

ARITERM



ARITERM-VTT-S-07229-11.1
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INSTALLATION AND OPERATING INSTRUCTIONS

♦ Ariterm Biomatic+ 20i/40i



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■ GENERAL INFORMATION

Ariterm Biomatic+ 20i/40i is a cost-effective, resistant, non-condensing and environmentally friendly central heating boiler intended for use for the heating of single-family detached houses and the production of hot domestic water using pellets. Additional/backup heat is produced by an immersion heater (9 kW, not in models L and UL). Standard equipment includes an automatic convection cleaning system and an automatic heating circuit regulation system. Detailed technical data can be found on page 3. To make use of all features of the boiler and burner, it is important to observe these instructions.

Keep this manual in a safe place for future reference. Read this manual carefully before starting to use your Ariterm Biomatic+ 20i/40i pellet heating unit. The power of the pellet burner depends on how many pellets can be fed into and burned in the burner head during one hour.

Please note! Follow the recommendations contained in this manual when using and servicing the burner and the boiler.

■ TRANSPORT, STORAGE AND PACKAGE OPENING

Receipt and acceptance

The boiler is delivered in a wooden frame. The base is a platform from which the boiler can be safely lifted. The package should be unwrapped as close to the installation site as possible. It is important for the person who receives the boiler to verify the state of the boiler before its acceptance. In case of damage, the dealer must be contacted without delay.

Storage

The boiler should be stored inside.

Package opening

After opening the packaging, open the hatch and check the accessory list to make sure that all loose accessories are contained in the package (cleaning brush handles are attached to the packaging).

Disposing of the package

The plastic cover is landfill waste and the boards can be burned.

TECHNICAL DATA ARITERM BIOMATIC+

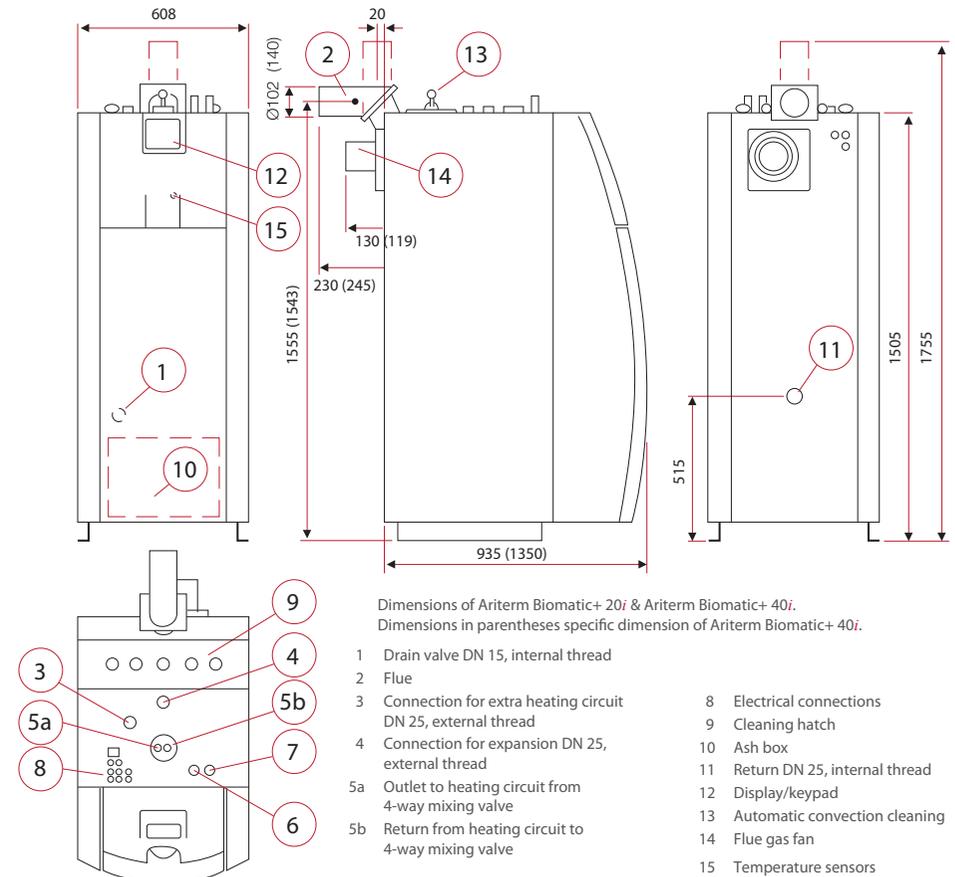
TECHNICAL DATA		Biomatic+ 20i	Biomatic+ 40i
Boiler class	Class according to EN303-5 2012	class 5	class 5
Performance	Power with pellets Combustion efficiency Noise level	6-20 kW 91% 62 dbA	12-40 kW 93% 62 dbA
Dimensions	Dimensions (width x depth x height) Empty weight Water volume	601 x 944 x 1,509 mm 245 kg 140 l	606 x 1350 x 1618 mm 455 kg 173 l
Design and adjustment values	Working pressure: boiler Working pressure: heat exchanger* Working temperature*	0.5-1.5 bar max 10 bar max 120 °C	0.5 - 2.5 bar max 10 bar max 120 °C
	Production of hot tap water* *Not applicable for Ultra-Light model Flue gas temperature nominal output Flue gas temperature minimum output Flue gas mass flow nominal output Flue gas mass flow minimum output	1-shower (12 l/min, 520 l/+40 C) 2-shower (20 l/min, 240 l/+40 C) 109 °C 65 °C 11,5 g/s 4,0 g/s	1-shower (12 l/min, continuously/+40 C) 2-shower (20 l/min, 400 l/+40 C) 132 °C 76 °C 19,6 g/s 8,6 g/s
Connections	Additional heating circuit unit Domestic water Expansion Discharge Flue pipe connection Pressure drop - connections	DN 25 male Cu Ø 22 mm DN 25 male DN 15 female Ø 102 mm 2 mbar @ 0,86 m³/h 11 mbar @ 1,72 m³/h	DN 25 male Cu Ø 22 mm DN 25 male DN 15 female Ø 140 mm 15 mbar @ 1,72 m³/h 58 mbar @ 3,44 m³/h
Electrical values	Power supply	Standard model 400V, 3N~, 50 Hz Light & Ultra-Light model 230V, 1N~, 50 Hz	Standard model 400V, 3N~, 50 Hz Light & Ultra-Light model 230V, 1N~, 50 Hz
	Fuse size	Standard model 9 kW immersion, 3x16 A Light & Ultra-Light model <1 kW immersion, 1x6 A	Standard model 9 kW immersion, 3x16 A Light & Ultra-Light model <1 kW immersion, 1x6 A
	Power in operation	Burner, ignition 500 W Burner, normal 40 W	Burner, ignition 560 W Burner, normal 60 W
	Power consumption - standby	19 W	19 W

Standard delivery

- ♦ Four-way mixing valve ESBE TM 20
- ♦ Sweeping gear
- ♦ Dirt trap
- ♦ Brick support
- ♦ Flue duct joint
- ♦ Oxygen sensor regulation
- ♦ Shunt motor unit incl. Wireless Room unit
- ♦ Flow water sensor
- ♦ Outdoor temperature sensor
- ♦ Automatic convection cleaning system
- ♦ Flow switch

Accessory

- ♦ Combined flue duct
- ♦ Shunt valve, motor and control for additional heat circuit



FUNCTIONAL DESCRIPTION

Heating with the Ariterm Biomatic+ 20i/40i pellet heating unit is similar to oil heating in many ways. The main difference is that heating with solid fuel produces a certain amount of ash, which must be removed at certain intervals. If the ash is not removed, combustion efficiency will decrease and the burner may malfunction.

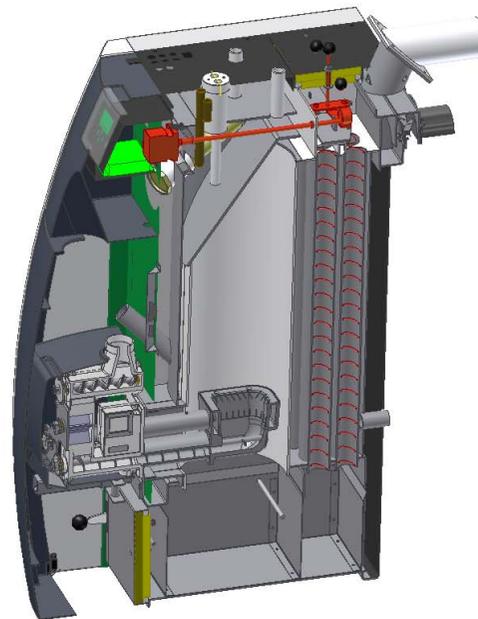
The BeQuem pellet burner is equipped with automatic ignition. However, it can also be ignited manually when necessary. The electric ignition system of the burner will only be activated during cold starts, i.e., when the system has been inactive for a long period and the boiler temperature has dropped to at least 7°C below the target temperature. During the heating process, the necessary ignition cycles take place by means of the embers in the burner head. This saves electric energy.

The burner and the incorporated feeding system operate automatically. The operation of the burner is controlled by the temperature sensor installed in the boiler. The burner head contains an accurately defined mixture of fuel and air, which ensures perfect combustion which is both cost-effective and environmentally friendly.

The burner auger is over-pressurised during operation. The purpose of this is to reduce the risk of damage to the burner if the draught is weak.

Wood pellets according to EN standards with a diameter of 6 or 8 millimetres are the recommended fuel for the boiler. Ash is removed from the ash box located in the lower part of the boiler.

Standard equipment includes an automatic heat regulation system that adjusts the supply water temperature according to the outdoor and indoor temperature.



Biomatic+ 20i

SAFETY AND ALARMS

For safety reasons, the Biomatic+ 20i/40i and fuel store must be placed apart from each other to prevent possible damage. Any malfunctions or damages caused by incorrect handling will then be limited to the burner. The fuel store must be built as a separate, fire-classified, confined space.

Faults that cause the system to stop are indicated by a red indicator light. In addition to this, a text message appears in the web app and an email will be sent if the boiler is connected to internet AND email addresses are added in menu "Alarm: Manage emails".

During every operating cycle, a small amount of pellets is fed from the pellet store via the external feeding system to the upper connection of the burner. To make it possible to dispense an accurate and equal amount of pellets during every cycle, the dispensing is carried out by means of a separate feeding auger via the blocking feeder and burner auger to the burner head.

As the burner auger feeds pellets forward three times faster than they arrive at the auger, a safety zone, containing only single pellets, is created between the burner head and the upper connection. This safety zone always remains intact even in the event of power failure, insufficient maintenance or equipment breakage.

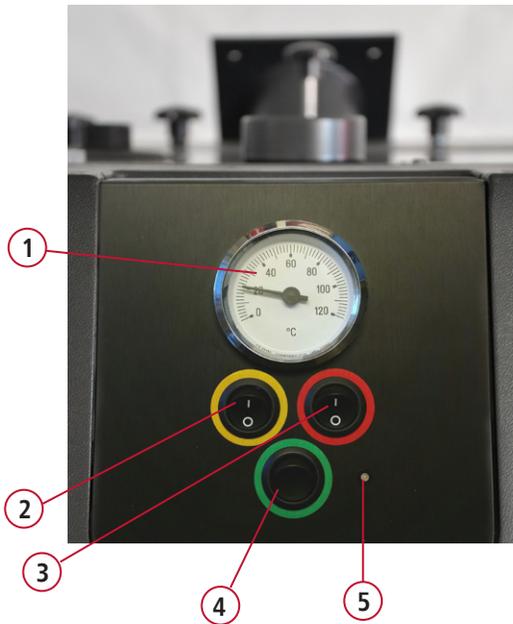
Alarms are described in "Alarms and troubleshooting".



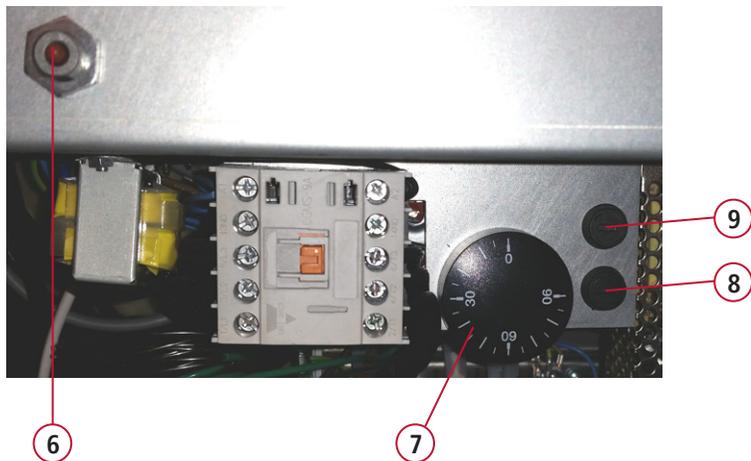
Biomatic+ 20i

The feeding auger must be installed in such a way that its position, with respect to the drop funnel, allows the drop pipe to swing free outside the burner in case of back fire.

CONTROL PANEL

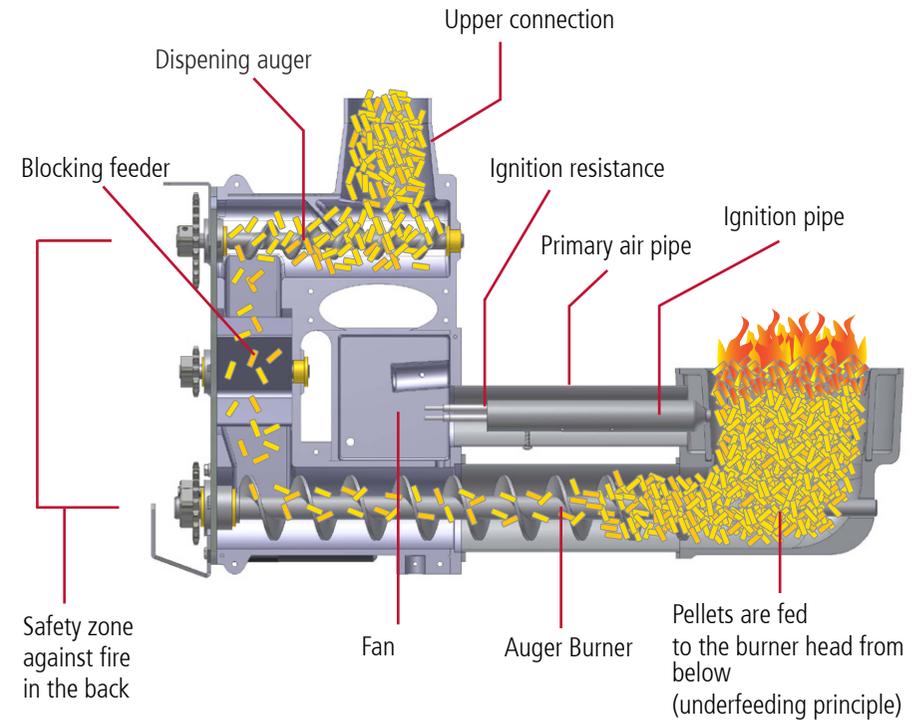


1. Actual boiler temperature
2. Immersion heater on/off
3. Tap water pump on/off
4. Burner control switch on/off/reset
5. Status LED green/red
No light = OFF
Green 1 s on 3 s off = Standby
Green 3 s on 1 s off = Ignition
Green = Operation
Red = Alarm
6. Cut out thermostat
7. Back up Thermostat
8. Tap water pump Fuse
9. Main fuse



BURNER OPERATING PRINCIPLE

The picture shows 20 kW burner.



BOILER INSTALLATIONS

The boiler should be installed by a company with the proper professional qualifications. The installation must always be carried out in accordance with, at the time being, valid local standards and regulations, as well as the Ariterm Installation and Operation Instructions..

NOTE!

All electrical connections must be carried out by a professionally-qualified electrician.

Space requirement

The boiler room must always meet, at the time being, valid local standards and regulations. At least one meter of free space is recommended to be left in front of the boiler for cleaning and maintenance operations. It is also recommended to leave about 40 cm of free space on each side and at least 50 cm above the boiler.

NOTE!

The boiler must be located at a distance of no less than 180 mm from the back wall. In addition, it must be possible to remove the flue gas fan whenever maintenance requires it.

Flue pipe connection and combustion air intake

Silicon sealant with a temperature resistance of 350°C can be used as a sealing compound for joints. The flue pipe must be made of steel or equivalent material. The flue pipe length must be dimensioned according to the building requirements. The low temperature of the flue gas from the Biomatic gives rise to a risk of condensation in the chimney. Make sure the chimney is well ventilated with the help of draught diverter/inhibitor. The chimney flue should be stainless steel or acid-proof. Ensure that the chimney connection (boiler flue to chimney connection) is air tight since, during certain operating cases, there could be an overpressure after the boiler flue. The ventilation air intake must not be covered.

Flue pipe connection and ventilation air intake		
	Biomatic+ 20i	Biomatic+ 40i
Recommended flue pipe diameter	Ø 100 mm	Ø 140 mm
Recommended flue pipe length	4 m	4 m
Recommended underpressure* in the combustion chamber	3-15 Pa	3-15 Pa
Ventilation air intake	100 cm ²	200 cm ²
Recommended under pressure in the chimney	>0	>0

* Measure the vacuum in the measurement hole on the left-hand side of the burner. Remove the black screw

NOTE! The vacuum in the chimney is not critical because the boiler is equipped with a suction fan. However, it must be dimensioned to be able to evacuate the flue gases without overpressure occurring as the flue gases could then leak into the building.

BOILER INSTALLATIONS

Pipe installations

Before installing the boiler, the heating network must be flushed and checked by means of a water-pressure test. After installation, make sure that all joints are tight. Ariterm is not responsible for damages caused by leaking joints.

Dirt trap and manometer installation

It is recommended that the dirt trap delivered with the boiler is installed in the cold water pipe before the heat exchanger. There is no manometer in the boiler. Therefore, a manometer must be installed in the heating network.

Safety valve installation

The valve must be CE marked. Its maximum opening pressure must be 1.5 bar and its minimum size DN 15. The safety valve must be chosen according to the highest pressure class of the combination of devices. Devices that can close the connection must not be installed between the valve and the boiler. The release pipe must be dimensioned and installed in such a way that it does not limit the valve release efficiency and does not cause dangerous situations during the operation of the valve.

Electrical installations

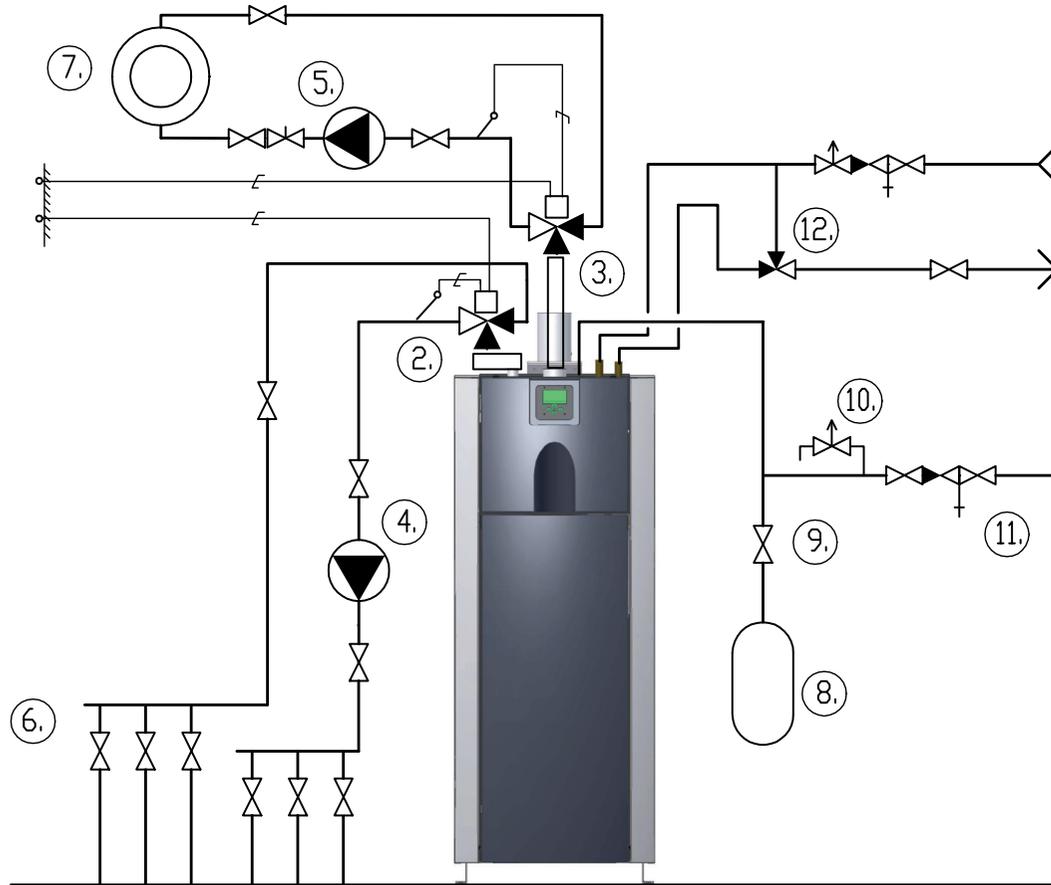
A pellet burner, a 9 kW immersion heater (not in models L and UL) and an internal circulation pump with its switches are installed in the boiler and are ready for use. The boiler contains an overheat protection for the burner and the immersion heater. The electrical installations related to the boiler must be carried out by an installer with the relevant qualifications and the boiler must be connected according to the enclosed connection diagram. A safety/maintenance switch must be installed in the voltage supply system of the boiler.

Before commissioning

Before starting the boiler, the following should be checked:

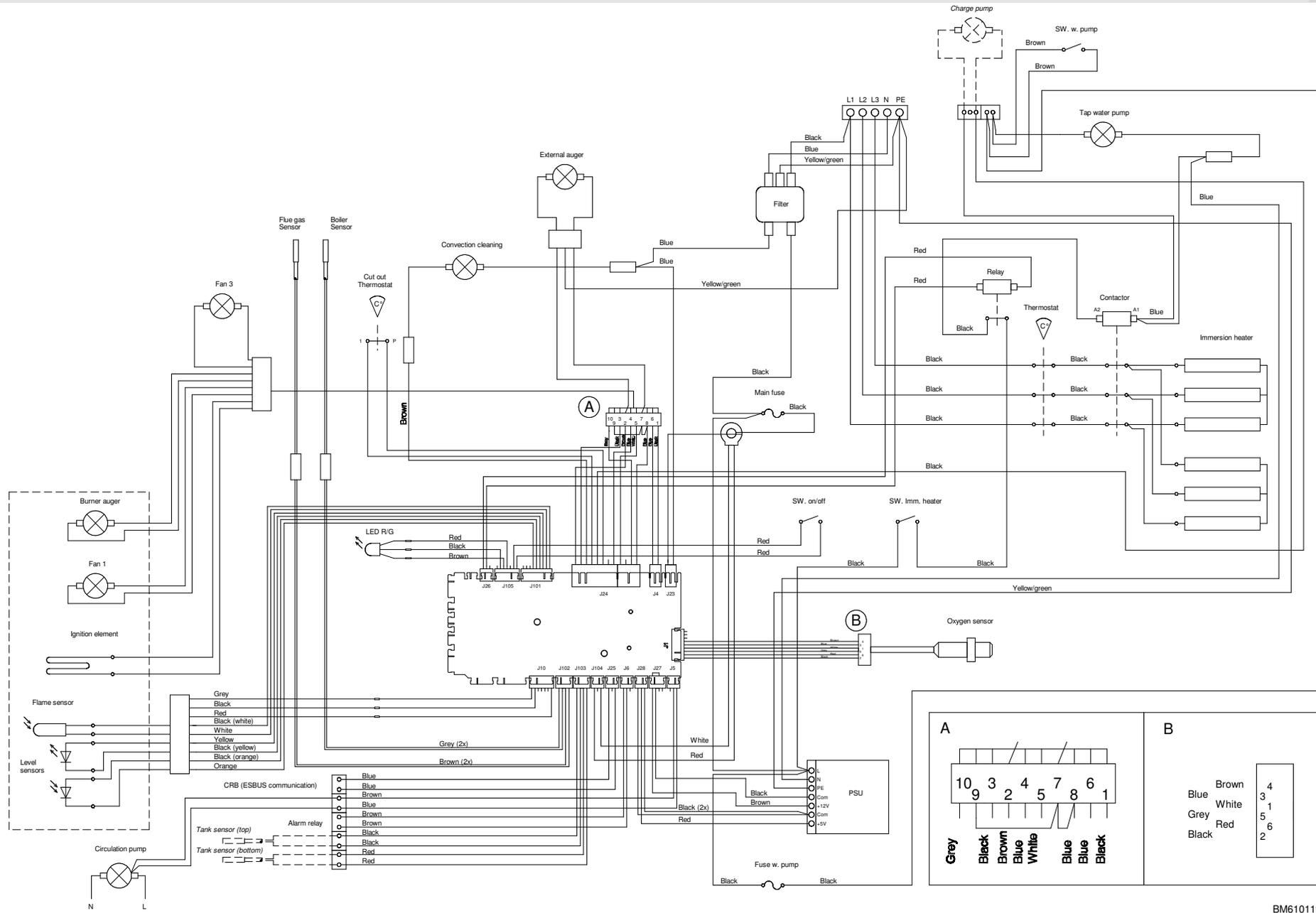
- the heating network and the boiler are full of water (pressure at least 0.5 bar).
- air is removed from the internal circulation pump through the venting screw located in the pump head.
- the flue damper (if any) is open.
- the circulation damper located in the convection part of the boiler is in place.
- the circulation pump is running.
- the network valves are open.
- the ventilation air intake is open.
- the safety valve is in working order and there are no obstacles between it and the boiler.

PIPE INSTALLATIONS



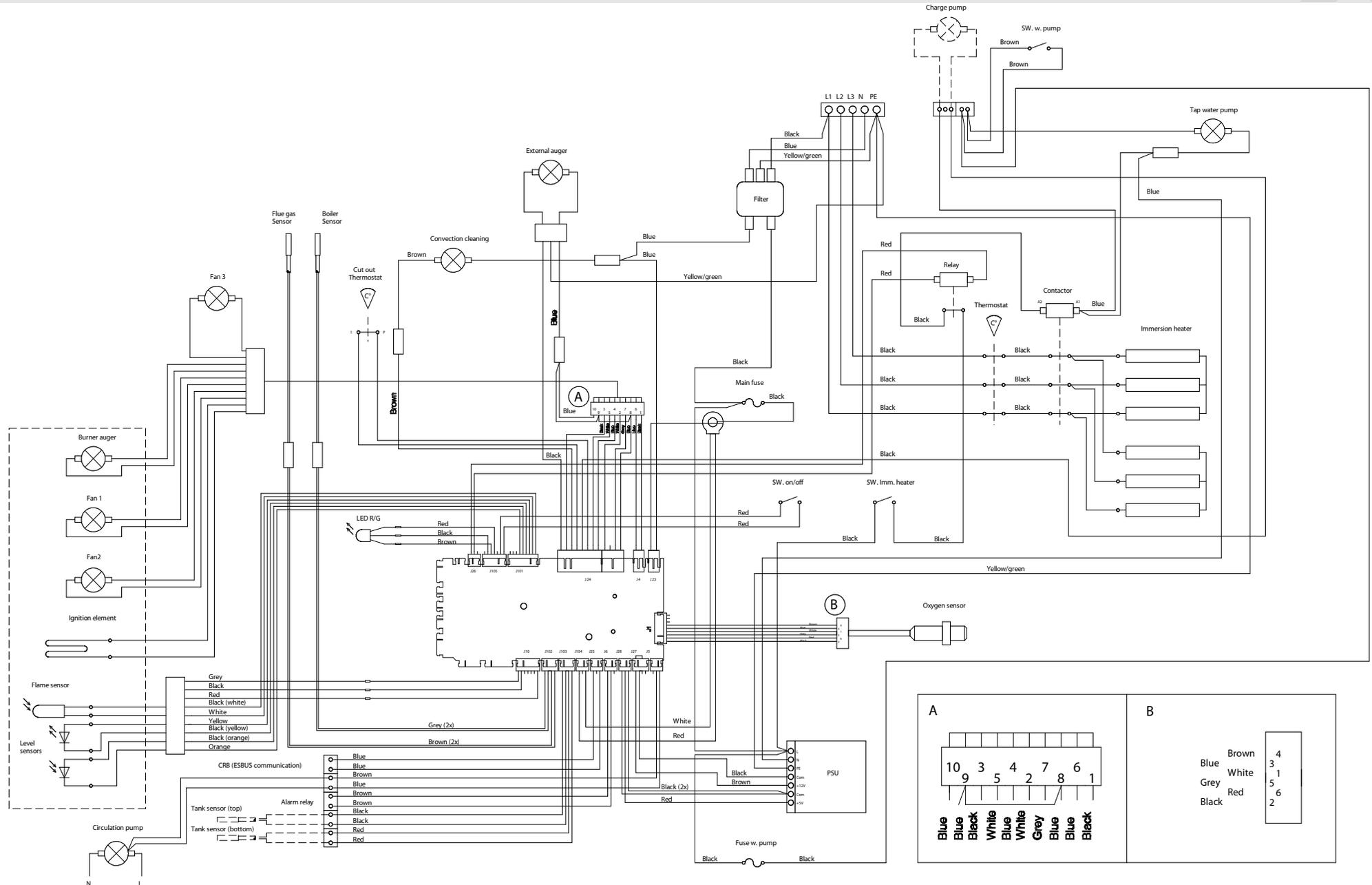
1. ARITERM BIOMATIC+
2. 4-WAY VALVE, FLOOR HEATING (RADIATOR HEATING)
3. CONNECTION SET OF THE ADDITIONAL HEATING CIRCUIT (RADIATOR HEATING)
4. HEAT PIPE PUMP, FLOOR HEATING
5. HEAT PIPE PUMP, RADIATOR HEATING
6. FLOOR HEATING NETWORK MANIFOLDS
7. RADIATOR HEATING NETWORK
8. EXPANSION VESSEL
9. SERVICE SHUT-OFF VALVE
10. SAFETY VALVE
11. FILLING VALVE
12. FEED MIXING VALVE

WIRING DIAGRAM - Biomatic+ 20i



BM61011v1 140822

WIRING DIAGRAM - Biomatic+ 40i



■ START-UP AND STOP

■ Web interface function

(See separate section)

When the boiler arrives it is set as an AP (Access Point). You could connect to this by using your WiFi unit, i.e. Smart phone, Computer, Tablet, iPad etc. When searching for accessible wifi-networks in your unit, a SSID called [serialnumberSSID] will appear. Choose that one and enter password: ariterm123. Now you are connected to the boiler. Start your browser and you will automatically enter the Log in page in the boiler. Enter the user name (serialnumber of the boiler) and the password (user). Now you can control the boiler by the web interface.

If you want to connect the boiler to internet, go to the Network menu choose your SSID, enter your password. OBSERVE! Now you will leave the AP mode. Choose the same SSID on your WiFi unit, start the browser. Enter [serialnumber].local and you are connected to the boiler by your own network. If you use an Android device you may have to download the app. called "Bonjour browser". By using this app. you can find the boilers IP-adress. Then use this IP-adress in your web browser to connect to the boiler. When the boiler is connected to the internet it will start syncing with our server. Enter portal.aritermgroup.se (same user/password as above) in your browser and you will have access to your boiler wherever you are.

Note! It is at this point strongly recommended to change password.

■ Burner start-up and stop

Turn the burner and the internal pump on from the operating switch. If the flow switch that controls the internal pump is on, set the operating switch to Off mode. The first start-up differs from normal start-up in that there are no pellets in the burner. Likewise, there are no pellets in the external feeding system. Carry out the following actions in connection with the first start-up or if there are no more pellets in the store:

1. Enter the menu "Settings/Pellets store". Set "External feeder manual" to desired amount of minutes to fill the feeder up. Click at "Update". Repeat this until the external feeder is filled with pellets.
2. Press the burner control switch. Let the external auger run until the level sensors in the burner indicates pellets. If the external auger operates longer than the maximum external auger time, you have to reset the alarm and start again.
3. When the external auger is filled and the level sensors indicates pellets, the burner will start.

■ Cold start

The burner performs a cold start with the ignition element when the boiler water temperature is more than 7°C below the set value. The LED starts blinking green. Shortly afterwards, the blower and the ignition element turn on. When the flame sensor detects a flame in the burner head, the burner jumps directly to next start phase.

In the last start phase the burner stops. Do not change the settings during a cold start. After cleaning the burner head, make sure that the burner performs a cold start because there are no embers in the burner head. The success of the cold start can be ensured by sufficiently increasing the set boiler water temperature and by changing it back to the desired value after ignition

■ Hot start

The burner performs a hot start when the boiler water temperature is within 8°C of the set temperature, for example, after a short power failure. During a hot start, the burner uses the embers in the burner head for ignition and, by doing so, saves energy. In normal use, when the burner goes from "Glow mode" to Power mode, the burner performs a hot start. The burner starts up automatically after power failures (hot or cold start depending on the temperature of boiler water).

■ Power mode - Glow mode

After ignition, the burner starts using the High power mode. When the boiler water temperature rises to within 5 °C of its set value, the burner starts using the Low power mode and will continue to use it until the set value is reached. When the set boiler water temperature is reached, the burner blower still runs for one minute before the burner moves to Glow mode. While the burner is in Glow mode, the auger burner brings pellets to the burner head every now and then in order to maintain the embers.

■ Stop

The burner can be stopped at any stage of the combustion process. Set Burner to Off by pressing the burner control switch. The blower will run for one minute after the burner has been stopped.

■ Buffer tank mode

As an option two Buffer tank sensors and charge pump can be connected to the boiler. The charge pump is to be connected to fast connectors labeled Charge pump and the tank sensor to connectors labeled Tank sensor top/bottom. Put the Holding time setting to off-mode. The burner's starting- and stopping temperatures can now be set.

In buffer tank mode the stop temperature is the temperature of the top sensor of the buffer tank, read at "Buffer tank sensor top" in the "Home" menu, set at "Stop temperature" in the "Settings: Main" menu. The start temperature is the temperature of the bottom sensor of the buffer tank, read at "Buffer tank sensor bottom" in the "Home" menu, set at "Start temperature (Degrees below Stop temperature)" in the "Settings: Main" menu. When the boiler temperature exceeds the set charge pump start temperature, set at "Tank pump start temperature" in the "Settings: Tank mode" menu, the charge pump will start. When the tank is warm and the burner stopped the charge pump will turn off when boiler temperature has dropped 3 degrees below the set start temperature of the charge pump. The return temperature shall be regulated, with a thermic valve, to at least 60°C.

■ BURNER SETTINGS

Combustion adjustment

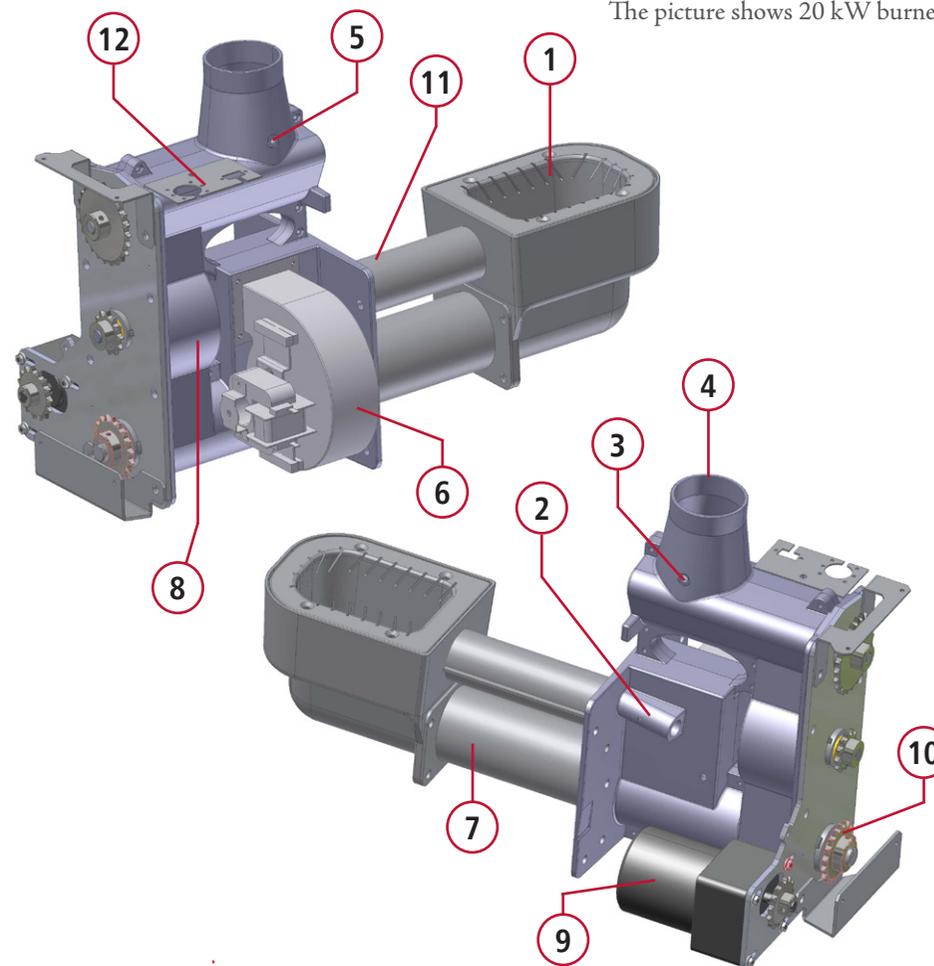
Normally you don't need to do any combustion adjustments. The fan 1-3 is set to two different power modes. High and Low. The oxygen sensor then regulates the fans and adjust the pellet feeding automatically. In a couple of ours you will have an optimized combustion. If you want to lower the output please contact our local dealer.

Immersion heater operation (not in models L and UL)

According to default settings the immersion heater heats the boiler to "Immersion heater stop temperature". When the temperature drops "Immersion heater hysteresis" degrees the immersion heater starts again. Alternatively, if "Activate immersion heater back-up mode" is set to ON the immersion heater will operate as back up according to the boiler temperatures in the Main menu, IF the boiler is in Alarm mode.

■ BURNER PARTS

The picture shows 20 kW burner.



- | | |
|------------------------------|--|
| 1. Burner | 7. Auger burner |
| 2. Flame detection system | 8. Blocking feeder |
| 3. Level switch, receiver | 9. Drive motor |
| 4. Upper connection | 10. Wheels and chain (not in the figure) |
| 5. Level switch, transmitter | 11. Primary air pipe |
| 6. Blower | 12. Connector panel |

MENU STRUCTURE

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn off

State of burner

Current status: High power mode
ON/OFF settings: ON
Sync status: ON
Last sync: 2 minutes ago

Readings

Boiler temperature	71.2
Room temperature	18.3
Outdoor temperature	-5.9
Latest known pellet level (kg)	64.4
Oxygen (%)	8.4
Flow water temperature	50.3
Buffer tank sensor top	150.0
Buffer tank sensor bottom	150.0
Flue gas temperature	52.4
Flame sensor	752.0
Number of cold starts	106.0
Maintenance time 1 (s)	0.0
Maintenance time 2 (s)	0.0
External feeder total runtime (s)	162,697.0

Home

In the home menu you can see readings as follows:

The present operating mode of the burner, Burner set to On or Off, Sync status
Current boiler temperature, -Room temperature, -Outdoor temperature, -Pellet level in storage, -Oxygen level, -Flow water temperature, -Buffer tank top temperature, -Buffer tank bottom temperature, -Flue gas temperature, -Flame sensor level, -Number of warm starts, -Number of cold starts, -Current maintenance time 1 & 2, - External feeder total runtime.

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn off

Alarm

Review and search for alarms

Search

From

To

2014-12-23 10:32:13	Error: Error, High Power Mode	Acknowledge: ✓
2014-12-21 07:12:25	Error: Error, High Power Mode	Acknowledge: ✓
2014-12-17 18:01:46	Error: Alarm no water level	Acknowledge: ✓
2014-12-17 17:58:30	Error: Alarm no water level	Acknowledge: ✓
2014-12-11 08:17:21	Error: Ignition failed	Acknowledge: ✓
2014-12-10 21:26:37	Warning: Alarm flame or lambda indicated in standby	Acknowledge: ✓
2014-12-08 05:48:40	Error: Error, High Power Mode	Acknowledge: ✓
2014-12-07 22:13:42	Warning: Alarm flame or lambda indicated in standby	Acknowledge: ✓
2014-12-06 23:11:48	Error: Alarm no water level	Acknowledge: ✓
2014-12-06 18:33:33	Warning: Alarm ESBUS communication	Acknowledge: ✓

« Previous

10 25 50 100

Next »

✓ Confirm all

Alarm

In the alarm menu you can see current alarm and are able to confirm them.
You can also see the history record of alarm and search.

MENU STRUCTURE

The screenshot shows the 'Alarm emails' settings page. At the top, there is a navigation bar with 'ARITERM LOCAL' and a 'Turn off' button. Below the navigation bar, there is a search bar and a 'No alarm emails!' message. Underneath, there is an 'Add new' section with a text input field containing 'name@domain.com' and a list of checkboxes for 'warning', 'service', 'error', and 'pellets'. A green 'Add' button is at the bottom of this section. At the very bottom of the page, there is a footer with contact information and version numbers: 'Ariterm Sweden AB | Flottiljvägen 15 392 41 Kalmar | Tel: +46 (0)480-44 28 50 | Fax: 0480-442859 | Mail: info@ariterm.se' and 'CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0'.

The screenshot shows the 'Settings: Main' page. At the top, there is a navigation bar with 'ARITERM LOCAL' and a 'Turn off' button. Below the navigation bar, there is a 'Settings: Main' section. This section contains three sliders: 'Desired room temperature: 19' with a 'Factory reset' button, 'Stop temperature: 80.5' with a 'Factory reset' button, and 'Burner on/off (1/0): ON' with a checked checkbox and a 'Factory reset' button. At the bottom of the page, there is a 'Factory reset all' button and a footer with contact information and version numbers: 'Ariterm Sweden AB | Flottiljvägen 15 392 41 Kalmar | Tel: +46 (0)480-44 28 50 | Fax: 0480-442859 | Mail: info@ariterm.se' and 'CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0'.

Manage emails

In the manage emails menu you can add new receivers of alarm emails and customize them to each address.

Main

In the main menu you are able to set the boiler temperature (40 - 90°C), room temperature and start and stop the burner.

MENU STRUCTURE

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn off

Settings: Maintenance

Maintenance alarm 1/ External auger time (h): 0

Clear maintenance alarm 1: OFF

ON:

Maintenance alarm 2/ External auger time (h): 0

Clear maintenance alarm 2: OFF

ON:

Reset all adjustment values: OFF

ON:

Factory reset all

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn off

Settings: Immersion heater

Immersion heater stop temperature: 64

Immersion heater hysteresis: 5

Activate immersion heater backup mode: ON

ON:

Factory reset all

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CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0

Maintenance

In the maintenance menu you are able to set two different alarm timers. When the external feeder has run set time you will get an email. (If email is added in alarm menu)
After each cleaning of the burner you should set the "Reset all adjustment values" to ON and click "Update".

Immersion heater

Here you can set start and stop temperature of the immersion heater.
If "Activate immersion heater back-up mode" is set to ON the immersion heater will operate as back up according to the boiler temperatures in the Main menu, IF the boiler is in Alarm mode.

MENU STRUCTURE

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn off

Settings: Pellet store

Current pellet amount (kg): 64.5065

64,50€

Factory reset

Pellet storage Alarm level (kg): 20

20

Factory reset

Feeding rate (kg/h): 9.5

9,5

Factory reset

External feeder manual (min): 0

0

Factory reset all

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CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn off

Settings: Tank mode

Tank mode activated: OFF

ON:

Tank pump start temperature: 65

65

Factory reset all

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CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0

Pellet store

Manage the pellet storage depending of size, storage type and set the alarm level.
Enter the external feeder feeding rate and the boiler calculates and alarms at certain level.

Tank mode

Activate tank mode when boiler is connected to a buffertank.

MENU STRUCTURE

The screenshot shows the ARITERM LOCAL web interface with the 'Profile' menu selected. The navigation bar includes Home, Alarm, Settings, Profile, Network, Users, Schedule, Logout, and Turn on. The Profile page has the following fields:

- Username: BM40100158
- Serial number: BM40100158
- Name: (empty)
- Surname: (empty)
- Email: (empty)
- Phone number: (empty)
- Password: Password
- Language: English

An 'Update' button is located at the bottom of the form. The footer contains contact information for Ariterm Sweden AB and version information: CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0.

Profile

In the profile menu you can edit your profile.

The screenshot shows the ARITERM LOCAL web interface with the 'Network' menu selected. The navigation bar is the same as in the Profile view. The Network page has the following elements:

- Section: NETWORK
- Instruction: Choose your network and enter password
- SSID: (empty)
- Password: Password
- Available wlan: A list of available networks including RBD, Zebulba_2, Zebulba, RBDVPN, AgbService-Guest, and KMP-WL.
- Buttons: Scan wlan and Connect to wlan

The footer contains contact information for Ariterm Sweden AB and version information: CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0.

Network

In the network menu you are able to scan and select a network if you don't want to use the boiler as an AP (Access Point)

MENU STRUCTURE

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn on

Users

Search

BM40100158	Name:
Email:	USER

Ariterm Sweden AB | Flottiljvägen 15 392 41 Kalmar | Tel: +46 (0)480-44 28 50 | Fax: 0480-442859 | Mail: info@ariterm.se

CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0

Users

Here you can view all the users.

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn on

New user

Username @BM40100158

Name

Surname

Email

Phone number

Password

Repeat password

Language

Role

Create

Ariterm Sweden AB | Flottiljvägen 15 392 41 Kalmar | Tel: +46 (0)480-44 28 50 | Fax: 0480-442859 | Mail: info@ariterm.se

CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0

Create users

Here you can add new users. You are able to add users in the same user level as yourself and lower.

HEATING CIRCUIT SETTINGS

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn off

Schedule

03:00 06:00 09:00 12:00 15:00 18:00 21:00

18°C

Temporary Fixed

Schedule Running

Work Home Vacation

Actual time
2014-12-29 13:45:27 Update

Current time
2014-12-29 13:44:54

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Schedule

Here you can view the current schedule and select profile of room temperature.

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn off

Edit schedule

Weekday	<input checked="" type="radio"/>	<input type="radio"/>
Monday	<input type="radio"/>	<input checked="" type="radio"/>
Tuesday	<input type="radio"/>	<input checked="" type="radio"/>
Wednesday	<input type="radio"/>	<input checked="" type="radio"/>
Thursday	<input type="radio"/>	<input checked="" type="radio"/>
Friday	<input type="radio"/>	<input checked="" type="radio"/>
Saturday	<input checked="" type="radio"/>	<input type="radio"/>
Sunday	<input checked="" type="radio"/>	<input type="radio"/>

Undo Done

Ariterm Sweden AB | Flottiljvägen 15 392 41 Kalmar | Tel: +46 (0)480-44 28 50 | Fax: 0480-442859 | Mail: info@ariterm.se

CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0

Schedule

In the schedule profile you choose how to compose your week.

HEATING CIRCUIT SETTINGS

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Logout Turn off

Edit schedule ⌵

Change settings for workdays

From	To	Temperature (°C)	Duration
00:00	06:00	18	6 hours
06:00	08:00	20	2 hours
08:00	14:00	18	6 hours
14:00	22:00	19	8 hours
22:00	23:59	18	1 hours

Create Undo Done

Ariterm Sweden AB | Flottiljvägen 15 392 41 Kalmar | Tel: +46 (0)480-44 28 50 | Fax: 0480-442859 | Mail: info@ariterm.se

CC12 v0.7.26 Webapp v0.4.0 db v1.1.16 bl v2.0.0

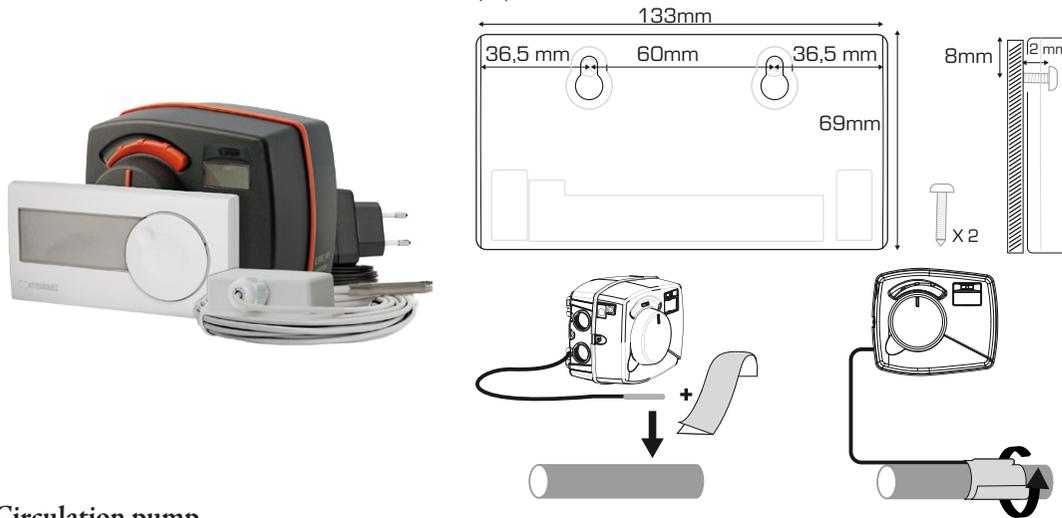
Schedule

In each profile you set the desired room temperatures and times.

HEAT CIRCUIT SETTINGS AND CONNECTIONS

CRB122 Shunt motor unit

Install the CRB122 unit by following the supplied manual. Connect the outdoor sensor on the same connectors as the room sensor (A).



Circulation pump

Connect the PWM regulation cable from the circulation pump in the fast connectors, blue on blue and brown on brown. (B)

Alarm relay

Relay output normally open. (C)

Buffer tank sensors

(D)

Main supply

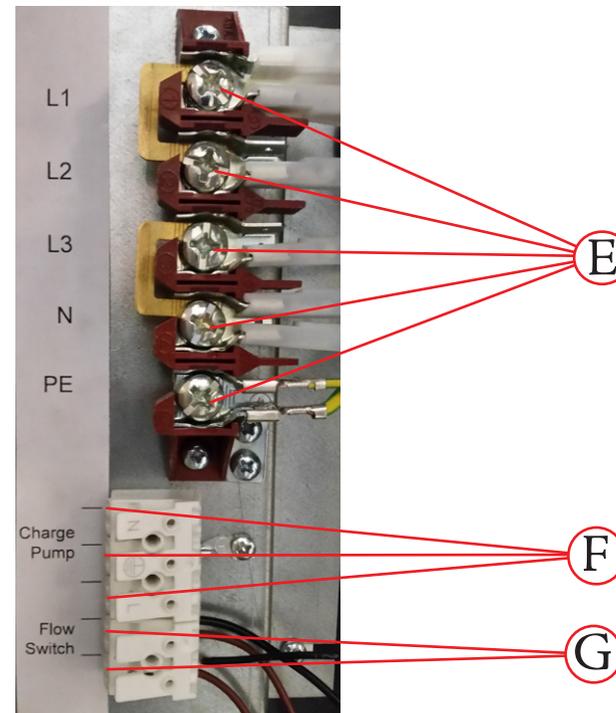
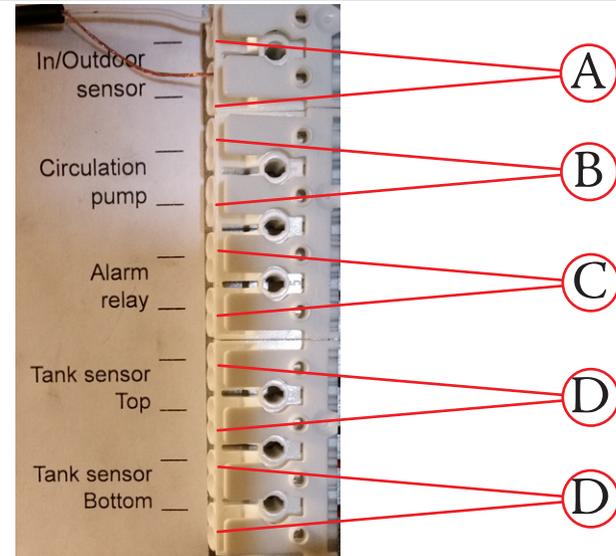
(E)

Charge pump

Connect the buffer tank charge pump to this 230V output.(F)

Flow switch

Connect the flow switch here. If not, control the tap water pump with the tap water switch on the panel.(G)



ALARMS AND TROUBLESHOOTING

Alarm message	Cause	Action
Ignition failed	The boiler didn't ignite during cold start.	Pellets haven't reach up to the ignition hole in the burner cup.
Error, High Power Mode	No flame during High power mode.	Control and/or clean the flame sensor.
Error, Low Power Mode	No flame during Low power mode.	Control and/or clean the flame sensor.
Alarm fan tachometer	No tacho pulses detected from fan1.	Control the fan1 and the cabling.
Max time external feeder alarm	The external feeder has been operating longer than the maximum time.	Check the pellets in the storage. Check the external auger connector. Control the level sensors in the burner.
Max time internal feeder alarm	The internal feeder has been operating longer than the maximum time.	Control the level sensors in the burner.
Ignition elements are out of order	The ignition output is not consuming any current.	Check the ignition element connections and/or the element resistance.
Alarm ESBUS communication	No communication from CRB122 to boiler.	Check internal and external cabling.
Alarm power card communication	No communication between RPi and power card.	Check connector between RaspberryPi and power card.
Alarm lost database	No data in the database.	Try to reboot the boiler by pressing the boiler control switch in 12 s, wait 12s, make the boiler powerless and power it up again.
Alarm flame or lambda indicated in standby	Flame or oxygen value is indicated during standby.	Control and/or alter the flame sensor or the oxygen sensor

Alarm message	Cause	Action
Alarm safety circuit open	The safety circuit to the cut out thermostat is open.	Control why the boiler has been overheated. Lower boiler temperature. Check cabling to cut out thermostat.
Low SD card memory left	The SD card is nearly full.	Contact your nearest Ariterm dealer.
No SD card memory left	The SD card is full.	Contact your nearest Ariterm dealer.
Maintenance time 1 exceeded	The total operating time of the external auger is longer than the maximum time alarm1 settings.	Clear the maintenance alarm 1 in the maintenance menu.
Maintenance time 2 exceeded	The total operating time of the external auger is longer than the maximum time alarm2 settings.	Clear the maintenance alarm 2 in the maintenance menu.
Oxygen sensor failure	The oxygen sensor is faulty	Contact your nearest Ariterm dealer.
Warning Pellets level low	Low pellets level in the storage.	Clear the alarm and fill the storage with pellets. Remember to add pellets in the "Pellet store" menu as well.
Boiler temp reached high temp limit.	The boiler is almost overheated.	Lower the stop temperature or increase the speed of the charge pump when using tank mode.

■ GUARANTEE AND DECOMMISSIONING

■ Guarantee

For Warranty Issues Ariterm Sweden AB refers to our local Distributor.

■ Decommissioning

An end-of-life boiler is suitable for scrapping. Its plastic parts are landfill waste.

Biomatic+ 20i spare part list

Product no.	Description
5936	Thermal protection
5212	Gasket burner/boiler
5787	Circulation pump, domestic hot water
5362	Boiler temperature sensor
5358	Flue gas temperature sensor
6104	Raspberry Pi
5820	ESBE ARA661 shunt motor
5062	Motor aut. convection cleaning
6103	Power card CC14
6168	Outdoor temperature sensor ESBE
5346	Cogg drive Z=12, Locker feeder
5023	Cogg drive Z=15, Motor
5831	Cogg drive Z=24, Dosing screw
5886	Chain, 79-link
5421	Chain shackle
5488	Feed motor
5036	Primary air ring
5037	Burn cup, outer mould
5486	Locker feeder impeller
5035	Burner screw
5939	Combustion fan
5033	Ignition element 450W
5360/5361	Level sensors
5359	Optical sensor

■ MOST COMMON SPARE PARTS

Biomatic+ 40i spare part list

Product no.	Description
5936	Thermal protection
5213	Gasket burner/boiler
5787	Circulation pump, domestic hot water
5362	Boiler temperature sensor
5358	Flue gas temperature sensor
5820	ESBE ARA661 shunt motor
5062	Motor aut. convection cleaning
6168	Outdoor temperature sensor
6103	Power card CC14
6104	Raspberry Pi
5875	Cogg drive Z=17, Motor
5831	Cogg drive Z=24, Dosing screw
5081	Cogg drive Z=18, Burner screw
5346	Cogg drive Z=12, Locker feeder
5416	Ball bearing, burner auger
5886	Chain, 79-link
5421	Chain shackle
5307	Feed motor
5963	Primary air ring
5328	Burn cup, lower part
5786	Locker feeder impeller
5935	Burner screw
1293	Combustion fan2
5308	Combustion fan1
5425	Oil bronze bearing 12/18x8, for feed.auger and block. feeder
5415	Ignition element 450W
5360+5361	Level switches (incl. transmitter and receiver)
5359	Optical sensor

■ SERVICE AND MAINTENANCE

The boiler and burner will function without problems for a long time if the following instructions are observed:

- The boiler must be kept in a dry environment
- The boiler and burner operate all the time within the defined adjustment values.
- Clean the boiler when the temperature of flue gases has increased by 20-30°C from the temperature with a clean boiler.
- Check the burner head and clean it if needed. Remove any sintering and, if necessary, scrape the air gaps open.
- Replace damaged parts with a new ones in due time
- Check to make sure that no condensed water or water coming from pipe leaks can damage the boiler.

Note! After cleaning the burner, "Reset all adjustment values" in "Settings: Maintenance" menu.

■ Boiler cleaning

Turn the burner off for about an hour before maintenance work. Clean the furnace from the burner opening and the convection part from the cleanout hatch on the top of the boiler. Clean all convection pipes with the cleaning brush delivered with the boiler (see the next page). Finally, empty the ash box.

The interval for ash removal and boiler cleaning can be specified in the Maintenance menu on the basis of experience.

■ Burner cleaning

Turn the burner off for about an hour before maintenance work. Disconnect and pull the burner out of the boiler, check the burner head and carry out the necessary operations. The burner head does not usually need special maintenance. However, in connection with ash removal, it is good to check whether hardened ash has accumulated in the burner head. To detach the hardened ash, use a screwdriver or similar tool. At the same time, check whether ash has flown to the opening of the flame detection pipe and clean it if needed.

In connection with a new fuel delivery, the burner head must be checked in order to detect possible sintering (mutually bound ash, rock and gravel-like particles in the burner head) over time. Such particles must absolutely be removed from the burner head at short intervals so that the primary ring will not become overheated and get damaged.

Sintering is often due to impurities in the fuel. If this is the case, you should immediately file a complaint with the fuel supplier. Pay special attention to pellet quality when you receive a new delivery or when you change suppliers.

■ Check every 1-2 years

Unfasten the burner primary air ring, which is fastened by means of four screws and nuts. Clean the air vents of the primary ring and remove all ash. At the same time, check the primary air pipe and clean it of ash. The burn cup should be sealed with fireproof sealant.

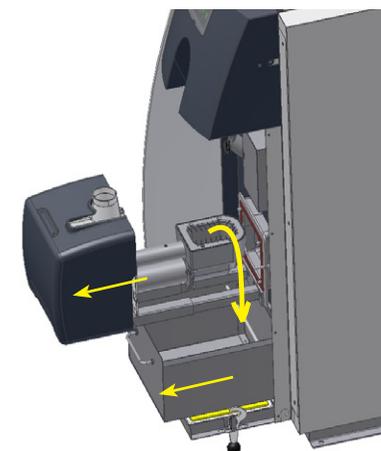
Detach the protective casing of the burner. Check the chain wheels and chains for wear or whether the chain has loosened. Adjust and change as needed. Lubricate the chain with thin oil.

Note!

Always remember to be careful when dealing with ash because it may still be incandescent. The ash must be stored in a fire-resistant vessel.



Burner cleaning is started by unfastening the long nuts on both sides of the burner and by pulling the burner out of the boiler. Make sure that the burner wires do not get damaged.



It is recommended to have the ash box open when cleaning the burner cup.

BOILER CLEANING (pictures show Biomatic+ 40i)

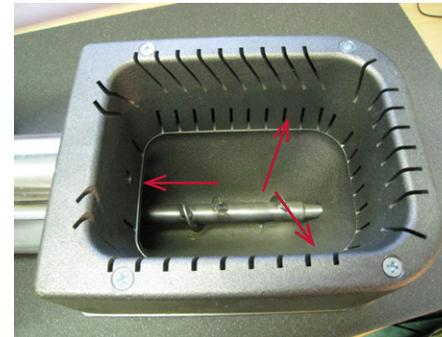
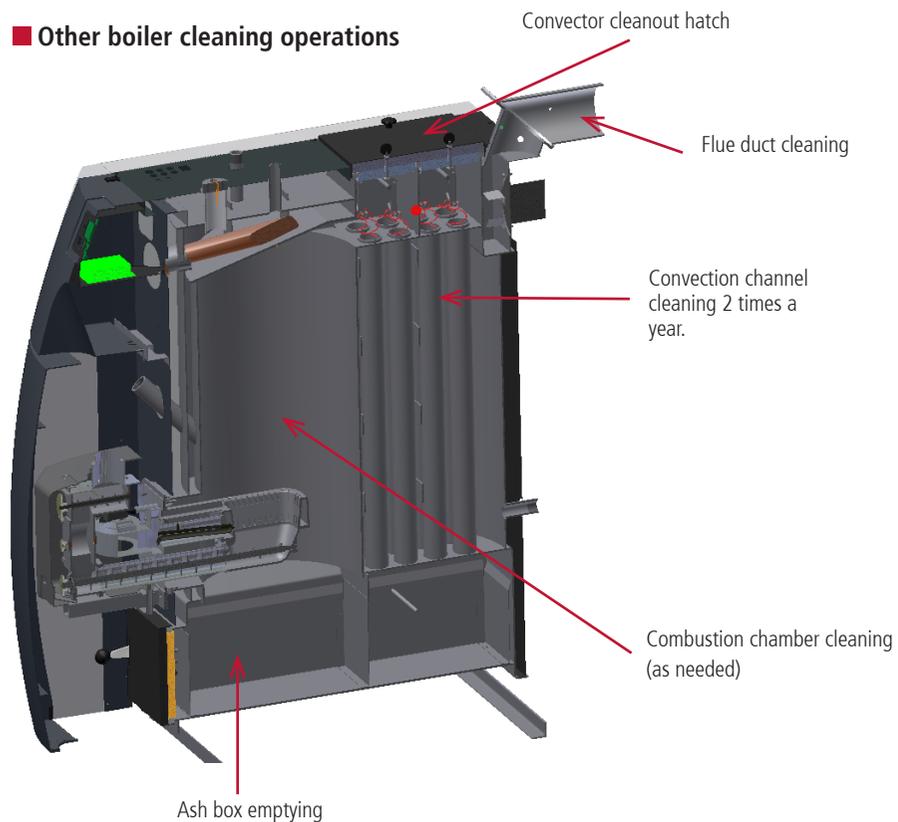


Automatic convection cleaning system

The boiler is equipped with automatic convection cleaning system that automatically carries out the sweeping at certain intervals. In any case, the convection channels must be cleaned (swept) two times a year.

The cleaning is done through the cleanout hatch on the top of the boiler. The automatic sweeping system must be removed before sweeping. Disconnect the main power before maintenance work.

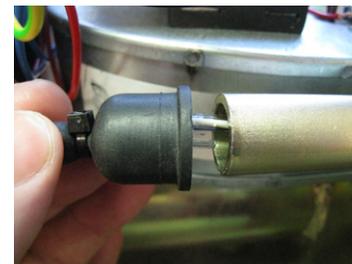
Other boiler cleaning operations



Remove all ash and possible sintering from the combustion vessel. The primary air intakes and the ignition resistance opening must be open.



Clean the metal pipe of the flame detector so that the ash accumulated in the pipe will not hinder the operation of the flame detector.



Pull the flame detector out of its pipe with caution and hold on to the rubber lid.

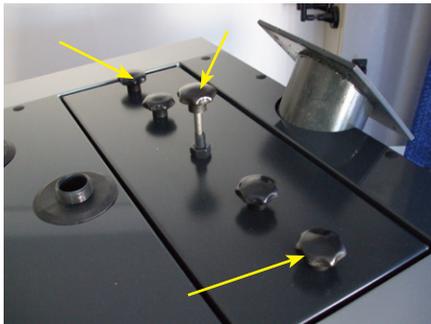


Clean the flame detector of impurities.

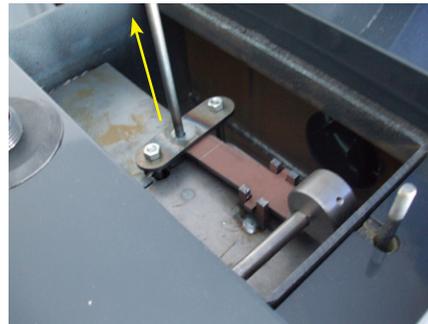
NOTE!

If the protective glass of the flame detector breaks or detaches, the flame detector can no longer be used and must be replaced with a new one.

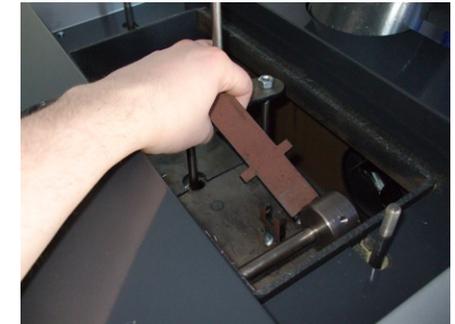
■ DISSASSEMBLY AND CLEANING OF THE AUTOMATIC CONVECTION CLEANING SYSTEM OF BIOMATIC+ 20i



1. Open the outer and intermediate star knobs and lift off the soot hatch.



2. Lift the lift lever up.



3. Lift the rocker switch to the side.



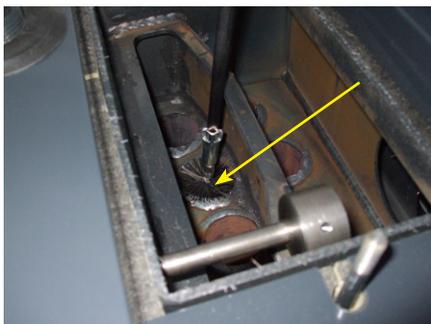
4. Lift the lift lever up, remove the hatch for the convection channel.



5. Lift off the second hatch of the convection channel.



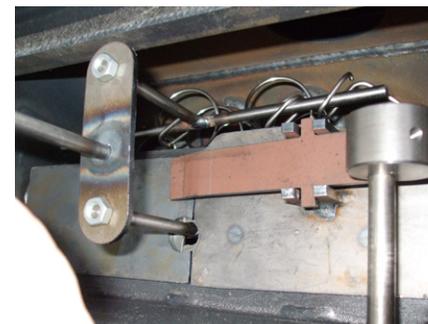
6. Lift off the holder and the springs from the convection.



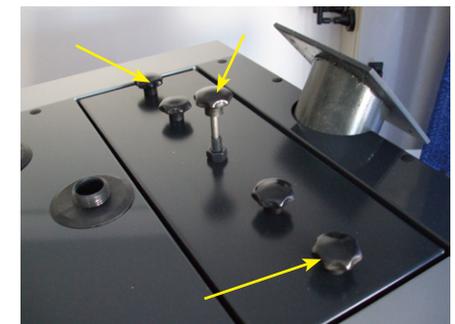
7. Sweep the convection pipe surface with a brush, remove any ash. Push the brush up and down again.



8. Reinstall all the springs and lifting levers illustrated.



9. Install the convection channel hatch and the rocker switch.



10. Install the soot hatch and screw in the star knob.

■ DISSASSEMBLY AND CLEANING OF THE AUTOMATIC CONVECTION CLEANING SYSTEM OF BIOMATIC+ 40i



1. Open the outer star knobs and remove the cleanout hatch.



2. Convection part



3. Pull all the spirals out.



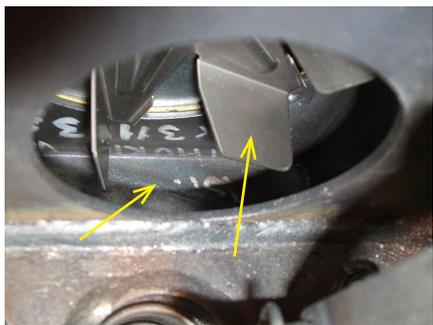
4. Spirals removed



5. Sweep the convection tube surfaces with a round brush and remove fly ash. Insert the brush all the way down and lift back up.



6. Fit all the spirals in place.



7. Clean the flu gas blower blades and remove ash from the blower box, for example, with an ash vacuum.



8. Attach the cleanout hatch and fit the star knobs.

■ WOOD PELLETS AS FUEL

Wood pellets are renewable bioenergy and provide fuel in a compact and uniform form, which is easy to handle. The moisture content is less than 10%, which means that the pellets do not freeze or become mouldy. No chemical substances are used in the manufacturing process. Instead, the binding agent is the tree's own lignin.

The pellet diameter is 6 to 8mm and the length is 10 to 30 mm. Due to their small size, the pellets move freely in the feeding augers.

NOTE!

The Ariterm Biomatic + series boilers are suitable for burning pellets of diameters ranging from 6mm through to 8mm. The burner is factory set for 6mm wood pellet.

Most of the disturbances that occur as a result of bad fuel quality are caused by incorrect handling and intermediate storage before the product is delivered to the customer. Large contents of fine materials may be due to insufficient sifting. Ash sintering is often caused by silicate impurities (sand). These materials cannot be detected before burning. NOTE! If the ash is sintered, all sintered material must be continuously removed from the burner head.

■ Fuel storage

Thanks to the feeding system, it is possible to build the pellet store for so-called bulk deliveries. The store can be placed either inside or in a separate building outside the house. The shorter the transport distance from the store to the burner, the better the feeding system functions. Fire regulations must be taken into consideration when designing the boiler room and the storage area.

The entire store must be insulated with extreme caution in order to prevent dust from spreading.

The pellet delivery methods must be taken into account when choosing the store size. In general, the pellets can be obtained in small sacks (20 kg), large sacks (500 kg) or directly to the store by means of a blower truck. One ton of pellet fuel requires about 1.6 m³ of storage space. A store of 8 to 10 cubic metres is a reasonable solution for many houses and involves lower delivery costs.

NOTE!

Pellet should be stored in a dry place.

Fuel recommendation

Raw material	Chemically untreated, barkless wood
Diameter	6-8 mm
Length	10-30 mm
Volume weight	over 600 kg/m ³
Moisture content	less than 10%
Ash content	less than 0.7 weight %
Fine material content	max 4 weight %
Ash melting temperature	> 1,100 °C
Energy content	>4.75 kWh/kg

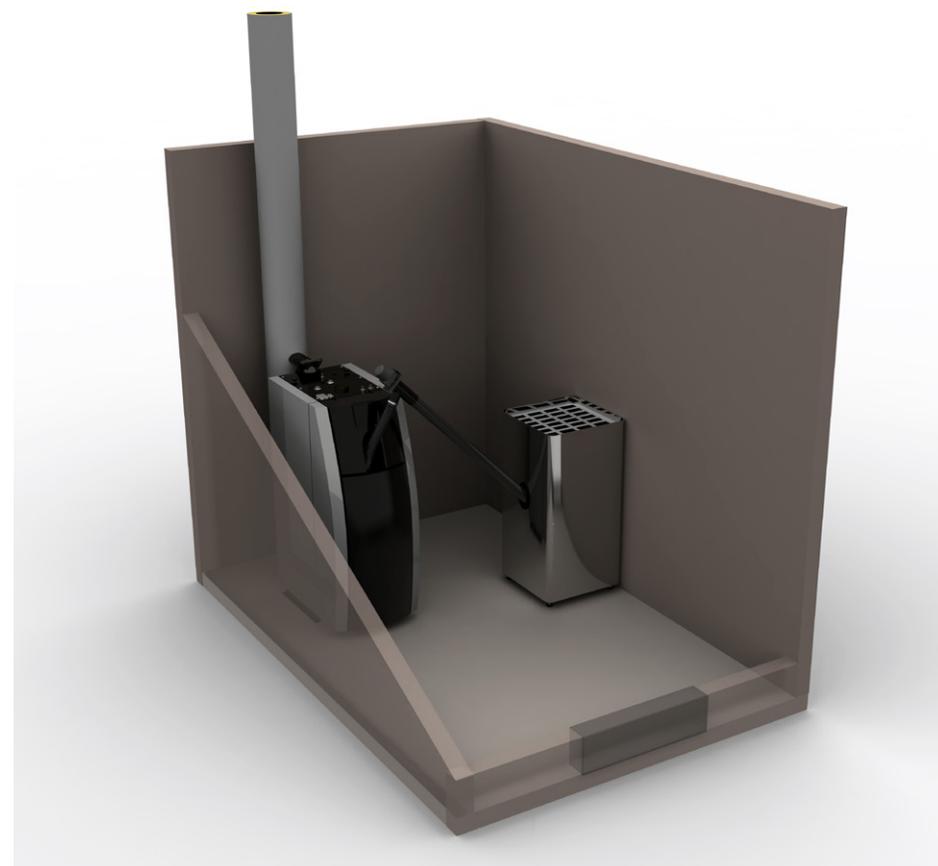
■ FEEDING SYSTEM

■ Weekly silo PF450

The lightweight silo is an alternative to the self-built silo. The practical PF450 may also be used as intermediate store for pellets. The capacity of the pellet silo is 450 litres and its filling is facilitated by the intermediate grid in the silo.

NOTE!

More information on the installation of PF450/Feedo can be found in separate manuals.



■ Depo

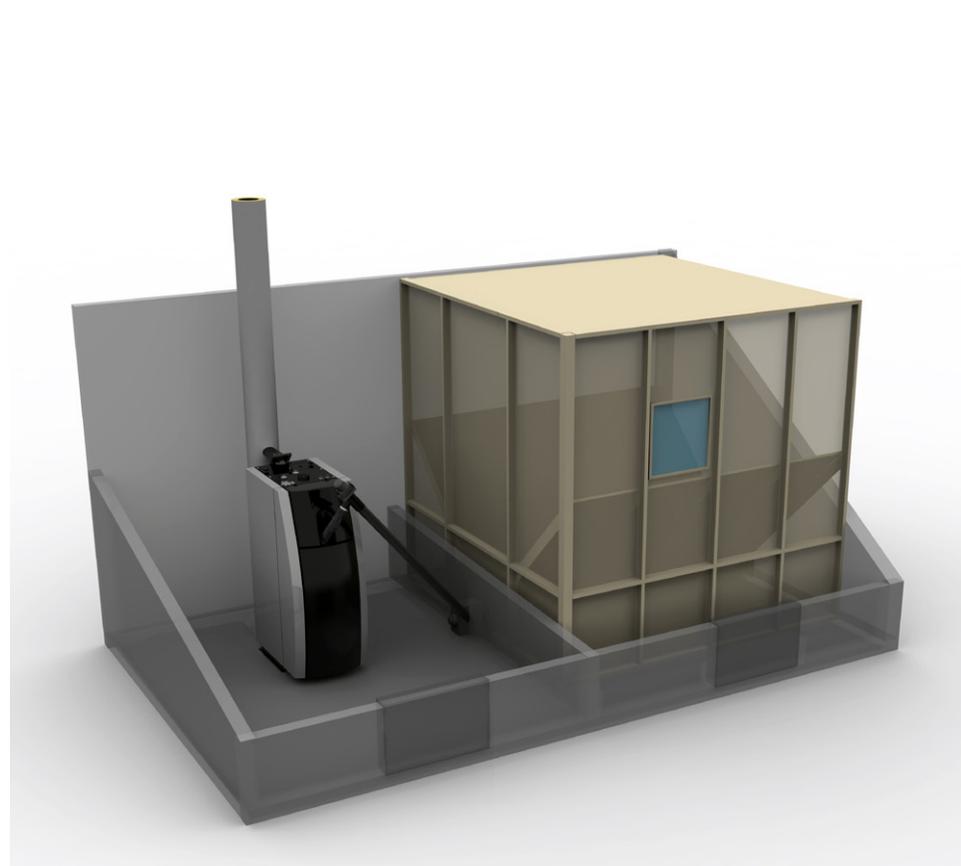
Feed chute Depo is a patented pellet transfer system that effectively, reliably and quietly feeds pellets from the silo via the feeding system to the burner.

■ Feedo

Feedo is a pellet feeding system designed to work with feed chute Depo.

NOTE!

More information on the installation of Depo/Feedo can be found in separate manuals.



Declaration of conformity / Försäkran om överensstämmelse
Konformitätserklärung / Vaatimuksenmukaisuusvakuutus

Ariterm AB
Flottiljvägen 15
S-39241 KALMAR

declare under our sole responsibility that the products / försäkrar under eget ansvar att produkterna
erklären in alleiniger Verantwortung, daß die Produkten / vakuuttaa omalla vastuulla että tuote

- Ariterm Biomatic+ 20i
- Ariterm Biomatic+ 40i

to which this declaration relates are in conformity with requirements of the following directives:

som omfattas av denna försäkran är i överensstämmelse med följande direktiv:

auf das sich diese Erklärung bezieht, konform ist mit den Anforderungen der Richtlinien:

jota tämä vakuutus koskee on yhteensopiva seuraaviin määräyksiin

EMC Directive 2004/108/EY
Low Voltage Directive 2006/95/EC
Machinery directive 2006/42/EC
Pressure vessels 97/23/EG (H-module, notified body 0424)

The conformity was checked in accordance with the following EN-standards

Överensstämmelsen är kontrollerad i enlighet med följande EN-standarder

Die Konformität wurde überprüft anhand der EN-Normen

Yhdenmukaisuus on tarkastettu seuraavien EN-standardien mukaan

- EN 61000-6-3:2007, -3-2:2006, -A1:2009, -A2:2009, -3-3:2008, Emission by electromagnetic disturbances.
- EN 61000-6-2:2005, -4-2, -3, -4, -5, -6, -11, Immunity to electronic disturbances.
- EN ISO 14121-1 Risk assessment
- EN 60335-1:1994 Safety of household and similar appliances - Part 1: General requirements.
- EN 303-5:2012 Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW - Terminology, requirements, testing and marking

- The boiler meets requirements for **emission class 5** -

Kalmar 2015-04-20



Staffan Lundegårdh, Managing Director

■ DECLARATION OF CONFORMITY

■ The Clean Air Act 1993 and Smoke Control Areas

Under the Clean Air Act local authorities may declare the whole or part of the district of the authority to be a smoke control area. It is an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler if located in a designated smoke control area. It is also an offence to acquire an “unauthorised fuel” for use within a smoke control area unless it is used in an “exempt” appliance (“exempted” from the controls which generally apply in the smoke control area).

The Secretary of State for Environment, Food and Rural Affairs has powers under the Act to authorise smokeless fuels or exempt appliances for use in smoke control areas in England. In Scotland and Wales this power rests with Ministers in the devolved administrations for those countries. Separate legislation, the Clean Air (Northern Ireland) Order 1981, applies in Northern Ireland. Therefore it is a requirement that fuels burnt or obtained for use in smoke control areas have been “authorised” in Regulations and that appliances used to burn solid fuel in those areas (other than “authorised” fuels) have been exempted by an Order made and signed by the Secretary of State or Minister in the devolved administrations.

Further information on the requirements of the Clean Air Act can be found here : <http://smokecontrol.defra.gov.uk/>

Your local authority is responsible for implementing the Clean Air Act 1993 including designation and supervision of smoke control areas and you can contact them for details of Clean Air Act requirements

The Ariterm Biomatic+ series boilers have been recommended as suitable for use in smoke control areas when burning wood pellets.

■ INSTALLATION REPORT

Flue gas temperature - Max	CO	O ₂	CO ₂
Combustion efficiency	Draught mm	Blower %	Auger %
Flue gas temperature - Mean	CO	O ₂	CO ₂
Combustion efficiency	Draught mm	Blower %	Auger %
Flue gas temperature - Min	CO	O ₂	CO ₂
Combustion efficiency	Draught mm	Blower %	Auger %

Dealer / Installer

Installer

Date



ARITERM SWEDEN AB | Flottljvägen 15
39241 Kalmat | www.ariterm.se | 0771-442850



Inspecta

ORGANISATION
CERTIFIED BY

ISO 9001
ISO 14001

ARITERM-VTT-S-07229-11.1
ARITERM-VTT-S-07229-11.2
ARITERM-VTT-S-06765-11.1
ARITERM-VTT-S-06765-11.2