

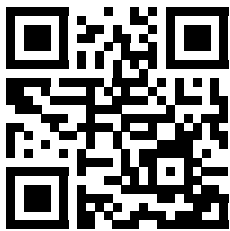
Handleiding

Ariterm Biomatic 20i 40i

Deze handleiding wordt u aangeboden door www.climacraft.nl — service en onderhoud voor pelletkachels, van Almere tot Harderwijk, Amersfoort, Utrecht, Mijdrecht, Zaandam en Purmerend.

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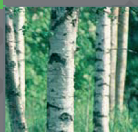
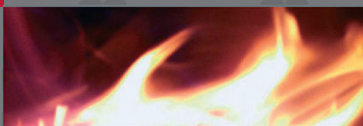


ARITERM



INSTALLATION AND OPERATING INSTRUCTIONS

- Ariterm Biomatic+ 20*i*/40*i*
- Ariterm Biomatic+ 20*i*/40*i* Light
- Ariterm Biomatic+ 20*i*/40*i* Ultra-Light



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■ GENERAL INFORMATION

■ GENERAL INFORMATION

Ariterm Biomatic+ 20*i*/40*i* is a cost-effective, resistant, non-condensing and environmentally friendly, self regulating central heating boiler intended for heating of residential houses and production of domestic hot water using pellets. Standard equipment of the Ariterm Biomatic+ 20*i*/40*i* includes true lambda control, automatic heating circuit regulation, automatic convection cleaning system, large internal buffer tank, domestic hot water heat exchanger (not in U-L model) and internal access point allowing internet connection. Backup heating (safety feature) is produced by a 9kW immersion heater (not in models L and U-L).

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.

Read this manual carefully before starting to use your Ariterm Biomatic+ 20*i*/40*i* pellet heating unit. Keep this manual in a safe place for future reference.

Ariterm reserves for errors and changes.

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

■ TRANSPORT, STORAGE AND PACKAGE OPENING

Transport

The boiler is delivered in a wooden frame. The base is a platform from which the boiler can be safely lifted. The packaging should be unwrapped as close to the installation site as possible. It is important for the receiver to verify the general state of the boiler before accepting the delivery. In case of damage, the installer/supplier must be contacted without further delay.

Storage

The boiler should be stored inside.

Package opening

After removing the packaging, open the ash box and check the accessory list to make sure that all accessories are contained in the delivery (cleaning brush handles are attached to the packaging). Disposing of the packaging The plastic cover is landfill waste and the boards can be burned.

■ TECHNICAL DATA ARITERM BIOMATIC+

TECHNICAL DATA		Biomatic+ 20 <i>i</i>	Biomatic+ 40 <i>i</i>
Boiler class	Class according to EN303-5 2012 Energy Class EEI η_s	Class 5 A+ 114 79	Class 5 A+ 120 83
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 1509 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 110 °C	0.5-2.5 bar max 10 bar max 110 °C
	Production of hot tap water*	1-shower (12 l/min), 520 l/+40 °C) 2-shower (20 l/min, 240 l / +40 °C)	1-shower (12 l/min), continuously / +40 °C) 2-shower (20 l/min, 400 l / +40 °C)
Connections	Flue gas temperature nominal output Flue gas temperature minimum output Flue gas mass flow nominal output Flue gas mass flow minimum output	109 °C 65 °C 11,5 g/s 4,0 g/s	132 °C 76 °C 19,6 g/s 8,6 g/s
	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 heater, 3x16 A Light & Ultra-Light model <1 kW, 1x6 A	Standard model 9 kW immersion heater, 3x16 A Light & Ultra-Light model <1 kW, 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

* Not applicable for Ultra-Light model

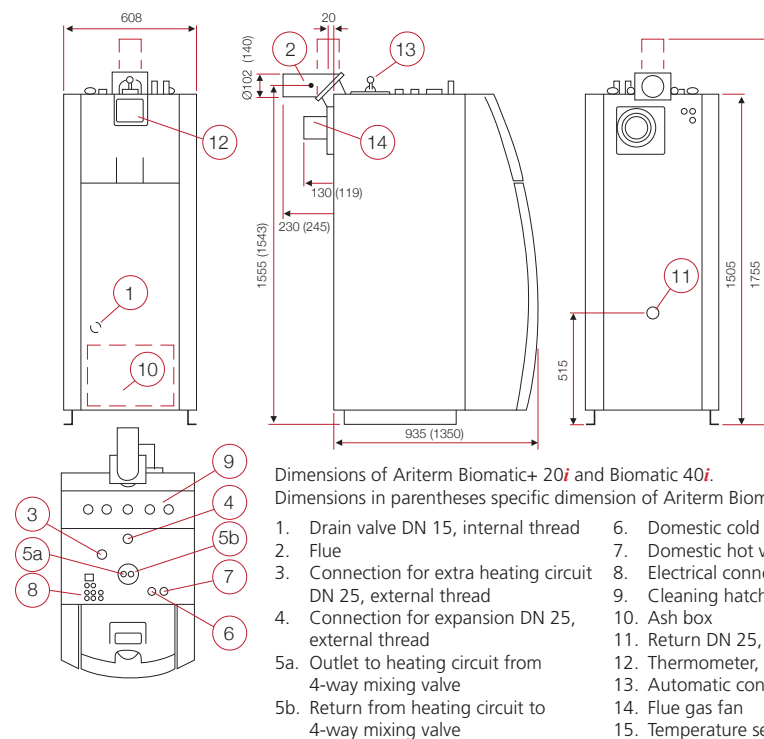
■ Standard delivery

- 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 compensation
- Automatic convection cleaning system
- Domestic Hot Water heat exchanger (Not Ultra-Light model)

- Domestic Hot Water charge pump (Not Ultra-Light model)
- Immersion heater 9kW (Not Light or Ultra-Light model)
- Local Access Point allowing Internet connection

■ Accessories

- Flue connection
- Flue connection with ESP-filter
- Shunt valve, motor and control for additional heat circuit
- Temp sensors to buffer tank
- Circulation / Load pump



FUNCTIONAL DESCRIPTION

Heating with the Arterm Biomatic+ 20*i*/40*i* 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 integrated pellet burner of the Biomatic+ 20*i*/40*i* is equipped with automatic ignition, but can if necessary be manually ignited. 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 operation, if not de-activated, the necessary ignition takes place by means of the embers in the burner head, i.e. a warm start. This saves electric energy.

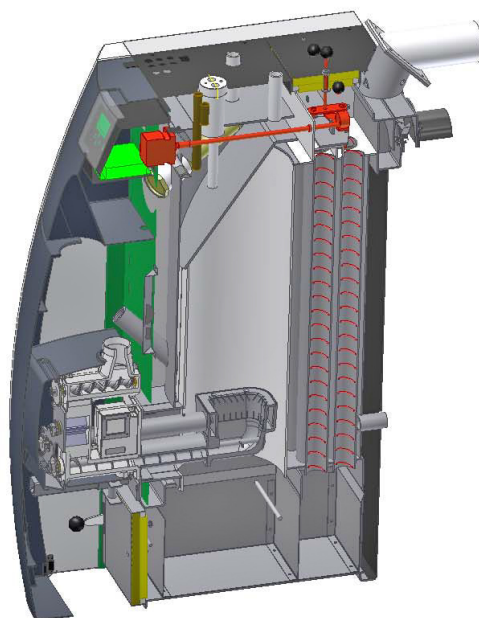
The burner and the internal feeding system operate automatically. The operation of the burner is controlled by the temperature sensor installed in the boiler. The burner head is due to the true lambda control fed with an accurately defined mixture of fuel and air for optimal combustion, which is both 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.

The automatic heat regulation system adjusts the supply water temperature according to the outdoor and indoor temperature.

Wood pellets according to EN standards with a diameter of 6 or 8 millimeters are the recommended fuel for the boiler.

The convection parts of the boiler are automatically cleaned on set intervals. Ash is to be removed from the ash box located in the lower part of the boiler.



Biomatic+ 20*i*

SAFETY AND ALARMS

For safety reasons, the Biomatic+ 20*i*/40*i* 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 of the external feeding system, a small amount of pellets is fed from the pellet store to the upper connection of the burner. To allow dispense of an accurate and equal amount of pellets during every operation cycle of the burner, the feeding is carried out by means of a separate internal feed system - including feeder screw, locker feeder and burner screw - to the burner head.

As the internal burner screw feeds pellets forward three times faster than they arrive at the screw, 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.

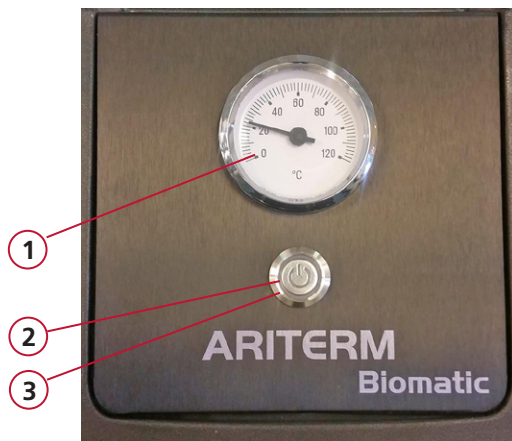
Alarms are described in "Alarms and troubleshooting".



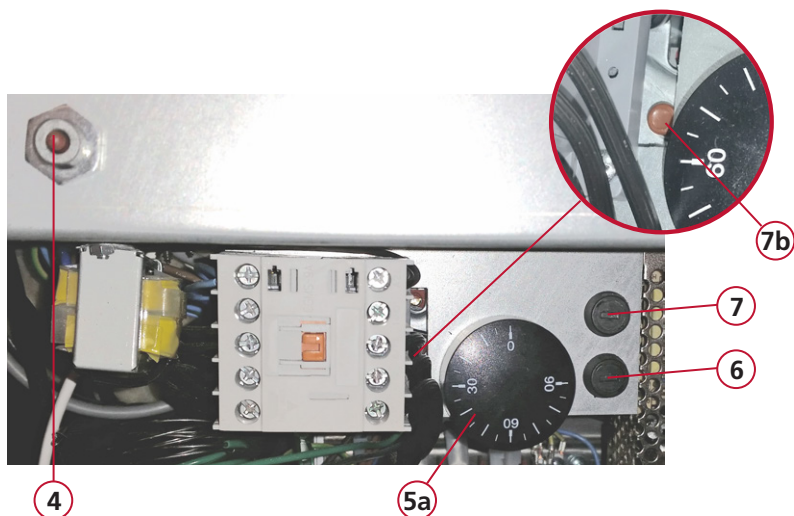
Biomatic+ 20*i*

The external 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

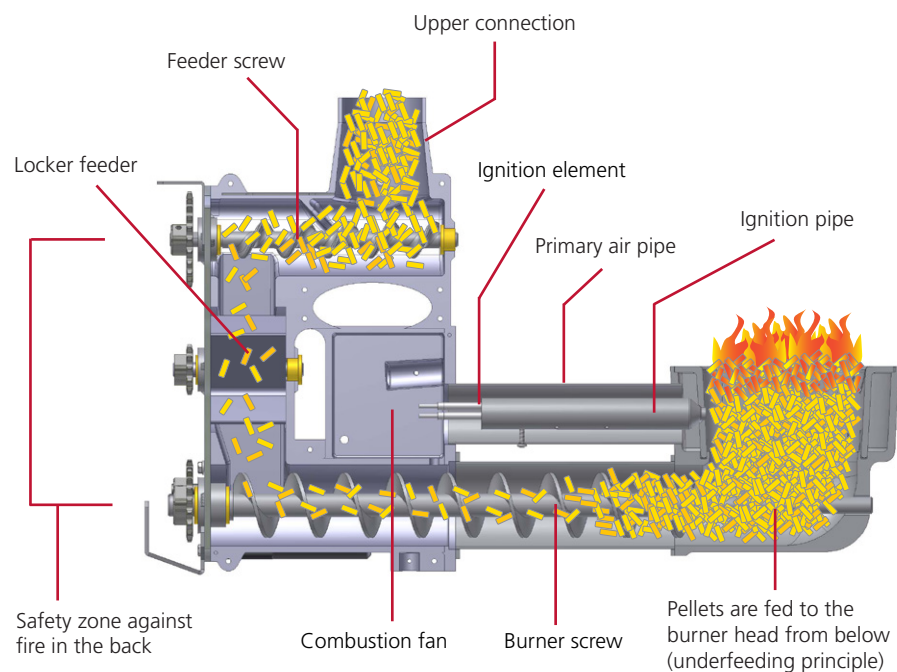


1. Actual boiler temperature
2. Burner control switch on/off/reset
3. Status LED green/red
No light = OFF/Shutdown
Green = High or Low power mode
Green breathing = Standby
Green blink = Ignition mode
Green = Operation
Red = Alarm
4. Cut out thermostat
- 5a. Immersion heater back up/
Cut out thermostat
- 5b. Immersion heater cut out
thermostat reset
6. Tap water pump Fuse
7. 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 Arterm 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 placed 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+ 20i/40i 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 boiler room 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 since the boiler is equipped with a flue gas fan. However, the chimney must be dimensioned to be able to evacuate the flue gases without overpressure. Overpressure and/or leakage in the chimney can cause the flue gases to leak into the building.

Pipe installations

Before installing the boiler, the heating system must be flushed and checked by means of a water-pressure test. After installation, make sure that all joints are tight. Arterm 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 domestic hot water heat exchanger. There is no manometer in the Biomatic+ 20i/40i. Therefore, a manometer must be installed in the heating network.

Safety valve installation

A safety valve must be fitted to the heating system. The valve must be CE marked with a maximum opening pressure of 1.5 bar and a minimum size of DN 15. The safety valve must be chosen according to the highest pressure class of the combination of devices in the heating system. 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 risk/danger during the operation of the valve.

Electrical installations

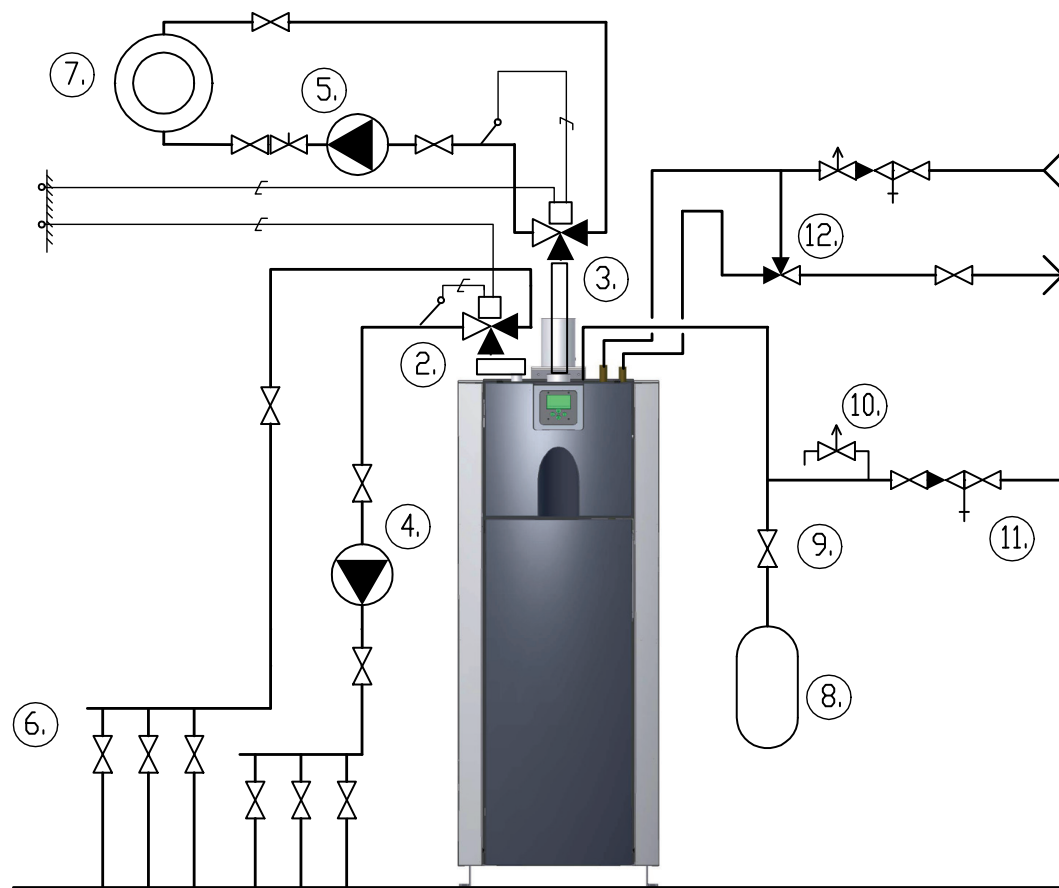
The Biomatic+ 20i/40i contain an integrated pellet burner, a 9 kW immersion heater (not in L and U-L models) and an internal DHW circulation pump. The boiler also contain an overheat protection for the burner and the immersion heater. The electrical installations related to the boiler must be carried out by an installer with the relevant qualifications and the boiler must be connected according to the enclosed wiring diagram. A safety/maintenance switch must be installed in the voltage supply system of the boiler.

Before commissioning

Before starting the boiler, the following must be checked:

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

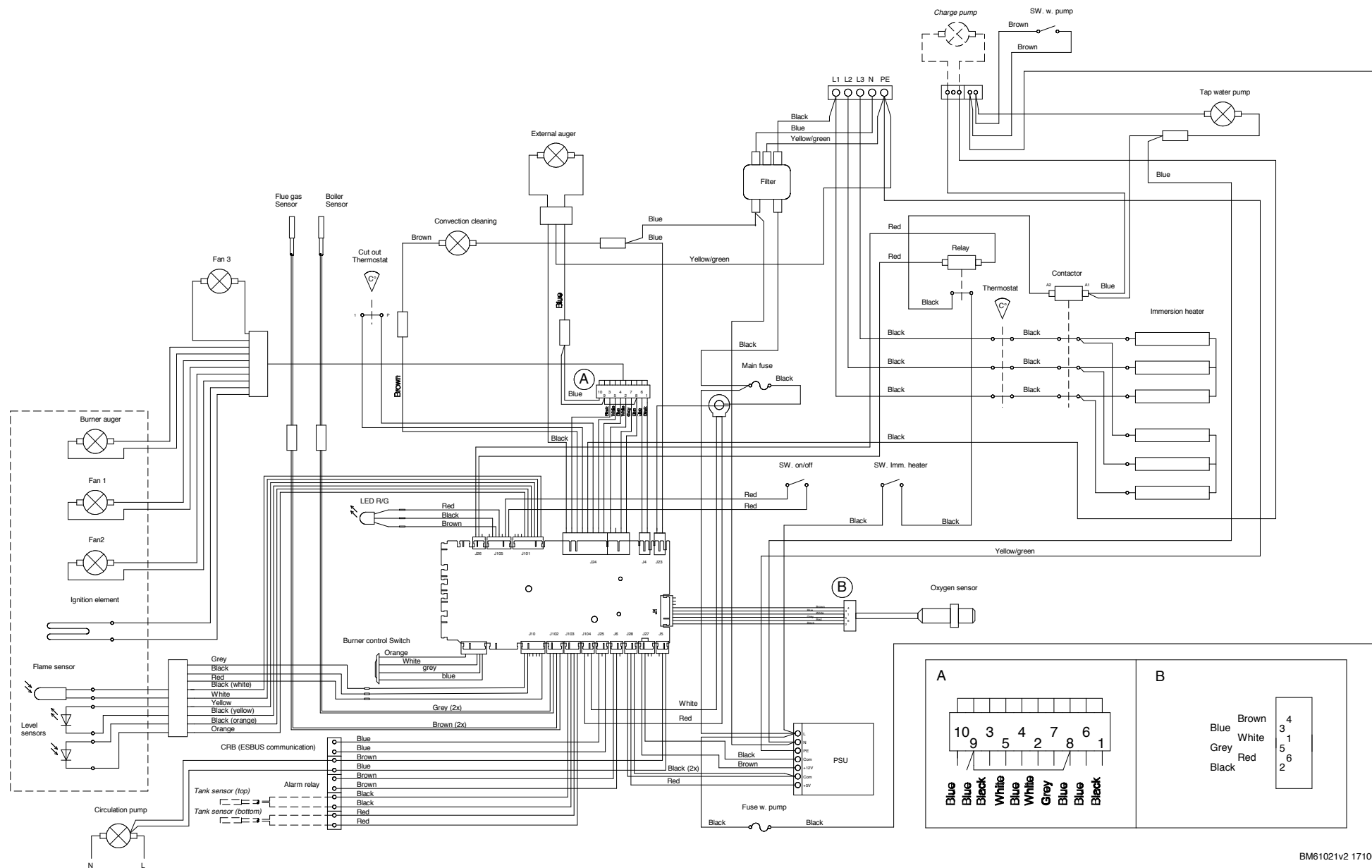
PIPE INSTALLATIONS



1. Arterm Biomatic+ 20*i*/40*i*
2. Connection set of the additional heating circuit (under floor or radiator heating)
3. 4-way valve, first heating circuit (radiator or under floor heating)
4. Circulation pump, additional heating circuit
5. Circulation pump, first heating circuit
6. Floor heating network manifolds
7. Radiator heating network
8. Expansion vessel
9. Service shut-off valve
10. Safety valve
11. Filling valve
12. DHW mixing valve



WIRING DIAGRAM - Biomatic+ 40i



BM61021v2 171006

■ START-UP, START AND STOP

■ Connecting to Ariterm web interface

(For more detailed information of the Ariterm Local/Portal Control see "Menu structure")

Ariterm Local Control:

When the Biomatic+ 20i/40i arrives it is set as an AP (Access Point). You can connect to the boiler by using your WiFi unit, i.e. Smart phone, Computer, Tablet, iPad etc.

- Search for accessible wifi-networks in your WiFi unit, a SSID called [serialnumberSSID] will appear.
- Choose that one and enter password: ariterm123. Now you are connected to the boiler.
- Start the web browser of your WiFi unit and you will automatically enter the Log in page of the boiler. (If not, enter the serialnumber of the boiler followed by .se in the address field of your browser.)
- Enter the user name (serialnumber of the boiler) and the password (user) and click Log in.

Now you will access Ariterm Local Control of the boiler via the web interface and will be able to control the boiler when close by.

Ariterm Portal Control:

If you want to connect the boiler to internet, go to the "Network" menu in the Ariterm Local control.

- Search for and choose the SSID of the local network that you want to connect to.
- Enter the password of the local network.

NOTE! Now you will leave the AP mode. When the boiler is connected to internet via the local network it will start syncing with our server.

- Enter "portal.aritermgroup.se" (same user/password as above) in the web browser of your WiFi unit and you will access Ariterm Portal Control.

Via Ariterm Portal Control you will be able to access and control your boiler wherever you are, given that you have internet connection.

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

■ Burner start-up

Turn the burner and the internal DHW circulation pump on from the operating switches at the front of the boiler. Thereafter the boiler can be controlled from the Ariterm Local/Portal Control. (If a flow switch controlling the internal DHW pump is fitted, we recommend to set the operating switch to Off mode.)

NOTE! In order to achieve best possible combustion and large DHW capacity, our strongest recommendation is to have the internal DHW circulation pump switched on during during summer/low output seasons.

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: Pellet storage". Set "External feeder, forced operation (min)" to desired amount of minutes to fill the feeder up. Click at "Update". Repeat until the external feeder has fed a couple of liters of pellets into a bucket.
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.

■ START-UP, START AND STOP

■ High and Low Power mode - Glow mode

After ignition, the burner start operating in High power mode. When the boiler temperature rises to within 5 °C of its set value, the burner start operating in Low power mode and will continue to do so until the set boiler temperature is reached. If boiler temperature decreases the burner will once again start operating in High power mode. When the set boiler temperature is reached, the fan will continue to run for one minute before the burner enters Glow mode.

While the burner is in Glow mode, the burner auger brings pellets to the burner head on set interval in order to maintain the embers.

■ Cold start

At initial start up the burner performs a Cold start. The LED starts blinking green, the fan and the ignition element starts. 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 fan stops and the burner soon begin to operate in High Power mode.

The burner performs cold starts when the boiler temperature decreases more than 7 °C below the set value. After maintenance cleaning of the burner head, make sure that the burner performs a Cold start since 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.

■ Warm start

The burner performs a Warm start when the boiler water temperature is within 8 °C of the set temperature. During a Warm 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 Warm start. The burner starts up automatically after power failures (Warm or Cold start depending on the temperature of boiler water).

■ 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.

NOTE! Before cutting the power to the boiler it is important to turn the boiler off in a proper way in order to prevent damages to the control card. Press the burner control switch for more than 10 seconds until the flue gas fan starts to pulse.

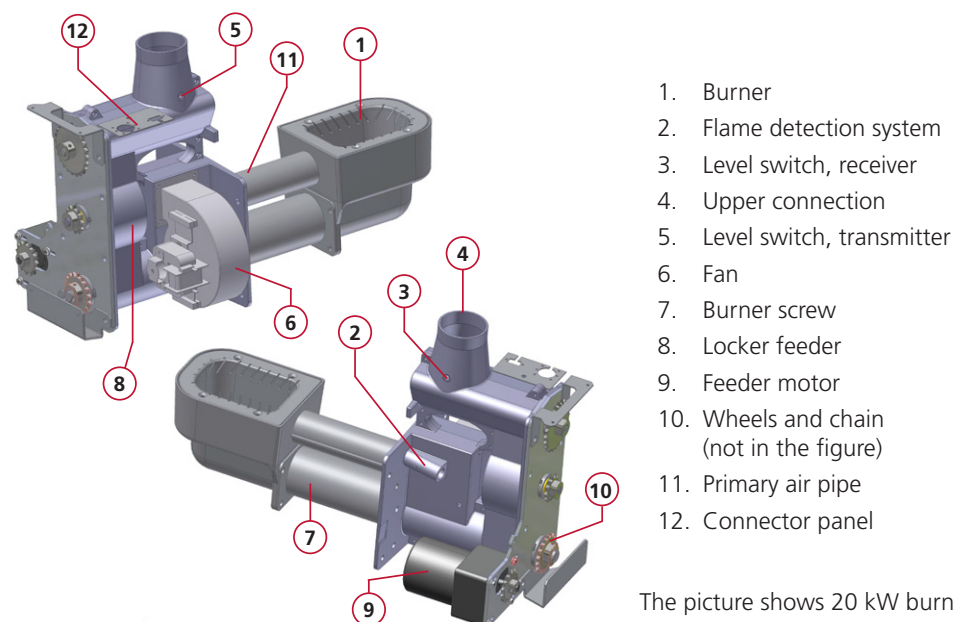
■ BURNER SETTINGS AND PARTS

■ Combustion adjustment

Normally you don't need to do any combustion adjustments. The fans 1-3 are set to two different power modes. High and Low. The oxygen sensor regulate the fans and adjust the pellet feeding automatically. In a couple of ours after start up you will have an optimized combustion. If you by any reason want to lower the output, please contact your local Arterm installer.

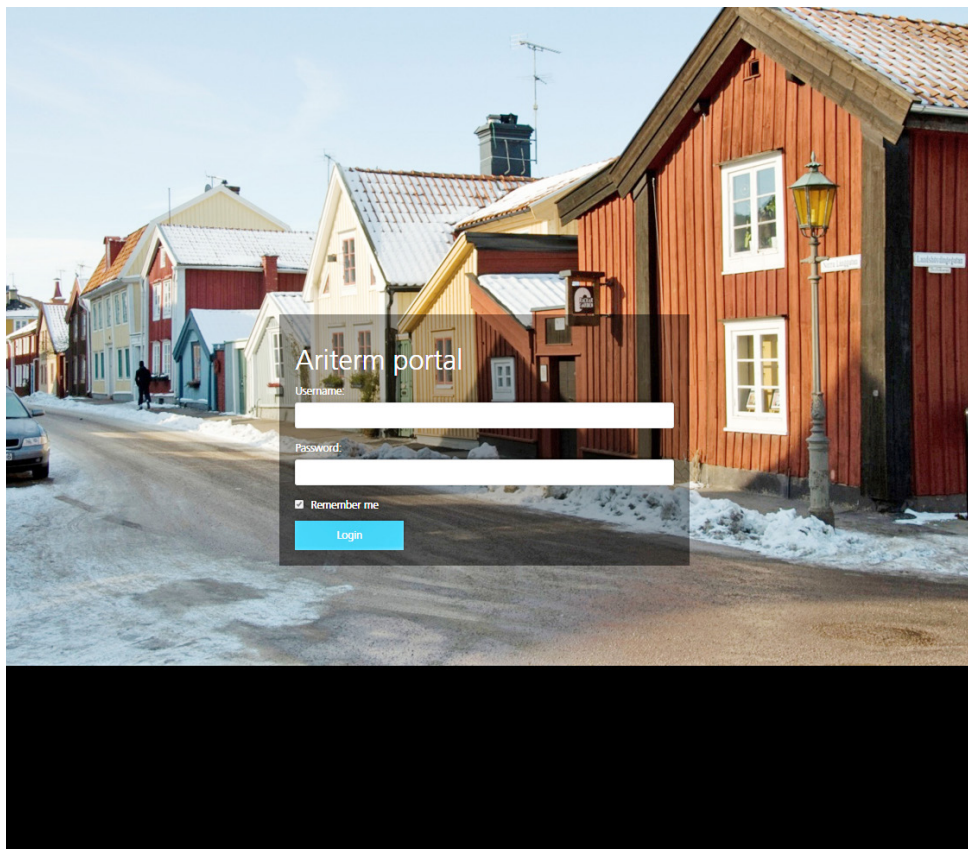
■ Immersion heater operation (not in models L and UL)

According to default settings the immersion heater heats the boiler to set "Immersion heater stop temperature". When the boiler temperature drops more than the set "Immersion heater start/stop temperature difference" the immersion heater starts again. Alternatively, if "immersion heater backup mode" is set to ON the immersion heater will operate as back up according to set boiler temperatures in the "Settings: Main" menu, IF the boiler is in Alarm mode.



The picture shows 20 kW burner.

MENU STRUCTURE ARITERM LOCAL/PORTAL CONTROL



Login

The web interface of Ariterm Biomatic+ 20i/40i is Ariterm Local/Portal Control. You enter the control with Username/Password. Further information at "Connecting to Ariterm web interface" under "Start-up, Start and Stop".

Status		BM20P101126B	
Operation mode:	Standby	Readings	
ON/OFF:	OFF	Boiler temperature	20.4
Sync status:	ON	Room temperature	19.4
Last sync: 2 minutes ago		Outdoor temperature	19.6
		Estimated pellet level (kg)	0.0
		Oxygen (%)	20.9
		Flow water temperature	20.6
		Buffer tank top temperature	999.0
		Buffer tank bottom temperature	999.0
		Flue gas temperature	23.1
		Flame sensor	0.0
		Number of cold starts	0.0
		Number of warm starts	0.0
		Maintenance timer 1 (s)	46.0
		Maintenance timer 2 (s)	0.0
		External feeder total runtime (s)	48.0

Home

In the "Home" menu you can see readings as follows:

The present operating mode of the burner, On or Off status of the burner, Sync status, Boiler temperature, Room temperature, Outdoor temperature, Estimated pellet level, Oxygen level, Flow water temperature, Buffer tank top temperature, Buffer tank bottom temperature, Flue gas temperature, Flame sensor level, Number of cold starts, Number of warm starts, Maintenance time 1 & 2 and External feeder total runtime.

MENU STRUCTURE ARITERM LOCAL/PORTAL CONTROL

The screenshot shows the ARITERM LOCAL control interface. At the top is a navigation bar with icons for Home, Alarm, Settings, Profile, Network, Users, Schedule, Log out, and a Turn on button. Below the navigation bar is a header for the 'Alarm' menu, with a sub-header 'Manage alarms' and a device ID 'BM20P101126B'. The main area contains a search bar with a 'Search phrase' placeholder, 'From' and 'To' date pickers, a 'Clear search fields' button, and a 'Sort by' dropdown. A red alert bar displays the message '2017-02-10 16:43:33 Error: Alarm Max time external feeder' with a 'Confirm' button and a green checkmark. Below the alert bar are four buttons labeled '10', '25', '50', and '100'. At the bottom right is a green 'Confirm all' button.

Alarm

In the “Alarm” menu you can see current alarms and are able to confirm them. You can also view and search the alarm history.

The screenshot shows the ARITERM LOCAL control interface for the 'Alarm: Manage emails' menu. The navigation bar is identical to the previous screenshot. The header for the 'Alarm: Manage emails' menu shows the device ID 'BM20P101126B'. The main area contains a search bar with a 'Search' placeholder and the text 'Set alarm types for specific email address'. Below the search bar is the message 'No alarm emails!'. There is an 'Add new' button with an upward arrow. Below it is a text input field with the placeholder 'name@domain.com'. A list of alarm types is shown with checkboxes: 'warning' (unchecked), 'service' (checked), 'error' (unchecked), and 'pellets' (unchecked). At the bottom right is a green 'Add' button.

Alarm: Manage emails

In the “Alarm: Manage emails” menu you can add receivers of alarm emails and customize them to each address.

MENU STRUCTURE ARITERM LOCAL/PORTAL CONTROL

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Log out Turn on

Settings: Main BM20P101126B

Desired room temperature: 21

Stop temperature: 80

ON/OFF: OFF
ON: ☐

Factory reset all

Settings: Main

In the "Settings: Main" menu you are able to set the boiler start and stop temperatures (40-90 °C) , desired room temperature and set the burner in On/Off mode.

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Log out Turn on

Settings: Maintenance BM20P101126B

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: ☐

Settings: Maintenance

In the "Settings: 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)

Clear the Maintenance alarm by setting "Clear Maintenance alarm 1 or 2" to ON and click "Update".

After each cleaning of the burner you should set the "Reset all adjustment values" to ON and click "Update".

MENU STRUCTURE ARITERM LOCAL/PORTAL CONTROL

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Log out Turn on

Settings: Immersion heater BM20P101126B

Immersion heater stop temperature: 65

Immersion heater start/stop temperature difference: 10

Immersion heater backup mode (If the boiler is in Alarm mode the immersion heater will operate according to Stop temperature in Main menu): OFF

ON: ☐

Factory reset all

Settings: Immersion heater

In the "Settings: Immersion heater" menu you can set start and stop temperature of the immersion heater.

If "Immersion heater back-up mode" is set to ON the immersion heater will operate as back up according to the boiler temperatures in the "Settings: Main" menu, IF the boiler is in Alarm mode.

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Log out Turn on

Settings: Pellet storage BM20P101126B

Estimated pellet level (At refill, adjust the estimated pellet level) (kg): 0

Pellet storage Alarm level (Estimated remaining pellet) (kg): 0

External feeder Feeding rate (kg/h): 20

External feeder, forced operation (min): 0

Factory reset all

Settings: Pellet Storage

In the "Settings: Pellet storage" menu you can manually force feed the external feed screw as well as manage the "Estimated pellet level" used for alarms of low pellet level. Enter the "External feeder Feeding rate" and the boiler calculates and alarms at certain level.

MENU STRUCTURE ARITERM LOCAL/PORTAL CONTROL

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Log out Turn on

Settings: Tank mode BM20P101126B

Tank mode: OFF
ON: ☐

Tank pump start temperature: 65

65

Factory reset all

Settings: Tank mode

At "Settings: Tank mode" you can activate Tank mode, set "Boiler temperature limit" and "Tank pump start temperature".

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Log out Turn on

Profile BM20P101126B

Username
BM20P101126B

Serial number
BM20P101126B

Name
Nils

Surname
Nilsson

Email
nils@telia.se

Phone number
1231245

Password
Password

Language
English

Update

Profile

In the "Profile" menu you can edit your profile. To be able to edit your profile you must register an e-mail address.

NOTE! Remember to change the pre-set password used for first log in.

MENU STRUCTURE ARITERM LOCAL/PORTAL CONTROL

The screenshot shows the ARITERM LOCAL control interface with the 'Network' menu selected. The top navigation bar includes Home, Alarm, Settings, Profile, Network, Users, Schedule, Log out, and Turn on. The main content area has a header 'NETWORK' with a Wi-Fi icon and the device ID 'BM20P101126B'. Below this is a prompt 'Choose your network and enter password'. There are input fields for 'SSID' and 'Password'. A list of 'Available wlan' networks is shown, including '(enter manually)', 'BCPX8SSID', 'BM40100058BSSID', 'KMP-WL', 'R8D', 'R8DVPN', 'R9DVPN', and 'sollab95SSID'. At the bottom are two green buttons: 'Scan wlan' and 'Connect to wlan'.

Network

In "Network" menu you are able to scan and select local networks if to connect the boiler to internet, changing from Ariterm Local Control (using the boiler integrated AP) to Ariterm Portal Control.

More information at "Connecting to Ariterm web interface" under "Start-up, Start and Stop".

The screenshot shows the ARITERM LOCAL control interface with the 'Users' menu selected. The top navigation bar is the same as the Network menu. The main content area has a header 'Users' with the device ID 'BM20P101126B'. Below this is a search bar. A user entry is displayed with the ID 'BM20P101126B', Name 'Nils Nilsson', and Email 'nils@telia.se'. There is a small 'USER' button next to the email.

Users

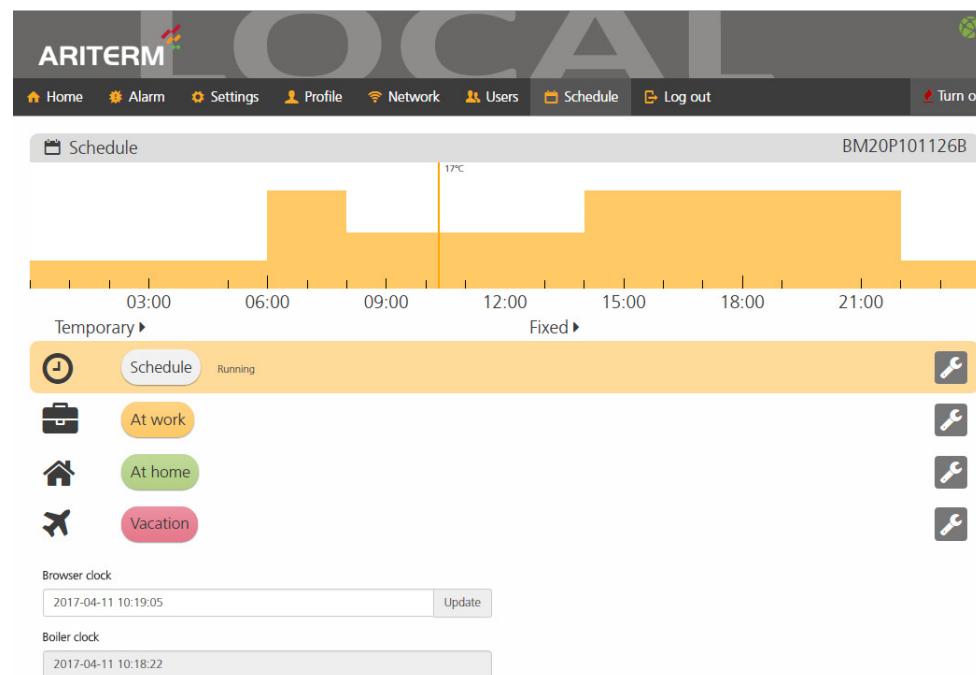
In the "User" menu you can view all users of the boiler.

MENU STRUCTURE ARITERM LOCAL/PORTAL CONTROL

The screenshot shows the 'Users: Create user' interface. At the top is a navigation bar with icons for Home, Alarm, Settings, Profile, Network, Users, Schedule, and Log out, along with a 'Turn on' button. Below the navigation bar is a header with a user icon, the text 'Users: Create user', and a device ID 'BM20P101126B'. The main area contains several input fields: 'Username' (with a dropdown showing '@BM20P101126B'), 'Name', 'Surname', 'Email', 'Phone number', 'Password', 'Repeat password', 'Language' (a dropdown menu), and 'Role' (a dropdown menu). A green 'Create' button is at the bottom.

Users: Create user

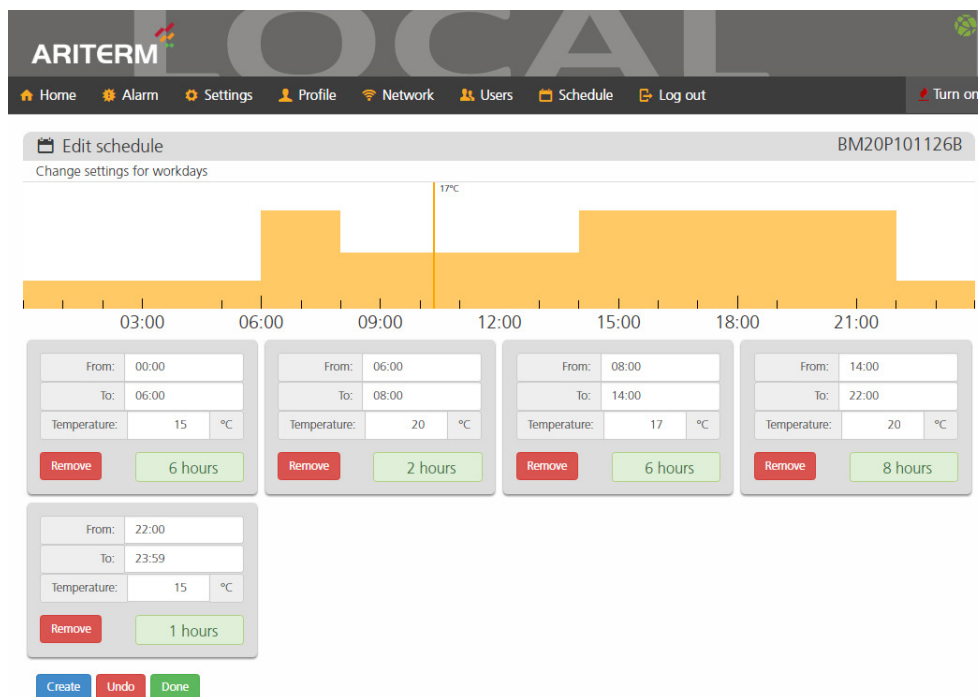
In the "Users: Create user" menu you can add new users. You are not able to add users in a higher user level than your own.



Schedule

In the "Schedule" menu you can see what profile - "Schedule", "Work", "Home" or "Vacation" - currently in operation. Each profile can be edited by clicking the Wrench icon. You activate any of the profiles simply by clicking them.

HEAT CIRCUIT SETTINGS ARITERM LOCAL/PORTAL CONTROL



Schedule (option): Work/Home

In "Work" and "Home" profiles you can set desired room temperatures during the day for days away from home "Work", or at home "Home". Profiles to be activated, either directly in "Schedule" menu or thru "Schedule" profile.

ARITERM LOCAL

Home Alarm Settings Profile Network Users Schedule Log out Turn on

Edit schedule BM20P101126B

Day	Work	Home
Weekday	Home	Home
Monday	Work	Home
Tuesday	Work	Home
Wednesday	Work	Home
Thursday	Work	Home
Friday	Work	Home
Saturday	Work	Home
Sunday	Work	Home

Undo Done

Schedule (option): Schedule

In the "Schedule" profile you edit the weekly heating schedule defining what weekdays the boiler is to operate according to "Work" or "Home" profile.

HEAT CIRCUIT SETTINGS AND CONNECTIONS

CRB122 Shunt motor unit with Arterm Local/Portal Control

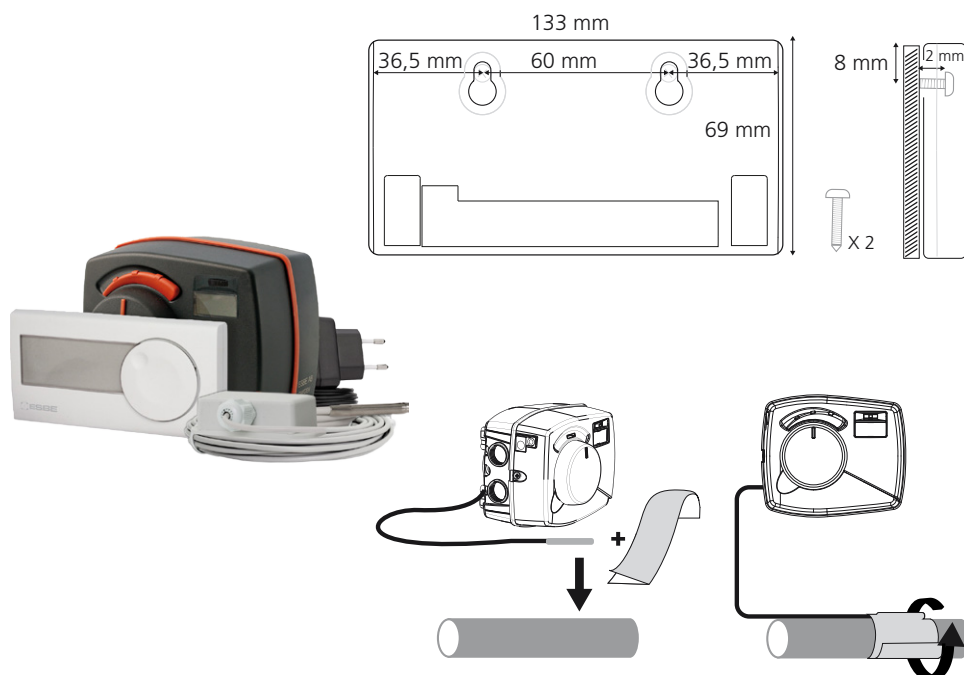
For the first heating circuit the CRB122 unit operates together with the Arterm Local/Portal Control. Install the CRB122 unit. Connect the CRB122 unit and the outdoor sensor on the same connectors marked In/Outdoor sensor (A).

NOTE! When the CRB122 unit is installed at the first heating circuit, operating together with the boiler control, the indoor display of the CRB unit is only used to show and adjust the existing indoor temperature. Any other adjustments, settings, scheduling etc must be made in the Arterm Local/Portal Control.

CRB122 Shunt motor unit with additional heating circuits

For additional heating circuits the CRB122 unit is operated as a separate system/control. Install the CRB122 unit by following the supplied manual.

NOTE! If placing the CRB122 Shunt motor unit elsewhere than direct at the boiler, make sure that the turning direction of the shunt motor is correct.



PWM pump

Connect the PWM regulation cable to the fast connectors, blue on blue and brown on brown. (B)

NOTE! 230V supply to the pump is to be connected separately.

Alarm relay

Relay output normally open. (C)

Buffer tank sensors

Connect the Tank top and bottom sensors to the fast connectors marked accordingly. (D)

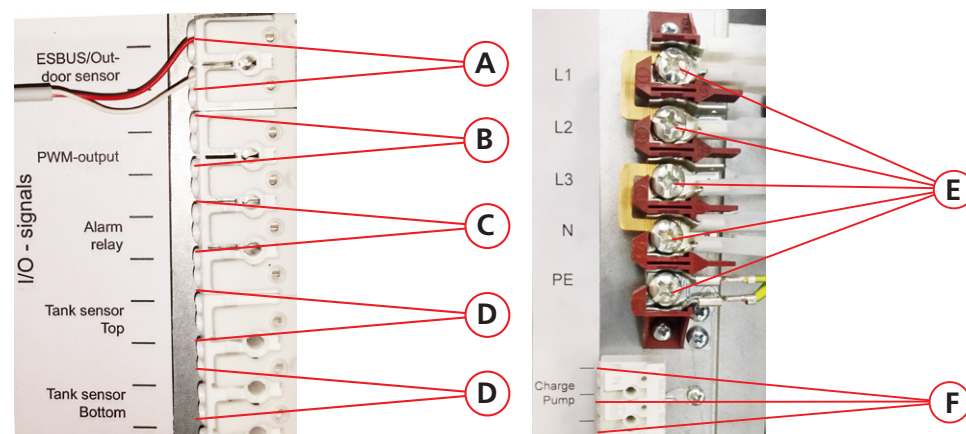
Main supply

Connect the main supply L1, L2, L3, N and PE to the connectors marked accordingly. (E)

Charge pump

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

NOTE! In order to achieve best possible combustion and large DHW capacity, our strongest recommendation is to have the internal DHW circulation pump switched on during summer/low output seasons.



HEAT CIRCUIT SETTINGS AND CONNECTIONS

Tank mode

As an alternative the boiler can be operated with buffer tank. Two tank sensors and a charge pump must then be connected to the boiler. The charge pump is to be connected to fast connectors labeled Charge pump (Marked F on page 20) and the tank sensor to connectors labeled Tank sensor top/bottom (Marked D on page 20).

Tank mode is activated at "Tank mode" in the "Settings: Tank mode" menu.

When Tank mode is activated the burner will only operate by Cold starts. To assure an as efficient operation as possible, the boiler should operate in long operation intervals and during standby be disconnected from the heating circuit. Instead of using the standard delivery included TM-20 valve at top of the boiler, use a VRG-valve on the heat circuit side of the buffer tank. Mount the standard delivery included shunt motor to the VRG-valve. Connect the shunt motor to the boiler with a 3.5 mm phone plug extension cable. Connect the external power supply to the motor.

NOTE! Remember to set the actual valve turning direction at "Shunt motor turning direction" in the "Settings: Heating circuit" menu. Blank the shunt mounting flange at top of the boiler with a Blanking plate.

The buffer tank is connected from the top of the boiler to the top of the tank, and from the lower part of the tank to the back side of the boiler. (If solar coil is used the lower connection of the tank to the boiler should be above the highest connection of the solar coil.)

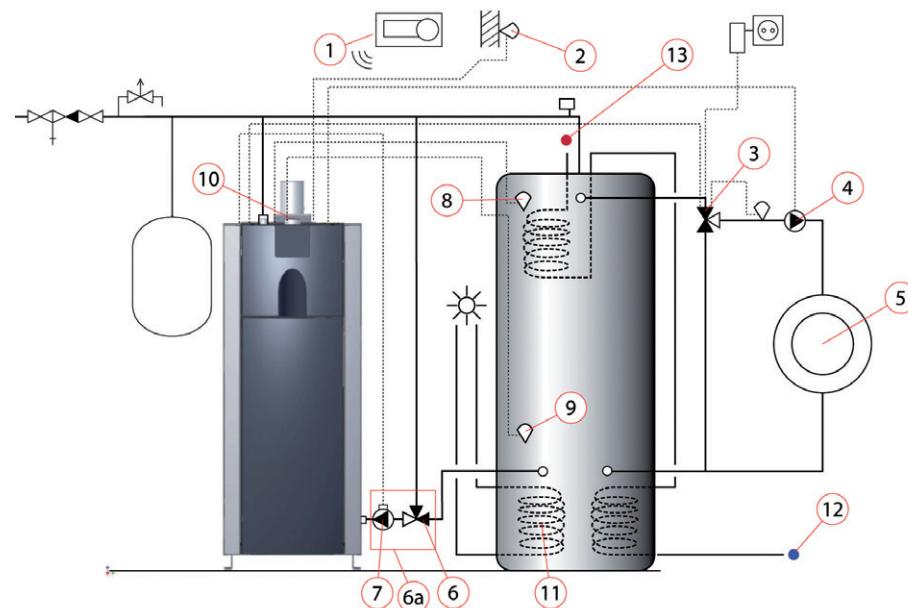
In tank mode the start temperature is the temperature of the top sensor of the buffer tank, read at "Buffer tank top temperature" in the "Home" menu, set at "Start temperature (Degrees below Stop temperature)" in the "Settings: Main" menu. The stop temperature is the temperature of the bottom sensor of the buffer tank, read at "Buffer tank bottom temperature" in the "Home" menu, set at "Stop temperature" in the "Settings: Main" menu.

Now the boiler will start when the top sensor reads lower temperature than the set Start temperature. 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. It will run until the boiler temperature has dropped 3 degrees below the set start temperature of the charge pump. When the bottom sensor reads a higher temperature than set Stop temperature the boiler will stop and eventually, when the temperature drops, the charge pump will stop. The boiler will cool down without affecting the heating circuit. The shunt motor unit controls the flow water temperature to the heating circuit, according to read indoor- and outdoor temperatures. The boiler controls the circulation pump speed according to indoor temperature.

NOTE! The return temperature shall be regulated, with a thermic valve, to at least 60 °C.

(If the buffer tank is equipped with solar coil, the coil will be the primary heating source of the tank. When the solar contribution is not sufficient the temperature will drop in the upper part of the tank and the boiler will start. No extra control interface needed.)

NOTE! If placing the CRB122 Shunt motor unit elsewhere than direct at the boiler, make sure that the turning direction of the shunt motor is correct.



1. Indoor display unit (art.nr 4319), wireless communication with Shunt motor unit (3)
2. Outdoor sensor, 2-wire cable connected to boiler on ESBUS / Outdoor sensor terminal block
3. Shunt motor unit with flow water sensor and shunt valve (e.g. VRG), pipe connected instead of TM20-valve at mounting flange (10).
4. Circulation pump (art.nr 4323). Connected to 230 VAC and PWM-control on PWM-control terminal block in the boiler.
5. Heating circuit.
- 6a. LTC buffer tank charging device (art.nr 4318). (Alternatively: 6 + 7)
6. Thermic valve, adjusted to get warmer return water than 65 °C. (art.nr 4324)
7. Charge pump (art.nr 4323), connected in the boiler on Charge pump terminal block.
8. Buffer tank top sensor connected in the boiler on Tank sensor Top terminal block.
9. Buffer tank bottom sensor connected in the boiler on Tank sensor Bottom terminal block.
10. Shunt valve (TM20) mounting flange. To be blocked with blanking plate (art.nr 5801)
11. Solar coil.
12. DHW cold inlet from mixing valve.
13. DHW warm outlet to mixing valve.

ALARMS AND TROUBLESHOOTING

ALARM MESSAGE	CAUSE	ACTION
Alarm Ignition failed	The boiler didn't ignite during cold start.	Pellets haven't reach up to the ignition hole in the burner cup.
Alarm High power mode	No flame during High power mode.	Control and/or clean the flame sensor.
Alarm 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.
Alarm Max time external feeder	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.
Alarm Max time internal feeder	The internal feeder has been operating longer than the maximum time.	Control the level sensors in the burner.
Alarm Ignition element broken	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 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.
Alarm Low SD card memory left	The SD card is nearly full.	Contact your nearest Arterm dealer.
Alarm No SD card memory left	The SD card is full.	Contact your nearest Arterm dealer.
Alarm 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.
Alarm Maintenance time 2 exceeded	The total operating time of the external auger is longer than the maximum time alarm 2 settings.	Clear the maintenance alarm 2 in the maintenance menu.
Alarm Oxygen sensor failure	The oxygen sensor is faulty.	Contact your nearest Arterm dealer.
Alarm Pellet storage 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.
Alarm Boiler temperature limit reached	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 Arterm AB refers to our local Distributor.

■ Decommissioning

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

■ MOST COMMON SPARE PARTS

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
5425	Oil bronze bearing 12/18x8-24x3
5339	Oil bronze bearing 18/24x12-30x3
5033	Ignition element 450W
5360 + 5361	Level sensors (transmitter and receiver)
5359	Optical sensor

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
6104	Raspberry Pi
5820	ESBE ARA661 shunt motor
5062	Motor aut. convection cleaning
6103	Power card CC14
6168	Outdoor temperature sensor
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 12/18x8-24x3
5339	Oil bronze bearing 18/24x12-30x3
5415	Ignition element 450W
5360 + 5361	Level sensors (transmitter and receiver)
5359	Optical sensor

SERVICE AND MAINTENANCE

The boiler and burner will function for a long time if the following instructions are observed:

- The boiler must be kept in a dry environment
- The boiler and burner only operates within the defined adjustment values.
- The boiler/burner is cleaned when the temperature of flue gases has increased by 20-30 °C compared to a clean boiler.
- The burner head is regularly inspected and cleaned when necessary. Remove any sintering and, if necessary, scrape the air gaps open.
- Damaged or worn parts are replaced with new ones in due time
- It is made sure that condense water or pipe leaks can not damage the boiler.

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

Boiler cleaning

Turn the burner off at least one hour before maintenance work.

Clean the furnace from the burner opening and the convection part from the hatch on the top of the boiler. Clean all convection parts by using the rod and brushes supplied with the boiler (see the next page). Empty the ash box.

Alarm interval for ash removal and boiler cleaning can be set in the "Settings: Maintenance" menu on basis of experience.

Burner cleaning

Turn the burner off at least one hour before maintenance work. Disconnect and pull the burner out of the boiler, check the burner head and carry out the necessary cleaning. Remove the ash. Check whether hardened ash (sintering) has accumulated in the burner head. To remove the sintering, use a screwdriver or similar. Scrape the air gaps of the burner head open. Check whether ash has stuck to the opening of the flame detection pipe, and clean if needed.

Regularly - e.g. in connection with ash removal and 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). Such particles must absolutely be removed from the burner head preventing the primary ring to become overheated and get damaged.

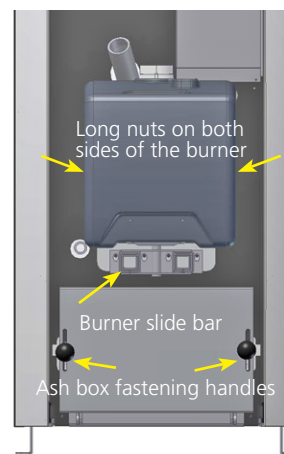
Sintering is often due to impurities in the fuel. If this is the case, you should immediately file a complaint with the fuel supplier. Pay special attention to pellet quality when you receive a new delivery or when you change suppliers.

Check every 1-2 years

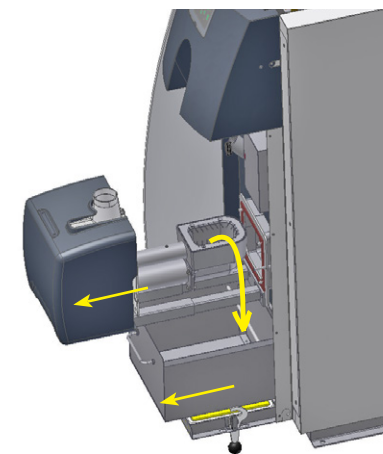
Dismount the burner primary air ring, which is fastened by means of four screws and nuts. Clean the air vents of the primary ring and remove all ash. At the same time, check the primary air pipe and clean it of ash. The burn cup should, when re-assembled, be sealed with fireproof sealant.

Detach the protective casing of the burner. Check the chain wheels and chains for wear and if 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.

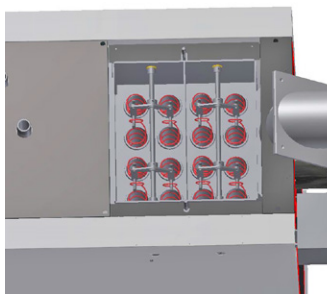


Burner cleaning is started by unfastening the long nuts on both sides of the burner and by pulling the burner out of the boiler. Make sure that the burner wires do not get damaged.



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

■ BOILER CLEANING (pictures show Biomatic+ 40i)



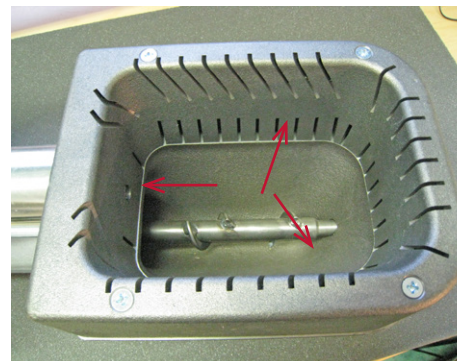
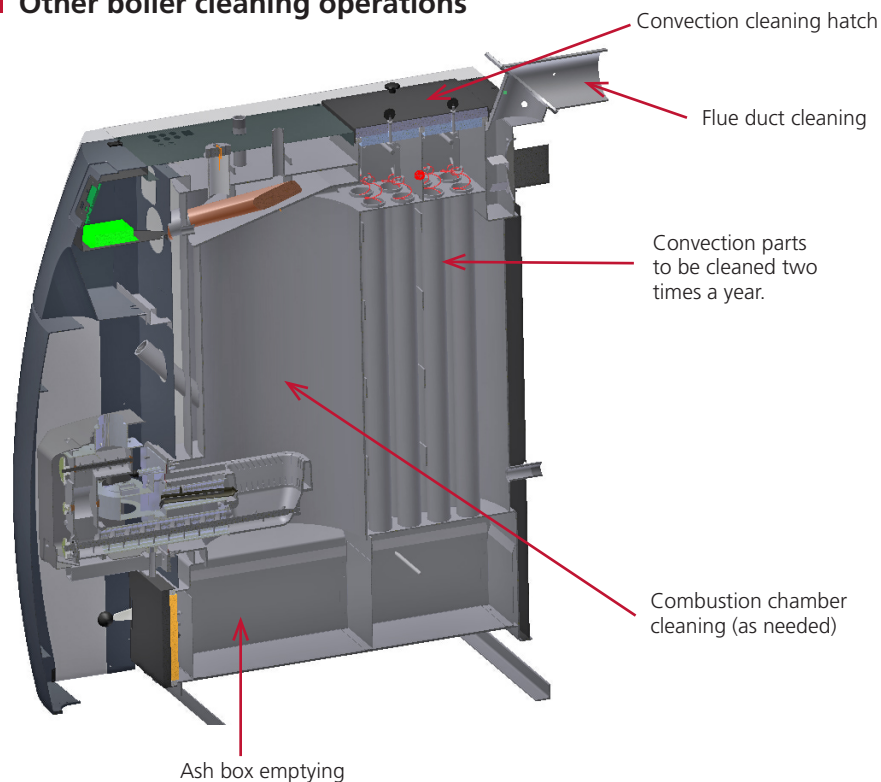
■ Automatic convection cleaning system

The boiler is equipped with automatic convection cleaning system automatically sweeping the convection pipes at certain intervals. Additionally the convection channels must be cleaned (swept) manually two times a year.

The cleaning is done through the convection cleaning hatch on the top of the boiler. The automatic convection cleaning system must be removed before manual sweeping takes place.

NOTE! Disconnect the main power before maintenance work.

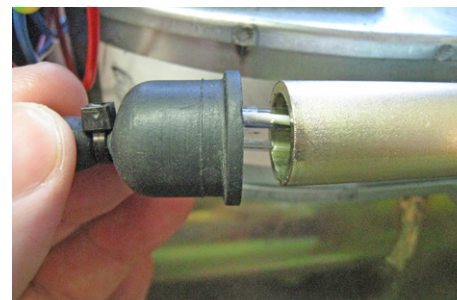
■ Other boiler cleaning operations



Remove all ash and possible sintering from the burner head. The primary air intakes and the ignition element opening must be open.



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



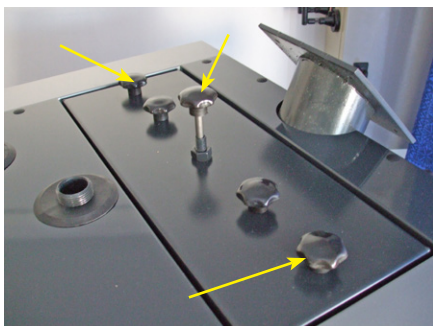
Pull the flame detector out of its pipe with caution and hold on to the rubber lid.



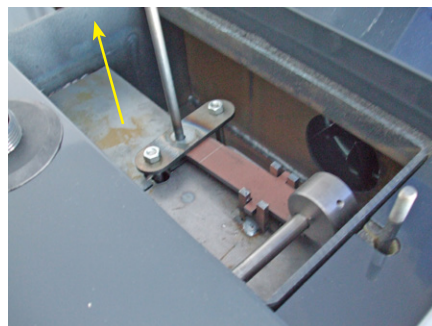
Clean the flame detector.

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.

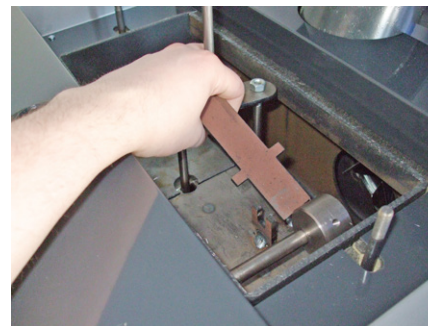
■ DISSASSEMBLY AND CLEANING OF THE AUTOMATIC CONVECTION CLEANING SYSTEM OF BIOMATIC+ 20*i*



1. Unscrew the outer and center star knobs and remove the Convection cleaning hatch.



2. Raise the Turbulator lift.



3. Remove the Turbulator rocker to the side.



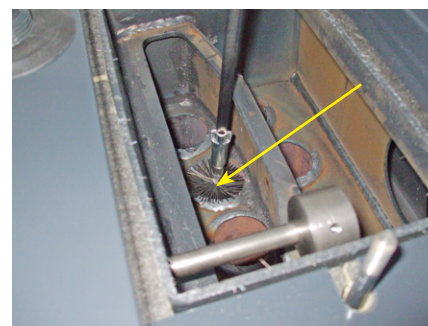
4. Raise the Turbulator lift, remove the Turbulator cover plate.



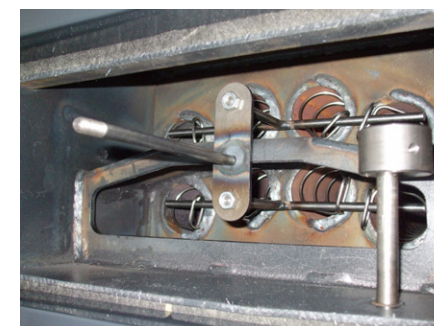
5. Remove the second Turbulator cover plate.



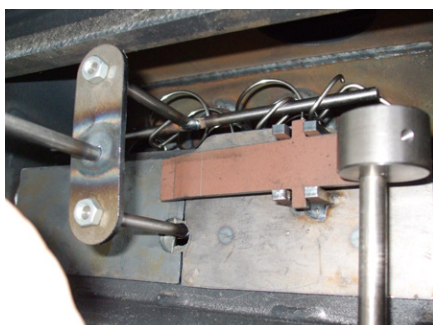
6. Remove the Turbulator lift and the Turbulator springs.



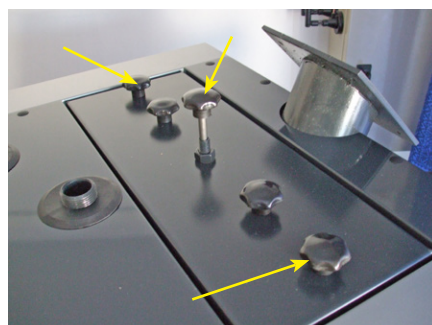
7. Sweep the convection pipe surface with a brush. Remove any ash. Make sure to insert the brush all the way down the convection pipes. Repeat a couple of times.



8. Replace the Turbulator lift and Turbulator springs.

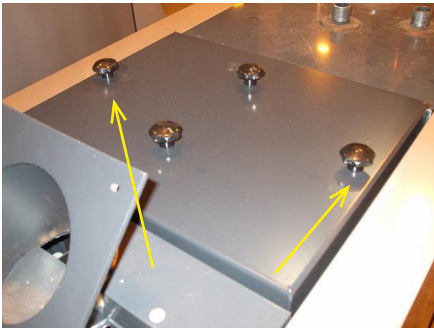


9. Replace the Turbulator cover plates and the Turbulator rocker.



10. Replace the Convection cleaning hatch and fasten the start knobs.

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



1. Unscrew the outer star knobs and remove the Convection cleaning hatch.



2. Convection part.



3. Remove the Turbulator springs.



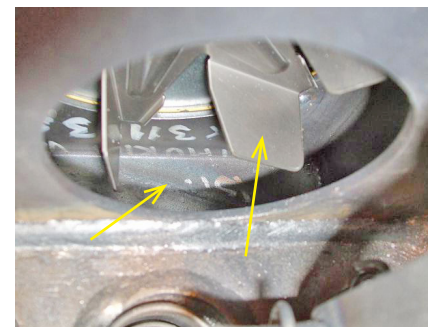
4. Turbulator springs removed.



5. Sweep the convection pipe surface with a brush. Remove any ash. Make sure to insert the brush all the way down the convection pipes. Repeat a couple of times.



6. Replace the Turbulator springs.



7. Clean the wings of the Flu gas fan and remove ash from the fan box, e.g. with an ash vacuum cleaner.



8. Replace the Convection cleaning hatch and fasten the start 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 lignin of the wood.

The pellet diameter normally range from 6 to 8 mm and the length from 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 6 mm through to 8 mm. The burner is factory set for 6 mm wood pellet.

Most of the disturbances that occur as a result of bad fuel quality are caused by incorrect handling and intermediate storage of the pellets prior to that it is delivered to the customer. Large contents of fine materials in the pellet supply 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

Optional to the Biomatic+ 20i/40i is a close coupled 450l storage. Due to the internal feeding system of the Biomatic+ 20i/40i it is also possible feed the direct from a bulk storage.

The storage can be placed either inside or in a separate building outside the house. Generally, the shorter the transport distance from the storage to the burner, the better the feeding system will function. Local building and fire regulations must be taken into consideration when designing the boiler room and the storage area.

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

Pellet delivery methods is recommended to be taken into account when deciding on storage size. In general, pellets can be obtained in small bags (app. 20 kg), large bags (app. 500 kg) or by bulk delivery, blown into the storage. One ton of pellet requires about 1.6 cubic meter of storage space.

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

■ Aritem PF450 storage

The lightweight Aritem PF450 storage is an excellent "weekly storage". The capacity of the storage is 450 liters and it's filled by an integrated grid at the top. The Aritem PF450 may also be used as intermediate storage.

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

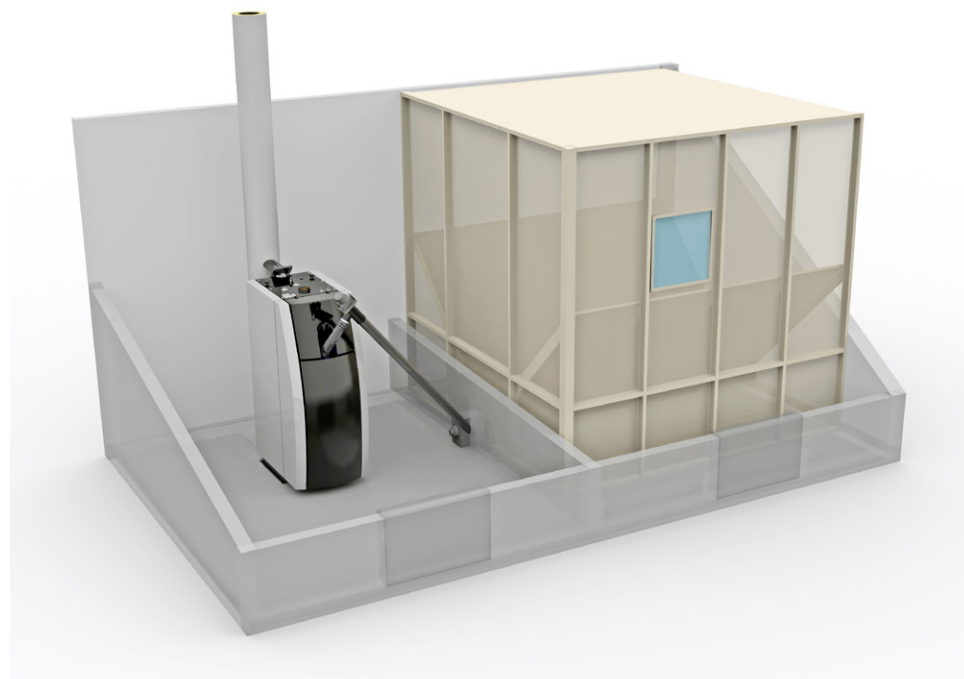
■ Aritem Depo

Aritem Depo is a patented pellet silo feed chute system that effectively, reliably and quietly feeds pellets from the silo. Aritem Depo is designed to be used in combination with Aritem Feedo to secure a reliable and quiet feeding of the boiler.

■ Aritem Feedo

Aritem Feedo is a flexible pellet feeding system for reliable and quiet feeding, designed to work with pellet silo feed chute Aritem Depo

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



■ 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).

In England appliances are exempted by publication on a list by the Secretary of State in accordance with changes made to sections 20 and 21 of the Clean Air Act 1993 by section 15 of the Deregulation Act 2015. Similarly in Scotland appliances are exempted by publication on a list by Scottish Ministers under section 50 of the Regulatory Reform (Scotland) Act 2014.

In Wales and Northern Ireland these are authorised by regulations made by Welsh Ministers and by the Department of the Environment respectively. Further information on the requirements of the Clean Air Act can be found here:
<https://www.gov.uk/smoke-control-area-rules>

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 Arterm Biomatic +20*i* with pellet burner BeQuem 20, Arterm Biomatic+ 20*i* Light with pellet burner BeQuem 20, Arterm Biomatic +20*i* Ultra-Light with pellet burner BeQuem 20, Arterm Biomatic +40*i* with pellet burner BeQuem 40, Arterm Biomatic+ 40*i* Light with pellet burner BeQuem 40 and Arterm Biomatic +40*i* Ultra-Light with pellet burner BeQuem 40 have been recommended for exemption under the Clean Air Act when burning wood pellets and operated in accordance with these instructions.

■ 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





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ORGANISATION
CERTIFIED BY

Inspecta

ISO 9001
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