominal power output	$kg.h^{-1}$	4.79	6.05	7.31	8.58
Fuel consumption at minimum power output	$kg.h^{-1}$	1.56	1.86	2.16	2.46
Burning time at nominal power output	h	>6	>6	>6	>6
Efficiency – nominal power output	%	85.7	85.9	86.1	86.3
Efficiency – minimum power output	%	86.3	86.2	86.2	86.2
Combustion product temperature at nominal power output	°C	161.3	162.7	164.1	165.5
Combustion product temperature at reduced power output	°C	92.2	91.2	90	89

Values differ depending on the quality and type of fuel. Thus, it is necessary to perform certain adjustments when configuring the loading cycle and ventilator speed. For example, if unburned fuel appears in the ashtray, the ventilator speed shall either be increased or the fuel loading cycle shall be reduced. Or vice versa, if the fuel in the burner falls in the direction of the coil, the ventilator speed shall be decreased or more fuel shall be added!

3. Recommended fuel

Warranty fuel parameters – fuel used to perform tests at SZÚ Brno:

Table 3 Warranty fuel

Fuel	**Type of fuel**	**Operation**	**Granularity [mm]**	**Calorific power [$MJ.kg^{-1}$]**
Biomass	Wooden pellets	Automatic	Ø6-8	15 - 19

Pellets must comply with at least one of the guidelines or standards:

- Guideline 14-2000 MŽP ČR
- DIN 517 31
- ÖNORM M 7135

Specified pellet granularity 6 – 8 mm
Water content in fuel max. 12%
Ash content max. 1.5%

ATTENTION! Poor pellet quality can influence the output and emissions parameters of the boiler.

4. Description

4.1 BOILER DESIGN

The boiler design corresponds to the specifications per:
STN EN 303-5 : 2012 - Heating boilers - Part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 300 kW. Terminology, requirements, testing and marking.

The primary component of the boiler is the cast iron element. The element consists of a defined number of cast iron cells, which are mutually pressed into one another with inserts and secured with anchoring screws. The element always consists of front, back and middle cells. The main heat energy transfer from combustion products to heating water takes place in the boiler element. The top cleaning door and middle door are located on the front cell. The back cell then contains a smoke attachment for the combustion product exhaust into the chimney.

The complete cast iron body is then placed on a base. The base is a 5mm thick welded steel sheet metal. The front side of the base contains an ash compartment door.

The burner is placed into the base on the side wall. It has an extended shaft leading all the way to the end of the burner, where it is placed. The feeding coil ends at the beginning of the combustion chamber and the coil is turned around on the other side. The coils have opposite threading and press against each other and therefore are efficient in pushing fuel upward.
The top part of the burner consists of two cast iron rings.

The boiler contains ceramics (2 plates), the function of which is to improve combustion. The ceramics are located in the front part of the cleaning door of the boiler element. Turbulators are located in the boiler bushings.

Primary air is supplied to the burner via the ventilator located on the burner flange under the fuel tank. The ventilator speed is electronically controlled.

The fuel tank is placed next to the boiler on the coil feed. The boiler is available in two versions:

- **right version** – viewing the boiler from the front, the tank is to the right of the boiler element
- **left version** – viewing the boiler from the front, the tank is to the left of the boiler element

The wax cap placed on the burner serves as an emergency fire extinguisher.

The boiler body, base and door are insulated using harmless mineral insulation, which reduces loss by sharing heat to the surrounding area.

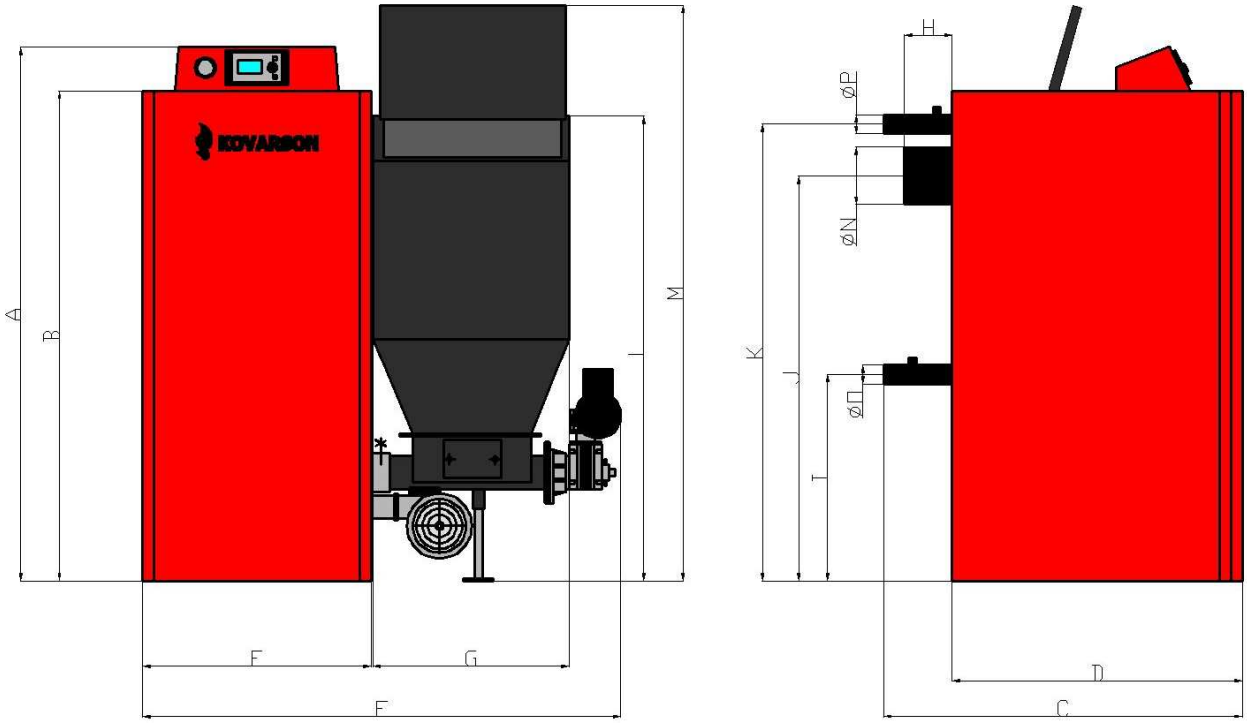


Fig. 1 Main boiler dimensions (right version)

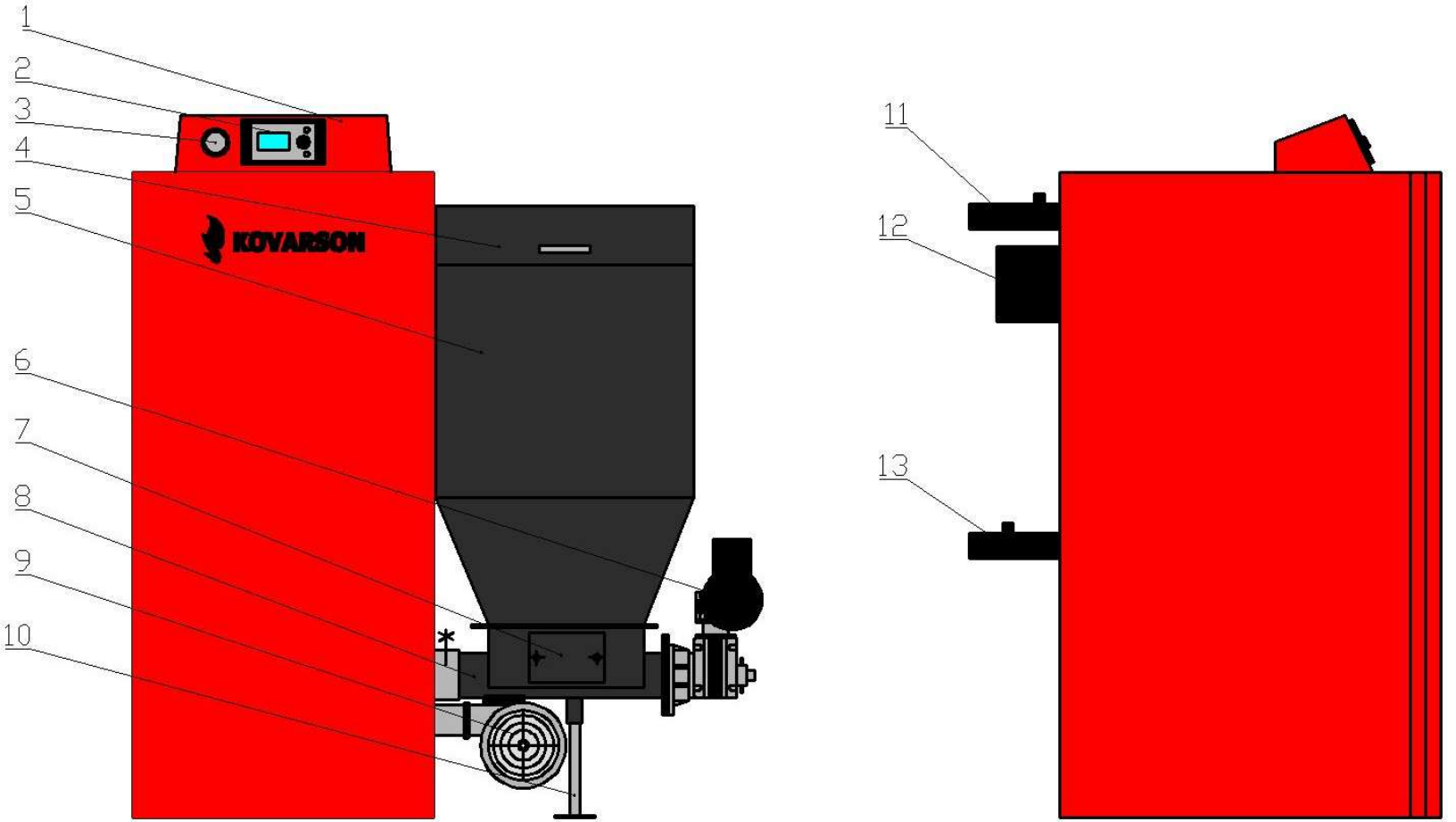
Table 6 – Boiler depth

		A	B	C	D	E	F	G	H
value	mm	1480	1370			1245	590	500	125

		I	J	K	L	M	N	O	P
value	mm	580	1080	1250	1350	1710	158	2"	2"

Table 6 – Boiler depth

Boiler model	PANTHER 20	PANTHER 25	PANTHER 30	PANTHER 35
Number of cells	4	5	6	7
C	770	830	930	1030
D	640	700	800	900



1. control unit panel
2. control unit
3. thermometer and manometer
4. tank cover
5. tank
6. motor with gearbox
7. cleaning cover of hopper
8. fuel feeder
9. fuel feeder
10. tank leg
11. heating water drain
12. chimney
13. return water inlet

4.2 CONTROL, REGULATION AND SAFETY ELEMENTS

The SPARK electronic control unit is responsible for control and regulation - see independent operator's manual.

Safety elements:

- The emergency thermometer located in the reservoir of the water supply line monitors the heating system to prevent overheating. The default setting by the manufacturer is 90°C, where upon exceeding this temperature, the ventilator and feeder are disabled and the unit goes into off mode – manual reset is necessary. The unit shall again be switched to work mode in order to reignite the boiler.

- The heat sensor of the tank is monitored by a system, which prevents reverse fuel burning. The default setting by the manufacturer is 74°C, however, the temperature can be adjusted to the required user temperature under service settings. When the configured temperature is exceeded, the motor is activated for the duration set in the control unit to ensure deactivation. This safety mechanism is available provided the boiler is powered by electricity.

- The motor does have heat protection and is used to protect against burning. The standard operating temperature of the motor reaches 80°C – this temperature does not yet indicate a failure.

- The fire extinguisher is a safety element, which uses a wax cap to prevent reverse burning. In case the temperature in the feeder exceeds 90°C, the wax cap melts and cooling water pours into the area from the plastic canister.

4.3 BOILER ACCESSORIES

Standard accessories:

- PANTHER P boiler operator's and installation manual
- SPARM control unit operator's manual
- top ceramics (2 fitting pieces)
- boiler brush
- boiler rake
- flanges - 2 units (heating and reverse)
- ¾" cap - 1 unit
- emptying / filling valve
- ashtray
- cutting safety - 2 units
- sensor reservoir - 1 unit

5. Location and installation

5.1 RULES AND GUIDELINES

The solid fuel boiler shall only be installed by a person qualified and authorized to perform the installation and initiation of the boiler upon undergoing training by the manufacturer. A project that follows the rules in effect shall be prepared for the installation.

The heating system shall be filled with water, which complies with the specifications of ČSN 07 7401 and particularly the hardness of water shall not exceed the defined parameters.

Recommended values		
Hardness	mmol/l	1
Ca2+	mmol/l	0.3
Overall Fe + Mn concentration	mg/l	(0.3)*

ATTENTION!!! The manufacturer does not recommend using antifreeze.

a) heating system
ČSN 06 0310 Heating systems in buildings - Design and installation
ČSN 06 0830 Heating systems in buildings - Safety devices
ČSN 07 7401 Water and steam for hot water and steam boilers with nominal steam pressure of up to 8 MPa.
ČSN EN 303-5 Heating boilers – Part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 300 kW – Terminology, requirements, testing and marking.

b) chimney
ČSN 73 4201 Chimneys and connecting flue pipes.

c) with respect to fire regulations
ČSN 06 1008 Fire protection of heating appliances.
ČSN EN 13 501-1+A1 Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests.

d) power network
ČSN 33 0165 Electrical engineering regulations. Identification of conductors by colours or numerals. Procedure provisions.
ČSN 33 1500 Electrical engineering regulations. Inspection and testing of electrical installations.
ČSN 33 2000-3 Electrical engineering regulations. Electrical installations. Part 3: Fundamental principles.
ČSN 33 2000-4-41 Electrical installations: part 4: Safety chapter 41: Protection against electric shock.
ČSN 33 2000-5-51 ed. 2 Electrical engineering regulations. Construction of electrical installations.
ČSN 33 2130 Electrical engineering regulations. Internal electric distribution lines
ČSN 33 2180 Electrical engineering regulations. Rules for installation of electrical apparatus and appliances.

ČSN 34 0350 Electrical engineering regulations. Safety requirements for flexible cords and cables.
ČSN EN 60 079-10 Electrical engineering regulations. Regulations for electrical installations in atmospheres with risk of explosion from flammable gases and steam.
ČSN EN 60 079-14 ed.2 Electrical installations for explosive gas atmospheres - part 14: Electrical installations in dangerous areas (other than mines).
ČSN EN 60 252-1 Capacitors for alternating current boilers – Part 1: General – Design, testing, rating – Safety regulations – Instructions for assembly and operation.
ČSN EN 60 335-1 ed.2 Safety of household and similar electrical appliances – Part 1: General requirements.
ČSN EN 60 335-2-102 Safety of household and similar electrical appliances – Part 2-102: Special requirements for appliances that burn gas, oil and solid fuels containing electrical connections.
ČSN EN 60 445 ed. 3 Fundamental and safety principles for human interface - machine, marking and identification.
ČSN EN 60 446 Fundamental and safety principles for operating machine installations - Identifying wires with colours or numbers.
ČSN EN 61000 – 6 – 3 EMC – Part 6 – 3: General standards – Emission standard for residential, commercial and light-industrial environments.
ČSN EN 61000 – 3 – 2 EMC – Part 3 – 2: Limits - Limits for harmonic current emissions (equipment input current £16 A per phase).
ČSN EN 61000 – 3 –3 EMC – Part 3 - Limits - section 3: Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current £ 16 A per phase and not subject to conditional connection.

e) warm water heating system
ČSN 06 0320 Heating systems in buildings - Generation of domestic hot water - Designing.
ČSN 06 0830 Heating systems in buildings - Safety devices.
ČSN 73 6660 Installations inside buildings.

5.2 INSTALLATION OPTIONS

The boiler can be installed and operated in the AA5/AB5 base environment in accordance to ČSN 33 2000-3. The boiler is equipped with a moving network line and plug. The boiler shall comply with ČSN EN 60 335–1 ed. 2 art. 7.12.4 in terms of being installed in such manner to ensure the plug is accessible.
All specifications of ČSN 06 1008 shall be observed during the installation and use of the boiler.

Boiler installation with respect to fire regulations:

1. Installing the boiler on a base made of fireproof material:
- place the boiler on the fireproof heat-insulated base extending beyond the boiler, 20 mm on all sides
- if the boiler is installed in the basement, it is recommended to install the unit on a bedding, which is at least 50 mm high. The boiler shall stand horizontally, any unevenness in the bedding is eliminated via the screw located under the tank

2. Safe distance from flammable materials:

- a safe distance of 200 mm from flammable materials shall be kept when installing and operating the boiler
- the safe distance for mildly flammable materials, which burn fast and independently even after the source of the fire is eliminated (e.g. paper, tape, carton, bitumen and tar paper, wood and wooden fibre boards, plastic materials, flooring materials) is doubled, i.e. 400 mm
- the safe distance shall be doubled (i.e. 400mm) also in cases where the classification of the response to the fire is not proven

Boiler installation with respect to the area necessary for handling:

- a handling area of at least 1000 mm shall be reserved in front of the boiler.
- the minimum distance between the back part of the boiler and the wall is 400 mm.
- at least 500 mm of space shall be reserved on the tank side in case the feeding coil requires removing.
- the minimum distance from the side wall of the boiler is 100 mm.
- at least 450 mm of room shall be left above the boiler.

Boiler installation with respect to the power network:

- the boiler shall be installed in such manner to ensure the plug in the socket (230 V/50 Hz) is always accessible.

Fuel location:

- dry fuel shall be used to ensure proper burning inside the boiler. The manufacturer recommends storing fuel in the basement or at least under a shelter
- storing fuel behind the boiler or closer than 400 mm away from the boiler is not possible
- the manufacturer recommends keeping a distance of at least 1 000 mm between the boiler and fuel or placing the fuel in a room other than the room where the boiler is installed

Continuous air circulation must be supplied into the room where the boiler shall be installed to ensure proper burning and ventilation.

Table 6 – Air consumption

Boiler model	**PANTHER P 20**	**PANTHER P 25**	**PANTHER P 30**	**PANTHER P 35**
Number of cells	**4**	**5**	**6**	**7**
Air consumption [m3.h-1]	45	60	75	90

The heating system pipeline or heater insert pipeline connection shall be carried out by an authorized individual.

ATTENTION: The filling/emptying valve shall be placed as close to the boiler as possible when connecting the boiler to the heating system.

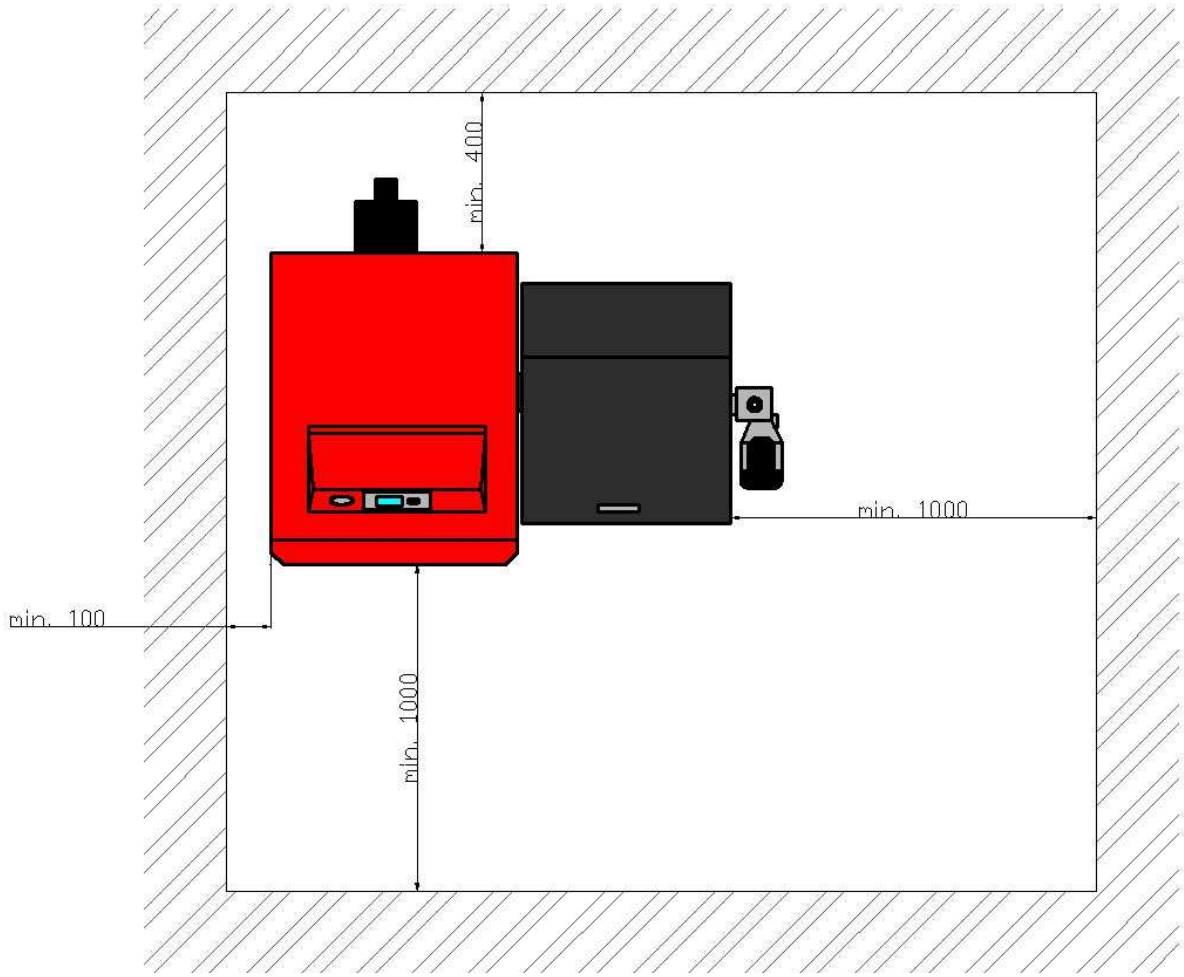


Fig. 2 Boiler installation

6. Boiler assembly

The American-made PANTHER boiler can only be installed by an individual professionally qualified and authorized to perform the installation and start-up after undergoing training conducted by the manufacturer.

6.1 DELIVERY AND FITTINGS

The boiler is delivered unassembled on 2 pallets. The fittings are placed inside the boiler body, accessible upon opening the cleaning door. The base that goes under the boiler, versatile burner, control unit, ventilator, tank and complete sheeting with mineral insulation layer is placed on the second pallet.

Standard boiler delivery:
- boiler on pallet containing the respective number of cells
- boiler cladding with mineral insulation
- cleaning tools (hook, brush with attachment)
- thermal manometer 1 unit
- DN 1/2" filling/emptying cock 1 unit
- DN 6/4" blind cap 1 unit
- φ 60 x 48 x 2 seal 2 units
- bonding material for the boiler body cladding
- 6/4" heating and reverse water flange for sizes 4 – 7 (2 units)
- SPARK control unit with heat sensors and connectors
- ventilator with respective output
- versatile burner with respective output
- burner fixation leg
- burner to base bonding material
- stove cement (1 tube 310ml)
- top fireclay (2 boards)
- turbulators (4 units)
- fuel tank
- base under boiler
- ashtray
- ventilator bonding material
- tank bonding material
- rubber mat under ventilator
- rubber mat under tank
- flushing system (canister, 1m hose, hose clips, wax cartridges)
- flushing system holder
- flushing system bonding material
- 3/4" cap 1 unit
- reservoir 1 unit
- DN 1/2" cap 1 unit

6.2 ASSEMBLY PROCEDURE

6.2.1 Installing the boiler body with base

1. Position the boiler body with the base on the bedding (mat) in a horizontal position.
2. Insert the burner head according to chapter 6.2.3.
3. Apply stove cement between the base and boiler body.
4. Apply cement to the positioned boiler body from the outside using stove cement.
5. Blind hollows with DN 6/4 and DN ½ caps. Place sealing under cap.
6. Open the cleaning door and insert the top fitting piece.

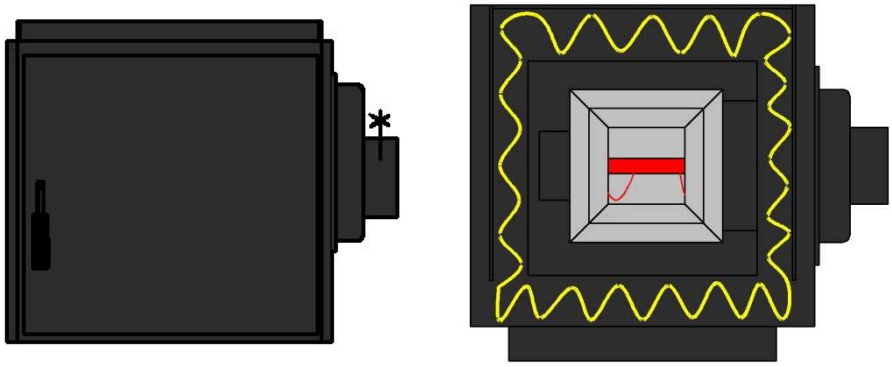
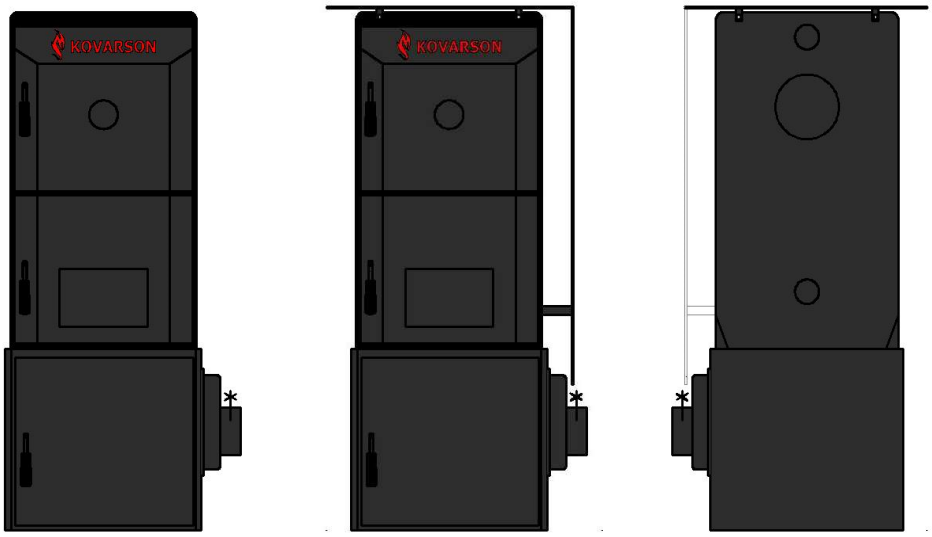


fig. 4 – cement on base

6.2.2 Boiler cladding assembly

1. Remove the cladding from the cardboard package.
2. Install sheet components using the relevant bonding material.
3. Apply boiler cladding:
    - apply the front cladding holder to the bonding tube, tighten with M10 nuts
    - apply the back cladding holder to the bonding tube, tighten with M10 nuts
    - position the top cover sheet under the front holder - the top door must be opened
    - screw on the side cover sheet into the side sheeting and place the clip into the top part
    - install the side cladding including cover sheets, screw to holders with M6 nuts.
    - install the top cover - ATTENTION, the cover sheet shall be inserted into the top cover and the cover shall be clipped in
    - screw on the back of the cladding with self-drilling screws
    - install and position the door on the door hinges
    - even out the door with respect to the cladding
    - install and drill the control unit holder



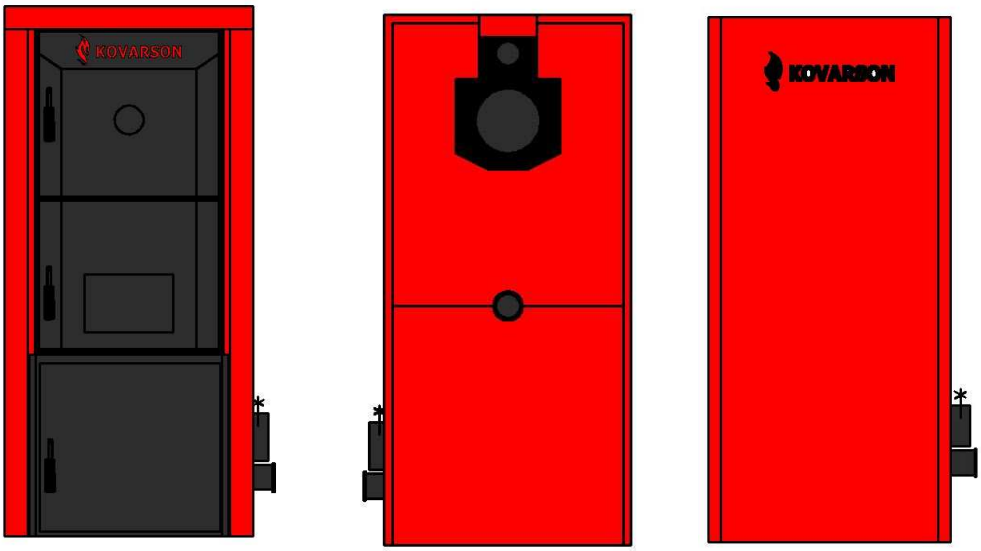


fig. 5 – boiler sheeting procedure

6.2.3 Burner assembly

1. Remove the top cast iron brace from the cast iron head.
2. Apply cement to the base under the burner flange.
3. Apply cement around the burner from the outside and inside.
4. Screw the burner head into the base without the top brace.
5. Apply stove cement on to the brace and return (Fig. 8)
6. Install the boiler sheeting according to chapter 6.2.2.
7. Insert the feeder, cut legs as necessary. Must be inserted all the way to the red marker.
8. Even out in a horizontal position and tighten the feeder.

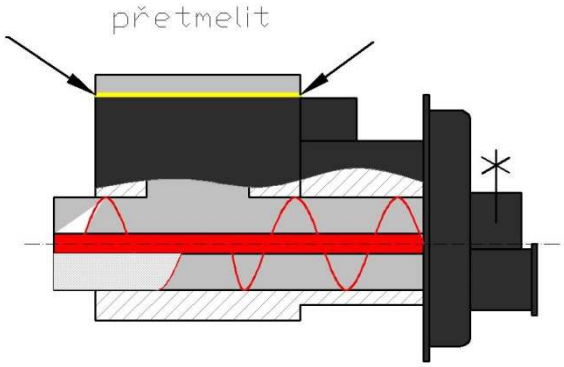


Fig. 8 Applying fresh cement to the top cast iron brace and flange

6.2.3 Ventilator assembly

1. Install the ventilator and tighten – a rubber or cork mat shall be inserted between the flange and ventilator.

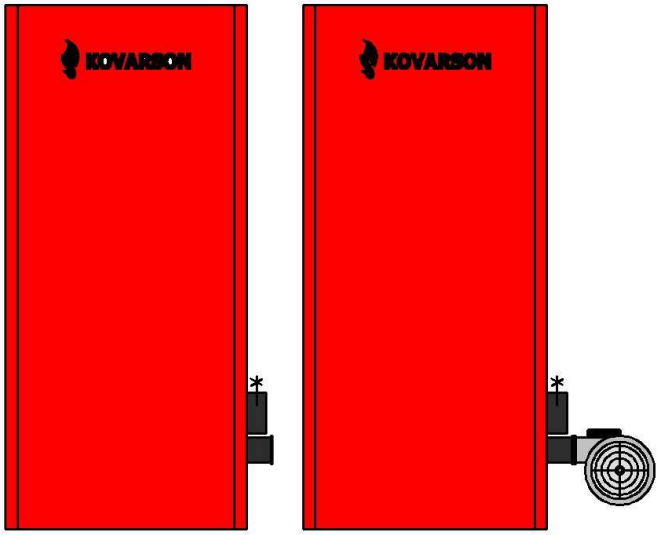


Fig. 9 Ventilator assembly

6.2.4 Fuel tank assembly

1. When assembling the fuel feed to the base and fuel tank, we shall first set everything into a horizontal position and then tighten the nuts and bolts.
2. Apply cement to the fuel conveyor system in the fuel tank contact area. Place the fuel tank into position and tighten the screws.

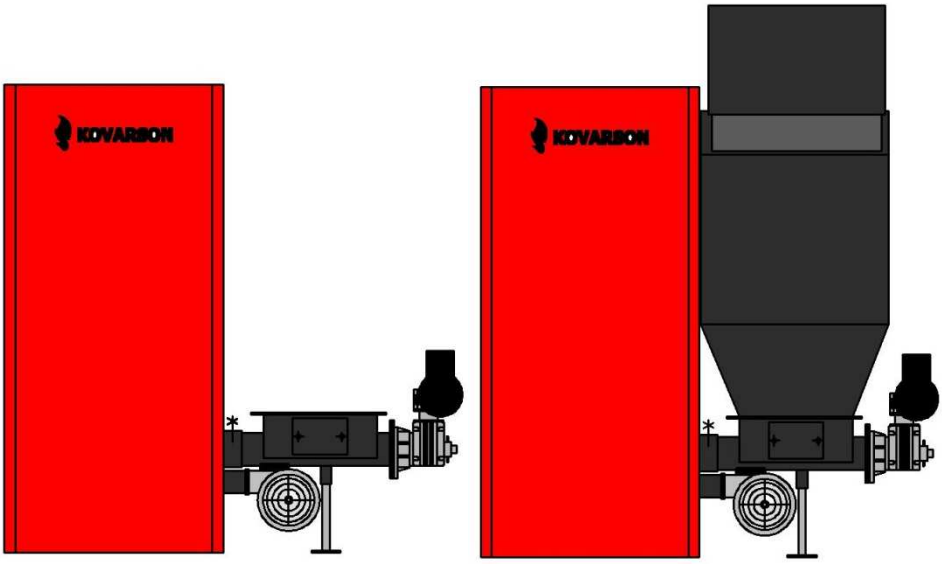


Fig. 10 Tank assembly

6.2.6 Assembly of the control unit and control unit heat sensors

1. The control unit is anchored to the boiler or to a suitable place, where it will not be exposed to risks.
2. Insert the panel into the holder.
3. Connect the heat sensor:
   - insert the central heating sensor into the reservoir on the water outlet line
   - insert the warm utility water into the boiler reservoir or on the supply line (by default, the sensor is deactivated, when the boiler is not in use, the sensor is not used)
   - insert the temperature limiter sensor (emergency thermometer) into an independent reservoir on the water outlet line, as close to the boiler as possible
   - hopper temperature sensor – connect to the tube located on the coil behind the ventilator
   - follow the manual and connect other sensors to the SPARK control unit
4. Connect the feeder, ventilator, pump and control unit according to the manual.
5. Follow the manual for the SPARK control unit connection.

7. Operating the boiler

The boiler shall only be commissioned by an individual professionally qualified and authorized to start the boiler.

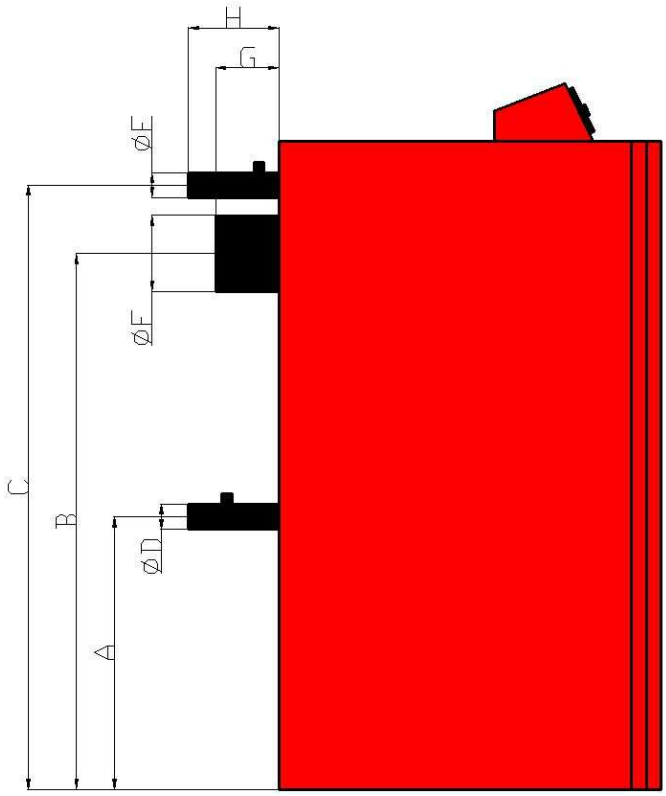


Fig. 12 Boiler connection dimensions

	A	B	C	D	E	F	G	H

value	**mm**	1080	1250	1350	2"	158	2"	125	130

7.1 ELECTRICAL WIRING

No action is required with the electrical wiring to commission the boiler. All connectors are lead to the back side of the control unit, these connectors make disconnecting quick and easy or facilitate the control unit connection.

Sensor cables can be shortened or extended as necessary while respecting the following principles:

- do not cut the sensor cable 0.5 m or less from the case
- we do not recommend extending the sensor cable by more than 10 m
- we recommend using, for example, a CMSM – H 2 x 0.5 mm cable for extending
- the coupling of cables to extend the connection shall be carried out with care. Ensure the connection is conductive when shortening or extending the cable.

7.2 PRE-START INSPECTION

The following shall be inspected prior to commissioning the boiler:

a) heating system filled with water

The water hardness shall comply with ČSN 07 7401 and if the water hardness is not suitable, it is necessary to treat the water according to chapter 5.1.
Heating systems with an open expansion tank allow having the heating water in direct contact with the atmosphere. During the heating season, the expanding water in the tank absorbs oxygen, which increases the corrosive effects, and at the same time, the water evaporates significantly. Only water treated to achieve the values per ČSN 07 7401 may be used for replenishing.
The heating system shall be thoroughly rinsed to ensure all impurities are washed out. The water capacity in the heating system shall be maintained during the heating season. Ensure air is not sucked into the system when replenishing the heating system with water. Water from the boiler and heating system shall never be drained or used in cases other than those necessary, for example repairs etc. Draining the water and filling the boiler up with fresh water increases the risk of corrosion and the formation of scale. **If the heating system required replenishing the water, we only replenish into a cooled boiler to prevent cracking the cells.**

b) heating system seal

c) chimney connection - approval from chimney organization required

d) burner seal

Plug the system into the power network (socket). Press the main button to activate the control unit, switch to manual mode and activate the ventilator. All air shall flow into the combustion area of the versatile burner. Emphasis shall be put on the contacts during the inspection:

- ventilator to flange
- around the bottom cleaning hole of the burner

– cast iron grate with burner. If leaks are discovered, the grate shall be removed, old cement shall be removed from contacts, an adequate amount of fresh cement shall be applied and the grate shall be installed back into the burner and the inspection shall be repeated.
– press the button again to deactivate the ventilator.

e) power connection

The boiler is connected to a standard 230 V/50 Hz/10 A socket by a moving feed via a plug.

g) check the opening of the chimney valve

7.3 CONTROL UNIT PARAMETER SETUP

Table 7 Setting up the control unit for wooden pellet at nominal output

Boiler model	**PANTHER P 20**	**PANTHER P 25**	**PANTHER P 30**	**PANTHER P 35**
Number of cells	**4**	**5**	**6**	**7**
feed time	6	6	6	8
period between feed	12	10	8	5
ventilator speed	31	34	37	41

Table 8 Setting up the control unit for wooden pellet at reduced output

Boiler model	**PANTHER P 20**	**PANTHER P 25**	**PANTHER P 30**	**PANTHER P 35**
Number of cells	**4**	**5**	**6**	**7**
feed time	4	4	4	4
period between feed	30	27	24	19
ventilator speed	26	28	29	30

7.4 STARTING THE BOILER - LIGHTING UP

1. Lighting up

– Check the parameter settings, see chapter 7.3
– Check the manometer to determine the amount of water in the heating system.
– Open the stop valve between the boiler and heating system.
– Check the pump functionality (mechanical rotation)
– Clean the burner and ashtray (unless it is the first light-up sequence). The ashtray door must always be closed during the light-up sequence and operation.
– Fill the fuel tank with the specified fuel. Once replenished, close the tank carefully to prevent air from being sucked into the burner via the feeder.
– Switch the unit to manual mode and activate the feeder. The fuel shall be transferred to the burner about 1 cm under the edge of the burner. The feeding period for an empty coil is about 7 minutes and the motor may potentially overheat and stop thanks to the thermal fuse. The motor resumes the feeding process after cooling off.
– The fuel needs to be lighted either by a liquid or solid firelighter, or using wooden spills.
– Light up and allow the fire to kindle.

– After burning for about 3 minutes, the operator activates the ventilator by pressing -. The ventilator starts and the operator immediately switches the ventilator off to provide just a small amount of ventilation. The ventilator speed can be controlled in manual (ignition) mode.
– During the light-up sequence, keep the height of the fuel about 2 cm below the edge of the cast iron grate.
– When the burner area is fully warmed up, the operator can switch to automatic mode.

2. **Check the boiler again for leaks.**
3. **Perform a heating test.**
4. **Acquaint the user with operating the boiler.**
5. **Record to Warranty Card.**

Checking the shape of the flame (wooden pellets)

The shape of the flame indicates the boiler is setup properly for the nominal output. We recommend performing this inspection prior to each new fuel purchase. When checking the shape of the flame, make sure the boiler is set to the nominal output.

Wooden pellets:

Fig. 13 Optimal shape of the flame

Fig. 14 Improper shape of the flame

8. Important notice

- The boiler shall only be used for its intended purpose.
- Only adult individuals, familiar with this operator's manual authorized to operate the boiler. Leaving children unattended by an active boiler is prohibited.
- The boiler is not intended for use by individuals (including children), whose physical, sensory or mental capacity or insufficient experience or knowledge prevents them from safely using the appliance, provided they are not supervised, or were not instructed on how to use the appliance by a person responsible for their safety.
- Children shall be supervised to prevent them from tampering with the appliance.
- If there is an imminent danger of flammable vapours or gases leaking into the boiler room, or there is a temporary risk of fire or explosion while performing certain work (installing flooring materials, painting with flammable paint, etc.), the boiler must be shutdown promptly before the start of work.
- Prior to ignition, when transferring fuel into the burning area, the operator shall perform a visual inspection on the retort quantity, not by placing their hand into the furnace. Risk of injury by the rotating coil shaft.
- Using flammable liquids (benzine, alcohol, etc.) to ignite PANTHER boilers is PROHIBITED.
- Overheating PANTHER boilers in any manner during operation is PROHIBITED.
- No objects made of flammable materials shall be placed on the boiler and in a distance closer than what is considered to be a safe distance.
- When removing ash from the boiler, no flammable substances shall be present within at least 1500 mm of the boiler. Ash shall be placed into fireproof containers with lids. Use protective equipment.
- At the end of the heating season, the boiler including the smoke flue shall be thoroughly cleaned. The boiler room shall be kept clean and dry.
- Intervening with the frame and wiring of the boiler is prohibited.
- A safety value with a maximum overpressure of 3 kPa, the rating of which must comply with the nominal output of the boiler, shall be installed in the system. Should you have additional questions, please refer to our official assembly companies and repair organizations.
- Poor fuel quality can significantly influence the output and emissions parameters of the boiler.
- Standards that apply within the applicable country shall be adhered to during the assembly, installation and operation of the appliance. Failure to respect these terms results in forfeiting the claim for warranty repairs.
- Pursuant to Government Decree 91/2010 Coll. - on fire safety conditions, the operator shall perform the regular cleaning and inspection of combustion routes when operating chimneys, smoke flues and fuel appliances.

9. Maintenance

1. The operator must make sure the tank is continuously replenished with fuel. If only a small amount of fuel remains in the tank, it shall be replenished. When replenishing or checking the amount of fuel, it is necessary to make sure the tank cover is closed.

2. If the boiler is configured properly, fuel is entirely spent when it reaches the edge of the combustion grate. Ash and cinder then falls into the ashtray. At average capacity, the ashtray requires emptying every other day (wearing protective gloves is mandatory). A piece of cinder can occasionally get stuck between the edge of the combustion grate and the boiler wall. This then requires using the rake to remove the cinder.

3. If the boiler operates continuously, we recommend cleaning the interior surfaces of the metal body twice a month (heat transfer surfaces become clogged, which can significantly influence heat transfer and boiler efficiency).

4. The burner mixer is cleaned once every 3 months. The purity of the mixer affects the proper air circulation.

5. If the fuel contains a solid element, which blocks the coil rotation, the cutting safety is cut and requires a replacement. Using the cleaning hollows of the hopper, the coil is cleaned of undesired material, the coil can be turned using a number 19 wrench. We can then install the new cutting safety and restart the burner.

NOTICE: Before performing this operation, make sure the boiler is disconnected from electricity (unplugged from the socket) and fuel is burned out, to prevent reverse burning.

6. The ventilator produces mild overpressure in the boiler and therefore we must ensure the boiler is duly sealed (cleaning door, middle door, ashtray door, cleaning hollow of the burner, fuel tank cover, etc.). The fuel tank seal encompasses a securely shut cover using a safety element and intact rubber seal for contacts. If damaged, the tank seal shall be replaced with a new piece.

7. Should the power go out, the wax cap, which extinguishes the fuel, functions as a safety against reverse burning. It is imperative that the canister is always filled with water.
8. The boiler walls inside the furnace, smoke flues and smoke attachment shall be cleaned regularly, once a month. This maintenance shall be performed on a cooled boiler, when the temperature is no higher than 40°C. The cleaning lid on the bottom is intended to remove ash from the smoke attachment. We must again make sure the boiler is sealed during the cleaning process.
9. Check the water level in the canister. The canister lid shall be open and water may evaporate.

10. Instructions for disposing of a product after its service life has expired

We recommend disposing of packaged as follows:

- plastic wrap, cardboard boxes, take to recycling facility
- metal packing strips, take to recycling facility
- wooden base, designed as a disposable unit, cannot be used further as a product. The disposal is subject to Act 94/2004 Coll. and 185/2001 Coll. as amended. Considering the fact that the product is designed using standard metal materials, it is recommended to dispose of individual components as follows:
- exchanger (grey cast iron), take to recycling facility
- pipelines, cladding, take to recycling facility
- other metal parts, take to recycling facility

11. Warranty and liability for defects

Provided warranty:

A 24-month warranty is provided for the boiler, commencing on the date the product is commissioned.

In case the customer returns the product, they are required to present the invoice from the supplier.
The user shall have a professional assembly organization commission the product and have any defects removed by an authorized repair shop, otherwise the warranty for proper boiler functionality is null and void. The "PANTHER boiler Certification of Quality and Completeness" serves as the "Warranty Card" after being filled out. The user shall perform regular maintenance on the boiler.
Each defect shall be reported, immediately after discovering the defect, in writing and by phone.
Failure to follow these instructions will result in the manufacturer warranty not being acknowledged.

The manufacturer reserves the right to make changes as part of product innovation. These changes do not necessarily have to be present in this manual.

The warranty does not apply to:

- defects caused by improper assembly and improper product operation and defects caused by improper maintenance, see chapter 8
- damage caused to the product during transport or other mechanical damage
- defects caused by unsuitable storage
- defects caused by failure to maintain the water quality within the heating system, see chapter 5.1 and 7.2 or by using antifreeze
- defects caused by failure to follow the instructions specified in this manual
- defects caused by operating the boiler with unauthorized fuel (see tables 3 and 4)

12. Possible defects and resolution

Defect	Root cause	Resolution
The control unit will not start	- no voltage	- check
	- plug inserted improperly into the socket	- check
	- defective control unit	- replace
	- damaged cord	- replace
	- LED indicators do not light up	- damaged fuse
The boiler does not achieve the required parameters	- insufficient amount of water in the heating system	- replenish
	- large pump output	- adjust flow rate and pump activation
	- insufficient output rated for the given system	- project prepared incorrectly
	- low quality fuel	- check the calorific capacity and quality of material from the supplier
	- low chimney draft	- new chimney, insufficient connection
	- high chimney draft	- insert choke valve into smoke flue
	- insufficiently cleaned boiler	- clean
Leaking door	- incorrectly adjusted door hinges	- tighten door hinge screws
	- defective sealing cord	- replace
Ventilator not rotating or noisy	- overheated boiler – temperature limiter activated (emergency thermostat)	- wait until the temperature drops to about 70°C, then press the temperature limiter button located on the control unit
	- motor not running	- replace
	- damaged cord	- replace
Alarm activation	- Alarm 5	- insufficient fuel - incorrect fuel supply unit setup
	- sensor alarm	- determine which sensor is damaged and contact the repair shop
Smoke in the boiler room	- leaking door	- replace the sealing cord - tighten door hinge screws
	- incorrect burner setup	- if smoke is exiting the boiler, reduce the amount of fuel added or increase the ventilator speed

ES PROHLÁŠENÍ O SHODĚ

(původní)

Výrobce: KOVARSON s.r.o., Lhota u Vsetína 4, 755 01 Vsetín
IČ: 29220327, DIČ: CZ29220327

tímto prohlašujeme,

že následně označené zařízení na základě jeho koncepce a konstrukce, stejně jako námi do oběhu uvedené provedení, odpovídá příslušným základním bezpečnostním požadavkům nařízení vlády. Při námi neodsouhlasených změnách zařízení ztrácí toto prohlášení svou platnost.

Identifikační údaje o zařízení:

Název:	Automatický litinový kotel
Typ:	PANTHER P 20 – 35kW
Výr. č:	2020xxxx, 2520xxxx, 3020xxxx, 3520xxxx

Příslušná nařízení vlády (NV) – ES/EÚ:

NV č. 176/2008 Sb.	– strojní zařízení (2006/42/ES)
NV č. 17/2003 Sb.	– elektrická zařízení nízkého napětí (2006/95/ES)
NV č. 616/2006 Sb.	– EMC (2004/108/ES)

Použité harmonizované normy při posuzování shody:
ČSN EN ISO 12100:2011 (EN ISO 12100:2010)
ČSN EN 303-5:2013 (EN 303-5:2012)

ČSN EN 60335-1 ed. 3:2012 (EN 60335-1:2012)
ČSN EN 60335-2-102:2007/A1:2010 (EN 60335-2-102:2006/A1:2010)

ČSN EN 55014-1 ed. 3:2007/A1:2010/A2:2012 (EN 55014-1:2006/A1:209/A2:2011)
ČSN EN 55014-2:1998/A1:202/A2:2009/Z1:2008 (EN 55014-2:1997/A1:2001/IS1:2007/A2:2008)

Doklady vydané autorizovanými osobami:
Certifikát č. B-30-00949-13 ze dne 29.11.2013, vydaný Stroiírenský zkušební ústav, s.p., Hudcova 424l56b, 621 00 Brno, IČO: 00001490 (1045.1)

Výrobek je za podmínek obvyklého a určeného použití bezpečný.

Při posuzování shody bylo postupováno podle § 12, odst. 3a) zákona č. 22/1997 Sb. v platném znění.

Ve Vsetíně dne 29.11.2013

KOVARSON s.r.o.
zapsané v OR u KS v Brně, oddíl C, vložka 69644
Lhota u Vsetína 4, 755 01 Vsetín
Tel.: +420 724 045 900, E-mail: info@kovarson.cz
IČ: 29220327, DIČ: CZ29220327

Ing. Jan Valčík
jednatel společnosti KOVARSON s.r.o.

PROHLÁŠENÍ O SHODĚ

podle zákona č. 22/1997 Sb.
zákon o technických požadavcích na výrobky ve znění pozdějších předpisů a podle nařízení vlády č. 163/2002 Sb., kterým se stanoví technické požadavky na vybrané stavební výrobky ve znění pozdějších předpisů

Výrobce: KOVARSON s.r.o., Lhota u Vsetína 4, 755 01 Vsetín
IČ: 29220327, DIČ: CZ29220327

Identifikační údaje o zařízení:

Název:	Automatický litinový kotel
Typ:	PANTHER P 20 – 35kW
Výrobek:	Kotle teplovodní na dřevní pelety s automatickou dodávkou paliva
Výrobek. č:	2020xxxx, 2520xxxx, 3020xxxx, 3520xxxx

Popis výrobku:
Automatický kotel PANTHER je učen k ekologickému a úspornému vytápění rodinných domů a menších firem s vysokou účinností. Tato řada kotlů je vyvinuta na dřevěné pelety.

Způsob posuzování shody podle §7 nařízení vlády č. 163/2002 Sb., ve znění pozdějších předpisů.

Výrobce potvrzuje, že výrobek splňuje požadavky dle ČSN EN 303-5:2013 (třída 4 - mimo odchylky C.6 přílohy C), ČSN 06 1008:1997, ČSN EN 60335-1 ed.2:2003, ČSN EN 60335-2-102:2007, ČSN EN 62233:2008 a nařízení vlády č. 272/2011 Sb.

Doklady vydané autorizovanými osobami:
Protokol o počáteční zkoušce číslo: 30-12061 ze de 29.11.2013, platný do 30.11.2015
Certifikát číslo: B-30-00949-13 ze dne 29.11.2013, platný do 30.11.2015

Vydaný autorizovanou osobou č. 202: Strojírenský zkušební ústav, s.p., Hudcova 56b, 621 00 Brno, IČO: 00001490

Výrobce potvrzuje, že vlastnosti výrobku splňují základní požadavky podle tohoto nařízení, popřípadě požadavky jiných technických předpisů, že výrobek je za podmínek výrobcem určeného použití bezpečný a že přijal opatření, kterými zabezpečuje shodu všech výrobků uváděných na trh s technickou dokumentací a se základními požadavky.

Ve Vsetíně dne 29.11.2013

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