ARITERM

INSTALLATION and OPERATING INSTRUCTIONS

- Bionet+ 12 (UB)

TABLE OF CONTENTS

Ariterm reserves the right to make changes to components and specifications without prior notice.

GENERAL INFORMATION

Important information

- Keep this instruction manual to hand for future use.
- Read the instruction manual before commissioning the pellet boiler.
- The power of the boiler is calculated based on the maximum quantity of pellets that can be fed in and burnt in the crucible in 1 hour (with respect to firing with normal wood pellets at the average of the fuel specification).
- Follow the instructions in the instruction manual carefully and carry out the recommended care and maintenance.

Application to Planning Authority

NOTE! At each change of a heating installation, the Local Planning Authority must be contacted and a "Building application" made.

Inspection

Heating installations installed after 01/01/1983 must be inspected and approved by a duly authorised inspector. The Local Planning Authority in the municipality can provide information for how this is to be done.

Sweeping

According to the Fire Protection Act, the chimney must be swept regularly. This is taken care of by the chimney sweep in your area. The boiler should be swept in such a way that good operating economy is maintained (see "Maintenance"). Prepare for sweeping by turning off the boiler/burner at least a couple of hours before cleaning in order to reduce the quantity of glowing embers.

Service agreement

Ariterm recommends entering into a service agreement. For more information, contact your Ariterm dealer.
Ariterm recommends that when necessary wear parts are always replaced by an authorised service technician from your Ariterm dealer. Ariterm's dealers can provide the requisite spare parts and during replacement will ensure that the installation's replaced parts are tuned and that analyses are made of the smoke gas.

DIMENSIONS/SCOPE OF DELIVERY

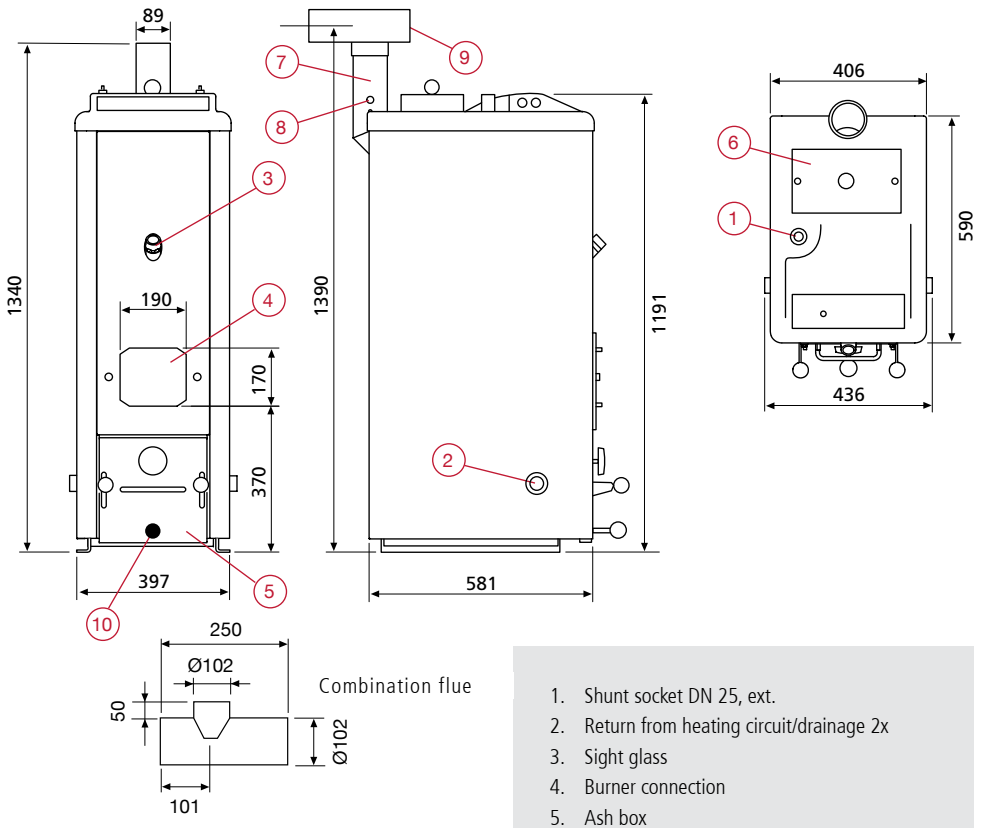
Standard delivery

- Soot brush 40x80x110 (10040) and spring steel shaft 1.25m (3492)
- Soot brush for combustion chamber and shaft (angled)
- Glass fibre cord Ø 6 mm (1502)
- Horizontal flue
- Connection piece for flue Ø 114 x 2.5 x 180
- Flue
- Boiler sensor and smoke gas sensor for BeQuems (installed)
- Quick release for BeQuem

Accessories

- Pellet burner Ariterm BeQuem 12
- Pellet burner Ariterm BeQuem 20, **NOTE!** Maximum boiler output 12 kW
- Shunt connection (part no. 4259)
- Shunt valve Esbe TM20 (part no. 5700)
- Sensor kit for solar tank control (part no. 2454) with tank sensor, decal and connection cable (for old BeQuem)
- Draft regulator TIGEX with flange (part no. 1201)

Always consult the chimney sweep about the boiler arrangement.



1. Shunt socket DN 25, ext.
2. Return from heating circuit/drainage 2x
3. Sight glass
4. Burner connection
5. Ash box
6. Soot hatch
7. Flue
8. Outlet for smoke gas analysis/smoke gas temp.
9. Combination flue
10. Ash compression

TECHNICAL SPECIFICATION		
Performance	Output with pellets	12 kW
Dimensions	Dimensions (width x depth x height) Weight without water Water volume	436 x 581 x 1340 mm 160 kg 50 l
Design and installation values	Operating pressure: boiler Operating temperature Rec. draught in fire box	0.5 – 1.5 bar max 120 °C 5-15 Pa
Connections	Expansion Drain Flue connection	DN 25 ext. DN 15 int. Ø 102 mm

Overheat protection with reset button

In the submersible tube for overheat protection there is also space for an operating thermostat. The submersible tube is located to the left under the control panel. Before resetting, check that there is water in the boiler and that the thermostat is functioning. If the overheat protection cannot be reset – contact an authorised installer.

FUNCTION DESCRIPTION

The Ariterm Bionet pellet boiler is specially constructed for firing with pellets, which among other things means that it has a vertical convention system that reduces deposits so that the boiler can maintain a high degree of efficiency between service intervals. The comfort, environmental performance and efficiency are the best possible in order to meet requirements for easy handling and effective firing with pellets. The need for service depends on the quality of the pellets and the achieved output (fuel consumption) and varies throughout the year.

The capacious 20-litre ash box is easy to pull out and empty.
The Bionet consists of a fuel space with associated flue, which is surrounded by an external jacket that holds 50 litres of water. During firing with pellets, the heat from the burner is transferred directly to the boiler water. The heat from the boiler water can be transferred as hot water, for example directly to an accumulator tank. The heat can also be transferred to the heating system via a shunt connection (accessory).

Versatile additional heating

The Ariterm Bionet is suitable for adapting to an existing waterborne heating system. The Bionet is an easy to maintain, convenient and economic choice in combination with modern oil boilers, wood-fired boilers, heat pumps or solar energy systems. Its 12 kW of power is sufficient for most domestic systems. For tap water, the Bionet can be coupled to a separate hot water accumulator prepared for solar heating. The Ariterm Bionet's compact format makes installation possible even in cramped spaces.

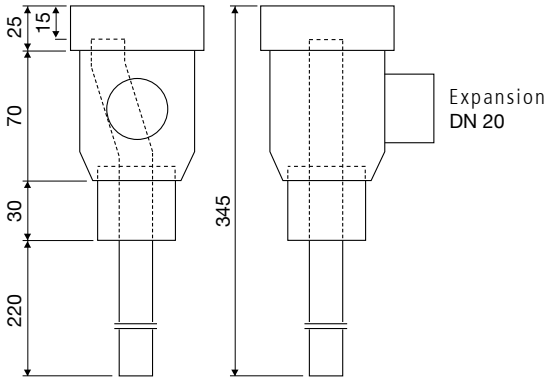
Shunt connection

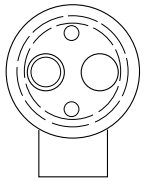
In the shunt valve, the boiler water and return water are mixed so the correct temperature is obtained in the radiator system in relation to the outdoor temperature. This mixing can be done manually or automatically using control equipment (accessory) in order to obtain the best heating economy.

Sweeping

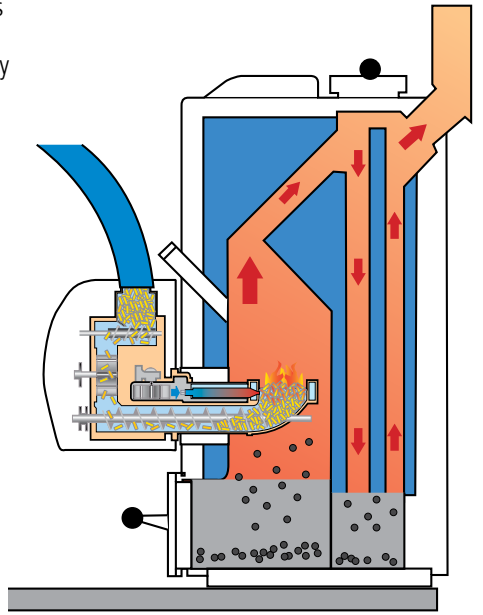
The boiler is swept through the fire chamber hatch and the cleaning hatch on the top. Convection surfaces are cleaned with a soot brush. Pull out the burner and brush the combustion chamber's walls.

NOTE! Always take care with ash, as it can be red hot. Ash must be stored in a fireproof container.





Shunt connection for shunt valve ESBE TM20 is available as an accessory for assembly on the supply connection.



Cross-section Bionet 12 with installed pellet burner Ariterm BeQuem 12D.

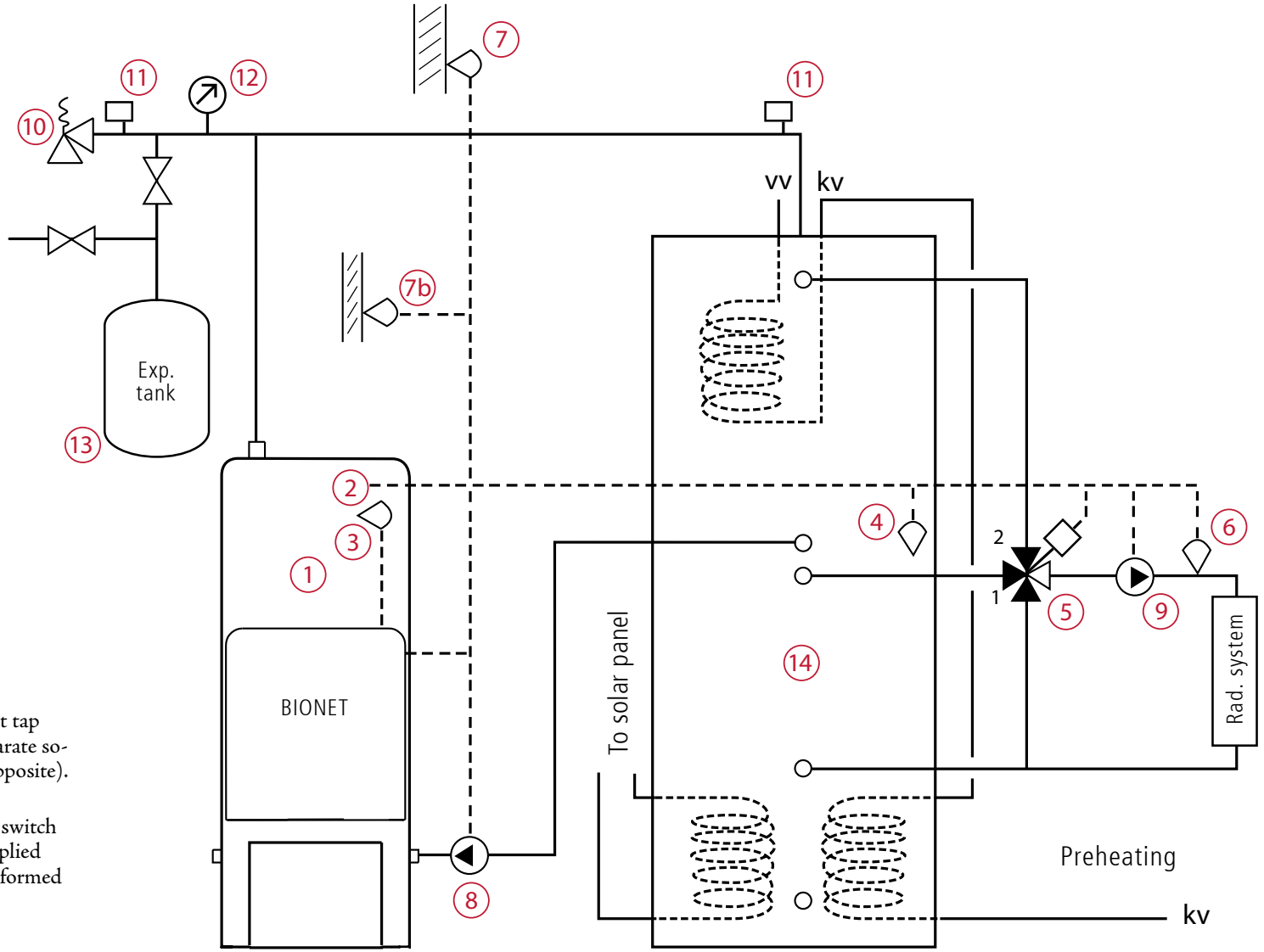
PHS - INSTALLATION

Example of installation, Bionet with solar heating tank

1. Boiler
2. Expansion card
3. Boiler sensor
4. Tank sensor
5. Bivalent shunt
6. Flow line sensor
7. Outdoor sensor

7b Room sensor

8. Charge pump
9. Radiator pump
10. Safety valve
11. Vent
12. Manometer
13. Expansion tank
14. Accumulator tank



Hot tap water

Bionet does not have any inbuilt function for hot tap water. The water is heated, for example, in a separate solar heating tank or equivalent (see illustration opposite).

NOTE! Before carrying out work on the boiler, switch off at the mains switches so the boiler is not supplied with power. Work on the boiler may only be performed by a qualified electrician.

INSTALLATION

The construction dimension of the Bionet makes it very easy to install. The pipe connections are located on the boiler's top, on the right/left side respectively. The boiler must be set up and installed according to the applicable Building Standards. The minimum distance from the front of the boiler (including burner) is 1000 mm. The boiler must stand vertically on the floor. A certain amount of adjustment can be made for uneven floors using the bottom bolts that must be assembled in the bottom plate (supplied with boiler).

The duct for the air supply to the boiler room must have an area that is at least equal to the area of the flues. The boiler must be installed in such a way that variations in the draught conditions do not affect the burner's performance. For example, this can be done by installing a draught inhibitor.

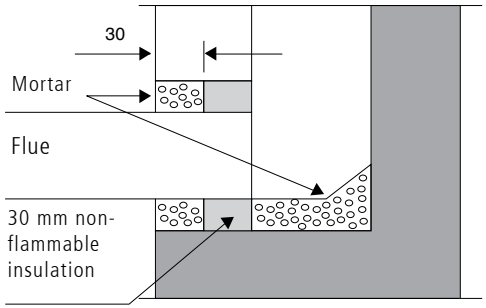
Installation chimney

The installation of the flue in the chimney should be done according to the illustration below. If the installation is performed in this way, soot is prevented from leaking when sweeping the chimney. Height for making the hole for the flue as per dimensions diagram on page 3. Flue connection and combustion air inlet. Using the combination flue that is available for the boiler, connection can be made both upwards and to the rear. Suitable sealant is Pannkitt. Recommended smoke gas requirements: a brick chimney lined with an approx. Ø 100 mm acid-proof thin wall pipe or an acid-proof element chimney with Ø 100-120 mm.

The height of the flue is dimensioned according to the building's needs. Condensation precipitation, if any, should be checked by ocular inspection of the chimney's upper section under various weather conditions. If condensation runs out of the flue, a condensation tank must be installed in the bottom of the chimney to drain the condensed water. The combustion air inlet must not be covered.

NOTE! An application must be made to the chimney sweep for inspection of the flue.

WARNING!
The boiler has low smoke gas temperatures that u
certain circumstances can lead to condensation of
gases.



Installing into the chimney

PHS - INSTALLATION

PSH-installation must be performed according to applicable hot water standards and the Swedish National Board of Housing's Regulations for New Buildings. Safety equipment must be installed according to the applicable Regulations for New Buildings as well as heating and hot water standards. If a closed expansion tank is used, a safety valve (approved by the Swedish Worker Protection Board), manometer and venting valve must be installed. The safety valve must be installed so its connection to the highest point of the boiler cannot be closed. The connection must run in an unbroken rise to the safety valve.

Radiator system and expansion tank

The system must be refilled with all valves in the open position and the external circulation pump turned off. The system is carefully deaerated during refilling. When the installation has been in operation for a couple of days, venting and refilling must be repeated.

NOTE! See special instruction for refilling with water.
The expansion tank's volume is selected in the following way:
Open system:
5% of the water volume in the heating system.
Closed system:
The tank's volume should be extracted from the manufacturer's instructions for closed tanks.

In the following table, examples are shown of suitable expansion tanks for closed systems.

System volume	Opening pressure	Pre-pressure	Tank volume	
litres*	bar	bar	70°C	90°C
500	1.5	0.5	35	80
1000	1.5	0.5	80	140

An open system with 500 litres water volume requires at least a 35-litre expansion tank and for a 1500 litre system volume, an 80-litre expansion tank is needed.
* System volume = boiler volume + storage tanks + pipe volume + radiator volume

PHS - INSTALLATION

Planning and installation work

The installation's planning and installation work must be carried out in a professional manner paying attention to general and local regulations and ordinances. The max. working pressure is 1.5 bar.

Before the installation is brought into use and always at the start of the firing season, the following checks must be made:

- that the heating system is filled with water and deaerated
- that the circulation pump is running
- that the system's valves are open
- that any control and safety automation is functioning
- that the chimney has the necessary draught and that the fresh air ventilation is open.

Inspection

Heating installations installed after 01/01/1983 must be inspected and approved by a duly authorised inspector. The Local Planning Authority in the municipality can provide information for how this is to be done.

Sweeping

According to the Fire Protection Act, the chimney must be swept regularly. This is taken care of by the chimney sweep in your area. The boiler should be swept in such a way that good operating economy is maintained (see "Maintenance").
NOTE! Make sure the power is turned off to the boiler before removing the cover over the burner.

Safety valve

If a closed expansion tank is installed in the radiator system, the safety valve has to be checked 4 times/year. Activate the valve by pressing or turning the regulator and then checking that there is water in the drainpipe that runs from the valve to the drain.

Boiler temperature

The higher the boiler temperature is set the better the hot water capacity from the separate water heater (recommended setting = 80˚C).
The boiler temperature must not be set so low that condensation forms in the boiler.

REFILLING WITH WATER

Before connecting the heat, the heating system must be filled with water.
The system is refilled as follows:

1. All shut-off valves are opened, even the shunt valve. The pump must be switched off.
2. Refilling boiler and radiators with water. Venting is done on the radiators.
3. When the system is completely filled, the circulation pump can be started and heating starts.
4. When the water in the boiler reaches the set operating temperature, the pump should be switched off and the radiators should be vented again. This should be repeated several times.

Bear in mind that there is a lot of air in mains water. The volume can amount to approx. 10% so deaeration can take time – especially for larger volumes. Closed systems must be refilled so the manometer shows the desired system pressure – distance from the manometer to the highest placed radiator in metres x 0.1, which gives the system temperature in bar. Set the manometer's red indicator to the same value as the large indicator.

ELECTRICAL INSTALLATION

Boiler

The boiler is provided with overheat protection. The power supply (230 V, 1~, 50 Hz) to the boiler is run via a fuse (not enclosed). See the wiring diagram. Only authorised electrical installers may carry out the boiler's electrical installation.

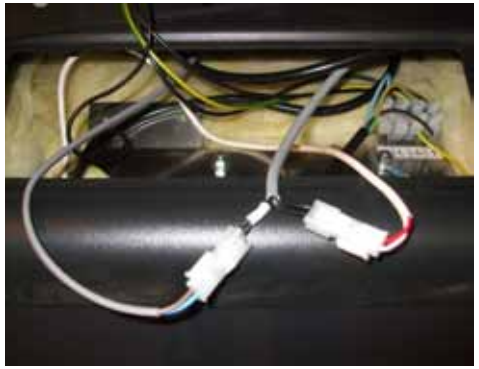
The boiler is equipped from the factory with a boiler sensor, smoke gas sensor and power supply to the BeQuem burner. The power supply goes via the overheat protection.

BeQuem installation

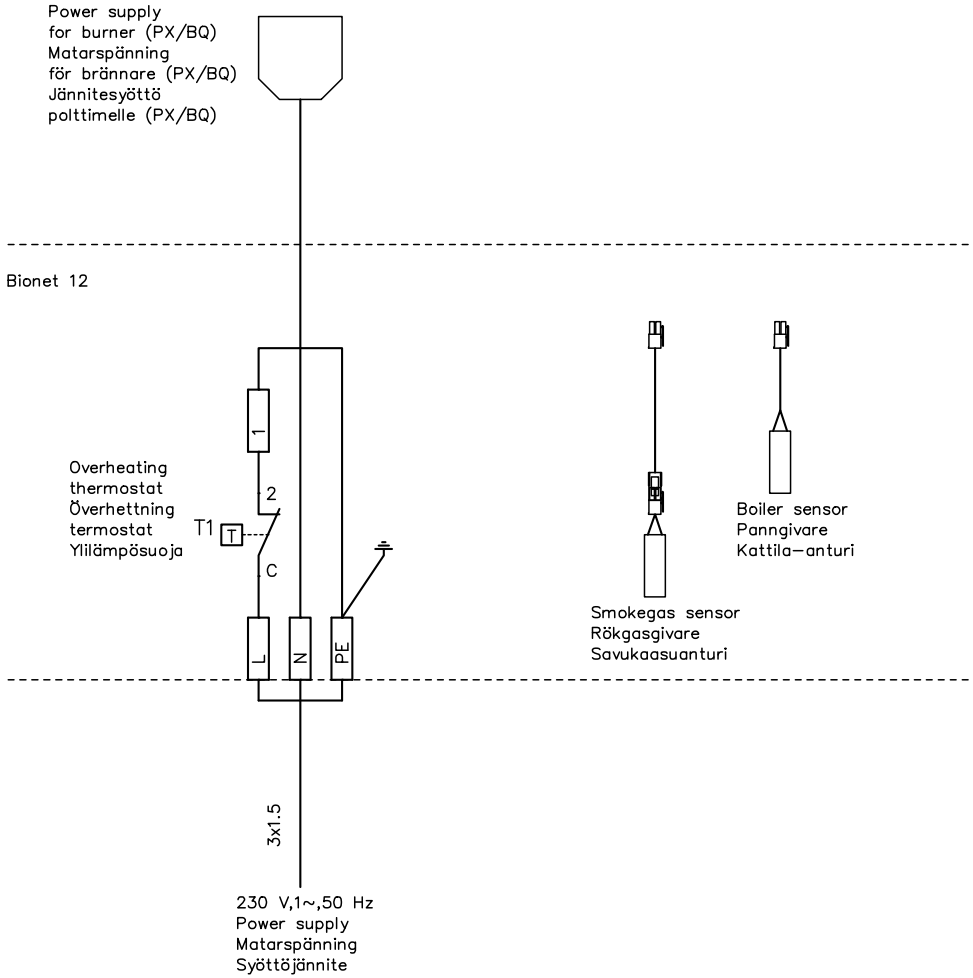
Install the burner in the boiler. Connect the enclosed boiler sensor and smoke gas sensor to the contacts in the boiler. Make sure the sensors are connected correctly. Connect the burner's supply cable.

Connect the power supply to the screw terminals L, N, and PE.

The burner's supply cable is installed from the factory. Install the BeQuem burner's sensor cable in the panel.



Connect cables to the smoke gas sensor (marked with white identification) and boiler sensor.



MAINTENANCE AND CARE

Boiler cleaning

All combustion with solid fuels, even if it takes place in automated form, normally demands a little more maintenance and care compared to firing with oil. In the Bionet, the care required has been minimised, among other things by a well thought-out design and the large ash box, with a 20 litre capacity. The ash is emptied as required. The boiler's convection components are cleaned when the smoke gas temperature has risen 50 degrees compared to when the boiler is newly swept.

The following must be done during cleaning (NOTE! Turn off the power to the boiler).

- Turn off the burner a couple of hours before service.
- Lift the soot hatch on the top and clean the tubes.
- Remove the securing bolts from the burner and undo the hose and electrical connections.
- Pull out the burner and brush the combustion chamber's walls.
- Empty the ash.

NOTE! Take care with the ash, as it can be red hot. Ash must be stored in a fireproof container. Pay extra attention to the pellet quality of new deliveries or when changing supplier.

The burner

- carry out checks and actions according to the burner manufacturer's instructions.

On receiving a new delivery of fuel, the crucible should always be checked so that any sintering (solid ash crust or stone and gravel-like particles in the crucible) is discovered promptly. Such particles must be removed from the crucible without fail at frequent intervals to prevent the primary ring from overheating and suffering damage. Sintering is due to contaminants in the fuel and a complaint should immediately be made to the fuel supplier.

FUEL STORE

Bear in mind when planning a fuel store that you cannot use the same feed system for a day or week's supply as for a store for bulk refilling.
One common way is to start with a smaller and simpler pellets store, which in itself is a quick and easy solution but it does involve quite a lot of handling both to fetch pellets from your supplier and then in your installation.

For such simple stores, pellets are available for purchase in small 16-20 kg sacks or in large sacks of approx. 700 kg. The best way for the simple and convenient handling of pellets is to install a pellet store for receiving pellets by bulk transport. For filling by bulk transport, the volume should be at least 5.5 m^3 in order to be able to take 3 metric tonnes. This quality normally applies for bulk refilling.

The pellet store must be planned to exclude the risk of contamination or damage due to damp. In particular, consider permeation of damp from walls and floor. It is also important that the pellets are not subjected to direct water spray from rain or dripping condensation. On the other hand, pellets do not absorb damp from the ambient air and can therefore be stored under cover outdoors.

The fuel store should be planned based on the consumption and thus the refilling intervals that ensure convenient fuel management.

MANUFACTURER'S DECLARATION

ARITERM

VAATIMUSTENMUKAISUUSVAKUUTUS

Valmistaja: ARITERM OY
Osoite: PL 59, 43101 SAARIJÄRVI

Laite: **Bionet keskuslämmityskattila**

Valmistaja vakuuttaa,
- että tämän yksilön valmistuksessa on huomioitu Euroopan yhteisön neuvoston painelaitedirektiivin (97/23/EY) olennaiset turvallisuusvaatimukset.
- Vaatimustenmukaisuuden arvointimenettelynä on käytetty H - moduulia. (ilmoitettu laitos 0424)
- Toimitukseen ei sisälly varolaitteet.

DECLARATION OF COMFORMITY - MANUFACTURERS DECLARATION

Manufacturer: ARITERM OY
Adress: P.O.BOX 59, FIN-43101 SAARIJÄRVI

Equipment: **Bionet central heating boiler**

Manufacturer assures,
- that in production of above mentioned example has been observed the essential safety demands of EC council`s directive for pressure vessels (97/23/EY).
- As estimation method of conformity has been used H - module. (notified body 0424)
- Safety device are not included in the delivery.

FÖRSÄKRAN OM ÖVERENSSTÄMMELSE - TILLVERKAREDEKLARATION

Tillverkare: ARITERM OY
Adress: P.O.BOX 59, FIN-43101 SAARIJÄRVI

Apparat: **Bionet centralvärmepanna**

Tillverkare försäkrar,
- att vid tillverkningen av ovannämda exempel har man iakttagit väsentliga säkerhetskrav av EG rådets direktiv för tryckkärl (97/23/EY).
- Som värderingsmetod av överensstämmelse har använts H - modul. (notified body 0424)
- Säkerhetsventilen ingår inte i leveransen.

24.3.2011
Ariterm Oy

Petteri Korpioja
Toimitusjohtaja
Managing director
Verkställande direktör

NOTES

INSTALLATION REPORT

After installation, the burner must be adjusted with the help of a smoke gas analyser.

Smoke gas temperature – max.	CO	O_2	CO_2
Efficiency level	Draught mm	Fan %	Screw %
Smoke gas temperature - average	CO	O_2	CO_2
Efficiency level	Draught mm	Fan %	Screw %
Smoke gas temperature – min.	CO	O_2	CO_2
Efficiency level	Draught mm	Fan %	Screw %

Dealer/Installer
Installer
Date

If the installation and service measures in the installations and operating instructions are not followed, the given warranty commitments are void. Ariterm reserves the right to make changes without separate notification.

ARITERM

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ISO 14001