MANUAL FOR INSTALATION AND OPERATION OF MAGA PELLET AND WOOD BOILER DP25 PREMIUM

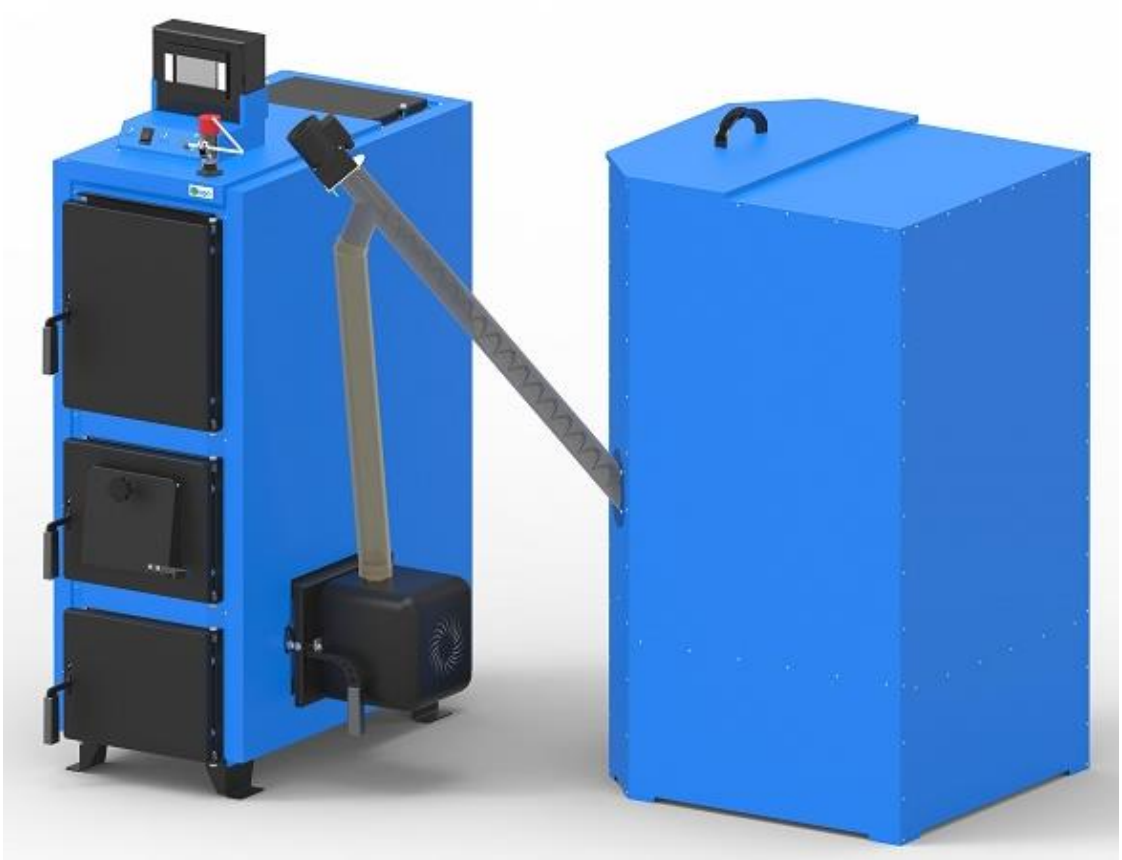


Fig.1 MAGA DP25 PREMIUM

Dear customer, thank you for the purchasing of our product. Please, follow the manual in order to be 100% satisfied with its operation and maintenance.

Team MAGA

CONTENT

1 BOILER USE AND ADVANTAGES

Hot water boiler MAGA DP25 Premium is designed for heating of dwellings, houses, cottages and other objects demands on the heat source (heating + hot water system) shall not exceed 20 kW. The recommended fuel is wood pellets of a diameter of 6-8 mm, which are transported by the feeder from the autonomous container into the combustion chamber. This allows time-saving and user friendly operation and maintanance. The high efficiency can be achieved by low operating costs. Moreover, automatic ignition of fuel in the focus guarantees very low emission burden on the surrounding environment (in the boiler properly set it is practically a "smokeless" incineration). Regulator is adapted for connection to external control (room thermostat, equithermic regulation), including control of the circulating pump.

MAGA DP 25 solid fuel boilers are designed for combustion of wood, wood briquettes in manual application, or burning of 6 mm diameter wood pellets in automatic mode. Nominal output for DP 25 steel boilers is 20 kW for manual loading of wood and 3-20 kW for automatic pellet operation. The boiler body is equipped with a dual heat exchanger (vertical tubular and horizontal vane) which ensures optimal heat transfer to the system. High quality insulating materials minimize heat losses and contribute significantly to the high thermal efficiency of the entire facility 94.5 %.

The boilers are fitted with a built-in cooling loop and can be used in both forced and self-draining systems. Very good price and short delivery times! Of course, the products we supply are trouble-free and economical operation, low operating costs and reliability. All of our energy-efficient systems are innovative and environmentally friendly.

2 ACCESSORIES

Maga pellet boiler set consists of following fundamental parts:

A. Basic parts

1. Boiler body (incl. ash tray, cleaning instruments – rounded stick and sharp-scratch stick)
2. Electronic regulator
3. Pellet burner
4. Pellet feeder (tube, engine, plastic hose with steel fitting to pellet burner)
5. User manual for boiler and regulator
6. Use manual for electronic controler
7. Manufacturer stick (grey) with basic manufacturing data incl. serial No.

B. **Reccomended Accessories:**

1. EcoNet 3000 – internet module (boiler control online web application for online operation and distant service
2. The remote room control EcoSTER 200 (boiler operation without the need for physical presence in the boiler room)
3. Water accumulation tank – buffer of min. volume 800 litres.

⚠ *Please, make sure your boiler set is complete!*

Please keep the manual for installation and operation, as well as all required document-ation, if necessary, to be able to use them at any time. In the case of moving or selling the device it is necessary to pass new user/owner, with all the documents.

Symbols used
This manual contains the following graphic symbols:

☞ - This symbol indicates useful information and reports
⚠ -This symbol means important information regarding the protection of life and health of people and pets or property damage

WARNING: Used symbols are marked with relevant information in the manual.
However the user to remove the obligation to familiarize themselves and comply with instructions not to designate using graphic symbols!

3 BOILER CONSTRUCTION

3.1 BOILER BODY

Under-pressure parts of boiler correspond to requirements of Standard EN 303-5: 2012 -Boilers for central heating - Part 5: boilers for central heating, solid fuel, with manual or automatic delivery of output up to 300 kW.

The basic parts of DP boiler are: a boiler body, a pellet burner, pellet feeder and electronic devices. The body is welded from steel plates. All parts of the boiler body, in contact with the flame and combustion products, are made of metal sheet of thickness 5 mm. The Heat exchanger is tubular with economizers.

Vertical pellet heat exchanger is positioned in the back side of the boiler body which is connected to the pellet burner chamber situated on the bottom part. The top part of the boiler includes the horizontal heat exchanger for both pellets and wood. This is the only part of the DP boiler common for both fuels. Unburned fuel residues fall through into the ash collector at the bottom of the chamber. Automatically operated pellet burner controls the air intake, fuel, intensity of burning, ignition and extinction according to the set parameters.

The proper functioning of pellet combustion is conditioned by a slight negative pressure in the combustion chamber.

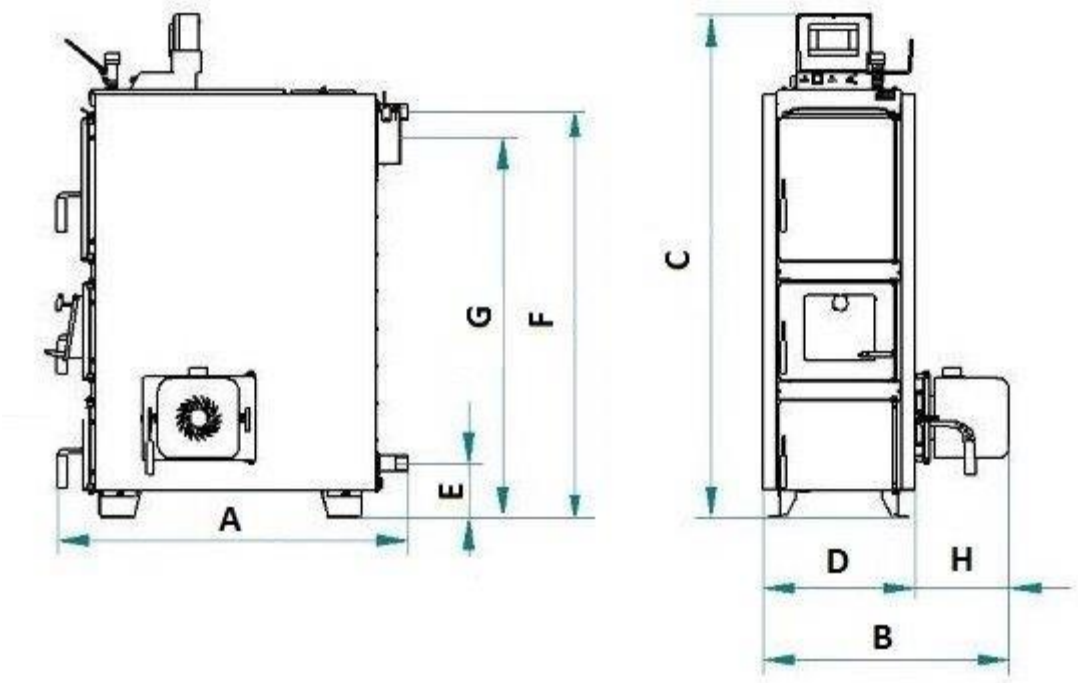
☞ There is an ashtray on the bottom of the combustion chamber. The boiler is feeded by a pellet screw-feeder from the pellet silo.

The combustion air fan is located inside a compact pellet burner. The heating water inlet is located at the rear side of the boiler with external thread G 6/4 " and outlet located on the top of the boiler to be connected with the heating circuit. Thread inlet at the top rear G 1/2" function is for the installation of the drain valve.

The chimney is situated in the rear upper part of the boiler there is a chimney for flue gas discharge into the chimney in horizontal position.

The steel heat exchanger and its lid are insulated with harmless insulation, which reduces heat loss to the environment. The steel shell of the boiler is color-treated with powder coating.

The detailed technical parameters are shown in the table Tab.1



Tab.1 Technic parameters of boiler DP25

DP 25		
Dimensions: A	mm	1055
B	mm	745
C	mm	1515
D	mm	460
E	mm	163
F	mm	1220
G	mm	1145
H	mm	285
Power (nominal) pellet	kW	17 or 27
Max. Power pellet	kW	20/27
Upper fuel chamber capacity	l	65
Operational chimney flow	Pa	15-20
Max. Operational water pressure	MPa	0.2
Boiler weight	kg	427
Chimney outlet diameter	mm	159
Water volume	l	89
Connection		6/4“
Heat efficiency	%	94.5
Fuel required		Wood pellets 6 mm
Max. wood length (ø 60-120 mm)	mm	500
Burners el. consumption	W	100
Pellet silo	l	250, 600, 900

3.2 PELLET SILO

Pellet silo is another standard part of the boiler pellet silo set, standardly of volume of 600 liters. There are also additional volumes as 330 or 900 liters avialable.

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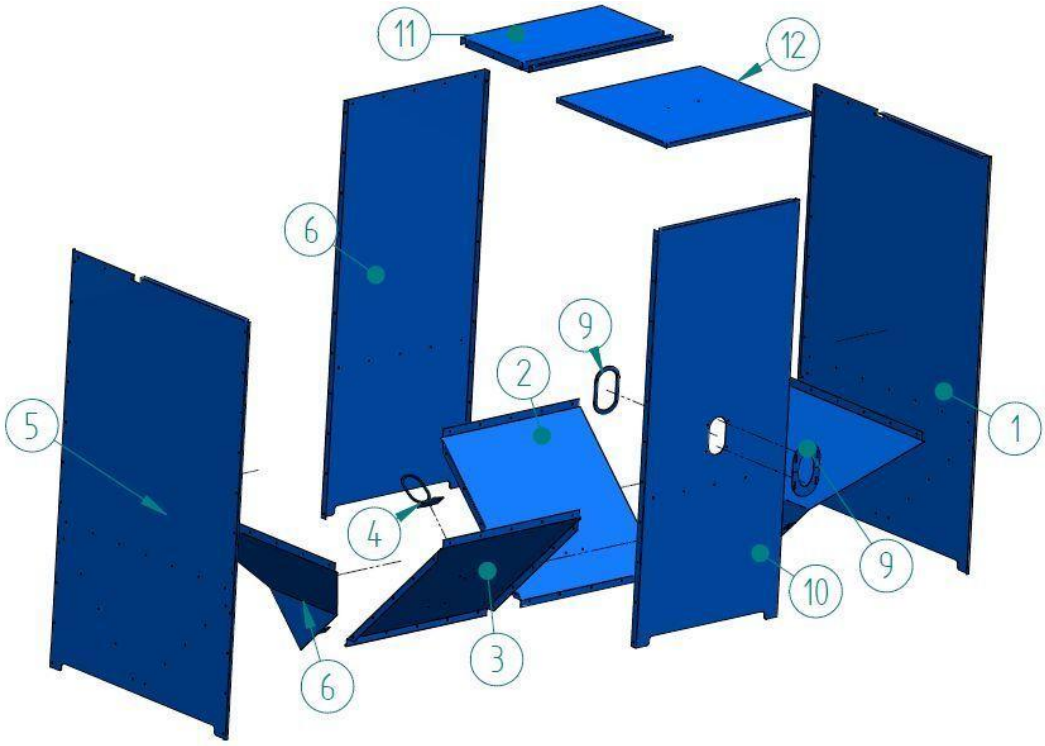


Fig. 2 Set of pellet silo

Single parts need to be connected in the numeric order according the figure 7. Parts with the same numbers need to be completed at on time (6-6, 9-9). Put the cover on the top after feeding the silo with pellets.

⚠ **Pellet silo-tank is not intended for liquid fuel. The tank is designed for pellet or granules of diameter 6-8 mm according to current EN standards. When using a fuel that does not meet the standards, the manufacturer is not responsible for the functionality of the device and is not responsible for any damages caused by operation of the boiler**.

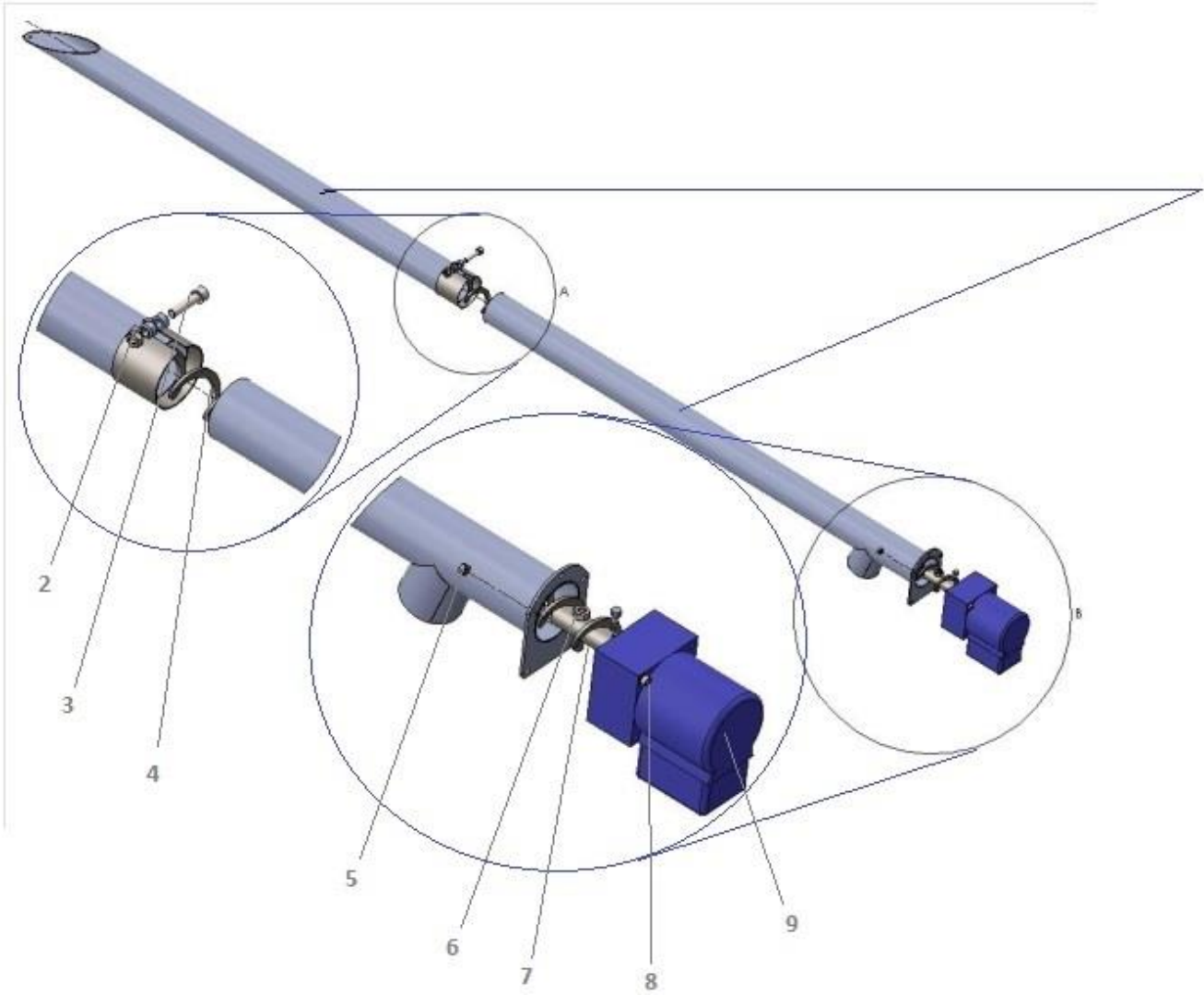


Fig. 3 Assembly of pellet feeder. 1 oven tray, 2.nut, 3.screw, 4 spring, 5 bolt, 6.screw , 7.rod, 8 screw, 9. Gearbox with engine motor

For proper operation of the feeder must be inserted through the opening to the bottom (9), and need to be fixed by holder (4). Feeder need to be turned up side by open side.

Fig. 4 Ending of pellet feeder

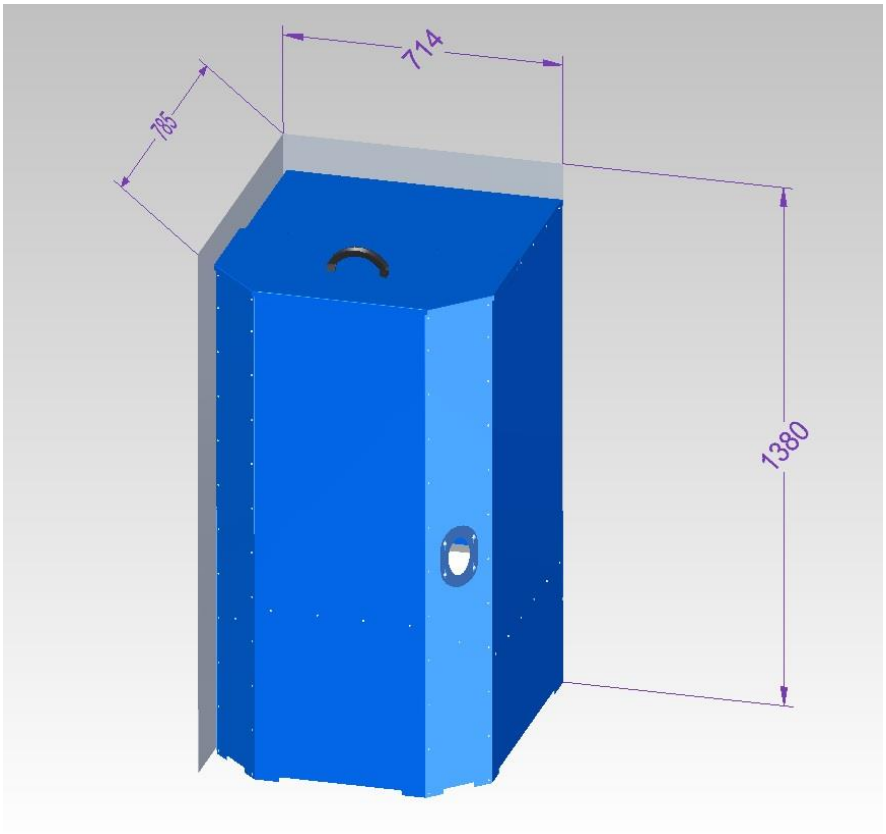


Fig. 5 Pellet tank dimensions 600l

3.3 PELLET BURNER

Fundamental part of the boiler is the pellet burner series PB 25/35 Premium. Pellet burner need to be pushed into the boiler door and fitted by enclosed screws. To the top of the burner need to be connected with the tube of the feeder. This have to be done with all the types of burners.

PB 25/35 PREMIUM

Type Premium also requires the involvement of the relevant cables and a water temperature sensor. Regulator panel touch screen is usually placed on the wall next to the boiler.

Fig.6 PB 25/35 PREMIUM, Touch-screen electronig regulator

4 OPERATION, REGULATION AND SAFETY ELEMENTS

The combined boiler DP25 is equipped with a pellet burner control unit in a pellet burner to ensure smooth operation of the system.
When switching to pellet mode (pellet indicator light is on), the pellet burner is automatically put into operation after burning wood in the combustion chamber. After switching back to the combustion mode, it is necessary to:

1. Turn OFF the pellet burner.
2. Switch ON wood button (LED diode - wood)

4.1 REGULATION ELEMENTS

Boiler regulator setting ecoTouch 850 enables setting of:
• boiler water outlet temperature
• Auto mode Fuel feeder and ventilator
• parameters for the setback mode
• Operation of feeder and fan hand
• The flow temperature of the circulating pump (Central heating)
• The storage tank
• Control pumps for hot

The controller is equipped with an input for room thermostat.

The external regulator - for boiler controller can be connected (potential-free) normal room thermostat. The thermostat is connected by opening the controller box located at the bottom part behind the of a burner screw. There are also slots for connection of the pump.

4.2 SAFETY FEATURES

STB emergency thermostat

The STB safety thermostat represents the protection of the boiler against overheating. After heating the boiler to a temperature above 95 ° C, the thermostat switches off, thereby interrupting the power supply to the fuel substation. The boiler output instantly decreases. To re-start the boiler it is necessary to unscrew the cover and mechanically push the pin.

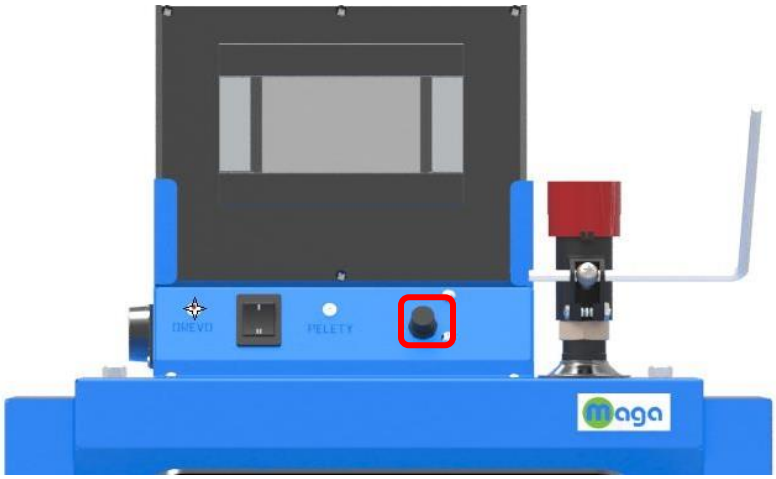


Fig. 8 STB thermostatic protection

Thermal protection of the burner

A temperature sensor connected to the burner control unit is located in the burner body. In the event of overheating above 70 ° C, an alarm condition and an interruption of the fuel supply to the burner

Photosensor

The photosensors monitors the flame intensity in the combustion chamber. In the event of a decrease in light intensity, the burner is extinguished and cleaned. It does not recommence when the heat demand occurs.

Fig. 9 Photosensor placement in the burner

Motor thermal protection

It is part of the engine and serves to protect it from burning in the event of a blockage of the fuel feeder.

⚠**The boiler can not be operated properly without required chimney draft!**

STB fuse protects a controller against high voltage and short curcuit. It consists of a tubular glass fuse STB 3.15 A, which after melting stops the feeder – fuel supply is stopped. Burner then burns out.

5 INSTALATION

Instalation is provided only by the licenced companies. Instalation by other than licenced people might result into warranty refusal from the manufacturer.

5.1 STANDARDS AND REGULATIONS

Solid fuel boiler can be installed by a firm authorized to mount this device. The instalation have to be done according the project respecting the current official standards. The heating system has to be filled with water which meets the requirements of STN 07 7401: 1992 and its hardness must not exceed the required parameters.

Tab 2 Water hardness

Hardness	mmol/l	1
Ca^{2+}	mmol/l	0.3
Total concentration of Fe + Mn	mg/l	0.3 (recommended value)

a) **Heating system**
STN 06 0310 central heating, designing and assembly.
STN 06 0830 Safety set up for central heating and hot water.
STN 07 7401 Water and steam for thermal energy facilities with a working pressure up to 8 MPa.
STN EN 303-5: 2012 Boilers for central heating - Part 5: boilers for central heating, solid fuel, with manual or automatic feed and nominal heat output maximum 300 kW - Terminology, requirements, testing and marking.

b) Chimney
STN 06 1610 Parts of flue household appliances.
STN 73 4201 Designing the chimneys and flues.

c)Fire regulations
STN 06 1008 Fire safety of heating equipment.
STN 73 0823 Fire technical properties of materials. Flammability levels of building materials.
STN 73 0861 Fire safety of buildings. Flammability Testing of building materials. Non-combustible materials.
EN 60 335-1A55: 1997 Safety of power. appliances for household and similar purposes.

d) Mains
STN 33 0160 Electrotechnical regulations of labeling electrical terminals. objects. Implementing regulations

STN 33 2000-4-41 Protection against electric shock.
STN 33 2000-5-51 Electrical regulations. El. equipment. Part 5: Construction of power. devices.
STN 33 2030 Electrotechnical regulations. Protection against dangerous effects of static electricity.
STN 33 2130 Electrotechnical regulations. Internal electrical wiring.
STN 33 2180 Connection of electrical devices and appliances.
SNT 33 2320 Electrical regulations. Regulations for electrical devices in areas with danger of explosion of combustible gases and vapors
STN 33 2350 Regulations for electrical equipment in difficult climatic conditions.
STN EN 60335-1 Safety of electrical appliances for household and similar purposes.

5.2 BOILER PLACEMENT

The location of the boiler regarding to fire regulations

Placing on the floor from combustible material

- boiler on a fireproof thermal insulation pad exceeding boiler on the sides of 20 mm.
- if the boiler is located in the cellar, we recommend placing it on concrete slabs min. 50 mm high. The boiler must stand horizontally.

Safety distance from combustible materials

- When installing and operating the boiler it is necessary to keep a safety distance of 200 mm from flammable materials of flammability B, C, and D (according to EN 13501-1) (Table 3)
- for easily flammable substances degree E, F, which burn quickly and by themselves also after the ignition source removal (eg. Paper, paperboard, cardboard, asphalt and tar boards, wood and fibreboards, plastics, flooring materials) the safe distance is doubled ie. to 400 mm
- safe distance is to be doubled also in case when the flammability level of the building material is not proved

Tab 3 Flammability levels of building materials and products

Flammability of Constructing materials and products	**Constructing materials and productsaccordingflammability degree (selection of EN 13501-1)**
A1 - non-combustible	granite, sandstone, concrete, bricks, ceramic tiles, mortars, fire plasters, ...
A2 - hardly flammable	acumin, izumin,, Lignos, boards and basalt felt, glass fiber boards, ...
B - hardly combustible	Beech and oak wood, OSB, plywood, formica, sirkolit, ...
C, D - medium	pine, chipboard and cork boards, rubber flooring, ...

combustible	
E, F - easily combustible	Asphalt board, fibreboards, cellulose materials, polyurethane, polystyrene, polyethylene, PVC, ...

A boiler placement:

• basic environment AA5 / AB5 according to STN 33 2000-3
• Before the boiler must be working space of min. 1000 mm
• The minimum distance between the rear of the boiler and the wall is 400 mm
• on the tray fuel gap min. 500 mm in case of collection of feed screw
• The minimum distance from the left side wall 100 mm
• the boiler at least 450 mm for the possibility exchanger cleaning and refueling

Location of the boiler to the electrical network:

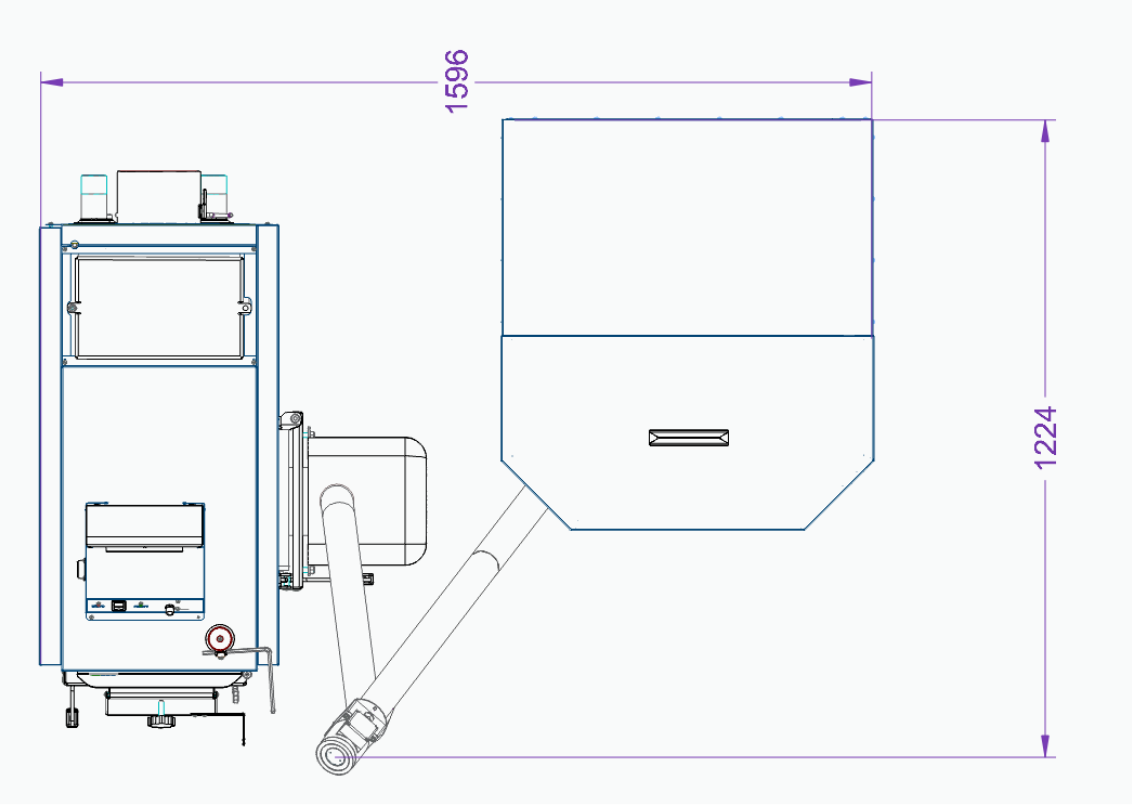
• boiler must be positioned so that the plug in socket (230V / 50Hz) accessible at all times.
• boiler is connected to power. Fixed network attached corded completed a standardized plug
• Protection against electric shock must be ensured in accordance with the applicable EN STN (see Sec. 1.4)

Location of fuel:

• for proper combustion in the boiler is necessary to use dry fuel. We recommend to store the pellets in their original packaging from the manufacturer (PET bags) on a dry place.
• It is forbidden to store the fuel for the boiler, stored next to the boiler at a distance less than 400 mm
• The manufacturer recommends to observe distance between the boiler and fuel min. 1000 mm or put fuel into a different room than the installed boiler.

To the room where the boiler is installed, it must be ensured steady supply and exhaust air for combustion and ventilation. Pipe connection of the heating system or water heater ducts have to be provided by a specialist with the licence.

⚠ **When connecting the boiler to the heating system it must be at the lowest point and as close to the boiler a drain valve.**



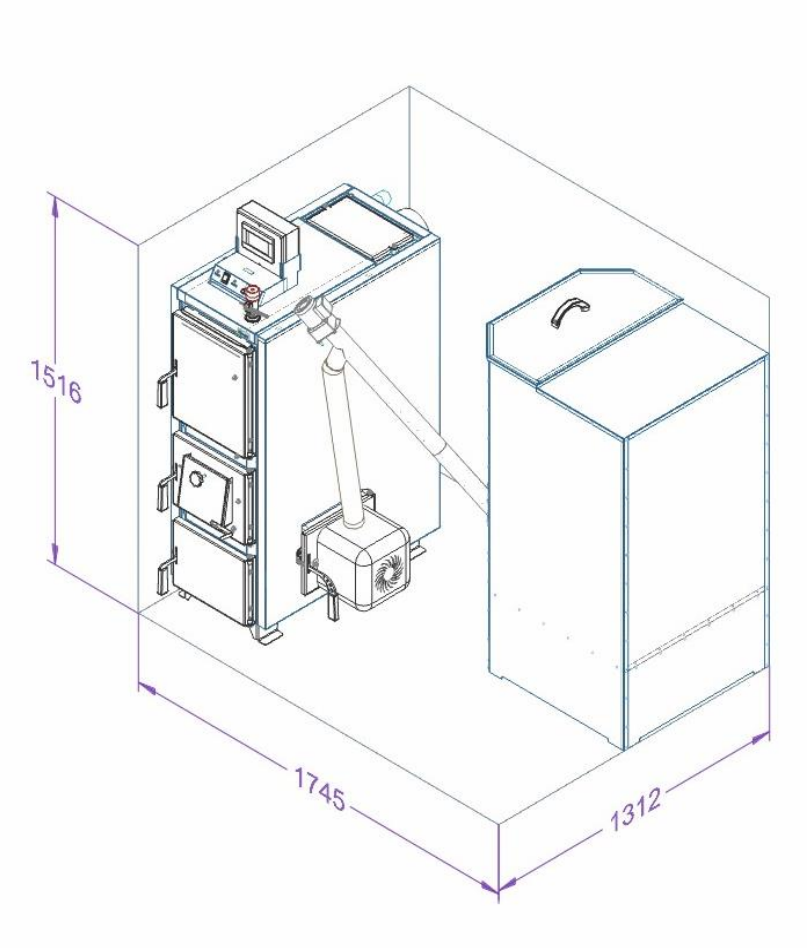


Fig.10 Boiler placement in the boiler room space

The boiler is placed:
• Basic environment AA5 / AB5 according to STN 33 2000-3
• Before the boiler, the min. 1000 mm
• The minimum distance between the back of the boiler and the wall is 400 mm
• at the fuel tank side a gap of min. 500 mm in case of removal of the feeding screw
• Minimum distance from the left sidewall 100 mm
• above the boiler at least 450 mm for the possibility of cleaning the exchanger and filling the fuel

Location of the boiler to the electricity grid
The boiler must be positioned so that the plug in the socket (230V/50Hz) is always accessible. The boiler connects to the el. network with a rigidly connected movable supply terminated by a standardized fork
Protection against electric shock has to be ensured according to current STN EN (see chapter 4.1).

Fuel location
For proper combustion in the boiler it is necessary to use dry fuel. Pellets are recommended to be stored in their original packaging by the manufacturer (PET bags) in a dry place. Fuel is forbidden to stow the boiler, store it next to the boiler at a distance of less than 400 mm. The manufacturer recommends that the distance between the boiler and the fuel min. 1 000 mm or place the fuel in a different room than the boiler installed

The room where the boiler is installed must have a permanent supply and exhaust for combustion and ventilation. The connection of the heating system pipe or DHW heater piping must be carried out by an authorized person.

⚠ **When connecting the boiler to the heating system, the drain valve must be located in the lowest position and as closest to the boiler as possible.**

6 STARTUP INSTRUCTIONS FOR CONTRACTUAL SERVICE ORGANIZATION

Starting the boiler into operation can be performed only by the manufacturer authorized contractual service organization with authorization from the boiler manufacturer MAGA, s.r.o. As long as the boiler is put into operation by non-authorized person the damages caused by improper installation will not be treat as waranty issue! The manufacturer is not responsible for the errors and malfunctions caused by incorrect boiler start-up!

6.1 BEFORE-START CHECK

Before the boiler is started - the following need to be checked:

A) Filling the heating system by water

Water for filling the boiler and heating system must be clear and colorless, without suspended solids, oil and chemically aggressive substances. Its hardness must correspond to STN 07 7401 and it is essential that if the hardness is unsatisfactory, was treated. Even multiple heating of water with higher hardness does not precipitated salts on the walls of the exchanger. Precipitation of 1 mm calcite reduces at a given place the heat transfer from the metal to water by 10%.

Heating systems with an open expansion tank allow direct contact of heating water with atmosphere. In the heat period the expansive water in the tank absorbs oxygen which increases the corrosive effects and at the same time there is a significant evaporation. The amendment can only use water treated with the desired value according to STN 07 7401. The heating system must be thoroughly flushed in order to wash out all impurities.

During the heating season it is necessary to maintain a constant volume of water in the heating system. When refilling the heating system with water it is necessary to ensure that no air is sucked into the system. Water from boiler and heating system should not escape, except in cases such as repairs and the like. Draining water and feeding with new water increases the danger of corrosion and scaling.

When it is necessary to add a water to the heating system, proceed it only when the system is cooled off to prevent damage of the steel boiler.

Before starting the boiler into operation it is necessary to check also:

a) heating system tightness

b) connection to chimney - must be approved by a chimney-instalation company

c) Electrical connection

☞ **Finishing of instalation and the first operation must be recorded in the "Letter of Warranty".**

6.2 FIRST BOILER OPERATION AND OPERATOR TRAINING[1]

1. Fit the fuel tank as shown in Figure 1 to the boiler - insert a screw conveyor into the hopper.
2. Attach the hose to the conveyor and secure by the Screw/band hose clamp

Fig. 11 Screw hose clamp

3. Put the pellets in the hopper
4. Plug the conveyor power plug into an electrical socket (leave it running for approx. 10 minutes if the conveyor is not filled and the pellets do not start to fall over the hose)
5. Perform calibration of the fuel feeder and set parameters to the control unit
6. Insert the second end of the hose into the burner
7. Now, the boiler is ready for operation
8. Use the control unit to start the boiler - see the operating instructions for the control unit
9. Heat the boiler to the required operating temperature. Recommended outlet water temperature is 65-80 °C
10. Check the boiler tightness
11. Familiarize the user with the boiler
12. Add a note on the Letter of Guarantee-Date of putting into operation

[1] Always provided by officialy approved company installers

6.3 BOILER OPERATION

Boiler start (operating the boiler)

1) Connect the boiler controller to the power grid (plugging in)
2) Check the amount of water in the heating system.
3) Check whether the stop valves between the boiler and heating system are open.
4) Fill the container by specified fuel. After filling, the container need to be closed by the lid.
5) Turn on heating by touching an icon *Power* on electronic controller. (The pellet mode on the main mode button must be on!)
6) After switching on the control unit, the boiler is in automatic mode.

IMPORTANT WARNINGS

☞ The boiler can be operated only by adult persons familiar with these operating instructions. Leave children unattended by adults at the boiler, which is in operation is not permitted.

☞ If there is a danger of penetration of combustible vapors or gases into the boiler room or at works where there is a risk of fire or explosion (gluing the floorings, painting with combustible paints, etc.), The boiler must be off before the work out of operation.

☞ On the boiler and closer than the safe distance from it must not be stored articles of combustible materials.

☞ When removing the ash from the boiler must be at a minimum distance of 1500 mm from the boiler flammable substances. The ash must be collected in the fireproof container with a lid.

☞ When operating the boiler at a lower temperature than 60 °C, the steel gets wet and the exchanger is affected by low-temperature corrosion, which shortens the life of the heat exchanger. Therefore, the boiler must be run at a temperature of 60 °C and higher.

☞ After the heating season it is necessary to thoroughly clean the boiler – exchanger, burner and chimney.

☞ Any interference into the boiler construction and electrical installation is strictly prohibited!

If it is necessary to add water to the heating system, it is only added to the cooled boiler to avoid damaging the steel heat exchanger.

Check the boiler before starting up the boiler

A) The tightness of the heating system

B) Connection to the chimney - must be approved by a smoker company

C) Connection to the electricity network

☞ **The completeness of the installation and the first heating must be recorded in the "Letter of Guarantee."**

7 BOILER CLEANING

Boiler cleaning should be done during the season on regulary basis and after each season.

7.1 BOILER BODY CLEANING

The combustion efficiency of the pellet boiler DP25 series is extremely high around 99%. Ie. That only 1% ash is produced in proportion to the weight of the burned pellets when the boiler control is set correctly when the combustion process is optimal. For less efficient combustion, the amount of ash produced increases proportionally. Following basic parts of the boiler need to be cleaned out of the ash:

- Pellet burner (at the recommended interval)
- Tube exchanger (remove flue gas turbines and use rounded poke and brush to remove ash from the tubes)
- Inner walls of the boiler body (scratch the inner walls with a sharp blade)
- Ashtray (pour ash into a fireproof container)
- Chimney outlet

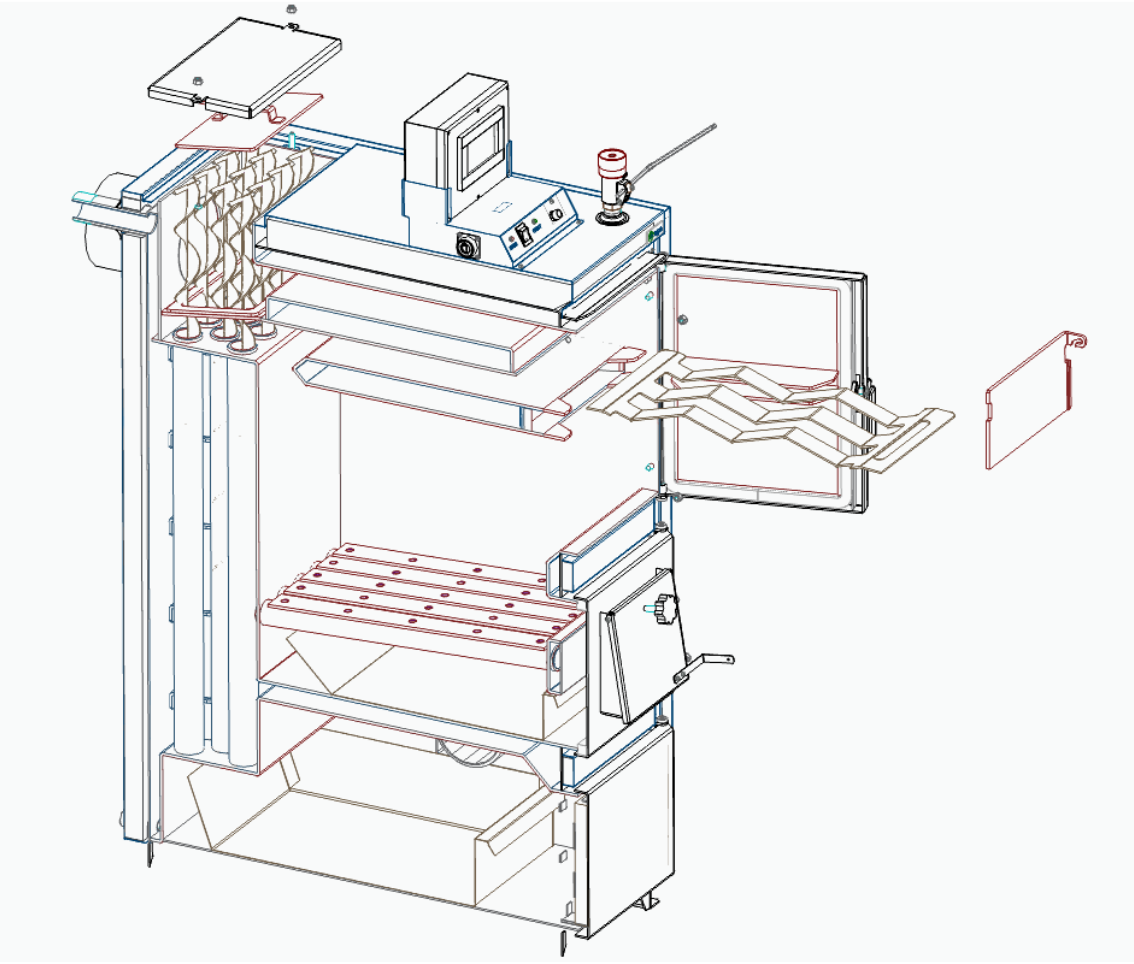


Fig. 12 The boiler removable parts during the cleaning

Always switch off the boiler before cleaning. Press the el. controler to select the power **off**. The extinction process takes about 20 minutes. Subsequently, it is possible to start the cleaning.

When cleaning, use personal protective equipment: We recommend protective gloves and respiratory protection against dust.

Exchanger cleaning
1. Unscrew the butterfly nuts of the top cover
2. Pull the turbulators out of the heat exchanger. They can be hot!
3. Clean the heat exchanger tubes using a rounded poke and brush.
4. After cleaning, insert the turbulators back, put on the steel cover, and then install the top cover.

Ashtray
Spill out the ash regularly. Ash bonds the moisture, which causes surface degradation of metallic materials.

Pull out the ashtrays using an iron stick! Prevent injury of burning! Always use fire-proof material designed to keep hot ash!

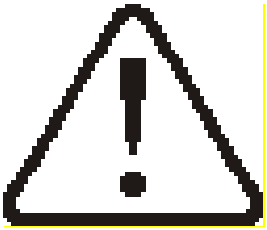
Chimney outlet
1. Remove the two butterfly screws
2. Remove the top
3. Clean the chimney outlet of the boiler
4. After cleaning, attach the top part with butterfly screws

The chimney outlet needs to be cleaned once a month. as needed.

Note: Regular cleaning is necessary to maintain optimal boiler efficiency, it prevents problems with insufficient burning and boiler operation.

7.2 PELLET BURNER CLEANING

The necessity of cleaning the burner depends on the type of burned pellets. When burning DIN + quality pellets, less ash is produced. When burning pellets containing bark, it is necessary to clean the burner more often. The PB Premium burner is self-cleaning[2] due to the rotation of the inner chamber



WARNING!
The service of the device can only be performed when the burner and boiler power is off !!!

7.2.1 Photosensor cleaning

The photosensors in the burner must be cleaned with a damp soft cloth once in a while, as in oil or gas burners. For this purpose, it is necessary to remove the cover by loosening in models of four screws. Then remove the photosensor from the socket, clean and reassemble. After performing the above operations, the burner cover must be mounted in the opposite direction.

☞ **Clean the photosensor regulary once per 3 months**

Fig. 13 Photosensor placement in the burner

7.2.3 Ignitor exchanging

If the ignitor does not fire despite the "initiation on" message, it can be admitted that it is damaged. Replace the burner cover to replace the ignitor. On the right side of the fan there is a steel case with an electric ignitor. Disconnect the electrical cables the ignitor from the electrical clamp, loosen the screw retaining steel housing cover and pull out the ignitor. Reinstall the new ignitor and put the burner cover back.

[2] Self cleaning works on 100% only with proper set up of the controller parameters.

7.2.4. Cleaning the feeder pipe

If a lance with a fuel bag or other object blocking the feeder action is received in the feeder pipe then the feeder motor is overheated and the fuse is switched off by means of a temperature sensor located in the motor. To remove the object from the feeder pipe, pull the power cord out of the socket in the controller by unscrewing the screws securing the drive gear to the feeder pipe to pull out the spring from the pipe and remove the object causing the fault. Complete it and check its functioning.

7.2.5 Cleaning the burner

One of the causes of igniting the burner may be slag lying in the burner chamber. The lighters do not fire when they come in contact with the trunk because the cloth is non-combustible. When we are not sure about the quality of the fuel it is necessary to clean the combustion tube of the burner from the crush and ash at the beginning of each day and then once in a while. After removing the burner, remove the ash and debris residue with the best wire brush or small knife. often

The cause of the hoarding is to switch off the burner by the main switch. Suddenly stopping the air supply (oxygen) to the furnace causes insufficient combustion of fuel residues. If the burner is ignited again without cleaning it from the crush and the ash, the burner can smoke because the holes blocked by the breeze will not get enough oxygen.

Therefore, before disconnecting the power supply of the burner, burning out process is required.

Always do maintanance of the burner when it is completely cold!

In case of more serious faults, contact your service technician!

WARNING! During the service inspection (every 12 months) a service technician the inspector must remove the combustion tube from the protective tube, clean it protective tube from the ash and passing the air nozzles in the furnace.

Do not open the boiler door during the burner operation.

· The opening of the boiler door is only allowed after the burner has been cooled down and off the power.

Overview of Service processes:

- Checking the automatic settings
- Inspection of security devices (STB, boiler and burner temperature sensors)
- Checking and cleaning the flame sensor
- Check flap state with counterbalance (if any)
- Recording the status of service counters
- Cleaning the jet nozzles and the burner burner tube
- Checking the attachment mechanism and the condition of the combustion pipe
- Calibration of the lambda probe (if any)
- Checking the burner tightness
- Checking the state of electrical connections
- Checking the lighter status

8 SAFETY REGULATIONS

Safety instructions for the installation and use of a burner

- The burner can only be operated by adults after familiarization with the operating instructions.
- Keep children away from the burner.
- It is forbidden to insert the hand into the feeder pipe and the burner feed pipe.
- Do not open the boiler door during the burner operation.
- Opening of the boiler door is only allowed after the burner has been cooled down and the power grid disconnected.

The burner is designed for combustion of pellets in boilers operated in the central heating system. Electric installation must be done in accordance with applicable regulations and safety rules. The electric installation to supply the burner must be made in the TN-S system and protected by a current fuse of 6A/30 mA. For the implementation of the installation the authorized electrician must be responsible.

The first-initial start and installation of the burner must be performed by an authorized service technician. The service technician will fill in the Letter of Guarantee within this Manual.

Any operations and fixes of the burner or feeder must be carried out with the power cord disconnected from the mains. The room in which the burner is operated must be well ventilated. The burner must not be used in an environment with unsuitable conditions, excessive temperature above 45 °C, aggressive compounds, poor ventilation, etc.
It is necessary to connect the boiler with:

- capillary safety sensor STB and
- boiler temperature sensor burner opening

Refusing the SAFETY REGULATIONS above stated by the user will lead to the call of responsibility from by the manufacturer and consequently it means a loss of quarantee for the burner damage.
If the user makes a burner installation not in accordance with the manufacturer's

instructions or the Letter of Warranty is not properly filled by the Authorized installer during the initial operation and confirmed by the user's signature, he will lose the right to repair burner faults at the same time with the loss of the warranty.

9 INSTRUCTIONS FOR DISPOSAL OF THE PRODUCT AFTER ITS SERVICE LIFE

Please, kindly take into account that the product is made of conventional metallic materials, therefore it is recommended to dispose its individual parts as follows:

- ✓ Boiler body, cladding – recycling centre
- ✓ Other metal parts – recycling centre
- ✓ SIBRAL insulating material – the general waste
- ✓ KNAUF insulating material – the general waste
- ✓ Plastic parts – plastic recycle
- ✓ Wires – recycle centre

10 IMPORTANT NOTICES

- ☞ This appliance is not intended for use by persons (including children) whose physical, sensory or mental incompetence or lack of experience and knowledge prevents safe use of the appliance.
- ☞ Children must not be in a boiler that is not supervised by adults.
- ☞ If there is a risk of flammable vapors or gases coming into the boiler or in the event of a hazardous fire or explosion hazard (bonding of floor coverings, flammable paints, etc.), the boiler must be shut down in good time before commencing work .
- ☞ When transporting fuel to the combustion chamber prior to curtaining, it is necessary to check the amount of fuel in the burner visually, not by inserting the hand into the screw feeder. There is a risk of injury by the rotating worm shaft.
- ☞ Do not fire the boiler with flammable liquids.
- ☞ Possible flame observation during boiler operation is by opening the door.
- ☞ Opening the door during operation is prohibited.
- ☞ When operating the boiler it is necessary to have a carefully closed lid on the tank.
- ☞ The fuel is filled into the hopper up to a height of about 30 mm below the lower edge of the filling borehole so as to ensure a reliable closure of the fuel tank cover.
- ☞ The boiler and a shorter distance than the safe distance from it must not be placed with objects of combustible material.
- ☞ When removing ashes from the boiler, they must not be at least 1500 mm from the combustion boiler. Ash must be stored in non-flammable containers with the lid.
- ☞ When operating the boiler at a lower temperature than 60 ° C, the roasting of the steel boiler body results in the so- Low-temperature corrosion, which shortens its life. Therefore, the boiler must operate at 60 ° C or higher.
- ☞ After the end of the heating season it is necessary to thoroughly clean the boiler, including the flue. The boiler must be kept clean and dry.

 **Any interference and changes of the electric installation is strongly forbiden!**

11 REMAINING RISKS AND THEIR PREVENTION

The risks arising from the operation of the boiler under the conditions of intended use and logically foreseeable misuse have been minimized by available technical means. During the construction of the boiler, certain residual risks arise from the analysis of the risks given by the technological process at the various phases of the plant's life. These include, in particular, the risks of inattention to the operator of the boiler and failure to observe the safety principles of operation.

In order to further risk reducement to ensure higher security efficiency, we draw attention to the possible emergence of certain residual risks that can not be eliminated by any technical solution.

Electrical risks

- The connection, maintenance of the repair of the electrical parts of the boiler may only be carried out by professionally qualified personnel in accordance with the applicable technical regulations and standards
- the electrical wiring must comply with the applicable regulations
- The supply cable and electrical installation of the boiler must be checked and maintained in the prescribed state
- In case of any damage to the electrical equipment, the boiler must be shut down, disconnected from the power supply and ensure a qualified repair
- it is forbidden to interfere with the integration of security circuits or to perform any unauthorized interference related to the safety and reliability of the equipment

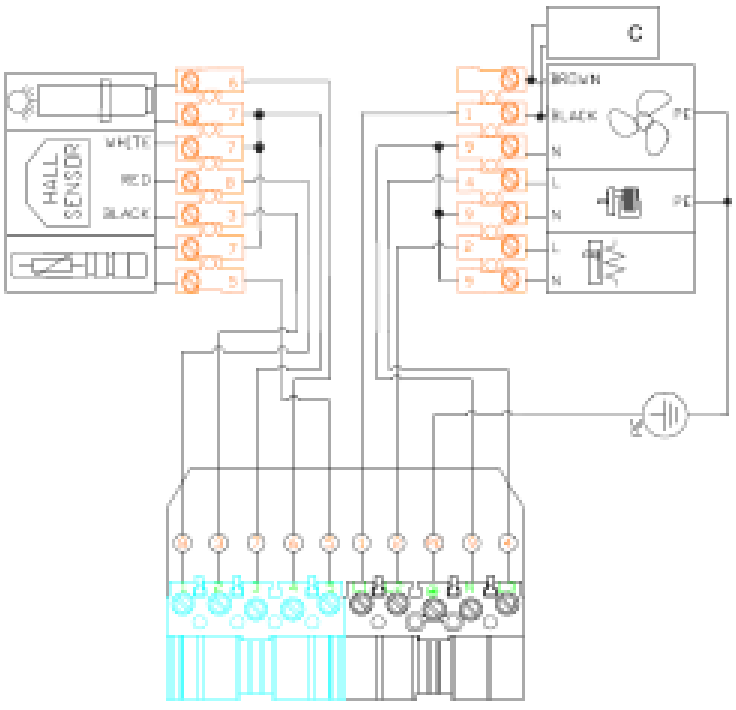


Fig.13 Electric schema of the burner

Thermal risks

- The boiler must not be subjected to higher working pressure as prescribed
- the boiler is forbidden to overheat
- The boiler must be protected against low-temperature corrosion by appropriate engagement with automatic return protection
- Only the prescribed fuel may be combusted in the boiler
- I forbid storage of flammable liquids near the boiler
- Take full attention to the risk of burning when operating the boiler

Risks due to fuel handling

- When handling from fuel, particulate matter is emitted, therefore the operator should use appropriate protective equipment according to the degree of dustiness
- As the fuel is concerned, the applicable fire regulations must be observed

Ergonomic risks

- The boiler must be in a horizontal position
- It is forbidden to put the hands inside the screw feeder
- All boiler doors, lids and covers must be properly closed during boiler operation

12 REASONS AND SOLUTIONS OF BOILER BURNER MAL-FUNCTIONING

One of the causes of non-igniting of the burner may be the mineral-residuals in the burner chamber. The ignitor cannot work when it comes into contact with the mineral-residuals because the mineral residuals are non-flammable. If the quality of the fuel is questionable, it is necessary to clean the combustion tube of the burner regulary on daily basis. After removing the burner, remove the ash and mineral residue with the best wire brush or small stick.

Frequent cause of the hoarding is the switching off the burner by the main switch. Sudden interruption of the air supply (oxygen) to the furnace causes insufficient combustion of fuel residues. If the burner is ignited again without cleaning it from the clinker and the ash, the burner can smoke, as the holes might be blocked by the mineral residues. Therefore the extinguishing process must be carried out before turning off the power supply of the burner.

☞ **In case of more serious faults, contact the installer.**

The burner does not ignite the fuel
Causes and service actions:

- Fuel shortage - Check the hopper and feeder if they are not clogged.
- Very low starting dose - Check the starting dose.
- Damaged ignitor - Check the ceramic ignitor.
- Damaged drive motor - Check engine temperature.

The burner ignites but does not reach the initial power
Causes and service actions:

- Very large starting fuel amount - Check the starting fuel amount
- Dirty or non-functional photosensor - Clean or replace the photosensor

Overheating of the internal feeder
Causes and service actions:

- Burner slapped by a slag
- Poor chimney draft - use flue gas extraction
- Clogged boiler heat exchanger or clogged chimney

Damage of the feeder sensor - can not cancel the alarm alert
Causes and service actions:

- The most common cause of the fault is damage to the thermal protection of the sensor, which ultimately leads to overheating of the measuring component. If it is not possible to erase the fault despite cooling the burner, it is necessary to replace the measuring sensor.

Feeder is clogged

The inner burner feeder is designed to regular fuel mix and add. The cause of the internal feeder should be:

- Improper setting of the internal feeder towards the outside - Increase the time of the internal feeder (service menu / burner feeder)
- Transmission Damage - Transmission Replacement
- Incorrectly selected service interval - value must not exceed 20s (service menu / burner interval)

Damage to the fan

Causes and service actions:

- Locking the fan blades - Unscrew the fan cover screws and check if they are not mechanically locked
- Check the voltage in the fan cables
- Check the fan motor capacitor

13 WARRANTY AND GUARANTEE

Warranty and after-warranty reparations are made by Manufacturer:

MAGA s.r.o.
S. Kollára 86
979 01 Čerenčany
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Tel: +421 4756 34798
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www.magasro.sk

LETTER OF GUARANTEE

This letter of guarantee substitutes certificate of quality and integrity of the product. Producer confirms that the boiler meets requirements of demanded quality, is complete in an extent specified by documentation and is in accordance with EN 303-5: 2012.

Product:.....

Serial number:.....

Production date: .....

Stamp and signature of the producer

Date of sale: .....

Stamp and signature of the seller

Date of putting into operation: .....

Stamp and signature

Letter of guarantee is not valid unless properly filled in and confirmed by the seller or when rewritten! (in this case guarantee expires)

Customer is obliged to control all the documents!

By buying the product customer fully agrees with all the conditions for guarantee and complaints of the product. Instructions for customer: Warranty and guarantee conditions are inseparable part of the letter of guarantee.

WARRANTY AND GUARANTEE CONDITIONS

1) The claim for completeness of delivery is applied in accordance with the Commercial and Civil Code at the suppliers country.
2) The manufacturer provides a product warranty 24 months from the date of sale to the final consumer, with a return temperature of at least 60 °C during operation. The boiler body has a warranty of 36 months from the date of sale of the product to the final consumer (the 36-month warranty covers the boiler body faults when the boiler is operated in a storage tank system).

The warranty period begins on the day the product is sold to end customer, regardless of when the product was put into operation.

3) The warranty does not cover errors that have arisen:
Failure to observe the operating and maintenance instructions of the boiler, improper maintenance and operation, or the product being used for a purpose other than normal, low temperature boiler corrosion, maltreatment or improper handling or combustion of illicit fuels, failures caused by the use of components other than Recommended by the manufacturer or supplier as well as repairs or modifications by persons other than those authorized by the manufacturer or supplier as well as defects caused by the accidental or intentional penetration of liquid, insects, animals or foreign objects into the product's body.
4) Should a component fail, this component will be repaired or replaced under a warranty, after delivery of a faulty part and reimbursement of the eligible shipping costs.
5) The warranty remains valid if the product is used as written and specified in the warranty card, unless the instructions are followed, the warranty expires, as well as damage caused during transport which was not provided by the means of transport of the manufacturer and his drivers. For this reason, it is necessary to check this product properly and report any defects or errors to the seller when taking the product.
6) The customer loses its warranty in the event of faults caused by improper connection of the product (failure to observe the wiring included in the instructions for use), overload due to high voltage or voltage changes, or due to the use of fuel not intended for this type of product .

All the materials subject to normal wear and tear are excluded from the warranty: seals and sealing lines, fiberglass fittings and fillers, sibling fillings. The warranty will not be granted and recognized if the customer fails to meet the agreed payment terms within the due date of the seller.

Small color, varnish, or dimensional deviations do not give rise to a complaint. The service technician's transport does not fall under the warranty repair and the customer pays it in full.

7) Eventual complaints of any kind must be made by the final user of the product in writing, but no later than three working days from the day of learning of the defect, by mail or fax or electronic means, and provide the supplier with all the required information; A report of any defect that has been sent, other than via mail, must be subsequently confirmed by letter, not later than three days. The authorized person is obliged to prove the damage caused by the defect of the product to the supplier without undue delay, but not later than three working days after the supplier's request. The manufacturer is required to make a statement in writing by the user within 30 days of making the complaint, and in case of a claim recognition, remove the error.

The cost of unjustified complaints, defects caused by the user's failure to comply with the instructions for use, improperly executed assembly, resulting in malfunctioning of the product or reduced performance, are covered by the end user of the product.

Rights of Product Liability for which the warranty period applies shall expire if they have not been applied within the warranty period.
The customer was familiar with the operation and operation of the boiler when buying the product.

The manufacturer disclaims any liability for damage to health or property, whether direct or indirect, including consequential damages.
Claims for defects in products do not affect the claim for damages caused by a causal link with the defect of the product. The manufacturer reserves the right to change the product's in-product conversion, which may not be included in this manual.
In case of interference with the boiler electrical parts other than a service technician, or by professionally trained workers, the warranty expires.

All the products manufactured by MAGA, s.r.o. are certified according to valid standards and regulations. Technic and design modifications of the products are reserved. Company MAGA, s.r.o. is not responsible for printing errors.

RECORD OF GUARANTEE REPAIRS

Record of performed repairs within and after guarantee period			
Date of the record	**Performed activity**	**Organization (signature, stamp)**	**Signature of the customer**