

Pellet boiler

BIOSTAR FLEX/BOX/W

Installation instructions

BS-A-00-00-01-IAEN



EN-B31-003-V07-0511

GUNTAMATIC

Information on this documentation

Please read through this documentation carefully.

It is intended as a reference document and contains important information on the design, safety, operation, maintenance and care of your heating system.

We are always looking to improve our products and documentation. Any ideas and suggestions you may have will be gratefully received.

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It is important that you pay particular attention to the safety issues highlighted in the text by these symbols.

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1 Introduction

1.1 Safety instructions

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GUNTAMATIC heating systems represent state-of-the-art technology and meet all applicable safety regulations. Incorrect installation can endanger life and limb. Heating boilers are combustion systems and are potentially dangerous if handled incorrectly. Installation, commissioning and servicing must, therefore, only be carried out by adequately qualified technicians observing all regulations and the manufacturer's instructions.

1.2 Guarantee and warranty

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The manufacturer's guarantee is subject to correct installation and commissioning of the heating system. Defects and damage caused by incorrect installation, commissioning or operation are not covered by the guarantee. To ensure that the system functions as intended, the manufacturer's instructions must be followed. Furthermore, only genuine replacement parts or parts explicitly approved by the manufacturer may be fitted to the system.

1.3 Commissioning

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Commissioning of the boiler must be carried out by an authorised GUNTAMATIC specialist or other qualified persons. They will check whether the system has been installed according to the plans, adjust the system settings as required and explain to the system operator how to use the heating system.

1.4 Site requirements

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When establishing the site requirements, it is absolutely essential to take account of the locally applicable planning, building and implementation regulations and the dimensional specifications in the fitting guidelines, installation examples and technical data. Compliance with the locally applicable regulations and the correct implementation of the measures required on site are solely the responsibility of the system owner and are a requirement of the manufacturer's guarantee. GUNTAMATIC provides no guarantee of any kind for any type of site work. Without making any claims as to completeness or non-applicability of official requirements, we recommend the following specifications based on the Austrian Guidelines pr TRVB H 118:

1.4.1 Fire safety

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If the installation site is not subject to any other fire safety requirements, the GUNTAMATIC minimum fire safety requirements must always be observed. If the installation site is subject to stricter requirements than the minimum fire safety requirements specified here, then the stricter requirements must always be observed without exception.

Caution: Compliance with the GUNTAMATIC minimum fire safety requirements is subject only to verification by the operator. The operator alone is responsible for strict compliance. Verification during commissioning is not provided for.

Caution: **National regulations must also be complied with.**

National regulations

Austria: F90/T30

State legislation of the federal states

Technical Directive on Preventative Fire Safety pr TRVB H118

Germany: No requirements for systems up to 50 kW

Standard boiler regulations (M-FeuVO)

Hessen and Saarland – in these states §16 FeuVO Hessen applies

Switzerland:

Fire safety regulations (www.vkf.ch)

France:

Relevant fire safety authority

Italy:

Relevant fire safety authority

Minimum fire safety requirements

Boiler room

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Floor of concrete construction, either bare or tiled. All materials for floor, walls and ceiling must be fire-resistant to F60 rating. If a fabric hopper is installed in the boiler room (not allowed in all countries), the floor walls and ceiling must be F90-rated. The boiler room door must be a Class T30 fire door which opens in the direction of escape and is self-closing. Connecting doors to the fuel storeroom must also be Class T30 fire doors, self-closing and lockable. There must be no direct connection to rooms in which flammable gases or liquids are stored (e.g. garage).

Fuel storeroom

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The same minimum fire safety requirements apply as for the boiler room.

Storeroom doors/hatches: Storeroom doors/hatches must be fire safe to Class T30, self-closing and lockable. There must be a warning sign carrying the message "Do not enter when feeder system is running" attached to the storeroom door/hatch.

Fireproof collars: If the storeroom is not situated directly adjacent to the boiler room, a fireproof collar must be fitted to the extraction and air return pipes at their wall exit points from the boiler room. If the outfeed auger goes directly into the boiler room, it is factory fitted with a special fire safety lining. No additional fireproof collars are required on the air pipes. If the outfeed auger is sited entirely inside the storeroom (i.e. if the outfeed auger does not extend out of the storeroom), fireproof collars must similarly be fitted to the extraction and air return pipes at their wall exit points from the storeroom.

Manual fire extinguisher: If 50 m³ of fuel or more can be stored, a manually operated fire extinguishing facility must be installed. It must be protected against freezing and connected to a pressurised water pipe (DN20 conduit). The discharge point must be located directly above where the fuel outfeed channel exits the storeroom. The fire extinguishing facility must be identified by a sign carrying the inscription "Fuel storeroom fire extinguisher".

Filler pipes: Filler pipes through rooms where there is a fire risk must be provided with Class F90 cladding.

1.4.2 Boiler room requirements


<u>Combustion air supply</u>	<p style="text-align: right; font-size: small;">BS-01-04-02-01-IAEN</p> <p>The pressure in the boiler room must not be less than 3 Pa (0.3 mm H₂O). The air vents for boiler rooms must have a clear, net cross-sectional area of at least 100 cm² for the Biostar 12/15 and at least 150 cm² for the Biostar 23 and must not be sealable. The air supply ducting must connect directly to the outside and if the ducting passes through other rooms, it must be jacketed to Class F90. On the outside of the building, air vents must be covered by a protective grille with a mesh size of > 5 mm. The supply of combustion air should, if possible, enter at floor level in order to prevent cooling of the boiler room.</p>						
<u>Electrical installation</u>	<p style="text-align: right; font-size: small;">BS-01-04-02-02-01-IAEN</p> <p>The lighting and the electrical wiring in the boiler room must be permanently installed. There must be a clearly marked emergency off switch in an easily accessible position outside the boiler room, close to the boiler-room door.</p>						
<u>Fire extinguisher</u>	<p style="text-align: right; font-size: small;">BS-01-04-02-03-01-IAEN</p> <p>A hand-held fire extinguisher (6kg gross weight, EN3) must be mounted outside the boiler room near the boiler-room door.</p>						
<u>Protection against freezing</u>	<p style="text-align: right; font-size: small;">BS-01-04-02-04-01-IAEN</p> <p>The boiler room, pipes carrying water and any district heating pipes must be protected against freezing.</p>						
<u>Minimum room size</u>	<table border="0"> <tr> <td data-bbox="663 1140 823 1167">Biostar FLEX</td> <td data-bbox="911 1140 1262 1167">at least 148 x 193 cm (W x L)</td> </tr> <tr> <td data-bbox="663 1178 778 1205">Biostar W</td> <td data-bbox="911 1178 1262 1205">at least 194 x 193 cm (W x L)</td> </tr> </table>	Biostar FLEX	at least 148 x 193 cm (W x L)	Biostar W	at least 194 x 193 cm (W x L)		
Biostar FLEX	at least 148 x 193 cm (W x L)						
Biostar W	at least 194 x 193 cm (W x L)						
<u>Minimum room height</u>	<table border="0"> <tr> <td data-bbox="663 1267 823 1294">Biostar FLEX</td> <td data-bbox="911 1267 1094 1294">at least 200 cm</td> </tr> <tr> <td data-bbox="663 1305 778 1332">Biostar W</td> <td data-bbox="911 1305 1094 1332">at least 180 cm</td> </tr> </table>	Biostar FLEX	at least 200 cm	Biostar W	at least 180 cm		
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Biostar W	at least 180 cm						
<u>Clear access opening</u>	<table border="0"> <tr> <td data-bbox="663 1395 855 1422">Biostar FLEX/W</td> <td data-bbox="911 1395 1254 1422">at least 70 x 150 cm (W x H)</td> </tr> </table>	Biostar FLEX/W	at least 70 x 150 cm (W x H)				
Biostar FLEX/W	at least 70 x 150 cm (W x H)						
<u>Boiler dimensions</u>							
<u>With packing</u>	<table border="0"> <tr> <td data-bbox="663 1518 823 1545">Biostar FLEX</td> <td data-bbox="911 1518 1366 1545">at least 106 x 83 x 195 cm (L x W x H)</td> </tr> <tr> <td data-bbox="663 1556 778 1583">Biostar W</td> <td data-bbox="911 1556 1366 1583">at least 163 x 83 x 157 cm (L x W x H)</td> </tr> </table>	Biostar FLEX	at least 106 x 83 x 195 cm (L x W x H)	Biostar W	at least 163 x 83 x 157 cm (L x W x H)		
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Biostar W	at least 163 x 83 x 157 cm (L x W x H)						
<u>Without packing</u>	<table border="0"> <tr> <td data-bbox="663 1592 823 1619">Biostar FLEX</td> <td data-bbox="911 1592 1350 1619">at least 64 x 68 x 150 cm (L x W x H)</td> </tr> <tr> <td data-bbox="663 1630 778 1657">Biostar W</td> <td data-bbox="911 1630 1350 1657">at least 64 x 68 x 150 cm (L x W x H)</td> </tr> <tr> <td data-bbox="663 1668 951 1695">Boiler-mounted hopper</td> <td data-bbox="911 1668 1406 1695">at least 101 x 61 x 150 cm (L x W x H)</td> </tr> </table>	Biostar FLEX	at least 64 x 68 x 150 cm (L x W x H)	Biostar W	at least 64 x 68 x 150 cm (L x W x H)	Boiler-mounted hopper	at least 101 x 61 x 150 cm (L x W x H)
Biostar FLEX	at least 64 x 68 x 150 cm (L x W x H)						
Biostar W	at least 64 x 68 x 150 cm (L x W x H)						
Boiler-mounted hopper	at least 101 x 61 x 150 cm (L x W x H)						

1.4.3 Flue requirements

The flue must be matched to the system in order to ensure economical and trouble-free operation.

BS-01-04-03-01-01-IAEN

Important



Use heat-insulated fireclay flues that are insensitive to damp.

The flue gas temperature can be less than 105°C.

BS-01-04-03-02-01-IAEN

The system must only be connected to the flue if the flue meets the legal requirements and the technical specifications. The flue must be matched to the boiler output and dimensioned in accordance with DIN 4705. In order to be able to accurately dimension the flue, the calculations must be based on the flue gas figures. When designing new flues, high thermal insulation chimneys (DIN 18160 T1 heat transmission resistance group I) or suitable **fireclay flues** that are insusceptible to damp and have general building regulation approval should be used. It is advisable to involve those responsible for approving the flue system early on in the planning phase.

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Flue height

The minimum flue height is 5 - 10 m depending on boiler output. The flue must terminate at least 0.5 m above the highest part of the building. In the case of flat rooves, the flue must terminate at least 1.5 m above the surface of the roof.

BS-01-04-03-04-01-IAEN

Flue diameter

The flue must be matched to the boiler output. The following details are guide figures and can be used for planning purposes. However, we recommend that the flue dimensions are calculated precisely by an expert.

BIOSTAR 12/15	eff. flue height over 6 m	D=140 mm
	eff. flue height under 6 m	D=160 mm
BIOSTAR 23	eff. flue height over 6 m	D=160 mm
	eff. flue height under 6 m	D=180 mm

Flue dimensioning data

Dimension the flue for rated output!
(Averaged figures with used heat exchanger)

BS-01-04-03-05-01-IAEN

Rated output

Type	Flue gas temp.	CO ₂	Mass flow rate	Required draught
Biostar 12	160°C	13,6%	0.010 kg/s	10 pascals
Biostar 15	175°C	14,3%	0.012 kg/s	10 pascals
Biostar 23	180°C	13,1%	0.016 kg/s	15 pascals

Sub-maximum output

Type	Flue gas temp.	CO ₂	Mass flow rate	Required draught
Biostar 12	105°C	9,9%	0.003 kg/s	5 pascals
Biostar 15	105°C	9,9%	0.003 kg/s	5 pascals
Biostar 23	101°C	10,0%	0.006 kg/s	7 pascals

1.4.4 Fuel store requirements

<u>Access doors/hatches</u>	<p style="text-align: right;">BS-01-04-04-01-01-IAEN</p> <p>Above-ground fuel stores must be provided with a door or hatch that opens outwards. So that the fuel cannot run out if the fuel store is opened by mistake, the inside of the access door/hatch opening must be covered with boarding (which must be removable from the outside). Due to the risk of injury when the system is in operation, access doors/hatches must be lockable and kept locked when the system is in operation. There must be a warning sign carrying the message "Do not enter when feeder system is running" attached to the access door/hatch.</p>
<u>Electrical equipment</u>	<p style="text-align: right;">BS-01-04-04-02-01-IAEN</p> <p><u>FLEX system</u> Electrical equipment is prohibited in the fuel storeroom.</p> <p><u>BOX system</u> Electrical equipment is permitted in the room in which the system is installed. Light bulbs must not be fitted in close proximity to the fabric hopper.</p>
<u>Filler set</u>	<p style="text-align: right;">BS-01-04-04-03-01-IAEN</p> <p>The filler pipes must be earthed.</p> <p><u>FLEX system</u> At least 2 filler pipes must be installed. Minimum separation 0.5 m.</p>
<u>Installation in cold areas</u>	<p style="text-align: right;">BS-01-04-04-04-01-IAEN</p> <p>If installed in cold areas, vacuum pipes and outfeed unit must be adequately insulated (frost-proof).</p> <p>Risk of condensation formation</p>
<u>Structural requirements</u>	<p style="text-align: right;">BS-01-04-04-05-01-IAEN</p> <p><u>FLEX system</u> The enclosing walls must be capable of withstanding the possible static loads created by the fuel and the pressure when filling the fuel store.</p> <p><u>BOX system</u> It is imperative that the load-bearing capacity of the base is adequately dimensioned as, when the hopper is completely full, heavy loads act on the points on which the unit rests.</p>
<u>Erecting BOX system</u>	<p style="text-align: right;">BS-01-04-04-06-01-IAEN</p> <p><u>Indoor installation:</u> The fabric hopper must always be installed separately from the boiler in a different room. In some countries, the fabric hopper may be installed in the same room as the boiler if a minimum separation of 1 m between the fabric hopper and the boiler can be maintained and the fuel heat output remains below 50 kW.</p> <p>National legislation must also be observed!</p> <p><u>Outdoor installation:</u> If erected outdoors, no F90 lining is required if the minimum distances for fire flashover are maintained. The fabric hopper must be protected against rain, damp and UV light.</p>

Wall penetration

BS-01-04-04-07-01-IAEN

If there is an auger conveyor passing through the storeroom wall, the gap in the wall must be filled with mineral wool and sealed by means of the non-contact (sound insulation) finishing plates provided.

Filling the fuel store

BS-01-04-04-08-01-IAEN

When pressure-filling the fuel store from a tanker truck, the air pumped in must be drawn out of the fuel store. Extraction is the responsibility of the supplier.

Damp-proofing

BS-01-04-04-09-01-IAEN

The fuel must be protected against contact with water or damp floors/walls. The storeroom must remain dry all year round. If there is a risk of temporarily damp walls, fitting a back-ventilated facing to the walls and lining them with wooden material may be required.

2 Installation and assembly

2.1 Delivery

BS-02-01-00-00-01-IAEN

The boiler system is delivered packed in a wooden crate wrapped in foil. Please check that the delivery is complete according to the delivery note and in perfect condition.

Deficiencies

Please make a note of the deficiencies identified directly on the delivery note and contact the supplier, heating installer or our Customer Service.

2.2 Carrying to installation site

BS-02-02-00-00-01-IAEN

The system is delivered on a wooden pallet and can be lifted and carried to the installation site using a pallet truck.

Carrying in dismantled

The boiler body can be dismantled into parts for carrying in. If that is done, a person authorised by GUNTAMATIC must be consulted.

2.3 Positioning and aligning the boiler

BS-02-03-00-00-01-IAEN

Keep to the minimum wall clearances specified by the system planner and manufacturer. If important details are missing, please refer to the planning documentation or ask our Technical Support. Position the system as close as possible to the flue to avoid having a long flue connecting pipe. The system must be accessible from the left or right side.

Clearance on left

at least 17 cm (from wall or installation)

Clearance on right

at least 25 cm with FLEX system
at least 15 cm with boiler-mounted hopper system

Clearance at front

at least 70 cm (leave space for fuel box door to open)

Clearance at rear

at least 40 cm (from flue pipe)

Floor clearance

Set the clearance between the boiler base and the floor to the required minimum of 25 mm by unscrewing the adjustable feet on the boiler base.

Set the boiler at a slant

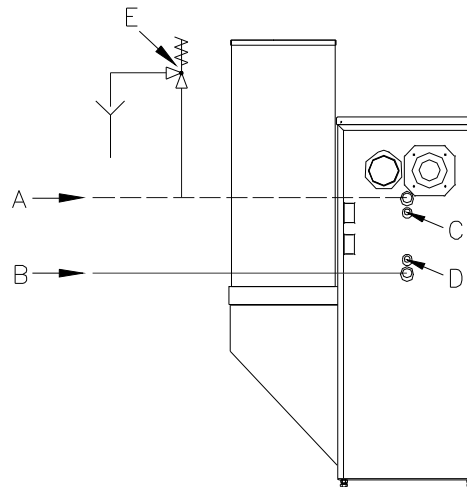
Unscrew the rear adjustable feet slightly further so that the boiler is slightly **higher at the rear**. That will allow the air inside the boiler to escape easily when the system is filled.

2.4 Plumbing connections

BS-02-04-00-00-01-IAEN

Biostar 12/15/23 - FLEX/W

- F** → Heating return, 1"
- B** → Heating flow, 1"
- C** → Boiler sensor/STL
- D** → External thermostat, 1/2"
(if required)
- E** → Safety valve



BS-02-04-00-01-01-IAEN

Temperature-relief heat exchanger

Connection of a temperature-relief valve is not required according to the standards ÖNORM B 8131 and DIN 4751. It is not possible for the maximum permissible operating temperature of 110 °C to be exceeded. The system ensures the maximum permissible operating temperature is not exceeded by software-controlled limitation of the maximum boiler temperature to 80 °C, a mechanical safety boiler cut-out (STL) with a response temperature of 95 °C (+/- 5 °C) and by a pump control mode for excessive temperatures.

BS-02-04-00-02-01-IAEN

Thermal store

Installing a thermal store is not necessary as the Biostar boiler is operated by a modulating control system and can be quickly shut down. Operation with a thermal store only serves a useful purpose in combination with a solar panel system or a solid fuel boiler.

BS-02-04-00-03-01-IAEN

Return boost

The Biostar has a patented low-temperature heat exchanger that functions according to the contraflow principle. Cold water is kept away from the heat-exchanger surfaces and preheated by rising hot water from the boiler. That prevents condensation temperatures from occurring on the heat-exchanger surfaces. Therefore, a return boost circuit should only be fitted in combination with a thermal store in order to maintain the required return temperature of 38 °C.

Connection for operation in modulating mode (radiators):

With modern systems (max 1" pipes) that are set up for operation in modulating mode, an external return boost is therefore not necessary.

Connection with low-temperature systems (mixer valves only):

With low-temperature systems (underfloor or warm-air systems only) that are operated exclusively using mixer valves and low flow temperatures, it is necessary to fit a bypass pump between the flow and return pipes (see plumbing diagram in the Appendix). It must be designed for a minimum flow capacity of 600 l/h as that is required for optimum mixing inside the heat exchanger.

Connection with systems with thermal store:

Do not install a return or fixed-setting valve to keep the return temperature at a certain level, instead use a branch regulating valve in the bypass pipe as, even when operating with a thermal store, the boiler temperature is modulated between 50°C and 80°C. If this requirement is not complied with, there is an increased risk of corrosion and guarantee entitlement will be lost as a result. Connect the return boost set precisely as specified in our plumbing diagrams.

Adjusting the return

Restrict the bypass flow using the branch regulating valve so that the return comes back 10°C colder than the flow.

Expansion vessel

BS-02-04-00-04-01-IAEN

The boiler operates in a sealed heating system and must be provided with an expansion vessel for pressure compensation. To calculate the expansion volume, the volume of the system when cold must be known. Please select the expansion vessel on the basis of the manufacturer's specifications. The expansion volume of the system is calculated as follows:

System volume x Expansion factor x Additional allowance factor

- Expansion factor for wood-fuel boilers = 0.03
- Additional allowance factor (rated output < 30 kW) = 3

Example calculation: 500 litres x 0.03 x 3 = 45 litres

Plastic piping

BS-02-04-00-05-01-IAEN

If plastic piping for underfloor heating or district heating pipes are connected, they must be protected against excessive temperatures by using a limiting thermostat for the circulation pumps.

Pump selection

BS-02-04-00-06-01-IAEN

The choice of pump must be made by the installer or building technology planner on the basis of the friction data, the pipe cross-sectional area and the required delivery pressure for the piping system planned.

2.5 Filling and bleeding the system

BS-02-05-00-00-01-IAEN

The system is filled with water from the domestic supply. Please note the guidelines on "Corrosion and boiler protection in heating and domestic water systems".

Water quality

The water quality of hot water systems with flow temperatures of max. 100°C is subject to VDI 2035. According to VDI 2035 Part 1, "Avoiding damage to hot water systems", which comply with EN12828, the first-fill and replenishment water, must be conditioned (preferably softened) if the following overall hardness limits [$^{\circ}\text{dH}$] according to total heat output (kW) are exceeded:

- < 50kW: with circulating flow heaters, if $^{\circ}\text{dH} > 16.8$
- 50 to 200 kW: if $^{\circ}\text{dH} > 11.2$
- 200 to 500 kW: if $^{\circ}\text{dH} > 8.4$
- > 500kW: if $^{\circ}\text{dH} > 0.11$

Water heater

If a water heater is also used in addition to the GUNTAMATIC boiler, it should be filled according to the installation instructions for it.

Filling the system

- Match the pressure of the system when cold to the air charge pressure of the expansion vessel
- Check the operating pressure on the pressure gauge

Bleeding the system

- Switch off and bleed circulation pumps.
- Bleed boiler by opening the bleed valve on the boiler and allowing air to escape until water runs out.
- Bleed radiator heating system (if present) by opening the bleed valve on every radiator and allowing air to escape until water runs out.
- Bleed underfloor heating system (if present) by opening each heating circuit and flushing through thoroughly until there are no more air bubbles in the heating circuit pipes.
- **Important:** perform sequence in the correct order!

Start bleeding in the cellar or on the ground floor and finish in the attic.

- Check the system operating pressure on the pressure gauge and add more water if necessary.
- Restart circulation pumps.



Only systems that have been properly bled guarantee effective conveyance of heat.

2.6 Connecting the flue

BS-02-06-00-01-01-IAEN

The boiler is connected to the flue by means of a flue connecting pipe which must be gas-tight and insulated between the heating boiler and the chimney (insulation thickness 50 mm).

Flue connecting pipe

The following diameters should be used:

- Biostar 12/15/23 dia. = 130 mm

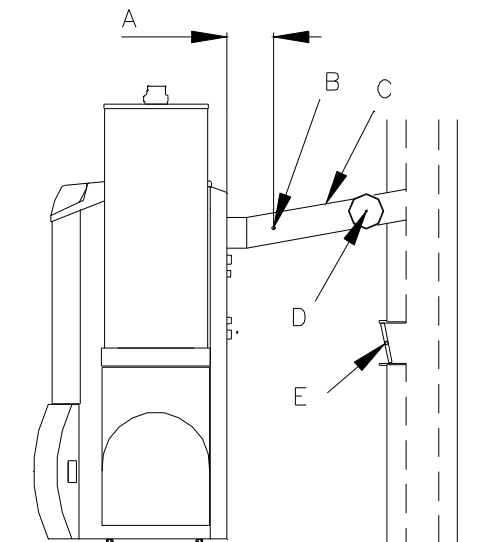
Flue connecting pipes longer than 4 m or with more than 3 bends:

- Biostar 12/15/23 dia. = 150 mm

The hole in the wall for connecting the flue pipe must be lined with a built-in double-skinned lining tube or fireproof material. The flue connecting pipe must rise upwards from the boiler to the flue at an angle of at least 6° and be connected with gas-tight joints. An inspection cover must be provided for cleaning the flue connecting pipe.

BS-02-06-00-02-01-IAEN

- A** → At least 3 x flue connecting pipe diameter
- B** → Testing point for flue draught
- C** → Flue connecting pipe, min. gradient 6°
- D** → Alternatively: Flue draught regulator in flue connecting pipe
(As close as possible to junction with the flue)
- H** → Flue draught regulator/pressure-surge compensator in flue
(Preferred fitting arrangement)



Note

BS-02-06-00-03-01-IAEN

- The flue connecting pipe must be gas-tight
- An energy-saving flue draught regulator with pressure-surge compensator (Class RE) must be fitted
- Insulate the flue connecting pipe
- Do not brick in the flue connecting pipe (noise transmission)
- The flue connecting pipe must not extend into the flue

2.7 Energy-saving flue draught regulator and pressure-surge compensator

BS-02-07-00-00-01-IAEN



Fitting an energy-saving flue draught regulator/pressure-surge compensator (Class RE) is absolutely imperative.

Purpose

- To ventilate the flue when the system is not in operation
- To compensate for pressure surges
- To regulate and limit the flue draught

Fitting requirement

The energy-saving flue draught regulator must be fitted in accordance with the local regulations, preferably in the flue approx. 0.5 m below the point where the flue connecting pipe joins or alternatively in the flue connecting pipe close to its junction with the flue.

Flue draught setting:

- Adjusting the flue draught is only of any use at outside temperatures below +5°C.
- The system must have been in operation for at least an hour
- Ensure there is sufficient demand for heat for the boiler to be run at rated output for at least 15 minutes
- Measure the flue draught between the boiler and the flue draught regulator (distance of measuring point from boiler ideally 3 x flue diameter from connection between boiler and flue connecting pipe).

Flue draught

The flue draught should not differ by more than +/- 3 pascals from the figure specified in the flue dimensioning data. If the flue draught cannot be reduced to the required figure, either a larger draught regulator should be fitted or an additional flue baffle fitted between the flue and the draught regulator.

Too much flue draught

May cause the flue gas temperature to increase and accelerate combustion as a result. Poor boiler output adjustability, increased dust discharge and malfunctions can result.

Too little flue draught

Performance problems, incomplete combustion and malfunctions when operating below rated output can result.

2.8 Fuel outfeed installation

2.8.1 FLEX system

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Important → Ensure the inlet opening is on the correct side.

A → Conveying direction

B → Inlet opening always this side

C → Direction of rotation

D → Scraper

E → Floor mounting plate

F → Check dimension 56 mm

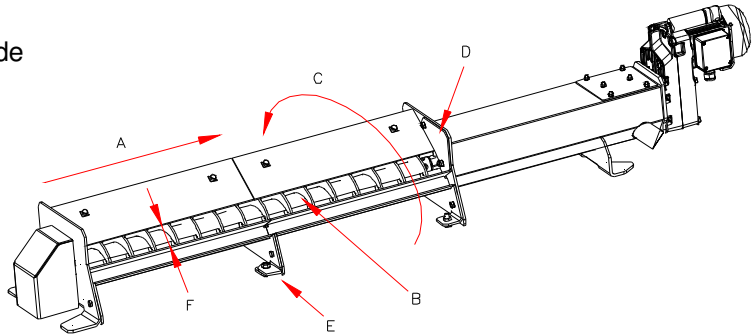


Fig. A

Installing the outfeed auger (Fig. 9)

1. Feed the drive unit (1) of the fuel outfeed auger through the hole (W 330mm x H 250mm) in the storeroom wall.
2. Depending on the auger length, join auger sections complete with conveyor trough (2) to the drive unit (1) from the storeroom end. **Important:** join the auger sections together so that the auger slope continues evenly. Afterwards securely fix the auger trough flange joint using the M8x30 bolts supplied (3) and locking washers. Make sure that the auger troughs are joined together so as to be perfectly flush on the inside. Screw the flange plate (4) and bearing on the end of the outfeed auger (if not pre-fitted).
3. Slightly unscrew the grub screws (5) on the bearing and attempt to push the auger towards the drive unit as far as it will go. Then re-tighten the grub screws.
4. After assembly: rotate the auger to check that is running true (maximum allowable auger run-out in the centre is 3 mm).
5. Position the assembled outfeed auger so that the drive unit extends at least 420 mm (see Fig. B) out of the storeroom wall.
6. Screw the conveyor trough securely to the storeroom floor.

Important: the conveyor trough must be aligned flush using the floor mounting plates (E) and screwed securely to the floor so that it is straight and has no sags or humps.

7. Fill the gap (6) in the wall around the conveyor with mineral wool. Cover the hole on both sides of the wall with the masking plates supplied (7), fitting them so that they do not touch the conveyor.

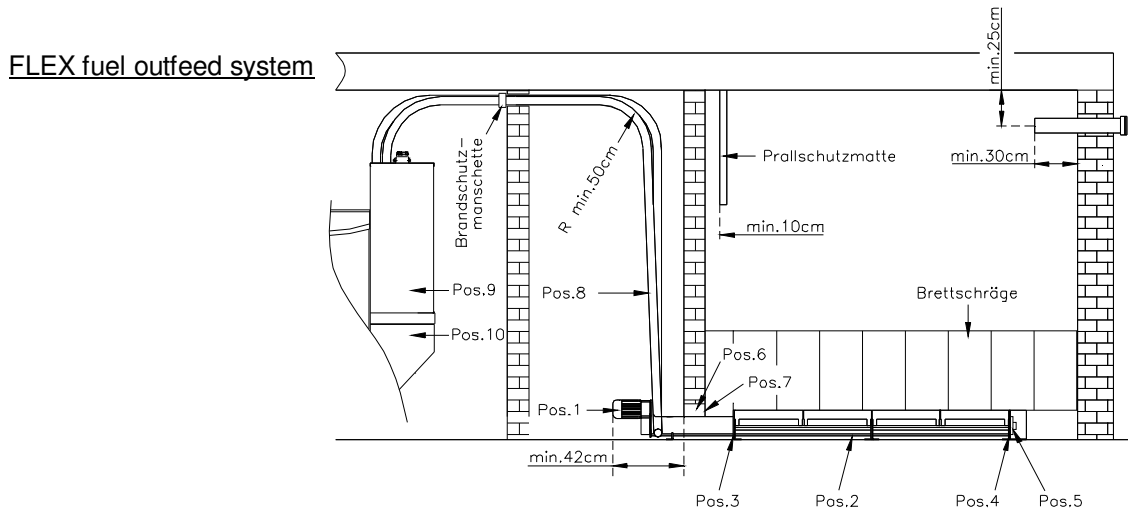


Fig. B

Fitting the vacuum extraction and air return pipes (Fig. 9)

1. Connect the vacuum hoses (8) from the cyclonic separator (9) or fan to either of the vacuum hose connection spigots on the auger (routing the hoses so that the bends are as gradual as possible).

Important: the minimum curvature radius for routing the hoses is 0.5 m. In addition, the hoses should not sag. An adequate number of fixings should be used.

2. The vacuum and air return pipes (8) must be secured to the cyclonic separator (9) and the drive unit (1) and made air-tight using the pipe clips supplied.

Important: check for air-tightness the first time fuel is drawn in. Leaking joints can cause problems with filling.

3. Do not route the air hoses for the fuel delivery system outdoors or through cold rooms (possibility of condensation forming in the vacuum hoses). If necessary, insulate the vacuum hoses adequately.



Important →

It is imperative that the vacuum and air return pipes are earthed. To do so, separate out the copper wire at the ends of the pipes joining the vacuum unit and the conveyor drive unit and connect them to the earthing connections on the vacuum unit and the outfeed unit.



Important →

The fuel outfeed conveyor must be completely emptied (vacuumed out) every 3 years at least.

Fitting the boarding in the FLEX system storeroom (Fig. 10)

- A** → Batten
- B** → Board trimmed by 3 cm
- C** → Supporting batten (10 x 10)
- D** → Wooden boards, planed, or blockboard (3 cm)
- E** → Square batten, 10 x 10
- F** → Square batten, 10 x 10
- L** → Reinforcing batten (C) required if $L \geq 1500$ mm

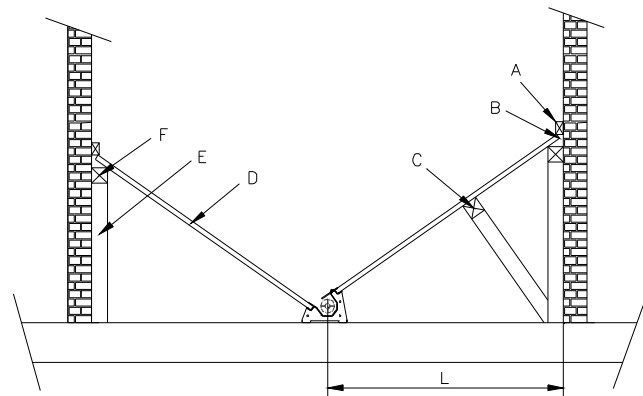


Fig. C Viewed from conveyor drive unit facing towards storeroom

Fit boarding in storeroom as follows:

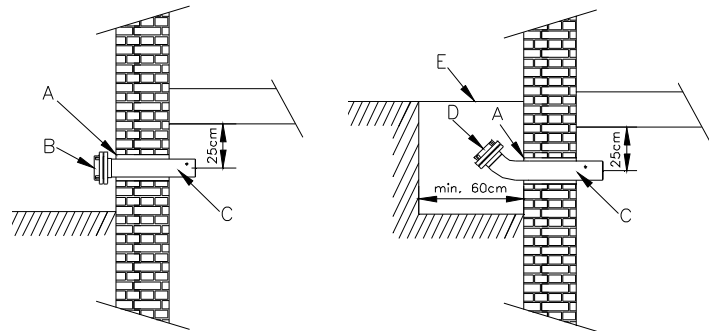
1. Locate a length of roof batten in the slot in the auger to mark out the 35° slope.
2. Mark the height of the slope on the wall and screw square batten (F) (e.g. 10 cm x 10 cm) to the wall approx. 3 cm below the marked height of the slope.
3. Support horizontal batten with uprights every 1.5 m. If the distance between the auger and the wall is greater than 1.5 m, additional supporting battens (C) must be provided.
4. Planed timber boards or blockboard panels 3 cm thick (D) should be cut approx. 3 cm short so that when they are slotted into the auger a gap is left between the board and the wall.
5. Do not screw every board in place and instead screw a horizontal batten (A) to the wall across all the boards.
6. If the auger does not extend to the end of the storeroom, a 35° slope should also be constructed from the end wall to the conveyor.
7. If the conveyor sections do not reach up to the exit point through the wall, an additional substructure must be used up to the wall.

Filler set

The pellet store requires at least 2 filler pipes (for pressure-filling and air extraction).

- Whenever possible, the filler pipes should be placed centrally in the shorter side of the storeroom.
- Minimum distance from ceiling and walls 25 cm.
- Required hole diameter in wall 130-150 mm.
- Fill gap with (waterproof) expanding foam filler.
- Ensure the filler pipes are fixed firmly in place.
- The filler pipes must be earthed to the earthing conductor (1.5 mm²).

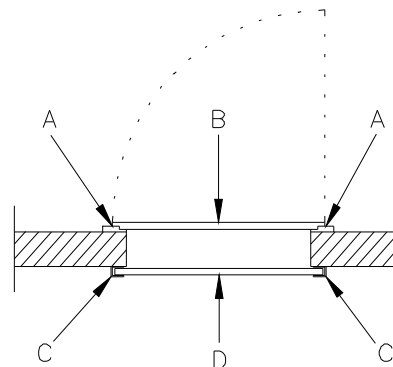
- A** → PVC pipe, 150 mm dia.
- B** → Filler set, straight
- C** → Steel pipe internal dia. 100 mm external dia. 108 mm
- D** → Filler set, 45° elbow
- E** → Light shaft



Access doors/hatches

Above-ground fuel stores must be provided with a door or hatch that opens outwards. So that the fuel cannot run out if the door/hatch is opened by mistake, the inside of the access door/hatch opening must be covered with boarding (which must be removable from the outside). Due to the risk of injury when the system is in operation, access doors/hatches must be lockable. There must be a warning sign carrying the message "Do not enter when feeder system is running" attached to the access door/hatch. The door/hatch opening must be provided with a (dust-proof) seal around its perimeter.

- A** → Seal
- B** → Fire door (hatch), Class T30
- C** → U or Z-section framing
- D** → Wooden boards (at least 3 cm thick)



2.8.2 BOX system

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The BOX fabric hopper system is installed as described in the separate installation instructions. They are supplied with the BOX system.

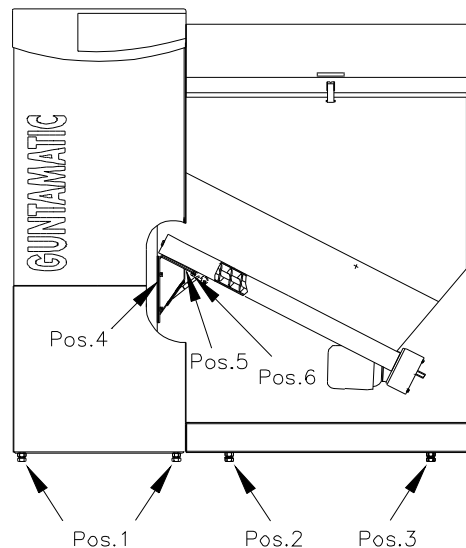
2.8.3 Boiler-mounted hopper system

BS-02-08-03-00-01-IAEN

The base surface and immediate area of the boiler must only be constructed of fire-resistant materials.

Erecting

1. Set up the boiler using the adjustable feet (1) so that it slopes slightly upwards to the rear.
2. Screw the adjustable feet (2) on the boiler-mounted hopper all the way in.
3. Screw in the adjustable feet (3) on the boiler-mounted hopper to the same position as the adjustable feet on the boiler.
4. Locate the boiler-mounted hopper on the fuel-chute flange (4) so that the centring bolts (5) snap into position and the seal glued on the flange is not damaged.
5. Unscrew the hopper feet (2) so that they are just resting on the floor. **The hopper must form a 100% air-tight seal with the flange.**
6. Finally secure the stud bolt (6) with the washer and M08 nut.
7. Connect up the fill-level sensor in the hopper and the door switch to the boiler circuit board.



Caution →

The boiler-mounted hopper must form a completely air-tight seal with the fuel chute. The correct height must be obtained by adjusting the feet – see above.!

Function check when commissioning:

Open hopper lid, set power switch to "On" → Flue draught fan cuts in → using lighter check whether air is being drawn in at fuel chute.

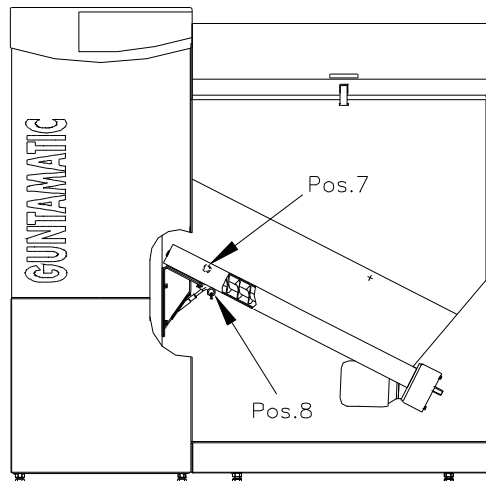
Sprinkler system

In Austria the system may legally be operated without a sprinkler system. Connection of a sprinkler system is at the discretion of the operator or else is subject to the locally applicable regulations.

The fire extinguishing system cannot be installed until the boiler and boiler-mounted hopper positions have been adjusted.

Installation

1. Connect a cold water supply pipe that cannot be turned off through the rear hopper insulation to the 3/4" sprinkler pipe connection (7) via a temperature-relief valve (95°C) to be provided on site.
2. Insert the temperature sensor for the temperature-relief valve in the sensor socket (8) below the auger casing and make sure it is making good contact/firmly seated.



Note →

Temperature-relief valves that are used as sprinkler systems must be tested and approved to DIN 3440 and guarantee a flow rate of at least 2000 l/h. The response temperature must be 95°C.



Important →

The connection to a permanently pressurised water supply system must not be capable of being turned off. The static pressure must be at least 2 bar. The internal diameter of the supply pipe to the temperature-relief valve must not be less than the valve's nominal diameter. According to DIN 4751, Sheet 2, the temperature-relief valve must be inspected at least once a year by an expert. If deficiencies are identified, they must be immediately rectified.

Function

If a temperature above 95°C occurs inside the fuel auger channel, a temperature-relief valve allows cold water to be introduced until fuel burn-back is extinguished.

3 Electrical connections

3.1 Heating system electrical connections

BS-03-01-00-00-01-IAEN

Mains connection

- 230V, 50Hz, 13A fuse (surge protector recommended)

Standard specifications

- 1 Boiler control panel (BCE)
- 1 Boiler circuit board (230V AC)
- 1 Safety temperature limiter (STL)
- 1 Boiler sensor (KVT 20 Ω)
- 1 Flue gas temperature sensor (thermocouple)
- 1 Oxygen sensor (12V DC)
- 1 Flue draught fan (230V AC)
- 1 Grate cleaner motor (24V DC)
- 1 TKS 1 (ash box door switch, 24V DC)
- 1 Stoker drive motor G1 (230V AC)
- 1 Outfeed drive motor A1 (230 VAC)
- 1 Outfeed fan A2 (230V AC)
- 1 Fill level sensor (12V DC)
- 1 Ignition fan (230V AC)
- 1 Boiler enabling switch (emergency off)
- 1 Special output HP0 (230V AC)

Optional equipment

- 4 Pump outputs (230V AC)
- 2 Mixer valve outputs (230V AC)
- 1 Outside temperature sensor input (KVT 20 Ω)
- 1 DHW cylinder sensor input (KVT 20 Ω)
- 2 Flow temperature sensor inputs (KVT 20 Ω)

KVT20 resistances

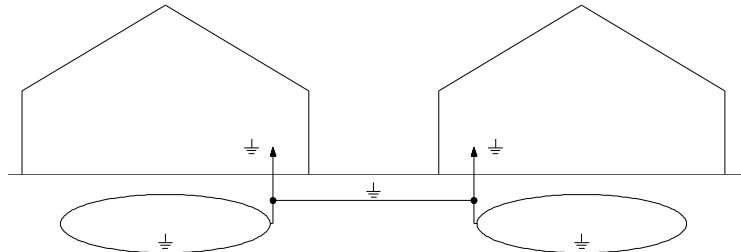
Temperature in °C	KVT 20 in kOhm (kΩ)
-20 °C	1.383
-16 °C	1.434
-8 °C	1.537
-4 °C	1.590
0 °C	1.644
10 °C	1.783
20 °C	1.928
30 °C	2.078
40 °C	2.234
50 °C	2.395
60 °C	2.563
70 °C	2.735
80 °C	2.914

3.2 Wiring requirements

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Surge protection

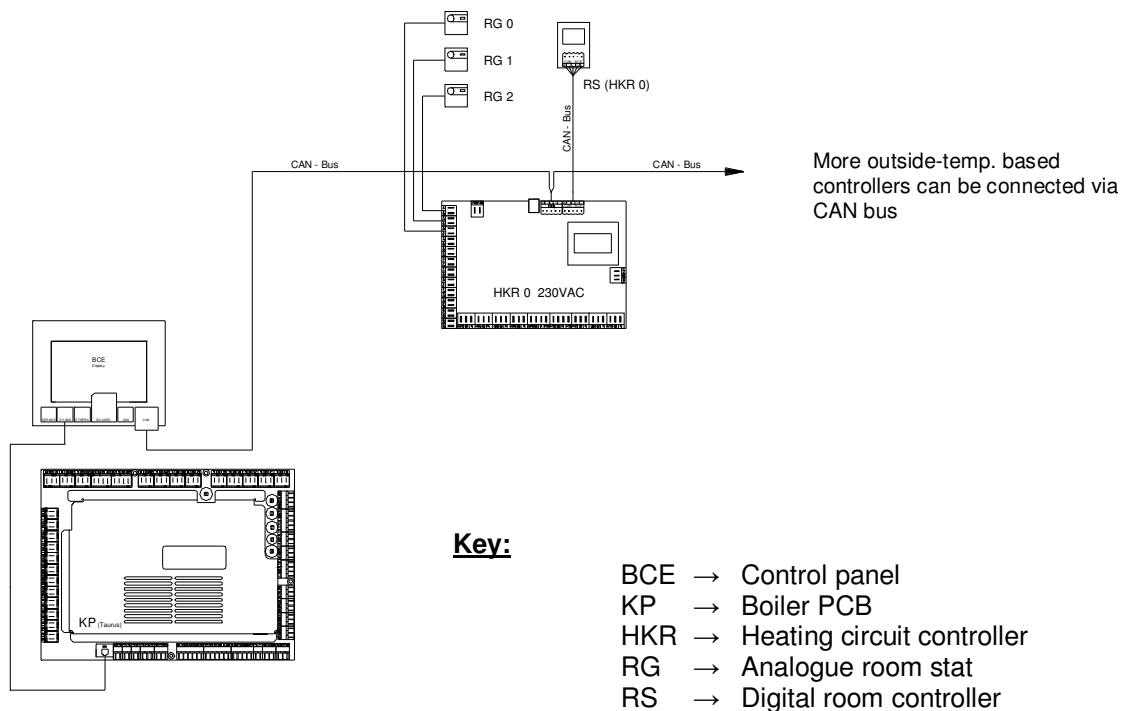
Where CAN bus cables run between different buildings, the earthing conductors of the buildings must be connected to each other for potential equalisation purposes. If the earthing conductors cannot be inter-connected, a 10 mm rustless ring earth must be laid along with the CAN bus cable in the ground. The earthing conductors and ring earth must then be connected to one another.



Sensor 2 x 1 mm²

Analogue room stat RFF 2 x 1 mm²

CAN bus connecting cable 2 x 2 x 0.5 mm² twisted pair, shielded



Wiring CAN bus in line

Whenever possible, always wire the CAN bus "in line", i.e. from the display and control unit to heating circuit controller 0 then from there to heating circuit controller 1, and so on. If wired in a star pattern, the overall length of the CAN bus must not exceed 100 metres. Wire the CAN bus +/- and H/L connections with twisted-pair cable in each case.

3.3 Electrical connections

BS-03-03-00-00-01-IAEN

The electrical connections to the boiler system on site may only be made by an approved electrical installer observing all the applicable regulations. In addition, it is essential that electrical system components are protected against damage from heat radiation.

All boiler system internal wiring is wired up at the factory ready for use. The work required on site by the electrical installer consists only of connecting the mains power and wiring up and connecting the system components such as thermal store, CAN bus, heating circuit pumps, mixer valve motors, etc.

Mains power supply

230 V, 50 Hz, 13 A fuse

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The mains power must be connected by means of the standard non-reversible power socket on the rear panel of the boiler. It must be possible to isolate the system entirely from the mains without opening the switch panel cover, e.g. by means of an automatic circuit-breaker.



Correct polarity of the boiler's mains power connection must be ensured. The live (L) and neutral (N) phases must not be reversed as otherwise the short-circuit protection and safety system function cannot be guaranteed.

Opening switch panel

Before the switch panel is opened, the boiler mains lead must be unplugged from the power supply. The system must not be live.

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- Undo switch panel securing screw on right
- Lift up front convex panel section slightly, pull forwards at the bottom and slide down to detach.
- The circuit boards with the associated connectors and fuses (see electrical wiring diagram) are located underneath it in an easily accessible position.
- The appropriate cable ducts must be used when connecting electrical leads.

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Outside-temperature based controller The MKR outside-temperature based heating circuit controller set is offered as an option and activated on the boiler circuit board if required. The MK261 wall controller set, on the other hand, can only be fitted externally and connected to the system via the CAN bus. Operation and configuration is via the boiler control panel.

Set MKR The heating circuit controller can be used to control a DHW cylinder, a pumped heating circuit (HC0) and two mixed heating circuits (HC1, HC2).

Wall controller set MK261 The wall controller set MK261 must be connected to the (external) power supply at terminal H35 and connected to the control panel via the CAN bus.
The wall controller can be used to control a DHW cylinder, a pumped heating circuit and 2 mixer-valve heating circuits.



Pay special attention to the section "Wiring requirements, Wiring CAN bus in line".

Analogue room stat The room stat should be connected to the relevant heating circuit controller input at terminals 1 and 2 (see electrical wiring diagram).

Digital room controller The room controller must be connected to the boiler (control panel) or wall controller set MK261 via CAN bus.

Emergency off switch According to prTRVB H 118, it must be possible to switch off the system using an emergency off switch fitted outside the boiler room near to the boiler room door. The burner must then shut down but the heating controller and all safety equipment must remain functional. Connected to the boiler enabling switch, terminals 22/23 on the boiler circuit board (see electrical wiring diagram).

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Surge protection We recommend the installation of a power surge protector in the building's consumer unit.

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Pay special attention to the section "Wiring requirements, Surge protection".

Earthing The entire system is to be joined to the earth circuit conductor via the connected piping system according to the regulations.



When connecting the earth circuit conductor pay particular attention to keeping the connecting runs as short as possible.

Emergency power supply Only use regulated generators.

4 Final checks/Commissioning

BS-04-00-00-00-01-IAEN

Final checks

- After completing installation of the system, check again that all joints and pipes are properly tightened and not leaking.
- Check that all covers are fitted and secured.
- Check that the fitting of all connections (water, flue, electrical, ...) has been done correctly.
- Check that all required safety signs and instructions are attached and hand over all documentation (operating and installation instructions) for the system.
- Check that all electrical connections have been properly wired before connecting the system to the power supply.
- Clean the system and clear up the installation site.
- Always leave the boiler room clean.

Initial commissioning

Commissioning must only be carried out by GUNTAMATIC or a qualified specialist. The precondition is that the flue technician, heating installer and electrician have cleared the system for operation. The authorised GUNTAMATIC specialist will carry out the following work during commissioning:

- Check the entire system
- Check the electrical functions
- Adjust the programmer to the system
- Commission the system
- Explain to the user how the system functions and how to operate and clean it
- Record the details of the customer and the system and complete the commissioning log



Important →

Any deficiencies identified must be recorded in writing and rectified within the following 4 weeks in order to maintain guarantee entitlement.

The fully completed commissioning checklist must be sent to GUNTAMATIC immediately as otherwise the guarantee will be void.



Important →

These installation instructions should not be destroyed after commissioning but kept permanently with the system together with the operating instructions.

5 Standards/Regulations

BS-05-00-00-00-01-IAEN

The boiler is designed as a Class 3 appliance as defined by the draft standard ÖNORM EN 303-5 (CEN/TC7/WG 1 – Doc. N 36-D) of 15/12/1996 and the agreement of the [Austrian] Federal States according to Art. 15a BVG, in accordance with the Austrian fire safety regulations, safety systems, CE and on safety measures for small combustion heating systems and the combustion heating system approval regulations (LGB.33/1992) of the Austrian Federal State of Steiermark. The original design approval certificates (BLT Wieselburg, IBS Linz) are available for inspection at the manufacturer's offices. When connecting the boiler, the following general, standard and safety regulations must be followed in addition to the local fire safety and building control requirements:

- ÖNORM EN303-5 Boilers for solid fuels, manually and automatically stoked, with outputs up to 300 kW; terms, requirements, testing and identification;
- ÖNORM H 5195-1 Assessment and suitability of the heating water (minimum requirements for the heating water);
- ÖNORM M 7510 Guidelines for the inspection of central heating systems;
- ÖNORM M 7550 Central heating boilers up to 100°C – Terms, requirements, tests, standard identification;
- ÖNORM B 8130 Safety systems;
- ÖNORM B 8131 Sealed water-circulation heating systems, safety requirements;
- ÖNORM B 8133 Safety requirements, domestic hot water systems;
- pr TRVB H 118 Technical Directive on Preventative Fire Safety
- DIN 4751-1 / Safety systems for heating systems with flow temperatures up to 110°C (120°C in course of preparation);
- DIN 4751-2 / Water-circulation heating systems – sealed heating systems with thermostatic safety systems and flow temperatures up to 120°C – safety systems;
- DIN 4751-4 / Safety systems for domestic hot water systems with flow temperatures up to 120°C; sealed water-circulation heating systems with static heads over 15 m or rated heat outputs over 350 kW;
- DIN 1988 Mains water piping systems on building plots, technical regulations for construction and operation;
- DGVO §7(2) Technical requirements for systems for producing domestic hot water with a temperature not higher than 110°C which are stoked by hand with solid fuel;
- HEATING OUTPUT: The heating output is to be selected (set) by the engineer in accordance with the local heating system regulations so that the rated heat output does not exceed the heat requirement determined according to DIN 4701 or ÖNORM M7500;
- Swiss Clean Air Regulations (LRV)
- Swiss Regulations on Small Combustion Heating Systems
- VKF Fire Safety Directive for Heating Systems (Switzerland)
- SIA 384 (Switzerland)

6 Plumbing diagrams

BS-06-00-00-01-IAEN

- Diagram no.: **BS-01-1** BS with modulating control radiator system
outside-temperature based controller, ECO305 DHW cylinder
- Diagram no.: **BS-02-1** BS with pure low-temperature system
outside-temperature based controller, ECO305 DHW cylinder
- Diagram no.: **BC-03-2** BS with PSF thermal store inc. water supply unit
outside-temperature based controller, PSF thermal store
- Diagram no.: **BS-04-1** BS Duo with KOBRA solid-fuel boiler
outside-temperature based controller, ECO305 DHW cylinder
- Diagram no.: **BSM-06-1** BS combined with BIOSMART wood-burning boiler
outside-temperature based controller, PSF thermal store

Plumbing diagram for BIOSTAR with modulating-control radiator system

Outside-temperature based controller, ECO305 DHW cylinder

Caution: For modulating control mode, one heating circuit must be in the form of a radiator heating circuit.

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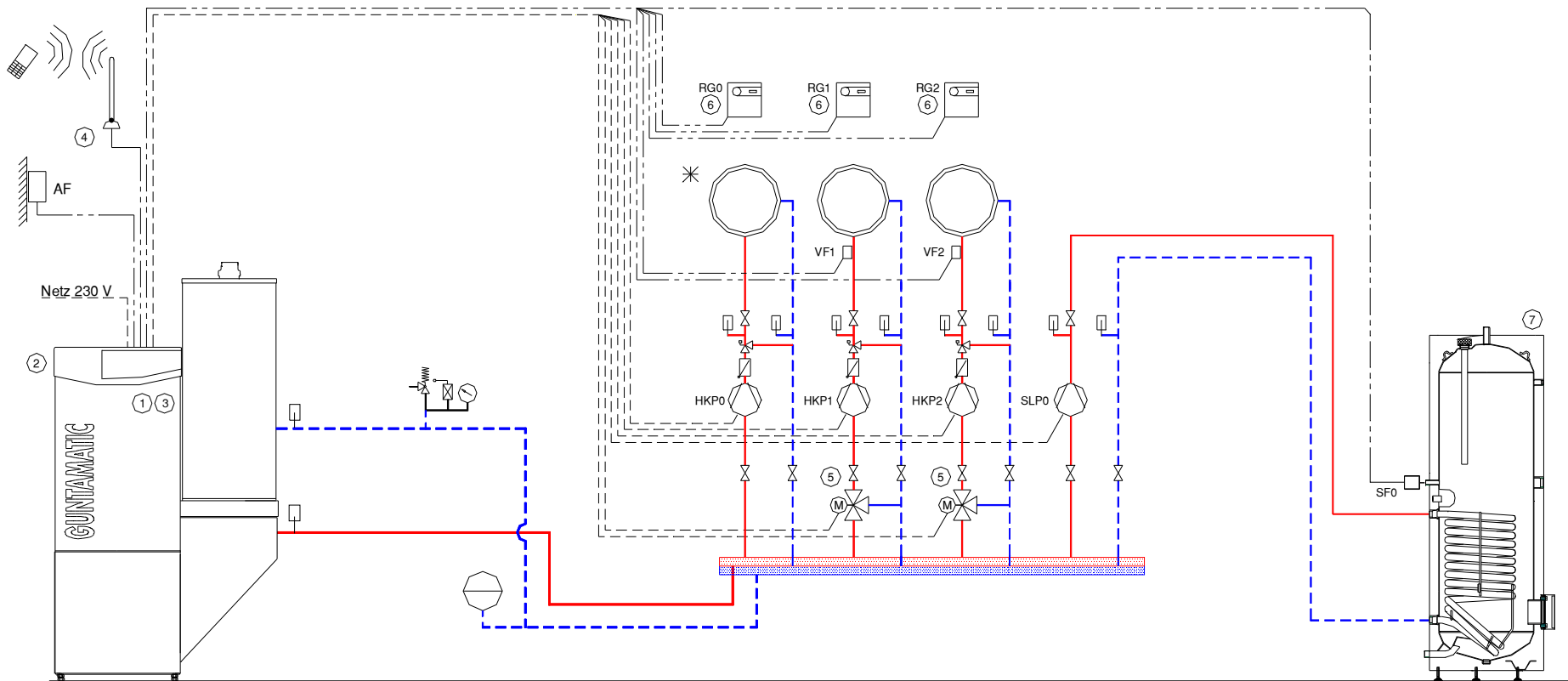
Diagram no. BS-01-1

Electrical connections as per operating and installation instructions

Heating circuit 0 can be room-temperature controlled using a RFF25 room stat.

GUNTAMATIC components

- | | |
|---|-------------------|
| 1. BIOSTAR boiler | As price list |
| 2. Flue draught regulator RE (size to suit flue diameter) | As price list |
| 3. Outside temp. based controller set MKR | Art. no.: S30-031 |
| 4. GSM module | Art. no.: S15-002 |
| 5. Mixer valve positioner motor SM70 | Art. no.: S50-501 |
| 6. Option: Room stat RFF25 | Art. no.: S70-006 |
| 7. DHW cylinder ECO305 | Art. no.: 048-500 |



Plumbing diagram for BIOSTAR with pure low-temperature system
 Outside-temperature based controller, ECO305 DHW cylinder

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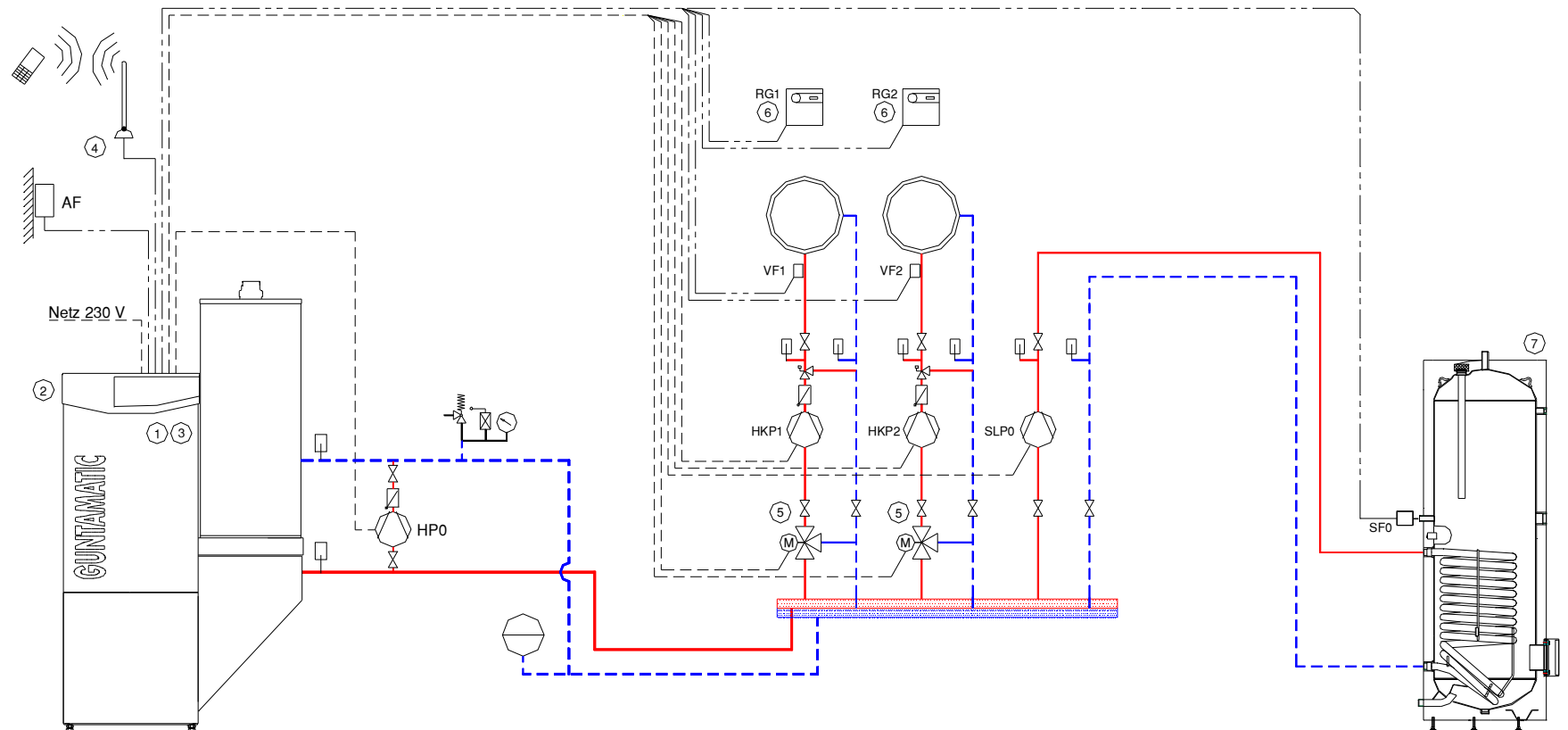


Diagram no. BS-02-1

Electrical connections as per operating and installation instructions

GUNTAMATIC components

- | | |
|---|-------------------|
| 1. BIOSTAR boiler | As price list |
| 2. Flue draught regulator RE (size to suit flue diameter) | As price list |
| 3. Outside temp. based controller set MKR | Art. no.: S30-031 |
| 4. GSM module | Art. no.: S15-002 |
| 5. Mixer valve positioner motor SM70 | Art. no.: S50-501 |
| 6. Option: Room stat RFF25 | Art. no.: S70-006 |
| 7. DHW cylinder ECO305 | Art. no.: 048-500 |



Plumbing diagram for BIOSTAR with PSF thermal store
 Outside-temperature based controller, thermal store PSF inc. water supply unit

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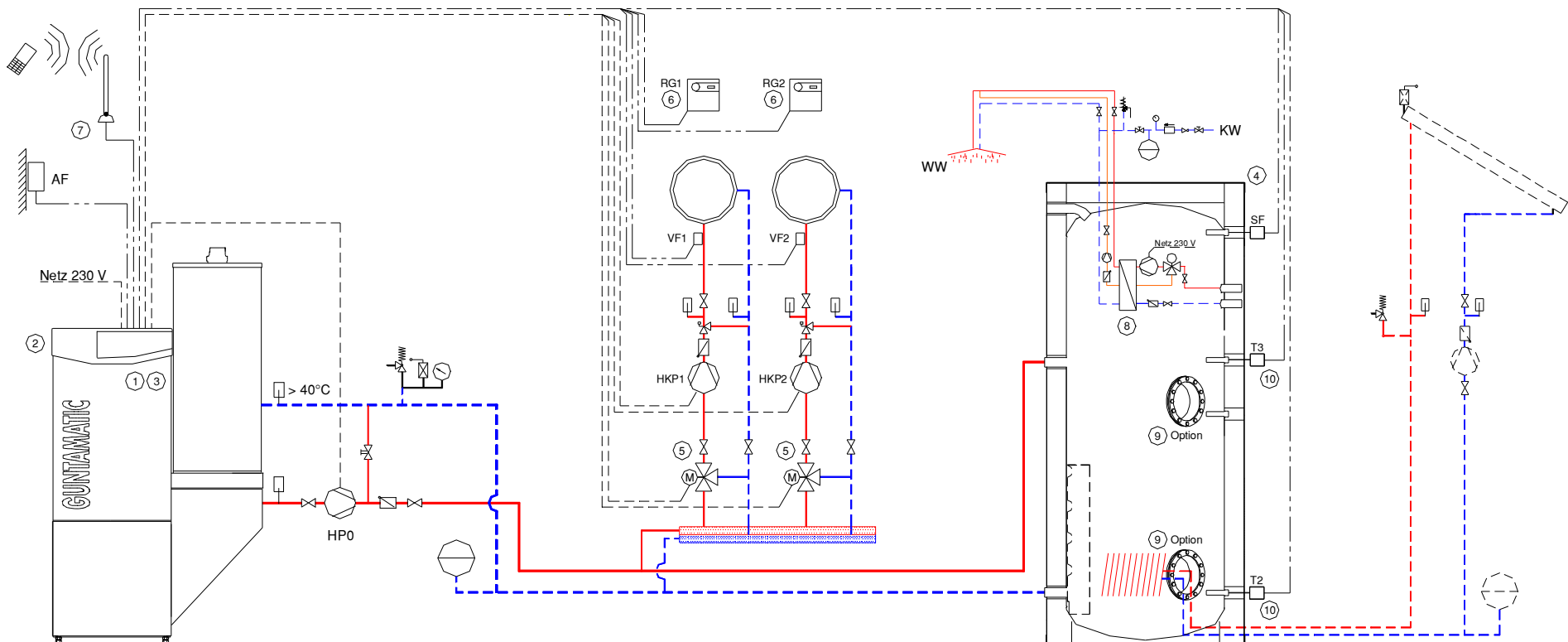
GUNTAMATIC

Diagram no. BS-03-2

Electrical connections as per operating and installation instructions

GUNTAMATIC components

- | | |
|---|-------------------|
| 1. BIOSTAR boiler | As price list |
| 2. Flue draught regulator RE (size to suit flue diameter) | As price list |
| 3. Outside temp. based controller set MKR | Art. no.: S30-031 |
| 4. Thermal store PSF | As price list |
| 5. Mixer valve positioner motor SM70 | Art. no.: S50-501 |
| 6. Option: Room stat RFF25 | Art. no.: S70-006 |
| 7. GSM module | Art. no.: S15-002 |
| 8. Option: Secondary return pump | Art. no.: 045-250 |
| 9. Option: 12-hole flange and ridged pipe heat exchanger | |
| 10. 2 Thermal store sensors | Art. no.: S70-003 |



Plumbing diagram for BIOSTAR Duo with KOBRA solid-fuel boiler
 Outside-temperature based controller, ECO305 DHW cylinder

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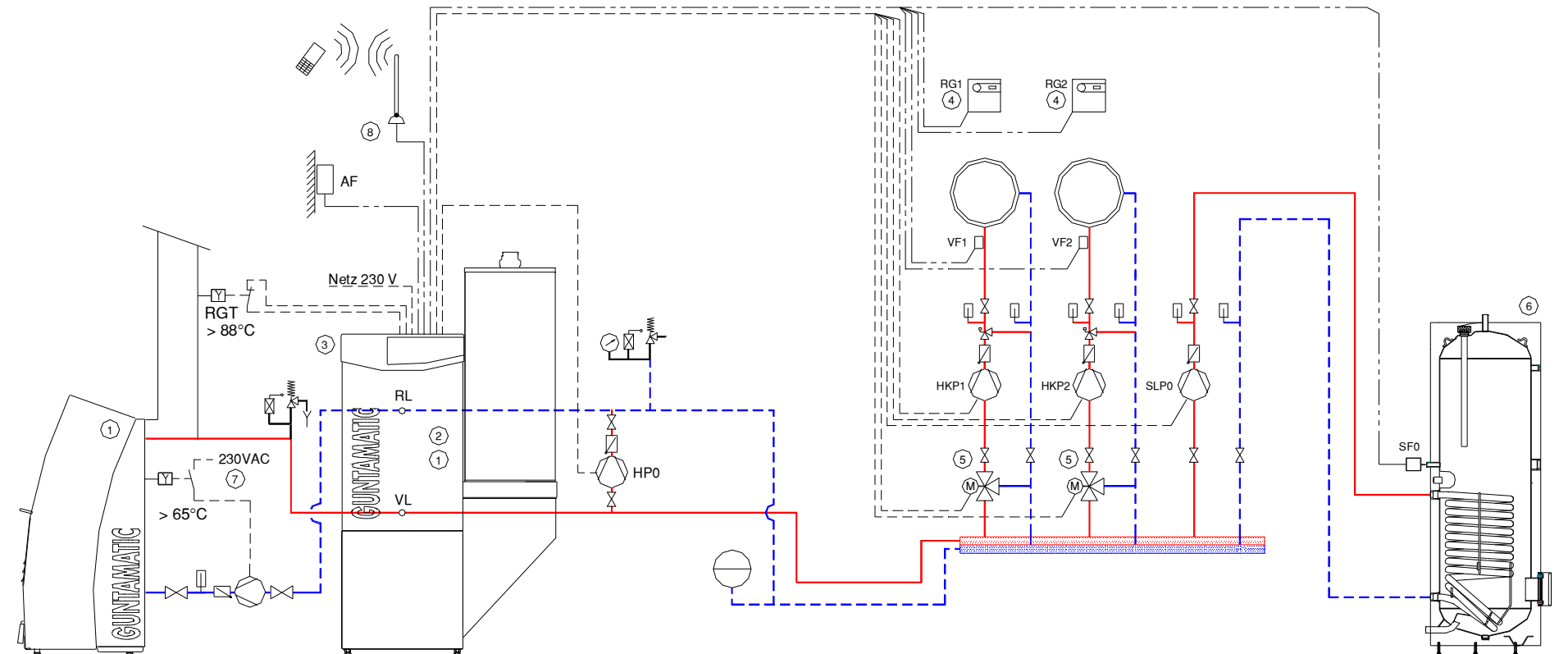
Diagram no. BS-04-1

Electrical connections as per operating and installation instructions

GUNTAMATIC components

- Flue gas thermostat supplied opens the enabling switch (terminals 22/23) at above 88°C
- **Caution:** In solid-fuel mode a minimum heat draw of approx. 8 kW must be ensured

1. BIOSTAR DUO boiler with KOBRA solid-fuel boiler
 2. Outside temp. based controller set MKR
 3. Flue draught regulator RE (size to suit flue diameter) As price list
 4. **Option:** Room stat RFF25
 5. Mixer valve positioner motor SM70
 6. DHW cylinder ECO305
 7. Single thermostat ETH 100
 8. GSM module
- Art. no.: S30-031
 Art. no.: S70-006
 Art. no.: S50-501
 Art. no.: 048-500
 Art. no.: S40-110
 Art. no.: S15-002



Plumbing diagram for BIOSTAR combined with BIOSMART wood-burning boiler

Outside-temperature based controller, thermal store PSF inc. water supply unit

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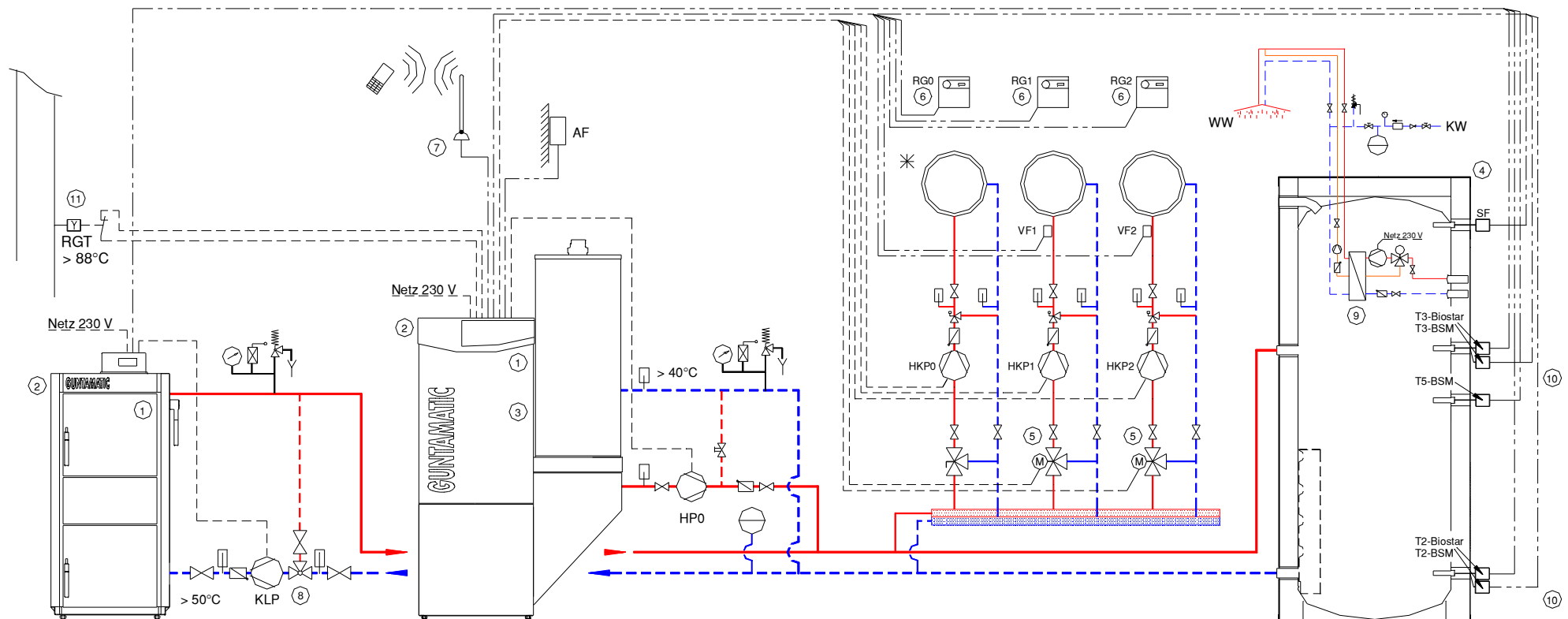
Diagram no. BSM-06-1

Electrical connections as per operating and installation instructions

- The flue gas thermostat (11) opens the Biostar enabling switch (22/23) at above 88°C

GUNTAMATIC components

- BIOSTAR boiler combined with BIOSMART wood-burning boiler
- Flue draught regulator RE (size to suit flue diameter) As price list
- Outside temp. based controller set MKR Art. no.: S30-031
- Thermal store PSF As price list
- Mixer valve positioner motor SM70 Art. no.: S50-501
- Option:** Room stat RFF25 Art. no.: S70-006
- GSM module Art. no.: S15-002
- Return boost set RA60 EnergieA Art. no.: H39-003
- Option:** Secondary return pump Art. no.: 045-250
- 2 Additional thermal store sensors Art. no.: S70-003
- Flue gas monitor (RGT), switching point 88°C Art. no.: H00-801



Output HP0 setting on Service menu Commissioning: → HP0 mode = Thermal store pump

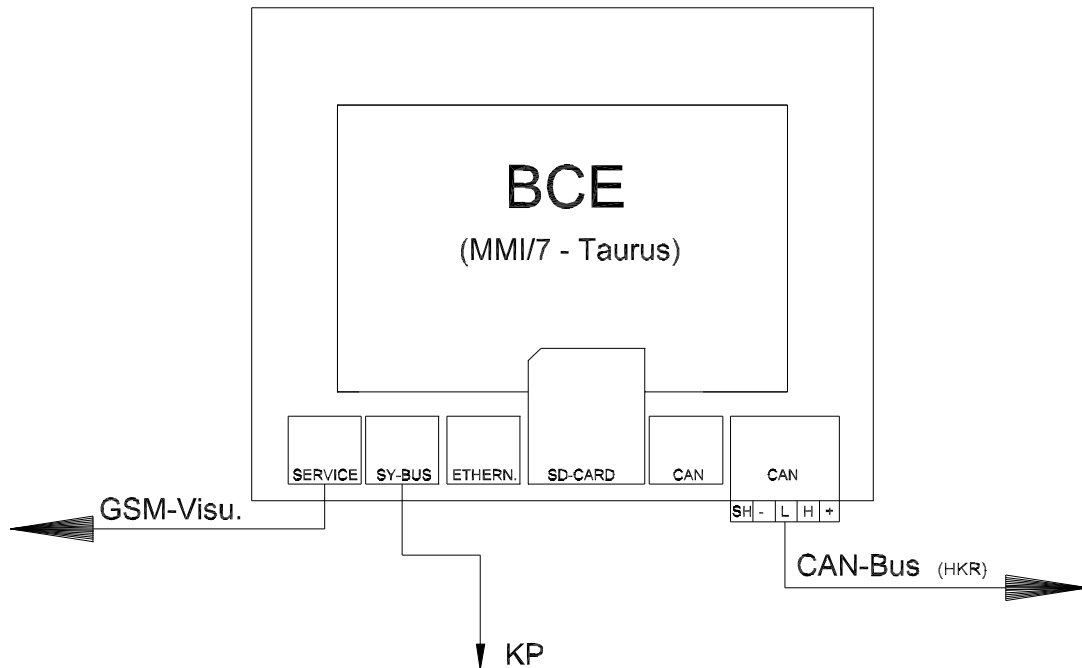
Heat from biomass 34

7 Electrical wiring diagram

7.1 Control panel (use only flexible cables for wiring)

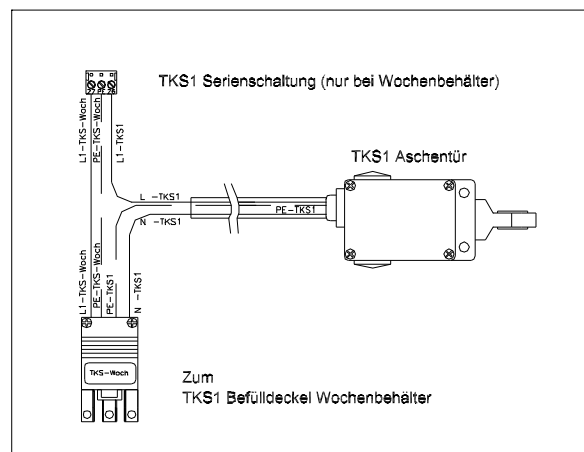
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- BCE** = Display and control unit (touch screen)
- Service** = Connection socket
- SY-BUS** = Connection socket/cable connection betw. BCE and boiler PCB
- Ethern.** = Connection socket (inactive)
- SD-Card** = Slot for SD memory card
- CAN** = Connection socket for CAN bus
- CAN-Bus** = Cable connection between BCE and digital room controller or wall controller
- GSM** = Facility for connecting a GSM module
- Visu.** = Facility for connecting a graphical boiler interface
- KP** = Cable connection to boiler circuit board (SY bus)



Caution: It is imperative that the vacuum pipes are earthed on the vacuum pump and the outfeed auger.

Connections for cover switch on boiler-mounted hopper



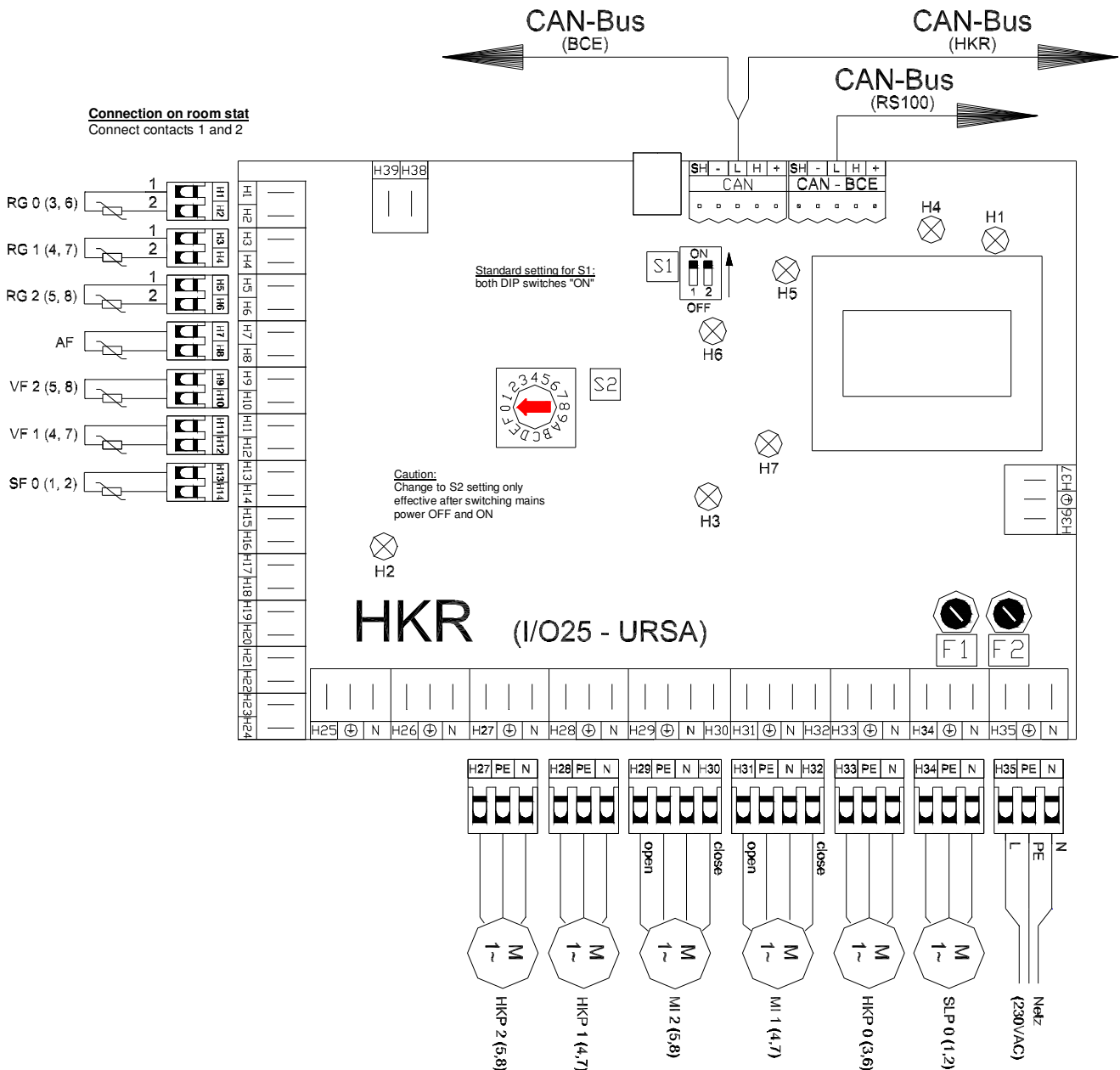
7.2 Wall controller set MK261 (use only flexible cables for wiring)

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RG 0-8	= Analogue room stat input for HC 0 - 8	Connector: H1/H2 – H3/H4 – H5/H6
AF	= Connect only if not connected on boiler PCB	Connector: H7/H8
VF 1, 2, 4, 5, 7, 8	= Flow sensor input for heating circuit 1, 2, 4, 5, 7, 8	Connector: H9/H10 – H11/H12
SF 0-3	= Cylinder sensor input for DHW cylinder 0, 1, 2	Connector: H13/H14
HKP 0-8	= Output for heating circuit pump 0 - 8	Connector: H27/PE/N (H28/PE/N,H33/PE/N)
Mi 1, 2, 4, 5, 7, 8	= Output for mixer valve 1, 2, 4, 5, 7, 8	Connector: H29/PE/N/H30 (H31/PE/N/H32)
SLP 0-3	= Output for cylinder charging pump 0, 1, 2	Connector: H34/PE/N
Netz	= Power supply input (230VAC)	Connector: H35/PE/N
BCE	= Connection for display and control unit	Connector: CAN
HKR	= Connection for an additional wall controller	Connector: CAN
RS	= Connection for digital room controller	Connector: CAN-BCE

Function of LEDs
Controller on, CAN bus cable correctly connected:
LED → H5 (green) should light up LED → H6, H7 (orange) should flash
Mains power and fuse F1 are OK
LED → H1, H4 (green) should light up LED → H2, H3 (green) should flash

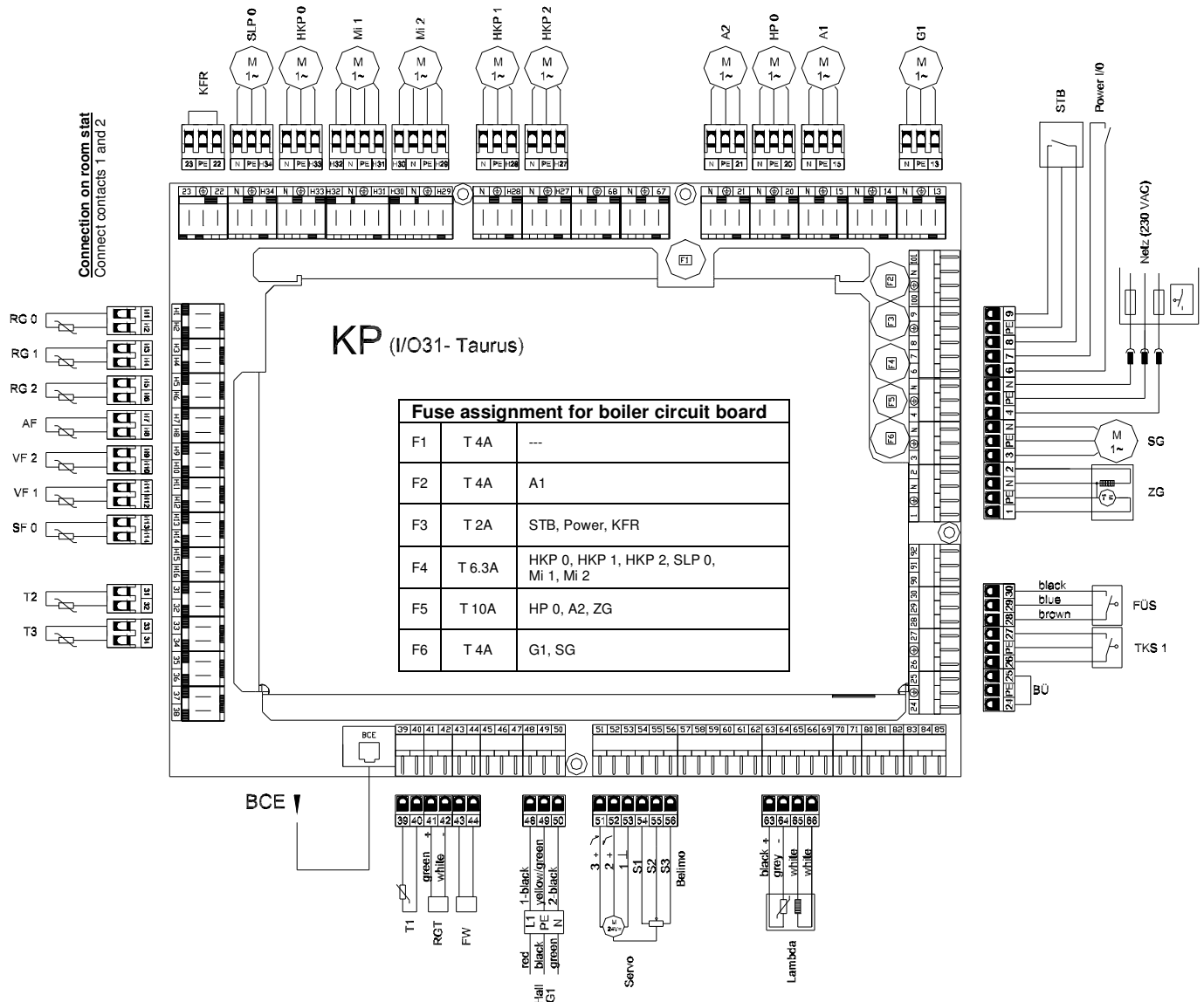
Fuse assignment for wall controller		
F1	T 0.63A	Power supply for electronics
F2	T 6.30A	HKP 0, HKP 1, HKP 2, MI 1, MI 2, SLP 0



7.3 Boiler circuit board (use only flexible cables for wiring)

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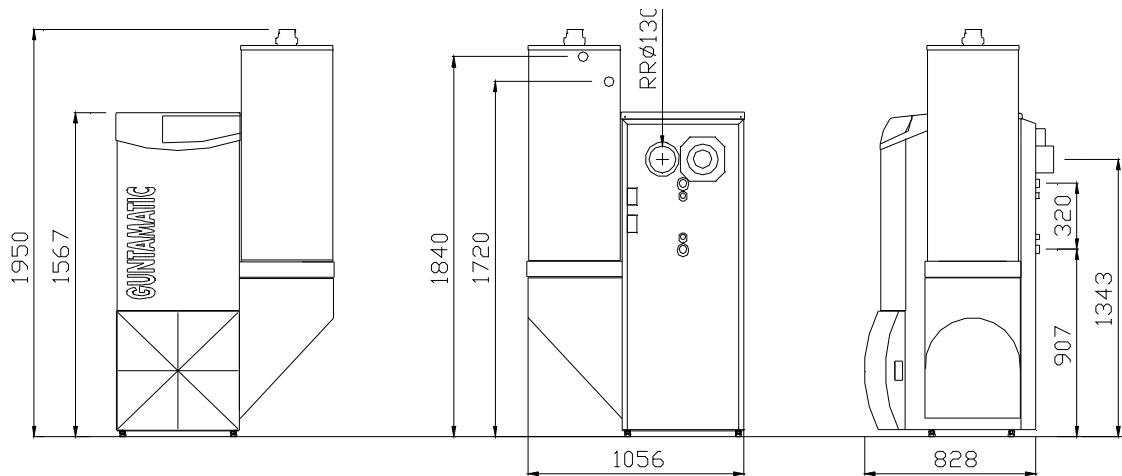
- | | | |
|---------------------|---|--|
| RG 0 (1, 2) | = Analogue room stat input for HC 0 (1, 2) | Connector: H1/H2 (H3/H4, H5/H6) |
| AF | = Outside sensor input | Connector: H7/H8 |
| VF 2 (1) | = Flow temperature sensor input for heating circuit 2 (1) | Connector: H9/H10 (H11/H12) |
| SF 0 | = Cylinder sensor input for DHW cylinder 0 | Connector: H13/H14 |
| T1 | = Boiler sensor input | Connector: 39/40 |
| T2 | = Thermal store bottom sensor input | Connector: 31/32 |
| T3 | = Thermal store top sensor input | Connector: 33/34 |
| RGT | = Flue gas temp. sensor input (ensure correct polarity) | Connector: 41/42 |
| FW | = Photosensor input | Connector: 43/44 |
| Hall G1 | = Hall-effect sensor input from drive motor G1 | Connector: 48/49/50 |
| Servo | = Output for grate servo motor (set to 0) | Connector: 51/52/53/54/55/56 |
| Lambda | = Oxygen sensor input | Connector: 63/64/65/66 |
| TKS 1 | = Input for door switch | Connector: 26/PE/27 |
| FÜS | = Fill-level sensor input | Connector: 28/29/30 |
| ZG | = Ignition fan output (1=Fan, 2=Igniter) | Connector: 1/PE/N/2 |
| SG | = Flue draught fan output | Connector: 3/PE/N |
| Netz | = Power supply input (230VAC) | Connector: 4/PE/N |
| Power I/O | = Power switch input/output | Connector: 6/7 |
| STB | = STL input/output | Connector: 8/PE/9 |
| G1 | = Output for stoker drive motor | Connector: 13/PE/N |
| A1 | = Output for fuel outfeed drive motor | Connector: 15/PE/N |
| HP 0 | = Programmable special output | Connector: 20/PE/N |
| A2 | = Output for vacuum pump | Connector: 21/PE/N |
| KFR | = Boiler enabling switch input | Connector: 22/PE/23 |
| HKP 2 (1, 0) | = Output for heating circuit pump 2 (1, 0) | Connector: H27/PE/N (H28/PE/N, H33/PE/N) |
| Mi 2 (1) | = Output for mixer valve 2 (1) | Connector: H29/PE/N/H30 (H31/PE/N/H32) |
| SLP 0 | = Output for cylinder charging pump 0 | Connector: H34/PE/N |



8 Technical data

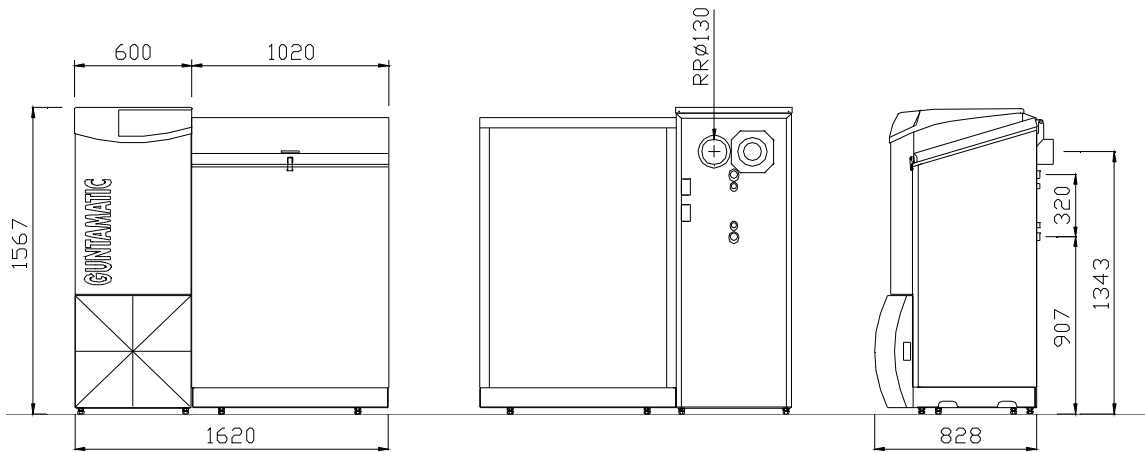
8.1 BIOSTAR FLEX

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Type	BIOSTAR 12 FLEX	BIOSTAR 15 FLEX	BIOSTAR 23 FLEX	
Fuel	Pellets, 6mm	Pellets, 6mm	Pellets, 6mm	ÖNORM M7135
Boiler output	Pellets, 3.3 - 12 kW	Pellets, 3.5 - 15 kW	Pellets, 6.9 - 23 kW	ÖNORM M7135
Required flue draught	0.10	0.10	0.15	mbar
Boiler temperature	38 – 80	38 – 80	38 – 80	°C
Return temperature	>38	>38	>38	°C
Water capacity	30	30	30	litres
Operating pressure	max. 3	max. 3	max. 3	bar
Water system resistance	1030	1285	1970	kg/h
Temperature difference 10 K	6.2	13.5	37.7	mbar
Water system resistance	510	620	985	kg/h
Temperature difference 20 K	2.0	3.4	10.9	mbar
Fuel hopper volume	100	100	100	litres
Refill time	8 – 10	8 – 10	8 – 10	minutes
Max. vacuum pipe length	20	20	20	m
Flue pipe diameter	130	130	130	mm
Boiler weight	298	298	305	kg
Auger weight per metre	40	40	40	kg
Outfeed servicing	Maintenance free	Maintenance free	Maintenance free	
Power supply	230 V/13 A	230 V/13 A	230 V/13 A	

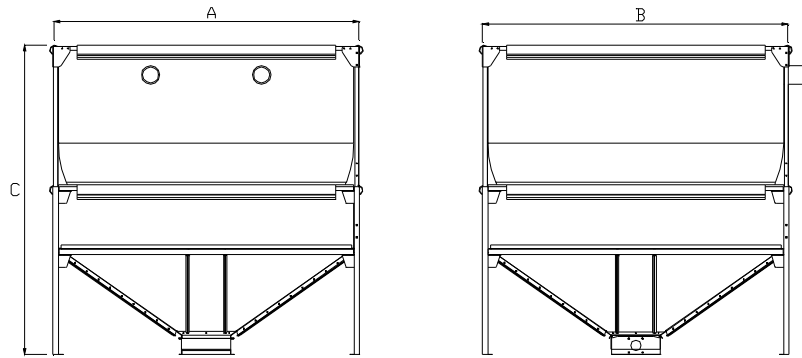
BIOSTAR W



Type	BIOSTAR 12 W	BIOSTAR 15 W	BIOSTAR 23 W	
Fuel	Pellets, 6mm	Pellets, 6mm	Pellets, 6mm	ÖNORM M7135
Boiler output	Pellets, 3.3 - 12 kW	Pellets, 3.5 - 15 kW	Pellets, 6.7 - 20 kW	ÖNORM M7135
Required flue draught	0.10	0.10	0.15	mbar
Boiler temperature	38 – 80	38 – 80	38 – 80	°C
Return temperature	>38	>38	>38	°C
Water capacity	30	30	30	litres
Operating pressure	max. 3	max. 3	max. 3	bar
Water system resistance	1030	1285	1970	kg/h
Temperature difference 10 K	6.2	13.5	37.7	mbar
Water system resistance	510	620	985	kg/h
Temperature difference 20 K	2.0	3.4	10.9	mbar
Fuel hopper volume	400	400	400	litres
Flue pipe diameter	130	130	130	mm
Boiler weight	298	298	305	kg
Boiler-mounted hopper weight	140	140	140	kg
Auger weight per metre	40	40	40	kg
Power supply	230 V/13 A	230 V/13 A	230 V/13 A	

8.3 BOX system outfeed

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	Dimension A - B	Dimension C (variable)	Hopper capacity in m ³	Hopper capacity in t
BOX 5.2	170 cm x 170 cm	180 cm - 250 cm	3.0 m ³ to 5.2m ³	2.0 t to 3.4 t
BOX 7.5	210 cm x 210 cm	180 cm - 250 cm	5.0 m ³ to 7.5 m ³	3.0 t to 4.7 t
BOX 8.3	170 cm x 290 cm	180 cm - 250 cm	6.1 m ³ to 8.3 m ³	4.0 t to 5.4 t
BOX 11	250 cm x 250 cm	180 cm - 250 cm	8.3 m ³ to 11 m ³	5.0 t to 6.7 t
BOX 14	290 cm x 290 cm	190 cm - 250 cm	10.2 m ³ to 14.1 m ³	6.5 t to 9.1 t

GUNTAMATIC

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