Woodchip boiler

englisch

PRO

Planning and Installation

EN-B31-012-V09-0822

GUNTAMATIC

Information on this documentation

BS-01

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 BS-03

1.1 Safety instructions

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

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

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

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:

1.5 Quality management

QM for wood-fired heating systems PR-01

Austria:	www.qmholzheizwerke.at www.qm-heizwerke.at www.umweltfoerderung.at
Germany:	www.qmholzheizwerke.de
Switzerland:	www.qmholzheizwerke.ch www.holzenergie.ch

2 Planning

2.1 Fire safety

BS-01

 **The fire security instroductions are obligatory needed on the construction place** 

 **The Compliance from counties ore states fire security law is obligatory and stands higher then the GUNTAMATIC fire security instruction** 

Austria	State legislation of the federal states Technical Directive on Preventative Fire Safety (pr TRVB H118)
Germany	Standard boiler regulations (M-FeuVO) Hessen and Saarland – in these states §16 FeuVO Hessen applies
Switzerland	Fire safety regulations (www.vkf.ch)
any other exporting countries	Any fire safety office

 **You have to follow you specific country fire safety rules obligatory. Your country safety rules are higher then our GUNTAMATIC minimum rules.** 

 **If there are no specific fire security rules in your country, you have to follow the GUNTAMATIC introductions** 

2.2 Minimum fire safety requirements 01

Boiler room

Floor of concrete construction, either bare or tiled. All materials for floor, walls and ceiling must be fire-resistant to F60/REI60 rating.

Boiler room door: boiler rooms should not be generally accessible. At the entrance to a boiler room there should be clearly visible signs indicating the purpose of the room, that access is prohibited for unauthorised persons, that no smoking is allowed and naked flames are forbidden. The boiler room door must be a Class T30/$EI_2$30-C fire door which opens in the direction of escape, is self-closing and lockable. Connecting doors to the fuel storeroom must also be Class T30/$EI_2$30-C fire doors, self-closing and lockable. There must be no direct connection to rooms in which highly flammable or easily combustible materials are stored (e.g. garage).

Boiler room windows: windows which constitute a risk of fire cross-over must be fire-inhibiting.

Combustion air supply: an adequate supply of combustion air to the boiler from outside must be provided.

Sprinklers: connected to the outfeed unit there must be a sprinkler device set to trip at 55°C. When the sprinkler is triggered, the outfeed auger enclosure is completely flooded. The quantity of water required to do so is at least 20 litres.

The sprinkler system must be connected on all systems regardless of local regulations!

Fuel storeroom

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/$EI_2$30-C, selfclosing 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.

Filler pipes: filler pipes through rooms where there is a fire risk must be provided with Class F90/REI90 cladding.

Safety systems

In Austria various safety systems are required according to prTRVB H118 (Technical Directive on Preventative Fire Safety) depending on the system design, heat output, fuel type and fuel store size.

Woodchip

RSE = Burn-back prevention device (fire safety flap
RZS = Back-ignition prevention device (fire safety flap)
SLE = Automatic fire extinguishing facility (sprinkler)
RHE = Burn-back inhibiting facility (sloping fuel auger)
FÜF = Flame monitor in boiler room (photo sensor)
TÜB = Temperature monitor in the fuel storeroom/bunker

A temperature monitor connected to a visual and audible warning device must be installed at the point where the fuel auger exits the fuel store and enters the boiler room. The warning device must be triggered when the temperature exceeds 70°C.

Safety equipment to be provided on site

HLE = Manually operated fire extinguishing facility

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 auger exits the storeroom. The fire extinguishing facility must be identified by a sign carrying the inscription "**Fuel storeroom fire extinguisher**.

Pellets

RSE = Burn-back prevention device (fire safety flap)
RHE = Burn-back inhibiting facility (sloping fuel auger)

For heating systems with a heat output > 150kW or fuel storerooms > 50m³, differences from this directive in the form of special designs are permissible if they provide at least the same degree of fire safety as required by this directive (prTRVB h118).

Any differences are to be examined by a testing agency and documented in an inspection report!

2.3 Boiler room requirements

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Minimum room height	ideal	**H 280 cm**
	[1] possible	**H 250 cm**

[1] = the flue pipe connection on the boiler must be turned either horizontally to the rear or 45° rising to the rear

Minimum room size	1 module	**B 270 cm x [2] T 330 cm**
		Module accessible from the left
		B 270 cm x [2] T 430 cm
		Module accessible on one side and from the rear
	2 modules	**B 540 cm x [2] T 330 cm**
		Each module accessible from the left
		B 440 cm x [2] T 430 cm
		Each module accessible on one side and from the rear

[2] T = the space seen from the front of the boiler to the rear

Clear access opening	[3] ideal	**B 150 cm x H 230 cm**
	[4] possible	**B 125 cm x H 200 cm**
	[5] possible	**B 90 cm x H 200 cm**

[3] = Insertion of the fully assembled boiler on the transport timber
[4] = Boiler supplied in parts
[5] = All screw-on parts must be dismantled

Combustion air supply

The pressure in the boiler room must not be less than 3 Pa (0.3 mm H_2O). The air vents for boiler rooms where the fuel heat output is 50 kW or more must have a clear, net cross-sectional area of at least 5 cm² per kW of rated output. 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/REI90. 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.

Electrical installation

The lighting and the electrical wiring in the boiler room must be permanently installed. For every heating system there must be a clearly marked lockable heating master switch and an emergency off switch in an easily accessible position outside the boiler room, close to the boiler-room door.

The line connector 400 VAC, 50 Hz, 20 A is needed.

Fire extinguisher

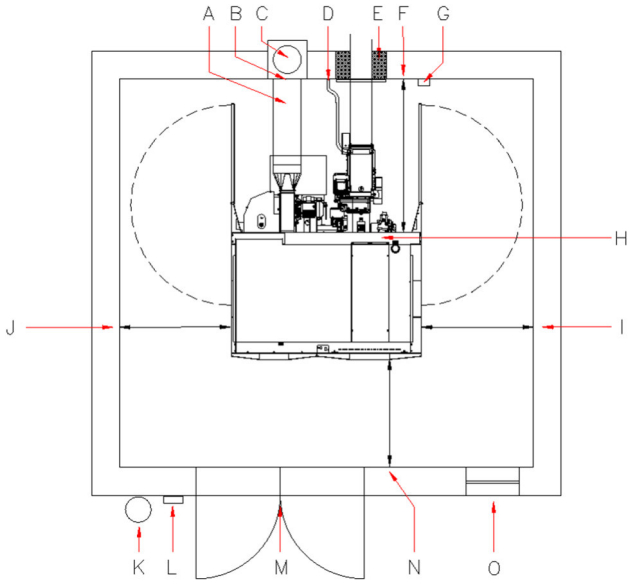
A hand-held fire extinguisher (6kg gross weight, EN3) must be mounted outside the boiler room near the boiler-room door.

Protection against freezing

The boiler room, pipes carrying water and any district heating pipes must be protected against freezing.

Installation site

Plan for positioning the module(s) as close as possible to the flue to avoid having a long flue connecting pipe. For servicing purposes and for emptying the ash box, the module should ideally be accessible from the left or from the rear left. Should it be necessary due to the circumstances of the site to position the module with its left side against the wall, it is not possible to empty the ash box. With this configuration, the automatic ash extraction system has to be installed. In the case of cascade systems with multiple modules, the use of an automatic ash extraction system is generally advisable.



A → Installation option with draught regulator/pressure-surge compensator in flue connecting pipe (As close as possible to junction with flue – observe local regulations)

B → Installation option with flue draught regulator/pressure-surge compensator in flue (Approx. 50cm below junction with flue – observe local regulations)

C → Flue (fireclay flue that is insusceptible to damp recommended)

D → Water connection for sprinkler device set to trip at 55°C (must be connected)

E → Wall aperture (height 70 mm, width 45 mm)

F → Clearance at rear

possible	**130 cm**	if clearance at left is at least 1m
	230 cm	if clearance at left is less than 1m or if several modules are placed adjacent to one another

G → Drain for safety valves and temperature relief valve

H → Mains power connection

I → Clearance at right

possible	**0 cm**	if clearance at left and at rear is at least 1m
	100 cm	1m if clearance at left is less than 1m

J → Clearance at left

possible	**0 cm**	if clearance at right and at rear is at least 1m
	100 cm	if clearance at right is less than 1m

K → Fire extinguisher 6 kg gross weight to EN3

L → Emergency off switch

M → Fire door Class T30/EI$_2$30-C lockable and self-closing

N → Clearance at front

ideal	**150 cm**
possible	**100 cm**

O → Combustion air inlet 5 cm² per kW output

2.4 Flue requirements

02

The system may always be connected to flues dimensioned in accordance with DIN EN 13384. For our furnaces, we recommend (with no obligation in this respect) thermally insulated refractory clay flues that are insensitive to moisture and resistant to over 400°C. For automatically fed furnaces, we also recommend thermally insulated, soot fire-resistant stainless steel flues as an alternative, provided the system is correctly dimensioned. (Valid for the usual turbulator delivery condition "Set heating value". If the situation should differ, see the information in the chapter on flue connection). In order to produce an exact flue design, the flue gas values listed below must form the basis of a flue calculation. It is advisable to involve the chimney sweep in the planning phase, because they have to approve the flue system.

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.

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.

PRO 175 / 250	eff. height over	6 m	D = 250 mm
	eff. height under	6 m	D = 300 mm

Flue dimensioning data

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

Rated output[*)]

Type	Flue gas temp.	CO_2	Mass flow rate	Required draught
PRO 175	150°C	12,0%	0,144 kg/s	10 Pascal
PRO 250	180°C	12,0%	0,194 kg/s	10 Pascal

Sub-maximum output[*)]

Type	Flue gas temp.	CO_2	Mass flow rate	Required draught
PRO 175	110°C	10,0%	0,051 kg/s	2 Pascal
PRO 250	130°C	10,0%	0,051 kg/s	2 Pascal

*) Exhaust gas and CO2 values preset according to the fuel qualities commonly used in practice - can be optimised by menu settings if the fuel quality is ideal.

2.5 Flue draught regulator/pressure-surge compensator

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Fitting an energy-saving flue draught regulator/pressure-surge compensator is absolutely imperative!

Fit 2 if necessary!

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 draught regulator installed.

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).

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.

2.6 Fuel store requirements 03

Estimating annual requirement

Calculation is based on the following annual fuel requirements per kilowatt of building heat demand:

Approx. 2,00 m³ Hardwood woodchips (m³ - per 1 kW/year)

Approx. 2,50 m³ Softwood woodchips (m³ - per 1 kW/year)

Approx. 0,65 m³ Pellets (m³ - per 1 kW/year)

Storeroom configuration

The storeroom should ideally be square in order to achieve the best possible utilisation by the agitator.

Storeroom ventilation

Storerooms and storage containers must be designed and ventilated to avoid life-threatening CO concentrations up to ≤ 100 tonnes according to ÖNORM EN ISO 20023 and > 100 tonnes according to ÖNORM EN ISO 20024. Ventilation openings must lead to the outside and ensure that air exchange takes place between the storeroom and the ambient air. If the natural thermal situation is insufficient, appropriate technical precautions must be taken. If the filler nozzles do not open into the outside air, ventilation must be provided via a separate ventilation opening. Ensure that no rainwater can enter the storeroom via the ventilation opening. The installation rooms of storage containers made of air-permeable fabric must have a ventilation opening leading to the outside air.

INFO: The overall ventilation cross-section of 2 caps on our filling sets is 60 cm².

The following information is based on the above-mentioned standards and is a recommendation with no guarantee of completeness and correctness. Always observe the relevant mandatory standards and national regulations as a matter of priority.

Flex storeroom, agitator, auger ... with sloping floor

1) Storeroom with Guntamatic filling set
   - Can be used up to a maximum 2 m line length and 15 t capacity;
   - Filling openings outside max. 0.5 m higher or max. 0 m lower than inside;

2) Storeroom as above (1) but 15-100 t capacity
   - With additional ventilation opening ≥ 10 cm²/t (min. 150 cm²)

3) Design as above (1) but with longer filling line or greater height difference
   - Establish ventilation according to EN ISO 20023

4) Large capacity storage > 100 tons capacity
   Establish ventilation according to EN ISO 20024

Ventilation opening with filter

If the ventilation opening in the fuel store is equipped with a dust filter (e.g. in joinery extraction systems), a pressure sensor with warning device (e.g. signal horn) must be installed in the fuel store, which indicates dirty filter fabric in the ventilation opening in the event of a pressure difference in the storeroom.

Air pressure monitor

Fuel storerooms must be ventilated in such a way that no overpressure or underpressure can develop in the storage room. If ventilation openings are closed by means of a filter mat, for example in Schräder systems or joinery extraction systems, an air pressure monitor must be installed in the storeroom, which immediately switches off the heating system in case of dangerous overpressure or underpressure in the fuel store.

Storeroom filling

Woodchips are usually delivered by a tipper lorry. A surfaced access to the storeroom is required. Ideally, the storeroom should be located on the outside wall and filled through a door. To prevent damage to the agitator when the woodchips are being shovelled into the storeroom by a front loader, the bottom edge of the filler door should be at least 30 - 40 cm above the lowest point of the agitator arms. If the fuel storeroom is filled by a tanker truck using a compressed-air delivery system, the filler pipes must be earthed. With this method of filling, make sure the storeroom is dust-sealed.

Access doors/boarding

Above-ground fuel stores must be provided with a lockable door or hatch (outward-opening) with an opening area of at least 1.80 m². 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. Attached to the access door there must be a warning sign indicating the dangers of entering the storeroom and offering safety guidance.

Electrical installations

Agitator

Electrical equipment is prohibited in the fuel storeroom.

Overhead filler auger

The drive motor and the necessary electrics must be installed outside the storeroom.

Filler set

The filler pipes must be earthed.

At least 2 filler pipes must be installed. Minimum separation 0.5m – maximum separation 1.5m.

Structural requirements

The enclosing walls must be capable of withstanding the possible static loads created by the stored fuel and the pressure when filling the fuel store.

Damp-proofing

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.

Floor boarding

If fuelling the system with pellets, a boarded or concrete floor is absolutely essential. If the system is to be fuelled exclusively with woodchips, the floor can be covered with dry logs instead of boards.

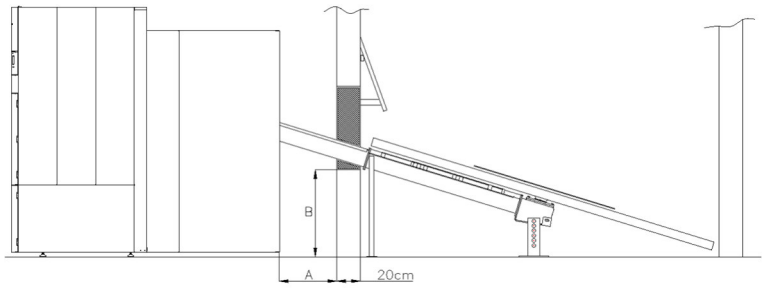
Filler auger

The drive motor and the necessary electrics must be installed outside the storeroom. A lockable emergency off switch with motor cut-out function must be installed in the immediate vicinity of the filler shaft. Storeroom doors must be provided with a door switch which cuts off the power supply to the filler auger when the door is opened. The filler shaft must be covered by a grate.

Wall opening

The tables of dimensions below detail the measurements for positioning the wall opening according to the length of the auger:

Width 450 mm
Height 700 mm



All agitator fuel outfeed systems are supplied with a fuel outfeed unit, an auger trough and the relevant agitator.

Standard outfeed system:

Agitator	Dimension A	Dimension B
3,0 m	Approx. 49 cm	Approx. 73 cm
3,5 m	Approx. 49 cm	Approx. 76 cm
4,0 m	Approx. 49 cm	Approx. 79 cm
4,5 m	Approx. 49 cm	Approx. 82 cm
5,0 m	Approx. 49 cm	Approx. 85 cm

Standard outfeed system + additional 55cm auger trough:

Agitator	Dimension A	Dimension B
3,0 m	Approx. 102 cm	Approx. 62 cm
3,5 m	Approx. 102 cm	Approx. 65 cm
4,0 m	Approx. 102 cm	Approx. 68 cm
4,5 m	Approx. 102 cm	Approx. 71 cm
5,0 m	Approx. 102 cm	Approx. 74 cm

Standard outfeed system + additional 110cm auger trough:

Agitator	Dimension A	Dimension B
3,0 m	Approx. 156 cm	Approx. 53 cm
3,5 m	Approx. 156 cm	Approx. 56 cm
4,0 m	Approx. 156 cm	Approx. 59 cm
4,5 m	Approx. 156 cm	Approx. 62 cm
5,0 m	Approx. 156 cm	Approx. 65 cm

Standard outfeed system + additional 220cm auger trough:

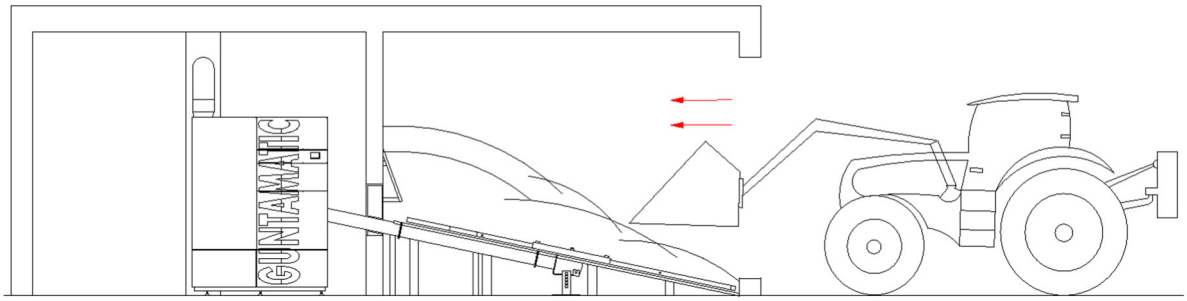
Agitator	Dimension A	Dimension B
3,0 m	Approx. 265 cm	Approx. 42 cm
3,5 m	Approx. 265 cm	Approx. 45 cm
4,0 m	Approx. 265 cm	Approx. 48 cm
4,5 m	Approx. 265 cm	Approx. 51 cm
5,0 m	Approx. 265 cm	Approx. 54 cm

2.7 Planning examples for the fuel store

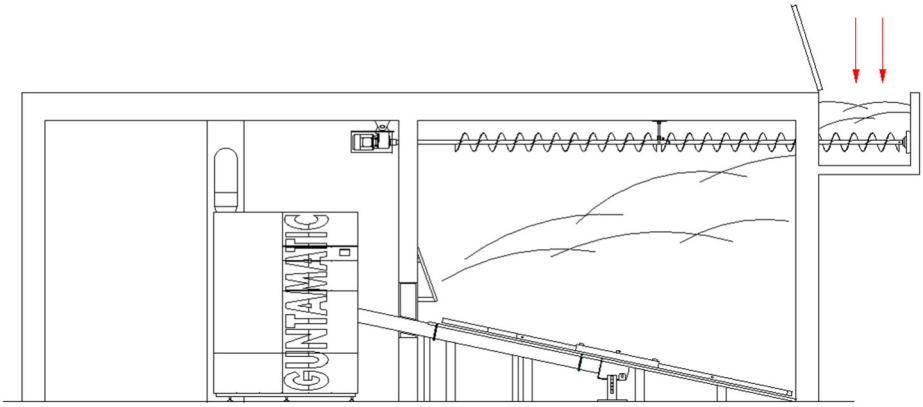
02

For systems fuelled by pellets, filler connections must also be provided.

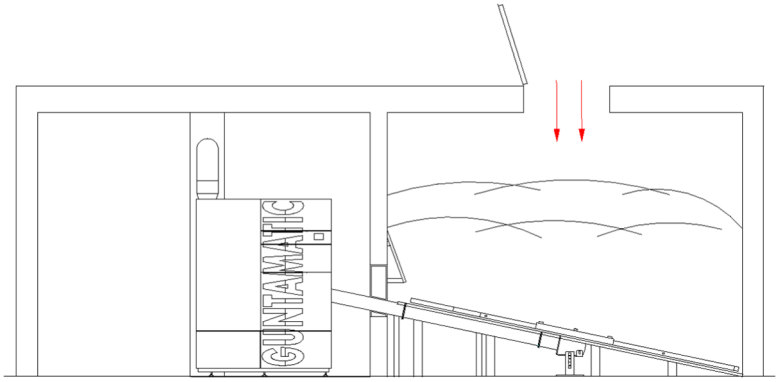
Planning example 1 The storeroom is alongside or behind the boiler room and can be filled through a door by a front loader. The maximum length of the outfeed system including agitator is 7 m.



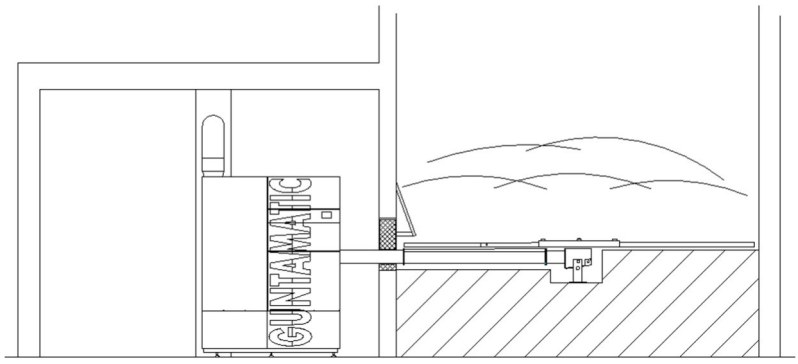
Planning example 2 The storeroom is alongside or behind the boiler room and is filled by an overhead filler auger from a filler shaft. Available filler auger lengths: 3 m, 4 m, 5 m, 6 m or 7 m (non extendable).



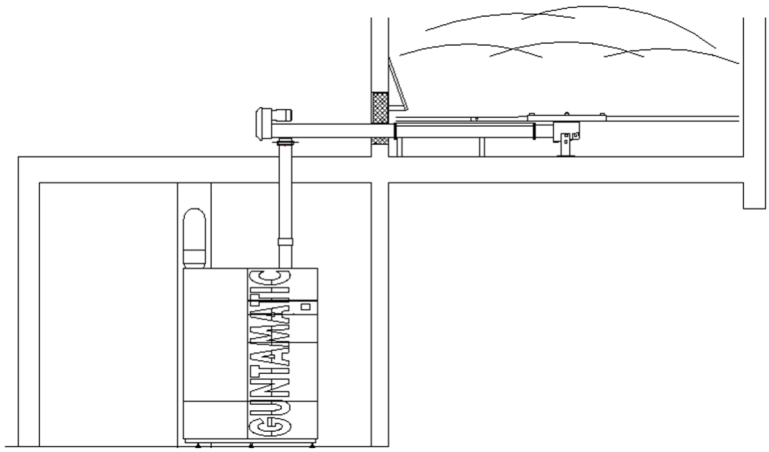
Planning example 3 The storeroom is alongside or behind the boiler room and the fuel is brought in via a shaft in the storeroom ceiling. The maximum length of the outfeed system is 7 m.



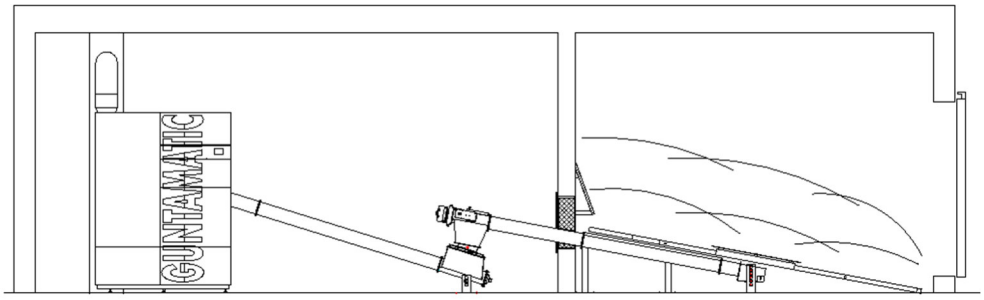
Planning example 4 The storeroom is alongside or behind the boiler room. The fuel outfeed from the storeroom is via a horizontally mounted agitator.



Planning example 5 The storeroom is above the boiler room. The fuel is carried via a downpipe through the ceiling to the boiler.



Planning example 6 Outfeed system with transfer unit and feeder auger. The maximum length of the feeder auger is 7 m.



2.8 Automatic ash extraction system

PC-02

> The information below is provided primarily for system planning purposes. Full details of installing the automatic ash extraction system are provided in the separate installation and operating instructions supplied with the system!

An optional automatic ash extraction system is available. The extraction system is built into the boiler and conveys the accumulated ash via flexible metal vacuum pipes (maximum length of 20 m vacuum pipe and 20 m air return pipe) to a large-capacity wheeled ash bin. Ash removal is fully automatic.

Retrofitting

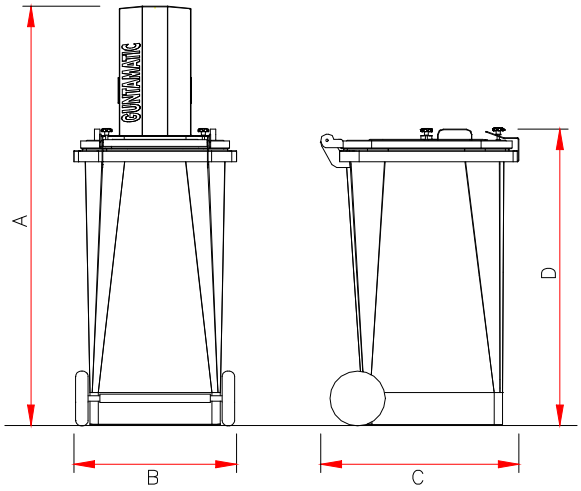
The automatic ash extraction system can also be retrofitted at a later date.

A → 153 cm

B → 59 cm

C → 72 cm

D → 107 cm



Siting the ash bin

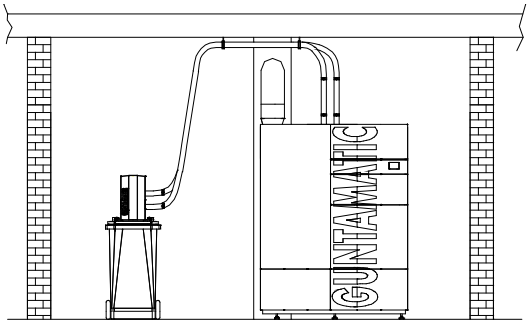
If possible, plan for placing the ash bin at ground level in the boiler room near the boiler. A fundamental requirement for the siting of the ash bin is good ventilation of the room in which it is placed. The ash bin must be sited permanently with a minimum clearance of 25 cm from combustible materials and on a non-combustible base that extends at least 5 cm beyond the bin on all sides.

Locations where the ash bin must not be installed:

- Garages;
- Outdoors (unless protected from frost and ventilated)
- Rooms used for living purposes;
- Storerooms for flammable liquids and gases;

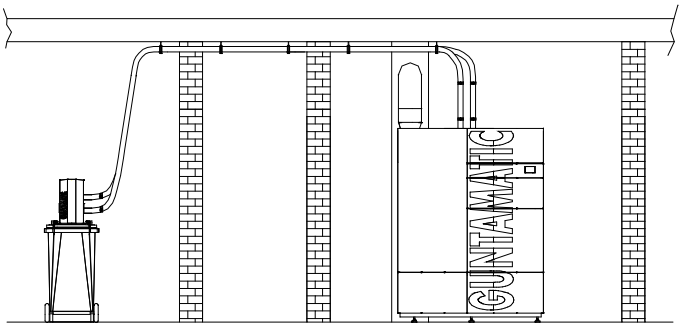
Locations where the ash bin may be installed:

- In the boiler room



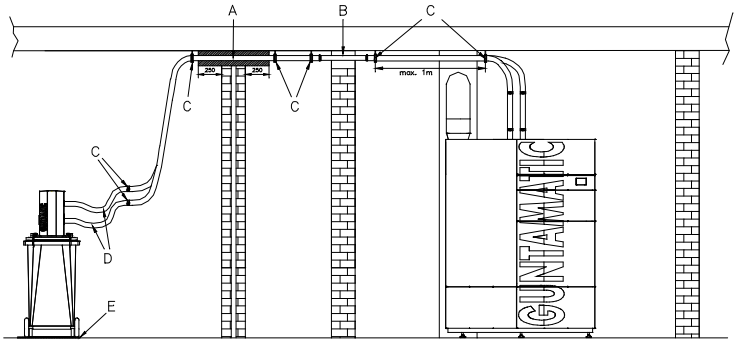
PR-01

- In an adjoining room



PR-01

Vacuum pipe routing through fire containment zones:



PR-01

A → Passage through wall using mineral wool sleeves;

B → Passage through wall using steel tube built into wall;

C → Fireproof pipe bracket 54-60 ZUS (maximum spacing 1 m)

D → Metal vacuum hoses (spacing at least 10 cm)

E → Non-combustible base;

2.9 MAINS CIRCUIT CONTROL

PR-02

IMPORTANT INFORMATION

- **The mains circuit control is standard with every system** (module)**.**
- **The heating circuit control cannot be additionally used in systems with activated mains circuit control.**
- **For systems** (modules) **with EC filter, the mains circuit pumps cannot be remote-controlled via the 0-10 V input.**

The following functions can be activated on each system (module):

Hot water optionally as
- Hot water storage tank
- [1] Double pump for mains circuit 2

Mains circuit 0 optionally as
- Pump network circuit
- [2] Double pump for mains circuit 1
- [3] Auxiliary hot water tank
- [4] External heater

Mains circuit 1 optionally as
- Pump network circuit
- [5] Mixed network circuit

Mains circuit 2 optionally as
- Pump network circuit
- [6] Mixed network circuit

INFO

1) The double pump function for mains circuit 2 can only be activated if the hot water tank 0 function is deactivated;
2) The double pump function for mains circuit 1 can only be activated if the pump mains circuit 0, auxiliary hot water tank and external heater functions are deactivated;
3) The auxiliary hot water tank function can only be activated if the pump mains circuit 0, double pump for mains circuit 1 and external heater functions are deactivated;
4) The external heater function can only be activated if the pump mains circuit 0, double pump for mains circuit 1 and auxiliary hot water tank functions are deactivated;
5) Mains circuit 1 can only be operated with double pump if the functions pump mains circuit 0, auxiliary hot water tank or external heater are not used;
6) Mains circuit 2 can only be operated with double pump if the hot water tank function is not used;

2.10 HEATING CIRCUIT CONTROL

PR-02

IMPORTANT INFORMATION

- **The mains circuit control cannot be additionally used in systems with activated heating circuit control.**
- **Only wall-mounted MK261 units can be installed.**
- **For each system** (module) **up to three wall-mounted units Set MK261** (= heating circuit controls) **can be installed.**
- **For each system** (module) **up to a maximum of three digital room stations can be installed.**
- **One analogue room unit can be installed for each heating circuit.**
  ATTENTION: Exceptions when connecting the 5-sensor buffer management device to a wall-mounted unit Set MK261.

The following functions can be activated on each installed wall unit:

Hot water ..... ● Hot water tank

Heating circuit 0 optionally as ..... ● Pump heating circuit
7) ● Third mixed heating circuit

Heating circuit 1 optionally as..... ● Pump heating circuit
● Mixed heating circuit

Heating circuit 2 optionally as..... ● Pump heating circuit
● Mixed heating circuit

Remote line optionally as ..... ● Buffer pump (PUP)
● Feed pump (LAP)
8) ● Extension (ERW)
9) ● Third mixed heating circuit

Auxiliary unit optionally as ..... ● Auxiliary hot water tank
● External heater
10) ● Third mixed heating circuit

INFO

7) The "third mixed heating circuit" can only be activated if the functions remote line and auxiliary unit are not used;

8) The "ERW" function can be used to assign another heating circuit controller to a heating circuit controller with a remote line;

9) If the "third mixed heating circuit" function is activated, the remote line functions are not available;

10) If the "third mixed heating circuit" function is activated, the auxiliary functions are not available;

notes

3 Assembly

3.1 Delivery

BS-01

The heating system is delivered packaged in plywood. Please refer to the delivery note to check whether the delivery is complete 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.

3.2 Carrying to installation site

BS-01

The system is delivered mounted on transport timber and can be lifted and driven to the installation site with a lift truck.

Multi-part insertion

The boiler body can be disassembled into parts and inserted. In this case, GUNTAMATIC-authorised personnel must be consulted.

3.3 Positioning and aligning the boiler

03

Keep to the minimum wall clearances specified by the system planner and manufacturer. If important details are missing, please 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 at rear

ideal **100 cm**
if clearance at left is less than 1m or if several modules are placed adjacent to one another

possible **0 cm**
if clearance at left is at least 1m

Clearance at left

ideal **100 cm**
if clearance at right is less than 1m

possible **0 cm**
if clearance at right and at rear is at least 1m

Clearance at right

ideal **100 cm**
if clearance at left is less than 1m

possible **0 cm**
if clearance at left and at rear is at least 1m

Clearance at front

ideal **150 cm**

possible **100 cm**

Floor clearance

ideal **5 cm** adjust by means of screw feet

possible **8 cm**

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.

3.4 Fuel outfeed installation

04

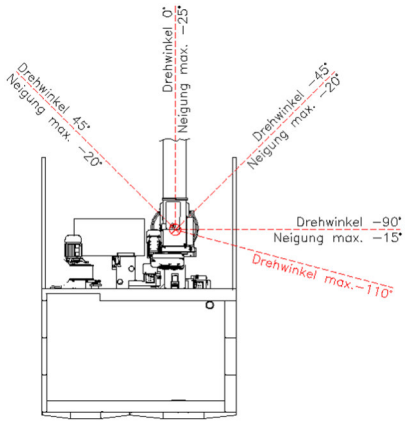


Fig: 1

1) Erect the boiler in the boiler room with the required minimum wall clearances, setting the adjustable feet so that the boiler is slightly higher at the rear so that the air inside the boiler can escape when the system is filled.

2) When setting up the boiler, be aware that the fuel auger is mounted on the right-hand side of the boiler (viewed from above) and the auger can only be set at an angle of approx. 0° to 45° or 0 to -90° (max. 110°) (see Fig. 1)

3) The storeroom should not be significantly lower down than the boiler room (no more than 20 - 30 cm). The maximum possible inclination angles for the outfeed auger are shown in Fig. 1. If the fuel auger slopes steeply downwards, the storeroom should be adapted to the slope of the agitator.

4) With the stoker unit removed, insert the inlet seal (A, Fig. 4) between the stoker unit and boiler flange and secure with 6 M08x25 hexagon-head bolts, flat washers, spring washers and nuts. Unscrew the foot (B, Fig. 4) on the stoker unit to take the weight of the stoker unit. Connect the electrical leads for the ignition fan, fire safety flap motor, stoker sensor, fill-level sensor, drive motor G1 and drive motor A1.

5) Place the drive unit (C, Fig. 4) on the stoker unit and turn it towards the storeroom. The drive unit ball should form an airtight seal with the rubber seal (D, Fig. 4) of the stoker unit.

6) Pre-assemble the required conveyor trough sections (0.22 m, 0.55 m, 1.10 m, 2.20 m or 2.97 m) on the floor. Always fit the 1,1 m trough section supplied as standard (E, Fig. 4) in the area where the auger passes through the wall. Screw the individual trough sections firmly together using M08x30 hexagon-head bolts, washers and nuts (joins should be flush on the inside). Join the individual auger sections together so that the auger slope is even and continuous (F, Fig. 4). Then connect the pre-assembled outfeed auger to the drive unit (C, Fig. 4).

7) Connect the agitator (G, Fig. 4) to the outfeed auger, making sure that the auger slope is even and continuous (F, Fig. 4). Then screw the auger trough sections firmly together.

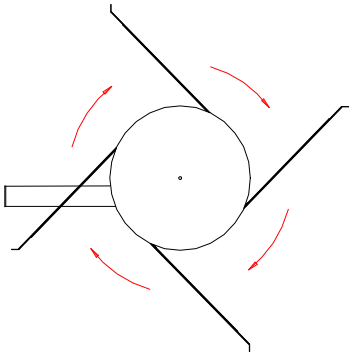


Fig: 2

8) Fit the spring arms to the agitator. The agitator rotates clockwise (Fig. 2). Fit the longest arms opposite one another. The spring arms (I, Fig. 4) must be 15-20 mm above the outfeed auger at the point where they pass over it. Do not tighten the bolts (H, Fig. 4) on the spring arms. The agitator feet (J, Fig. 4) must be adjusted so that the longest arm is 3-4 cm clear of the floor at its lowest point (K, Fig. 4).

9) Screw the drive unit to the stoker unit using the fixing screws (L, Fig. 4) (M10x100 and M10x70mm mm) making sure it forms an airtight seal.

10) Place the agitator centrally in the storeroom so that the spring arms clear the storeroom walls by a few centimetres. Firmly secure the agitator to the storeroom floor using masonry screws and wall plugs.

11) Using the legs supplied (V), support the outfeed auger in the storeroom at the mid-point of the auger and where it exits the storeroom (Fig. 6).

(Legs should not be more than 120 cm apart)

12) Position the feet so that they cannot move lengthways. The legs should rest against the flanges/support brackets of the auger. Place sound insulating material underneath to prevent noise transmission. Adjust the legs vertically so that the auger is resting firmly on them. Firmly secure the legs to the storeroom floor using masonry screws and wall plugs.

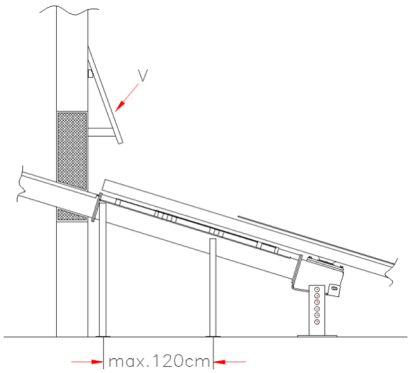


Fig: 3

13) Seal the hole in the wall (M, Fig. 4, dimensions H 700 x W 450 mm) around the outfeed auger with mineral wool and cover the gap on both sides of the wall with the cover plates supplied. If necessary, break out the perforations in the cover plates.

14) If the boiler is to be run on woodchips, a sloping storeroom floor is not absolutely imperative. If it is to run on pellets, a sloping storeroom floor must be constructed.

- Use planed timber boards (larch) or blockboard panels 3 cm thick.
- Rest the boards/panels on the lip of the outfeed auger. A supporting substructure as shown in Fig. 6 should be constructed at the rear of the agitator.

15) The boarding (V, Fig. 3) over the inspection hatch must be provided on site and prevents uncontrolled spillage of the fuel into the boiler room. A sloping board 3 cm thick and 80 cm wide must be fitted at an angle of approx. 20°, 40 cm above the outfeed auger and 40 cm from the storeroom wall. The structure must be adequately fixed and adequately supported underneath.

The auger drive unit must form a 100% airtight seal with the fuel chute. The rubber seal must completely seal the ball joint. Fix the drive unit securely with the screws supplied.

16) Connected to the outfeed unit there must be a sprinkler device set to trip at 55°C. When the sprinkler is triggered, the outfeed auger enclosure is completely flooded. The quantity of water required to do so is at least 20 litres. A temperature monitor connected to a visual and audible warning device must be installed in the area where the fuel auger passes through the wall. If 50 m³ of fuel or more can be stored, a manually operated fire extinguishing facility (HLE) 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 duct exits the storeroom. The fire extinguishing facility must be identified by a sign carrying the inscription "Fuel storeroom fire extinguisher".

Fig: 4 **Installation of boiler, fuel auger and agitator**

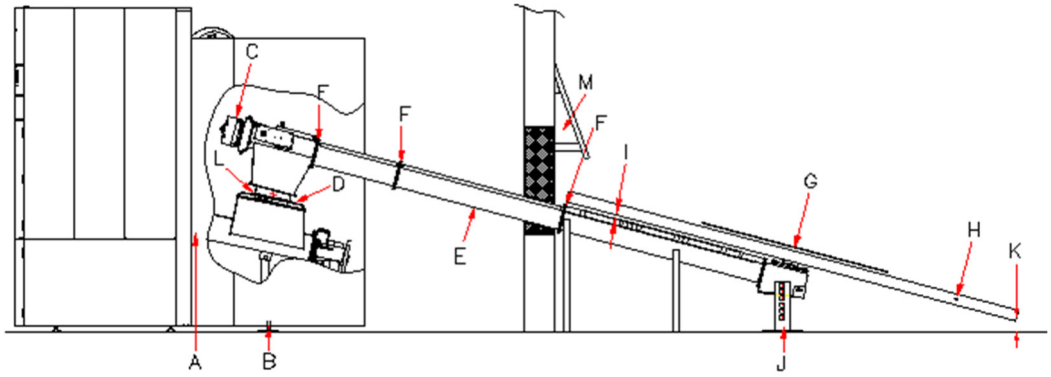


Fig: 5 **Installation of safety systems**

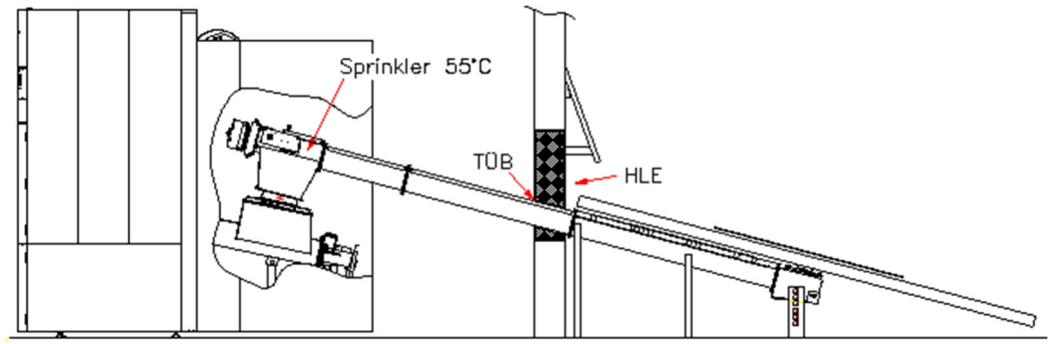


Fig: 6 Installation of sloping floor, emergency off switch, air vents, fire extinguisher, wall opening, safety systems

17) Sloping floors made of wood or concrete must be provided on site. If made of wood, the sloping floor should be constructed of timber boards (larch) or blockboard panels 3 cm thick; the substructure of 10 x 10 cm battens should be as shown in Fig. 6. The posts must stand on concrete or metal plates. The clearance between the agitator arms and the sloping floor must be 15 - 20 mm. With concrete sloping floors, the auger channel clearance should be 2-3 cm.

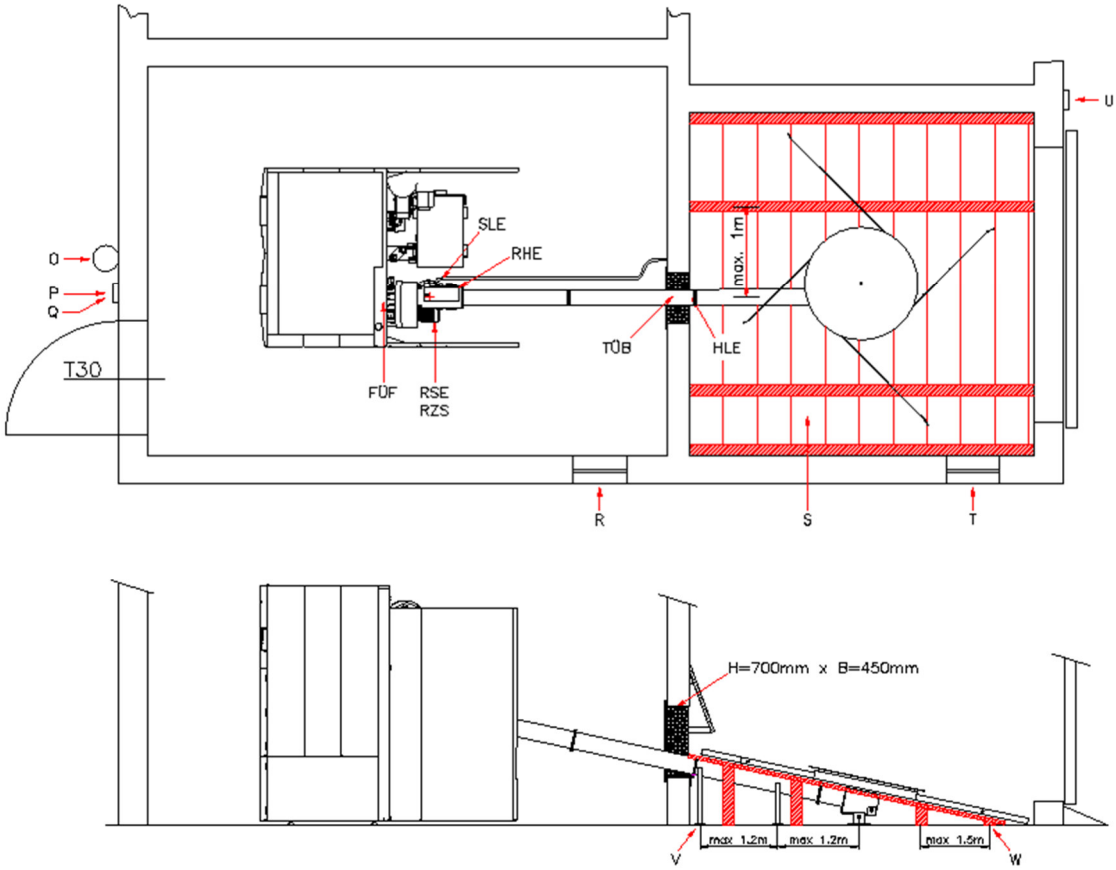


Fig: 6

O → Fire extinguisher (6 kg) adjacent to boiler room door

P → Heating system master switch (lockable)

Q → Heating system emergency off switch

R → Air vent min. size 5 cm² per kW

S → Sloping floor made of wood or concrete

T → Storeroom air vent

U → Storeroom safety switch (lockable)

V → Supports for outfeed auger

W → Supports for sloping wooden floor

Fig: 7

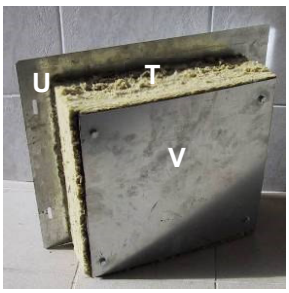


Fig: 8

Fig: 9

18) The construction of the inspection hatch and the associated wall lining should be carried out as described below and will enable access to the storeroom for the purposes of removing any objects that may be jammed in the auger before the enclosed section of the auger trough. The hatch canopy constructed as per Fig. 5 prevents the stored fuel spilling out when the inspection hatch is opened.

- Pack the gap at the sides and below the outfeed auger with mineral wool. Please refer (Q) Fig.7

- Fit the cover plates supplied (R) on the inside and outside. Please refer Fig.7
- Fix the top edge of the lining (S) in the wall flush with the cover plates. Please refer Fig.7

- Cut a section of mineral wool (T) to size to fit the hatch opening. Please refer Fig.8

- Insert the mineral wool (T) between the cover plate (U) and the inspection hatch rear panel (V) as shown in Fig. 8 using the hexagon-head bolts supplied.

- Fit the inspection hatch cover (W) and secure with wing nuts.

3.5 Plumbing connections

PR-02

A → Temperature-relief heat exchanger, ¾"

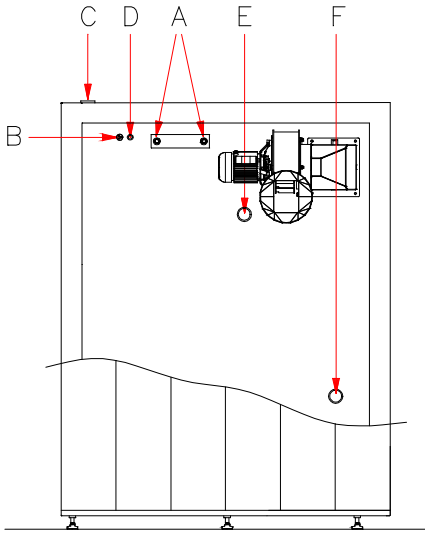
B → Boiler sensor, STL

C → Heating flow, 2"

D → Sensor for temp. relief valve, ½"

E → Heating return, 2" (run pipe upwards)

F → Drain 2“



Temperature-relief heat exchanger

The maximum permissible operating temperature of the firing system is 110°C. In order to prevent the maximum permissible operating temperature from being exceeded, it is necessary to connect a thermal discharge safety device in accordance with EN14597, which responds at 95°C. The connection pressure must be at least 2 bar and must not exceed 6 bar.

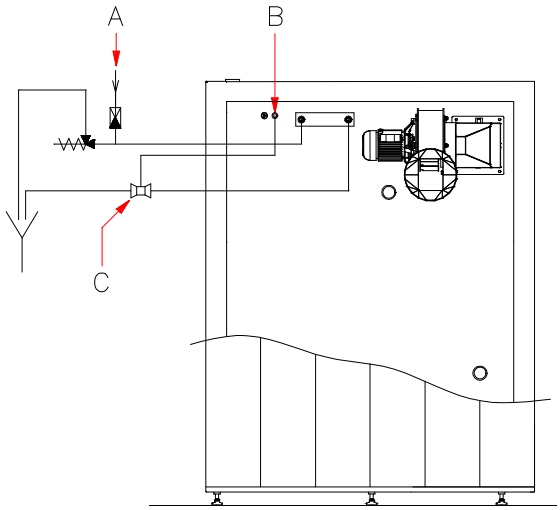
Safety valve

A non-shut-off 1" safety valve for heating systems up to 200 kW or a 1¼" safety valve for heating systems up to 300 kW nominal output according to EN12828 or EN ISO 4126-1 with 3 bar opening pressure must be installed. The drain pipe outlet must be laid and designed in such a way that the functionality is not impaired and no danger can occur when the safety valve responds. The instructions for safety valves must be observed!

A → Cold water supply for Temperature-relief heat exchanger

B → Sensor for temp. relief valve, ½"

C → Temp. relief valve, 95°C



Thermal store

Installing a thermal store is absolutely imperative as it helps to balance the load within the system so that the boiler can be operated with a substantial degree of modulation. In larger systems with multiple modules, a sufficiently large thermal store must be used in order to balance out heating load spikes and to assist sequential boiler control. The minimum thermal store size is stated on the plumbing diagram in each case.

If 5-sensor thermal store management is activated, it is imperative that a return mixer valve controlled by the boiler controller is used.

Compliance with Stage 2 BIMSCHV (Germany) requires a thermal store capacity of at least 20 litres/kW.

Return boost

The boiler return temperature must be at least 55°C and must be guaranteed by a return boost set as per the system plumbing diagram. 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.

The dimensioning of the return boost set is designed for the configurations shown in GUNTAMATIC plumbing diagrams. If additional components such as heat meters are incorporated in the system plumbing, or if the overall thermal store pipe run (flow and return) is more than 25 m, re-dimensioning of the boiler charging pump (HP0) may be necessary.

Use the 2" piping shown in the plumbing diagrams as a minimum or large-sized components with the lowest possible flow resistances.

Sludge separator with magnet

Magnetite and rust sludge in the heating water can prove problematic for energy-saving pumps. Effective and economical remedial action can be taken by installing an appropriately dimensioned sludge separator with magnet.

Older pipe systems in particular can be increasingly affected!

Expansion vessel

The boiler operates in a sealed heating system and must be provided with an automatic pressure maintenance system or 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 is calculated as follows:

System volume x Expansion factor x Additional allowance factor

- Expansion factor for wood-fired boilers = 0,03
- Additional allowance factor (1.5 for systems over 150 kW)

Example calculation: 10000 litres x 0,03 x 1,5 = 450 litres

Pump selection

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.

Plastic piping

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.

Risk of overheating

Incorrect operation, incorrect fuel and faults in the unit can lead to overheating. In order to prevent damage, additional safeguards must be implemented for the maximum domestic hot water temperature and the maximum heating circuit temperatures.

3.6 Filling and bleeding the system

BS-02

Please observe the guidelines for corrosion and boiler protection in heating and domestic water systems!

Water quality

The water quality of hot water systems with max. supply temperatures of 100°C is subject to VDI 2035 Sheet 1 "Avoiding damage in hot water heating systems". The filling and make-up water must be treated or preferably softened if the following limit values of the total hardness [°dH] in relation to the total heating capacity and system volume are exceeded.

Total heating capacity	Total hardness [°dH] depending on the volume of the system		
	< 20 litres/kW	≥ 20 litres/kW < 50 litres/kW	≥ 50 litres/kW
< 50 kW	≤ 16,8 °dH	≤ 11,2 °dH	< 0,11 °dH
50 – 200 kW	≤ 11,2 °dH	≤ 8,4 °dH	< 0,11 °dH
200 – 600 kW	≤ 8,4 °dH	≤ 0,11 °dH	< 0,11 °dH
> 600 kW	< 0,11 °dH	< 0,11 °dH	< 0,11 °dH

External devices

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

Flushing the system

- Before filling the system, thoroughly flush the entire pipe system to remove magnetite and rust sludge from the pipe system as insofar as possible.

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!

3.7 Connecting the flue

PR-02

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.

→ **The following diameters should be used:**

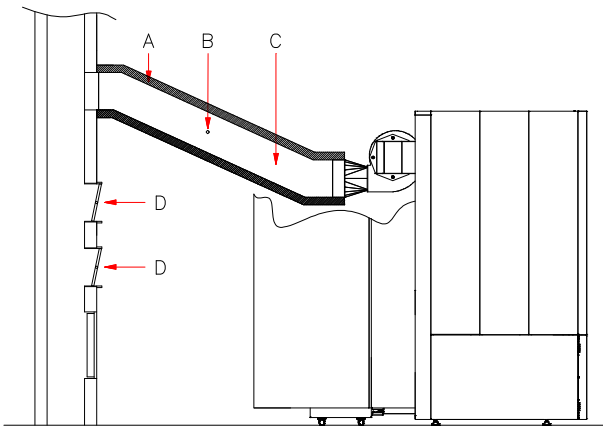
- PRO Ø = 250 mm

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

- PRO Ø = 300 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.

45/90° flue connection elbow, rotatable to vertical position;



A → Insulation (at least 50 mm thick)

B → Testing point for flue draught

C → Flue connecting pipe (min. gradient 6°)

D → Flue draught regulator in flue (install 2 if required)

- The flue connecting pipe must be gas-tight;
- A flue draught regulator with pressure-surge compensator must be fitted;
- Insulate the flue connecting pipe;
- Do not brick in the flue connecting pipe;
- The flue connecting pipe must not extend into the flue;

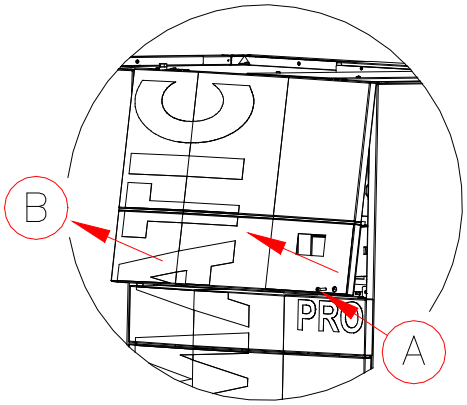
General information regarding the flue: The unit may always be connected to flues that are dimensioned according to DIN EN 13384. For our furnaces, we recommend (with no obligation in this respect) thermally insulated refractory clay flues that are insensitive to moisture and resistant to over 400°C. For automatically fed furnaces, we also recommend thermally insulated, soot fire-resistant stainless steel flues as an alternative, provided the system is correctly dimensioned. (Valid for the usual turbulator delivery condition "Set heating value". If, however the system is ordered with turbulator "Set partial condensing", flue systems must be suitable for heating values in accordance with the relevant standards. The system must be dimensioned in such a way that longer ember or standby phases are avoided (i.e. provide large buffer tanks if necessary), in order to prevent tar deposits in the flue gas system and operating faults. Selection of the turbulator system must take place according to regional efficiency requirements and the available flue gas system. The difference in efficiency of the turbulator systems can be a few percent (please ask for detailed values and tests if necessary). For initial delivery, the selection is cost-neutral (if no specific specification is made, the "Set heating value" for normal flues is supplied for safety reasons). Later or subsequent modifications of the turbulator system are subject to a charge.

4 Electrical connections

PR-03

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.



Opening switch panel

- Loosen the locking screw (A);
- Lift the control cover in the direction of the arrow (B) until it locks into place at the top;
- The circuit board with connection plugs and fuses is located below in an easily accessible position;

Mains connection

400 VAC, 50 Hz, 20 A (surge protector recommended)

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 – either by means of the master switch outside the boiler room door, an automatic circuit-breaker in the control cabinet or the power plug on the rear of the boiler – without opening the switch panel cover.

Master switch

The heating system must be capable of being fully isolated from the mains power supply by means of a master switch mounted outside the boiler room door which can be secured in the 0/OFF position by locking and removing the key so as to prevent it being switched on by unauthorised persons.

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 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.

Safety switch (storeroom)

The agitator must be capable of being switched off by means of a safety switch mounted outside the boiler room door which can be secured in the 0/OFF position by locking and removing the key so as to prevent it being switched on by unauthorised persons.

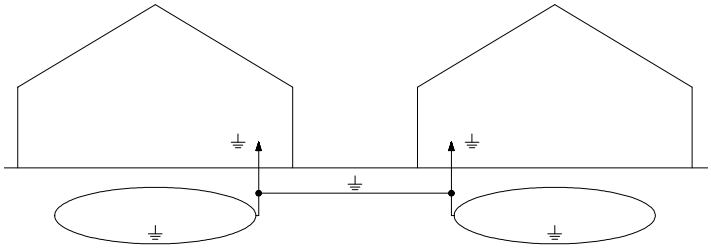
Cabeling

- Feeder min. 5 x 1,5 mm²
  Calculate the required cross-section according to the line length!
- Sensor 2 x 1 mm²
- Room stat 2 x 1 mm²
- CAN-Bus 2 x 2 x 0,5 mm² (twisted pair, shielded)

For low voltage (sensores…) and high voltage, the cable duct on the boiler, is needed

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 interconnected, a 10 mm 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.



Wiring CAN bus

linear wiring: (you have to prefer this kind of wiring)

The connection is rewire linear, further cabling the CAN bus, for example, from the operating unit to the wall unit and the wall-mounted unit to the remote unity.

wirring radial:

The connection is radial wiring, means the CAN bus, for example, from the operating unit to the wall unit and the space station. The total length of the CAN bus connection must not exceed 100 m in this case.

The terminals +/- and H / L connect each twisted pair.

Kaskade verkabeln

Up to four heating boilers can be operated in a cascade system (sequential control system) and must be connected in-line via a CAN bus.

The CAN bus lead must be wired without connecting the + terminal.

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.

Cabel non tensioned

to avoid defects or errors all cables strain relieved

Emergency power supply

Only use regulated generators.

4.1 Heating system electrical connections 01

Mains connection 400 VAC, 50 Hz, 20 A

Standard specifications

- Boiler control panel (BCE)
- Boiler circuit board (230VAC)
- Conveyor module (400VAC)
- Fault signal output (24VDC 200mA)
- Safety temperature limiter
- Boiler sensor (KVT20)
- Stoker sensor (PT1000)
- Flue gas sensor (thermocouple)
- Cleaner sensor (thermocouple)
- Combustion chamber photo sensor
- Door switch, cleaning position (12VDC)
- Combustion chamber door monitor (24VDC)
- Ash box monitor (230VAC)
- Oxygen sensor (12VDC)
- Air flap (24 VDC)
- Fire safety flap (24VDC)
- Inputs for up to 5 thermal store sensors
- Ash extractor motor (230VAC)
- Ash extractor motor speed monitor
- Cleaner motor (230VAC)
- Flue draught fan (230VAC)
- Flue draught fan speed monitor
- Grate motor (230VAC)
- Grate motor speed monitor
- Fill level (conveyor monitor)
- Auger motor (400VAC)
- Stoker motor (400VAC)
- Ignition fan (230VAC)
- Boiler charging pump (230VAC)
- Return mixer valve (230VAC)
- Return sensor (KVT20)
- Storeroom safety switch (230VAC)
- Boiler enabling switch (230VAC)

Optional equipment

- VF Flow temp. sensor (KVT20)
- RF Return temp. sensor (KVT20)
- SF Cylinder sensor (KVT20)
- AF Outside temp. sensor (KVT20)
- NKP Network system pumps (230VAC)
- HKP Heating circuit pumps (230VAC)
- Mixer valve (230VAC)
- Ash extractor fan (230VAC)
- Ash bin sensor (KVT20)
- Ash bin monitor
- Feed auger (400VAC)
- Network system clearance (0-10V)

Resistances

Temperature	KVT20	Temperature	PT1000
-16C°	1,434 kΩ	0C°	1,000 kΩ
-8C°	1,537 kΩ	10C°	1,039 kΩ
0C°	1,644 kΩ	30C°	1,117 kΩ
10C°	1,783 kΩ	40C°	1,155 kΩ
20C°	1,928 kΩ	50C°	1,194 kΩ
30C°	2,078 kΩ	60C°	1,232 kΩ
40C°	2,234 kΩ	70C°	1,271 kΩ
50C°	2,395 kΩ	80C°	1,309 kΩ
60C°	2,563 kΩ	100C°	1,385 kΩ
70C°	2,735 kΩ	125C°	1,480 kΩ

5 Final checks

BS-01

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

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.

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

6 Standards / Regulations

BS-04

The heating appliance is designed in accordance with Class 5 to EN 303-5 and the Agreement of the Austrian Federal States according to Art. 15a BVG relating to safety measures for small combustion heating systems and energy saving. The original type approval certificates are available for inspection at the manufacturer's offices. When connecting the boiler, the following generally applicable standards and safety regulations must be followed in addition to the local fire safety and building control requirements

- **ÖNORM / DIN EN 303-5**
  Heaters for pillar fuel, automatic and manual sanded up to 500 KW. Terms, requirements, and checkups;

- **ÖNORM / DIN EN 12828**
  heaters for pillar fuel, automatic and manual sanded up to 300 kw, terms, requirements, checkups and marking;

- **ÖNORM / DIN EN 12831**
  Heating systems inside buildings; procedures for calculating rated heat input;

- **ÖNORM EN ISO 20023 und ÖNORM EN ISO 20024**
  Requirements for pellet storage by the end user;

- **ÖNORM M 7510**
  Guidelines for the inspection of central heating systems;

- **ÖNORM H 5195-1** (Austria)
  Preventing damage from corrosion and scale formation in hot-water circulation heating systems with operating temperatures up to 100°C;

- **VDI 2035** (Germany)
  Preventing damage in hot-water circulation heating systems; corrosion from heating-system water;

- **SWKI 97-1** (Switzerland)
  Limescale and corrosion-proofing in heating systems;

- **TRVB H 118** (for automatically stoked systems in Austria)
  Technical directive on preventative fire safety;

- **DIN 1988**
  Technical regulations for household-water installations (TRWI);

- Swiss Clean Air Regulations LRV

- Swiss Regulations on Small Combustion Heating Systems

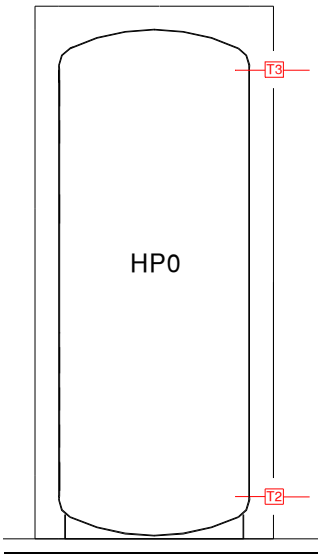
- VKF Fire Safety Directive for Heating Systems (Switzerland)

- SIA 384 (Switzerland)

7 Connection diagrams

7.1 Buffer tank HP0

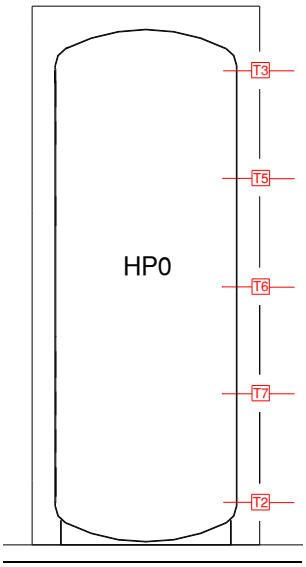
PH-01



2 Sensors - Buffer management

- Setting "PART load"
  The buffer tank is predominantly only loaded in the top section. ON and OFF switching temperatures can be set via buffer parameters.

- Setting "FULL load"
  The buffer tank is fully loaded from top to bottom. ON and OFF switching temperatures can be set via buffer parameters.



5 Sensors - Buffer management

NOTE:

The additionally required buffer sensors T5, T6 and T7 must be connected on the boiler PCB or on a wall unit on the connection terminals of the analogue room units. Therefore, no analogue room units RFF can be programmed for heating circuits on this controller.

As an alternative, use digital room stations RS or an additional wall unit Set-MKR261 for connecting the analogue room sensors RFF.

- Setting "PARTIAL LOAD LIMIT"
  The buffer tank is loaded with full boiler output until the set partial load limit is reached. As soon as this limit is reached, the boiler output is reduced by the buffer management to such an extent that this load status of buffer can be maintained for as long as possible and restarts of the system are therefore avoided insofar as possible.

PRO 175 / 250 minimum thermal store capacity 4,000 litres 05

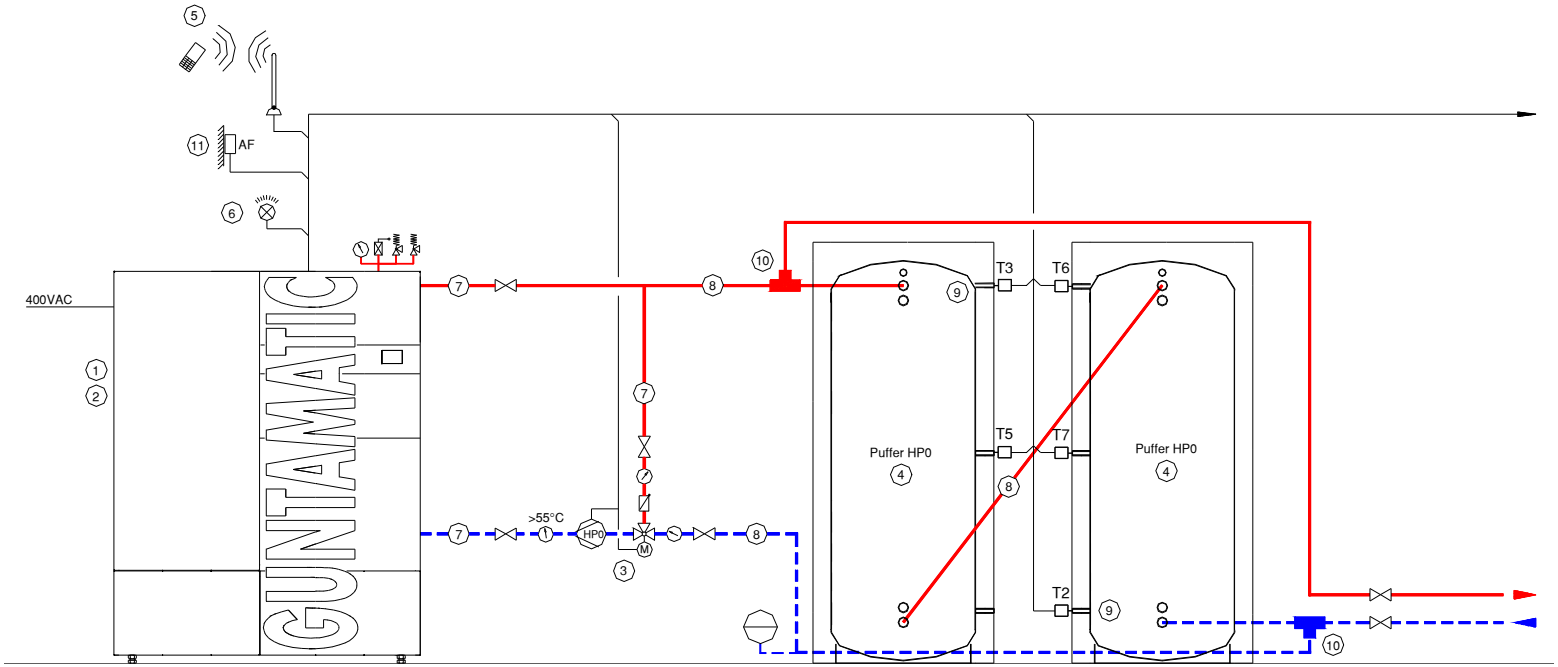
optionally with or without mains circuit control - for on-site heating circuit control

Diagram no: PR-01

Electrical connections as per operating and installation instructions

1.	1 PRO	As price list
2.	1 Flue draught regulator RE	As price list
3.	1 Return boost set RA250 A	H39-024
4.	2 Thermal store Akkutherm	As price list
5.	1 GSM module / APP	As price list
6.	Fault indicator lamp (Follow wiring diagram)	Not supplied
7.	Pipe size 2"	Not supplied
8.	If pipe length exceeds 2 x 25m for thermal store flow and return, use 3" pipe	Not supplied
9.	5 thermal store sensors	S70-003
10.	T-joints, minimum size 4"	Not supplied
11.	1 Outside temp. sensor	S70-001

Note: If network system controller is used, heating system controller cannot be activated.



HP0 setting = Thermal store pump

Connection sheet Mains circuit control 01 or 02

PRO 350 / 425 / 500 minimum thermal store capacity 10,000 litres 06

optionally with or without mains circuit control - for on-site heating circuit control

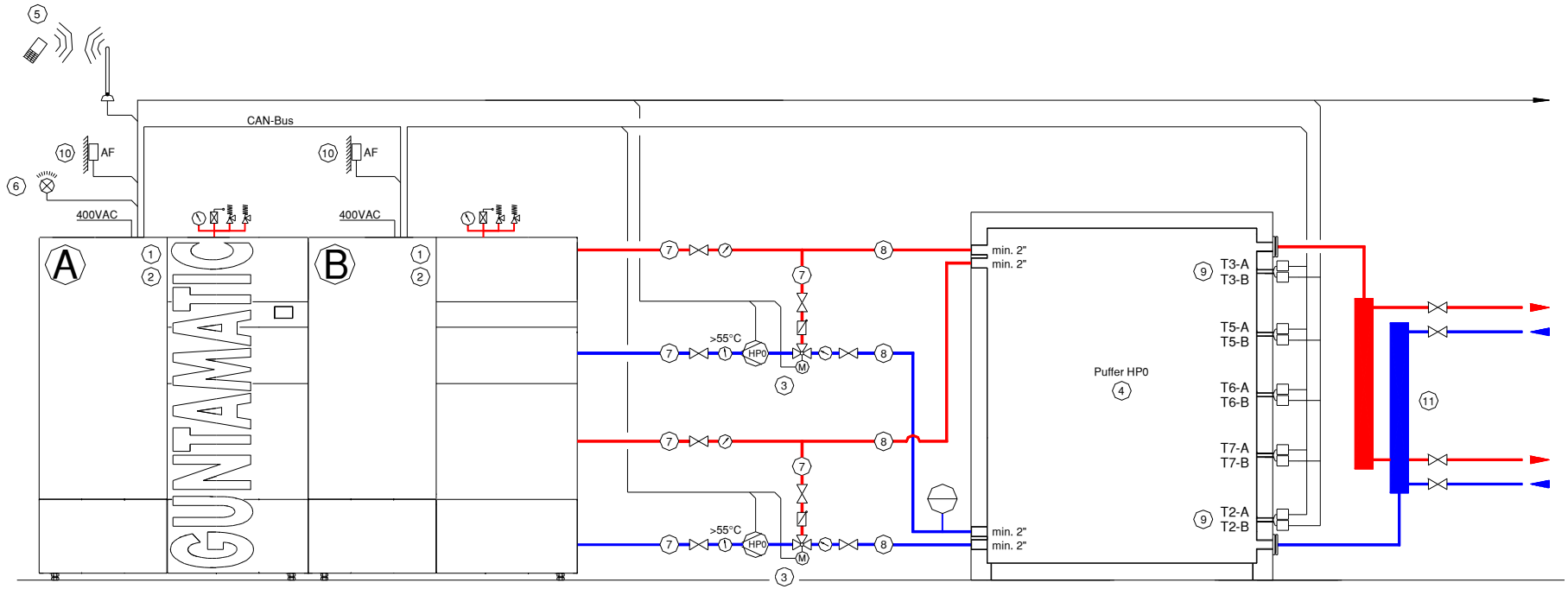
GUNTAMATIC

Diagram no: PR-02

Electrical connections as per operating and installation instructions

1.	2 PRO	As price list
2.	2 Flue draught regulator RE	As price list
3.	2 Return boost set RA250 A	H39-024
4.	Thermal store min. capacity 10,000 litres	Not supplied
5.	1 GSM module / APP	As price list
6.	Fault indicator lamp (Follow wiring diagram)	Not supplied
7.	Pipe size 2"	Not supplied
8.	If pipe length exceeds 2 x 25m for thermal store flow and return, use 3" pipe	Not supplied
9.	Order 10 thermal store sensors	S70-003
10.	2 Outside temp. sensor	S70-001
11.	Make sure the distribution piping in the area of the flow and return connections is adequately dimensioned	

Note: If network system controller is used, heating system controller cannot be activated.



HP0 setting = Thermal store pump

Connection sheet Mains circuit control 01 or 02

3 pump mains circuits - Mains circuit 1 and 2 optionally also as mixed circuit 03

1 mains circuit control per module possible

GUNTAMATIC

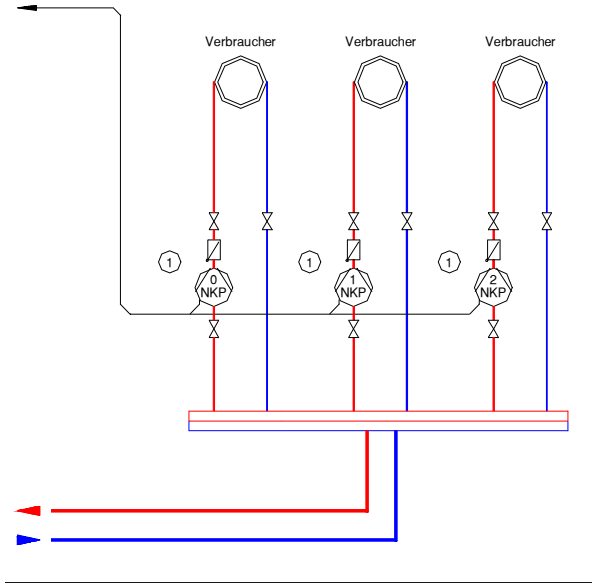
Diagram no: Mains circuit control-01

Electrical connections as per operating and installation instructions

1.	Network system pumps	Not supplied
2.	1 flow sensor per mixed mains circuit	S70-002
3.	Storage tank sensor	S70-003

PRO 01 or PRO-02

Connection sheet



Info:

1) Each network system pump can be timer-controlled by its own timer programme and also controlled on the basis of outside temperature by means of the functions Night OFF OT and OT Off;
2) Network system 1 and Network system 2 can also be operated by means of mixer valves;
3) A DHW cylinder can be charged;
4) If Network system 0 is not used, the "*Supplementary*" function can be used to control a 2nd DHW cylinder or a peak load boiler;
5) 0-10 volt input for network system pumps ON/OFF;

2 mixed mains circuits - Optionally with double pump

1 mains circuit control per module possible

03

GUNTAMATIC

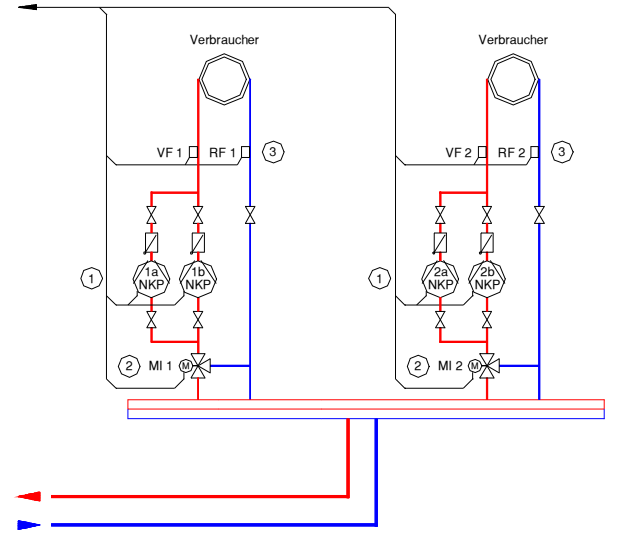
Diagram no: Mains circuit control-02

Electrical connections as per operating and installation instructions

1.	Network system pumps	Not supplied
2.	Mixer valves	Not supplied
3.	1 flow sensor per mixed mains circuit	S70-002
	1 return sensor per circuit with double pump	S70-002
4.	Storage tank sensor	S70-003

PRO 01 or PRO-02

Connection sheet



Info:

1) Each network system can be timer-controlled by its own timer programme and also controlled on the basis of outside temperature by means of the functions Night OFF OT and OT Off;

2) Mains circuit 1 and 2 can be operated with double pump; the double pump is automatically switched on and off to increase the delivery rate;

3) If mains circuit 1 is operated without a double pump, a hot water tank or a peak load boiler can be operated;

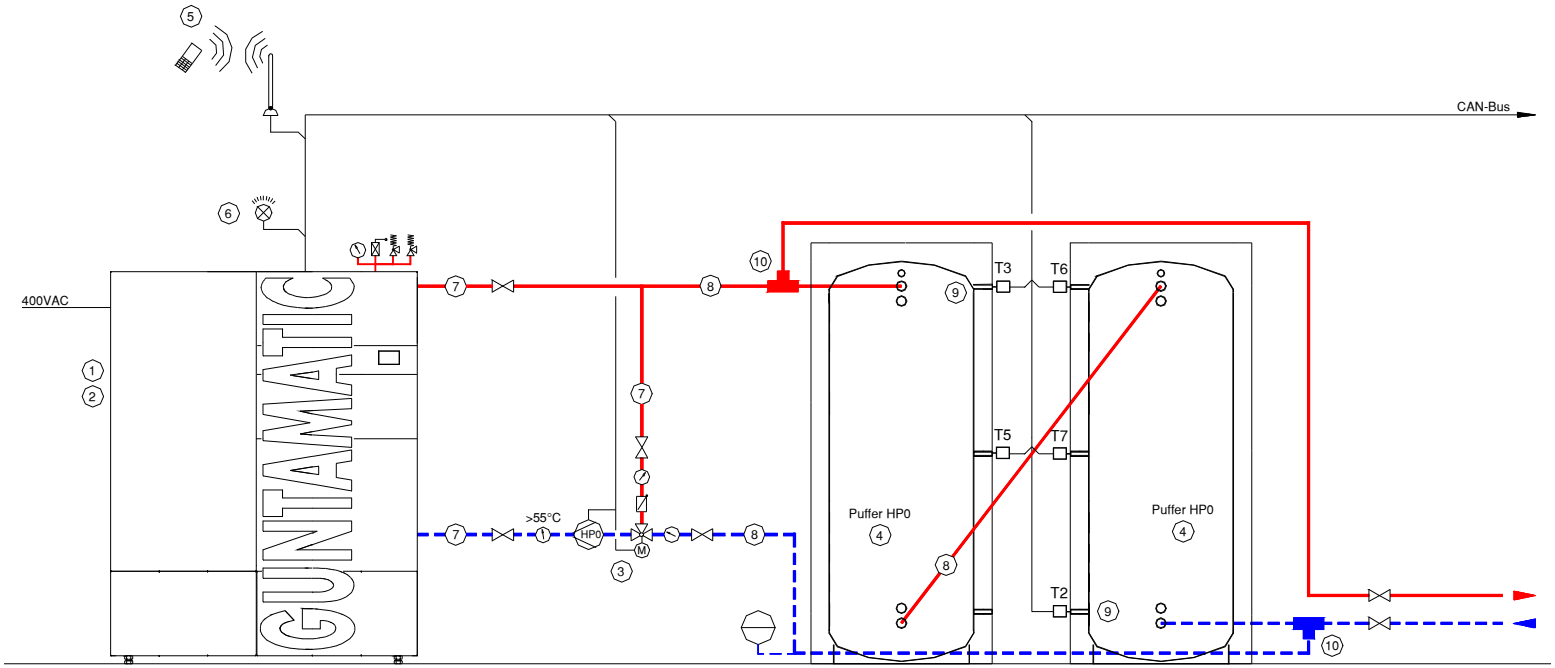
4) If mains circuit 2 is operated without a double pump, only one hot water tank can be charged;

5) 0-10 volt input for network system ON/OFF;

Diagram no: PR-03

Electrical connections as per operating and installation instructions

1.	1 PRO	As price list
2.	1 Flue draught regulator RE	As price list
3.	1 Return boost set RA250 A	H39-024
4.	2 Thermal store Akkutherm	As price list
5.	1 GSM module / APP	As price list
6.	Fault indicator lamp (Follow wiring diagram)	Not supplied
7.	Pipe size 2"	Not supplied
8.	If pipe length exceeds 2 x 25m for thermal store flow and return, use 3" pipe	Not supplied
9.	Order 5 thermal store sensors	S70-003
10.	T-joints, minimum size 4"	Not supplied



HP0 setting = Thermal store pump

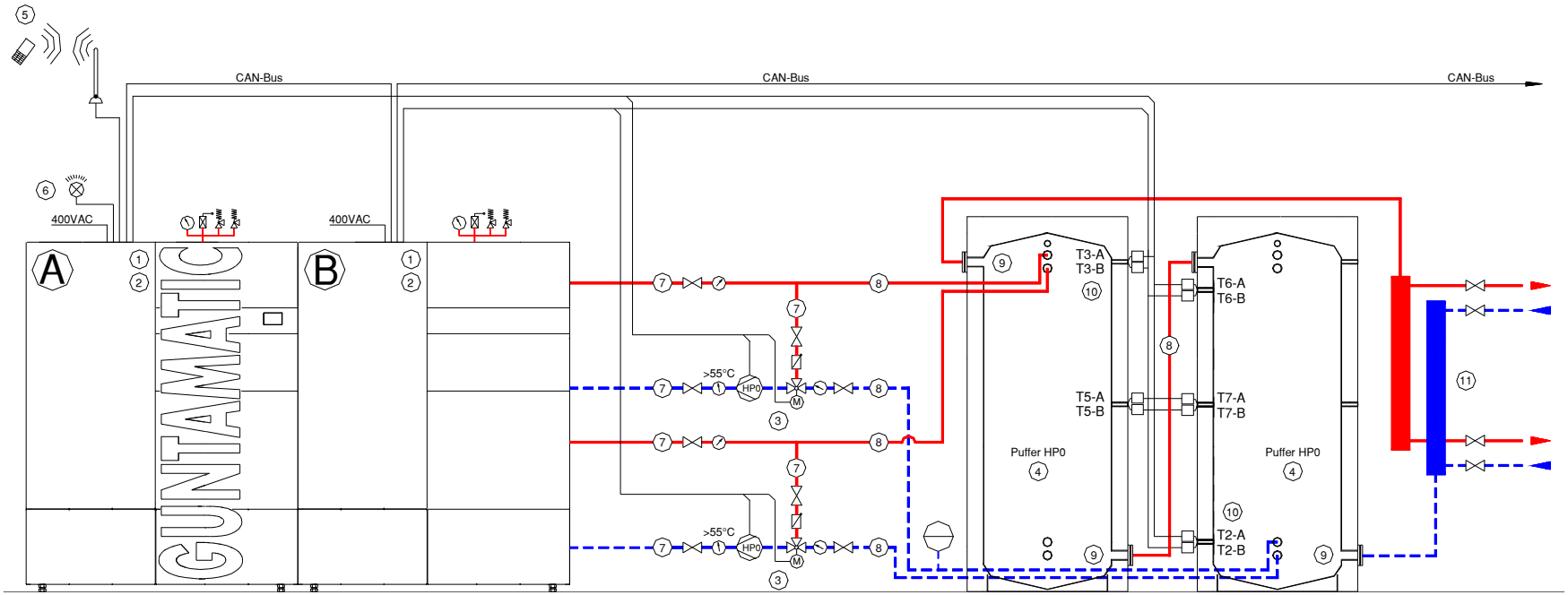
Connection sheet Heating circuit control 01

GUNTAMATIC

Diagram no: PR-04

Electrical connections as per operating and installation instructions

1.	2 PRO	As price list
2.	2 Flue draught regulator RE	As price list
3.	2 Return boost set RA250 A	H39-024
4.	2 Thermal store Akkutherm	As price list
5.	1 GSM module / APP	As price list
6.	Fault indicator lamp (Follow wiring diagram)	Not supplied
7.	Pipe size 2"	Not supplied
8.	If pipe length exceeds 2 x 25m for thermal store flow and return, use 3" pipe	Not supplied
9.	Order 2 special flanges, DN80 (3"), per thermal store	
10.	Order 5 thermal store sensors	S70-003
11.	Make sure the distribution piping in the area of the flow and return connections is adequately dimensioned	



HP0 setting = Thermal store pump

Connection sheet for heating circuit control 01

Weather-driven heating circuit control without remote line

03

3 wall units per module possible

GUNTAMATIC

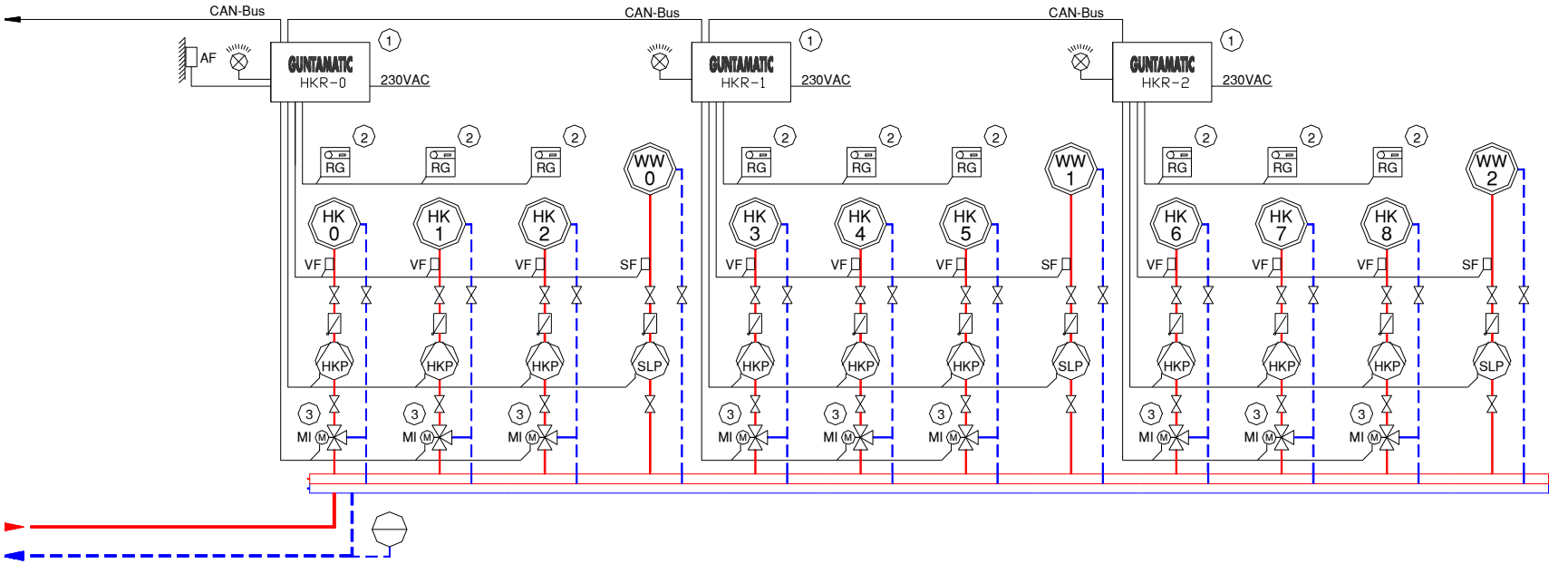
Diagram no: Heating circuit control-01

Electrical connections as per operating and installation instructions

1. Outside temp. based wall controller set MKR261 S30-030
   Observe the maximum load capacity of the wall controller!
2. Analogue room stat S70-006
   Digital room controller S60-004
3. Mixer-valve motor S50-501

Info:

1) Maximum of 3 MK261 wall controller sets can be connected to each boiler;
2) One analogue room stat can be connected to each heating circuit;
3) A maximum of 3 digital room controllers (RS) can be connected to each boiler;

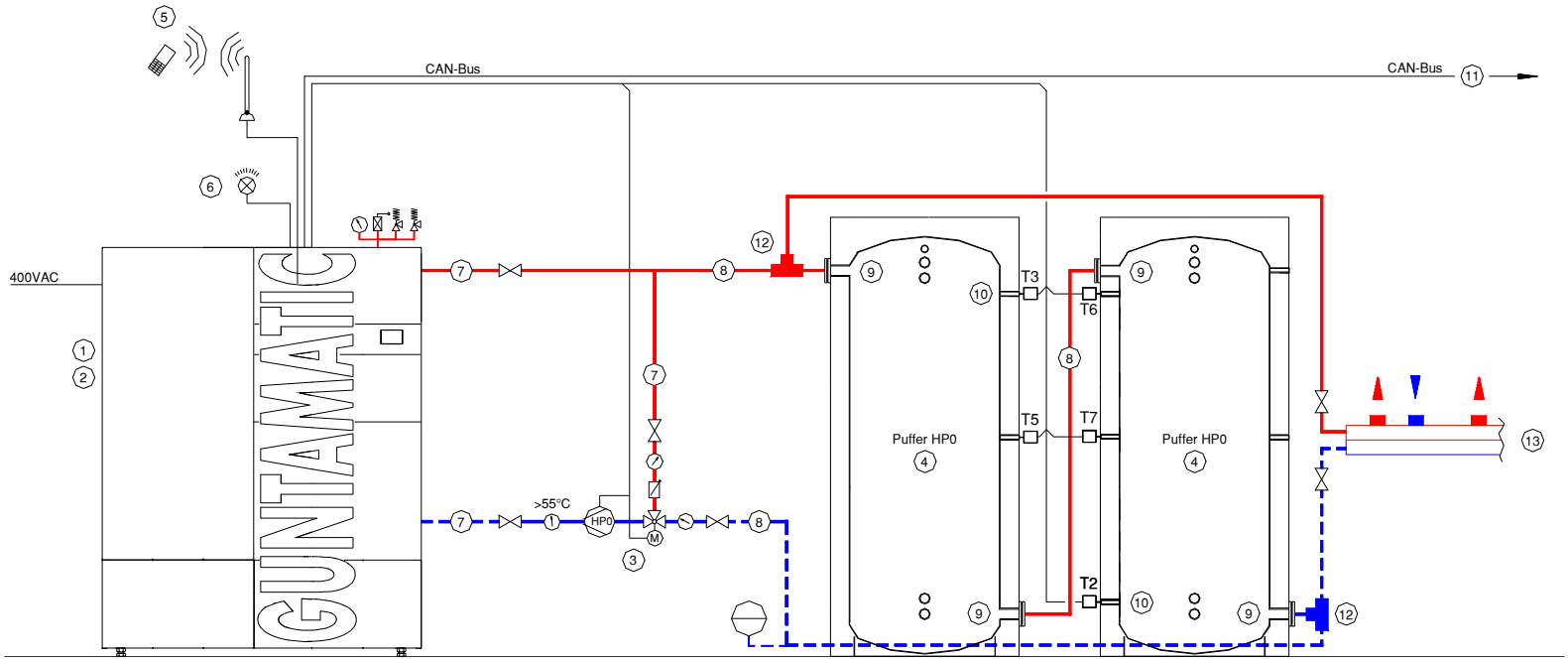


Connection sheet PRO-03 or PRO-04

Diagram no: PR-05

Electrical connections as per operating and installation instructions

1.	1 PRO	As price list
2.	1 Flue draught regulator RE	As price list
3.	1 Return boost set RA250 A	H39-024
4.	2 Thermal store Akkutherm	As price list
5.	1 GSM module / APP	As price list
6.	Fault indicator lamp (Follow wiring diagram)	Not supplied
7.	Pipe size 2"	Not supplied
8.	If pipe length exceeds 2 x 25m for thermal store flow and return, use 3" pipe	Not supplied
9.	Order 2 special flanges, DN80 (3"), per thermal store	
10.	Order 5 thermal store sensors	S70-003
11.	Always wire the CAN bus "in line"	
12.	T-joints, minimum size 4"	Not supplied
13.	Make sure the distribution piping in the area of the flow and return connections is adequately dimensioned.	

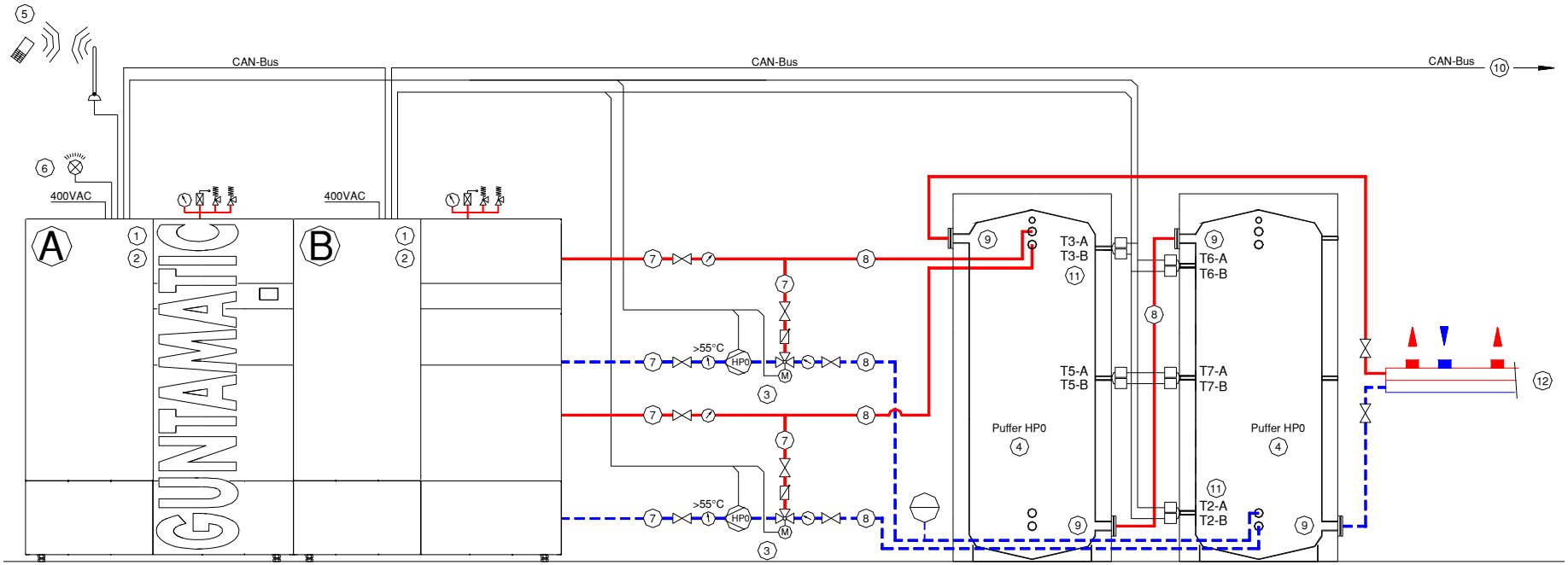


HP0 setting = Thermal store pump

Diagram no: PR-06

Electrical connections as per operating and installation instructions

1.	2 PRO	As price list
2.	2 Flue draught regulator RE	As price list
3.	2 Return boost set RA250 A	H39-024
4.	2 Thermal store Akkutherm	As price list
5.	1 GSM module / APP	As price list
6.	Fault indicator lamp (Follow wiring diagram)	Not supplied
7.	Pipe size 2"	Not supplied
8.	If pipe length exceeds 2 x 25m for thermal store flow and return, use 3" pipe	Not supplied
9.	Order 2 special flanges, DN80 (3"), per thermal store	
10.	Always wire the CAN bus "in line"	
11.	Order 10 thermal store sensors	S70-003
12.	Make sure the distribution piping in the area of the flow and return connections is adequately dimensioned	



HP0 setting = Thermal store pump

Connection sheet Heating circuit control 02, 03 or 04

Building supply using heating circuit controller and district heating function FP

03

3 wall devices per module possible

GUNTAMATIC

Diagram no: Heating circuit control-02

Electrical connections as per operating and installation instructions

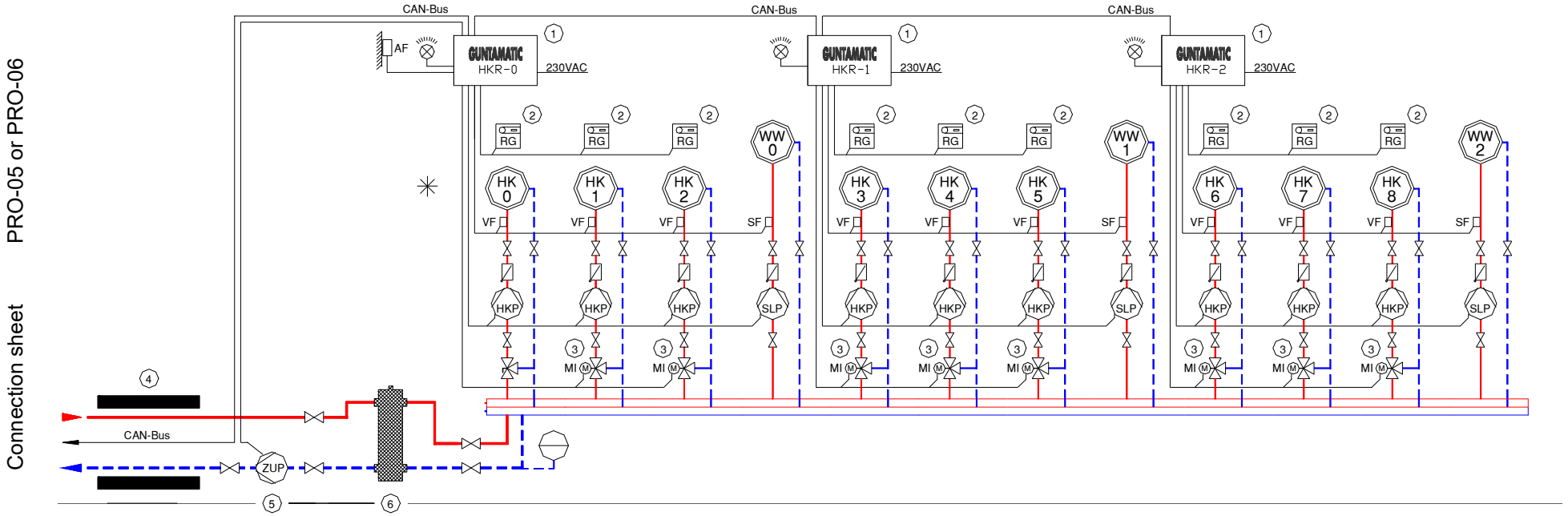
Info:

1) Maximum of 3 MK261 wall controller sets can be connected to each boiler;
2) One analogue room stat can be connected to each heating circuit;
3) A maximum of 3 digital room controllers can be connected to each boiler;

Caution:

If the district heating function (FP, CP, …) is used on a heating circuit controller, heating circuit 0 can only be operated as a pumped circuit without mixer valve. Heating circuit 0 can be used with a fixed-setting controller for a low-temperature heating system or can be room-temperature controlled using a room stat for a radiator heating system.

1. Outside temp. based wall controller set MKR261 S30-030
   Observe the maximum load capacity of the wall controller!
2. Analogue room stat S70-006
   Digital room controller S60-004
3. Mixer-valve motor S50-501
4. District heating pipe and dimensioning Not supplied
5. Pump and dimensioning Not supplied
   Observe the maximum load capacity of the output!
6. Flow equaliser and dimensioning Not supplied



Einstellung Fernleitung 0 = ZUP Einstellung HKR 1 und HKR 2 = ERW

Building supply using heating circuit controller and district heating function FP

03

3 wall units per module possible

GUNTAMATIC

Diagram no: Heating circuit control-03

Electrical connections as per operating and installation instructions

Info:

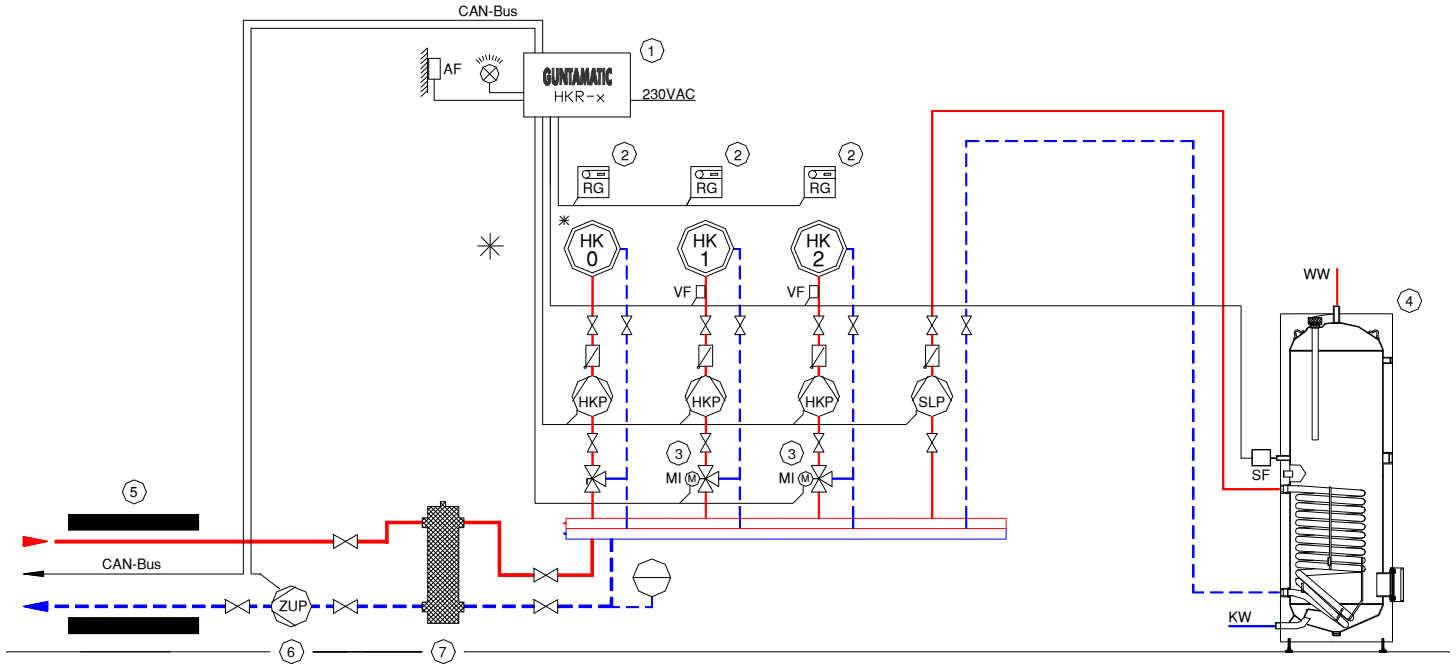
1) Maximum of 3 MK261 wall controller sets can be connected to each boiler;
2) One analogue room stat can be connected to each heating circuit;
3) A maximum of 3 digital room controllers can be connected to each boiler;

Caution:

If the district heating function (FP, CP, …) is used on a heating circuit controller, heating circuit 0 can only be operated as a pumped circuit without mixer valve. Heating circuit 0 can be used with a fixed-setting controller for a low-temperature heating system or can be room-temperature controlled using a room stat for a radiator heating system.

1. Outside temp. based wall controller set MKR261 S30-030
   Observe the maximum load capacity of the wall controller!
2. Analogue room stat S70-006
   Digital room controller S60-004
3. Mixer-valve motor S50-501
4. DHW cylinder ECO As price list
5. District heating pipe and dimensioning Not supplied
6. Pump and dimensioning Not supplied
   Observe the maximum load capacity of the output!
7. Flow equaliser and dimensioning Not supplied

Connection sheet PRO-05 or PRO-06



District heating setting = FP

Building supply using heating circuit controller and district heating function CP

04

3 wall units per module possible

GUNTAMATIC

Diagram no: Heating circuit control-04

Electrical connections as per operating and installation instructions

Info:

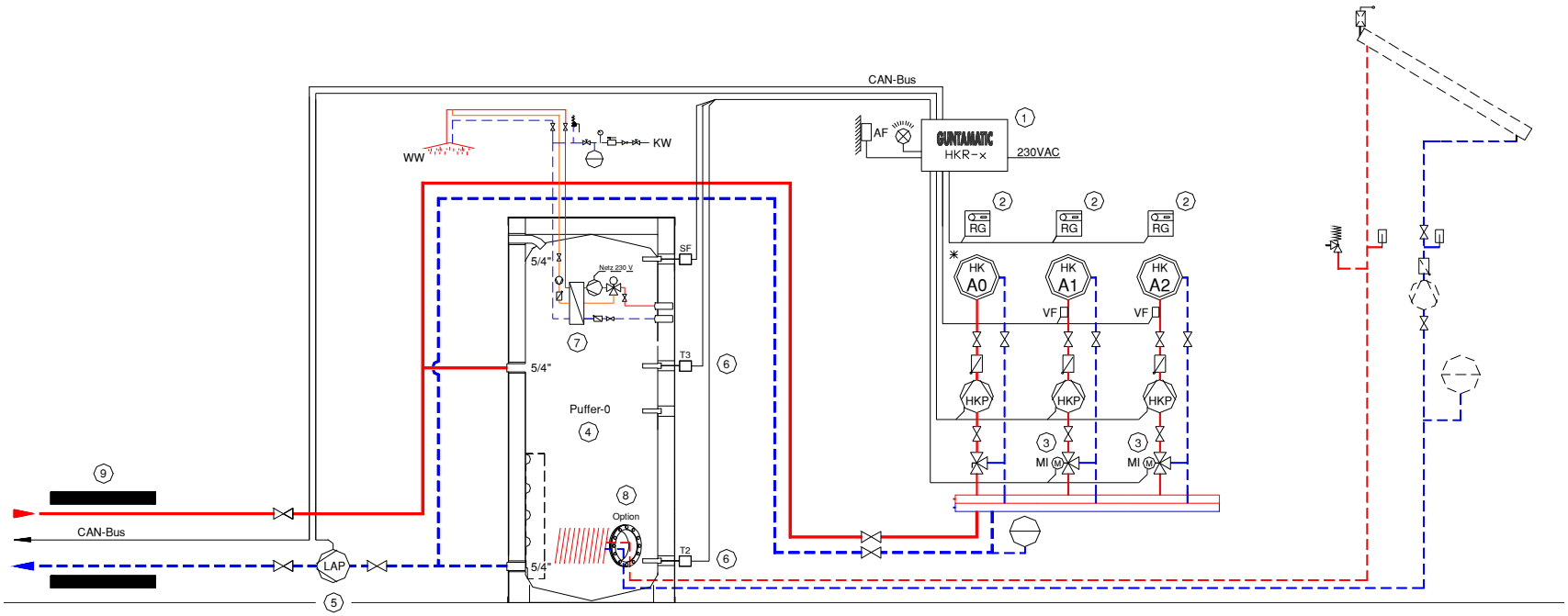
1) Maximum of 3 MK261 wall controller sets can be connected to each boiler;
2) One analogue room stat can be connected to each heating circuit;
3) A maximum of 3 digital room controllers can be connected to each boiler;

Caution:

If the district heating function (FP, CP, …) is used on a heating circuit controller, heating circuit 0 can only be operated as a pumped circuit without mixer valve. Heating circuit 0 can be used with a fixed-setting controller for a low-temperature heating system or can be room-temperature controlled using a room stat for a radiator heating system.

1.	Outside temp. based wall controller set MKR261 Observe the maximum load capacity of the wall controller!	S30-030
2.	Analogue room stat Digital room controller	S70-006 S60-004
3.	Mixer-valve motor	S50-501
4.	Thermal store PSF	As price list
5.	Pump and dimensioning Observe the maximum load capacity of the output!	Not supplied
6.	Order 2 thermal store sensors	S70-003
7.	Secondary return pump	045-250
8.	12-hole flange and heat exchanger	As price list
9.	District heating pipe and dimensioning	Not supplied

Connection sheet PRO-05 or PRO-06

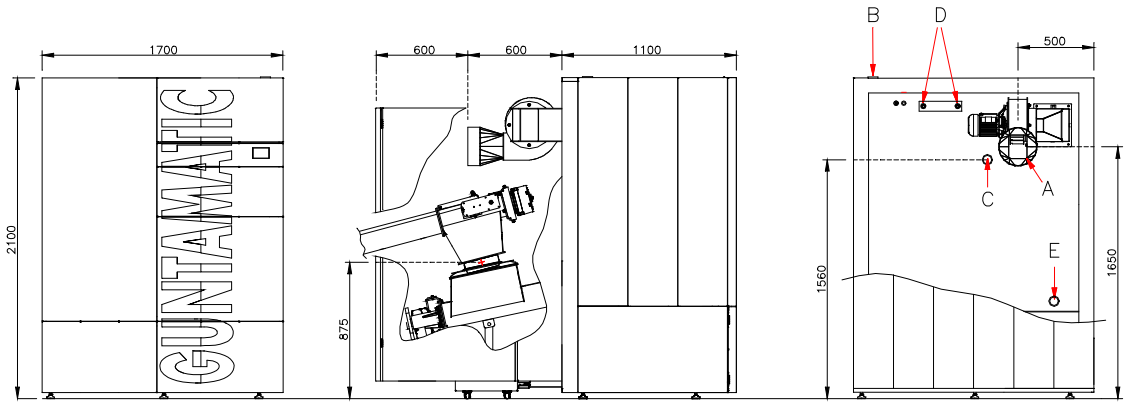


District heating setting = CP

notes

8 Technical data

05

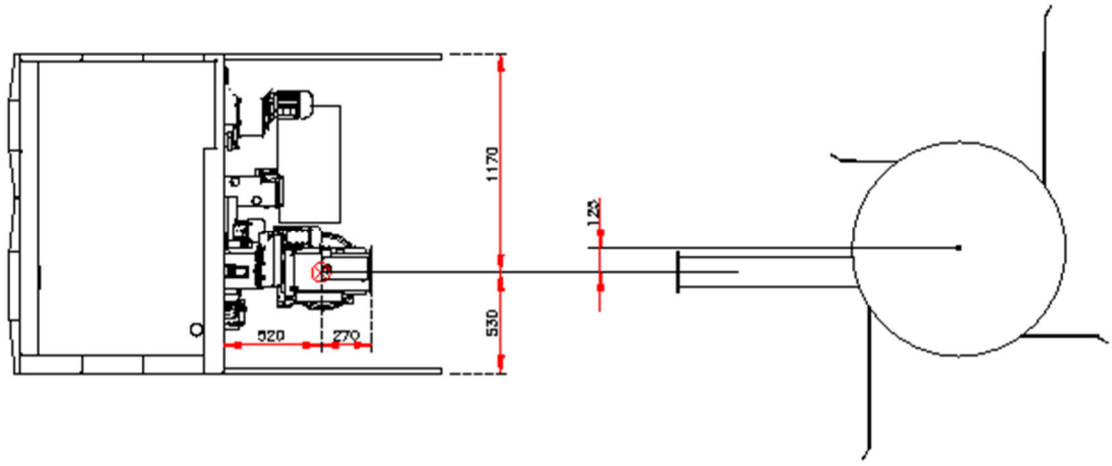


PRO	175/250	350/425/500	600/750	850/1000	
Fuel	Woodchips grade[4] P16B or P45A[3] Wood pellets grade[4] EN Plus A1 or A2				EN 17225-4 EN 17225-2
Boiler output[5]	188 199,5[1] / 250[2]	Total output is combined output of the modules concerned			kW
Boiler temperature Return temperature	60 – 85 55	60 – 85 55	60 – 85 55	60 – 85 55	°C °C
Required flue draught	2 - 10	2 - 10	2 - 10	2 - 10	Pascal
Water capacity Operating pressure	572 max. 3	1144 max. 3	1716 max. 3	2288 max. 3	litres bar
A – Flue connecting pipe dia. B – Flow C - Return D - Temp.-relief heat exch. E - Drain	250 2 2 3/4 2	- - - - -	- - - - -	- - - - -	mm Inches Inches Inches Inches
PRO 175 Water system resistance 10K	16168 80,3	- -	- -	- -	kg/h mbar
PRO 175 Water system resistance 20K	8084 20,7	- -	- -	- -	kg/h mbar
PRO 250 Water system resistance 10K	21500 142,6	- -	- -	- -	kg/h mbar
PRO 250 Water system resistance 20K	10750 36,7	- -	- -	- -	kg/h mbar
Ash capacity	max. 240	max. 480	max. 720	max. 960	litres
Overall weight Weight of bottom box Weight of heat exchanger Weight of stoker unit Weight of drive unit	2200 600 1000 130 75	4400 - - - -	6600 - - - -	8800 - - - -	kg kg kg kg kg
Power supply	400 VAC / 20 A	-	-	-	-

1) Specified rated output for module output < 400 kW / ** maximum possible boiler output
2) Maximum possible boiler output
3) Burn P45A (G50) wood chips only with well-chipped wood chips (disc chipper recommended)
4) Tested and recommended with low fines and dust content from low-potassium, low-nitrogen and low-bark wood quality (an optional EC filter is available for poorer material)
5) The maximum system availability is 21 hours per day (operating breaks due to automatic cleaning processes)

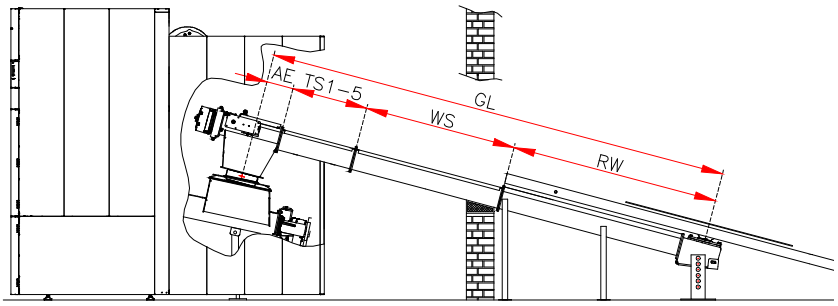
Version ... EC describes a set consisting of the listed heater with the EC 24P, 24, 85 or 250 electric filter to be attached.

View from above:



Delivery condition:

- consisting of discharge unit (AE), wall piece (WS) and agitator (RW);
- maximum total length (GL) of the discharge auger = 7 m;



Filling height:

Wood chips	max. 5.0 m
Pellets	max. 2.5 m

Ø Agitator	**Discharge unit** (AE)	**Wall piece** (WS)	**Agitator** (RW)	**Total length** (GL)
3,0 m	18 cm	110 cm	150 cm	278 cm
3,5 m	18 cm	110 cm	175 cm	303 cm
4,0 m	18 cm	110 cm	200 cm	328 cm
4,5 m	18 cm	110 cm	225 cm	353 cm
5,0 m	18 cm	110 cm	250 cm	378 cm

Auger extensions:

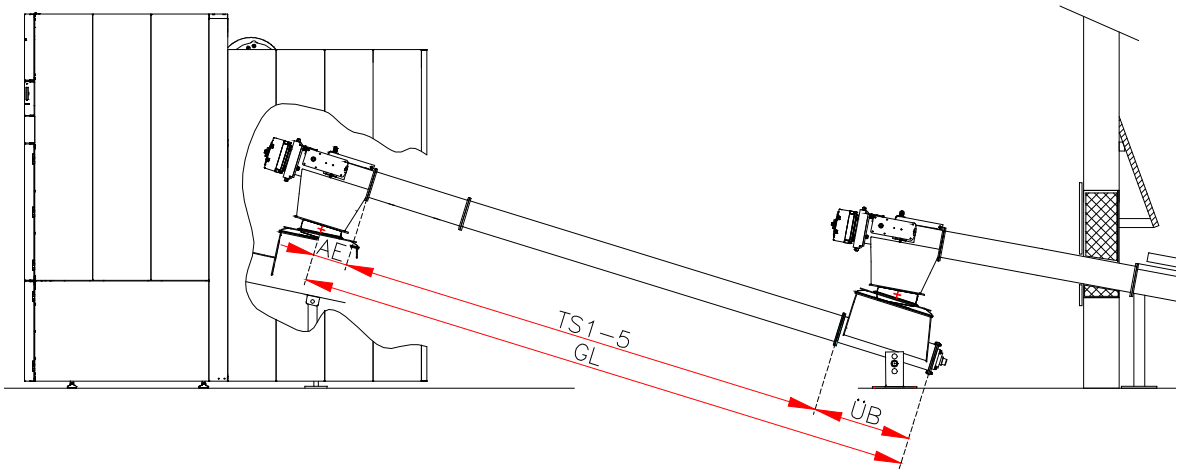
	Length
Auger trough **TS 1**	22 cm
Auger trough **TS 2**	55 cm
Auger trough **TS 3**	110 cm
Auger trough **TS 4**	220 cm
Auger trough **TS 5**	297 cm

Spring arms:

Ø Agitator	64 cm	92 cm	120 cm	147 cm	172 cm	197 cm	225 cm	250 cm
3,0 m			2 Stk.	2 Stk.				
3,5 m			1 Stk.	1 Stk.	2 Stk.			
4,0 m				1 Stk.	1 Stk.	2 Stk.		
4,5 m				1 Stk.	1 Stk.		2 Stk.	
5,0 m				1 Stk.	1 Stk.		1 Stk.	1 Stk.

Transfer set for feed auger:

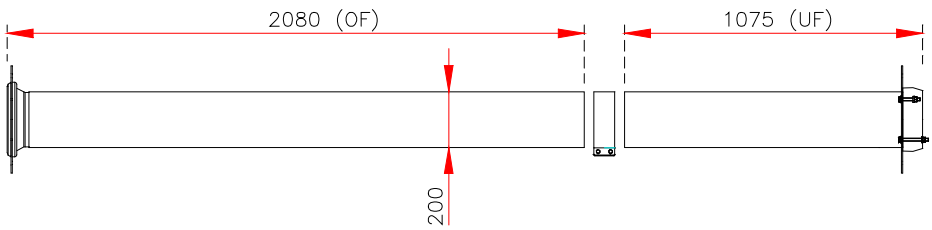
- consisting of drive unit (AS) and transfer station (ÜB);
- Trough augers (TS1-5) according to the auger extension table;
- maximum total length (GL) = 7 m;



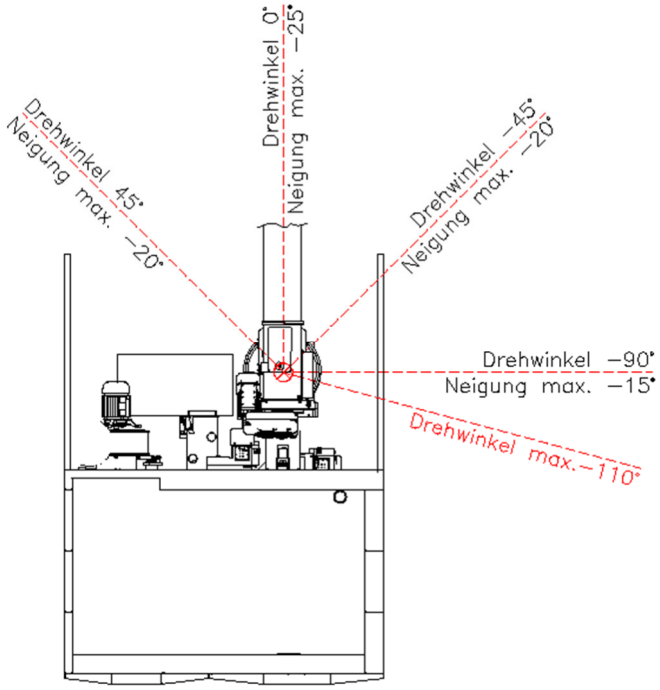
Transfer set	Length
Drive unit (AE)	18 cm
Transfer station (ÜB)	57 cm

Downpipe up to 3 m high:

- consisting of top downpipe (OF), bottom downpipe (UF) and bracket for screwing;

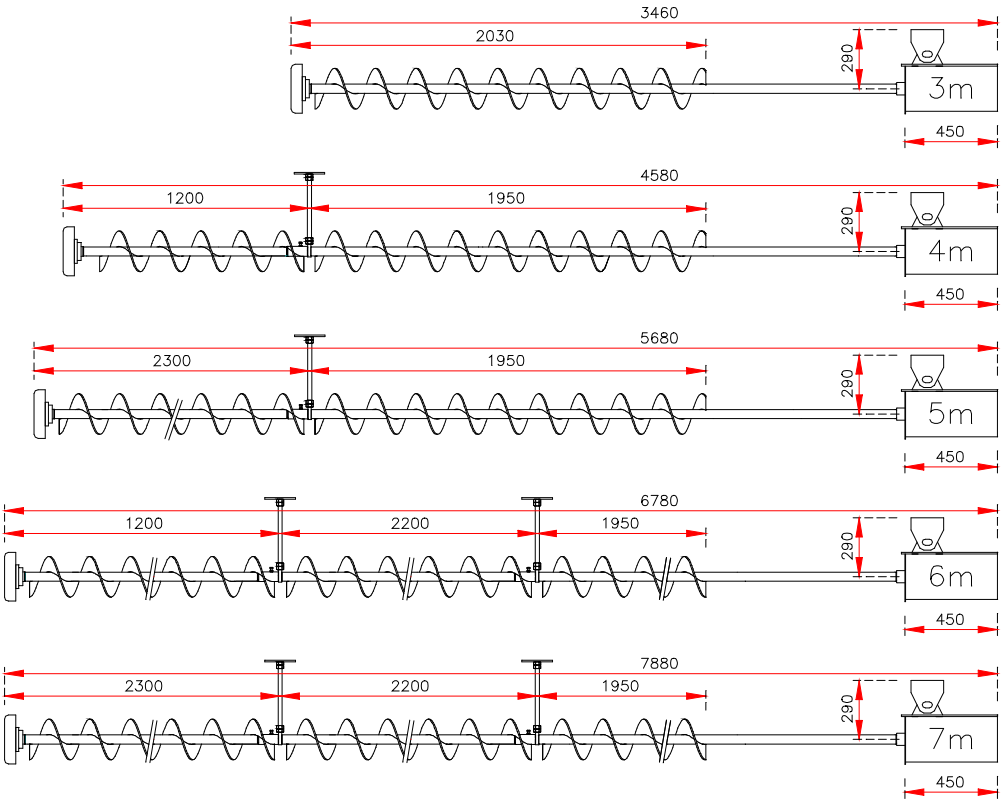


Rotation and tilt angle



8.2 Technical specifications **Ceiling filling augers** PH-02

- consisting of drive motor, filling screw(s), bearing plate and holder(s);
- only suitable for mounting on the storage room ceiling;
- the drive motor must be mounted outside the bearing;



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