

**SWEBO Bioenergy**  
**Manual pellet burner PB20**

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**SWEBO**  
**PELLET BURNER PB/20**

**Installation and maintenance instructions**



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### 1 GENERAL INFORMATION

The PB20 pellet burner is intended to replace oil burners, other types of pellet burner or for installation in existing boilers without burners and for installation in one of the boilers compartments. Thanks to its small size and accompanying adapter plate it is suitable for most types of boiler.

In terms of function a pellet burner does not differ greatly from an oil burner, it fires up or increases a power stage automatically when the boiler temperature drops, or goes out or decreases a power stage when the desired temperature is reached. This burner is also equipped with an extremely advanced and flexible electronic control system with a large number of adjustment options with the possibility of modulated output. Modulated output means that the burner can operate in four independent power stages. This means fewer firings as well as better operation. Both the fan and fuel feed can be adjusted separately for the four power stages, further information can be found in section 6.

Often, the old overheat thermostat can also be used for the new burner, which further facilitates the installation.

In line with development over the last few years, the required maintenance of the pellet burner has been reduced drastically and can be considered to be minimal on these burners. (read more in chapter 10)

#### 1.1 Pellet storage

Stores can be designed relatively generously according to what the space allows. However, Swebo's 300 litre ready pellet store or bulk store are recommended.

***Regardless of the choice of store, it is extremely important that the feed auger's angle towards the horizontal never exceeds 45° and that the auger is installed in such a way that the blue tube exits at the side of the drop pipe when it hangs freely. An example of a well planned out boiler room is shown below.***



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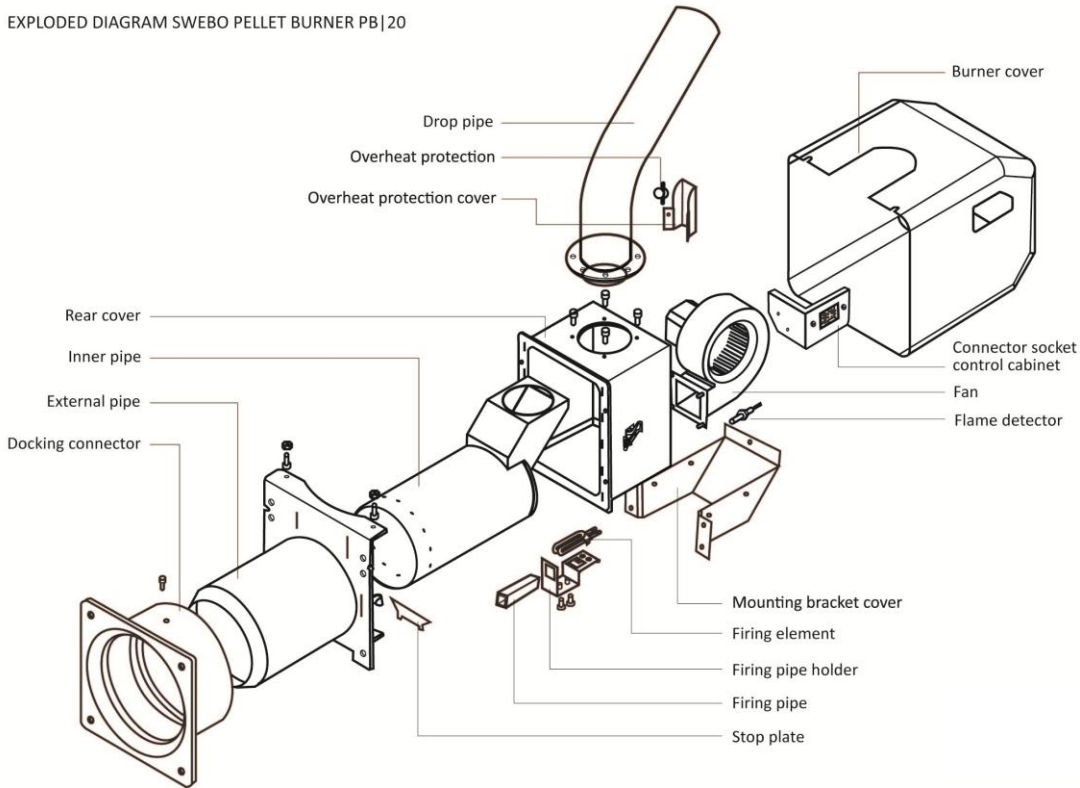
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## 1.2 Construction and function

### 1.2.1 Name and location of key components

The figure below shows an exploded view of the burner with its key components named.

EXPLODED DIAGRAM SWEBO PELLETT BURNER PB|20



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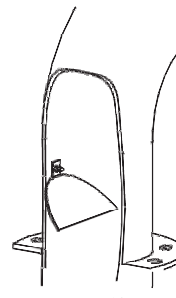
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### 1.3 Pellet brake in drop pipe

In some cases, it may be necessary to install a so-called pellet brake, which prevents the pellets from bouncing out of the burner. This may happen if the pellets used are extremely short or hard, or if the tube between the auger and burner is unusually long.

The plate that makes up the pellet brake is installed using the supplied rivet and must be installed on the front of the drop pipe in the pre-drilled hole. (see the figure to the right)



## 2 SAFETY FUNCTIONS

The burner and its surrounding equipment have a number of safety systems, which are described below. In the event of smoke in the boiler room, ventilate and leave the room.

### 2.1 Overfeed principle (chute)

Pellets are supplied using the overfeed principle. The pellets are released down into the burner pipe from the feed auger, via the flexible tube. In other words, it is the tube that separates the combustion part from the feed part.

### 2.2 Non-combustible feed tube

The blue tube that joins the feed auger and burner is designed to burn off in the event of a blowback fire. This is a safety function and this tube must not be replaced with any other type of tube.

### 2.3 Overheat protection

On the burner's drop pipe there is a heat detector that stops the burner when the drop pipe becomes unusually hot (>95 degrees). The sensor must be reset manually.

(When overheat is detected, the "Overheat", alarm is triggered, see chapter 6 "Faults and corrective actions").

### 2.4 Flame detector

The flame detector is a sensor in the system which detects the state of the flame and must be kept free of soot and dust. (read more in chapter 7)

(In the event of a flame detector related problem, the "Flame detector", alarm is triggered, see chapter 9 "Faults and corrective actions").

### 2.5 Monitored shut-off of the auger motor for pellet supply

The motor for the pellet auger has two shut-off functions. The normal working off/on function is continuously monitored by checking that the voltage to the motor is only maintained when required, and when faults are detected all power to the motor is cut via a main relay.

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### 3 TECHNICAL DATA

#### 3.1 Fuel type

The burner is designed for 6-8 mm wood pellets. Pellets corresponding to Group 1 in accordance with Swedish standard SS 187 120 are recommended.

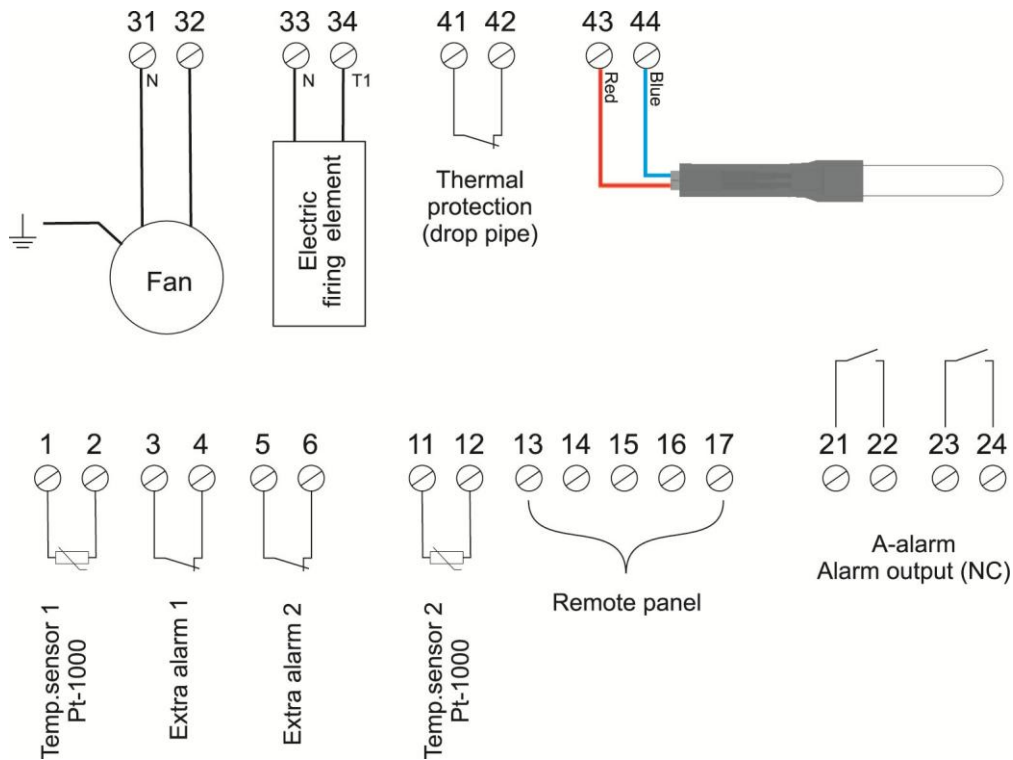
#### 3.2 Electrical data

Supply voltage 230VAC

Nominal output ~40W

Start-up output ~480W

#### 3.3 Wiring diagram





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### 3.4 Measurements and dimensions

Space requirement:

- A distance of 500 mm is required from the boiler where the burner is to be located to the wall (so that the burner can be removed for cleaning).
- A distance of at least 300mm is required from the front edge of the burner to the rear wall of the boiler.
- It is also important that there is sufficient space under the burner for the ash that builds up after a week's operation. Note that the majority of the ash collects inside the boiler.



| TECHNICAL DATA                               | PB20            |
|--|-----------------|
| External boiler dimensions (W x H x D)       | 220 x 250 x 300 |
| Internal firebox dimensions                  | 156 x 200 mm    |
| Combustion efficiency                        | approx.: 90%    |
| Rated output in max. mode                    | 20 kW           |
| Rated output in half-speed mode              | approx.: 10 kW  |
| Voltage                                      | 230 VAC         |
| Power consumption (average during operation) | 40 W            |

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### 4 INSTALLATION

#### Installing in the boiler

- Check the burner for damage.
- Check that the required space is available inside the boiler and that the burner is inserted a sufficient way inside the boiler (for measurements see technical data).
- Install the burner in the oil burner compartment, wood compartment or soot compartment.
- After making holes in the cover, screw the cast mounting flange into the cover and ensure that the locking screw is upwards.
- Ensure that the connection is sealed. Use heat resistant sealant or fibre glass gasket to ensure a sealed connection. Also ensure that other boiler hatches and connections are sealed.
- Install the loose stop plate at the front edge of the burner pipe, see image below.



- Install the burner in the flange with the locking screw.



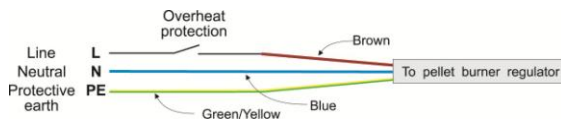
- Check that the burner's firing element is correctly adjusted. Do this by removing the blue cover. There are two screws under the burner that hold the firing element. Slacken these off slightly and slide as far as possible towards the boiler and then retighten and reinstall the blue cover.
- Install the accompanying connector to the blue tube and then install the connector in the drop pipe. Note that the tube must be installed in such a way that the pellets can fall through it unhindered without getting stuck, see image below, and that clamps must be used at both ends.



- Install the control panel in an appropriate place (on the boiler or a wall, however, not directly above the burner!).
- NOTE! The panel and cable must be installed in such a way that the connection cable can be disconnected so that the burner can be removed from the boiler and placed next to it.
- Ensure that no combustible material is stored in close proximity to the burner.
- Any flue dampers must be kept fully open all the time.
- An alternative heat source must always be installed in the event of a pellet burner malfunction.
- Note that the local authority as well as the local chimney sweep must always be contacted with regard to the installation of burners.
- Note that the installation must be carried out in such a way that variations in the draught conditions do not affect the performance of the burner. This is achieved most easily by installing a draught regulator in the chimney.

#### 4.1 Connecting to the mains power

The power cable supplied must not be connected directly to the wall socket but must be connected via the overheat protection installed on the boiler. It is also important that the overheat protection can be manually reset. The main fuse is located in the mains inlet on the automatic lighting control device and connection of the incoming mains supply must be carried out according to the figure below.

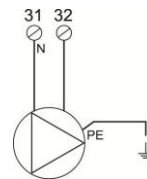


#### 4.2 Auger motor

The auger motor is connected directly to the connector socket on the automatic lighting control device with the cable supplied.

#### 4.3 Fan

The fan is used to supply air to the combustion and is speed-controlled via phase angle control (Triac Control).



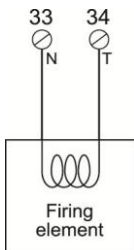
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#### 4.4 Electric firing device

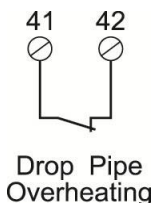
The electric firing device (firing element) is used to achieve automatic firing in the firebox. The firing element's output is 420W.



#### 4.5 Overheat protection drop pipe

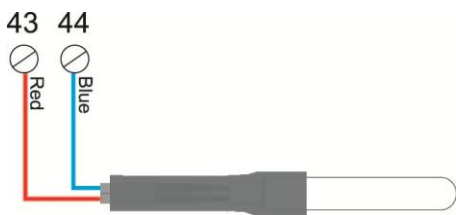
The overheat protection installed on the drop pipe is used to prevent blowback fires via the fuel feed pipe. In the event of the overheat protection being deployed, the current to the burner and auger motor is cut, which prevents more fuel being fed causing the fire to go out due to lack of fuel.

Overheat protection is reset manually and alarm input for overheating is of the safety type and triggers A-alarm.



#### 4.6 Flame detector

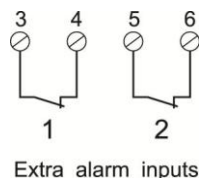
The flame detector is used to detect fire in the burner.



#### 4.7 Extra alarm inputs 1-2

The two extra alarm inputs can be used for optional external alarm switches. Extra alarm inputs 1-2 are of the safety type and trigger A-alarm.

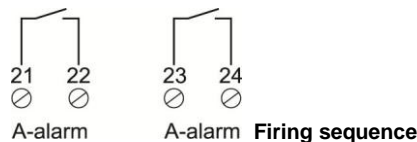
Connect extra alarms according to the image below.



#### 4.8 Alarm output A-alarm

The buzzer output is in the form of 2 breaking (NC) relay switches for A-alarm. The relay switches in the figure below are shown in non-powered position. Max. connection to the relay switches is 230 VAC, 2A.

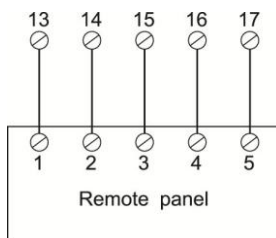
Connect buzzer alarm output A-alarm according to the image below.



#### 4.9 Remote panel

Extra external operating panel or other type of device that can communicate with automatic lighting control device PB 1. The remote panel displays information on its front panel in PB 1 but certain other operations can be carried out from the remote panel. The remote panel can be installed at a distance of up to 500 metres from the automatic lighting control device.

The remote panel is connected according to the image below.



#### 4.10 External temperature sensor

The external temperature sensor is used to provide the system with information about the current boiler temperature. The sensor must be installed in the submerged tube, if applicable. If there is no submerged tube, the sensor can be installed against the boiler inside the boiler's insulation. Regardless of whether the sensor is installed in the submerged tube or not, it must be installed 3/4 of the way up the boiler. Furthermore, the sensor must be connected to terminals 1 and 2 on the control box terminal block. See wiring diagram under 3.3.

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### 5      **Control system**

#### **Firing sequence**

The burner's firing sequence is the time from when firing is initiated to the time it transfers to normal operation. The included parameters can be modified via the control panel, read more under "Configurations".

#### **Programming**

Changes to the operating settings can be made via a menu system. To enter programming mode, press the "Menu/Save" button. Then scroll using the plus and minus buttons to the sub menu you wish to make changes in. To enter the displayed sub menu, press the "Menu/Save" button.

Navigate the main groups of the menu system by using the plus and minus buttons to select in which group adjustment is to be made, confirm using the "Menu/Save" button. Navigate the sub groups in selected main groups in the same way by using the plus and minus buttons, confirm using the "Menu/Save" button. To change a parameter, press "Menu/Save" so that the numerical value starts to flash, change the value using the plus/minus buttons, and confirm using "Menu/Save".

The "ESC" button cancels a setting and scrolls you back in the menu system.

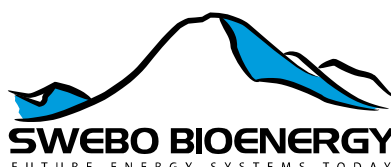
**NOTE!** Many of the settings in the control system can only be carried out by an authorised service technician, "Not to be opened unless authorised" is shown for these. Certain settings cannot be changed, where "Not available" is shown.

**Also note that the default settings in the control system are only guide values where adjustments may be required for optimal function and economy in some cases.**

In the remaining parts of this section the heading numbering consist of two parts. The part outside the brackets correspond to the numbering in the control panel's menu system.

#### **Menu tree**

The menu tree on the following pages describes how the control system is constructed, there is also information regarding default values as well as which setting options are available for each parameter.



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### PS 1

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|                 |
|-----------------|
| 0<br>Quick menu |
|-----------------|

|                           |         |   |
|---------------------------|---------|---|
| 1.5<br>Power regulation   | Manual  | Manual/Auto (not with Accumulator tank in 1.4)                            |
| 1.6<br>Avail. Pwr stage   | 1->4    | 1->4 / 2->4 / 1->3 (all values available in manual)                       |
| 1.7<br>Flame det.         | X %     | Current value   |
| 3.1<br>Stop temp          | 85°C    | Stop temp > Reference value temp > Start temp                             |
| 3.2<br>Start temp         | 70°C    |   |
| 3.3.1<br>Set point temp   | 80°C    |   |
| 3.4.1<br>Power stages     | 1       | Menu/Save creates a submenu (only power stages selected in 1.6 available) |
| 3.4.1.1<br>Feed time      | 2,0 sec | 0.5-20.0 s (customer can adjust by ±2 s)                                  |
| 3.4.1.2<br>Pause time     | 21 sec  | 1-60 s (customer can adjust by ±3 s)                                      |
| 3.4.1.3<br>Fan speed      | 38 %    | Off/25-100% (customer can adjust by ±20%)                                 |
| 3.4.1.4<br>Low power mode | Off     | Off/1-3 (lower values only, only available if "Man" selected in 1.5)      |
| 3.4.2<br>Power stages     | 2       | Menu/Save creates a submenu (only power stages selected in 1.6 available) |
| 3.4.2.1<br>Feed time      | 3,0 sec | 0.5-20.0 s (customer can adjust by ±2 s)                                  |
| 3.4.2.2<br>Pause time     | 18 sec  | 1-60 s (customer can adjust by ±3 s)                                      |
| 3.4.2.3<br>Fan speed      | 47 %    | Off/25-100% (customer can adjust by ±20%)                                 |
| 3.4.2.4<br>Low power mode | Off     | Off/1-3 (lower values only, only available if "Man" selected in 1.5)      |
| 3.4.3<br>Power stages     | 3       | Menu/Save creates a submenu (only power stages selected in 1.6 available) |
| 3.4.3.1<br>Feed time      | 4,0 sec | 0.5-20.0 s (customer can adjust by ±2 s)                                  |
| 3.4.3.2<br>Pause time     | 16 sec  | 1-60 s (customer can adjust by ±3 s)                                      |
| 3.4.3.3<br>Fan speed      | 56 %    | Off/25-100% (customer can adjust by ±20%)                                 |
| 3.4.3.4<br>Low power mode | 2       | Off/1-3 (lower values only, only available if "Man" selected in 1.5)      |



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|                           |         |   |
|---------------------------|---------|---|
| 3.4.4<br>Power stages     | 4       | Menu/Save creates a submenu (only power stages selected in 1.6 available) |
| 3.4.4.1<br>Feed time      | 5,5 sec | 0.5-20.0 s (customer can adjust by $\pm 2$ s)                             |
| 3.4.4.2<br>Pause time     | 14 sec  | 1-60 s (customer can adjust by $\pm 3$ s)                                 |
| 3.4.4.3<br>Fan speed      | 65 %    | Off/25-100% (customer can adjust by $\pm 20\%$ )                          |
| 3.4.4.4<br>Low power mode | 2       | Off/1-3 (lower values only, only available if "Man" selected in 1.5)      |

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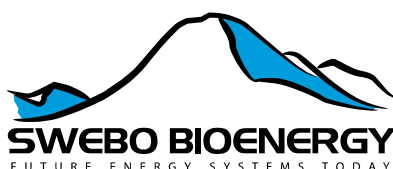
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## PS 1

Vers 1.12  
Date 2008-10-02

### 1 Configuration

|         |                  |             |   |
|---------|------------------|-------------|---|
| 1.1     | Program version  | 1.11        |   |
| 1.2     | Connections      |             |   |
| 1.2.1   | Remote panel     | No          | Yes/No  |
| 1.2.2   | Network          | No          | Yes/No  |
| 1.3     | Start ramp fan   | 0 sec       | 0-40 s  |
| 1.4     | Accumulator tank | No          | Yes/No (for "Yes" -> 2 temp sensor & power stage = "Manual" in 1.5) |
| 1.5     | Power regulation | Manual      | Manual/Auto (not with Accumulator tank in 1.4)                      |
| 1.6     | Avail. Pwr stage | 1->4        | 1->4 / 2->4 / 1->3 (all values available in manual)                 |
| 1.7     | Flame det.       | X %         | Current value   |
| 1.7.1   | Firing           |             | (On level > Off level)  |
| 1.7.1.1 | Level firing     | 12 %<br>X % | Adjustment, 5-95% (lower value is current value)                    |
| 1.7.1.2 | Delayed firing   | 10 sec      | 1 – 60s (delay before flame detector indicates ignition on)         |
| 1.7.2   | Extinguished     |             |   |
| 1.7.2.1 | Level ext.       | 10 %<br>X % | Adjustment, 5-95% (lower value is current value)                    |
| 1.7.2.2 | Delayed ext.     | 30 sec      | 1 – 60 s (delay before flame detector indicates ignition off)       |
| 1.8     | Service mode     | No          | Yes/No (shut down manually or automatically after 2 hours)          |
| 1.8.1   | Enter code       | 0           | 0-9999  |
| 1.9     | Temp. unit       | °C          | °C / °F   |



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**2** (only service man)  
**Firing sequence**

2.1      10 sec  
Blow cleaning      1-300 s

2.2      115 sec  
Pre-heating      10-300 s

2.3      50 sec  
Start dose      1-240 s (customer can modify in 7.1.1)

2.4  
Fan

2.4.1->7      1      1-7 (goes to next sequence when time has elapsed, then varies between 6 & 7 before max time (2.6) has elapsed)

2.4.x.1      X sec      1-60 s      (Default 20; 20; 15; 20; 20; 10; 10)

2.4.x.2      X %      Off/25-100%      (Default 41; 45; 41; 50; 46; 51; 46)

2.5      15 min  
Maxtime sequence      5-20 min

2.6  
Firing attempt

2.6.1      2 pcs      1-3 pcs  
Firing attempts

2.6.2      20 sec      1-240 s  
Start dose 2 & 3

2.7  
Pre-operation

2.7.1      90 sec      1-300 s  
Start delay

2.7.2      5,0 min      1-8 min (step 0.5 min)  
Lighting time

2.7.3      4 sec      0.5-20.0 s  
Feed time

2.7.4      40 sec      1-60 s  
Pause time

2.7.5      57 %      Off/25-100%  
Fan speed





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**3** Power stages (Default power stage 3)

3.1 Stop temp 85°C 20-90°C

Stop temp > Reference value temp > Start temp

3.2 Start temp 70°C 20-90°C

3.3 Auto. regulation (only available if "Auto" selected in 1.5)

3.3.1 Setpoint temp 80°C 20-90°C

3.3.2 Pwr. level temp 3°C 2-10°C

3.3.3 Pwr. level time 30 secs 1-300 s

3.4 Power stages 1 1-4 (only power stages selected in 1.6 available)

3.4.x.1 Feed time x.x secs 0.5-20.0 s (customer can adjust by ±2 s) (Default 2.0; 3.0; 4.0; 5.5)

3.4.x.2 Pause time X secs 1-60 s (customer can adjust by ±3 s) (Default 21; 18; 16; 14)

3.4.x.3 Fan speed X% Off/25-100% (customer can adjust by ±20%) (Default 38; 47; 56; 65)

3.4.x.4 Low power mode X Off/1-3 (lower values only, only available if "Man" selected in 1.5) (Default Off; Off; 2; 2)

3.4.x.5 Low power temp 5°C 1-10°C (from stop temp, hysteresis 2°C, only available if "Man" selected in 1.5)

3.5 Max. light. time Off Off/1-24 hrs (not applicable for emergency combustion & fail-safe operation)

### 4 Damping down

4.1 Blow cleaning 1 min 1-20 min (fan 100% after flame detection alarm)

4.2 Fan speed 100% Off/25-100%

### 5 Failsafe op. (only service man) (flame detection alarm during operation -> combustion with parameters 5.1-5.4) (must be acknowledged before changeover to normal combustion, may occur once)

5.1 Start delay 30 min 1-60 min

5.2 Feed time 3.0 secs 0.5-20.0 s (same default value as power stage 2)

5.3 Pause time 18 secs 1-60 s (same default value as power stage 2)

5.4 Fan speed 47% Off/25-100% (same default value as power stage 2)



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#### 6 Alarm1

|                  |         |                     |
|------------------|---------|---------------------|
| 6.1              |         | Blank (empty)       |
| 6.2 Alarm memory |         |                     |
| 6.2.1            | 1:Alarm |                     |
| xxxxxxx          |         |                     |
| 6.2.3            | 2:Alarm |                     |
| xxxxxxx          |         |                     |
| 6.2.3->8         | x:Alarm | 3->8:Alarm          |
| xxxxxxx          |         |                     |
| 6.3              | Normal  | Off/Low/Normal/High |
| Buzzer volume    |         |                     |

#### 7 Manuel operation

|                  |          |  |
|------------------|----------|--|
| 7.1              | No       | Yes/No (only when shut down)   |
| Test mode        |          |  |
| 7.1.1            | X secs   | 1-240 s (linked with 2.3)  |
| Start dose       |          |  |
| 7.1.2            | Off      | Off/1-4 (dose for 15 min combustion, no delay)   |
| Dose power stage |          |  |
| 7.1.2.x          | X secs   | 0.5-20.0 secs (linked with 3.4.x.1, whole range can be adjusted without accessing service mode)  |
| Feed time        |          |  |
| 7.1.3            | No       | Yes/No (max 5 min, fan 40%)  |
| Electric firing  |          |  |
| 7.1.4            | Off      | Off/25-100% (max 5 min)  |
| Fan speed        |          |  |
| 7.2              | No       | Yes/No (for "Yes", combustion with selected power stage & and settings from 7.2.x are low power) |
| Emerg. lighting  |          |  |
| 7.2.1            | 2.0 secs | 0.5-20.0 s   |
| Feed time        |          |  |
| 7.2.2            | 40 secs  | 1-300 s  |
| Pause time       |          |  |
| 7.2.3            | 33%      | Off/25-100%  |
| Fan speed        |          |  |
| 7.2.4            | 20 secs  | 1-300 s  |
| Fan time on      |          |  |
| 7.2.5            | 300 secs | 1-600 s  |
| Fan time off     |          |  |



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#### 8 Statistic

|                          |                  |                           |
|--------------------------|------------------|---------------------------|
| 8.1<br>Tot. operat. time | Ddd:hh:mm:s<br>s | (burn, flame detector)    |
| 8.2<br>Runtime motor     | Ddd:hh:mm:s<br>s |                           |
| 8.3<br>Feeds             | Xxxxxxxx pcs     |                           |
| 8.4<br>Firings           | Xxxx pcs         | (successful)              |
| 8.5<br>Reset statistics  | No               | Yes/No (only service man) |

#### 9 Default settings

(only service man & shut down)

|                    |    |                       |
|--------------------|----|-----------------------|
| 8.1<br>Total reset | No | Yes/No                |
| 8.2<br>Check mode  | No | Yes/No (for our test) |

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### (6.)1 Configuration

Settings for how the heating system is made up surrounding the automatic lighting control device are made in the main configuration group.

#### 1.1 Program version

The installed program version is shown under "Program version".

#### 1.2 Connections

Any other equipment connected to the automatic lighting control device PB 1 is shown under "Connections".

##### 1.2.1 Remote panel

"Remote panel" shows whether an extra FT 20 type front panel is installed on terminals 13-17.

Setting option, Yes or No.  
Default setting = No.

##### 1.2.2 Network

"Network" shows whether there is a connection to a wired computer network via NV 20 device on terminals 13-17.

Setting option, Yes or No.

Default setting = No. **1.3 Start ramp fan**

#### 1.3 Start ramp fan

The ramp-up time that is to apply for the fan is set under "Start ramp fan". The ramp-up time is the time it takes for the fan to achieve the selected speed.

Setting option, 0-40 seconds.  
Default setting = 0 seconds.

#### 1.4 Accumulator tank

"Accumulator tank" shows whether there is accumulator tank lighting. In the event of accumulator tank lighting, 2 temperature sensors must be used. Sensor 1 installed at the top of the tank and sensor 2 installed at the bottom of the tank. Connect the sensors according to the wiring diagram, see 3.3.

Also note that the start temperature (3.2) and stop temp (3.1) for accumulator tank lighting must be adjusted so that the burner starts when the upper sensor has dropped to the start temperature and stops when the lower sensor has reached the stop temperature. Note that the start and stop temperatures must not be the same, around 80 degrees at the bottom and 65 degrees at the top of the tank are appropriate guide values. Note that the burner should operate at as high an output as possible during this type of operation and that both 3.4.x.4 and 3.5 must be in the "OFF" mode.

Setting option, Yes or No.

Default setting = No. **1.5 Power regulation**

#### 1.5 Power regulation

"Power regulation" shows whether power stages should be selected manually via the front panel or be switched automatically by the automatic lighting control device depending on the power output.

Note that if accumulator tank is selected in 1.4 automatic power regulation cannot be selected.

Setting option, Manual or Auto.  
Default setting = Manual.

#### 1.6 Available power stages

"Available power stages" shows which power stages are to be available during automatic power regulation.

1-4 = All power stages available.  
2-4 = Power stages 2, 3 and 4 available.  
1-3 = Power stages 1, 2 and 3 available.

Setting options, 1-4, 2-4, 1-3.  
Default setting = 1-4.

#### 1.7 Flame detector

The function of the flame detector is adjusted in the main group, "Flame detector". Here the current flame detector level is shown.

##### 1.7.1 Firing

###### 1.7.1.1 Level firing

Adjust at which light level the automatic lighting control device is to detect that a flame is present under "Level firing". The lower value in the display shows the current light level. Note that the higher the value you select, the stronger the flame must be for it to be considered present.

Setting options, 5-95%  
Default setting = 12%.

###### 1.7.1.2 Delayed firing

Adjust the time delay from when the light level exceeded the level set in 1.7.1 until the automatic lighting control device detects that the flame is present under "Delayed Firing".

Setting option, 1-60 seconds.  
Default setting = 10 seconds.

##### 1.7.2 Extinguished

###### 1.7.2.1 Level extinguished

Adjust at which light level the automatic lighting control device is to detect that the flame has been extinguished under "Level extinguished". The lower value in the display shows the current light level.

Setting options, 5-95%  
Default setting = 10%.

###### 1.7.2.2 Delayed extinguished

Adjust the time delay from when the light level fell below the level set in 1.7.2.1 until the automatic lighting control device detects that the flame has been extinguished under "Delayed Extinguished".

Setting option, 1-60 seconds.  
Default setting = 30 seconds.



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### 1.8 Service mode

Adjustments in the main group "Service mode" must only be made by an authorised and trained technician.

Setting option, Yes or No.  
Default setting = No.

To scroll in thousands, press and hold the "up" arrow button, then immediately press "Power stage 1" and scroll using the "Power stage 1" button for the desired number of thousands. For hundreds, press and hold the "up" arrow button, then press "Power stage 2" and scroll using the "Power stage 2" button for the desired number of hundreds.

#### 1.8.1 Enter code

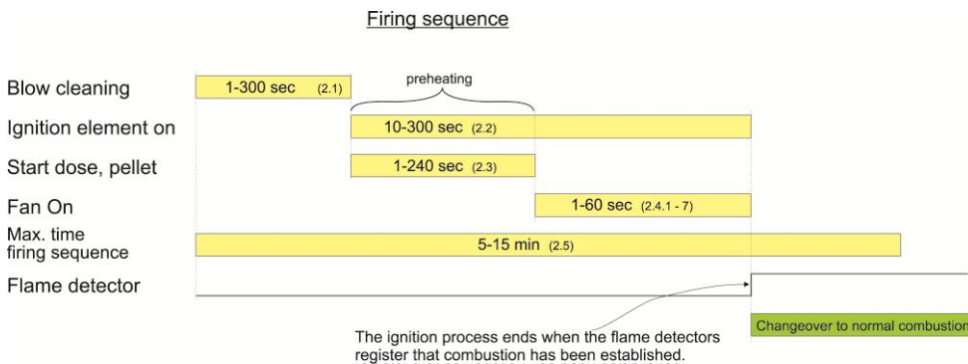
The code to enter service mode is shown under "Enter code".

Service mode deactivates automatically after 2 hours.

Setting option, 0-9999.

## (6.)2 Firing sequence

The firing sequence can be configured in the main group "Firing sequence", see the figure below, which graphically describes the firing process. Settings can only be made by a service technician.



### 2.1 Blow cleaning

Under "Blow cleaning" the time that the fan runs before firing starts can be adjusted, this is to evacuate any gases in the boiler.

Setting range, 1-300 seconds.  
Default setting = 60 seconds.

### 2.2 Pre-heating

Under "Pre-heating" the time that the firing element is on before the first start dose of pellets is fed in is adjusted.

Setting range, 10-300 seconds.  
Default setting = 115 seconds.

### 2.3 Start dose

Under "Start dose" the feed time that is to apply for the start dose can be adjusted.

Setting range, 1-240 seconds.  
Default setting = 50 seconds.

### 2.4 Fan

During the firing sequence, the fan runs in a sequence of seven steps, where the fan speed and fan time are separately adjustable for each step. Steps 6 and 7 alternate until burning starts or the set maximum time has been exceeded.

Remember that when setting the fan speed below 25 to 30 %, the fan can remain stationary, this is due to the mains power supply level and the fan's rotation resistance. No settings can be made here.

#### 2.4.1 - 7 Fan sequence

Select which power stage the settings are to be made in under "Fan sequence" .

Setting range, 1-7.  
Default setting = 1.

##### 2.4.x.1 Fan time

The fan time for the selected stage can be adjusted under "Fan time".  
Setting range, 1-60 seconds.

Default setting  
stage 1 = 20 seconds.  
stage 2 = 20 seconds.  
stage 3 = 15 seconds.  
stage 4 = 20 seconds.  
stage 5 = 20 seconds.  
stage 6 = 10 seconds.  
stage 7 = 10 seconds.

##### 2.4.x.2 fan speed

The fan speed for the selected stage can be adjusted under "Fan speed".

Setting range, Off or 25-100 %.

Default setting  
stage 1 = 41 %.  
stage 2 = 45 %.  
stage 3 = 41 %.  
stage 4 = 50 %.  
stage 5 = 46 %.  
stage 6 = 51 %.  
stage 7 = 46 %.

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### 2.5 Maximum time firing delay.

The maximum time that the firing sequence can run without the pellets being fired can be adjusted under "Maximum time firing delay". After the exceeded time, a new firing attempt starts if permitted according to setting 2.6.1. The maximum time is calculated from when the first start dose is fed in.

Setting range, 5-20 minutes.  
Default setting = 15 minutes.

### 2.6 Firing attempt

If pellet firing failed, the automatic firing control device can be permitted to make up to 3 firing attempts according to the settings made for Firing sequence, with the exception of the start dose which can be modified to firing attempt 2 and 3.

No settings can be made here.

#### 2.6.1 Number of Firing attempts

#### 2.6.1 Number of Firing attempts

The number of firing attempts that are to be permitted can be adjusted under "Number of firing attempts".

Setting range, 1-3.  
Default setting = 2.

#### 2.6.2 Start dose 2 & 3

The feed time that is to apply for the start dose for firing attempt 2 and 3 can be adjusted under "Start dose 2 & 3".

Setting range, 1-240 seconds.  
Default setting = 20 seconds.

### 2.7 Pre-operation

When the flame detector has detected fire during the firing sequence, the automatic control device shifts to pre-operation. This means that lighting occurs according to a lower power stage for a certain time to start the fire efficiently before the shift to the selected power stage.

No settings can be made here.

#### 2.7.1 Start delay

The time delay that is to apply from when the flame detector detects the flame to when the first dose of pellets is fed in during pre-operation can be adjusted under "Start delay".

Setting range, 1-300 seconds.  
Default setting = 90 seconds.

#### 2.7.2 Lighting time

The time that is to apply to lighting according to pre-operation before shift to the selected power stage can be adjusted under "Lighting time".

Setting range, 1-8 minutes.  
Default setting = 5 minutes.

#### 2.7.3 Feed time

Under "Feed time" the feed time that is to be used during pre-operation can be selected.

Setting option, 0.5-20.0 seconds.  
Default setting = 4.

#### 2.7.4 Pause time

Under "Pause time" the pause time that is to be used during pre-operation can be selected.

Setting option, 1-60 seconds.  
Default setting = 40.

#### 2.7.5 Fan speed

Under "Fan speed" the fan speed that is to be used during pre-operation can be selected.

Setting range, OFF / 25 - 100 %.  
Default setting = 52 %.

### (6.)3 Power stages

There are four power stages where settings can be saved for running and pause times for the fuel supply as well as the fan speed etc. The memories are used to save the lighting parameters adapted for different power output. Settings must be made so that power stage 1 is adjusted for the lowest power stage and thereafter increasing power for power stages 2, 3 and 4.

It is extremely important if automatic power regulation has been selected as the automatic lighting control device determines that the settings are made as above.

#### 3.1 Stop temperature

Under "Stop temp" the temperature that is to apply for activating extinguishing according to parameter 4 can be adjusted.

NOTE! "Stop temp" > "Desired value temp" > "Start temp".

Setting range, 20-90 degrees.

Default setting = 85 degrees.

#### 3.2 Start temp

The temperature that is to apply for activating firing sequence according to parameter 2 can be adjusted under "Start temp".

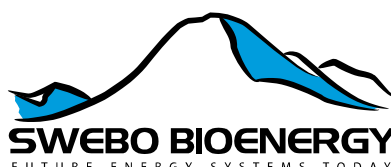
NOTE! "Stop temp" > "Desired value temp" > "Start temp".

Setting range, 20-90 degrees.

Default setting = 70 degrees.

#### 3.3 Automatic regulation

If automatic power regulation is selected in parameter 1.5, make settings for it here.



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### 3.3.1 Desired value temp.

The desired boiler temperature that automatic power regulation is to maintain can be adjusted under "Desired value temp"

NOTE! "Stop temp" > "Desired value temp" > "Start temp".

Setting range, 20-90 degrees.  
Default setting = 80 degrees.

### 3.3.2 Power around temp

The temperature range that is permitted around the desired value for each power range can be adjusted under "Power surrounding temp".

Setting range, 2-10 degrees.  
Default setting = 3 degrees.

### 3.3.3 Power surrounding time

The maximum time for a power stage within the same power range can be adjusted under "Power surrounding time".

Setting range, 1-300 seconds.  
Default setting = 30 seconds.

### 3.4 Power stages

Select here in which power stage settings are to be made. Users can only make limited changes from the standard settings.

Options, 1-4.

#### 3.4.x.1 Feed time

The fuel feed time can be adjusted under "Feed time". This is done separately for each power stage.

Setting range, 0.5-20 seconds.

Default setting (power stage 1) = 2 seconds.  
Default setting (power stage 2) = 2 seconds.  
Default setting (power stage 3) = 3 seconds.  
Default setting (power stage 4) = 5.5 seconds.

#### 3.4.x.2 Pause time

The pause time for the fuel supply can be adjusted under "Pause time". This is done separately for each power stage.

Setting range, 1-60 seconds.

Default setting (power stage 1) = 21 seconds.  
Default setting (power stage 2) = 18 seconds.  
Default setting (power stage 3) = 16 seconds.  
Default setting (power stage 4) = 14 seconds.

#### 3.4.x.3 Fan speed

The fan speed time can be adjusted under "Fan speed". This is done separately for each power stage.

Setting range, Off or 25-100 %.

Default setting (power stage 1) = 38 %.  
Default setting (power stage 2) = 47 %.

Default setting (power stage 3) = 56 %.  
Default setting (power stage 4) = 65 %.

#### 3.4.x.4 Low power mode

The low power stage at which lighting is to shift when the temperature reaches the stop temperature set in parameter 3.1 can be adjusted under "Low power mode". This is done separately for each power stage.

Setting options, Off or 1-3.  
Default setting power mode 1 & 2 = OFF.  
Default setting power mode 3 & 4 = 2.

#### 3.4.x.5 Low power temp

The number of degrees below the stop temperature that shift to lighting according to the low power mode occurs can be adjusted under "Low power temp".

Setting range, 1-10 degrees.  
Default setting = 5 degrees.

### 3.5 Max. Lighting time

How long continuous lighting can occur without stopping can be adjusted under "Max. Lighting time". Even if the temperature has not reached the stop temperature, the automatic control device, after the selected time has been exceeded, will start damping down with corresponding blow cleaning.

Setting range, Off or 1-24 hours.  
Default setting = 6 hours.

## (6.)4 Damping down

When the boiler temperature has reached the stop temperature (3.1), damping down starts. During damping down, fuel feed stops and when the flame detector detects that the fire has gone out the fan speed increases for blow cleaning the burner and combustion chamber.

#### 4.1 Blow cleaning

The applicable running time for the fan during blow cleaning of the burner and combustion chamber can be adjusted under "Blow cleaning".

Setting range, 1-20 minutes.  
Default setting = 6 minutes.

#### 4.2 Fan speed

The fan speed time during blow cleaning can be adjusted under "Fan speed".

Setting range, Off or 25-100 %.  
Default setting = 100 %.

## (6.)5 Failsafe operation

If malfunctions occur during normal lighting in the event of an alarm via the flame detector, the automatic control device will shift to lighting according to failsafe operation. Before firing and transfer to failsafe operation, damping down occurs and only one firing attempt is permitted during failsafe operation.



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Failsafe operation must be acknowledged manually via the operating panel before transfer to normal lighting is permitted. Note that if the automatic control device has shifted to failsafe operation, it signifies some sort of problem. (read more under "Faults and corrective actions")

Settings for failsafe operation are made in this main group. Note that settings can only be made by a service technician.

### 5.1 Start delay

The time before firing in failsafe mode is permitted can be adjusted under "**Start delay**". The period should be long enough for any remaining pellets to be burned.

Setting range, 1-60 minutes.  
Default setting = 30 minutes.

### 5.2 Feed time

The fuel feed time that is to apply during failsafe operation can be adjusted under "**Feed time**".

Setting range, 0.5-20 seconds.  
Default setting = 2.6 seconds.

### 5.3 Pause time

The pause time that is to apply for fuel feed during failsafe operation can be adjusted under "**Pause time**".

Setting range, 1-60 seconds.  
Default setting = 19 seconds.

### 5.4 Fan speed

The fan speed that is to apply during failsafe operation can be adjusted under "**Fan speed**".

Setting range, Off or 25-100 %.  
Default setting = 41 %.

## (6.)6 Alarm

There is an alarm memory which can be used to view the order in which alarms have occurred.

### 6.1 Auxiliary menu not used

### 6.2 Alarm memory

The order in which the alarms occurred in the event of several alarms occurring is displayed under "Alarm memory". The alarm that occurred first is at the top of the list.

#### 6.2.1 - 6.2.8 Alarm memory

The last occurring alarms are displayed here.

- 6.2.1 displays 1<sup>st</sup> received alarm.
- 6.2.2 displays 2<sup>nd</sup> received alarm.
- 6.2.3 displays 3<sup>rd</sup> received alarm.
- 6.2.4 displays 4<sup>th</sup> received alarm.
- 6.2.5 displays 5<sup>th</sup> received alarm.
- 6.2.6 displays 6<sup>th</sup> received alarm.
- 6.2.7 displays 7<sup>th</sup> received alarm.
- 6.2.8 displays 8<sup>th</sup> received alarm.

### 6.3 Alarm sound volume

The sound level for the buzzer signal can be adjusted under "Alarm sound volume".

Setting options, Off, Low, Normal, High.  
Default setting = Normal.

## (6.)7 Manual operation

During manual operation, it is possible to test the electric firing function, the fan and feed auger. There are separate tests of start doses and feed doses for each power stage, this makes it very easy to ascertain how many pellets a given feed time produces for the type of pellets being used.

Manual operation only works when the automatic control device is switched off using the "On/Off" button.

### 7.1 Test mode

Here it is possible to check the function of the fan, electric firing and auger motor.

Setting option: Yes / No

#### 7.1.1 Start dose

The amount of pellets that the start dose produces is checked and adjusted here. Settings to change the settings in parameter 2.3 are also made here.

Setting range, 1-120 seconds.  
Default setting = 50 seconds.

#### 7.1.2 Dose power stage

The amount of pellets that the feed dose for each power stage produces is checked here. During the selected power stage, pellets are fed corresponding to 15 minutes operation, this is to get an idea about which power output the selected stage corresponds to. When this is done, the blue tube detaches from the drop pipe so that the pellets drop into a container, bag or similar. Ejection takes approximately 1-4 minutes.

Weigh in the pellets as follows:

1. When the installation is shut down, go to menu 7.1.
2. Press "Menu" and select "Yes" using the arrow.
3. Scroll down to menu 7.1.2 and press "Menu".
4. Use the arrow to select the power level you wish to weigh for, then press "menu".
5. Menu 7.1.2.X (X = power stage selected [1-4]) appears on the display, along with the message "Infeed time" and the number of seconds.
6. If you do not wish to alter the infeed time, confirm using the "Menu" button and infeeding will start at the selected power stage.
7. When the dose is set, the pellets can be weighed in line with our recommendations (see below).

Recommended values for the pellets (may vary according to the pellet quality):

- Power level 1: 340 g (approx. 6 kW)
- Power level 2: 560 g
- Power level 3: 780 g
- Power level 4: 1,000 g (approx. 20kW)





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After weighing the ejected pellets, carry out a power output calculation as follows.

Output (kW) = weight (kg) x 4 x 4.9 (kWh/kg)

Calculation example: 0.9 x 4 x 4.9 = 17.64 kW

The above calculation is based on the energy value 4.9 kWh/kg, this value can vary slightly between different pellet manufacturers but is usually stated on the pellet bag or can be obtained from the supplier.

### 7.1.3 Electric firing

The electric coil can be checked here. At the same time as the electric coil is switched on, the fan starts to blow a small amount of air past the coil, which makes it easier to establish whether the coil heats up.

Setting option, Yes or No.

### 7.1.4 Fan speed

The function of the fan can be checked here by manually changing the fan speed.

Setting option, Off or 25-100%.

### 7.2 Emergency lighting

Emergency lighting is an operating mode that can be used for lighting even without electric firing. If the firing element is not working, the fire cannot be permitted to be extinguished as firing is not possible without the firing element. This operating mode must therefore only be used for short periods.

Under "emergency lighting" lighting occurs according to the selected power output mode. When the temperature has reached the level selected in "3.4.x.5", lighting instead occurs according to the settings made here.

The idea behind these settings is that the fire is just kept alive so that when the temperature has dropped below the selected start temperature it is possible to start lighting according to the selected power output mode without firing.

#### 7.2.1 Feed time

Under "Feed time" the fuel feed time that is to apply during emergency lighting can be adjusted.

Setting range, 0.5-20 seconds.  
Default setting = 2 seconds.

#### 7.2.2 Pause time

The pause time that is to apply during emergency lighting can be adjusted under "Pause time".

Setting range, 1-300 seconds.  
Default setting = 40 seconds.

#### 7.2.3 Fan speed

The fan speed time that is to apply during emergency lighting can be adjusted under "Fan speed".

Setting range, Off or 25-100 %.  
Default setting = 30 %.

### 7.2.4 Fan time on

The time that the fan is to be active during emergency lighting can be adjusted under "Fan time on". Then the fan stops and is stationary for the time selected in 7.2.5.

Setting range, 1-300 seconds.  
Default setting = 20 seconds.

### 7.2.5 Fan time off

The time that the fan is to be passive during emergency lighting can be adjusted under "Fan time off". Then the fan starts and runs for the time selected in 7.2.4.

Setting range, 1-600 seconds.  
Default setting = 300 seconds.

## (6.)8 Statistics

The accumulated operating data for the automatic lighting control device is shown here.

### 8.1 Total operating time

The total burning time is shown here. The information is available in the following units.

Days, Hours, Minutes, Seconds.

### 8.2 Running time motor

The total running time for the auger motor is shown here. The information is available in the following units.

Days, Hours, Minutes, Seconds.

### 8.3 Feeds

The total number of pellet feeds is shown here.

### 8.4 Firings

The total number of successful firings is shown here.

### 8.5 Reset statistics

All stored statistics can be reset here.

Setting option, Yes or No.

## (6.)9 Default settings

Settings can only be made by an authorised and trained service technician.

### 9.1 Total reset

Here it is possible to recall all settings and reset all parameters to the default settings.

Setting option, Yes or No.

### 9.2 Checking mode

Only for factory testing the automatic lighting control device.



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## 7 OPERATING INSTRUCTIONS

### 7.1 Starting the burner at first power connection

- Switch on the power by pressing the "On/Off" button until the display illuminates.
- The display shows "Ignite?", use the arrow keys and select "Yes" and confirm using "Menu/Save".
- The burner starts firing, which takes a few minutes.
- Note that the auger must be filled before the burner can be started.



### 7.2 Filling the feed auger

The auger is only filled when the burner or auger is new or if there are no more pellets in the pellet store.

- Disconnect the tube from the burner.
- Place a container under the tube.
- Disconnect the incoming power cable and the cable for the auger motor and connect them together.
- The auger motor starts and begins to feed the pellets up through the pipe.
- Allow the auger to be fed until approximately 1 litre of pellets are in the container.
- Check the start dose (7.1.1 in the menu) the dose must be approximately 3 dl, correct the feed time as necessary (2.3). Corresponding corrections should also be made for the feed times for the different power stages.
- Reinstall the tube on the burner as well as both cables to their normal positions on the control panel.

### 7.3 Starting the burner

Firstly, the pellets are weighed in for each power stage. Weigh in the pellets as follows:

1. When the installation is shut down, go to menu 7.1.
2. Press "Menu" and select "Yes" using the arrow.
3. Scroll down to menu 7.1.2 and press "Menu".
4. Use the arrow to select the power level you wish to weigh for, then press "Menu".
5. Menu 7.1.2.X (X = power stage selected [1-4]) appears on the display, along with the message "Infeed time" and the number of seconds.
6. If you do not wish to alter the infeed time, confirm using the "Menu" button and infeeding will start at the selected power stage.
7. When the dose is set, the pellets can be weighed in line with our recommendations (see below).

Recommended values for the pellets (may vary according to the pellet quality):

Power level 1: 340 g (approx. 6 kW)

Power level 2: 560 g

Power level 3: 780 g

Power level 4: 1,000 g (approx. 20kW)

After weighing the ejected pellets, calculate the power output as follows.

Output (kW) = weight (kg) x 4 x 4.9 (kWh/kg)

Calculation example: 0.9 x 4 x 4.9 = 17.64 kW

The above calculation is based on the energy value 4.9 kWh/kg. This value may vary slightly between different makes of pellet, but it is usually stated on the pellet bag or can be obtained from the supplier.

After weighing, start the burner.

- Switch on the power by pressing the "On/Off" button until the display illuminates.
- The display shows "Ignite?", use the arrow keys and select "Yes" and confirm using "Menu/Save".
- The burner starts firing, which takes a few minutes.
- Flue gas instruments should be used to check the flue gas values.

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## 7.4 Switching off the burner

Switch off the burner by pressing the "On/Off" button until the display shows "Blow cleaning". The burner will run the fan for approximately 5-7 minutes to burn off the remaining fuel. If the main current is interrupted, the unburned fuel will remain and turn to embers.



## 7.5 Starting the burner after a power cut

The burner will automatically start on the operating settings that applied before the power cut. The first thing the burner does after a power cut is to blow clean the burner for approximately 5-7 minutes before the first attempt.

If any of the alarm LEDs illuminate after a power cut, the burner had a fault prior to the power cut. (read more under "Faults and corrective actions")

## 8 MAINTENANCE INSTRUCTIONS

Cleaning should be carried out once a week for optimum fuel economy.

***NOTE! Store ash in a fireproof container until it has cooled and remember that the burner and boiler can become extremely hot.***

### 8.1 The boiler

The boiler must be swept clean. Take care to remove soot from all parts of the boiler (between plates).



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### 8.2 Burner pipe

Remove the stop plate from the burner pipe's front part and remove any slag, ash and similar from the burner pipe using the scraper provided. After cleaning, reinstall the stop plate.



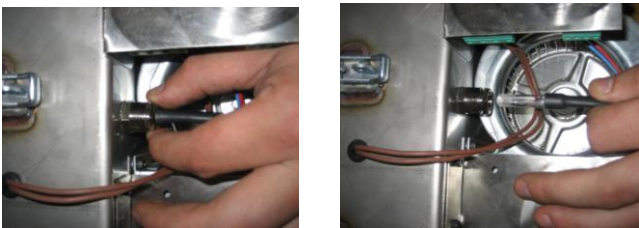
### 8.3 Cleaning the external burner pipe

Clean the external burner pipe 4 times a year as follows, also see exploded diagram under 1.2.1.

- Stop the burner according to 7.4.
- Wait until the burner has cooled down completely.
- Cut the current to the burner, auger and control unit.
- Remove the feed tube.
- Remove the burner cover.
- Detach the two eccentric locks holding the burner housing.
- Pull the cover backwards/upwards.
- Pull the inner pipe out.
- Clean the external pipe.
- Reinstall in reverse order.

### 8.4 Flame detector

Remove the blue burner cover by slackening off the three screws that hold the cover in place and pulling the cover backwards. Pull out the flame detector straight back and clean off any soot and dust (only if necessary).



### 8.5 Checking the safety system

The safety system should be checked when a component has been replaced, damaged or disassembled. This applies to overheat protection, electronic panels, circuit boards, connectors, wiring or similar.

Check overheat protection as follows.

#### 8.5.1 Overheat protection

- Stop the burner according to 7.4.
- Remove the feed tube.
- Blow air using a hot air gun on the inside of the pipe before the sensor.
- Alarm "Overheat" should occur.

### 8.6 Prior to sweeping

Before sweeping, the burner and boiler should be cleaned according to 8.1 - 8.3. The burner can be reinstalled but should not be started before the chimney sweep's visit.

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### 9 FAULTS AND CORRECTIVE ACTIONS

In the event of a fault, a buzzer alarm will be triggered on the burner and one or more lamps will illuminate on the control panel. The panel has five lamps, one for "flame detector error", one for "drop pipe overhear", one for "failsafe operation" as well as two for "extra alarms". The extra alarms can be used for external extra alarms.



Note that it is extremely important to wait until the combustion chamber has been ventilated and the burner has cooled before the door to the combustion compartment is opened. It is also important that the burner pipe is emptied of all fuel before the burner is restarted.

#### 9.1 Alarm "Flame detector"

The burner has stopped, the flame detector does not detect a flame.

| Probable causes   | Corrective action   |
|---|---|
| Dirty sensor  | <ol style="list-style-type: none"> <li>Clean the burner pipe and sensor.</li> <li>Acknowledge the alarm on the "Alarm acknowledgement button".</li> </ol>   |
| Defective firing element (unburned pellets in the burner) | <ol style="list-style-type: none"> <li>Replace the firing element.</li> <li>Acknowledge the alarm on the "Alarm acknowledgement button".</li> </ol>   |
| Incorrect supply of pellets (no pellets in the burner)    | <ol style="list-style-type: none"> <li>Check the level of pellets in the store, fill if necessary.</li> <li>Check for air pockets in the store, shake or move the store so that the pellets drop down.</li> <li>Check that the auger is not blocked, tap or shake the auger and, if necessary, remove pellets from it.</li> <li>Acknowledge the alarm on the "Alarm acknowledgement button".</li> </ol> |
| None of the above faults                                  | <ol style="list-style-type: none"> <li>Check the flame detector's switches and wiring, fix or replace flame detector.</li> <li>Acknowledge the alarm on the "Alarm acknowledgement button".</li> </ol>  |

#### 9.2 Alarm "Overheat"

The overheat protection indicates that the burner's drop pipe is too hot , >95 degrees.

| Probable causes             | Corrective action   |
|-----------------------------|---|
| Poor draught in the boiler  | <ol style="list-style-type: none"> <li>Wait about 15 minutes until the burner has cooled down completely.</li> <li>Clean the burner pipe.</li> <li>Check the flue gas damper and flue in the boiler and the chimney. In the event of a problem, contact a chimney sweep.</li> <li>Acknowledge the alarm on the "Alarm acknowledgement button".</li> </ol> |
| Sensor not connected        | <ol style="list-style-type: none"> <li>Wait about 15 minutes until the burner has cooled down completely.</li> <li>Connect the sensor.</li> <li>Acknowledge the alarm on the "Alarm acknowledgement button".</li> </ol>   |
| Faulty sensor/damaged cable | <ol style="list-style-type: none"> <li>Wait about 15 minutes until the burner has cooled down completely.</li> <li>Replace or fix the sensor/cable.</li> <li>Acknowledge the alarm on the "Alarm acknowledgement button".</li> </ol>  |
| Power output too high       | <ol style="list-style-type: none"> <li>Contact installer.</li> </ol>  |

Note that the acknowledgement must be made partly in the control system, see (6.)6.1, but also manually on the overheat protection. Make a manual acknowledgement as follows. Remove the cover from over the overheat protection on the drop pipe. The overheat protection is under this cover which is acknowledged by pressing in the popped out button. Reinstall the cover.

#### 9.3 Alarm "Failsafe operation"

Further information regarding failsafe operation can be found under 6.5, and acknowledged on button "Alarm acknowledgement" on the front of the control panel.

#### 9.4 Question mark filled display, "?????????"

This occurs when the control unit for some reason receives conflicting information. This is extremely rare and the control unit will acknowledge itself within a short period of time and shift to normal operation. If self-acknowledgement fails, contact technical support.

## **10      ADJUSTING THE BURNER**

### **10.1 Negative pressure**

Check negative pressure using a vacuum gauge and set it so that the negative pressure in the boiler is 1-1.5mm VP.

### **10.2 Flue gas temperature**

The output must be selected so that a flue gas temperature of 150-200 degrees is obtained (on the condition that negative pressure is set). If the correct flue gas temperature is not obtained there is a risk of condensation building up which can damage the chimney (see 10.3).

### **10.3 Checking for condensation**

Check for condensation by reading off the flue gas temperature one metre down from the chimney top when the burner has been running a while and the boiler is at approximately 80 degrees. The flue gases should maintain a temperature of at least 60-70 degrees to avoid condensation build-up.

If condensation is detected in the chimney, a local chimney sweep should be contacted immediately.









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***NOTE! This page must be retained by the owner!***

### WARRANTY AND INSTALLATION CERTIFICATE SWEBO PB20

|                       |  |
|-----------------------|--|
| Manufacture number:   |  |
| Date of installation: |  |

|  |     |
|--|-----|
| Negative pressure in the chimney, hot:     | Pa  |
| Negative pressure in the chimney, cold:    | Pa  |
| Current outdoor temperature:               | °C  |
| Flue gas temperature, maximum load:        | °C  |
| Boiler, make/model:                        | /   |
| Boiler, model year:                        |     |
| Carbon dioxide content (CO <sub>2</sub> ): | %   |
| Carbon monoxide content (CO)               | Ppm |
| Oxygen content (O <sub>2</sub> )           | %   |

#### INSTALLATION CARRIED OUT AT:

|                 |  |
|-----------------|--|
| Name:           |  |
| Address:        |  |
| Postal address: |  |
| Telephone:      |  |

#### SALES:

#### INSTALLATION AND TRAINING:

|                   |  |                   |  |
|-------------------|--|-------------------|--|
| Company:          |  | Company:          |  |
| Salesperson:      |  | Installer:        |  |
| Address:          |  | Address:          |  |
| Postal address:   |  | Postal address:   |  |
| Telephone:        |  | Telephone:        |  |
| Mobile telephone: |  | Mobile telephone: |  |

#### Applicable warranty:

| Designation               | Period of warranty | Comments   |
|---------------------------|--------------------|------------|
| Pellet tube               | No warranty        | Consumable |
| Firing element            | 1 years            | Consumable |
| Other parts of the burner | 2 years            | *          |
| Labour costs              | 2 years            | *          |

\*On the condition that the burner is installed and set-up by an authorised installer.

The user of the burner is hereby certified to have undergone the training which is part of the installation work.

Name in block capitals

Signature

.....

.....



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**NOTE! This page must be sent to SWEBO Bioenergy AB,  
address on the reverse of this paper!**

## WARRANTY AND INSTALLATION CERTIFICATE SWEBO PB20

|                       |  |
|-----------------------|--|
| Manufacture number:   |  |
| Date of installation: |  |

|  |     |
|--|-----|
| Negative pressure in the chimney, hot:     | Pa  |
| Negative pressure in the chimney, cold:    | Pa  |
| Current outdoor temperature:               | °C  |
| Flue gas temperature, maximum load:        | °C  |
| Boiler, make/model:                        | /   |
| Boiler, model year:                        |     |
| Carbon dioxide content (CO <sub>2</sub> ): | %   |
| Carbon monoxide content (CO)               | Ppm |
| Oxygen content (O <sub>2</sub> )           | %   |

### INSTALLATION CARRIED OUT AT:

|                 |  |
|-----------------|--|
| Name:           |  |
| Address:        |  |
| Postal address: |  |
| Telephone:      |  |

### SALES:

### INSTALLATION AND TRAINING:

|                   |  |                   |  |
|-------------------|--|-------------------|--|
| Company:          |  | Company:          |  |
| Salesperson:      |  | Installer:        |  |
| Address:          |  | Address:          |  |
| Postal address:   |  | Postal address:   |  |
| Telephone:        |  | Telephone:        |  |
| Mobile telephone: |  | Mobile telephone: |  |

### Applicable warranty:

| Designation               | Period of warranty | Comments   |
|---------------------------|--------------------|------------|
| Pellet tube               | No warranty        | Consumable |
| Firing element            | 1 years            | Consumable |
| Other parts of the burner | 2 years            | *          |
| Labour costs              | 2 years            | *          |

\*On the condition that the burner is installed and set-up by an authorised installer.

The user of the burner is hereby certified to have undergone the training which is part of the installation work.

Name in block capitals

Signature

.....

.....



Warranty  
**SWEBO**  
Pelletsbrännare PB/20

Stamp

SWEBO Bioenergy AB  
Bullerleden 7  
SE-961 67 Boden  
Sweden

Fold here

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