

Gas wall-mounted boiler

Condens 3000 W

ZWB 28-3 C ...

BOSCH

Installation and servicing instructions

6 720 640 851 (2009/09) BD(AZ,GE,RU)-en

Contents

1 Explanation of symbols and safety information . 4
1.1 Explanation of symbols 4
1.2 Safety precautions 4

2 Standard package 6

3 Product details 7
3.1 Intended use 7
3.2 EC Declaration of Conformity 7
3.3 Explanation of model code 7
3.4 Type plate 7
3.5 Description of appliance 8
3.6 Accessories 8
3.7 Dimensions and minimum clearances . . . 9
3.8 Appliance layout GB042-22K 10
3.9 Electrical wiring diagram 12
3.10 Specification 14
3.11 Condensate composition 15

4 Regulations 16

5 Installation 17
5.1 Important notes 17
5.2 Siting the appliance 18
5.3 Pre-installing pipes 18
5.4 Fitting the appliance 20
5.5 Checking the connections 22

6 Electrical connections 23
6.1 General 23
6.2 Mains electrical connection 23
6.3 Connecting accessories 24
6.3.1 Opening the Heatronic unit 24
6.3.2 Connecting the heating controller or remote control units 24
6.3.3 Connecting temperature limiter TB 1 from the flow of an underfloor heating system 26
6.3.4 Connecting the circulation pump 26
6.3.5 Replacing the Power cable 27

7 Commissioning 28
7.1 Before commissioning 29
7.2 Switching the appliance on/off 29
7.3 Starting the central heating 29
7.4 Heating control 30
7.5 After commissioning 30
7.6 ZWB 28-3 C - setting hot water temperature 30
7.7 Summer mode (central heating off, DHW only) 31
7.8 Frost protection 31
7.9 Button lock 31
7.10 Fault mode 31
7.11 Pump anti-seizing function 32

8 Individual settings 33
8.1 Mechanical settings 33
8.1.1 Checking the size of the expansion vessel 33
8.1.2 Changing the heating circuit pump characteristic 33
8.2 Heatronic settings 34
8.2.1 Operating the Heatronic unit 34
8.2.2 Heating output (Service function 1.A) . 35
8.2.3 Hot water output (Service function 1.b) 35
8.2.4 Pump control mode for central heating (Service function 1.E) 35
8.2.5 Maximum flow temperature (service function 2.b) 36
8.2.6 Bleeding function (service function 2.C) 36
8.2.7 Automatic anti-cycle time adjustment (service function 3.A) 36
8.2.8 Anti-cycle time (service function 3.b) . 36
8.2.9 Switching differential (service function 3.C) 36
8.2.10 Warning signal (service function 4.d) . . 37
8.2.11 Trap filling function (service function 4.F) 37
8.2.12 Reset servicing interval (service function 5.A) 37
8.2.13 Changing channel used by single-channel timer (service function 5.C) 37
8.2.14 Show servicing interval (service function 5.F) 37
8.2.15 Retrieving last fault stored (service function 6.A) 37
8.2.16 Minimum hot water flow rate (service function 7.C) (GB042-22K) . . . 37
8.2.17 External flow temperature sensor, e.g. on flow equaliser (service function 7.d) 37
8.2.18 Reset appliance (Heatronic 3) to standard settings (service function 8.E) 38
8.2.19 Response delay for hot water demand (service function 9.E) 38
8.2.20 Pump run-on time (service function 9.F) 38

9 Converting the appliance to different gas types .. 39
9.1 Setting the gas-air ratio (CO_2 or O_2) .. 40
9.2 Checking the gas supply pressure 41

10 Checking flue gas readings 42
10.1 Chimney sweep button 42
10.2 Checking flue system for leaks 42
10.3 Measuring CO content of flue gas 42

11 Environmental protection 43

12 Inspection/Maintenance 44
12.1 Checklist for inspection/maintenance (Inspection/Maintenance report) 45
12.2 Description of various maintenance operations 46
12.2.1 Strainer in cold water pipe (GB042-22K) 46
12.2.2 Plate-type heat exchanger (GB042-22K) 46
12.2.3 Gas valve 47
12.2.4 Water valve 47
12.2.5 3-way diverter valve 47
12.2.6 Pump and return manifold 47
12.2.7 Checking heating block, burner and electrodes 48
12.2.8 Cleaning condensate trap 50
12.2.9 Diaphragm in mixer unit 50
12.2.10 Testing central heating safety valve ... 51
12.2.11 Checking the expansion vessel 51
12.2.12 Setting the heating system pressure .. 51
12.2.13 Checking electrical wiring 51
12.2.14 Cleaning of other components 51
12.3 Draining the wall mounted gas boiler . 52

13 Appendix 53
13.1 Display codes 53
13.2 Fault codes 54
13.3 Gas settings 55
13.3.1 Settings for heating output on Logamax plus GB042-22K running on natural gas 55
13.3.2 Settings for heating output on Logamax plus GB042-22K running on LPG 56

14 Commissioning report for the appliance 57

Index 58

1 Explanation of symbols and safety information

1.1 Explanation of symbols

Warning symbols



Safety instructions in this document are framed and identified by a warning triangle which is printed on a grey background.



Electrical hazards are identified by a lightning symbol surrounded by a warning triangle.

Signal words indicate the seriousness of the hazard in terms of the consequences of not following the safety instructions.

- **NOTICE** indicates possible damage to property or equipment, but where there is no risk of injury.
- **CAUTION** indicates possible injury.
- **WARNING** indicates possible severe injury.
- **DANGER** indicates possible risk to life.

Important information



Notes contain important information in cases where there is no risk of personal injury or material losses and are identified by the symbol shown on the left. They are bordered by horizontal lines above and below the text.

Additional symbols

Symbol	Meaning
▶	a step in an action sequence
→	a reference to a related part in the document or to other related documents
•	a list entry
–	a list entry (second level)

Tab. 1

1.2 Safety precautions

If you smell gas

- ▶ Turn off gas service cock (→ page 28).
- ▶ Open windows.
- ▶ Do not operate any electrical switches.
- ▶ Extinguish any naked flames.
- ▶ Leave the building and telephone your gas supply utility and authorised contractor **from an outside phone**.

If you smell flue gas from the appliance

- ▶ Switch off the appliance (→ page 29).
- ▶ Open windows and doors.
- ▶ Inform your heating contractor.

Installation and conversion

- ▶ This appliance may only be installed or converted by an approved installer.
- ▶ Never modify any parts of the flue system.
- ▶ **If the appliance has a type B.. flue system:** Do not seal off or reduce the size of air vents in doors, windows or walls. If draught-sealed windows are installed, ensure there is an adequate supply of air to the appliance for combustion.

Thermal disinfection

- ▶ **Risk of scalding!**
  It is imperative to monitor operation at temperatures over 60 °C (→ page 33).

Inspection/Maintenance

- ▶ **We recommend** that you take out a contract to have the system regularly serviced in order to ensure that it functions reliably and safely.
- ▶ The user is responsible for the general and environmental safety of the system.
- ▶ Only use genuine spare parts!

Combustible materials

- ▶ Never store or use any combustible materials (paper, thinners, paints etc.) in the vicinity of the appliance.

Combustion air/Ambient air

- ▶ Keep combustion air/ambient air free of corrosive substances (e.g. halogenated hydrocarbons which contain chlorine or fluorine compounds). In that way corrosion can be prevented.

Instructions to the customer

- Explain to the customer how the appliance works and how to operate it.
- Advise the customer that he/she must not make any modifications to the appliance or carry out any repairs on it.

2 Standard package

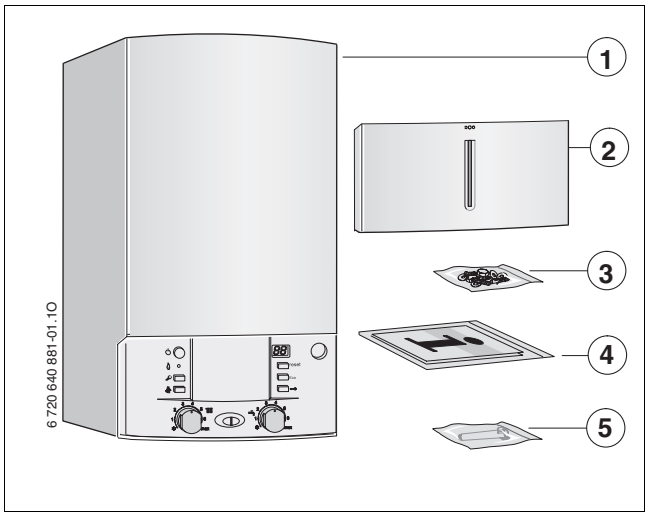


Fig. 1

1 Gas combination boiler for central heating
2 Cover panel (including fixings)
3 Fixings (screws etc.)
4 Set of printed documents for the appliance
5 Handle for filling loop

Additional documentation for the heating engineer (not included in standard pack)

The following documents are available i n addition to the set of documents supplied:

- Spare parts catalogue
- Servicing instructions (for fault diagnosis/elimination and checking function)

These documents can be requested from the Bosch Information Service. The contact address can be found on the back page of these Installation Instructions.

3 Product details

ZWB appliances are combi boilers for central and DHW heating according to the instantaneous water heating principle.

3.1 Intended use

The appliance may only be installed in sealed unvented hot water central heating systems to EN 12828.

Using the boiler for any other purpose will be considered incorect use. Bosch accepts no liability for any damage resulting from such use.

The commercial and industrial use of the appliance to generate process heat is not permitted.

3.2 EC Declaration of Conformity

This appliance conforms to the applicable requirements of the European Directives 90/396/EWG, 92/42/EWG, 2006/95/EG, 2004/108/EG and the design described in the EC design approval certificate.

It meets the requirements for condensing boilers as defined in the Energy Saving Regulations.

According to § 7, para. 2.1 of the regulations of the new edition of the first and changes to the fourth regulation on the implementation of the national law on pollution protection, the concentration of nitrogen oxide in the exhaust fumes as determined by test condition acc. to DIN 4702, Part 8, Edition March 1990, is under 80 mg/kWh.

The appliance has been tested acc. to EN 677.

Prod. ID.	CE-0085 BS0253
Category	$II_{2H\ 3B/P}$
Type of appliance	C_{13},$C_{13(X)}$, C_{33}, $C_{33(X)}$, C_{43}, $C_{43(X)}$, C_{53}, C_{83}, B_{23}, B_{33}

Tab. 2

3.3 Explanation of model code

ZWB 28	-3C	23
ZWB 28	-3C	31

Tab. 3

Z Central heating appliance
W Hot water appliance
B Condensing technology
28 DHW output up to 28 kW
-3C Version
23 Natural gas type H
31 LPG

The code number indicates the gas group according to EN 437:

Code number	Wobbe index (W_S) (15 °C)	Gas type
23	12,7-15,2 kWh/m^3	Erdgas, type 2H
31	20,2-24,3 kWh/m^3	Flüssiggas 3B/P

Tab. 4

3.4 Type plate

The rating plate (418) is on the right at the bottom of the chassis (→ fig. 3).

It contains details of the output of the appliance, the order number, the approval data and the date of manufacture in encoded form (FD).

3.5 Description of appliance

- Wall mounted boiler; installation independent of chimney location or room size.
- **Intelligent heating circuit pump control when connected to an weather-dependent heating controller**
- **Heatronic 3 with 2-wire BUS**
- Connecting lead with mains plug
- Display
- Automatic ignition
- Modulating output control
- Fully featured safety system provided by Heatronic module with flame failure detection and solenoid valves to EN 298
- No minimum water circulation rate required
- Suitable for floor heating
- Facility for connecting 60/100 or 80/125 mm dia. concentric flue/air pipe, or alternatively 80 mm dia. separate flue and air pipes or flue pipe only
- Variable speed fan
- Premix burner
- Temperature sensor and temperature control for central heating
- Temperature sensor in flow
- Safety temperature limiter in 24 V electrical circuit
- Three-speed heating pump with automatic air vent
- Safety valve, pressure gauge, expansion vessel
- Connection for cylinder temperature sensor (NTC)
- Flue gas temperature limiter (120 °C)
- DHW priority
- Motorised 3-way valve
- Plate type heat exchanger (GB042-22K)
- Integral heating-system top-up fixture (GB042-22K)
- Mounting plate

3.6 Accessories

Below is a list of typical accessories for this appliance. You can find comprehensive details of all available accessories in our catalogue.

- Flue kits
- Weather-compensated controller, e.g FW 100, FW 200
- Room thermostat, e.g. FR 100, FR 110
- Remote control units FB 100, FB 10
- Condensate pump KP 130
- Neutralising box NB 100
- Safety assembly no. 429 or 430
- Outlet siphon with optional connection for condensate and safety valve no. 432
- Outlet siphon with optional connection for condensate and safety valve no. 432
- L-Pipe-Set

3.7 Dimensions and minimum clearances

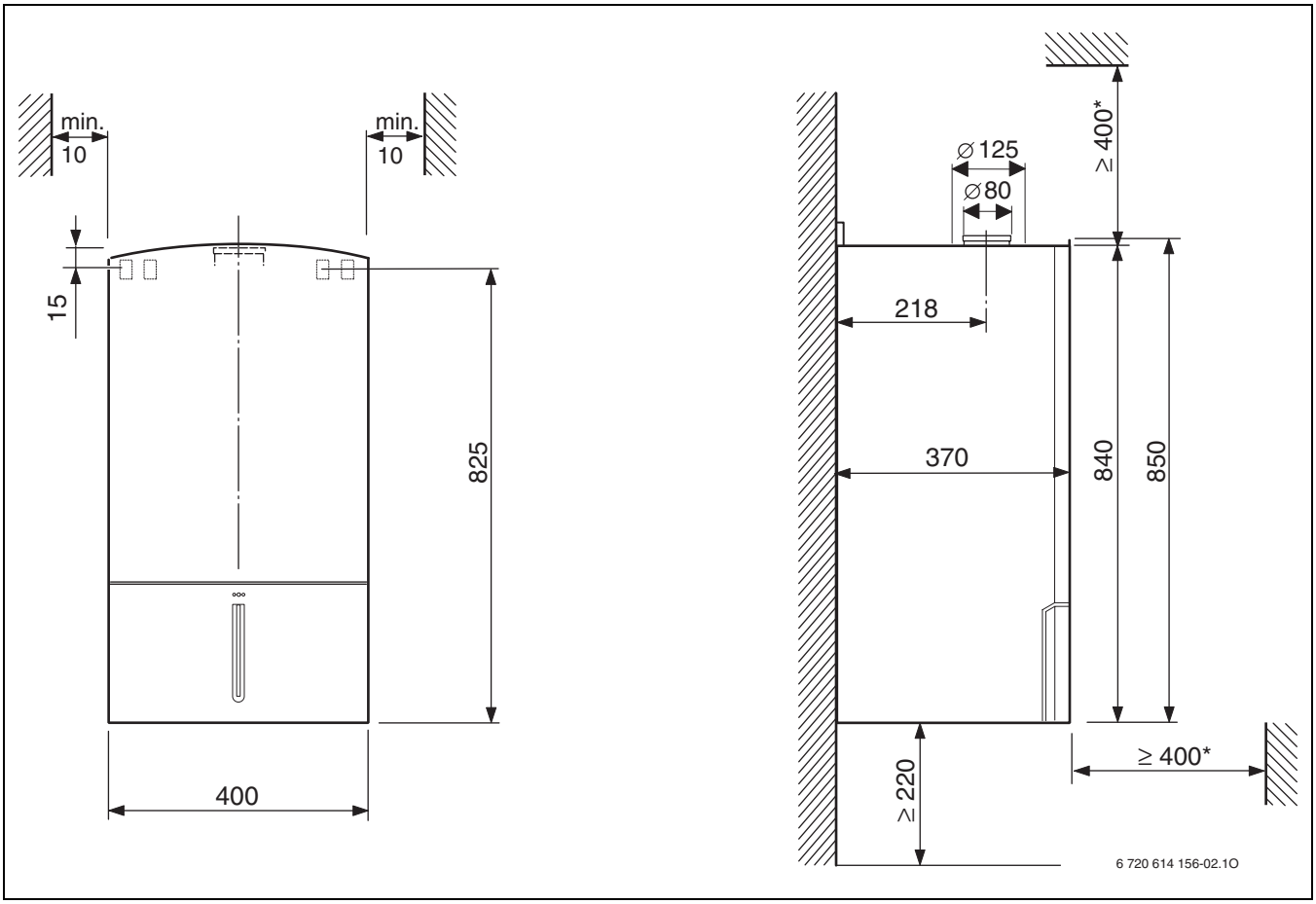


Fig. 2

***** For servicing and maintenance

3.8 Appliance layout GB042-22K

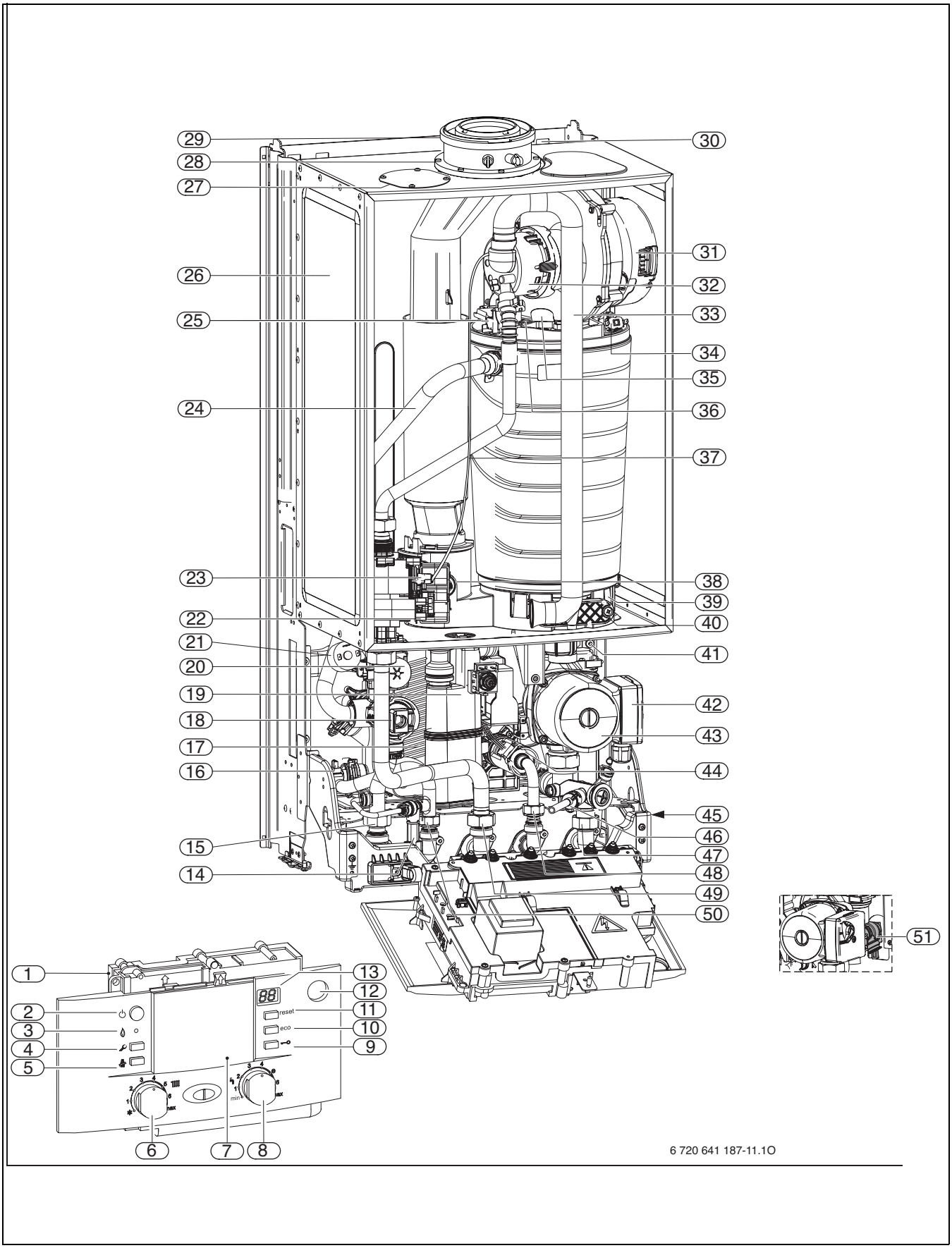


Fig. 3

1 Heatronic 3
2 Main switch
3 Burner ON indicator
4 Service button
5 Chimney sweep button
6 Flow temperature control
7 Here, a weather-compensated control unit or a time switch (accessories) can be plugged in
8 DHW temperature control
9 Button lock
10 eco button
11 reset button
12 Pressure gauge
13 Display
14 Filling valve
15 CH flow
16 DHW temperature sensor
17 Plate-type heat exchanger
18 3-way valve
19 Condensate trap
20 Motor
21 Pressure switch in CH flow
22 Gas supply pressure test port
23 Adjusting screw for min. gas inlet flow rate
24 CH flow
25 Tempe.pdfrature sensor, CH flow
26 Expansion vessel
27 Combustion air inlet (separate pipe)
28 Combustion air inlet
29 Flue pipe
30 Fixing points
31 Fan
32 Mixer unit
33 Suction pipe
34 Sight glass
35 Temperature limiter for heating block
36 Set of electrodes
37 Hose for control pressure
38 Flue gas temperature limiter
39 Condensate tray
40 Inspection window cover
41 Automatic air vent valve
42 Pump speed selector switch
43 Central heating pump
44 Turbine
45 Type plate
46 Drain tap
47 CH return
48 Cold water inlet
49 Gas
50 DHW outlet
51 Safety valve (CH system)

3.9 Electrical wiring diagram

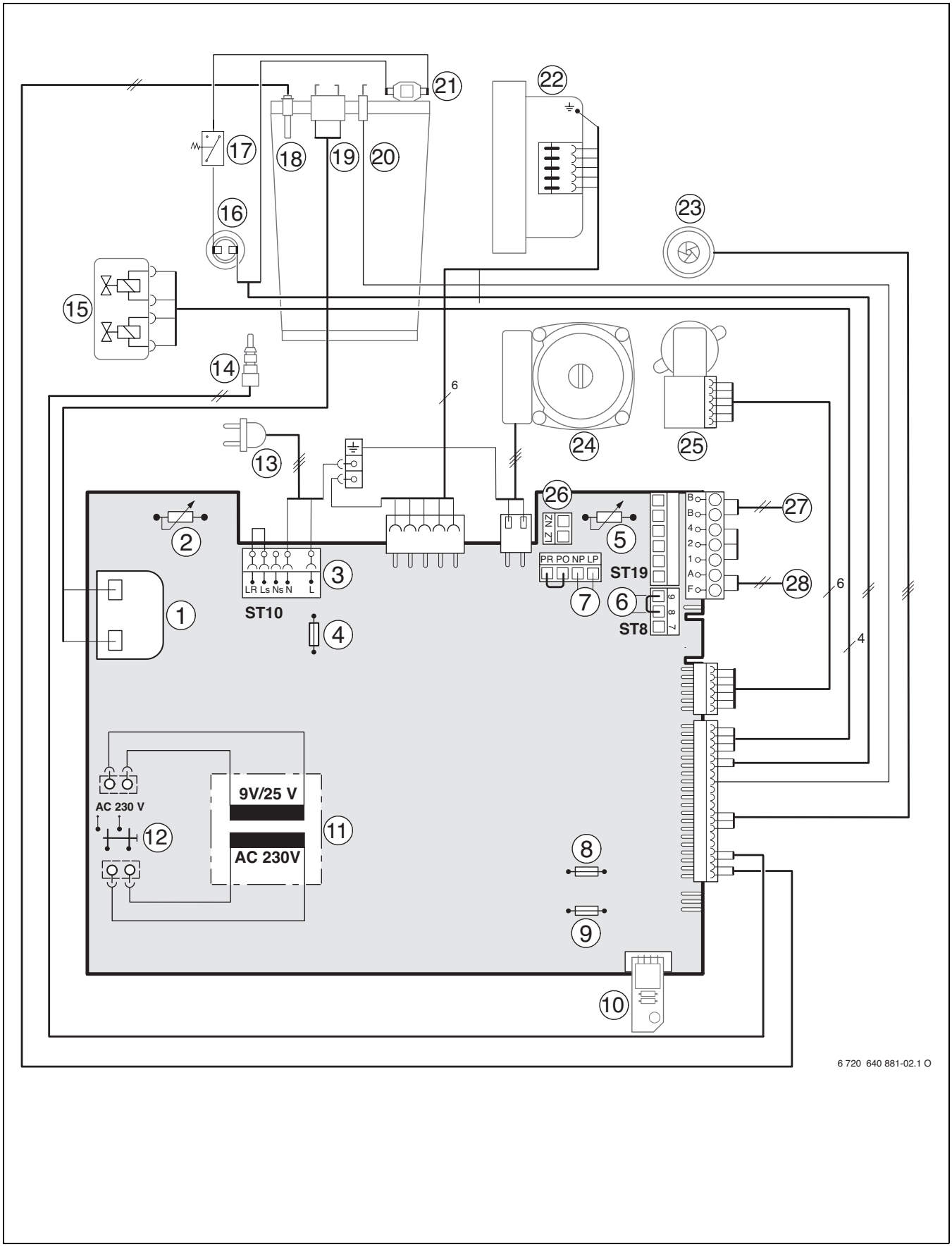


Fig. 4

1 Ignition transformer
2 Flow temperature control
3 Terminal strip, 230 V AC
4 Fuse, 2.5 A slow (230 V AC)
5 DHW temperature control
6 Connection for temperature limiter TB1 (230 V AC)
7 Connection for circulation pump
8 Fuse, 0.5 A slow (5 V DC)
9 Fuse, 1.6 A slow (24 V DC)
10 Coding plug
11 Transformer
12 Main switch
13 Connecting lead with plug
14 DHW temperature sensor on ZWB 28-3 Cr
15 Gas valve
16 Flue gas temperature limiter
17 Pressure switch in CH flow
18 Temperature sensor, CH flow
19 Ignition electrode
20 Flame monitoring electrode
21 Temperature limiter for heating block
22 Fan
23 Turbine
24 Central heating pump
25 3-way valve
26 Connection for external heating circuit pump (primary circuit)
27 Connection for BUS device, e.g. heating controller
28 Connection for TR100, TR200, TRQ 21, TRP 31

3.10 Specification

	Unit	Natural gas	ZWB 28-3 C Propane[1)]	Butane
Max. rated output (P_{max}) 40/30 °C	kW	21,8	21,7	24,5
Max. rated output (P_{max}) 50/30 °C	kW	21,6	21,6	24,7
Max. rated output (P_{max}) 80/60 °C	kW	20,3	20,3	23,0
Max. rated heat input (Q_{max}), central heating	kW	20,8	20,8	23,6
Min. rated output (P_{min}) 40/30 °C	kW	8,1	11,6	11,6
Min. rated output (P_{min}) 50/30 °C	kW	8,0	11,5	11,5
Min. rated output (P_{min}) 80/60 °C	kW	7,3	10,5	10,5
Min. rated heat input (Q_{min}), central heating	kW	7,5	10,8	10,8
Max. rated heat output (P_{nW}), DHW	kW	27,4	27,4	27,4
Max. rated heat input (Q_{nW}), DHW	kW	28,0	28,0	28,0
Maximum gas inlet flow rate				
Natural gas type H (H_{iS} = 9.5 kWh/m^3)	m^3/h	2,8	-	-
Butane/propane (H_i = 12.9 kWh/kg)	kg/h	-	2,1	2,0
Permissible gas inlet pressure				
Natural gas type H	mbar	10,5 - 16	-	-
Propane type 37	mbar	-	25 - 35	25 - 35
Expansion vessel				
Pre-charge pressure	bar	0,5	0,5	0,5
Total capacity	l	8	8	8
DHW				
Max. DHW flow rate	l/min	12	12	12
Outlet temperature range	°C	40 - 60	40 - 60	40 - 60
Max. cold water inlet temperature	°C	60	60	60
Max. permissible water supply pressure	bar	10	10	10
Min. inlet pressure	bar	0,3	0,3	0,3
Specific flow rate acc. to EN 625	l/min	13,0	13,0	13,0
Calculation figures for calculating cross-sectional area to DIN 4705				
Flue gas volumetric flow rate, max./min. rated	g/s	11,9/3,5	12,3/4,9	11,6/4,7
Flue gas temperature 80/60 °C max./min. rated	°C	94/61	94/61	94/61
Flue gas temperature 40/30 °C max./min. rated	°C	60/32	60/32	60/32
Residual pump head	Pa	80	80	80
CO_2 at max. rated output	%	9,6	10,8	11,5
CO_2 min. rated heat output	%	8,7	10,5	11,0
Flue gas rating group to G 635/G 636		G_{61}/G_{62}	G_{61}/G_{62}	G_{61}/G_{62}
NO_x class		5	5	5
Condensate				
Max. condensate quantity (t_R = 30 °C)	l/h	1,7	1,7	1,7
pH level, approx.		4,8	4,8	4,8
General data				
Power supply voltage	AC ... V	230	230	230
Frequency	Hz	50	50	50
Max. power consumption, central heating mode	W	125	125	125
EMC limit class	-	B	B	B
Noise output level	≤ dB(A)	36	36	36
Appliance enclosure rating	IP	X4D	X4D	X4D
Max. CH flow temperature	°C	Approx. 90	Approx. 90	Approx. 90
Max. permissible operating pressure (P_{MS}) CH	bar	3	3	3
Permissible ambient temperature	°C	0 - 50	0 - 50	0 - 50
Nominal capacity of appliance (CH)	l	3,0	3,0	3,0
Weight (excluding packaging)	kg	44	44	44
Dimensions, W x H x D	mm	400 x 850 x 370	400 x 850 x 370	400 x 850 x 370

Tab. 5

1) Standard figure for LPG with fixed tanks with capacities up to 15,000 litres.

3.11 Condensate composition

Substance		Concentration [mg/l]
Ammonium		1,2
Lead	≤	0,01
Cadmium	≤	0,001
Chrome	≤	0,1
Halogenated hydrocarbons	≤	0,002
Hydrocarbons		0,015
Copper		0,028
Nickel		0,15
Mercuryv	≤	0,0001
Sulfat		1
Zink	≤	0,015
Zinn	≤	0,01
Vanadium	≤	0,001
pH-value		4,8

Tab. 6

4 Regulations

The following regulations and requirements must be observed:

- National building regulations
- Requirements of the gas supply utility
- **EnEG** (German Energy Saving Act)
- **EnEV** (German regulations on energy saving thermal insulation and energy saving building design)
- **Heizraumrichtlinien** oder die Bauordnung der Bundesländer, Richtlinien für den Einbau und die Einrichtung von zentralen Heizräumen und ihren Brennstoffräumen (German boiler room regulations or the state building regulations, regulations for installation and fitting out of boiler rooms and fuel supply rooms), Beuth-Verlag GmbH - Burggrafenstraße 6 - 10787 Berlin
- **DVGW**, Wirtschafts- und Verlagsgesellschaft, Gas- und Wasser GmbH - Josef-Wirmer-Str. 1–3 - 53123 Bonn
  - Worksheet G 600, TRGI (Technical regulations for gas installations)
  - Worksheet G 670, (Installation of gas fired systems in rooms with mechanical ventilation systems)
- **TRF 1996** (Technical regulations for LPG) Wirtschafts- und Verlagsgesellschaft, Gas- und Wasser GmbH - Josef-Wirmer-Str. 1–3 - 53123 Bonn
- **DIN Standards**, Beuth-Verlag GmbH - Burggrafenstrasse 6 - 10787 Berlin
  - **DIN 1988**, TRWI (Technical Regulations for Domestic Water Systems)
  - **DIN 4708** (Central Water Heating Systems)
  - **DIN 4807** (Expansion Vessels)
  - **DIN EN 12828** (Heating Systems in Buildings)
  - **DIN VDE 0100**, Part 701 (Installation of High Voltage Equipment with Rated Voltages up to 1000 V, Rooms with Bath or Shower)

5 Installation

DANGER: Risk of explosion
- Turn off gas tap before working on gas-carrying components.
- Check for leaks before working on gas-carrying components.

Installation of the appliance, its connection to the gas and electricity supplies, to the flue system and commissioning of it may only be carried out by an installer approved by the gas supplier or electricity supply utility.

5.1 Important notes

The water volume of the appliances is less than 10 litres and conforms to Group 1 as per DampfKV. No type approval is therefore required.

- Before installing the appliance, consult your gas supply utility and your local flue gas inspector [where appropriate].

Open vented heating systems

- Open vented heating systems must be converted to sealed systems.

Gravity fed heating systems

- Connect the appliance to the existing piping system via a flow equaliser with a dirt separator.

Underfloor heating systems

- Observe Information Sheet on the use of Bosch gas appliances with underfloor heating systems.

Galvanised radiators and pipes

To prevent gas formation:

- Do not use galvanised radiators or pipes.

Neutralisation device

If the building regulations require the use of a neutraliser unit:

- Use a neutraliser unit.

If a room thermostat is used

- Do not fit a thermostatic radiator valve to the radiator in the primary room.

Anti-freeze

The following anti-freeze fluids are permitted:

Product	Concentration
Varidos FSK	22 - 55 %
Alphi - 11	
Glythermin NF	20 - 62 %

Tab. 7

Corrosion inhibiter

The following corrosion inhibiters are permitted:

Product	Concentration
Nalco 77381	1 - 2 %
Sentinel X 100	1,1 %
Copal	1 %

Tab. 8

Sealants

In our experience, adding sealants to the heating water may result in problems (deposits in the heating block). We therefore advise against using them.

Water circulation noises

To prevent water circulation noises:

- Fit an overflow valve or, with two-pipe heating systems, a 3-way valve to the radiator furthest from the boiler.

Single-lever taps and thermostatic mixer taps

All types of single-lever taps and thermostatic mixer taps can be used.

In-line filters (GB042-22K)

To prevent pitting:

- Fit an in-line filter.

LPG

To protect the appliance against excessive pressure (TRF):

- Fit a pressure regulator with a safety valve.

Circulation pump

The associated circulation pump (external) must meet the following specifications: 230 V AC, 0.45 A, cos φ = 0.99.

5.2 Siting the appliance

Regulations concerning the installation site

The appliance is not suitable for installation outside.

Systems up to 50 kW are subject to DVGW-TRGI, LPG appliances are subject to the most recent version of the TRF.

- Observe relevant national regulations.
- Consult the flue kit installation instructions for details of minimum clearances required.

Combustion air supply

In order to prevent corrosion, the combustion air must not contain any corrosive substances.

Substances classed as corrosion-promoting include halogenated hydrocarbons which contain chlorine and fluorine compounds and are contained in some solvents, paints, adhesives, aerosol propellants and household cleaners, for example.

Surface temperature

The max. surface temperature of the appliance is below 85 °C. That means that no special safety precautions are required with regard to flammable building materials and fitted furniture. If regulations differ in individual countries they must be observed.

LPG systems below ground level

The appliance conforms to the requirements of the German technical regulations for LPG, TRF 1996, Section 7.7, for installation below ground level. We recommend that a solenoid shut-off valve is fitted to the gas supply pipe (connection via IUM) so that the LPG supply is only turned on when the system calls for heat.

5.3 Pre-installing pipes

NOTICE: Never carry the appliance by the Heatronic unit or rest the appliance on it.

- Remove packing, taking care to observe the instructions on the packing.

Fixing to the wall

- No special wall protection is required. The wall must be flat and able to bear the weight of the appliance.
- Fix the mounting template supplied with the documents to the wall, observing a lateral clearance of at least 10 mm (→ Fig. 2).
- Drill holes for wall plugs (dia. 8 mm) and mounting plate to match the mounting template.
- If required: make hole in wall for the flue pipe.

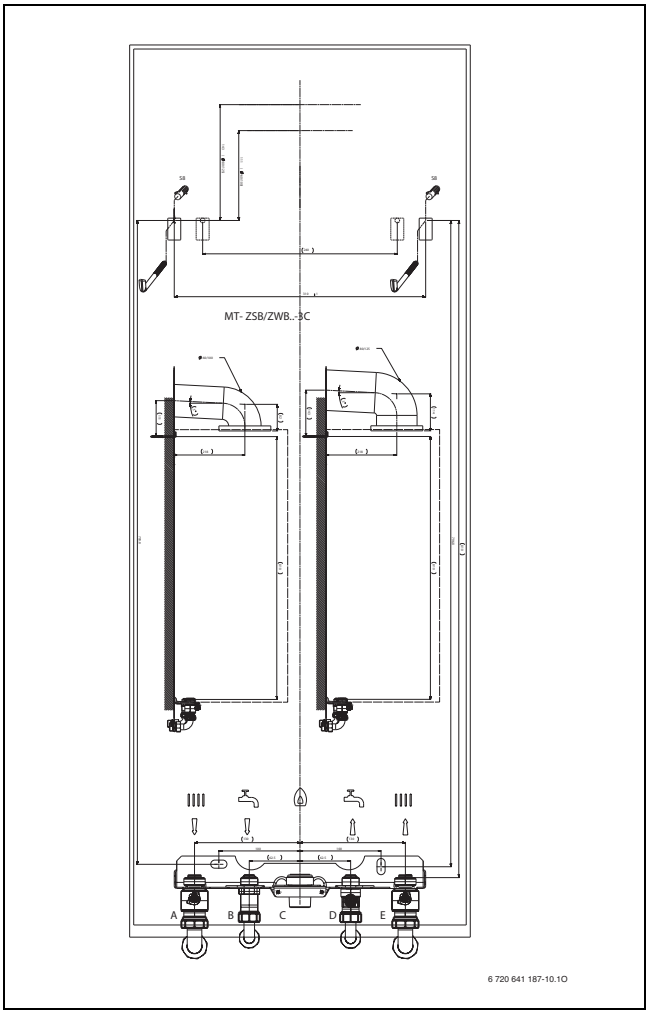


Fig. 5 Mounting template

- Remove the mounting template.
- Fit wall plugs and screw hooks provided.
- Fit mounting plate (not included) using fixings provided.

Gas and water connections

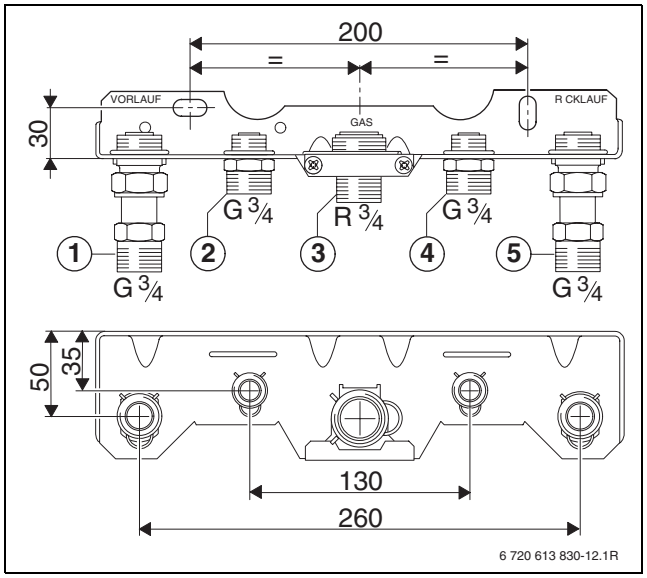


Fig. 6 Mounting plate (Accessories)

1 CH flow
2 Hot water connection
3 Gas connection
4 Cold water connection
5 CH return

- Determine the internal pipe diameter for the gas supply in accordance with DVGW-TRGI (natural gas) or TRF (LPG).
- All pipe connections in the heating system must be suitable for a pressure of 3 bar and for 10 bar in a hot water circuit.
- For filling and draining the system, fit fill & drain valves at the lowest point of the system.
- Fit an air vent valve at the highest point.

5.4 Fitting the appliance

NOTICE: The appliance can be damaged by dirt in the piping system.

- Flush out the system to remove all dirt residues.

- Remove the fixings on the connecting pipes.

Removing the outer casing

The outer casing is secured against unauthorised removal by two screws (electrical safety).

- Always secure the outer casing with these screws.

- Remove the two securing screws underneath the appliance.
- Slide outer casing from the bottom forwards and move upwards.

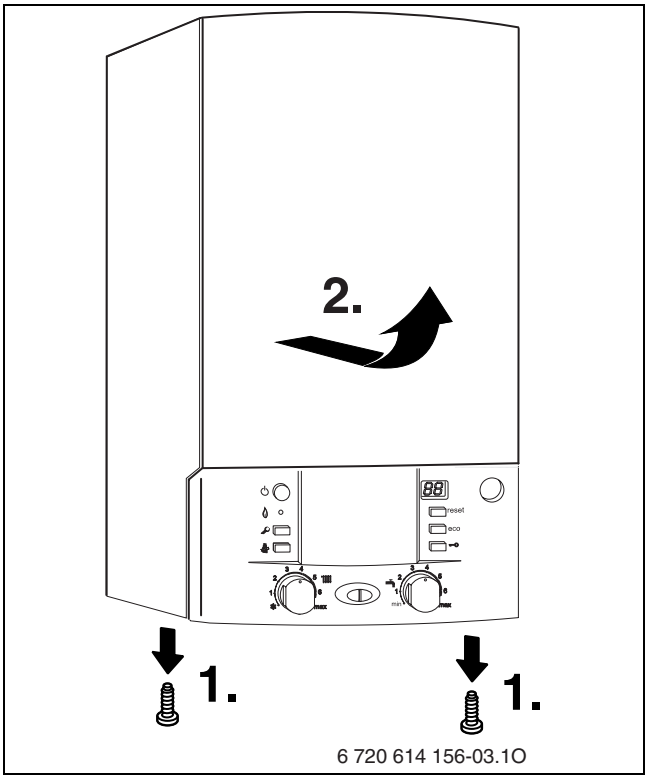


Fig. 7

Securing the appliance

- Place sealing washers on the mounting plate connections.
- Locate the appliance on the two hooks (1) on the wall.

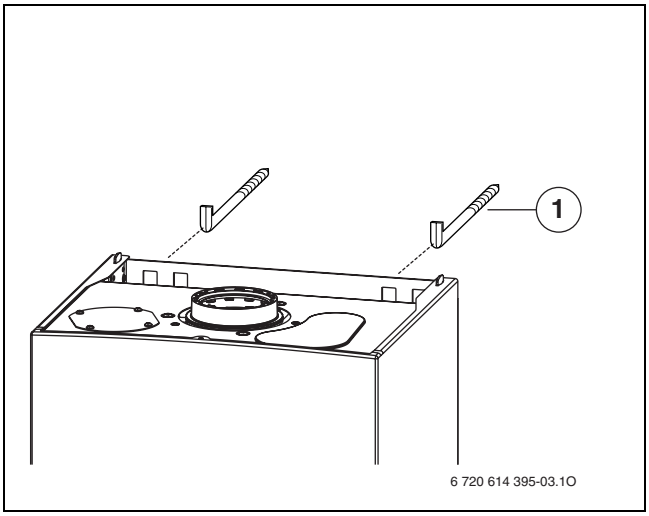


Fig. 8 Locating the appliance on the hooks

1 Haken

- Tighten the union nuts on the pipe connections.

Fitting hose from filling valve

- Fix handle with one screw on the filling valve.

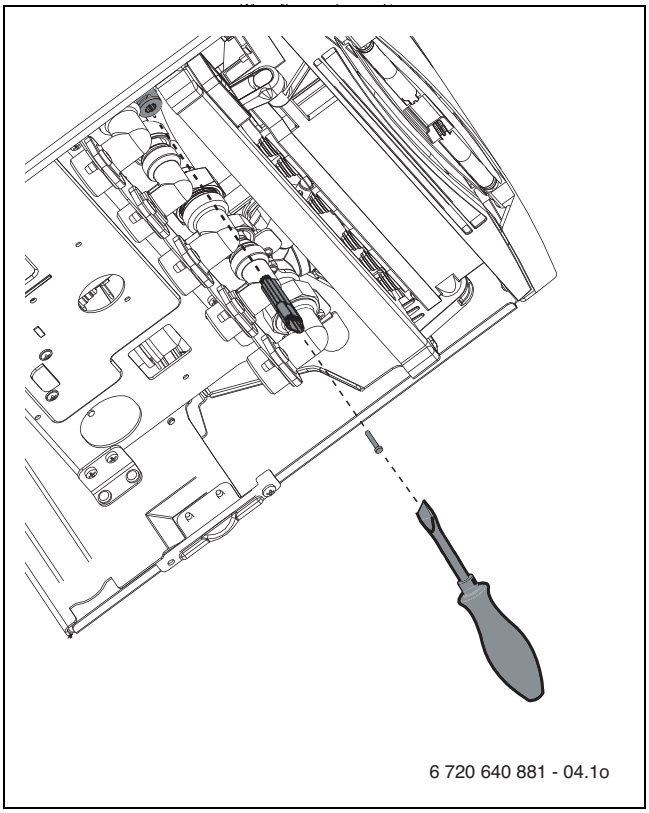


Fig. 9

Fitting hose from safety valve

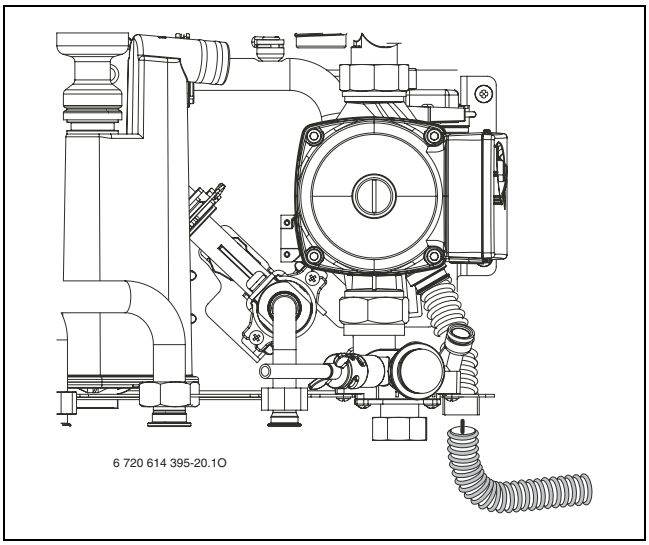


Fig. 10

Funnel trap accessory kit

A funnel trap accessory kit is available for safe drainage of water discharged by the safety valve and of condensate.

- Construct drainage system of corrosion-proof materials
  (ATV-A 251).
  These include stoneware pipes, hard PVC pipes, PVC pipes, PE-HD pipes, PP pipes, ABS/ASA pipes, cast pipes enamelled or coated on the inside, plastic-coated steel pipes, stainless steel pipes, borosilicate glass pipes.
- Fit drain directly to a DN 40 connection.

CAUTION:
- Do not modify or seal off drain pipes.
- Hoses must always slope downwards.

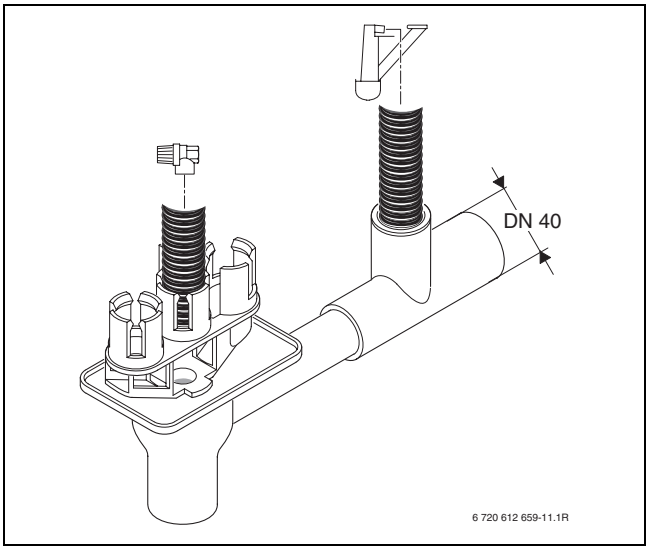


Fig. 11

Fitting the cover panel

- Insert dampers ((1) and (2), supplied) below the control panel. Only fit damper (2) loosely.
- Slide the pin (3) on the right of the cover panel into the damper (2).
- Open cover panel (4) and position both dampers correctly below the control panel.
- Close cover panel.
  The cover panel locks into place.

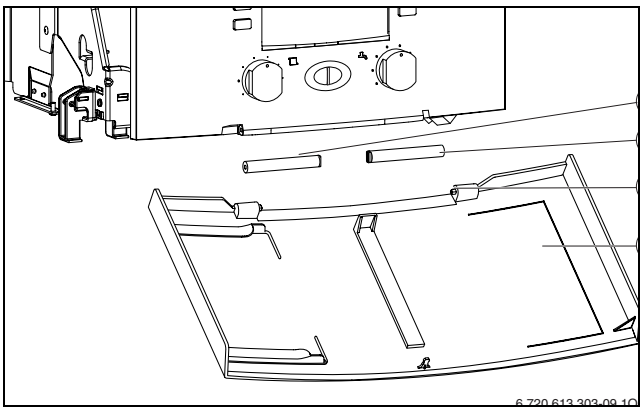


Fig. 12 Fitting the cover panel

1, 2 Damper
3 Pin on cover panel
4 Cover panel

- To open the cover panel: push in the upper middle part of the cover panel and release it.
  The cover panel will then open.

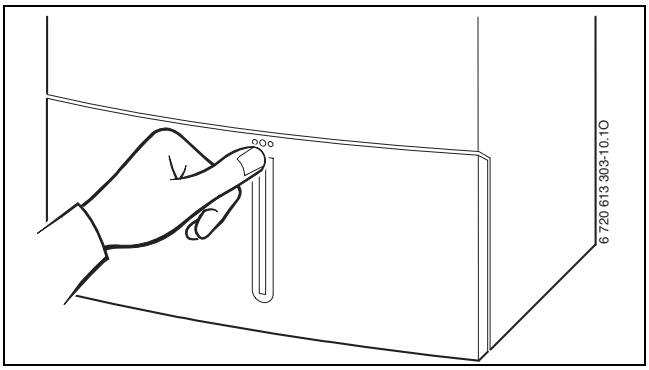


Fig. 13

Flue system

- Pushing on the flue gas accessories and securing with the screws supplied.

For more precise details of connecting the flue, refer to the installation instructions for the flue kit.

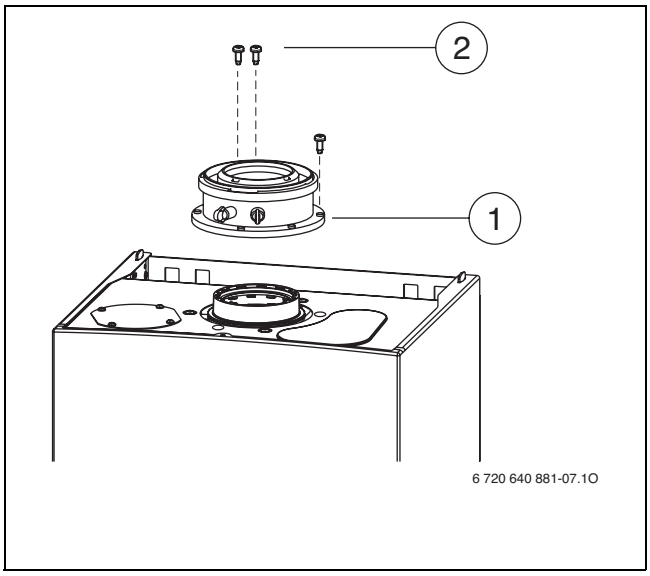


Fig. 14 Fitting the flue kit

1 Flue/adaptor
2 Screws

- Fit the flue kit and screw on together with the throttle disc.

For more precise details of connecting the flue, refer to the installation instructions for the flue kit.

L-Pipes

- Fit L-pipes (not included).

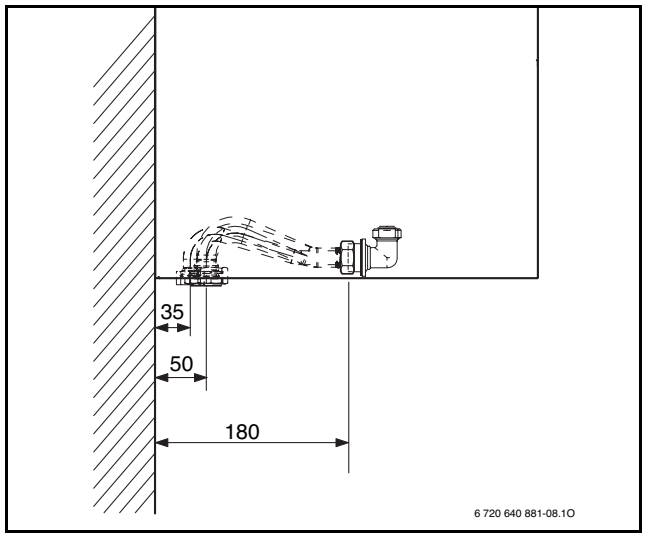


Fig. 15

5.5 Checking the connections

Water connections

- Turn on the cold water isolator on the appliance and a turn on a hot water tap until water runs out (testing pressure: max. 10 bar).
- Turn on the service valves for central heating flow and return and fill the heating system through an approved filler pipe arrangement.
- Check sealing points and unions for leaks (testing pressure: max. 2.5 bar at the pressure gauge).
- Check all connections for leaks.

Gas supply pipe

- Turn off gas tap to protect gas valve against damage from excessive pressure (max. pressure 150 mbar).
- Check gas supply pipe.
- Release the pressure on the gas supply pipe.

6 Electrical connections

6.1 General

DANGER: Risk of electric shock

- Always disconnect the power supply to the appliance at the mains before carrying out any work on the electrical systems and components (fuse, circuit breaker).

All appliance modulation, control and safety components are tested and ready-wired for use.

Observe safety precautions as per VDE Requirements 0100 and special regulations (TAB) of the local electricity suppliers.

In rooms with a bath or shower, the appliance may only be connected via an RCD protected circuit.

No other electrical consumer units may be connected to the same power cable.

In safety zone 1, route the cable vertically away from the appliance.

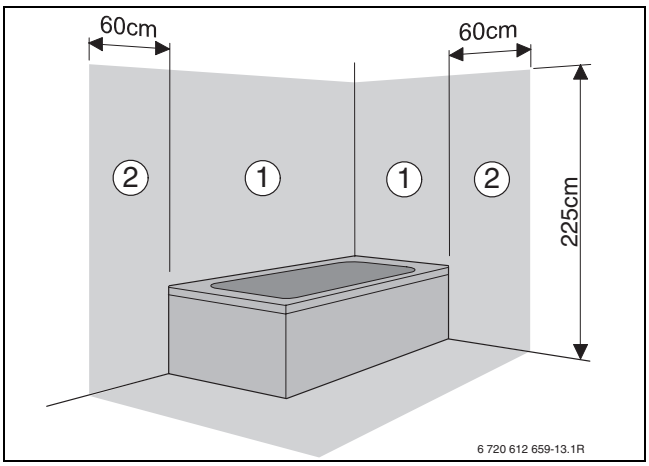


Fig. 16

Safety zone 1: directly above the bath
Safety zone 2: within a distance of 60 cm from the bath/shower

Two-phase network (IT)

- To ensure adequate ionisation current, fit a resistor (order no. 8 900 431 516) between the neutral terminal and the earth terminal.

-or-

- Use isolation transformer accessory no. 969.

Fuses

The appliance is protected by three fuses. They are located on the circuit board (→ Fig. 4, page 12).

Replacement fuses can be found on the back of the cover (→ Fig. 18).

6.2 Mains electrical connection

- Plug mains plug into an earthed power outlet socket (outside safety zones 1 and 2).

If the cable is not long enough, disconnect and remove the cable,
→Section 6.3
Use the following cable types:

- HO5VV-F 3 x 0.75 mm^2 or
- HO5VV-F 3 x 1.0 mm^2

If the appliance connection is inside safety zone 1 or 2, disconnect and remove the cable, → 6.3. Use cable type NYM-I 3 x 1.5 mm^2.

- NYM-I 3 x 1.5 mm^2

- Connect the power supply via an isolating device with a contact separation of at least 3 mm (e.g. fuse, circuit breaker).

6.3 Connecting accessories

6.3.1 Opening the Heatronic unit

CAUTION: Cable offcuts can damage the Heatronic.

- Always strip cables away from the Heatronic.

To establish the electrical connections, the Heatronic unit must be folded out and opened up.

- Remove the outer casing (→ page 20).
- Undo the screw and fold the Heatronic down.

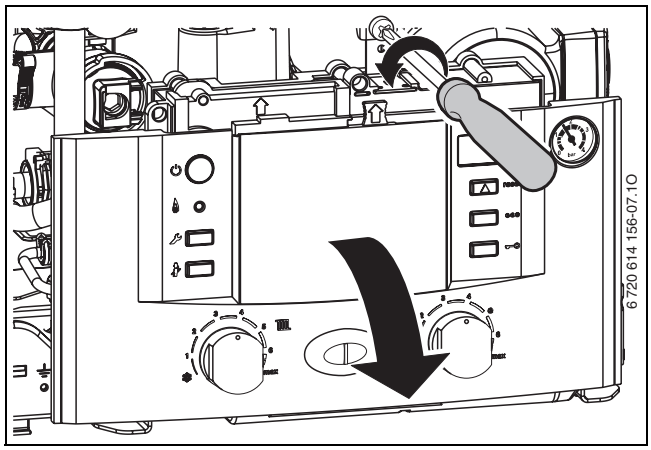


Fig. 17

- Remove screws, unhook cable and remove cover.

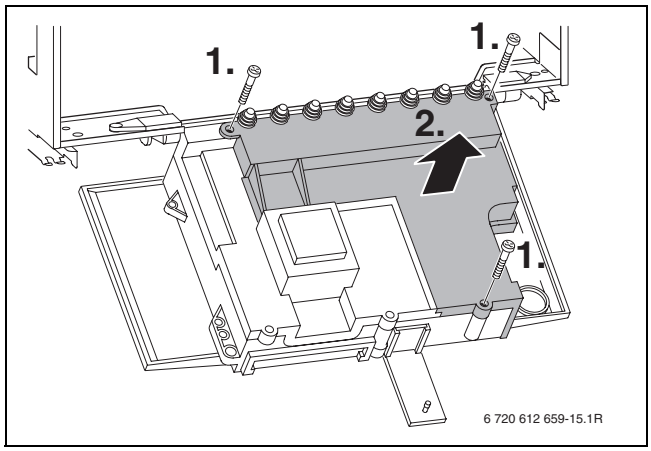


Fig. 18

- To provide anti-splash protection (IP), always cut cable grip to fit cable diameter.

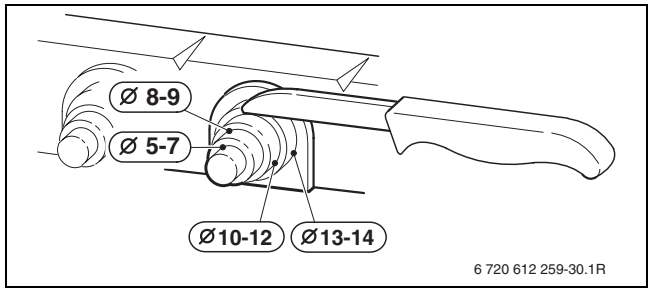


Fig. 19

- Feed cable through cable grip and connect as appropriate.
- Secure cable in cable grommet by means of cable grip.

6.3.2 Connecting the heating controller or remote control units

Only operate this appliance with a Bosch controller.

The heating controllers FW 100 and FW 200 can also be installed into the front of the Heatronic 3.

For installation and electrical connection, see the relevant installation instructions.

Connecting a 230-Volt on/off programmer (TRZ..)

The controller must be suitable for mains voltage (from boiler) and must not have its own earth connection.

- ▶ Cut cable grommet to diameter of cable.
- ▶ Feed cable through cable grip and connect programmer to ST10 as follows:
  - L to L_S
  - S to L_R
- ▶ Secure cable in cable grommet by means of cable grip.

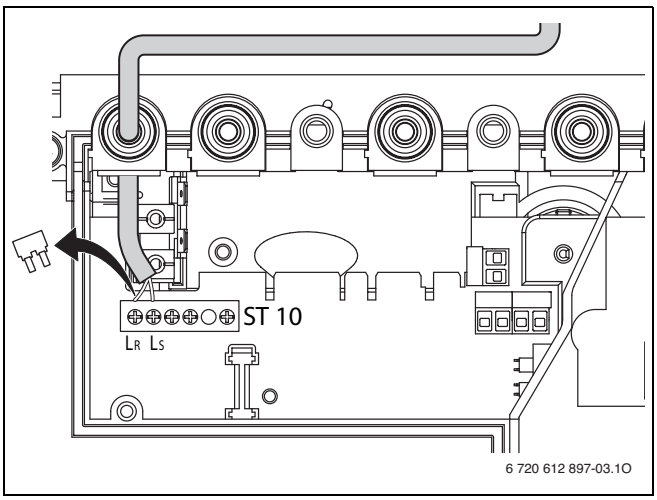


Fig. 20 Connection (230 V AC, remove jumper between LS and LR)

Connecting TR 100/TR 200 controller

- ▶ Use the following cable sizes:

Cable length	Cross-sectional area
≤ 20 m	0,75 - 1,5 mm^2
≤ 30 m	1,0 - 1,5 mm^2
> 30 m	1,5 mm^2

Tab. 9

- ▶ Cut cable grommet to diameter of cable.
- ▶ Feed cable through cable grip and connect to ST19 at terminals 1, 2 and 4.
- ▶ Secure cable in cable grommet by means of cable grip.

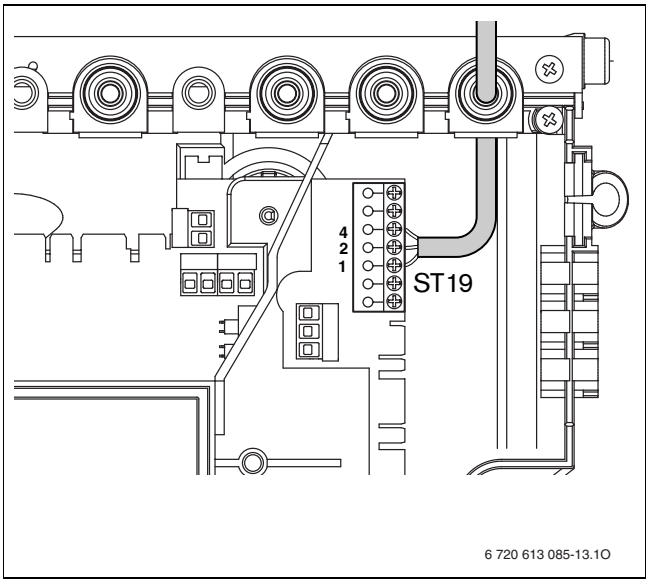


Fig. 21 Connecting a 24-V programmer

6.3.3 Connecting temperature limiter TB 1 from the flow of an underfloor heating system

Only for underfloor heating systems connected directly to the appliance.

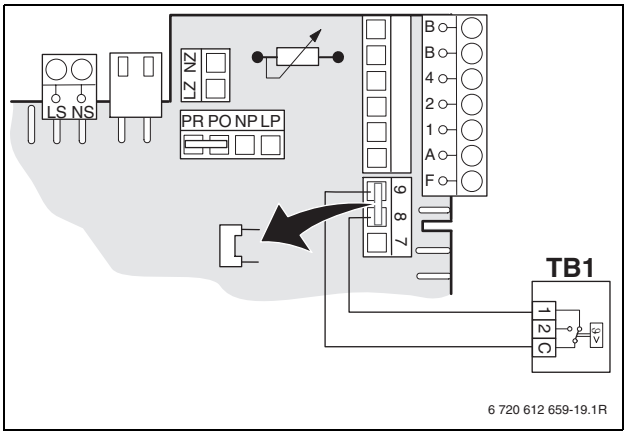


Fig. 22

If the temperature limiter trips, central heating and DHW modes are interrupted.

6.3.4 Connecting the circulation pump

- For splash-water protection (IP), always route the cable through a cable grommet with a hole diameter appropriate to the diameter of the cable.
- The following types of cable are suitable:
  - NYM-I 3 x 1.5 mm^2
  - HO5VV-F 3 x 0.75 mm^2 (not in immediate vicinity of bath or shower; zones 1 and 2 as per VDE 0100, Part 701)
  - HO5VV-F 3 x 1.0 mm^2 (not in immediate vicinity of bath or shower; zones 1 and 2 as per VDE 0100, Part 701).

▶ Cut cable grommet to diameter of cable.

▶ Feed the cable through the cable grommet and connect the circulation pump to ST25:
  - L to L_Z
  - N to N_Z
  - Earth connection (green or green-yellow connection.

▶ Secure power supply cable with cable grip.
The earth lead must be long enough so as to remain loose even if the other leads are pulled out.

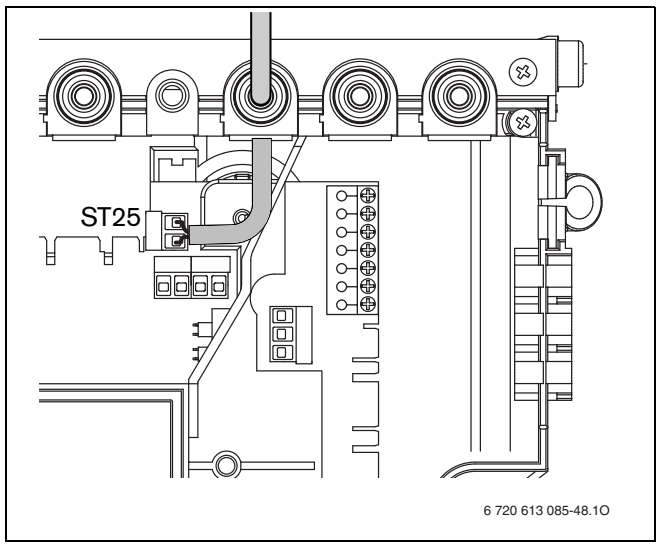


Fig. 23 Connecting the circulation pump

6.3.5 Replacing the Power cable

- For splash-water protection (IP), always route the cable through a cable grommet with a hole diameter appropriate to the diameter of the cable.
- The following types of cable are suitable:
  - NYM-I 3 x 1.5 mm^2
  - HO5VV-F 3 x 0.75 mm^2 (not in immediate vicinity of bath or shower; zones 1 and 2 as per VDE 0100, Part 701)
  - HO5VV-F 3 x 1.0 mm^2 (not in immediate vicinity of bath or shower; zones 1 and 2 as per VDE 0100, Part 701).

▶ Cut cable grommet to diameter of cable.

▶ Feed the cable through the cable grommet and connect as follows:
  - Terminal strip ST10, Terminal L (red or brown wire)
  - Terminal strip ST10, Terminal N (blue wire)
  - Earth connection (green or green-yellow connection.

▶ Secure power supply cable with cable grip.
The earth lead must be long enough so as to remain loose even if the other leads are pulled out.

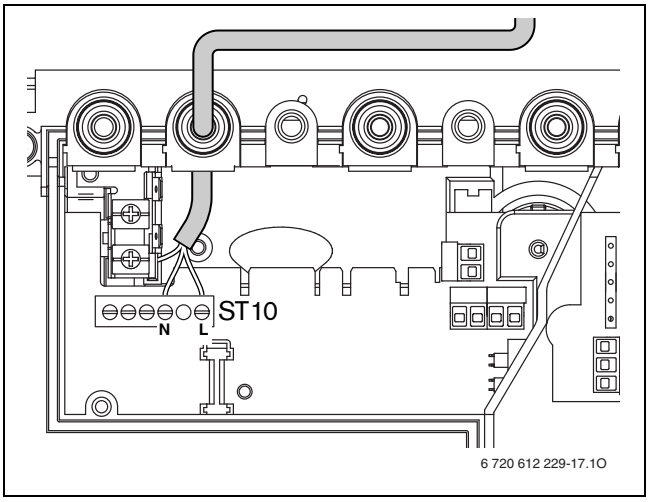


Fig. 24 Terminal strip for power supply ST10

7 Commissioning

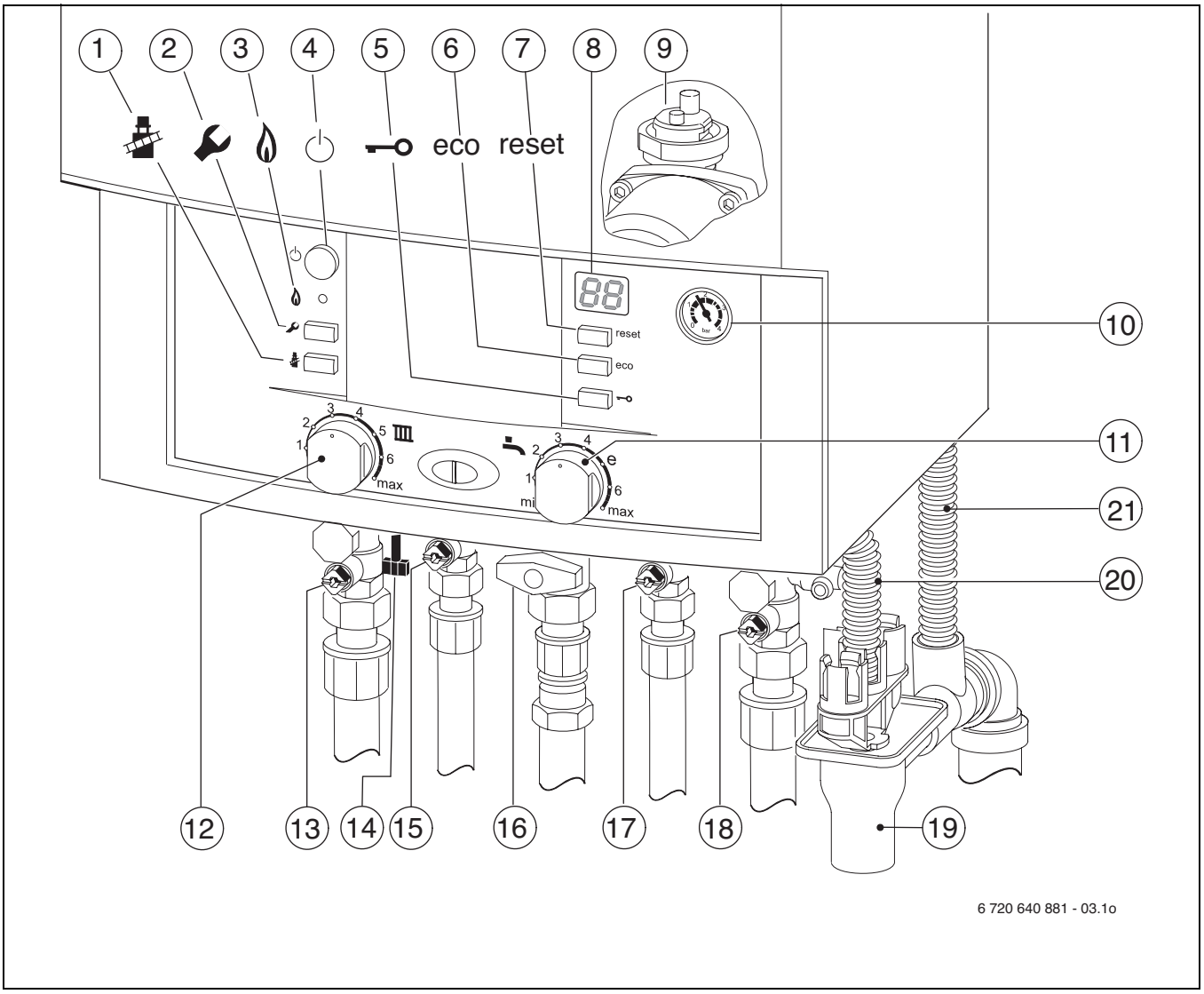


Fig. 25

1 Chimney sweep button
2 Service button
3 Burner ON indicator
4 Main switch
5 Button lock
6 eco button
7 reset button
8 Display
9 Automatic air vent valve
10 Pressure gauge
11 DHW temperature control
12 Flow temperature control
13 CH flow isolator
14 Filling valve
15 DHW isolator
16 Gas tap (shown in off position)
17 Cold water isolator
18 CH return isolator
19 Funnel trap (not included)
20 Hose from safety valve
21 Condensate hose

7.1 Before commissioning

NOTICE: Starting up the appliance when it has not been filled with water will damage it beyond repair!

- Never run the appliance without water in it.

- Adjust charge pressure of expansion vessel to static head of the central heating system (→ page 33).
- Open all system radiator valves.
- With ZWB 28-3 C appliances turn on the cold water isolator and hot water isolator (26 and 18, Fig. 32) and then turn on a hot water tap until water runs out.
- Turn on central heating flow isolator and central heating return isolator (19 and 15. Fig. 32), fill heating system to a pressure of 1 - 2 bar then turn off the filling tap.
- Bleed radiators.
- Top up heating system to pressure of 1 - 2 bar.
- Check that the gas type specified on the type plate matches that of the gas supply.
  The max. rated heat input does not have to be set in accordance with TRGI 1986, Section 8.2.
- Turn on the gas tap (17).

7.2 Switching the appliance on/off

Switching on

- Switch appliance on at the main switch.
  The display shows the CH flow temperature.

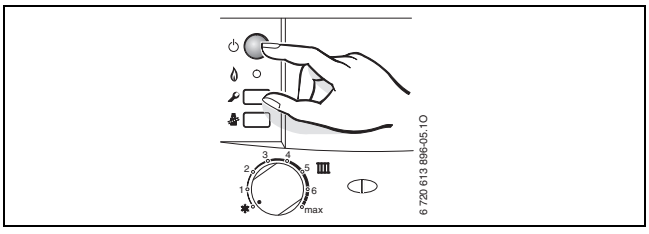


Fig. 26

When the appliance is switched on for the first time, it performs a once-only venting sequence. This involves the heating circuit pump switching on and off at intervals (for a period of approx. 4 minutes).
The display shows ⊡ in alternation with the flow temperature.

- Open the automatic vent (9) and close it again when the venting sequence has finished (→ page 37).

If the display shows ⊹ in alternation with the flow temperature, the trap filling function is active (→ page 37).

Switching off the appliance

- Switch appliance off at the main switch. The display goes out.
- If the appliance is to be switched off for a longer period of time: observe correct frost protection procedures (→ Section 7.8).

7.3 Starting the central heating

The maximum flow temperature can be set to between 35 °C and approx. 90 °C .

With underfloor heating systems, take care to observe the maximum permissible CH flow temperatures.

- Turn CH flow temperature control to adjust the max. CH flow temperature according to the central heating system:
  - Underfloor heating: e.g. position **3** (approx. 50 °C)
  - Low temperature heating system: position **6** (approx. 75 °C)
  - Heating system for flow temperatures up to 90 °C: **max** position

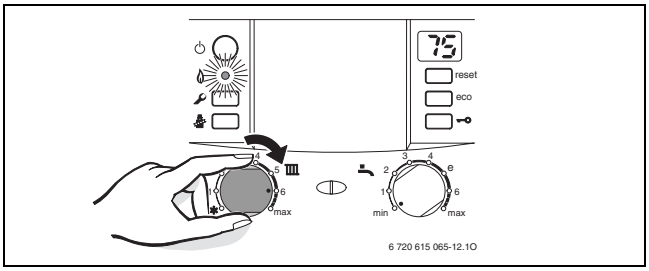


Fig. 27

When the burner is alight, the green indicator lamp lights up.

Position	CH flow temperature
1	Approx. 35 °C
2	Approx. 43 °C
3	Approx. 50 °C
4	Approx. 60 °C
5	Approx. 67 °C
6	**Approx. 75 °C**
max	Approx. 90 °C

Tab. 10

7.4 Heating control

Follow the operating instructions for the heating controller used. Those instructions will tell you

- how to set the operating mode and the heating curve for weather-dependent controllers,
- how to adjust the room temperature,
- how to heat economically and save energy.

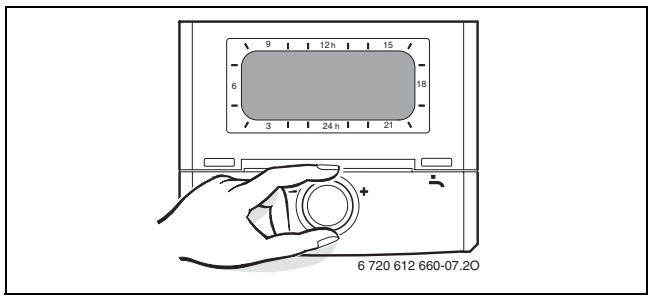


Fig. 28

7.5 After commissioning

- Check the gas inlet pressure (→ page 41).
- Check that condensate is being discharged from the condensate hose. If that is not the case, switch the main switch off and on again. That activates the trap filling function (→ page 37). Repeat the procedure several times until condensate starts running out.
- Record the settings in the commissioning report (→ page 57).

7.6 ZWB 28-3 C - setting hot water temperature

- Set the DHW temperature on the DHW temperature control .
  The set DHW temperature flashes on the display for 30 seconds.

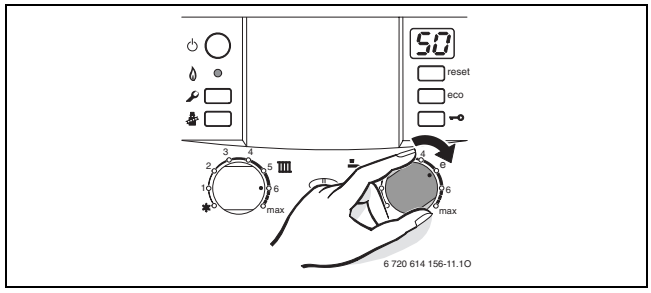


Fig. 29

DHW thermostat	DHW temperature
min	Approx. 40 °C
e	Approx. 50 °C
max	Approx. 60 °C

Tab. 11

eco button

Pressing and holding the eco button until it lights up switches between **Comfort mode** and **Economy mode**.

Comfort mode, Eco button is not lit (default setting)

The appliance is held **constantly** at the set temperature. This means that hot water is available almost instantaneously at the tap.
Consequently the appliance will switch on at intervals, even if no hot water is being drawn.

Economy mode, Eco button lit

- The water is not heated up until a hot water tap is turned on.
- **Signalling demand**.
  Briefly turning a hot water tap on and then off signals demand so that the water is then heated up to the set temperature.

Signalling demand enables maximum gas and water economy.

7.7 Summer mode (central heating off, DHW only)

- Note position of CH flow temperature control .
- Turn CH flow temperature control anti-clockwise as far as the stop .
  The heating circuit pump and consequently central heating are switched OFF. However, the DHW supply as well as the power supply to the heating programmer and timer remain 'live'.

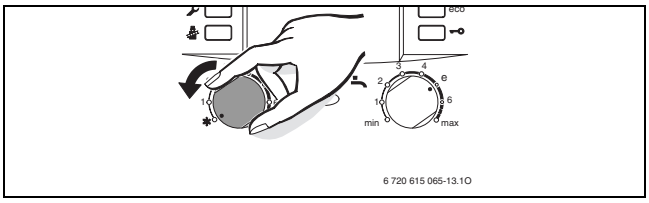


Fig. 30

NOTICE: Heating system at risk from frost.

Additional instructions are contained in the operating instructions for the heating programmer.

7.8 Frost protection

Frost protection for the heating system:

- Leave appliance switched on, set CH flow temperature control to position 1 at least.

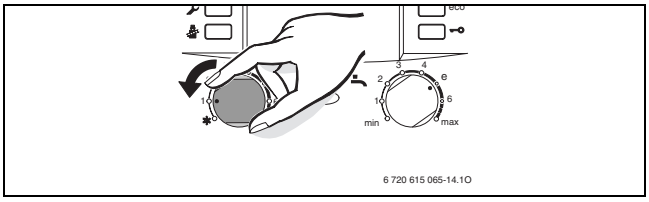


Fig. 31

- Add anti-freeze to central heating system water (→ page 17) and drain the hot water system.

Additional instructions are contained in the operating instructions for the heating programmer.

7.9 Button lock

The button lock affects the CH flow temperature control, the hot water temperature control and all buttons except the main switch and the chimney sweep button.

To switch on the button lock:

- Press button until and the heating flow temperature are shown alternately on the display.

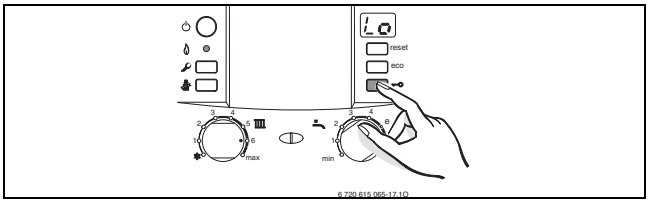


Fig. 32

To switch off the button lock:

- Press and hold the button until the display shows only the CH flow temperature.

7.10 Fault mode

All safety, modulation and control components are monitored by the Heatronic system.

If a fault occurs during operation, an audible warning signal sounds.

Pressing any button switches off the warning signal.

The display indicates a fault and the reset button may also flash.

If the reset button flashes:

- Press and hold the reset button until the display shows - -.
  The appliance will start up again and the central heating (CH) flow temperature will be displayed.

If the reset button does not flash:

- Switch the appliance off and then on again at the main switch.
  The appliance will start up again and the central heating flow temperature will be displayed.

If the fault remains and cannot be cleared:

- Contact your authorised contractor or customer service for assistance, providing details of the fault and the appliance (→ page 7).

A table of fault codes can be found on page 54.
A table of display indications can be found on page 53.

7.11 Pump anti-seizing function

This function prevents the central heating pump and the 3-way valve seizing up during long periods of inactivity.

Every time the pump is switched off, a timer is started. If after 24 hours the pump and the 3-way valve have not been used, they are switched on briefly.

8 Individual settings

8.1 Mechanical settings

8.1.1 Checking the size of the expansion vessel

The following diagrams help you to make a rough estimate as to whether the built-in expansion vessel is adequate or whether an additional expansion vessel is required (not for underfloor heating).

The characteristic curves shown are based on the following key data:

- 1% water volume in expansion vessel or 20% of nominal volume of expansion vessel
- Differential operating pressure of the safety valve of 0.5 bar, according to DIN 3320
- Pre-charge pressure of expansion vessels matches static head of the system above the heat exchanger
- Maximum operating pressure of 3 bar

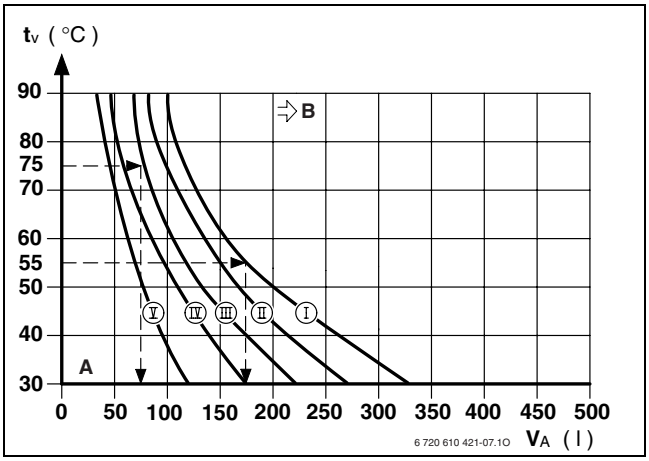


Fig. 33

I Pre-charge pressure 0.2 bar
II Pre-charge pressure 0.5 bar (standard setting)
III Pre-charge pressure 0.75 bar
IV Pre-charge pressure 1.0 bar
V Pre-charge pressure 1.2 bar
A Operating range of the expansion vessel
B A larger expansion vessel is required in this range
t_V CH flow temperature
V_A System capacity in litres

- ▶ If intersection is on the limit: determine the exact size of the vessel according to DIN EN 12828.
- ▶ If the intersection is to the right of the curve: install additional expansion vessel.

8.1.2 Changing the heating circuit pump characteristic

The speed of the heating pump can be changed at the pump terminal box.

Factory setting: switch position 3

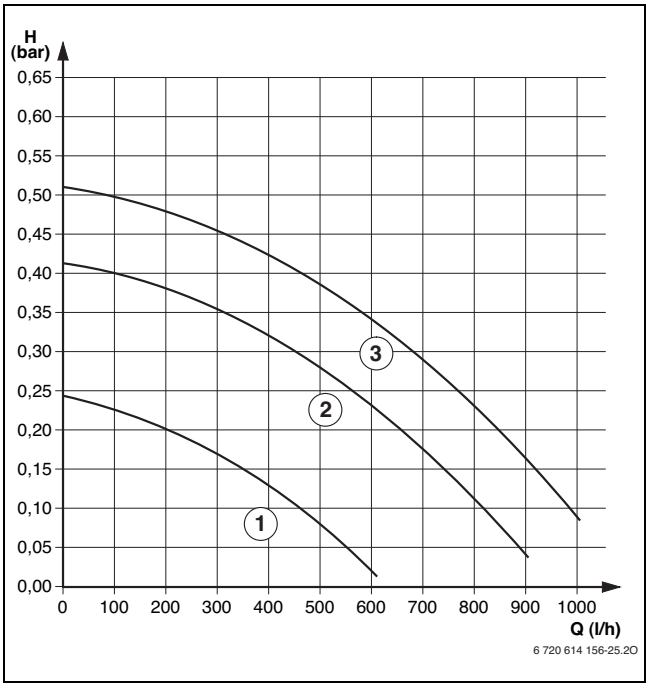


Fig. 34 Pump characteristic curves (without mounting plate)

1 Curve for switch position 1
2 Curve for switch position 2
3 Curve for switch position 3
H Residual pump head to pipe system
Q Water circulation rate

To save as much energy as possible and keep any water circulation noises to a minimum, select a low characteristic setting.

8.2 Heatronic settings

8.2.1 Operating the Heatronic unit

The Heatronic unit enables easy setting and testing of a large number of appliance functions.

This description is limited to the most important service functions.

Detailed information about fault diagnosis/elimination and function checking as well as all service functions is provided in the Servicing Instructions for heating engineers.

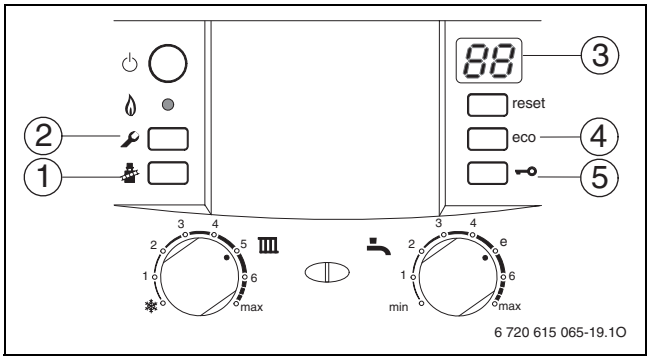


Fig. 35 Appliance controls

1 Chimney sweep button
2 Service button
3 Display
4 eco button or “Up” for service functions
5 Button lock or “Down” for service functions

Selecting service functions

The service functions are divided into two levels: **Level 1** comprises service functions **up to 7.F**, the **level 2** comprises service functions **from 8.A** onwards.

To select a service function from Level 1:

- Press and hold the service button until it lights up.
  The display will show a code such as 1.A.
- Repeatedly press the button lock or eco button until the required service function is displayed.
- Press and release the chimney sweep button.
  The chimney sweep button will light up and the display shows the setting for the selected service function.

Service function	Code no.	Page
Max. output	**1.A**	35
Max. DHW output	**1.b**	35
Pump control mode	**1.E**	35
Max. CH flow temperature	**2.b**	36
Venting function	**2.C**	36
Automatic anti-cycle time adjustment	**3.A**	36
Anti-cycle time	**3.b**	36
Switching differential	**3.C**	36
Warning signal	**4.d**	37
Trap filling function	**4.F**	37
Reset servicing interval	**5.A**	37
Set timer channel	**5.C**	37
Servicing interval	**5.F**	37
Retrieve last stored fault	**6.A**	37
Min. hot water flow rate	**7.C**	37
External flow temperature sensor (e.g. on flow equaliser)	**7.d**	37

Tab. 12 Level 1 service functions

To select a service function from Level 2:

- Press and hold the service button until it lights up.
- Press and hold the Button lock and Eco buttons simultaneously for 3 seconds (the display shows --) until the display reverts to number.letter, e.g. 8.A.
- Repeatedly press the button lock or eco button until the required service function is displayed.
- Press and release the chimney sweep button.
  The chimney sweep button will light up and the display shows the setting for the selected service function.

Service function	Code no.	Page
Reset appliance (Heatronic 3) to standard settings	**8.E**	38
Response delay for hot water demand	**9.E**	37
Pump run-on time (central heating)	**9.F**	38

Tab. 13 Level 2 service functions

Entering a setting

- ▶ Repeatedly press the button lock or eco button until the required service function setting is displayed.
- ▶ Record the setting in the commissioning log (→ page 57).

Storing a setting

- ▶ Press and hold chimney sweep button until the display shows [ ].

The unit automatically exits the service level if no button is pressed for 15 minutes.

Exiting the service function without storing the settings

- ▶ Briefly press the chimney sweep button. The light in the chimney sweep button will go out.

8.2.2 Heating output (Service function 1.A)

Some gas supply utilities charge a basic rate based on output.

The output can be limited to any level in percent between the minimum and maximum rated output, to suit the specific heat demand.

Even if the output has been limited, the maximum rated output is still available for DHW.

Default setting is maximum rated heat output:

Appliance type	Display indication
ZWB 28 ...	76

Tab. 14

- ▶ Select service function 1.A.
- ▶ Refer to the settings tables (→ page 55 onwards) for the heat output in kW and the corresponding setting code.
- ▶ Enter the setting code.
- ▶ Measure the gas flow rate and compare with the figures for the setting shown. If they do not match, change the setting.
- ▶ Save the setting.
- ▶ Enter the heating output in kW and the setting in the display in the commissioning log (→ page 57).
- ▶ Exit service functions. The display will show the CH flow temperature again.

8.2.3 Hot water output (Service function 1.b)

The hot water output can be set to between the minimum and maximum rated heat output for hot water to suit the heat transfer capacity of the DHW cylinder.

Standard setting is the maximum rated output for DHW: U0.

- ▶ Select service function 1.b.
- ▶ Refer to the settings tables (→ page 55 onwards) for the hot water heat output in kW and the corresponding setting code.
- ▶ Enter the setting code.
- ▶ Measure the gas flow rate and compare with the figures for the setting shown. If they do not match, change the setting.
- ▶ Save the setting.
- ▶ Enter the heating output in kW and the setting in the display in the commissioning log (→ page 57).
- ▶ Exit service functions. The display will show the CH flow temperature again.

8.2.4 Pump control mode for central heating (Service function 1.E)

If an outside temperature sensor for a weather-dependent controller is connected, pump control mode 4 is automatically set.

- **Pump control mode 0 (automatic mode, standard setting)**: The BUS controller controls the central heating circuit pump.
- **Pump control mode 1 (not permitted in Germany or Switzerland)**: For heating systems without controller. The flow temperature control activates the heating circuit pump. When there is a demand for heat, the heating circuit pump and the burner start up.
- **Pump control mode 2**: For heating systems with room temperature controller connected to 1, 2, 4 (24 V).
- **Pump control mode 3**: The heating circuit pump runs continuously (exceptions: see heating controller operating instructions).
- **Pump control mode 4**: Intelligent control of heating circuit pump in heating systems with weather-dependent controller. The heating circuit pump is only switched on when necessary.

8.2.5 Maximum flow temperature (service function 2.b)

The maximum flow temperature can be set to between 35° °C and 88° °C.

Standard setting is 88.

8.2.6 Bleeding function (service function 2.C)

When the appliance is switched on for the first time, it performs a once-only venting sequence. This involves the heating circuit pump switching on and off at intervals (for a period of approx. 4 minutes).
The display shows in alternation with the flow temperature.

The venting function can be activated after servicing.

The choice of settings is as follows:

- **0**: Venting function off
- **1**: Venting function is switched on and after completion automatically reset to **0**
- **2**: Venting function is permanently on and is not reset to **0**

Standard setting is 1.

8.2.7 Automatic anti-cycle time adjustment (service function 3.A)

If a weather-dependent controller is connected, the anti-cycle time is automatically adjusted. With service function 3.A automatic adjustment of the anti-cycle time can be disabled. This may be necessary with unfavourably dimensioned heating systems.
If automatic anti-cycle time adjustment is disabled, the anti-cycle time must be set by means of service function 3.b (→ page 36).

Standard setting is 1 (ON).

8.2.8 Anti-cycle time (service function 3.b)

This service function is only active if automatic anti-cycle time adjustment (service function 3.A) has been disabled.

If a weather-dependent heating controller is connected, there is no need to set the anti-cycle time on the boiler.
The anti-cycle time is adjusted as required by the heating controller.

The anti-cycle time can be set to between 0 and 15 minutes.

Standard setting is 3 minutes.

If the setting 0 is entered, the anti-cycle time is disabled.

The shortest possible anti-cycle time is 1 minute (recommended for single-pipe and hot-air heating systems).

8.2.9 Switching differential (service function 3.C)

This service function is only active if automatic anti-cycle time adjustment (service function 3.A) has been disabled.

If an weather-dependent heating controller is connected, there is no need to set the switching differential on the boiler.
The switching differential is adjusted as required by the heating controller.

The switching differential is the permissible difference from the set flow temperature. It can be set in increments of 1 K. The minimum flow temperature is 35 °C.

The switching differential can be set to between 0 and 30 K.

Factory setting is 10 K.

8.2.10 Warning signal (service function 4.d)

If a fault occurs, an audible warning signal sounds. The audible signal can be disabled by means of service function 4.d.

Standard setting is 1 (ON).

8.2.11 Trap filling function (service function 4.F)

The trap filling function ensures that the condensate trap is filled when the appliance is first installed or after it has been shut down for a long period; the condensate trap prevents flue gas escaping from the appliance into the room in which it is installed.

The trap filling function is activated when:

- the appliance is switched on at the main switch
- the burner has not been in use for at least 28 days
- the appliance is switched from summer to winter mode

The next time there is a demand for heat in central heating or hot water mode, the appliance is held at low output for 15 minutes. The trap filling function remains active until the appliance has completed 15 minutes of operation at low output.The display shows in alternation with the flow temperature.
Standard setting is 1: trap filling function at minimum output.

Setting 2: trap filing sequence at set minimum output.

Setting 0: trap filling function is off.

WARNING: If the condensate trap is not filled, flue gas can escape.

- ▶ Only deactivate the trap filling function for servicing purposes.
- ▶ When servicing is complete, reactivate the trap filling function.

8.2.12 Reset servicing interval (service function 5.A)

This function enables you to reset the indication on the display after completing inspection/servicing of the appliance.

Standard setting 0.

8.2.13 Changing channel used by single-channel timer (service function 5.C)

This service function enables you to change the channel used from central heating to hot water.

The choice of settings is as follows:

- **0**: 2 channels (CH and DHW)
- **1**: 1 channel, CH
- **2**: 1 channel, DHW

Standard setting is 0.

8.2.14 Show servicing interval (service function 5.F)

This service function enables you to set the number of months after which the 'inspection due' indication appears in alternation with the flow temperature on the display.

The number of months can be set to between 0 and 72.

Standard setting is 0 (disabled).

If the display shows **U0** this function has already been set on the controller.

8.2.15 Retrieving last fault stored (service function 6.A)

The function enables you to retrieve the last fault stored.

8.2.16 Minimum hot water flow rate (service function 7.C) (GB042-22K)

This function enables you to set the hot water flow rate required to switch on the burner to provide hot water The setting range is from 2.5 to 5 litres (per minute). The figure displayed (25 to 50) indicates the hot water flow rate in 0.1 litre increments (**default setting**: 2.5 litres, i.e. setting displayed = 25).

8.2.17 External flow temperature sensor, e.g. on flow equaliser (service function 7.d)

Connection of an external flow temperature sensor is automatically detected in the standard setting; you do not need to change any settings.

If a connected flow temperature sensor is disconnected, change the setting back to the standard setting 0.

The choice of settings is as follows:

- **0**: Standard setting
- **1**: External flow temperature sensor connected to Heatronic 3.
- **2**: External flow temperature sensor connected to IPM1 or IPM2.

8.2.18 Reset appliance (Heatronic 3) to standard settings (service function 8.E)

This function enables you to reset the appliance to the standard settings. All service functions that have been altered are reset to their standard settings.

- Press and hold the service button until it lights up.
  The display will show a code such as 1.A.
- Press and hold eco button and button lock simultaneously until the display shows a service function, e.g. 8.A.
- Repeatedly press the button lock or eco button until service function **8.E** is displayed.
- Press and release the chimney sweep button .
  The chimney sweep button lights up and the display shows **00**.
- Press and hold chimney sweep button until the display shows .
  All settings are reset and the appliance restarts with the standard settings.
- Reset altered service functions to the settings recorded in commissioning log (p. 57).

8.2.19 Response delay for hot water demand (service function 9.E)

Spontaneous changes in the water supply pressure can cause the flow meter (turbine) to signal a demand for DHW. As a result, the burner may start up even though no hot water is being drawn off. The setting range for the delay is between 0.5 and 3 secs. The figure displayed (2 to 12) indicates the delay in increments of 0.25 seconds (**factory setting**: 1 sec., display shows 4).

8.2.20 Pump run-on time (service function 9.F)

This service function enables you to set the pump run-on time to between 0 and 10 minutes after the end of heat demand from the external controller.

Default setting is 3 minutes.

9 Converting the appliance to different gas types

The standard setting for the natural gas appliances is gas type EE-H.

Adjustment to the rated heat input and minimum heat input according to TRGI 198 Section 8.2 is not required.

The gas-air ratio must always be set on the basis of a CO_2 or O_2 reading taken at maximum rated heat output and minimum rated heat output using an electronic tester.

Adjustment to different flue systems using throttle discs or baffle plates is not necessary.

Natural gas

- Appliances for **natural gas type 2E (2H)** are factory-set to Wobbe index 15 kWh/m^3 and 13 mbar inlet pressure and sealed

Converting to a different gas type

The following gas conversion kits are available:

Appliance	Conversion to	Order no.
ZWB 28-3C	LPG	8 716 012 762 0
	Natural gas	8 714 431 156 0

Tab. 15

DANGER: Risk of explosion

- ▸ Turn off gas tap before working on gas-carrying components.
- ▸ Check for leaks before working on gas-carrying components.

- ▸ Install the conversion kit according to the accompanying installation instructions.
- ▸ Always adjust the gas-air ratio (CO_2 or O_2) after converting to a different gas type (→ Section 9.1).

9.1 Setting the gas-air ratio (CO_2 or O_2)

- Switch appliance off at the main switch.
- Remove the outer casing (→ page 20).
- Switch appliance on at the main switch.
- Remove sealing plug from flue gas testing point.
- Insert a flue gas probe approx. 135 mm into the testing point socket and seal the testing point.

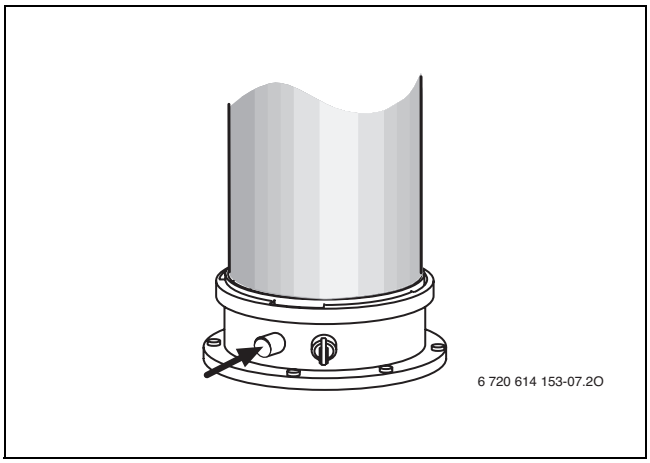


Fig. 36

- Press and hold the chimney sweep button until it lights up.
  The display shows the flow temperature in alternation with = **maximum rated output**.
- Measure the CO_2 or O_2 level.
- Adjust the gas flow throttle to set the CO_2 or O_2 level for maximum rated output according to the table.
- Adjust the gas flow throttle (3) to set the CO_2 level for maximum rated heat output according to the table.

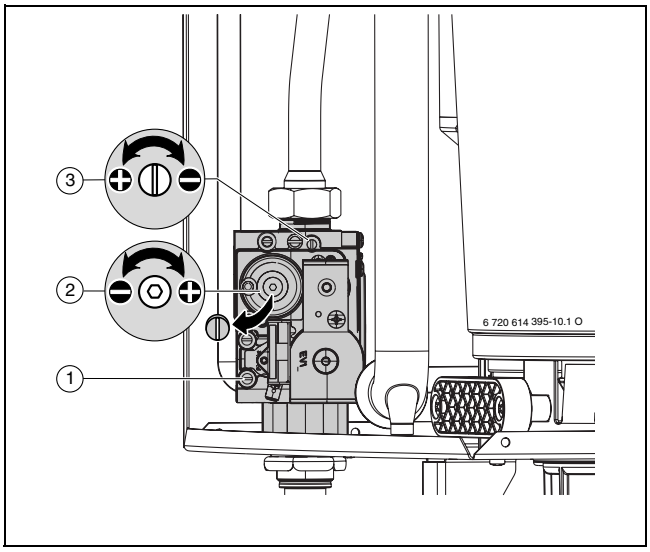


Fig. 37

1 Gas supply pressure test port
2 Adjusting screw for min. gas inlet flow rate
3 Adjusting screw for max. gas inlet flow rate

Appli-ance	Gas type	CO_2 at max. rated heat output	CO_2 at min. rated heat out-put
ZWB 28-3	Natural gas type H (23),	9,7 %	8,7 %
	LPG (propane)[1].	10,8 %	10,6%
	LPG (butane)	11,6 %	11,0 %

Tab. 16

1) Standard figure for LPG with fixed tanks with capacities up to 15,000 litres

- Press the button briefly twice.
  The display shows the flow temperature in alternation with = **minimum rated heat output**.
- Measure the CO_2 or O_2 level.
- Remove lead seal from gas valve adjusting screw and set CO_2 or O_2 level for minimum rated heat output.
- Re-check settings at maximum and minimum rated output and re-adjust if necessary.
- Record the CO_2 or O_2 levels in the commissioning log.
- Repeatedly press the chimney sweep button until the light goes out.
  The display will show the CH flow temperature again.
- Remove flue gas probe from flue gas testing point and refit sealing plug.
- Re-seal gas valve with tamper sealant.

9.2 Checking the gas supply pressure

- Switch off the appliance and turn off the gas tap.
- Undo the plug on the testing point for gas inlet pressure and connect a pressure gauge.

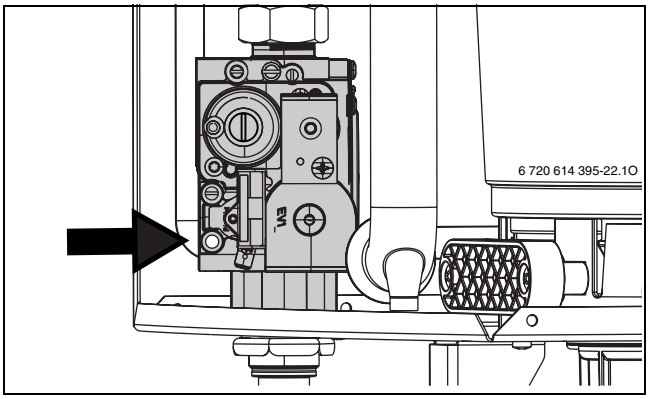


Fig. 38

- Turn on the gas tap and switch on the appliance.
- Press and hold the chimney sweep button until it lights up.
  The display shows the flow temperature in alternation with = **maximum rated output**.
- Check required gas supply pressure according to table.

Gas type	Nominal pressure [mbar]	Permissible pressure range at max. rated output [mbar]
Natural gas type H (23)	13	10,5 - 16
LPG (Propane)[1)]	30	25 - 35
LPG (Butane)	30	25 - 35

Tab. 17

1) Standard figure for LPG with fixed cylinders with capacities up to 15 000 l

The appliance must not be operated if the pressure is above or below these figures. Determine the cause and correct the fault. If that is not possible, securely seal off the gas supply to the appliance and contact the gas supplier.

- Repeatedly press the chimney sweep button until the light goes out.
  The display will show the CH flow temperature again.
- Switch off the appliance, turn off the gas cock, remove the pressure gauge and refit the plug.
- Refit the outer casing.

10 Checking flue gas readings

10.1 Chimney sweep button

The following appliance outputs can be selected by pressing the chimney sweep button until it lights up:

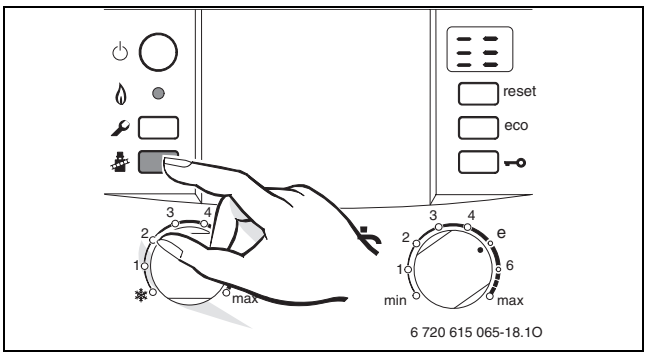


Fig. 39

- = **max. heating output setting**
- = **max. rated heat output**
- = **min. rated heat output**

You have 15 minutes in which to measure the levels. After that, the appliance switches back from “chimney sweep” mode to standard mode.

10.2 Checking flue system for leaks

Measuring O_2 or CO_2 levels in combustion air.

Use an annular-slot flue gas probe for the measurements.

With a type C_{13}, C_{33} or C_{43} flue system, the **gas tightness of the flue system** can be tested by measuring the O_2 or CO_2 content of the combustion air. The O_2 level must not exceed 20.6 percent. The CO_2 level must not exceed 0.2%.

- Remove sealing plug from combustion air testing point (2, → Fig. 40).
- Insert a flue gas probe into the testing point socket and seal the testing point.
- Press the chimney sweep button to select = **maximum rated output**.

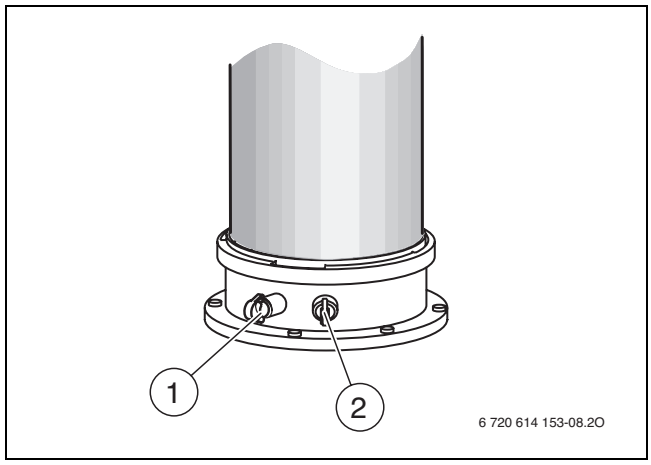


Fig. 40

- Measure the CO_2 and O_2 levels.
- Refit sealing plug.

10.3 Measuring CO content of flue gas

Use a multiport flue gas probe for the measurements.

- Remove sealing plug from flue gas testing point (1, → Fig. 40).
- Insert a flue gas probe as far as it will go into the testing point socket and seal the testing point.
- Press the chimney sweep button to select = **maximum rated output**.
- Measure the CO levels.
- Repeatedly press the chimney sweep button until the light goes out.
  The display will show the CH flow temperature again.
- Refit sealing plug.

11 Environmental protection

Environmental protection is a fundamental corporate strategy of the Bosch Group.
The quality of our products, their economy and environmental safety are all of equal importance to us and all environmental protection legislation and regulations are strictly observed.
We use the best possible technology and materials for protecting the environment taking account of economic considerations.

Packaging

We participate in the recycling programmes of the countries in which our products are sold to ensure optimum recycling.
All of our packaging materials are environmentally compatible and can be recycled.

Used appliances

Used appliances contain valuable materials that should be recycled.
The various assemblies can be easily dismantled and synthetic materials are marked accordingly. Assemblies can therefore be sorted by composition and passed on for recycling or disposal.

12 Inspection/Maintenance

To ensure that gas consumption and environmental impact (pollution, etc.) remain as low as possible over an extended period of time, we recommend that you take out an inspection/maintenance contract with an authorised contractor covering the annual inspection and servicing and maintenance at other times as required.

Detailed information about fault diagnosis/ elimination and function checking is provided in the Servicing Instructions for heating engineers.

DANGER: Risk of explosion
- ▶ Turn off gas tap before working on gas-carrying components.
- ▶ Check for leaks before working on gas-carrying components.

DANGER: Risk of poisoning
- ▶ Check for leaks before working on gas-carrying components.

DANGER: Risk of electric shock
- ▶ Always disconnect the power supply to the appliance at the mains before carrying out any work on the electrical systems and components (fuse, circuit breaker).

Heatronic unit

If a component fails, a fault is indicated on the display.

All safety, modulation and control components are monitored by the Heatronic system.

CAUTION: Leaking water may damage the Heatronic module.
- ▶ Cover the Heatronic module before working on any parts that carry water.

Important notes

An overview of fault codes is given on page 54.

- The following test equipment is required:
  - Electronic flue gas emission meter for CO_2, CO and exhaust temperature
  - Pressure gauge for 0 - 30 mbar (resolution at least 0.1 mbar)
- Special tools are not required
- Permissible lucricants:
  - Water valve: Unisilkon L 641 (8 709 918 413)
  - Unions: HFt 1 v 5 (8 709 918 010).
- ▶ Use 8 719 918 658 as heat conducting paste.
- ▶ Only use genuine spare parts!
- ▶ Refer to the spare parts catalogue when ordering spare parts.
- ▶ Always renew seals and O-rings removed during servicing or repair work.

After inspection/maintenance
- ▶ Retighten all loosened threaded fittings.
- ▶ Recommission the appliance (→ page 28).
- ▶ Check all connections for leaks.
- ▶ Check the gas-air ratio and adjust if necessary (→ page 40).

12.1 Checklist for inspection/maintenance (Inspection/Maintenance report)

		Date								
1	Retrieve last fault stored on the Heatronic module, service function **6.A** (→ page 37).									
2	On Logamax plus GB042-22K appliances, check filter in cold water pipe (→ page 46).									
3	Perform a visual check of the combustion air/flue connection.									
4	Check the gas supply pressure, mbar (→ page 41).									
5	Check the gas-air ratio at min./ max. and adjust if necessary (→ page 40). min. % max. %									
6	Check for leaks on the gas and water connections (→ page 22).									
7	Check heat exchanger, (→ page 48).									
8	Check burner (→ page 48).									
9	Check electrodes (→ page 48).									
10	Check diaphragm in mixer unit (→ page 50).									
11	Clean condensate trap (→ page 50).									
12	Check the expansion vessel pre-charge pressure matches the static head of the central heating system. bar									
13	Check the heating system pressure (→ page 51). bar									
14	Check automatic air vent valve for leaks; check if cap is loose.									
15	Check electrical wiring for damage.									
16	Check the heating controller settings.									
17	Check other appliances that are part of the heating system such as hot water cylinders.									
18	Check that the service function settings match the commissioning log.									

Tab. 18

12.2 Description of various maintenance operations

Retrieving last fault stored (service function 6.A)

- Select service function **6.A** (→ page 34).

An overview of fault codes is given on page 54.

12.2.1 Strainer in cold water pipe (GB042-22K)

- Undo cold water pipe and check strainer for dirt.

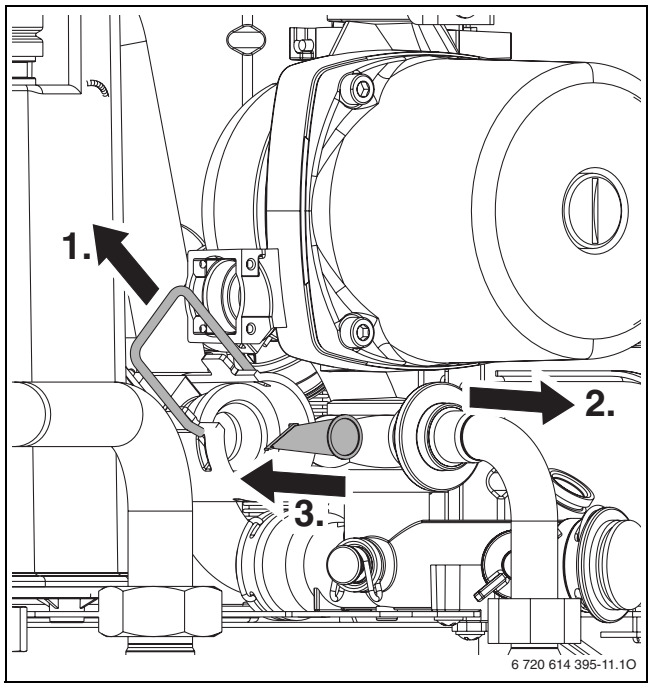


Fig. 41

12.2.2 Plate-type heat exchanger (GB042-22K)

If the DHW output is inadequate:

- Check strainer in cold water pipe for dirt (→ page 46).
- Remove plate-type heat exchanger and replace

-or-

- Descale only with a product that has been approved for stainless steel (1.4401).

To remove plate-type heat exchanger:

- Remove screw at the top of the heat exchanger and remove heat exchanger
- Fit new heat exchanger with new seals and secure with screw.

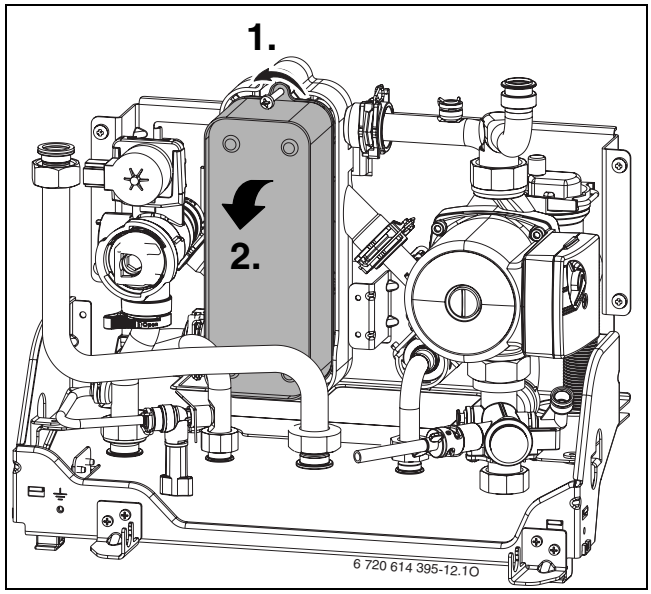


Fig. 42

12.2.3 Gas valve

- Disconnect electrical connectors.
- Unscrew gas connecting pipe.
- Loosen two screws, slide gas valve and retaining plate upwards and off the screws.

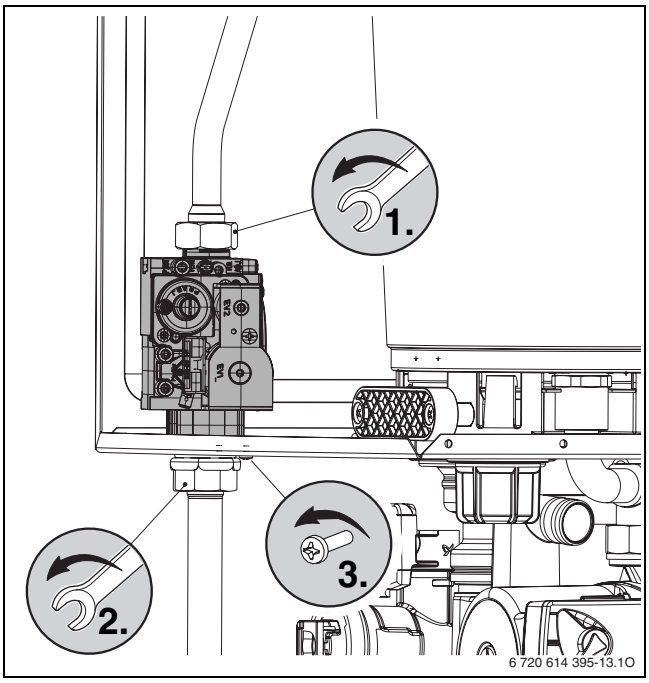


Fig. 43

12.2.4 Water valve

- Remove condensate trap.
- Undo/remove pipe unions (1.).
- Undo pipe union at top of pump (2.).
- Undo quick-release connector on 3-way valve (3.).
- Undo six screws and remove water valve assembly (4.).

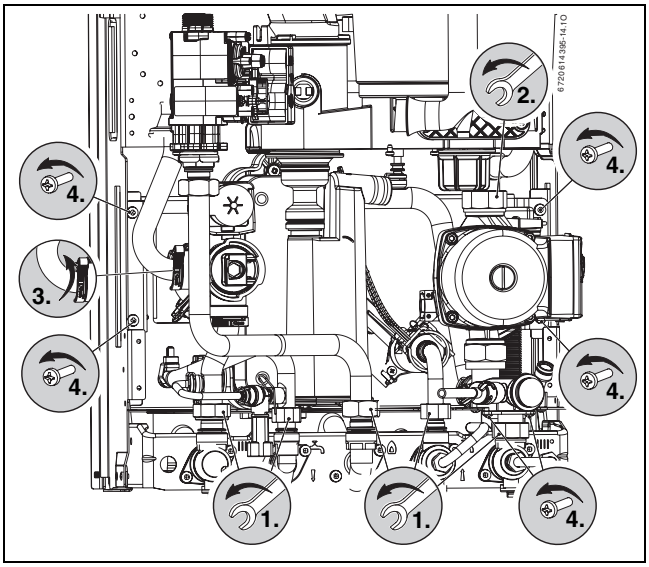


Fig. 44

12.2.5 3-way diverter valve

- Undo three quick-release connectors.
- Lift 3-way valve upwards to remove.

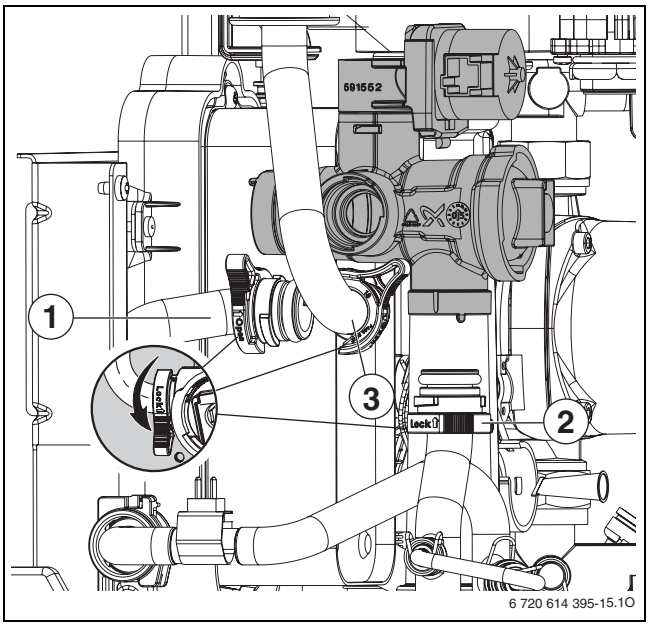


Fig. 45

1, 2, 3 Pipes

For easy assembly of 3-way valve, fit pipe 1 first, then pipe 2 and then pipe 3.

12.2.6 Pump and return manifold

- Undo pipe union at bottom of pump and lift pump upwards to remove.
- Remove clip on rear connection of return manifold.
- Undo CH return pipe union.
- Remove two fixing screws and draw return manifold forwards to remove.

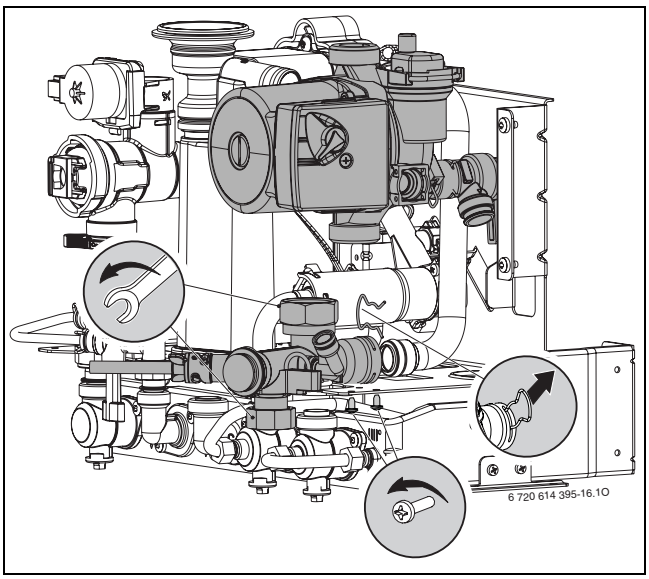


Fig. 46

12.2.7 Checking heating block, burner and electrodes

When cleaning the heat exchanger, use accessory kit consisting of brush and removal tool.

- Check control pressure at maximum rated output at mixer unit.

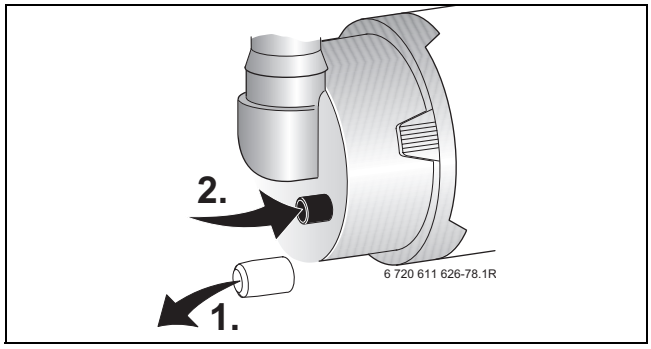


Fig. 47

Appliance	Control pressure	Cleaning reqd?
ZWB 28-3C	≥ 4,5 mbar	No
	< 4,5 mbar	Yes

Tab. 19

If cleaning is required:

- Remove the air intake pipe and disconnect gas pipe from mixer unit, →Fig. 48.
- Remove hose for control pressure.
- Remove mixer unit.

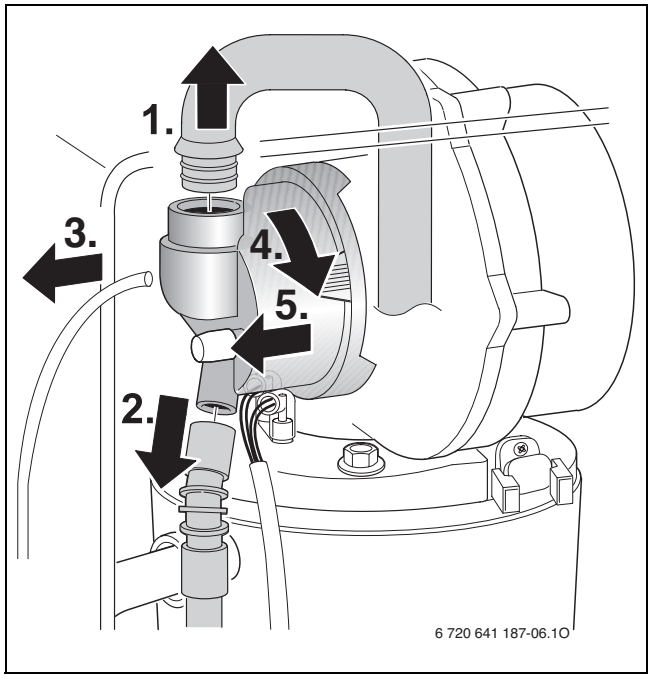


Fig. 48

- Disconnect ignition and flame monitoring electrode leads, →Fig. 49.
- Unscrew securing nut for fan plate and remove fan.

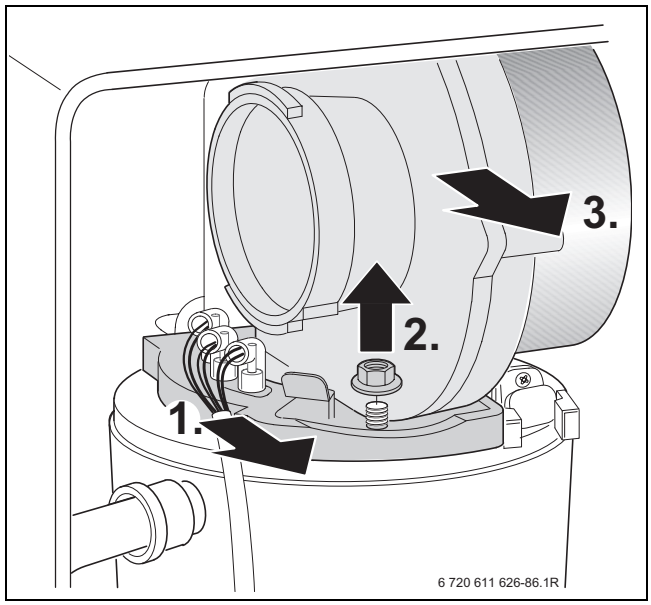


Fig. 49

- Remove electrode assembly and gasket and inspect electrodes for dirt and clean or replace as necessary.
- Remove burner.

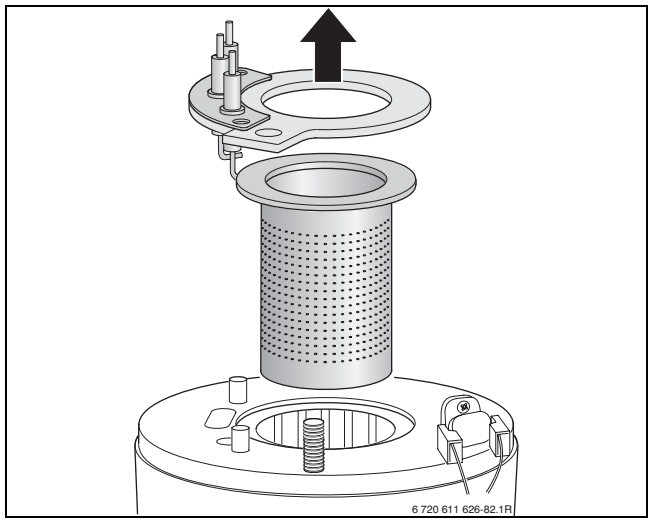


Fig. 50

WARNING: Risk of burning. The displacement bodies can still be very hot even after the appliance has not been used for some time.

- Cool the displacement bodies with a damp cloth.

- Remove the top displacement body.
- Remove the bottom displacement body using the removal tool.

- Clean both displacement bodies as required.

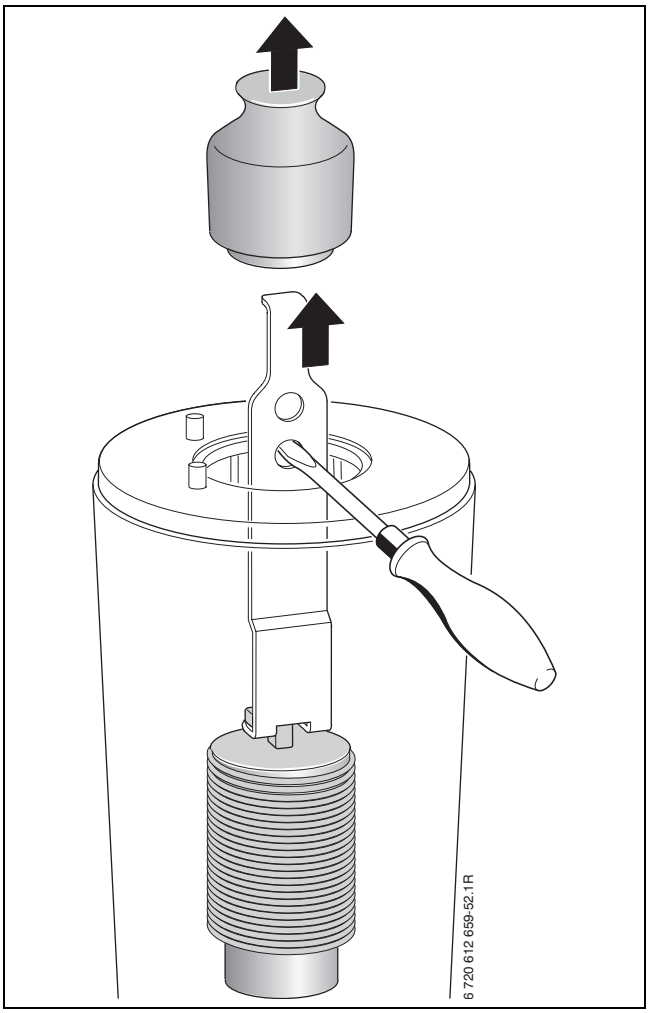


Fig. 51

The heating block can be inspected with the aid of a torch and the mirror.

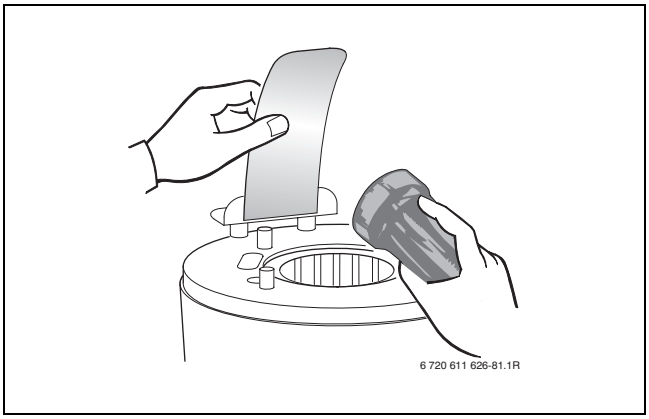


Fig. 52

- Clean the heating block with the brush as follows:
  - rotate in both directions
  - move up and down as far as possible
- Remove screws from inspection cover and remove cover.

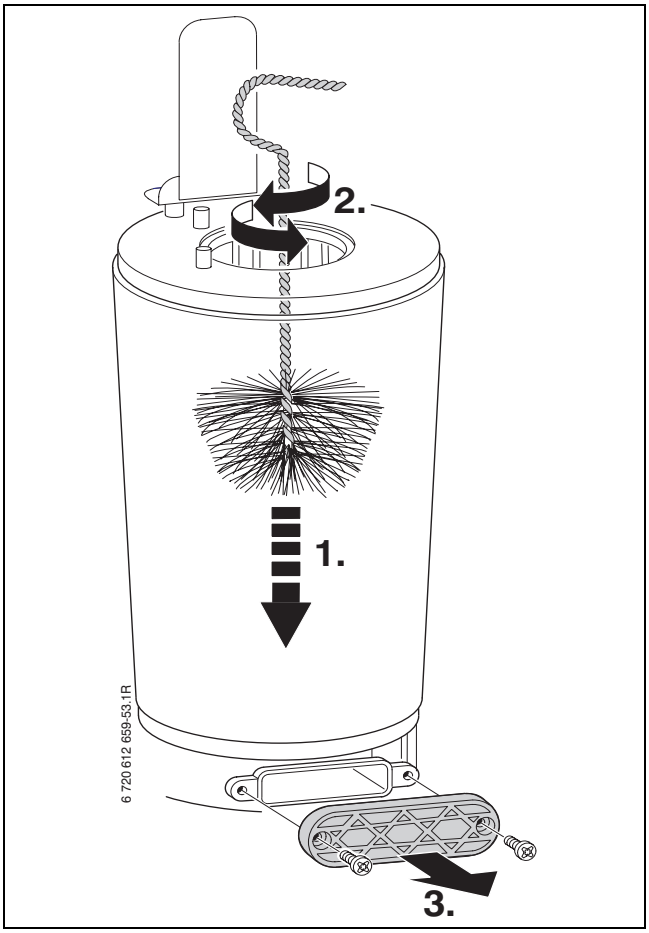


Fig. 53

- Vacuum out residues and refit inspection cover.
- Refit the displacement bodies.
- Screw off the condensation trap and place a suitable container underneath.
- Flush out the heating block with water from the top.

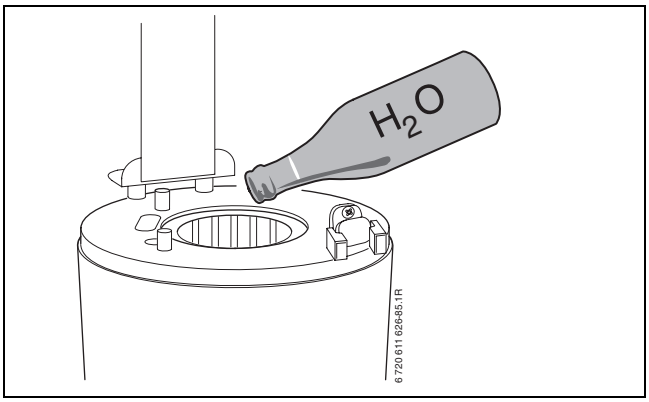


Fig. 54

- Remove the inspection cover again and clean the condensate tray and connection.
- Refit the components in the reverse order of removal.
- Adjust the gas-air ratio (→ page 40).

12.2.8 Cleaning condensate trap

- Undo screw and remove condensate trap.
- Check inlet from heat exchanger for clear passage.

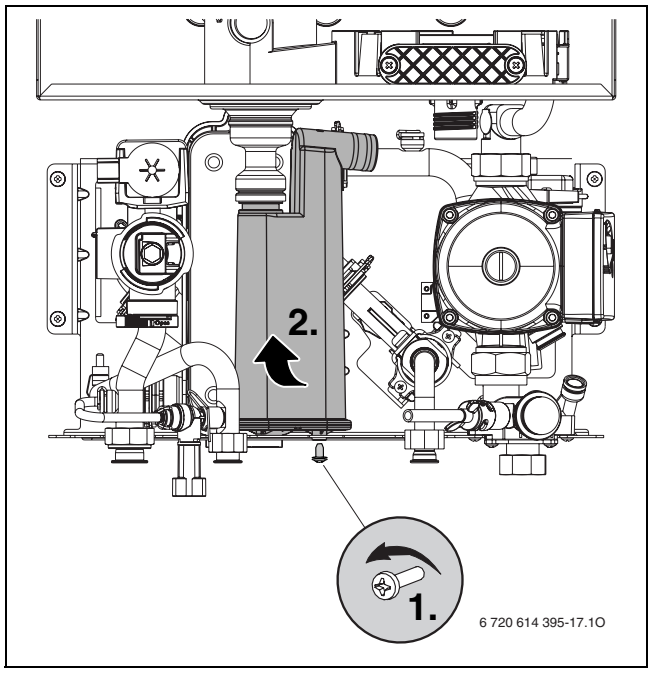


Fig. 55

- Flush out condensate trap.
- Check condensate hose and clean if necessary.
- Fill condensation trap with approx. 1/4 l of water and refit.

12.2.9 Diaphragm in mixer unit

- Remove diaphragm from mixer unit (1) as shown in Fig. 48.
- Check diaphragm (2) for dirt and cracks.

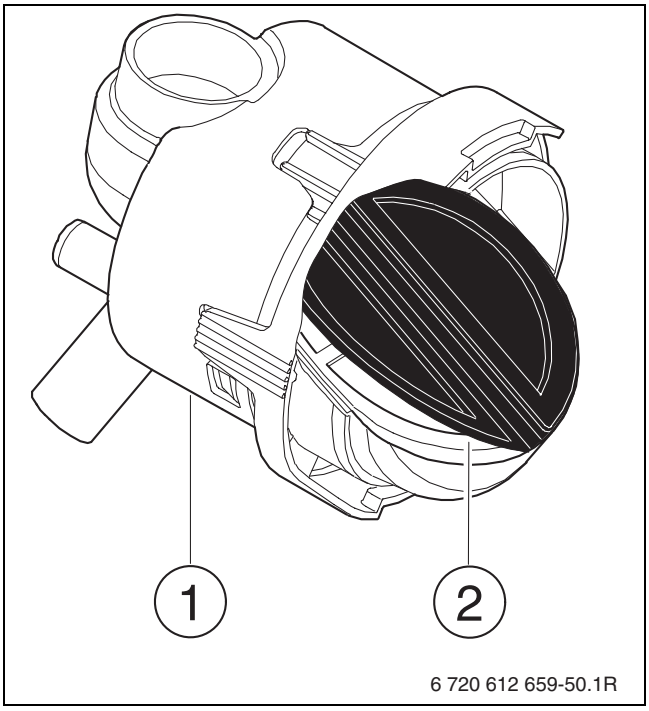


Fig. 56

- Refit mixer unit.

12.2.10 Testing central heating safety valve

The purpose of this test is to protect the heating system and the installation as a whole against excess pressure. The factory setting is such that the valve opens when the system pressure reaches approx. 3 bar.

NOTICE:
- Never block the safety valve outlet.
- Slope the safety valve overflow downwards.

To open the safety valve manually:

- press lever, e. g. with the help of a screw driver.

To close:

- release lever.

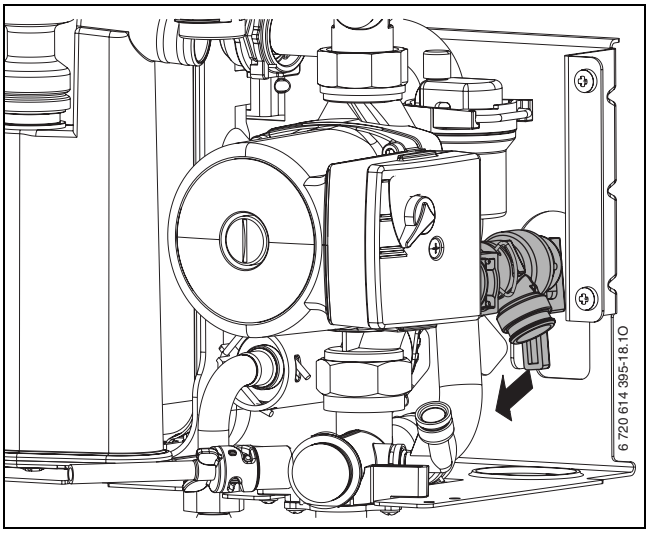


Fig. 57 Safety valve (central heating)

12.2.11 Checking the expansion vessel (see also page 33)

According to DIN 4807, Part 2, Section 3.5, the expansion vessel must be checked annually.

- Depressurise the appliance.
- If necessary, adjust charge pre-charge pressure of expansion vessel to static head of the central heating system.

12.2.12 Setting the heating system pressure

NOTICE: Risk of damaging the appliance.
- Only top up the heating system when the appliance is cold.

Pressure gauge reading	
1 bar	Minimum system pressure (when cold)
1 - 2 bar	Optimum system pressure
3 bar	Maximum system pressure at maximum central heating system temperature: must not be exceeded (safety valve opens).

Tab. 20

- If the pointer is below 1 bar (when the system is cold), top up with water to the system until the pointer is between 1 bar and 2 bar again.

Fill the hose with water before topping up the heating system. This will prevent air getting into the central heating system.

- If there is a pressure drop: check the expansion vessel and heating system for leaks.

12.2.13 Checking electrical wiring

- Check electrical wiring for physical damage and replace faulty leads.

12.2.14 Cleaning of other components

- Clean the electrodes, replace if there is any sign of erosion.

12.3 Draining the wall mounted gas boiler

Central heating system

In order to be able to drain the central heating system, there must be a drain tap fitted at the lowest point of the system.

To drain the boiler:

- open the drain tap and drain off the heating system water through the connected hose.

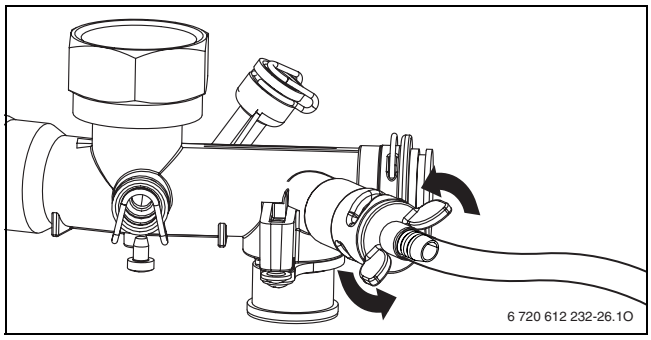


Fig. 58

Hot water system

The hot water system can be drained via the pressure relief valve.

- Turn off cold water supply shut-off valve.
- Turn a hot tap on full.
- Completely open the pressure relief valve.

13 Appendix

13.1 Display codes

Display code	Description
88	Maximum rated output, net
--	Max. heating output setting
00	Minimum rated output, net
Lo	Button lock active (→ page 31).
dr	Drying function. If the floor drying function is activated on the weather-dependent controller, refer to controller instructions.
--	Two buttons pressed simultaneously
--	One button pressed
CJ	Storing service mode data
In	Inspection due (→ page 37).
H	Trap filling sequence active (→ page 37).
bP	Bleeding function active (→ page 36).
C	Excessively rapid increase in CH flow temperature (temp. gradient monitoring). Heating mode is disabled for two minutes.

Tab. 21

13.2 Fault codes

Display	Description	Remedy
A7	Temperature sensor for hot water is faulty.	Check the temperature sensor and connecting lead for breaks or short-circuits.
A8	Communication fault.	Check BUS device connecting lead.
b1	Code plug not detected.	▶ Insert code plug correctly, test and replace if necessary.
b2	Internal data error.	See Servicing Instructions for heating engineers.
b3		
C6	Fan not running.	Check fan lead and connector, check fan, replace as necessary.
CC	Outside temperature sensor not detected.	Check outside temperature sensor and connecting lead for breaks.
d3	External limiter has tripped.	Temperature limiter TB1 has tripped. Jumper across 8-9 or PR-P0 is missing.
d5	External flow temperature sensor defective (flow equaliser).	Check the temperature sensor and connecting lead for breaks or short-circuits.
E2	Temperature sensor in CH flow faulty.	Check the temperature sensor and connecting lead.
E9	Heat exchanger temperature limiter or flue gas temperature limiter has tripped.	▶ Check system pressure. Check system pressure, temperature limiter, pump operation, fuse on PCB bleed appliance. Check water-side of heating block On appliances with displacement bodies in heating block, check whether displacement bodies are fitted.
EA	Flame not detected.	Is gas cock turned on? Check gas inlet pressure, mains power connection, electrodes and leads, flue pipe, gas-air ratio.On natural gas appliances, check external gas flow switch.
F0	Internal fault.	Check electrical connectors and ignition leads, replace PCB if necessary. Check gas-air ratio.
F1	Internal data error.	See Servicing Instructions for heating engineers.
F7	A flame is detected although the appliance is switched off.	Check electrodes. Flue system OK? Check PCB for moisture.
FA	A flame is detected after the gas has been switched off.	Check gas valve. Clean condensate trap and check electrodes. Flue system OK?
Fd	Reset was pressed in error.	Press reset again.

Tab. 22

13.3 Gas settings

13.3.1 Settings for heating output on Logamax plus GB042-22K running on natural gas

		Natural gas type H, code 23								
	H_S (kWh/m³)	9,3	9,8	10,2	10,7	11,2	11,6	12,1	12,6	13,0
	H_{iS} (kWh/m³)	7,9	8,3	8,7	9,1	9,5	9,9	10,3	10,7	11,1
Display	Output (kW)	Heat input (kW)	Gas flow rate (l/min at t_V/t_R = 80/60 °C)								
27	7,3	7,5	16	15	14	14	13	13	12	12	11
30	8,1	8,4	18	17	16	15	15	14	14	13	13
35	9,5	9,8	21	20	19	18	17	16	16	15	15
40	10,9	11,2	24	23	21	21	20	19	18	17	17
45	12,3	12,6	27	25	24	23	22	21	20	20	19
50	13,7	14,1	30	28	27	26	25	24	23	22	21
55	15,1	15,5	33	31	30	28	27	26	25	24	23
60	16,5	16,9	36	34	32	31	30	28	27	26	25
65	17,9	18,3	39	37	35	34	32	31	30	29	28
70	19,3	19,8	42	40	38	36	35	33	32	31	30
75	21,0	21,2	45	43	41	39	37	36	34	33	32
80	22,4	22,6	48	45	43	41	40	38	37	35	34
85	23,8	24,0	51	48	46	44	42	40	39	37	36
90	25,2	25,5	54	51	49	47	45	43	41	40	38
95	26,6	26,9	57	54	51	49	47	45	43	42	40
U0	28,0	28,0	59	56	54	51	49	47	45	44	42

Tab. 23

13.3.2 Settings for heating output on Logamax plus GB042-22K running on LPG

	Propane		Butane	
Display	Output (kW)	Heat input (kW)	Output (kW)	Heat input (kW)
39	10,5	10,8	12,0	12,3
40	10,8	11,1	12,3	12,6
45	12,2	12,5	13,9	14,3
50	13,6	14,0	15,5	15,9
55	15,0	15,4	17,1	17,5
60	16,4	16,8	18,7	19,1
65	17,8	18,3	20,3	20,8
70	19,2	19,7	21,8	22,4
75	20,9	21,1	23,8	24,0
80	22,3	22,6	25,4	25,7
85	23,8	24,0	27,0	27,3
90	25,2	25,4	28,6	28,9
95	26,6	26,9	30,3	30,6
U0	28,0	28,0	31,8	31,8

Tab. 24

14 Commissioning report for the appliance

Customer/System user:	Attach test report here
System installer:	
Appliance type:	
FD (Date of manufacture):	
Date commissioned:	
Gas type setting:	
Calorific value H_{iB}: . . . . . kWh/m^3	
Heating controller:	

Flue system: balanced flue ☐, LAS ☐, chimney stack ☐, separate flue and air pipes ☐

Other system components:

The following work has been carried out

Water circulation systems checked ☐Remarks:

Electrical connections checked ☐ Remarks:

Heating controller adjusted ☐ Remarks:

Heatronic settings:

1.A Max. heating output . . . . . kW	**3.C** Switching differential. . . . . K
1.b DHW output . . . . . kW	**4.d** Audible warning signal . . . . . .on ☐/off ☐
1.E Pump control mode:	**5.E** Connector NP - LP
2.b Max. CH flow temperature: . . . . . °C	
3.b Anti-cycle timesecs	**9.E** Hot water demand response delay (ZWB 28-3 C) . . . . . .sec.

Gas inlet pressure . . . . . mbar	Combustion air/flue gas test completed:☐

Gas and water systems checked for tightness ☐

Appliance function checked ☐

Customer/system operator instructed how to operate the appliance ☐

Appliance documentation handed over ☐

Signature of system installer and date:

Index

A

Accessories 8
Anti-freeze 17
Appliance
  Switching off 28
Appliance commissioning report 56
Appliance layout
  ZWB 10

B

Before commissioning
  Venting the system 28
Bleeding
  Bleeding function 35
Burner 47

C

Central heating
  Switching on 28
Changing the heating pump characteristic 32
Checking flue gas readings 41
Checking gas supply pipe 21
Checking the connections
  Gas and water connections 21
Checking the dynamic gas supply pressure 40
Checking the size of the expansion vessel 32
Checklist for inspection/maintenance 44
Checks by local safety inspector
  Flue system leakage check 41
  Measuring CO content of flue gas 41
Combustion air 18
Comfort mode 29
Commissioning 27
Condensate trap 49
Conversion kits 38
Converting the appliance to different gas types 38
Corrosion inhibiter 17

D

Description of appliance 8
Description of various inspection/maintenance operations 45
  Checking the expansion vessel 50
Details of appliance
  Dimensions 9
  ZWB appliance layout 10
Dimensions 9
Display of faults 30
Drain kit 20

E

EC Declaration of Conformity 7
Eco button 29
Economy mode 29
Electrical connections 22
  Checking electrical wiring 50
  Connecting accessories 23
  Heating controller, remote control units 23
  Temperature limiter 25
Electrodes 47
Environmental protection 42
Expansion vessel 50
  Checking the size 32
Explanation of model code 7

F

Fault codes 53
Fault mode 30
Fitting the appliance 19
Flue gas readings 41
Flue system 21
Flue system leakage check 41
Frost protection 30
Fuses
  Mains fuse 22

G

Galvanised radiators or galvanised pipes 17
Gas and water connections 21
Gas settings 54
Gas type 38
Gas-air ratio 39

H

Heat exchanger 47
Heating control 29
Heating Pump characteristic 32
Heating system pressure 50
Heatronic
  Service functions 33–37, 45
    - Maximum flow temperature (service function 2.b) 35

I

Important notes for installation 17, 43
Important notes on inspection/maintenance 43
Indication of fault codes 53
Inspection and maintenance operations
  Checking heating block, burner and electrodes 47
  Cleaning condensate trap 49
  DHW system heat exchanger (ZWB) 45
Inspection and servicing operations
  Checking electrical wiring 50
Inspection/Maintenance 43
Inspection/Maintenance log 44
Installation 17
  Important notes 17, 43
  pre-fitting piping 18
  Siting the appliance 18
Installation Site
  Combustion air 18
  LPG systems below ground level 18
  Surface temperature 18
Intended use 7

L

LPG 17
LPG systems below ground level 18

M

Maintenance operations
  Setting the heating system pressure 50
Measuring CO content of flue gas 41
Minimum clearances 9

N

Natural gas 14, 38
Neutralisation device 17

O

Open vented heating systems 17

P

Packaging 42
Pipes
  Galvanised 17
Power connection
  Replacing the power cable 26
  two-phase network 22
Power connection cable 26
Procedure for servicing and maintenance
  Retrieving last fault stored 36, 45
Product details 7
  Accessories 8
  Description of appliance 8
  EC Declaration of Conformity 7
  Explanation of model code 7
  Standard package 6
Pump anti-seizing function 31

R

Radiators
  Galvanised 17
Recycling 42
Regulations 16
Replacing the cable for the power connection 26
Retrieving last fault stored 36, 45
Room thermostat 17

S

Safety precautions 4
Sealants 17
Service functions
  Anti-cycle time (service function 3.b) 35
  Automatic anti-cycle time adjustment (service function 3.A) 35
  Bleeding function (service function 2.C) 35
  Changing channel used by single-channel timer (Service function 5.C) 36
  External flow temperature sensor (service function 7.d) 36
  Heating output (Service function 1.A) 34
  Hot water output (Service function 1.b) 34
  Last fault stored (service function 6.A) 36, 45
  Pump control mode (Service function 1.E) 34
  Pump run-on time (service function 9.F) 37
  Reset Heatronic 3 to standard settings (service function 8.E) 37
  Switching differential (service function 3.C) 35
  Trap filling function (service function 4.F) 36
Settings
  Heatronic 33
  Mechanical settings 32
Settings for heating/hot water output
  ZWB 28...21/23 54
  ZWB 28...31 55
Siting the appliance 18
Standard package 6
Summer mode 30
Surface temperature 18
Switching off the appliance 28
Switching on the central heating 28

T

Technical data 14

U

Underfloor heating 17
Used appliance 42
Used appliances 42

V

Venting the system 28

W

Water circulation noises 17
Water connections
  Checking the connections 21

Bosch Thermotechnik GmbH
Junkersstrasse 20-24
D-73249 Wernau

www.bosch-thermotechnology.com