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# Wood chip boiler 200 kW



## Service manual





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# 1 General information

## Support for cleaning and maintenance

This document helps support you with the cleaning and maintenance of the boiler. The required steps are listed in detail here.

Take note of the date of the cleaning or maintenance and any faults that may have occurred. This facilitates troubleshooting for the expert (system operator, heating technician...).

 For services (such as commissioning, maintenance, fault fixing provided by ETA customer service), the service reports are provided in digital form. For clarity, you should staple these reports to this document or enclose them.

## Commissioning data

Enter the boiler number (printed on the type plate), the date of commissioning as well as the heating technician who commissioned the system.

Commissioning data
Boiler number: _____
Commissioned on: _____
Commissioned by (company): _____ _____ _____


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## Subject to technical changes

We reserve the right to make technical modifications without notice. Printing and typesetting errors or changes of any kind made in the interim are not cause for claims. Individual configurations depicted or described here are only available optionally. In the event of contradictions between individual documents regarding delivery scope, the information in our current price list applies.

## Explanation of symbols

 Instructions and information

## Layout of safety instructions

 **SIGNAL WORD!**  
Type and source of danger

Possible effects

- Measures for avoiding the danger

## Types of safety instruction

 **CAUTION!**

On non-compliance with this safety instruction, there is a risk of material damage.

 **WARNING!**

On non-compliance with this safety instruction, there is a risk of physical injury.

 **DANGER!**


On non-compliance with this safety instruction, there is a risk of major physical injury.

## 2 Cleaning and maintenance

### 2.1 Maintenance notes

#### **Performing regular cleaning and maintenance**

To ensure satisfactory functioning, cleaning and maintenance must be performed at regular intervals. Carry out this work within the intervals stated here.

 All tasks where the maintenance table reads "Customer" or "Customer or expert" in the column "To be carried out by" can be carried out by any trained adult. Instructions can be provided by the heating technician or our customer service.

Steps that are marked with "Expert" only can only be carried out by the heating technician or our customer service.

#### **Operation only by trained personnel**

The product may be operated by trained adults only. Training may be provided by the heating technician or our customer service. Please read the associated documentation carefully in order to avoid errors during operation and maintenance.

Persons who lack experience and knowledge as well as children may not operate, clean, or maintain the product.

#### **Explanation of pictograms**



Switch the boiler on/off with the mains switch.



Perform a visual check of the components.



Clean the components, for example, with a soft cloth.



Remove deposits with a vacuum or an ash vacuum.



Remove deposits with the poker.



Remove deposits with the cleaning brush.



Replace the wear parts (e.g. seals) on the components.



Lubricate the components. The lubricant to use is listed in the respective step.



Install the components with some force (for example the retaining tube or the Lambda probe).



Handle the components carefully, since they break very easily.

#### **Clean panels**

If necessary, clean the panels of the boiler and the ETAtouch screen with a moist cloth.



Under no circumstances use aggressive solvents, chemicals or scouring agents. They can lead to stress cracks and damage.

#### **Checking the boiler counters**

The counters can be seen in the boiler's text menu. Counter [Full load hours since maint.] is used for the service intervals. If it has reached one of the listed intervals, maintenance is required. This counter is in:

Counters




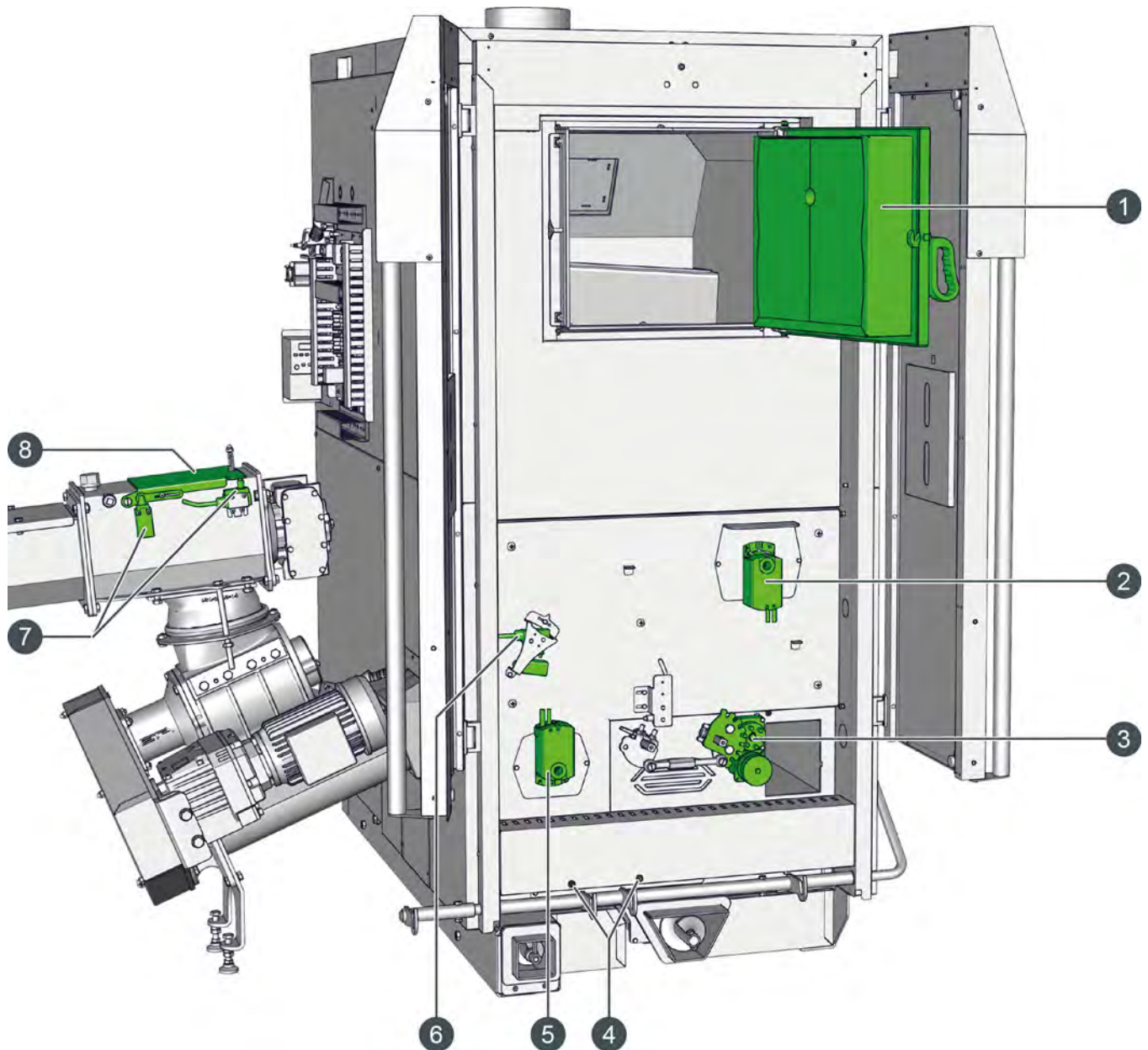
Full load hours since maint.



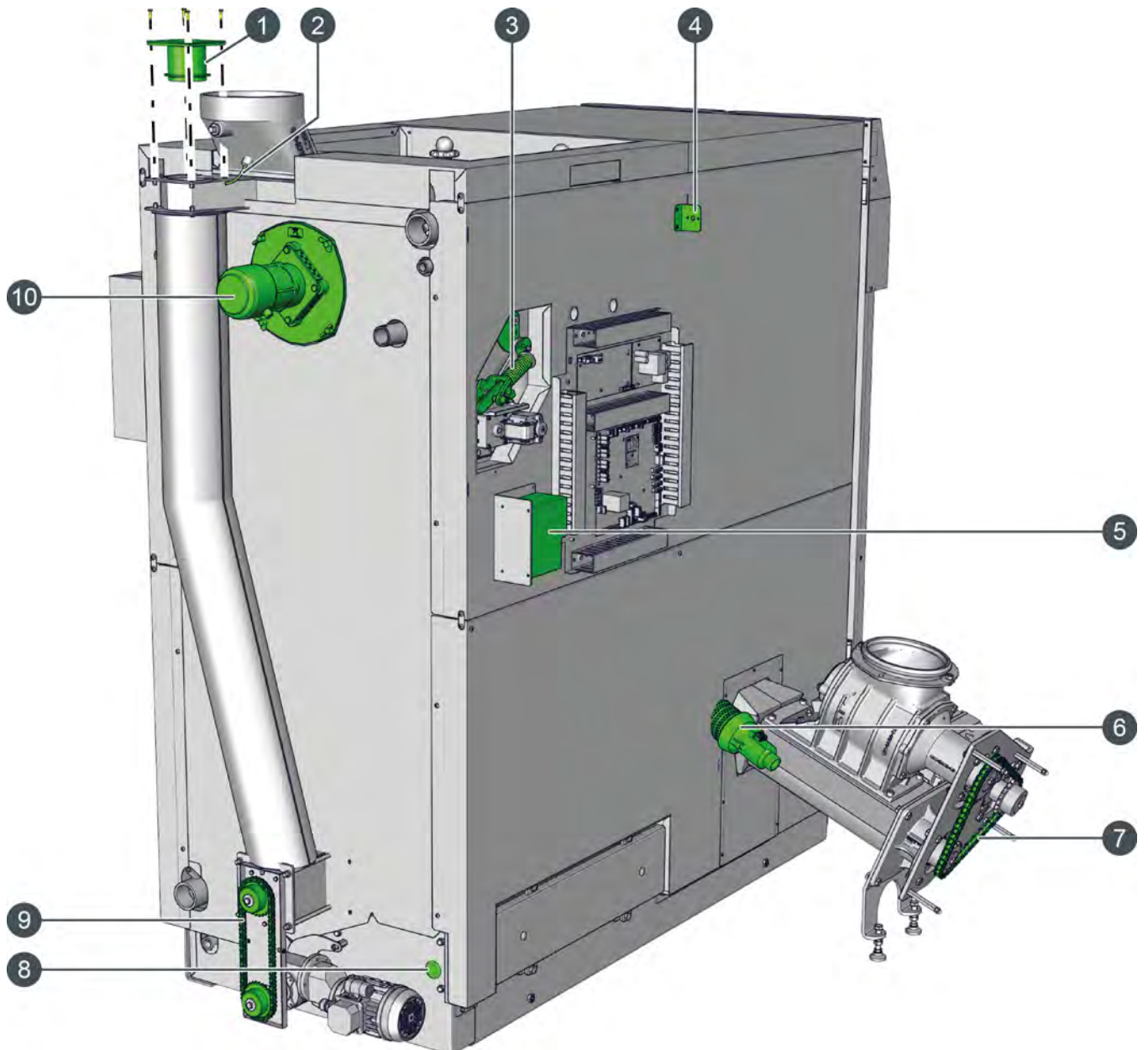
## 2.2 Maintenance openings in the boiler

### *Maintenance openings and components*

 The illustration shows a boiler with its fuel discharge on the left side. The fuel discharge depicted here is the standard configuration.



- |   |  |   |   |
|---|--|---|---|
| 1 | Combustion chamber door  | 6 | Firebed switch (mirrored for fuel discharge installed on the right) |
| 2 | Secondary air actuator (mirrored for fuel discharge installed on the right)  | 7 | Drop chute safety switch  |
| 3 | Drive for tilting grate (mirrored for fuel discharge installed on the right) | 8 | Drop chute maintenance cover  |
| 4 | Position switch for ash bins   |   |   |
| 5 | Primary air actuator (mirrored for fuel discharge installed on the right)    |   |   |



- 1 Shut-off plug for optional flue gas recirculation
- 2 Flue gas temperature sensor
- 3 Heat exchanger cleaner (on both sides)
- 4 Release button for safety temperature limiter (STB)
- 5 Frequency converter
- 6 Ignition
- 7 Stoker drive chain
- 8 Plug screw for lubricating the de-ashing system's drive chain
- 9 Drive chain for optional flue gas recirculation
- 10 Draught fan

## 2.3 Maintenance table

Tasks	Regularly	Every 2500 h or 1 year	Every 5000 h or 3 years	to be performed by
Empty the ash bins <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	X	X	X	Customer
Check the pressure of the heating system	X	X	X	Customer
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>		X	X	Customer or specialist
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>		X	X	Customer or specialist
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>		X	X	Customer or specialist
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>		X	X	Customer or specialist
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>		X	X	Customer or specialist
Clean the draught fan			X	Specialist
Clean the temperature sensor			X	Specialist
Check air valve for primary and secondary air			X	Specialist
Lubricate the grate drive			X	Specialist
Check ash bin position switches			X	Specialist
Check de-ashing system			X	Specialist
Clean ignition			X	Specialist
Check boiler doors			X	Specialist
Check stoker <ul style="list-style-type: none"> <li>Check stoker drive chain</li> <li>Check gap of the rotary valve position sensor</li> </ul>			X	Specialist
Check drop chute safety switch			X	Specialist





<b>Tasks</b>	<b>Regularly</b>	<b>Every 2500 h or 1 year</b>	<b>Every 5000 h or 3 years</b>	<b>to be performed by</b>
Check end position of the rotary valve			X	Specialist
Calibrate the lambda probe			X	Specialist
Reset the maintenance counter			X	Specialist
Perform heating test			X	Specialist

## 2.4 Regularly

### 2.4.1 Preparation

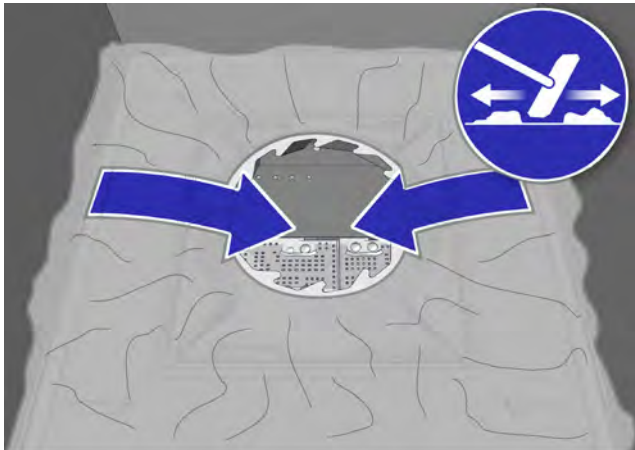
#### Stop heating


End the boiler's heating mode with the On/Off switch  in the boiler overview window. The boiler performs an ember burnout and then changes to [Switched off] mode. Press the [De-ash]  button to make the boiler perform a final de-ashing.

### 2.4.2 Empty the ash bins

#### Remove excess ash from secondary combustion chamber


Open the combustion chamber door and use the poker to scrape the excess ash into the combustion chamber.



 The ash in the secondary combustion chamber may not be steeper than 45°.

To remove this ash, initiate boiler de-ashing by pressing the [De-ash]  button.

#### Empty ash bins, check seals

 The sight glass can be used to check the fill level of the ash bins without opening them.

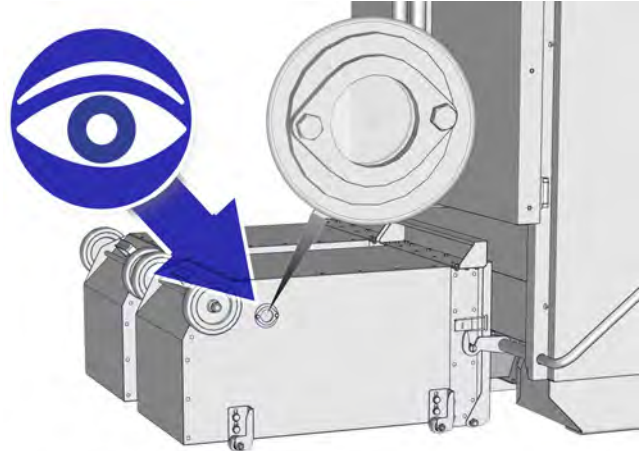
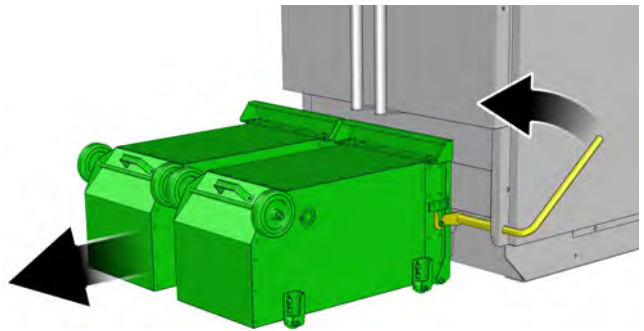


Fig. 2-1: Sight glass

To remove the ash bins, pull the lever on the side towards the ash bins to release them. Remove the ash bins from the boiler.



Close the covers in the ash bin lids and fasten them with the wing nuts.

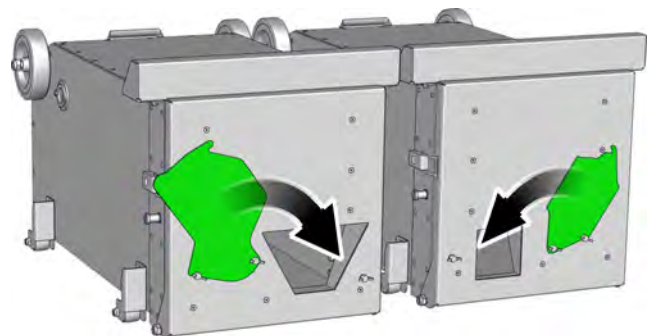


Fig. 2-2: Covers

Open the fasteners on the lids and empty the ash bins.

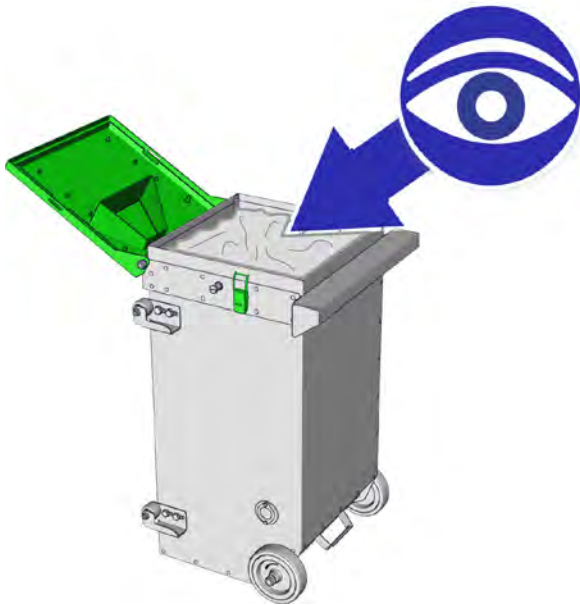


Fig. 2-3: Check ash

**i** If there are large pieces of slag in the ash, the combustion chamber and the tilting grate must be checked and the de-ashing interval reduced, if necessary.

Inspect the seal in the ash bin lids to ensure it is in good order, and replace if necessary.

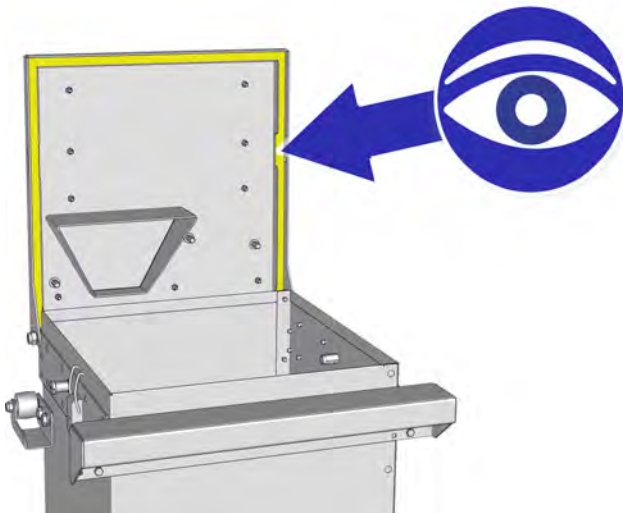


Fig. 2-4: Seal

Inspect the ash bin seals on the boiler to ensure they are in good order, replace them if necessary.

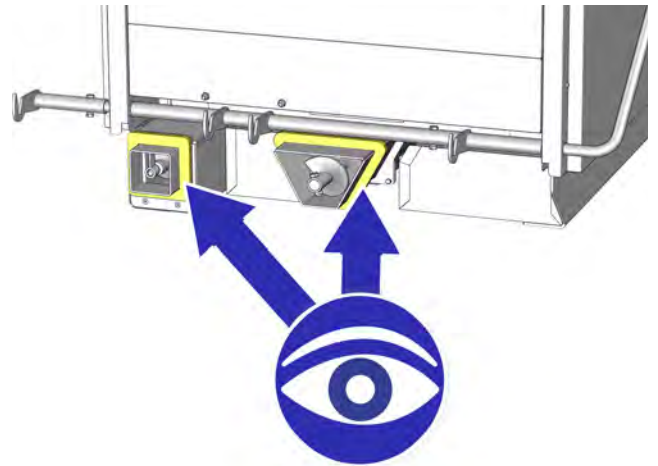


Fig. 2-5: Seal

**Attach the ash bins to the boiler**

Reattach the cover to the ash bins and secure with the fasteners. Then re-open the covers in the lids.

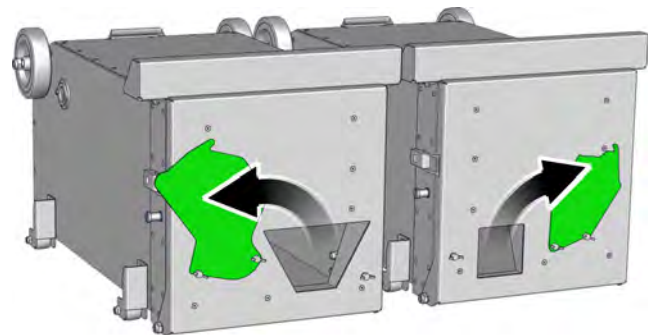


Fig. 2-6: Covers

Push the ash bins over the connections on the boiler and attach to the boiler with the lever.

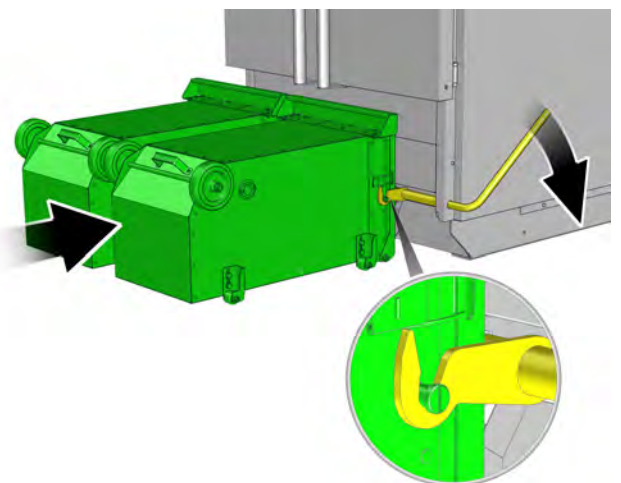


Fig. 2-7: Attach the ash bins to the boiler with the lever


### 2.4.3 Check pressure of the heating system


#### ***Check heating system water pressure***

In buildings with up to three storeys, the optimum water pressure in a cold heating system is between 1 and 2 bar. For a warm heating system, the optimum water pressure is between 1.5 and 2.5 bar.




Fig. 2-8: Pressure gauge

 If the water pressure is too low, fill the cold heating system to approx. 2 bar. Do not fill to a higher pressure, as water expands with increasing temperature and the water pressure also rises when the boiler is in heating mode. The safety valve triggers at approx. 2.8 bar.

 If the water pressure drops several times a year, contact a heating professional. When refilling water in the heating system, the same water as used during initial filling should be used whenever possible (e.g. prepared water).

### 2.4.4 Establish operational readiness



#### ***Switching on the boiler***

Switch the boiler back on with the On/Off  switch.

## 2.5 2500 h / annually

### 2.5.1 Preparation

#### Stop heating

End the boiler's heating mode with the On/Off switch  in the boiler overview window. The boiler performs an ember burnout and then changes to [Switched off] mode. Press the [De-ash]  button to make the boiler perform a final de-ashing.

#### Switch off boiler via mains switch

##### WARNING!

- ▶ Switch off the electricity to the boiler via the mains switch. This prevents injuries caused by switching the boiler on inadvertently.

##### WARNING!

#### Burns caused by hot parts



Risk of burning on parts located behind the boiler housing, even after shutting the boiler down.

- ▶ Allow the boiler to cool down sufficiently before starting any activities.

### 2.5.2 Check safety devices

#### Checking the safety valves

Perform a visual check of all safety valves of the heating system. The outlets of the safety valves may not drip.

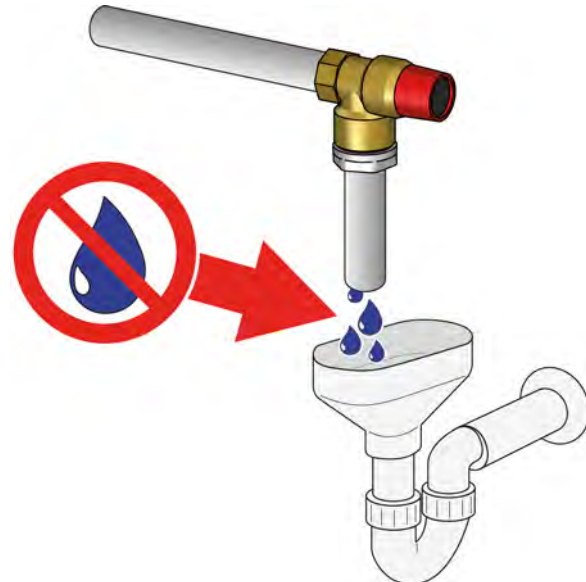



Fig. 2-9: Safety valve

If the safety valve drips, open it with a quarter turn of the red cap and rinse it out (danger of scalding). If the safety valve still cannot be sealed effectively after being rinsed several times, it must be cleaned or replaced by an installer (heating technician).

 A manual check of the safety valve is carried out with a 1/4 turn of the red cap. This rinses the safety valve. However it is very likely that the seal will be damaged in the process and thus the outlet will drip. That is why you should only perform this check on weekdays and never on weekends in cold winter, as no heating technician may be available if the seal is defective.

#### Check function of safety devices in fuel path

Check the safety devices in the fuel path, such as the temperature-monitoring system, the manually operated extinguishing system or the automatic extinguishing system.

Also check malfunction indicators and alarms, for example if messages from the boiler room are displayed elsewhere.

### Checking the thermal relief valve

Visually examine the thermal relief valve. The outlet should not drip.



Fig. 2-10: Thermally actuated drain valve

If the relief valve is dripping, rinse it by pressing the red button (risk of scalding). If the relief valve still cannot be closed tightly after being rinsed several times, it must be cleaned by an installer (heating technician) or replaced.

**i** A manual check of the relief valve is carried out by pressing the red button. This rinses the relief valve. However it is very likely that the seal will be damaged in the process and thus the outlet will drip. That is why you should only perform this check on weekdays and never on weekends in cold winter, as no heating technician may be available if the seal is defective.

### 2.5.3 Chimney

#### Clean the flue tube

Sweep the flue tube from the flue outlet to the chimney and remove flue ash from the chimney using a vacuum cleaner.

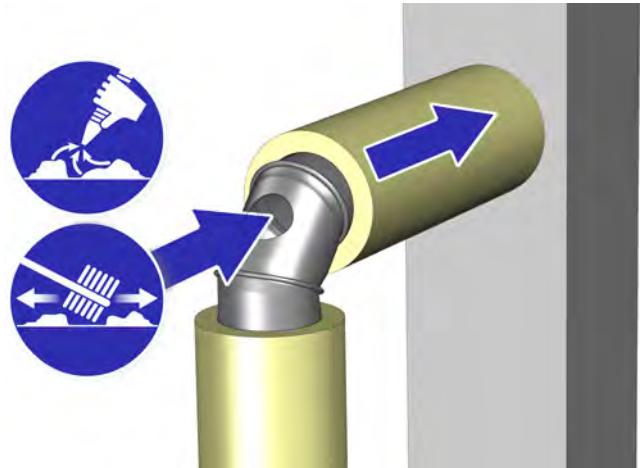


Fig. 2-11: Flue tube

**i** Sweep the ash into the chimney, not into the boiler. Otherwise, ash will collect in the fan housing and can block the draught fan.

#### Rinse the chimney's condensate drain

Check the chimney's condensate drain to make sure it is free, as ash can block the outlet. To check, rinse the outlet with some water.

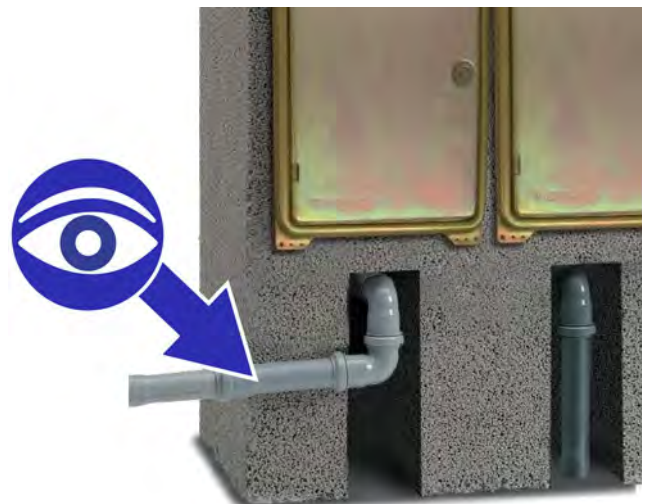


Fig. 2-12: Condensate drain

## 2.5.4 Cleaning the combustion chamber

### Clean inside of the secondary combustion chamber

Open the combustion chamber door and scrape all of the ash from the secondary combustion chamber into the primary combustion chamber with the poker.

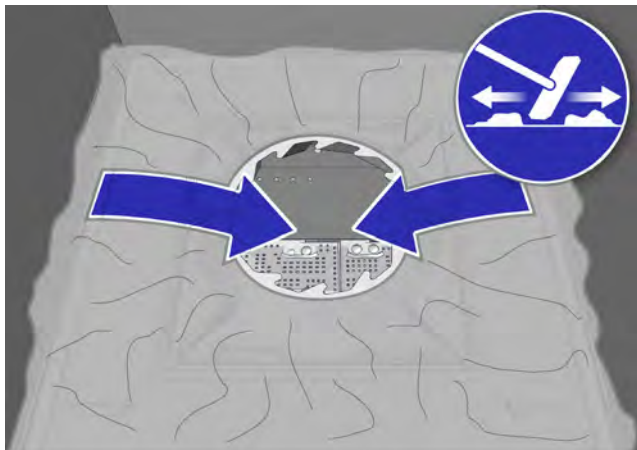


Fig. 2-13: Secondary combustion chamber

Remove both halves of the combustion chamber cover from the secondary combustion chamber.

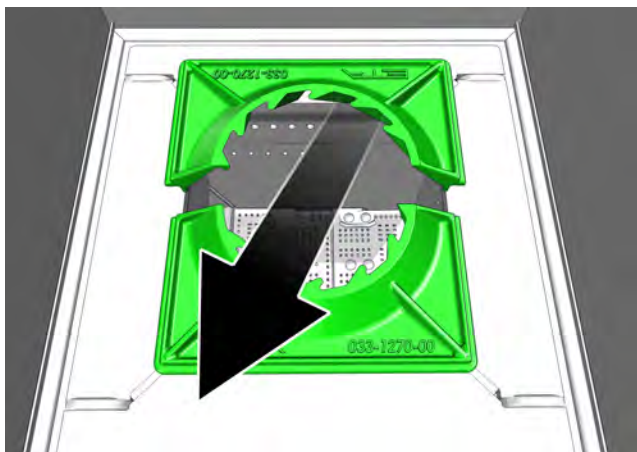


Fig. 2-14: Combustion chamber cover

### Clean tilting grate

The tilting grate cannot be rotated by hand. Therefore, press the [De-ash] button to de-ash the boiler. The grate is tilted and remains in this position for approximately 15 seconds.

#### **WARNING!**

#### **Danger of crushing due to tilting grate**

- ▶ When the grate is tilted, switch off the boiler with the mains switch. This causes the grate to remain in this position so injuries while cleaning the grate are prevented.

Use the poker to clean the tilting grate and the openings in it; let the ash fall down.

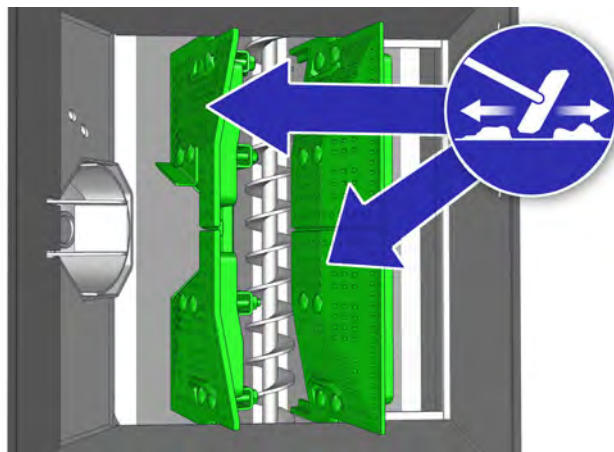


Fig. 2-15: Tilting grate

 Do not hit the tilting grate with the poker.

### Clean secondary air openings

Clean secondary air openings (above the tilting grate).

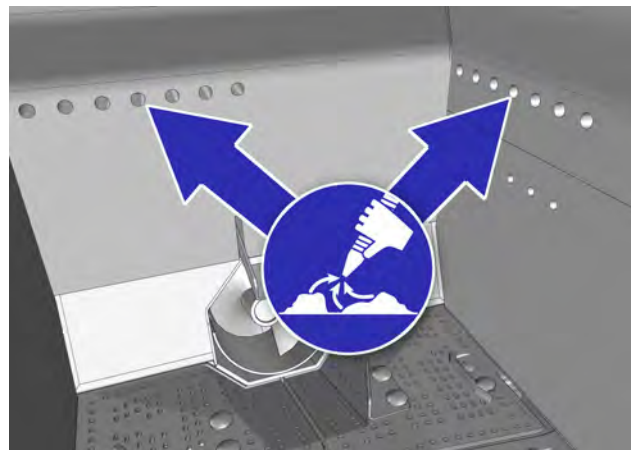


Fig. 2-16: Secondary air openings

**Clean ignition tubes**

Check the ignition tube for combustion residues and clean it by vacuuming.

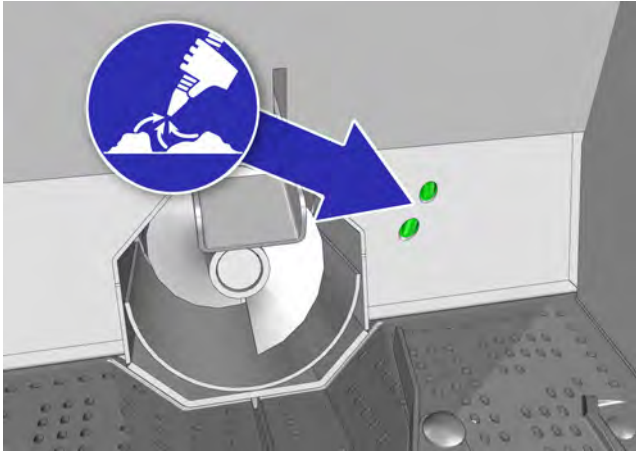


Fig. 2-17: Ignition tubes

**Remove the cover on the front**

Remove the screws for securing the cover. Push the cover on the front up slightly, detach and remove it.

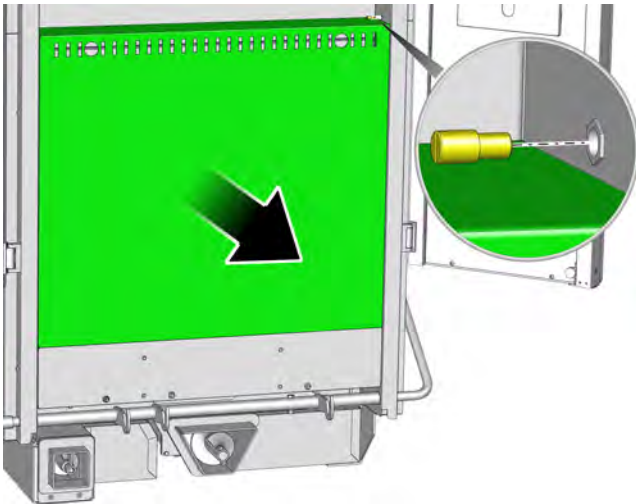


Fig. 2-18: Cover

**Check firebed button and firebed switch**

Check the mobility of the firebed button in the combustion chamber by repeated lifting.

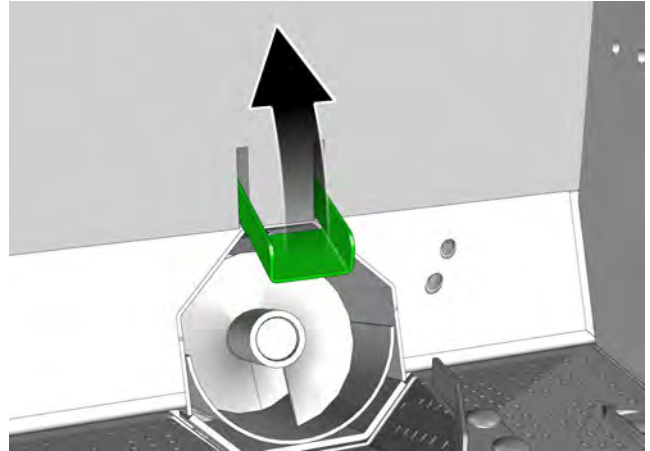


Fig. 2-19: Firebed button

The firebed switch on the front of the boiler must be actuated when lifting.

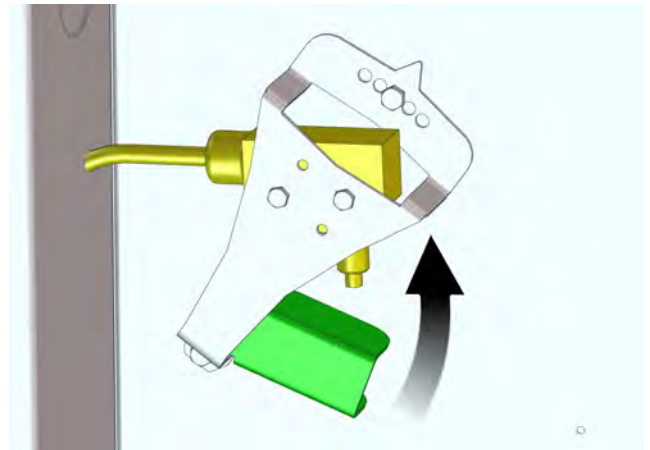


Fig. 2-20: Firebed switch



**Mount cover on the front**

Mount the cover on the front of the boiler. Also re-install the screws for securing the cover.

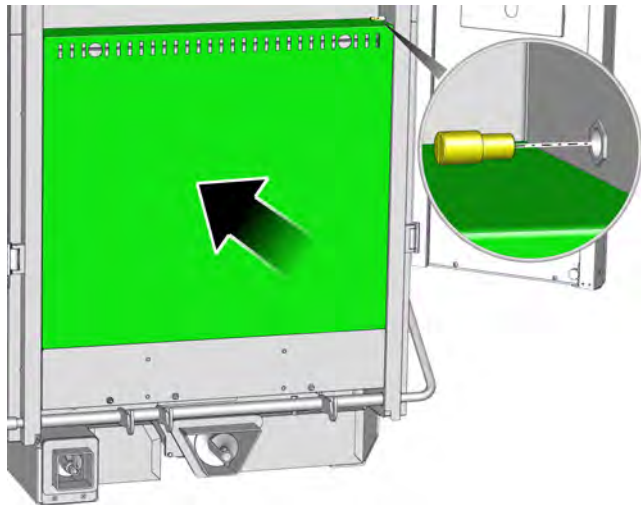


Fig. 2-21: Cover

**Check refractory lining**

Check the refractory lining of the primary and secondary combustion chambers for damage and cracks.

**Replace the combustion chamber cover**

Replace both halves of the combustion chamber cover. Ensure that they are properly centred.

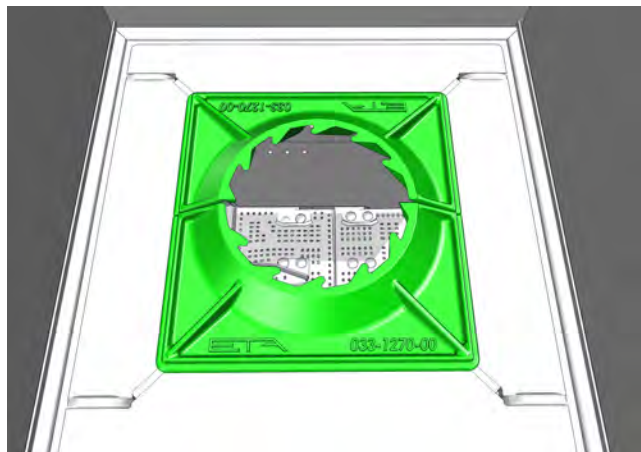



Fig. 2-22: Combustion chamber cover

 The convex surface of the combustion chamber cover must point to the top of the boiler.

**2.5.5 Cleaning the heat exchanger**

**Remove heat exchanger cover**

Remove the insulating lid on the top of the boiler.

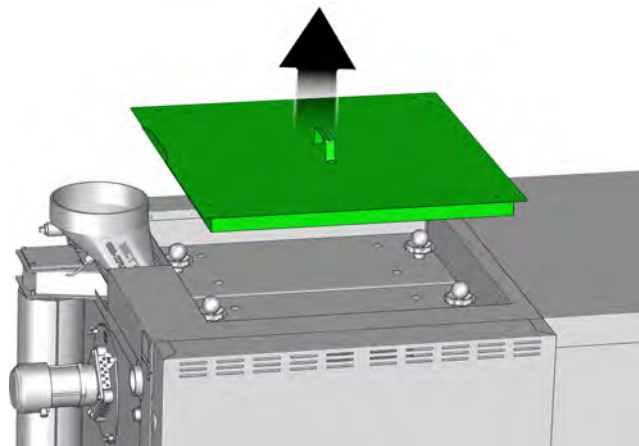


Fig. 2-23: Insulating cover

Loosen the knurled nuts on the heat exchanger cover by turning them anti-clockwise and rotate the ball knobs by 180°.

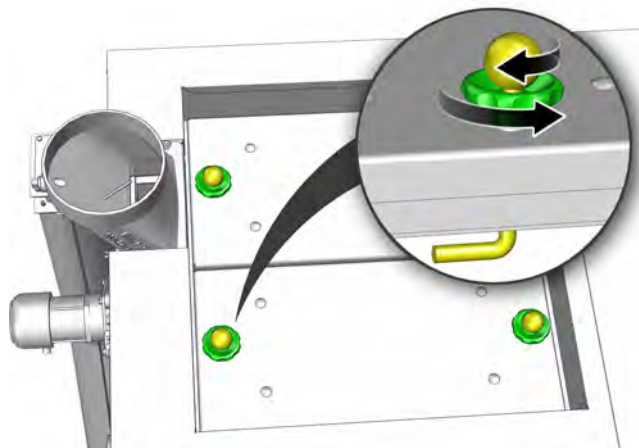


Fig. 2-24: Knurled nuts and ball knobs

Remove the heat exchanger cover.

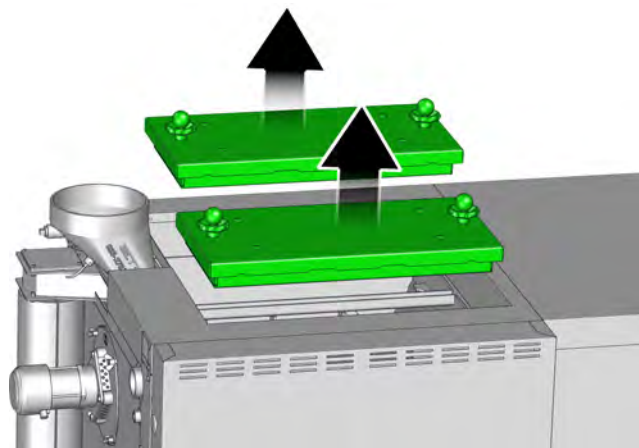


Fig. 2-25: Heat exchanger cover

### Remove internal cover

Detach the internal cover's retaining bracket. By loosening the wing nuts and turning the retaining bracket upwards.

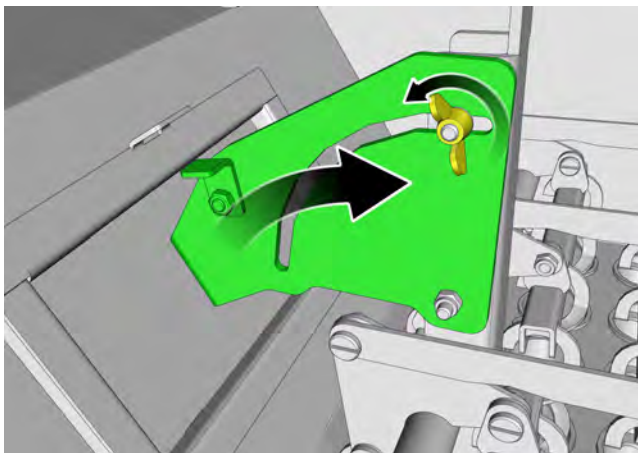


Fig. 2-26: Locking

Loosen the screws on the internal cover's retaining tabs and turn the tabs away from the cover. Then remove the internal cover from the heat exchanger.

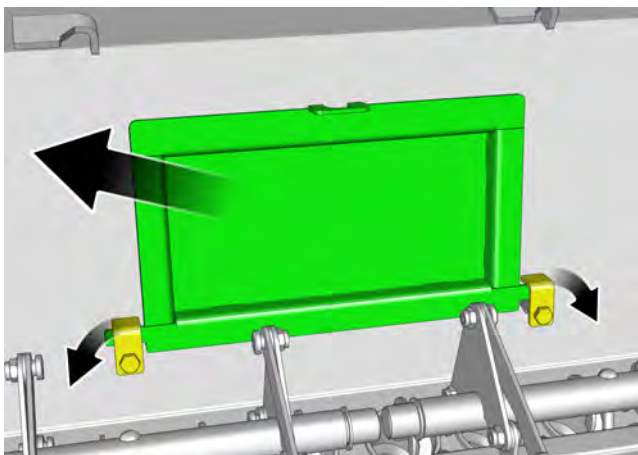


Fig. 2-27: Internal cover

### Clean heat exchanger and downdraft channel

Brush out the downdraft channel and remove the flue ash from the heat exchanger, for example with an ash vacuum.

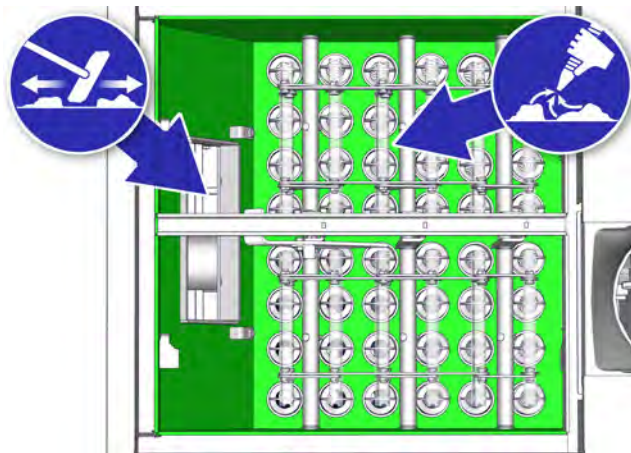


Fig. 2-28: Heat exchanger and downdraft channel

### Clean lambda probe

Vacuum out the head of the lambda probe using a vacuum cleaner. Do not dismantle the lambda probe.

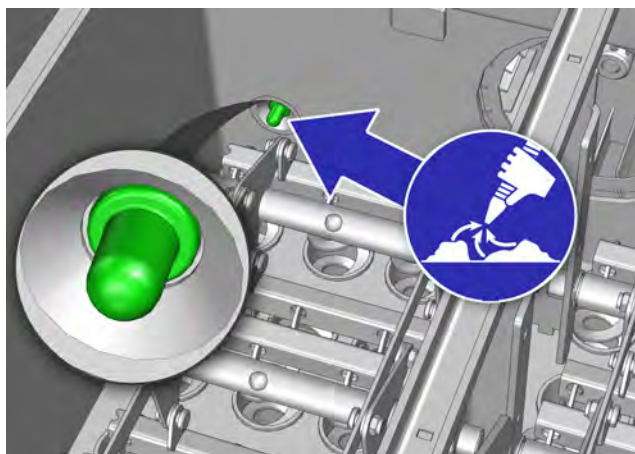


Fig. 2-29: Head of the lambda probe

### Insert internal cover

Check the ceramic seal on the internal cover and replace it if necessary.

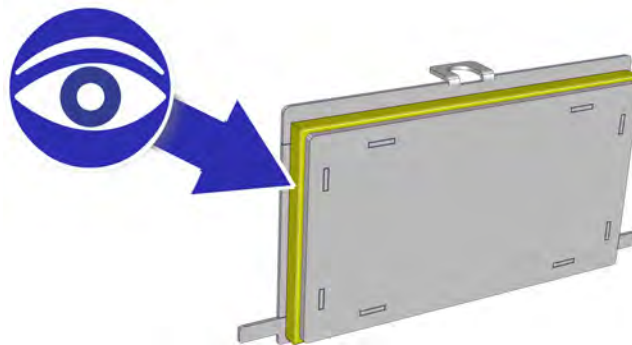


Fig. 2-30: Seal

Replace the internal cover, ensuring that it is positioned properly. Fasten the retaining tabs in place and secure the internal cover with the retaining bracket.

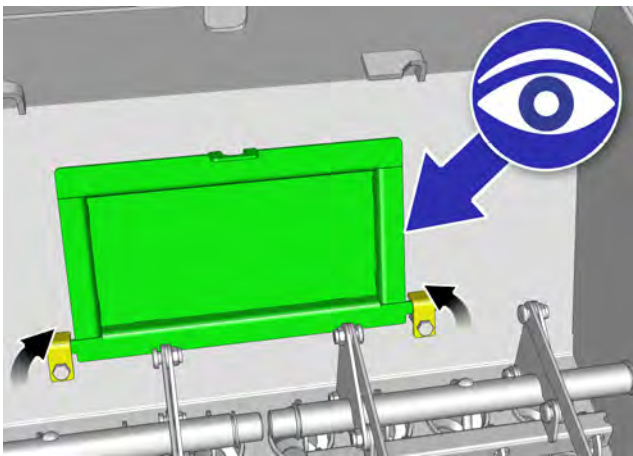


Fig. 2-31: Internal cover

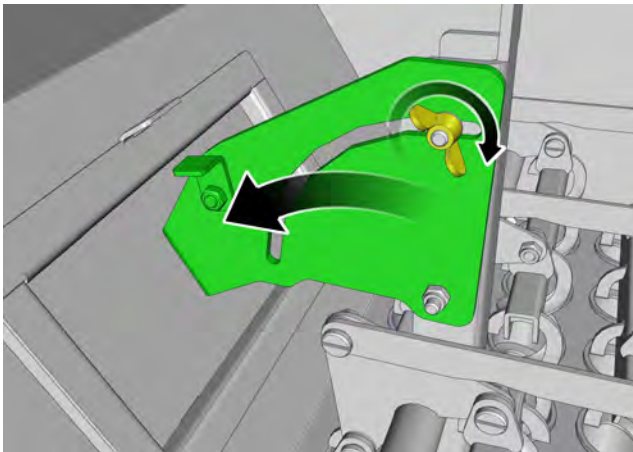


Fig. 2-32: Locking

**Check heat exchanger tubes**

Check the heat exchanger tubes and the turbulators for tar deposits.

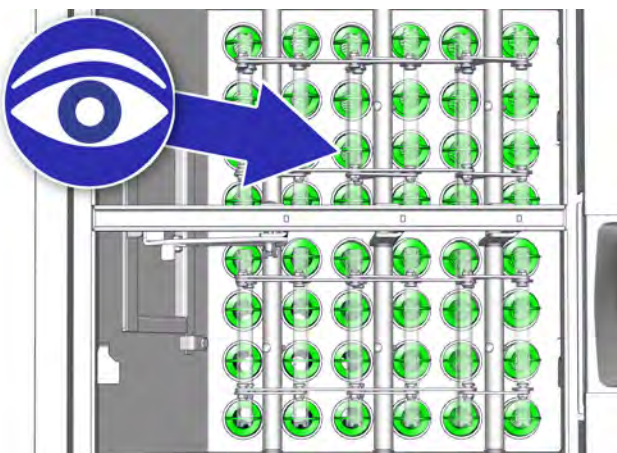


Fig. 2-33: Heat exchanger tubes

**i** Tar deposits can have several causes, for example:

- leak air through the heat exchanger cover, the combustion chamber door or the lambda probe.
- an incorrectly calibrated lambda probe
- overly moist wood chips
- insufficient boiler runtime (start-stop operation)

**Check heat exchanger cleaner**

Remove the covers on both sides of the boiler.

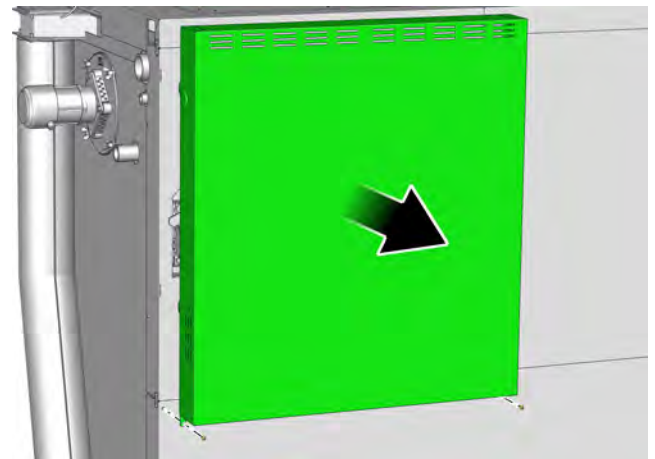


Fig. 2-34: Cover



Fig. 2-35: Cover

Manually operate the lever and check its ease of movement on both sides of the boiler. Lubricate the spring, guide and bearing with a heat-resistant lubricant.

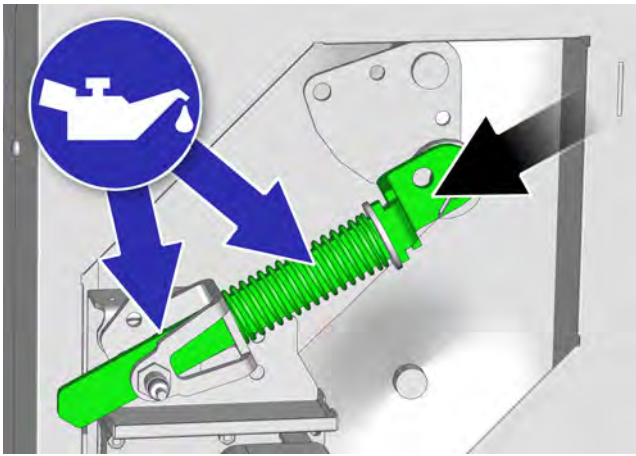


Fig. 2-36: Lever

Check the gap between the sensor and the spring arm on both sides of the boiler. It must be 2 mm.

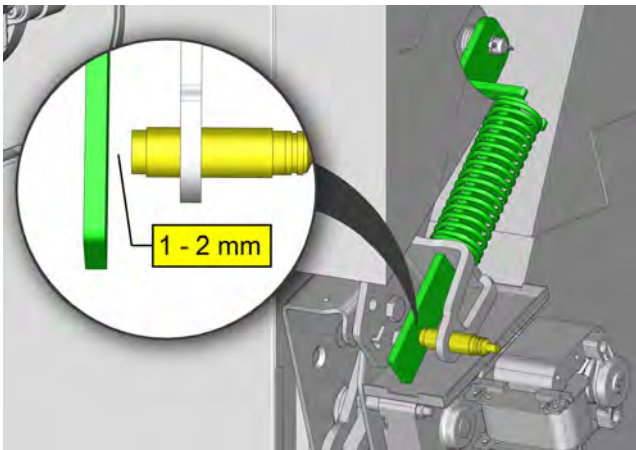


Fig. 2-37: Position sensor

### Clean the housing of the frequency converter

Clean dust and dirt from the frequency converter housing.

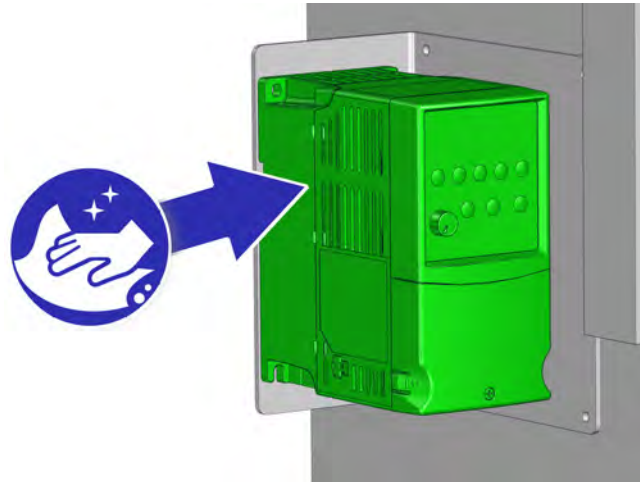


Fig. 2-38: Frequency converter

### Attach covers

Re-install the covers on both sides of the boiler.

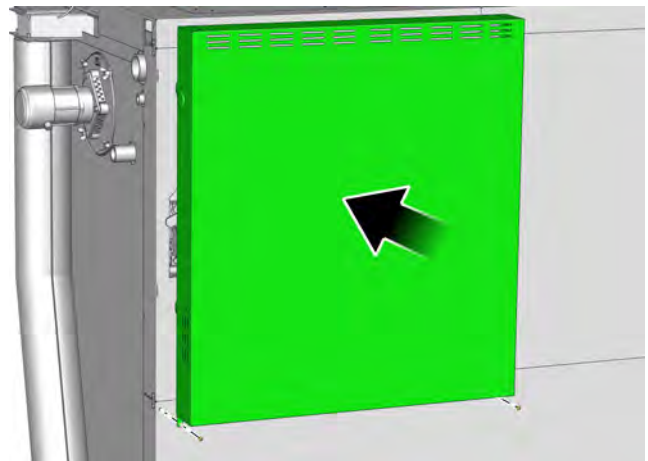


Fig. 2-39: Cover

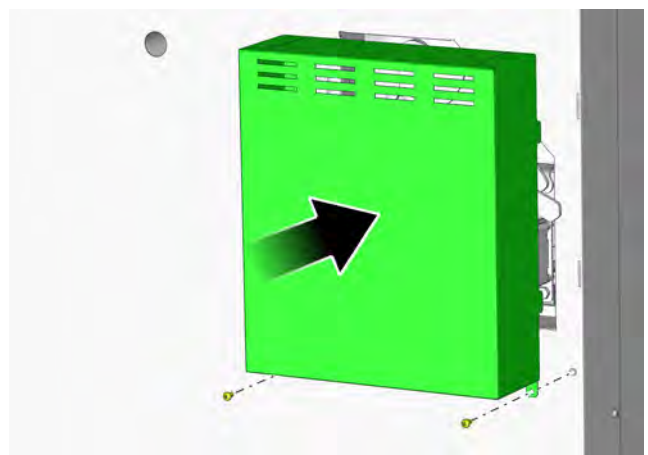


Fig. 2-40: Cover

**Inspect seals on heat exchanger covers**

Inspect the integrity of the seals on the heat exchanger covers and replace if necessary.

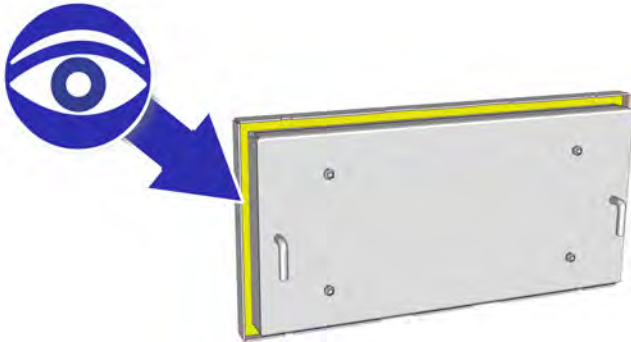


Fig. 2-41: Heat exchanger cover

**⚠ CAUTION!**

**Avoid operation with damaged seals**

Never operate the boiler with damaged seals. Otherwise, leak air is sucked in, disturbing the combustion process and causing increased wear.

- ▶ Always replace seals as soon as they are damaged.

**Close heat exchanger cover**

Position the heat exchanger cover carefully.

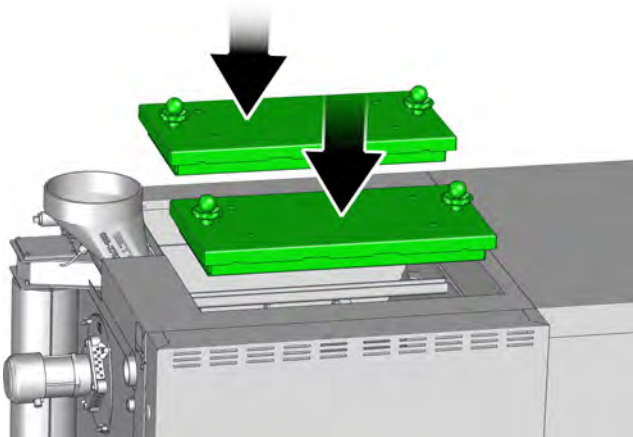


Fig. 2-42: Heat exchanger cover

Turn the ball knobs by 180° to secure the heat exchanger covers. Then tighten the knurled nuts evenly and alternately by turning them clockwise.

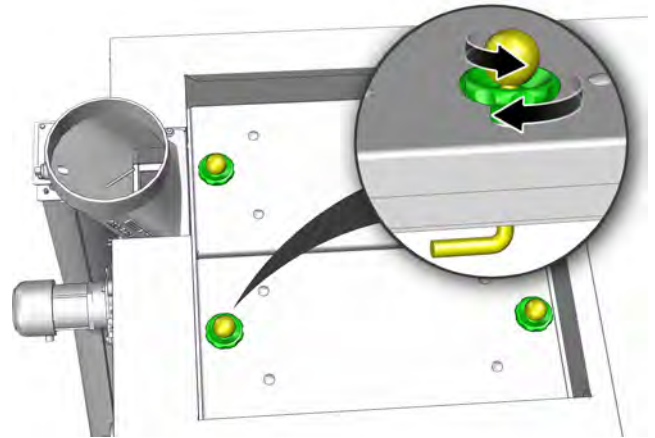


Fig. 2-43: Knurled nuts and ball knobs

Put the insulating cover back on.

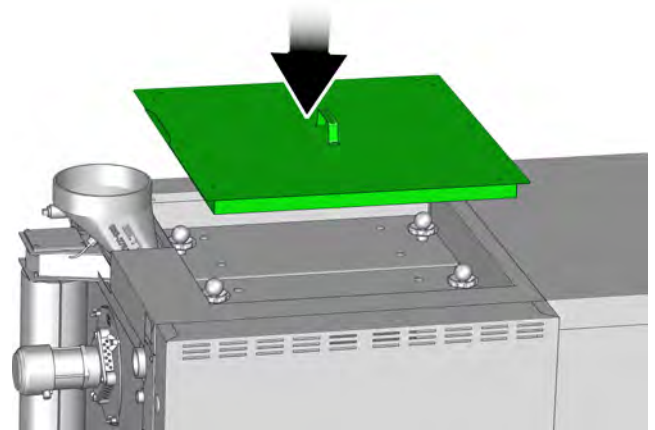


Fig. 2-44: Insulating cover

## 2.5.6 Clean flue gas recirculator (optional)

### Clean flue gas recirculation piping

Remove the shut-off plug for the flue gas recirculation.

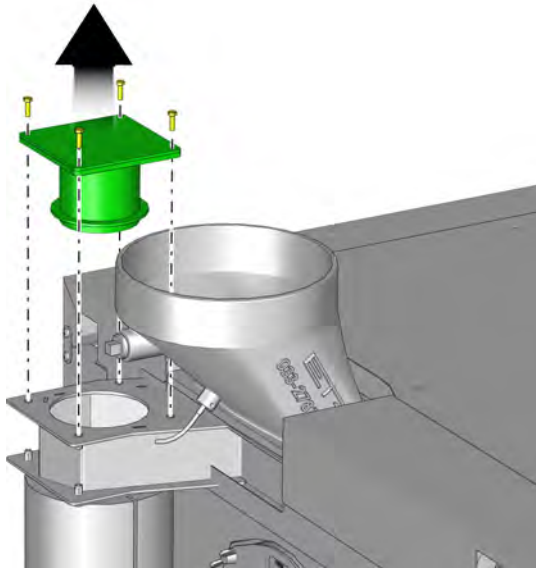


Fig. 2-45: Shut-off plug

Clean the pipe of the flue gas recirculation with downward strokes of a brush.

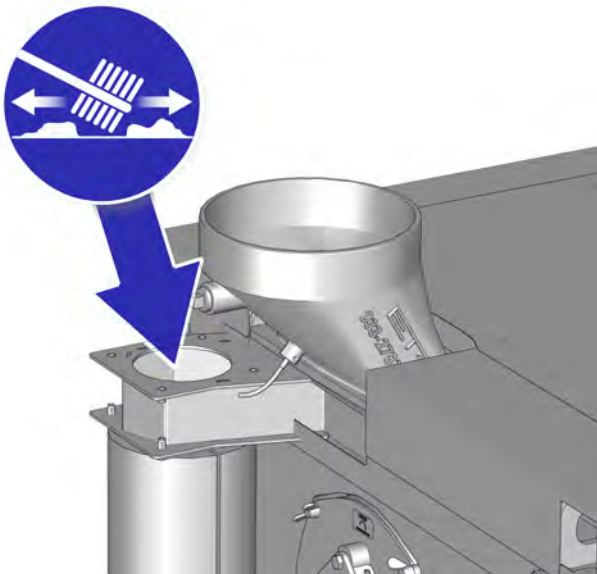


Fig. 2-46: Pipe

Inspect the integrity of the seal on the shut-off plug and replace it if necessary.

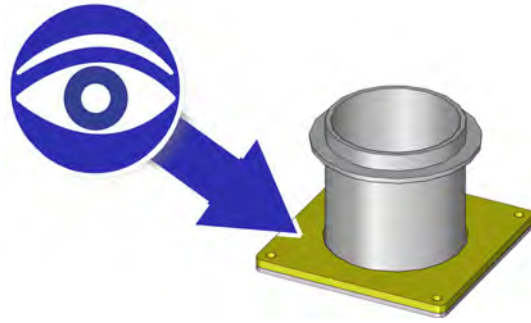


Fig. 2-47: Seal

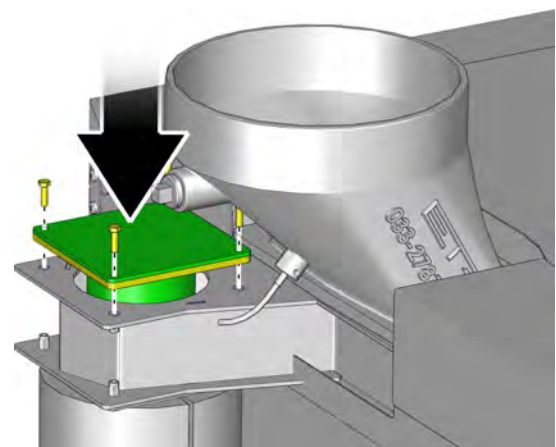
### ⚠ CAUTION!

#### Avoid operation with damaged seals

Never operate the boiler with damaged seals. Otherwise, leak air is sucked in, disturbing the combustion process and causing increased wear.

- ▶ Always replace seals as soon as they are damaged.

Re-install the shut-off plug.



**Lubricate the flue gas recirculation drive chain**

Remove the cover and the chain protection.

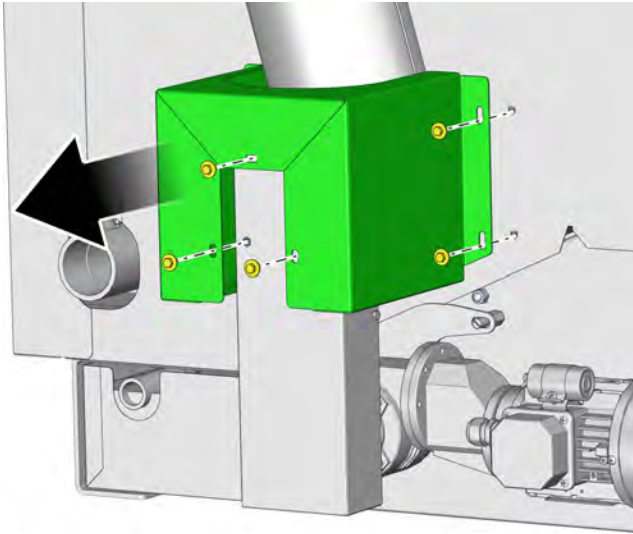


Fig. 2-48: Cover

Re-install the chain protector and the cover.

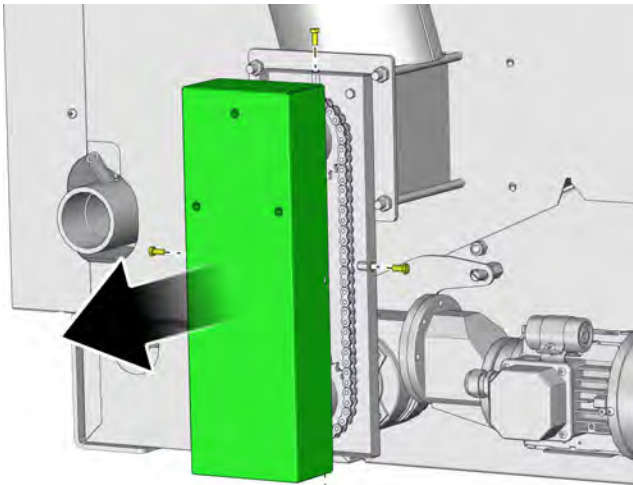
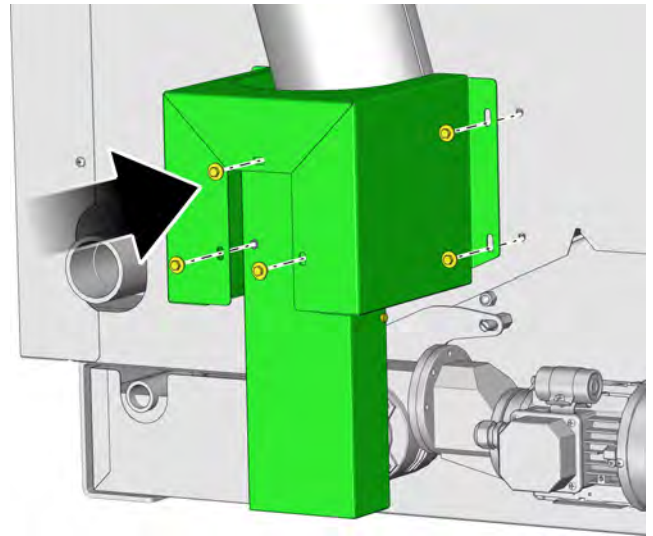


Fig. 2-49: Chain protector

Lubricate the drive chain with chain spray.

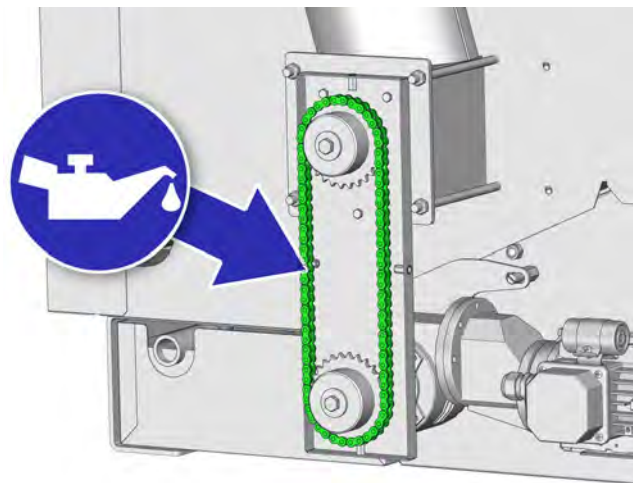




Fig. 2-50: Lubricate drive chain

### 2.5.7 Establish operational readiness

***Switch the boiler on via the mains switch and start de-ashing.***


Establish the boiler's power supply at the mains switch. Press the [De-ash]  button to de-ash the boiler. Switch the boiler back on with the On/Off  switch.



## 2.6 5000 h / 3 years

### 2.6.1 Preparation

**Before this maintenance, perform all steps for the preceding maintenance intervals**

 Before this maintenance, all steps for the preceding maintenance intervals must be performed.



#### **WARNING!**

**The following activities may only be performed by qualified specialist personnel.**

If you carry out these activities without the corresponding specialist training, and above all without the required experience, safe operation is no longer guaranteed. The resulting defects and consequential damage are excluded from the guarantee and warranty.

Equally an incorrect performance of these activities can lead to serious injuries.

#### **Stop heating**

End the boiler's heating mode with the On/Off switch  in the boiler overview window. The boiler performs an ember burnout and then changes to [Switched off] mode. Press the [De-ash]  button to make the boiler perform a final de-ashing.

#### **Switch off boiler via mains switch**

#### **WARNING!**

- ▶ Switch off the electricity to the boiler via the mains switch. This prevents injuries caused by switching the boiler on inadvertently.

#### **WARNING!**

#### **Burns caused by hot parts**



Risk of burning on parts located behind the boiler housing, even after shutting the boiler down.

- ▶ Allow the boiler to cool down sufficiently before starting any activities.

### 2.6.2 Clean draught fan

#### **Clean the draught fan**

Unplug the power supply and remove the draught fan from the boiler by removing the wing screws.

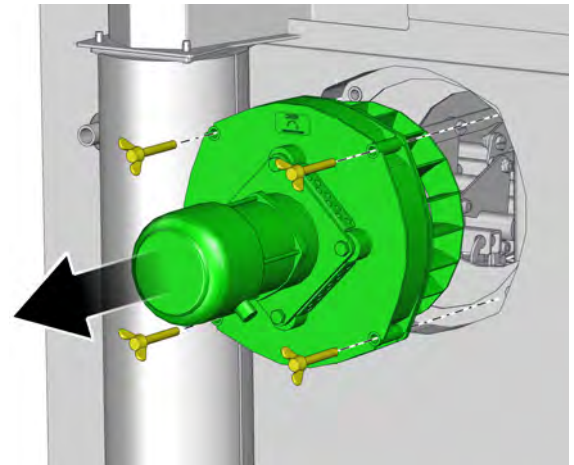


Fig. 2-51: Draught fan

Remove the ash from the fan housing on the boiler.

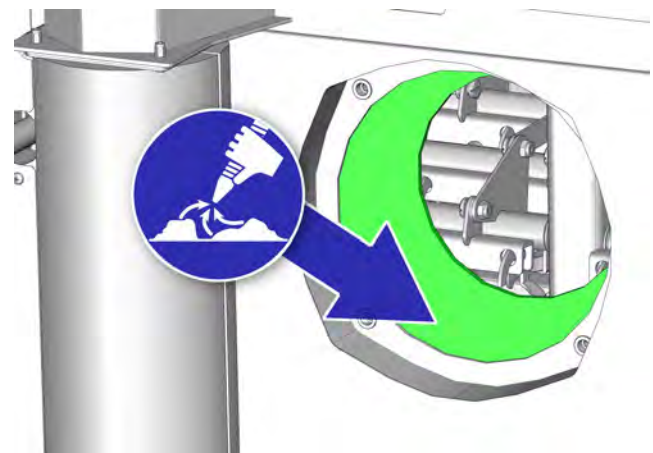


Fig. 2-52: Clean the fan housing

Carefully clean the impeller of the draught fan with a soft brush (not a wire brush) or with compressed air, so that the impeller does not move out of balance. Replace the seal on the draught fan.

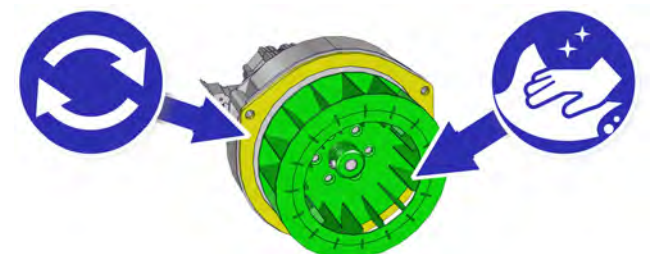
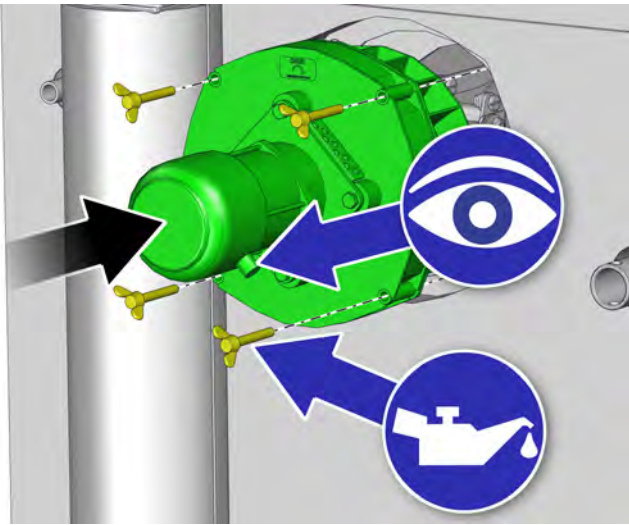


Fig. 2-53: Clean impeller; replace seal

Lubricate the screws with heat-resistant lubricant and reattach the draught fan to the fan housing. Tighten the screws evenly. The plug connection must point to the right when viewed from behind the boiler.



### 2.6.3 Clean temperature sensor

#### *Clean the flue gas temperature sensor*

To clean, loosen the screw and pull out the flue gas temperature sensor. Clean the sensor with a soft cloth and then re-install it. When fixing the temperature sensor in place, only tighten the screw hand-tight so as not to damage the sensor.

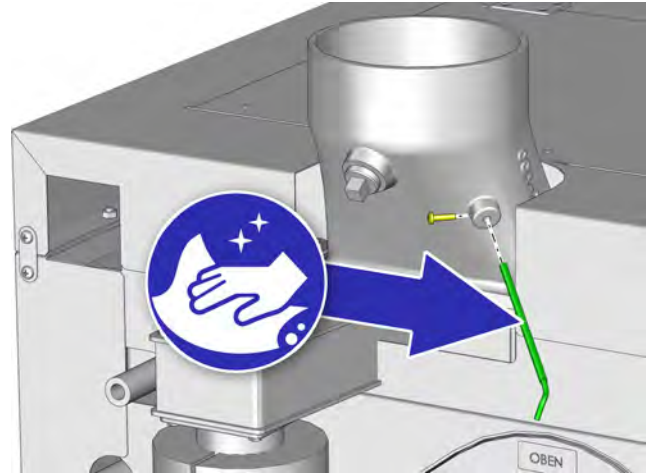


Fig. 2-54: Flue gas temperature sensor

### 2.6.4 Check air valve

#### **Remove the cover on the front**

Remove the screws for securing the cover. Push the cover on the front up slightly, detach and remove it.

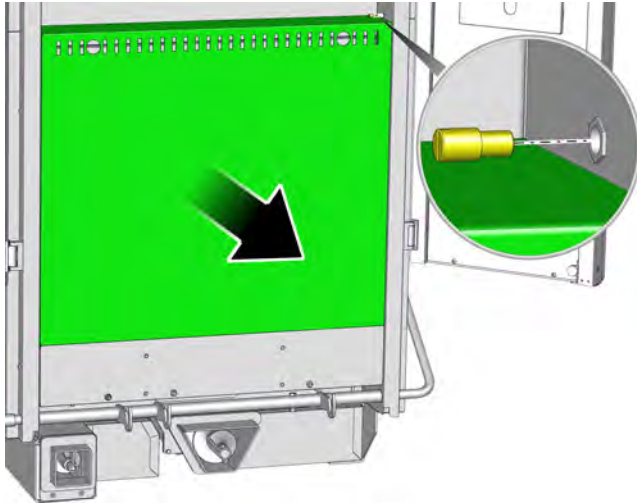


Fig. 2-55: Cover

#### **Check air valve**

Manually operate both air valve actuators and check their movement.



Fig. 2-56: Air valve actuators

For manual operation, push the release button (red button) and manually turn the actuator through 90° with the set screw.

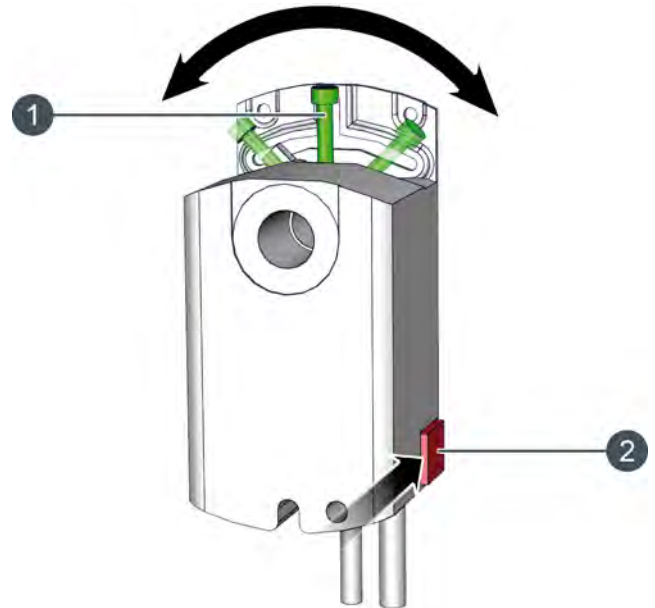


Fig. 2-57: Manual operation of actuator

- 1 Set screw
- 2 Release button

**i** If there is resistance in the movement of the air valves, lubricate only with dry lubricant (e.g. PTFE spray).

### 2.6.5 Lubricate the grate drive

#### **Lubricate the grate drive**

Lubricate the drive gear teeth of the tilting grate with heat-resistant grease or copper paste.

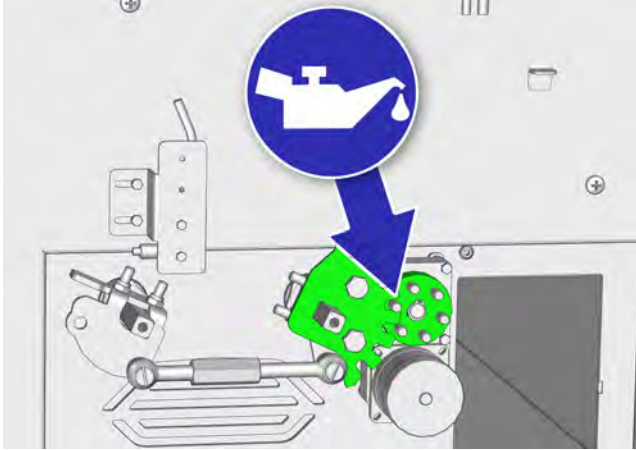


Fig. 2-58: Drive and gear teeth

#### **Mount cover on the front**

Mount the cover on the front of the boiler. Also re-install the screws for securing the cover.

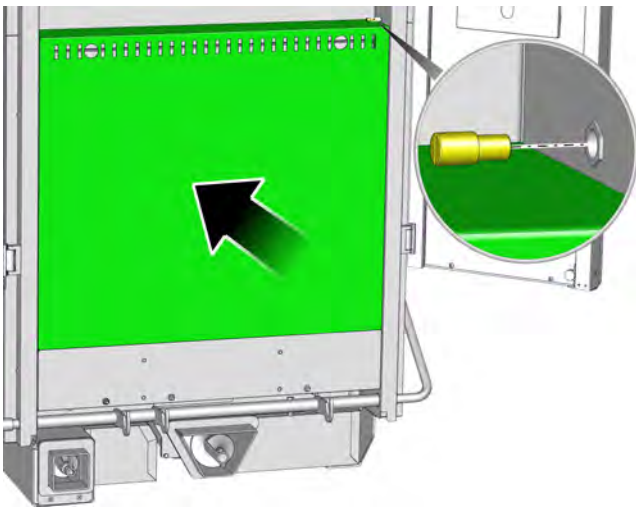


Fig. 2-59: Cover

### 2.6.6 Check ash bin position switches

#### **Check ash bin position switches**

Check the function of both ash bin position switches. They must be actuated when the ash bin is attached to the boiler.

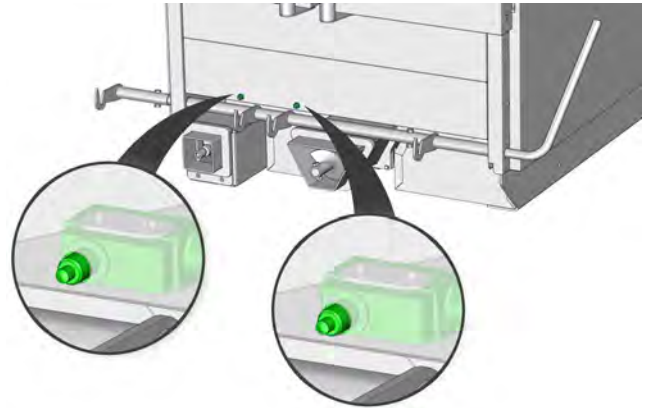


Fig. 2-60: Position switch

### 2.6.7 Check de-ashing

#### **Lubricating the de-ashing drive chain**

On the rear of the boiler, remove the plug screw from the cover next to the de-ashing drive.

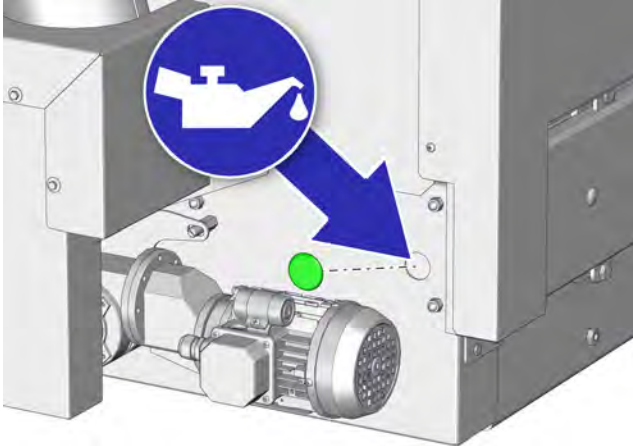


Fig. 2-61: Plug screw

Through this opening, lubricate the de-ashing drive chain with chain spray. The easiest way to do this is to start de-ashing. This sets the chain in motion so it can be completely lubricated.

#### **Check de-ashing system**

Start de-ashing in order to check de-ashing of the boiler. The movement of the turbulators in the heat exchanger must be audible, the tilting grate must tip and then close again, and the ash screws must operate without malfunction.

### 2.6.8 Clean ignition

#### **Clean ignition fan and photocell**

Remove the ignition fan from the boiler.

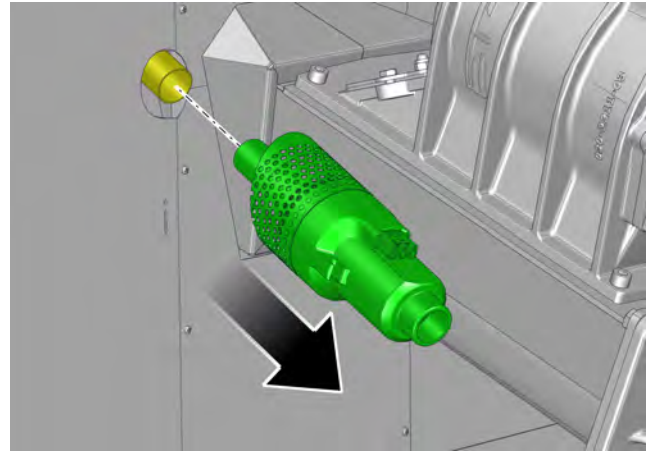


Fig. 2-62: Removing the ignition fan

Detach the ignition tube by loosening the 4 screws and remove the ignition rod. Clean the photocell with a soft cloth. Then reattach the ignition tube.

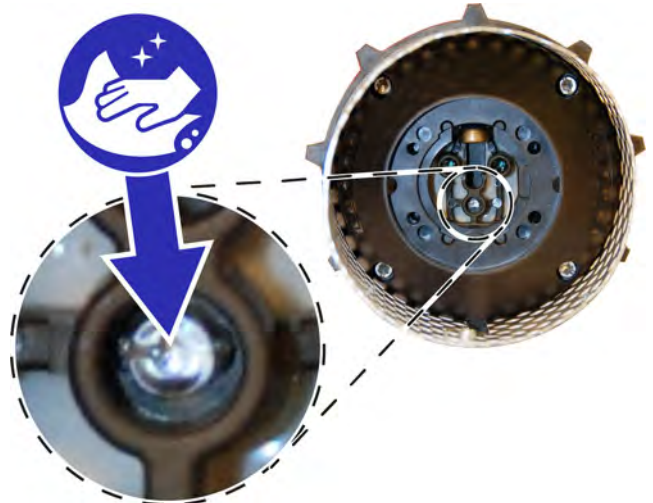


Fig. 2-63: Photocell

Also clean the opening in the boiler for the ignition tube.

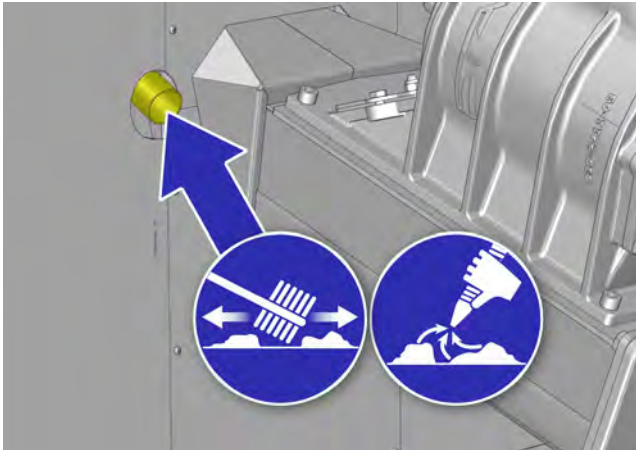
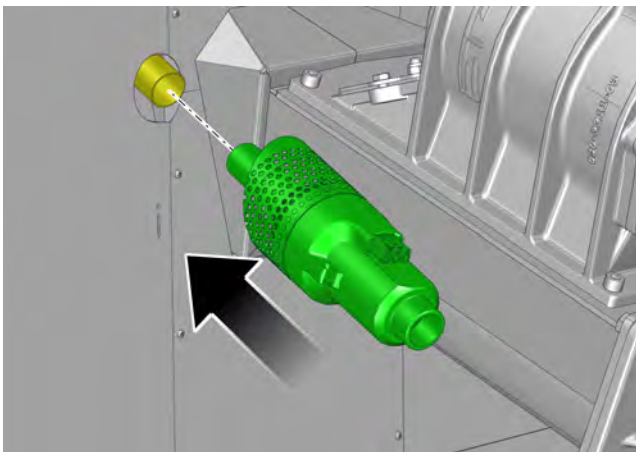


Fig. 2-64: Ignition tube

Re-install the ignition fan and attach it to the boiler with the chain.



## 2.6.9 Check boiler doors

### Check airtightness of combustion chamber door

Open and then close the combustion chamber door. When closing, make sure that it closes tightly and with force. The sealing edges of the door frame must leave a clear indentation in the sealing cord of the combustion chamber door.

**i** Leaks can be detected by variations in the colouration of the sealing cord. If leaks are found, it is usually sufficient to adjust the hinges and the closing roller mount. If the hinges cannot be adjusted any further, the sealing cord must be replaced.

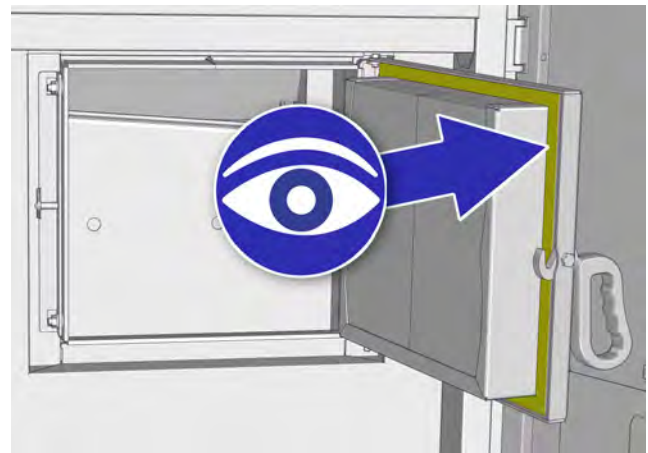
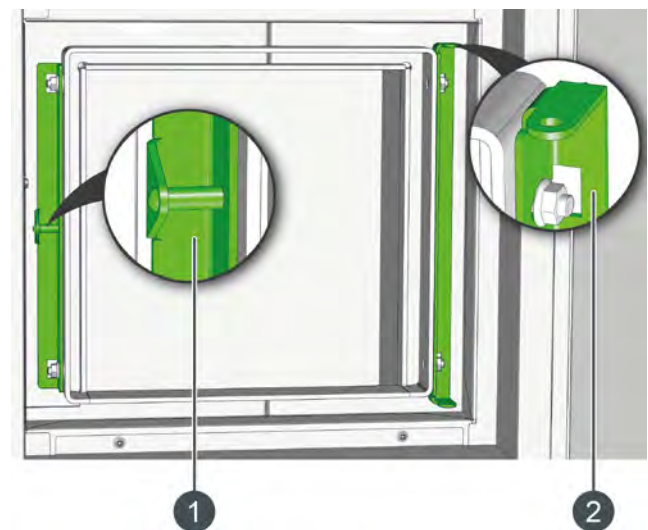


Fig. 2-65: Seal

**i** Also check if the sealing cord is already "hard". To check, press on the sealing cord with your finger nail. If it can no longer be pressed, it is "hard" already and must be replaced.

Adjustment requires the removal of the combustion chamber door. To do so, open the combustion chamber door, lift it slightly, remove it and carefully place it next to the boiler.



- 1 Closing roller mount
- 2 Hinge

Loosen the flange nuts (top and bottom) on the hinge and the closing roller mount and evenly make the gap to the boiler a bit smaller.

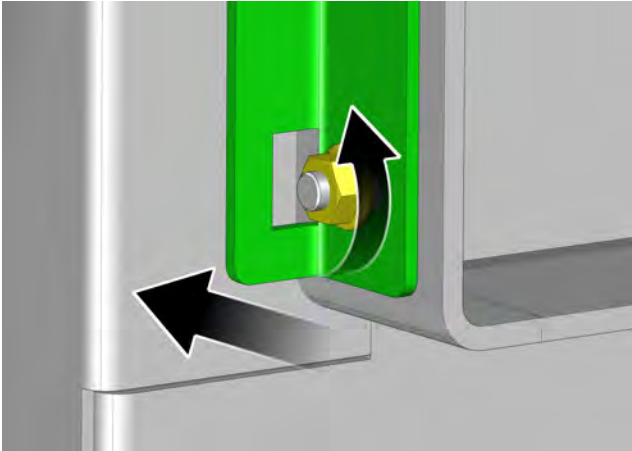


Fig. 2-66: Flange nut

Push the hinge and the closing roller mount onto the boiler and tighten the flange nuts.

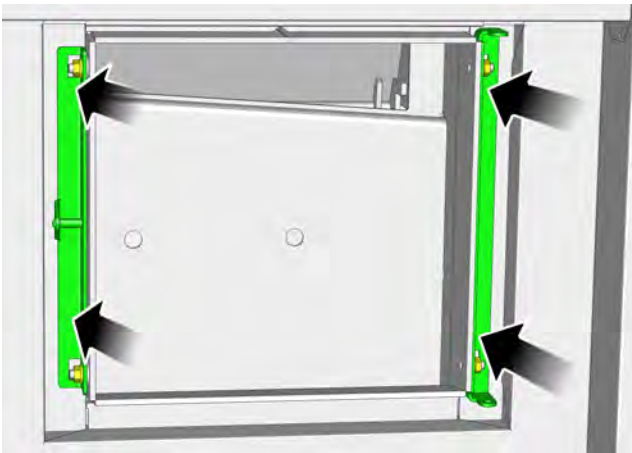


Fig. 2-67: Reduce gap

Attach the door and check whether it closes fully. If not, repeat the process.

**i** Always adjust the hinges and the closing roller mount so that the seal is evenly compressed.

## 2.6.10 Check stoker

### Check stoker drive chain

Remove the drive chain cover by loosening the acorn nuts.

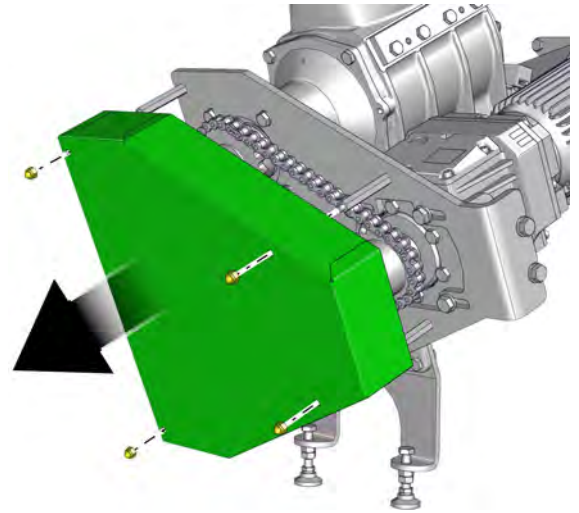


Fig. 2-68: Cover

Check the tension of the stoker drive chain. The chain may sag by 1 - 2 cm without effort.

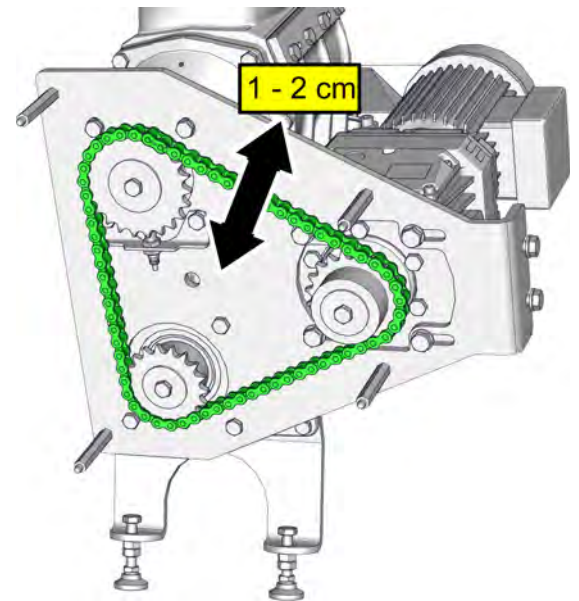


Fig. 2-69: Stoker drive chain

If it sags more, the chain must be tensioned with the two set screws on the side.

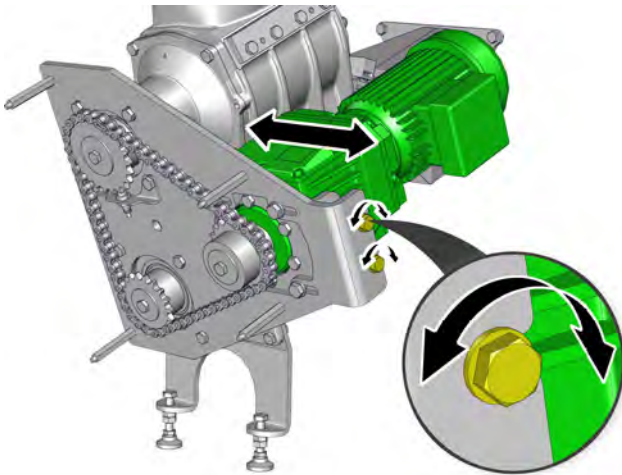


Fig. 2-70: Setting screws

Lubricate the drive chain with chain spray.

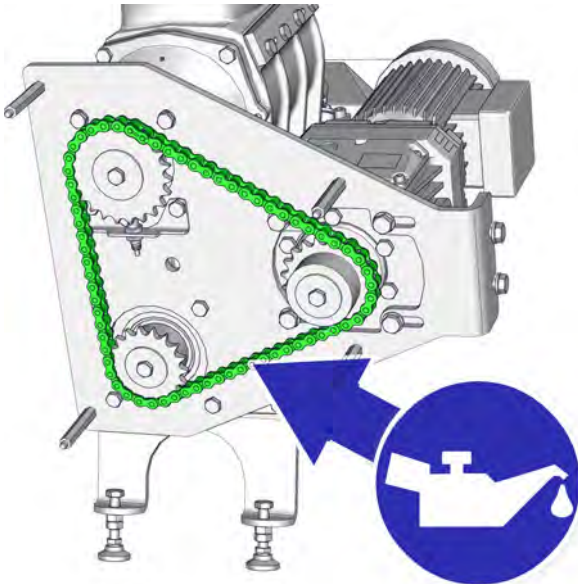


Fig. 2-71: Lubricate drive chain

### **Check gap of the rotary valve position sensor**

Check the gap between the screw in the gear and the sensor. The gap should be about 1 - 2 mm.

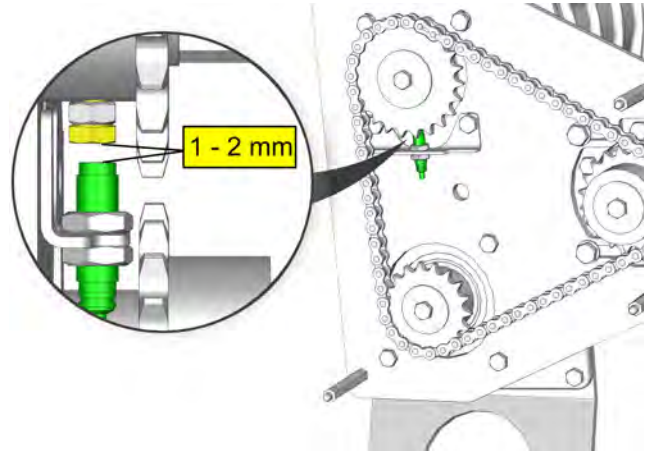


Fig. 2-72: Gap between sensor and screw

### **Mount the drive chain cover**

Remount the drive chain cover.

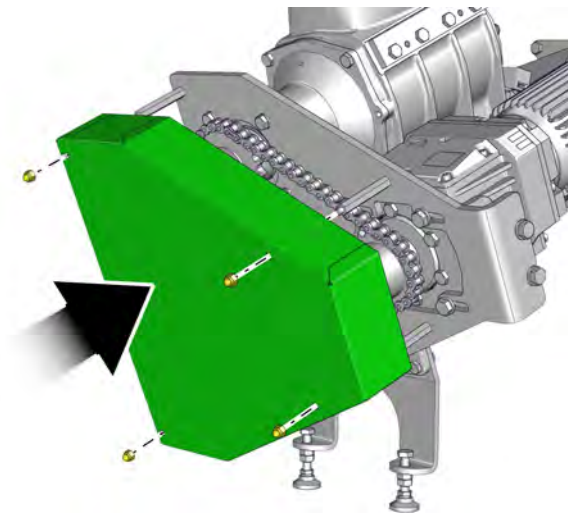


Fig. 2-73: Cover



### 2.6.11 Inspect safety switch on the drop chute

#### **Check the contact switch on the drop chute**

Check the contact switch on the drop chute. To do so, raise the drop chute cover.

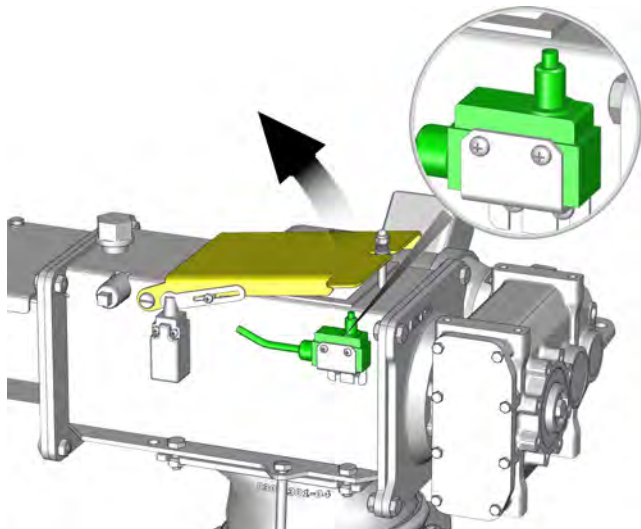


Fig. 2-74: Contact switch on the drop chute

#### **Check drop chute safety switch**

Check the safety switch on the drop chute. To do so, raise the drop chute cover.

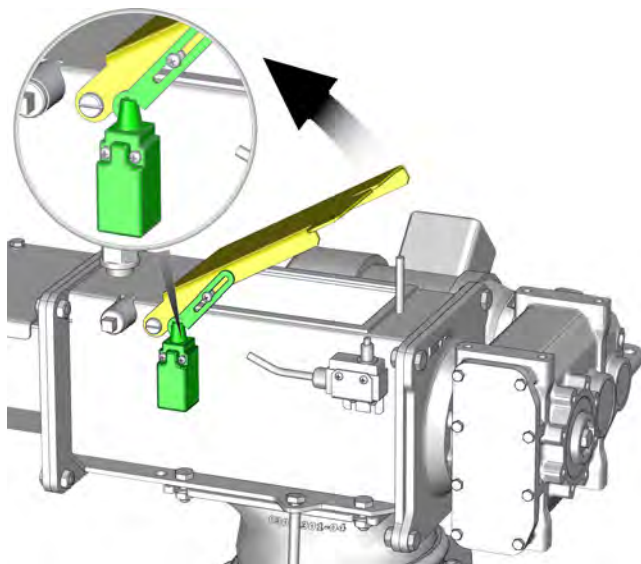


Fig. 2-75: Drop chute safety switch

### 2.6.12 Check end position of the rotary valve

#### **WARNING!**

#### **Injuries caused by moving parts**



Possible danger of crushing by stoker drive chain.

- ▶ The boiler must be switched off. This prevents injuries caused by switching the boiler on inadvertently.

#### **WARNING!**

#### **Injuries caused by moving parts**



Possible danger of crushing by conveyor screw.

- ▶ Opening the drop chute cover results in a risk of crushing by the accessible conveyor screw. Therefore, perform only a visual check. Never reach into the conveyor screw.

#### **Check end position of the rotary valve**

The end position of the rotary valve is checked when filling using the [Rotary valve stop test] function. The function is found in the boiler text menu under:

- |                          |
|--------------------------|
| Conveying system         |
| ➤ Stoker unit            |
| ➤ RotValveInPos          |
| ➤ Rotary valve stop test |

When this function is activated, the rotary valve rotates until it is detected by the rotary valve position sensor and then it stops.

Next perform a visual check of the rotary valve end position. To do so, remove the locking nut and the spring and raise the drop chute cover.

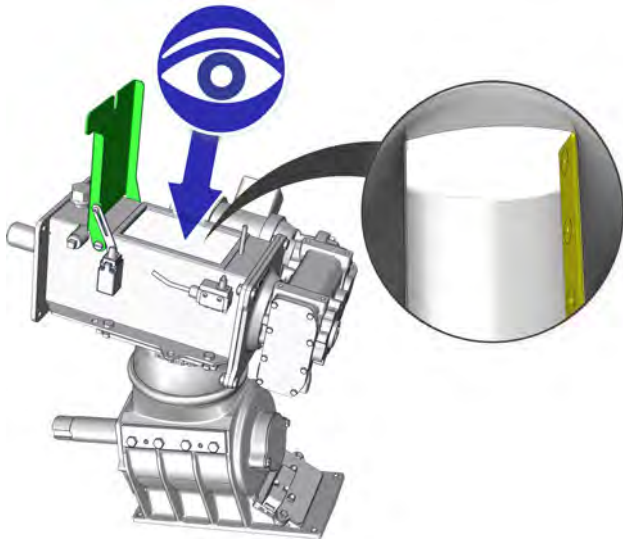


Fig. 2-76: Visual check

**i** The rotary valve is positioned correctly if the opening in the rotary valve is completely visible from above (through the open drop chute cover). The rotary valve can then fully receive the discharge screw fuel.

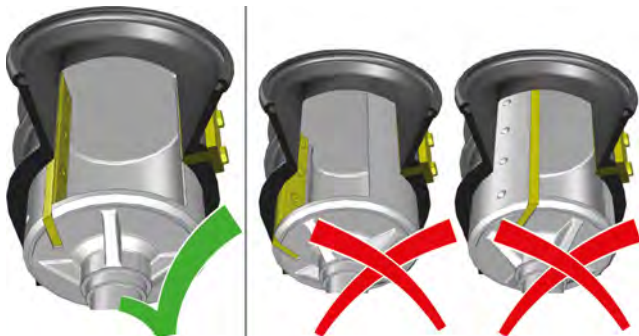


Fig. 2-77: Correct and incorrect position of the rotary valve

If the opening is not completely visible, the end position must be adapted with the [Stoker delay] parameter. This parameter specifies the delay time for the rotary valve after it has been detected by the position sensor.

**i** After setting the delay time, repeat the process to check the setting. To do so, restart the [Rotary valve stop test] function and then perform a visual check.

### Check the setting for the [RotValveStop] function

If the discharge screw and the stoker screw are in operation simultaneously, use the [Service] authorisation in the boiler text menu to check the setting for the [RotValveStop] function. The factory setting is [Yes]. The function can be seen under:


Conveying system	
→	Stoker unit
→	RotValveStop

It can be deliberately set to [No] if the used fuel requires it.

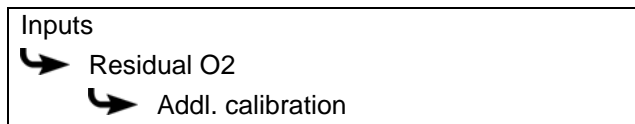
If the discharge screw and the stoker screw are in operation simultaneously and the function is set to [Yes], either the sensor is faulty or the gap between the screw in the gear and the sensor is too large and must be adjusted. The gap should be about 1 - 2 mm.

### 2.6.13 Calibrate lambda probe


#### Calibrating the lambda probe

 The boiler's built-in lambda probe checks the residual oxygen content of the flue gas and uses it to control the combustion. To ensure reliability, the control system autonomously performs an automatic calibration after every 500 hours of operation.

If you wish to perform an additional lambda probe calibration, the control system features the [Addl. calibration] function. This function can be selected with the [Service] access level and can be found under:



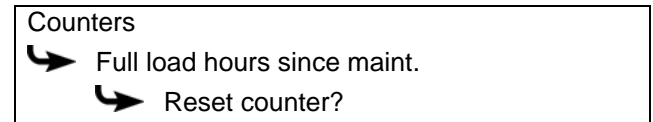
Switch on this function and the additional calibration will now start. If the boiler is heating, it is automatically stopped first. De-ashing begins, then the boiler is purged with fresh air. After this, the residual oxygen content is measured and the lambda probe is automatically calibrated. Altogether, these steps last approximately 1.5 to 2 hours. When the calibration is complete, the boiler goes back into operation and starts heating, if necessary.

 After another 100 hours of operation, the control system automatically performs another calibration.


### 2.6.14 Establish operational readiness

#### Reset maintenance counter

When maintenance is complete, reset the counter. With the [Service] access level, it will be visible in the boiler text menu under:



#### Perform heating test

To perform the heating test, put the boiler into emissions measurement mode. To do this, carry out the following steps. In the boiler overview window, press the [Measurement] button  in order to enter the emissions measurement settings window.

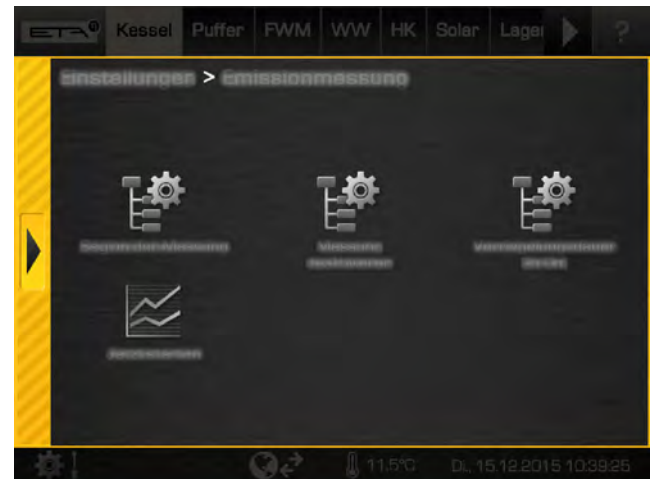





Fig. 2-78: Settings window for emissions measurement


Press the [Start now]  button so the boiler will start immediately. The control system ensures that sufficient heat is channelled to the buffer, the heating circuits and the hot water tank.

After around 10 minutes of heating, the residual oxygen value should reach 6% to 9%. The current residual oxygen content is displayed in the boiler's text menu under:



 If the value does not drop below 12% residual oxygen, the boiler is receiving leak air. The reason (leaky combustion chamber door, heat exchanger cover, etc.) must be identified and corrected.

 If possible, perform a flue gas measurement during the heating test.

After the heating test, switch the boiler back to normal mode. To do this, press the [Deactivate measurement]  button in the settings window.



### 3 Records

#### 3.1 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>• Remove excess ash from secondary combustion chamber</li> <li>• Empty the ash bins</li> <li>• Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>• Visual check of the safety valves</li> <li>• Visual check of the thermal relief valve</li> <li>• Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>• Clean the flue tube</li> <li>• Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>• Clean inside of the secondary combustion chamber</li> <li>• Clean tilting grate</li> <li>• Clean secondary air openings</li> <li>• Clean ignition tubes</li> <li>• Check firebed button and firebed switch</li> <li>• Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>• Clean heat exchanger and downdraft channel</li> <li>• Clean lambda probe</li> <li>• Check heat exchanger tubes</li> <li>• Check heat exchanger cleaner</li> <li>• Clean the housing of the frequency converter</li> <li>• Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>• Clean flue gas recirculation piping</li> <li>• Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.2 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**


### 3.3 Maintenance (expert)



This maintenance is to be carried out every 3 years or after 5000 hours.

Tasks		Notes
Empty the ash box <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	
Clean the draught fan	<input type="checkbox"/>	
Clean the temperature sensor	<input type="checkbox"/>	
Check air valve for primary and secondary air	<input type="checkbox"/>	
Lubricate the grate drive	<input type="checkbox"/>	
Check ash bin position switches	<input type="checkbox"/>	
Check de-ashing system	<input type="checkbox"/>	
Clean ignition	<input type="checkbox"/>	
Check boiler doors	<input type="checkbox"/>	
Check stoker <ul style="list-style-type: none"> <li>Check stoker drive chain</li> <li>Check gap of the rotary valve position sensor</li> </ul>	<input type="checkbox"/>	




Tasks		Notes
Check drop chute safety switch	<input type="checkbox"/>	
Check end position of the rotary valve	<input type="checkbox"/>	
Calibrate the lambda probe	<input type="checkbox"/>	
Reset the maintenance counter	<input type="checkbox"/>	
Perform heating test	<input type="checkbox"/>	


performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.4 Cleaning (customer)

 Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>• Remove excess ash from secondary combustion chamber</li> <li>• Empty the ash bins</li> <li>• Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>• Visual check of the safety valves</li> <li>• Visual check of the thermal relief valve</li> <li>• Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>• Clean the flue tube</li> <li>• Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>• Clean inside of the secondary combustion chamber</li> <li>• Clean tilting grate</li> <li>• Clean secondary air openings</li> <li>• Clean ignition tubes</li> <li>• Check firebed button and firebed switch</li> <li>• Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>• Clean heat exchanger and downdraft channel</li> <li>• Clean lambda probe</li> <li>• Check heat exchanger tubes</li> <li>• Check heat exchanger cleaner</li> <li>• Clean the housing of the frequency converter</li> <li>• Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>• Clean flue gas recirculation piping</li> <li>• Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.5 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_


**Comments:**

### 3.6 Maintenance (expert)



This maintenance is to be carried out every 3 years or after 5000 hours.

Tasks		Notes
Empty the ash box <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	
Clean the draught fan	<input type="checkbox"/>	
Clean the temperature sensor	<input type="checkbox"/>	
Check air valve for primary and secondary air	<input type="checkbox"/>	
Lubricate the grate drive	<input type="checkbox"/>	
Check ash bin position switches	<input type="checkbox"/>	
Check de-ashing system	<input type="checkbox"/>	
Clean ignition	<input type="checkbox"/>	
Check boiler doors	<input type="checkbox"/>	
Check stoker <ul style="list-style-type: none"> <li>Check stoker drive chain</li> <li>Check gap of the rotary valve position sensor</li> </ul>	<input type="checkbox"/>	

Tasks		Notes
Check drop chute safety switch	<input type="checkbox"/>	
Check end position of the rotary valve	<input type="checkbox"/>	
Calibrate the lambda probe	<input type="checkbox"/>	
Reset the maintenance counter	<input type="checkbox"/>	
Perform heating test	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.7 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>• Remove excess ash from secondary combustion chamber</li> <li>• Empty the ash bins</li> <li>• Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>• Visual check of the safety valves</li> <li>• Visual check of the thermal relief valve</li> <li>• Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>• Clean the flue tube</li> <li>• Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>• Clean inside of the secondary combustion chamber</li> <li>• Clean tilting grate</li> <li>• Clean secondary air openings</li> <li>• Clean ignition tubes</li> <li>• Check firebed button and firebed switch</li> <li>• Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>• Clean heat exchanger and downdraft channel</li> <li>• Clean lambda probe</li> <li>• Check heat exchanger tubes</li> <li>• Check heat exchanger cleaner</li> <li>• Clean the housing of the frequency converter</li> <li>• Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>• Clean flue gas recirculation piping</li> <li>• Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.8 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>• Remove excess ash from secondary combustion chamber</li> <li>• Empty the ash bins</li> <li>• Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>• Visual check of the safety valves</li> <li>• Visual check of the thermal relief valve</li> <li>• Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>• Clean the flue tube</li> <li>• Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>• Clean inside of the secondary combustion chamber</li> <li>• Clean tilting grate</li> <li>• Clean secondary air openings</li> <li>• Clean ignition tubes</li> <li>• Check firebed button and firebed switch</li> <li>• Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>• Clean heat exchanger and downdraft channel</li> <li>• Clean lambda probe</li> <li>• Check heat exchanger tubes</li> <li>• Check heat exchanger cleaner</li> <li>• Clean the housing of the frequency converter</li> <li>• Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>• Clean flue gas recirculation piping</li> <li>• Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**


### 3.9 Maintenance (expert)



This maintenance is to be carried out every 3 years or after 5000 hours.

Tasks		Notes
Empty the ash box <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	
Clean the draught fan	<input type="checkbox"/>	
Clean the temperature sensor	<input type="checkbox"/>	
Check air valve for primary and secondary air	<input type="checkbox"/>	
Lubricate the grate drive	<input type="checkbox"/>	
Check ash bin position switches	<input type="checkbox"/>	
Check de-ashing system	<input type="checkbox"/>	
Clean ignition	<input type="checkbox"/>	
Check boiler doors	<input type="checkbox"/>	
Check stoker <ul style="list-style-type: none"> <li>Check stoker drive chain</li> <li>Check gap of the rotary valve position sensor</li> </ul>	<input type="checkbox"/>	



Tasks		Notes
Check drop chute safety switch	<input type="checkbox"/>	
Check end position of the rotary valve	<input type="checkbox"/>	
Calibrate the lambda probe	<input type="checkbox"/>	
Reset the maintenance counter	<input type="checkbox"/>	
Perform heating test	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.10 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.11 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>• Remove excess ash from secondary combustion chamber</li> <li>• Empty the ash bins</li> <li>• Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>• Visual check of the safety valves</li> <li>• Visual check of the thermal relief valve</li> <li>• Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>• Clean the flue tube</li> <li>• Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>• Clean inside of the secondary combustion chamber</li> <li>• Clean tilting grate</li> <li>• Clean secondary air openings</li> <li>• Clean ignition tubes</li> <li>• Check firebed button and firebed switch</li> <li>• Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>• Clean heat exchanger and downdraft channel</li> <li>• Clean lambda probe</li> <li>• Check heat exchanger tubes</li> <li>• Check heat exchanger cleaner</li> <li>• Clean the housing of the frequency converter</li> <li>• Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>• Clean flue gas recirculation piping</li> <li>• Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_


**Comments:**

### 3.12 Maintenance (expert)



This maintenance is to be carried out every 3 years or after 5000 hours.

Tasks		Notes
Empty the ash box <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	
Clean the draught fan	<input type="checkbox"/>	
Clean the temperature sensor	<input type="checkbox"/>	
Check air valve for primary and secondary air	<input type="checkbox"/>	
Lubricate the grate drive	<input type="checkbox"/>	
Check ash bin position switches	<input type="checkbox"/>	
Check de-ashing system	<input type="checkbox"/>	
Clean ignition	<input type="checkbox"/>	
Check boiler doors	<input type="checkbox"/>	
Check stoker <ul style="list-style-type: none"> <li>Check stoker drive chain</li> <li>Check gap of the rotary valve position sensor</li> </ul>	<input type="checkbox"/>	

Tasks		Notes
Check drop chute safety switch	<input type="checkbox"/>	
Check end position of the rotary valve	<input type="checkbox"/>	
Calibrate the lambda probe	<input type="checkbox"/>	
Reset the maintenance counter	<input type="checkbox"/>	
Perform heating test	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.13 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>• Remove excess ash from secondary combustion chamber</li> <li>• Empty the ash bins</li> <li>• Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>• Visual check of the safety valves</li> <li>• Visual check of the thermal relief valve</li> <li>• Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>• Clean the flue tube</li> <li>• Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>• Clean inside of the secondary combustion chamber</li> <li>• Clean tilting grate</li> <li>• Clean secondary air openings</li> <li>• Clean ignition tubes</li> <li>• Check firebed button and firebed switch</li> <li>• Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>• Clean heat exchanger and downdraft channel</li> <li>• Clean lambda probe</li> <li>• Check heat exchanger tubes</li> <li>• Check heat exchanger cleaner</li> <li>• Clean the housing of the frequency converter</li> <li>• Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>• Clean flue gas recirculation piping</li> <li>• Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.14 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>• Remove excess ash from secondary combustion chamber</li> <li>• Empty the ash bins</li> <li>• Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>• Visual check of the safety valves</li> <li>• Visual check of the thermal relief valve</li> <li>• Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>• Clean the flue tube</li> <li>• Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>• Clean inside of the secondary combustion chamber</li> <li>• Clean tilting grate</li> <li>• Clean secondary air openings</li> <li>• Clean ignition tubes</li> <li>• Check firebed button and firebed switch</li> <li>• Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>• Clean heat exchanger and downdraft channel</li> <li>• Clean lambda probe</li> <li>• Check heat exchanger tubes</li> <li>• Check heat exchanger cleaner</li> <li>• Clean the housing of the frequency converter</li> <li>• Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>• Clean flue gas recirculation piping</li> <li>• Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**


### 3.15 Maintenance (expert)



This maintenance is to be carried out every 3 years or after 5000 hours.

Tasks		Notes
Empty the ash box <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	
Clean the draught fan	<input type="checkbox"/>	
Clean the temperature sensor	<input type="checkbox"/>	
Check air valve for primary and secondary air	<input type="checkbox"/>	
Lubricate the grate drive	<input type="checkbox"/>	
Check ash bin position switches	<input type="checkbox"/>	
Check de-ashing system	<input type="checkbox"/>	
Clean ignition	<input type="checkbox"/>	
Check boiler doors	<input type="checkbox"/>	
Check stoker <ul style="list-style-type: none"> <li>Check stoker drive chain</li> <li>Check gap of the rotary valve position sensor</li> </ul>	<input type="checkbox"/>	




Tasks		Notes
Check drop chute safety switch	<input type="checkbox"/>	
Check end position of the rotary valve	<input type="checkbox"/>	
Calibrate the lambda probe	<input type="checkbox"/>	
Reset the maintenance counter	<input type="checkbox"/>	
Perform heating test	<input type="checkbox"/>	


performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.16 Cleaning (customer)

 Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.17 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_


**Comments:**

### 3.18 Maintenance (expert)



This maintenance is to be carried out every 3 years or after 5000 hours.

Tasks		Notes
Empty the ash box <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	
Clean the draught fan	<input type="checkbox"/>	
Clean the temperature sensor	<input type="checkbox"/>	
Check air valve for primary and secondary air	<input type="checkbox"/>	
Lubricate the grate drive	<input type="checkbox"/>	
Check ash bin position switches	<input type="checkbox"/>	
Check de-ashing system	<input type="checkbox"/>	
Clean ignition	<input type="checkbox"/>	
Check boiler doors	<input type="checkbox"/>	
Check stoker <ul style="list-style-type: none"> <li>Check stoker drive chain</li> <li>Check gap of the rotary valve position sensor</li> </ul>	<input type="checkbox"/>	


Tasks		Notes
Check drop chute safety switch	<input type="checkbox"/>	
Check end position of the rotary valve	<input type="checkbox"/>	
Calibrate the lambda probe	<input type="checkbox"/>	
Reset the maintenance counter	<input type="checkbox"/>	
Perform heating test	<input type="checkbox"/>	


performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.19 Cleaning (customer)

 Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>• Remove excess ash from secondary combustion chamber</li> <li>• Empty the ash bins</li> <li>• Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>• Visual check of the safety valves</li> <li>• Visual check of the thermal relief valve</li> <li>• Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>• Clean the flue tube</li> <li>• Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>• Clean inside of the secondary combustion chamber</li> <li>• Clean tilting grate</li> <li>• Clean secondary air openings</li> <li>• Clean ignition tubes</li> <li>• Check firebed button and firebed switch</li> <li>• Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>• Clean heat exchanger and downdraft channel</li> <li>• Clean lambda probe</li> <li>• Check heat exchanger tubes</li> <li>• Check heat exchanger cleaner</li> <li>• Clean the housing of the frequency converter</li> <li>• Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>• Clean flue gas recirculation piping</li> <li>• Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**

### 3.20 Cleaning (customer)



Cleaning is to be carried out once a year or after 2500 hours.

Tasks		Notes
Empty the ash bins <ul style="list-style-type: none"> <li>• Remove excess ash from secondary combustion chamber</li> <li>• Empty the ash bins</li> <li>• Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>• Visual check of the safety valves</li> <li>• Visual check of the thermal relief valve</li> <li>• Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>• Clean the flue tube</li> <li>• Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>• Clean inside of the secondary combustion chamber</li> <li>• Clean tilting grate</li> <li>• Clean secondary air openings</li> <li>• Clean ignition tubes</li> <li>• Check firebed button and firebed switch</li> <li>• Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>• Clean heat exchanger and downdraft channel</li> <li>• Clean lambda probe</li> <li>• Check heat exchanger tubes</li> <li>• Check heat exchanger cleaner</li> <li>• Clean the housing of the frequency converter</li> <li>• Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>• Clean flue gas recirculation piping</li> <li>• Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	

performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**


### 3.21 Maintenance (expert)



This maintenance is to be carried out every 3 years or after 5000 hours.

Tasks		Notes
Empty the ash box <ul style="list-style-type: none"> <li>Remove excess ash from secondary combustion chamber</li> <li>Empty the ash bins</li> <li>Check the seals</li> </ul>	<input type="checkbox"/>	
Check the pressure of the heating system	<input type="checkbox"/>	_____ bar
Check safety devices <ul style="list-style-type: none"> <li>Visual check of the safety valves</li> <li>Visual check of the thermal relief valve</li> <li>Check operational readiness of the safety devices in the fuel path</li> </ul>	<input type="checkbox"/>	
Chimney <ul style="list-style-type: none"> <li>Clean the flue tube</li> <li>Flush the chimney's condensate drain</li> </ul>	<input type="checkbox"/>	
Clean combustion chamber <ul style="list-style-type: none"> <li>Clean inside of the secondary combustion chamber</li> <li>Clean tilting grate</li> <li>Clean secondary air openings</li> <li>Clean ignition tubes</li> <li>Check firebed button and firebed switch</li> <li>Check refractory lining</li> </ul>	<input type="checkbox"/>	
Clean heat exchanger <ul style="list-style-type: none"> <li>Clean heat exchanger and downdraft channel</li> <li>Clean lambda probe</li> <li>Check heat exchanger tubes</li> <li>Check heat exchanger cleaner</li> <li>Clean the housing of the frequency converter</li> <li>Inspect seals on heat exchanger covers</li> </ul>	<input type="checkbox"/>	
Clean flue gas recirculator (optional) <ul style="list-style-type: none"> <li>Clean flue gas recirculation piping</li> <li>Lubricate the flue gas recirculation drive chain</li> </ul>	<input type="checkbox"/>	
Clean the draught fan	<input type="checkbox"/>	
Clean the temperature sensor	<input type="checkbox"/>	
Check air valve for primary and secondary air	<input type="checkbox"/>	
Lubricate the grate drive	<input type="checkbox"/>	
Check ash bin position switches	<input type="checkbox"/>	
Check de-ashing system	<input type="checkbox"/>	
Clean ignition	<input type="checkbox"/>	
Check boiler doors	<input type="checkbox"/>	
Check stoker <ul style="list-style-type: none"> <li>Check stoker drive chain</li> <li>Check gap of the rotary valve position sensor</li> </ul>	<input type="checkbox"/>	



Tasks		Notes
Check drop chute safety switch	<input type="checkbox"/>	
Check end position of the rotary valve	<input type="checkbox"/>	
Calibrate the lambda probe	<input type="checkbox"/>	
Reset the maintenance counter	<input type="checkbox"/>	
Perform heating test	<input type="checkbox"/>	

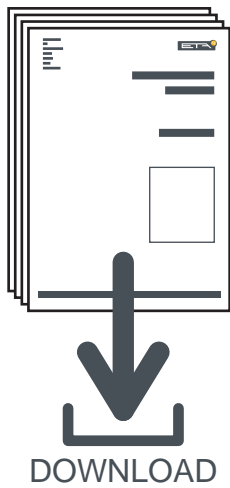
performed on: \_\_\_\_\_

performed by: \_\_\_\_\_

**Comments:**







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