WOLF

CN-
EN

Operating instructions for contractors

WALL MOUNTED GAS CONDENSING BOILER

CGB-2-75/100 wall mounted gas condensing boiler

English | subject to modifications

8616724_202108_Englishmaster

注意事项

1 错误安装将对人、畜和财产造成损害；
2 请严格按照沃乐夫制造工厂的说明书及相应的国家及地方技术标准来进行安装和调试；
3 只有持有电工和燃气专业操作证书的授权经销商和安装商，才能存储 / 更换锅炉零件或者整个锅炉；
4 为保证安全标准的贯彻，请使用原厂配件；
5 请用沃乐夫原厂提供的烟道系统设计和配件，禁止随意更改，严格禁止将双烟道系统改为单烟道系统；
6 对燃气压力控制器和燃气控制进行的专业维护维修，必须由燃气专业公司或者设备制造厂家进行；
7 为确保安全，请在安装商处购买原厂锅炉，请勿在经销商处购买经过非授权更改过的锅炉；
8 应在锅炉前的燃气管道上的明显位置安装燃气截止阀；
9 请勿将锅炉安装在具有强电磁辐射的电器周围，如电磁炉、微波炉等等；
10 禁止拆除锅炉上的任何密封件；
11 不能使用带有腐蚀性的清洁剂来清洁锅炉；
12 禁止将锅炉安装在卧房、起居室和浴室；
13 禁止儿童和无行为能力者操作锅炉，禁止将锅炉当成玩具给儿童玩耍；
14 禁止用户独自操作供暖安全阀和供暖热水排水阀；只有专业的技术人员方可操作；
15 请勿将锅炉安装在隐蔽的位置；
16 负责维护和检查的人员在对锅炉进行维护检查后应在维护和检查结果上进行标注并留档；
17 室内的配电系统应安装地线；请勿将与锅炉相连的开关安装在带有浴缸或淋浴设备的房间；使用的插头和插座应通过中国相关部门的认证；
18 防冻保护：锅炉安装位置的周围温度需高于 +5 度并且具有防雨保护设施；
19 用户需注意，在冬季长期停机期间，必须彻底排空锅炉内采暖和热水系统中的水，此外禁止在锅炉采暖水中加入防冻液；
20 采暖循环的水质必须满足安装手册中对水质的相关要求；
21 补水时需要操作人员一直在现场并按《使用说明书》中规定的正常工作压力范围 (1.2-1.8 bar) 内补水，若低于 1.0 bar 请补水至正常工作压力，补水后立即关掉补水阀；
22 只有保证采暖和生活热水系统的正确设计、施工、安装、维护和操作，锅炉才能正确工作，并保证对应的效率；
23 采暖及生活热水的运行费用，不仅仅与锅炉有关，亦与整个系统的构建和运行模式有关。

Cautions

1. Improper installation may cause hazards to human, livestock and object.
2 Installation and commissioning of boilers shall be carried out in strict accordance with the requirements of instruction and the relevant national and local technical requirements.
3 Only professionally trained, especially professionally certified in doing electrical and gas work, dealers or technical personnel authorized by the manufacturer may conduct professional maintenance or replace spare parts or the entire appliance.
4 Original fittings shall be used to avoid reduction of the appliance safety.
5 Original flue gas ducts shall be used, and random changes of other ducts are not allowed; it is strictly forbidden to replace coaxial ducts with single pipe ducts;
6 Maintenance work of gas pressure regulating valve and control shall be completed by related appliance manufacturer.
7 Original productions of the manufacturer, but not the boilers customized by the distributors shall be bought to ensure safety.
8 Gas stop valve shall be installed on the pipeline in front of boiler when installing.
9 Boiler shall not be installed near electrical apparatuses with strong electromagnetic radiation, like induction cooker, microwave oven, etc.
10 It is strictly forbidden to dismantle any seal off the boiler.
11 Corrosive detergents shall not be used for boiler cleaning.
12 It is strictly forbidden to install boiler in bedroom, living room and bathroom.
13 Children and people who cannot operate boiler shall not deal with the work and it is strictly forbidden for children to toy with boilers.
14 Users shall not handle the heating safety valve and heating water outlet valve themselves; they shall be handled by professional personnel.
15 Boilers should not be installed concealed.
16 Maintenance and inspection personnel shall label and document the result of maintenance and inspection on appliances after the work.
17 Power distribution system in room shall be provided with earth wire; switch connected to boiler shall not be arranged in rooms with bath tub or shower device; plug and socket shall pass relevant Chinese certifications.
18 Frost protection: The boiler can only be installed in the environment with temperature above +5 degree and rain water protection.
19 Users shall be noted that during long shutdown periods in winter, the water in heating boiler and domestic hot water system shall be discharged completely. Adding anti-freeze agent is not allowed.
20 The water circulated in the heating system must meet the standard specified in the installation manual.
21 Operators are required to be on site when filling the boiler and water pressure shall be supplied within the normal working range (1.2-1.8 bar) as specified in the operation manual. If the water pressure is below 1.0 bar, please top up with water to normal working pressure, and turn off the water supply valve immediately after filling.
22 The boiler can only function well with target efficiency when the heating system and the DHW systems are properly designed, installed, maintained and operated.
23 The running cost of heating and DHW is NOT ONLY connected with the boiler, but also the built up of the system and the operating behavior.

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1 About this document

► Read this document before you begin working on the appliance.
► Follow the instructions in this document.
Failure to observe these instructions voids any WOLF GmbH warranty.

1.1 Scope

This document contains instructions for the CGB-2-75/100 wall mounted gas condensing boiler.

1.2 Target group

This document is intended for gas, plumbing, heating and electricity contractors.

A contractor is defined as a qualified and properly trained installer, electrician, etc.
The user is defined as somebody who has been trained to use the heat generator by a specialist.

1.3 Other applicable documents

CGB-2 Maintenance instructions for contractors
CGB-2 operating instructions for users
System and operator's log for contractors

The documents for all accessory modules and other accessories also apply where relevant.

1.4 Safekeeping of these documents

Documents must be kept in a suitable location and must be available at all times.
The user is responsible for the safekeeping of all documents.
The documents are provided by the contractor.

1.5 Symbols

The following symbols are used in this document:

Symbol	Meaning
►	An action which must be taken
➠	A necessary requirement
✓	The outcome of an action
	Important information regarding the proper use of the heat generator
	A reference to other relevant documents

Table 1.1 Meaning of the symbols

1.6 Warnings

Warnings in the text warn you of possible risks before the start of an instruction. The warnings provide you with information on the possible severity of the risk using a pictogram and a keyword.

Symbol	Keyword	Explanation
⚠	**DANGER**	This means that there is a risk of serious injury or loss of life.
⚠	**WARNING**	This means that there is a potential risk of serious injury or loss of life.
⚠	**CAUTION**	This means that there is a potential risk of minor to moderate injury.
⚠	**NOTE**	This means that material damage may occur.

Table 1.2 Meaning of warnings

Layout of warnings

These warnings are laid out as follows:

⚠ **KEYWORD**
Type and source of risk!
Explanation of the risk.
► Action to prevent the risk.

1.7 Abbreviations

BCC	Boiler coding card
CRC	Cyclic redundancy check
EEPROM	Rewritable memory
BCU	Burner control unit
GCV	Gas combination valve
BMS	Building management system
HC	Heating circuit
HCP	Heating circuit pump
IO	Ionisation signal
BDF	Boiler drain & fill valve
CW	Cold water
High limit safety cut-out (HLSC)	High limit safety cut-out
eHLSC	Electronic high limit safety cut-out
TL	Temperature limiter
TBA	Flue gas high limit safety cut-out
TM	Temperature monitor
DHW	Domestic hot water
FHP	Feed/heating circuit pump

2 Safety

► The heat generator may only be worked on by contractors.
► In accordance with VDE 0105 Part 1, work on electrical components may only be carried out by qualified electricians.

2.1 Intended use

The heat generator may only be used in hot water heating systems in accordance with DIN EN 12828.
The heat generator must not be operated outside of its permitted output range.

A contractor is defined as a qualified and properly trained installer, electrician, etc.
The user is defined as somebody who has been trained to use the heat generator by a specialist.

2.2 Safety measures

Never remove, bypass or otherwise disable any safety or monitoring equipment. Only operate the heat generator if it is in perfect technical condition. Any faults or damage that impact or might impact safety must be remedied immediately by a qualified contractor.
► All faulty components of the heat generator must be replaced with original WOLF spare parts.

2.3 General safety information

⚠ DANGER
Electrical voltage!
Danger of death from electrocution.
► All electrical work must be performed by a qualified contractor.

⚠ DANGER
Insufficient combustion air supply or flue gas removal!
Risk of asphyxiation or severe to life-threatening poisoning.
► Switch OFF the heat generator if you can smell flue gas.
► Open windows and doors.
► Notify an approved contractor.

⚠ DANGER
Escaping gas!
Risk of asphyxiation or severe to life-threatening poisoning.
► Close the gas tap if you smell gas.
► Open windows and doors.
► Notify an approved contractor.

⚠ WARNING
Hot water!
Risk of scalding hands from hot water.
► Before working on parts which are in contact with water, allow the appliance to cool to below 40°C.
► Use safety gloves.

⚠ WARNING
High temperatures!
Risk of burns on the hands from hot components.
► Before working on an open heat generator, allow the heat generator to cool to below 40°C.
► Use safety gloves.

⚠ WARNING
Overpressure on the water side!
Risk of injury due to high overpressure in the heat generator, expansion vessels and sensors.
► Close all valves.
► Empty the heat generator if necessary.
► Use safety gloves.

2.4 Handover to operator

► Provide these instructions and the other applicable documents to the operator.

► Instruct the system user how to operate the heating system.
► Make the operator aware of the following:
  – Annual inspections and maintenance must be performed by a contractor.
  – WOLF recommends concluding an inspection and maintenance contract with a contractor.
  – Repair work must be performed by a contractor.
  – Use only genuine WOLF spare parts.
  – Do not make any technical changes to the heat generator or control components.
  – The pH level must be checked after 8 to 12 weeks by a contractor.
  – This guide and the other applicable documents must be kept safely in a suitable location and must be available at all times.
  – Inform your gas utility company that the installation is taking place
  – Inform the local flue gas inspector and waste water authority

The system user is responsible for the safety, environmental compatibility and energy quality of the heating system under the German Emission Control Act/Energy Saving Ordinance.
► Inform the operator.
► Refer the operator to the operating instructions.

2.5 Declaration of Conformity

This product complies with China's regulations and national requirements.

3 Description

3.1 CGB-2-75 / CGB-2-100 wall mounted gas condensing boiler layout

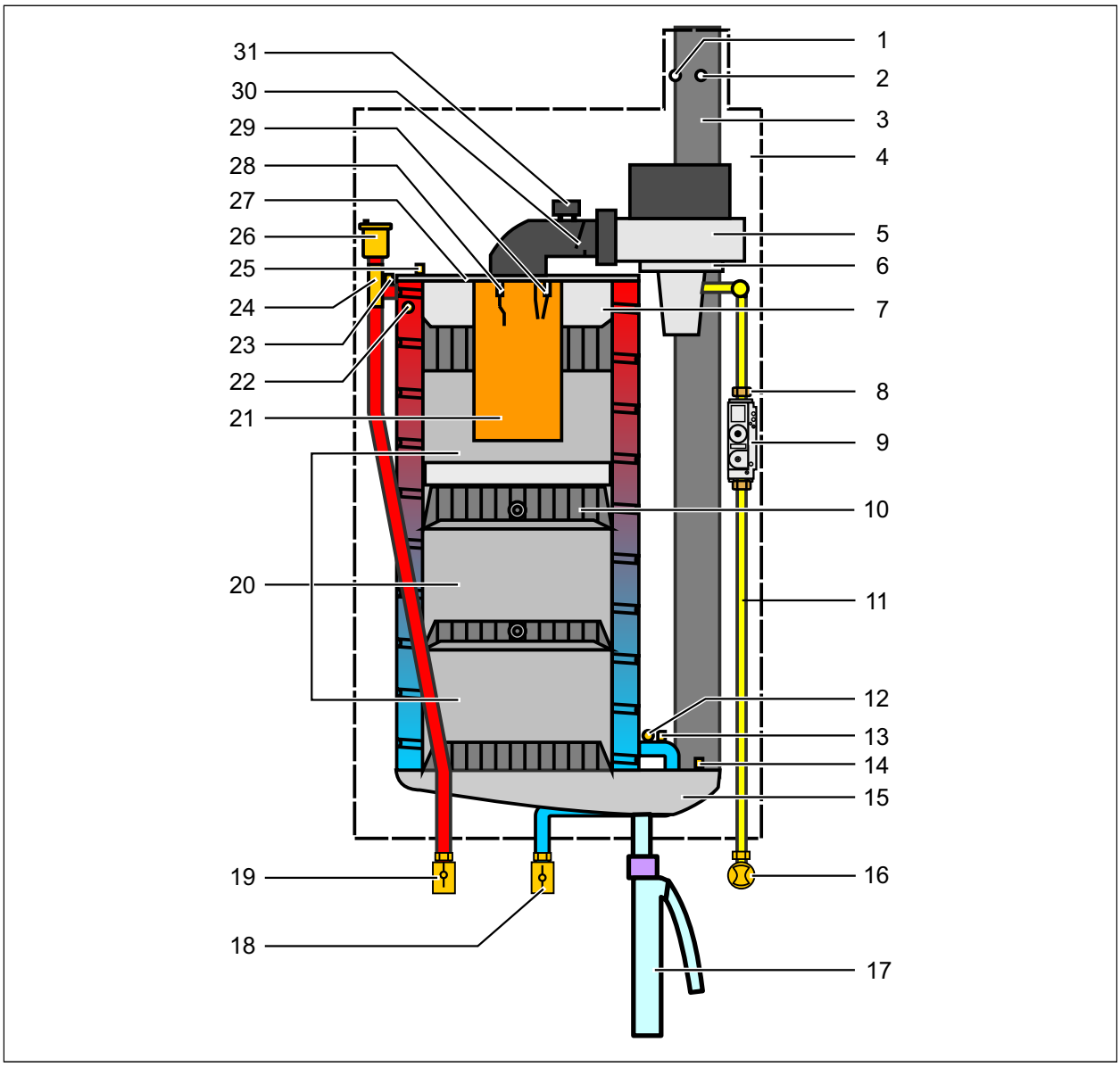


Fig. 3.1 Wall mounted gas condensing boiler layout

1 Ventilation air test point
2 Flue gas test point
3 Flue pipe
4 Combustion chamber casing
5 Gas fan
6 Gas-air mixing chamber
7 Combustion chamber cover insulation
8 Gas restrictor
9 Gas combination valve
10 Heating water heat exchanger
11 Gas pressure switch (optional)
12 Water pressure sensor
13 Return temperatur sensor
14 Flue gas temperature sensor
15 Condensate pan
16 Gas supply pipe / gas appliance valve
17 Condensate trap
18 Heating return
19 Heating flow
20 Displacement device
21 Burner
22 Flow temperatur sensor
23 eHLSC flow
24 Flash trap
25 Combustion chamber temperature limiter
26 Quick-action air vent valve
27 Combustion chamber cover
28 monitoring electrode
29 Ignition electrode
30 Back draught safety device
31 Ignition transformer

4 Planning

4.1 Regulations

Local regulations

The local regulations must be complied with during the installation and operation of the heating system in the following respects:

– Siting conditions
– Ventilation and extract air facilities and connection to a chimney
– Electrical connection to the power supply
– Regulations and standards regarding the safety equipment of the water heating system
– Drinking water installation

Replaced by CN regulations
Chinese Standards:
GB25034-2020 Gas-fired heating and hot water combi-boilers
燃气采暖热水炉
GB20665-2015 Minimum allowable values of energy efficiency and energy efficiency grades for domestic gas instantaneous water heater and gas fired heating and hot water combiboilers
家用燃气快速热水器和燃气采暖热水炉能效限定值及能效等级

4.2 Installation location

The wall mounted CGB-2 gas condensing boiler is delivered ready for connection.
The 350 mm clearance to the ceiling to enable inspection and maintenance work on the heat generator must be maintained; otherwise, the necessary inspection and function tests on components cannot be ensured during maintenance. The drain hoses must be secured with the retainer above the drain outlet (trap). The drain must be able to be inspected.

4.2.1 Minimum clearances

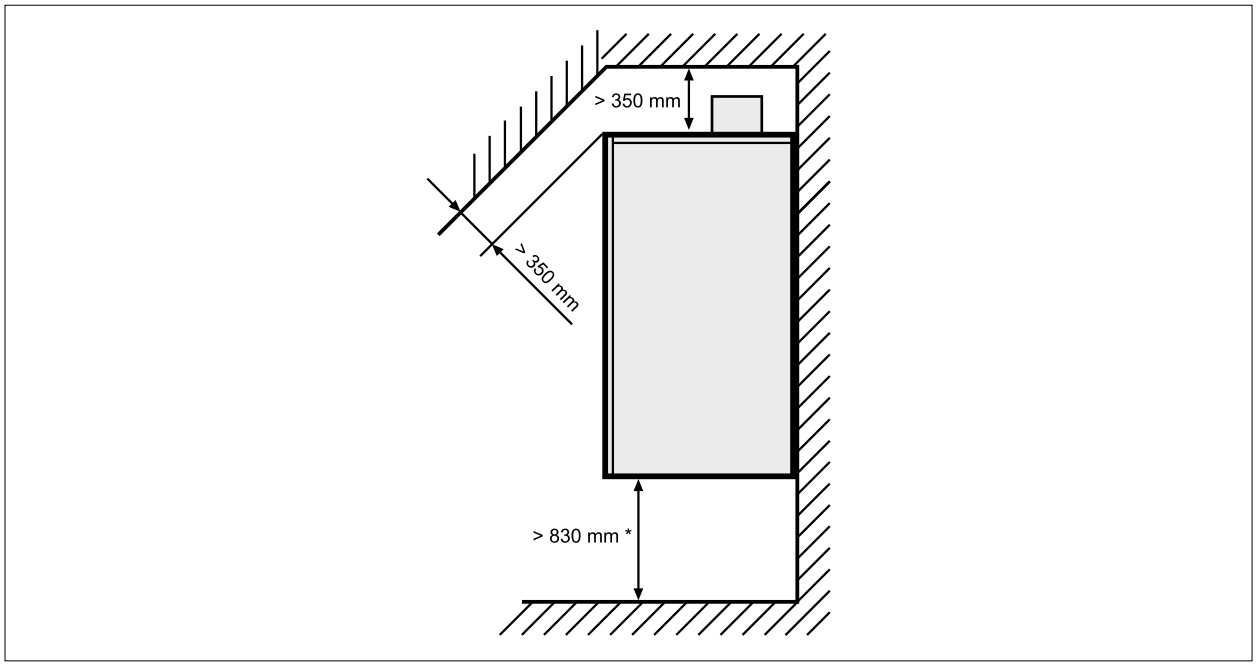


Fig. 4.1 Minimum clearances in mm

* At least 830 mm when using the low loss header set
Minimum lateral clearances 100 mm

4.2.2 Installation site requirements

Requirements		Possible consequences of failing to follow instructions
Substrate	Adequate load bearing capacity	Fault
Ventilation (open flue)	Ventilation requirements specified in TRÖl	Operating the appliance with a leaking flue gas system presents a risk of poisoning or asphyxiation due to the escape of flue gases
Frost protection	Adequate ambient temperature	System damage due to frost
Vapours and dust	No aggressive steam No significant dust levels Appliance must not be installed in areas like workshops, washrooms, hobby rooms, etc	Component damage and/or significant soiling of hot water heat exchanger
Combustion air	Free from halogenated hydrocarbons	Premature ageing of heat exchanger due to corrosion.
Sound insulation	Anti-vibration rawl plugs or rubber mounts to provide insulation against structure-born noise	Noise pollution
Temperature in the room where the appliance is installed	0 - 40°C	Fault
Installation room	Protected against water	Damage due to water ingress Risk of electric shock

Table 4.1 Installation site requirements

4.3 Heating system

4.3.1 Safety equipment

– Provide a drain & fill valve at the lowest point in the system.

– The heat exchanger has not been fitted with an expansion vessel at the factory.
  ► The expansion vessel must be sized sufficiently, in accordance with DIN EN 13831:2007-12.
  ► Fit the expansion vessel onsite (WOLF accessories range).

NOTE
This appliance does not have built-in expansion tank. The installer shall according to the water volume contained in the heating circuit and the necessary safety factor dimension and install the expansion tank.

WARNING
Risk of explosion due to pressure buildup!
Scalding and physical injury.
  ► Do not install a shut-off valve between the expansion vessel and the heat generator.

This does not include butterfly valves upstream of the expansion vessel.
  ► Route the discharge pipe of the butterfly valve into a drain outlet.

– Make sure that a drain outlet and safety assembly is provided.
The safety assembly from the WOLF accessories range includes an integral 3 bar safety valve.

– A minimum flow rate prevents damage to the hot water heat exchanger as a result of overheating or steam hammers. This is not required for flow temperatures < 80 °C.

– WOLF recommends using a sludge separator with a magnetite separator.
Deposits in the heating water heat exchanger may lead to boiling noises, a drop in performance or faults. Using a sludge separator with a magnetite separator protects the heat generator and the high-efficiency pump against magnetic and non-magnetic contamination.
  ► Install a sludge operator with magnetite separator in the heating return to the heat generator.

– WOLF recommends using an air and microbubble separator.
Microbubbles can cause faults in the heating circuit. An air and microbubble separator is most effective

at the hottest point of the heating circuit.
► Install the air and microbubble separator in the heating flow of the heat generator.

4.3.2 Heating water

Limits

Limits Table 4.3	Measures	Possible consequences of failing to follow instructions
Complied with	Use potable water as fill and top-up water.	-
Not complied with	Flush system with potable water.	High level of oxygen ingress
	This water must be desalinated using a dirt filter upstream from the ion exchanger.	Warranty voided for water-side system components.

Table 4.2 Treatment of heating water in accordance with VDI 2035

Heating water additives

NOTE
Heating water additives!
Damage to heating water heat exchanger.
► Do not use antifreeze or inhibitors.

NOTE
Corrosion of aluminium components due to pH levels being too high or too low!
Damage to heating water heat exchanger
► The pH value of the heating water must be between 6.5 and 9.0.
► In mixed installations, a pH value of 8.2 to 9.0 must be maintained in accordance with VDI 2035.

Electrical conductivity and water hardness

The limits for conductivity and water hardness are dependent on the specific system volume V_A (V_A = system volume / max. rated heating output).
According to VDI 2035, multi-boiler systems, use the maximum rated heating output of the smallest heat generator.

Heating water quality requirement relating to the entire heating system:

		V_A ≤ 20 L/kW	
Total heating output	Total hardness[1] / total alkaline earths		Conductivity[2] at 25°C
[kW]	[°dH]	[mol/m³]	Cond. [µS/cm]
≤ 50	≤ 16.8	≤ 3.0	< 800
50-200	≤ 11.2	≤ 2	< 100
		V_A > 20 L/kW and < 50 L/kW	
Total heating output	Total hardness[1] / total alkaline earths		Conductivity[2] at 25°C
[kW]	[°dH]	[mol/m³]	Cond. [µS/cm]
≤ 50	≤ 11.2	≤ 2	< 800
50-200	≤ 8.4	≤ 1.5	< 100
		V_A ≥ 50 L/kW	
Total heating output	Total hardness[1] / total alkaline earths		Conductivity[2] at 25°C
[kW]	[°dH]	[mol/m³]	Cond. [µS/cm]
≤ 50	≤ 0.11[3]	≤ 0.02	< 800
50-200	≤ 0.11[3]	≤ 0.02	< 100

1 Total hardness conversion: 1 mol/m³ = 5.6 °dH = 10 °fH
2 < 800 µS/cm: high salinity / < 100 µS/cm: low salinity
3 < 0.11 °dH recommended standard, permissible up to limit of < 1 °dH

Table 4.3 Electrical conductivity and water hardness

Add Content:
Water hardness (Germany) : 1 °dH
Water hardness (Chinese) : 10.0 mg CaO/L water
Water hardness (Chinese) : 17.8 mg CaCO3/L water

Calculation example

System with a CGB-2-75
System volume = 800 L
Max. rated heating output for CGB-2-75 = 75 kW
Total hardness of untreated potable water $C_{potable\ water}$ = 18 °dH

Specific system volume V_A
V_A= system volume / max. Rated heating output

V_A = 800 L / 75 kW = 11 L/kW

Maximum permissible total hardness C_{max}
see Table 4.3 Electrical conductivity and water hardness

The specific system volume V_A is ≤ 20 L/kW when total output is between 50 and 200 kW.
The total hardness for the fill and top-up water C_{max} must therefore be ≤ 11.2 °dH.
If the total hardness of the untreated potable water is too high, some of the filling and top-up water must be desalinated:

Proportion of desalinated water A
$A = 100\,\% - [(C_{max} - 0.1\,°dH) / C_{potable\ water} - 0.1\,°dH)] \cdot 100\,\%$

A = 100 % – [(11.2 °dH – 0.1 °dH) / 18 °dH – 0.1 °dH)] • 100% = 38 %
38% of the filling and top-up water must be desalinated.

Volume of desalinated water $V_{treatment}$
$V_{treatment}$ = A • system volume

$V_{treatment}$ = 38% x 800 L = 304 L

At least 304 L of desalinated water must be added when filling the system.
The system can then be topped up with potable water.

Top-up water

The total amount of filling and top-up water over the life cycle of the heat generator must not exceed three times the nominal volume of the heating system (oxygen ingress!). If a system requires large volumes of top-up water (e.g. more than 10 % of the system volume per year), the cause must be sought immediately and the fault remedied.

4.4 Balanced flue

For safety reasons, use only original WOLF flues and concentric balanced flue systems.

⚠ **DANGER**
Fire and smoke will travel to other floors!
Risk of suffocation, poisoning and burning in the event of exposure to fire from outside.
► Take precautions to ensure fire resistance.

It is forbidden:
* Using stainless steel pipe, soft pipe or systems designed for non-condensing boilers;
* Not mounting the external pipe, or punching holes on the wall of the external pipe;
* The terminal is placed under the roof, close to side wall and from obstacle etc. – These installation errors may block the inlet or outlet of the flue gas pipe and result in fault.

It is required:
* When, leaving the wall, the flue gas pipe shall be placed completely in open position, which shall leave eaves, glass houses, canopies, fences, etc.
* The terminal in all directions shall avoid any possible access to inlet of the ventilator, which may bring the combustion material into the room and risk life.

4.4.1 Installation of the balanced flue lines

Balanced flue lines - general

– Discuss any installation questions, particular those relating to the installation of inspection covers and vents, with the local flue gas inspector.
– Route the balanced flue line over the heat generator in such a way that the displacement device can be removed.
– Minimum clearance above the heat generator: 350 mm for installation and maintenance of the balanced flue system.

Balanced flue routing via roof (type C33x)

Routing of the balanced flue above the roof is permitted under the following conditions:

– Heat generator is located in the attic.

– Heat generator is located in a room where the ceiling is also the roof.

– There is nothing above the ceiling but the roof structure.

If there is nothing above the ceiling but the roof structure, the following applies for the combustion air supply and the flue from the top edge of the ceiling to the roof skin:

Fire resistance	Measures
Required	Clad any lines with non-combustible materials which also have this fire resistance.
No specific requirements	Lines must be laid in a shaft made of non-combustible rigid materials or a metal conduit (mechanical protection).

Balanced flue routing via shaft

If multiple floors are bridged by the lines for the combustion air supply and the flue, these lines must be routed in a shaft outside of the installation room. If this is not done, there is no guarantee of any mechanical protection. Fire resistance must be guaranteed for at least 90 minutes.

Balanced flue routing via existing shaft

Ducts which were previously connected to an oil or solid fuel boiler must be cleaned by the chimney sweep so that no dust remains. If the combustion air is drawn in via the shaft, the prior use can cause odours in the boiler room.
Dust-free cleaning not possible:
► Use separate air supply.

Securing the balanced flue line outside of the shaft

⚠ **WARNING**
Risk of falling parts!
Physical injury and damage to objects.
► Lines must be secured with brackets every 150 cm.

Secure the balanced flue or standard flue outside of ducts with spacer pipe brackets to prevent the pipe joints being pulled apart.

Minimum clearance of 50 cm:
– From the connection to the heat generator
– Before or after bends

Protection in winter

⚠ **WARNING**
Risk of water vapour becoming ice and falling off!
Physical injury and damage to objects.
► Use appropriate measures on site to mitigate this risk, e.g. installation of a suitable snow guard.

At low outside temperatures, the water vapour contained in the flue gas may condense and freeze on the balanced flue system.

Fire protection

No clearance is required between the concentric balanced flue and combustible materials or components, as temperatures above 85°C will not occur at the rated heating output.

Connection to the balanced flue system

– It must be possible to inspect the entire cross-section of the flues.
– Therefore, install at least one appropriate cleaning and/or inspection port inside the boiler room; agree on suitable arrangements with the local flue gas inspector
– Between the flue terminal and the roof surface, there must be a clearance of at least 0.4 m.

Flue gas temperature sensor

The electronic flue gas temperature sensor switches the heat generator off when the flue gas temperature exceeds 105°C. The heat generator restarts when the reset button is pressed.

4.5 Overview of connection types

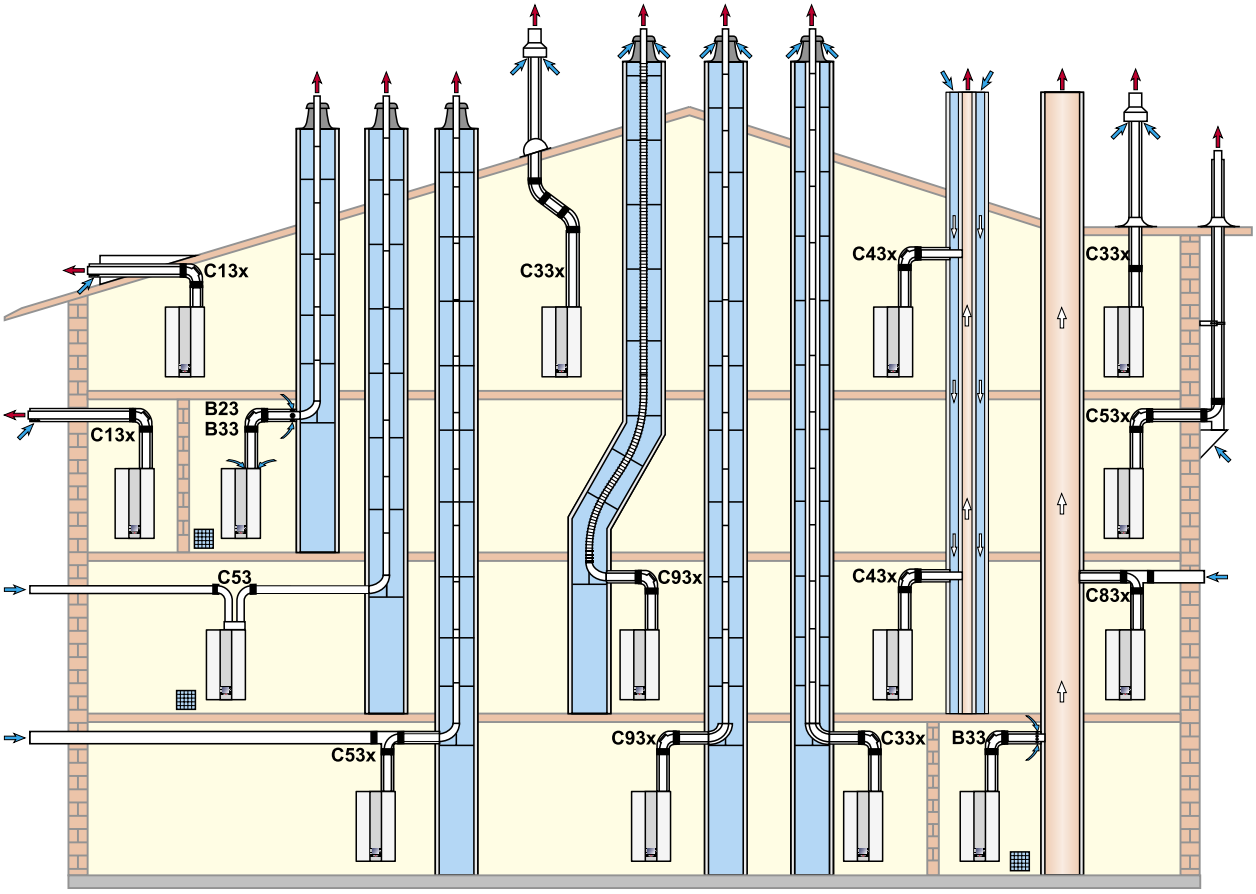


Fig. 4.2 Overview of connection types

4.5.1 Permitted connection types

Type	CGB-2-75 / 100
Connection type[1, 2]	B23, B33, C13x[3], C33x, C43x, C53, C53x, C83x, C93x
Operating mode	
Room sealed	Yes
Can be connected to	
Balanced flue	C13x, C33x, C53x,
Moisture-resistant flue	C53x, C33x

[1] Mark “x” indicates that all components of the flue are surrounded by combustion air and meet higher requirements for gas tightness.
[2] For type C, combustion air is drawn through a sealed system from the outside (room sealed combustion equipment).

Table 4.4 Permitted connection types

4.5.2 Balanced flue lengths

Available draught for calculating the length of the flue line as per DIN EN 13384 from the heat generators up to the flue terminal:

		Type	
Load	Setting parameters	CGB-2-75	CGB-2-100
Minimum	HG02 minimum	6 Pa	6 Pa
	HG02 Factory setting	17 Pa	17 Pa
Maximum	HG04 maximum	120 Pa	216 Pa

Balanced flue lengths for single boiler systems

Calculation basis for maximum lengths (H):

– Geodetic height: 325 m (above sea level)

– Calculation incl. 2 m connection piece, 1 x inspection bend 87° and 1 x bend 87° for C33x, C53x.

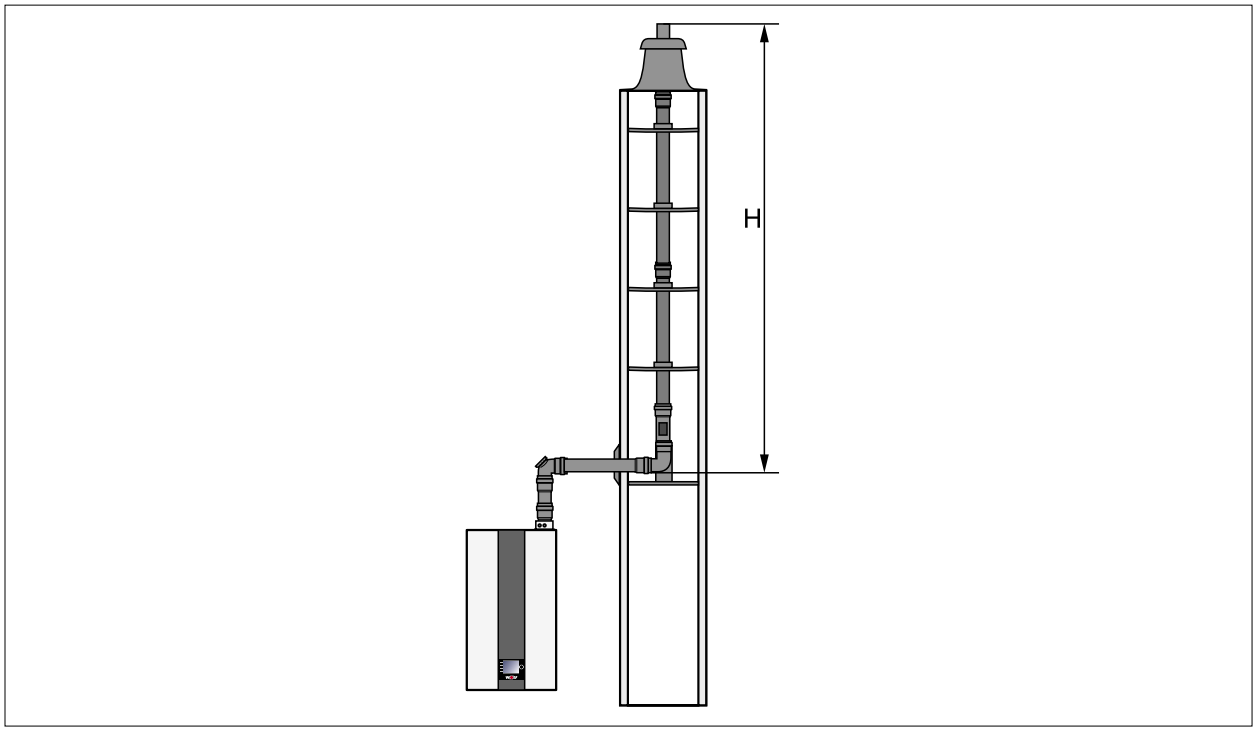


Fig. 4.3 H = Maximum lengths

Type	Design variants		Maximum length[1) 2)] [m]	
		CGB-2	-75	-100
C13x	Horizontal concentric roof outlet through pitched roof, (room sealed– onsite dormer)	DN 110/160	(12) 15	(9) 16
C33x	Vertical concentric roof outlet through a pitched or flat roof (room sealed)	DN 110/160	(8) 11	(8) 12
C53x	Connection to flue routed over an external wall; combustion air via external wall panel (room sealed)	DN 110	45	45
C53x	Connection to flue in a duct and supply air through external wall (room sealed)	DN 110	43	44
		DN 110/160[3)]	50	50

1) Values apply to HG02 “factory setting” (see Tab. 7.1.); for setting HG02 at minimum, please use the value in parentheses.
2) For calculating the pipe length, see section “Calculating the balanced flue length”, Table 4.7.
3) Enlargement in a duct from DN 110 to DN 160

Table 4.5 Balanced flue lengths

Systems C33x and C83x are also suitable for installation in garages.
Where necessary, adapt the installation examples to the relevant building regulations and requirements in your country/region. Discuss any questions relating to the installation of inspection covers and supply air apertures with your local flue gas inspector.
The length dimensions for a concentric balanced flue and flues relate exclusively to original WOLF components.

Balanced flue lengths for cascade systems

- Calculation basis for maximum lengths (H):
- Shaft ventilation using balanced flow principle
- One appliance at partial load, all others simultaneously at full load (see DIN EN 13384)
- Geodetic height: 325 m (above sea level)
- Calculation incl. 2 m connection piece after last appliance, 2 x bend 45° between vertical line and header pipe and 1 x bend 87°.

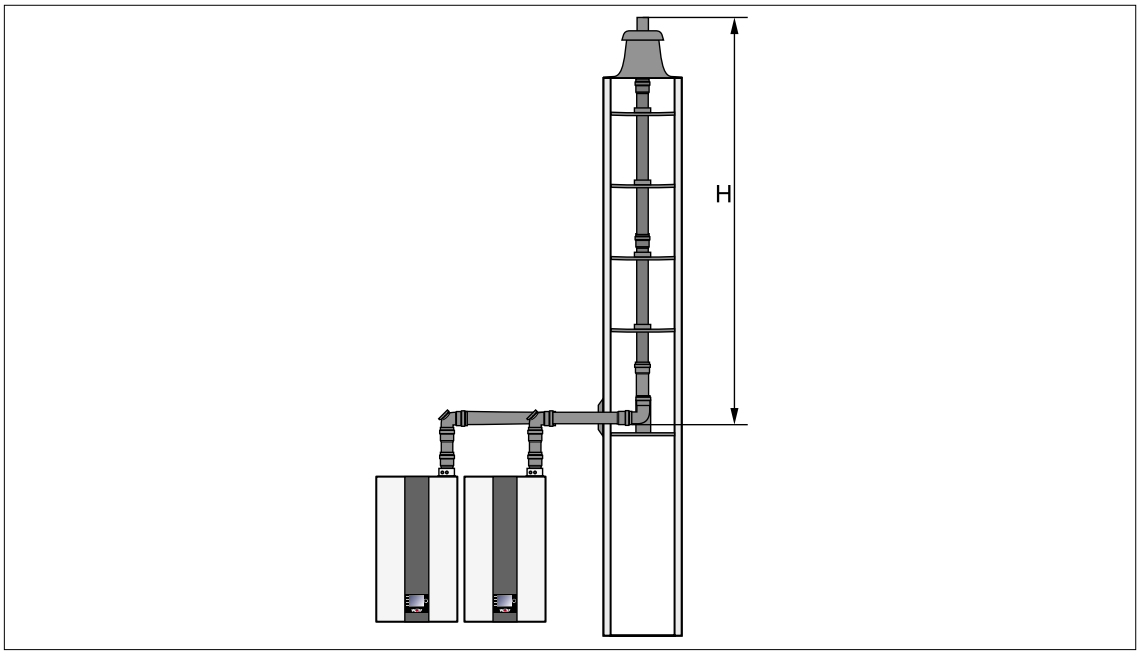


Fig. 4.4 H = Maximum cascade lengths

Number of appliances and appliance types in series	Nominal diameter of connection pipe (appliance to header)	Nominal diameter of header to duct	Nominal diameter of vertical flue	**Round duct**, minimum duct size Ø in mm	**Rectangular duct**, minimum duct size in mm	Max. vertical height (insertion of connection piece up to terminal in m)
2 x CGB-2-75	DN 110	DN 160	DN 160	205	185	47
2 x CGB-2-75	DN 110	DN 160	DN 200	285	265	50
3 x CGB-2-75	DN 110	DN 160	DN 200	285	265	31
3 x CGB-2-75	DN 110	DN 200	DN 200	285	265	50
4 x CGB-2-75	DN 110	DN 200	DN 250	333	313	50
5 x CGB-2-75	DN 110	DN 250	DN 250	411	351	50
2 x CGB-2-100	DN 110	DN 160	DN 160	244	224	26
2 x CGB-2-100	DN 110	DN 160	DN 200	285	265	50
3 x CGB-2-100	DN 110	DN 200	DN 200	285	265	22
3 x CGB-2-100	DN 110	DN 200	DN 250	333	313	50
4 x CGB-2-100	DN 110	DN 250	DN 250	333	313	50
5 x CGB-2-100	DN 110	DN 250	DN 315	411	351	50

Fig. 4.5 Balanced flue lengths for cascade systems

Calculated length of balanced flue bends

Component	Calculated length [m]
Straight pipe	Corresponding to length
45° bend	1.0
87° bend	2.0
87° bend with inspection port	2.0
87° tee with inspection aperture	2.0

Table 4.6 Calculated lengths of balanced flue bends

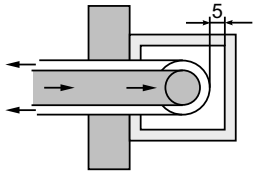
Calculation example

The calculated length of the balanced flue or standard flue is derived from the straight pipe length and the length of any pipe bends.

Design type B23:	
Horizontal straight balanced flue pipe (connection piece) length	= 2 m (incl.)
Inspection tee 87°	= 2 m (incl.)
2 x 45°-bends = 2 x 1 m	= 2 m
(Support-) bend 87°	= 2 m (incl.)
Vertical straight balanced flue pipe length	= 5 m
Total length L = 2 x 1 m + 5 m	= 7 m < maximum length ->i.O.

Minimum shaft sizes

These apply to open flue and room sealed operation.



C33x room sealed
In duct DN 110/160

Fig. 4.6 Minimum shaft sizes

Flue routing, rigid in a duct

	Circular diameter Ø	Rectangular width □
DN 110	190 mm	170 mm
DN 160	250 mm	230 mm

4.5.3 Balanced flue examples

Balanced flue, vertical and concentric (example)

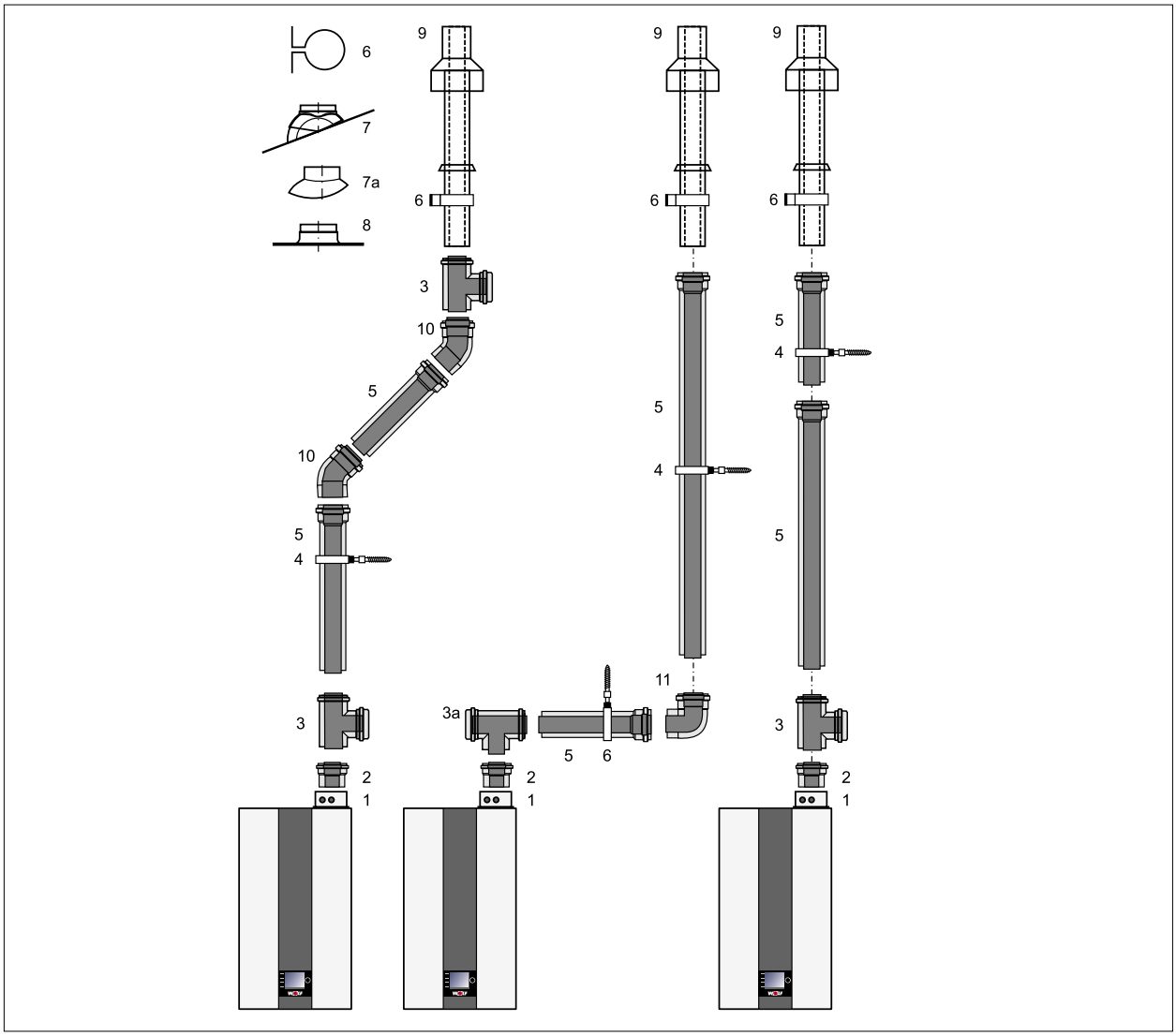


Fig. 4.7 Type C33x: Vertical balanced flue routing above roof.

1 Heat generator
2 DN 110/160 condensing boiler connection
3 Inspection piece
4 Pipe clip DN 160
5 Balanced flue pipe DN 110/160
500 mm, 1000 mm, 2000 mm
6 Mounting bracket DN 160 for roof outlet
7 Universal tile for pitched roof 25-45°
7a “Klöber” adaptor 20-50°
8 Flat roof collar
9 Balanced flue routing vertical (roof outlet for flat or pitched roof) L = 2000 mm
10 Bend 45° DN 110/160
11 Bend 87° DN 110/160
12 87° bend for duct installation DN 110/160
13 External wall support bend F87° with smooth ends on both side of the air pipe DN 110/160
14 Air inlet, external wall F DN 110/160
15 PP wall outlet, external wall F
16 Wall plate
17 Balanced flue routing horizontal incl. cowl
18 Connection to flue gas chimney B33, length 250 mm with air aperture
19 Support bend 87°, DN 110 for connection to a flue in a duct
20 Support rail

– Ventilation air aperture in open flue operation in accordance with TRGI 150 cm² or 2 x 75 cm²
– Type C33x: Gas condensing boiler with combustion air and flue gas routed vertically via the roof.
– Lubricate the pipe ends and gaskets for easier installation.
– Prior to installation, liaise with your local flue gas inspector regarding the required inspection piece **(3) (3a)**.

Horizontal concentric balanced flues C13x and C53x and standard flue on an external wall C53x (examples)

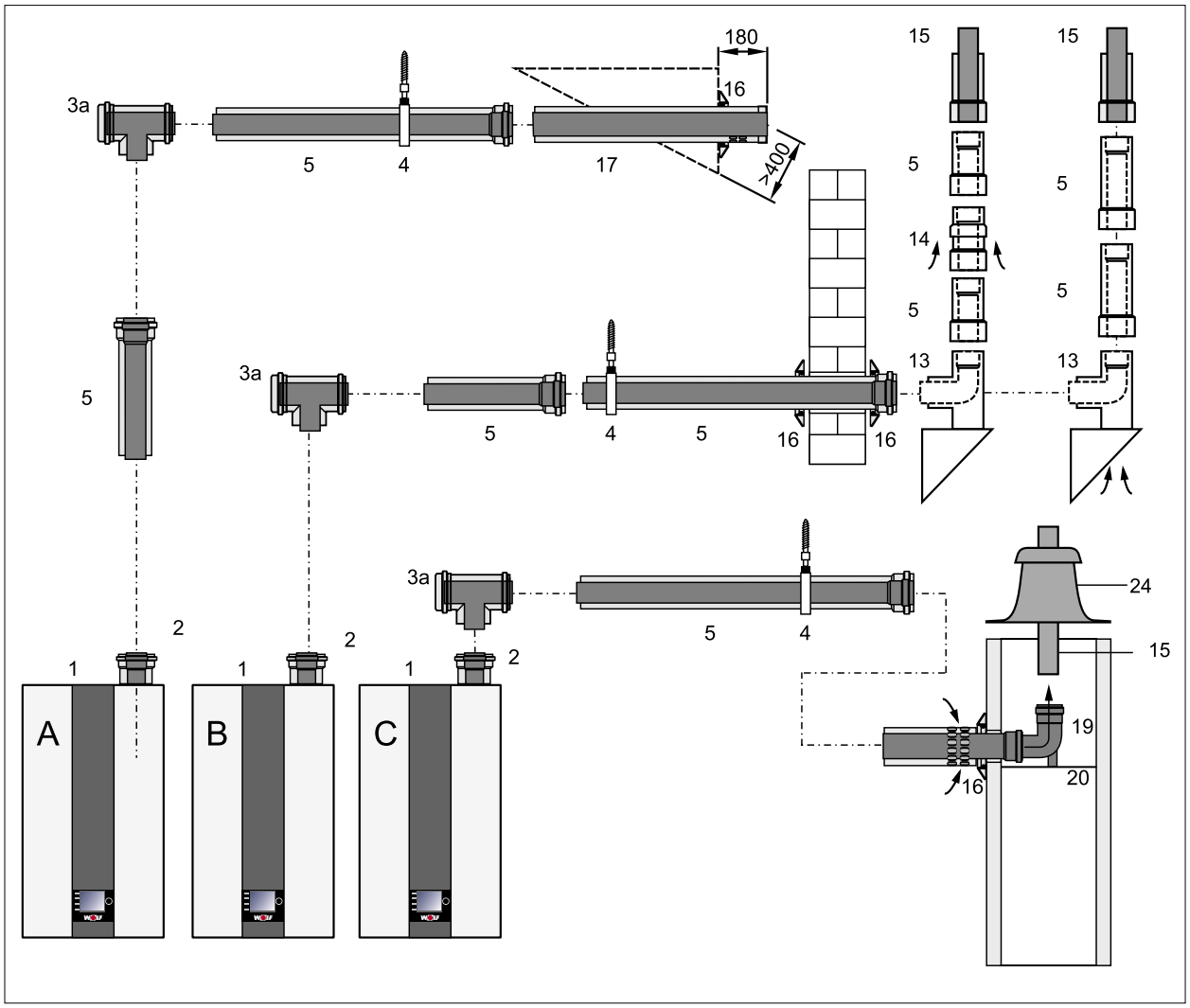


Fig. 4.8 Horizontal concentric balanced flue C13x, C53x and on external wall

A C13x - Horizontal balanced flue routed through pitched roof
B C53x - Flue routed along external wall
C B33
1 Heat generator
2 DN 110/160 condensing boiler connection
3a Inspection piece, 87° tee
4 Pipe clip DN 160
5 Balanced flue pipe DN 110/160
500 mm, 1000 mm, 2000 mm
12 87° bend for duct installation DN 110/160
13 External wall support bend F87° with smooth ends on both side of the air pipe DN 110/160
14 Air inlet, external wall F DN 110/160
15 PP wall outlet, external wall F
16 Wall plate
17 Balanced flue routing horizontal incl. cowl
18 Connection to flue gas chimney B33, length 250 mm with air aperture
19 Support bend 87°, DN 110 for connection to a flue in a duct
20 Support rail
21 Flue pipe DN 110, 500 mm, 1000 mm, 2000 mm
22 Bend 87° DN 110
23 Spacer
24 Shaft cover
25 Air inlet pipe Ø 110 mm
26 Air pipe Ø 160 mm

– Ventilation air aperture in open flue operation in accordance with TRGI 150 cm² or 2 x 75 cm²
– Lubricate the pipe ends and gaskets for easier installation.
– Prior to installation, liaise with your local flue gas inspector regarding the required inspection piece **(3a)**.
– Install the horizontal flue with a fall of approx. 3° (6 cm/m) towards the heat generator.
– Install the horizontal air line with a fall of approx. 3° towards the outside.
– Connect the support bend **(19)** and the flue (DN 110 or DN 110 flexible) in the duct.

4.5.4 Supplementary installation information

Inspection piece

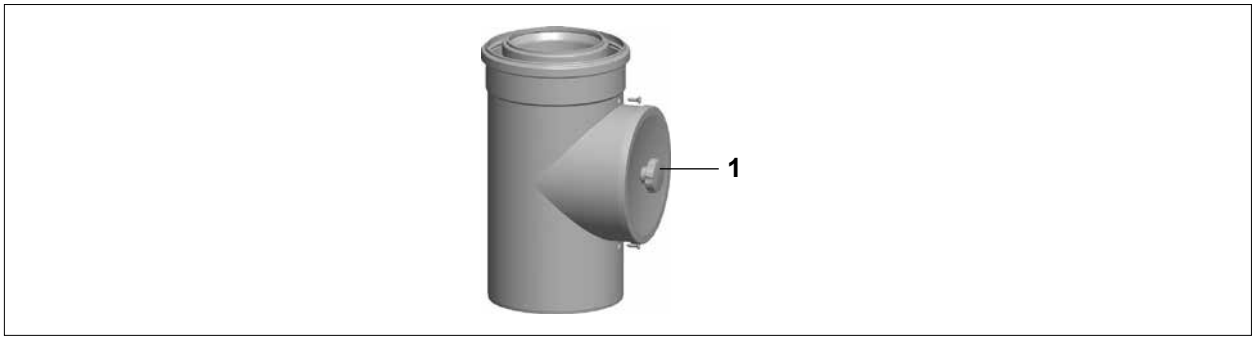


Fig. 4.9 Inspection piece

– To check the balanced flue, undo and remove the cover **(1)** of the inspection piece.

Support bend

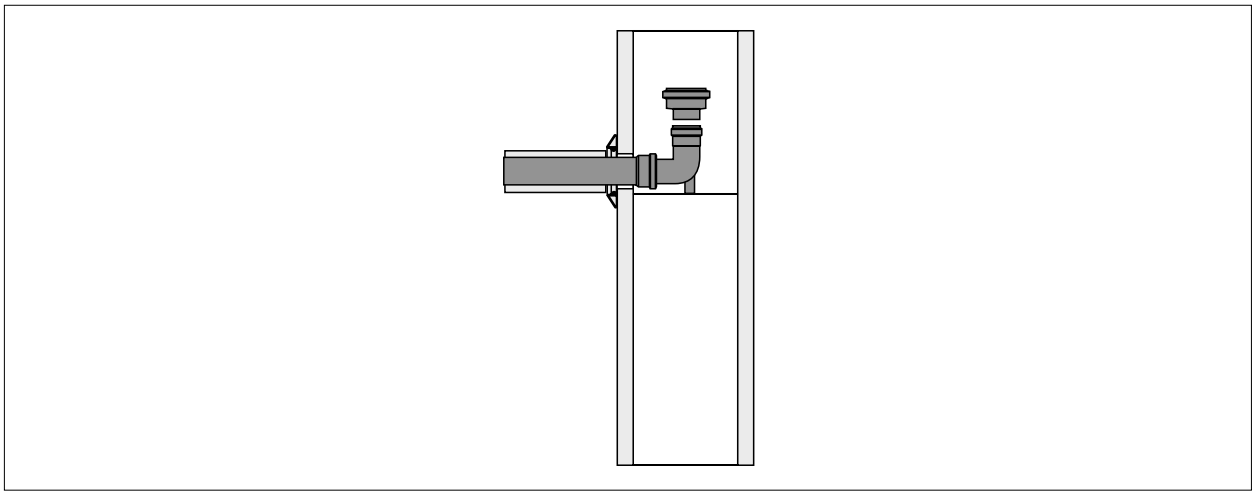


Fig. 4.10 Enlargement for support bend from DN 110 to DN 160

– If required, the flue pipe can be extended in the duct from DN 110 to DN 160 after the support bend.

4.5.5 Installation of the flue in the duct with support pipe (optional)

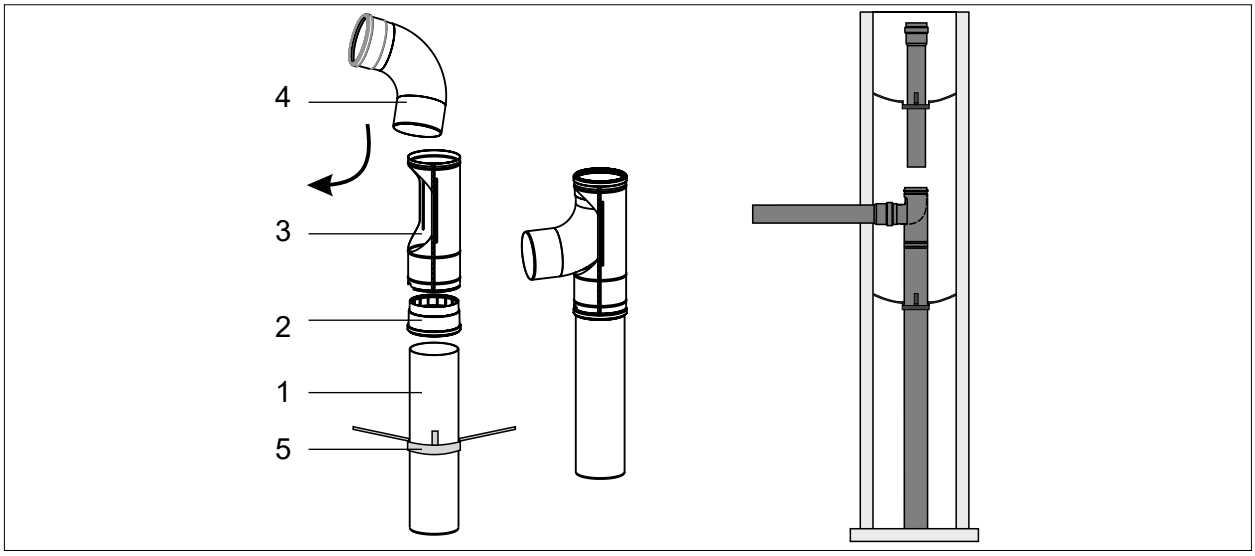


Fig. 4.11 Installation with support pipe

- ► Determine the required length of the support pipe (1) and shorten the pipe accordingly.
- ► If necessary, connect the socket (2) to the support pipe and take into account in determining the length.
- ► Insert bend (4) with the plug end into the support sleeve (3) and push in while rotating in the direction of the bend.
- ► Slide the spacer (5) over the support pipe (1), and centre the support pipe in the duct.
- ► Place the support sleeve (3) with attached bend on the support pipe.

4.6 Information on hydraulics

A speed-controlled pump is installed in the heat generator, which is modulated according to the burner output. Make sure that the flow rate for the heat generator is at a safe level.

► Install low loss header or hydraulic separation.

NOTE

For each new installation or new start after long period of idle, it is required that the professional installer or the service staff to check the functionality, for instance to turn the pump manually, in order to prevent the pump from being sticking.

4.6.1 Residual head of the heating circuit pump (accessory)

The pump assembly modulates subject to burner load. The residual head is specified in the diagrams.

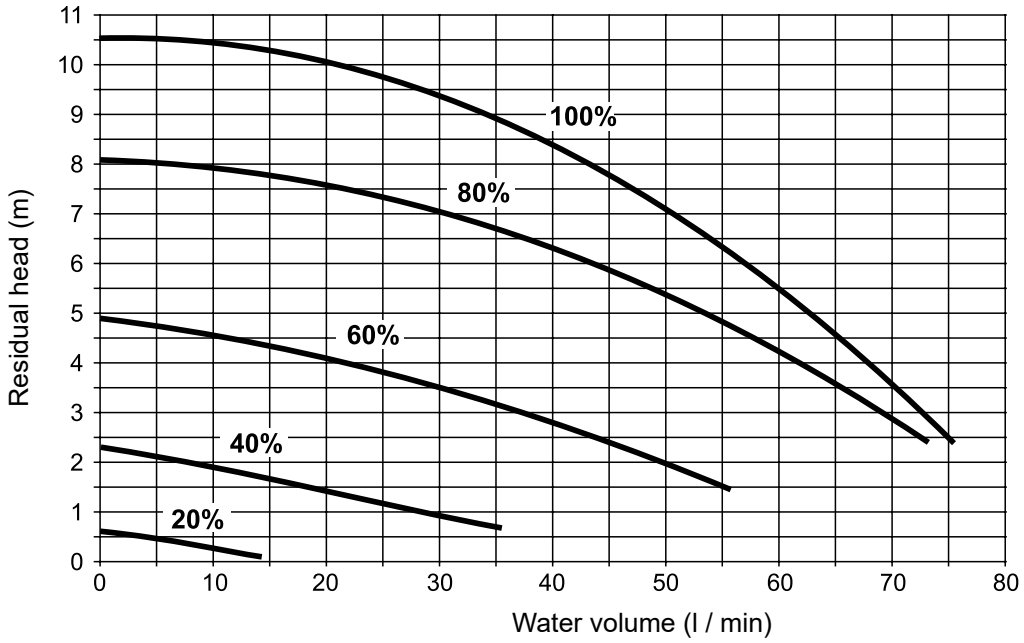
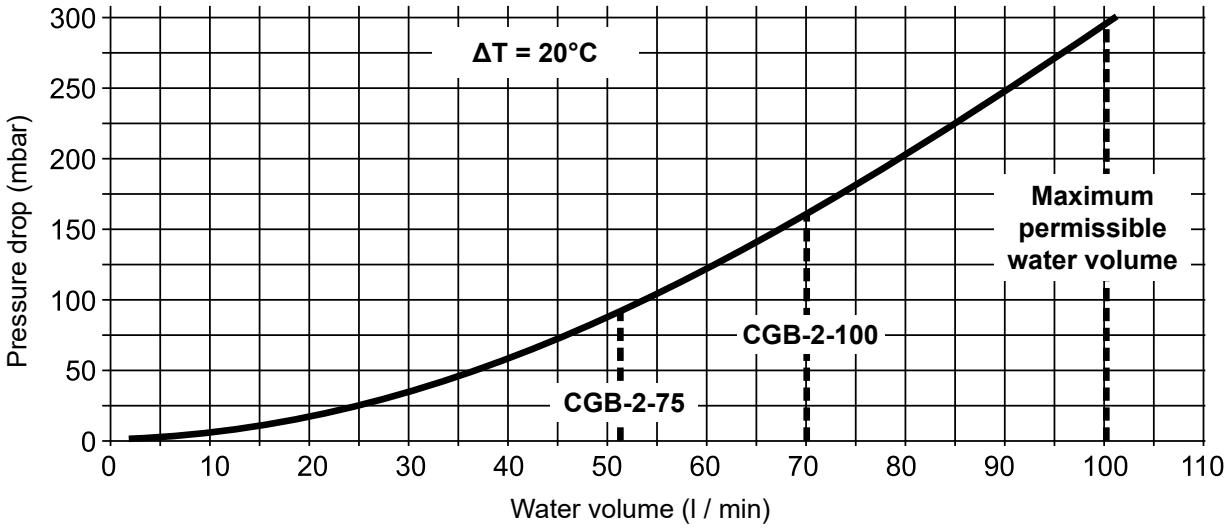


Table 4.7 Residual head of pump assembly depending on modulation level

4.6.2 Hydraulic pressure drop in the boiler excluding pump assembly



4.7 Load diagram

Note: The loads refer to sea level

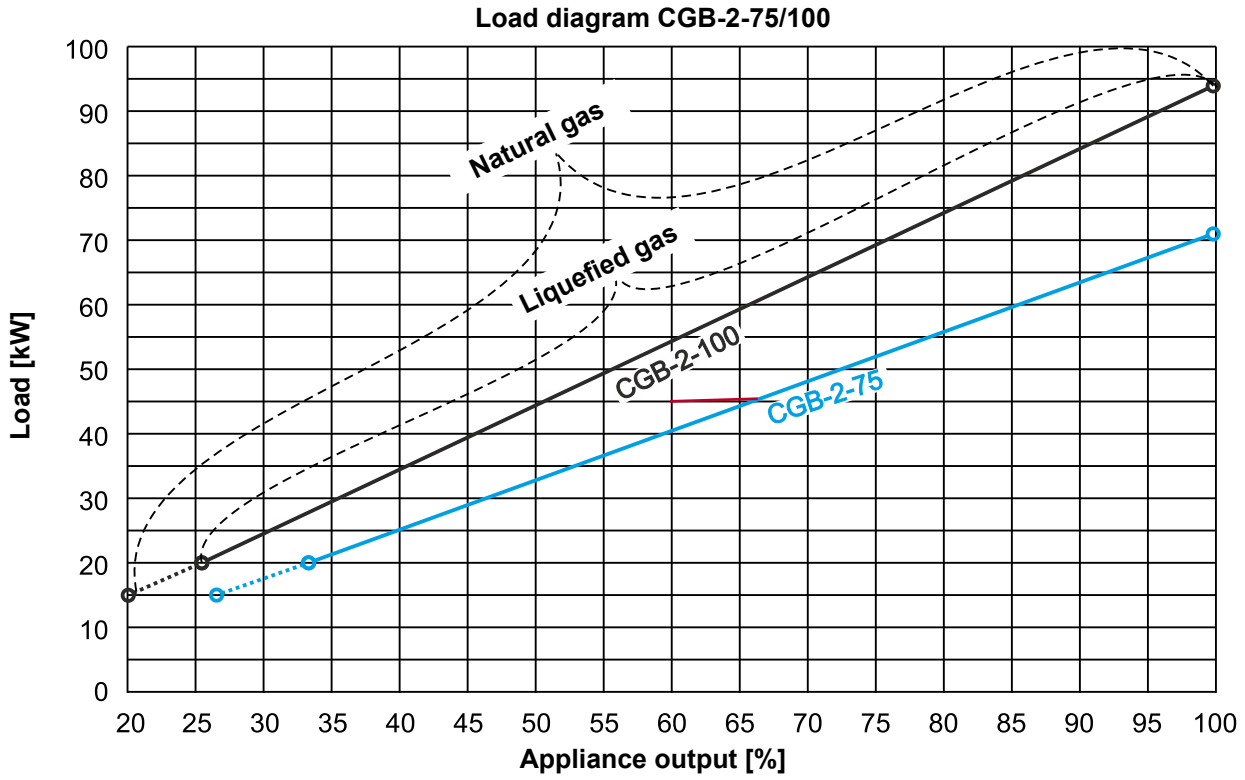


Table 4.8 Load diagram CGB-2-75/100

5 Installation

5.1 Transporting the wall mounted gas condensing boiler

Transport the heat generator with packaging and pallet.
This can be done using equipment like a pallet truck or hand truck.

Fig. 5.1 Transporting the heat generator

- ► Position a sack truck at the rear of the heat generator.
- ► Place a strap around the heat generator and hand truck.
- ► Transport to the installation site.
- ► Undo the straps and remove the box.
- ► Lift the heat generator off the pallet and align it.
- ► Make sure the heat generator is stable.
- ► Remove the top part of the packaging and take out the accessories.
- ► Remove the outer packaging from below.

Note: To keep the connections safe, only remove the inner packaging on the bottom part of the heat generator once it has been mounted to the wall.

5.2 Checking the delivery

The following parts are included:

- – Heat generator, ready to connect, with casing
- – Mounting bracket for mounting on the wall, with installation accessories
- – Installation instructions
- – Operating instructions
- – Maintenance instructions
- – Trap with hose
- – Maintenance tools

5.3 Required accessories

The following accessories are required for installing the heat generator:

- – Balanced flue accessories (see technical information)
- – Room temperature-dependent or weather-compensated control
- – Condensate drain outlet with hose retainer
- – Gas ball valve with fire protection
- – Fitting assembly for heating flow, heating return and integral safety assembly
- – Pump assembly with variable speed pump and integral safety assembly
- – Low loss header set for one or two appliances in a cascade
- – Dirt filter in the heating return

5.4 Securing the heat generator

NOTE

Risk of explosion and flooding.

Escaping gas and water

► Ensure that the fixings and wall have sufficient load-bearing capacity.

Identify installation site:

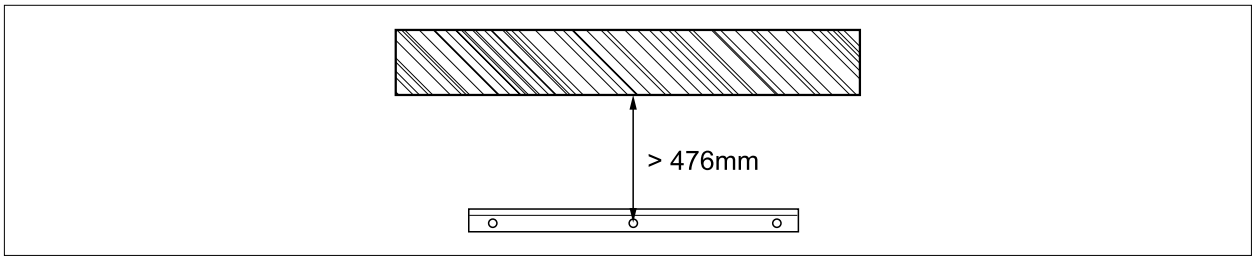


Fig. 5.2 Clearance between suspension bracket and ceiling

► Heat generator connection with flue gas test ports, observe minimum clearances and any existing connections for gas, heating, DHW and electrics.
► Mark drill holes for the mounting bracket and set screw anchors.
► Fit the mounting bracket with the coach bolts and washers supplied.
► Hang the heat generator into the suspension bracket using the mounting stay.
► Remove the inner packaging.

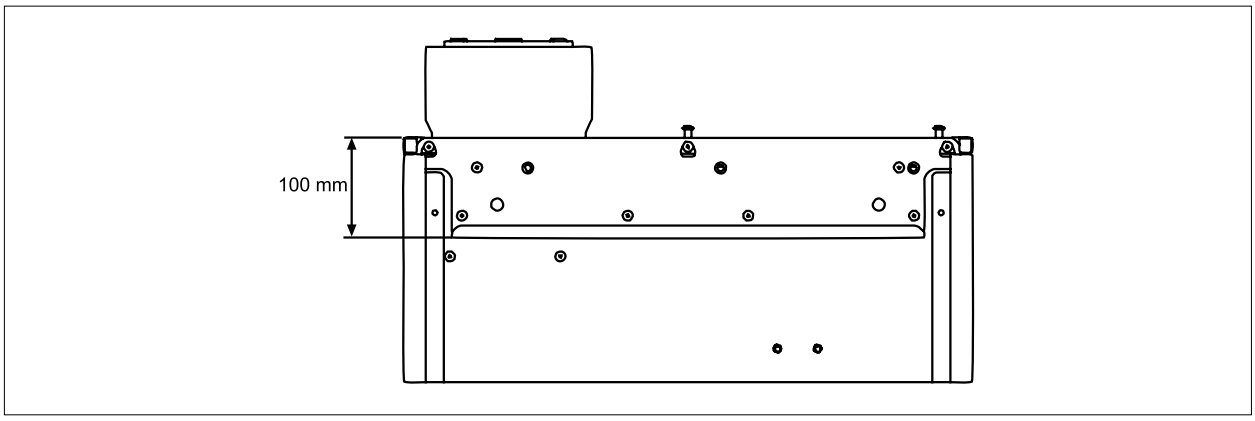


Fig. 5.3 Mounting brace on the rear of the gas condensing boiler

NOTE

Foreign bodies and drilling dust inside the heat generator.

Fault

► Use the expanded polystyrene cover supplied.

5.5 Dimensions/installation dimensions

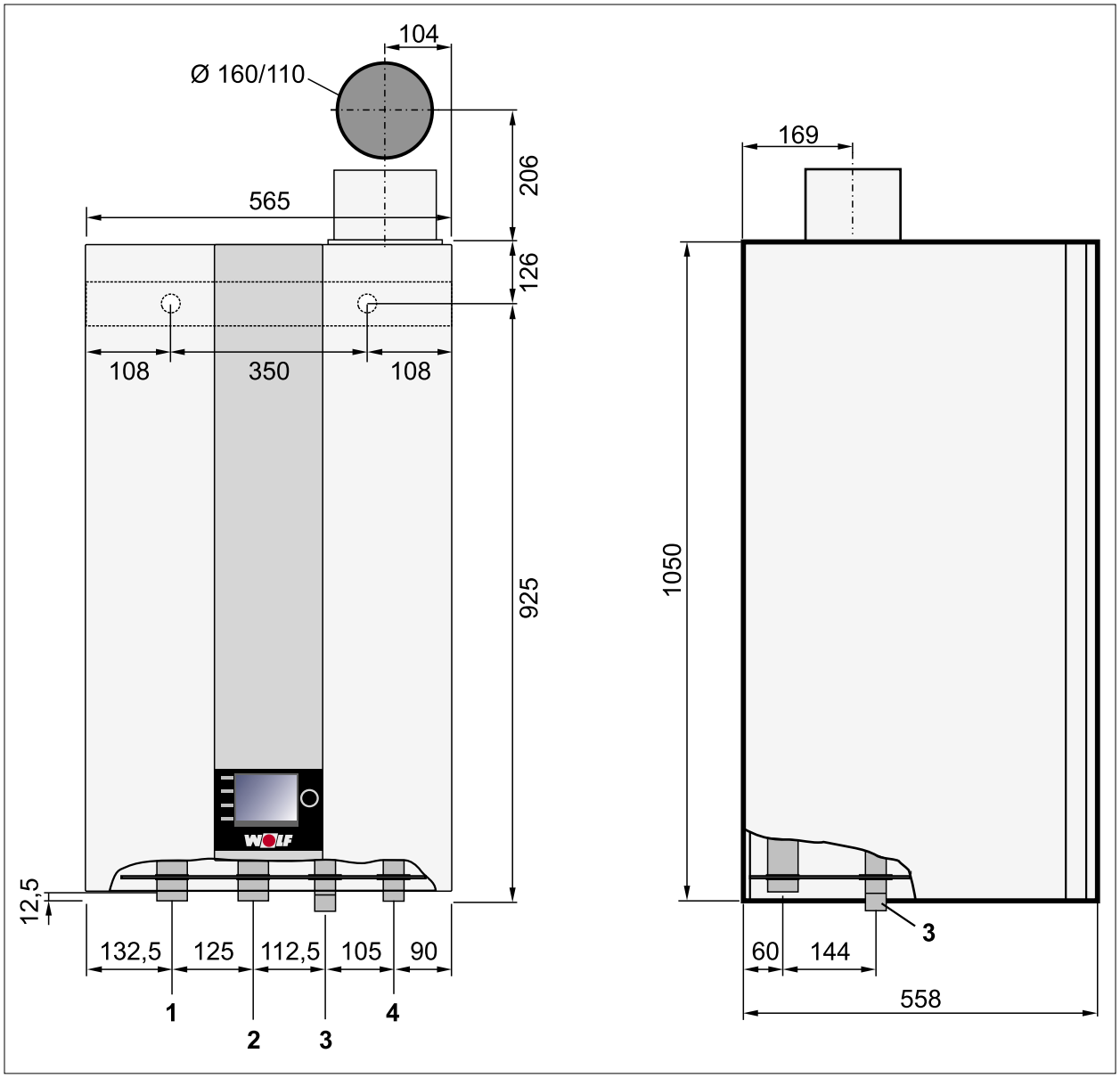


Fig. 5.4 Dimensions/installation dimensions

1 Heating flow
2 Heating return
3 Condensate drain
4 Gas connection

5.5.1 Overpressure cascade DN 160 with low loss header set

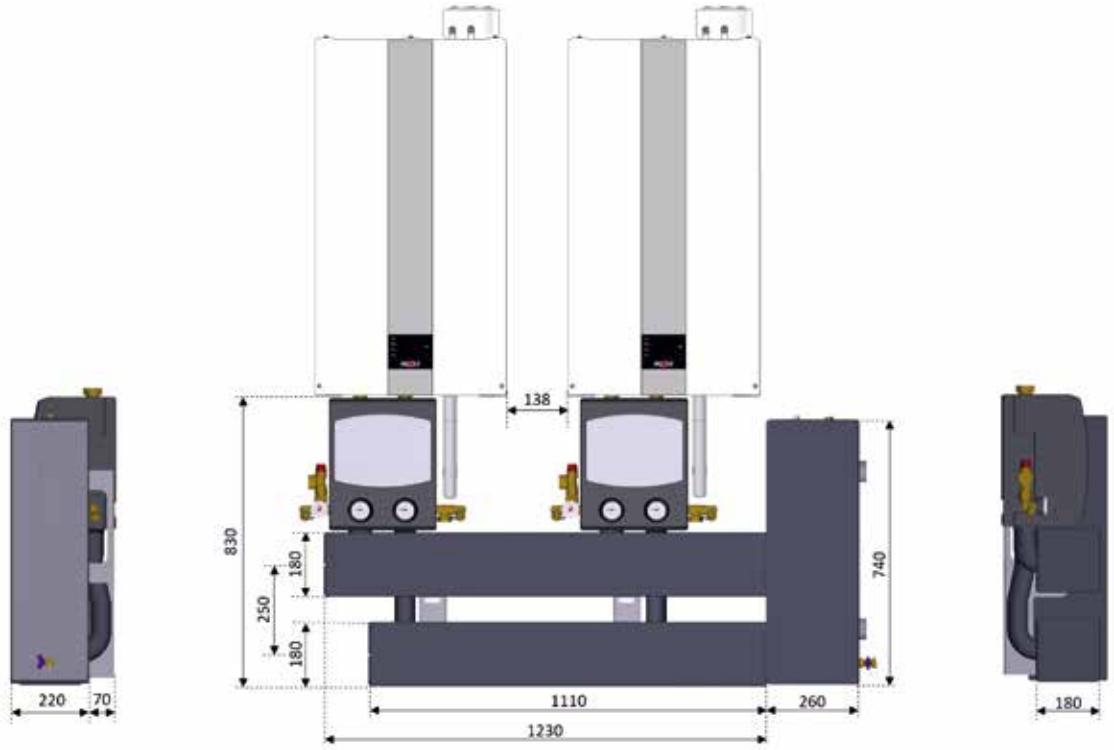


Fig. 5.5 Overpressure cascade with low loss header set

5.6 Heating circuit connection

► We recommend you connect the heating system with the aid of a WOLF heating circuit connection kit.

NOTE

Boiling noise, power loss and malfunction!

Deposits in the heat exchanger

► Install sludge separator with magnetite separator in the heating return.

NOTE

The interface between the boiler and the piping, marked with G3/4 and G1-1/2 connection MUST use union nut connection, standard flat sealing by using the gasket. Using the G-type external thread with any type of sealant is entirely forbidden. It is also required to add on the boiler valve with the same connection size as the boiler.

Fit a drain & fill valve at the lowest point in the system.

5.6.1 Heating circuit connection set (accessory)

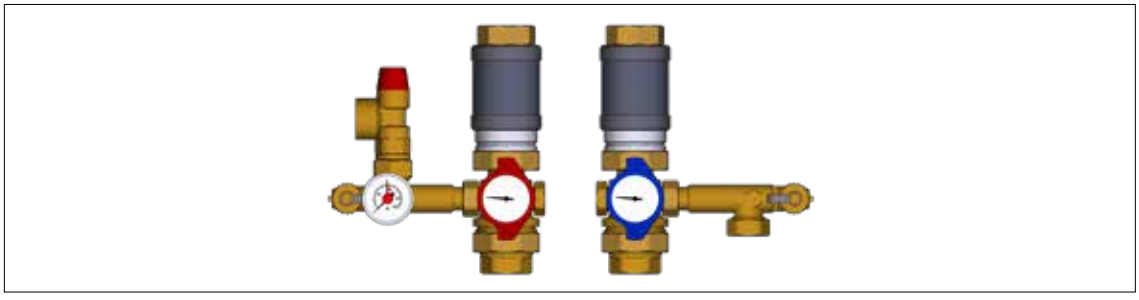


Fig. 5.6 Heating circuit connection set (accessory)

Connection set comprising:

– Connection to the appliance with flat gasket.
– Connection to heating flow/return with ball valves 1” female thread.

5.7 Safety equipment

– Minimum system pressure 0.8 bar.
– The boilers are only approved for sealed systems of up to 6 bar.
– The maximum flow temperature is factory-set to 80°C and may be adjusted to 90°C if required.
– DHW mode generally at 80°C.

NOTE
Components may cause scalding if they burst!
The CGB-2-75/100 does not come fitted with an expansion vessel
► Install expansion vessel into the system.
► The expansion vessel must be correctly sized in accordance with DIN 4807.
► Do not install a shut-off valve between the expansion vessel and the heat generator.

5.7.1 Pump assembly

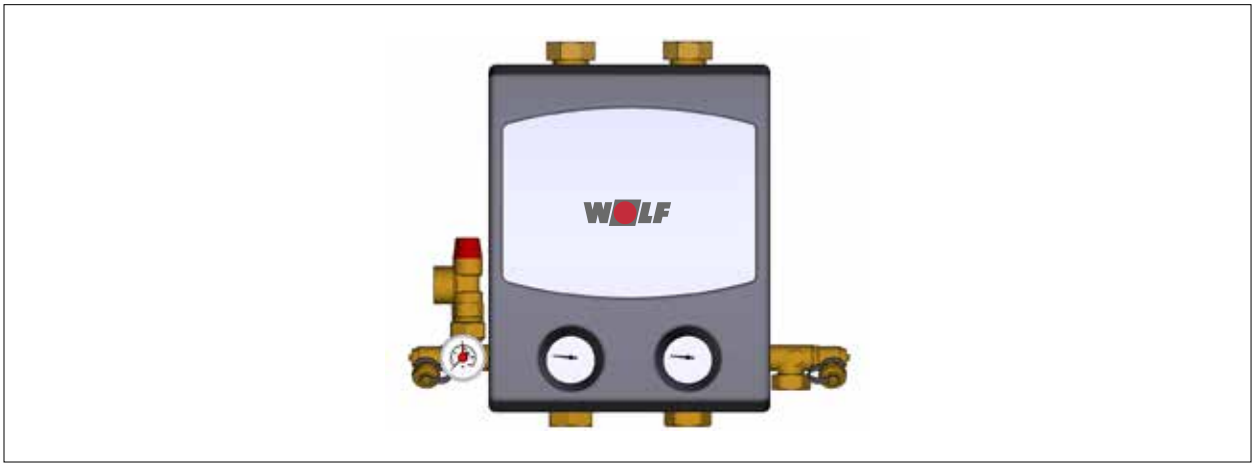


Fig. 5.7 Pump assembly

– The pump or fitting assembly includes a 3 bar safety valve (6 bar safety valve is available as an accessory).
– Route the discharge pipe into a drain funnel.

5.7.2 Heating water

General requirements

NOTE
Escaping water!
Water damage
► Flush the heating system to remove residues and dirt from the pipework.

► Connect DHW flow and return with a three-way diverter valve and/or the return of the heat generator.

When connecting a cylinder from another manufacturer, the cylinder sensor from the WOLF accessory range must be used.

5.8 Connecting the condensate drain

DANGER
Escape of flue gases!
Risk of asphyxiation or severe to life-threatening poisoning.
► Fill the trap with water prior to commissioning.

5.8.1 Connecting the trap

► Loosen the trap union nut (2).
► Check that the wedge gasket is fitted correctly.
► Open the locking clasp (1) at the condensate drain connection.

- ► Insert the trap until it contacts the condensate drain connection.
- ► Tighten the trap union nut (2).
- ► Close and lock the locking clasp (1) at the condensate drain connection.
- ► Connect a drain hose to the trap and the on-site drain.
- ► Make sure that the line has a consistent downward incline and is properly ventilated.

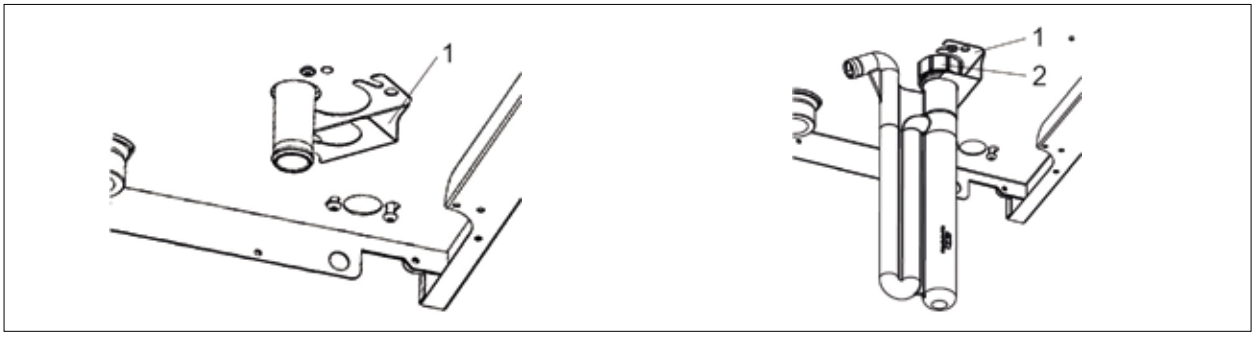


Fig. 5.8 Fit the trap

1 Locking clasp **2** Union nut

5.8.2 Connecting a neutralising system

According to Code of Practice ATV-DVWK- A251, no neutralising system is required for appliances up to 200 kW.

Neutralising system installation instructions

Fig. 5.9 Neutralising system (accessory)

5.9 Connecting the gas

WARNING

There is a risk of explosion, suffocation and poisoning during the leak test!

The gas fittings can be damaged.

- ► Pressure test the gas fittings on the gas burner to a maximum of 150 mbar.

Requirement:

- Ensure that the heat generator corresponds to the gas type available. (Table 5.1)

- ► Clean the gas line before connecting the heat generator.
- ► Use a gas ball valve with fire protection.
- ► Install the gas ball valve upstream from the heat generator in an easily accessible location.

Fig. 5.10 Gas ball valve, angled (accessory)

Fig. 5.11 Straight-through gas ball valve (accessory)

► Only a licensed gas fitter may route the gas pipe and make the gas connections.
► Prior to commissioning, test all gas pipes and connections for leaks according to TRGI.
► Before pressure testing the gas line, close the gas ball valve on the heat generator.
► Only foaming leak detection sprays which are approved by the DVGW may be used.

5.9.1 Gas type factory setting

Gas type	WS	Info
Natural gas 12T	11.4 - 1 5.2 kWh/m³ = 40.9 - 54.7 MJ/m³	

Table 5.1 Gas type factory settings

5.10 Connecting the balanced flue

► Comply with the planning guidance 4.4.
►

It is forbidden:
* Using stainless steel pipe, soft pipe or systems designed for non-condensing boilers;
* Not mounting the external pipe, or punching holes on the wall of the external pipe;
* The terminal is placed under the roof, close to side wall and from obstacle etc. – These installation errors may block the inlet or outlet of the flue gas pipe and result in fault.

It is required:
* When, leaving the wall, the flue gas pipe shall be placed completely in open position, which shall leave eaves, glass houses, canopies, fences, etc.
* The terminal in all directions shall avoid any possible access to inlet of the ventilator, which may bring the combustion material into the room and risk life.

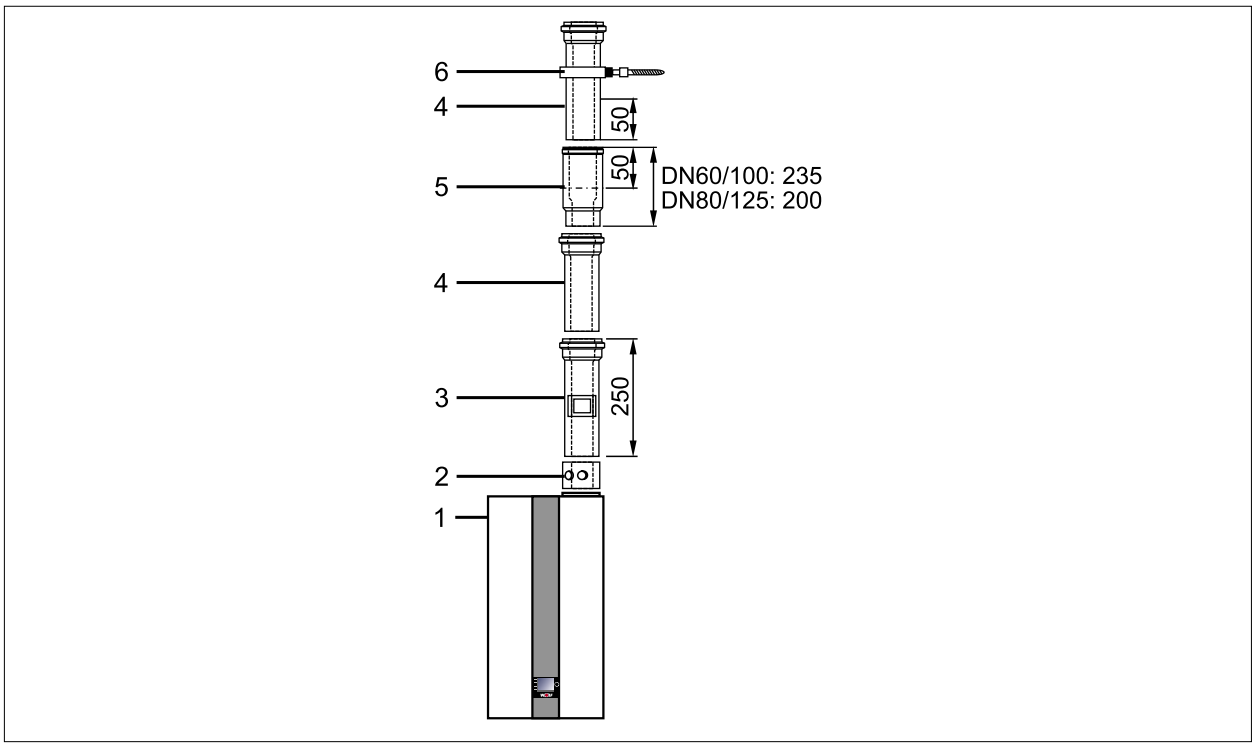


Fig. 5.12 Example: balanced flue [mm]

1 Heat generator
2 Appliance connection with flue gas test port
3 Inspection piece
4 Balanced pipe flue
5 Separator
6 Spacer clip

5.10.1 Installing the balanced flue

Installation information for balanced flue system

NOTE
Inadequate incline for balanced flue!
Corrosion of components or faults.
► Install the balanced flue with an angle of **at least 3°** (6 cm/m) relative to the heat generator.

► Follow the installation instructions for the balanced flue system.
► Never install damaged parts.
► Create flue connections using sockets and gaskets.
► Ensure that gaskets are fitted correctly.
► Always arrange sockets against the direction of the condensate flow.
► Always trim the flue on the smooth side, **never** on the coupling side.
► Bevel or deburr trimmed flues to ensure gas-tight installation of pipe joints.
► Remove contamination before installation.
► Wet or lubricate all balanced flue pipe joints prior to installation, e.g. using soap suds or a suitable grease without silicone.
► Lines must be secured with brackets.

Connecting the appliance connection with flue gas test port

► Install appliance connection with flue gas test port **(2)** (Fig. 5.12) at the connection point of the heat generator **(1)**.

Fit inspection piece

If an inspection port is required for the balanced flue:
► Insert a balanced flue pipe with inspection port.

Fitting the separator

► Slide the separator **(6)** (Fig. 5.12) fully into the socket **(5)**.
► Slide the next balanced flue pipe **(4)** 50 mm into the socket of the separator **(5)**.
► Ensure that the balanced flue pipe **(4)** is fully secured in this position, e. g. with a pipe clamp **(6)** or with

a locking screw on the air side.

Calculating clearance and offset

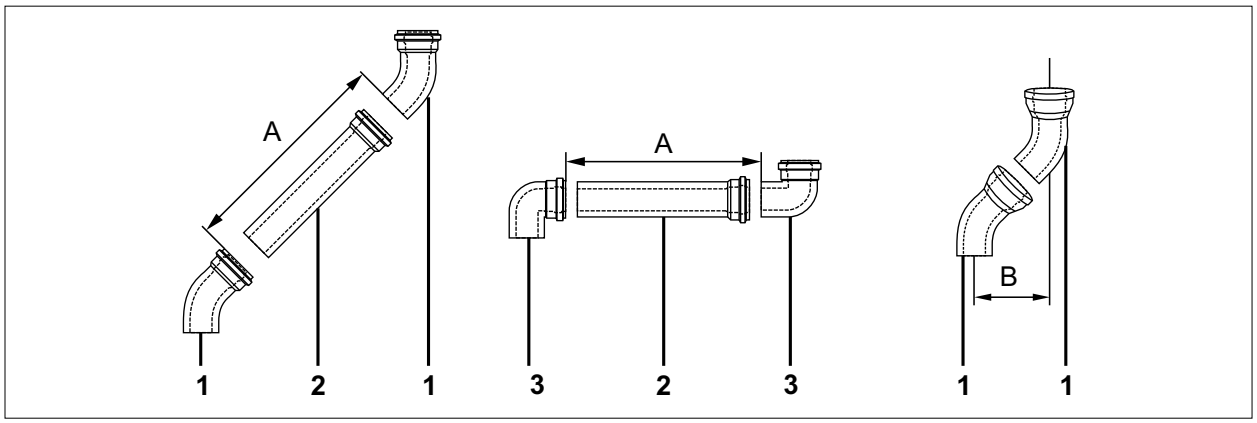


Fig. 5.13 Balanced flue pipe length

A Clearance
B Offset
1 45° bend
2 Balanced flue pipe length
3 Bend 87°

► Determine distance **(A)**.
► Balanced flue pipe **(1)** length always approximately 100 mm longer than clearance **(A)**.
► Take the offset **(B)** into account.

Bend	B
87°	At least 270 mm
45°	At least 106 mm

Table 5.2 Offset bend

Installing a balanced flue in an existing chimney/duct

► Make sure that there is appropriate clearance between the outside of the flue and the wall of the duct (Fig. 4.3).
► Flue lines, retaining straps and spacers must be installed in channels and ducts in such a way that the ventilated cross-section can be inspected and cleaned.
► Close cleaning apertures in ducts with chimney cleaning covers which have been assigned an approved test mark.
► The outlets of flue lines in ducts must be designed so that the following requirements are met:
  – no ingress of precipitation
  – secondary ventilation can flow freely
► It must be possible to remove removable covers without tools and they must be secured to prevent them falling.

5.10.2 Installing the roof outlet

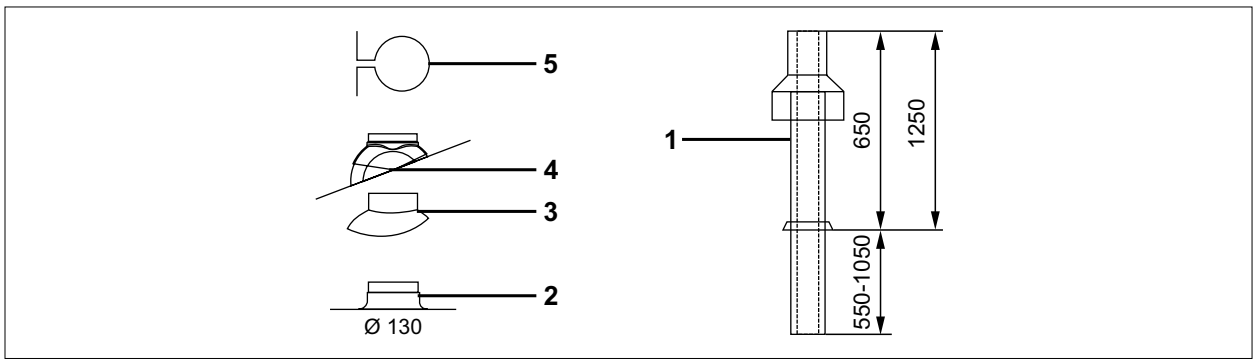


Fig. 5.14 Roof outlet [mm]

1 Roof outlet
2 Flat roof collar
3 Adaptor for “Klöber base panels”
4 Universal tile
5 Mounting bracket

The roof outlet **(1)** may only be installed in its original condition. Modifications are not permissible. Universal tile **(4)** can be combined with adaptor for “Klöber base panels” **(3)**.

- ► Affix flat roof collar **(2)** into roof cover.
- ► When using universal tile **(4)**, observe the installation instructions on the cowl regarding roof pitch.
- ► Guide the roof outlet **(1)** through the roof from above.
- ► Secure roof outlet vertically with mounting bracket **(5)** to a rafter or brickwork.

5.11 Electrical connection

DANGER

Risk of electrical voltage even when the ON/OFF switch is set to OFF!

Danger of death from electrocution

- ► Isolate the entire system from the power supply across all poles (e.g. by removing the mains fuse or by means of a main switch or heating emergency stop switch).
- ► Check that the appliance is isolated from the power supply.
- ► Safeguard the system against reconnection.

NOTE

After having filled with water, the power supply must be granted that the appliance can perform self-service in every 24 hours. For instance, the pump and the 3-VW shall operate 60 seconds after every 24 hours.

NOTE

Installing of the cable shall be carried by professional electrician. Please according to local regulation use CCC certified GB standard power harness:
Art. Nr 2016101: length 1.1 meter
Art. Nr 2016102: length 1.6 meter

5.11.1 General information, electrical connection

- ► Never route sensor leads alongside 230 V cables.
- ► Relieve the strain on connection lines and cables.
- ► The relevant local regulations of the VDE/ÖVE must be observed.
- ► Regulations of the electricity supply utility apply.

5.11.2 Power supply

Power cable: flexible, 3 x 1.0 mm² or rigid, up to 3 x 1.5 mm².
The maximum current carrying capacity of the outputs is 1.5 A. Do not exceed a total of 4 A.

- ► In case of a permanent connection, connect the power supply via a mains isolator (e.g. fuse, heating system emergency stop switch) that ensures at least 3 mm contact separation.

5.11.3 Opening the front casing

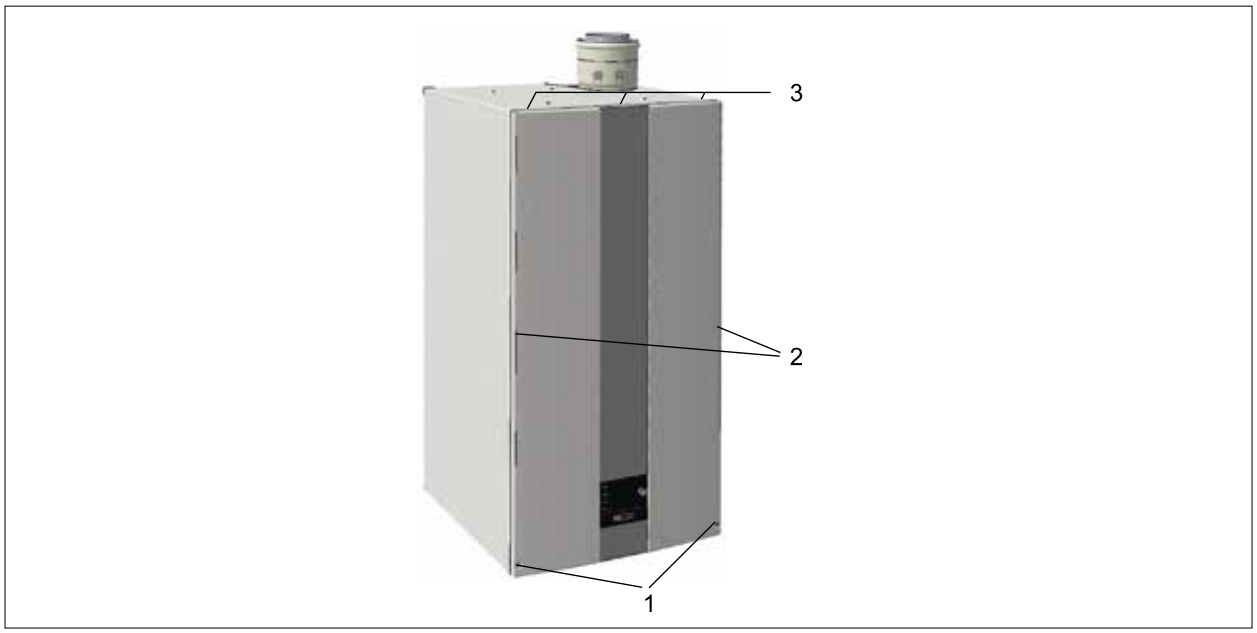


Fig. 5.15 Opening the front casing

► Undo screws **(1)**.

► Pull the front casing forward out of the catches **(2)**.

► Unhook the retainers at the top **(3)** and remove.

5.11.4 Opening the control unit casing

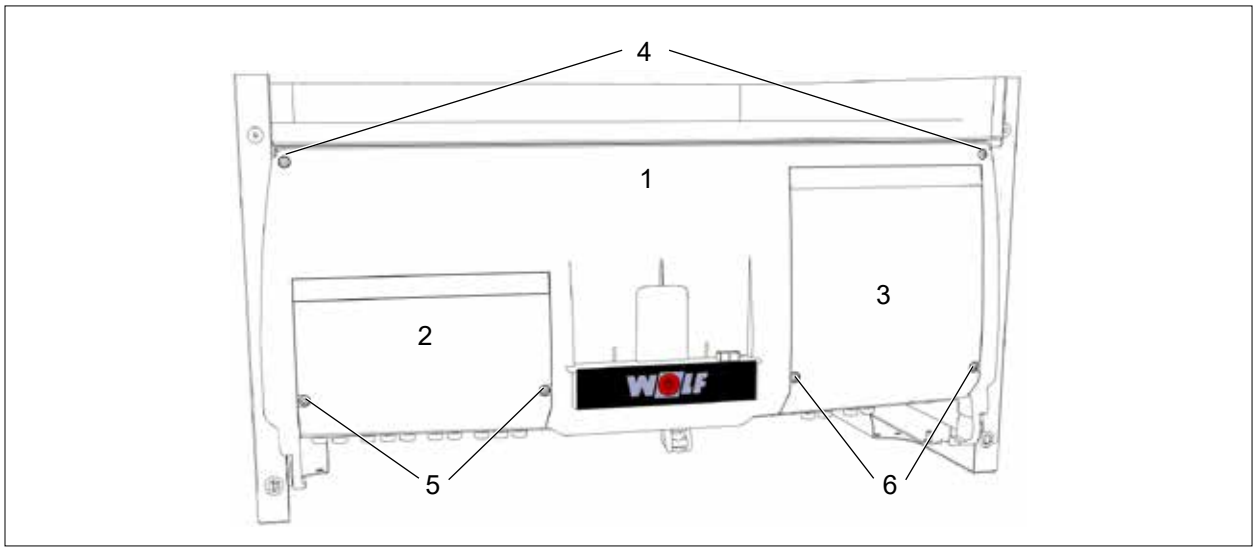


Fig. 5.16 Opening the control unit casing

1 Control unit casing
2 Cover for on-site connections
3 Cover for auxiliary modules (WOLF Link Home / I/O module)
4 Fixing screws for control unit casing
5 Fixing screws
6 Fixing screws

Opening the entire control unit casing

► Undo the fixing screws for the control unit casing (4).

► Fold the entire control unit casing (1) downwards.

Only open the cover for on-site connections or auxiliary modules.

► Undo the fixing screws of the cover for on-site connections (5) or auxiliary modules (6).

► Open the cover for on-site connections (2) or auxiliary modules (3) upwards.

5.11.5 Terminal assignment for on-site connections

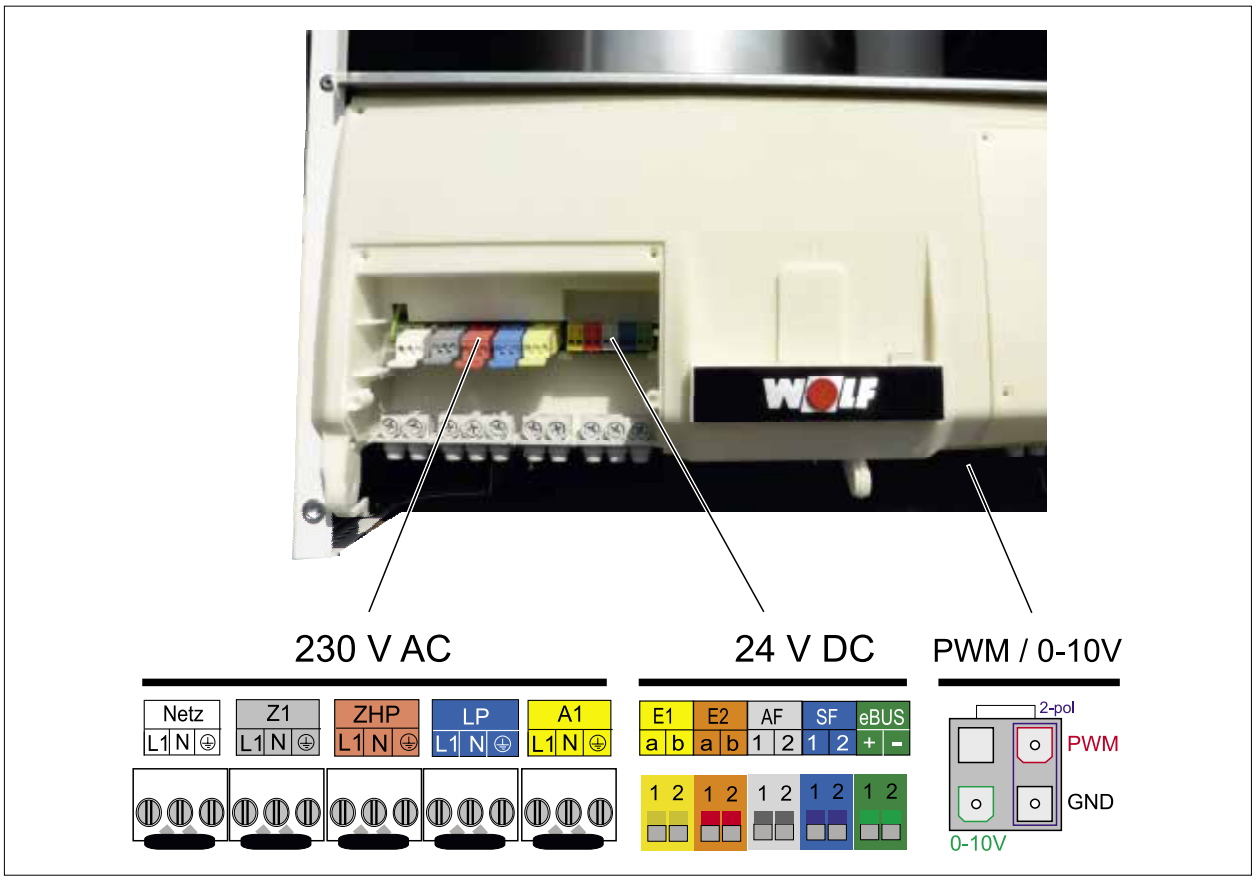


Fig. 5.17 Terminal assignment for on-site connections

Terminal	Explanation
Mains	Power supply
Z1	230 V output when ON/OFF switch is in the ON position Maximum of 1.5 A per output, no more than 600 VA in total
FHP	Feed / heating circuit pump control Maximum of 1.5 A per output, no more than 600 VA in total
PP	Cylinder primary pump Maximum of 1.5 A per output, no more than 600 VA in total
A1	Programmable output (HG14) 230 VAC, e.g. DHW circulation pump Maximum of 1.5 A per output, no more than 600 VA in total
E1	Programmable input (HG13), e.g. flue gas damper or room thermostat
E2	5k NTC common sensor = header Alternative 0-10 V control, e.g. 8V = 80% heating output The maximum external voltage at **input E2** is 10 V. Anything higher will destroy the control PCB 1(a) = 10 V, 2(b) = GND.
AF	5k NTC outside sensor
SF	5k NTC cylinder sensor
eBus	(WOLF control accessories e.g. BM-2, MM-2, KM-2, SM1-2, SM2-2)
PWM/0-10V	Connection for controlling the speed of the feed/heating circuit pump

NOTE

Increased electromagnetic interference at the installation site!

Possible control faults.

- ► Fit screened sensor leads and eBus cables.
- ► One end of the cable shield must be connected to the PE potential in the control unit.

5.11.6 Power supply 230 V

The internal control and safety devices are fully wired and tested.

► Create a permanent connection between the heat generator and the power network.
► No other consumers may be connected to the cable.

The heat generator (IP rating IP20) is **not approved** for installation in the immediate vicinity of a bath or shower (protected area 1 according to DIN VDE 0100).
– Make sure that the heat generator is not exposed to water droplets or moisture.

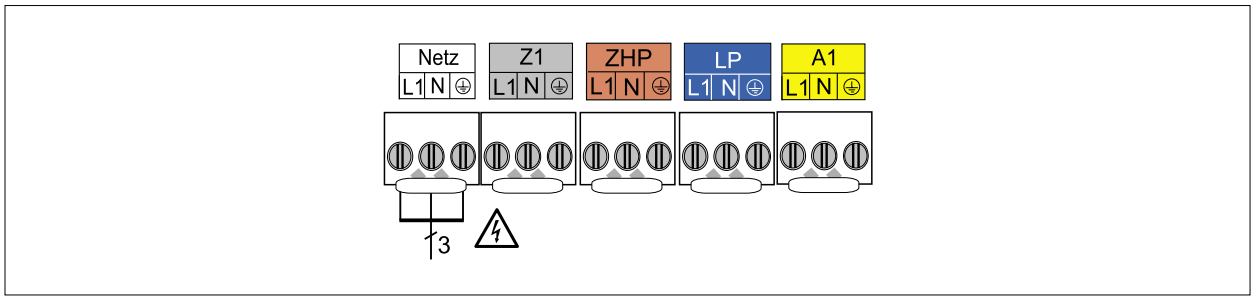


Fig. 5.18 Power supply 230 V

NOTE
Installing of the cable shall be carried by professional electrician. Please according to local regulation use CCC certified GB standard power harness:
Art. Nr 2016101: length 1.1 meter
Art. Nr 2016102: length 1.6 meter

5.11.7 Connecting output Z1 (230 V AC; maximum 1.5 A)

► Insert and secure the connecting cable through the cable gland.
► Connect the cable to terminals L1, N and ⏚.

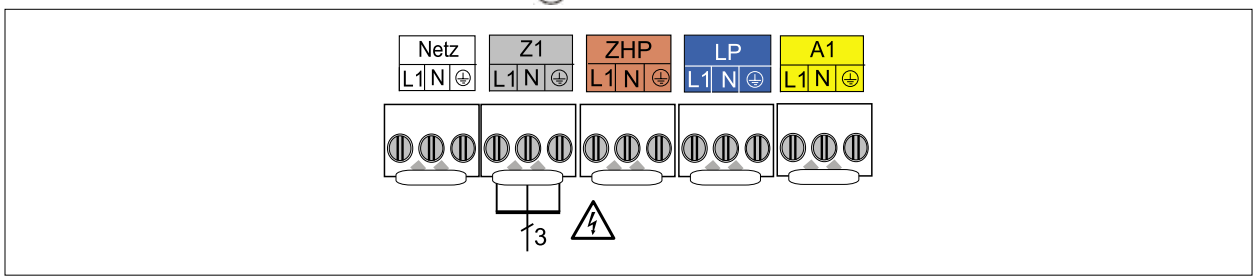


Fig. 5.19 Connecting output Z1

5.11.8 Connecting output A1 (230 V AC; maximum 1.5 A)

► Insert and secure the connecting cable through the cable gland.
► Connect the cable to terminals L1, N and ⏚.
The parameters for output A1 are described in Table 7.2.11.

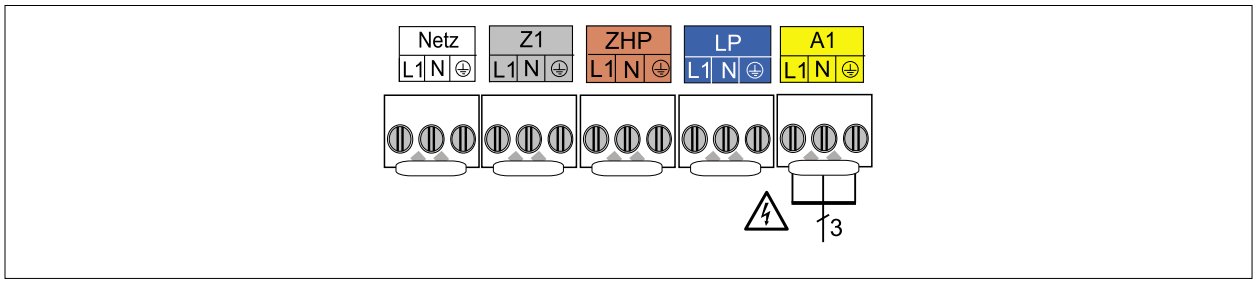


Fig. 5.20 Connecting output A1

5.11.9 Connecting input E1

► Insert and secure the connecting cable through the cable gland.
► Connect the cable to terminal E1.

NOTE
Controller board destruction
External voltage will destroy input E1.
► Do not connect external voltage.

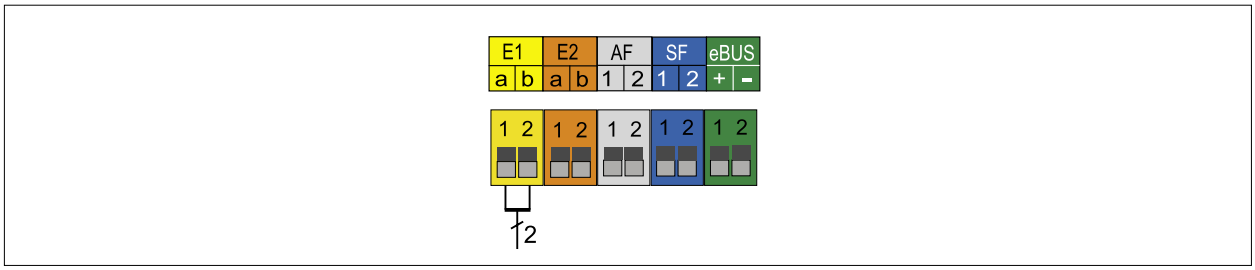


Fig. 5.21 Connecting input E1

5.11.10 Connecting input E2

► Insert and secure the connecting cable through the cable gland.
► Connect the cable to terminal E2.

NOTE
Controller board destruction
High voltage will destroy input E2.
► Do not connect voltage over 10 V DC.

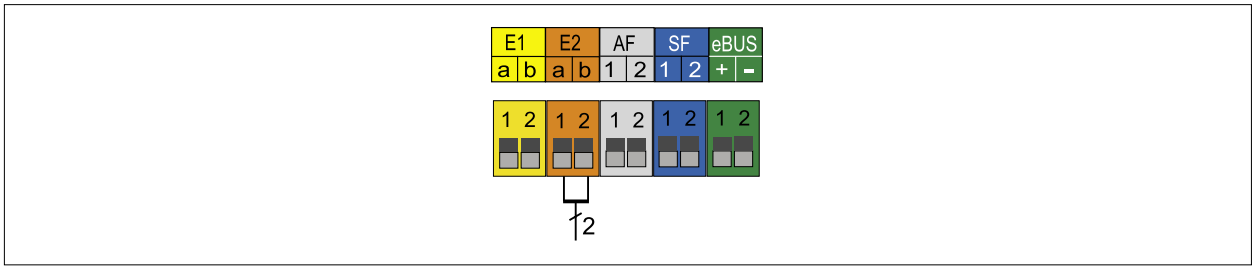


Fig. 5.22 Connecting input E2

5.11.11 Connecting the outside sensor

► The outside sensor can be connected to the terminal strip of the heat generator at connection AF or to the terminal strip of the BM-2 programming unit.

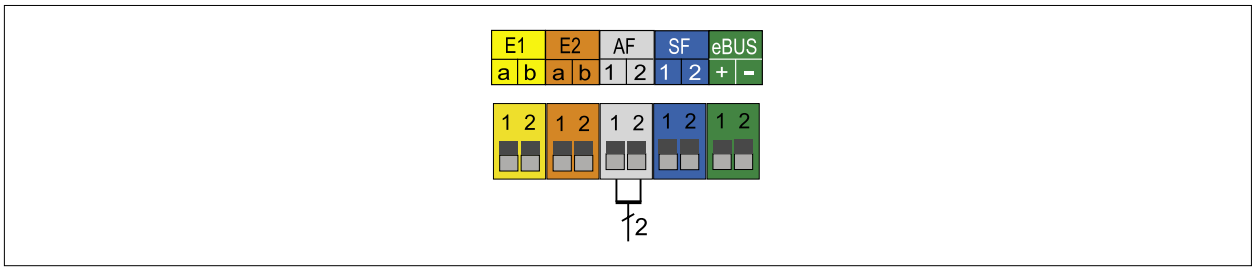


Fig. 5.23 Connecting the outside sensor

5.11.12 Connecting the DHW cylinder sensor

► Insert and secure the connecting cable through the cable gland.
► Connect the cable to terminal SF

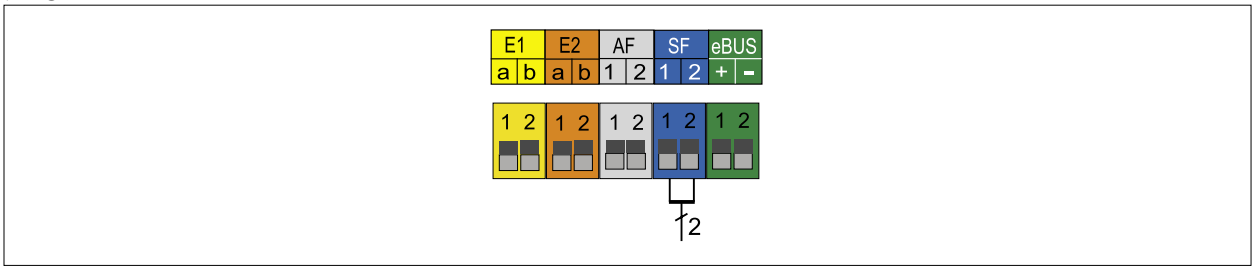


Fig. 5.24 Connecting the cylinder sensor

5.11.13 Connecting digital WOLF control accessories

► Only connect control modules from the WOLF range of accessories.

AM display module installation and operating instructions for contractors
BM-2 programming unit installation and operating instructions for contractors
MM-2 mixer module installation and operating instructions for contractors
KM-2 cascade module installation and operating instructions for contractors
SM1-1 solar module installation and operating instructions for contractors
SM2-2 solar module installation and operating instructions for contractors

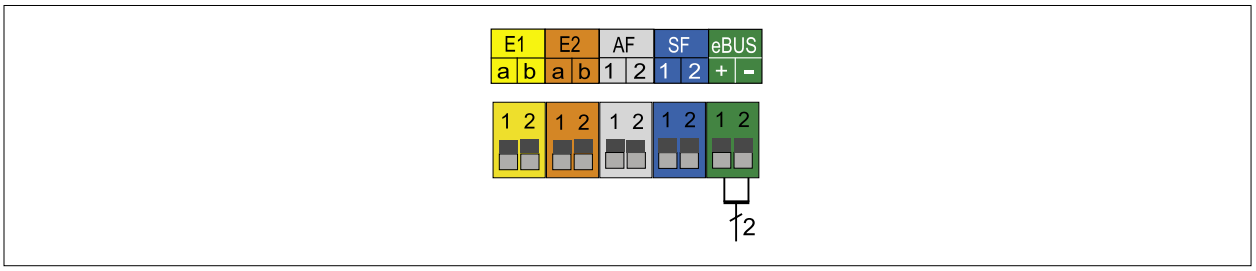


Fig. 5.25 Connecting digital WOLF control accessories (eBus interface)

5.11.14 Connect the speed controller for the feed/heating circuit pump

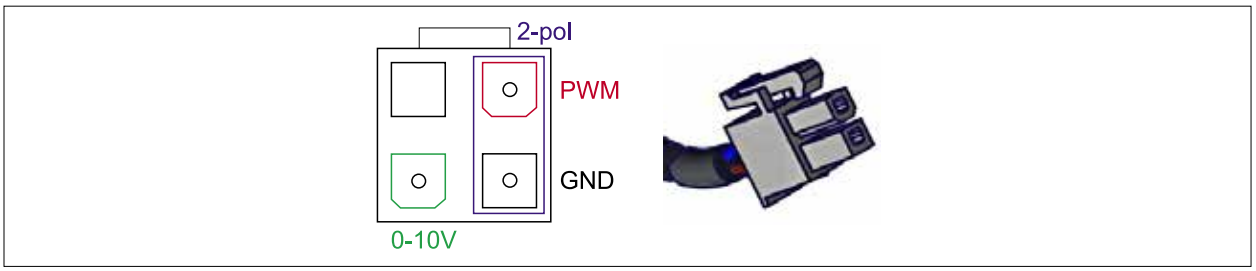


Fig. 5.26 Connection for feed/heating circuit pump speed controller

► If using a WOLF pump assembly, connect the 2-pole pump connector to the right side of the PWM / 0-10 V connection.
► If you are using a third party item, follow the manufacturer's instructions to connect the accessory cable (item no. 2747888).

5.11.15 Connecting the flue gas damper / supply air damper

► Connect the damper motor to output A1 (see 5.11.8).
► Connect the damper limit switch to input E1 (see 5.11.9).
► Follow the instructions in 7.2.10 to program input E1 as a flue gas / supply air damper (HG13)
► Follow the instructions in 7.2.11 to program output A1 as a flue gas / supply air damper (HG14)

NOTE
HCM-2 controller board destruction
The HCM-2 controller board will be destroyed if there is any voltage at the limit switch
► Disconnect the limit switch for the flue gas / supply air damper from the power supply.

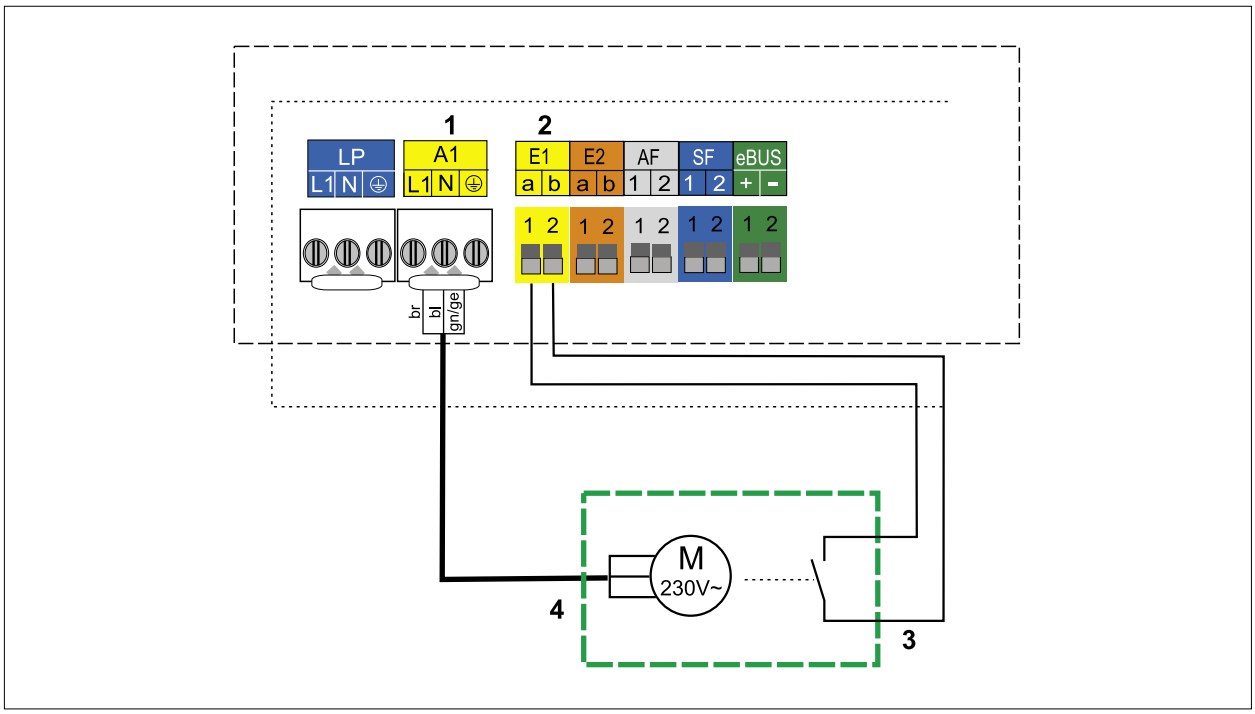


Fig. 5.27 Flue gas / supply air damper electrical connection

1 A1 (programmable output, flue gas damper)
2 E1 (programmable input, flue gas damper)
3 Limit switch
4 Flue gas / supply air damper motor

5.12 Filling the heating system and checking for leaks

NOTE
Escaping water!
Water damage
► Check all hydraulic pipework for leaks.

NOTE
Poor heat transfer or corrosion!
Damage to wall mounted boiler
► Do not use frost protection or inhibitors.

NOTE
The system pressure shall be always kept within the range. If it is lower than the allowable pressure value, the appliance will display low pressure fault that self-service is not possible to be performed. After long period of the low pressure, the appliance will possibly experience further fault or damaging, for instance pump sticking.

Fill the system and vent it completely to ensure that the heat generator functions without any faults.

NOTE
This appliance does not have built-in expansion tank. The installer shall according to the water volume contained in the heating circuit and the necessary safety factor dimension and install the expansion tank.

Preparation

► The gas tap must be shut.
► Flush the heating system before connecting the heat generator.

► Loosen the locking cap on the air vent valve in the heat generator by one revolution.
► Open all radiator valves and return valves.
► Ensure that water quality requirements are met (Table 4.3).

Fig. 5.28 Air vent valve

Filling the heating system

► With the entire heating system (heating circuit, heat generator, cylinder) in a cold condition, slowly fill the system via the BDF valve on the heating return until approx. 2 bar (1.5 to 2.5) pressure is indicated.
► Slowly open the expansion vessel.
► Close any manual air vent valves (onsite) if water comes out.
► Open the flow valves on the heat generator.
► Fill the heating system until operating pressure (approx. 2 bar) is indicated.
► Check the entire system for water leaks.
► Open the gas ball valve.

Checking the hydraulic pipework for leaks

Test criteria	Unit	Value	Measures
Maximum flow rate (100 l/min)	L/h	6,000	-
Max. test pressure on the heating water side	bar	6	-
Heat generator tested at the factory	bar	10	-
Minimum system pressure	bar/MPa	0.8 / 0.08	-
Safety valve (onsite)	bar	3	► Close the shut-off valves in the heating circuit to the heat generator
System pressure	bar	< 1.5	► Top up with water.

5.13 Checking the pH value

Chemical reactions can change the pH level:
► Check pH level 8 to 12 weeks after commissioning.
► Compare value (Table 4.3).

pH level is within the specified range:
► No measures required.

pH level is not within the specified range:
► Implement measures.
► Add alkalising additives.

5.14 Control modules

The control modules are used to set or display specific parameters of the heat generator.

BM-2 programming unit

This control module communicates with the heat generator and all connected extension modules via eBus.

AM display module

This control module functions as a display module for the heat generator.

Either an AM display module or a BM-2 programming unit must be installed for operation.

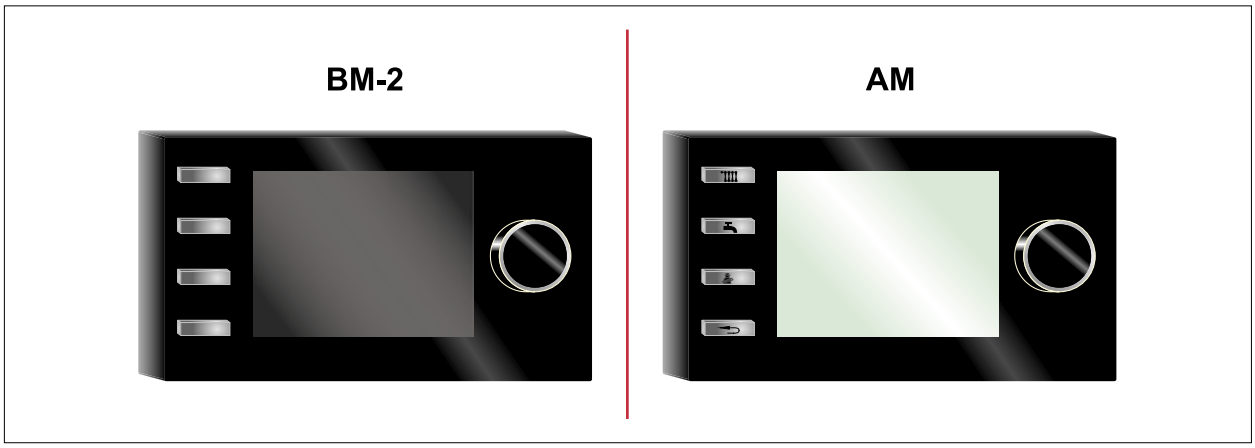


Fig. 5.29 Possible control modules

5.14.1 Plugging in the control module

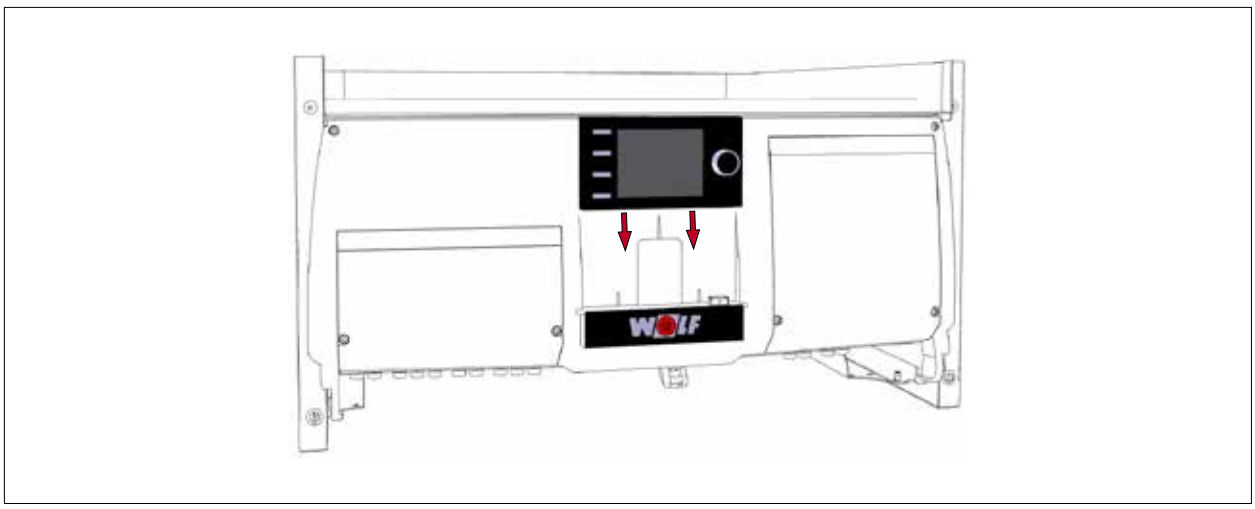


Fig. 5.30 Plugging in the control module

► Insert the control module (BM-2 programming unit or AM display module) above the WOLF logo.

6 Commissioning

⚠ DANGER
Escaping gas!
Risk of explosion!
Risk of asphyxiation or severe to life-threatening poisoning.
► Close the gas tap if you smell gas.
► Open windows and doors.
► Notify an approved contractor.

⚠ DANGER
Escape of flue gases!
Risk of asphyxiation or severe to life-threatening poisoning.
► Check that all flue gas accessories have been correctly installed and that none are leaking.
► Fill the trap with water.

⚠ NOTE
Unqualified personnel!
System damage.
► The heat generator may only be commissioned and used for the first time by a contractor.
► The operator must be instructed by a contractor.

⚠ DANGER
Combustion parameters outside of specified limits!
Risk of asphyxiation or severe to life-threatening poisoning.
Appliance faults.
► Configure the combustion parameters as described in the instructions.
► Perform a flue gas test using suitable equipment in good working order.

⚠ WARNING
Overpressure on the water side!
Risk of injury due to high overpressure in the heat generator, expansion vessels and sensors.
► Close all valves.
► Empty the heat generator if necessary.
► Use safety gloves.

⚠ NOTE
Escaping water!
Water damage.
► Check all hydraulic pipework for leaks.

⚠ NOTE
For each new installation or new start after long period of idle, it is required that the professional installer or the service staff to check the functionality, for instance to turn the pump manually, in order to prevent the pump from being sticking.

WOLF recommends that commissioning be performed by WOLF Customer Service.

6.1 Preparation for commissioning

► Check that all flue gas accessories have been correctly installed and that none are leaking.

► Unscrew the trap, remove and fill with water.
✓ Water will run out of the drain hole on the side.

► Screw on the trap.
► Make sure the gasket is seated correctly and secure with clip (see 5.8.1)

► Check electrical and hydraulic connections.
➠ Open slides and shut-off valves in the heating water circuit.
➠ All heating circuits flushed.
➠ Protect power feeds on an omnipolar basis in accordance with the specifications.

► Check the heat generator and system for water tightness.

6.2 Turning on the heat generator

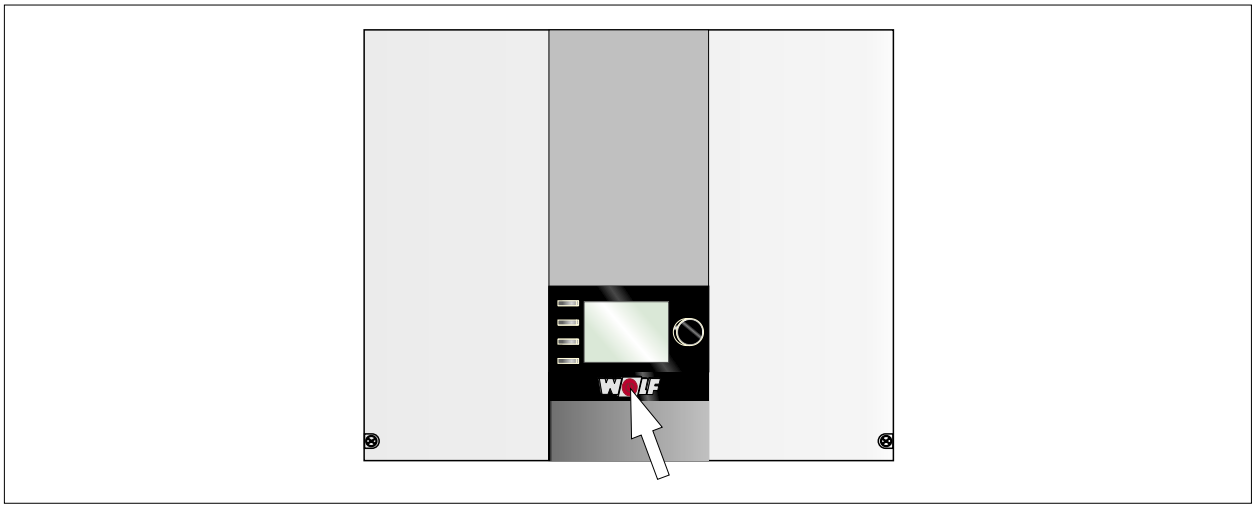


Fig. 6.1 Turning on the heat generator

► Press the ON/OFF switch.
✓ The commissioning assistant is launched.

6.3 Configuring the system

BM-2 programming unit installation and operating instructions for contractors
AM display module installation and operating instructions for contractors

The commissioning assistant provides assistance with the following settings:
– Language
– User interface simplified / extended
– Time
– Date
– Configuration of the modules embedded in the eBus
– Service message
– Pasteurisation function (start time)
– Maximum DHW temperature
– Heating appliance configuration
✓ The commissioning assistant is closed automatically after the final configuration.

► To open the commissioning assistant again, perform a reset of the control module.

A parameter reset is only possible for control modules connected to the heat generator.

6.4 Venting the heat generator and heating circuits

Activate venting function

AM programming unit operating instructions for contractors
BM-2 display unit operating instructions for contractors

Activate venting function on AM or BM-2
► Vent system, check that automatic air vent valve is functioning properly
► Check the system pressure.

System pressure over 1.5 bar:
✓ System pressure OK.

System pressure below 1.5 bar:
► Top up with water.

6.5 Configuring the heat generator

Standard settings for heat generator on the control module.

► Set parameters (7.1 Parameter list).

NOTE

The screw must be completely tightened to ensure that the gas pressure measurement port is sealed.

6.6 Checking the gas supply pressure (gas flow pressure)

► Switch OFF the ON/OFF switch at the heat generator.
► Open the gas ball valve.
► Release the plug at test nipple **(1)** (Fig. 6.2) and vent the gas supply line.
► Connect the differential pressure tester or U-tube manometer to the test nipple **(1)** at “+”. With “-” against atmosphere
► Switch ON the ON/OFF switch at the heat generator.
► Call up parameter HG49 (upper appliance output) and wait until the appliance output is at the setpoint
► Read off the supply pressure on the differential pressure tester.

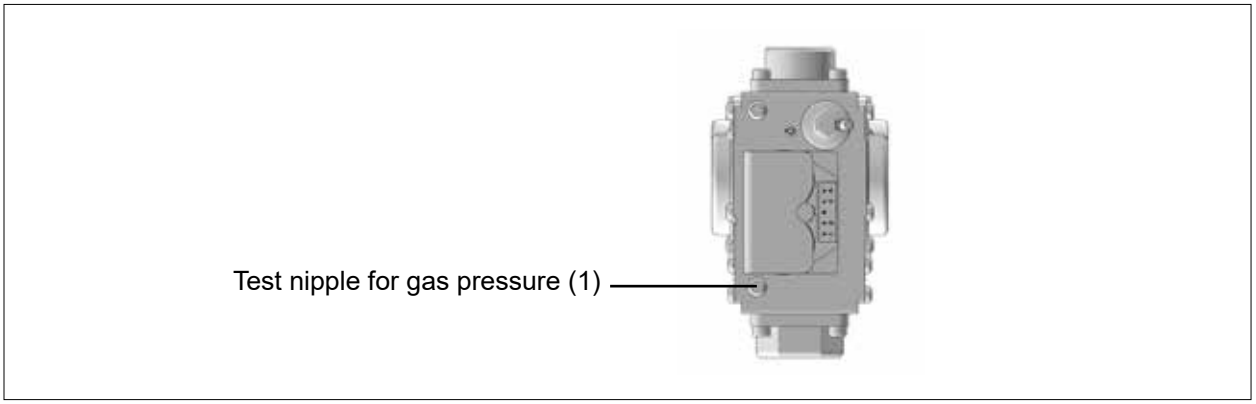


Fig. 6.2 Test nipple for gas pressure

	Natural gas E/H/LL/Lw/S
Gas flow pressure	18-25 mbar
CGB-2-75/100	GS 16

Table 6.1 Gas flow meter (provided onsite)

► Set the ON/OFF switch to OFF.
► Close the gas ball valve.
► Remove the differential pressure tester
► Re-seal the test nipple with the plug **(1)** .
► Open the gas ball valve.
► Check that the test nipple is gas-tight.

NOTE

Flow pressure deviates from Table 6.2

There is a risk of boiler malfunction.

► Do not operate the wall mounted condensing boiler.
► Make sure that the gas flow meter is appropriate for the gas type.

6.7 Checking the combustion parameters

During commissioning and maintenance, only a check of the CO, CO_2 and O_2 is required.

► Test the combustion air parameters with the heat generator closed.
► Wait for at least 60 seconds after the burner has started before testing the combustion air.

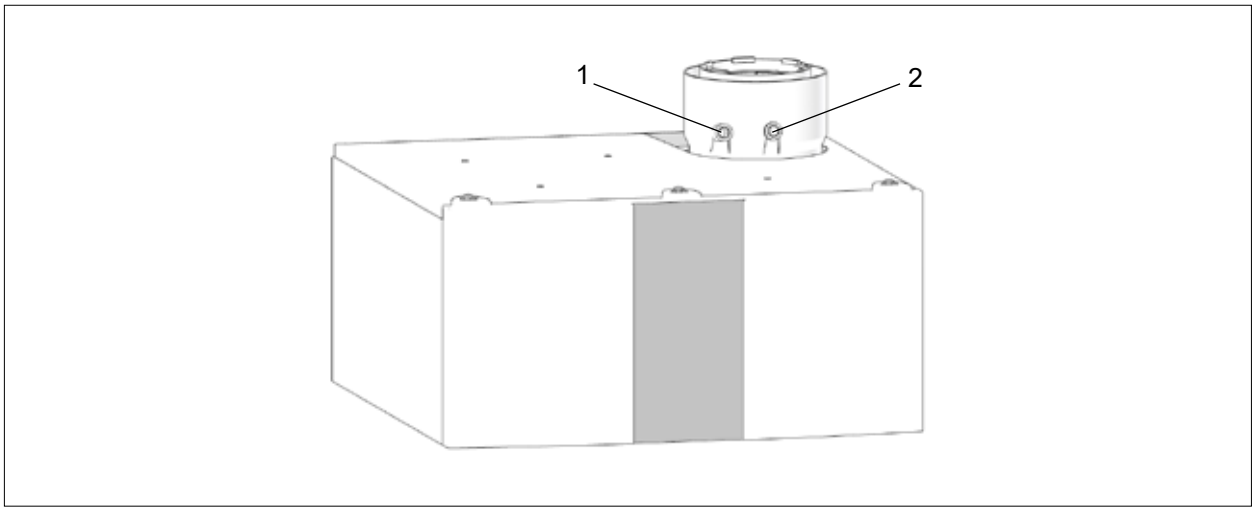


Fig. 6.3 Appliance connection with flue gas test ports

1 Inlet air test port **2** Flue gas test port

Testing the intake air

► Test the intake air with the heat generator closed.
► Remove the cap from the left test port **(1)**.
► Insert the test probe.
► Call up parameter HG49 (upper appliance output) and wait until the appliance output is at the setpoint.
► Test the temperature and CO_2 value.

CO_2 value exceeds 0.2%, there is a leak in the flue system:
► Find and fix the leak.
► Measure the CO_2 level again.

CO_2 level remains below 0.2%, no leak in the flue system:
► Exit parameter HG49.
✓ The heat generator shuts down.
► Close the test port and ensure the cap is seated firmly!

Measure the flue gas values

► Always measure the flue gas values with the heat generator closed.
► Remove the cap from the right test port **(2)**.
► Insert the test probe.
► Call up parameter HG49 (upper appliance output) and wait until the appliance output is at the setpoint.
► Check the flue gas levels and compare with the values in Table 6.3.
► If necessary, adjust the CO_2 value as described in 6.9 Setting the CO_2 level.
► Call up parameter HG47 (lower appliance output) and wait until the appliance output is at the setpoint
► Check the flue gas levels and compare with the values in Table 6.3.
► If necessary, adjust the CO_2 value as described in 6.9 Setting the CO_2 level.
► Exit parameter HG47 / HG49.
✓ The heat generator shuts down.
► Close the test port and ensure the cap is seated firmly!

6.8 Setting the CO_2 level

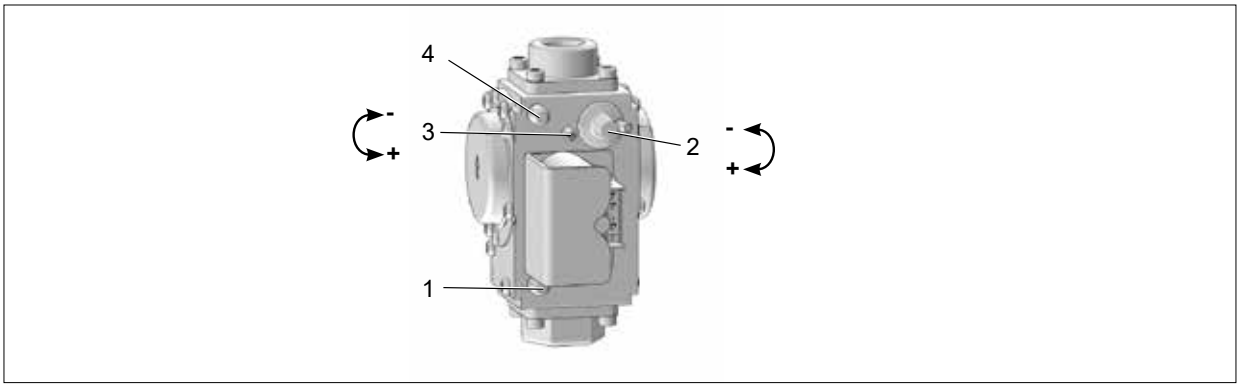


Fig. 6.4 Gas combination valve

1 Gas supply pressure test port
2 Offset adjusting screw (lower load)
3 Gas flow adjusting screw (upper load)
4 Gas outlet pressure test port

NOTE
The screw must be completely tightened to ensure that the gas pressure measurement port is sealed.

NOTE
The throttle screw (Fig.1) should never be adjusted without using a CO_2 gas analyzer in the flue gas.

NOTE
The zero point screw (Fig.1) MUST NOT be adjusted by the installer (only by professional WOLF service engineer.)

6.8.1 Setting the CO_2 value at the upper load

► Set the CO_2 value first at upper load and then at lower load.
► Set the CO_2 value with appliance open.
► Remove the cap from right flue gas test port.
► Insert the test probe into the test port.
► Call up parameter HG49 (upper appliance output) and wait until the appliance output is at the setpoint.
► Ensure that the heating appliance is not limited electronically.
► Check the CO_2 value and compare with the values in Table 6.3.
► Correct the CO_2 value if required using the gas flow adjusting screw **(3)**.
► Next measure the CO_2 value at lower load and adjust if necessary.

6.8.2 Setting the CO_2 value at the lower load

► First set the CO_2 value at upper load if this has not been done already.
► Set the CO_2 value with appliance open.
► Remove the cap from the left flue gas test port.
► Insert the test probe into the test port.
► Call up parameter HG47 (lower appliance output) and wait until the appliance output is at the setpoint.
If the appliance output does not match the setpoint within two minutes, the appliance output may have been temporarily increased by the wind detection system.
✓ In order to reach the lower appliance output required to set CO_2 values, turn the appliance off and then back on, and then call up HG47 again.
➠ If the lower appliance output cannot be reached despite taking this action, the gas valve must be restored to its standard setting in accordance with section 6.9.4.

► Check the CO_2 value and compare with the values in Table 6.3.
► Correct the CO_2 value if required using the offset adjusting screw **(2)** in accordance with Table 6.3.

Gas type	Upper load	Lower load
Natural gas 12T	8,6 ... 8,9 % CO_2 (5,0 ... 5,5 % O_2)	8,3 ... 8,6 % CO_2 (5,6 ... 6,1 % O_2)

LPG P	10,1 ... 10,4 % CO_2 (5,0 ... 5,5 % O_2)	9,8 ... 10,1 % CO_2 (5,5 ... 6,0 % O_2)

[1] The specified O_2 levels must be used when configuring the combustion for natural gas S!

Table 6.2 CO_2 set values with the heat generator open

► After completing the adjustment, fit the front casing and check the CO_2 values with the appliance closed in accordance with Table 6.4.

Gas type	Upper load	Lower load
Natural gas 12T	8,8 ... 9,1 % CO_2 (4,7 ... 5,2 % O_2)	8,4 ...8,7 % CO_2 (5,4 ... 5,9 % O_2)
LPG P	10,3 ... 10,6 % CO_2 (4,7 ... 5,2 % O_2)	9,9 ... 10,2 % CO_2 (5,4 ... 5,9 % O_2)

[1] The specified O_2 levels must be used when configuring the combustion for natural gas S!

Table 6.3 CO_2 set values with the heat generator closed

► Exit parameters HG47 and HG49.
✓ The heat generator shuts down.
► Close the test port and ensure the cap is seated firmly!

NOTE
In the final delivery, it is required to have the CO_2 setting at low modulation should always be approximately 0.1% lower than at the high modulation.

6.8.3 Checking CO emissions

Monitor CO emissions while configuring CO_2 values.
► Check CO values at upper and lower appliance output.
⇛ CO value > 200 ppm with correct CO_2 value
► Proceed as follows:
– Make sure that no flue gas is drawn back in.
– Check that the correct gas restrictor is fitted in accordance with Table 6.1 .
– Make sure that CO_2 has been configured for both upper and lower appliance output (call up parameters HG49 and HG47). The appliance output must be at the setpoint (displayed under HG49/47 in AM/BM-2). See section Table 6.3 for further instructions.

If the CO value is still >200 ppm, the gas valve is incorrectly configured and the default settings must be restored.

6.8.4 Standard setting for the gas combination valve

Check that the correct gas restrictor for the gas type is fitted in accordance with section Table 6.1.
► Fully tighten the gas flow adjusting screw.
► Open the gas flow adjusting screw the specified number of rotations.

Number of rotations for GCV standard setting		Gas flow adjusting screw
CGB-2-75/100	Natural gas 12T	7

Table 6.4 Rotations for GCV standard setting

► Next, set CO_2 in accordance with 6.9.1 and 6.9.2 .
► Follow the instructions in 6.9.3 to check the CO values.
► Exit parameters HG47 and HG49.
✓ The heat generator shuts down.
► Close the test port and ensure the cap is seated firmly!

Do not completely screw in the offset adjusting screw (2) to prevent damage to the gas combination valve!

Standard setting for the lower appliance output:

➠ Open appliance lid

► Start appliance

► Set the offset pressure using the offset screw (2) to about -5 to -9 Pacal (-0.05 to -0.09 mbar).

6.9 Commissioning cascade

BM-2 programming unit installation and operating instructions for contractors
AM display module installation and operating instructions for contractors
KM-2 cascade module installation and operating instructions for contractors

Setting the eBus address in the programming unit or display module

⚠ **NOTE**

Duplicated eBus address!

System faults.

► Assign the eBus address once.

Address 1 is assigned as standard for all heat generators.

► Select parameter HG10 in the contractor menu of each heat generator.

► Assign addresses 1 to 5.

Check that the internal check valves are free of leaks

⚠ **DANGER**

Escape of flue gases!

Risk of asphyxiation or severe to life-threatening poisoning.

► The check valves must be checked for leaks during commissioning and then once a year in positive pressure systems.

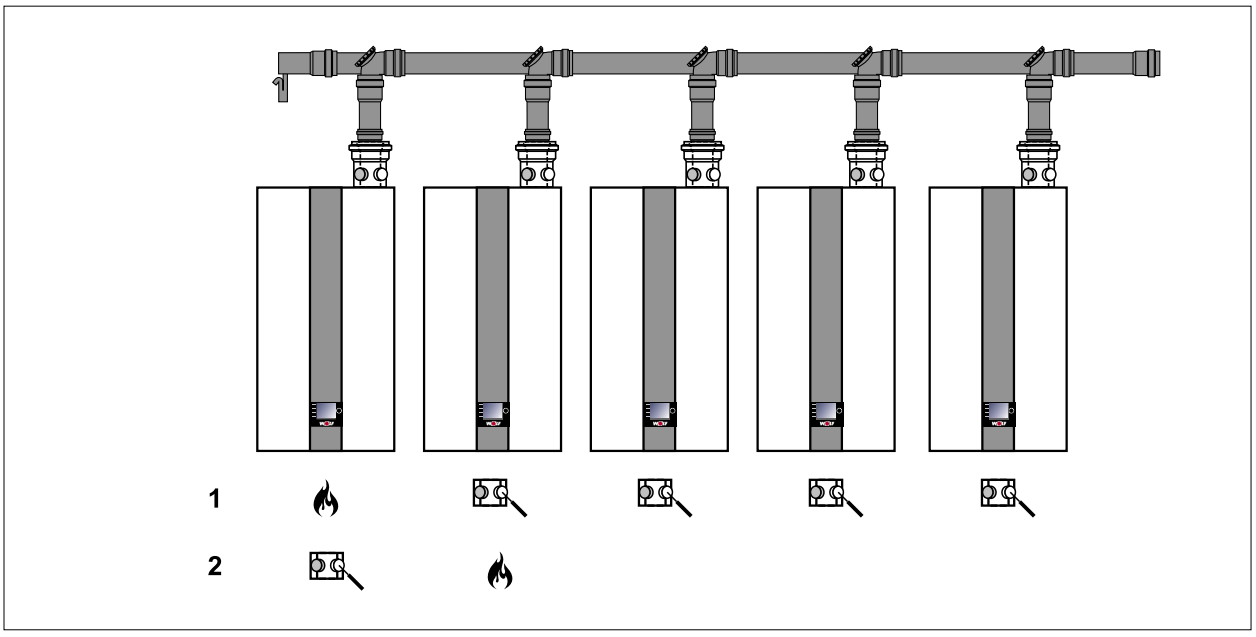


Fig. 6.5 Flue cascade

1 Check adjacent appliances for leaks

2 Check first heat generator for leaks

Calculating the dimensions of the flue cascade

The dimensions of the flue cascade must be calculated in accordance with DIN EN 13384 (see Table 4.6)

Check for leaks on adjacent appliances (1)

► Switch the second, third, fourth and fifth heat generators to standby:
  – Select the heating circuit status page in the BM-2 programming unit.
  – Select the rotary selector icon and switch to Standby.
✓ The heat generators will switch to standby mode.

► Turn the first CGB-2 on with parameter HG49 (upper appliance output).
✓ CGB-2 turns on.
► Wait for at least 5 minutes.

► Measure the CO_2 level for the second, third, fourth and fifth heat generator:
  – Remove cap from inlet air test port.
  – Insert test probe 2 cm.
  – Measure CO_2 value.

CO_2 value exceeds 0.2% in the first 15 minutes, there is a leak in the flue system:
► Find and fix the leak.
► Measure the CO_2 level again.

CO_2 level remains below 0.2%, no leak in the flue system:
► Exit parameter HG49.
✓ The heat generator shuts down.
► Close the test ports. When doing so, ensure the caps are seated firmly!

Check first heat generator for leaks (2)

► Turn the second CGB-2 on with parameter HG49 (upper appliance output).
✓ CGB-2 turns on.
► Wait for at least 5 minutes.

► Measure the CO_2 level for the first heat generator:
  – Remove cap from inlet air test port.
  – Insert test probe 2 cm.
  – Measure CO_2 value.

CO_2 value exceeds 0.2% in the first 15 minutes, there is a leak in the flue system:
► Find and fix the leak.
► Measure the CO_2 level again.

CO_2 level remains below 0.2%, no leak in the flue system:
► Exit parameter HG49.
✓ The heat generator shuts down.
► Close the test ports. When doing so, ensure the caps are seated firmly!
► Turn all heat generators back on and set the operating mode using the BM-2 programming unit.

6.10 Configuring the heat generator

Standard settings for heat generator on the control module.
► Set parameters (Table 7.1).

6.11 Finishing the commissioning process

► Complete commissioning report (12.1 Commissioning report).
► Document values in “System and operator's log”.

7 Parameter settings

BM-2 programming unit installation and operating instructions for contractors
AM display module installation and operating instructions for contractors

7.1 Parameter list

Changes may only be made by a contractor or WOLF customer service.

NOTE
Improper use!
System faults.
► Arrange for a contractor to set and change parameters.

Parameters can only be displayed or changed using the BM-2 programming unit or the AM display module.

Parameter	Description		Unit	Factory setting Condensing boiler		Min.	Max.
				75 kW	100 kW		
HG01	Burner switching hysteresis		°C	15	15	7	30
HG02	Lower burner output (fan control), heat generator	Natural gas LPG	% %	28 36	22 28	26/20 34/26	100
HG03	Upper burner output, DHW (fan control) Maximum burner output, DHW in %		%	100	100	1)	100
HG04	Upper burner output, heating (fan control) Maximum burner output, heating		%	100	100	1)	100
HG07	Heating circuit pump run-on time Heating circuit pump run-on time in heating mode		Min.	3	3	0	30
HG08	Maximum boiler water temperature for heating (applies to heating mode) T-flow max.		°C	80	80	40	90
HG09	Burner cycle block; applies to heating mode		Min.	7	7	1	30
HG10	Heat generator eBus address		-	1	1	1	5
HG13	Function of input E1, various functions can be assigned to input E1		-	0	0	Various	Various
HG14	Function of output A1 (230 VAC), various functions can be assigned to output A1		-	0	0	Various	Various
HG15	Cylinder hysteresis; switching differential during cylinder reheating		°C	5	5	1	30
HG16	Minimum heating circuit pump rate		%	40	40	15	100
HG17	Maximum heating circuit pump rate		%	100	100	15	100
HG19	Run-on time, CPP (cylinder primary pump)		Min.	3	3	1	10
HG20	max. cylinder heating time		Min.	120	120	30 / OFF	300
HG21	Minimum boiler water temperature T-boiler min.		°C	20	20	20	90
HG22	Maximum boiler water temperature T-boiler max.		°C	90	90	50	90
HG23	Maximum DHW temperature		°C	65	65	60	80
HG25	Excess boiler water temperature during cylinder heating		°C	15	15	0	40
HG33	Burner hysteresis runtime		Min.	10	10	1	30
HG34	eBus feed		-	Auto	Auto	Off	On
HG37	Pump control type (constant/linear/spread)		-	spread	spread	spread	Various
HG38	Set spread, pump control (spread)		°C	20	20	0	40
HG39	Soft start time		Min.	3	3	0	30
HG40	System configuration (see 7.2)		-	01	01	Various	Various
HG41	ZHP speed DHW		%	100	100	15	100

Para-meter	Description	Unit	Factory setting Condensing boiler		Min.	Max.
			75 kW	100 kW		
HG42	Header hysteresis	°C	5	5	0	20
HG46	Excess boiler water temperature, header	°C	6	6	0	20
HG47	CO_2 adjustment of lower burner output (BM-2 with FW 2.90 or later and AM with FW 1.80 or later)		-	-	-	-
HG49	CO_2 adjustment of upper burner output (BM-2 with FW 2.90 or later and AM with FW 1.80 or later)		-	-	-	-
HG60	Minimum burner switching hysteresis	°C	7	7	1	30
HG61	DHW control unit (boiler sensor / header sensor)	-	kF	kF	Various	Various

[1] Minimum heat generator output

Table 7.1 Parameter list

7.2 Parameter descriptions

Factory setting, setting range (Table 7.1)

7.2.1 HG01: Burner switching hysteresis

The burner switching hysteresis regulates the heat generator temperature within a set range by switching the burner ON and OFF. The higher the start/stop temperature differential, the greater the fluctuation in heat generator temperature around the set value with correspondingly longer burner runtimes, and vice versa.
Longer burner runtimes protect the environment and extend the service life of wearing parts.

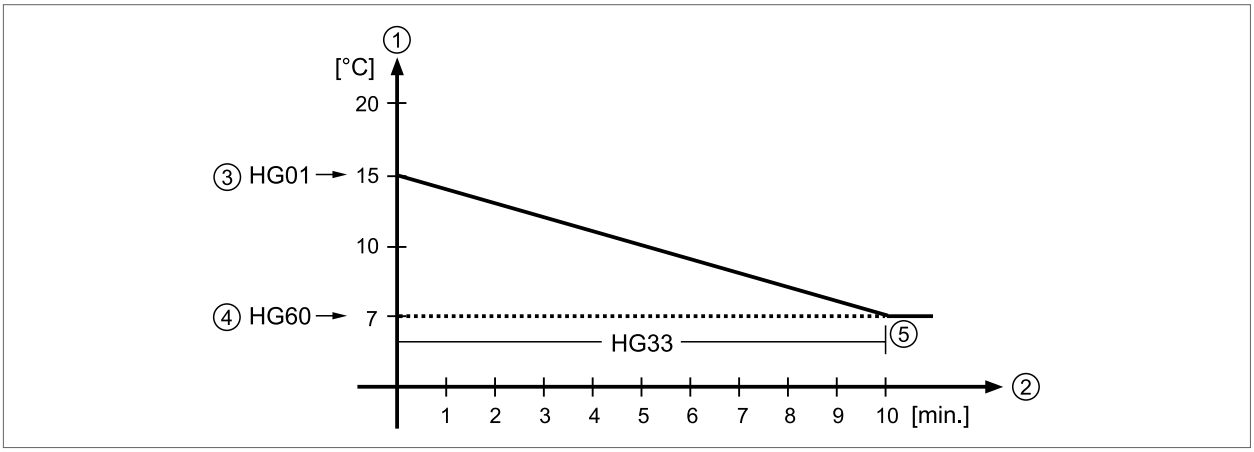


Fig. 7.1 Burner hysteresis

1 Burner hysteresis [°C]
2 Burner runtime (min)
3 HG01: Set burner hysteresis 15°C
4 HG60: Minimum hysteresis 7°C
5 HG33: Burner hysteresis runtime 10 minutes

Time curve of the dynamic burner hysteresis for a user defined burner hysteresis (HG01) of 15°C and a selected hysteresis time (HG33) of 10 minutes. After the hysteresis time, the burner switches off at the minimum burner hysteresis (HG60) of 7°C.

7.2.2 HG02: Lower burner output

The setting for lower burner output (minimum heat generator load) is applicable to all operating modes. This percentage value corresponds approximately to the real burner output. At setting HG02, the information in section 4.5 (Overview of connection types) must be taken into account.

7.2.3 HG03: Upper burner output DHW

HG03 limits the upper burner output in DHW mode (maximum heat generator load). Valid for DHW cylinder heating. This percentage value corresponds approximately to the real burner output.

7.2.4 HG04: Upper burner output HTG

HG04 limits the upper burner output in heating mode (maximum heat generator load). Valid for heating mode, BMS and emissions test. This percentage value corresponds approximately to the real burner output.

7.2.5 HG07: Run-on time, heating circuit pump

If there is no further heat demand from the heating circuit, the feed/heating circuit pump will run on in accordance with the set time This prevents a safety shutdown at high temperatures.

7.2.6 HG08: Maximum boiler water temperature HTG T-Flow$_{max}$

HG08 sets the upper limit of the temperature of the heat generator during heating mode. The burner shuts down. HG08 has no effect during cylinder heating. The temperature of the heat generator can be higher during this time. “Reheating effects” can result in the temperature being slightly exceeded.

7.2.7 HG09: Burner cycle block

Each time the burner is shut down in heating mode, it will be disabled for the duration of the burner cycle block. The burner cycle block is reset by turning the ON/OFF switch off and on or by briefly pressing the reset button.

7.2.8 HG10: eBus address of the heat generator

A cascade module controls multiple heat generators in a heating system. The heat generators therefore must be assigned addresses. Each heat generator requires its own eBus address in order to communicate with the cascade module.

⚠ NOTE

Duplicated eBus address!

Fault code on the control unit. Heat generator lockout.

► Assign the eBus address once.

7.2.9 HG13: Function input E1

Read and configure parameter HG13 using the BM-2 programming unit or the AM display module directly at the heat generator.

Display	Description
None	**No function (factory setting)** Input E1 is ignored by the control unit.
RT	**Room thermostat** With input E1 open, heating mode will be disabled (summer mode), regardless of any digital WOLF control accessories. When heating is disabled, frost protection mode, emissions test mode and CO_2 configuration will remain enabled.
DHW	**DHW disabled/enabled** With input E1 open, DHW heating will be disabled, regardless of any digital WOLF control accessories.
RT/DHW	**Heating and DHW disabled/enabled** With input E1 open, heating mode, DHW heating, emissions test mode and CO_2 configuration will be disabled, regardless of any digital WOLF control accessories. When the input is open, frost protection mode will remain enabled.

Zirkomat	**Zirkomat (DHW circulation remote control)** When input E1 is configured as the DHW circulation remote control, output A1 is automatically set to “DHW circulation pump”. Output A1 is locked for other settings. With input E1 closed, output A1 is activated for 5 minutes. After input E1 has been switched off and 30 minutes have elapsed, the Zirkomat function is re-enabled for the next operation.
W/o burner	**Operation without burner (burner disabled)** When contact E1 is closed, the burner is blocked. Heating circuit pump and cylinder primary pump continue running in standard mode. The burner is enabled in emissions test mode and in frost protection mode. Opening contact E1 enables the burner again.
Flue gas damper	**Flue gas / supply air damper** Function monitoring of the flue gas / supply air damper with floating contact. Closed contact is a prerequisite for enabling the burner in heating, DHW and emissions test mode. If input E1 is configured as a flue gas damper, output A1 is automatically programmed as a flue gas damper and disabled for other settings.
OWHA	**Operation without heating appliance (external disable)** When contact E1 is closed, the heat generator is blocked. Burner, heating circuit pump, feed pump and cylinder primary pump are disabled. Opening contact E1 enables the heat generator again. The heat generator is enabled in emissions test and in frost protection mode.
Ex f msg w/ sh	**External fault (e.g. fault contact of condensate removal pump)** When contact E1 is open, fault message 116 is generated. Heating and DHW heating will be blocked. Closing contact E1 enables heating and DHW heating again. The fault message is cancelled.
Ex f msg w/o sh	**External fault (e.g. fault contact of condensate removal pump)** When contact E1 is open, fault message 116 is generated. Heating and DHW heating will remain active. The fault message is cancelled by closing contact E1.

Table 7.2 Function input E1

7.2.10 HG14: Function output A1

Read and configure parameter HG14 using the BM-2 programming unit or the AM display module directly at the heat generator.

Display	Description
None	**None (factory setting)** Output A1 is ignored by the control unit.
DHWcirc 100	**DHW circulation pump 100%** Output A1 is switched by the time program in the control accessory if DHW circulation has been enabled. Output A1 is constantly switched if no accessory controller is installed.
DHWcirc 50	**DHW circulation pump 50%** Output A1 is switched cyclically by the time program in the control accessory if DHW circulation has been enabled. 5 minutes ON, 5 minutes OFF. Output A1 is switched cyclically if no accessory controller is installed.
DHWcirc 20	**DHW circulation pump 20%** Output A1 is switched cyclically by the time program in the control accessory if DHW circulation has been enabled. 2 minutes ON, 8 minutes OFF. Output A1 is switched cyclically if no accessory controller is installed.

Flame	**Flame detector** Output A1 is switched after a flame has been recognised.
Flue gas damper	**Flue gas / supply air damper** Output A1 is switched first before each burner start. The burner will only be enabled after input E1 has been closed. Closed contact E1 is a prerequisite for enabling the burner in heating, DHW and emissions test mode. If output A1 is switched and does not close input E1 within 1 minute, a fault is generated (FC 8). If output A1 is deactivated and does not open input E1 within 1 minute, a fault is generated (FC 8). If output A1 is configured as a flue gas damper, input E1 is automatically programmed as a flue gas damper and disabled for other settings.
Zirkomat	**Zirkomat (DHW circulation remote control)** Output A1 is activated for 5 minutes when input E1 closes. After input E1 has been switched off and 30 minutes have elapsed, the Zirkomat function is re-enabled for the next operation.
Alarm	**Alarm output** If a fault has occurred and 4 minutes have passed, the alarm output is activated. There is no notification of warnings.
Ext vent.	**External ventilation** Output A1 is switched inversely to the flame signal. Switching off external ventilation (e.g. extractor fan) during burner operation is required only if the heat generator is operated in open flue mode.
Br: Valve	**External fuel valve** Activates an additional fuel valve during burner operation. Output 1 is activated from the pre-purging of the heat generator until burner shutdown.
HCP	**Heating circuit pump** For HG40 system configuration 1, output A1 is switched parallel to the feed/heating circuit pump. If HG40 system configuration is set to 12, output A1 is automatically enabled as the output for a heating circuit pump (direct heating circuit).

Table 7.3 Function output A1

7.2.11 HG15: Cylinder hysteresis

HG15 controls the start point for cylinder heating. The higher the setting, the lower the start point for cylinder heating.

Example:
- ➠ Set cylinder temperature: 60°C
- ➠ Cylinder hysteresis: 5 K
- ✓ Cylinder heating: Start at < 55°C and end at 60°C.

7.2.12 HG16: Minimum heating circuit pump rate

In heating mode, the feed/heating circuit pump does not regulate below this set value. This parameter has no function if a feed/heating circuit pump with no PWM signal control is used.

7.2.13 HG17: Maximum heating circuit pump rate

In heating mode, the pump does not regulate above this set value.
Regardless of pump control type set in HG37.
If the pump control type is “Constant”, HG17 is used as the setting for the pump speed in heating mode.

7.2.14 HG19: Run-on time, cylinder primary pump

Summer mode

After completing cylinder heating (when the cylinder has reached the set temperature), the cylinder primary pump will run on up to the maximum set run-on time.
The cylinder primary pump will switch off prematurely if, during the run-on time, the heat generator water

temperature cools down to a differential of 5 K between the set heat generator temperature and set cylinder temperature.

Winter mode

The setting of parameter HG19 is ignored. The cylinder primary pump will continue to run for 30 seconds after cylinder heating is complete.

7.2.15 HG20: Max. cylinder heating time

Cylinder heating commences as soon as the cylinder temperature sensor calls for heat. The heating circuit pumps would be constantly off if the heat generator were undersized, the cylinder were scaled up (limescale) or if DHW were constantly drawn off during DHW priority mode. The accommodation would then cool down significantly. To limit this effect, it is possible to specify a max. cylinder heating time.
If the set maximum cylinder heating time has expired, error message FC52 appears on the control module.
The control unit reverts to heating mode and cycles in the selected rhythm (HG20) between heating and cylinder heating mode, regardless of whether the cylinder has reached its set temperature or not.
The “Max. cylinder heating time” function remains active even if parallel pump operation is enabled. If HG20 is set to **OFF**, the “Max. cylinder heating time” function is disabled. WOLF recommends setting HG20 to **OFF** in heating systems with high DHW consumption, e.g. hotels, sports facilities, etc.

7.2.16 HG21: Minimum boiler temperature BT_{min}

The control unit is equipped with an electronic boiler temperature controller which has an adjustable minimum start temperature. The burner is switched on subject to the cycle block if this temperature is not achieved when heat is demanded. The minimum boiler water temperature BTmin is also not necessarily achieved when there is no heat demand.

7.2.17 HG22: Maximum boiler temperature BT_{max}

The control unit is equipped with an electronic boiler temperature controller which has an adjustable maximum shutdown temperature. The burner is switched off if this temperature is exceeded. The burner is switched back on once the boiler temperature has decreased by the burner hysteresis.

7.2.18 HG23: Maximum DHW temperature

The factory setting for the max. DHW temperature is 65°C. This temperature can be enabled at 80°C if, for commercial reasons, a higher DHW temperature is required.

⚠ WARNING
Hot water!
Scalding.
► Implement suitable measures.

In order to enable higher DHW temperatures, system parameter A14 (maximum DHW temperature) must also be set accordingly.

7.2.19 HG25: Excess boiler water temperature during cylinder heating

HG25 sets the excess temperature differential between the cylinder temperature and the heat generator temperature during cylinder heating.
The boiler water temperature continues to be limited by the maximum boiler water temperature (HG22). This ensures that, even in spring and autumn, the heat generator temperature is higher than the cylinder temperature, thereby ensuring short heating times.

7.2.20 HG33: Burner hysteresis runtime

When starting the burner or changing to heating mode, the burner hysteresis is set to HG01. Based on this set value, the burner hysteresis within the configured burner hysteresis runtime (HG33) is reduced to the minimum hysteresis (HG60). This is designed to prevent short burner runtimes.

7.2.21 HG34: eBus feed

In the “Auto” setting, the power supply to the eBus system is switched on or off automatically by the control unit, depending on the number of available eBus subscribers.

Setting	Description
OFF	The bus feed is always off.
ON	The bus feed is always on.
Auto	The control unit switches the bus feed on or off automatically.

Table 7.4 HG34: eBus feed

7.2.22 HG37: Type of pump control

Setting the type of pump speed control in heating mode and with BMS52.

Setting	Description
Constant	Fixed pump speed (HG17).
Linear	Linear speed control between HG16 and HG17 corresponding to the current burner output.
Spread	Speed control between HG16 and HG17 to achieve the flow/return temperature spread (HG38). This function is only possible in heating mode and BMS 52. With BMS 51 or a cascade, this switches automatically to linear control.

7.2.23 HG38: Set spread, pump control

The set spread specified in HG38 applies if spread is enabled in parameter HG37. The spread is regulated between flow and return within the speed limits in HG16 and HG17 by changing the pump speed.
Note: The heat exchanger protection function reduces the modulation level when the spread is >28 K.

7.2.24 HG39: Soft start time

Burner runtime at low level, in heating mode after burner start.

7.2.25 HG40: System configurations

System configurations in accordance with 12.4 (see “HG40 system configuration” on page 75).

7.2.26 HG41: ZHP speed DHW

In DHW mode, the pump runs at this set value. Regardless of pump control type set in HG37.

7.2.27 HG42: Header hysteresis

The header hysteresis regulates the header temperature within the set range by switching the heat generator on and off. The higher the ON/OFF temperature differential, the higher the header temperature fluctuation around the set value, resulting in longer heat generator runtimes, and vice-versa.

7.2.28 HG46: Excess boiler water temperature, header

H46 sets the excess temperature differential between the header temperature and the heat generator temperature during header heating. The temperature of the heat generator continues to be limited by the maximum boiler temperature (HG22).

7.2.29 HG47: CO_2 adjustment of lower burner output (BM-2 with FW 2.90 or later and AM with FW 1.80 or later)

When parameter HG47 is selected, the CO_2 setting for lower burner output is activated for a period of 30 minutes and can be extended to 30 minutes again using “Extend time”.
The current boiler temperature, the output setpoint and the current appliance output are displayed. The testing or configuration process outlined in section 6.7 can begin once the appliance output is at the setpoint.
If the CO_2 setting for the lower burner output is active, the appliance output will be at minimum. Any customer-specific setting in parameter HG02 (lower burner output) is ignored during the function.
Use “Back” to exit the function.

7.2.30 HG49: CO_2 setting upper burner output (BM-2 with FW 2.90 or later and AM with FW 1.80 or later)

When parameter HG49 is selected, the CO_2 setting for upper burner output is activated for a period of 30 minutes and can be extended again to 30 minutes using “Extend time”.
The current boiler temperature, the output setpoint and the current appliance output are displayed. The testing or configuration process outlined in section 6.7 can begin once the appliance output is at the setpoint.
If the CO_2 setting for the upper burner output is active, the appliance output will be at maximum. Any customer-specific setting in parameter HG04 (upper burner output) is ignored during the function.
Use “Back” to exit the function.

7.2.31 HG56: Input E3

HG56 can be selected only if the “I/O module” expansion board is connected.
The flue gas damper function cannot be selected.
All other functions can be set as for HG13 (input E1).

7.2.32 HG57: Input E4

HG57 can be selected only if the “I/O module” expansion board is connected.
The flue gas damper function cannot be selected.
All other functions can be set as for HG13 (input E1).

7.2.33 HG58: Output A3

HG58 can be selected only if the “I/O module” expansion board is connected.
The flue gas damper function cannot be selected.
All other functions can be set as for HG14 (output A1).

7.2.34 HG59: Output A4

HG59 can be selected only if the “I/O module” expansion board is connected.
The flue gas damper function cannot be selected.
All other functions can be set as for HG14 (output A1).

7.2.35 HG60: Minimum burner switching hysteresis

Based on the maximum burner hysteresis (HG01), there is a linear reduction of the burner shutdown point after the burner starts. After the hysteresis time (HG33), the burner switches off at the minimum burner hysteresis (HG60).
Also see parameter HG01 diagram.

7.2.36 HG61: DHW control

With header temperature control (system configuration HG40 = 11 or 12), the cylinder primary pump can be installed upstream or downstream of the low loss header.

Boiler sensor

Cylinder primary pump upstream of low loss header. Control on boiler sensor; feed pump off during cylinder heating.

Header sensor

Cylinder primary pump downstream of low loss header. Control on header sensor; feed pump on during cylinder heating.

8 Troubleshooting

NOTE
Fault reset without rectifying the cause!
Damage to components or the system.
► Faults must be rectified by a contractor.

NOTE
Fault reset with flue gas temperature too high!
Destruction of the flue system.
► Allow the flue system to cool.

NOTE
High temperatures at the heating water heat exchanger!
Fault cannot be acknowledged.
► Allow the heat generator to cool.

8.1 Symbols in fault and warning messages

Faults and warnings are shown in plain text on the display of the control module.

Symbol	Explanation
⚠	Active warning or fault
min	How long the message has been active
🔒	Fault message which deactivates the heat generator with a lockout.

Displaying the message history

It is possible to open a message history and display the most recent fault messages in the contractor menu.

► Select **Message history** in the contractor menu.

8.2 Dealing with fault and warning messages

► Identify the code.
► Determine the cause (Table 8.1 Fault messages, Table 8.2 Warning messages).
► Rectify the cause.
► Acknowledge fault message.
► Check that the system is functioning correctly.

8.3 Fault codes

8.3.1 Fault messages

The control unit automatically acknowledges faults such as faulty temperature sensors or other sensors if the part concerned has been replaced and plausible test values have been supplied.

Fault code	Message	Cause	Remedy
1	Excess temperature, heat exchanger HLSC	– High limit safety cut-out was triggered. – The temperature at the combustion chamber cover has exceeded 170°C.	► Check sensor/cable. ► Check the heating circuit pump. ► Vent the system. ► Press reset button. ► Clean the heating water heat exchanger.

Troubleshooting

Fault code	Message	Cause	Remedy
2	TL excess temp.	– eHLSC1 has exceeded 105°C – eHLSC2 has exceeded 105°C	► Check sensor/cable. ► Check the heating circuit pump. ► Vent the system. ► Press reset button. ► Clean the heating water heat exchanger.
3	dT – eHLSC drift	– Temperature differential between temperature sensors eHLSC1 and eHLSC2 > 6°C.	► Check sensor/cable. ► Clean the dirt trap. ► Check the heating circuit pump. ► Vent the system. ► Press reset button. ► Clean the heating water heat exchanger.
4	No flame	– When the burner starts, no flame forms by the end of safety time. – Burner is contaminated. – CO_2 incorrectly set. – Monitoring electrode faulty. – Ignition electrode faulty. – Ignition transformer faulty. – Ignition electrodes contaminated. – Heat generator contaminated.	► Check monitoring electrode. ► Clean the burner. ► Check the CO_2 setting. ► Check the ignition electrode and ignition transformer. ► Press reset button. ► Check gas pressure.
5	Flame failure	– Flame failure during operation. – CO_2 set incorrectly, monitoring electrode faulty, flue path blocked, condensate drain blocked	► Check monitoring electrode. ► Clean the burner. ► Check the CO_2 setting. ► Press reset button. ► Check flue system. ► Check that the condensate can drain off freely.
6	TM excess temp.	– One of the temperature sensors eHLSC1 or eHLSC2 has exceeded the limit of the temperature monitor (97°C)	► Check the heating circuit pump. ► Vent the system. ► Check sensor. ► Clean the heat exchanger
7	Flue gas sensor excess temperature	– The flue gas temperature has exceeded 105°C.	► Clean the heat exchanger. ► Check sensor. ► Check flue system. ► Press reset button.
8	Flue gas / supply air damper does not respond	– Flue gas / supply air damper contact (E1) fails to close or open when there is a demand.	► Check wiring of flue gas / supply air damper. ► Press reset button.
10	eHLS - sensor faulty	– Temperature sensor eHLSC1 / eHLSC2 or sensor lead faulty – eHLSC temp. < -10°C or > 126°C	► Press reset button. ► Check sensor. ► Check lead.
11	Flame detection error	– A flame is recognised before the burner starts.	► Press reset button. ► Check monitoring electrode.
12	Boiler sensor faulty	– Faulty boiler sensor or lead. – Boiler temp. < 0°C or > 98°C	► Check sensor. ► Check lead.

Troubleshooting

Fault code	Message	Cause	Remedy
13	Flue gas sensor faulty	– Faulty flue gas sensor or lead. – Flue gas temp. < -10°C or > 126°C	► Press reset button. ► Check sensor. ► Check lead.
14	Faulty cylinder sensor CS	– Faulty cylinder sensor or lead. – Cylinder temp. < 1°C or > 95°C	► Check sensor. ► Check lead.
15	Outside temperature sensor fault	– Faulty outside temperature sensor or lead.	► Check sensor. ► Check lead.
16	Return temperature sensor faulty	– Return temperature sensor or cable faulty. – Return temp. < 0°C or > 95°C	► Check sensor. ► Check lead.
20	GCV relay test	– The internal relay test failed. – Ignition transformer not connected to burner control unit. – Turn power ON/OFF quickly	► Press reset button. ► Check ignition transformer ► Call a contractor ► Check the line to the ignition transformer
24	Fan speed <	– Set fan speed is not achieved. – Power or PWM connector loose at housing – Loose connection between HCM-2 and GBC-p	► Press reset button. ► Switch power supply OFF/ON. ► Check power cable to fan. ► Check connection between HCM-2 and GBC-p ► Check fan.
26	Fan speed >	– The fan does not stop. – Significant draft in flue system. – Power or PWM connector loose at housing – Loose connection between HCM-2 and GBC-p	► Press reset button. ► Switch power supply OFF/ON. ► Check power cable to fan. ► Check connection between HCM-2 and GBC-p. ► Check fan. ► Check flue system.
28	Gas pressure switch	– No gas pressure for > 15 min.	► Check gas supply ► Check gas pressure switch
30	CRC Burner control unit	– The EEPROM data set is invalid.	► Press reset button. ► Switch power supply OFF/ON. ► Replacing the boiler coding card
32	Fault in 23 VAC supply	– 23 V AC supply outside the permissible range.	► Switch power supply OFF/ON. ► Check voltage ► Check wiring on site If fault persists: ► Replace the control PCB.
35	BCC not correct	– Boiler coding card has been removed or incorrectly inserted.	► Switch power supply OFF/ON. ► Refit the correct boiler coding card.
36	CRC BCC-ID incorrect in the BCC	– Boiler coding card fault.	► Switch power supply OFF/ON. ► Refit the correct boiler coding card. ► Press reset button. ► Enter contractor code “1111”. ► Enter the correct BCC code.

Fault code	Message	Cause	Remedy
37	Incorrect BCC	– The boiler coding card is incompatible with the PCB. – Control components swapped.	► Switch the ON/OFF switch. ► Insert the correct boiler coding card. ► Press reset button. ► Enter contractor code “1111”. ► Enter the correct BCC code.
38	BCC update required	– Boiler coding card fault, PCB requires a new boiler coding card (if replacement part).	► Switch power supply OFF/ON. ► Reinsert boiler coding card. ► Enter the correct BCC code. ► Replace boiler coding card.
39	BCC system error	– Boiler coding card fault.	► Switch the ON/OFF switch. ► Press reset button. ► Enter contractor code “1111”. ► Enter BCC code from the type plate correctly. ► Replace boiler coding card.
41	Flow monitoring	– Return temperature higher than flow temperature.	► Vent the system. ► Check flue system. ► Check flue gas damper.
52	max. cylinder heating time	– The maximum cylinder heat time is longer than permitted.	► Check DHW sensor (cylinder sensor) and sensor lead. ► Check sensor position. ► Vent cylinder. ► Extend cylinder heating time.
53	IO - control deviation	– Wind detection, severe storm. – Inadequate ionisation signal. – Burner contaminated. – CO_2 incorrectly set.	► Check monitoring electrode. ► Check flue system. ► Press reset button. ► Clean the burner. ► Check the CO_2 setting.
60	Trap back pressure	– Trap or flue system is blocked.	► Clean the trap. ► Check flue system. ► Check the gas and flow pressure. ► Check monitoring electrode. ► Increase minimum fan speed. ► Press reset button.
78	Header sensor fault	– Faulty header sensor or lead.	► Check sensor. ► Check lead.
90	BCU communication	– Emergency stop via ChipCom. – Communication between control unit PCB and burner control unit disrupted.	► Check connection between burner control unit and HCM-2 board.
95	Prog. mode	– Burner control unit is controlled by PC.	No action.
96	Reset	– Reset button pressed too many times.	► Switch power supply OFF/ON. ► Press reset button.

Fault code	Message	Cause	Remedy
98	Flame amplifier	– Internal fault. Burner control units. – Short circuit, monitoring electrode. – Wiring error on HCM-2 (low voltage side).	► Press reset button. ► Switch power supply off and on, If fault persists: ► Check monitoring electrode. ► Check connection HCM-2.
99	System error Burner control unit	– Internal burner control unit fault – Loose contact at PWM connector. – Loose contact at fan power connection.	► Switch power supply OFF/ON. ► Press reset button. ► Check electrical connections of the fan.
107	HC pressure	– System pressure < 0.8 bar. – Supply line pressure sensor faulty. – Pressure sensor faulty.	► Check system pressure. ► Check pressure sensor cables and plug-in connections. If OK but no function: ► Replace pressure sensor.
116	External fault input E1	– Contact E1 is open.	► Rectify fault on external accessory. ► Press reset button.
225	Fault code unknown	– Fault not known.	► Check software version. ► Call out a contractor. ► Contact WOLF Service. email: service@wolf.eu

Table 8.1 Fault messages

8.3.2 Warning messages

Warning messages do not lead directly to the heat generator being switched OFF. The issue which caused the warning may lead to malfunctions or faults.
These issues must be rectified by a contractor.

Warning codes	Message	Cause	Remedy
1	Burner control unit replaced	– The PCB has detected that the burner control unit has been replaced.	► Insert the correct boiler coding card. ► Check parameter settings. ► Acknowledge warning messages.
2	Heating circuit pressure	– System pressure < 1.2 bar.	► Check system pressure. ► Test sensor.
3	Parameter changed	– Different boiler coding card has been inserted. – Parameters have been reset to their factory settings. – HCM-2 or GBC-p was changed.	► Insert the boiler coding card. ► Reinsert boiler coding card. ► Check parameter settings.
4	No flame	– No flame detected at the last start attempt.	► Wait for more start attempts. ► Reinsert boiler coding card. ► Check the ignition electrode and ignition transformer. ► Check monitoring electrode. ► Check the gas supply pressure.

Warning codes	Message	Cause	Remedy
5	Flame failure	– Flame failure during operation.	► Monitoring electrode faulty. ► Flue path blocked. ► Press reset button. ► Condensate drain blocked. ► Check the gas supply pressure.
24	Speed fault Fan	– Set fan speed is not achieved.	► Check power cable to fan. ► Check fan.
43	Many burner starts	– Excessive number of burner starts.	► Check heat transfer. ► Check flow rate. ► Check demand.

Table 8.2 Warning messages

8.4 Operating messages

8.4.1 Heat generator modes

Display message	Cause
Start	– Heat generator startup
Standby	– No heating or DHW demand
Combi mode	– DHW heating with heat exchanger active, water tap is open
Heating mode	– Heating mode, at least one heating circuit is calling for heat
DHW heating	– DHW heating with cylinder; cylinder temperature is below set value
Emissions test	– Emissions test mode active; heating appliance running at maximum output
Frost prot htg	– Heat generator frost protection function; boiler water temperature below frost protection limit
Frost prot DHW	– Frost protection function of DHW cylinder enabled; cylinder temperature below frost protection limit
Frost protection	– System frost protection enabled; outside temperature below frost protection limit
HTG run-on	– Heating circuit pump run-on enabled
DHW run-on	– Cylinder primary pump run-on enabled
Parallel mode	– Heating circuit pump and cylinder primary pump enabled in parallel
Test	– Relay test function has been enabled
Cascade	– Cascade module in system active
BMS	– Heat generator is controlled by building management system (BMS)
External disable	– External disabling of the heat generator (input E1 closed; OWHA)
FR low	– Heat generator blocked, flow rate through heat generator too low

Table 8.3 Heat generator modes

8.4.2 Heat generator burner status

Display message	Cause
Off	– No burner demand
Pre-flush	– Fan operation before burner start
Ignition	– Gas valves and ignition unit are enabled
Stabilisation	– Flame stabilisation after safety time
Soft start	– After flame stabilisation in heating mode, the burner runs at low burner power for the duration of the soft start to prevent cycling
On	– Burner operational
Cycle block	– Burner block after a burner cycle for the duration of the cycle block
W/o burner	– Operation without burner; input E1 closed

Display message	Cause
Flue gas damper	– Awaiting feedback from flue gas damper (input E1)
Spread high	– Temperature spread between boiler water temperature sensor and return temperature sensor too wide
Spread KF	– Temperature spread between eHLSC1/eHLSC2 and boiler water temperature sensor too wide
Valve test	– Gas valve test
Grad. control	– Boiler water temperature rising too quickly
Fault	– Burner not operational due to a fault
Post-flush	– Fan operation after burner shutdown

Table 8.4 Heat generator burner status

8.4.3 Change fuse

DANGER

Risk of electrical voltage even when the ON/OFF switch is set to OFF!

Danger of death from electrocution.

► Isolate the entire system from the power supply.

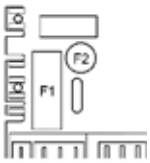


Fig. 8.1 Change fuse

The ON/OFF switch on the heat generator does not provide isolation from the power supply!
The F1 and F2 fuses are located on the PCB (HCM-2).
F1: Fine wire fuse (5 x 20 mm) M 4 A
F2: Micro fuse T 1.25 A

► Remove the faulty fuse.
► Insert the new fuse.

9 Decommissioning

NOTE
Improper shutdown!
Pump damaged due to downtime.
Heating system damaged due to frost.
► The heat generator may only be operated using the control module.

9.1 Taking the heat generator out of service temporarily

BM-2 programming unit operating instructions for users

► Activate **standby mode** using the control module.

9.2 Putting the heat generator back into service

► Activate a heating mode using the control module.

9.3 Taking the heat generator out of service in an emergency

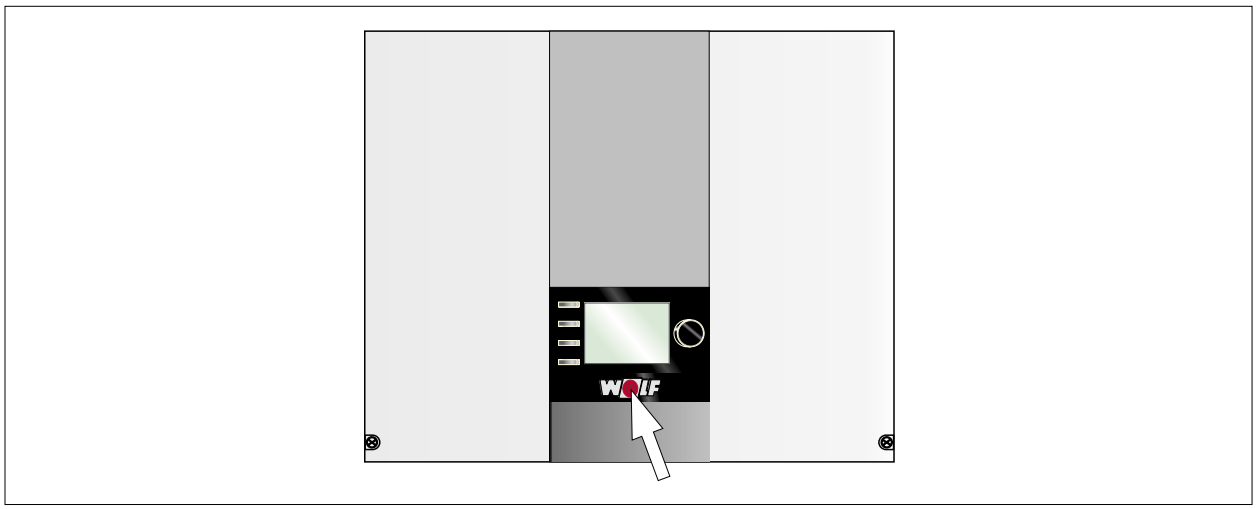


Fig. 9.1 ON/OFF switch

► Switch OFF the heat generator at the ON/OFF switch.
► Notify a contractor.

9.4 Taking the heat generator out of service permanently

Prepare for decommissioning

DANGER
Risk of electrical voltage even when the ON/OFF switch is set to OFF!
Danger of death from electrocution
► Isolate the entire system from the power supply.

► Switch OFF the heat generator at the ON/OFF switch.
► Isolate the system from the power supply.
► Safeguard the system against reconnection.
► Disconnect the heat generator from the power.

9.4.1 Draining the heating system

⚠ WARNING
Hot water!
Risk of scalding hands from hot water.
► Before working on parts which are in contact with water, allow the appliance to cool to below 40°C.
► Use safety gloves.

⚠ WARNING
High temperatures!
Risk of burns on the hands from hot components.
► Before working on the open heat generator, allow it to cool below 40°C.
► Use safety gloves.

► Open the drain valve (e.g. heat generator BDF valve).
► Open the air vent valves on the radiators.
► Drain off the heating water.

Shutting off the gas supply

► Close the gas valve.

10 Recycling and disposal

⚠ DANGER
Electrical voltage!
Danger of death from electrocution.
► The heat generator may only be disconnected from mains power by a contractor.

⚠ DANGER
Escaping gas!
Risk of asphyxiation or severe to life-threatening poisoning.
► Close the gas tap if you smell gas.
► Open windows and doors.
► Notify an approved contractor.

⚠ NOTE
Escaping water!
Water damage.
► Collect any remaining water from the heat generator and the heating system.


Do not dispose of as household waste!

► In accordance with the Waste Disposal Act, the following components must be disposed of or recycled in an environmentally compatible manner by means of appropriate collection points:
– Old appliance
– Wearing parts
– Defective components
– Electrical or electronic waste
– Environmentally hazardous liquids and oils
Environmentally compatible means separated by material groups to ensure the greatest possible recyclability of the base materials with the minimum environmental impact.

► Dispose of packaging made of cardboard, recyclable plastics and synthetic filler materials in an environmentally compatible manner through appropriate recycling systems or a recycling centre.

► Please observe the applicable national and local regulations.

11 Specifications

11.1 CGB-2-75/100 wall mounted gas condensing boiler

Type of wall mounted gas condensing boiler	Unit	CGB-2-75	CGB-2-100
Type per GB25034-2020		LN1GBQ72-CGB2 (CGB-2-75)	LN1GBQ93-CGB2 (CGB-2-100)
Max. Heating Load (80/60 °C)	kW	71.5	93.3
Max. Heating Output (80/60 °C)	kW	70.8	92.1
Max. Heating Output (50/30 °C)	kW	75.8	98.7
Max. DHW Load	kW	-	-
Min. Heating Load (Min. Heating Load (80/60 °C))	kW	15	
Min. Heating Output (80/60 °C)	kW	14.9	
Min. Heating Output (50/30 °C)	kW	15.9	
Heating Circuit Flow / Return Connections	G	1½"	
Cold Water / DHW / DHW Tank Heating Connections	G		
Gas connection	R	¾"	
Balanced flue connection	mm	110/160	
Dimensions:			
Depth	mm	548	
Width	mm	565	
Height (incl. appliance connection with flue gas test port)	mm	1050	
Installing the balanced flue	Type	C13(x)、C33(x)、C53(x)	
Gas category		12T	
Gas Consumption 12T (Hi = 9.5 kWh/m³ = 34.2 MJ/m³)	m³/h	7.53	9.89
Natural gas supply pressures	Pa	2000 (1500-3000)	
Efficiency:			
Nominal Heating Load (80/60°C)	%	98/88	
30% of Nominal Heating Load (50/30 °C)	%	110/90	
Heating circuit flow temperature, factory setting	°C	80	
Heating circuit flow temperature adjustable range factory setting	°C	20-73	
Flow temperature up to approx.	°C	90	
Max. overall positive pressure, heating circuit	MPa	0.6	
Max. Residual Head of the Heating Circuit HE Pump		Per the intallation of the HC pump	
3220 L/h Primary pump flow rate (75 kW at dt=20 K)	mbar	N/A	
4250 L/h Primary pump flow rate (99 kW at dt=20 K)	mbar	N/A	
Max. permitted overall positive pressure	MPa	N/A	
Minimum flow pressure	MPa	N/A	
DHW temperature range (adjustable)	°C	15-65	
Specific DHW Rate (ΔT=25K)	L/min.	N/A	
Expansion vessel total capacity	L	To be dimensioned according to the heating circuit instllation	
Expansion vessel, pre-charge pressure	MPa	To be defined according to the heating circuit instllation	
Flue gas temperature 80/60-50/30 at Qmax	°C	55-79	65-91
Flue gas temperature 80/60-50/30 at Qmin	°C	36-60	
Flue gas mass flow rate at Qmax	g/s	32.2	42.4
Flue gas mass flow rate at Qmin	g/s	6.9	
Available gas fan draught at Qmax	Pa	120	216
Available gas fan draught at Qmin	Pa	6/17	
NO_x class		5 (Per GB25034-2021 Appendix H)	
Max. amount of condensate	L/h	7.1	9.8
Condensate pH value		Approx. 4	
Standby Power Consumption	W	6	
Max. Power Consumption (Excluding the HC pump.)	W	110	165
IP rating		IPX4	
Type of protection against electric shock		Type I	
Electrical connection/fuse protection		220V~AC/50 HZ/4A	
Sound power level	dB	47	53
Total weight	kg	94	

Table 11.1 CGB-2-75/100 gas condensing boiler specifications

11.2 NTC sensor resistances

Boiler sensor, cylinder sensor, outside temperature sensor, header sensor, DHW heating sensor

Temperature	°C	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10
Resistance	Ω	51393	48487	45762	43207	40810	38560	36447	34463	32599	30846	29198	27648
Temperature	°C	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2
Resistance	Ω	26189	24816	23523	22305	21157	20075	19054	18091	17183	16325	15515	14750
Temperature	°C	3	4	5	6	7	8	9	10	11	12	13	14
Resistance	Ω	14027	13344	12697	12086	11508	10961	10442	9952	9487	9046	8629	8233
Temperature	°C	15	16	17	18	19	20	21	22	23	24	25	26
Resistance	Ω	7857	7501	7162	6841	6536	6247	5972	5710	5461	5225	5000	4786
Temperature	°C	27	28	29	30	31	32	33	34	35	36	37	38
Resistance	Ω	4582	4388	4204	4028	3860	3701	3549	3403	3265	3133	3007	2887
Temperature	°C	39	40	41	42	43	44	45	46	47	48	49	50
Resistance	Ω	2772	2662	2558	2458	2362	2271	2183	2100	2020	1944	1870	1800
Temperature	°C	51	52	53	54	55	56	57	58	59	60	61	62
Resistance	Ω	1733	1669	1608	1549	1493	1438	1387	1337	1289	1244	1200	1158
Temperature	°C	63	64	65	66	67	68	69	70	71	72	73	74
Resistance	Ω	1117	10178	1041	1005	971	938	906	876	846	818	791	765
Temperature	°C	75	76	77	78	79	80	81	82	83	84	85	86
Resistance	Ω	740	716	693	670	649	628	608	589	570	552	535	519
Temperature	°C	87	88	89	90	91	92	93	94	95	96	97	98
Resistance	Ω	503	487	472	458	444	431	418	406	393	382	371	360
Temperature	°C	99	100	101	102	103	104	105	106	107	108	109	110
Resistance	Ω	349	339	330	320	311	302	294	285	277	270	262	255
Temperature	°C	111	112	113	114	115	116	117	118				
Resistance	Ω	248	241	235	228	222	216	211	205				

Table 11.2 NTC sensor resistances

11.3 Dimensions

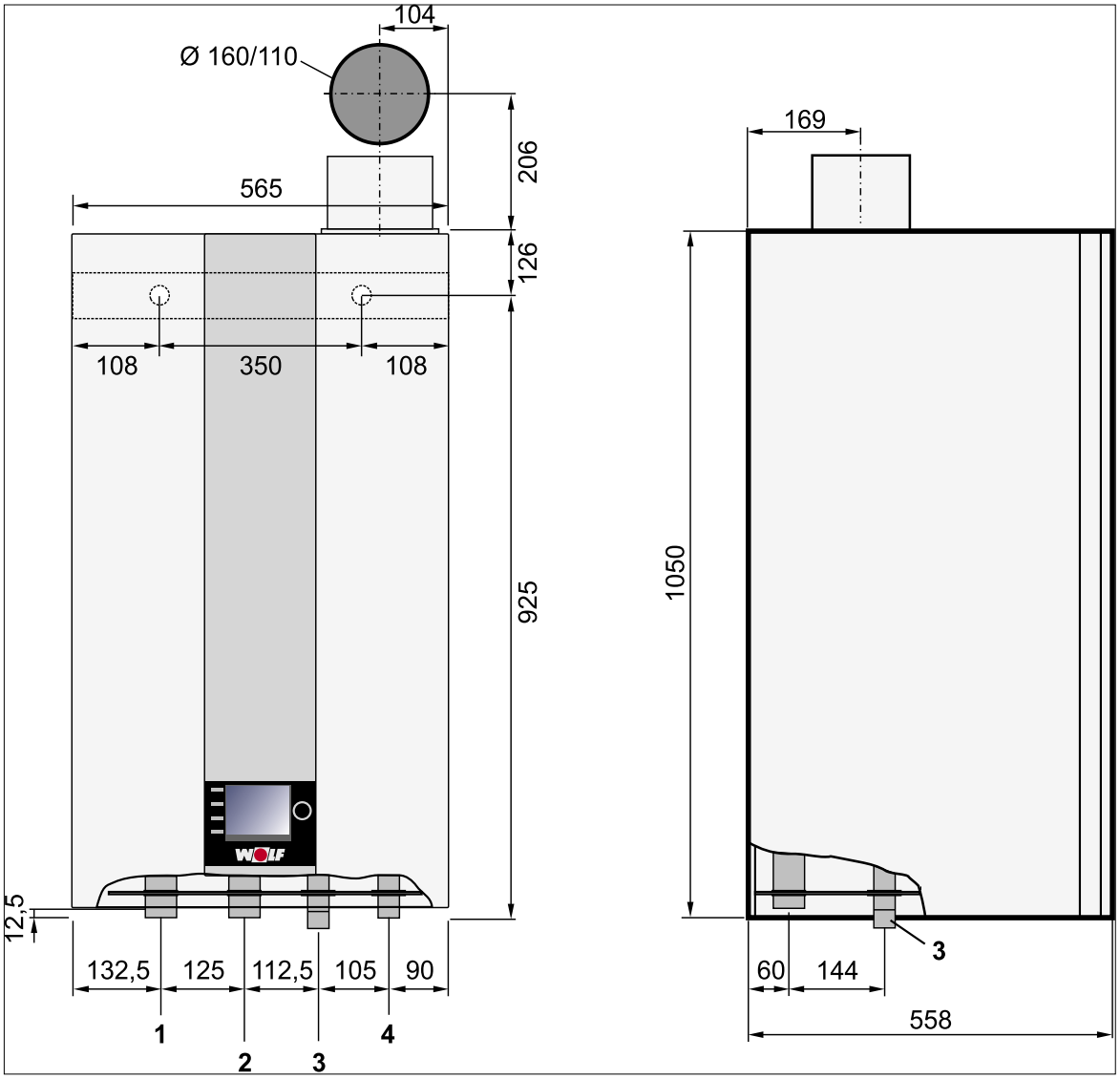


Fig. 11.1 Dimensions/installation dimensions

1 Heating flow
2 Heating return
3 Condensate drain
4 Gas connection

11.4 Connections

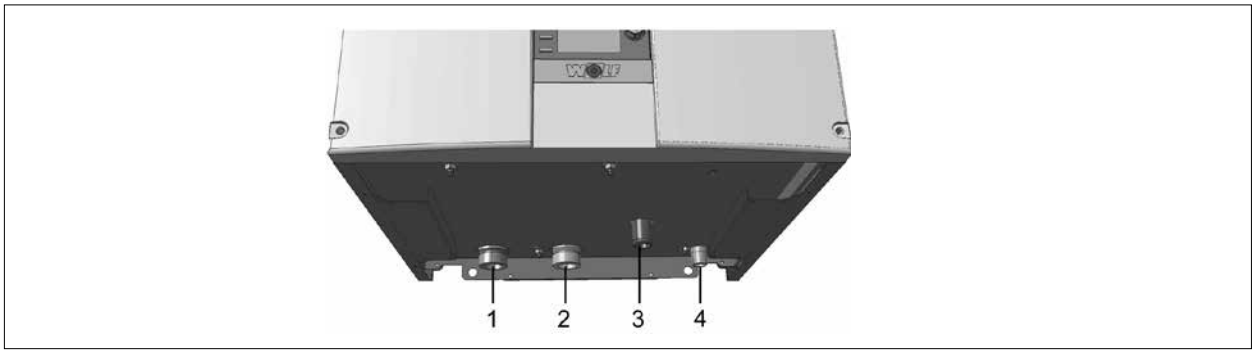


Fig. 11.2 Description of connections

1 Heating flow G 1½”
2 Heating return G 1½”
3 Trap
4 Gas connection R ¾”

12 Appendix

12.1 Commissioning report

Commissioning steps		Test values or confirmation	
1.	Gas type	Natural gas 12T	☐
		Wobbe index	____kWh/m³
		Calorific value, heating	____kWh/m³
2.	Gas supply pressure checked?	_____mbar	☐
3.	Gas tightness test carried out?		☐
4.	Balanced flue system checked? HG02 checked?		☐
5.	Water connections checked for tightness?		☐
6.	Is the trap filled, fitted and positioned correctly?		☐
7.	Boiler and system vented?		☐
8.	System pressure checked?	_____bar	☐
9.	System flushed?		☐
10.	Heating water hardness checked?	_____°dH	☐
11.	No chemical additives (inhibitors; antifreeze) added?		☐
12.	Gas type and heating output entered on label?		☐
13.	Function test carried out?		☐
14.	Flue gas test:		
	Gross flue gas temperature	_____	tA [°C]
	Intake air temperature	_____	tL [°C]
	Net flue gas temperature	_____	(tA - tL) [°C]
	Carbon dioxide (CO_2) content or oxygen content (O_2)	_____	%
	Carbon monoxide content (CO)	_____	ppm
15.	Casing fitted?		☐
16.	Control parameters checked?		☐
17.	System user instructed; documentation handed over?		☐
18.	Commissioning confirmed?	Yes ☐	No ☐
	Date:	_____	
	Signature:	_____	

12.2 HCM-2 wiring diagram

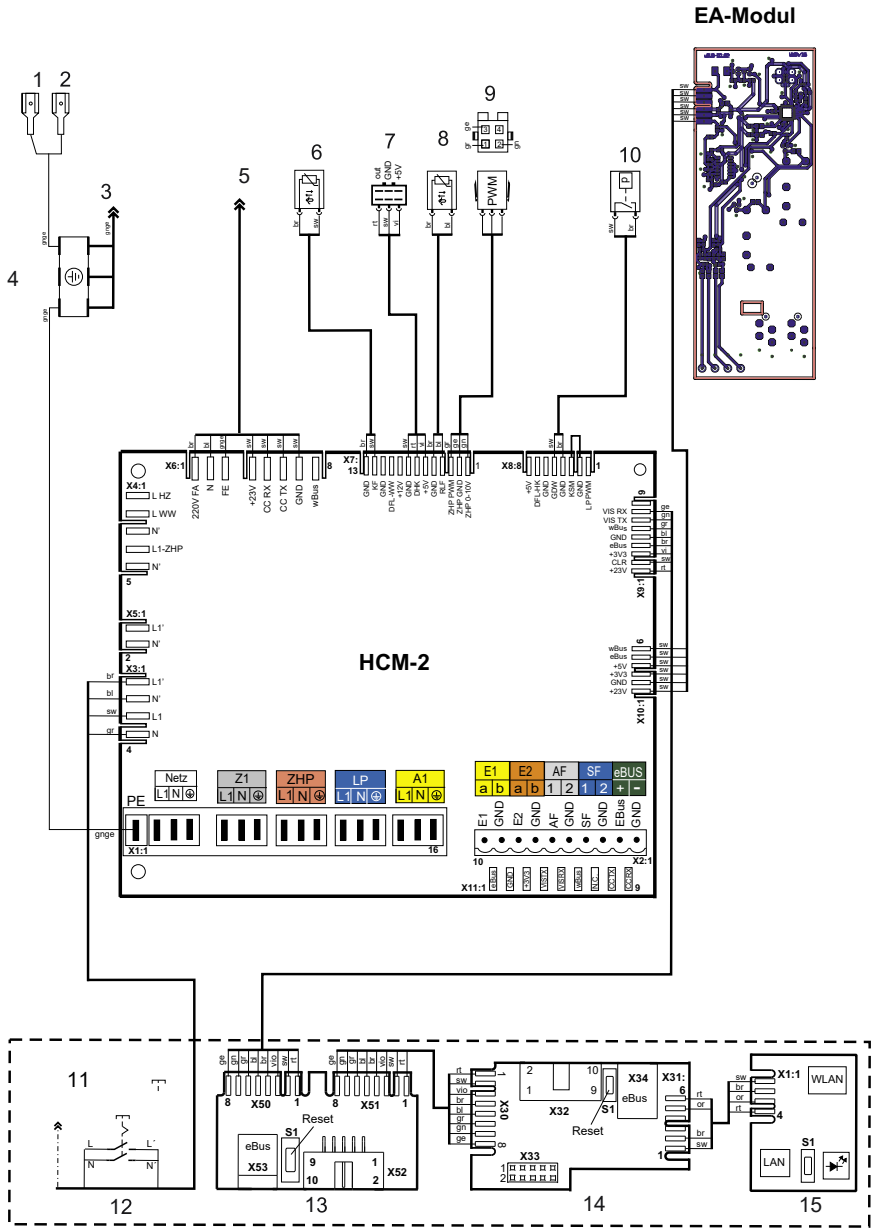


Fig. 12.1 HCM-2 wiring diagram

1 PE combustion chamber floor
2 PE combustion chamber cover
3 X2: PE GBC-P
4 PE distributor (grounding connector)
5 X1: GBC-P
6 Boiler water temperature sensor
7 Water pressure sensor
8 Return temperature sensor
9 Internal appliance pump speed (temporarily use WILO PWM connector)
10 Gas pressure switch
11 Front panel (mounting plate front panel)
12 ON/OFF switch
13 Service PCB
14 Contact board AM/BM
15 WOLF Link Home (optional)

12.3 GBC-p wiring diagram

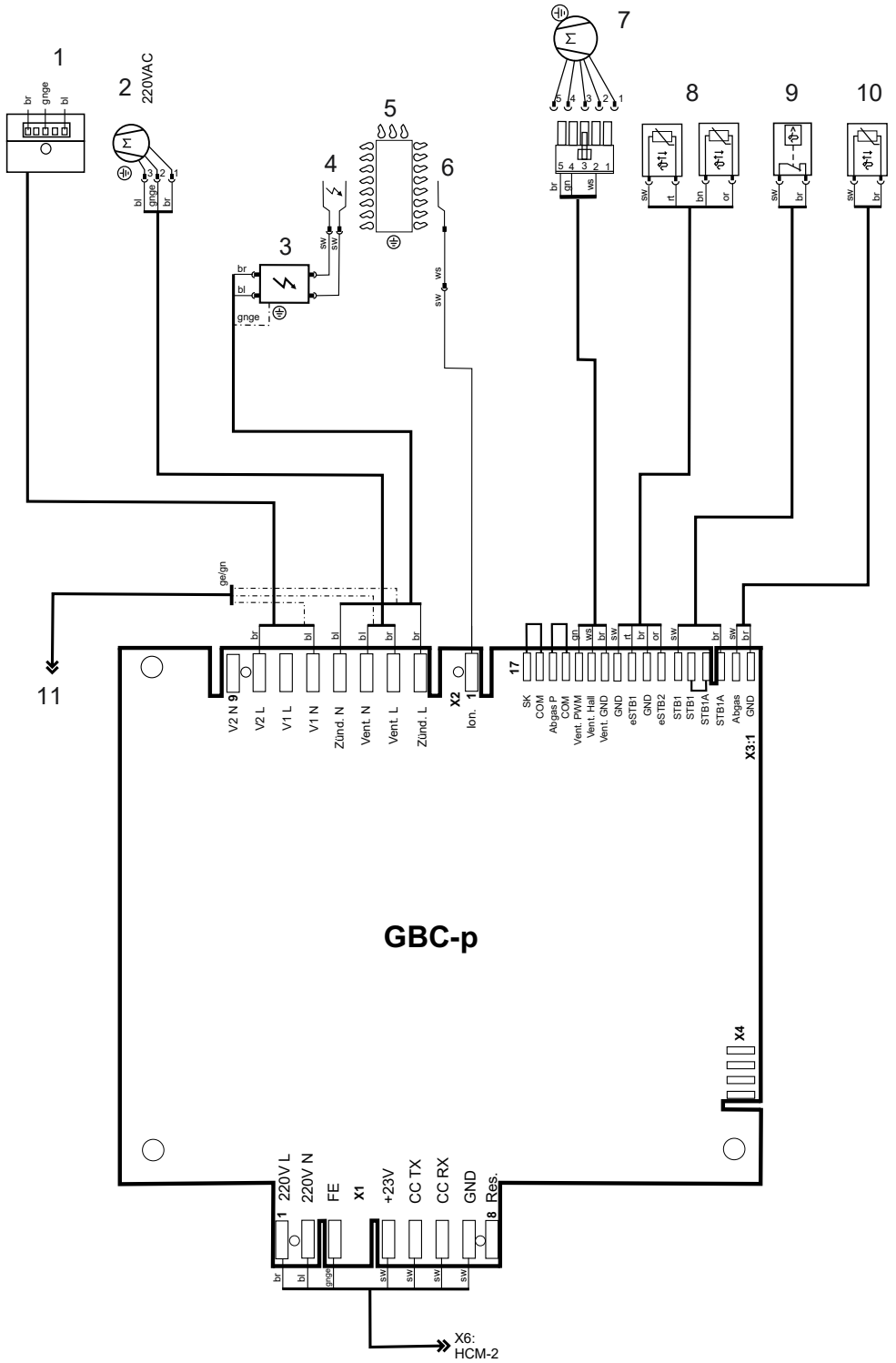


Fig. 12.2 GBC-p wiring diagram

1 Gas combination valve Rast5 plug (EBM Papst)
2 Fan 230 V AC
3 Ignition transformer ZAG 2C
4 Ignition electrode
5 Gas burners
6 monitoring electrode
7 Fan PWM signal
8 eHLSC-2 sensor of CGB-2 (dual sensor)
9 HLSC combustion chamber cover
10 CGB-2 flue gas temperature sensor
11 PE distributor

12.4 HG40: System configuration

Hydraulic and electrical details: “Hydraulic System Solutions” technical guide.

Shut-off valves, air vent valves and safety equipment are not depicted in these hydraulic diagrams.

► These should be provided for each system individually, in line with the applicable standards and regulations.

12.4.1 Symbols used

				
Feed pump	Heating circuit	Low loss header	System separation with heat exchanger	Cascade up to 5 appliances

12.4.2 System configuration 11

Low loss header / plate heat exchanger as hydraulic separation

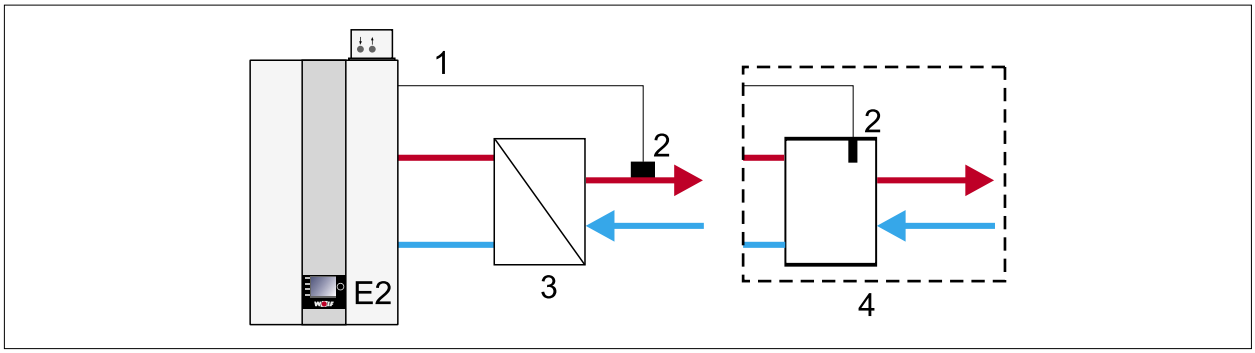


Fig. 12.3 System configuration 11 - Low loss header / plate heat exchanger for hydraulic separation

1 Input E2
2 Common sensor
3 Hydraulic separation
4 Low loss header

– Burner starts subject to demand from the header temperature control.
– Feed/heating circuit pump enabled as a feed pump.
– Header temperature control
– Input E2: Header sensor
– Parameter HG08 ($T\text{-}Flow_{max}$): 90°C
– Heating circuit and cylinder heating with MM-2.

12.4.3 System configuration 12

Low loss header with header sensor + direct heating circuit (A1)

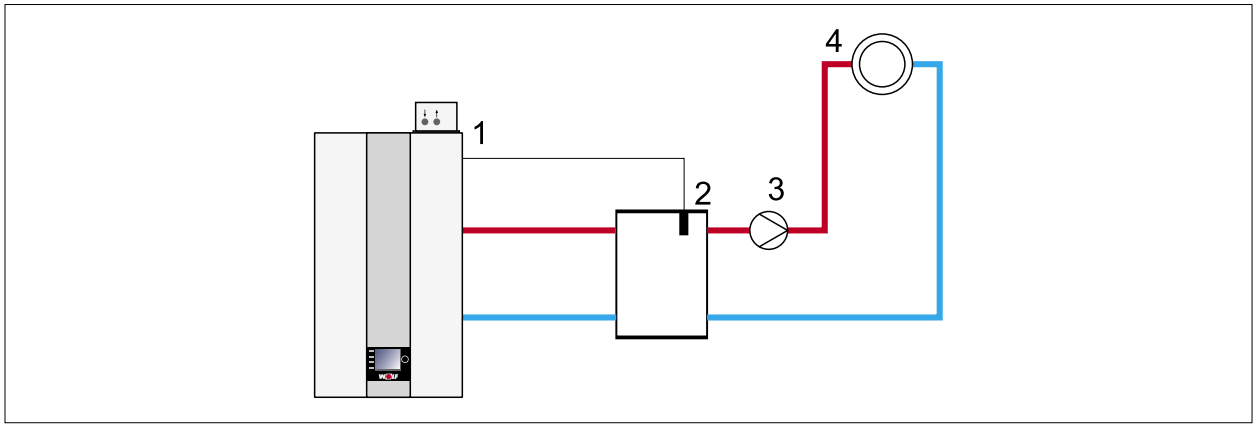


Fig. 12.4 System configuration 12 - Low loss header with header sensor

1 Input E2: Header temperature sensor
2 Header temperature sensor
3 A1 = heating circuit pump
4 Direct heating circuit

– Burner starts subject to demand from the header temperature control.
– Feed/heating circuit pump enabled as a feed pump for header demand.
– Header temperature control.
– Input E2: Header sensor.
– Parameter 08 ($T\text{-}Flow_{max}$): 90°C.
– Parameter 22 (max. Boiler temp.): 90°C.
– Parameter 14 (output A1): HCP.

12.4.4 System configuration 51

BMS – burner output

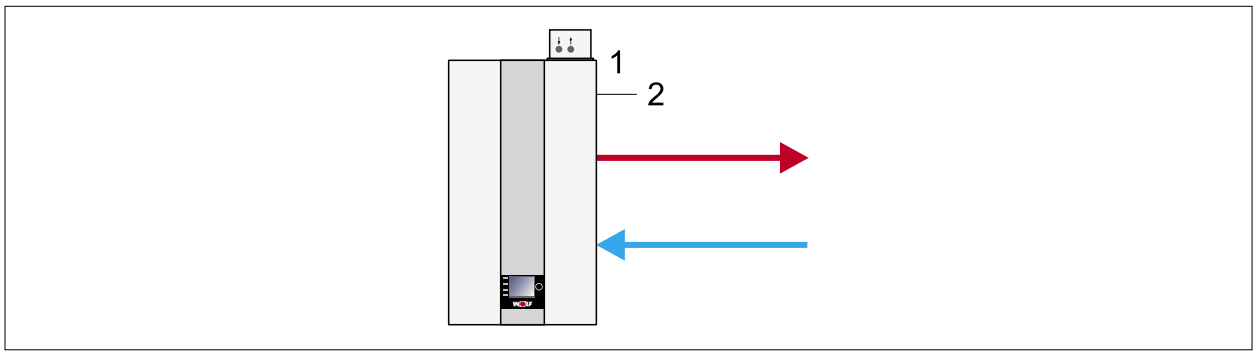


Fig. 12.5 System configuration 51 - BMS - burner output

1 Input E2
2 BMS %

– Burner starts subject to demand from the external controller (cycle block and soft start inactive).
– Feed/heating circuit pump enabled as a feed pump from 2 V.
– No temperature control.
– Input E2:
  Control 0 - 10 V by external controller
  0 - 2 V burner OFF,
  2-10 V burner output min. to max. within the programmed limits.
– Automatic output reduction when approaching $T\text{-}boiler_{max}$ (HG22). Shutdown when $T\text{-}boiler_{max}$ is reached

12.4.5 System configuration 52

BMS – set boiler temperature

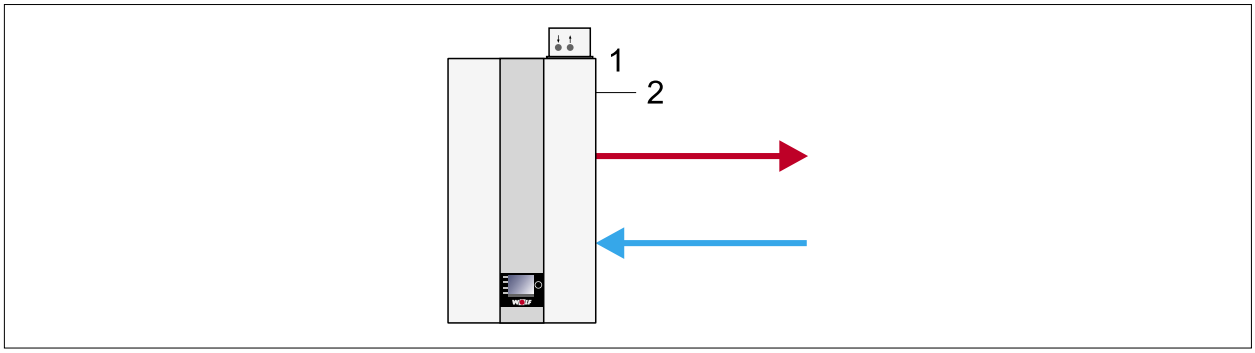


Fig. 12.6 System configuration 52 - BMS - set boiler temperature

1 Input E2 **2** BMS %

– Burner starts subject to demand from the boiler thermostat (cycle block and soft start active)
– Feed/heating circuit pump enabled as a feed pump from 2 V.
– Boiler temperature controller
– Input E2:
  Control by external controller with 0 - 10 V
  0 - 2 V burner OFF
  2-10 V set boiler temperature BT_{min} (HG21) - BT_{max} (HG22).

12.4.6 System configuration 60

Cascade for multi-boiler systems

Automatic setting if cascade module is connected.

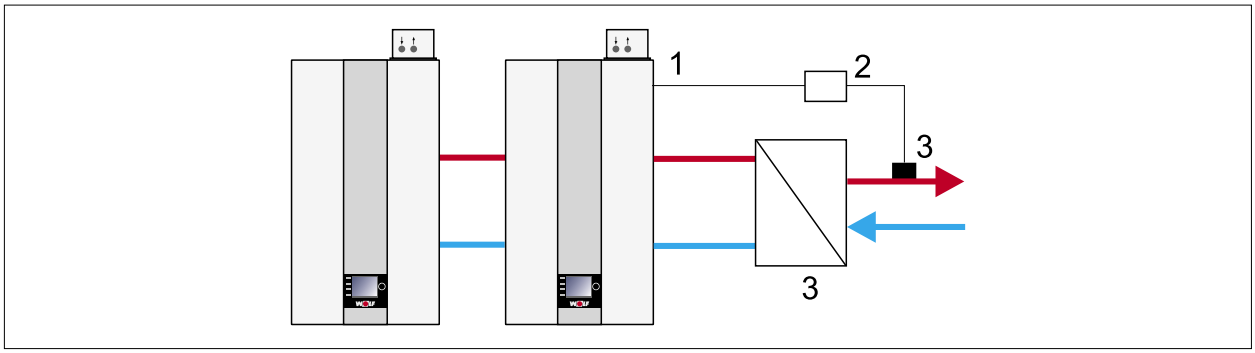


Fig. 12.7 System configuration 60 - Cascade for multi-boiler systems

1 eBus **3** Header temperature sensor
2 Cascade module

– Burner starts following a demand from the cascade module via eBus (0 - 100% burner output; min. to max. within the programmed limit).
– Feed/heating circuit pump enabled as a feed pump.
– Header temperature control via cascade module
– Input E2: not assigned,
– Automatic output reduction when approaching BT_{max} (HG22) is enabled. Shutdown when BT_{max} is reached
– Use a low loss header or plate heat exchanger for hydraulic separation.

Declaration of Conformity
合格声明

Nr.
编号：
8616422

Issued by:
签发：
Wolf GmbH

Address:
地址：
Industriestrasse 1, D-84048 Mainburg, Germany（**德国**）

Product:
产品：
Wall mounted gas fired boilers
全预混冷凝壁挂炉

CGB-2-75, CGB-2-100

The product described above conforms to the requirements specified in the following document:
上述产品符合下列文件中的规定及要求：

GB 25034-2020 — **Gas-Fired Heating & Hot Water Combi-Boilers**
燃气采暖热水炉

This product is marked with Energy Label grade 1 according to the following Specification:
本产品依据下列标准标定能效等级为 1 级：

GB 20665-2015 — Minimum Allowable Values of Energy Efficiency and Energy Efficiency Grades for Domestic Gas Instantaneous Water Heaters and Gas Fired Heating and Hot Water Combi-Boilers
家用燃气快速热水器和燃气采暖热水炉能效限定值及能效等级

The manufacturer and its process have complied with：
本产品生产企业制造满足：

CNCA-C24-01-2019 — Compulsory Product Certification Implementation Rules: Domestic gas-burning appliances
强制性产品认证实施规则：家用燃气器具

The products has complied with：
产品符合：

CCC — China Compulsory Certification
中国国家强制认证

This declaration of conformity is issued under the sole responsibility of the manufacturer
本合格声明由制造商全权负责发布

Mainburg, 01/08/2021
德国美茵堡，2021年08月01日

Gerdewan Jacobs	Jörn Friedrichs	Holger Schlafke
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2021 年 8 月 16 日 (CN)
技术上可能随时做出调整