

Service Instructions

for the service engineer

VIESSMANN

Vitodens 100

Type WB1

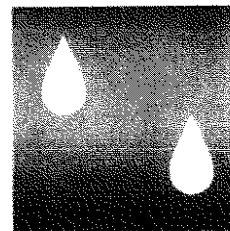
Gas-fired, condensing central heating boiler

Gas-fired, condensing combination boiler

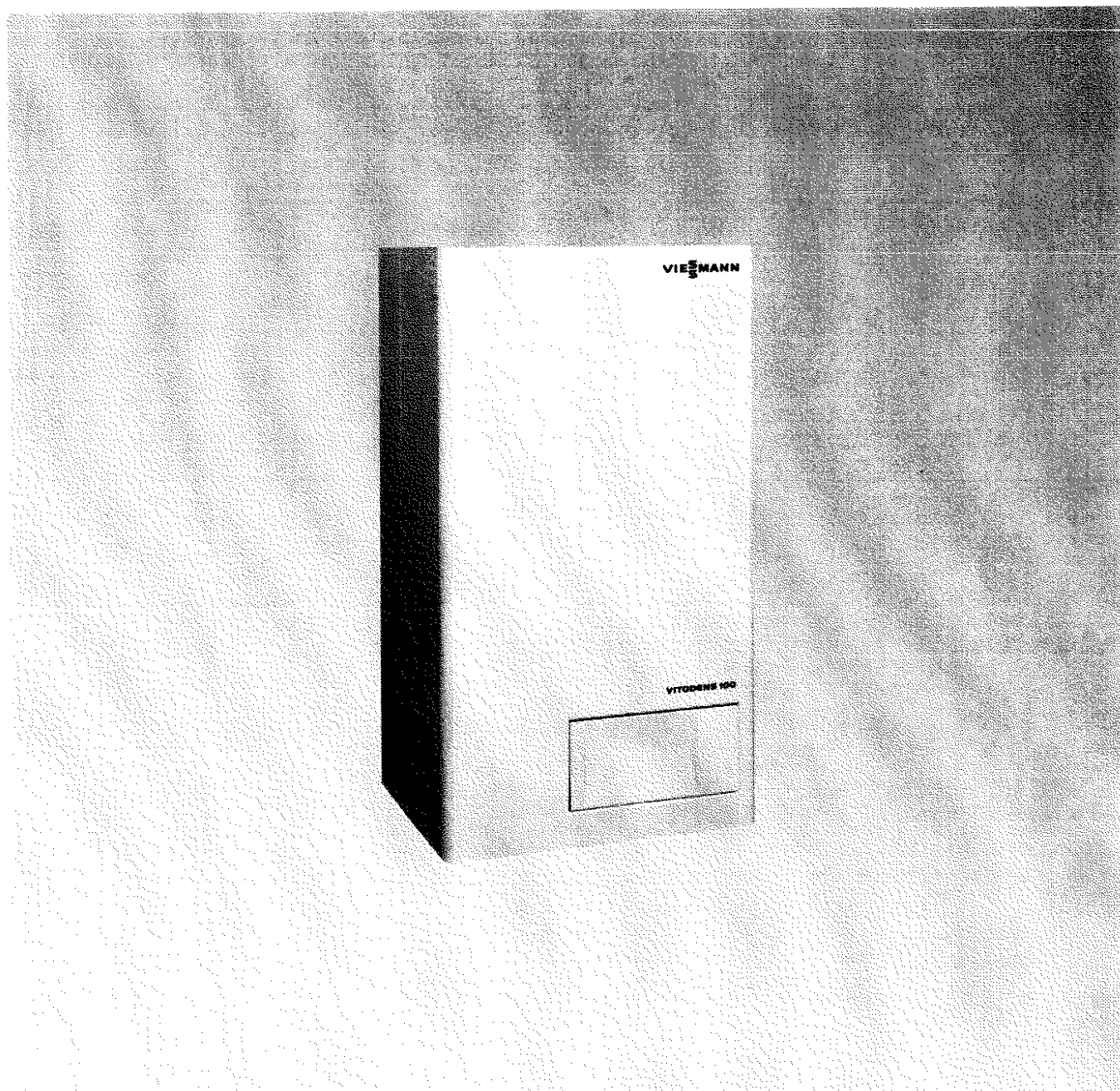
Natural gas ~~and~~ LPG version

See notes on applicability, page 2.


Länderspezifische Angaben:
Kontaktperson: HFO *[Signature]*
gewählter Gaskod: 1000
Druckabgabe:
Datum: 30. 8. 01



VITODENS 100



Safety instructions

 Please follow these safety instructions closely to avoid the risk of injury to persons and damage to property.

Work on the equipment

Installation, initial start-up, maintenance and repairs must be carried out by a competent person (heating engineer/service contractor). (See EN 50 110, Part 1, and VDE 1000, Part 10. (GB): British Standards codes of practice).

Before work is undertaken on the equipment/heating system, the mains voltage must be switched off (e.g. at the separate fuse or mains electrical isolator switch) and measures taken to prevent it from being switched on again. Disconnection must be carried out by means of an isolating device which simultaneously isolates all non-earthed conductors with at least 3 mm contact separation.

On gas-fired systems, also close the gas shut-off valve and make secure to prevent unauthorised opening.

When carrying out work which involves opening up the control unit, no static discharge should be allowed to take place through the internal components.

Gas installation work

Gas installation work must be carried out by an approved installer (GB: registered with C.O.R.G.I.). The requirements for starting up gas-fired systems and LPG-fired systems, as defined in TRGI'86/96 and TRF 1996 respectively, must be complied with (GB: British Standards codes of practice).

Repairs

It is not permitted to carry out repairs on parts which serve a safety function. Defective parts must be replaced with the appropriate Viessmann proprietary components or equivalent parts which have been approved by Viessmann.

Initial start-up

The initial start-up must be carried out by the installer of the system or a commissioning engineer designated by him; all readings should be recorded in a commissioning report.

Instruction of the system user

The installer of the system is required to give the system user the operating instructions and show him how to operate the system.

Safety instruction!

This heading in these instructions denotes information which must be observed to safeguard persons and property.

Caution!

This heading denotes actions which must be avoided in the interests of the safety of persons and property.



This symbol indicates a reference to other instructions which must be observed.

Notes on applicability

Gas-fired, condensing
central heating boiler
Type WB1,
from Serial No.
7158234 1 00001 ...

Gas-fired, condensing
combination boiler
Type WB1,
from Serial No.
7158235 1 00001 ...

Operating and service documents

Hand over all parts lists, operating and service instructions to the system user for safekeeping.

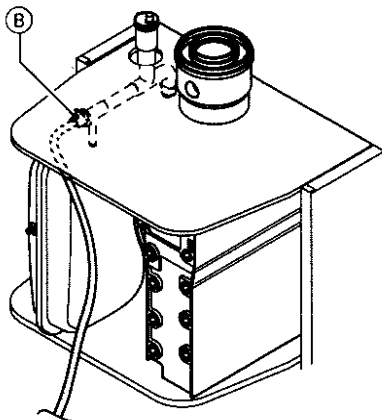
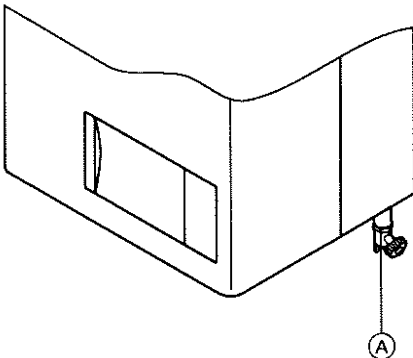
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Procedure (overview)

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Steps

Initial start-up



1. Fill the heating system with water

1. Open non-return valves (if installed).
2. Check the inlet pressure of the diaphragm expansion vessel.
3. Fill the heating system with water at the boiler filling and drain cock (A) and bleed the air from the system.

→ **Please note:**

Before filling the heating system with water, check that all necessary check valves are installed.

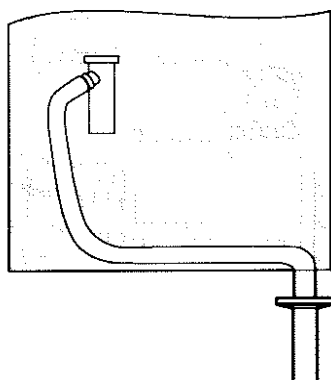
→ If the inlet pressure of the diaphragm expansion vessel is lower than the static pressure of the system, add sufficient nitrogen until the inlet pressure is higher than the static pressure of the system.

→ Before draining/venting, pull the safety cap off the electromagnetic drive, reverse the safety cap and put it back on again (changeover valve in centre setting). After draining/venting the system, the safety cap must be returned to its original position.

4. Check the pressure of the system.
5. Reset non-return valves (if installed) to their operating position.
6. Shut off the boiler from the heating system on the heating water side (close shut-off valves).
7. Connect the drain hose to the top ball cock (B).
8. Open the ball cocks (A) and (B) and vent the boiler at mains pressure until noise due to the presence of air is eliminated.
9. Close the ball cocks (A) and (B), and open the heating water shut-off valves.
10. Check the pressure of the system.

→ Minimum system pressure > 0.8 bar.

Initial start-up



2. Fill siphon trap with water

1. Fill the siphon trap with water via the hose.
2. Check that the condensate drains away freely.

→ **⚠ Safety instruction:**

There is a risk that flue gas may escape if the siphon trap is not filled with water.

Steps (continued)

Initial start-up

3. Check mains electrical connections and connections of external equipment

Voltage range

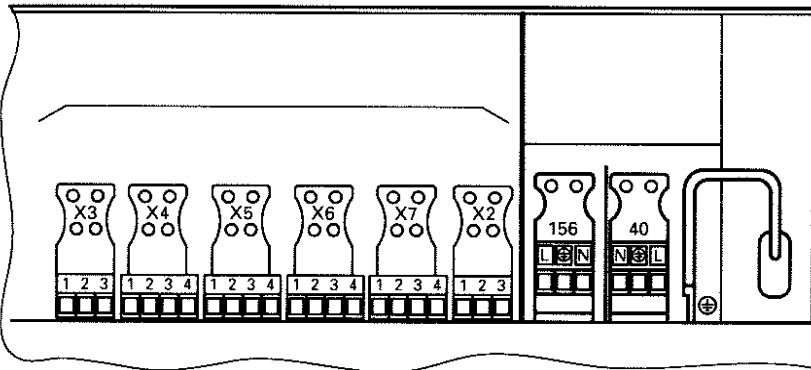
The operating voltage at connector **40** (boiler) and **156** (accessories) must be between 200 and 250 V~; connector **156** cannot be checked until after the heating system on/off switch has been operated.

Neutral conductor

The mains electrical supply must have a neutral conductor. The water piping must be connected to the potential equalization line of the building.

→ **Please note:**

The outer conductor "L1" and the neutral conductor "N" must not be interchanged. See wiring diagram in section headed "Additional information".



Initial start-up

Maintenance

4. Check gas type

1. Contact the gas supply company or LPG supplier to establish the gas type and Wobbe index (Wo).
2. Compare the gas type and gas group with the data on the burner label.
3. If the data differs, the burner must be matched to the available gas type according to the data provided by the gas supply company/LPG supplier.
 - See "Conversion to other gas type" if conversion from natural gas E to natural gas LL or to LPG is required.
4. Enter the gas type in the commissioning/service report form on the inside rear cover.

→ **Please note:**

In its as delivered condition, the boiler is preadjusted for operation with natural gas E.

The boiler can be operated in the Wobbe index range from 12.0 to 16.1 kWh/m³ (43.2 to 58.0 MJ/m³).

After conversion

■ **from natural gas E to natural gas LL:**

The boiler can be operated in the Wobbe index range from 10.0 to 13.1 kWh/m³ (36.0 to 47.2 MJ/m³).

■ **from natural gas E to LPG**

The boiler can be operated in the Wobbe index range from 21.4 to 22.5 kWh/m³ (76.9 to 81 MJ/m³).

Initial start-up

5. Conversion to other gas type



See installation instructions for gas restrictors or conversion kit

Steps (continued)

Initial start-up

Maintenance

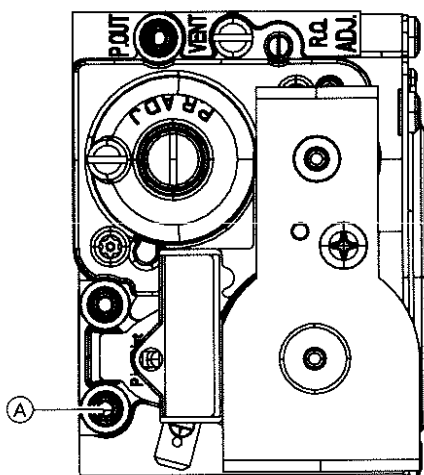
6. Measure static pressure and supply pressure

⚠ Safety instruction!

A CO measurement must be made before and after working on gas appliances to preclude any risk to health and to guarantee the satisfactory condition of the system.

LPG version:

The LPG tank must be flushed twice on initial start-up or replacement. The tank and the gas connection pipe must be thoroughly vented after flushing.



Static pressure

1. Close the gas shut-off valve.
2. Unscrew the screw in the test nipple "Pin" (A) on the gas combination valve, but do not screw out. Connect manometer.
3. Open the gas shut-off valve.
4. Measure the static pressure. It should be ~~25 mbar max~~ *4.5*
 - 25 mbar max. for natural gas
 - 57.5 mbar max. for LPG
5. Enter the value measured in the commissioning/ service report.

Supply pressure (flow pressure)

6. Start up the boiler.
7. Measure the supply pressure (flow pressure); it should be ~~17.4 to 25 mbar~~ *4.5*
 - between 17.4 and 25 mbar for natural gas
 - between 42.5 and 57.5 mbar for LPG *FG.*

→ Please note:

The burner is automatically ignited and starts to operate after a safety time has elapsed. When started up for the first time, the unit may indicate a fault because of air in the gas supply pipe. After approx. 5 seconds, press the "⏮" button to reset the burner. The ignition procedure is repeated.

Take the action described in the table.

Supply pressure (flow pressure)		Action required
Natural gas	LPG	
under 17.4 mbar	under 42.5 mbar	Do not make any adjustments; inform gas supply company/LPG supplier.
17.4 to 25 mbar	42.5 to 57.5 mbar	Start up the boiler.
over 25 mbar	over 57.5 mbar	Install a separate gas governor upstream of boiler, and set pressure to 20 mbar for natural gas or 50 mbar for LPG. Inform gas supply company/LPG supplier.

8. Enter the value measured in the commissioning/ service report.
9. Switch off the heating system on/off switch on the control unit (boiler is shut down), close the gas shut-off valve, remove the manometer and re-tighten the test nipple (A) with the screw.

10. ⚠ Safety instruction:

Open gas shut-off valve and check that the test nipple (A) is gas-tight.

Steps (continued)

Initial start-up

Maintenance

7. Check CO₂ setting

The Vitodens 100 is preset in the factory for operation with natural gas E. A CO₂ check should be made at the boiler connection adaptor as part of the initial start-up/maintenance procedure.

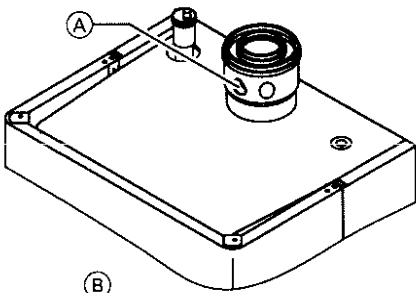
Depending on the Wobbe index, the CO₂ value lies within the range of

- 7.4 to 11.0 % for natural gas E,
- 7.7 to 10.7 % for natural gas LL and
- approx. 10.0 to 10.8 % for LPG.

Please note:
Do not make any readjustment unless replacing the gas combination valve.

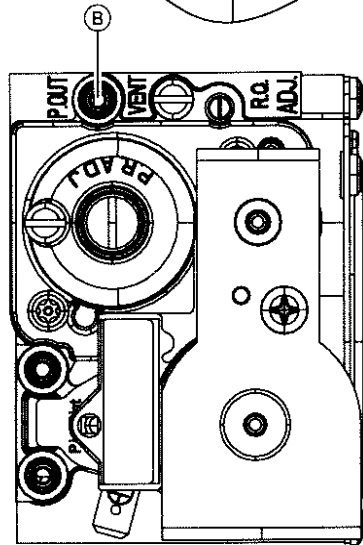
If the CO₂ value measured lies more than 1% outside the stated range for natural gas or 0.5 % for LPG, carry out the following steps:

- Check that the correct gas restrictor has been used.
- Check the AZ system for leaks (see page 12).



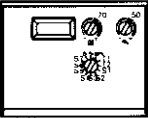
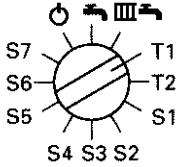
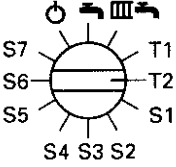
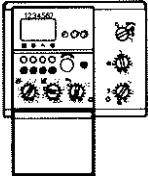
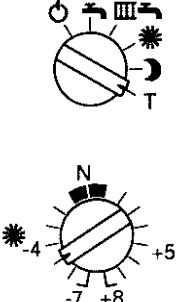
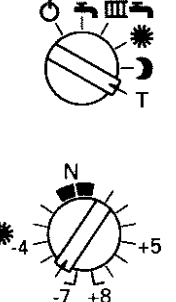
1. Connect flue gas analyzer to the boiler connection adaptor (A) ("Flue gas" port).

Please note:
In accordance with current regulations, flue gas loss measurements are not carried out on condensing boilers.



2. Only when readjusting: Unscrew the screw in the test nipple "Pout" (B) on the gas combination valve, but do not screw out. Connect manometer.
3. Open the gas shut-off valve and start up the boiler.
4. Trigger heat request by adjusting the setpoint value.
5. Select the top end of the rated output range (see table).

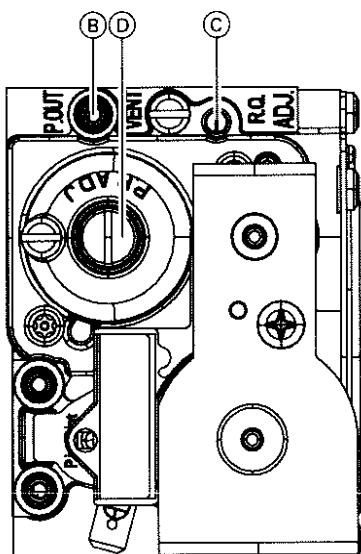
Important:
Do not use the emissions test switch "T" to trigger the heat request.

Control unit type	Select bottom end of rated output range	Select top end of rated output range	Exit the setting mode
Control unit for operation at constant temperature 			<ul style="list-style-type: none"> ■ Select the required heating program.
Control unit for weather-compensated operation with standard programming unit 			<ul style="list-style-type: none"> ■ Select the required heating program. ■ Turn the "☀" selector knob to the required value.

Steps (continued)

Initial start-up

Maintenance

7. Check CO₂ setting (continued)

6. Only when readjusting:
Check the nozzle pressure for the top end of the rated output range according to the table on page 10 and (if necessary) adjust accordingly with the adjusting screw "RQADJ" (C).
7. Measure the CO₂ content.
8. Select the bottom end of the rated output range (see table on page 8).
9. Only when readjusting:
Check the nozzle pressure for the bottom end of the rated output range according to the table on page 10 and (if necessary) adjust accordingly with the adjusting screw "PRADJ" (D). (Remove covering screw).

Please note:

*A sufficiently accurate measuring instrument must be available for adjustment purposes.
Tolerance for setting the nozzle pressure: +0.1/-0 mbar.*

If no sufficiently accurate measuring instrument is available, the bottom end of the rated output range can be set via the CO₂ content:
Set the CO₂ content on the adjusting screw "PRADJ" (D) to the same value as for the top end of the rated output range.

10. Enter the CO₂ content for the top and bottom end of the rated output range in the commissioning/service report.
11. Exit the setting mode (see table on page 8).
12. Close the measuring port on the boiler connection adaptor.
13. Only when readjusting:
Close the gas shut-off valve, remove the manometer and re-tighten the test nipple (B).
14. **⚠ Safety instruction:**
Open gas shut-off valve and check that the test nipple (B) is gas-tight.

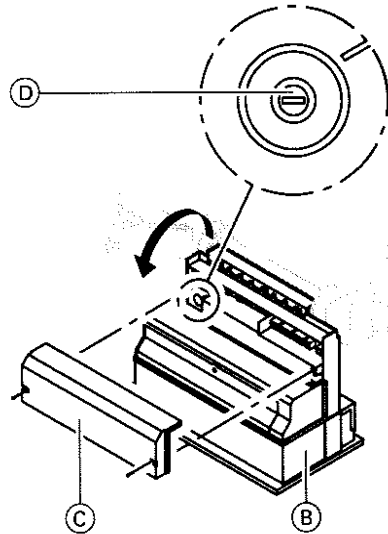
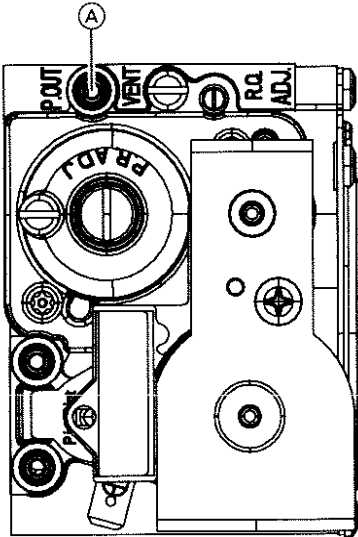
Steps (continued)

Initial start-up

8. Set the max. output

(if necessary)

The max. output can be limited for the heating mode.
The limit is set via the modulation range.



1. Unscrew the screw in the test nipple "Pout" (A) on the gas combination valve, but do not screw out, and connect manometer.
2. Open the gas shut-off valve. Start up the boiler.
3. Select the top end of the rated output range: See table on page 8.

4. Unscrew the underside of the control unit (B) and swing down.
5. Unscrew the rear cover (C) of the case.
6. Using a screwdriver, turn the potentiometer (D) counter-clockwise until the nozzle pressure corresponds to the required output according to the table below.

Rated output	kW	8	11	15	18	20	24
Rated thermal load	kW	8.4	11.5	15.6	18.8	20.8	25
Nozzle pressure for natural gas E based on G20	mbar	1.20 1,0	1.80 1,9	2.95 3,0	3.90 3,8	4.80 4,4	5.90 5,5
Nozzle pressure for natural gas LL based on G25	mbar	1.00 1,0	1.65 1,8	2.75 2,8	3.80 3,5	4.60 4,1	5.60 5,1
Nozzle pressure for LPG based on G31	mbar	1.10 1,1	2.10 1,9	3.30 1,9	4.20 1,9	4.90 1,9	6.10 1,9

7. Screw the rear cover (C) of the case back on.
8. Swing up the control unit (B) and screw on.

Steps (continued)**I**nitial start-up**8. Set the max. output (continued)**

9. Turn the heating program selector switch and the "☀" selector knob (on the control unit for weather-compensated operation) back to their original position.
10. Record the setting of the max. output on the nameplate enclosed with the "Technical Documentation". Affix the nameplate inside the hinged cover on the front panel.
11. Close the gas shut-off valve, remove the manometer and retighten the test nipple (A).
12. **⚠ Safety instruction:**
Open gas shut-off valve and check that the test nipple (A) is gas-tight.

Initial start-up**M**aintenance**9. Measures burner values****⚠ Safety instruction!**

A CO measurement must be made before and after working on gas appliances to preclude any risk to health and to guarantee the satisfactory condition of the system.

Record the measured values in the sequence stated in the commissioning/service report on the inside rear cover.

→ **Please note:**

The front panel must be mounted when the measurement is made.

Initial start-up**M**aintenance**10. Check gas pipes and fittings for leaks**

Check all joints in the gas pipes and fittings for leaks with a foaming agent (leak detecting spray) at operating pressure.

Steps (continued)

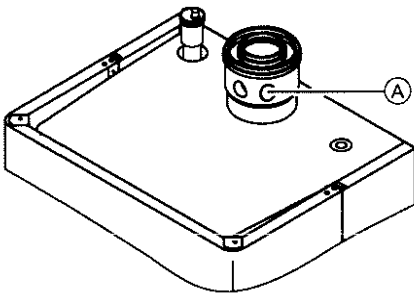
Initial start-up

11. Control unit for weather-compensated operation – Match coding addresses

The control unit must be matched to the system equipment; see page 44. For details of the coding procedure and an overview of the coding addresses, see page 46 onwards.

Initial start-up

12. Check AZ system for leaks (circular gap measurement)

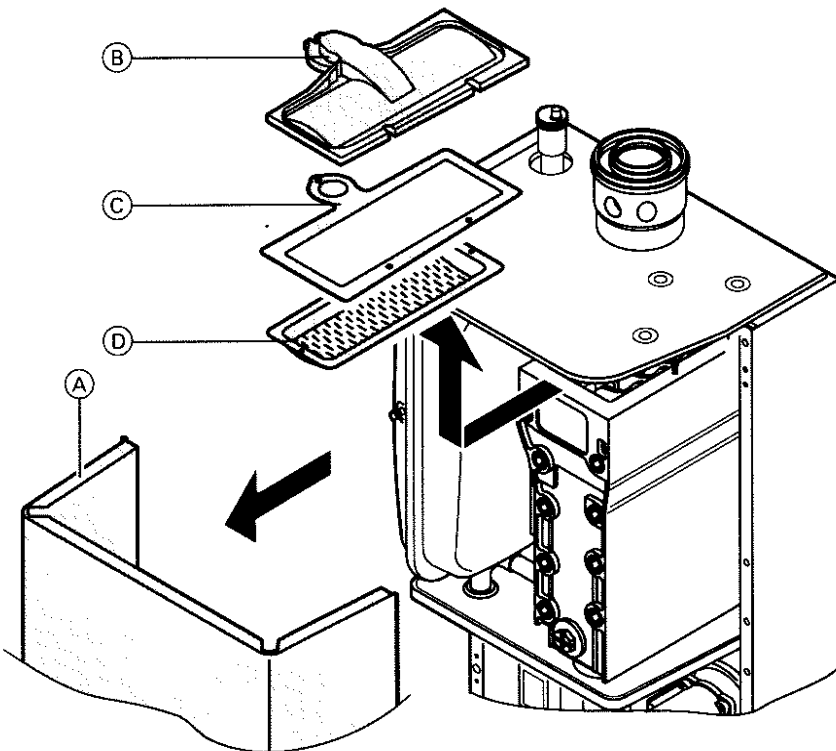


Not all inspection authorities require a leak test (overpressure test) to be carried out when the system is started up in the case of flue gas/ventilation systems tested together with the wall-mounted gas boiler. In such cases, we recommend that the heating contractor carries out a simplified check for leaks when starting up the system. For this purpose, it is sufficient to measure the CO₂ concentration in the combustion air in the circular gap of the AZ pipe. The flue pipe is considered sufficiently leak-proof if the CO₂ concentration in the combustion air is no higher than 0.2% and the O₂ concentration no lower than 20.6%. If higher CO₂ or lower O₂ values are measured, the flue pipe must be subjected to pressure testing at a static overpressure of 200 Pa.

Ⓐ Combustion air measuring point (ventilation air)

Maintenance

13. Check the perforated burner plate



1. Switch off the heating system switch on the control unit and the mains power.
2. Close the gas shut-off valve and secure.
3. Remove the hood Ⓐ.
4. Unscrew the screw on the left-hand side of the burner cover Ⓑ and slacken off the screws on the right (remove rubber plug above).

⚠ **Safety instruction:**
The burner may still be hot.

5. Push the burner cover Ⓑ slightly to the left and remove towards you.
6. Remove the gasket Ⓒ and take out the perforated burner plate Ⓓ.

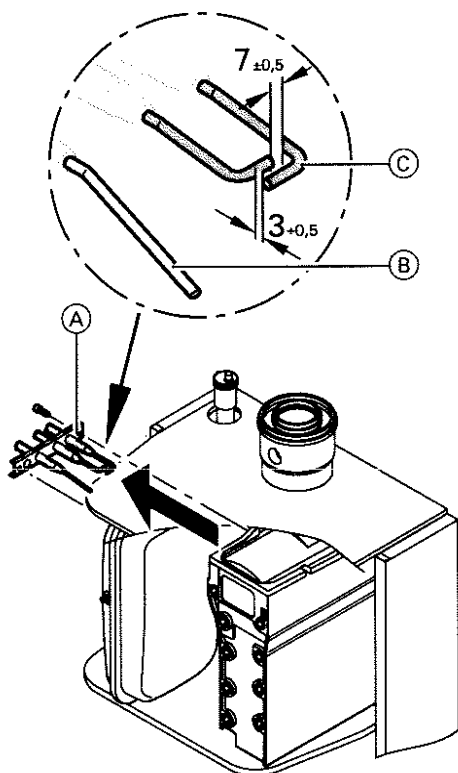
⚠ **Caution!**
Do not place the perforated burner plate on the burner gauze assembly (wire gauze)!

7. Check the perforated burner plate for damage. Replace if necessary.

Steps (continued)

Maintenance

14. Check electrode block

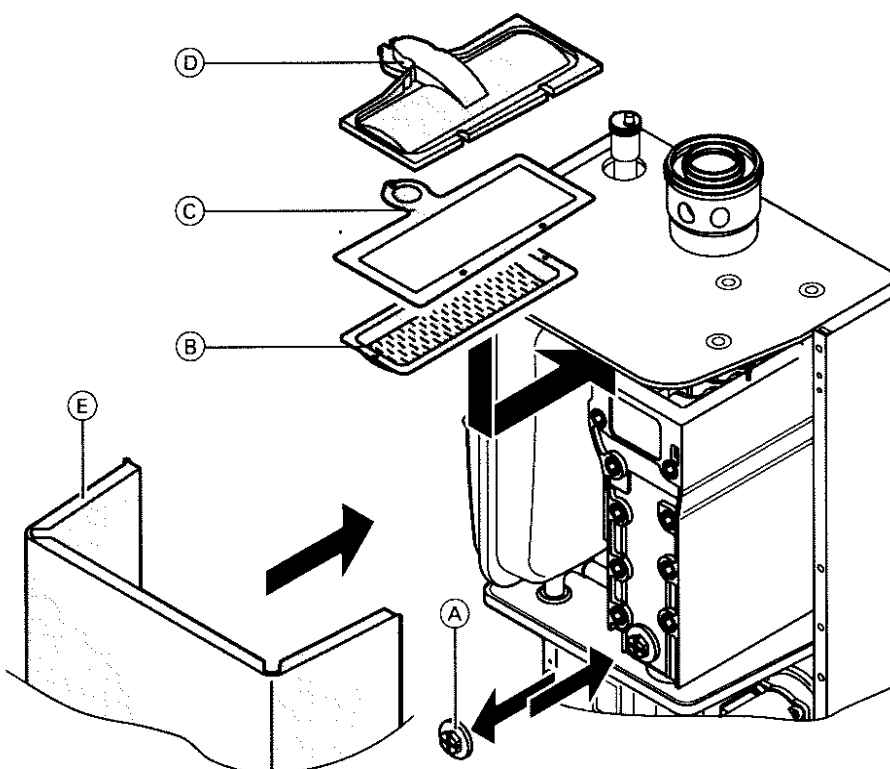


1. Disconnect the cables from the electrodes.
2. Unscrew the screws (A) and take the electrode block off the boiler shell.
3. Check the ionization electrode (B) and ignition electrode (C) for wear, contamination and dimensional accuracy (see figure). Check the ceramic for cracks, and replace if necessary.
4. Fit new electrode with new seal in the reverse sequence.

→ **Please note:**
Torque for screws (A): 7 Nm.

Maintenance

15. Clean heat exchange surfaces and mount burner

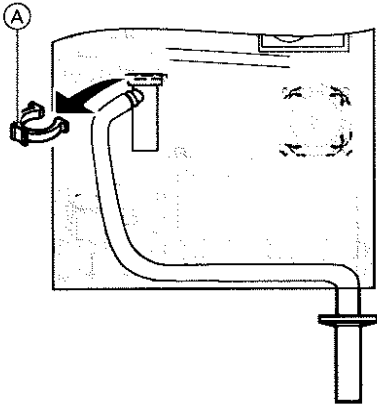


1. Check the heat exchange surfaces for contamination and, if necessary, clean with tap water.
2. Unscrew the clean-out plug (A) (bottom centre).
⚠ Caution!
Do not open metal plugs on side.
3. Remove any sediment which may have accumulated on the floor of the heat exchanger.
4. Screw on the clean-out plug (A) with O ring seal (to a torque of 4 Nm).
5. Place the perforated burner plate (B) in position.
6. Fit new gasket (C) (make sure that it is correctly positioned).
7. Place the burner cover (D) in position and screw on (to a torque of 4 Nm). Put the rubber plug back in.
8. Mount the hood (E).

Steps (continued)

Maintenance

16. Clean the siphon trap



1. Pull off the spring clip (A) and take off the siphon trap.
2. Thoroughly flush through the siphon trap with water.
3. Fill the siphon trap with water, re-mount the siphon trap and secure the spring clip (A).
4. Check that the condensate drains away freely.

→ **! Safety instruction:**
There is a risk that flue gas may escape if the siphon trap is not filled with water.

Please note:
If the condensate cannot drain away freely, it collects in the bottom part of the boiler and obstructs the free passage of the flue gases.

Maintenance

17. Check neutralizing unit (if installed)

Accessory

1. Check the pH value of the condensate with pH paper. If the pH value is less than 6.5, replace the granulate.
2. If required, add granulate up to the level of the marking.

If contaminated:
Rinse the neutralizing unit with tap water.

Please note:
Part No. of pH paper: 9517 678.

Please follow the instructions of the manufacturer of the neutralizing unit.

The granulate is consumed as it neutralizes the condensate. The red marking shows the minimum filling level.

Steps (continued)

Maintenance

18. Check diaphragm expansion vessel and pressure of system

Carry out the check with the system cold.

1. Drain the boiler/system and reduce the pressure until the manometer reading is "0".
2. If the inlet pressure of the diaphragm expansion vessel is lower than the static pressure of the system, add sufficient nitrogen until the inlet pressure is higher than the static pressure of the system.
3. Top up with water until the filling pressure is 0.1 to 0.2 bar higher than the inlet pressure of the diaphragm expansion vessel.

Example

Static head 10 m
(distance between boiler and top-most heat exchange surface)
corresponds to a static pressure of 1 bar

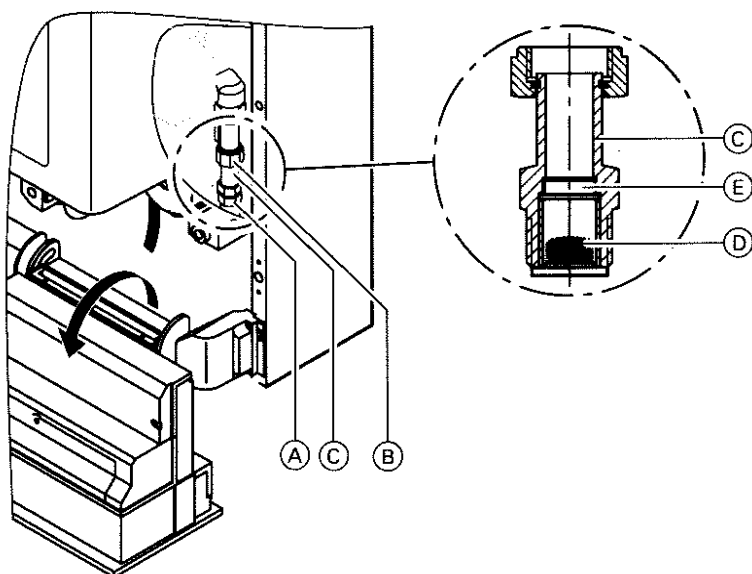
→ With the system cold, the filling pressure must be approx. 0.2 bar higher than the static pressure.
Max. operating pressure: 3 bar.
Min. operating pressure: 0.8 bar.

→ **⚠ Safety instruction:**
No chemical corrosion inhibitors should be used.

Maintenance

19. Check flow rate limiter and water switch filter

(gas combination boiler only)



1. Unscrew the screwed connection of the cold water pipe (A).
2. Unscrew the screwed connection at the cold water connection nipple (B).
3. Take out the cold water connection nipple (C) with the water filter (D).
4. Check the flow rate limiter (E) in the connection nipple (C); if lime-scale is present or if damaged, replace the connection nipple.
5. If necessary, clean the water filter (D).
6. Reassemble in the reverse sequence.

Maintenance

20. Check all primary and secondary circuit connections

Check all plug-in connections, temperature sensors and screwed connections on the water side for leaks.

Steps (continued)

Maintenance

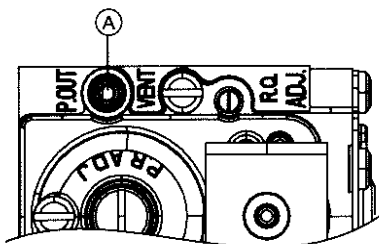
21. Check function of safety valves

Maintenance

22. Check soundness of electrical connections

Maintenance

23. Check closing action of the solenoids in the gas combination valve



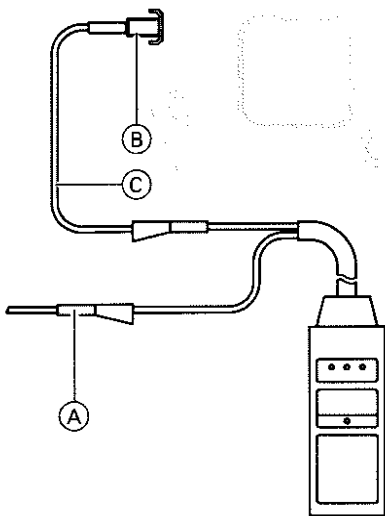
1. Connect manometer to test nipple "Pout" (A).
2. Start up the system.
3. Switch off the control unit:
The nozzle pressure must fall to 0 mbar within 1 second. If the nozzle pressure falls more slowly, replace the gas train.

Maintenance

24. Measure ionization current

⚠ Safety instruction!

Switch off the heating system switch on the control unit before connecting the measuring instrument.



1. Disconnect the socket of the ionization measuring cable (A) from the ionization electrode (B) and connect to the plug of the Testomatik.
2. Connect the additional ionization measuring cable (C) to the ionization electrode (B) and the socket of the Testomatik.
3. Start up the boiler at the top end of its rated output range (see page 8).
4. Enter the value measured in the commissioning/service report.
5. Remove the Testomatik-Gas and place the socket (A) of the ionization measuring cable on ionization electrode (B).

→ *Measuring cable 1 is required for measurements with the Testomatik-Gas. The measurement can also be made with a multimeter.*

→ **Please note:**
The minimum ionization current must be at least 7 μA when the flame is formed (approx. 2-3 seconds after the gas combination valve opens).

→ *The commissioning/service report form is on the inside rear cover of this manual.*

Maintenance

25. Carry out flue gas measurement

Carry out the flue gas measurement at the boiler connection adaptor. Record the values measured in the commissioning/service report form on the inside rear cover of this manual.

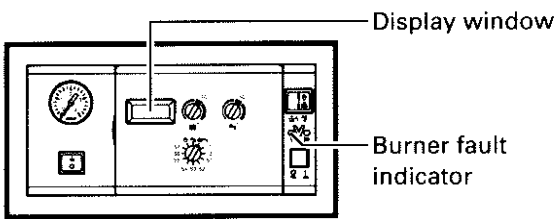
Troubleshooting steps**Diagnosis**

1. Establish fault message or ascertain behaviour of system
2. Look for the corresponding cause of the fault in the diagnosis tables
Diagnosis with the control units
 - for faults with fault display on control unit (page 18)
Please note:
See page 23 for retrieval of fault codes from the fault memory.
 - for faults without fault display on control unit (page 22)
3. Establish the action required in the table

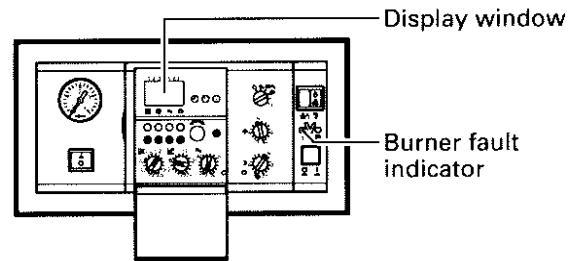
Correction

4. Correct the fault (page 25)

Diagnosis with the control units



Control unit for operation at constant temperature

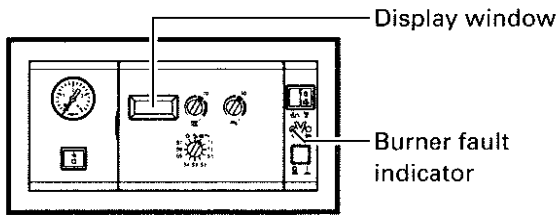


Control unit for weather-compensated operation

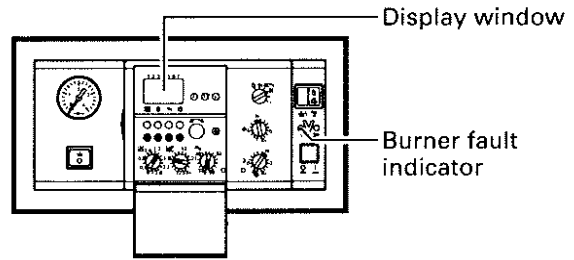
Diagnosis table: Faults with fault display on control unit

Fault message in display window		Red burner fault indicator	Behaviour of the system
Control unit for operation at constant temperature	Control unit for weather-compensated operation		
—	4:1:0	OFF	Operates on basis of 0 °C outdoor temperature
—	4:1:8	OFF	Operates on basis of 0 °C outdoor temperature
—	4:2:0	OFF	Flow temperature of heating circuits too low
—	4:2:8	OFF	Flow temperature of heating circuits too low
E3	4:3:0	OFF	Boiler cools down
E3	4:3:8	OFF	Boiler cools down
—	4:4:0	OFF	Mixing valve is opened
—	4:4:8	OFF	Mixing valve is opened
E5	4:5:0	OFF	No domestic hot water heating/comfort mode not operating (gas combination boiler)
E5	4:5:1	OFF	No domestic hot water heating
E5	4:5:8	OFF	No domestic hot water heating/comfort mode not operating (gas combination boiler)
E5	4:5:9	OFF	No domestic hot water heating
E7	—	OFF	No central heating
E7	—	OFF	No central heating
—	4:7:0	OFF	Operates on basis of 20 °C desired day temperature, 14 °C desired night temperature
—	4:7:8	OFF	Operates on basis of 20 °C desired day temperature, 14 °C desired night temperature
E11	4:8:1	Flashes	Boiler operates in emergency mode (after approx. 30 min BUS fault)
		OFF	Boiler cools down
E12	4:8:2	OFF	—
E15	4:8:5	OFF	—

Diagnosis with the control units







Control unit for operation at constant temperature



Control unit for weather-compensated operation

Diagnosis table: Faults with fault display on control unit

Fault message in display window		Red burner fault indicator	Behaviour of the system
Control unit for operation at constant temperature	Control unit for weather-compensated operation		
—	4:0:0	OFF	Operates on basis of 0 °C outdoor temperature
—	4:1:8	OFF	Operates on basis of 0 °C outdoor temperature
—	4:2:0	OFF	Flow temperature of heating circuits too low
—	4:2:8	OFF	Flow temperature of heating circuits too low
E3	4:3:0	OFF	Boiler cools down
E3	4:3:8	OFF	Boiler cools down
—	4:4:0	OFF	Mixing valve is opened
—	4:4:8	OFF	Mixing valve is opened
E5	4:5:0	OFF	No domestic hot water heating/comfort mode not operating (gas combination boiler)
E5	4:5:1	OFF	No domestic hot water heating
E5	4:5:8	OFF	No domestic hot water heating/comfort mode not operating (gas combination boiler)
E5	4:5:9	OFF	No domestic hot water heating
E7	—	OFF	No central heating
E7	—	OFF	No central heating
—	4:7:0	OFF	Operates on basis of 20 °C desired day temperature, 14 °C desired night temperature
—	4:7:8	OFF	Operates on basis of 20 °C desired day temperature, 14 °C desired night temperature
RE1	4:8:1	Flashes	Boiler operates in emergency mode (after approx. 30 min BUS fault)
		OFF	Boiler cools down
RE2	4:8:2	OFF	—
RE5	4:8:5	OFF	—

	Cause of fault	Action
	Short circuit – outdoor temperature sensor	Check outdoor temperature sensor (see page 26)
	Open circuit – outdoor temperature sensor	Check outdoor temperature sensor (see page 26)
	Short circuit – flow temperature sensor, low loss header	Check flow temperature sensor (see page 28)
	Open circuit – flow temperature sensor, low loss header	Check flow temperature sensor (see page 28)
	Short circuit – boiler temperature sensor	Check boiler temperature sensor (see page 26)
	Open circuit – boiler temperature sensor	Check boiler temperature sensor (see page 26)
	Short circuit – flow temperature sensor	 See installation instructions for mixing valve motor
	Open circuit – flow temperature sensor	 See installation instructions for mixing valve motor
	Short circuit – cylinder temperature sensor / short circuit – comfort sensor (gas combination boiler)	Check cylinder temperature sensor / comfort sensor (see page 28/27)
	Short circuit – outlet temperature sensor	Check outlet temperature sensor (see page 27)
	Open circuit – cylinder temperature sensor / open circuit – comfort sensor (gas combination boiler)	Check cylinder temperature sensor / comfort sensor (see page 28/27)
	Open circuit – outlet temperature sensor	Check outlet temperature sensor (see page 27)
	Short circuit – M clock thermostat	Check M clock thermostat  See operating instructions for M clock thermostat
	Open circuit – M clock thermostat	Check M clock thermostat  See operating instructions for M clock thermostat
	Short circuit – WS/RS remote control unit	Check WS/RS remote control unit (see page 33)
	Open circuit – WS/RS remote control unit	Check WS/RS remote control unit (see page 33)
	BUS fault	Replace circuit board VR 20 or circuit board of burner control unit LGM 29
	Open circuit – internal BUS connection	Replace circuit board VR 20 or circuit board of burner control unit LGM 29
	KM BUS fault on line to Vitocom	Check connection or Vitocom
	Open circuit/closed circuit – BUS connection to extension kit for a heating circuit with mixing valve	Check connection of extension kit for the heating circuit with mixing valve (see page 31)

Diagnosis with the control units (continued)


Diagnosis table: Faults with fault display on control unit (continued)

Fault message in display window		Red burner fault indicator	Behaviour of the system
Control unit for operation at constant temperature	Control unit for weather-compensated operation		
6E2	4:b: 2	OFF	Boiler cools down
6E3	4:b: 3	OFF	Setting via service level not possible
4E6	4:b: 6	OFF	Boiler cools down
4CC	4:c: C	ON	Burner control unit goes to fault mode
—	4:e: 4 or 4:e:	OFF	—
FE2	4:f: 2	OFF	—
FE5	4:f: 5	OFF	—
4F9	4:f: 9	OFF/ON	Burner control unit goes to fault mode
4F8	4:f: 8	ON	Burner control unit goes to fault mode
4FE	4:f: E	ON	Burner control unit goes to fault mode
402	4:0: 2	ON	Burner control unit goes to fault mode
414	4:1: 4	ON	Burner control unit goes to fault mode
40C	4:0: C	ON	Burner control unit goes to fault mode
408	4:0: 8	ON	Burner control unit goes to fault mode
425	4:2: 5	OFF	Boiler operates with high boiler water temperature
426	4:2: 6	OFF	Boiler operates with continuous modulation
435	4:3: 5	OFF	Boiler does not switch on
EE5	5 : 5	OFF	No DHW function
EE9	5 : 9	OFF	No DHW function
EEC	C : 8	OFF	Boiler does not switch on
EE0	C : 0	OFF	Boiler does not switch on

Cause of fault	Action
Sensor inputs are not read in correctly	Replace circuit board VR 20
Data points are not stored	Replace circuit board VR 20
AD converter of burner control unit defective	Replace circuit board of burner control unit LGM 29
Internal fault or fault with internal data protection	Reset burner control unit
Fault in Dekamatik-HK heating circuit control unit connected downstream	Check Dekamatik-HK heating circuit control unit connected downstream and data transmission circuit (see page 32)
Error message re Vitocom	Check Vitocom
Error message re extension kit for heating circuit with mixing valve	Check coding of extension kit and check extension kit
Parameterization of burner control unit defective	Replace circuit board of burner control unit LGM 29
Parameterization of burner control unit defective	Replace circuit board of burner control unit LGM 29
Internal fault in burner control unit or interference	Reset burner control unit. After several unsuccessful attempts replace circuit board of LGM 29
Safety chain has operated	Check thermal circuit breakers (see page 30)
No flame signal present	Check electrical connections (see page 6) Measure ionization current (see page 16) Check gas pressure (see page 7) Check gas combination valve (see page 16) Check ignition (see page 13) Check ignition electrodes (see page 13)
Flame signal still present after shutdown	Check gas combination valve (see page 16) Check electrodes (see page 13) or replace circuit board of burner control unit LGM 29
Unit is still interlocked	Press reset button "⏏" once
Emissions test switch "⚡" in "👤" setting for 0.5 hours already	Turn emissions test switch "⚡" to "👤"
Setting mode active for top or bottom end of rated output range for 0.5 hours already	Turn heating program selector switch to the required operating mode
Emissions test switch "⚡" turned to "👤" and reset button "⏏" operated	Turn emissions test switch "⚡" to "👤" and press reset button "⏏" once
Outlet sensor / short circuit	Check sensor / wiring
Outlet sensor / open circuit	Check sensor / wiring
Air pressure switch / open circuit	Check wiring or check for kinks in pressure hoses
Air pressure switch / open circuit	Switch defective

Diagnosis with the control units (continued)

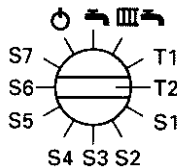
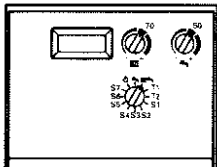
Diagnosis table: Faults without fault display on control unit

Behaviour of system	Cause of fault	Action
Flow temperature too cold or too warm	Heating system type incorrectly coded (with control unit for weather-compensated operation only)	Check coding of heating system type (see page 44)
Room temperature too cold or too warm	Thermostatic radiator valves	Check thermostatic radiator valves (see page 29)
	Clock thermostat (with control unit for operation at constant temperature only)	 Check clock thermostat See operating instructions for clock thermostat
Domestic hot water temperature too cold or too hot	Sensor fault or water switch sticking (gas combination boiler only)	Gas combination boiler only: Check outlet temperature sensor (see page 27), check comfort sensor (see page 27), check plate-type heat exchanger (see page 28). Gas central heating boiler only: Check cylinder temperature sensor (see page 28)
Boiler constantly switches on and off	Flue system leaking	Check flue system for leaks

Diagnosis with the control units (continued)

Retrieval of fault codes from the fault memory

Details of burner faults which occur are stored and can be scanned. The scanning sequence starts with the most recently stored fault code.



Control unit for operation at constant temperature

1. Turn heating program selector switch to "T2"
 - Display goes out for a short time
 - Max. output is displayed for a short time in %
 - Each fault code which has been recorded (max. 10) flashes for approx. 5 seconds (starting with the most recently stored fault code).

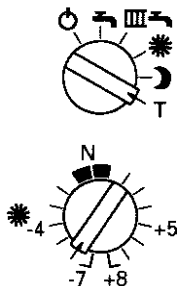
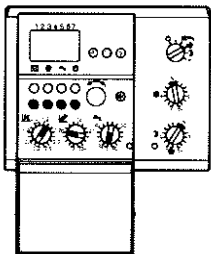
→ **Please note:**
The meaning of the fault code is explained in the tables on page 18 onwards.

→ **Please note:**
After the boiler water temperature is displayed, the display of the recorded fault codes re-commences.

2. Turn the heating program selector switch back to the required heating program.

Control unit for weather compensated operation

1. Turn heating program selector switch to "T".
2. Turn the "☀" selector knob to "-6". "i" appears for approx. 3 seconds in the display. Afterwards, a flashing fault code appears for approx. 3 seconds (most recent fault code). Then the figure "2" appears, followed by a flashing fault code; the sequence continues until "10" appears with the last of the fault codes stored.



Diagnosis with the control units (continued)

Correction

	Page
Sensors	
Check outdoor temperature sensor	26
Check boiler temperature sensor	26
Check outlet temperature sensor or comfort sensor (gas combination boiler only)	27
Check cylinder temperature sensor/ flow temperature sensor for low loss header	28
Boiler components	
Check plate-type heat exchanger	28
Check thermostatic radiator valves	29
Control components	
Relay test	29
Check safety chain	30
Check fuse	30
Accessories	
Extension kit for heating circuit with mixing valve	31
Check Dekamatik-HK	32
WS remote control unit	33
RS remote control	33
Connection extension adaptor	33

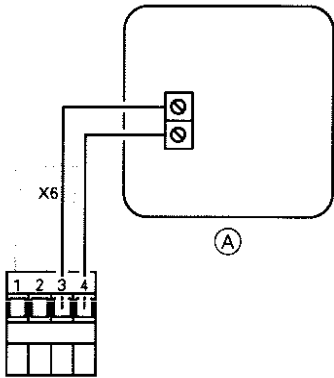
Correction (continued)

Scanning the actual and desired temperatures

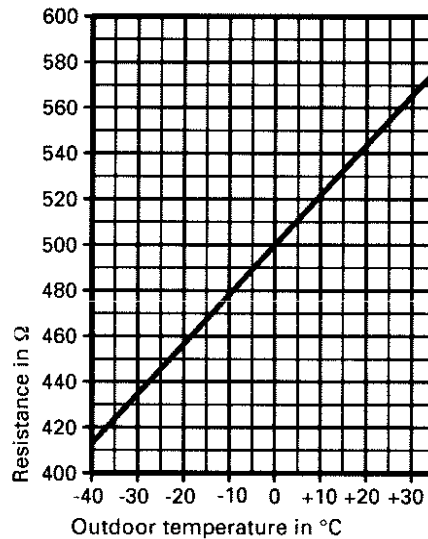
for control unit for operation at constant temperature: see page 42

for control unit for weather-compensated operation with standard programming unit: see page 56

Check outdoor temperature sensor (control unit for weather-compensated operation)

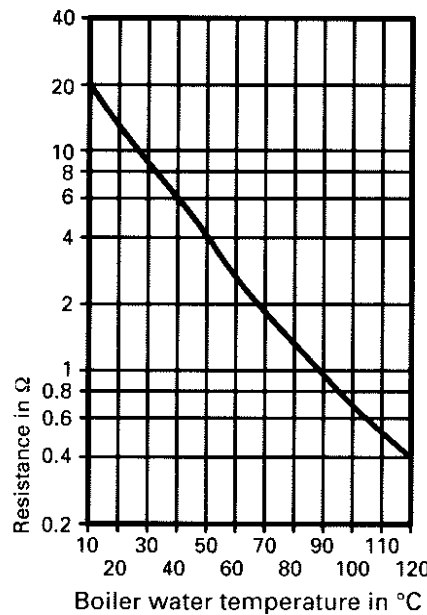
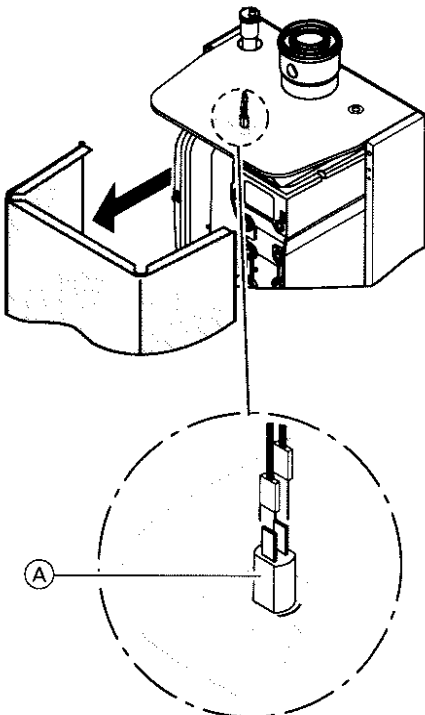


(A) Outdoor temperature sensor



1. Disconnect connector "X6" from the control unit.
2. Measure resistance of outdoor temperature sensor at the disconnected connector between "X6.3" and "X6.4", and compare with the curve.
3. If the value measured differs significantly from the curve, disconnect the wires on the sensor and repeat the measurement directly on the sensor.
4. Depending on the result, replace the cable or the outdoor temperature sensor.

Check boiler temperature sensor



1. Disconnect the cables from the boiler temperature sensor (A).
2. Measure the resistance of the boiler temperature sensor and compare with the curve.
3. If the value measured differs significantly, replace the sensor.

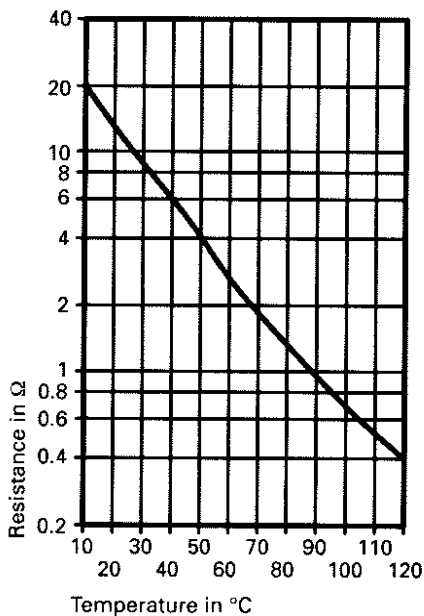
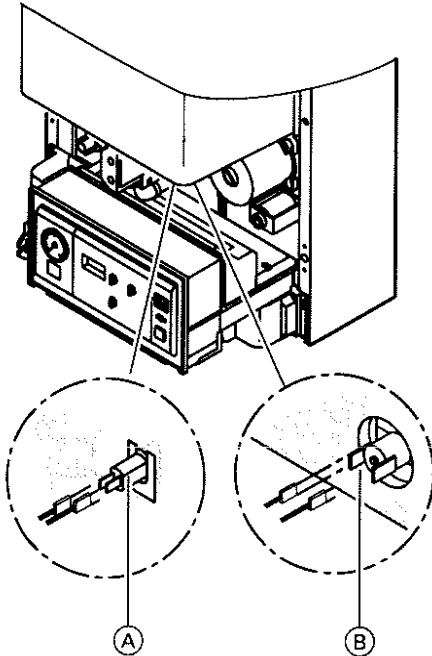
→ **⚠ Safety instruction!**
As the sensor is in direct contact with the heating water, the boiler must be drained before changing the sensor.

Correction (continued)

Check outlet temperature sensor or comfort sensor

(gas combination boiler only)

1. Disconnect the cables from the outlet temperature sensor (A) or the comfort sensor (B).



2. Measure the resistance of the sensor and compare with the curve.
3. If the value measured differs significantly, replace the sensor.

→ **⚠ Safety instruction!**
The outlet temperature sensor is seated directly in the DHW connection flange.

Before replacing:

Outlet temperature sensor

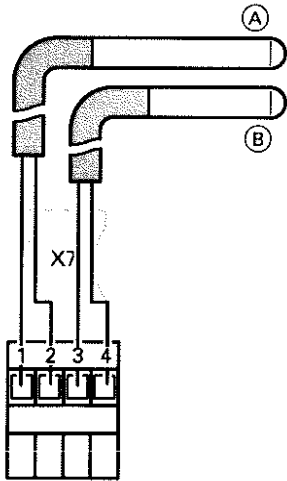
- Close the cold water shut-off cock.
- Drain the domestic hot water pipe and the plate-type heat exchanger (secondary circuit).

Comfort sensor

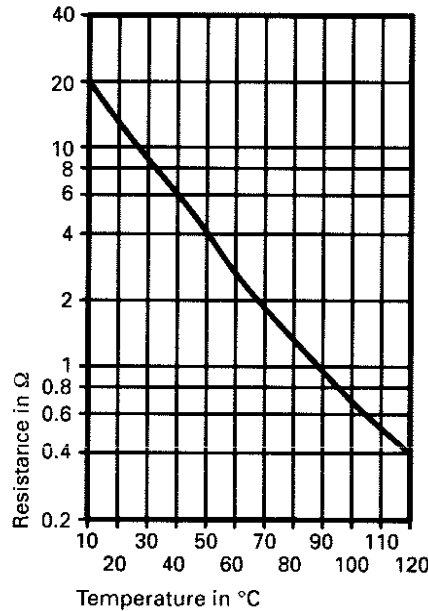
When installing, push the sensor into the tabs on the heat exchanger.

Correction (continued)

Check cylinder temperature sensor/flow temperature sensor for low loss header

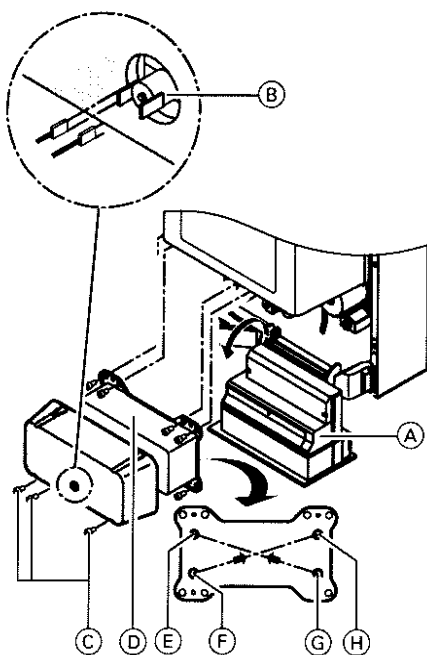


- (A) Cylinder temperature sensor
- (B) Flow temperature sensor for low loss header



1. Disconnect connector "X7" from the control unit.
2. Measure resistance of the cylinder temperature sensor and compare with the curve.
3. If the value measured differs significantly, replace the sensor.

Check plate-type heat exchanger (gas combination boiler only)



- (E) Heating return
- (F) Cold water
- (G) Hot water
- (H) Heating flow

1. Close the shut-off valves on the heating water and domestic hot water side of the boiler and drain.
2. Unscrew the fastening screws and swing down the control unit (A).
3. Disconnect the connector of the comfort sensor (B).
4. Unscrew the fastening screws (C) and pull out the plate-type heat exchanger (D) towards you.
5. Check the domestic hot water connections for limescale, clean and, if necessary, replace the plate-type heat exchanger.
6. Install in the reverse sequence.

→ **Please note:**
Small amounts of residual water may escape on disassembly including from the disassembled plate-type heat exchanger.

→ **Please note:**
Grease new seals and place in the connections of the aqua-plate.

Correction (continued)

Check thermostatic radiator valves

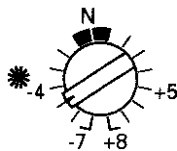
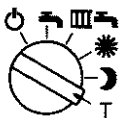
Check operation and setting.

→ **Please note:**

The thermostatic radiator valves must not be activated in the room in which the room temperature sensor is installed for room temperature controlled operation (e.g. with F or M clock thermostat or in the case of weather-compensated control with the room temperature sensor switched in via the RS remote control unit (keep the thermostatic radiator valves fully open).

(T)

Relay test (control unit for weather-compensated operation)



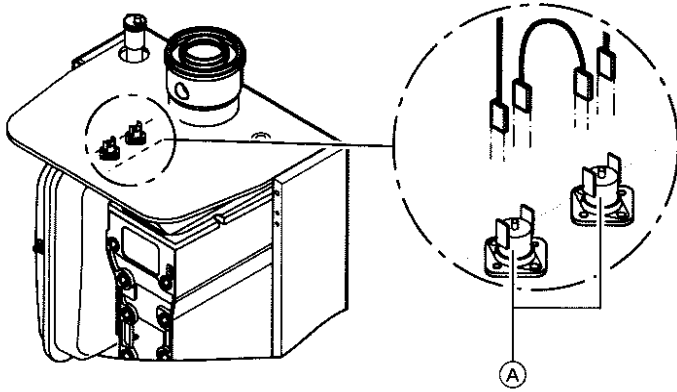
1. Turn heating program selector switch to "T".
2. Select required setting on the "☀" selector knob.

Function	"☀" selector knob	Flashing display
Circulation pump for heating the cylinder	N	4:0:4
Heating circuit pump A	-1	4:0:2
Heating circuit pump with extension kit for heating circuit with mixing valve	-2	4:0:3
Open mixing valve	+1	4:0:8
Close mixing valve	+2	4:0:7
DHW circulation pump	-4	4:0:6
Without function	-3	4:0:1
Burner ON at bottom end of rated output range and heating circuit pump ON	-5	Boiler water temperature displayed
Burner ON at max. output and heating circuit pump ON	-6	Fault code from fault memory displayed (see page 23)

3. Turn heating program selector switch and "☀" selector knob back to original settings.

Correction (continued)

Check safety chain



If the safety chain cannot be reset after an automatic cut-out, even though the boiler water temperature is below approx. 90 °C, carry out the following steps:

Disconnect one cable from each of the thermal circuit breakers (A).

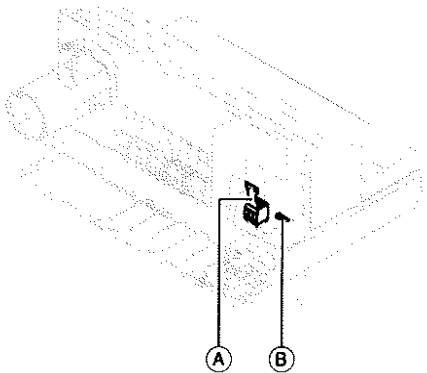
Check the continuity of the thermal circuit breakers with a multimeter. Remove defective thermal circuit breakers.

Install the new thermal circuit breakers.

After starting up, press the reset button "↕" on the control unit.

Check fuse

Mounting position of fuse

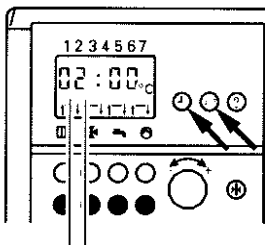


1. Disconnect connector 40 (A) in the control unit.
2. Holding the fuse F3 (6.3 A) (B) by its grip, pull out of the base.
3. Check continuity of fuse with a multimeter.

Correction (continued)

**Check extension kit for heating circuit with mixing valve
Control unit for weather-compensated operation**

Accessory



1. Press buttons "⊖" and "1-7" simultaneously.

2. Evaluate display.

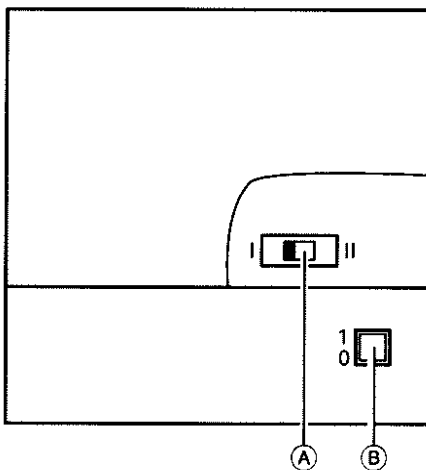
- 02 with burner control unit
- 06 with burner control unit and extension kit for a heating circuit with mixing valve
- 12 with burner control unit and Vitocom 100
- 16 with burner control unit and extension kit for a heating circuit with mixing valve and Vitocom 100

3. If the extension kit is not recognized, check the coding of the heating system type (see page 44).

Please note:

The extension kit is only recognized when connected via the KM-BUS, not when connected via the Viessmann 2-wire BUS.

Check mixing valve motor



- (A) Switch for rotational direction
- (B) Mains electrical isolator switch "⊖"

1. Select the rotational direction of the mixing valve motor.

- Switch setting I for heating return from left (factory setting)
- Switch setting II for heating return from right

2. Relay test

Switch the mains electrical isolator switch on the motor off and then on again. The unit carries out the following self-test:

- Close mixing valve (150 sec.)
- Pump ON (10 sec.)
- Open mixing valve (10 sec.)
- Close mixing valve (10 sec.)

Then the normal control mode is resumed.

3. Observe the rotational direction of the mixing valve motor during the automatic relay test of the extension kit.

Afterwards, position the mixing valve by hand in the "Open" setting.

The flow temperature sensor must now measure a higher temperature.

If the temperature is lower, either the rotational direction of the motor is incorrect or the mixing valve insert is incorrectly fitted.

Correction (continued)

Check Dekamatik-HK

Control unit for weather-compensated operation

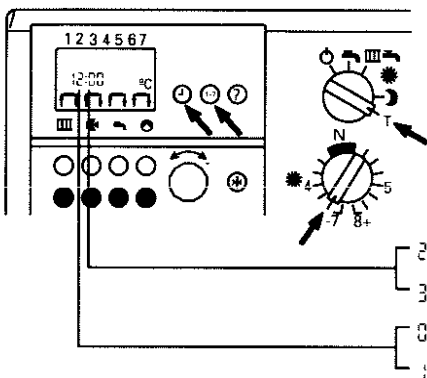
Accessory

Please note:

The Viessmann 2-wire BUS expansion module is required in order to activate a Dekamatik-HK.

A communication module is required additionally in the Dekamatik-HK1 in order to activate a Dekamatik-HK1.

Check Viessmann 2-wire BUS and data transfer line to the Dekamatik-HK



1. Turn heating program selector switch to "T".
2. Turn "☀" selector knob to "-6".
3. Press buttons "⊖" and "1-7" simultaneously.
4. Evaluate display.

- 2 With Dekamatik-HK1 or Dekamatik-HK2
- 3 With Dekamatik-HK4
- 0 Expansion module not recognized
- 1 Expansion module recognized

5. If the expansion module or the Dekamatik-HK is not recognized, check that they have been installed correctly.

→ **Please note:**

A green LED flashes on the expansion module if the data bus is intact. If the LED is not lit, the data line connections "X5.3"- "X5.4" may be interchanged or the expansion module may be incorrectly connected.

Check setting of rotary switch

- Dekamatik-HK1:
The rotary switch on the communication module must be set to "4".
- Dekamatik-HK2:
The rotary switch on the electronics board E4 must be set to "4".
- Dekamatik-HK4:
The rotary switch on electronics board E4.1 must be set to "4" and the rotary switch on electronics board E4.2 to "5".

→ **Please note:**



Please refer also to the corresponding installation documents for the Dekamatik-HK.

Correction (continued)

Check WS remote control unit (Part No. 7450 027)
Check RS remote control unit (Part No. 7450 028)
 (control unit for weather-compensated operation)

(Accessory)
 (Accessory)

The WS remote control unit is used for setting the desired room temperature values from any room in the building.
 The RS remote control unit is used for setting the desired room temperature values from the main living room (with room temperature dependent control).

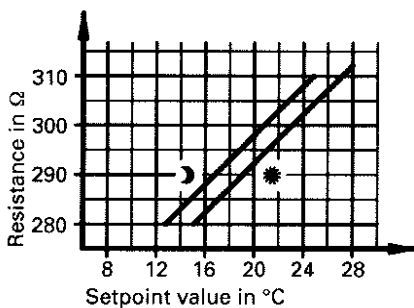
Functional check

Resistance measurement and control unit response test.
 If the presence of a fault is suspected in the customer's connecting cable, temporarily connect the remote control unit directly to the control unit and carry out test.

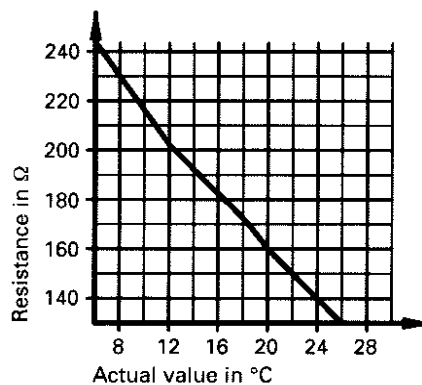
→ **Please note:**
 Wiring diagram: see section headed "Additional information".

→ **Please note:**
 In most cases, faulty behaviour of the control unit is due to the installation of the RS remote control unit in an unsuitable location. This can lead to draught phenomena caused by cavities behind the remote control unit or by the stack effect of empty pipes.

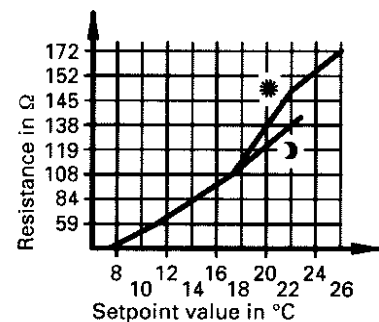
To check, add together the actual value and the current resistance setpoint value and compare with the value measured.



WS remote control unit
 * – Setpoint value between terminal "9" and "10"
 ☾ – Setpoint value between terminal "9" and "11"



RS remote control unit
 Room temperature sensor (NTC) curve between terminal "9" and "13"



RS remote control unit
 * – Setpoint value between terminal "10" and "14"
 ☾ – Setpoint value between terminal "11" and "14"

Connection extension adaptor (LPG) (Part No. 7404 582)

Accessory

When a heat request is triggered:
 A voltage of 24 V~ is fed to connector "X2".
 The relay contacts of the adaptor connect 230 V~ to the external gas solenoid and the gas solenoid opens.

At the end of the heat request or when automatic switch-off takes place:
 The connector "X2" receives no voltage. The external gas solenoid closes.

→ **Please note:**
 To re-start after automatic switch off, press the reset button "↕" on the control unit.

Overview

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Technical data

Rated voltage: 230 V~
 Rated frequency: 50 Hz
 Rated current: 4 A~
 Power consumption
 (incl. pump): 165 W max.
 Protection class: I
 Degree of protection
 for control unit,
 integrated
 in Vitodens 100: IP X4D to
 EN 60529

Method of
 operation: Type 1B to
 EN 60730-1

Ambient
 temperature

- during operation: 0 to +40 °C
 For use in living
 accommodation
 and boiler
 rooms (normal
 ambient condi-
 tions)
- during storage
 and transport: -20 to +65 °C

Settings

Limit thermostat: 82 °C, fixed
 Temperature limiter/
 boil-dry protection: 100 °C, fixed
 Temperature
 regulator: < 82 °C

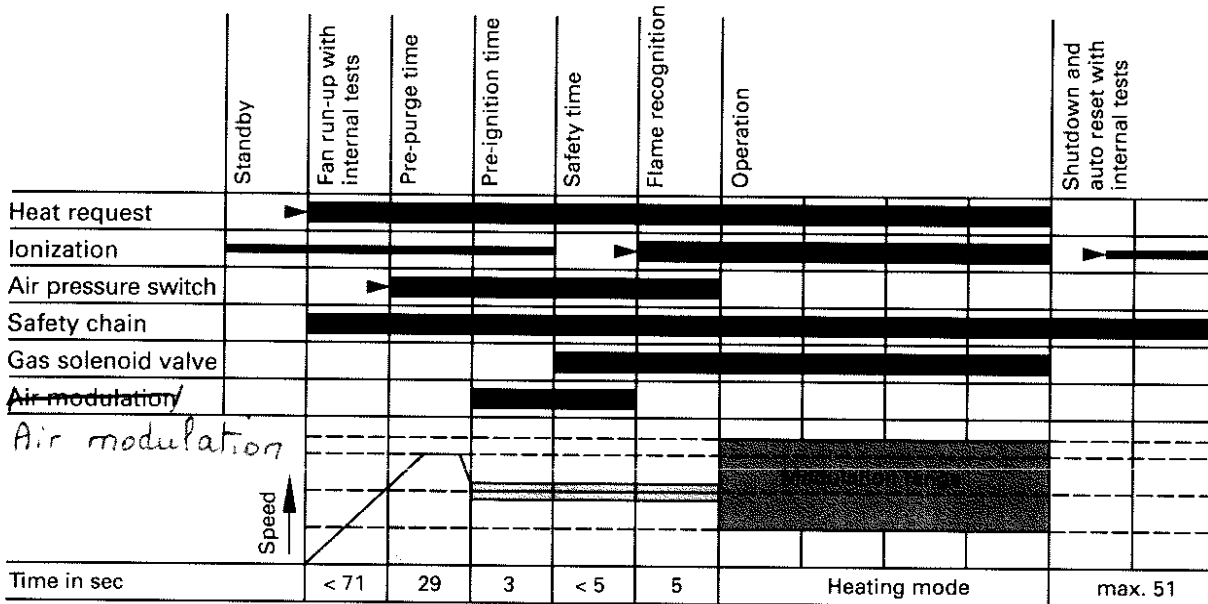
Gas boiler, type B₂₃, B₃₃, C_{13X}, C_{33X}, C_{43X}, C_{53X}, C_{63X}, C_{83X}: category II₂ELL3P

Rated output		kW	8	8.5	10.5	11	12	15	18	21	24
Rated thermal load		kW	8.4	8.9	11.0	11.5	12.5	15.6	18.8	21.9	25.0
Connection values*¹											
based on the max. load											
with gas											
natural gas setting E	with net c.v.										
	9.54 kWh/m ³	m ³ /h	0.88	0.93	1.15	1.21	1.31	1.64	1.97	2.30	2.62
natural gas setting LL	34.34 MJ/m ³	ltr/min	15	16	19	20	22	27	33	38	44
	8.13 kWh/m ³	m ³ /h	1.03	1.09	1.35	1.41	1.54	1.92	2.31	2.69	3.08
LPG setting	29.25 MJ/m ³	ltr/min	17	18	23	24	26	32	39	45	51
	12.79 kWh/kg	kg/h	0.66	0.70	0.86	0.90	0.98	1.22	1.47	1.71	1.95
46.04 MJ/kg											
Product ID No.		CE-0085 AU 0029									

*¹Connection values are only for documentation purposes (e.g. for the gas supply application) or for approximate, supplementary volumetric checking of the setting. Due to the factory settings, the gas pressures must not be changed from the values stated.

Burner control unit LGM 29

Program sequence



- signal required
- ▬ signal invalid
- ▶ signal required for transition to next phase

Standby

Waiting time until next heat request signal. The air pressure switch must be reset and the speed feedback signal (HALL) must signal fan stationary.

Start-up and run-up of fan

Start takes place when request is received from controller, provided no air pressure is detected. The fan motor receives voltage. The speed signal (HALL) and the air pressure signal must be received within approx. 70 seconds, otherwise a fault message is transmitted. During the run-up of the fan, the self-tests take place within the burner control unit LGM 29.

Pre-purge time

The combustion chamber is flushed out by the fan.

Pre-ignition time

Ignition spark is initiated.

Safety time

The solenoid valve coils receive voltage, flame monitoring is activated. Ignition is switched off after approx. 4 seconds. If the flame is not recognized during ignition, automatic switch-off takes place.

Burner operation (green LED lit)

Burner operation begins after the safety time has elapsed with flame recognition having taken place successfully. The burner control unit modulates from its ignition load on the basis of the selected setpoint value. After controlled shutdown, auto reset to the standby mode takes place.

Shutdown

The fuel valves are switched off. Internal tests are carried out.

Air pressure switch test

The air pressure switch must be reset after shutdown. A fault message is transmitted if

- the air pressure switch is not reset,
- a flame is still recognized.

Test time

Auto reset is the end of shutdown after controlled switch-off. Auto reset also takes place after re-setting, failure of the flame during operation or heat request terminated before the start of the safety time.

Safety chain

The safety chain must be closed continuously during the entire period of operation, otherwise automatic switch-off takes place immediately.

Burner control unit LGM 29

The burner control unit LGM 29 carries out self-tests in the following cases:

- when the burner has been in continuous operation for more than 24 hours,
- before each time that the burner is switched on,
- after each time that the burner is switched off.

Behaviour in the event of malfunctions

If errors are detected, either no start takes place or automatic switch-off is triggered. In the case of all safety-relevant malfunctions, the fuel supply is cut off. Automatic switch-off takes place

- when the flame fails to form before the expiry of the flame formation time,
- in the event of an uninterrupted delay of the flame signal for more than 3 seconds,
- in the event of an incorrect air pressure switch message longer than 70 seconds,
- in the event of internal faults.

In the event of undervoltage, the burner control unit either operates without a fault function or goes into the reset position (fuel valve closed). When the voltage rises to the normal value again, the burner control unit is ready to start again.

Control unit for operation at constant temperature

Functional description

Central heating mode

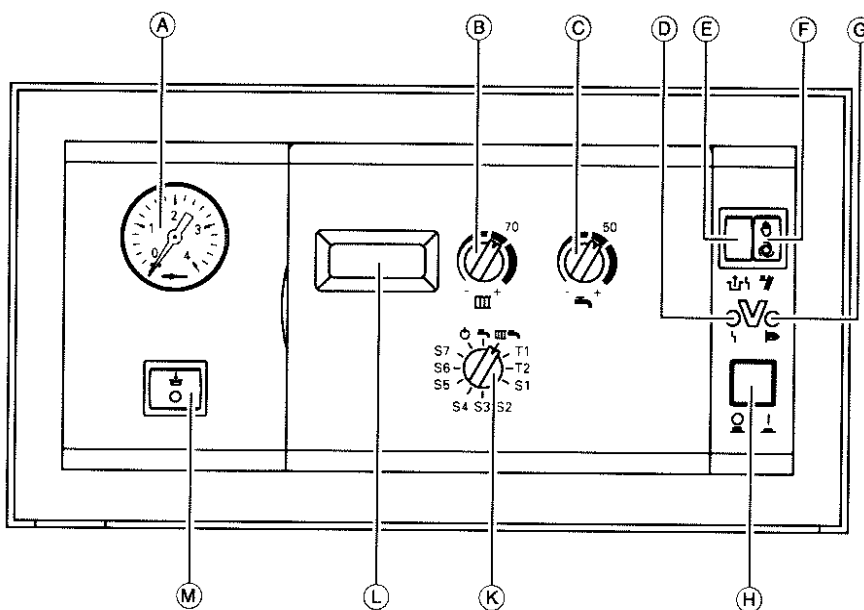
When a heat request is received via the room temperature dependent clock thermostat, the preset desired boiler water temperature is maintained in the heating program for central heating and domestic hot water "III". If no heat request is received, the boiler water temperature is maintained at the preset frost protection temperature (5 °C – burner ON, 50 °C – burner OFF). The behaviour of the circulation pump after burner shutdown can be selected by means of setting "S1" of the heating program selector switch (see page 39). The DHW cylinder (if installed) can be heated briefly to 60 °C in the "S4" setting of the heating program selector switch (see page 40). Limited frost protection of the system can be selected with setting "S6" of the heating program selector switch (see page 40).

Domestic hot water supply with the gas combination boiler

When the water switch detects that hot water is being drawn off (>3 litres), the burner and the circulation pump switch on, and the 3-port valve switches over to domestic hot water "F" symbol in the display). The burner modulates on the basis of the domestic hot water outlet temperature and is limited by the limit thermostat (82 °C) on the boiler side. When the comfort function is activated, the plate-type heat exchanger is kept at a standby temperature of "42 °C on" and "46 °C off".

Domestic hot water supply with the gas central heating boiler

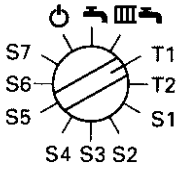
Domestic hot water heating is activated when the cylinder temperature is 2.5 K below the cylinder temperature setpoint value. The burner and the circulation pump are switched on, and the 3-port valve is switched over. In the as delivered condition, the desired boiler temperature is set at 78 °C (service setting S3). When the actual cylinder temperature rises 2.5 K above the cylinder temperature setpoint value, the burner is switched off and the run-on of the cylinder loading pump is activated.



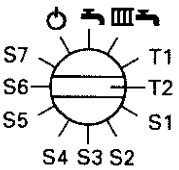
- (A) Manometer
- (B) "Heating water temperature" selector knob
- (C) "Domestic hot water temperature" selector knob
- (D) Burner fault indicator
- (E) Burner fault reset button
- (F) Emissions test switch
- (G) Burner operating status indicator
- (H) Heating system on/off switch
- (K) Heating program selector switch
 - ⏻ Standby mode
 - 🔥 Domestic hot water only
 - 🔥🔥 Central heating and domestic hot water
- (L) Display
- (M) Comfort function switch (on gas combination boiler only)

Control unit for operation at constant temperature (continued)

Test settings "T1" and "T2"



T1 – Heating at bottom end of rated output range



T2 – Heating at max. preset output

→ **Please note:**

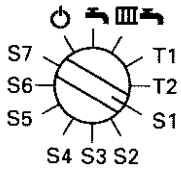
The fault memory is also displayed in test setting "T2" (see page 23).

Service settings "S1" to "S7"

The parameters of the control unit and the system are influenced through the service settings "S1" to "S7".

The following steps for changing the parameters apply to all service settings.

Changing parameters



1. Select service setting on the heating program selector switch.

→ Display shows: "- - "

After approx. 2 sec the current parameter is displayed.

2. Turn "↻" selector knob fully clockwise.

→ Maximum value flashes in display.

Please note:

If the "↻" selector knob is to the right of the centre setting, turn it counter-clockwise beyond the centre setting first.

3. Turn "↻" selector knob fully counter-clockwise.

→ Minimum value flashes in display.

4. Set required value on the "↻" selector knob.

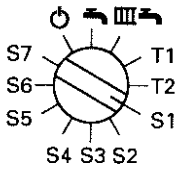
5. Turn heating program selector switch to another position.

→ Value is stored.



Control unit for operation at constant temperature (continued)

Service settings "S1" to "S7" (continued)



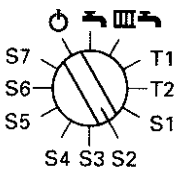
S1 – Pump run-on for operation with clock thermostat

The clock thermostat input is only evaluated in the heating mode. When a heat request is made by the clock thermostat, the preset boiler water temperature is maintained and the circulation pump is switched on.

When no heat is requested, the burner is switched off. The run-on time of the circulation pump is adjustable.


→ **Please note:**
See page 38 for setting procedure.

Parameter	Behaviour of circulation pump
0	Immediately OFF after shutdown of burner
1 to 120 Factory setting: "2" Adjustment increments: (2 min run-on)	1 to 120 minutes run-on time. Adjustment increments: 1 to 10 minutes in 1 min steps, 15 to 120 minutes in 5 min steps
121	Continuously ON



S2 – External blocking

Depending on the preset parameter, different system components are blocked when the contact "X6.1" – "X6.2" closes.

→ **Please note:**
Change plug-in jumper "X6" on circuit board VR20 to 
See page 38 for setting procedure.

Parameter	System component blocked
0	Burner
1	Heating circuit and domestic hot water supply
2	Heating circuit
3	Domestic hot water supply
4	Comfort function

S3 – Max. boiler water temperature with domestic hot water heating

The temperature value is displayed in °C.
Factory setting: "78".

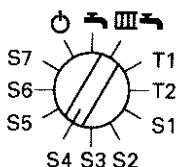
→ **Please note:**
See page 38 for setting procedure.

Setting range on the control unit 50 to 125 °C, limited by the temperature regulator to 84 °C.
To ensure optimum control behaviour, only boiler water temperatures up to 78 °C max. should be set.

X Zeichnung fehlt -
Siehe deutsche Untereinheit

Control unit for operation at constant temperature (continued)

Service settings "S1" to "S7" (continued)

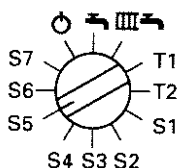


S4 – Additional function for domestic hot water heating (gas central heating boiler)

The domestic hot water cylinder is heated briefly to 60 °C with this function.
The frequency is adjustable.

→ **Please note:**
See page 38 for setting procedure.

Parameter	Frequency of heating
0 (factory setting)	Additional function not activated
1 to 30	1 Heating up to 60 °C takes place every time domestic hot water is heated to 30 Heating up to 60 °C takes place every 30th time domestic hot water is heated



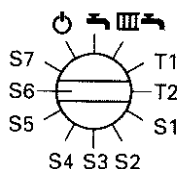
S5 – Domestic hot water heating

The different possible domestic hot water heating modes are recognized via "S5".

→ **Please note:**
See page 38 for setting procedure.

Parameter	Domestic hot water heating
0 Factory setting (gas central heating boiler)	No domestic hot water heating
1	Cylinder temperature control
2	Cylinder temperature control (optimized)*1
3	Not assigned
4	Not assigned
5 Factory setting (gas combination boiler)	With built-in heat exchanger
6	Not assigned

*1 This is set automatically when a cylinder temperature sensor is connected and can be re-set to "1" manually if required.



S6 – Limited frost protection of system

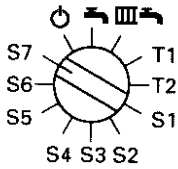
Limited frost protection of the system can be achieved by switching on the circulation pump for 10 minutes.
The switching frequency is adjustable.

→ **Please note:**
See page 38 for setting procedure.

Parameter	Switching frequency
0	Circulation pump is not switched on
1 to 24	The circulation pump is switched on 1 to 24 times per day

Control unit for operation at constant temperature (continued)

Service settings "S1" to "S7" (continued)



S7 – M clock thermostat

→ **Please note:**
See page 38 for setting procedure.

Parameter		Pump function
Without M clock thermostat	0	—
With M clock thermostat with room temperature dependent control. The desired boiler water temperature is adjusted by the control unit so that the temperature in the room corresponds as closely as possible to the desired room temperature set on the clock thermostat. The burner is released when the value falls below the room temperature hysteresis. The burner is switched off when the value rises above the room temperature hysteresis.	1	Selected room temperature hysteresis ± 0.5 Pump "ON" when value falls below ± 1.0 room temperature hysteresis. ± 1.5 Pump run-on (S1) is activated when ± 2.0 the value rises above the room ± 2.5 temperature hysteresis. ± 3.0 ± 3.5 ± 4.0
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
<p>Please note: In setting 1 to 9 the jumper on the M clock thermostat must be open (factory setting).</p> <p> See installation instructions for M clock thermostat</p>		Pumps runs continuously*1
Without M clock thermostat and with jumper on input of clock thermostat with control output	10	Pump run-on active when burner switched off, pump "ON" when burner "ON"
With M clock thermostat. The desired boiler water temperature is influenced by the desired room temperature set on the clock thermostat. With a desired room temperature of 20 °C, the boiler water temperature is maintained at the desired value set on the control unit.	11	For each 1 K of the desired room temperature, the desired boiler water temperature changes from the preset set-point value by 1 K Pump "ON" and burner "ON". 2 K Pump run-on (S1) is activated when 3 K the burner is switched off. 4 K 5 K 6 K 7 K 8 K 9 K 10 K
	12	
	13	
	14	
	15	
	16	
	17	
	18	
	19	
	20	
<p>Please note: In setting 11 to 20 the jumper on the M clock thermostat must be closed.</p> <p> See installation instructions for M clock thermostat</p>		

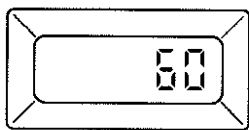
*1The burner is released continuously as no room temperature hysteresis can be selected.

Control unit for operation at constant temperature (continued)

Calling up temperatures

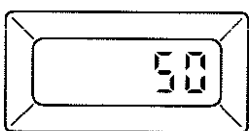
The desired and actual values of the
 ■ boiler water temperature
 ■ cylinder water temperature
 can be displayed.

Calling up actual temperatures



The boiler water temperature is displayed in the heating programs "⏻" standby and "⏻⏻" central heating and domestic hot water.

→ Turn heating program selector switch to this setting where applicable.



The cylinder water temperature is displayed in the heating program "⏻" domestic hot water only.

→ **Please note:**
 The "⏻" selector knob must not be set fully counter-clockwise.

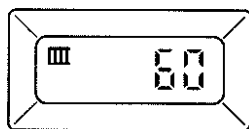
*Gas central heating boiler:
 If no cylinder temperature control is coded (see service setting "S5" on page 40), the boiler water temperature is displayed.*

① (gas central heating boiler or outlet temperature (gas combination boiler))

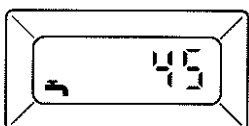
Calling up and changing setpoint temperatures

The setpoint temperature change flashes in the display for approx. 5 sec. Then the actual temperature is displayed.

→ The display is only shown for a change in the setpoint temperature of at least 2 K.



Set the required boiler water temperature on the "III" selector knob.



Set the required cylinder water temperature on the "⏻" selector knob.

Control unit for weather-compensated operation

Functional description

Central heating mode

The control unit calculates a boiler water setpoint temperature as a function of the outdoor temperature or room temperature (where a room temperature dependent remote control is connected) and the slope/shift of the heating curve.

The computed boiler water setpoint temperature is transmitted to the burner control unit.

From the boiler water setpoint and actual temperature the burner control unit calculates the degree of modulation required and controls the burner accordingly.

The boiler water temperature is limited in the burner control unit to

- 84 °C by the temperature regulator,
- 82 °C by the electronic limit thermostat.

The thermal circuit breaker of the safety chain interlocks the burner control unit at 100 °C boiler water temperature.

Domestic hot water supply with the gas combination boiler

When the water switch detects that hot water is being drawn off (> 3 litres), the burner and the circulation pump switch on, and the 3-port valve switches over to domestic hot water. The burner modulates on the basis of the domestic hot water outlet temperature and is limited by the limit thermostat (82 °C) on the boiler side.

When the comfort function is activated, the plate-type heat exchanger is kept at a standby temperature of "42 °C on" and "46 °C off".

Domestic hot water supply with the gas central heating boiler

Domestic hot water heating is activated when the cylinder temperature is 2.5 K below the cylinder temperature setpoint value.

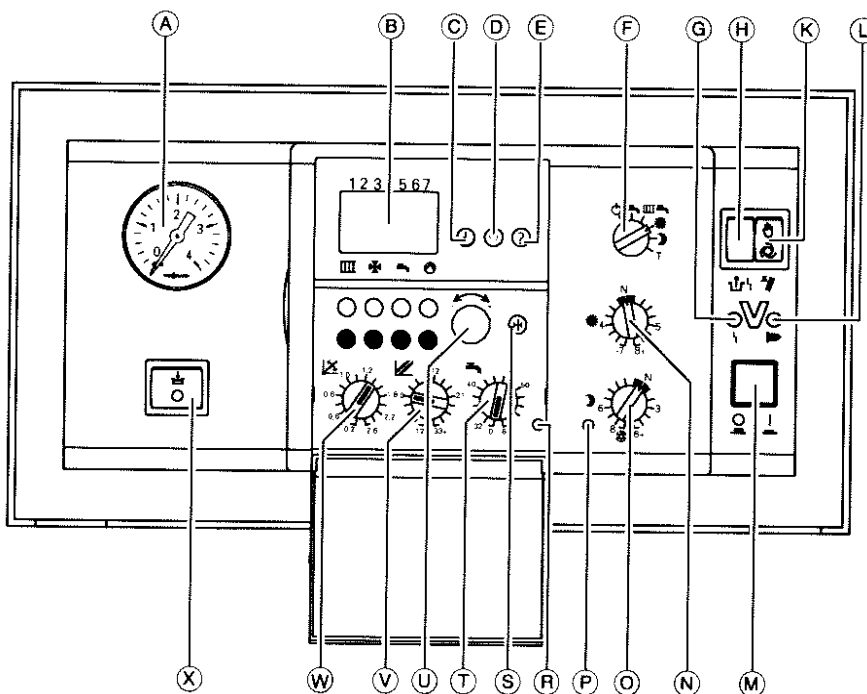
The burner and the cylinder loading pump are switched on. In the as delivered condition, the desired boiler temperature is set at 20 K above the cylinder temperature setpoint value. When the actual cylinder temperature rises 2.5 K above the cylinder temperature setpoint value, the burner is switched off and the run-on of the cylinder loading pump is activated.

Additional heating (domestic hot water)

The additional heating function is activated when an activation period of 10 minutes is selected (e.g. 22.10 to 22.20 hrs).

This period must lie outside the switching times for normal domestic hot water heating so that the signal is recognized by the control unit.

The temperature setpoint value for additional heating is set in coding address "107".



- (A) Manometer
- (B) Display
- (C) Time setting
- (D) Day setting
- (E) Temperature scan
- (F) Heating program selector switch
 - ⏻ Standby mode
 - 🔥 Domestic hot water only
 - 🏠 Central heating and domestic hot water
 - ⊛ Continuous normal room temperature
 - 🌙 Continuous reduced room temperature
 - T Test setting
- (G) Burner fault indicator
- (H) Burner fault reset button
- (K) Emissions test switch
- (L) Burner operating status indicator
- (M) Heating system on/off switch
- (N) ⊛ "Normal room temperature" selector knob
- (O) 🌙 "Reduced room temperature" selector knob
- (P) 🌙 "Reduced room temperature" indicator
- (R) 🔥 "Domestic hot water heating" indicator
- (S) ⏻ "Factory setting" button
- (T) 🔥 "Domestic hot water temperature" selector knob
- (U) ↔ selector knob
- (V) ↗ "Heating curve shift" selector knob
- (W) ↘ "Heating curve slope" selector knob
- (X) ⏻ Comfort function switch (on gas combination boiler only)

Control unit for weather-compensated operation (continued)

Heating system types

- The control unit must be matched to the system equipment.
 In the as delivered condition, the heating system type "04:00" is coded.
- The coding is changed automatically ("04:01") when a cylinder temperature sensor is connected (for operation with a DHW cylinder).
 - If a flow temperature sensor is connected (for operation with a low loss header), the function of the built-in circulation pump is automatically changed to operation as a boiler circuit pump.
 - The control unit must be re-coded if a heating circuit with mixing valve is connected:

For this purpose the corresponding heating system type is coded in the coding address "04".

For other settings please note the numbers of the system types.

See page 46 for procedure for calling up the coding level.

Please note:

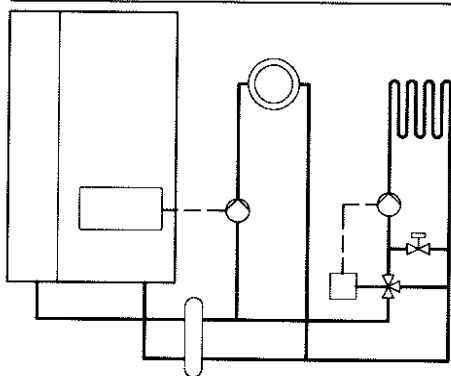
If only heating circuit "B" with mixing valve is connected (i.e. there is no direct-connected heating circuit), the built-in circulation pump must be set to "Stage 1".

	<p>System type "04:00" Heating system with one heating circuit "A" without mixing valve, without domestic hot water heating.</p>
	<p>System type "04:01" Heating system with one heating circuit "A" without mixing valve, with domestic hot water heating.</p>
	<p>System type "04:02"*1</p> <ul style="list-style-type: none"> ■ Heating system with one heating circuit with mixing valve, without domestic hot water heating or ■ Heating system with one heating circuit with mixing valve and one heating circuit without mixing valve, without domestic hot water heating.
	<p>System type "04:03"*1</p> <ul style="list-style-type: none"> ■ Heating system with one heating circuit with mixing valve, with domestic hot water heating or ■ Heating system with one heating circuit with mixing valve and one heating circuit without mixing valve, without domestic hot water heating.

*1The system types also apply in the case of system separation via heat exchanger.

Control unit for weather-compensated operation (continued)

Heating system types with low loss header



System type "04:02"

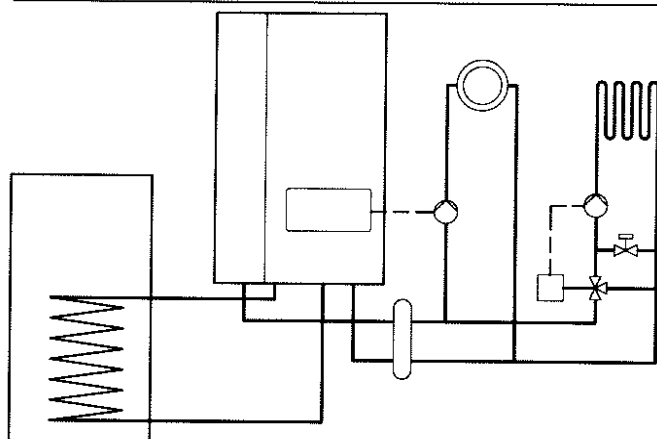
- Heating system with
- low loss header (with additional flow temperature sensor)
 - one heating circuit with mixing valve
 - one heating circuit without mixing valve (activation of heating circuit pump via connection extension adaptor)
 - without domestic hot water heating.

Settings/adjustments

The switching times for the heating circuit pump are set on timer channel "III" (heating circuit A). The coding address "03" must be set to the value "00".

Please note:

The built-in circulation pump operates as a boiler circuit pump and runs whenever one of the other pumps is in operation. It is not possible to activate a DHW circulation pump.



System type "04:03"

- Heating system with
- low loss header (with additional flow temperature sensor)
 - one heating circuit with mixing valve
 - one heating circuit without mixing valve (activation of heating circuit pump via connection extension adaptor)
 - with domestic hot water heating.

Settings/adjustments

The switching times for the heating circuit pump are set on timer channel "III" (heating circuit A). The coding address "03" must be set to the value "01" or "02".

Please note:

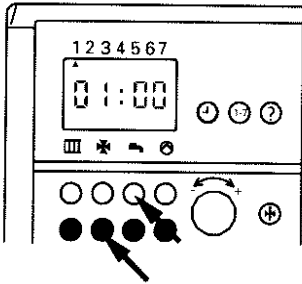
The built-in circulation pump operates as a boiler circuit pump and runs whenever one of the other pumps is in operation. It is not possible to activate a DHW circulation pump.

Control unit for weather-compensated operation (continued)

Call up coding level 1 (Example: Code heating system type)

Please note:

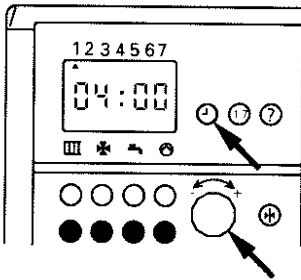
See page 51 for overview of all coding addresses in coding level 1.



1. Call up coding level

Press red "1-7" button and blue "X" button simultaneously. Keep both buttons pressed until "01:00" appears after approx. 5 seconds.

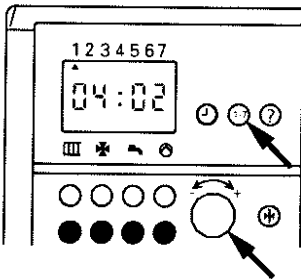
Coding level "01" is selected.



2. Select coding address

Press "0" button and turn the "↻" selector knob clockwise until "04:00" is displayed.

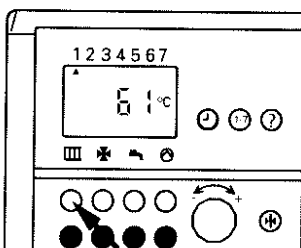
Coding address for the heating system type is selected.



3. Change value of coding address

Press "1-7" button and turn the "↻" selector knob until the code number of the selected system type appears.

Coding of the heating system type is selected.



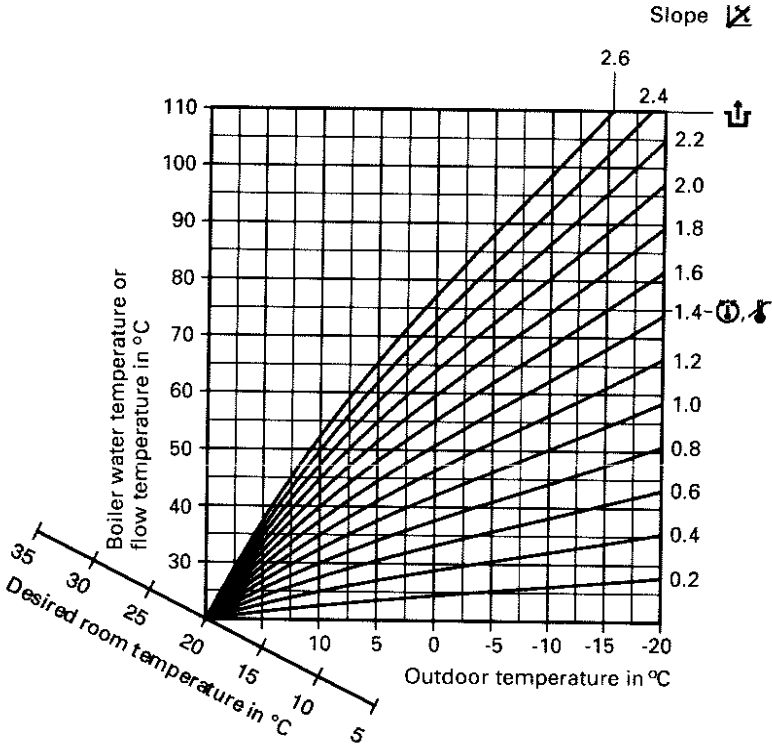
4. Exit coding

Press red "1-7" button.

Display goes back to initial status (e.g. display of boiler water temperature).

Control unit for weather-compensated operation (continued)

Heating curve



The heating curves represent the relationship between the outdoor temperature and the boiler water or flow temperature.
 Put simply: The lower the outdoor temperature, the higher the boiler water or flow temperature.
 In turn, the room temperature is dependent on the boiler water or flow temperature.
 If a different room temperature is set, the curves are shifted parallel to the desired room temperature axis.

- Factory settings:*
- Slope "X" = 1.4
 - Shift "Z" = 0

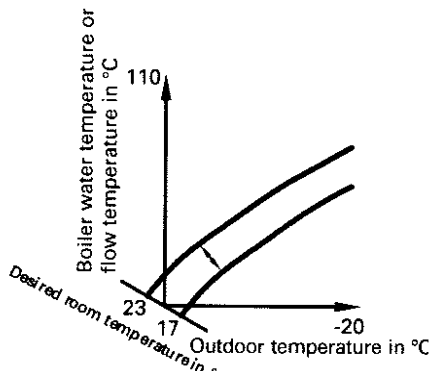
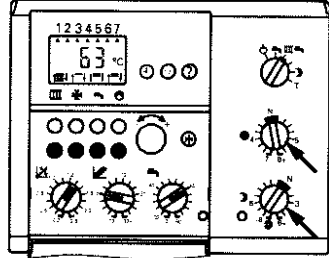
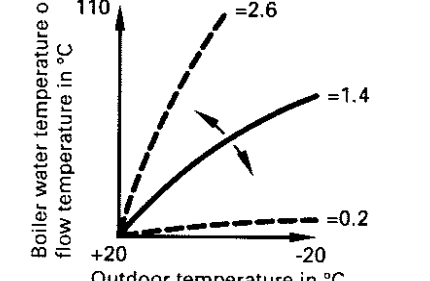
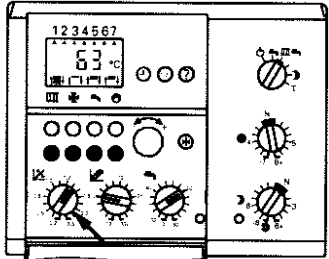
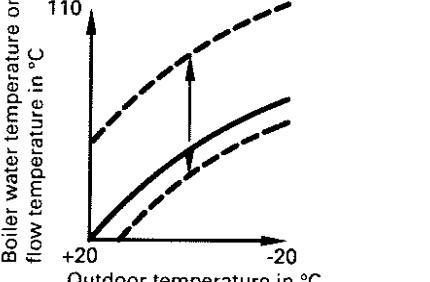
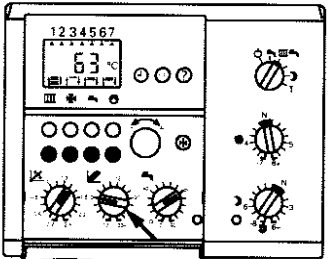
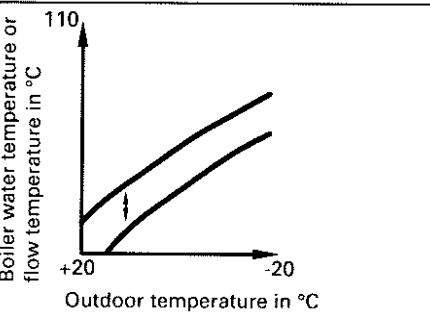
Control unit for weather-compensated operation (continued)

Heating curve for system types "04:00" and "04:01"

Setting required?	Effect on heating curve	How to carry out the setting																												
Desired room temperature		<p>"☼" selector knob "☾" selector knob</p>																												
Slope of heating curve		<p>"⊗" selector knob</p>																												
Shift of heating curve		<p>"⊘" selector knob</p>																												
Maximum temperature limit		<ol style="list-style-type: none"> 1. Call up coding address "05" (see procedure on page 46). 2. Change coding address for heating circuit A <table border="1" data-bbox="1043 1675 1445 2145"> <thead> <tr> <th>Coding address for heating circuit A</th> <th>Maximum limit</th> </tr> </thead> <tbody> <tr><td>06:01</td><td>40 °C</td></tr> <tr><td>06:02</td><td>45 °C</td></tr> <tr><td>06:03</td><td>50 °C</td></tr> <tr><td>06:04</td><td>55 °C</td></tr> <tr><td>06:05</td><td>60 °C</td></tr> <tr><td>06:06</td><td>65 °C</td></tr> <tr><td>06:07</td><td>70 °C</td></tr> <tr><td>06:08</td><td>75 °C</td></tr> <tr><td>06:09</td><td>80 °C</td></tr> <tr><td>06:10</td><td>85 °C (fact. setting)</td></tr> <tr><td>06:11</td><td>90 °C</td></tr> <tr><td>06:12</td><td>95 °C</td></tr> <tr><td>06:13</td><td>100 °C</td></tr> </tbody> </table>	Coding address for heating circuit A	Maximum limit	06:01	40 °C	06:02	45 °C	06:03	50 °C	06:04	55 °C	06:05	60 °C	06:06	65 °C	06:07	70 °C	06:08	75 °C	06:09	80 °C	06:10	85 °C (fact. setting)	06:11	90 °C	06:12	95 °C	06:13	100 °C
Coding address for heating circuit A	Maximum limit																													
06:01	40 °C																													
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06:11	90 °C																													
06:12	95 °C																													
06:13	100 °C																													

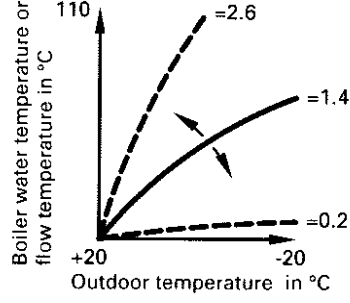
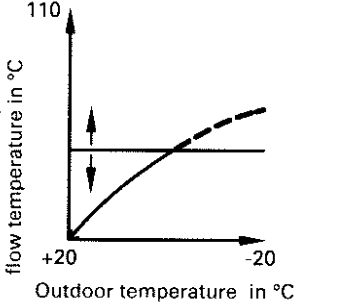
Control unit for weather-compensated operation (continued)

Heating curve for system types "04:02" and "04:03"

Setting required	Effect on heating curve	How to carry out the setting																																		
Desired room temperature		 <p>"☀" selector knob "☾" selector knob</p>																																		
Slope of heating curve of heating circuit with mixing valve		 <p>"∞" selector knob</p>																																		
Shift of heating curve of heating circuit with mixing valve		 <p>"↕" selector knob</p>																																		
Differential temperature		<ol style="list-style-type: none"> Call up coding address "07" (see procedure on page 46). Change coding address <table border="1" data-bbox="1061 1601 1476 2116"> <thead> <tr> <th>Coding address</th> <th>Differential temperature</th> </tr> </thead> <tbody> <tr> <td>07:00</td> <td>6 K</td> </tr> <tr> <td>07:01</td> <td>8 K (factory setting)</td> </tr> <tr> <td>07:02</td> <td>10 K</td> </tr> <tr> <td>07:03</td> <td>12 K</td> </tr> <tr> <td>07:04</td> <td>14 K</td> </tr> <tr> <td>07:05</td> <td>16 K</td> </tr> <tr> <td>07:06</td> <td>18 K</td> </tr> <tr> <td>07:07</td> <td>20 K</td> </tr> <tr> <td>07:08</td> <td>22 K</td> </tr> <tr> <td>07:09</td> <td>24 K</td> </tr> <tr> <td>07:10</td> <td>26 K</td> </tr> <tr> <td>07:11</td> <td>28 K</td> </tr> <tr> <td>07:12</td> <td>30 K</td> </tr> <tr> <td>07:13</td> <td>32 K</td> </tr> <tr> <td>07:14</td> <td>34 K</td> </tr> <tr> <td>07:15</td> <td>36 K</td> </tr> </tbody> </table>	Coding address	Differential temperature	07:00	6 K	07:01	8 K (factory setting)	07:02	10 K	07:03	12 K	07:04	14 K	07:05	16 K	07:06	18 K	07:07	20 K	07:08	22 K	07:09	24 K	07:10	26 K	07:11	28 K	07:12	30 K	07:13	32 K	07:14	34 K	07:15	36 K
Coding address	Differential temperature																																			
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07:09	24 K																																			
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07:13	32 K																																			
07:14	34 K																																			
07:15	36 K																																			

Control unit for weather-compensated operation (continued)

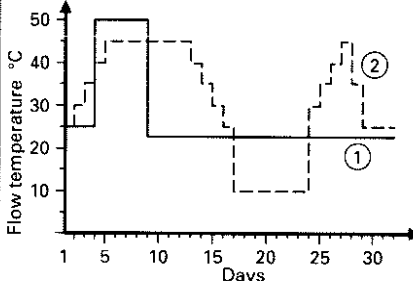
Heating curve for system types "04:02" and "04:03" (continued)

Setting required	Effect on heating curve	How to carry out the setting																																																			
Slope of heating curve for heating circuit without mixing valve	 <p>Please note: The heating curve for the heating circuit without mixing valve is shifted upwards by the differential temperature.</p>	<ol style="list-style-type: none"> Call up coding address "08" (see procedure on page 46). Change coding address <table border="1" data-bbox="1045 571 1444 1120"> <thead> <tr> <th>Coding address</th> <th>Setting range of slope "X"</th> </tr> </thead> <tbody> <tr><td>08:00</td><td>0.2</td></tr> <tr><td>08:01</td><td>0.4</td></tr> <tr><td>08:02</td><td>0.6</td></tr> <tr><td>08:03</td><td>0.7</td></tr> <tr><td>08:04</td><td>0.8</td></tr> <tr><td>08:05</td><td>0.9</td></tr> <tr><td>08:06</td><td>1.0</td></tr> <tr><td>08:07</td><td>1.1</td></tr> <tr><td>08:08</td><td>1.2</td></tr> <tr><td>08:09</td><td>1.4 (factory setting)</td></tr> <tr><td>08:10</td><td>1.6</td></tr> <tr><td>08:11</td><td>1.8</td></tr> <tr><td>08:12</td><td>2.0</td></tr> <tr><td>08:13</td><td>2.2</td></tr> <tr><td>08:14</td><td>2.4</td></tr> <tr><td>08:15</td><td>2.6</td></tr> </tbody> </table>	Coding address	Setting range of slope "X"	08:00	0.2	08:01	0.4	08:02	0.6	08:03	0.7	08:04	0.8	08:05	0.9	08:06	1.0	08:07	1.1	08:08	1.2	08:09	1.4 (factory setting)	08:10	1.6	08:11	1.8	08:12	2.0	08:13	2.2	08:14	2.4	08:15	2.6																	
Coding address	Setting range of slope "X"																																																				
08:00	0.2																																																				
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08:12	2.0																																																				
08:13	2.2																																																				
08:14	2.4																																																				
08:15	2.6																																																				
Maximum temperature limit		<ol style="list-style-type: none"> Call up coding address (see procedure on page 46). Heating circuit A (without mixing valve) "05" Heating circuit B (with mixing valve) "05" Change coding address <table border="1" data-bbox="1045 1366 1444 2004"> <thead> <tr> <th>Heating circuit A (boiler circuit)</th> <th>Heating circuit B (mixing valve circuit)</th> <th>Maximum limit</th> </tr> </thead> <tbody> <tr><td>—</td><td>05:00</td><td>35 °C</td></tr> <tr><td>06:01</td><td>05:01</td><td>40 °C</td></tr> <tr><td>06:02</td><td>05:02</td><td>45 °C</td></tr> <tr><td>06:03</td><td>05:03</td><td>50 °C</td></tr> <tr><td>06:04</td><td>05:04</td><td>55 °C</td></tr> <tr><td>06:05</td><td>05:05</td><td>60 °C</td></tr> <tr><td>06:06</td><td>05:06</td><td>65 °C</td></tr> <tr><td>06:07</td><td>05:07</td><td>70 °C</td></tr> <tr><td>06:08</td><td>05:08</td><td>75 °C</td></tr> <tr><td>06:09</td><td>05:09</td><td>80 °C</td></tr> <tr><td>06:10</td><td>05:10</td><td>85 °C</td></tr> <tr><td>06:11</td><td>05:11</td><td>90 °C</td></tr> <tr><td>06:12</td><td>05:12</td><td>95 °C</td></tr> <tr><td>06:13</td><td>05:13</td><td>100 °C</td></tr> <tr><td>06:14</td><td>05:14</td><td>105 °C</td></tr> <tr><td>06:15</td><td>05:15</td><td>110 °C</td></tr> </tbody> </table> <p>"06:10" and "05:08" are factory settings.</p>	Heating circuit A (boiler circuit)	Heating circuit B (mixing valve circuit)	Maximum limit	—	05:00	35 °C	06:01	05:01	40 °C	06:02	05:02	45 °C	06:03	05:03	50 °C	06:04	05:04	55 °C	06:05	05:05	60 °C	06:06	05:06	65 °C	06:07	05:07	70 °C	06:08	05:08	75 °C	06:09	05:09	80 °C	06:10	05:10	85 °C	06:11	05:11	90 °C	06:12	05:12	95 °C	06:13	05:13	100 °C	06:14	05:14	105 °C	06:15	05:15	110 °C
Heating circuit A (boiler circuit)	Heating circuit B (mixing valve circuit)	Maximum limit																																																			
—	05:00	35 °C																																																			
06:01	05:01	40 °C																																																			
06:02	05:02	45 °C																																																			
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06:06	05:06	65 °C																																																			
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06:15	05:15	110 °C																																																			

Control unit for weather-compensated operation (continued)

Overview – coding level 1

⚠ Safety note:
Do not change coding addresses which are not described below.
See page 46 for procedure for calling up coding level 1.

Coding as per factory setting Address: Value	Function mode	Coding change Address: Value	Possible change
00:15	Do not change		
01:00	Do not change		
02:08	Do not change		
03:00 03:05	Gas central heating boiler: No domestic hot water heating Gas combination boiler: Domestic hot water heating with built-in heat exchanger	03:01 03:02*1 03:14 03:15	Cylinder temperature control Cylinder temperature control (optimized) Screed function selectable on basis of two temperature/time curves. See DIN 4725-2.  Screed drying function based on temperature curve ① (DIN 4725)*2 Screed drying function based on temperature curve ② (Central Federation for Parquet and Floor Technology)*2
04:00*3 04:01*3	One heating circuit without mixing valve, without domestic hot water heating (gas central heating boiler) One heating circuit without mixing valve, with domestic hot water heating (gas combination boiler)	04:01*3 04:02 04:03*3	One heating circuit without mixing valve, with domestic hot water heating One heating circuit without mixing valve, one heating circuit with mixing valve, without domestic hot water heating One heating circuit without mixing valve, one heating circuit with mixing valve, with domestic hot water heating
05:00*4	Mixing valve Max. temperature limit set to 75 °C	05:00 to 05:15	Max. temperature limit setting variable between 35 and 110 °C
06:10	Boiler Max temperature limit set to 85 °C	06:00 to 06:15	Max. temperature limit setting variable between 35 and 110 °C
07:01*4	Boiler Differential temperature set to 8 K (Kelvin)	07:00 to 07:15	Differential temperature setting variable between 6 and 36 K (Kelvin)
08:09*4	Boiler Slope "∞" of heating curve set to "1.4"	08:00 to 08:15	Slope setting "∞" variable between "0.2" and "2.6"
10:01	DHW cylinder Circulation pump switches on immediately	10:00	Circulation pump is switched on as a function of the boiler temperature
13:00	DHW cylinder Circulation pump with run-on time up to max. 10 min	13:01	Circulation pump without run-on time
14:00	DHW cylinder When the cylinder is being heated, the boiler water setpoint temperature corresponds to the cylinder setpoint temperature +20 K	14:01	When the cylinder is being heated, the boiler water setpoint temperature corresponds to 78°C
15:01	DHW cylinder Do not change		

5092 426 GB

*1 This is set automatically when a cylinder temperature sensor is connected and can be re-set to "01" manually if required.
*2 When the function expires, the program is changed over automatically to the "Central heating and DHW heating" mode.
*3 Operation of heating circuit without mixing valve and DHW heating is recognized automatically. Address must be re-set manually.
*4 Only with heating system types "04:02" and "04:03".

Control unit for weather-compensated operation (continued)

Overview – coding level 1 (continued)

Coding as per factory setting Address: Value	Function mode	Coding change Address: Value	Possible change
16:01	Pumps With heating circuit pump logic function	16:00	Without heating circuit pump logic function
17:00	Heating circuits Heating circuit without mixing valve installed	17:01	Heating circuit with mixing valve installed
20:00	Heating circuits Without WS or RS remote control unit	20:01	With WS or RS remote control unit*1
21:00	Do not change		
22:00	Do not change		
23:00	DHW cylinder Setting range of domestic hot water temperature 32 to 60 °C	23:01	Setting range of domestic hot water temperature 52 to 80 °C (gas central heating boiler)
24:01	Do not change		
25:00	Do not change		
26:00	Do not change		
27:01	Do not change		
30:00	External changeover of heating program	30:01	External request
31:00	Do not change		
32:01 33:00	Remote control Weather-compensated operation in heating mode and with reduced operation	32:00*2 33:00*2	With room temperature control switched in for heating mode and reduced operation
		32:00*2 33:01*2	Weather-compensated operation in heating mode With room temperature dependent control switched in for reduced operation
34:00	Do not change		
35:00	External request or external changeover of heating program blocked	35:01	External request or external changeover of heating program active
40:01	Boiler Boiler water temperature displayed	40:00	Time displayed
41:00	Do not change		
42:00	Do not change		
43:00	Do not change		
44:01	Do not change		
45:00	Do not change		
46:01	Do not change		
47:01	Automatic resetting to summer/winter time	47:00	Manual resetting to summer/winter time
50:03	Start of summer time: March	50:01 to 50:12	January to December
51:05	Start of summer time: last week of month	51:01 to 51:05	Week 1 to Week 5 of the selected month
52:07	Start of summer time: last day of week (Sunday)	52:01 to 52:07	Monday to Sunday
53:10	Start of winter time: October	53:01 to 53:12	January to December
54:05	Start of winter time: last week of month	54:01 to 54:05	Week 1 to Week 5 of the selected month
55:07	Start of winter time: last day of week (Sunday)	55:01 to 55:07	Monday to Sunday

*1Address is set automatically and must be re-set manually.

*2Do not set in conjunction with RS remote control unit.

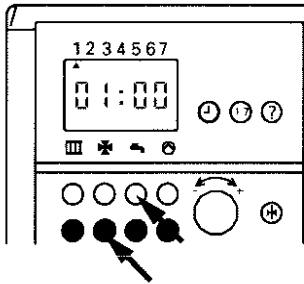
Control unit for weather-compensated operation (continued)

Call up coding level 2

Please note:

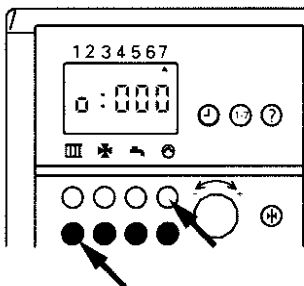
If codings are to be carried out in coding level 2, the programming unit must be inserted in the control unit in the case of systems equipped with a wall mounting fixture.

See page 54 for overview of all coding addresses in coding level 2.



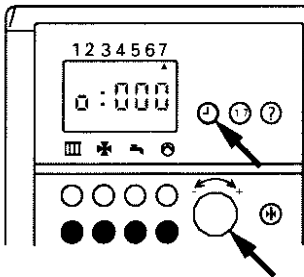
1. Call up coding level 1

Press red "↔" button and blue "✖" button simultaneously. Keep both buttons pressed until "01:00" appears after approx. 5 seconds.



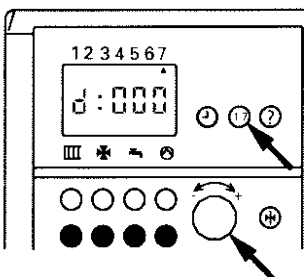
2. Call up coding level 2

Press red "⊕" button and blue "☐" button simultaneously. Keep both buttons pressed until the display changes after approx. 5 seconds (e.g. to "0:000").



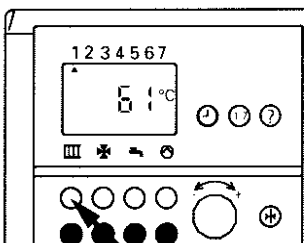
3. Select coding address

Press "⊕" button and turn the "↔" selector knob clockwise until the coding address is displayed.



4. Change value of coding address

Press "1-7" button and turn the "↔" selector knob until the required value of the coding address is displayed.



5. Exit coding

Press red "☐" button.

Control unit for weather-compensated operation (continued)

Overview of all coding addresses in coding level 2

See page 53 for procedure for calling up coding level 2.

Coding as per factory setting		Function mode		Coding change	Possible change
Address:	Value			Address: Value	
038	040	Boiler	Minimum flow temperature in heating mode	038:020 to 038:127	
042	075	Boiler	Maximum boiler water temperature in heating mode	042:000 to 042:127	
100	020*1	DHW cylinder	Differential temperature between boiler water setpoint temperature and cylinder setpoint temperature for domestic hot water heating	100:010 to 100:050	
102	075	Boiler	Desired boiler water temperature with external request 75 °C	102:000 to 102:127	Setting range of desired boiler water temperature 0 to 127 °C (max. possible boiler water temperature 82 °C)
107	050	DHW cylinder	Temperature for additional function for domestic hot water heating	107:051 to 107:090	Setting range between 61 and 90 °C (max. possible boiler water temperature 82 °C)
108	000	Boiler	See table below for effect of external blocking signal	108:001 to 108:007	See table below for effect of external blocking signal

Coding	Heating circuit pump	Heating circuit with mixing valve (extension kit)		Circulation pump for heating the cylinder	Burner
		Heating circuit pump	Mixing valve		
108:000	X	X	X	X	Blocked
108:001	OFF	OFF	CLOSED	OFF	Blocked
108:002	X	X	X	OFF	Blocked
108:003	X	OFF	CLOSED	X	Blocked
108:004	OFF	X	X	X	Blocked
108:005	OFF	X	X	OFF	Blocked
108:006	OFF	X	X	X	Blocked
108:007	OFF	OFF	CLOSED	X	Blocked

X = in normal control mode

*1 Only effective with coding 14:00.

Please note:

"055" is displayed for all coding addresses not listed.

Control unit for weather-compensated operation (continued)

Overview of all coding addresses in coding level 2 (continued)

Coding as per factory setting	Function mode	Coding change	Possible change
Address: Value		Address: Value	
125:000	Boiler See table below for effect of external request signal	125:001 to 125:011	See table below for effect of external request signal

Coding	Heating circuit pump	Heating circuit with mixing valve (extension kit)		Circulation pump for temperature heating the cylinder	Boiler water
		Heating circuit pump	Mixing valve		
125:000	ON	OFF	CLOSED	OFF	Maintained at desired value according to coding address "102"
125:001	OFF	OFF	CLOSED	OFF	
125:002	X	OFF	CLOSED	OFF	
125:003	OFF	X	X	OFF	
125:004	ON	X	X	OFF	
125:005	X	X	X	OFF	
125:006	OFF	OFF	CLOSED	X	
125:007	ON	OFF	CLOSED	X	
125:008	X	OFF	CLOSED	X	
125:009	OFF	X	X	X	
125:010	ON	X	X	X	
125:011	X	X	X	X	

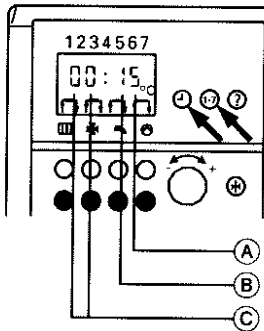
X = in normal control mode

Please note:

"255" is displayed for all coding addresses not listed.

Control unit for weather-compensated operation (continued)

Scanning



- (A) Domestic hot water system type selected in coding address 03^{*1}
- (B) Heating system type selected in coding address 04^{*1}
- (C) KM BUS user

^{*1}On systems equipped with a wall mounting fixture, the programming unit must be inserted in the control unit.

Press buttons "1" and "7" simultaneously.

Calling up temperatures

With the programming unit, the temperatures of the connected sensors can be called up as setpoint and actual values.

To call up actual temperatures

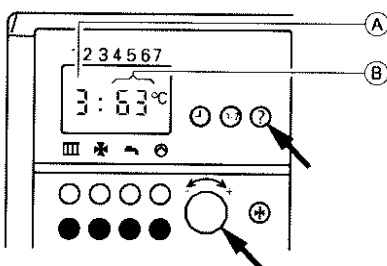
1. Select the code number for the corresponding temperature from the table.

Code number	Meaning of display	Actual temperature in °C (example of display)
1 ^{*1}	Outdoor temperature	1: 0 °C
2	Temperature of low loss header	2: 45 °C
3	Boiler water temperature	3: 63 °C
4 ^{*2}	Actual flow temperature	4: 44 °C
5 ^{*3}	Cylinder temperature (gas central heating boiler) Outlet temperature (gas combination boiler)	5: 50 °C
7 ^{*3}	Room temperature (only if the programming unit is used in the wall mounting fixture as a room temperature dependent remote control)	7: 20 °C

^{*1}The value displayed takes into account weather conditions such as wind and sunshine as well as the wall temperature of the building.

^{*2}Only in conjunction with extension kit for a heating circuit with mixing valve (connection via KM bus).

^{*3}Only if the sensor is connected/activated.



2. Press the "7" button and turn the "-/+ " selector knob clockwise or counter-clockwise until code number (A) for the corresponding temperature appears in the display window.
The current temperature (B) appears at the same time.

3. Release the "7" button.

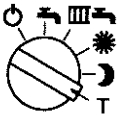
→ Temperature scan is ended.

Control unit for weather-compensated operation (continued)

Calling up temperatures (continued)

Please note:

On systems equipped with a wall mounting fixture, the programming unit must be inserted in the control unit in order to be able to call up the setpoint temperatures.

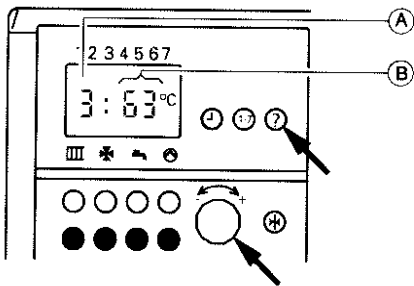


To call up setpoint temperatures

1. Turn the heating program selector switch to "T". → The display and the LEDs for "Reduced room temperature" and "Domestic hot water heating" flash.
2. Select the code number for the corresponding temperature from the table.

Code number	Meaning of display	Setpoint temperature in °C (example of display)
3	Boiler water setpoint temperature	3 : 65 °C
4 ^{*1}	Flow setpoint temperature	4 : 44 °C
5 ^{*2}	Cylinder setpoint temperature (gas central heating boiler) Outlet temperature (gas combination boiler)	5 : 45 °C

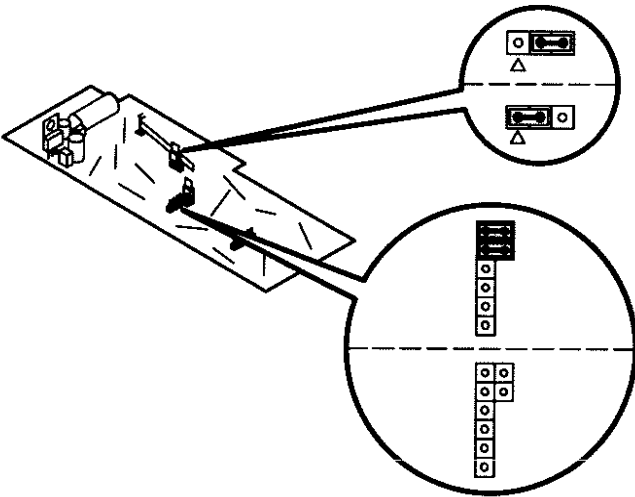
^{*1}Only in conjunction with extension kit for a heating circuit with mixing valve.
^{*2}Only if the sensor is connected/activated.



3. Press the "7" button and turn the "↻" selector knob clockwise or counter-clockwise until code number (A) for the corresponding temperature appears in the display window.
The current temperature (B) appears at the same time.
4. Release the "7" button. → Temperature scan is ended.

Control unit for weather-compensated operation (continued)

Assignment of plug-in jumper on circuit board VR 20



Plug-in jumper "X6"

Without the "External blocking of the burner" function (as delivered condition).

With the "External blocking of the burner" function.

Plug-in jumpers "X2" – "X4"

Without Viessmann 2-wire BUS expansion module:

Two plug-in jumpers connected as shown (as delivered condition).

With Viessmann 2-wire BUS expansion module:

Both plug-in jumpers removed.

External changeover of the heating program (telephone contact)

Change coding address "35:00" to "35:01".

External request

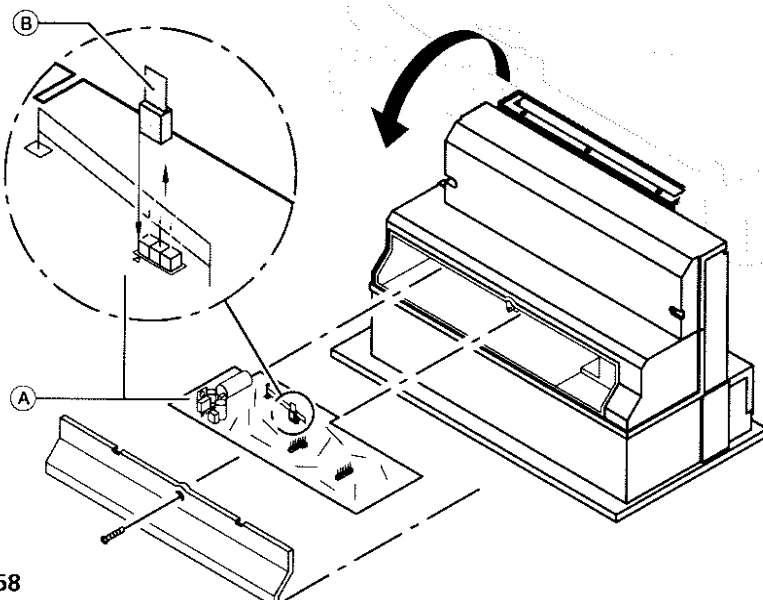
Change coding address "30:00" to "30:01" and "35:00" to "35:01".

Please note:

The boiler is started up in accordance with the setting of the coding address "125".

The boiler water temperature is maintained at the desired value in accordance with the setting of the coding address "102".

External blocking



1. Pull out the circuit board VR 20 (A).

2. Reverse the plug-in jumper "X6" (B) (see above).

3. Insert the circuit board (A) again.

Please note:

The boiler is shut down in accordance with the setting of the coding address "108".

Attestation of conformity for Vitodens 100

We, Viessmann Werke GmbH & Co, D-35107 Allendorf, bearing sole responsibility, declare that the product

Vitodens 100

conforms to the following standards:

DIN 4702-6
DIN EN 483
EN 625
EN 677
EN 297
EN 60 335
EN 50 165
EN 55 014
EN 61 000-3-2
EN 61 000-3-3

According to the provisions of the guidelines

90/396/EEC
89/336/EEC
73/ 23/EEC
92/ 42/EEC

this product is designated as follows:

CE-0085

This product conforms to the requirements of the Efficiency Directive (92/42/EEC) for:
Condensing boilers

Manufacturer's certificate

We, Viessmann Werke GmbH & Co, D-35107 Allendorf, confirm that the following product satisfies the NO_x emission limits required in accordance with current legislation:

Vitodens 100

Allendorf, 1st March 2001

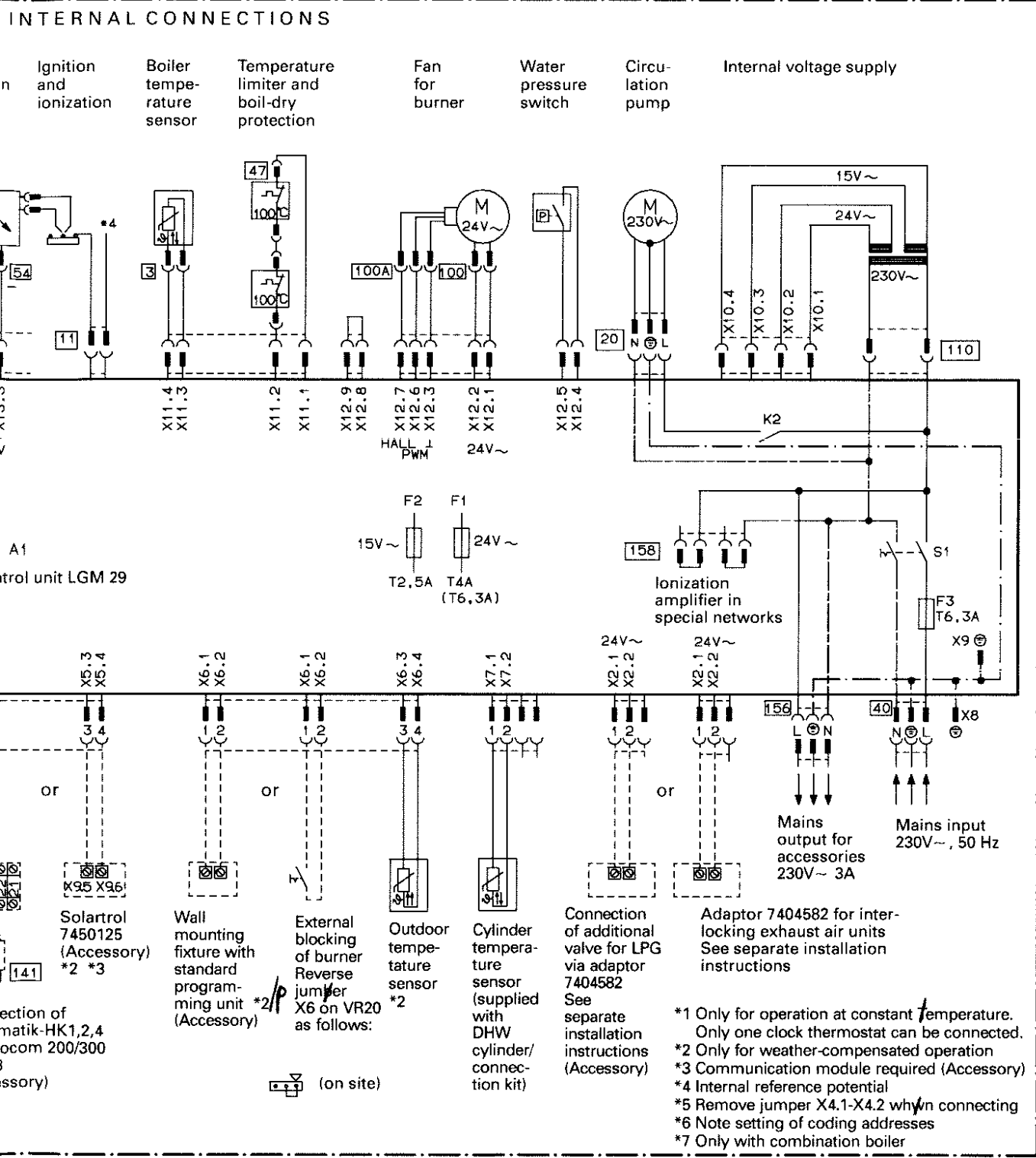
Viessmann Werke GmbH & Co

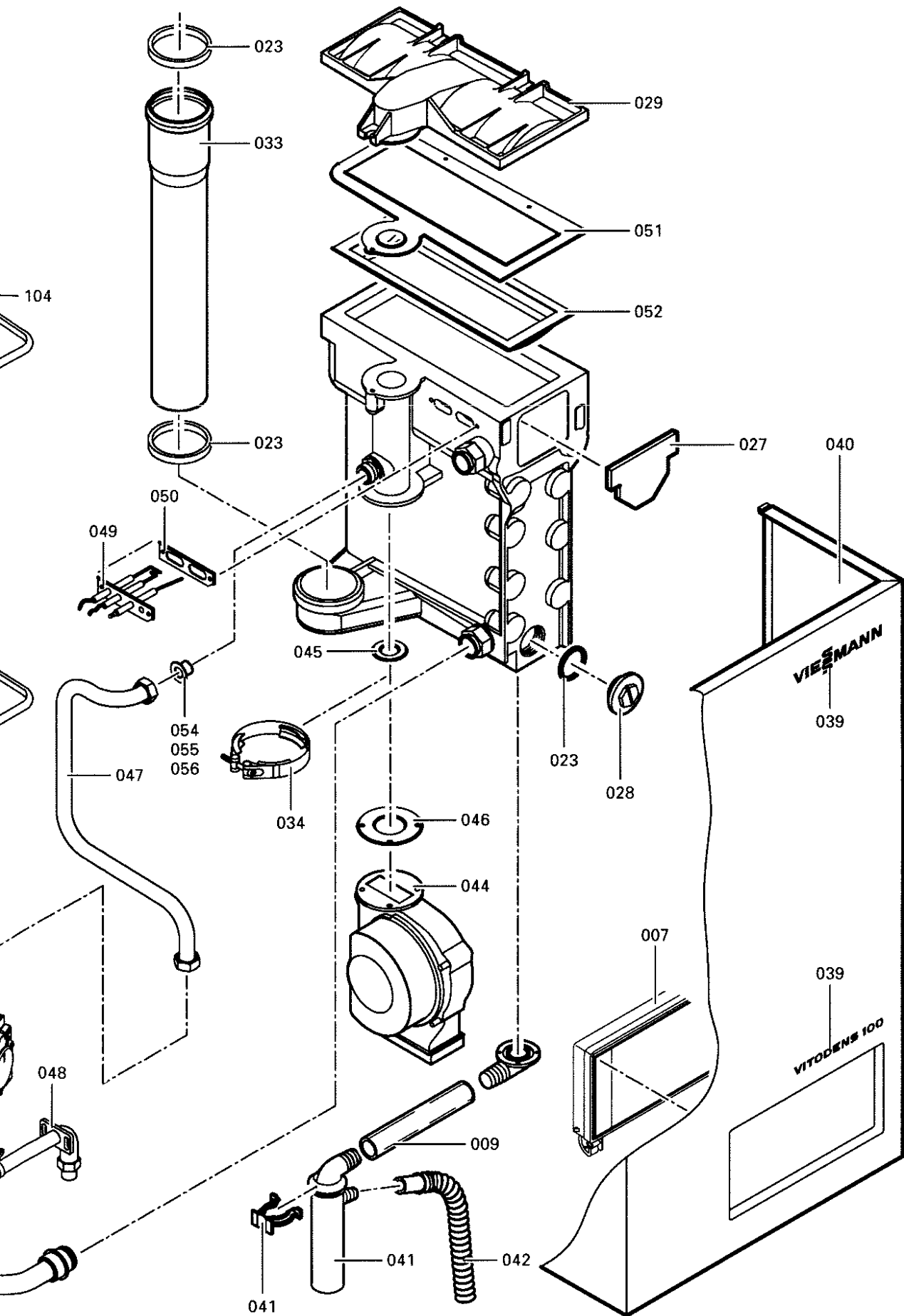


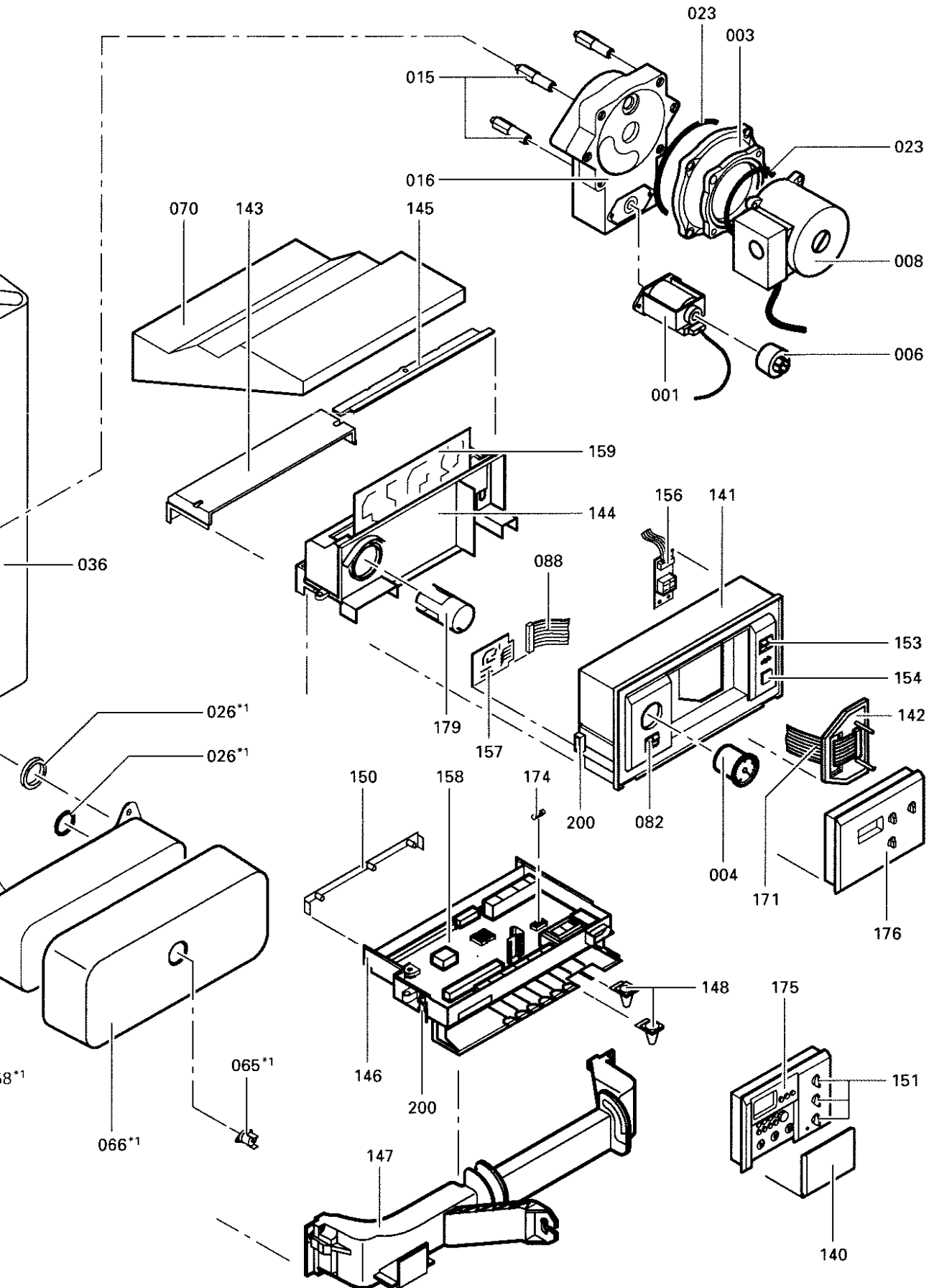
Prof. Dr.-Ing. Helmut Burger











5692 426 5B

Commissioning/service report

Measurements	Initial start-up Date: Signature:	Maintenance/service Date: Signature:	Maintenance/service Date: Signature:	Maintenance/service Date: Signature:	Maintenance/service Date: Signature:	Setpoint value
Static pressure	mbar					max. 57.5 mbar
Supply pressure (flow pressure)						
<input type="checkbox"/> Natural gas E	mbar					17.4 - 25 mbar
<input type="checkbox"/> Natural gas LL	mbar					17.4 - 25 mbar
<input type="checkbox"/> LPG	mbar					42.5 - 57.5 mbar
flue gas type						
Nozzle pressure						
- at top end of rated output range	mbar					
- at bottom end of rated output range	mbar					
Carbon dioxide content CO ₂						
- at top end of rated output range	Vol.-%					
- at bottom end of rated output range	Vol.-%					
Oxygen content O ₂						
- at top end of rated output range	Vol.-%					
- at bottom end of rated output range	Vol.-%					
Carbon monoxide content CO	ppm					
ionization current	µA					min. 7µA

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*Subject to technical modifications
5692 426 GB*