# PB25
# Pellet burner

## Installation and

operating instructions

PELLET HEATING AB

# 1 Product description

### 1.1 General

The PB25 burner is intended to be mounted on a boiler and must be fired with wood pellets. An external screw conveyor feeds the fuel from a separate pellet storage.

### 1.2 Function

The integrated electronics control the burner with the help of an included temperature sensor that is mounted on the boiler, and starts and stops the burner automatically and adjusts the power as needed. The control panel has a pressure-sensitive screen that shows current operating and adjustment values. All settings are made using the screen.

The burner is lit with the help of a ceramic igniter element when the boiler temperature is below the selected starting temperature. The starting procedure takes place completely automatically in several steps to get as fast and safe ignition as possible.

When the boiler temperature has reached 10 ° C below the set stop temperature, the power is regulated down, if the low power mode is selected (Low). It stops completely when set
the stop temperature has been reached, to restart when the boiler temperature has dropped to the set start temperature again.

### 1.3 Security

PB25 has three independent security systems:

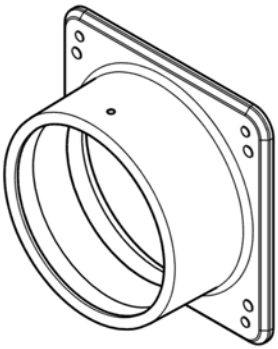
- downpipe for the fuel, which separates the feed system with the burner tube
- overheating protection on the downcomer which breaks the supply and switches off the burner in the event of excessive temperatures or back pressure
- flame guard who monitors that there is an open flame in the burner pipe and that no overnight stay takes place.

In addition, the torch must be connected to the screw conveyor with KMP's original hose, which has a melting temperature of approx. 75 ° C. Should a potentially dangerous situation arise, the hose must melt and the connection between the burner and the pellet conveyor must be broken.

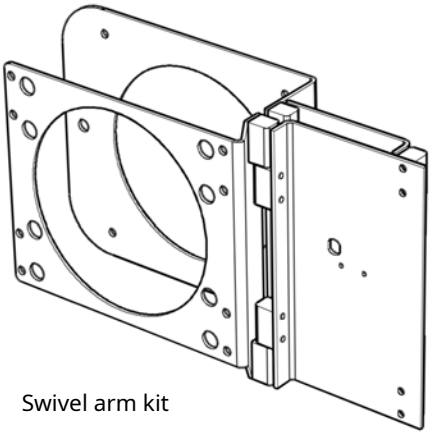
# 2 Installation

### 2.1 General

PB25 must be mounted in one of the boiler's fireplace doors. It is often advisable to install it in the oil burner door, but if the space for ash is small, the door for the wood caster can be a good alternative. As an accessory, there is a docking flange and a swingarm kit that facilitates the work of removing the burner for cleaning.



Docking flange



Swivel arm kit

### 2.2 Mounting

1. Decide where in the boiler the burner is to be mounted. Place it if possible so that it is possible to open the door with the burner sitting still as it facilitates maintenance.

2. Make a Ø155 mm hole in the door. Note that the door must be well insulated.

3. Check that all doors and dampers on the boiler are tight so that no stealing air can be drawn into the boiler.

Install the feed screw and connect it to the burner downpipe with the plastic hose.

5. If flue gas dampers are present, this must be fully open to prevent back pressure.

The distance between the upper edge of the burner pipe and the ceiling in the fireplace must be at least 50 mm.

There should be at least 200 mm between the front edge of the burner and the rear of the fireplace. This is regulated with the supplied docking flange (the burner does not need to be pushed completely into the flange).

Minimum dimensions for the bottom of the fireplace depend on the construction of the boiler, but in general it can be said that there must be room for the amount of ash that is formed during at least one week of winter heating.

Keep in mind that most of the ash ends up inside the fireplace.

## 2.3 Feed screw

Regardless of whether the KMP standard screw or other auger is used, the following must be observed:

- the inclination of the auger must be between 40 ° and 50 ° from the horizontal
- the feed screw must be anchored well because otherwise it can "eat" into the storage
- the outlet of the auger shall open offset from the inlet of the downcomer as seen from above, so that pellets can not fall into the downcomer if the downpipe melts.

#### 2.4 Electrical connection

The burner must be connected to 230 VAC 50 Hz via an overheating protection mounted on the top of the boiler. The overheating protection must have a breaking temperature of 95 - 105 ° C and have manual reset.

### 2.5 Temperature sensor

The supplied temperature sensor must be placed in a diving tube high on the boiler, or alternatively applied directly to the top of the boiler body during insulation. If there is no other way to attach it, a two-component epoxy adhesive can be used. The sensor must have direct contact with the boiler body in order for the temperature control to be precise and stable.

## 2.6 Boiler room and safety

There must be an open supply air valve in the boiler room to supply air to the combustion. The free surface of the valve must correspond to at least the cross-sectional area of the chimney.

**A hot air boiler must not collect the hot air from the boiler room as it can create negative pressure there!**

From a fire safety point of view, it is important that the boiler room is clean and dust-free.

Combustible materials should not be stored closer than 1.5 m from the burner.

Chemicals should not be stored in the boiler room at all as they can be flammable and can cause burns in the chimney.

**The door to the boiler room must always be closed!**

Make sure there is enough space around the burner so that service and maintenance can be easily performed. There must be space so that you can lift out of the burner and shave off ash in a non-combustible vessel. This is made easier if you use the Swing Arm accessory.

#### 2.7 Minimum dimensions of the fireplace

The distance between the upper edge of the burner pipe and the ceiling in the fireplace must be at least 50 mm.

There should be at least 200 mm between the front edge of the burner and the rear of the fireplace. If the depth is too small, it can be adjusted with a docking flange (the burner does not need to be pushed completely into the flange). The docking flange is an accessory.

Minimum dimensions for the bottom of the fireplace depend on the construction of the boiler, but in general it can be said that there must be room for the amount of ash that is formed during at least one week of winter heating. Keep in mind that most of the ash ends up inside the fireplace.

## 2.8 The chimney

The installation of the burner must be done in such a way that variations in draw conditions do not affect the performance of the burner. This is most easily achieved by installing a correctly dimensioned tensile limiter.

If the flue gas temperature is too low, there is a risk of condensation of the flue gases, which can lead to damage and freezing in the upper part of the chimney. One should strive a flue gas temperature after the boiler of at least 180 C°. A safer method is to measure the flue gas temperature about 1 meter down from the top of the chimney. If the temperature exceeds 60 C°, the risk of condensation is small.

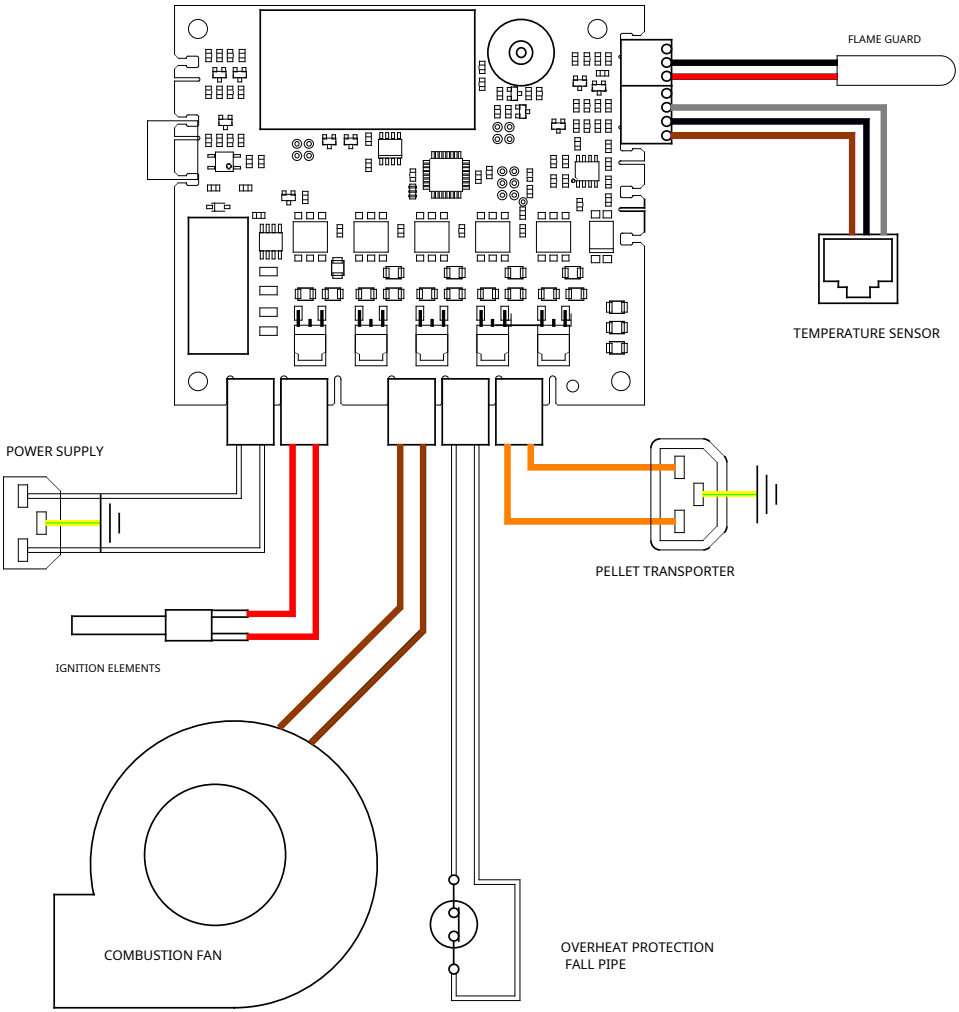
If the temperature is lower, a check must be made. Also check through the soot hatch of the chimney if there is moisture in the lower part of the chimney. If this is the case, the flue gas temperature must be raised.

If only slight condensation can be found in the upper part of the chimney, it may be sufficient to install a circuit breaker, or the burner can only be operated in high-power mode.

If large amounts of condensation occur, an insert pipe should be installed in the chimney that can withstand these stresses.

If the negative pressure in the chimney, in the case of a recently stopped burner, is greater than 20 Pa, a draft interruption must be installed. This must be set to 12-15 Pa to ensure trouble-free operation.

# 3 Wiring diagram



# 4 Settings

### 4.1 Start-up

The burner is factory set on delivery. It must be adjusted at the first start. Normally the burner should be used with two power modes (high and low), but with a simple menu selection the low power mode can be deselected or a third power step can be used (MIN).

A large or efficient boiler that produces flue gas temperatures below about 180 C° should be run on high power only to avoid problems with condensation precipitation in the chimney. Exception: if the chimney has an inlet pipe, it can withstand a certain amount of condensation, consult your installer.

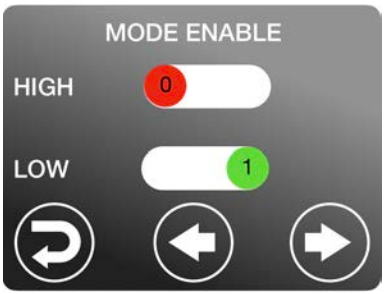
### 4.2 Setting the amount of air and fuel

1. Fill the screw conveyor with pellets before connecting it to the torch by connecting the torch power cable and the feed motor cable. Let it run for at least 5 minutes after filling the conveyor.

2. Set the starting dose time, the right size of starting dose is 3 - 4 dl.

3. Wait until the burner has been in the HIGH MODE for about 5 minutes, then adjust the feed (FEED RATE HIGH) and fan (XHST FAN HIGH) for best power and flue gas quality. The guideline value for CO2 content is 10 - 13%, CO should be as low as possible (<200 ppm) and the flue gas temperature as low as possible without risk of condensation (see section 2.8). Check that there is no back pressure in the fireplace. This is made easier by feeling the burner downpipe above the angle, the temperature should not be higher than you can hold your hand there. If there is a back pressure, the power is too high, start by reducing the fan speed by about 10% and adjust the supply. Repeat if necessary until the temperature on the downcomer stops rising.

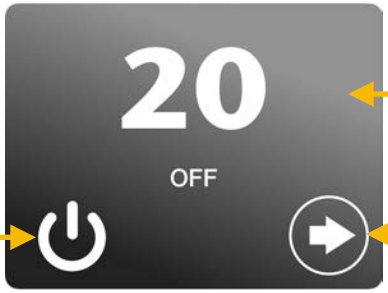
4. To adjust the burner in low speed mode, activate LOW and deactivate HIGH in the MODE ENABLE menu, see illustration. Wait about 5 minutes until the combustion has stabilized. Tun the burner in the same way as above with the parameters FEED RATE LOW and XHST FAN LOW. Do not forget to activate HIGH again!

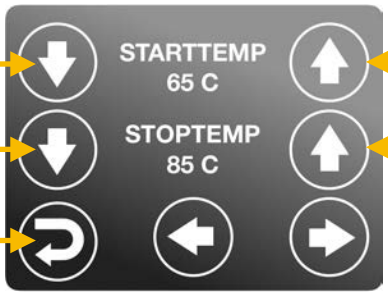



5. PB25 can handle most types of pure wood pellets, 6 or 8 mm diameter does not matter much. The pellet quality must be Group 1 according to Swedish standard SS187120. When changing fuel type or make, the settings must be checked.

# 5 Menus

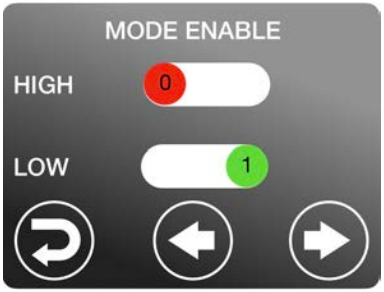
Below are pictures on all menu pages with explanatory text.





Activation and deactivation
activation of
high-speed and
low speed mode




Green / 1 = activated
Red / 0 = disabled

Press
SERVICE to
come to the next
level (only for
trained technicians)

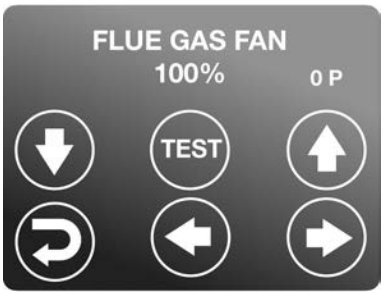

Setting of
pellet conveyor
speed in
high speed mode


Setting of
of the combustion fan
speed below
ignition

Setting of
of the combustion fan
speed below
high speed

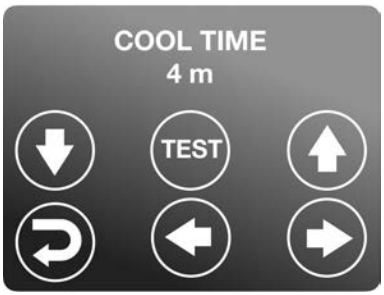

Setting of
of the combustion fan
speed below
extinguishing


Setting of
speed for extra
flue gas fan




Flue gas fan can
either be
mounted in the boiler
or on the chimney.

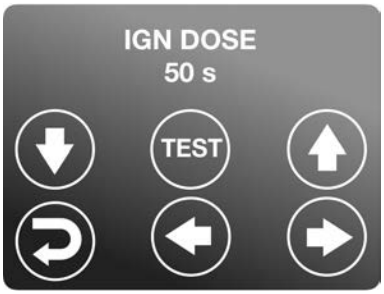
Setting the time for
extinguishing



Setting of
of the combustion fan
speed below

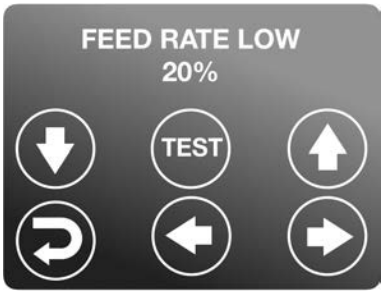
high speed


Setting of
starting dose size




Setting of
pellet conveyor
speed in

low speed mode




Setting of
of the combustion fan
speed below

low speed

Setting of
limit value for
the flame guard


The flame guard must
achieve at least that
set value for flame to
be detected
of the program.

Conversion between
burner and
fireplace program


This function should
only used for
replacement of control
card in the burner!

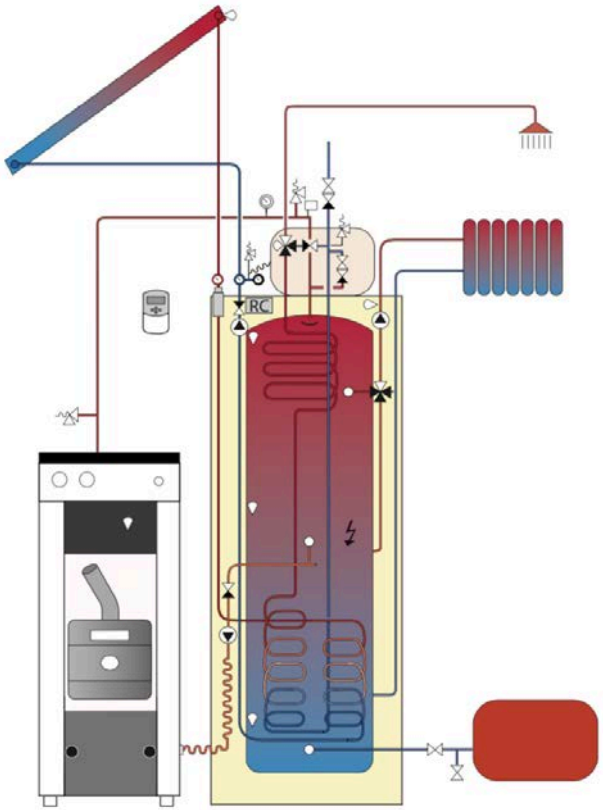
# 6 Accumulator tank

### 6.1 Fire against accumulator tank

It may be advantageous to use an accumulator tank connected to the boiler as it provides longer operating times on the burner and better annual average efficiency. With the PB25 burner, however, it rarely pays to re-install the accumulator tank as the profit is hardly so great that it can pay for the investment, due to the burner's very high efficiency.

### 6.2 Installation of burner on boiler with accumulator tank

If a water heater or shunt valve is placed in the boiler, the burner must always be controlled at the boiler temperature, the temperature sensor must then be located in a diving pipe on the boiler. If the boiler and the tank have direct circulation, the boiler temperature should not be below 60 ° C before the burner starts, as this can lead to condensation and corrosion in the boiler. If the water heater and shunt valve are located in the accumulator tank, you can alternatively place the temperature sensor on the (i) tank to have a longer operating time as it leads to fewer starts and stops.



**6.3 Location of the temperature sensor on the tank**

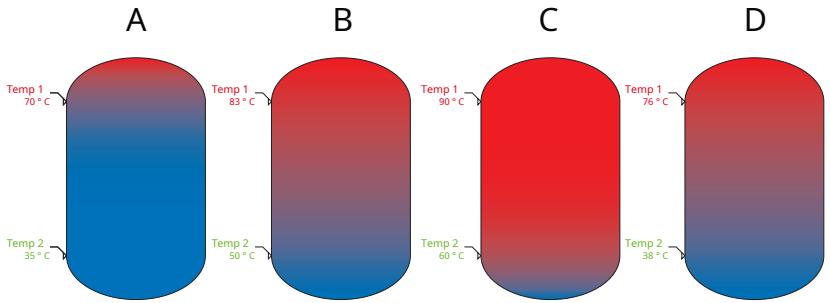
It can be advantageous to use an accumulator tank connected to the boiler as it provides longer operating times on the burner and better annual average efficiency. With the PB25 burner, however, it rarely pays to re-install the accumulator tank as the profit is hardly so great that it can pay for the investment, due to the burner's very high efficiency.

## 6.2 Installation of burner on boiler with accumulator tank

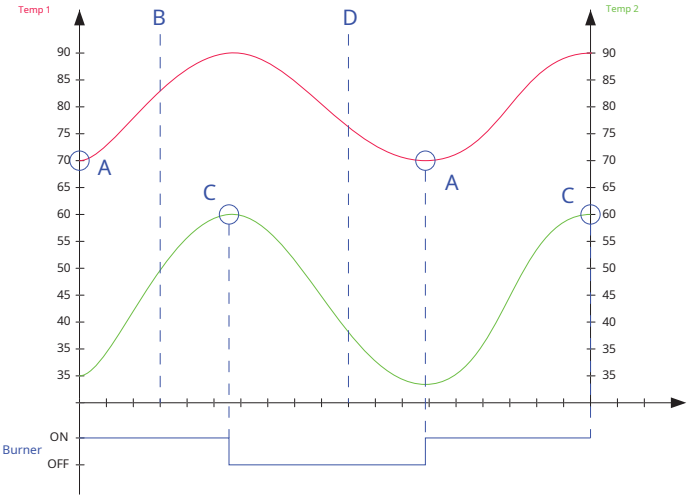
If the burner temperature sensor is to be placed on an accumulator tank, there must be a charging circuit that has a sufficient capacity to cool the boiler so that the boiler temperature does not exceed 95 C° before the tank reaches the set temperature (80 C° is recommended) and the burner switches off.

**The overheating protection must always be placed on the boiler!**

With a distribution box (extra accessory, art. No. 1599) you can connect two temperature sensors, one of which is mounted in the top of the accumulator tank, and the other in the bottom. The burner automatically detects that two sensors are connected and shows the top and bottom temperature instead of the boiler temperature.




Acktank activated, StartTemp = 70, StopTemp = 60

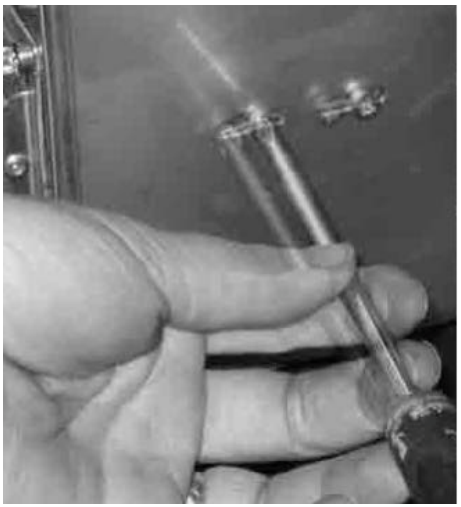


# 7 Assembly

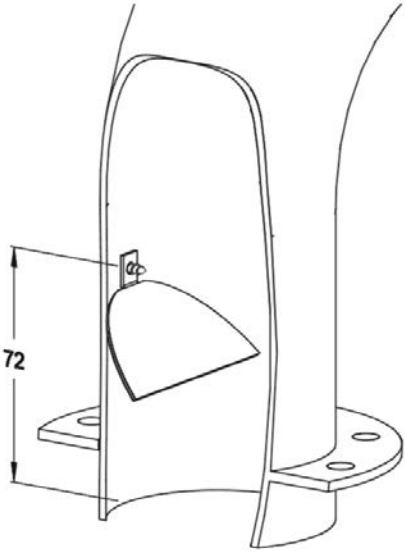
1. Place the downcomer at a suitable angle depending on where the pellet conveyor ends. Make sure that the lower end of the downcomer engages in the hole on the downcomer drawer. Screw on with 4 Allen screws.

2. Place the overheating protection in the protective cover and turn the metal side towards the underside of the downcomer. Screw on the cover.

3. Loosen the two screws under the burner 1 until it stops, the ignition element should then reach



If the pellets are extremely short, hard and / or the hose to the downcomer is unusually long, the pellets may jump out of the burner in some cases. To prevent this, you can then
install the supplied pellet brake. Loosen the screw mounted on the front of the downcomer. The pellet brake is screwed on from the outside with the supplied screw (RXS 4.2 x 9.5).




# 8 Maintenance

## 8.1 Cleaning

The pellet burner must be cleaned by shaving off the ash in the burner tube. This must be done every week during the heating season. During the summer, it is enough to clean every 14 days. At the same time, the boiler should be ashed out and smoked, as a soiled boiler results in a higher flue gas temperature and thus poorer efficiency.

NOTE! If the boiler has previously been fired with wood, there is a risk that soot flakes and tar fragments will come loose from the chimney and clog the flue and the opening of the smoke damper.
Clean and check in connection with dehumidification of the burner during the first 2 months after new installation.

Once a year, the burner should be disassembled and the area between inner and outer pipes emptied of ash residues and sintered material. Disassembly is done by loosening 4 countersunk countersunk screws in the front of the burner. Note that the electrical contacts in the burner connection panel must be removed before the cover can be loosened with its three nuts.

#### 8.2 Overheating protection of the downcomer

The PeBurner is equipped with an overheating protection on the downcomer that trips at approx. 75 C̊. If this triggers, the display shows Errsafe.

1. Disconnect all cables to the burner.
2. Loosen 2 screws for gutter ÖH protection
3. Press the ÖH protection button until a "button" is heard.
4. Reassemble in reverse order.

**8.3 Replacing the ignition element**

NOTE: this work must be performed by a person with the necessary knowledge

1. Loosen the three cables on the left side of the burner and remove the burner cover by loosening three nuts and pulling the cover back.

2. Loosen the two screws on the side of the bottom and lower the bottom plate.

3. Disconnect the ignition element cables from the quick coupling on the underside of the burner by pressing the keys and pulling the cables outwards.

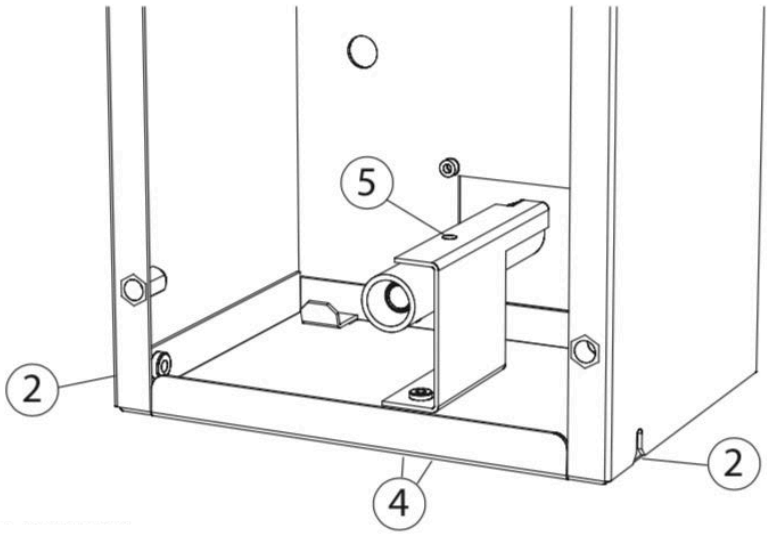
4. Loosen the two screws holding the ignition module.

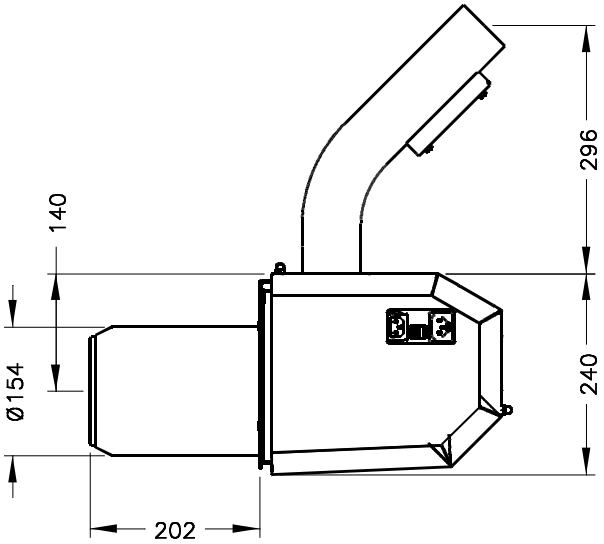
5. Pull the ignition element out of the tube.

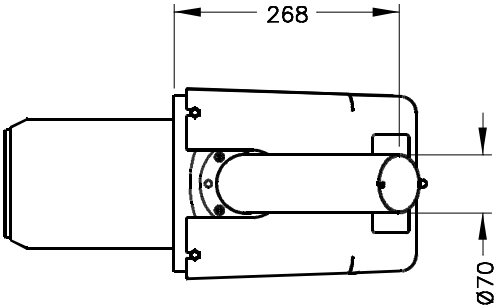
Slide the new element so that it ends up a few mm inside the mouth of the pipe.

7. Reassemble in reverse order.

8. Make sure that the ignition element tube is pushed forward firmly towards the back of the inner tube.






| Technical data | |
|---|---|
| Power max | c: a 25 kW |
| Power min | c: a 10 kW |
| Efficiency | > 90% |
| Power supply | 230 VAC |
| Power consumption operation | 40 W |
| Power consumption ignition | 200 W |
| Weight | 12 kg |

**Declaration of conformity / Declaration of conformity**
**Declaration of Conformity / Vaatimuksenmukaisuusvakuutus**

**KMP Pellet Heating AB**
**Stora Rörs Hamnplan 3**
**S-38695 FÄRJESTADEN**

declare under our sole responibility that the product / assure under your own responsibility that the product declares in sole responsibility that the product / vakuuttaa omalla vastuulla että tuote

Pellet stove Lilla Frö

to which this declaration relates is in accordance with the requirements of the following directives:
which is covered by this declaration is in accordance with the following directives:
to which this declaration relates is in accordance with the requirements of the guidelines:
jota tämä vakuutus koskee on yhteensopiva seuraaviin määräyksiin

**EMC Directive 89/336 / EEC Low**
**Voltage Directive 73/23 / EEC,**
**including amendments by the CE marking Directive 93/68 / EEC**

The conformity was checked in accordance with the following EN standards The agreement is checked in accordance with the following EN standards

Yhdenmukaisuus on tarkastettu seuraavien EN-standardien mukaan

• EN 55014, EN61000-4-2, -3, -4, -5, -6 Level 2, Emission and immunity by electromagnetic disturbances.

• EN 60335-1: 1994, Safety of household and similar appliances - Part 1: General requirements.

• EN 14785: 2006 Residential space heating appliance fired by wood pellets - Requirements and test methods.

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