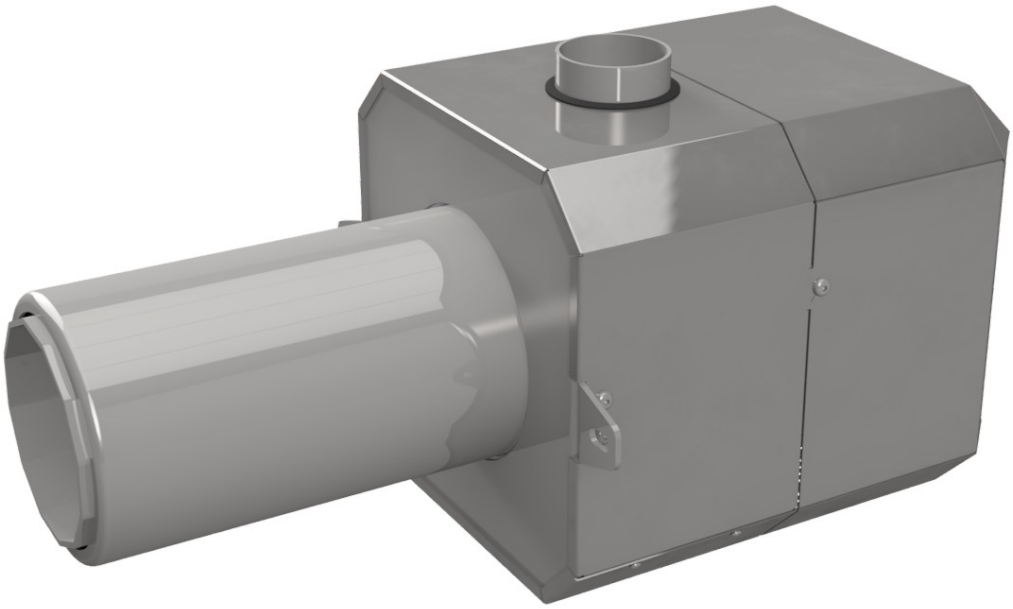
VENMA
PELLET BURNERS

Operation and Maintenance Manual

COMFORT S pellet burner



1. Product description.

Comfort S burners are modern and advanced devices for combustion of biomass in the form of wood pellets. The burners have a rotating combustion chamber, which changes its position during burner operation to clean the furnace of slag and ash generated as a result of combustion.

Burner starting, burning, extinguishing and cleaning in the burner are done automatically, which makes it a convenient device. The burner is started by feeding the initial batch and igniting the fire by heating the fuel to the flashpoint using the igniter located in the burner. Burning and extinguishing are managed using the controller (see the Controller Manual). Cleaning consists in turning the combustion chamber, which makes it possible to discharge burning residues into the ash pan. The combustion chamber rotates cyclically, which makes it easier to burn 100% of fuel, improving the combustion economy and ecology. Cleaning the burner also extends the life of the burner combustion chamber as it is evenly loaded on its entire circumference.

Comfort S burners are compatible with solid fuel central heating boilers and with some gas and oil boilers equipped with a combustion chamber and ash pan.

VENMA burner is a very eco-friendly device, as it is intended for the combustion of wood pellets, fuel that comes from renewable sources.

The burner is controlled by a controller included in the set, smooth fuel-oxygen control allows you to adjust the device power to your needs. Up to 4 pumps and 3 mixing valves can be connected to the controller. It supports up to 6 temperature sensors (including central heating, DHW, valve, return, buffer sensors). Many facilities and options, such as: PID exhaust sensor, room controller or lambda probe, will make operation easier and maximise the comfort when using the burner.

The burner is equipped with multiple fire protection measures which will cut off the fuel supply to the device in the event of failure or overheating. Interruption of electricity supply will not adversely affect the device, as the amount of fuel in the combustion chamber is small.

Fuel delivered to the burner should be stored in a sealed and closed container and should be transported using a feeder with a VENMA spiral insert of appropriate length and power.

The basic fuel is pellets with a valid **DIN Plus** or **EN Plus** certificate.

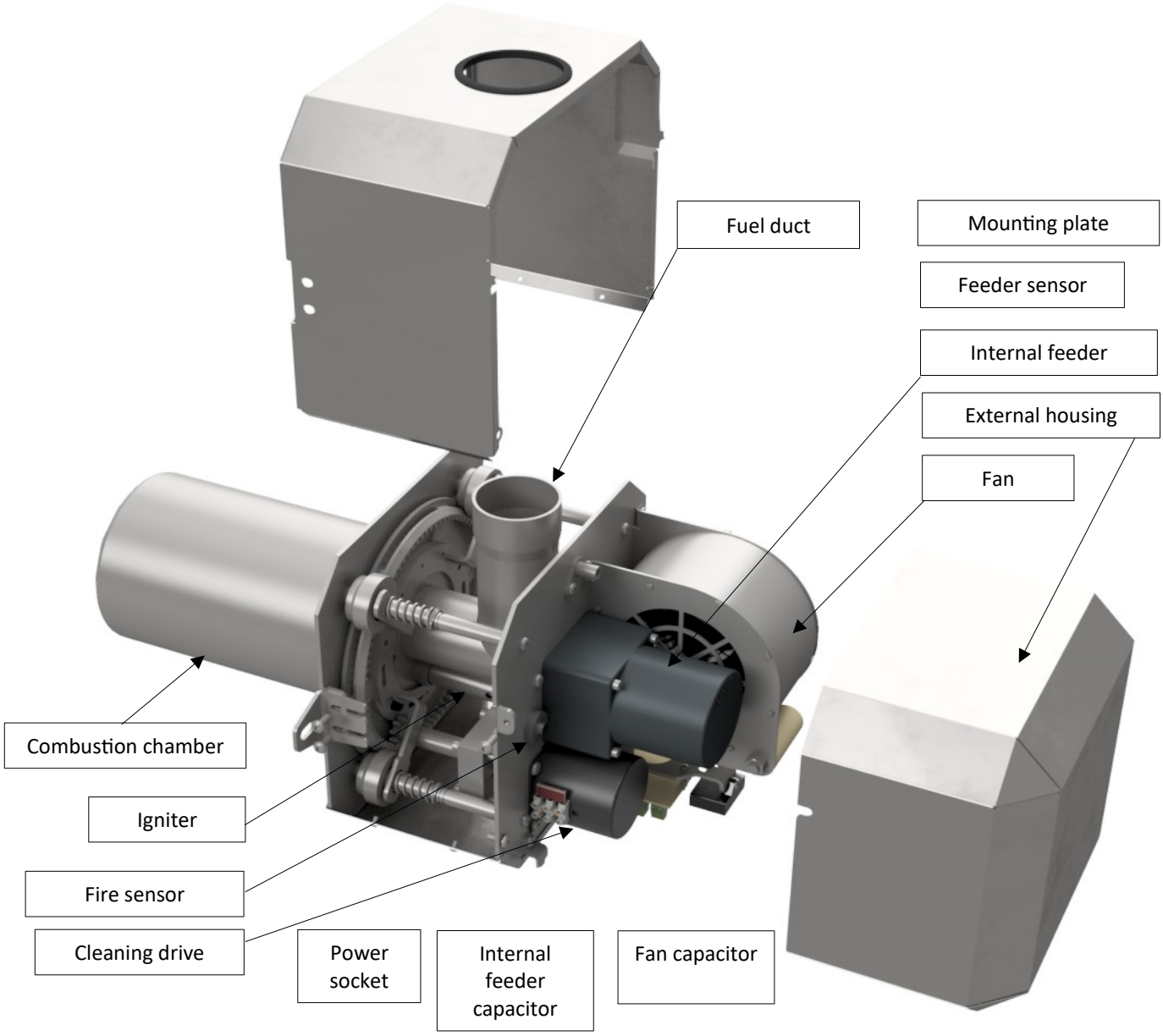
2. Fire protection measures

For safety reasons, the burner features the following fire protection measures:

- The burner temperature sensor installed on the feeding duct; in the event of a flashback, it detects high temperature and sends a signal to the controller to activate the internal feeder, which empties the feeding duct from any fuel remaining there,
- Air ducts in the feeding duct, combined with pressure in the pressure chamber, prevent the flashback by generating pressure and air flow in the direction opposite to the burner feed,
- Special design of the feeding pipe and the entire fuel supply system, whose high tightness does not allow the hot air to reverse
- Spiro-non-flammable pipe, which melts and cuts off fuel supply in an exceptional case of previous protection measures being insufficient,

3. Burner design

The VENMA burner is made from steel elements and electrical parts. The furnace and burner grate are made of heat-resistant stainless steel. Steel is tested up to temperatures above 1000^{O}C. The feeder pipe is made of black steel and galvanised to prevent corrosion during use. The burner design prevents overheating of electrical components, which effectively extends the life and reliability of the entire device.


Fuel duct
Mounting plate
Feeder sensor
Internal feeder
External housing
Fan
Combustion chamber
Igniter
Fire sensor
Cleaning drive
Power socket
Internal feeder capacitor
Fan capacitor

4. Operation description

Burner operation begins with starting by ignition and sustaining fire, ending with extinguishing and cleaning the burner.

The external screw feeder is responsible for transporting fuel from the hopper to the burner.

The starting process during the first launch should be activated manually, then it will be done automatically according to the controller settings.

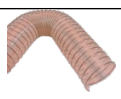
Starting is preceded by blowing through the burner to remove any residues after the last extinguishing from the combustion chamber. Then, the fuel is initially fed, and during that time the igniter heats up to approx. 1000^{O}C, the fan-powered and igniter-heated air stream causes the initial feed to ignite.
When the light sensor (photocell) detects light from the combustion chamber, the controller switches off the igniter and then switches to the "Flame stabilisation" to heat up and prepare the burner for operation. The following operating modes depend on the algorithm selection, i.e.: (details of operating modes can be found in the Controller Manual).

- Modulation (minimum and maximum operation)
- PID (PID operation)
- SIGMA operation (optional).

Cleaning - when the burner is in operation, its head rotates cyclically, discharging ash remains to the ash pan.

The burner is extinguished automatically or manually via the controller (see the Controller Manual). It means burning off the fuel remaining on the furnace.

5. Set composition

Part name:	**Reference picture:**
VENMA pellet burner	
VENMA St-976G controller with cables and sensors.	
The feeder is galvanised, 2 m in standard (can be extended - optional).	
Flexible pipe	
Burner chute with a fire-fighting flap (Optional for extra charge)	

Ceramic gasket	
Mounting flange (Optional for extra charge)	
VENMA Burner Manual	
ST-976 Controller Manual	

6. Installation and first start-up

The burner should be installed by a person with appropriate qualifications and skills. The manufacturer is not liable for improper installation of the burner.

VENMA burners are intended for installation in central heating boilers, but also for most gas or oil boilers. The position of the burner may vary depending on the type of boiler, but the most common and recommended installation method is the boiler door. When measuring the holes to be cut, remember to take into account the need to operate the burner. Therefore, the holes should be located in such a way so that after the installation, the boiler door can be opened.

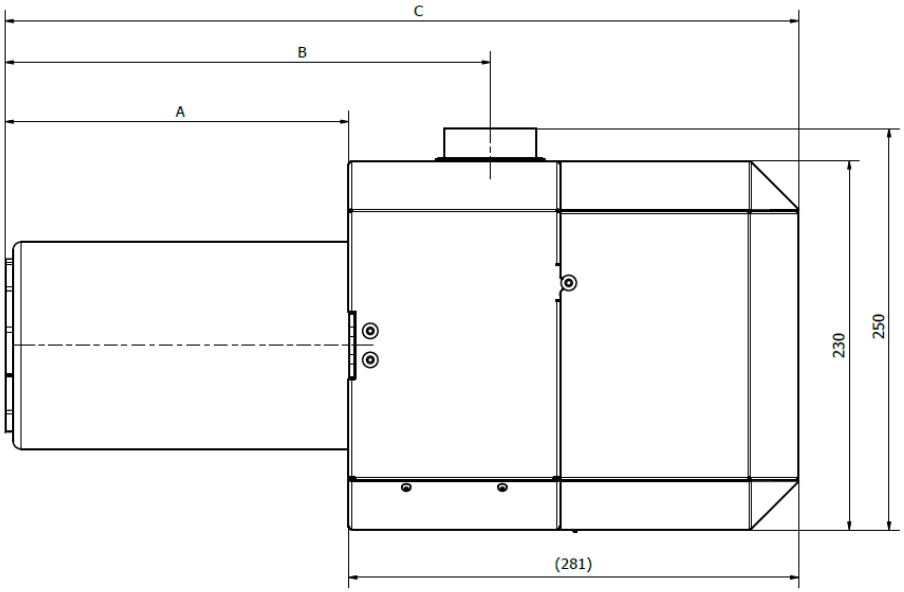
Mounting the device to a boiler prepared by the manufacturer is relatively easy because the hole for the furnace and mounting holes are already prepared.

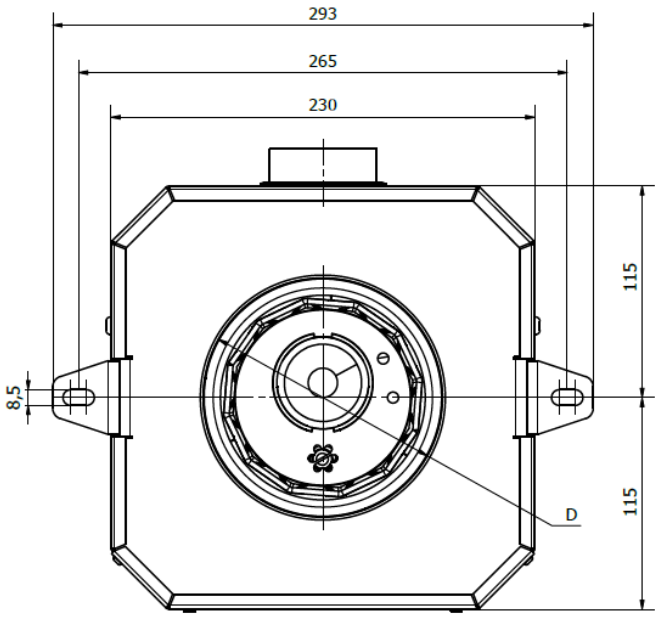
If you want to adapt a normal boiler for the burner, carefully measure the hole for the furnace and the mounting holes; the table below shows the dimensions of furnaces and the spacing and size of mounting holes. Remember that the selected burner should match the boiler power.

1. Measure and cut a hole for the burner furnace, measure and drill holes for burner mounting bolts. Fasten the burner to the boiler door by tightening the screws.
2. Set the pellet hopper.
3. Measure and adjust the length of the pellet feeder, bearing in mind that the angle between the ground and the feeder pipe should not exceed 45^{O}. (See Fig. 2)
4. Hang the feeder on a chain. (See Fig. 2).
5. Attach the flexible 'spiro' pipe to the burner and feeder. Please note that the pipe should not be too long and the angle should not be too low, i.e. pellet in the pipe must go down under the force of gravity (it cannot be suspended).
6. Install the controller actuation module in any place, where it will not be exposed to direct heat from the central heating boiler or pipes, as well as in a place where it will be freely accessible during later operation.
7. Attach the display unit and ducts to pumps, valves, etc.
8. Install all sensors in the right places.
9. Connect the cable connecting the controller to the burner.

10. Fill the hopper with fuel.
11. After filling, start the controller and wait until the start screen appears.
12. Fill the feeder with pellets; the feeder - a steel pipe in which the feeding screw is located. If the feeder is filled correctly, pellet will be visible pouring down through a flexible pipe (details in the Controller Manual).
13. If the flexible spiro pipe is filled with pellet, switch on the “Internal feeder” option in “Manual operation” and wait until the pellet is poured to the furnace; then remove the pellet from the furnace or discharge it to the ash drawer. DO NOT SWITCH ON THE HEAT UP FUNCTION WHEN YOU ARE NOT SURE WHETHER THE FURNACE AND THE SPIRO PIPE ARE EMPTY.
    RISK OF EXPLOSION!!!
14. After completing the above-mentioned operations, you can start working with the burner; all the details regarding the controller configuration can be found in the attached Controller Manual.

VENMA Comfort S 16-35 burners





Model:	Power range:	Maximum power consumption: (Start/ operation)	Weight:	A [mm]	B [mm]	C [mm]	D [mm]
Comfort S20	4-20kW	300/70 W	11 kg	185	274	465	Ø129
Comfort S 25	5-25 kW	300/70 W	13 kg	215	304	495	Ø129
Comfort S 35	6-35 kW	300/ 70 W	15 kg	238	327	518	Ø140

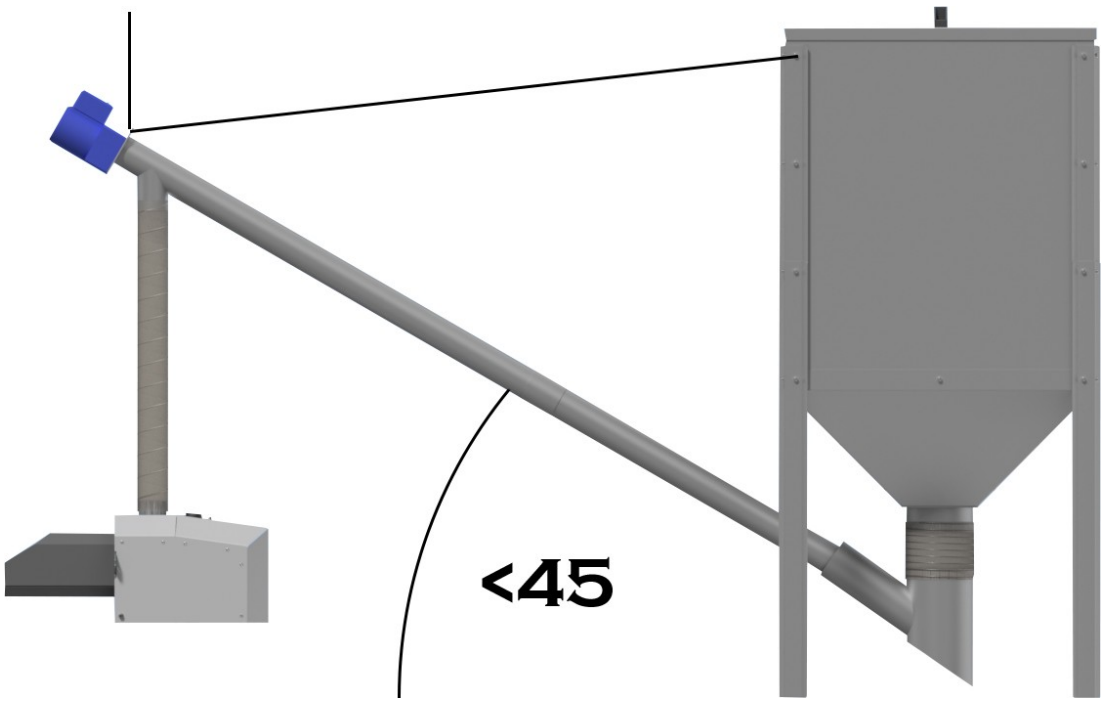


FIGURE 2

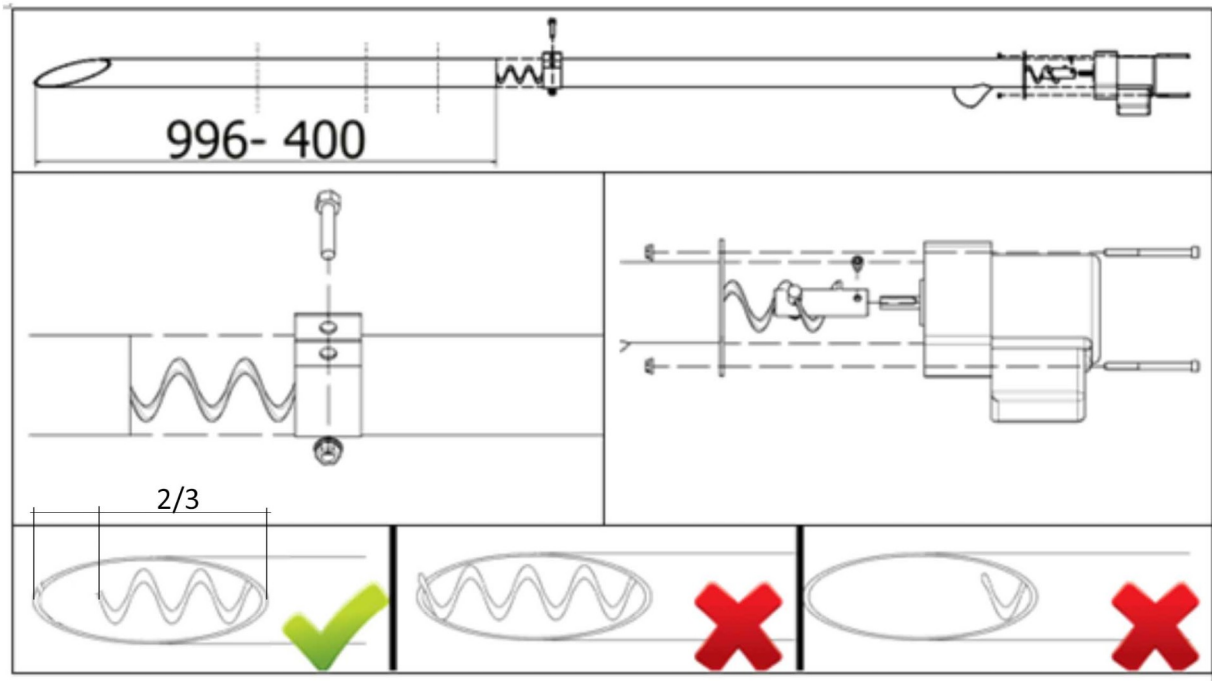
7. Fuel specifications

The fuel used in the burner should have the following properties:

Shape:	Granulate
Diameter:	6-8 mm
Length:	3-40 mm
Dust content:	≤1%
Fuel density:	≥620 kg/m^3
Humidity:	<8%
Calorific value:	16- 20 MJ/kg
Ash content:	≤0.7%
Quality standard:	DIN Plus/EN Plus

8. Screw feeder

The screw feeder connects the fuel hopper to the burner. It is made of steel galvanised pipe or stainless steel pipe with a diameter of 60 mm. Inside the pipe there is a steel spiral driven by a 230V AC electric motor with a gear, connected by means of a power cord to a suitable socket located on the burner controller. The burner is fed automatically, and the feeder is controlled automatically. If the pipe is damaged, e.g. by flashback overheating, the feeder will stop feeding fuel and the burner will extinguish.



9. Burner operation

1. The burner should be installed and operated in accordance with the information contained in the Manual and warranty card. The manufacturer is not liable for any damage caused by improper use of the burner.

2. According to the safety regulations for heating equipment, the burner should have at least 0.8m of free space after installation. The area for burner service should also be ensured.

3. The boiler room should be dry, clean and well ventilated. There should be no flammable objects near the burner.

4. According to the current regulations, the boiler room must have an open air vent with the minimum cross-section of 200 cm^2.

5. To ensure trouble-free operation, the burner furnace should be kept clean by regular manual cleaning.

6. The frequency of manual cleaning should be adjusted to the quality of the fuel used. If you notice that the fuel burned tends to sinter, or if excessive amount of ash is generated in the combustion process, pay special attention to the cleanliness of the combustion chamber.

7. Use only fuel compliant with the manufacturer's instructions, i.e. wood pellet with a valid Din Plus/ En Plus certificate. If pellet of different quality is used, the manufacturer is not liable for any resulting damage.

8. It is unacceptable to allow a situation in which the burner head/furnace is in contact with ashes accumulated in the ash pan.

9. Maintenance operations, including manual cleaning of the burner, should be performed on a switched off device disconnected from the mains.

10. Burner cleaning

1. When using fuel that does not have a valid Din Plus/En Plus certificate, pay special attention to sinters and slag accumulated in the combustion chamber.

2. When burning low-quality fuels, regularly inspect the condition of the furnace and, if necessary, remove the accumulated slag or sinters using a cleaner, which should be purchased separately.

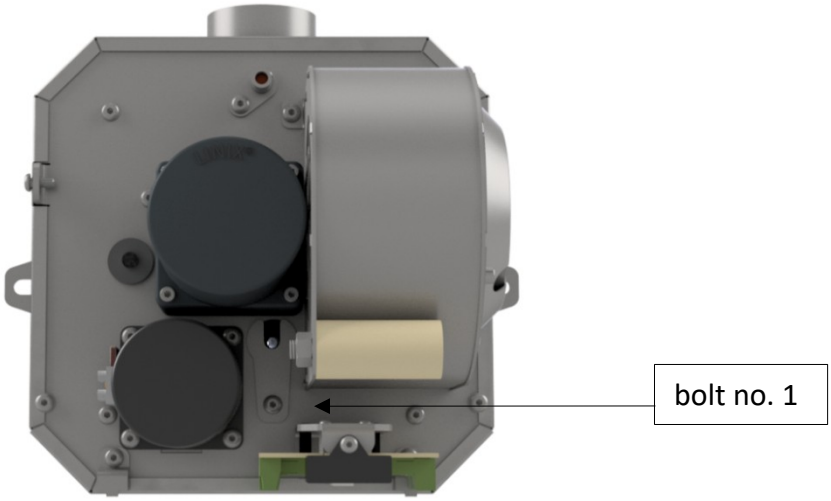
3. To remove sinters and slag, move the cleaner in the direction from the burner accessory plate to the head outlet, as shown in the figure below.

11. Burner inspections

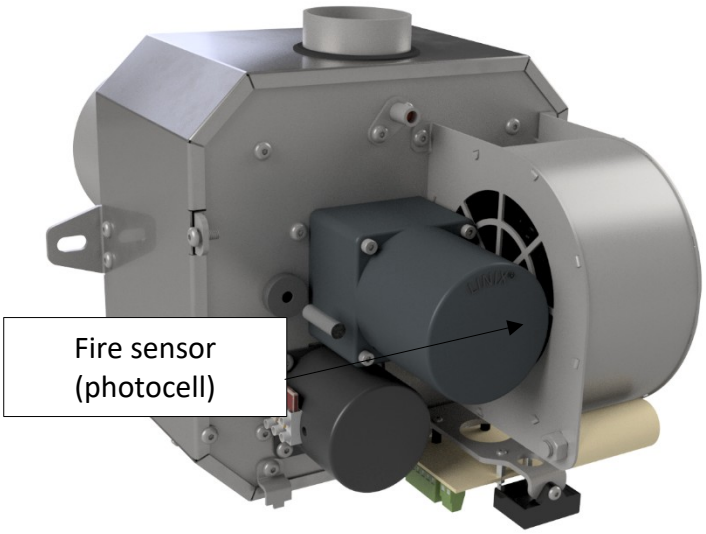
To ensure smooth and long-lasting burner operation, it is essential to follow the manufacturer's instructions and to remember to carry out periodic inspections of the device. The device may only be inspected by entities with a valid Venma Authorised Service Certificate.

NOTE!!! Switch off the controller and disconnect the power cables from the burner.

After removing the external housing, you can see the following.



- igniter replacement - unscrew screw no. 1 (4mm Allen key) and remove the igniter in the casing tube, remove the rubber grommet, unscrew the screw (3mm Allen key) on the casing tube until the igniter can be removed freely; after removing the igniter - insert a new one and screw in the order reverse to unscrewing



- clean the light sensor (photocell) and gently remove it by pulling it towards you, clean it gently with a dry cloth and place it back in the rubber grommet.

- to clean the pressure chamber, unscrew the fan and thoroughly clean the chamber through the hole to remove dust or ash

12. FAQ - frequently asked questions

Alarm/notification text	Possible causes
The burner has not ignited and the display shows the **Ignition Failure** error.	- No fuel in the tank- refill the fuel and fill the feeder pipe during manual operation, - Check the igniter during manual operation. If there is an igniter failure, contact the technical service. - Check the burner grate for ash contamination. Clean the grate manually if necessary. - Check the external feeder during manual operation. If the feeder is running but does not supply the required amount of fuel, clean the hopper and feeder pipe. - Check if the end of the ignition is visible. Using low-quality pellets may obstruct the igniter. - Clean the photocell (gently with a soft, dry cloth)
The controller displays the **Too High Feeder Temperature** alarm	- Check that the chimney duct and the chimney inlet pipe are clear. - Carefully check the chambers, the heat exchanger and the boiler flue - accumulation of ash and soot may block the chimney draft, - Check the burner grate for excessive ash accumulation. Remove manually if necessary.
The blower and external feeder are not working.	The bimetallic thermostat has probably been triggered. Wait for approx. 60 minutes. If the fault persists, contact the technical service,
The burner did not start despite the demand for DHW or request from the room controller	- Weekly Control function is active, - The burner has been manually extinguished by the User,
The central heating pump does not start despite reaching the switch-on temperature	- The Controller is working in the Summer Mode - change the Operating Mode to Parallel Pumps or Home Heating, - The Room Central Heating Pump function is active,
The DHW pump does not start despite reaching the switch-on temperature	- The Controller is working in the Home Heating Mode - change the Operating Mode to Parallel Pumps or Boiler Priority, - the current DHW temperature is higher than the boiler temperature, - The DHW Operation Plan is active,
The Controller Does Not Switch On	Replace the fuse located in the actuation module (the white box from which all the cables go out)
The burner makes a lot of smoke, soot is formed on the boiler	Insufficient oxygen or too much fuel: - reduce the feed or increase the oxygen amount - check if the openings in the grate and the furnace plate are not obscured. If they are, unblock them with a wire with a diameter of <4

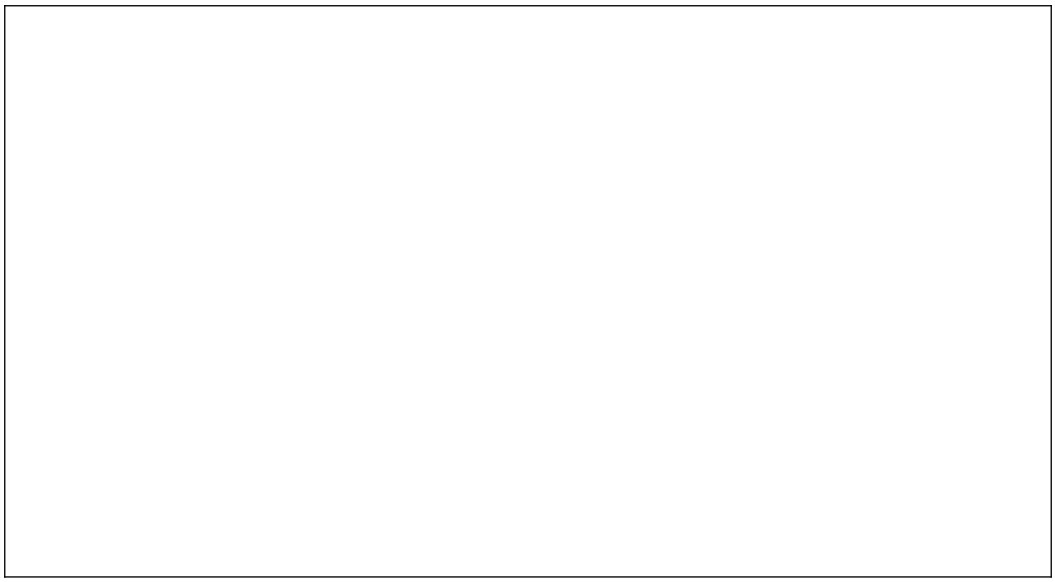
	mm.
A large amount of slag is formed	Low quality fuel: - it is recommended to replace the fuel a suitable one
Burnt igniter	A burnt heater does not have to mean that it will be cold in our home. The following instruction explains how to start the burner even when this important component is damaged. This process will not require special skills, just a little dexterity and patience. After establishing that the heater is burnt, press the “Start” button and observe the burner operation stages. This process starts with a blow, which lasts about 30 seconds, depending on the settings, followed by the initial feed, i.e. the external and internal feeders switch on simultaneously - the internal feeder runs for a few seconds longer. When observing the burner operation, remember not to open the boiler door. After the initial feed, the igniter activation icon will appear and at this moment kindling wood, for example, should be put on the pellet. The burner should start. Remember that when the set parameters are reached, the burner will go out, so it is recommended to change the settings in such a way that it works continuously until the igniter is replaced.

13. Installation report

Customer data		
Town:	Postal code:	City:
Street:	Phone:	E-mail:
Seller details:		
Town:	Postal code:	City:
Street:	Phone:	E-mail:
Details of the company/person installing the burner:		
Town:	Postal code:	City:
Street:	Phone:	E-mail:
Burner parameters:		
Standard Operation:	Sigma Operation:	PID Operation:
Minimum power: Feeder operating time:..... Feeder break time:..... Blow speed:..... Maximum power: Feeder operating time:..... Feeder break time:..... Blow speed:.....	Fuel weight:..... Fuel calorific value:..... Max. fan:..... Min. fan:.....	Max. feeder rate:..... Min. feeder rate:..... Max. fan rate:..... Min. fan rate:.....

....

Installer's signature: Customer's signature:



14. Annual inspection table:

IMPORTANT! The warranty may be extended provided that the inspection is registered on the website: **http://venma.eu/pl/rejestracja-urzadzenia.**

Device purchase date:		**Device installation date:**	
Inspection date:	**Service technician's stamp and signature:**		**Warranty valid until:**

15. Warranty card

Warranty and post-warranty repairs.

Date:	Service technician's stamp and signature:	Type of visit and report number:

Caution!!!
Each type of visit should be accompanied by a report filled out and signed by a service technician.

Table of Contents

Maczka Group Sp. z o.o. Sp.k.
Pustków 385b
39-205 Pustków
NIP (Tax Identification Number): 872-242-66-75

Office:
(Mon-Fr 7 a.m.-3 p.m.)
E-mail: biuro@venma.eu
Tel: +48 14 658 42 00

Service:
(Mon-Fr 7 a.m.-3 p.m.):
E-mail: serwis@venma.eu
Tel: +48 14 658 42 02

www.venma.eu