

Maintenance Manual

Pellet Boiler

Eco-PK 250-330

HARGASSNER
HEIZTECHNIK DER ZUKUNFT



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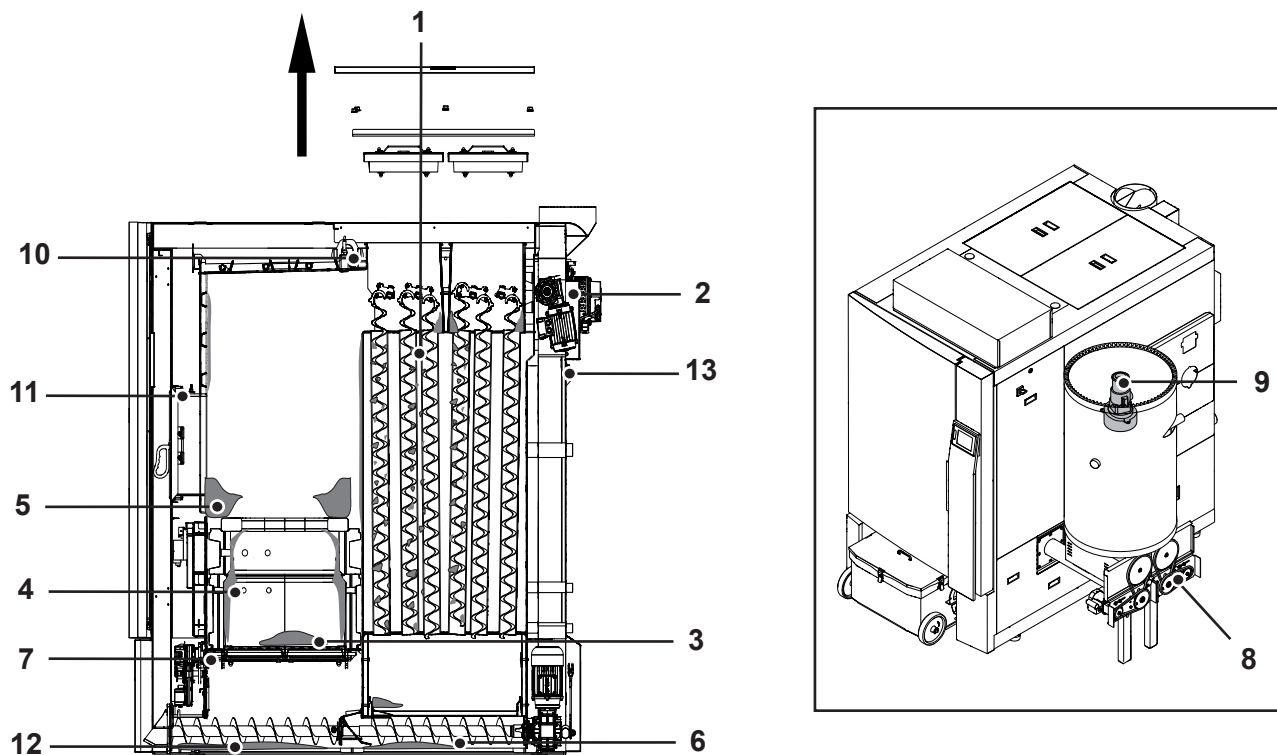
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Chapter I: Service and Maintenance

1 Maintenance overview



Pos.	Tasks of maintenance ¹	Frequency (a = annually)
1	Tap off the turbulators and clean the turbulator space	1x a
2	Clean the exhaust fan and flue pipe with a vacuum cleaner	1x a
3	Clean the grate	1x a
4	Clean combustion chamber with ash cleaner	1x a
5	Remove and clean flame concentration plate	1x a
6	Remove maintenance opening and clean fly ash space	1x a
7	Clean ignition	1x a
8	Lubricate the stoker chains and check the chain tension	1x a
9	Clean the filter of the pellet vacuum turbine	1x a
10	Clean the lambda sensor and combustion chamber sensor.	1x a
11	Check sealings	1x a
12	Remove ash under the grate (especially at ash grate)	1x a
13	Vacuum recirculation	1x a
14	Check the safety devices (main power switch, TMS, MOE/AFE, TMF and warning device)	1x a

¹ Frequency: at least once annually and no later than after 4000 full-load hrs, 8000 partial-load hrs or after a message has appeared on the control unit

2 Preparation for cleaning and maintenance

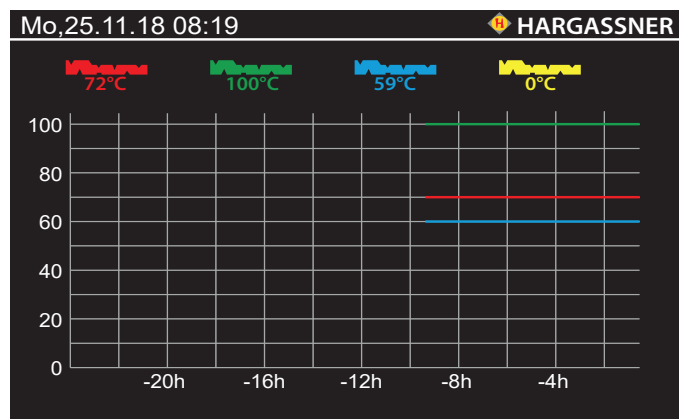
- Switch off the boiler on the control unit (BCE) (operating mode **F. Off**)
- Let boiler cool down

- Talk to the customer before beginning the maintenance process
- Take any problems and wishes the customer expresses into consideration when performing the maintenance tasks

2.1 Reading the error memory

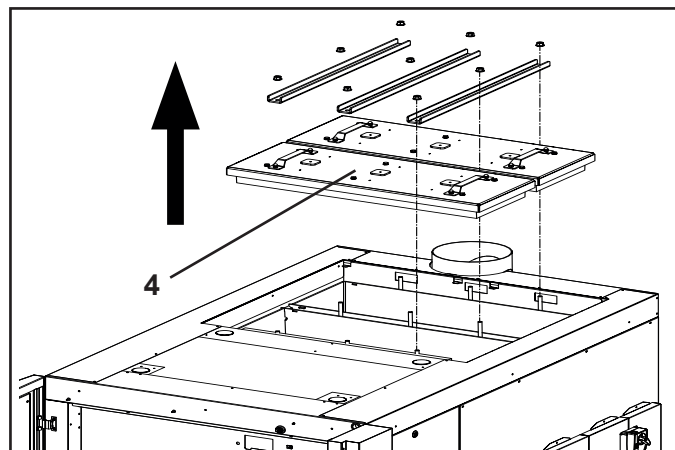
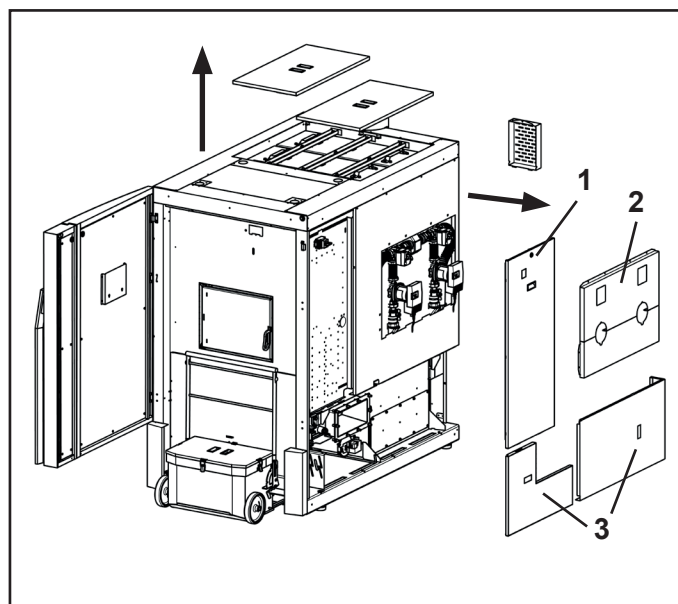
- Call up the error memory in the service level
- Rectify new errors during the maintenance process if possible

2.2 Checking the operating behaviour



- Call up the graph in the info level using an active service code
- Check the operating behaviour

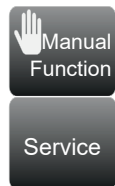
2.3 Removing the casing



- Remove cover lid and maintenance lid
- Remove the casing panel covering the control box (1)
- Remove the casing panel covering the back-end protection (2)
- Remove the lower casing panels on the side (3)
 - Loosen screw at the back cover of the fly ash space
 - Pull cover backwards and remove
 - Remove insulation
 - Lift cover from the stoker and remove
- Clean the maintenance lid (4) covering the heat exchanger
- Select manual mode

3 Service manual mode (function test)

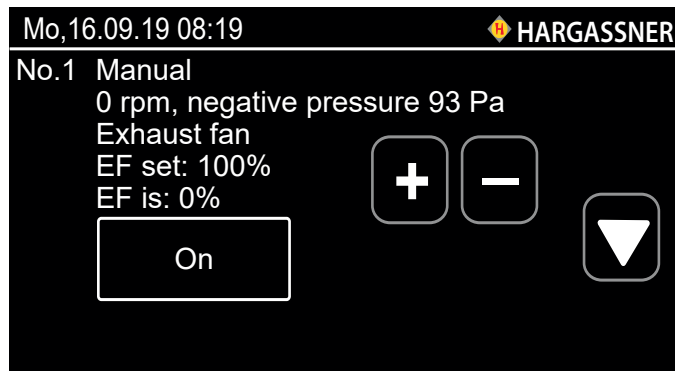
- Used to check all the electrical functions
- Manually operate the drives to check them or if there is an error



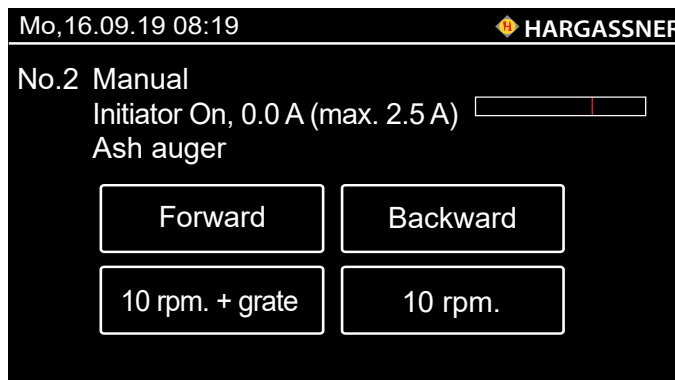
- Activate manual mode and service → A code has to be entered to activate them

- To activate the function, press or press and hold the button.
- To deactivate the function, press again or release the button
- To activate continuous operation (max. 2 minutes), double-click the button when the service settings are activated.

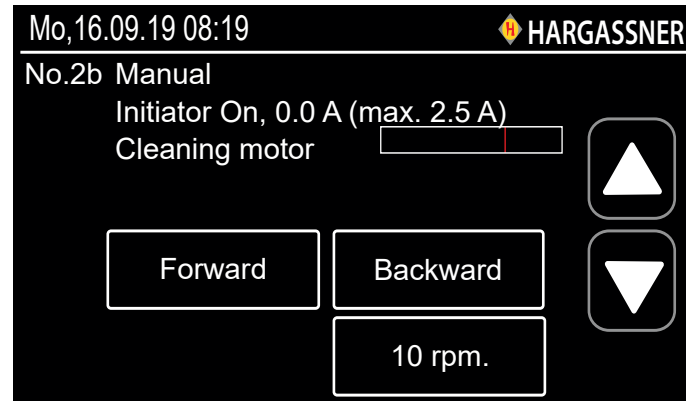
Only the selected function is activated. All other functions are inactive.



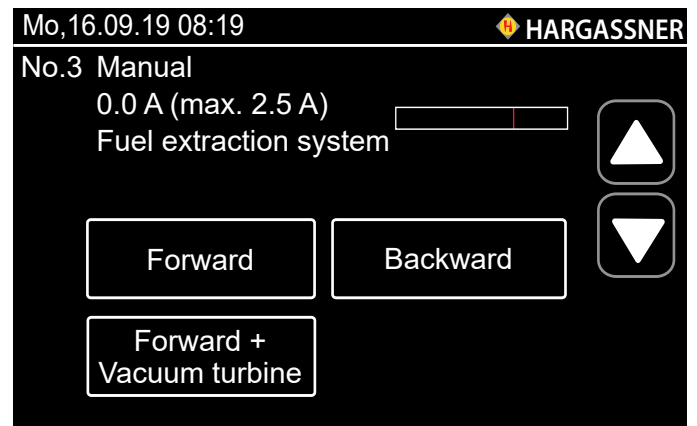
- No.1 Function check on the exhaust fan's motor
- Negative pressure reached with recirculation closed: 300 Pa



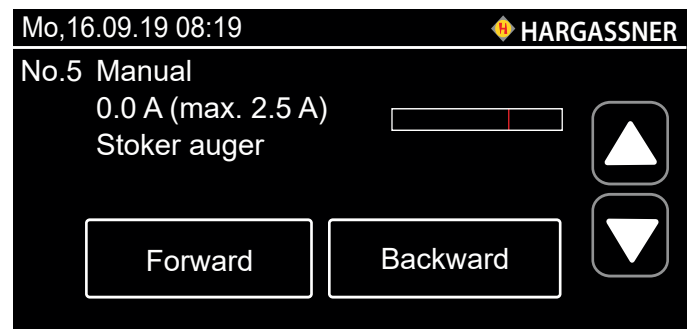
- No.2 Function and rotation check of ash extraction motor
- Forward
- Backward
- Only press the Backward button briefly



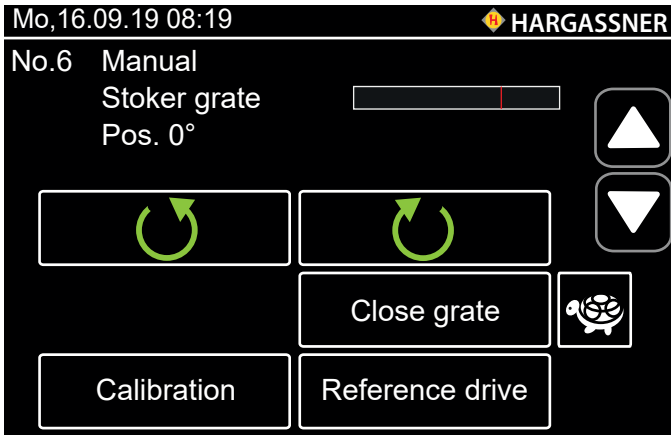
- No.2b Function and rotation check of cleaning motor
- Forward
- Backward
- Press Backward button only briefly



- No.3 Function and rotation check of fuel extraction motor
- Manual Forward and Backward of the motor to clear any blockages
- Press Backward button only briefly
- For double agitator, the additional parameter No. 3a is shown

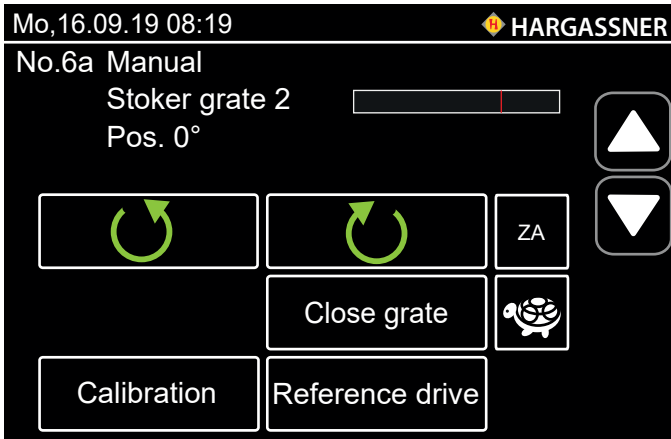


- No.5 Function and rotation check of stoker auger motor
- Manual Forward and Backward to fill the stoker auger
- Press Backward button only briefly
- For double rotary valve, the additional display No. 5a is shown



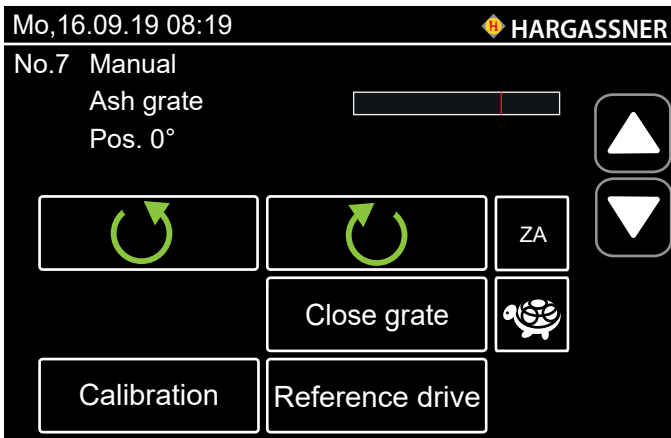
No.6 Function and rotation check of stoker grate motor

- Manual Forward or Backward of the motor
- Close and check the grate
- ⇒ See „Calibrating the rotary grates and intermediate flap“ on page 13
- Tortoise mode: a slow mode with more power for more precise calibration



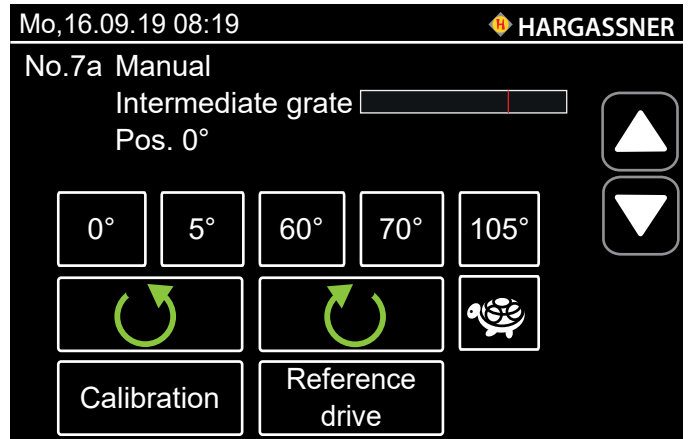
No.6a Function and rotation check on stoker grate motor 2

- Manual Forward or Backward of the motor
- Close and check the grate
- ⇒ See „Calibrating the rotary grates and intermediate flap“ on page 13
- Tortoise mode: a slow mode with more power for more precise calibration



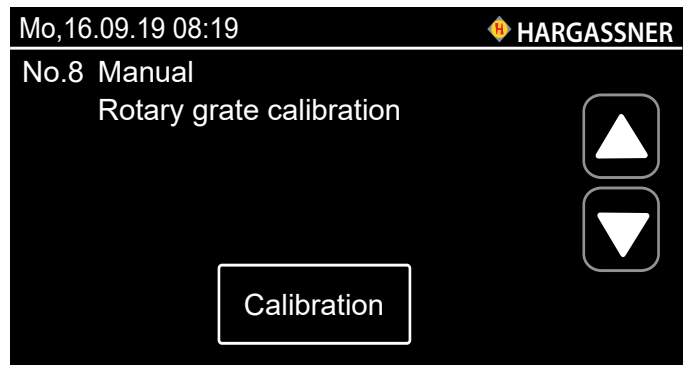
No.7 Function and rotation check of ash grate motor
→ Manual Forward or Backward of the motor

- Close and check the grate
- ⇒ See „Calibrating the rotary grates and intermediate flap“ on page 13
- Tortoise mode: a slow mode with more power for more precise calibration

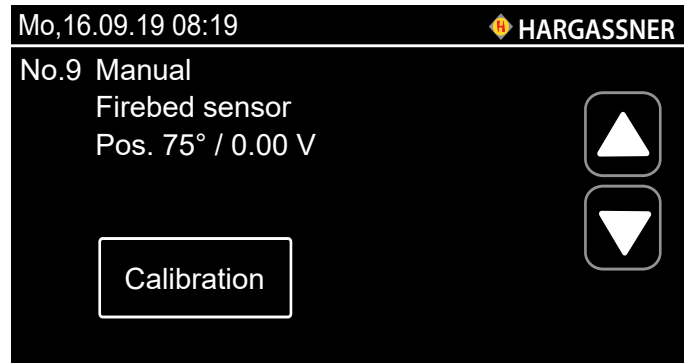


No.7a Function and rotation check of ash grate motor
→ Manual Forward or Backward of the motor

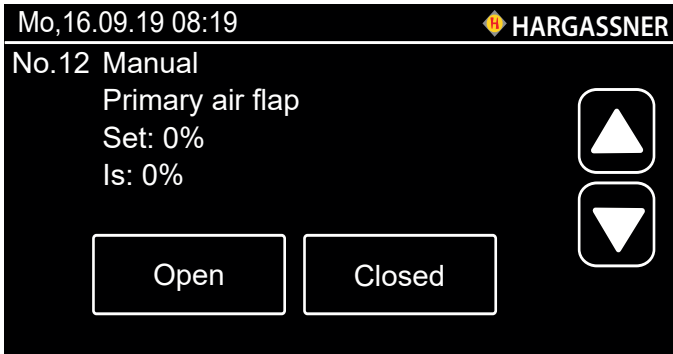
- Close and check the grate
- ⇒ See „Calibrating the rotary grates and intermediate flap“ on page 13
- Tortoise mode: a slow mode with more power



No.8 Calibration of the rotary grates
→ Motors automatically run forwards and backwards
⇒ See „Calibrating the rotary grates and intermediate flap“ on page 13



No.9 Calibration of the firebed sensor
⇒ See „Calibrating the firebed sensor“ on page 13

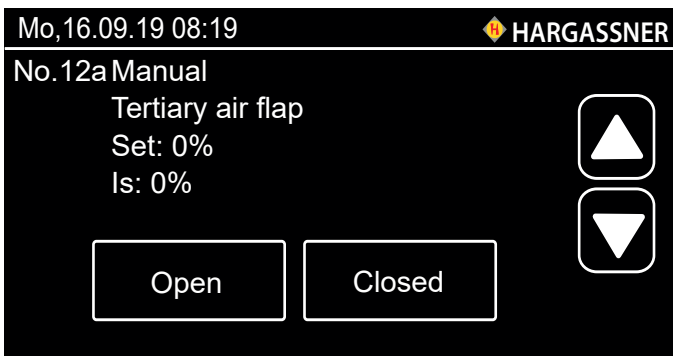


No.12 Function and position check of the primary air flap (set/actual)

→ 100% - Open; 0% - Closed

Position at both extremes 0% and 100%

→ Press Open or Closed and monitor the actual value as it changes

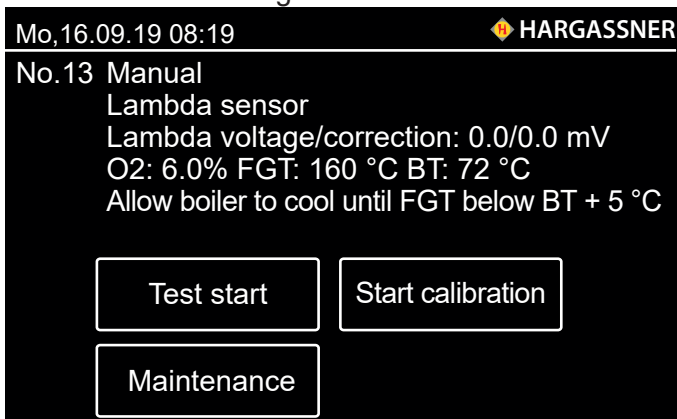


No.12a Function and position check on the tertiary air flap (set/actual)

→ 100% - Open; 0% - Closed

Position at both extremes 0% and 100%

→ Press Open or Closed and monitor the actual value as it changes



No.13 Calibration of the lambda sensor

⇒ See „Calibrating the lambda sensor“ on page 13

→ When a correction value is displayed, the calibration has been completed

→ If the value is not reached, the message “Lambda sensor defective” will be displayed

→ Calibrate the lambda sensor at the end of the maintenance process

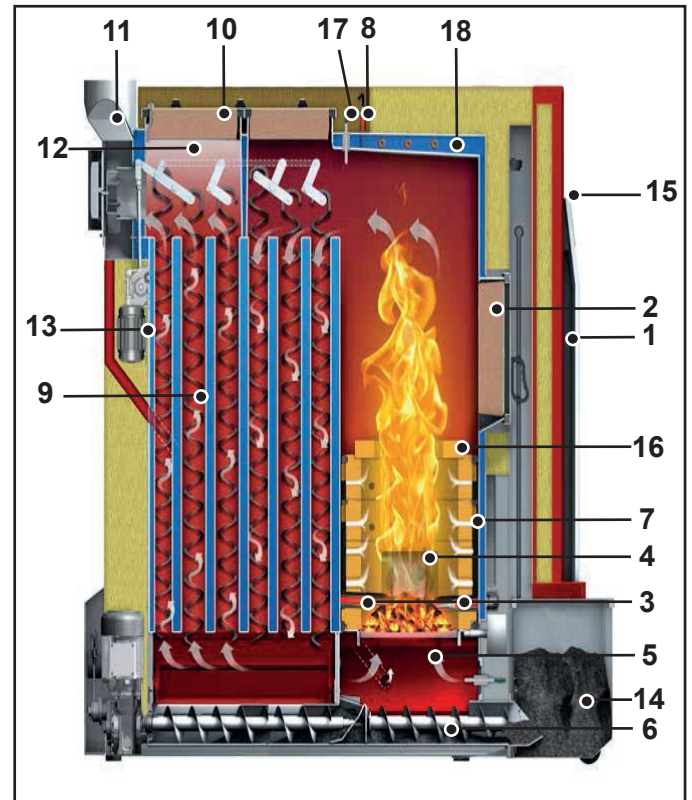
→ If the maintenance process is activated in service mode, the maintenance process has to be reset after the calibration

→ Service manual mode no. 59

4 Cleaning

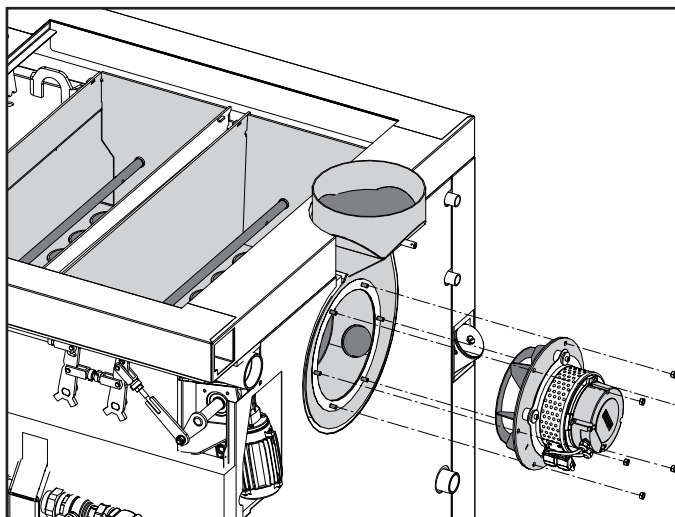
→ Disconnect the boiler's power supply before cleaning or performing maintenance tasks on any moving parts

4.1 Overview of components



Pos.	Description
1	Boiler cover door
2	Combustion door
3	Ignitions (2 x 300W)
4	Firebed monitoring
5	Double rotary step grate
6	Ash-auger
7	Refractory
8	Lambda sensor
9	Turbulators
10	Cleaning lid
11	Exhaust fan
12	Flue gas sensor
13	Recirculation
14	Ash box
15	Control unit
16	Flame concentration jet
17	Combustion chamber sensor
18	Thermal safety circuit

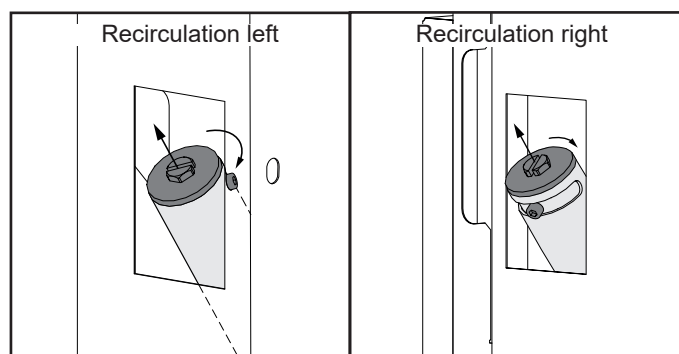
4.2 Cleaning the flue pipe



- Disconnect the electrical connections from the motor
- Loosen copper nuts and remove exhaust fan backwards
 - The anti-adhesive seal on the exhaust fan housing prevents the exhaust fan seal from sticking to the housing
 - If the fan seal gets stuck, replace the anti-adhesive
- Clean flue pipe, housing and impeller of the exhaust fan
- Do not damage the impeller

4.3 Cleaning the recirculation

→ Factory setting: 50%



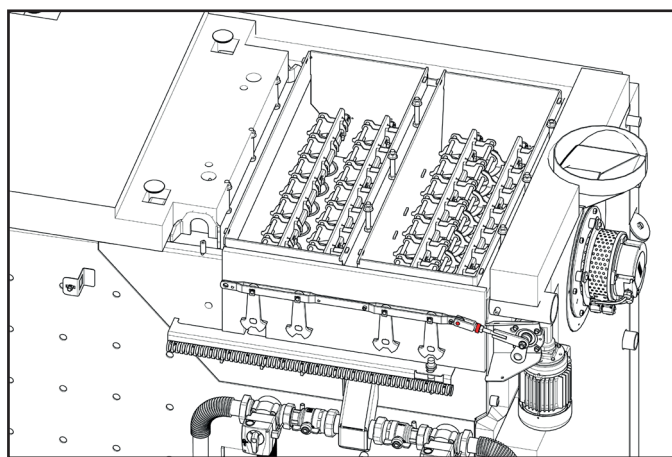
- Mark recirculation settings
- Plug a vacuum cleaner into the recirculation's connection point and turn the vacuum cleaner on
- Close** the recirculation
 - The vacuum cleaner is loud (no air is being suctioned)
- Open** the recirculation
 - The vacuum cleaner is quiet
- Put the recirculation back in its starting position

4.4 Cleaning and checking the heat exchanger

4.4.1 Checking the maintenance lid

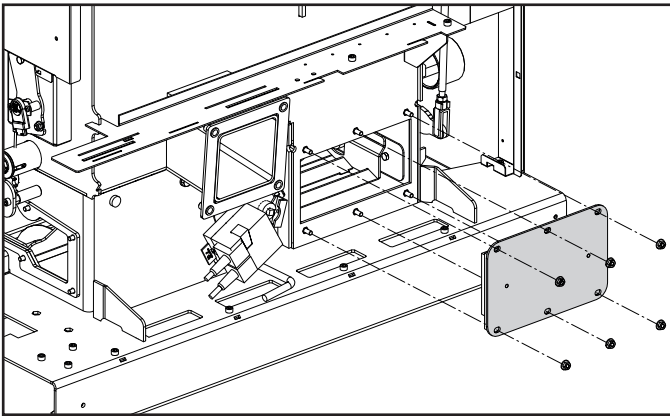
- Remove the cover and vacuum the seal
- Check the seal
 - Spray the seal with graphite spray
 - Press the cover on and take it off again
- You will be able to tell from the seal whether the cover is on properly
 - If necessary, replace the seal

4.4.2 Cleaning the turbulators and the turbulator chamber

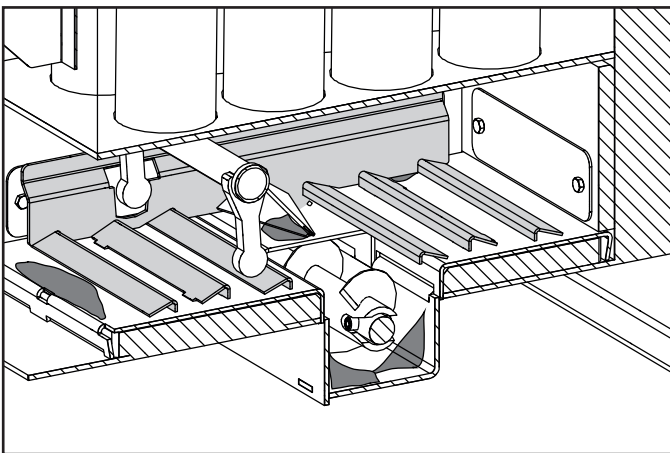


- Loosen the turbulators' fixing points
 - Remove the clevis pin
 - Spray with lubricant spray before putting it back in place
- Knock any residue off the turbulators and check they can move freely
- Clean the turbulator chamber
- Check the rods and rubber pads
- Check the cleaning device's initiator
 - Gap of 2 mm

4.5 Cleaning the fly ash area

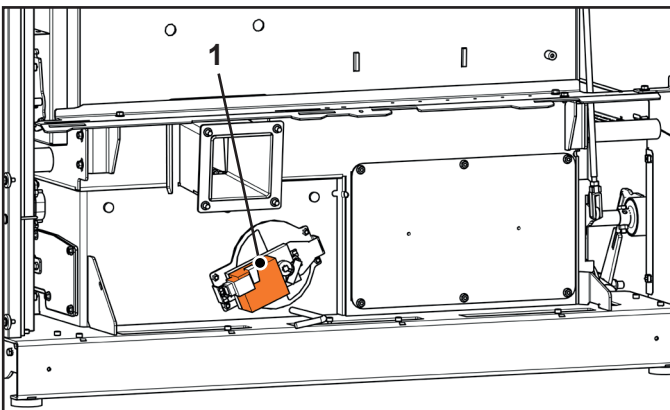


- Loosen the fastenings of the fly ash area's cover and remove it
- Check the cover's seal



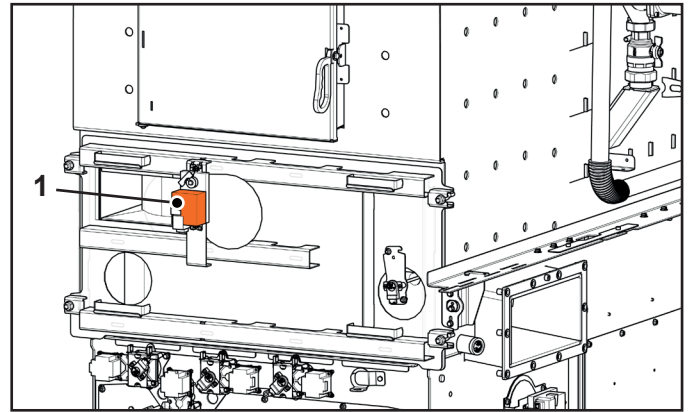
- Remove any accumulated ash from the ash area

4.6 Checking the primary air flap



- Unlock the air flap motor (1)
 - Press the black button and run the motor to open and close the air flap with the button pressed
- Check it can move freely
 - If any contact problems occur, the contacts have to be set (read the error memory)
 - ⇒ See „Resolving air flap servomotor errors“ on page 19

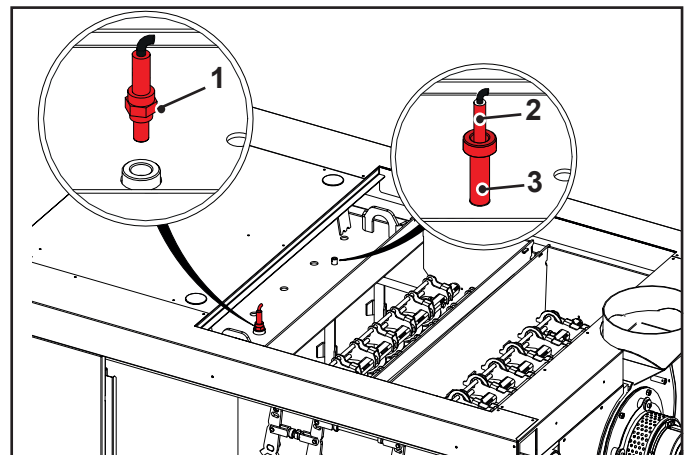
4.7 Checking the tertiary air flap



- Unlock the air flap motor (1)
 - Press the black button and run the motor to open and close the air flap with the button pressed
- Check it can move freely

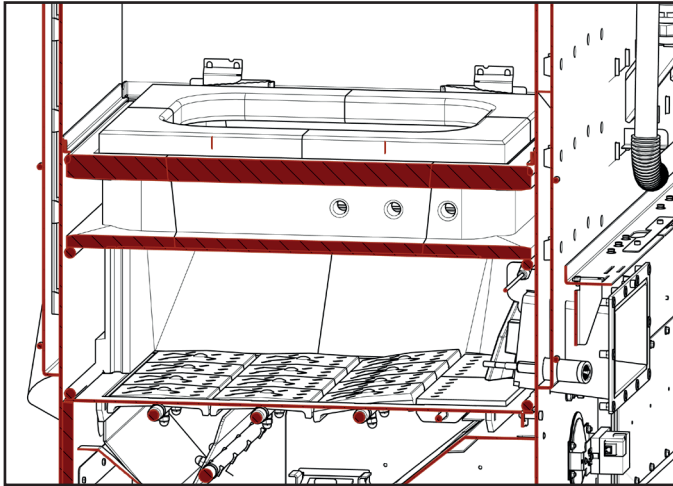
4.8 Cleaning the lambda sensor

NOTE	
i	Do not tap the lambda sensor <ul style="list-style-type: none"> • Do not blow it with compressed air • Do not use sharp objects or chemical cleaning agents (brake cleaner, etc.)



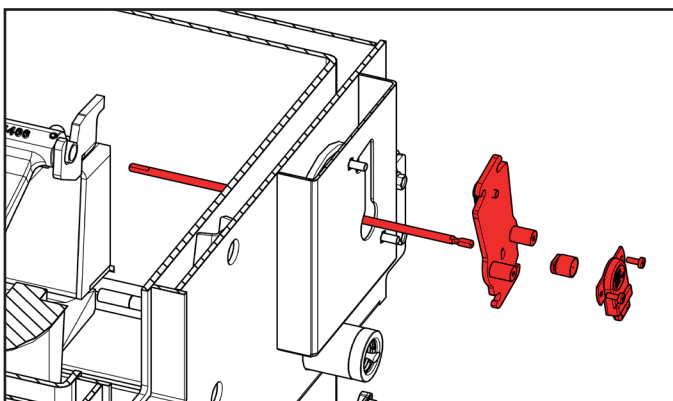
- Disconnect and unscrew the lambda sensor (1)
- Place sensor head down
 - Debris falls down
- Vacuum the sensor
- Calibrate the lambda sensor and then put it back in place once the maintenance process is complete
 - ⇒ See „Calibrating the lambda sensor“ on page 13
 - Pull out the combustion chamber sensor (2) and the ceramic protective pipe (3) and wipe them with a soft cloth

4.9 Cleaning the combustion chamber and post combustion chamber



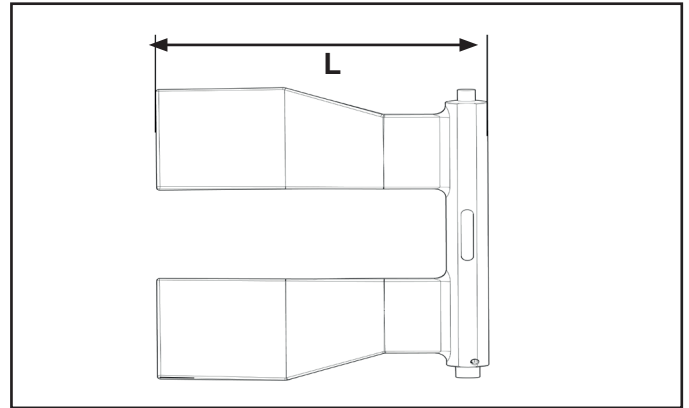
- Open the combustion chamber door and check the ash cone
- Check the seal and, if necessary, adjust the combustion chamber door
- Clean flame concentration plate in the combustion chamber
- Remove flame concentration plate from combustion chamber
- Clean the combustion chamber and post-combustion chamber with a cleaning stick
- Check the refractory stones for damage
 - Replace any stones with pieces broken off or major cracks or fissures
- ⇒ See „Replacing the refractory stones“ on page 16
- Extract the ash in manual mode
 - Turn all the grates to 90° and all the ash to drop down
- Ash area cleaning
- Check the ash hasp
- Clean the rotating grates and ensure the holes are free of any dirt
- Remove the lower front casing door and the ash box

4.9.1 Checking the firebed sensor unit

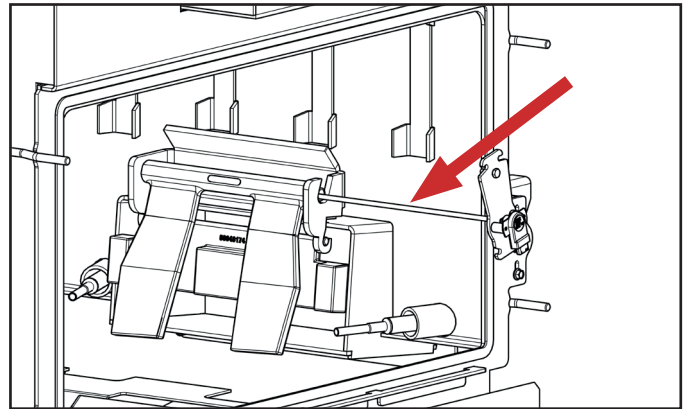


- Unscrew the magnetic sensor and remove the magnet
- Hold the shaft with a pair of pliers and pull the tongue of the firebed sensor up

→ If there has been too much erosion, replace the firebed sensor's tongue

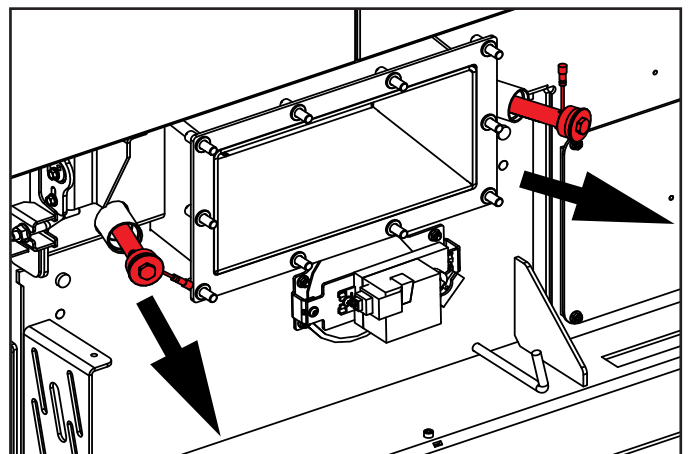


- Length when new 219 mm
- Length after the maximum amount of erosion 179 mm



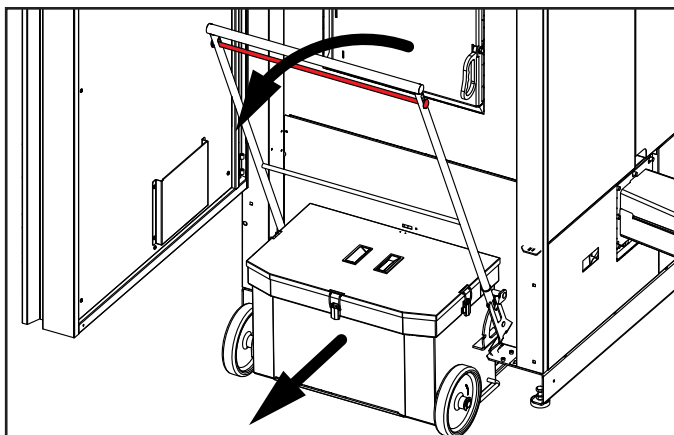
- Idle run between the shaft and firebed sensor tongue maximum 10°
- Check the spring
 - The spring should rebound back into its original position after being pressed down

4.10 Cleaning the ignition



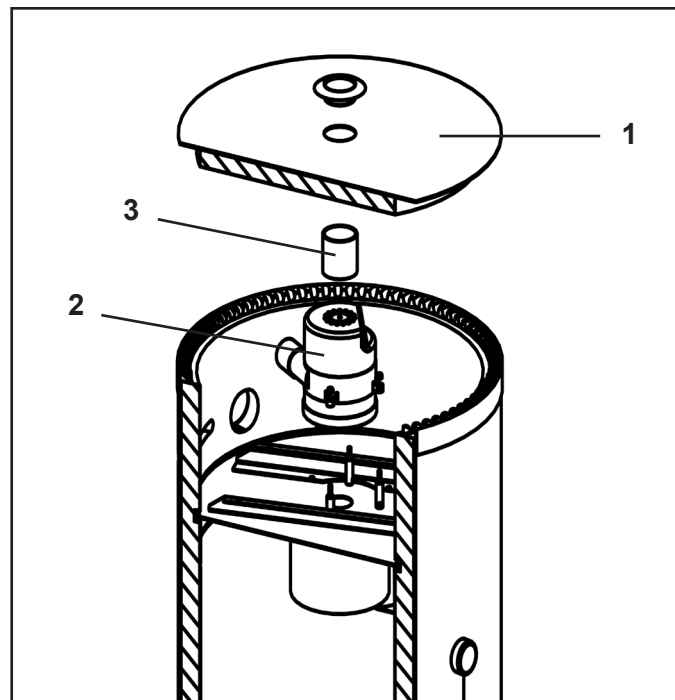
- Unscrew the ignition
 - Do not damage the ignition (ceramic component)
- Clean ignition and ignition sleeve (on the boiler) with vacuum cleaner
 - Mount ignition hand-tight only

4.11 Emptying the ash box

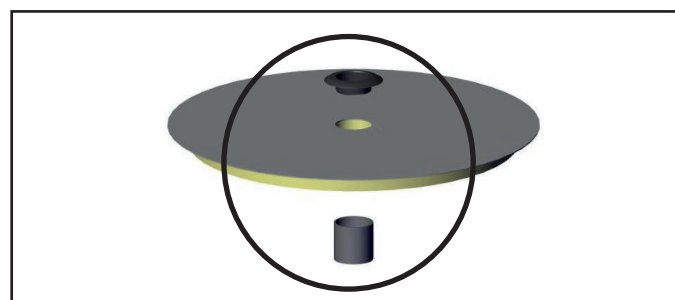


- Open the cover door
- Pull the ash box's release lever upwards
- Pull the handle backwards until it clicks into the transport position
- Now the ash box can easily be transported to the emptying point
- Place the transport handle in the emptying position
- Open the cover's fasteners and remove the cover
- Empty the ash box
- Put the cover back on and secure it with the fasteners
- Put the handle back into the transport position
- Reattach the ash box to the boiler
- It is locked on both sides by raising the transport handle into the heating mode position

4.12 Cleaning the vacuum turbine



- Remove the day hopper's cover (1)
- Remove the insulation at the top
- Disconnect plug of the vacuum turbine
- Loosen the clamp of the return air hose and remove the hose from the vacuum turbine
- Remove the vacuum turbine (2) by pulling it upwards
- Remove dust and deposits from the sieve, vacuum turbine and return air hose
- Use a vacuum cleaner
- Re-assemble the boiler after cleaning
- **Make sure the turbine ventilation socket (3) is in the correct position**



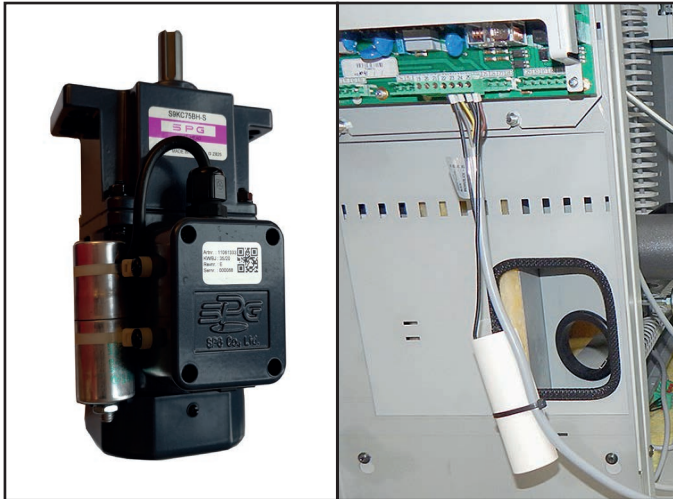
- If a brushless pellet vacuum turbine needs to be changed, a standard pellet vacuum turbine can be used as a temporary replacement
- See the 11061776 replacement part / installation information

5 Cleaning and checking the suction system

- Check the hoses for wear and holes
- Check them by inspecting and feeling them
 - White patches of discolouration on the red coating indicate wear
 - Replace the hose or add a metal bracket

6 Checking the capacitor

- Check the stoker motor's capacitor
 - Check the direction of rotation
 - Replace the capacitor if necessary and at least every 10 years
 - The capacitor can be attached to the motor or to the board



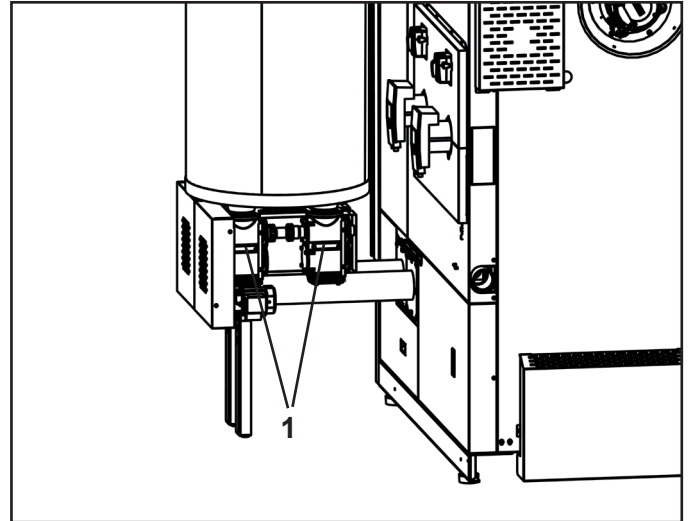
- Make a note of when (day and year) and the number of operating hours after which the capacitor has been changed

→ If a capacitor with white housing is currently installed, it needs to be replaced by the latest version (metal housing)

⇒ See „Changing the stoker motor capacitor“ on page 20



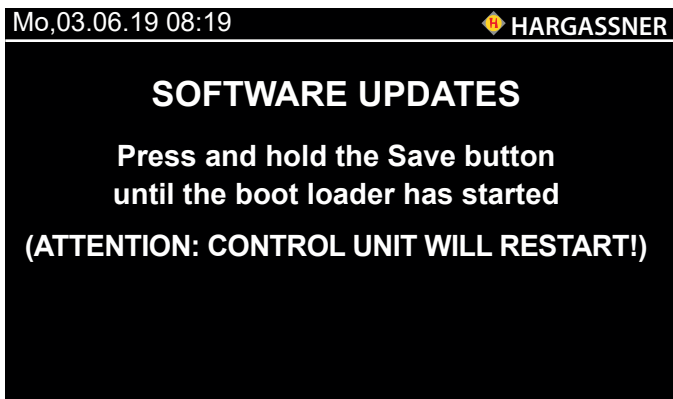
7 Checking the double rotary valve



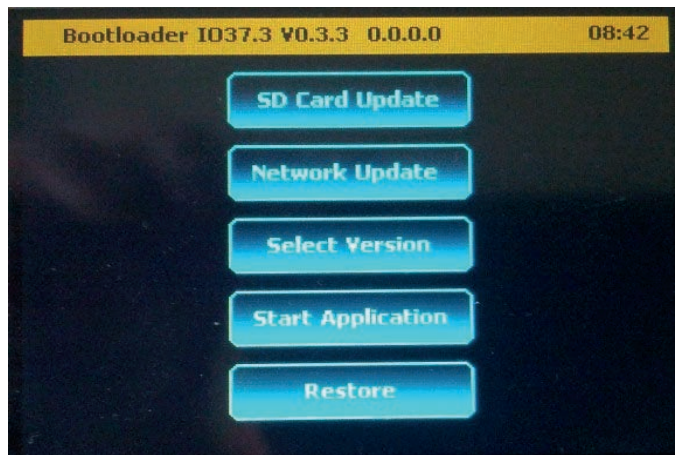
- Check the chain tension and, if necessary, adjust the tension
- Lubricate the chain
- ⇒ See „Lubrication points“ on page 15
- Check the air slot (1)

8 Software updates

- To ensure the warranty extension is granted, the boiler's software must be up to date
- Check the software version in the info level (Hargassner symbol) before updating
- Tap on **Settings**
- Select Service mode and enter the code
- Select the **Update** button and use the arrow button to move all the way to the bottom



- Tap and hold the Save button
 - The bootloader will start
- Insert a storage card into the card slot

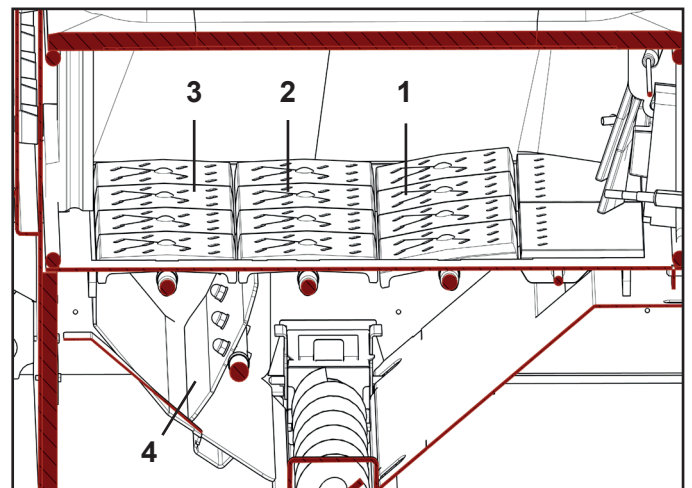


- Tap on "SD card update"
- Use the "Down" or "Up" button to select the correct software version
- Confirm your selection with "Enter"
- Start the software by tapping on the "Start application" button
 - The version you have selected will be loaded onto the control unit
- Remove the storage card

9 Calibrating the lambda sensor

- Connect the lambda sensor and put it in a safe place
 - The lambda sensor will get hot when it is connected
- Select Lambda sensor in service manual mode
- Tap on Start calibration
 - The calibration process will take 8 minutes
 - If an error message appears, clean and calibrate the lambda sensor again
 - If the error message is still displayed, replace the lambda sensor and then calibrate the replacement
 - Reset the maintenance process when the calibration process has been completed
 - Service manual mode no. 59

10 Calibrating the rotary grates and intermediate flap



- Select Calibrating the rotary grates in service manual mode (no. 9)
- Tap on Calibration
 - Stoker grate 1 (1), stoker grate 2 (2), the ash grate (3) and the intermediate flap (4) will be calibrated automatically
 - The calibration process will take approx. 5 min.

11 Calibrating the firebed sensor

- Put the firebed sensor in position
 - Check the vertical position by hand without wood chips
 - If 0° is displayed, the sensor is OK
 - If necessary, calibrate it

12 Test run

Repeat the function test

⇒ See „Service manual mode (function test)“ on page 5

→ All the moving parts should be checked before and after the maintenance process

Switch on the boiler

Start the flue gas measurement process

Wait for your desired boiler temperature

Tap on the boiler symbol and read the O₂ level on the BCE

Compare the O₂ level with the value on the meter

If no heat is required from the boiler, it can be heated using the test mode function.

Select Full load or Partial load

→ A message will appear when the boiler is ready for measurement

Check the hydraulics

Check the water pressure and pump settings

Check the back-end protection

Talk to the customer again at the end of the maintenance process and issue a maintenance report and/or a test report

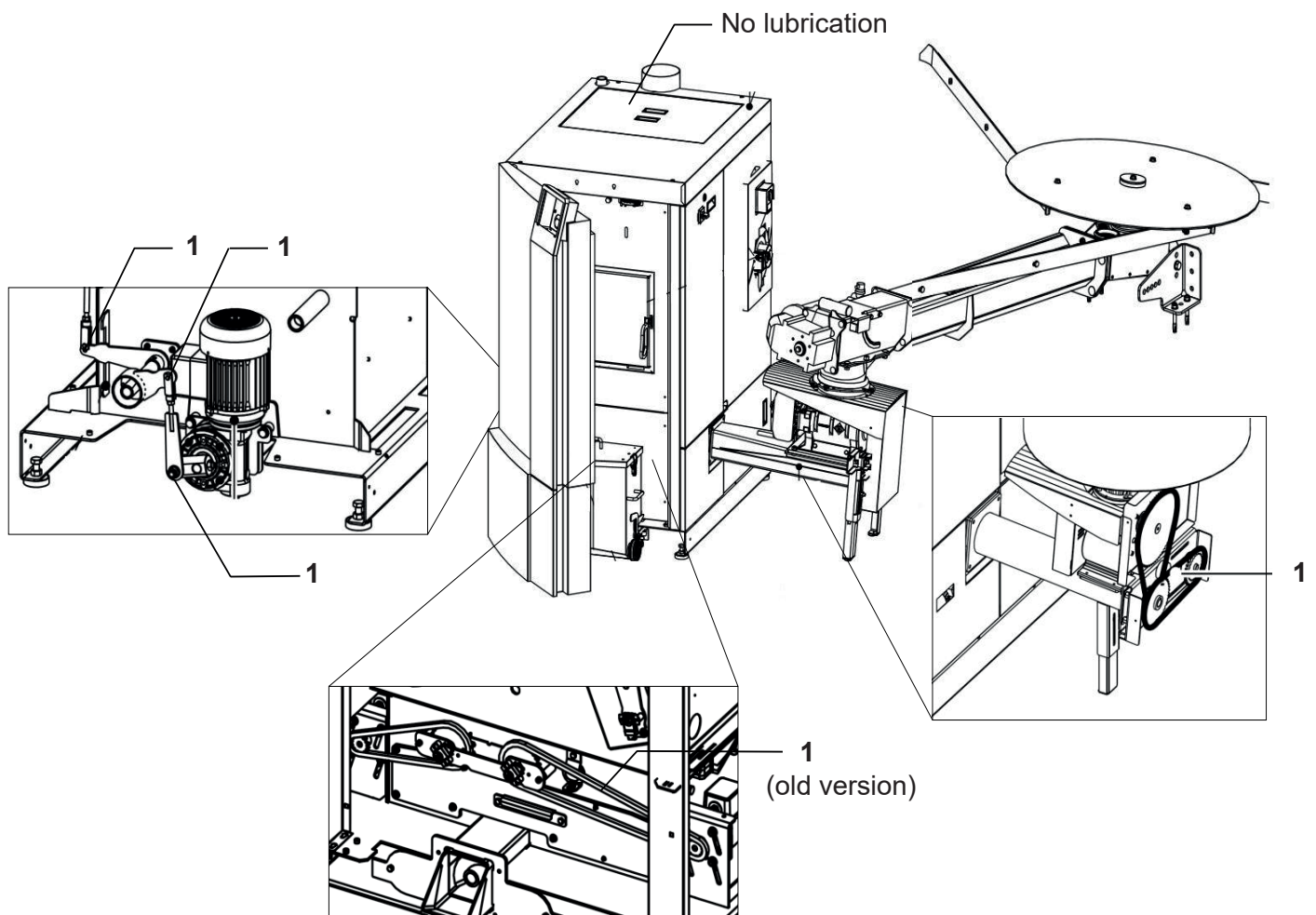
- Make a note of the flue gas values and any present defects
- Make a note of any technical safety defects depending on the respective country's regulations
- Check the flue pipe insulation
- Check the air supply openings

Chapter II: Lubrication plan

1 Lubricants

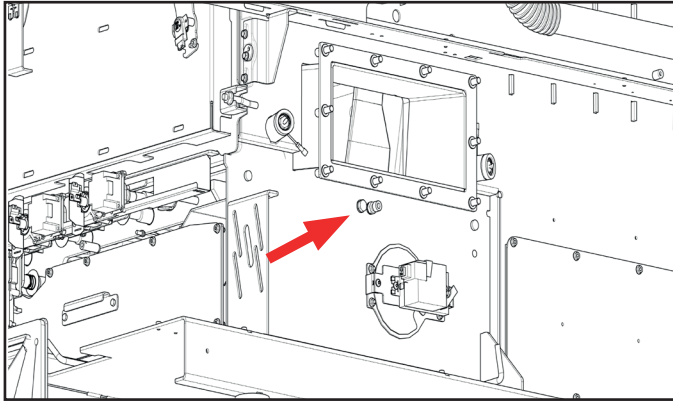
No.	Designation	Properties	Article number
1	High-performance lubricant	Mechanical joints and screws that are not exposed to heat	11052895

2 Lubrication points

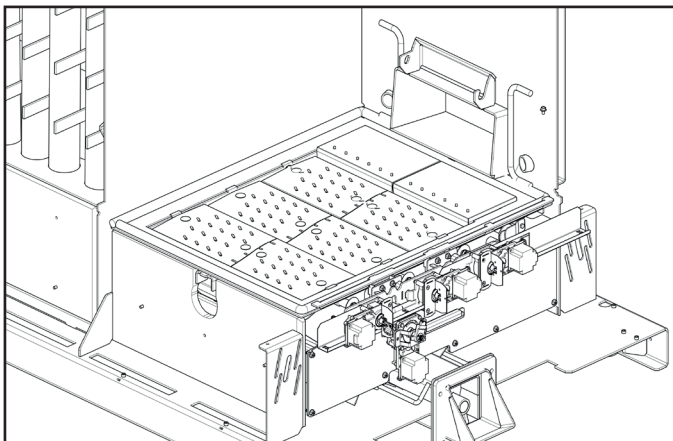


Chapter III: Advanced service tasks

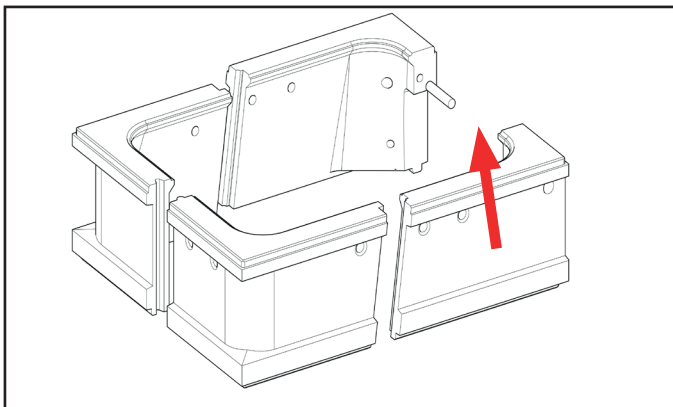
1 Replacing the refractory stones



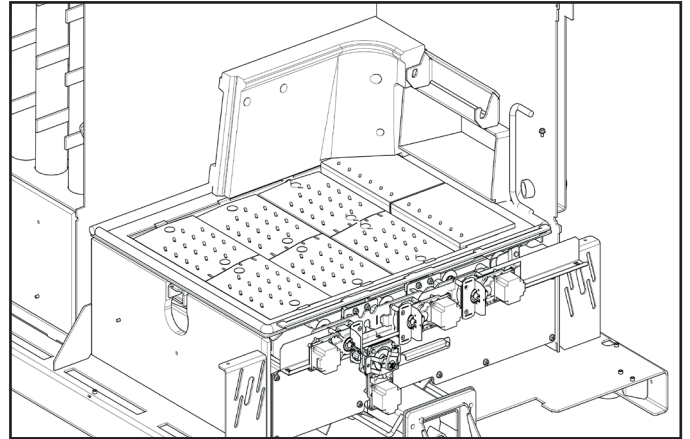
- Loosen the screw in the middle plate and push the plate to the opposite side of the boiler
→ The stop screw (with the nut) must not be changed



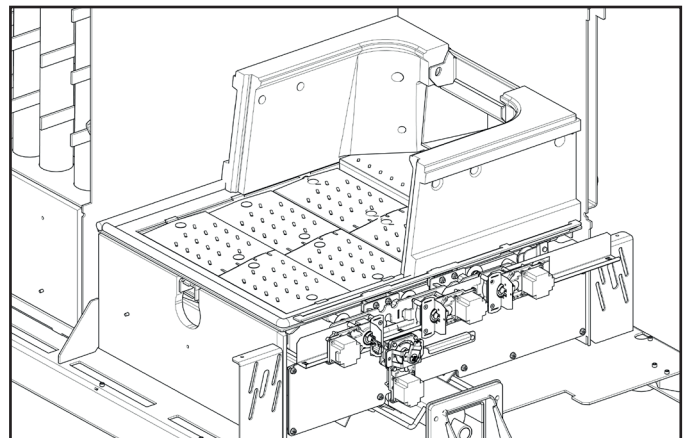
- Insert a fibreglass sealing cord (Ø 20 mm, length 3110 mm) into the gap between the middle plate and boiler wall
- Apply "KS Fiberfrax 140" mastic in the corners
- Place a fibreglass sealing cord (Ø 14 mm, length 390 mm) next to the stoker and secure it using "KS Fiberfrax 140"



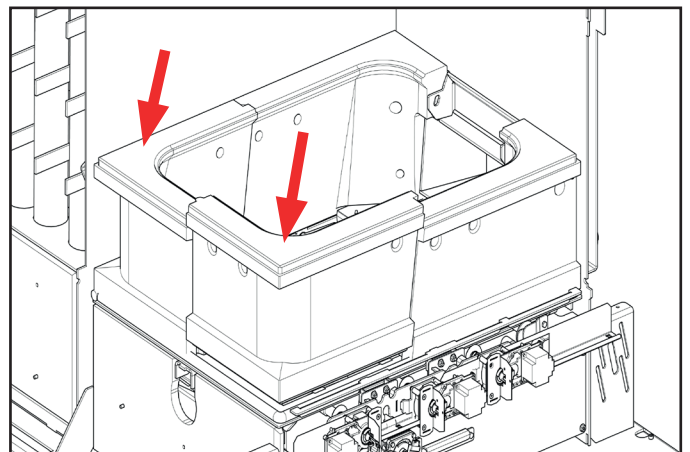
- Close the back refractory stone's opening with a fibreglass sealing cord (Ø 20 mm, length 100 mm)
- All the other openings must be clear



- Put the refractory stone in position behind the stoker

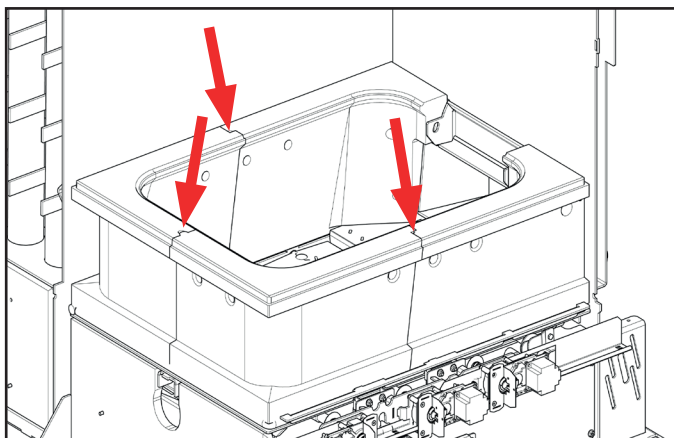


- Put the refractory stone in position in front of the stoker
→ Make sure the fibreglass sealing cords are in the correct position

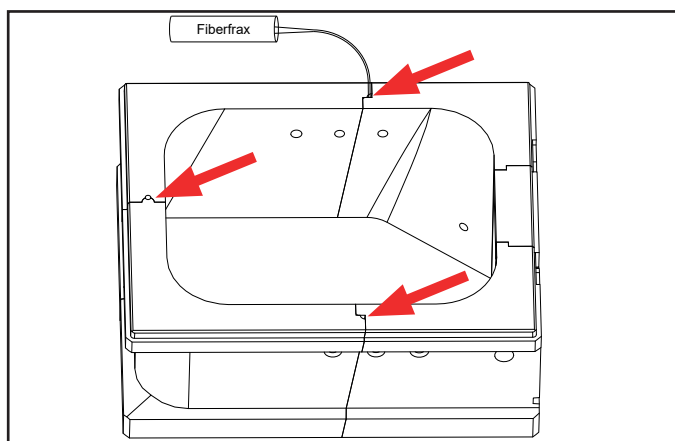


- Put the refractory stones in position opposite the stoker

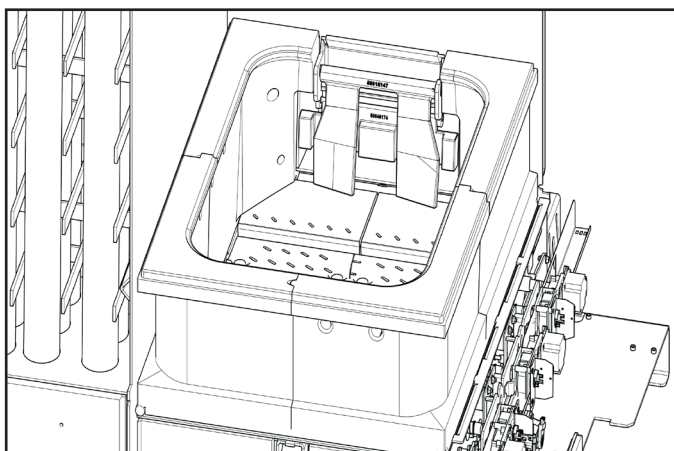
- “KS Fiberfrax 140” should be used as the sealant between the refractory stones
- Use a hose to insert the mastic straight from the cartridge into the gaps between the stones



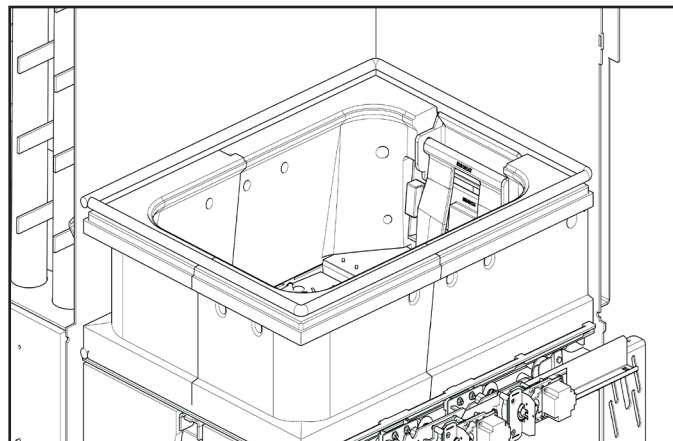
- Attach the hose to the nozzle
- Push the hose right to the bottom of the gap for the sealant



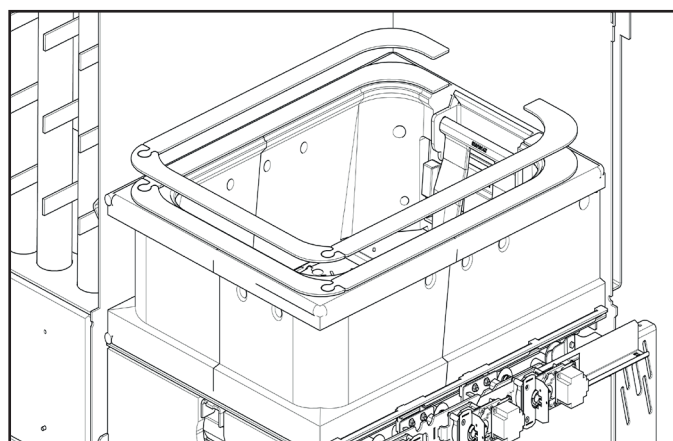
- Insert the sealant into the gap while slowly pulling the hose out at the same time



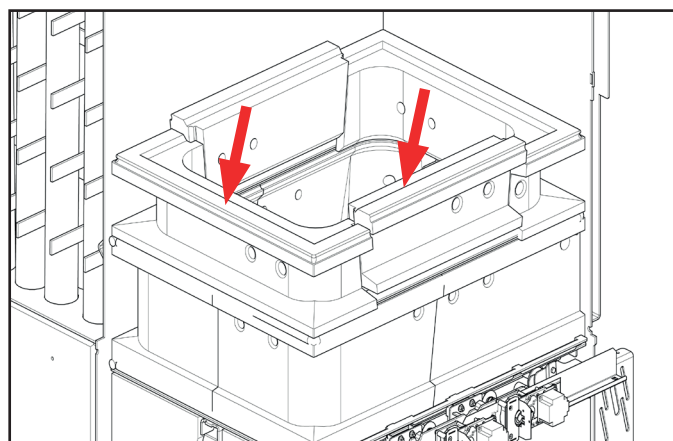
- Hook on the firebed sensor tongue
- Check that the firebed sensor tongue can move freely



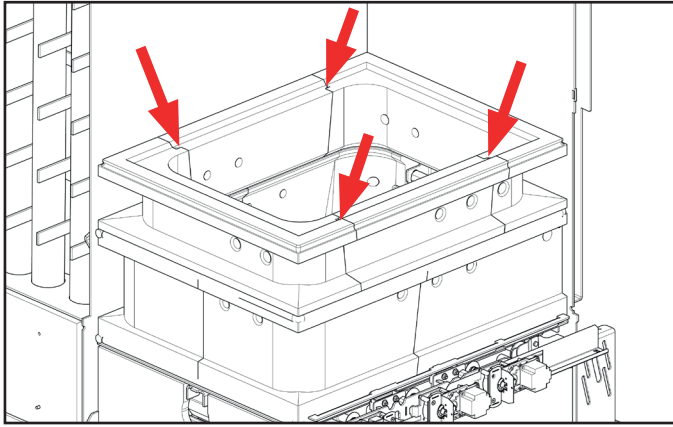
- Place a fibreglass sealing cord (Ø 20 mm, length 3110 mm) in the gap



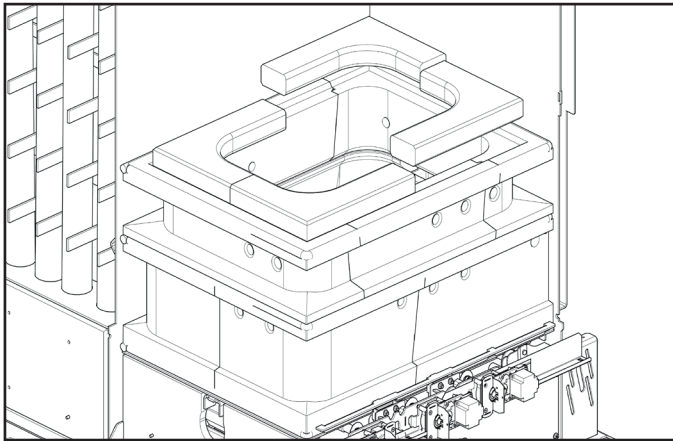
- Put on two layers of ceramic fibre seal



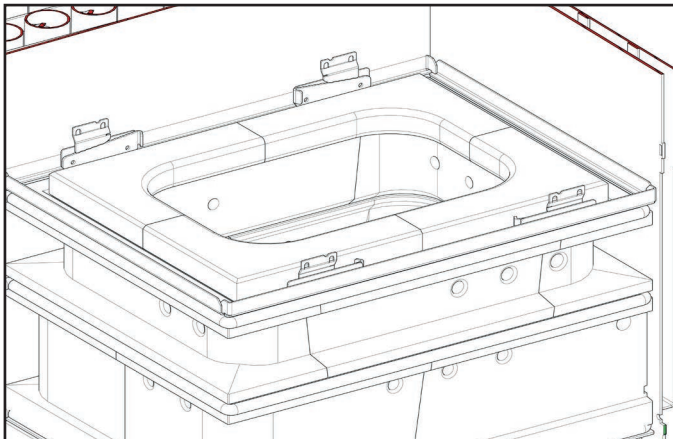
- Put the top row of refractory stones in position



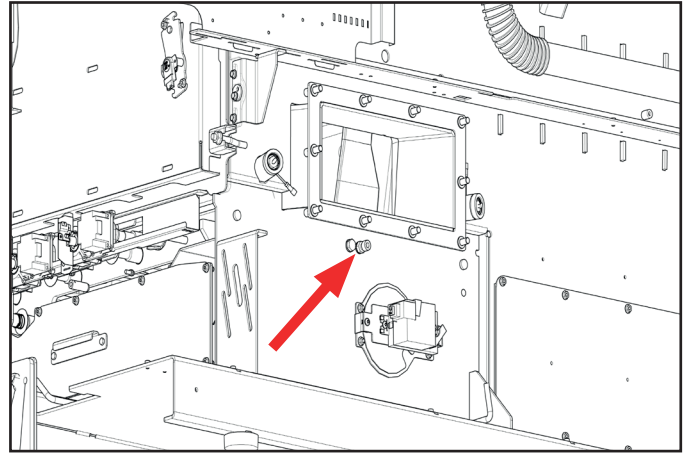
→ Seal with “KS Fiberfrax 140”



- Place a fibreglass sealing cord (Ø 20 mm, length 3110 mm) in the gap
- Apply “KS Fiberfrax 140” mastic to the edge all the way round
- Put the two-part flame concentration plate in position

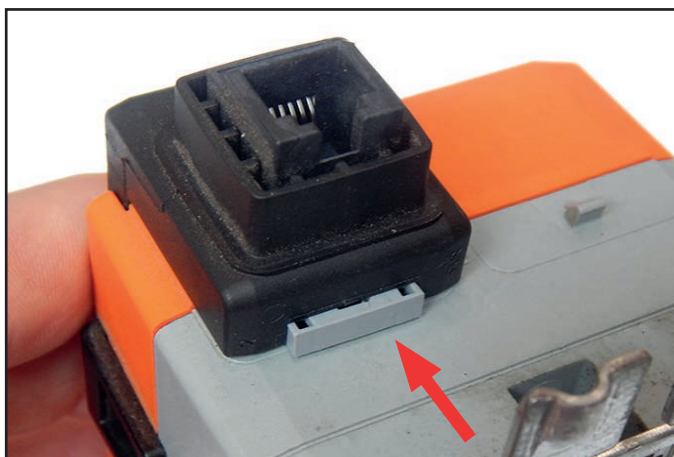


- Mount and pre-tension the stone holders
→ The refractory stones should be pressed down (if present)
- Put the two-part flame concentration plate in position

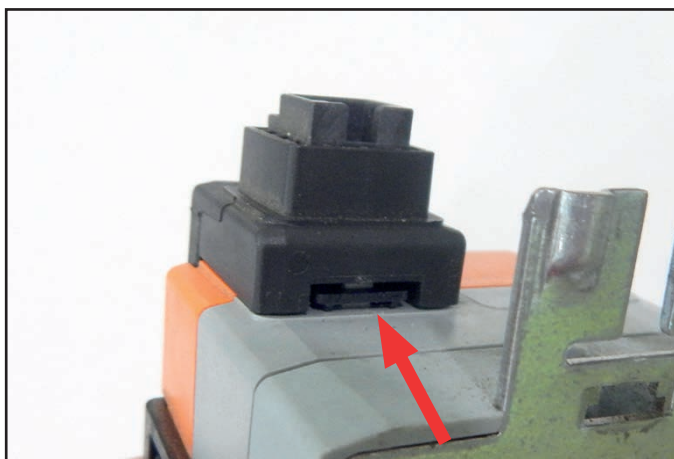


- Retighten the screw in the middle plate
→ The middle plate should be pulled to the stoker
→ The stop screw (with the nut) must not be changed

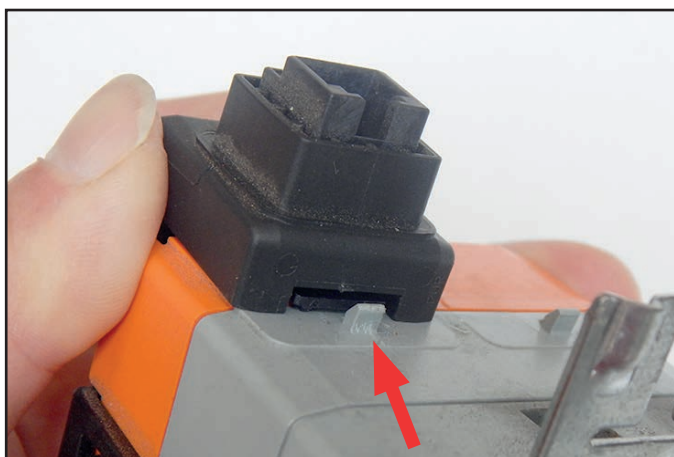
2 Resolving air flap servomotor errors



- Remove the plug lock



- Lift up the tab

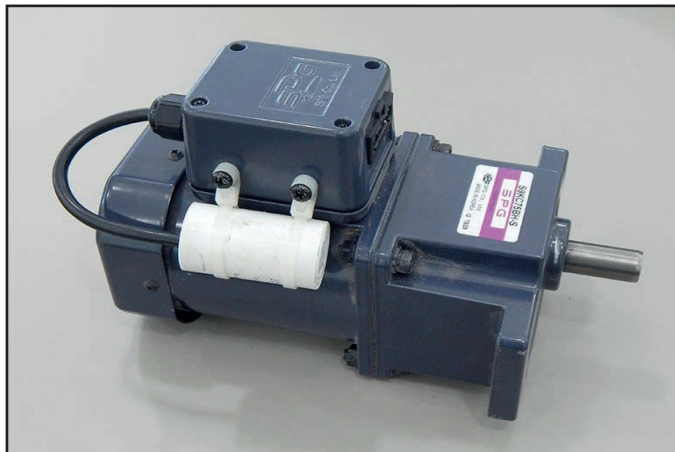


- Remove the plug

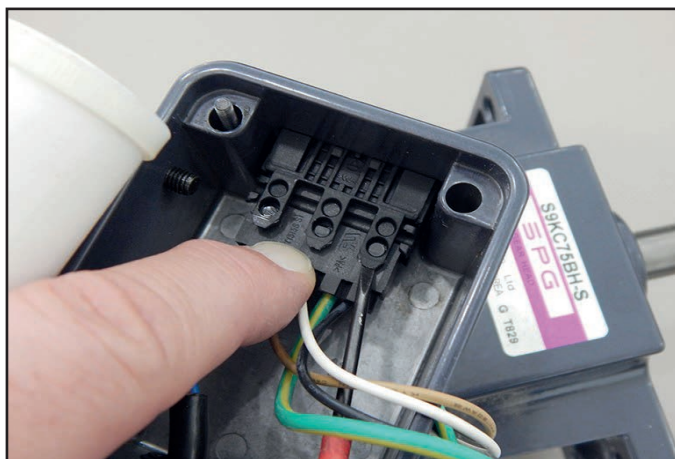


- Bend the plug's contact blades up slightly (max. of 1-2 mm)
- Spray the tips of the contact blades with a thin layer of contact spray
- Re-assemble the unit in reverse order.

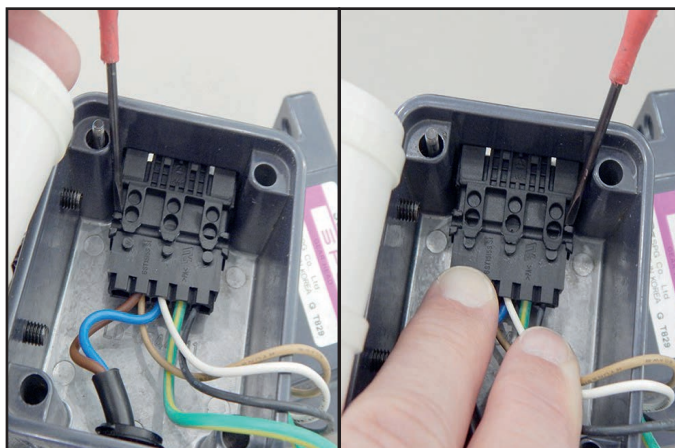
3 Changing the stoker motor capacitor



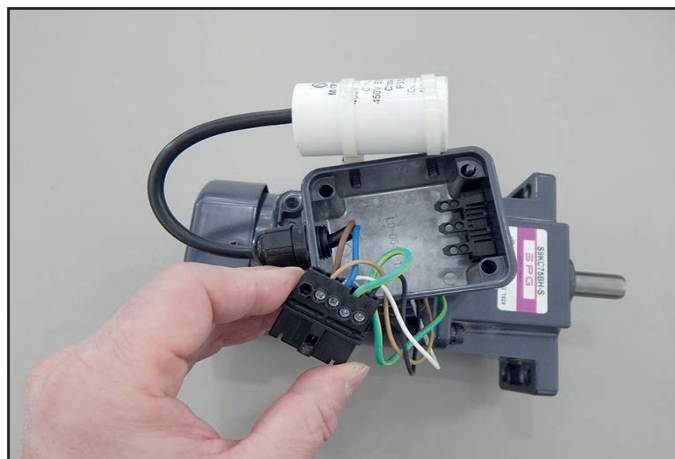
- ❑ Remove the cover and turn it over



- ❑ Press the plug down and carefully bend all three retaining brackets upwards
 - If the plug is not pressed down, the retaining brackets will immediately click into place again
 - There are no retaining brackets on the other side of the plug



- ❑ Carefully lever out the plug using the projections at the side



- ❑ Loosen the terminals and remove the capacitor



- ❑ Connect the new capacitor and click the plug back into place
- ❑ Put on the cover
- ❑ Turn the capacitor's holder so it is pointing upwards



- ❑ Install the new capacitor

Chapter IV: Parameters

1 Parameter list - Service

Menu	Description	Default
J - GSM		
J1	Waiting time - SMS alert	5 Min
J2	GSM module - alarm - reset	No
J3	Time to clear	10 Min
J4	Auto Reset GSM	Auto Reset YES
J5	Send notices via SMS	Yes
K - Boiler		
K1	Combustion - minimum output	30 %
K2	Combustion - maximum heat output	100 %
K3s	Controller Exhaust fan speed - 100% output	Eco-PK 250 85% Eco-PK 300 90% Eco-PK 330 100%
K10	Minimum temperature	78 °C
K11	Maximum temperature	90°C
K12	Temperature - hysteresis	5 °C
K13	Set temperature - superelevation	6 °C
K14	Flue gas temperature - error below	70 °C
K15	Time - flue gas temperature - error	15 Min
K20	TMF maximum temperature fuel storage room	60 °C
K21	TMS Temperature Note Stoker channel	65 °C
K21a	TMS temperature - error Stoker channel	70 °C
K21b	TMS temperature OK after notice/error	55 °C
K22	ATM Ash room maximum temperature	300°C
K23	Time for grate over maximum temp before error	60 sec
K24	Primary air during grate temperature error	20 %
K25	Exhaust fan during grate temperature error	20 %
K26	Stop burnout due to ATM when ATM is below	180 °C
K29	Max. board temperature exceeded	60 °C
K30	Test mode Set temperature	78 °C
K31	Test mode runtime	120 Min
K32	Test mode maximum power Full load	100 %
K32a	Boiler test mode maximum power Partial load	50 %
K40	Output limit during error	60 %
K51	PAF set in slumber mode	10 %
K51a	Exhaust fan set in slumber mode	10 %
K51b	PAF set off while lambda heating active	10 %
K51c	Exhaust fan set off while lambda heating active	10 %
K52	Boiler locked at 2x slumber mode within	30 Min
K52a	Duration - boiler locked at 2x slumber mode	60 Min
K54	Signal - water pressure at 0 bar	0 V
K55	Signal - water pressure at 10 bar	10 V
K56	Maximum demand HKR	75 °C

Menu	Description	Default
K57	Number of boiler starts within 24h below minimum runtime before info	10 x
K80	Runtime exhaust fan after burnout	60 Min
K81	Speed of exhaust fan after burn out	20 %
L - Pumps		
L1	District line pump 1 Release temperature	58 °C
L2	District line pump 2 Release temperature	59 °C
L2a	Controlled district line pump Release temperature	59 °C
L3	Heat circuit pump 1 Release temperature	60 °C
L4	Heat circuit pump 2 Release temperature	61 °C
L4a	Heat circuit pump 3 Release temperature	62 °C
L4b	Heat circuit pump 4 Release temperature	63 °C
L4c	Heat circuit pump 5 Release temperature	62 °C
L4d	Heat circuit pump 6 Release temperature	63 °C
L4e	Heat circuit pump A Release temperature	62 °C
L4f	Heat circuit pump B Release temperature	62 °C
L4i	Heat circuit pump 1 Release temperature at return mixer with accumulator pump	30 °C
L4j	Heat circuit pump 2 Release temperature at return mixer with accumulator pump	31 °C
L4k	Heat circuit pump 3 Release temperature at return mixer with accumulator pump	32 °C
L4l	Heat circuit pump 4 Release temperature at return mixer with accumulator pump	33 °C
L4m	Heat circuit pump 5 Release temperature at return mixer with accumulator pump	32 °C
L4n	Heat circuit pump 6 Release temperature at return mixer with accumulator pump	33 °C
L4o	Heat circuit pump A Release temperature at return mixer with accumulator pump	32 °C
L4p	Heat circuit pump B Release temperature at return mixer with accumulator pump	32 °C
L5	External heat circuits Release temperature	64 °C
L6	HWT pump 1 release temperature	62 °C
L7	HWT pump 2 release temperature	63 °C
L7a	HWT pump 3 release temperature	62 °C
L7b	HWT pump A release temperature	63 °C
L7c	HWT pump B release temperature	63 °C
L10	Return minimum	58 °C
L10a	Return - heat differential	Eco-PK 250 15 Eco-PK 300 17 Eco-PK 330 20
L10b	Return Heat differential - auto setting range	5
L10c	Return pump release temperature	47 °C
L10d	Return Minimum heat differential	3 °C
L11	Back-end protection error below	50 °C
L11e	Open return mixer at first startup	30 %

Menu	Description	Default
L12	Time for error back-end protection	60 Min
L12a	Return mixer interval	10 sec
L12b	Return mixer Kp	2 sec
L12c	Return mixer Tn	60 sec
L12d	Return minimum mixer runtime	0.5 sec
L12e	Return maximum mixer runtime per interval	50 %
L13	Return pump - type	HE-pump
L30	Return mixer at BTM Kp	3 sec
L31	Return mixer at BTM Tn	45 sec
L40	Output limit at return increase over	0.07 °C/s
L41	Return Output limit - controller Kp	2.5
L42	Return Output limit - controller Tn	10 sec
L43	Return Controller off at BT diff. higher than	10 °C
L51	Return Controller - accumulator 3F/5F Kp	0.7
L52	Return Controller - accumulator 3F/5F Tn	300 sec
L53	Return -controller - accumulator 3F/5F Tv	125 sec
L54	Return Controller accumulator 3F/5F T1	125
L55	Return Controller - output minimum	30 %
M - Heat circuits		
M1	All heat circuits Heat circuit pumps on above boiler temperature	92 °C
M1a	All heat circuits Outside temperature for safety circuit	-10 °C
M2	All heat circuits Residual heat until boiler below	40 °C
M2a	All heat circuits	Residual heat several times
M3	All heat circuits Boiler superelevation according to flow temperature	10 °C
M4	Heat circuit 1 Factor - room influence Remote control	1
M5	Heat circuit 2 Factor - room influence Remote control	1
M5a	Heat circuit 3 Factor - room influence Remote control	1
M5b	Heat circuit 4 Factor - room influence Remote control	1
M5c	Heat circuit 5 Factor - room influence Remote control	1
M5d	Heat circuit 6 Factor - room influence Remote control	1
M5e	Heat circuit A Factor - room influence Remote control	1
M5f	Heat circuit B Factor - room influence Remote control	1
M6	All heat circuits Superelevation room temperature Room controller	1 °C
M6a	All heat circuits Hysteresis room temperature Room controller	0 °C
M7	All heat circuits Reduction delay	15 Min
M8	Heat circuit 1 Minimum mixer runtime	0.3 sec
M9	Heat circuit 2 Minimum mixer runtime	0.3 sec
M9a	Heat circuit 3 Minimum mixer runtime	0.3 sec
M9b	Heat circuit 4 Minimum mixer runtime	0.3 sec
M9c	Heat circuit 5 Minimum mixer runtime	0.3 sec
M9d	Heat circuit 6 Minimum mixer runtime	0.3 sec
M9e	Heat circuit A Minimum mixer runtime	0.3 sec
M9f	Heat circuit B Minimum mixer runtime	0.3 sec
M10	External HC	without outside temperature

Menu	Description	Default
M11	All heat circuits Proportional coefficient	100 %
M12	All heat circuits Differential temperature for mixer	1 °C
M14	Controlled district line Differential temperature for mixer	1 °C
M15	Controlled district line minimum mixer runtime	0.3 sec
M16	Error detection - mixer/pump	not activated
N - HWT		
N1	HWT pump on when boiler temperature above	98 °C
N2	Differential temperature for HWT pump	1 °C
N3	HWT priority - factor	1
N4	HWT pump - post-run - residual heat	5 °C
N5	Boiler superelevation Legionella protection	5 °C
N6	All HWTs Residual heat	Residual heat several times
N7	Boiler superelevation during HWT loading	10 °C
O - Accumulator / External heat		
O1-Set	Superelevation - heat circuit set temperature	5 °C
O2	Hysteresis - heat circuit set temperature	5 °C
O3-Set	Superelevation - HWT temperature	5 °C
O4	Hysteresis - HWT temperature	1 °C
O5	Base temperature boiler - accumulator	58 °C
O6	Differential temperature	1 °C
O7	Accumulator pump on BT-differential	5 °C
O9	HWT difference control	ON
O10	External heat Switch-on temperature	60 °C
O11	External heat Heat differential	2 °C
O12	External heat Lock time	15 Min
O13	Accumulator Residual heat until boiler temperature below	65 °C
O14_HT	Accumulator Accumulator loading until TAT	90 °C
O30-O49	Fresh-water station; see fresh-water station (FWS) manual	
P - Ignition		
P1	Ignition timeout	25 min
P2s	Ignition Firebed-set at ignition pellets	20 °C
P3	Exhaust fan maximum upon ignition ON	75 %
P4	Negative pressure set for ignition	130 Pa
P5	Hysteresis firebed level	1 °C
P6	Exhaust fan when kindling	85 %
P7	Heat-up time	0 sec
P10	Second ignition attempt after	6 Min
P11	FBS superelevation	5 °C
P12	Negative pressure superelevation	10 Pa
P14	Number of ignition attempts	4
P15	Stoker - backwards before reinsertion	2 sec
P16	Minimum delivery rate from second ignition attempt	40 %
P30	Ignition on at O2 >	20 %
P31	Delta O2 ignition off	1.00%
P40	FGT - transition - combustion	100 °C

Menu	Description	Default
P41	Flue gas temperature increase	20 °C
P42	O2 maximum for transition to combustion	16.00 %
P43	Time O2 maximum for transition to combustion	10 sec
P44	Primary air at transition to combustion	100 %
P45	Ramp - transition - combustion	120 sec
P46	TCC transition combustion	150 °C
P50	Delivery rate ignition at defective FBS	40 %
P51	Stoker runtime ignition with defective FBS	180 sec
P60	Max. O2 decrease for PAF closed	-0.22 %
P61	PAF CLOSED for	10 sec
P62	Interval for max. O2 decrease	10 sec
P63	Stoker delay during ignition by	7 sec
P64	Exhaust fan and PAF delay during ignition by	0 sec
Q - Ash extraction		
Q1	Minimum runtime - combustion	30 min
Q2s	Maximum runtime combustion pellets	180 min
Q3s	Minimum burnout time pellets	14 min
Q3as	Maximum burnout time pellets	42 min
Q3b	Mean value O2-burnout finished	20 %
Q3c	Number of burnouts with maximum time before warning	0
Q4s	Exhaust fan maximum for burnout	100 %
Q5	Firebed reduction prior to burnout	15 °
Q6	Firebed reduction at ash grate blockage and ash grate < -10° or ash grate > 10°	15 °
Q11	Maximum motor current - ash auger 3-phase	3.4 A
Q11a	Maximum motor current - ash auger single-phase	3.2 A
Q12	Nominal motor current - de-ash	2.3 A
Q12a	Nominal motor current - de-ash single-phase	2.2 A
Q13a	Max. motor current (blockage threshold) ash auger system 0.18 kW	0.9 A
Q13aa	Maximum motor current ash auger system 0.25kW	2.5 A
Q13b	Nominal motor current ash auger system 0.18 kW	0.75 A
Q13ba	Nominal motor current ash auger system 025 kW	1.2 A
Q13c	Pre-run - number of revolutions - ash auger system	5
Q13d	Post-run - number of revolutions - ash auger system	8
Q13e	Ash auger system - number of return runs	7x
Q13f	Number of revolutions for return runs	9
Q13g	Duration overcurrent at motor	1 Sec
Q21s	Grate rounds pellets	1
Q22	Downtime after combustion for major de-ash	60 min
Q23s	Number before forced major de-ash cycle pellets	6
Q25	Primary air de-ash	0%
Q30	Max. overcurrent cleaning motor	2 A
Q31	Maximum duration - overcurrent Cleaning motor	1 sec
Q32	Duration - Return at overcurrent Cleaning motor	3 sec
Q33	Maximum number of attempts at overcurrent Cleaning motor	3
Q35	Start check of cleaning motor initiator	3 sec

Menu	Description	Default
Q36	Repeated grate blockage removal attempts	1x
Q36a	Interval between repeated grate blockage removal attempts	5 Min
Q37	Max. number of grate blockages during a de-ash	8x
Q52	Exhaust fan during de-ash	0 %
Q55	Ash auger active after error	No
Q57	Angle of grate open for blockage removal without blockage detection	10°
Q58	Attempts to open grates during blockage removal without blockage detection	6
Q66s	Ash auger Revolutions pellets	15
Q74	High torque of rotary grates around 0°	10°
Q74a	Delay rotary grate position at move	30°
Q75	High torque around 180°	No
Q77	Grates - blockage check - tolerance	10°
Q80	De-ash ABS function - boiler	active
R - Stoker unit / Fuel extraction		
R0	Stoker - motor	ABM
R1s	Firebed set value pellets	56°
R2	Delivery rate warning period	45 min
R9	Stoker - delivery rate [kg/h]	76.6
R9a	Info when storage level reached	1000 kg
R10	Maximum motor current - stoker	0.8 A
R11	Nominal motor current - stoker	0.5 A
R13	Maximum return time - stoker	15 sec
R19	Speed factor stoker 2 motor	0.8
R20s	Stoker cycle pellets	20 Sec
R21	Automatic filling - min. stoker auger runtime for suction	30 min
R22	Fill RAS - max. fill time	45 Min
R22a	Fill RAD - max. fill time	10 min
R22b	RAS filling - maximum filling time Schellinger	30 min
R23	Extraction auger delay at suction	5 Sec
R24	Fill RAS - follow up time vacuum turbine	10 Sec
R24a	RAS filling - backward running after suction - activation only in combination with freewheel clutch RAS	0.0 Sec
R24b	RAS filling Schellinger Classic suction turbine follow-up time	10 Sec
R24c	RAS filling Schellinger E3 suction turbine follow-up time	20 Sec
R25	Fill RAS - delay indication limiter	5 Sec
R25a	Fill RAD - follow up time extraction auger	20 Sec
R26	Auto change unit - max. suction time	25 min
R26a	AUP changeover unit limit for blockage detection	60 %
R27a	Changeover unit Pos.1 Set	2.5 mm
R27b	Changeover unit Pos.2 Set	67.5 mm
R27c	Changeover unit Pos.3 Set	132.5 mm
R27d	Changeover unit Pos.4 Set	197.5 mm
R27e	Changeover unit Pos.5 Set	262.5 mm
R27f	Changeover unit Pos.6 Set	327.5 mm
R27g	Changeover unit Pos.7 Set	392.5 mm

Menu	Description	Default
R27h	Changeover unit Pos.8 Set	457.5 mm
R29a	Changeover unit length of AUP 2 positions	135.0 mm
R29b	Changeover unit length of AUP 3 positions	135.0 mm
R29c	Changeover unit length of AUP 4 positions	200.0 mm
R29d	Changeover unit length of AUP 6 positions	330.0 mm
R29e	Changeover unit length of AUP 8 positions	460.0 mm
R30	Agitator factor FE-delivery rate pellets	100 %
R31	Auto Adapt - FE-delivery rate	Available
R32	Factor - FE-delivery rate - auto setting range	50%
R33	Current factor - FE delivery rate	70 %
R35	Connection monitoring FE	Yes
R40h	RAS extraction auger Maximum motor current FE (RAS)	3.2 A
R40i	Extrac. auger RAD max. motor current FE (RAD)	1.6 A
R40j	RAS extraction auger Maximum motor current FE (RAS 3~)	2.5 A
R41h	Nominal motor current FE (RAS)	2.0 A
R41i	RAD nominal motor current FE (RAD)	0.75 A
R41j	RAS nominal motor current FE (RAS 3)	1.2 A
R42	Return time fuel extraction system FE	1 sec
R59	Firebed superelevation after de-ash	3°
R59a	Firebed superelevation until PAF set less than	20%
R59b	Firebed superelevation complete when PAF set < R59a for period of	10 Min
R60	Stoker reduction for the FBS	15°
R60a	Stoker empty run during burnout (0 = deactivated)	10°
R60b	Stoker delivery rate during slumber mode (0 = deactivated)	10 %
R61	Time - overflow	30 sec
R62	Delivery rate when overfilled	70 %
R63	Overflow-stop off if below FBS set	0°
R64	Delivery rate reduction after overfilling	90 %
R65	Delivery rate at TMS	10 %
R79	Mole Schellinger Mole - trigger time	120 Sec
R79a	Mole Schellinger Mole - break time	5 Sec
R79b	Mole Schellinger E3 - trigger time	60 Sec
R79c	Mole Schellinger E3 - break time	15 Sec
S - Lambda sensor		
S1s	O2-set pellets	7 %
S2	Test mode - O2-set Full load	7 %
S3	O2-stop difference	3 %
S4	O2 increase partial load	0.7 %
S5	TCC max.	650 °C
S6	TCC - exceedance - O2 increase Kp	3
S7	TCC exceedance - O2 increase Tn	600 sec
S9	Exhaust fan during lambda calibration	60%
S10	Exhaust fan post-run until O2 over	18 %
S12	Lambda Default voltage lambda heating	8W
S20	Lambda sensor	0.0 mV

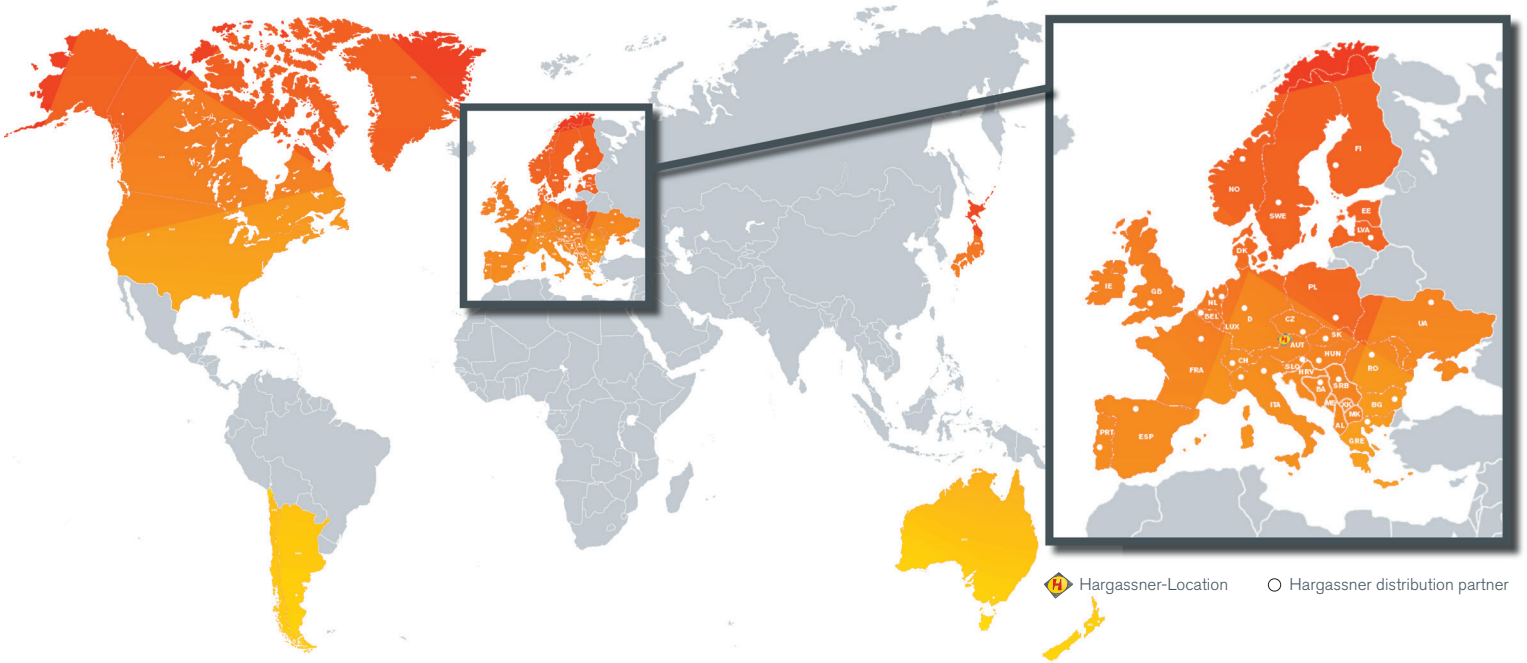
Menu	Description	Default
S30	O2 warning when set level has not been reached after (0 = deactivated)	60 min
T - Control		
T1	Flue gas temperature - minimum	100 °C
T2	Flue gas temperature - maximum	200 °C
T3	Flue gas temperature - limiter Kp	1
T4	Flue gas temperature - limiter Tn	250 sec
T5	Correction - flue gas temperature at 150 C	-10°C
T10	Boiler temperature - controller Kp	7
T11	Boiler temperature - controller Tn	800 sec
T12	Boiler temperature - controller Tv	0 sec
T13	Boiler temperature - controller T1	10
T14	Boiler temperature - controller xw_exp	1.5
T20	Delivery rate - firebed Kp	2.5
T21	Delivery rate - firebed Tn	250 sec
T22	Delivery rate - firebed z	0.5
T23	Delivery rate - firebed minimum	0
T24	Delivery rate - firebed maximum	150
T25	Delivery rate at defective FBS Kp	4
T26	Delivery rate at defective FBS Tn	120 sec
T27	Delivery rate at defective FBS minimum	0
T28	Delivery rate at defective FBS maximum	105
T30	Primary air (O2) Kp	4
T31	Primary air (O2) Tn	90
T32	Primary air (O2) Tv	0
T33	Primary air - factor - D-filter	2
T34	Primary air - negative boost	1.1
T35s	Primary air maximum pellets	100 %
T36	Primary air - defective lambda sensor	25 %
T36a	PAF maximum Kp (0 = deactivated)	1.5
T36b	PAF maximum Tn	80 sec
T36c	PAF maximum firebed set reduction	5 °C
T36d	PAF maximum controller active after	20 Min
T40	Negative pressure controller Kp	0.1
T41	Negative pressure controller Tn	4 sec
T42	Negative pressure controller Tv	0 sec
T50	Exhaust fan Kp	30
T51	Exhaust fan Tn	30 sec
T62	Service sensor FBS Offset (L)	190
T62a	Service sensor FBS Offset (R)	190
T63	Service sensor 0% TAF set at PAF	100%
T64	Service sensor 100% TAF set at PAF	40%
T65	Service sensor 0% TAFmax at output	30%
T66	Service sensor 100% TAFmax at output	100%
T67	Service sensor TAF max. - closing speed	3%
T67a	Tertiary air flap max. closing speed in	1.5%

Menu	Description	Default
T68	Service sensor TLK max. during de-ash	0%
T68a	Service sensor TLK max. during burnout	0%
T70	Service sensor Error - air flap	Enabled
U - Negative pressure / exhaust fan		
U1	Negative pressure set at 30% exhaust fan	30 Pa
U2	Negative pressure set at 80% exhaust fan	180 Pa
U9	Filter factor negative pressure sensor	95 %
U10	Negative pressure limit warning/error	50 %
U11	Time until error	30 sec
U20	Exhaust fan - motor type	EC motor
U21	Exhaust fan max. RPM	3500
U22	Exhaust fan - speed - tolerance	30 %
W - Service		
W1	Info for service	No
W2	Reset service	No
W3	Info for full-load hours	2000 h
W4	Info for heating hours	4000 h
W5	Info from	
W7	Period notice (dd.mm) from to	
W9	Info for boiler starts	3000 x
X - Fresh-water station		
X1 - X7	See fresh-water station instructions	
Z - Special functions		
Z0	Boiler - output	1-phase
Z1j	Ash auger system	Available
Z1yes	AFS motor	0.18 kW
Z1k	Power converter	Not available
Z1l	Timeout Loxone	30 sec
Z1m	S (IO-X10-104) extension control board 2	Not available
Z1ma	DAQ output - sensor board 2	No selection
Z1n	Distribution box / common agitator	Not available
Z1o	Mbus addressing	Secondary address
Z1p	Mbus baud rate	2400
Z1s	Bypass pump	Not available
Z1u	MWZ03 DAQ channels	Not available
Z2	Load parameter set	No
Z3	Save parameter set	No
Z4	Load factory parameters	All
Z4a	Release - load parameter file	All
Z5	Reset operating hours	No
Z7	Total reset	No
Z7a	Create backup on boiler ID card	No
Z8	Commission no.	1
Z9a	Delete error list	No
Z9b	Clear infos	No

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