

MANUAL

INSTALLATION AND OPERATION

Gas-fired condensing central heating boilers

CRYSTAL III

type:

system boilers

GCB-S57O

GCB-S57P

GCB-S57Q

GCB-S57R

GCB-S57S

GCB-S57T

GCB-S57U

combi boilers

GCB-C57A

GCB-C57B

GCB-C57C

GCB-C57D

GCB-C57E

GCB-C57F

GCB-C57G

GCB-C57H

DEAR CUSTOMER

Congratulations on choosing a boiler manufactured by **termet**.

We are pleased to provide you with a modern, energy-efficient, and environmentally friendly product that meets the high-quality standards of European regulations.

We kindly ask you to read this manual carefully, as understanding the operating principles and the manufacturer's recommendations are a prerequisite for the reliable, economical, and safe use of the boiler.

Please keep this manual for the entire lifetime of the boiler.

We wish you satisfaction with our product.

termet

IMPORTANT TIPS

- Read the instruction manual before commencing installation and use of the boiler.
- The instruction manual is an integral and essential part of the boiler's equipment. It should be kept for the entire lifetime of the boiler and read carefully, as it contains all safety information and warnings related to installation, operation, and maintenance that must be strictly observed.
- The boiler is a highly complex appliance, as it features several precise mechanisms.
- The reliable operation of the boiler will, to a large extent, depend on the proper installation of the systems it will be connected to. These include the:
 - gas system,
 - flue gas-air system,
 - central heating system,
 - domestic hot water system
- The flue gas - air system for type C boilers must meet the technical requirements specified in point 3.7 of this manual. Adapters connecting the boiler to the piping system must be provided with measuring ports.
- The flue gas - air system must be airtight. Any leaks in the flue pipe connections can lead to condensate flooding the boiler interior.
The manufacturer shall not be held liable for any damage or boiler malfunctions resulting from this cause.
- **The installation of the boiler must be carried out by a competent and appropriately qualified individual ¹⁾ Ensure that the installer provides written confirmation of having performed a gas tightness test after connecting the appliance to the gas supply system,**
- Installation and start-up of the boiler may only be carried out once all construction and installation work in the room intended for the boiler has been fully completed. Installing or commissioning the boiler in a room where construction work is still in progress is strictly prohibited.
- The air quality and cleanliness of the room in which the boiler is to be installed must meet the standards applicable to rooms intended for human habitation.
- Appropriate filters, which are not included in the boiler equipment, must be installed on the central heating, domestic hot water, and gas systems.
- Example of connecting the boiler to the system is shown in Fig. 3.5.1.
- Faults caused by the missing filters on the central heating and domestic hot water systems, as well as on the gas supply, will not be repaired under the warranty.
- The central heating system must be thoroughly cleaned and flushed, as described in point 3.5.2.
- To prevent the damaging calcification process of the flue gas – water heat exchanger and to reduce the risk of damage to other boiler components, the following measures must be taken:
 - The water in the central heating system must be prepared in accordance with the guidelines described in point 3.5.2. Proper water preparation in the central heating system ensures long-term operation of the boiler while maintaining high efficiency, which results in lower gas consumption costs.
 - Ensure that the central heating system is tight to prevent frequent refilling with water,
- Claims related to calcification of the flue gas–water heat exchanger will not be covered under the warranty.
- The initial start-up of the boiler as well as repairs, adjustments and maintenance may only be carried out by an AUTHORISED SERVICE.
- The boiler must be operated only by an adult person.
- Do not carry out any repairs or modifications to the boiler yourself.
- Do not obstruct the air supply or exhaust vents.
- Do not store containers with flammable and aggressive (highly corrosive) substances near the boiler.
- Defects in the boiler resulting from operation that does not comply with the recommendations in this manual are not subject to warranty claims.
- The manufacturer shall not be held liable for any damage resulting from installation or use that does not comply with the manufacturer's instructions and applicable regulations.
- Strict adherence to the instructions in the manual will ensure long-term, safe and reliable operation of the boiler.

USE EXTREME CAUTION WHEN USING DOMESTIC HOT WATER. RISK OF SCALDING!

To protect users' health, TERMET domestic hot water tank boilers are equipped with a factory-set ANTI-LEGIONELLA function, which periodically heats the water in the storage tank to 60°C, thereby eliminating bacteria that may develop in the water. As a result, after the heating cycle, the water at the point of use may temporarily exceed the set temperature. Since water at temperatures above 50°C can cause burns, it is recommended to install a thermostatic mixing valve in the domestic hot water system.

If you smell gas:

- do not operate electrical switches that may create sparks,
- open doors and windows,
- shut down the main gas valve,
- call the gas emergency service immediately.

In case of a malfunction:

- disconnect the boiler from the electrical supply,
- shut down the gas supply valve,
- shut down the water supply, drain the boiler and the entire central heating system if there is a risk of freezing,
- drain the water if there are any leaks that may result in flooding,
- notify the nearest **AUTHORIZED SERVICE** or the manufacturer.

¹⁾ The term 'appropriately qualified individual' refers to individuals with the necessary technical qualifications required for domestic installation activities necessary to connect appliances to the gas supply system, central heating system, and flue gas-air system, in accordance with applicable regulations and relevant standards.

CAUTION!

Procedure for initial start-up of condensing boilers.
This procedure must also be followed each time the boiler is drained of water,
e.g., during central heating system maintenance or boiler repairs.

Before proceeding with the boiler water filling procedure,
carefully read the installation and operation manual!

1. Before starting up the boiler, fill the heating system with water and bleed the radiators.
2. **Close the gas cut-off valve!**
3. **Open valves which cut-off the boiler from the central heating system.**
4. Remove the boiler cover by unscrewing the relevant fixing screws (Fig. 1).
5. Remove the front cover of the combustion chamber (fig. 2).
6. Loosen the cup on the pump's automatic air vent. Direct the vent opening to the right to protect the pressure transducer from being flooded with water (fig. 3).
7. Fill the boiler system with water using the filling valve (in system boilers – mounted on the central heating system; in combi boilers – on the boiler's equipment; see point 3.5).
Open the filling valve slowly to protect the boiler and central heating system components from the effects of hydraulic hammer.
8. Switch on the boiler power supply. The bleeding procedure will begin automatically, indicated by the symbol "AP" on the controller display, and lasts 2 minutes. The bleeding procedure requires a water pressure above 0.5 bar. Therefore, monitor the pressure (during this procedure) using the electronic manometer shown on the controller display and top up the system as needed, ideally maintaining the pressure between 1.0 and 1.5 bar.
9. Set the boiler to WINTER operating mode according to the boiler instruction manual. If a room temperature regulator is connected to the boiler controller, increase the desired temperature on the regulator to activate central heating mode.
10. Because the gas valve outside the boiler is closed, the controller will display error code E01 (no gas supply). This condition allows the pump to operate continuously, facilitating air removal from the system and maintaining water flow through the heat exchanger. Leave the boiler in this state for 2–3 minutes.
11. Delete E01 code by "reset" button and set the boiler controller on pressure reading mode (in version without an analogue manometer). For the first few days of boiler operation, it is recommended to set the water pressure in the central heating system to approximately 1.8–2.0 bar. This will improve the operation of the air vent on the pump and the central heating system components.*
12. **Open the gas valve** and reset the E01 error again.
13. Set the desired boiler operating parameters according to the instruction manual.**
14. Check the water pressure in the central heating system and, if necessary, top it up to the correct level.

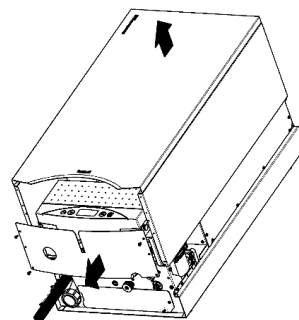


Fig. 1

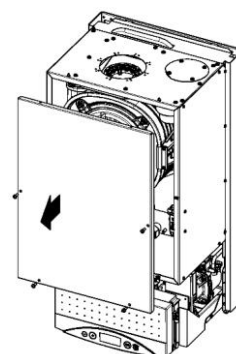


Fig. 2

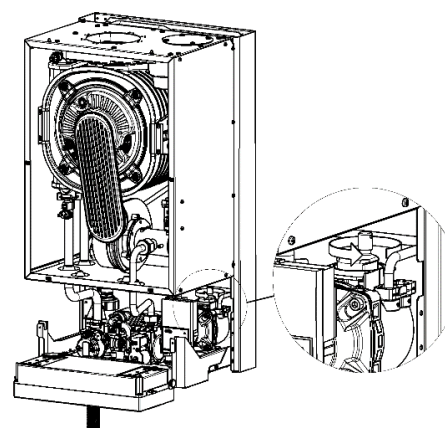


Fig. 3

* In domestic central heating systems, the nominal operating pressure should be set between 1.2–1.6 bar.

** **Caution!** The boiler is factory-set for operation in a high temperature circuit. These settings should be adjusted by an Authorised Service if needed.

Table of Contents

1.INTRODUCTION	3
2. BOILER DESCRIPTION	3
2.1. TECHNICAL SPECIFICATION	3
2.1.1. <i>Technical features</i>	3
2.2. BOILER CONSTRUCTION AND TECHNICAL DATA	3
2.2.1. <i>Main boiler components</i>	3
2.2.2. <i>Technical data</i>	5
2.3. SAFETY EQUIPMENT	8
2.4. OPERATION DESCRIPTION	8
2.4.1. <i>Method of heating water for central heating system</i>	8
2.4.2. <i>Temperature regulation based on outdoor temperature</i>	8
2.4.3. <i>Method of heating domestic water in a combi boiler</i>	9
2.4.4. <i>Method of heating domestic water in a system boiler cooperating with a domestic hot water tank</i>	9
3 BOILER INSTALLATION.....	10
3.1. BOILER INSTALLATION REQUIREMENTS.....	10
3.1.1. <i>Water, gas and flue gas - air systems regulations</i>	10
3.1.2. <i>Room requirements</i>	10
3.1.3. <i>Electrical installation requirements</i>	10
3.2. PRELIMINARY CHECKS.....	10
3.3. MOUNTING THE BOILER ON THE WALL.....	11
Fig. 3.3.1 <i>GCB-S57, GCB-C57 boilers installation dimensions</i>	11
3.4. GAS INSTALLATION CONNECTION.....	11
3.5. CENTRAL HEATING WATER SYSTEM CONNECTION.....	11
Fig. 3.5.1 <i>Boiler installation requirements</i>	12
3.5.2. <i>System cleaning and water treatment for the C.H. filling</i>	12
3.6. CONDENSATE DRAINING.....	12
3.7. FLUE GAS DISCHARGE	13
3.7.1 <i>Coaxial flue gas - air system (C13) with horizontal outlet through an external wall or roof</i>	13
3.7.2 <i>Coaxial flue gas - air system (C33) with vertical outlet through low-pitched or pitched roofs</i>	14
3.7.3 <i>Flue gas - air system (C53) with separate flue gas and air intake pipes</i>	14
3.7.4 <i>Air/flue system (C83) with separate ductwork, flue for connection to a single or common flue system with natural draught that discharges the products of combustion and air supply from outside the building</i>	15
3.7.5 <i>Coaxial flue gas - air system (C93) for connection to a flue pipe installed in a shaft. Combustion air is supplied through the shaft</i>	15
3.8. CONNECTION OF ADDITIONAL DEVICES.....	15
Fig.3.8.1 <i>Electrical terminals of the controller</i>	15
3.8.2 <i>Room temperature regulator connection</i>	16
3.9. CONNECTION OF OUTDOOR TEMPERATURE SENSOR	16
3.10. CONNECTION OF DOMESTIC HOT WATER TANK TO A SYSTEM BOILER	16
4. BOILER ADJUSTMENT AND PRELIMINARY SETTINGS	16
4.1. PRELIMINARY NOTES	16
4.2. BOILER ADJUSTMENT FOR COMBUSTING A DIFFERENT TYPE OF GAS	16
4.3.. INFORMATION MODE	16
Table 4.3.1 <i>List of parameters in information mode</i>	16
4.4. FAN CHARACTERISTICS.....	17
Fig.4.4.1. <i>NG40E fan characteristics</i>	17
4.5. PUMP CHARACTERISTICS	17
5. BOILER START-UP AND OPERATION	17
5.1. INITIAL START-UP OF THE BOILER	17
5.2. SWITCHING ON AND OPERATION	17
Fig. 5.2.1. <i>Control panel</i>	18
5.2.2 <i>Button functions on the control panel</i>	18
5.3. OPERATIONS MODES INDICATION AND DIAGNOSTICS	18
5.3.1 <i>Controller operating modes</i>	18
5.3.2. <i>Operating modes indication</i>	19
5.3.3. <i>Diagnostics</i>	19
5.4. BOILER DECOMMISSION / STANDBY MODE	21
6. MAINTENANCE, INSPECTIONS, FUNCTION CHECKS	21
6.1. INSPECTIONS AND MAINTENANCE	21
6.2. MAINTENANCE WORK TO BE CARRIED OUT BY THE USER	21
6.3. RANGE OF TECHNICAL MAINTENANCE PERFORMED BY AUTHORISED SERVICE.....	21
7. BOILER EQUIPMENT.....	22
TABLE 7.1.....	22

1. INTRODUCTION

The system, condensing gas-fired central heating boiler is designed to supply central heating systems and to heat domestic water.

This manual describes the GCB-C57 combi boiler types for supplying central heating systems and heating domestic water in a water-to-water heat exchanger:

type: GCB-C57A; GCB-C57B; GCB-C57C; GCB-C57D; GCB-C57E; GCB-C57F; GCB-C57G; GCB-C57H

and GCB-S57 system boiler types for supplying central heating systems and heating domestic water in a separately connected domestic hot water tank. The adaptation of the boiler types listed below for operation with a domestic hot water tank must be carried out by an Authorized Service.

type: GCB-S57O; GCB-S57P; GCB-S57Q; GCB-S57R; GCB-S57S; GCB-S57T; GCB-S57U

The boilers draw combustion air from outside the installation room, with the combustion circuit sealed relative to the living area of the building in which they are installed – installation types: C₁₃, C₃₃, C₄₃, C₅₃, C₆₃, C₈₃, C₉₃ Alternatively, they draw combustion air from a room that meets the appropriate requirements specified by regulations – installation type B₂₃.

Further details regarding installation types can be found in point 3.7 and in standard EN 15502-2-1:2022+A1:2023.

2. BOILER DESCRIPTION

2.1. Technical specification

2.1.1. Technical features

- Electronic smooth flame modulation for central heating (CH) and domestic hot water (DHW)
- Electronic ignition with ionisation flame control;
- Boiler power adjustment capability
- Water temperature regulation of CH and DHW
- Soft ignition function;
- Inlet gas pressure stabilisation;
- Compatible with closed-loop central heating (CH) systems

2.2. Boiler construction and technical data

2.2.1. Main boiler components

Descriptions of Figures 2.2.1.1 + 2.2.1.3

- | | |
|---|---|
| 5. Fan, | 18. NTC heating water temperature sensor - supply |
| 7. Pump, | 19. Heating water pressure transducer |
| 8. Gas unit | 20. Air vent |
| 9. Ignition/flame control electrode, | 21. Plate water-to-water heat exchanger, |
| 11. Burner, | 22. Valve for filling the system, |
| 12. Three-way valve, | 25. 3-bar safety valve |
| 13. Flue gas-water heat exchanger, | 26. DHW flow transducer, |
| 15. Temperature limiter
(safety device against exceeding the maximum CH water temperature) | 27. NTC domestic hot water temperature sensor |
| 16. Flue gas thermal fuse, | 28. NTC central heating water return temperature sensor |
| 17. Expansion vessel | 29. Siphon |
| | 30. Mixing unit |
| | 33. Drain valve |

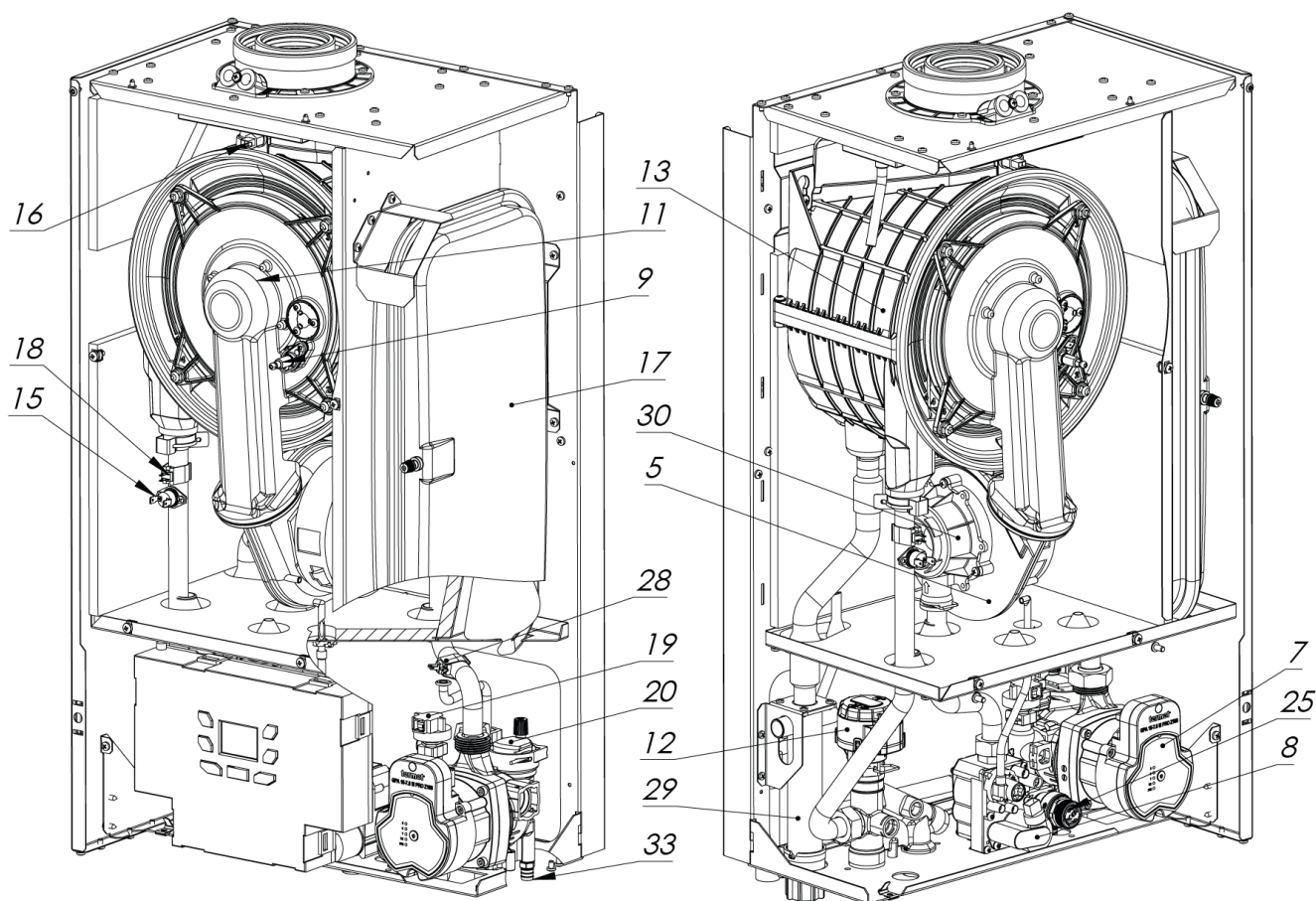


Fig.2.2.1.1. Component layout of the GCB-S57 system boiler

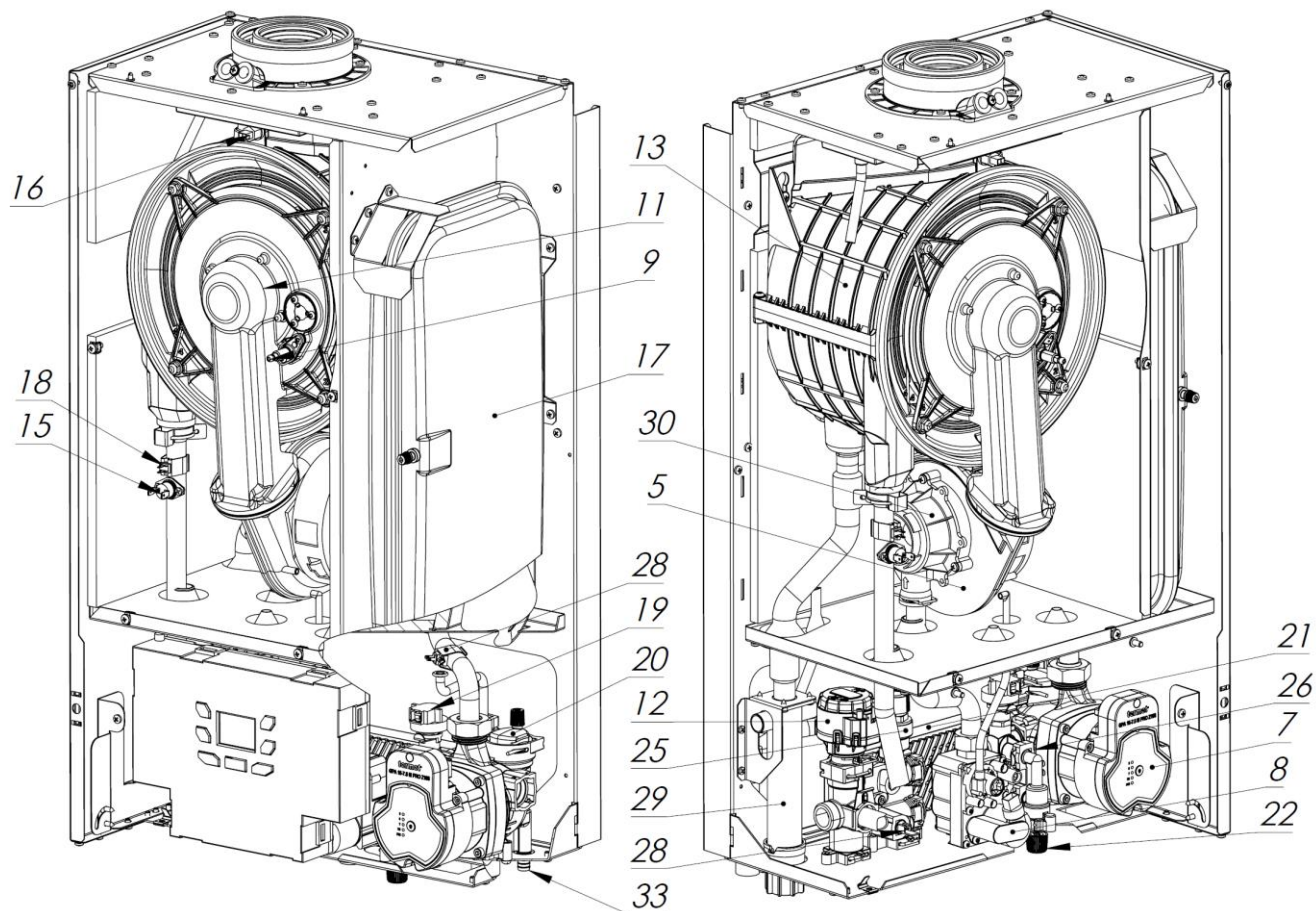


Fig.2.2.1.2. Component layout of the GCB-C57 combi boiler.

Boiler control elements



K3, K4. Central heating system water temperature selector,
4. Control board,

2. Display of heating water temperature, domestic hot water temperature, and heating water static pressure with fault diagnostics
K5, K6. Domestic hot water temperature selector.

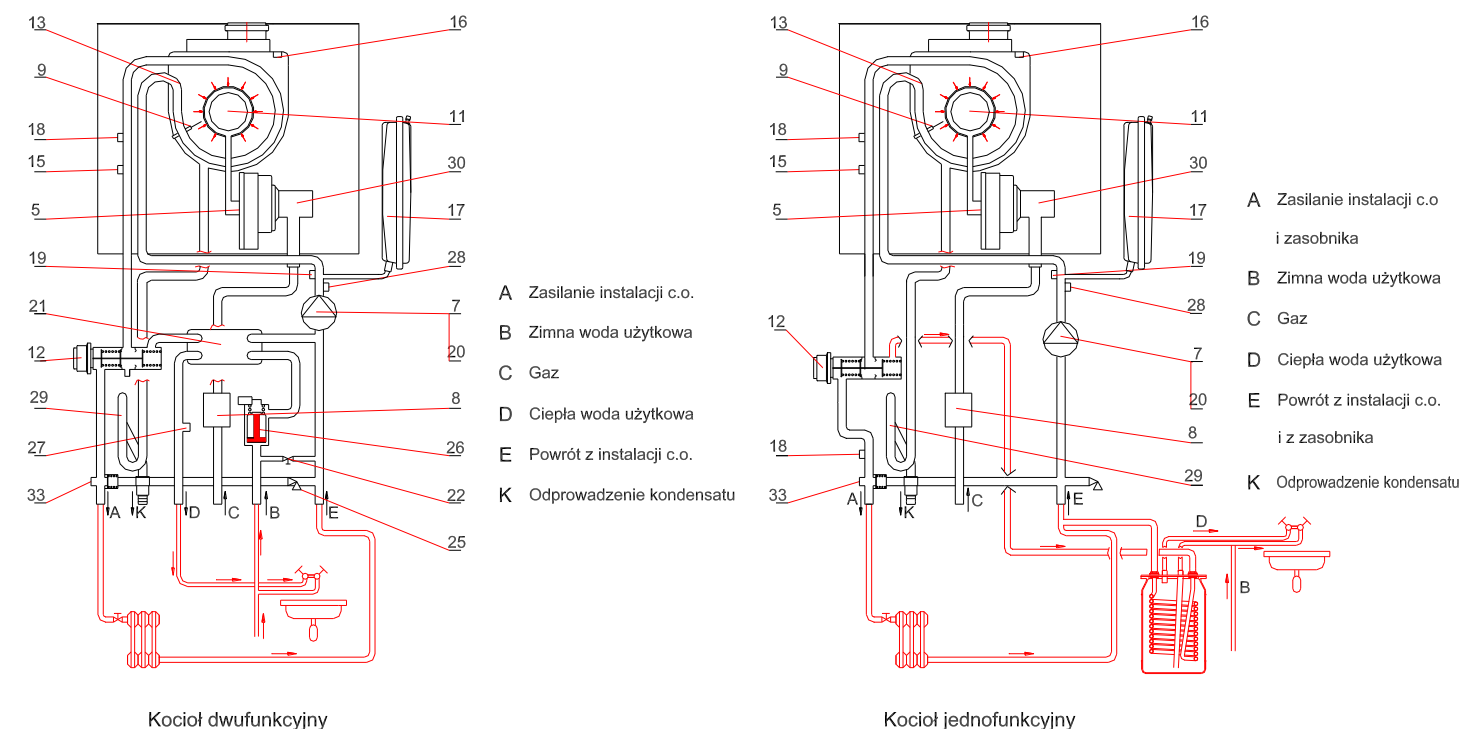


Fig. 2.2.1.3. Functional diagram of boiler operation

2.2.2. Technical data

Parameter	Unit	SYSTEM GCB-S57			COMBI GCB-C57			
		20	25	35	20/20	20/25	25/30	35/40
		Size						
Energy parameters								
Central heating circuit								
Power Range								
Boiler thermal output at 80/60°C (modulated)	kW	3.4 ÷ 19.1	4.4 ÷ 24.1	5.0 ÷ 34.0	3.4 ÷ 19.1	3.4 ÷ 19.1	4.4 ÷ 24.1	5.0 ÷ 34.0
Boiler thermal output at 50/30°C (modulated)	kW	3.8 ÷ 21.0	4.9 ÷ 26.6	5.5 ÷ 38.0	3.8 ÷ 21.0	3.8 ÷ 21.0	4.9 ÷ 26.6	5.5 ÷ 38.0
Heat load	kW	3.5 ÷ 19.5	4.5 ÷ 24.6	5.2 ÷ 35.6	3.5 ÷ 19.5	3.5 ÷ 19.5	4.5 ÷ 24.6	5.2 ÷ 35.6
Modulation range	%	18 - 100	18 - 100	15 - 100	18 - 100	18 - 100	18 - 100	15 - 100
Boiler efficiency at nominal loads and an average boiler water temperature of 70°C	%	98						
Utility efficiency of the boiler for partial loads and a return water temperature of 30°C	%	108						
Seasonal energy efficiency of space heating $\eta_{s,}$	%	94						
Seasonal energy efficiency rating for room heating		A						
Utility heat generated: - at rated heat output P_4 .	kW	19,1	24,0	34,8	19,1	19,1	24,0	34,8
- at 30% of rated capacity P_1	kW	6,3	7,8	11,5	6,3	6,3	7,8	11,5
Utility efficiency: - η_4	%	91,6	88,2	88,5	91,6	91,6	88,2	88,5
- η_1	%	98,8	96,1	97,5	98,8	98,8	96,1	97,5
Gas consumption ⁽¹⁾ : natural: 2E-G20	m³/h	0,37-2,07	0,49-2,61	0,54-3,77	0,37-2,07	0,37-2,07	0,49-2,61	0,54-3,77
liquefied: 3P-G31	kg/h	0,26-1,46	0,34-1,84	0,39-2,67	0,26-1,46	0,26-1,46	0,34-1,84	0,39-2,67
3B/P-G30	kg/h	0,27-1,48	0,34-1,87	0,40-2,71	0,27-1,48	0,27-1,48	0,34-1,87	0,40-2,71
Nominal kinetic pressure in front of the boiler for gas: 2E-G20, 2H-G20; 3P-G31; 3B/P-G30	Pa (mbar)	2000 (20); 2500 (25); 2000 (20); 1300 (13) 2800 ÷ 3000 (28 ÷ 30); 3000 (30); 3700 (37); 5000 (50)						
Maximum water pressure	MPa (bar)	0,3 (3)						
Max. central heating operating temperature	°C	95						
Adjustable temperature standard.	°C	40 ÷ 80						

Parameter	Unit	SYSTEM GCB-S57			COMBI GCB-C57			
		20	25	35	20/20	20/25	25/30	35/40
Adjustable temperature reduced		Size 25 ÷ 55						
Pump head at flow rate 0	kPa (bar)	60 (0,6)		70 (0,7)	60 (0,6)			70 (0,7)
DHW circuit								
Nominal heat output of the boiler at 80/60°C	kW	-----			3.4 ÷ 19.1	3.4 ÷ 24.1	4.4 ÷ 30.0	5.0 ÷ 39.2
Nominal thermal loads	kW	-----			3.5 ÷ 19.5	3.5 ÷ 24.6	4.5 ÷ 30.7	5.2 ÷ 41.0
Boiler efficiency at nominal loads and an average boiler water temperature of 70°C	%	-----			98			
Gas consumption ⁽¹⁾ : natural: 2E-G20	m³/h	-----			0,37-2,07	0,37-2,60	0,49-3,23	0,54-4,34
liquefied: 3P-G31	kg/h				0,26-1,46	0,26-1,84	0,34-2,30	0,39-3,07
3B/P-G30	kg/h				0,27-1,48	0,27-1,87	0,34-2,34	0,40-3,12
Energy efficiency class for water heating					A	A	A	A
Load profile					L	L	L	XL
Water pressure	MPa (bar)	-----			0,01 (0,1) ÷ 0.6(6)			
Minimum water flow	l/min	-----			2,0			
Max water flow (flow restrictor)	dm³/min	-----			10	----	-----	----
Water temperature regulation range	°C				30 - 60			
Flow w. u. for Δt=30K	dm³/min				9	12	14	19
Environmental protection								
Emissions of nitrogen oxides	mg/kWh	32,3	35,8	39,7	32,3	32,3	35,8	39,7
Emissions of NO _x (natural gas)	class	6						
Ph factor of the condensate	-	natural gas - 5						
Sound capacity L _{WA}	dB	47,4	48,9	50,8	47,4	47,4	48,9	50,8
Maximum CO level indicating that immediate maintenance, servicing and/or repair is required.		0.10%						
If this situation cannot be resolved immediately, the appliance must be taken out of service. The concentration of CO in the flue gas should always be in accordance with the installation rules of the country in which the boiler is installed.								
Hydraulic parameters								
Capacity of the expansion tank	dm³	8						
Pressure in the expansion tank	MPa (bar)	0.08±0.02 (0.8±0.2)						
Hydraulic resistance (at rated loads and 80/ 60 °C)	mbar	200-220	210-220	420-430	200-220	210-220	210-240	420-430
Electrical parameters								
Type and voltage of electric current	V	~ 230 ±10%/ 50Hz						
Protection rating		IPX4D						
Power consumption (max.)	W	110						
Standby power consumption P _{SB}	kW	0,005	0,007	0,005	0,005	0,005	0,007	0,005
Electric power consumption: - at full loads el _{max}	kW	0,080	0,078	0,102	0,080	0,080	0,078	0,102
- at partial load el _{min}	kW	0,062	0,063	0,054	0,062	0,062	0,063	0,054
Rated output terminal current	A	2						
Controller classification according to EN 298	-	B-M-C-L-X-N						
Type of flame sensor	-	ionization						
Flue gas parameters								
Fan characteristics		→ section 4.4						
Exhaust mass flow at full loads	kg/h	34.7	41.8	59.0	34.7	34.7	41.8	59.0
Exhaust gas mass flow at partial loads	kg/h	5.2	6.4	8.7	5.2	5.2	6.4	8.7
Minimum flue gas temperature at minimum capacity	°C	44,3	45,4	47,2	44,3	45,4	46,1	47,2
Maximum flue gas temperature at maximum capacity	°C	91,2	92,6	94,5	91,2	92,6	93,6	94,5
Time parameters								
Central heating pump coastdown time.	s	180						
Standstill time to prevent cycling of the boiler	minutes	3						
DHW pump coastdown time	s	30						
Pump and valve blockage protection	hrs /s	every 23 hours the pump switches on for 15 s every 23 hrs + 1 min, the three-way valve switches on for 15 s						
Installation dimensions								
Connection to flue pipe (p 3.8 and Table 7.1)	mm	Coaxial Φ80/Φ125, Coaxial Φ60/Φ100 or 2 single Φ80 x Φ80 (with TWIN type adapter)						
Connection central heating and gas	Inches	G3/4						
Drinking water connection	Inches	G3/4			G1/2			
Overall dimensions	mm	775x400x 310						
Boiler mass	kg							

Parameter	Unit	SYSTEM GCB-S57				COMBI GCB-C57			
		5	8	12	16	5/20	8/20	12/20	16/20
		Size							
Energy parameters									
Central heating circuit									
Power Range									
Boiler thermal output at 80/60°C (modulated)	kW	3.4 ÷ 4.5	3.4 ÷ 7.8	3.4 ÷ 11.8	3.4 ÷ 15.7	3.4 ÷ 4.5	3.4 ÷ 7.8	3.4 ÷ 11.8	3.4 ÷ 15.7
Boiler thermal output at 50/30°C (modulated)	kW	3.8 ÷ 5.0	3.8 ÷ 8.6	3.8 ÷ 13.0	3.8 ÷ 17.3	3.8 ÷ 5.0	3.8 ÷ 8.6	3.8 ÷ 13.0	3.8 ÷ 17.3
Heat load	kW	3.5 ÷ 4.6	3.5 ÷ 8.0	3.5 ÷ 12.0	3.5 ÷ 16.0	3.5 ÷ 4.6	3.5 ÷ 8.0	3.5 ÷ 12.0	3.5 ÷ 16.0
Modulation range	%	76 - 100	44 - 100	29 - 100	22 - 100	76 - 100	44 - 100	29 - 100	22 - 100
Boiler efficiency at nominal loads and an average boiler water temperature of 70°C	%	98							
Utility efficiency of the boiler for partial loads and a return water temperature of 30°C	%	108							
Seasonal energy efficiency of space heating η_{ls}	%	94							
Seasonal energy efficiency rating for room heating		A							
Utility heat generated: - at rated heat output P_4	kW	4,9	7,8	11,7	15,7	4,9	7,8	11,7	15,7
- at 30% of rated capacity P_1	kW	2,6	2,6	3,9	5,1	2,6	2,6	3,9	5,1
Utility efficiency: - η_4	%	91,3	91,1	91,4	91,5	91,3	91,1	91,4	91,5
- η_1		96,9	96,9	97,8	99,0	96,9	96,9	97,8	99,0
Gas consumption ⁽¹⁾ : natural: 2E-G20	m³/h	0,37-0,49	0,37-0,85	0,37-1,27	0,37-1,69	0,37-0,49	0,37-0,85	0,37-1,27	0,37-1,69
liquefied: 3P-G31	kg/h	0,26-0,35	0,26-0,61	0,26-0,92	0,26-1,22	0,26-0,35	0,26-0,61	0,26-0,92	0,26-1,22
3B/P-G30	kg/h	0,27-0,36	0,27-0,62	0,27-0,93	0,27-1,24	0,27-0,36	0,27-0,62	0,27-0,93	0,27-1,24
Nominal kinetic pressure in front of the boiler for gas: 2E-G20, 2H-G20; 3P-G31; 3B/P-G30	Pa (mbar)	2000 (20); 2500 (25); 2000 (20); 1300 (13) 2800 ÷ 3000 (28 ÷ 30); 3000 (30); 3700 (37); 5000 (50)							
Maximum water pressure	MPa (bar)	0,3 (3)							
Max. central heating operating temperature	°C	95							
Adjustable temperature standard.	°C	40 ÷ 80							
Adjustable temperature reduced		25 ÷ 55							
Pump head at flow rate 0	kPa (bar)	60 (0,6)							
DHW circuit									
Nominal heat output of the boiler at 80/60°C	kW	-----				3.4 ÷ 19.1			
Nominal thermal loads	kW	-----				3.5 ÷ 19.5			
Boiler efficiency at nominal loads and an average boiler water temperature of 70°C	%	-----				98			
Gas consumption ⁽¹⁾ : natural: 2E-G20	m³/h	-----				0,37-2,07			
liquefied: 3P-G31	kg/h	-----				0,26-1,46			
3B/P-G30	kg/h	-----				0,27-1,48			
Energy efficiency class for water heating						A			
Load profile						L			
Water pressure	MPa (bar)	-----				0,01 (0,1) ÷ 0.6(6)			
Minimum water flow	l/min	-----				2,0			
Max water flow (flow restrictor)	dm³/min	-----				10			
Water temperature regulation range	°C	30 - 60							
Flow w. u. for $\Delta t=30K$	dm³/min					9			
Environmental protection									
Emissions of nitrogen oxides	mg/kWh	20,58	26,1	29,3	30,5	20,58	26,1	29,3	30,5
Emissions of NO _x (natural gas)	class					6			
Ph factor of the condensate	-					natural gas - 5			
Sound capacity L_{WA}	dB	43,3	43,5	43,7	47,0	43,3	43,5	43,7	47,0
Maximum CO level indicating that immediate maintenance, servicing and/or repair is required.		0.10%							
If this situation cannot be resolved immediately, the appliance must be taken out of service. The concentration of CO in the flue gas should always be in accordance with the installation rules of the country in which the boiler is installed.									
Hydraulic parameters									
Capacity of the expansion tank	dm³	8							
Pressure in the expansion tank	MPa (bar)	0.08±0.02 (0.8±0.2)							
Hydraulic resistance (at rated loads and 80/ 60 °C)	mbar	200-220							
Electrical parameters									
Type and voltage of electric current	V	~ 230 ±10%/ 50Hz							
Protection rating		IPX4D							
Power consumption (max.)	W	110							
Standby power consumption P_{SR}	kW	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Parameter	Unit	SYSTEM GCB-S57				COMBI GCB-C57			
		5	8	12	16	5/20	8/20	12/20	16/20
		Size							
Electric power consumption: - at full loads e_{lmax}	kW	0,055	0,060	0,069	0,069	0,055	0,060	0,069	0,069
- at partial load e_{lmin}	kW	0,056	0,056	0,054	0,063	0,056	0,056	0,054	0,063
Rated output terminal current	A	2							
Controller classification according to EN 298	-	B-M-C-L-X-N							
Type of flame sensor	-	ionization							
Flue gas parameters									
Fan characteristics		→ section 4.5							
Exhaust mass flow at full loads	kg/h	8,3	13,3	19,9	26,6	33,2	33,2	33,2	33,2
Exhaust gas mass flow at partial loads	kg/h	2,8	3,6	4,1	4,6	5,0	5,0	5,0	5,0
Minimum flue gas temperature at minimum capacity	°C	38,4	38,8	40,2	44,1	44,3	44,3	44,3	44,3
Maximum flue gas temperature at maximum capacity	°C	84,7	85,5	87,6	89,8	91,2	91,2	91,2	91,2
Time parameters									
Central heating pump rundown time.	s	180							
Standstill time to prevent cycling of the boiler	minutes	3							
DHW pump rundown time	s	30							
Pump and valve blockage protection	hrs /s	every 23 hours the pump switches on for 15 s every 23 hrs + 1 min, the three-way valve switches on for 15 s							
Installation dimensions									
Connection to flue pipe (p 3.8 and Table 7.1)	mm	Coaxial $\Phi 80/\Phi 125$, Coaxial $\Phi 60/\Phi 100$ or 2 single $\Phi 80 \times \Phi 80$ (with TWIN type adapter)							
Connection central heating and gas	Inches	G3/4							
Drinking water connection	Inches	G3/4				G1/2			
Overall dimensions	mm	775x400x 310							
Boiler mass	kg								

⁽¹⁾The consumption of individual gas types is given for reference gases under standard conditions (15°C, pressure 1013 mbar), taking into account the boiler's useful efficiency at a return water temperature of 30°C. The provided values are for reference only. The manufacturer reserves the right to make modifications to the boiler construction not covered in this manual, provided that such changes do not affect the product's functional and technical characteristics.

2.3. Safety equipment

- Protection against gas outflow,
- Protection against explosive gas ignition,
- Protection against exceeding the maximum operating temperature of the heating water system
- Protection against exceeding the upper limit temperature of the heating water,
- First-stage water overpressure protection – electronic
- Second-stage water overpressure protection – mechanical
- Protection against water pressure drop
- Protection against excessive water overheating
- Boiler freeze protection
- Protection against pump blockage
- Monitoring of fan operation. A fan fault is detected when the actual fan speed differs from the speed expected by the boiler controller.
- Protection against exceeding the flue gas upper temperature limit

Faults that do not require manual reset will cause the boiler to return to normal operation once the fault has automatically cleared (see point 5.3.3 - Diagnostics).

Note:

In the case of repeated boiler shutdowns due to any of the safety equipment, contact an Authorized Service to determine the cause and perform the necessary repairs.

Unauthorized modifications to the boiler's safety systems are strictly prohibited.

2.4. Operation description

2.4.1. Method of heating water for central heating system.

The boiler switches on if the heating water temperature is lower than that set using buttons K3 and K4 (point 5.2) and the room temperature regulator sends a "heat" signal. The following sequence of operations is then executed:

- the three-way valve (item 12) is energized, directing flow toward the central heating system.
- the pump is energized (item 7),
- the fan is energized (item 5),
- the ignition sequence begins, with the fan speed set to the ignition speed (P02),
- once flame presence is detected, the fan speed is reduced to the minimum level, where it remains for the duration defined by parameter (P29)
- then the controller begins modulating the fan speed, based on the rate of temperature increase - parameter (P30). If the heating water temperature exceeds 95°C, the burner is deactivated and remains off until the temperature drops below 81°C.

The continuous flame modulation system uses a PI regulation algorithm to minimise the difference between the temperature value measured by the NTC sensor (item 18) and the central heating temperature setpoint.

The boiler switches off when the room temperature regulator signals that the desired room temperature has been reached or when the heating water temperature exceeds the setpoint by the central heating hysteresis value.

After the boiler shuts down, the circulation pump continues to operate for the pump overrun time — parameter (P27). At the same time, the central heating pause time — parameter (P26) — is counted.

The boiler will automatically restart once all the following conditions are simultaneously met:

- the heating water temperature is lower than the set temperature,
- the central heating pause time (P26) has elapsed.
- the room temperature regulator sends a heating demand signal ("heat").

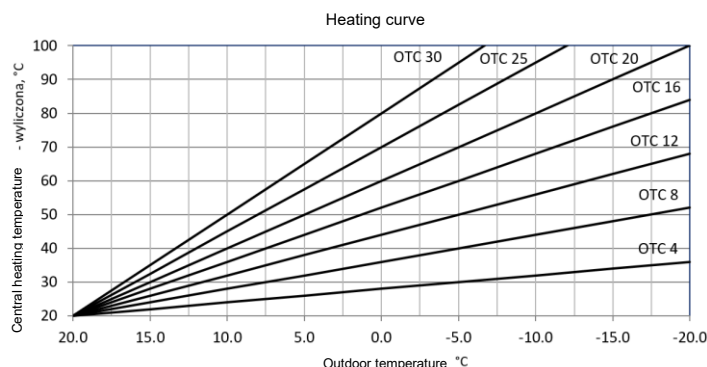
Refer to Table 4.4 for a full list of controller parameters.

2.4.2. Temperature regulation based on outdoor temperature

When an outdoor temperature sensor is connected to the boiler, parameter P33 can be set to a value other than zero, enabling the boiler to adjust the heating setpoint based on the outdoor temperature. To activate this function, press buttons K5 and K6 simultaneously for 5 seconds. Then use buttons K3 (decrease) and K4 (increase) to set the desired heating curve value. After 5 seconds, the display will return to normal operation. The central heating setpoint is calculated based on the heating curve set with parameter (P33) and the outdoor temperature value. Manual setting of the central heating flow temperature using buttons K3 and K4 is not possible. The maximum heating water

temperature is defined by parameter (P23).

The slope of the heating curve can be adjusted within the range 0 to 30. The set of heating curves is represented by the graph below.



2.4.3. Method of heating domestic water in a combi boiler

The combi boiler heats water in a flow-through mode. The domestic water temperature is set using buttons K5 and K6 within the range 30°C to 60°C. The water temperature at the point of use depends on the inlet water temperature.

In this mode, the domestic water heating request occurs when the DHW flow transducer. (item 26) registers a DHW flow rate of more than 2.0 l/min (ends at flow rate <1.5 l/min),

The following sequence is then initiated:

- switching the supply of the three-way valve (pos. 12) towards the water-water heat exchanger, feeding the pump (pos. 7), the three-way valve (item 12) is switched to direct flow toward the water-to-water heat exchanger, and the pump (item 7) is energized,
- the temperature is read from the DHW NTC sensor (item 27) and compared with the user-set DHW temperature. If the measured temperature is below the setpoint, the ignition sequence begins,
- Upon flame detection and completion of the startup sequence, the controller regulates the fan speed based on the DHW temperature setpoint. If the heating water temperature exceeds 90°C, the burner will shut down until the heating water temperature drops below 81°C.

The continuous flame modulation system uses a PID regulation algorithm to minimise the difference between the temperature value read by the NTC sensor and the DHW setpoint. If, during DHW heating, the water temperature exceeds the setpoint by the DHW hysteresis value (default: 8°C), the burner is switched off and remains off until the DHW temperature drops back to the setpoint.

The hot central heating water flows through the segments of the water-to-water heat exchanger, heating the domestic water. The heated domestic water is directed to the point of use.

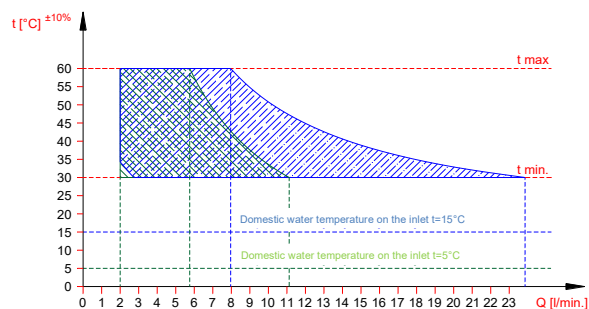


Fig. 2.4.3.1. DHW outlet temperature vs. water flow rate for a boiler with a thermal output of 25 kW.

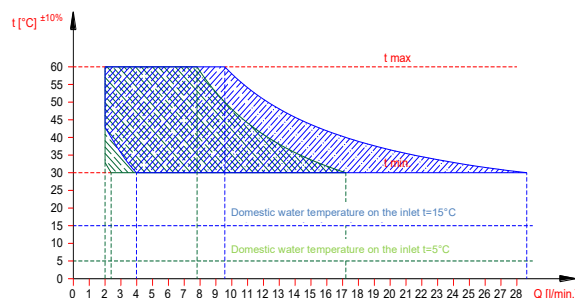


Fig. 2.4.3.2. DHW outlet temperature vs. water flow rate for a boiler with a thermal output of 30 kW.

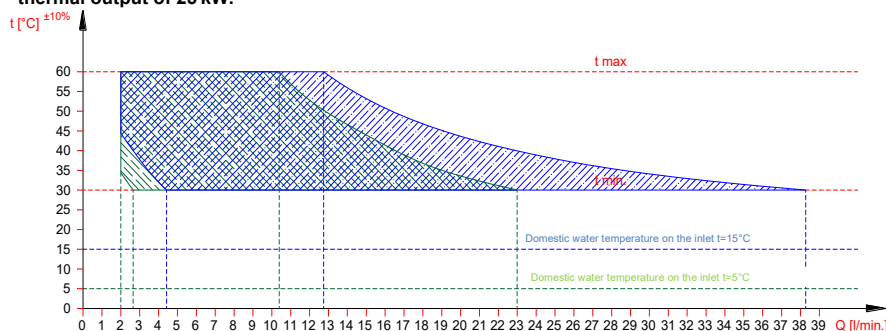


Fig. 2.4.3.3. DHW outlet temperature vs. water flow rate for a boiler with a thermal output of 40 kW

2.4.4. Method of heating domestic water in a system boiler cooperating with a domestic hot water tank.

The system boiler is compatible with all domestic hot water tanks offered by Termet S.A.

The DHW temperature is set and displayed via the boiler's control panel. Boilers are factory-set for cooperation with a domestic hot water tank.

The domestic hot water heating process proceeds as follows:

When the DHW temperature sensor in the domestic hot water tank detects a temperature lower than the setpoint (adjusted using buttons K5 and K6), the central heating supply is temporarily interrupted, and the boiler controller optimally regulates the temperature of the heating water for DHW heating.

Domestic hot water heating in cooperation with a DHW tank proceeds as follows:

- the DHW temperature sensor in the tank signals a temperature drop below the setpoint minus hysteresis (default: 3°C), e.g. due to opening a hot water tap.
- the boiler controller switches the three-way valve to direct heating water into the short (DHW) circuit, while simultaneously activating the spark generator and gas valve;
- the heating water flows through the coil in the domestic hot water tank (short circuit)
- the boiler controller controls the heating water temperature in an optimum manner so that it does not exceed the permitted value. If the heating water temperature exceeds 90°C, the burner will shut down until the heating water temperature drops below 85°C.

- once the domestic hot water temperature in the domestic hot water tank reaches the setpoint plus the hysteresis value (default: 1°C), the boiler controller switches the three-way valve to the long (central heating) circuit, and—if the following conditions are met—heating water is pumped into the central heating system:
 - the heating water temperature is lower than the set temperature;
 - the room temperature regulator gives a "heat" signal.

The hot water temperature at the point of use may differ from the setpoint. For this reason, installation of a mixing valve in the DHW circuit is recommended.

Note: To prevent the growth of Legionella bacteria in the DHW tank, the boiler automatically activates every 168 hours to heat the water in the tank to 60°C.

3 BOILER INSTALLATION

The boiler must be installed in accordance with applicable regulations by an authorised installation company. Once the boiler has been installed, all gas and water connections should be checked for leaks.

The installation company is responsible for the correct installation of the boiler.

The installation of the boiler into the system must be carried out in such a way that it does not cause stress on the system which may increase the operating noise.

At the end of the boiler's service life, disassemble the appliance and hand it over to a specialised disposal facility.

3.1. Boiler Installation requirements

3.1.1. Water, gas and flue gas - air systems regulations

The water, gas and flue gas - air systems - as well as the use of the gas, ventilation, and flue gas systems by the user—must comply with local regulations.

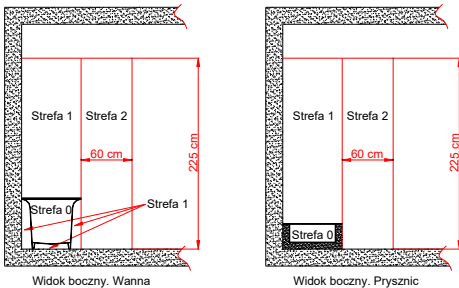
The approval of the District Gas Plant, Chimney Sweep and Building Administration must be obtained before installing the boiler.

Gas supplied with liquefied gas must not be installed in rooms where the floor level is below the surrounding ground level.

When using liquefied gas 3B/P, it is recommended that the temperature in the room where the gas cylinder is operated be maintained at no less than 15°C.

3.1.2. Room requirements

The requirements for rooms where gas appliances are installed must comply with applicable local regulations. The room must be equipped with a ventilation system that meets legal standards. The location of the air intake opening must not create a hazard of the water installation freezing. The temperature in the room where the boiler is installed should be above 6°C



The rooms where the boilers will be installed should be frost-proof and free of dust and aggressive gases. Laundry rooms, drying rooms, or storage areas for paints, cleaning agents, solvents, or aerosols are not permitted. Boilers with a thermal output exceeding 30 kW must be installed in a dedicated technical room.

The installation location of a boiler in a room containing a bath or a shower with a shower base, as well as its method of electrical connection, must comply with PN-HD 60364-7-701.

The boiler covered by this manual has an electrical protection rating of IPX4D cover. When equipped with a power cord with plug, it may be installed in zone 2 or beyond—installation in zone 1 is not permitted.

Installation within zone 1 is only allowed if the boiler is permanently connected to the power supply in accordance with PN-HD 60364-7-701.

Fig. 3.1.2.1. Dimensions of zones in rooms containing a bath or shower with a shower base

Zone	Side view. Bath	Side view. Shower
------	-----------------	-------------------

3.1.3. Electrical installation requirements

The boiler is designed to be powered from a single-phase alternating current power supply with a rated voltage of 230V / 50 Hz.

The power supply socket for the boiler must comply with the PN-IEC-60364-6-61:2000 standard

The boiler is designed as a Class I appliance and must be connected to a mains socket outlet with an earth pin in accordance with PN-IEC 60364-4-41.

The boiler has an electrical protection rating of IPX4D cover.

In the case of a permanent connection of the boiler to the power supply, this must be done via a junction box. The junction box should have an appropriate level of protection against electric shock for the specified installation zone. When connecting the boiler via a junction box, the electrical installation must be equipped with a means of disconnecting the boiler from the power supply. To connect the boiler to a junction box, proceed as follows:

- cut the power cord plug to the appropriate length for connection to the junction box
- strip the cord insulation
- crimp cable terminals of appropriate diameter onto the cords

Connect the prepared cords according to the diagram below:

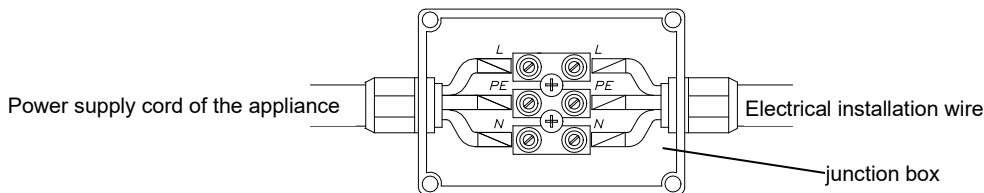


Fig. 3.1.3.1. Conductor colours: L - brown; N - blue; PE - yellow-green

3.2. Preliminary checks

Before starting installation work, check the following:

- that the boiler is factory-set for the gas type present in the gas system to which it will be connected. The type of gas the boiler is designed for is indicated on a rating plate on the boiler cover;
- that the water system and radiators have been properly flushed with clean water to remove rust, filings, mill scale, sand and other foreign bodies that could interfere with the operation of the boiler (e.g. increase the resistance of the water flow in the central heating system) or contaminate the heat exchanger,
- that the electric voltage is 230V and that the socket has a working earth pin (in compliance with PN-IEC-60364-6-61:2000).

3.3. Mounting the boiler on the wall

Fix the boiler on hooks permanently embedded in the wall, using the mounting bracket located at the top of the boiler. The boiler should be located so that any repair can be carried out without disconnecting it from the installation.

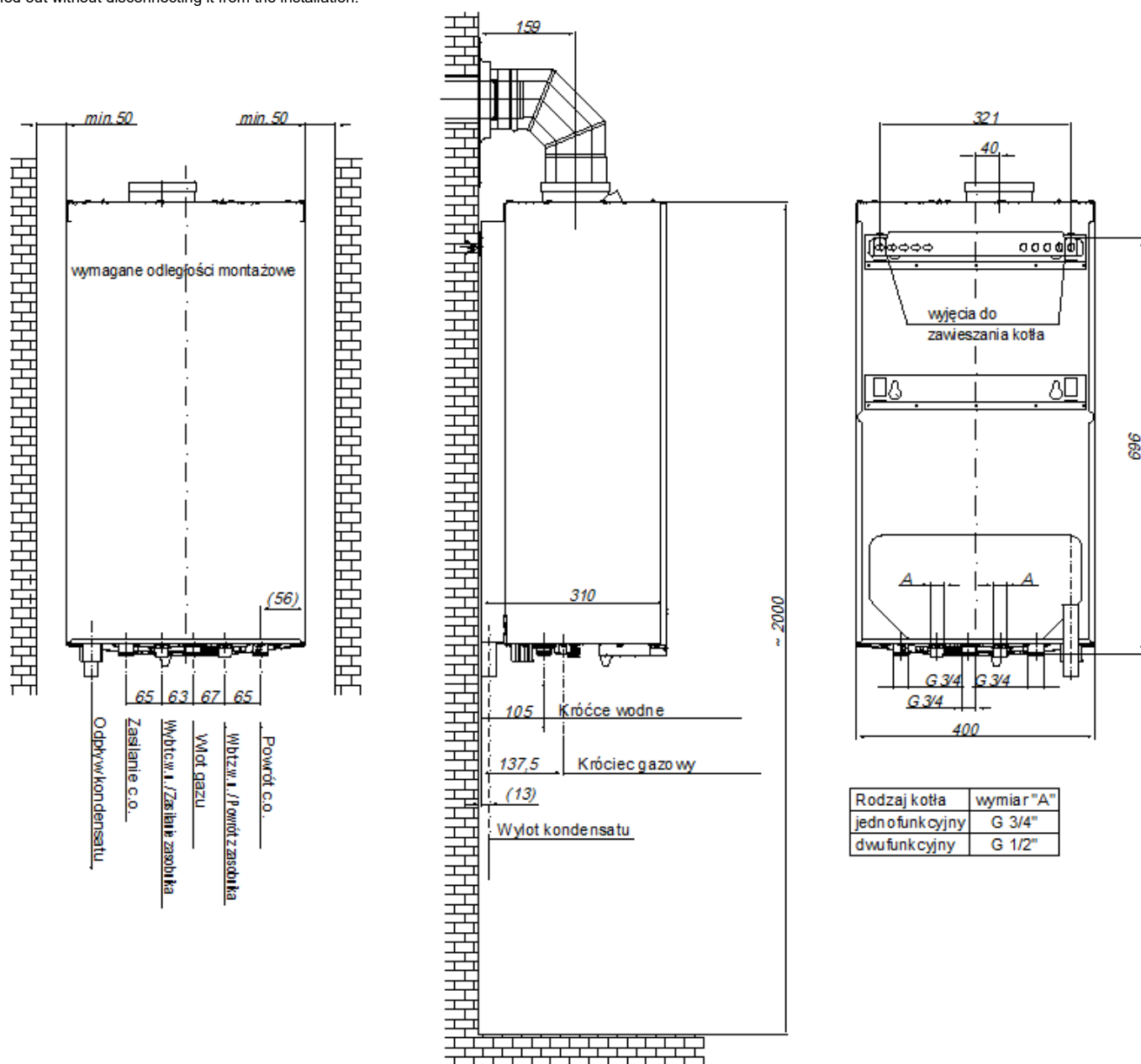


Fig. 3.3.1 GCB-S57, GCB-C57 boilers installation dimensions

Wymagane odległości montażowe / Required installation dimensions	Odprowadzenie kondensatu / Condensate drain	Zasilanie c.o./ Central heating supply	Wlot gazu / Gas inlet	Wylot c.w.u. / Zasilanie zasobnika DHW outlet / DHW tank supply	Wlot z.w.u. / Powrót z zasobnika DCW inlet / DHW tank return
Powrót c.o. / Central heating return	Króćce wodne / Water connectors	Króciec gazowy / Gas connector	Wyjęcia do zwieszania kotła / Wall-mounting brackets	Rodzaj kotła / Boiler type Wymiar „A” / Dimension “A”	Jednofunkcyjny / System dwufunkcyjny / Combi

3.4. Gas installation connection

Connect the gas pipe to the boiler's gas valve connector using connector subassembly no. 0696.00.00.00 (included with the boiler).

A gas filter must be installed on the gas supply. This filter is not part of the boiler's standard equipment. Installing a gas filter is essential for the proper operation of the gas valve and burner.

Install a shut-off valve on the gas pipe in an accessible location.

3.5. Central heating water system connection.

- Connect the central heating supply and return connectors of the boiler to the installation using appropriate connecting pieces. The position of the connectors is shown in Fig.3.3.1
- On the return water of the central heating system. (before the pump), a water filter should be fitted. This is not factory equipment for the boiler.**
- Flush the central heating system very carefully before connecting the boiler.
- It is permissible to use antifreeze recommended for use in central heating systems as the heating medium.
- Install isolating valves between the boiler and the central heating system to allow disassembly of the boiler without draining the system.
- Do not install thermostatic radiator valves in the room where a room temperature regulator is fitted. The functions of temperature control are taken over by the room temperature regulator operating in conjunction with the boiler.
- Do not install a thermostatic valve on at least one radiator in the central heating system.

- It is recommended to route the discharge from the 0.3 MPa (3 bar) safety valve (item 25) via a pipe or hose to a floor drain. If the safety valve activates, water discharge may cause flooding, for which the manufacturer assumes no responsibility.

Selection of the expansion tank

The boilers described in this manual can be connected to a central heating system with a maximum capacity of 140 litres. Connection to a system with a larger capacity is permitted only if an additional expansion tank is installed. The selection of the expansion tank for the corresponding water volume of the heating system must be carried out by the designer of the central heating system. The installation of the expansion tank should be carried out by the installation contractor in accordance with the applicable regulations.

Note: Thoroughly flush the central heating system of all impurities before installing the appliance.

It is recommended that, after the boiler zero start-up and warming up the system, the central heating system should be drained to dispose of any residual metallurgical pastes and radiator protectants. These actions will have a positive impact on the operation of the appliance, the performance and durability of the components.

Once the appliance has been installed:

- Fill the heating system with water;
- Bleed the central heating system and the boiler;
- Check the boiler connections in the central heating system for leaks.

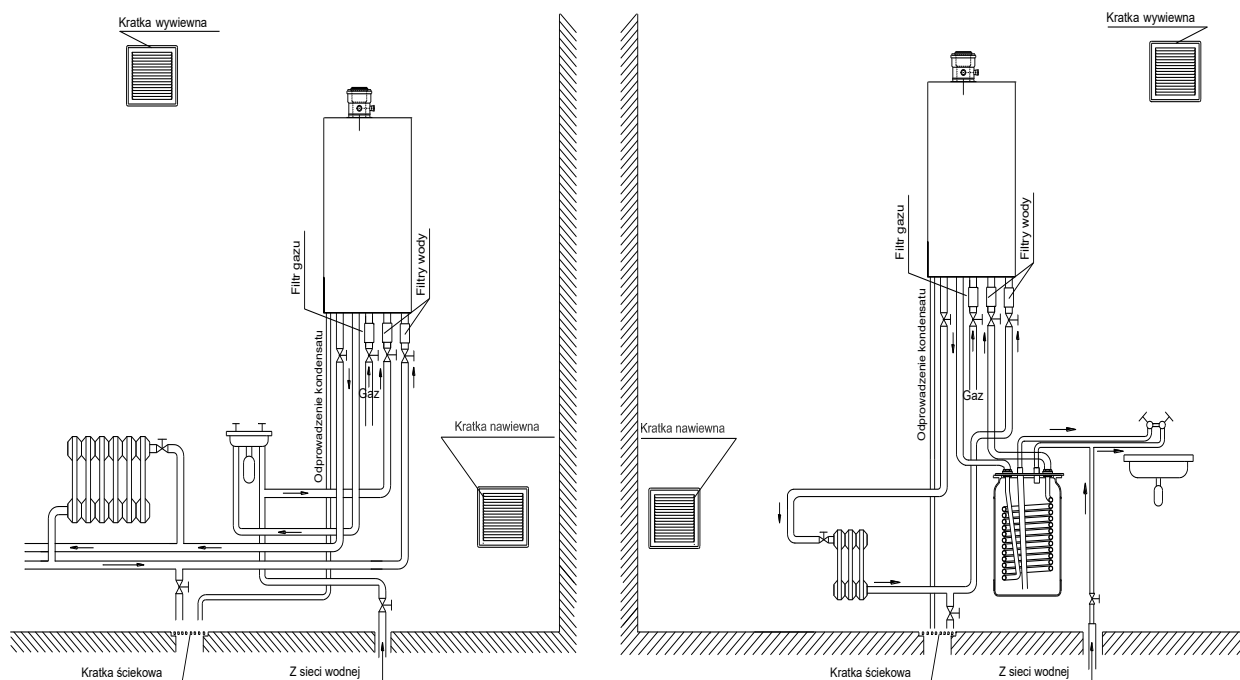


Fig. 3.5.1 Boiler installation requirements

Kratka wywiewna	Kratka nawiewna	Kratka ściekowa	Z sieci wodnej	Filtr gazu	Filtr wody
Air-outlet grille	Air-inlet grille	Floor drain	From the water supply system	Gas filter	Water filter

3.5.2. System cleaning and water treatment for the C.H. filling

Every component of C.H. system is threatened by limestone deposits, corrosion and other dangerous processes. Boiler is the most expensive part of C.H. system and it is necessary to protect its components like heat exchanger and other parts against harmful processes. Correct C.H. circuit preparation for using relies on making two operations: cleaning the CH system and treating the water that fills the system.

System cleaning

In new installation it is possible to find some remains of industrial process soldering and welding remains, flux, oil and grease residue among others. Older installations usually have products of corrosion in them. It necessary to clean up the systems with a water to remove the remains before boiler is mounted. Afterwards, system should be cleaned with appropriate chemicals. After that it is necessary to rinse the installation with water.

Water treatment to fill the system

For filling the system, it is recommended to use water with parameters: pH 6,5- 8,5, hardness < 10 °n (~ 18°F). Do not use demineralised or distilled water. To ensure protection against rocks depositing, corrosion, it is recommended to use a special inhibitor. Antifreeze liquid can also be used.

Low-temperature circuits

In the low-temperature area, it is recommended to treat the water.

Filtration technique

Additionally, in order to ensure the quality of operation heating system, it is recommended to mount a modern filters, which works on the principle of the magnetic and cyclone effect.

Notice:

- method and amount of use specific products for system cleaning and water treatment should be in accordance to the product manufacturer's instruction.
- above steps should be made by the authorized installer or service technician.

3.6. Condensate draining

The condensate produced during the combustion process must be discharged under the following conditions:

- The condensate drainage system must be made of corrosion-resistant material.
- The connection to the condensation drain must not be blocked.
- In order for condensate to drain along the flue gas path, all horizontal flue pipes must be installed with a slope of 3° (52mm/m).

3.7. Flue gas discharge

The flue gas from the boiler should be discharged in accordance with the applicable regulations and this manual. This operation should also be agreed with a local chimney sweeping company.

The GCB-57S, GCB-57C boilers can be installed as C or B appliances, as follows:

- **Type C** – This type of appliance has a sealed flue system (air supply, combustion chamber, heat exchanger, and flue gas discharge) which is airtight relative to the room in which it is installed.
- C13 – Appliance connected via a horizontal terminal with ducts supplying combustion air to the burner and discharging flue gases through coaxial or closely spaced vents unaffected by wind conditions.
- C33 – Appliance connected via two ducts to a vertical terminal that supplies combustion air and discharges flue gases through coaxial or closely spaced vents unaffected by wind conditions.
- C43 – Appliance connected via two ducts to a shared flue system serving multiple appliances. This shared system consists of two ducts connected to a terminal that simultaneously supplies combustion air and discharges flue gases through coaxial or closely spaced vents unaffected by wind conditions.
The appliance is not intended to be connected to a shared flue (i.e., more than one appliance connected to a flue duct) operating under excessive pressure.
- C53 – Appliance connected via separate ducts to individual terminals that supply combustion air and discharge flue gases. These ducts may terminate in zones with different pressure levels.
- C63 – Appliance intended for connection to an independently approved and sold combustion air supply and flue gases discharge system.
The appliance is not intended to be connected to a shared flue (i.e., more than one appliance connected to a flue duct) operating under excessive pressure.
- C83 – Appliance connected with one duct to an individual or shared flue consisting of a single naturally-draughted flue for flue gases discharge, and with another duct to a terminal that draws combustion air from outside the building.
- C93 – Appliance configured to connect the flue duct to a vertical terminal and the air duct to an existing vertical duct. The terminal supplies fresh air to the burner and discharges flue gases through coaxial or closely spaced outlets unaffected by wind conditions.
- **Type B** – This type of appliance is connected to a flue gas discharge duct that vents flue gases outside the room in which the appliance is installed. Combustion air is drawn from the room.
- B23 – Appliance designed for connection to a flue duct that discharges flue gases outside the room where the appliance is installed. The combustion air is drawn from the room in which the appliance is located.

The GCB-57S and GCB-57C boilers support three different dimensional series of flue – gas air, i.e. Coaxial system $\varnothing 80/\varnothing 125$ and $\varnothing 60/\varnothing 100$ and a separate 2 x $\varnothing 80$.

Note:

The boiler is factory-adjusted for a Coaxial air/flue system $\varnothing 60/100$ with a pipe length of 3mb + elbow. O_2 setting ~5%. The use of other systems and longer lengths require the boiler adjustment. After startup, inspect the correct operation of the boiler, and the concentration of CO_2 and/or O_2 in the flue gas.

When using Coaxial pipes $\varnothing 80/\varnothing 125$, it is necessary to use a Coaxial reducer $\varnothing 60/\varnothing 100$ x $\varnothing 80/\varnothing 125$ to the boiler adapter $\varnothing 60/100$ or replace the installed adapter $\varnothing 60/100$ and reduction ring $\varnothing 60/80$ with an adapter $\varnothing 80/\varnothing 125$ (insert the flue pipe $\varnothing 80$ as far as it will go to the heat exchanger). Adapters connecting the boiler to the piping system must be provided with test connections.

If separate Coaxial pipes 2 x $\varnothing 80$ are used, a TWIN type distribution manifold must be installed downstream the built-in Coaxial adapter $\varnothing 60/100$ with test connections.

The methods of connecting the boiler to the balanced flue system are shown in example figures 3.7...

Individual components of the balanced flue systems are consistent with table 7.1.

The balanced flue kits are sold according to the current TERMET offer. Kit components are not included in the boiler equipment.

To ensure proper operation of the boiler with a balanced flue system, it is necessary to:

- maintain a distance of no more than 1.5 m between two supports of the horizontal installation of the balanced flue system,
- limit the maximum length of the external terminal ducts to the length not exceeding 10 times their diameter, maximum 1 m,
- use the balanced flue systems with plastic flue pipe only inside the building,
- use appropriate duct dimensions (diameter, max length, elbow resistance) depending on the flue gas system used. The dimensions of the ductwork used shall be as specified in Tables 3.7, as appropriate.

Table 3.7.a

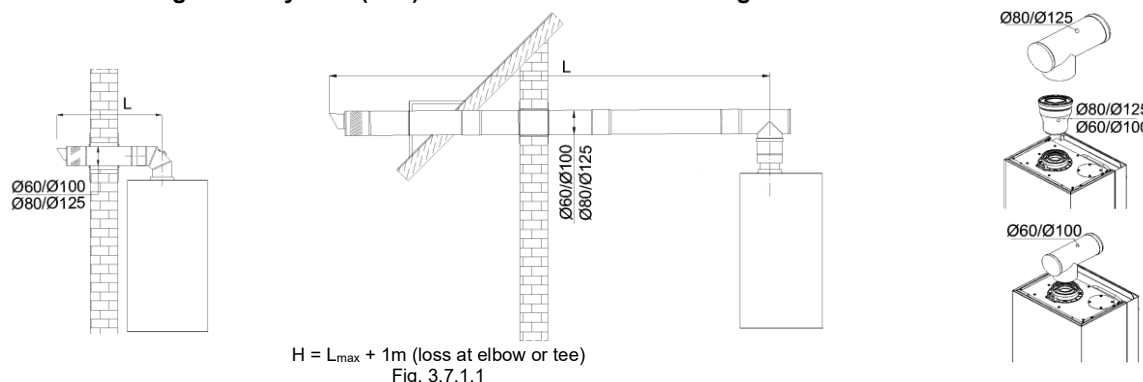
type of boiler	Coaxial system		Separate ducts system
	$\varnothing 60/\varnothing 100$	$\varnothing 80/\varnothing 125$	$\varnothing 80 \times \varnothing 80$
	Flue duct length H		
GCB-S57 - 5, 8, 12, 16, 20 GCB-C57 - 5/20; 8/20; 12/20; 16/20; 20/20; 20/25	18 m	25 m	50 m
GCB-S57 - 25, GCB-C57 - 25/30	12 m	25 m	50 m
GCB-S57 - 35, GCB-C57 - 35/40	14 m	21 m	40 m

The resistance of flue gas flow at each elbow depending on the bend angle and the associated reduction in maximum duct length is shown in the table below.

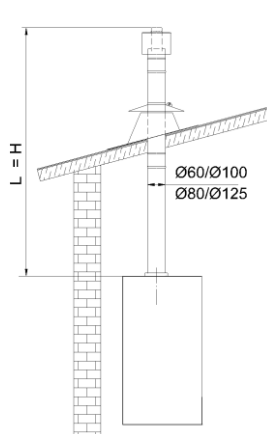
Table 3.7.b

Reduction of the maximum length of the balanced flue system depending on the elbow used.		
15° elbow	45° Elbow	90° Elbow
0.25 m thick	0.5 m	1m

3.7.1 Coaxial flue gas - air system (C13) with horizontal outlet through an external wall or roof

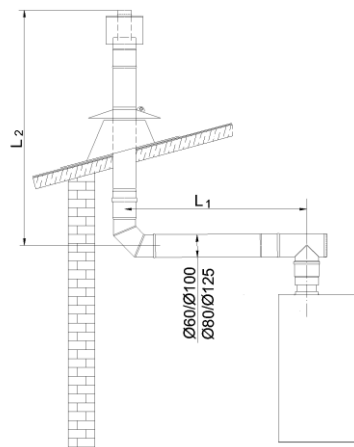


3.7.2 Coaxial flue gas - air system (C33) with vertical outlet through low-pitched or pitched roofs.



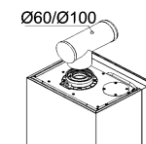
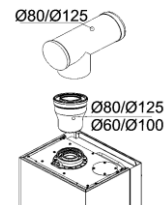
$$H = L$$

Fig. 3.7.2.1

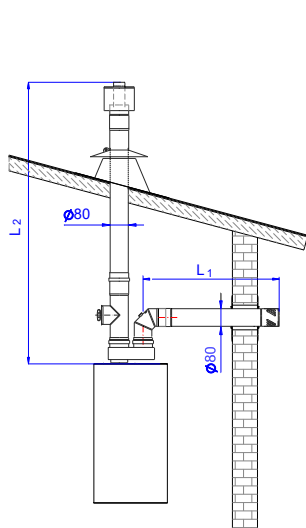


$$H = L_1 + L_2 + (1\text{m (loss at elbow)}) + 1\text{m (loss at tee)}$$

Fig. 3.7.2.2

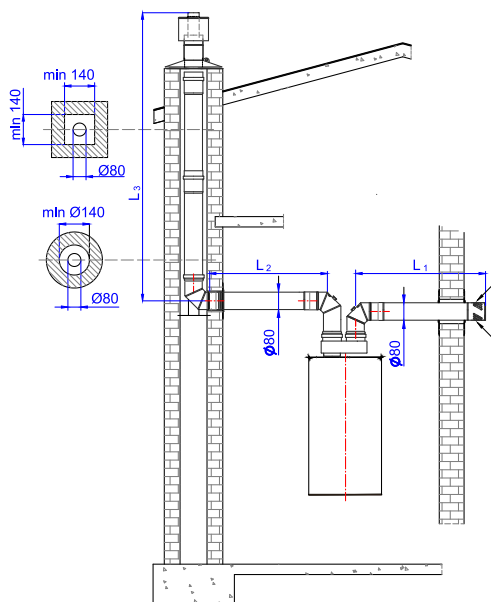


3.7.3 Flue gas - air system (C53) with separate flue gas and air intake pipes



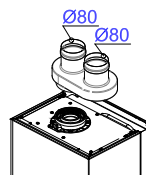
$$H = L_1 + L_2 + 1\text{m (loss at elbow)}$$

Fig. 3.7.3.1



$$H_{\text{max}} = L_1 + L_2 + L_3 + (1\text{m} + 1\text{m} + 1\text{m}) \text{ (lap loss)}$$

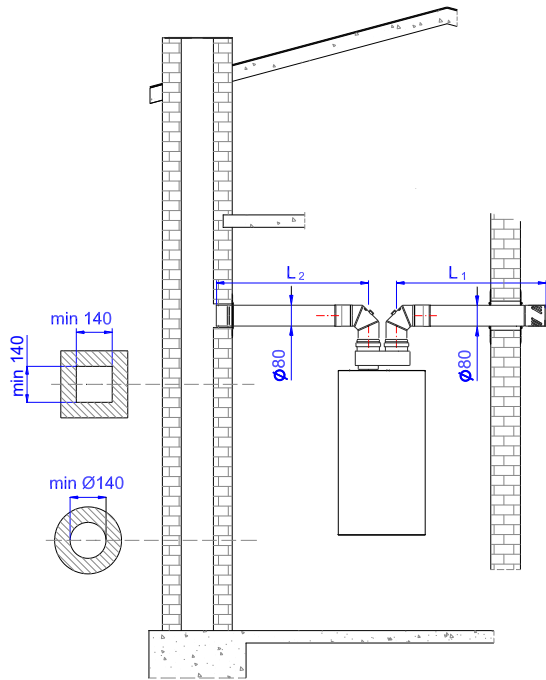
Fig. 3.7.3.2



Note:

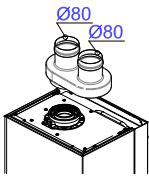
Install the horizontal air intake pipe with a downward slope of approximately 3° toward the boiler.

3.7.4 Air/flue system (C83) with separate ductwork, flue for connection to a single or common flue system with natural draught that discharges the products of combustion and air supply from outside the building.



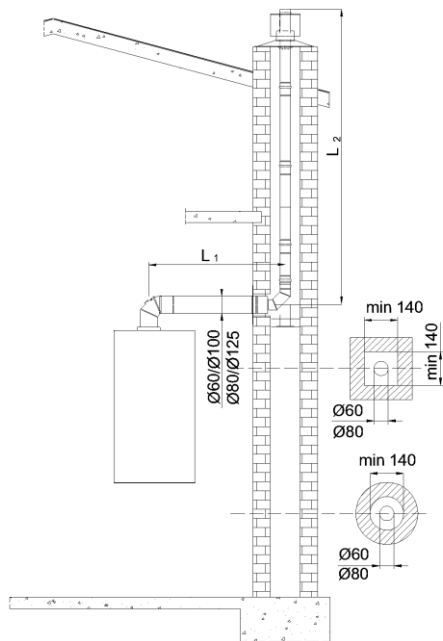
$H = L_1 + L_2 + (1m + 1m)$ (loss at elbows)

Fig. 3.7.4.1



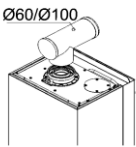
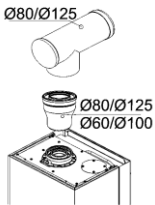
Note:
Install the horizontal air pipe at a ~3° inclination angle toward the boiler.

3.7.5 Coaxial flue gas - air system (C93) for connection to a flue pipe installed in a shaft. Combustion air is supplied through the shaft.



$H = L_1 + L_2 + (1m \text{ (loss at elbow)} + 1m \text{ (loss at tee)})$

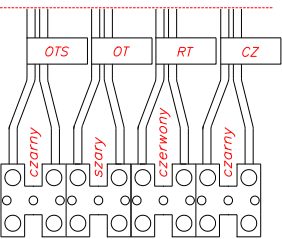
Fig. 3.7.5.1



3.8. Connection of additional devices

Electrical terminals have been routed to the outside of the controller. To connect an additional device, connect the ductwork ends of this device to the correct terminals.

Czarny / Black	Szary / Grey	Czerwony / Red
----------------	--------------	----------------



RT - room temperature regulator; OT - OpenTherm device; OTS- outdoor temperature sensor; CZ – domestic hot water tank temperature sensor

Fig.3.8.1 Electrical terminals of the controller

3.8.2 Room temperature regulator connection

3.8.2.1 Room temperature regulator with contact

The boiler has been designed to operate with a room temperature regulator that has its own power supply and a potential-free control contact. Connections should be made in accordance with the regulator manufacturer's instructions.

The room temperature regulator must be connected to the boiler using a suitable length of 2-core ductwork to the RT terminals (see Fig. 3.8.1), having first opened the electrical bridge.

3.8.2.2. Honeywell OpenTherm remote control

The boiler is also compatible with Honeywell OpenTherm® remote control device, which must be connected to the boiler using a suitable length of 2-core cable to the OT terminals (see Fig. 3.8.1). For all technical information on the OpenTherm® remote control, see: user manual provided by the manufacturer of the remote control.

The connection of the room temperature regulator to the boiler must be carried out by an AUTHORISED SERVICE or an AUTHORISED INSTALLER.

Two main remote control kits are available (see Table 7.1):

- Round control package - functions as a room temperature regulator for a single heating zone. Allows remote temperature setting, time scheduling, and wireless communication with the boiler.
- EvoHome control package – offers advanced control of multiple independent heating zones, time scheduling, a user-friendly colour touchscreen panel, and wireless boiler communication.

Honeywell's Total Connect Comfort app for smartphones is designed for use with the above control kits. It is available for download from Google Play (Android) and App Store (iOS). These control kits are not included with the boiler.

More information can be found on the manufacturer's website: <https://getconnected.honeywell.com/pl/>.

3.9. Connection of outdoor temperature sensor

To connect the outdoor temperature sensor, use a 2-core cable with a conductor cross-section of 0.5mm² and connect it to the OTS terminals (see Fig. 3.8.1).

Make the connection in accordance with the user manual supplied by the sensor manufacturer. The outdoor temperature sensor should be mounted on the north-facing wall of the building and must be protected from direct sunlight (should not be exposed to direct sunlight).

3.10. Connection of domestic hot water tank to a system boiler

The domestic hot water tank must be connected to the boiler according to the schematic diagram in Fig. 3.5.1. Then, connect the NTC sensor cable to the terminals marked CZ (Fig. 3.8.1), after disposal of the resistor connected to these terminals. Place the other end of the sensor cable in the tank at the designated domestic water temperature sensor location. Check the value of the parameter P00: for boilers operating with a domestic hot water tank it should be set to value 3.

The priority of boiler operation is always domestic hot water. A boiler that does not work with an external room temperature regulator will always prioritize heating the water in domestic hot water tank to the set temperature before responding to central heating demand (the heat demand from the central heating system will be ignored until then). The only way to disable domestic hot water tank heating is via the room temperature regulator.

4. BOILER ADJUSTMENT AND PRELIMINARY SETTINGS

4.1. Preliminary notes

The boiler you have purchased is factory-adjusted to the operating parameters for the type of gas specified on the nameplate and in the boiler documents. If it is necessary to change the parameters or adjust the boiler to another type of gas, the regulation and setting of the boiler operating parameters may only be carried out by an AUTHORISED SERVICE.

4.2. Boiler adjustment for combusting a different type of gas

The boiler can be adapted to burn other types of gas, but only the type for which the boiler has been certified. Gas types are indicated on the nameplate in the assay index: **Category II_{2H3P}, II_{2H3B/P}**

4.3.. Information mode

Procedure for reading out information parameters:

- Hold down the K1 button for 10 seconds. The number of the first information parameter (i00) will be displayed.
- Use the K5 and K6 buttons to select the desired information parameter.
- Press the K3 or K4 button to read out the value of this parameter.
- Press the K1 button to return to the parameter selection menu.
- Press the K1 button to exit Information Mode.

The controller will exit Information Mode automatically after 2 minutes of inactivity.

Table 4.3.1 List of parameters in information mode

Parameter number	Description	Value
i00	Supply temperature sensor (°C)	00 ÷ 125
i01	Return temperature sensor (°C)	00 ÷ 125
i02	HUW temperature sensor (°C) - tank, top of tank	00 ÷ 125
i03	HUW temperature sensor (°C) - tank bottom	00 ÷ 125
i04	Solar panel temperature sensor (°C)	00 ÷ 125
i05	Flue gas temperature sensor (°C)	00 ÷ 125
i06	Outdoor temperature sensor (°C)	2-digit value
i07	Current fan speed (rpm x 10)	
i08	DHW flow rate (l/min)	00 ÷ 125
i09	Current water pressure	
i10	Current ionization current (uA*10)	00 ÷ 99
i11	Software version	Version C x.xx

The "History" and "Reset" modes are described in section 5.3 Diagnostics.

4.4. Fan characteristics

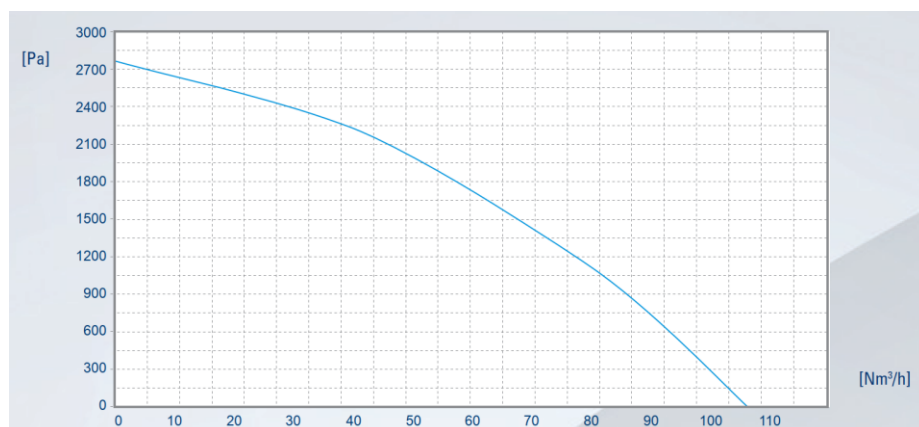


Fig.4.4.1. NG40E fan characteristics

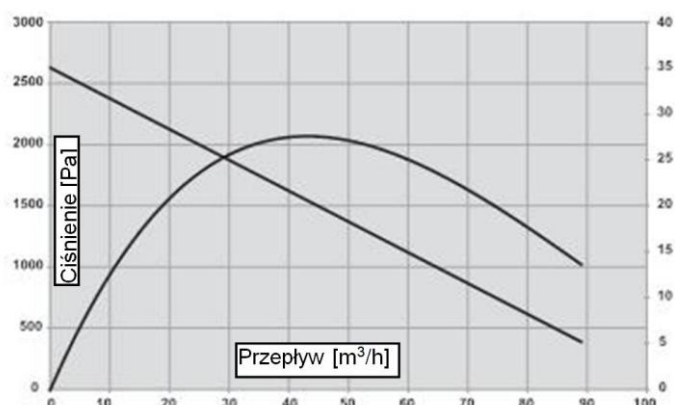


Fig.4.4.2. PX118 fan characteristics

4.5. Pump characteristics

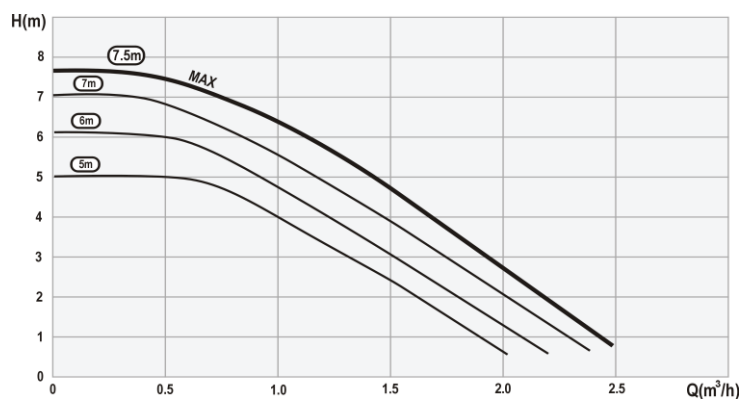


Fig.4.5.1. Pump characteristics

5. BOILER START-UP AND OPERATION

5.1. Initial start-up of the boiler

After the boiler has been installed, inspected for correctness and tightness of its connection and prepared for operation in accordance with these instructions and applicable regulations, the first start-up and training of the user in the operation of the boiler and its safety devices and in how to operate it may only be carried out by an AUTHORISED SERVICE.

A list with addresses and service area is attached to the product.

5.2. Switching on and operation

All boiler functions are carried out by an electronic control board. Operating mode and setpoints can be changed using 6 buttons. The current operating status of the boiler is illustrated on a dedicated LCD display.



Fig. 5.2 1. Control panel

- Inspection of the pump,
- Switch the boiler on,
- Open the gas valve and water valves,
- Wait for the boiler to go into de-aeration mode
- Set the operating mode to WINTER or SUMMER (p.5.3)

Switching the boiler on during the heating season

- Set the desired heating water temperature using buttons K3-K4 between 20°C and 80°C
- The spark generator will ignite the gas coming out of the burner.
- Set the desired hot water temperature using buttons K5-K6 between 30°C and 60°C. During boiler operation, priority is always given to obtaining hot water

In the case of a connected room temperature controller, select the desired room temperature on the controller.

5.2.2 Button functions on the control panel

Button number	Symbol	Name	Functions performed
K1		Reset	• retention of the venting functions • removal of error codes and interlocks
K2		Selection of operating mode / CO / CH + DHW	• resetting history information (5 sec)
K3		CO temperature setpoint (-)	• heating water temperature setpoint (-) • other functions depending on the current mode of operation
K4		CO temperature setpoint (+)	• heating water temperature setpoint (+) • other functions depending on the current mode of operation
K5		DHW temperature setpoint (-)	• drinking water temperature setpoint (-) • other functions depending on the current mode of operation
K6		DHW temperature setpoint (+)	• drinking water temperature setpoint (+) • other functions depending on the current mode of operation

5.3. Operations modes indication and diagnostics

5.3.1 Controller operating modes

Operating mode	Appearance of the display	Operating mode selection	Functions performed
WATCH		To switch the controller on or off, press the K2 button.	• active antifreeze function: the boiler switches on when the boiler water temperature falls below the value of parameter P08 and continues to heat water until the temperature reaches the value of parameter P09. • Three-way valve blockage protection (the valve is switched for 15s every 48 hours). • request for heat is ignored
WINTER		By pressing the K2 button, it is possible to switch to the "Winter" standby mode.	• heating of central heating and DHW, • anti-legionella function - only active for domestic hot water tank boilers

CH ONLY		By pressing the K2 button, it is possible to switch to the "CH ONLY" standby mode.	- CO heating, - anti-legionella function - only active for domestic hot water tank boilers
SUMMER		By pressing the K2 button, it is possible to switch to the "SUMMER" standby mode.	- DHW heating, - anti-legionella function - only active for domestic hot water tank boilers
VENTING		The functions are always activated in case: - Disconnect and reconnect to the power supply. - Restoration of the correct pressure in the central heating system after the occurrence of errors F37 or F40. - Manual reset of E3 error. The functions can be discontinued using the K1 button.	While this is being performed, the heat request is disabled and the fan runs at its highest speed for 120 seconds. The pump is alternately switched on and off for periods of 5 seconds. The 3-way valve switches to the CH position for the first 30 seconds, then to the DHW position for another 30 seconds, again to CH for 30 seconds and again to DHW for the last 30 seconds. In this way, all air bubbles are removed and the operation of the pump is protected.

5.3.2. Operating modes indication

Symbol on the display	Signalling	Comments
	THE BURNER IS RUNNING	Flame presence indication. The symbol is divided into 3 parts, the display of which indicates: - only the first (smallest): capacity less than 30% - first and second: capacity greater than 30% but less than 75% - all: capacity greater than 75%
	BOILER INTERLOCK	Once the cause of the fault has been disposed of, use the reset K1 button to resume boiler operation.
	CH MODE	CH mode is active.
	DHW MODE	DHW mode is active.
	- SERVICE FUNCTION - EMERGENCY SIGNALLING	Appears during: - operation in test mode - the occurrence of a boiler failure
	REMOTE CONTROL	Appears when an OpenTherm room controller is connected

5.3.2.1 Settings

CO setpoint

The CH water temperature setpoint can be changed using buttons K3 (decrease) and K4 (increase). The setting range is possible between 20°C and parameter P23 (Maximum heating water temperature setpoint). When making a setpoint using buttons K3 and K4, the temperature value is shown on the display and can change in 1°C steps.

After 5 seconds of inactivity, the display will return to its previous state.



HWU setpoint.

The DHW temperature setpoint can be changed using buttons K5 (decrease) and K5 (increase). The setting range is possible between 30°C and parameter P04 (Maximum drinking water temperature setpoint). When making a setpoint using buttons K5 and K6, the temperature value is shown on the display and can change in 1°C steps.

After 5 seconds of inactivity, the display will return to its previous state.



5.3.3. Diagnostics

When an anomaly occurs in the functioning of the boiler, an error message appears on the boiler display.

Errors requiring a manual reset of the boiler interlock with the K1 button are signalled by the "R" symbol and displayed with the letter E.

Errors that do not require a manual interlock reset are displayed with an F. When, in addition, the symbol is displayed, intervention by a qualified person is required.



If the boiler still enters the interlock condition after resetting the interlock, call an AUTHORISED SERVICE.

In the case of an error, the pump performs functions:

- coastdown,
- safeguards against freezing,
- safeguards against pump blockage.

Exceptions are situations where the error is related to the system pressure or pressure sensor errors.

5.3.3.1. Error codes causing boiler lockdown

In this case, a manual reset of the boiler interlock with the K1 button or intervention by an Authorised Service is required. Below troubleshooting steps are suitable for qualified personnel only. Do not attempt to fix the boiler yourself.

Error code	Error name	Cause	Error diagnosis and disposal
E01	No flame	The controller made all (3) failed ignition attempts.	Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E02	False flame	The signal of the presence of the flame appeared without any prior request for heat.	Possible causes: • Damaged high voltage cable • Dirty or damaged porcelain on ignition/flame detection electrode • Short circuit between flame control electrode and burner Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E03	Limit temperature exceeded in the central heating system.	The temperature of 95°C on the central heating NTC sensor or the central heating NTC sensor-return has been exceeded	Possible causes: • No water flow • Blocked pump • Clogged filter • Damaged NTC sensor causing false reading Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E05	No feedback signal from the fan	No fan feedback within 1 minute.	Possible causes: • Damage to electrical motor of the fan • No communication between boiler controller and the fan Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E07	Safeguard on the exhaust outlet	The flue gas temperature is too high.	Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E08	Flame control circuit fault	An internal inspection found an error in the flame control circuit.	Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E09	Gas valve control circuit fault	Internal control found a gas valve control error.	Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E12	EEPROM control error	EEPROM inspection failed. The data in the EEPROM is in failure.	Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E15	Temperature test error of NTC sensors	An internal audit revealed a malfunction.	Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E16	Error in central heating water NTC sensor. - no contact between sensor and pipe		Possible causes: • Poor contact between NTC sensor and the pipe • Internal damage to NTC sensor Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E17	Error in return water NTC sensor - no sensor contact with pipe		Possible causes: • Poor contact between NTC sensor and the pipe • Internal damage to NTC sensor Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE. Error could also occur if central heating installation has big water volume and boiler is not equipped with room thermostat or weather compensation sensor. In such conditions return temperature could reach steady state and do not change for long amount of time. Use room thermostat or weather compensation to force changes in return water temperature.
E18	Failure of the central heating or return water NTC sensor structure	An internal audit revealed a malfunction.	Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E21	ADC error	An internal check found an error in the ADC.	Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E33	Error in return water NTC sensor	The return water temperature sensor circuit is open (interrupted) or short-circuited, or the value indicated by the sensor is out of range	Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.
E35	Error in central heating water NTC sensor.	The circuit of the central heating water NTC sensor is open (interrupted) or short-circuited, or the value indicated by the sensor is out of range	Try to reset boiler lockdown. If the boiler still becomes locked after the error has been reset, call the AUTHORISED SERVICE.

5.3.3.2. Error codes without boiler lockout

Once the cause of the fault has been disposed of, the boiler automatically returns to normal operation. In the case of necessary service intervention, the "service" symbol is displayed.

Error code	Error cause/description	Solution
F13	Error of resetting faults too frequently (5 x in 60 min) Remote reset blocked	Disconnect the power supply to the boiler. Re-attach.
F34	Low supply voltage The supply voltage has dropped below 170V (+/-10V). If the boiler is running during this time, the burner will be shutdown.	Automatically, if the voltage value rises to the correct level.
F37	Low heating water pressure in the system. The water pressure in the heating system has fallen below < 0.4 bar. Heat demand and pump operation are stopped. The 3-way valve is set in the CO position.	Automatically, when the appropriate pressure is reached in the system or when the sensor contacts are short-circuited.
F39	Outside temperature sensor out of range The value indicated by the sensor is out of range (-40°C to +50°C) or a short circuit or interruption of the circuit has occurred. In the case of a circuit interlock, the interlock code will only be displayed in the case of an active heating curve (the sensor will be disconnected but the heating mode will remain available).	Automatically, if the value indicated by the sensor returns to the correct range.
F40	Heating water pressure in the system too high. The water pressure in the heating system has risen above >2.8 bar. The heat request is ignored, pump operation is stopped.	Automatically, once the system has reached the correct pressure
F41	Inactive. Only in the case of an automatic water filling valve.	-
F42	Inactive. Only in the case of an automatic water filling valve.	-
F43	Inactive. Only in the case of an automatic water filling valve.	-
F47	Pressure transmitter error The pressure transmitter is failure or not connected. The heat request is ignored, pump operation is stopped. Inspection of the pressure sensor connection. Replace the failed one with a new one, or improve the connection.	Automatic, post-accident sensor disposal.
F50	Solar cylinder sensor error: Error only occurs with boiler configuration P00 = 2 or 4 (not used)	-
F51	PT1000 sensor error: Error only occurs with boiler configuration P00 = 2 or 4 (not used)	-
F52	Drinking water temperature sensor out of range: There is a short circuit, a break in the sensor circuit or the value measured by the sensor is outside the range 5÷125°C. The request for heat is ignored.	Automatically, if the value indicated by the sensor has returned to its nominal value.
F53	Exhaust gas temperature sensor out of range: There is a short circuit, a break in the sensor circuit or the value measured by the sensor is outside the range 5÷125°C. The request for heat is ignored.	Automatically, if the value indicated by the sensor has returned to its nominal value.
F81	Temperature test of sensors in progress The request for heat is ignored. Only the pump is active.	Reset the boiler lock.

5.4. Boiler decommission / standby mode

- leave the boiler connected to the mains,
- leave the gas valve and the central heating water valves open.
- set the operating mode: STANDBY (5.3.1)

If you decide to stop using the boiler for a longer period of time and shutdown the above safeguards as well, you should:

- disconnect the boiler from the mains;
- empty the boiler water system and the central heating system. - only if there is a hazard of freezing;
- containment of the valve on the water and gas supply system.

Note: During winter (due to the risk of water freezing in the system) it is forbidden to disconnect the boiler from the electrical system if water remains in the boiler water system.

6. MAINTENANCE, INSPECTIONS, FUNCTION CHECKS

6.1. Inspections and maintenance

The boiler should be subjected to periodic inspections and treatments.

It is recommended that the boiler be inspected at least once a year, preferably before the heating season.

All repairs and maintenance checks should be carried out by an AUTHORISED SERVICE.

Use only original spare parts for repairs. Each time the boiler is inspected and maintained, the proper functioning of the safety systems and the tightness of the gas fittings and the tightness of the connections between the boiler and the gas supply system must be inspected. These activities are not part of the warranty repairs.

6.2. Maintenance work to be carried out by the user

The user himself should:

- periodically, preferably before the heating season, clean the water filters (replace them in case of wear),
- also clean the drinking water filter in the case of a decreasing flow rate,
- top up the water in the central heating system,
- Bleed the system and the boiler,
- periodically wash the containment vessel with water and detergent (avoid cleaning agents that cause scratches).

6.3. Range of technical maintenance performed by authorised service

- maintenance of the main heat exchanger ;
- maintenance of the burner ;
- boiler inlet water filter cleaning;
- cleaning the gas filter on the boiler inlet;
- checking the operation of the protection which monitoring the correct operation of the fan;
- checking the operation of the protection against exceeding the upper limit water temperature;
- check of operation of the protection against overheating of water - operation of the modulator;
- checking the operation of the room temperature controller;
- checking operation of heating water temperature controller;
- checking the operation of the domestic water temperature controller;
- checking of temperature sensors;
- checking the operation of water pump
- Checking the condition of the magnesium anode in the storage tank (in boilers with a connected storage tank)

7. BOILER EQUIPMENT

Table 7 gives a list of the parts necessary for the installation of the boiler, for proper operation and for increasing the comfort of use of the product. The following components are available for sale with the boiler or are included in the boiler equipment.

TABLE 7.1

TABLE 7.11						
No.	Name	Drawing ref. Data Code	CODE	Number of pieces entering the boiler	It comes to:	Comments
1	2.	3.			5.	6.
1.	Mounting bar	0700.00.00.44/CN		1	GCB-57S GCB-57C	Boiler equipmen Packed in boiler packaging
2.	Wood screws 8 x 70			2		
3.	Expansion sleeve			2		
4.	Coupling subdivision	0696.00.00.00		1		
PURCHASE RECOMMENDED TO ENHANCE USER COMFORT						
5.	Room temperature controller: Any contact or - OpenTherm remote control menu PL, GB, DE type CR11011	T9449.11.00.00 lub T9449.10.00.00 or WKZ0624.00.00.00		1.	GCB-57S GCB-57C	It is not included with the boiler.
6.	Outdoor temperature sensor	WKC 0566.00.00.00 or WKC 0567.00.00.00		1.		
7.	Round control package from Honeywell	WST9647.00.00.00/PL		1.	GCB-57S GCB-57C	It is not included with the boiler.
8.	Honeywell EvoHome control package	WST9648.00.00.00/PL		1.		
9.	Magnetic filter for central heating systems.			1.	GCB-57S GCB-57C	It is not included with the boiler.
PURCHASE REQUIRED TO ENSURE PROPER BOILER OPERATION						
10.	Gas filter			1.	GCB-57S GCB-57C	Is not boiler equipment
11.	Heating water filter (central heating)			1.		
12.	Drinking water filter (hot water)			1.		
PURCHASE REQUIRED FOR CASCADE BOILER INSTALLATION						
13.	Cascade manager AX1203SQ	WKM 0623000000		1.	GCB-57S GCB-57C	Is not boiler equipment
14.	OpenTherm remote control			1 per cascade		

BOILER BALANCED FLUE SYSTEM (plastic ducts)					
Flue gas system diagram	Flue gas system type	Name of the balanced flue system component	INDEX	Number of pieces entering the boiler	Remarks
Fig. 3.7.1.1	C13	Balanced flue kit – concentric system Ø80/Ø125			Additional equipment of C13 type boiler is sold according to the current offer.
		Reducing elbow with revision ø60/100 x ø80/125	T 9000 04 01 16	1	
		or			
		Concentric reducer ø60/100 x ø80/125	T 9000 04 01 34	1	
		Elbow 87° with cleanout ø80/125	T 9000 04 01 15	1	
		System components (according to the system design)		1 kit	
		Balanced flue kit – concentric system Ø60/Ø100			
Fig. 3.7.2.1	C33	Elbow 87° with cleanout ø60/100	T 9000 04 01 14	1	Additional equipment of C33 type boiler is sold according to the current offer.
		System components (according to the system design)		1 kit	
		Balanced flue kit – concentric system Ø80/Ø125			
		Concentric reducer ø60/100 x ø80/125	T 9000 04 01 34	1	
		System components (according to the system design)		1 kit	
		Balanced flue kit – concentric system Ø60/Ø100			
		System components (according to the system design)			
Fig. 3.7.2.2	C33	Balanced flue kit – concentric system Ø80/Ø125			Additional equipment of C33 type boiler is sold according to the current offer.
		Reducing elbow with revision ø60/100 x ø80/125	T 9000 04 01 16	1	
		or			
		Concentric reducer ø60/100 x ø80/125	T 9000 04 01 34	1	
		Elbow 87° with cleanout ø80/125	T 9000 04 01 15	1	
		System components (according to the system design)		1 kit	
		Balanced flue kit – concentric system Ø60/Ø100			
Fig. 3.7.3.1 Fig. 3.7.3.2	C53*	Elbow 87° with cleanout ø60/100	T 9000 04 01 14	1	Additional equipment of C53 type boiler is sold according to the current offer.
		System components (according to the system design)		1 kit	
		Balanced flue kit – separate ducts system Ø80 x Ø80			
		Air-flue gas separator ø60/100 x 2x ø80	T 9000 04 01 33	1	
		System components ø80 (according to the system design)		1 kit	
		Balanced flue kit – separate ducts system Ø80 x Ø80			
		Air-flue gas separator ø60/100 x 2x ø80	T 9000 04 01 33	1	
Fig. 3.7.4.1	C83*	System components ø80 (according to the system design)		1 kit	Additional equipment of C83 type boiler is sold according to the current offer.
		Balanced flue kit – concentric system Ø80/Ø125			
		Reducing elbow with revision ø60/100 x ø80/125	T 9000 04 01 16	1	
		or			
		Concentric reducer ø60/100 x ø80/125	T 9000 04 01 34	1	
		Elbow 87° with cleanout ø80/125	T 9000 04 01 15	1	
		System components (according to the system design)		1 kit	
Fig. 3.7.5.1	C93	Balanced flue kit – concentric system Ø60/Ø100			Additional equipment of C93 type boiler is sold according to the current offer.
		Elbow 87° with cleanout ø60/100	T 9000 04 01 14	1	
		System components (according to the system design)		1 kit	

*Air-flue systems should be installed in accordance with local regulations

BOILER BALANCED FLUE SYSTEM (steel ducts)					
Flue gas system diagram	Flue gas system type	Name of the balanced flue system component	INDEX	Number of pieces entering the boiler	Remarks
Fig. 3.7.1.1	C13	Balanced flue kit – concentric system Ø80/Ø125			Additional equipment of C13 type boiler is sold according to the current offer.
		Reducing elbow with revision ø60/100 x ø80/125	T 9000 04 02 88	1	
		System components (according to the system design)		1 kit	
		Balanced flue kit – concentric system Ø60/Ø100			
		Cleanout tee 87° ø60/100	T 9000 04 02 31	1	
Fig. 3.7.2.1	C33	Balanced flue kit – concentric system Ø80/Ø125			Additional equipment of C33 type boiler is sold according to the current offer.
		Concentric reducer ø60/100 x ø80/125	T 9000 04 03 42	1	
		System components (according to the system design)		1 kit	
		Balanced flue kit – concentric system Ø60/Ø100			
		System components (according to the system design)			
Fig. 3.7.2.2	C33	Balanced flue kit – concentric system Ø80/Ø125			Additional equipment of C33 type boiler is sold according to the current offer.
		Reducing elbow with revision ø60/100 x ø80/125	T 9000 04 02 88	1	
		System components (according to the system design)		1 kit	
		Balanced flue kit – concentric system Ø60/Ø100			
		Cleanout tee 87° ø60/100	T 9000 04 02 31	1	
Fig. 3.7.3.1 Fig. 3.7.3.2	C53	Balanced flue kit – separate ducts system Ø80 x Ø80			Additional equipment of C53 type boiler is sold according to the current offer.
		Air-flue gas separator ø60/100 x 2x ø80	T 9000 04 02 46	1 kit	
		System components ø80 (according to the system design)		1 kit	
		Balanced flue kit – separate ducts system Ø80 x Ø80			
		Air-flue gas separator ø60/100 x 2x ø80	T 9000 04 02 46	1 kit	
Fig. 3.7.4.1	C83	Balanced flue kit – separate ducts system Ø80 x Ø80			Additional equipment of C83 type boiler is sold according to the current offer.
		Air-flue gas separator ø60/100 x 2x ø80	T 9000 04 02 46	1 kit	
		System components ø80 (according to the system design)		1 kit	
		Balanced flue kit – concentric system Ø80/Ø125			
		Straight connector ø80/125	T 9000 04 07 48	1	
Fig. 3.7.5.1	C93	Cleanout tee 87° ø80/125	T 9000 04 02 32	1	Additional equipment of C93 type boiler is sold according to the current offer.
		System components (according to the system design)		1 kit	
		Balanced flue kit – concentric system Ø60/Ø100			
		Cleanout tee 87° ø60/100	T 9000 04 02 31	1	
		System components (according to the system design)		1 kit	



termet®

PL Producer:

Termet S.A.

ul. Długa 13
58-160 Świebodzice
Poland

T: +48 74 85 60 801

F: +48 74 85 40 884

E: termet@termet.com.pl

RO Importator/Distributor:

NOVASERVIS FERRO Group SRL

Sediul Central:

str. Câmpina nr. 47 Cluj-Napoca, jud. Cluj

HUB Logistic:

str. Sperantei nr. 101 Buftea, jud. Ilfov

Departament Service:

T/F: +40 264 522 524

E: service.termet@ferro.ro

T/F: +40 264 522 524

E: info@ferro.ro

www.termetcompany.com



[termet.romania](https://www.facebook.com/termet.romania)



[termet.romania](https://www.instagram.com/termet.romania)