Service instructions

for contractors

Vitodens 300
Type WB3B, 6.6 to 35.0 kW
Wall mounted gas fired condensing boiler
Natural gas and LPG version

For applicability, see the last page

VITODENS 300

5692 643 GB 11 /2006

Please keep safe.

Safety instructions

Please follow these safety instructions closely to prevent accidents and material losses.

Safety instructions explained

Danger
This symbol warns against the risk of injury.

Please note
This symbol warns against the risk of material losses and environmental pollution.

Note
Details identified by the word "Note" contain additional information.

Target group

These instructions are exclusively designed for qualified personnel.

- Work on gas equipment must only be carried out by a qualified gas fitter.
- Work on electrical equipment must only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

Regulations

Observe the following when working on this system

- all legal instructions regarding the prevention of accidents,
- all legal instructions regarding environmental protection,
- the Code of Practice of relevant trade associations,
- all current safety regulations as defined by DIN, EN, DVGW, TRGI, TRF, VDE and all locally applicable standards.

If you smell gas

Danger
Escaping gas can lead to explosions which may result in serious injury.

- Never smoke. Prevent naked flames and sparks. Never switch lights or electrical appliances ON or OFF.
- Close the gas shut-off valve.
- Open windows and doors.
- Remove all people from the danger zone.
- Notify your gas or electricity supplier from outside the building.
- Shut off the electricity supply to the building from a safe place (outside the building).

If you smell flue gas

Danger
Flue gas can lead to life-threatening poisoning.

- Shut down the heating system.
- Ventilate the boiler room.
- Close all doors leading to the living space.

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Safety instructions (cont.)

Working on the system

- When using gas as fuel, also close the main gas shut-off valve and safeguard against unauthorised reopening.
- Isolate the system from the power supply and check that it is no longer 'live', e.g. by removing a separate fuse or by means of a main isolator.
- Safeguard the system against unauthorised reconnection.

Please note
Electronic modules can be damaged by electro-static discharges.
Touch earthed objects, such as heating or water pipes, to discharge static loads.

Repair work

Please note
Repairing components which fulfil a safety function can compromise the safe operation of your heating system.
Replace faulty components only with original Viessmann spare parts.

Ancillary components, spare and wearing parts

Please note
Spare and wearing parts which have not been tested together with the heating system can compromise its function. Installing non-authorised components and non-approved modifications/conversion can compromise safety and may invalidate our warranty.
For replacements, use only original spare parts from Viessmann or those which are approved by Viessmann.

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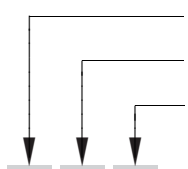
Steps - commissioning, inspection and maintenance

For further information regarding the individual steps, see the page indicated



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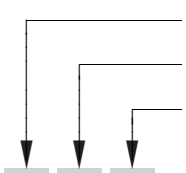
Steps - commissioning, inspection and . . . (cont.)



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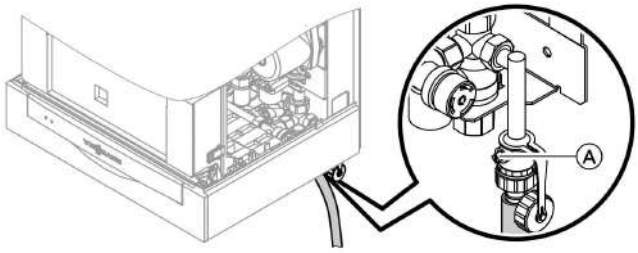
Further details regarding the individual steps

Filling the heating system

Please note
Unsuitable fill water increases the level of deposits and corrosion and may lead to boiler damage.
- Thoroughly flush the entire heating system prior to filling it with water.
- Only use fill water of potable quality.
- Soften fill water with a hardness above 3.0 mol/m^3, e.g. with a small softening system for heating water (see the Viessmann Vitoset price-list).
- An antifreeze additive suitable for heating systems can be mixed with the fill water. The antifreeze manufacturer must verify its suitability.



1. Check the inlet pressure of the diaphragm expansion vessel.
2. Close the gas shut-off valve.
3. Fill the heating system at the boiler fill & drain valve Ⓐ in the heating return (on the connection set or on site). (Minimum system pressure > 0.8 bar).

   Note
   If the control unit has not been switched ON prior to filling the system, then the servomotor of the diverter valve will still be in its central position, and the system will be completely filled.
4. If the control unit had already been switched ON before filling began: Switch ON the control unit and activate the filling program via coding address "2F:2".
5. Close boiler fill & drain valve Ⓐ.
6. Close the shut-off valves on the heating water side.

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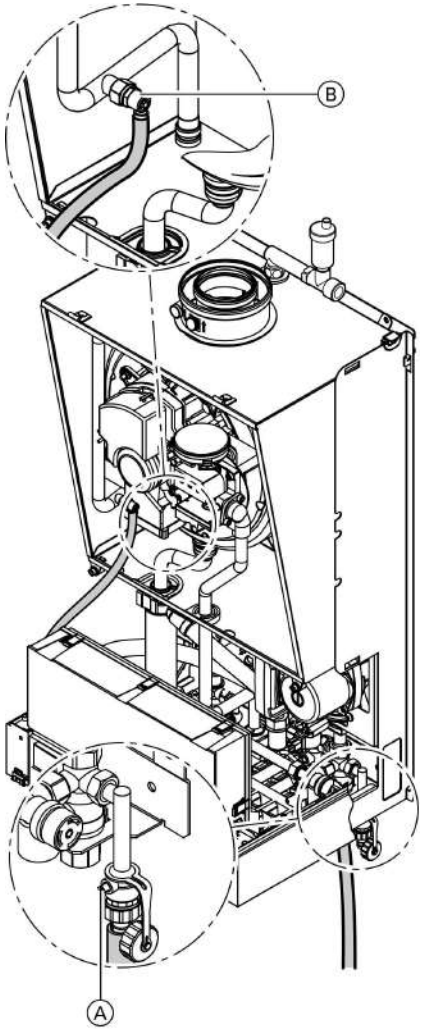
Further details regarding the individual steps (cont.)

Venting the boiler



1. Close the shut-off valves on the heating water side.
2. Connect the drain hose between top valve Ⓑ and a drain outlet.
3. Open valves Ⓐ and Ⓑ and vent using mains pressure until no more air noise is audible.
4. Close valves Ⓐ and Ⓑ and open the heating water shut-off valves.

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Further details regarding the individual steps (cont.)

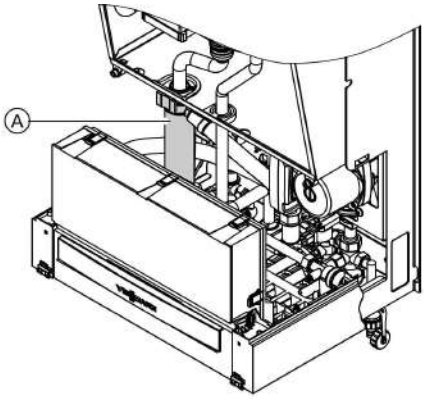
Venting the heating system

1. Close the gas shut-off valve and switch ON the control unit.
2. Activate the venting program via coding address "2F:1".

   Note
   To call up code 1 and for setting the coding address, see page 37.
   For function and sequence of the venting program, see page 96.
   Whilst the venting program runs, the display shows "EL" (constant temperature control unit) or "Entlüftung" (venting) (weather-compensated control unit).

3. Check the system pressure.

Filling the siphon with water



1. Remove the retaining clip and siphon Ⓐ.
2. Fill the siphon with water.
3. Fit siphon Ⓐ and secure with the retaining clip.

Further details regarding the individual steps (cont.)

Setting the time and date (if required) - only for weather-compensated control units

Note

- *During commissioning, or after a prolonged time out of use, it may be necessary to reset the time and date, if the time flashes in the display.*
- *During commissioning these terms appear in German (delivered condition):*

Time (see step 1)

Date (see step 2)

Press the following keys:

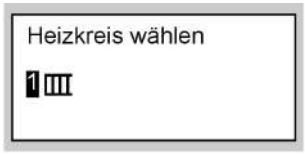
1. ⊕/⊖ for the current time.
2. OK to confirm; "**Datum**" (date) is displayed.
3. ⊕/⊖ for the current date.
4. OK to confirm.

Selecting the language (if required) - only for weather-compensated control units

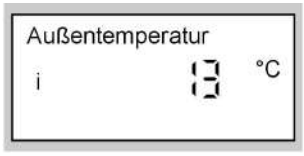
Note

When the unit is first taken into operation the display is in German (default language setting):

Select heating circuit (see step 1.)



Outside temperature (see step 3.)



Press the following keys:

1. i "**Heizkreis wählen**" (select heating circuit) is displayed.
2. OK to confirm; wait approx. 4 s.

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Further details regarding the individual steps (cont.)

3. ⓘ press this button again, "**Außentemperatur**" (outside temperature) is displayed.
4. ⊖ for the required language.
5. OK to confirm.

Checking the gas type

Note
In the delivered condition, the Vitodens 300 is set up for natural gas E.

1. Check the gas category and Wobbe index (Wo) with your mains gas or LPG supplier and compare them with the details on the burner label.
2. If these details do not match, convert the burner to the available gas type.

    Conversion kit installation instructions
3. Adjust the gas type via coding address "1E" at the control unit.

   Note
   To call up code 1 and for setting the coding address, see page 37.
4. Record the gas type in the service report on page 113.

Wobbe index ranges

Gas type	Wobbe index range kWh/m³	MJ/m³
Delivered condition Natural gas E	12.0 to 16.1	43.2 to 58.0
After conversion Natural gas LL LPG P	10.0 to 13.1 20.3 to 21.3	36.0 to 47.2 72.9 to 76.8

Gas type conversion

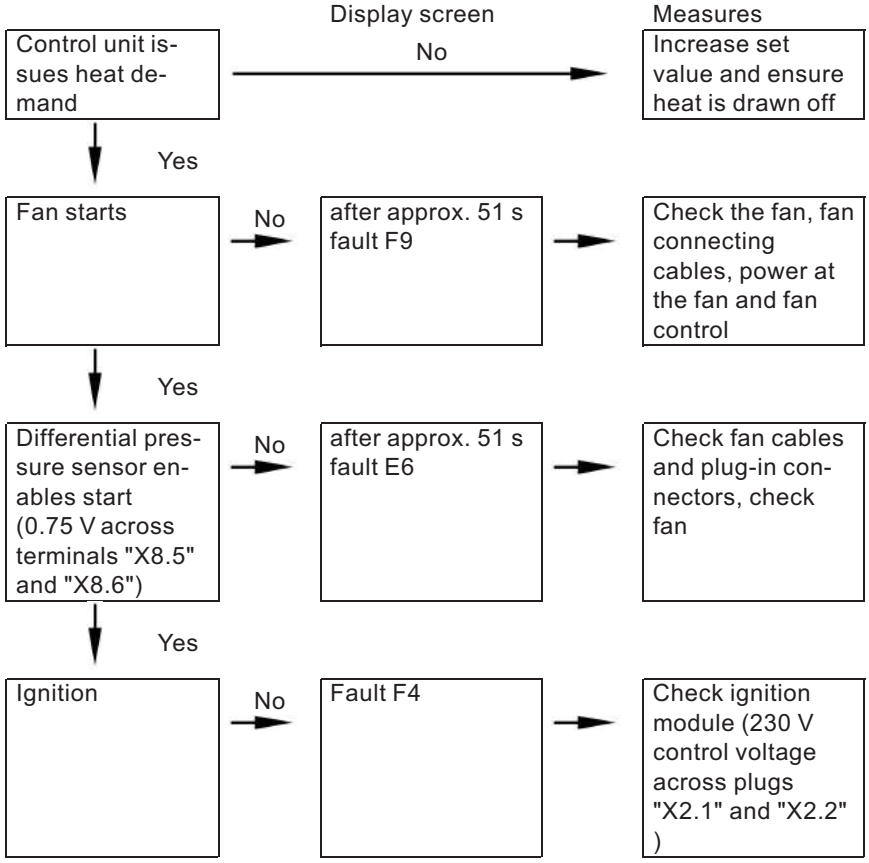
 Gas restrictor installation instructions

Further details regarding the individual steps (cont.)

Gas restrictor allocation

Rated output range	kW	6.6 to 26	8.7 to 35
Gas type	Internal ∅ gas restrictor		
■ Natural gas E	mm	6.0	7.3
■ Natural gas LL	mm	6.7	8.3
■ LPG P	mm	4.4	5.4

Function sequence and possible faults



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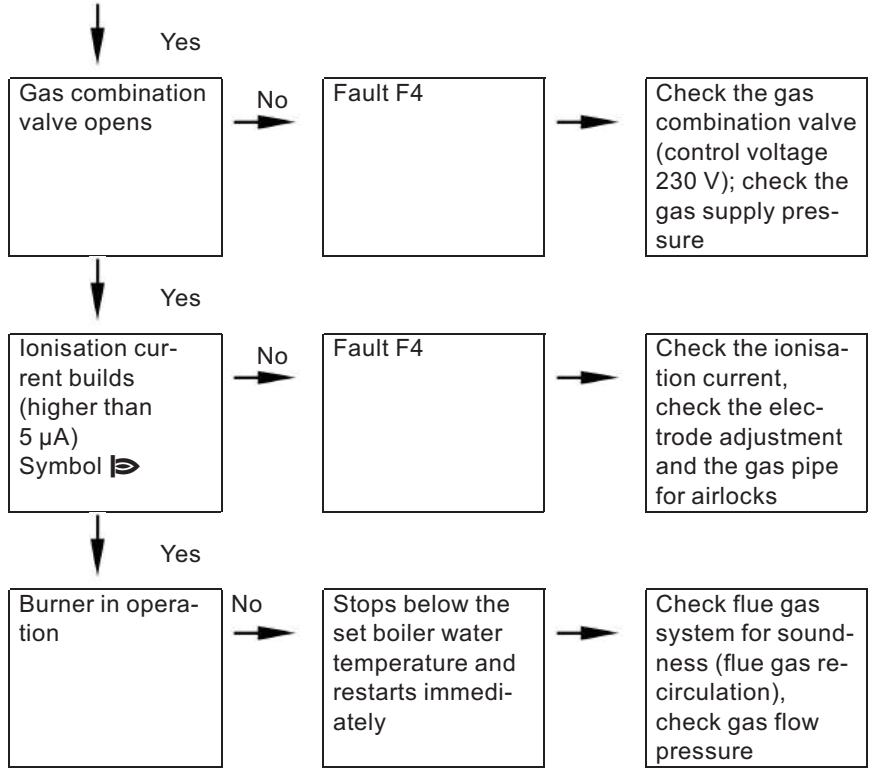
Further details regarding the individual steps (cont.)



For further details regarding faults, see page 70

Checking the static and supply pressure

Danger
CO build-up as a result of an incorrect burner setup can have serious health implications.
Carry out a CO test prior to, and after, work on gas equipment.

Operation with LPG
Flush the LPG tank twice during commissioning/replacement. Thoroughly vent the tank and gas supply lines after flushing.

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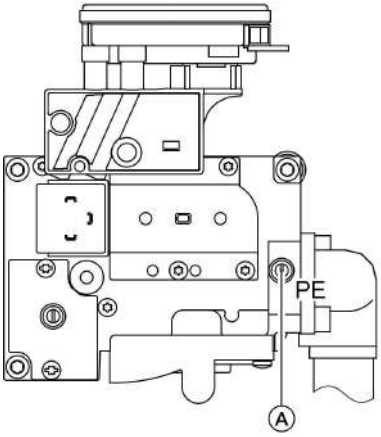
Further details regarding the individual steps (cont.)



1. Close the gas shut-off valve.

2. Release screw Ⓐ inside test connector "PE" on the gas combination valve, but do not remove it; then connect the pressure gauge.

3. Open the gas shut-off valve.

4. Measure the static pressure and record it in the service report on page 113.
   Set value: max. 57.5 mbar.

5. Start the boiler.

   Note
   During commissioning, the boiler can enter a fault state because of airlocks in the gas pipe. After approx. 5 s press ⇧ to reset the burner.

6. Check the supply (flow) pressure.
   Set values:
   - Natural gas 20 mbar
   - LPG 50 mbar

   Note
   Use suitable test equipment with a resolution of at least 0.1 mbar to measure the supply pressure.

7. Record the actual value in the service report.
   Take the action shown in the following table.

8. Shut down the boiler, close the gas shut-off valve, remove the pressure gauge and close test port Ⓐ with the screw.

9. ⚠ **Danger**
   Gas escaping from the test port leads to a risk of explosion.
   Check for soundness.

   Open the gas shut-off valve, start the boiler and check the soundness of test port Ⓐ.

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Further details regarding the individual steps (cont.)

Supply (flow) pressure for natural gas	Supply (flow) pressure for LPG	Measures
below 17.4 mbar	below 42.5 mbar	Do not start the boiler. Notify your mains gas or LPG supplier.
17.4 to 25 mbar	42.5 to 57.5 mbar	Start the boiler.
in excess of 25 mbar	in excess of 57.5 mbar	Install a separate gas pressure governor upstream of the system and regulate the inlet pressure to 20 mbar for natural gas or 50 mbar for LPG. Notify your mains gas or LPG supplier.

Setting the maximum output

You can limit the maximum output for **heating operation** via the modulation range.

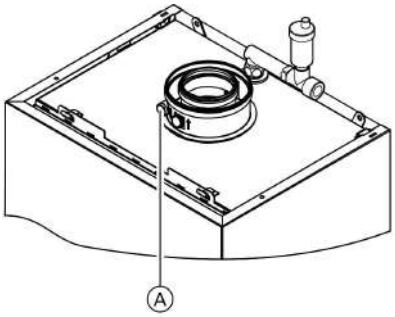
1. Start the boiler.
2. Press both ⏻ and 🌡 simultaneously until "100" flashes on the display, (equals 100% of rated output) and "⊳" is displayed. On weather-compensated control units, the display additionally shows "Max. heating output".
3. With ⊕/⊖ select the required value in % of rated output as maximum output.
4. Confirm the set value with OK.
5. Record the settings for maximum output on the additional type plate included with the technical documentation. Affix the type plate next to the original type plate on top of the boiler.

Note

The output can also be limited for DHW heating. For this, change coding address "6F" in code 2.

Further details regarding the individual steps (cont.)

Checking the balanced flue system for soundness (annular gap check)



Ⓐ Combustion air port

For balanced flue systems tested together with the wall mounted gas fired boiler, some authorities waive the requirement for a soundness test (overpressure test) during commissioning by the flue gas inspector. We recommend that your heating engineer carries out a simple soundness test during the commissioning of your system. For this, it would be sufficient to check the CO_2 or O_2 concentration in the combustion air at the annular gap of the balanced flue pipe.

The flue pipe is deemed to be sound if the CO_2 concentration in the combustion air is no higher than 0.2 % or the O_2 concentration is at least 20.6 %. If actual CO_2 values are higher or O_2 values are lower, then pressure test the flue pipe with a static pressure of 200 Pa.

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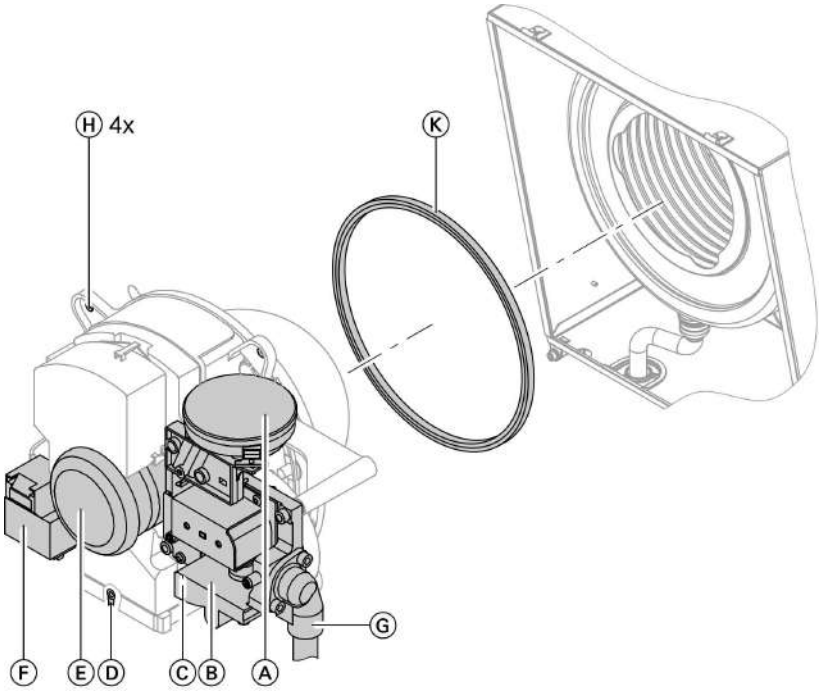
Further details regarding the individual steps (cont.)

Removing the burner and checking the burner gasket (replace gasket every two years)



1. Switch OFF the control unit ON/ OFF switch and the power supply.

2. Close the gas shut-off valve and safeguard against reopening.

3. Pull cables from differential pressure sensor Ⓐ, gas valve Ⓑ, ionisation electrode Ⓒ, earth tab Ⓓ, fan motor Ⓔ and ignition unit Ⓕ.

4. Undo the fixing screws of gas supply flange Ⓖ.

5. Release four nuts Ⓗ and remove the burner.

   Please note
   Prevent damage to the wire gauze.
   Never rest the burner on the gauze assembly.

6. Check burner gasket Ⓚ for damage.
   Generally replace the burner gasket **every 2 years**.

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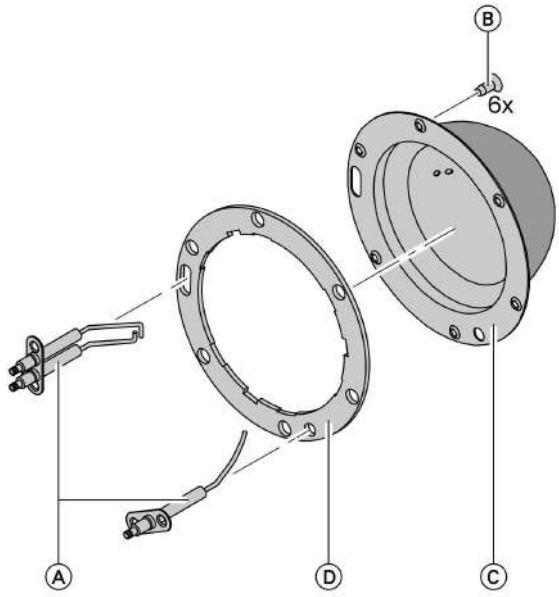
Further details regarding the individual steps (cont.)

Checking the burner gauze assembly

Replace the burner gauze assembly if the wire gauze is damaged.

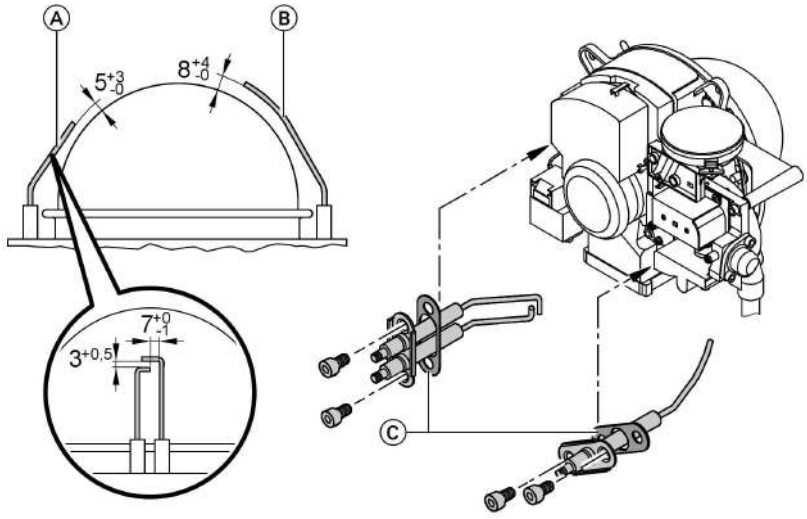


1. Remove electrodes Ⓐ.
2. Release six Torx screws Ⓑ and remove burner gauze assembly Ⓒ.
3. Remove old burner gauze gasket Ⓓ.
4. Install a new burner gauze assembly with a new gasket and secure with six Torx screws.

   Note
   Torque: 3.5 Nm

Further details regarding the individual steps (cont.)

Checking and adjusting the ignition and ionisation electrodes



Ⓐ Ignition electrodes

Ⓑ Ionisation electrode
Ⓒ Gasket

1. Check the electrodes for wear and contamination.

2. Clean the electrodes with a small brush (not with a wire brush) or emery paper.

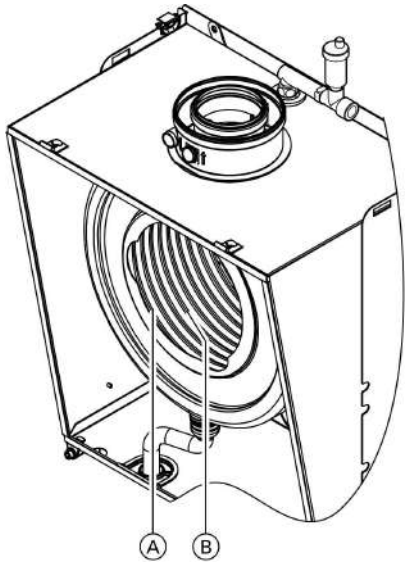
   Please note
   Do not damage the wire gauze.

3. Check the electrode gaps. If the gaps are not as specified or the electrodes are damaged, replace and align the electrodes together with new gaskets. Tighten the electrode fixing screws with 2 Nm.

Cleaning the combustion chamber/heat exchanger and installing the burner

Further details regarding the individual steps (cont.)

Please note
Scratches on parts that are in contact with flue gases can lead to corrosion.
Only use plastic brushes and NEVER wire brushes.



1. Clean combustion chamber Ⓐ and heat exchanger Ⓑ with a brush if necessary or rinse with water.
   Apply a solvent/potassium-free cleaning agent if residues remain:
   - Remove soot deposits with alkaline cleaning agents with additional surfactants (e.g. Fauch 600).
   - Remove coatings and surface discolouration (yellow-brown) with slightly acidic, chloride-free cleaning agents based on phosphoric acid (e.g. Antox 75 E).
   - Thoroughly flush with water.

   Note
   Fauch 600 and Antox 75 E are supplied by
   Hebro Chemie GmbH
   Rostocker Straße 40
   D 41199 Mönchengladbach

2. Install the burner and torque nuts diagonally with 4 Nm.

3. Secure the gas supply pipe with a new gasket.

4. Check the gas connections for soundness.

   Danger
   Escaping gas leads to a risk of explosions.
   Check all fittings for soundness.

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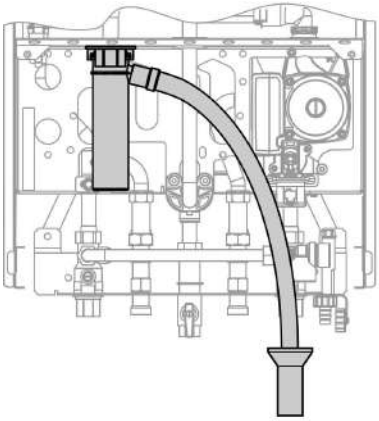
Further details regarding the individual steps (cont.)

5. Connect the cables/leads to each corresponding component.

Checking the condensate drain and cleaning the siphon



1. Check that the condensate can drain freely at the siphon.
2. Remove the retaining clip and the siphon.
3. Clean the siphon.
4. Fill the siphon with water and fit it to the boiler. Position the retaining clip.

Checking the diaphragm expansion vessel and system pressure

Note
Carry out this test on a cold system.

1. Drain the system, or close the cap valve on the diaphragm expansion vessel and reduce the pressure, until the pressure gauge indicates "0".
2. If the inlet pressure of the diaphragm expansion vessel is lower than the static system pressure, top up with nitrogen until the inlet pressure is raised by 0.1 to 0.2 bar.
3. Top up your heating system with water and vent until the filling pressure of a cooled system is 0.1 to 0.2 bar higher than the inlet pressure of the diaphragm expansion vessel.
   Permiss. operating pressure: 3 bar

Further details regarding the individual steps (cont.)

Checking all gas equipment for soundness at operating pressure

Danger
Escaping gas leads to a risk of explosions.
Check gas equipment for soundness.

Flue gas emissions test

The Vitodens 300 is set up in the factory for natural gas E and can be converted to natural gas LL or LPG P with the aid of a conversion kit.
During commissioning or maintenance, check the CO_2 level at the boiler flue outlet.

Note
The MatriX burner of the Vitodens 300 is preset for the entire gas group. The burner requires no modification or readjustment.

Subject to the Wobbe index, the CO_2 content fluctuates between:
- 6.6 to 10.0% for natural gas E
- 7.0 to 10.0% for natural gas LL and
- 8.5 to 10.5% for LPG P

Compare the actual CO_2 value with the above CO_2 value ranges for the individual gas groups (check the gas group with your mains gas or LPG supplier).
If the actual CO_2 value deviates by more than 1% for natural gas or 0.5% for LPG, proceed as follows:
- Check that the correct gas restrictor has been fitted.
- Check the balanced flue system for soundness, see page 16.

Maintain limits to EN 483 and EN 297 (CO content < 1000 ppm).

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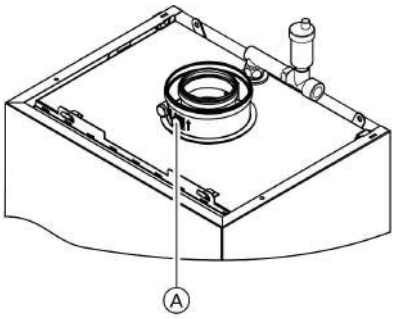
Further details regarding the individual steps (cont.)



1. Connect a flue gas analyser at flue gas port Ⓐ on the boiler flue connection.

2. Open the gas shut-off valve, start the boiler and create a heat demand.

3. Adjust the lower output.

   Constant temperature control unit:
   ⏻ + OK press simultaneously:
   "**1**" is shown.

   Weather-compensated control unit:
   ⏻ + OK press simultaneously:
   "**Relay test**" and then
   "**Base load**" is shown.

4. Check the CO_2 content. Should the actual value deviate by more than 1% from the above range, implement the steps from page 22.

5. Enter actual values into the service report.

6. Adjust the upper output.

   Constant temperature control unit:
   ⊕ press:
   "**2**" is shown.

   Weather-compensated control unit:
   ⊕ press:
   "**Full load**" is shown.

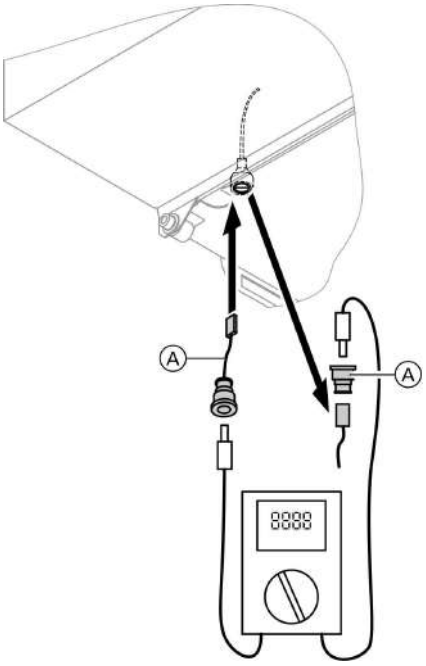
7. Check the CO_2 content. Should the actual value deviate by more than 1% from the above range, implement the steps from page 22.

8. After testing, press OK.

9. Enter actual values into the service report.

Further details regarding the individual steps (cont.)

Checking the ionisation current



Ⓐ Adaptor cable (available as accessory)

1. Connect the test equipment according to the diagram.

2. Adjusting the upper output:

Constant temperature control unit:

⏻ + OK press simultaneously:
"**1**" is shown.

⊕ press:
"**2**" is shown.

Weather-compensated control unit:

⏻ + OK press simultaneously:
"**Relay test**" and then
"**Base load**" is shown.

⊕ press:
"**Full load**" is shown.

3. Ionisation current when the flame is first established: min. 4 µA
Steps in case the ionisation current is < 4 µA:
- Check the electrode gap
- Check the control unit power supply.

4. Press OK.
Operation with the upper output is terminated.

5. Record the actual value in the service report.

Matching the control unit to the heating system

The control unit must be matched to the equipment level of the system. Various system components are recognised automatically by the control unit and the relevant codes are adjusted automatically.
- For the selection of an appropriate design, see the following diagrams.
- For coding steps, see page 37.

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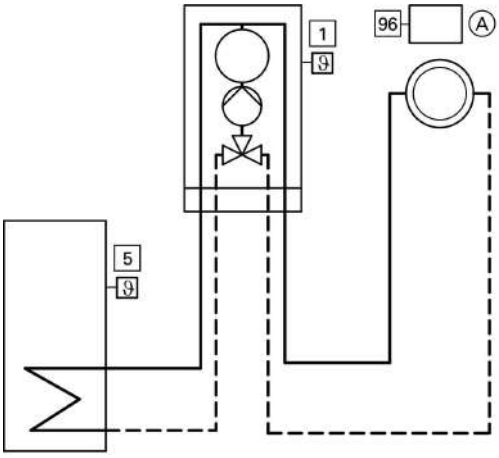
Further details regarding the individual steps (cont.)

System version 1

One heating circuit without mixer A1 (with/without DHW heating)



1	Outside temperature sensor (only for weather-compensated control units) or	A 96	Vitotrol 100 (only for constant temperature control units)
		5	Cylinder temperature sensor

Required coding	Address
Operation with LPG	1E:1

System version 2

One heating circuit without mixer A1 and one heating circuit with mixer M2 (with/without DHW heating)

Note
The flow rate of the heating circuit without mixer must be at least 30% greater than the flow rate of the heating circuit with mixer.

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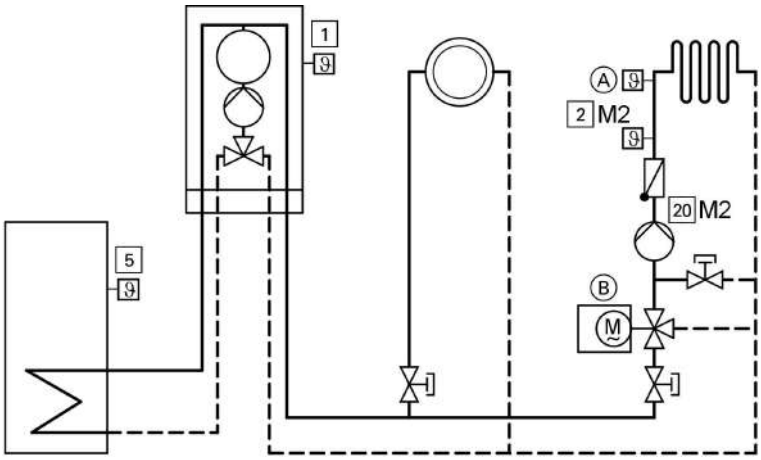
Further details regarding the individual steps (cont.)



1	Outside temperature sensor	Ⓐ	Temperature limiter for limiting the max. temp. of underfloor heating systems
2 M2	Flow temperature sensor		
5	Cylinder temperature sensor		
20 M2	Heating circuit pump	Ⓑ	Extension kit for one heating circuit with mixer M2

Required coding	Address
Operation with LPG	1E:1
System with only one heating circuit with mixer	
■ with DHW cylinder	00:4
■ without DHW cylinder	00:3

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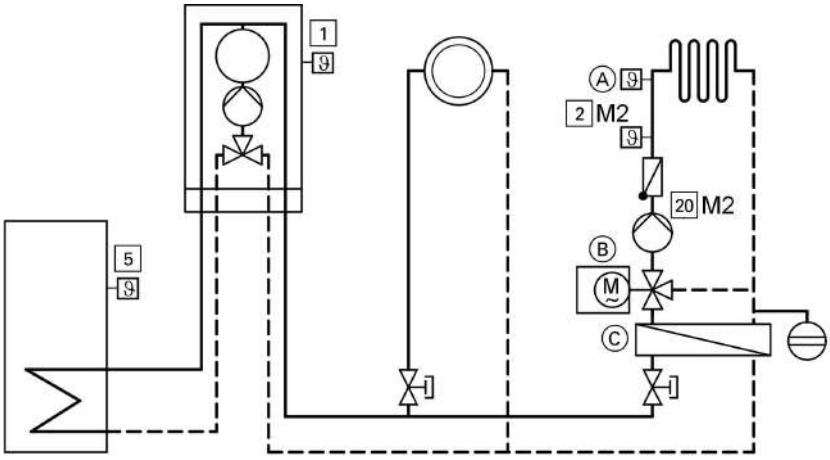
Further details regarding the individual steps (cont.)

System version 3

One heating circuit without mixer A1 and one heating circuit with mixer M2 with system separation (with/without DHW heating)



1		Outside temperature sensor	
2	M2	Flow temperature sensor	
5		Cylinder temperature sensor	
20	M2	Heating circuit pump	
Ⓐ		Temperature limiter for limiting the max. temp. of underfloor heating systems	
Ⓑ		Extension kit for one heating circuit with mixer M2	
Ⓒ		Heat exchanger for system separation	

Required coding	Address
Operation with LPG	1E:1

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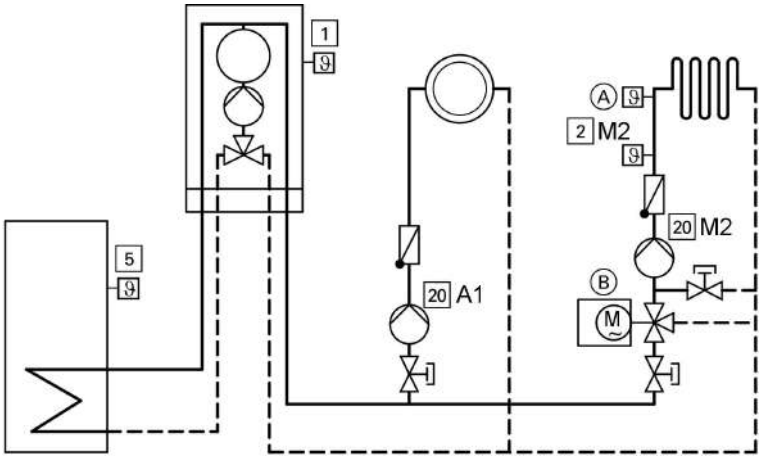
Further details regarding the individual steps (cont.)

System version 4

One heating circuit without mixer A1 with a separate heating circuit pump and one heating circuit with mixer M2 (with/without DHW heating)



1		Outside temperature sensor	
2	M2	Flow temperature sensor	
5		Cylinder temperature sensor	
20	A1	Heating circuit pump for heating circuit without mixer A1	
20	M2	Heating circuit pump heating circuit with mixer M2	
Ⓐ		High limit thermostat (underfloor heating)	
Ⓑ		Extension kit for a heating circuit with mixer	

Required coding	Address
Operation with LPG	1E:1
Max. speed of the internal circulation pump in heating mode: 20%	31:20

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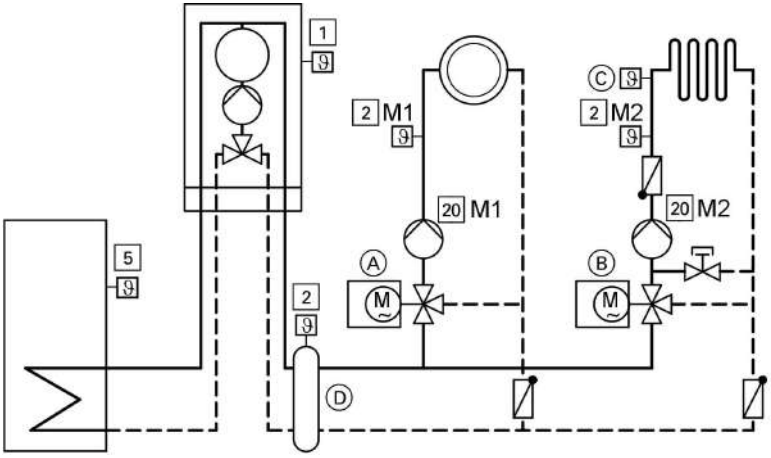
Further details regarding the individual steps (cont.)

System version 5

One heating circuit with mixer M2 (with extension kit), one heating circuit with mixer (with Vitotronic 050) and low loss header (with/without DHW heating)



1		Outside temperature sensor
2	M1	Flow temperature sensor heating circuit with mixer M1
2	M2	Flow temperature sensor heating circuit with mixer M2
5		Cylinder temperature sensor
20	M1	Heating circuit pump heating circuit with mixer M1
20	M2	Heating circuit pump heating circuit with mixer M2
Ⓐ		Vitotronic 050
Ⓑ		Extension kit for one heating circuit with mixer M2
Ⓒ		Temperature limiter for limiting the max. temp. of underfloor heating systems
Ⓓ		Low loss header

Required coding	Address
Operation with LPG	1E:1
One heating circuit with mixer with extension kit for mixer and one heating circuit with mixer with Vitotronic 050	
■ with DHW cylinder	00:4
■ without DHW cylinder	00:3

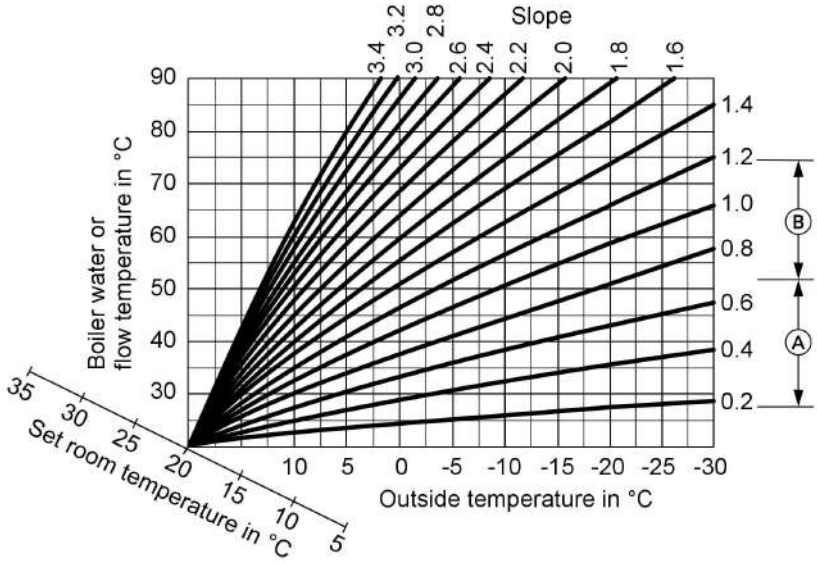
Further details regarding the individual steps (cont.)

Adjusting the heating curves (only for weather-compensated control units)

The heating curves illustrate the relationship between the outside temperature and the boiler water or flow temperature.
To put it simply: The lower the outside temperature, the higher the boiler water or flow temperature.

The room temperature, again, depends on the boiler water or the flow temperature.

Settings in the delivered condition:
- Slope = 1.4
- Level = 0



Ⓐ Heating curve slope for underfloor heating systems

Ⓑ Heating curve slope for low temperature heating systems (according to the Energy Savings Order [Germany])

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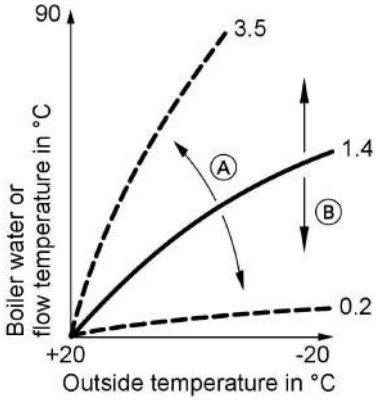
Further details regarding the individual steps (cont.)

Changing the slope and level



Ⓐ Changing the slope
Ⓑ Changing the level (vertical parallel offset of the heating curve)

1. **Slope:**
   Change with coding address "d3" in code 1.
   Setting range 2 to 35 (equals slope 0.2 to 3.5).

2. **Level:**
   Change with coding address "d4" in code 1.
   Setting range -13 to +40 K.

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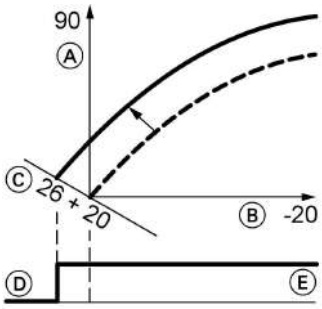
Further details regarding the individual steps (cont.)

Adjusting the set room temperature

Standard room temperature



Example 1: Adjustment of standard room temperature from 20 to 26 °C

Ⓐ Boiler water temperature or flow temperature in °C
Ⓑ Outside temperature in °C
Ⓒ Set room temperature in °C
Ⓓ Heating circuit pump "OFF"
Ⓔ Heating circuit pump "ON"

Press the following keys:

1. ⊕ "1 " flashes.

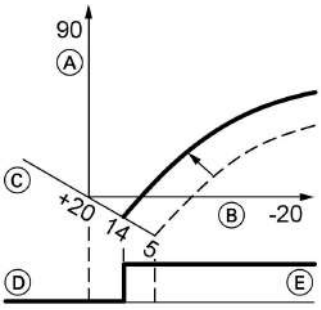
2. OK to select heating circuit A1 (heating circuit without mixer) **or**

3. ⊕ "2 " flashes.

4. OK to select heating circuit with mixer M2.

5. Adjust the set day temperature with rotary selector " ".
The value will be automatically accepted after approx. 2 s.
Accordingly, the heating curve is adjusted along set room temperature axis Ⓒ, which results in modified start/stop characteristics of the heating circuit pumps if heating circuit pump logic function is active.

Reduced room temperature



Example 2: Adjustment of reduced room temperature from 5 °C to 14 °C

Ⓐ Boiler water temperature or flow temperature in °C
Ⓑ Outside temperature in °C
Ⓒ Set room temperature in °C
Ⓓ Heating circuit pump "OFF"
Ⓔ Heating circuit pump "ON"

Press the following keys:

1. ⊕ "1 " flashes.

Further details regarding the individual steps (cont.)

2. OK to select heating circuit A1 (heating circuit without mixer)
or

3. ⊕ "2 III" flashes.

4. OK to select heating circuit with mixer M2.

5. Call up the set night temperature.

6. ⊕/⊖ Change the value.

7. OK Confirm the value.

Connecting the control unit to the LON system (only for weather-compensated control units)

The LON communication module (accessories) must be plugged in.

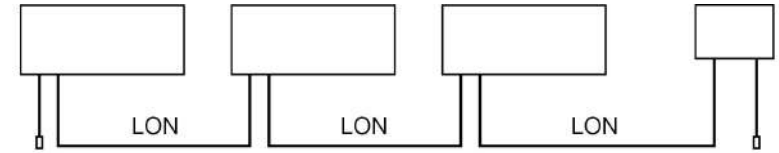
Installation instructions LON communication module

Note
The data transfer via LON can take several minutes.

Single boiler system with Vitotronic 050 and Vitocom 300

Set up the LON user numbers and further functions via code 2 (see the following table).

Note
*In the same LON system, the same number **cannot** be allocated twice.*
***Only one Vitotronic** may be programmed as fault manager.*

Boiler control unit	Vitotronic 050	Vitotronic 050	Vitocom
			
User no. 1 Coding address "77:1"	User no. 10 Coding address "77:10"	User no. 11 **Set** coding address "77:11"	User no. 99
Control unit is fault manager Coding address "79:1"	Control unit is not fault manager Coding address "79:0"	Control unit is not fault manager Coding address "79:0"	Device is fault manager

Further details regarding the individual steps (cont.)

Boiler control unit	Vitotronic 050	Vitotronic 050	Vitocom
Control unit transmits the time Coding address "7b:1"	Control unit receives the time **Set** coding address "81:3"	Control unit receives the time **Set** coding address "81:3"	Device receives the time
Control unit transmits outside temperature **Set** coding address "97:2"	Control unit receives outside temperature **Set** coding address "97:1"	Control unit receives outside temperature **Set** coding address "97:1"	—
LON user fault monitoring Coding address "9C:20"	LON user fault monitoring Coding address "9C:20"	LON user fault monitoring Coding address "9C:20"	—

Updating the LON user list

Only possible if all users are connected and the control unit is programmed to be fault manager (coding address "79:1").

Press the following keys:

1. ⌂ + OK simultaneously for approx. 2 s.
User check initiated (see page 34).

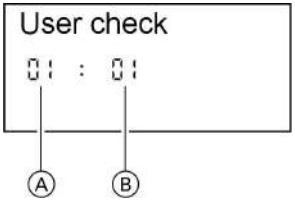
2. ⊕ The user list is updated after approx. 2 min.
The user check is completed.

Carrying out a user check

Communication with the system devices connected to the fault manager is tested with a user check.

Further details regarding the individual steps (cont.)

Preconditions:
- The control unit must be programmed as **fault manager** (coding address "79:1")
- The LON user number must be programmed in all control units (see page 33).
- The LON user list in the fault manager must be up to date (see page 33).



Ⓐ Consecutive number in the user list
Ⓑ User number

Press the following keys:

1. ⏎ + OK simultaneously for approx. 2 s.
The user check has been initiated.

2. ⊕/⊖ for the required user.

3. OK Check is enabled "**Check**" flashes until its completion.
The display and all key illuminations for the selected user flash for approx. 60 s.

4. "**Check OK**" is displayed during communication between both devices.
"**Check not OK**" is displayed if there is no communication between both devices. Check the LON connection.

5. Repeat points 2 and 3 to check further users.

6. ⏎ + OK simultaneously for approx. 1 s.
The user check is completed.

Instructing the system user

The system installer must hand the operating instructions to the system user and instruct him/her in the operation of the system.

Scanning and resetting the "Service" display

The red fault indicator flashes when the limits set via coding address "21" and "23" have been reached. The programming unit display flashes:

Further details regarding the individual steps (cont.)

- On a constant temperature control unit:
  The defaulted hours run or the defaulted interval with clock symbol "⏲" (subject to setting)
- On a weather-compensated control unit:
  "**Service**"

Note
Set coding address "24:1" and then coding address "24:0" if a service is carried out before "Service" is displayed; the set maintenance parameters for hours run and intervals are then reset to 0.

Press the following keys:

1. ⓘ The maintenance scan is active.

2. ⊕/⊖ Scan maintenance messages.

3. OK The maintenance display will be cleared (for a weather-compensated control unit: "Acknowledge: Yes", reconfirm with OK). The red fault display continues to flash.

Note
An acknowledged maintenance message can be redisplayed by pressing OK (approx. 3 s).

After a service has been carried out

1. Reset coding address "24:1" to "24:0".
The red fault indicator extinguishes.

Note
If coding address "24" is not reset, a new "Service" display will be shown on Monday at 07:00 h.

2. Reset the burner hours run, burner starts and consumption if required
Press the following keys:
ⓘ Scanning is active (see page 65).
⊕/⊖ For the selected value.
⊕⊖ The selected value will be set to "0".
⊕/⊖ For further scans.
OK Scanning is completed.

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Code 1

Calling up code 1

Note

- *On weather-compensated control units, codes are displayed as plain text.*
- *Codes that are irrelevant due to the system equipment level or the setting of other codes will not be displayed.*
- *Heating systems with one heating circuit without mixer and one heating circuit with mixer:*
  Initially, the possible coding addresses "A0" to "d4" for the heating circuit without mixer A1 are scanned; then the coding addresses for the heating circuit with mixer M2 are scanned.

Press the following keys:

1. ⏻ + 🛁 simultaneously for approx. 2 s.

2. ⊕/⊖ for the required coding address; the address flashes.

3. OK to confirm.

4. ⊕/⊖ for the selected value.

5. OK to confirm; the display briefly shows "**accepted**" (weather-compensated control unit); the address flashes again.

6. ⊕/⊖ for the selection of further addresses.

7. ⏻ + 🛁 press simultaneously for approx. 1 s; code 1 is terminated.

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Code 1 (cont.)

Overview

Coding

Coding in the delivered condition		Possible change	
System design			
00 :1	System version 1: 1 heating circuit without mixer A1, without DHW heating	00 :2	System version 1: 1 heating circuit without mixer A1, with DHW heating
		00 :3	System version 5: 1 heating circuit with mixer M2, without DHW heating
		00 :4	System version 5: 1 heating circuit with mixer M2, with DHW heating
		00 :5	System version 2, 3, 4: 1 heating circuit without mixer A1 and 1 heating circuit with mixer M2, without DHW heating
		00 :6	System version 2, 3, 4: 1 heating circuit without mixer A1; 1 heating circuit with mixer M2, with DHW heating
Max. boiler temp.			
06:...	Maximum limit of the boiler water temperature, defaulted by the boiler coding card	06:20 to 06:127	Maximum limit of the boiler water temperature within the ranges defaulted by the boiler
Gas type			
1E:0	Operation with natural gas	1E:1	Operation with LPG
Venting/filling			
2F:0	Venting program/filling program disabled	2F:1	Venting program enabled
		2F:2	Filling program enabled

Code 1 (cont.)

Coding in the delivered condition		Possible change	
User no.			
77:1	LON user number	77:2 to 77:99	LON user number, adjustable from 1 to 99: 1 - 4 = Boiler 5 = Cascade 10 - ... = Vitotronic 050 99 = Vitocom ***Note*** *Allocate each number* ***only*** *once.*
Summer econ. A1/M2			
A5:5	With heating circuit pump logic function (only for weather-compensated control units)	A5:0	Without heating circuit pump logic function
Min. supply temp. A1/M2			
C5:20	Electronic minimum flow temperature limit 20 °C (only for weather-compensated control units)	C5:1 to C5:127	Minimum limit adjustable from 10 to 127 °C
Max. supply temp. A1/M2			
C6:74	Electronic maximum flow temperature limit 74 °C (only for weather-compensated control units)	C6:10 to C6:127	Maximum limit adjustable from 10 to 127 °C
Slope A1/M2			
d3:14	Heating curve slope = 1.4 (only for weather-compensated control units)	d3:2 to d3:35	Heating curve slope adjustable from 0.2 to 3.5 (see page 30)
Level A1/M2			
d4:0	Heating curve level = 0 (only for weather-compensated control units)	d4:–13 to d4:40	Heating curve level adjustable from -13 to 40 (see page 30)

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Code 2

Calling up code 2

Note

- *On weather-compensated control units, codes are displayed as plain text.*
- *Codes that are irrelevant due to the system equipment level or the setting of other codes will not be displayed.*

Press the following keys:

1. [hot water] + [heating] simultaneously for approx. 2 s.

2. OK to confirm.

3. ⊕/⊖ for the required coding address; the address flashes.

4. OK to confirm; the value flashes.

5. ⊕/⊖ for the selected value.

6. OK to confirm; the display briefly shows "**accepted**" (for weather-compensated control units); the address flashes again.

7. ⊕/⊖ for the selection of further addresses.

8. [hot water] + [heating] press simultaneously for approx. 1 s; code 2 is terminated.

The coding addresses are grouped according to the following **function areas**. The respective function area is shown on the display.

Code 2 (cont.)

The areas are scanned in the following sequence with ⊕/⊖:

Function area	Coding addresses
System design	00
Boiler/burner	06 to 54
DHW	56 to 73
General	76 to 9F
Heating circuit A1 (heating circuit without mixer)	A0 to Fb
Heating circuit with mixer M2	A0 to Fb

Note

Heating systems with one heating circuit without mixer and one heating circuit with mixer:
Initially, the possible coding addresses "A0" to "Fb" for the heating circuit without mixer A1 are scanned; then the coding addresses for the heating circuit with mixer M2 are scanned.

Code 2 (cont.)

Coding

Coding in the delivered condition		Possible change	
System design			
00 :1	System version 1: 1 heating circuit without mixer A1, without DHW heating	00 :2	System version 1: 1 heating circuit without mixer A1, with DHW heating
		00 :3	System version 5: 1 heating circuit with mixer M2, without DHW heating
		00 :4	System version 5: 1 heating circuit with mixer M2, with DHW heating
		00 :5	System version 2, 3, 4: 1 heating circuit without mixer A1; 1 heating circuit with mixer M2, without DHW heating
		00 :6	System version 2, 3, 4: 1 heating circuit without mixer A1; 1 heating circuit with mixer M2, with DHW heating
Boiler/burner			
06:...	Maximum limit of the boiler water temperature, defaulted by the boiler coding card	06:20 to 06:127	Maximum limit of the boiler water temperature within the ranges defaulted by the boiler
1E:0	Operation with natural gas	1E:1	Operation with LPG
21:0	No maintenance interval (hours run) selected	21:1 to 21:9999	The number of hours run before the burner should be serviced is adjustable from 1 to 9999 h
23:0	No time interval for burner service selected	23:1 to 23:24	Interval adjustable from 1 to 24 months

Code 2 (cont.)

Coding in the delivered condition		Possible change	
24:0	The maintenance display has been reset	24:1	Maintenance display (the value is displayed automatically)
25:0	No outside temperature sensor or remote monitoring recognised (only in ⓘ for constant temperature control units)	25:1	Outside temperature sensor and fault monitoring recognised
28:0	No burner interval ignition	28:1	The burner will be force-started for 30 s every 5 h
2E:0	Without external extension	2E:1	With external extension (automatic adjustment on connection)
2F:0	Venting program/filling program disabled	2F:1	Venting program enabled
		2F:2	Filling program enabled
30:1	Internal variable speed circulation pump (automatic adjustment)	30:0	Internal circulation pump without variable speed (e.g. temporarily for service)
31:...	Set speed of the internal circulation pump when operated as boiler circuit pump in %, defaulted by the boiler coding card	31:0 to 31:100	Set speed adjustable from 0 to 100 %
32:0	Influence of the signal "External blocking" on circulation pumps: All pumps in control function	32:1 to 32:15	Influence of the signal "External blocking" on circulation pumps: see the following table

Note
Generally, the burner will be blocked.

Coding	Internal circulation pump	Heating circuit pump Heating circuit without mixer	Heating circuit pump Heating circuit with mixer	Cylinder primary pump
0	Control funct.	Control funct.	Control funct.	Control funct.
1	Control funct.	Control funct.	Control funct.	OFF

Code 2 (cont.)

Coding	Internal circulation pump	Heating circuit pump Heating circuit without mixer	Heating circuit pump Heating circuit with mixer	Cylinder primary pump
2	Control funct.	Control funct.	OFF	Control funct.
3	Control funct.	Control funct.	OFF	OFF
4	Control funct.	OFF	Control funct.	Control funct.
5	Control funct.	OFF	Control funct.	OFF
6	Control funct.	OFF	OFF	Control funct.
7	Control funct.	OFF	OFF	OFF
8	OFF	Control funct.	Control funct.	Control funct.
9	OFF	Control funct.	Control funct.	OFF
10	OFF	Control funct.	OFF	Control funct.
11	OFF	Control funct.	OFF	OFF
12	OFF	OFF	Control funct.	Control funct.
13	OFF	OFF	Control funct.	OFF
14	OFF	OFF	OFF	Control funct.
15	OFF	OFF	OFF	OFF

Coding in the delivered condition		Possible change	
Boiler/burner			
34:0	Influence of the signal "External demand" on the circulation pumps: All pumps in control function	34:1 to 34:23	Influence of the signal "External demand" on the circulation pumps: see the following table

Coding	Internal circulation pump	Heating circuit pump Heating circuit without mixer	Heating circuit pump Heating circuit with mixer	Cylinder primary pump
0	Control funct.	Control funct.	Control funct.	Control funct.
1	Control funct.	Control funct.	Control funct.	OFF
2	Control funct.	Control funct.	OFF	Control funct.
3	Control funct.	Control funct.	OFF	OFF

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Code 2 (cont.)

Coding	Internal circulation pump	Heating circuit pump Heating circuit without mixer	Heating circuit pump Heating circuit with mixer	Cylinder primary pump
4	Control funct.	OFF	Control funct.	Control funct.
5	Control funct.	OFF	Control funct.	OFF
6	Control funct.	OFF	OFF	Control funct.
7	Control funct.	OFF	OFF	OFF
8	OFF	Control funct.	Control funct.	Control funct.
9	OFF	Control funct.	Control funct.	OFF
10	OFF	Control funct.	OFF	Control funct.
11	OFF	Control funct.	OFF	OFF
12	OFF	OFF	Control funct.	Control funct.
13	OFF	OFF	Control funct.	OFF
14	OFF	OFF	OFF	Control funct.
15	OFF	OFF	OFF	OFF
16	ON	Control funct.	Control funct.	Control funct.
17	ON	Control funct.	Control funct.	OFF
18	ON	Control funct.	OFF	Control funct.
19	ON	Control funct.	OFF	OFF
20	ON	OFF	Control funct.	Control funct.
21	ON	OFF	Control funct.	OFF
22	ON	OFF	OFF	Control funct.
23	ON	OFF	OFF	OFF

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Code 2 (cont.)

Coding in the delivered condition		Possible change	
Boiler/burner			
52:0	Without flow temperature sensor for low loss header	52:1	With flow temperature sensor for low loss header (automatic adjustment on connection)
53:1	Function connection [28] of the internal extension: DHW circulation pump	53:0	Function connection [28]: Central fault
		53:2	Function connection [28]: External heating circuit pump (heating circuit A1)
		53:3	Function connection [28]: External cylinder primary pump
54:0	Without solar control unit	54:1	With Vitosolic 100 (automatic adjustment on connection)
		54:2	With Vitosolic 200 (automatic adjustment on connection)
DHW			
56:0	Set DHW temperature adjustable from 10 to 60 °C	56:1	Set DHW temperature adjustable from 10 to above 60 °C ***Note*** *Maximum value subject to boiler coding card. Observe the maximum permissible DHW temperature.*
58:0	Without auxiliary function for DHW heating	58:10 to 58:60	Input of a second set DHW value, adjustable from 10 to 60 °C (observe coding addresses 56 and 63)
59:0	Cylinder heating: Starting point -2.5 K Stopping point +2.5 K	59:1 to 59:10	Starting point adjustable from 1 to 10 K below the set value
5b:0	DHW cylinder directly connected to the boiler	5b:1	DHW cylinder connected downstream of the low loss header

Code 2 (cont.)

Coding in the delivered condition		Possible change	
60:20	During DHW heating, the boiler water temperature is max. 20 K higher than the set DHW temperature	60:5 to 60:25	The difference between the boiler water temperature and the set DHW temperature is adjustable from 5 to 25 K
62:2	Circulation pump with 2 min run-on time after cylinder heating	62:0	Circulation pump without run-on
		62:1 to 62:15	Run-on time adjustable from 1 to 15 min
63:0	Without auxiliary function for DHW heating (only for constant temperature control units)	63:1	Auxiliary function: 1 x daily
		63:2 to 63:14	Every 2 days to every 14 days
		63:15	2 x daily
65:...	Information regarding the type of diverter valve (not adjustable)	65:0	Without diverter valve
		65:1	Diverter valve by Viessmann
		65:2	Diverter valve by Wilo
		65:3	Diverter valve by Grundfos
67:40	With the Vitosolic: set DHW temperature 3 = 40 °C	67:0	Without set DHW temperature 3
		67:1 to 67:60	Set DHW temperature 3 adjustable from 1 to 60 °C (subject to the setting of coding address "56")
6C:100	Set speed; internal circulation pump with DHW heating 100 %	6C:0 to 6C:100	Set speed adjustable from 0 to 100 %
6F:100	Maximum output for DHW heating 100 %, defaulted by the boiler coding card	6F:0 to 6F:100	Max. output during DHW heating adjustable from 0 to 100 %
71:0	DHW circulation pump: "ON" in accordance with the time program (only for weather-compensated control units)	71:1	"OFF" during DHW heating to the first set value
		71:2	"ON" during DHW heating to the first set value

Code 2 (cont.)

Coding in the delivered condition		Possible change	
72:0	DHW circulation pump: "ON" in accordance with the time program (only for weather-compensated control units)	72:1	"OFF" during DHW heating to the second set value
		72:2	"ON" during DHW heating to the second set value
73:0	DHW circulation pump: "ON" in accordance with the time program (only for weather-compensated control units)	73:1 to 73:6	During the time program 1x/h "ON" for 5 min up to 6x/h "ON" for 5 min
		73:7	Permanently "ON"
General			
76:0	Without LON communication module (only for weather-compensated control units)	76:1	With LON communication module; automatic recognition
77 :1	LON user number (only for weather-compensated control units)	77 :2 to 77 :99	LON user number, adjustable from 1 to 99: 1 - 4 = Boiler 5 = Cascade 10 - 98 = Vitotronic 050 99 = Vitocom ***Note*** *Allocate each number* ***only*** *once.*
79:1	With LON communication module: The control unit is fault manager (only for weather-compensated control units)	79:0	Control unit is not fault manager
7b:1	With LON communication module: The control unit transmits the time (only for weather-compensated control units)	7b:0	Do not transmit time
7F:1	Detached house (only for weather-compensated control units)	7F:0	Apartment block Separate adjustment of holiday program and time program for DHW heating, as option

Code 2 (cont.)

Coding in the delivered condition		Possible change	
80:1	A fault message is displayed, providing a fault is active for at least 5 s	80:0	Immediate fault message
		80:2 to 80:199	The fault message is issued after a delay, that is adjustable from 10 s to 995 s; 1 step = 5 s
81:1	Automatic summer/winter time changeover	81:0	Manual summer/winter time changeover
		81:2	The radio clock module will be recognised automatically
		81:3	With LON communication module: The control unit receives the time
88:0	Temperature displayed in °C (Celsius)	88:1	Temperature displayed in °F (Fahrenheit)
8A:175	Never adjust		
90:128	Time constant for calculating the adjusted outside temperature 21.3 hours	90:0 to 90:199	Fast (low values) or slow (high values) matching of the flow temperature, subject to the set value when the outside temperature changes; 1 step = 10 min.
91:0	No external heating program changeover via external extension (only for weather-compensated control units)	91:1	The external heating program changeover affects the heating circuit without mixer
		91:2	The external heating program changeover affects the heating circuit with mixer
		91:3	The external heating program changeover affects the heating circuit without mixer and the heating circuit with mixer
95:0	Without Vitocom 100 communication interface	95:1	With the Vitocom 100 communication interface; automatic recognition

Code 2 (cont.)

Coding in the delivered condition		Possible change	
97:0	With LON communication module: The outside temperature of the sensor connected to the control unit is utilised internally (only for weather-compensated control units)	97:1	The control unit receives the outside temperature
		97:2	Control unit transmits outside temperature
98:1	Viessmann system number (in conjunction with monitoring several systems via the Vitocom 300)	98:1 to 98:5	System number adjustable from 1 to 5
9b:0	No minimum set boiler water temperature in case of external demand	9b:1 to 9b:127	Minimum set boiler water temperature adjustable from 1 to 127 °C (limited by the boiler coding card)
9C:20	Monitoring LON users When there is no response from a user, values defaulted by the control unit are used after 20 min and a fault message is issued (only for weather-compensated control units)	9C:0	No monitoring
		9C:5 to 9C:60	Time adjustable from 5 to 60 min
9F:8	Differential temperature 8 K; only in conjunction with the mixer circuit (only for weather-compensated control units)	9F:0 to 9F:40	Differential temperature adjustable from 0 to 40 K
Boiler circuit, mixer circuit			
A0:0	Without remote control (only for weather-compensated control units)	A0:1	With Vitotrol 200 (automatic recognition)
		A0:2	With Vitotrol 300 (automatic recognition)
A3:2	Outside temperature below 1 °C: Heating circuit pump "ON" Outside temperature above 3 °C: Heating circuit pump "OFF"	A3:-9 to A3:15	Heating circuit pump "ON/OFF" (see the following table)

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Code 2 (cont.)

! **Please note**
When selecting a value below 1 °C, there is a risk of pipes outside the thermal envelope of the building being damaged by frost.
The standby mode, in particular, should be taken into consideration, e.g. during holidays.

Parameter Address A3:...	Heating circuit pump "ON" at	"OFF" at
-9	-10 °C	-8 °C
-8	-9 °C	-7 °C
-7	-8 °C	-6 °C
-6	-7 °C	-5 °C
-5	-6 °C	-4 °C
-4	-5 °C	-3 °C
-3	-4 °C	-2 °C
-2	-3 °C	-1 °C
-1	-2 °C	0 °C
0	-1 °C	1 °C
1	0 °C	2 °C
2 to 15	1 °C to 14 °C	3 °C to 16 °C

Coding in the delivered condition		Possible change	
Boiler circuit, mixer circuit			
A4:0	With frost protection (only for weather-compensated control units)	A4:1	No frost protection, adjustment only possible if coding "A3: -9" has been selected. ***Note*** *Observe the note for coding address "A3".*

Code 2 (cont.)

Coding in the delivered condition		Possible change	
A5:5	With heating circuit pump logic function (economy circuit): Heating circuit pump "OFF" if the outside temperature (AT) is 1 K higher than the set room temperature (RT_{set}) $AT > RT_{set} + 1$ K (only for weather-compensated control units)	A5:0	Without heating circuit pump logic function
		A5:1 to A5:15	With heating circuit pump logic function: Heating circuit pump "OFF", if (see the following table)

Parameter Address A5:...	With heating circuit pump logic function: Heating circuit pump OFF, if
1	$AT > RT_{set} + 5$ K
2	$AT > RT_{set} + 4$ K
3	$AT > RT_{set} + 3$ K
4	$AT > RT_{set} + 2$ K
5	$AT > RT_{set} + 1$ K
6	$AT > RT_{set}$
7 to 15	$AT > RT_{set} - 1$ K $AT > RT_{set} - 9$ K

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Code 2 (cont.)

Coding in the delivered condition		Possible change	
Boiler circuit, mixer circuit			
A6:36	Extended economy mode **disabled** (only for weather-compensated control units)	A6:5 to A6:35	Extended economy mode is enabled, i.e. the burner and heating circuit pump will be switched OFF and the mixer will be closed at a variable value that is adjustable between 5 and 35 °C plus 1 °C. This value is based on the adjusted outside temperature, comprising the actual outside temperature and a time constant that takes the cooling down of an average building into consideration.
A7:0	Without mixer economy function (only for weather-compensated control units)	A7:1	With mixer economy function (extended heating circuit pump logic): Heating circuit pump also "OFF" if the mixer was closed longer than 20 min. Heating pump "ON": ■ If the mixer changes to control mode or ■ After cylinder heating (for 20 min) or ■ If there is a risk of frost
A8:1	Heating circuit with mixer M2 creates a demand for the internal circulation pump (only for weather-compensated control units)	A8:0	Heating circuit with mixer M2 (mixer circuit) creates no demand for the internal circulation pump

Code 2 (cont.)

Coding in the delivered condition		Possible change	
A9:7	With pump idle time: Heating circuit pump "OFF" if the set value changes through a change in operating mode or through a change in the set room temperature (only for weather-compensated control units)	A9:0	Without pump idle time
		A9:1 to A9:15	With pump idle time; adjustable from 1 to 15
b0:0	With remote control: Heating mode/reduced mode: weather-compensated (only for weather-compensated control units; change the coding only for the heating circuit with mixer M2)	b0:1	Heating mode: weather-compensated Reduced mode: with room temperature hook-up
		b0:2	Heating mode: with room temperature hook-up Reduced mode: weather-compensated
		b0:3	Heating mode/reduced mode: with room temperature hook-up
b2:8	With remote control unit and for the heating circuit, heating with room temperature hook-up must be encoded: Room influence factor 8 (only for weather-compensated control units; change the coding only for the heating circuit with mixer M2)	b2:0	Without room influence
		b2:1 to b2:64	Room influence factor adjustable from 1 to 64
b5:0	With remote control: No room temperature-dependent heating circuit pump logic function (only for weather-compensated control units; change the coding only for the heating circuit with mixer M2)	b5:1 to b5:8	Heating circuit pump logic function; see the following table

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Code 2 (cont.)

Parameter Address b5:...	With heating circuit pump logic function: Heating circuit pump OFF, if
1:	enabled $RT_{actual} > RT_{set} + 5$ K; disabled $RT_{actual} < RT_{set} + 4$ K
2:	enabled $RT_{actual} > RT_{set} + 4$ K; disabled $RT_{actual} < RT_{set} + 3$ K
3:	enabled $RT_{actual} > RT_{set} + 3$ K; disabled $RT_{actual} < RT_{set} + 2$ K
4:	enabled $RT_{actual} > RT_{set} + 2$ K; disabled $RT_{actual} < RT_{set} + 1$ K
5:	enabled $RT_{actual} > RT_{set} + 1$ K; disabled $RT_{actual} < RT_{set}$
6:	enabled $RT_{actual} > RT_{set}$; disabled $RT_{actual} < RT_{set} - 1$ K
7:	enabled $RT_{actual} > RT_{set} - 1$ K; disabled $RT_{actual} < RT_{set} - 2$ K
8:	enabled $RT_{actual} > RT_{set} - 2$ K; disabled $RT_{actual} < RT_{set} - 3$ K

Coding in the delivered condition		Possible change	
Boiler circuit, mixer circuit			
C5:20	Electronic minimum flow temperature limit 20 °C (only for weather-compensated control units)	C5:1 to C5:127	Minimum limit adjustable from 1 to 127 °C (limited by the boiler coding card)
C6:74	Electronic maximum flow temperature limit 74 °C (only for weather-compensated control units)	C6:10 to C6:127	Maximum limit adjustable from 10 to 127 °C (limited by the boiler coding card)
d3:14	Heating curve slope = 1.4 (only for weather-compensated control units)	d3:2 to d3:35	Heating curve slope adjustable from 0.2 to 3.5 (see page 30)
d4:0	Heating curve level = 0 (only for weather-compensated control units)	d4:–13 to d4:40	Heating curve level adjustable from -13 to 40 (see page 30)
d5:0	The external heating program changeover alters the heating program to "Constant operation with reduced room temperature" (only for weather-compensated control units)	d5:1	The external operating mode changeover alters to "Constant central heating with standard room temperature"

Code 2 (cont.)

Coding in the delivered condition		Possible change	
E1:1	With remote control: The set day temperature is adjustable at the remote control unit from 10 to 30 °C (only for weather-compensated control units)	E1:0	Set day temperature adjustable from 3 to 23 °C
		E1:2	Set day temperature adjustable from 17 to 37 °C
E2:50	With remote control: No display correction for the actual room temperature (only for weather-compensated control units)	E2:0 to E2:49	display correction –5 K to display correction –0.1 K
		E2:51 to E2:99	display correction +0.1 K to display correction +4.9 K
E5:0	Without variable speed external heating circuit pump (only for weather-compensated control units)	E5:1	With external variable speed heating circuit pump; automatic recognition
E6:65	Maximum speed of the external variable speed heating circuit pump 65 % of the max. speed in standard mode (only for weather-compensated control units)	E6:0 to E6:100	Maximum speed adjustable from 0 to 100 %
E7:30	Minimum speed of the external variable speed heating circuit pump 30 % of the max. speed (only for weather-compensated control units)	E7:0 to E7:100	Min. speed adjustable from 0 to 100 % of max. speed
E8:1	Minimum speed in operation with reduced room temperature subject to the setting in coding address "E9" (only for weather-compensated control units)	E8:0	Speed subject to the setting in coding address "E7"

Code 2 (cont.)

Coding in the delivered condition		Possible change	
E9:45	Speed of the external variable speed heating circuit pump 45 % of the max. speed during operation with reduced room temperature (only for weather-compensated control units)	E9:0 to E9:100	Speed adjustable from 0 to 100 % of the maximum speed during operation with reduced room temperature
F1:0	Screed drying function disabled (only for weather-compensated control units)	F1:1 to F1:5	Screed drying function adjustable in accordance with five optional temperature/time profiles (see page 97)
		F1:6 to F1:15	Constant flow temperature 20 °C
F2:8	Time limit for party mode 8 hours or external heating program changeover via the keyboard (only for weather-compensated control units) *1	F2:0	No time limit for party mode
		F2:1 to F2:12	Time limit adjustable from 1 to 12 hours *1
F5:12	Run-on time of the internal circulation pump in heating mode 12 min (only for constant temperature control units)	F5:0	No run-on time of the internal circulation pump
		F5:1 to F5:20	Run-on time of the internal circulation pump adjustable from 1 to 20 min
F6:25	In the "DHW only" operating mode, the internal circulation pump is permanently ON (only for constant temperature control units)	F6:0	In the "DHW only" operating mode, the internal circulation pump is permanently OFF
		F6:1 to F6:24	In the "DHW only" operating mode, the internal circulation pump will be started 1 to 24 times per day for 10 min respectively.

*1 *Party mode ends **automatically** in heating program "" when the system changes over to operation with standard room temperature.*

Code 2 (cont.)

Coding in the delivered condition		Possible change	
F7:25	In "Standby mode", the internal circulation pump is permanently ON (only for constant temperature control units)	F7:0	In "Standby mode", the internal circulation pump is permanently OFF
		F7:1 to F7:24	In "Standby mode", the internal circulation pump in operating mode will be started 1 to 24 times per day for 10 min respectively.
F8:-5	Temperature limit for terminating the reduced mode -5 ºC, see example on page 99. Observe the setting of coding address "A3" (only for weather-compensated control units).	F8:+10 to F8:-60	Temperature limit adjustable from +10 to -60 °C
		F8:-61	Function disabled
F9:-14	Temperature limit for raising the reduced set room temp. -14 ºC, see example on page 99. (only for weather-compensated control units).	F9:+10 to F9:-60	Temperature limit adjustable from +10 to -60 °C
FA:20	Raising the set boiler water temperature or the set flow temperature when changing from operation with reduced room temperature to operation with standard room temperature by 20 %. See example on page 100 (only for weather-compensated control units).	FA:0 to FA:50	Temperature increase adjustable from 0 to 50%

Code 2 (cont.)

Coding in the delivered condition		Possible change	
Fb:30	Duration for raising the set boiler water temperature or the set flow temperature (see coding address "FA") 60 min. See example on page 100 (only for weather-compensated control units).	Fb:0 to Fb:150	Duration adjustable from 0 to 300 min; 1 step ≙ 2 min

Resetting codes to their delivered condition

Press the following keys:

1. + simultaneously for approx. 2 s.
2. "**Standard setting? Yes**" appears.
3. OK to confirm
   or
4. ⊕/⊖ to select "**Standard setting? No**".

Service level overview

Function	Key combination	Exit	Page
Temperatures, boiler coding card and brief scans	⏻ and 🛁 simultaneously for approx. 2 s	Press OK	61
Relay test	⏻ and OK simultaneously for approx. 2 s	Press OK	64
Max. output (heating mode)	⏻ and 🌡🛁 simultaneously for approx. 2 s	Press OK	15
Operating conditions and sensors	Press i	Press OK	65
Maintenance scan	i (if "Service" flashes)	Press OK	36
Adjusting the display contrast	OK and + simultaneously; the display darkens	–	–
	OK and − simultaneously; the display becomes lighter	–	–
Calling up acknowledged fault messages	OK for approx. 3 s		69
Fault history	🛁 and OK simultaneously for approx. 2 s	Press OK	70
User check (in conjunction with LON)	🛁 and OK simultaneously for approx. 2 s	🛁 and OK simultaneously	34
Emissions test function "🧹"	Weather-compensated control unit: 🌡🛁 and 🌡) simultaneously for approx. 2 s Constant temperature control unit: 🌡🛁 and 🌡🛁 simultaneously for approx. 2 s	🌡🛁 and 🌡) or 🌡🛁 and 🌡🛁 simultaneously for approx. 1 s, alternatively automatic after 30 min	–
Coding level 1 Plain text display	⏻ and 🛁 simultaneously for approx. 2 s	⏻ and 🛁 simultaneously for approx. 1 s	37
Coding level 2 Numerical display	🛁 and 🛁 simultaneously for approx. 2 s	🛁 and 🛁 simultaneously for approx. 1 s	40
Resetting codes to the delivered condition	🛁 and 🛁 simultaneously for approx. 2 s; then ✳	–	59

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Temperatures, boiler coding card and brief scans

Weather-compensated control unit

Press the following keys:

1. ⏻ + 🛁 simultaneously for approx. 2 s.

2. ⊕/⊖ for the required scan.

3. OK Scanning is completed.

The following values can be scanned, subject to the actual system equipment level:

Display screen	Explanation
Slope A1 – level A1	
Slope M2 – level M2	
Outside temp. adj.	The adjusted outside temperature can be reset to the actual outside temperature with ⊕.
Outside temp. actual	
Boiler temp. set	
Boiler temp. actual	
DHW temp. set	
DHW temp. actual	
DHW outlet temp. actual	Only for combi boilers
DHW outlet temp. set	Only for combi boilers
Flow temp. set	Heating circuit with mixer
Flow temp. actual	Heating circuit with mixer
Mixed flow temp. set	Low loss header
Mixed flow temp. actual	Low loss header
Boiler coding card	
Brief scan 1 to 8	

	Display screen					
Brief scan	8	8	8	8	8	8
1	Software version Control unit		Equipment version		Burner control unit version	
2	System designs 01 to 06 Display in accordance with the system equipment level		Number of KM BUS users	Maximum demand temperature		

Temperatures, boiler coding card and brief . . . (cont.)

	Display screen					
Brief scan	8	8	8	8	8	8
3	0	Software version Programming unit	Software version Mixer extension 0: no mixer extension	Software version Solar control unit 0: no solar control unit	Software version LON module 0: no LON module	Software version External extension 0: no external extension
4	Software version Burner control unit		Type Burner control unit		Equipment type	
5	0: no external demand 1: external demand	0: no external blocking 1: external blocking	0	External 0 - 10 V hook-up Display in % 0: no external hook-up		
6	Number of LON users		Check digit	Max. output Display in %		
	Boiler		**Heating circuit A1 (without mixer)**		**Heating circuit M2 (with mixer)**	
7	0	0	Remote control 0: w/o 1: Vitotrol 200 2: Vitotrol 300	Software version Remote control 0: no remote control	Remote control 0: w/o 1: Vitotrol 200 2: Vitotrol 300	Software version Remote control 0: no remote control
	Internal circulation pump		**Heating circuit pump to connection extension**			
8	Variable speed pump 0: w/o 1: Wilo 2: Grundfos	Software version Variable speed pump 0: no variable speed pump	Variable speed pump 0: w/o 1: Wilo 2: Grundfos	Software version Variable speed pump 0: no variable speed pump	Variable speed pump 0: w/o 1: Wilo 2: Grundfos	Software version Variable speed pump 0: no variable speed pump

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Temperatures, boiler coding card and brief . . . (cont.)

Constant temperature control unit

Press the following keys:

1. ⏻ + ⚙ simultaneously for approx. 2 s.

2. ⊕/⊖ for the required scan.

3. OK Scanning is completed.

The following values can be scanned, subject to the actual system equipment level:

	Display screen				
Brief scan	8	8	8	8	8
0	0	System designs 1 to 6	Software version Control unit		Software version Programming unit
1	Software version Solar control unit 0: no solar control unit	Software version Burner control unit		Software version External extension 0: no external extension	0
E	0: no external demand 1: external demand	0: no external blocking 1: external blocking	External 0 - 10 V hook-up Display in % 0: no external hook-up		
3	0	0	Set boiler water temperature		
A	0	0	Highest demand temperature		
4	0	Burner control unit type		Equipment type	
5	0	0	Set cylinder temperature		
b	0	0	Max. output in %		
C	0	Boiler coding card (hexadecimal)			
c	0	Version Equipment		Version Burner control unit	

Temperatures, boiler coding card and brief . . . (cont.)

	Display screen				
Brief scan	8	8	8	8	8
d	0	0	0	Variable speed pump 0 w/o 1 Wilo 2 Grundfos	Software version Variable speed pump 0: no variable speed pump

Checking outputs (relay test)

Weather-compensated control unit

Press the following keys:

1. ⏻ + OK simultaneously for approx. 2 s.

2. ⊕/⊖ for the required relay output.

3. OK Relay test is completed.

The following relay outputs can be scanned, subject to the actual system equipment level:

Display screen	Explanation
Base load	Burner modulation base load
Full load	Burner modulation full load
Int. pump ON	Int. output 20
Heating valve	Diverter valve set to heating mode
Valve central position	Diverter valve in central position (filling/draining)
DHW valve	Diverter valve set to DHW mode
Heating pump M2 ON	Mixer extension
Mixer OPEN	Mixer extension
Mixer CLOSE	Mixer extension
Output int. ON	Internal extension
Heating pump A1 ON	External extension
Cylinder pump ON	External extension
DHW circ. pump ON	External extension
Central fault ON	External extension

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Checking outputs (relay test) (cont.)

Constant temperature control unit

Press the following keys:

1. ⏻ + OK simultaneously for approx. 2 s.
2. ⊕/⊖ for the required relay output.
3. OK Relay test is completed.

The following relay outputs can be controlled, subject to the actual system equipment level:

Display screen	Explanation
1	Burner modulation base load
2	Burner modulation full load
3	Internal pump / output 20 "ON"
4	Diverter valve set to heating mode
5	Diverter valve in central position (filling/draining)
6	Diverter valve set to DHW mode
10	Output 28 internal extension
11	Heating circuit pump A1 external extension
12	Cylinder primary pump external extension
14	Central fault external extension

Scanning operating conditions and sensors

Weather-compensated control unit

Press the following keys:

1. ⓘ "Select heating circuit" is displayed.
2. OK to confirm; wait approx. 4 s.
3. ⓘ press again.
4. ⊕/⊖ for the required operating condition.
5. OK Scanning is completed.

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Scanning operating conditions and sensors (cont.)

The following operating conditions can be scanned, subject to the actual system equipment level for heating circuit A1 and heating circuit with mixer M2:

Display screen	Explanation
User no.	Encoded user no. in the LON system
Holiday program	If a holiday program has been entered
Departure date	Date
Return date	Date
Outside temperature, ... °C	Actual value
Boiler water temp., ... °C	Actual value
Flow temperature, ... °C	Actual value (only for mixer circuit M2)
Standard room temperature, ... °C	Set value
Room temperature, ... °C	Actual value
Ext. set room temp, ... °C	For external hook-up
DHW temperature, ... °C	Actual DHW temperature
Solar DHW temp. ... °C	Actual value
Collector temperature, ... °C	Actual value
Mixed flow temp., ... °C	Actual value, only with low loss header
Burner, ...h	Actual hours run
Burner starts, ...	Hours run and burner starts (reset after maintenance with ⊕ to "0")
Solar energy, ... kW/h	
Time	
Date	
Burner OFF/ON	
Int. pump OFF/ON	Output 20
Int. output OFF/ON	If an internal extension is installed
Heating circuit pump OFF/ON	If an external extension or extension kit for one heating circuit with mixer is installed
Cylinder pump OFF/ON	If an external extension is installed
DHW circulation pump OFF/ON	If an external extension is installed
Central fault message OFF/ON	If an external extension is installed
Mixer OPEN/CLOSE	If an extension kit for one heating circuit with mixer is installed
Solar circuit pump OFF/ON	If a Vitosolic is installed
Solar circuit pump, ...h	Actual hours run
Various languages	The respective languages can be selected as permanent display language with OK

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Scanning operating conditions and sensors (cont.)

Constant temperature control unit

Press the following keys:

1. ⓘ press.

2. ⊕/⊖ for the required operating condition.

3. OK Scanning is completed.

The following operating conditions can be scanned, subject to the actual system equipment level:

Display screen	Explanation
1 15 °C/°F	Actual outside temperature
3 65 °C/°F	Actual boiler water temperature
5 50 °C/°F	Actual cylinder temperature (if a cylinder temperature sensor is installed)
5□ 45 °C/°F	Solar - actual DHW temperature
6 70 °C/°F	Actual collector temperature
▲ 263572 h	Burner hours run (after a service, reset with ⊕ to "0")
▲▲▲ 030529	Burner starts (after a service, reset with ⊕ to "0")
▲▲▲▲▲ 001417 h	Solar circuit pump hours run
▲▲▲▲▲▲ 002850	Solar energy in kWh

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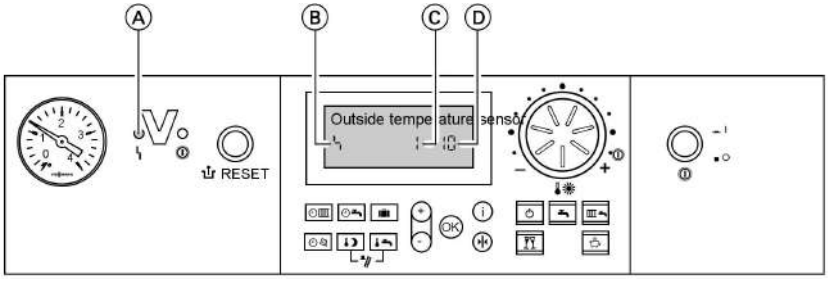
Fault display

Fault display layout



Ⓐ Fault display
Ⓑ Fault symbol
Ⓒ Fault number
Ⓓ Fault code

The red fault indicator flashes for every fault.

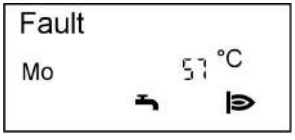
A fault in the burner control unit causes the display to show "⚠".

Constant temperature control unit

In case of a fault, the fault code and fault symbol is displayed at the programming unit

Weather-compensated control unit

The display flashes "Fault" if a fault message is issued



Plain text fault displays:
- Burner module
- Outdoor sensor
- Supply sensor
- Boiler sensor
- Com.supply sens.
- DHW sensor
- Flue gas sensor
- DHW outlet sensor
- Room sensor

Fault display (cont.)

- Collector sensor
- Solar DHW sensor
- Remote control
- Fault participant

Checking and acknowledging faults

Note
If an acknowledged fault is not removed, the fault message will be re-displayed:
- *With a constant temperature control unit after 24 h*
- *With a weather-compensated control unit at 7:00 h the next day*

Constant temperature control unit

Press the following keys:

1. ⊕/⊖ for further fault codes.

2. OK All fault messages are acknowledged simultaneously, the fault display will be deleted and the red fault indicator continues to flash.

Weather-compensated control unit

Press the following keys:

1. ⓘ for the current fault.

2. ⊕/⊖ for further fault messages.

3. OK All fault messages are acknowledged simultaneously, the fault display will be deleted and the red fault indicator continues to flash.

Calling up acknowledged fault messages

Press the following keys:

1. OK for approx. 3 s.

2. ⊕/⊖ for the acknowledged fault.

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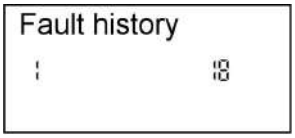
Fault display (cont.)

Calling up fault codes from the fault memory (fault history)

The 10 most recent faults are saved and may be scanned.
The faults are ordered by date, thus the most recent fault is fault number 1.



Press the following keys:

1. [⚙] + (OK) simultaneously for approx. 2 s.
2. ⊕/⊖ for individual fault codes.
3. ***Note***
   All saved fault codes can be deleted with ⊛.
4. (OK) Scanning is completed.

Fault codes

Display fault code	Const.	Weath.-comp.	System characteristics	Cause	Measures
0F	X	X	Control mode	Service	Service the equipment. After the service, set coding address "24:0".
10		X	Regulates as if the outside temperature was 0 °C	Outside temperature sensor shorted out	Check the outside temperature sensor (see page 80).
18		X	Regulates as if the outside temperature was 0 °C	Outside temperature sensor lead broken	Check the outside temperature sensor (see page 80).
20		X	Regulates without flow temperature sensor (low loss header)	System flow temperature sensor shorted out	Check the low loss header sensor (see page 81).

Fault codes (cont.)

Display fault code	Const.	Weath.-comp.	System characteristics	Cause	Measures
28		X	Regulates without flow temperature sensor (low loss header)	System flow temperature sensor lead broken	Check the low loss header sensor (see page 81).
30	X	X	Burner blocked	Boiler water temperature sensor shorted out	Check the boiler water temperature sensor (see page 81).
38	X	X	Burner blocked	Boiler water temperature sensor lead broken	Check the boiler water temperature sensor (see page 81).
40		X	Mixer closes	Heating circuit with mixer M2 flow temperature sensor shorted out	Check the flow temperature sensor.
48		X	Mixer closes	Heating circuit with mixer M2 flow temperature sensor lead broken	Check the flow temperature sensor.
50	X	X	No DHW heating	Cylinder temperature sensor shorted out	Check sensor (see page 81).
58	X	X	No DHW heating	Cylinder temperature sensor lead broken	Check sensor (see page 81).

Fault codes (cont.)

Display fault code	Const.	Weath.-comp.	System characteristics	Cause	Measures
92	X	X	Control mode	Collector temperature sensor shorted out; connects to the Vitosolic at S1	Check the sensor at the Vitosolic.
93	X	X	Control mode	Cylinder temperature sensor shorted out; connects to the Vitosolic at S3	Check the sensor at the Vitosolic.
94	X	X	Control mode	Temperature sensor shorted out; connects to the Vitosolic at S2	Check the sensor at the Vitosolic.
9A	X	X	Control mode	Collector temperature sensor lead broken; connects to the Vitosolic at S1	Check the sensor at the Vitosolic.
9b	X	X	Control mode	Cylinder temperature sensor lead broken; connects to the Vitosolic at S3	Check the sensor at the Vitosolic.
9C	X	X	Control mode	Temperature sensor lead broken; connects to the Vitosolic at S2	Check the sensor at the Vitosolic.

Fault codes (cont.)

Display fault code	Const.	Weath.-comp.	System characteristics	Cause	Measures
9F	X	X	Control mode	Solar control unit fault; displayed if a fault without fault code occurs at the solar control unit	Check the solar control unit (see solar control unit service instructions).
A7		X	Control mode as per the delivered condition	Faulty programming unit	Replace the programming unit.
b0	X	X	Burner blocked	Flue gas temperature sensor shorted out	Check the flue gas temperature sensor (see page 83).
b8	X	X	Burner blocked	Flue gas temperature sensor lead broken	Check the flue gas temperature sensor (see page 83).
b1	X	X	Control mode as per the delivered condition	Communication error; programming unit (internal)	Check connections and replace the programming unit, if necessary.
b4	X	X	Regulates as if the outside temperature was 0 °C	Internal fault	Replace the control unit.
b5	X	X	Control mode as per the delivered condition	Internal fault	Replace the control unit.
b7	X	X	Burner blocked	Boiler coding card missing, faulty or incorrect boiler coding card	Plug in boiler coding card or replace it, if faulty.

Fault codes (cont.)

Display fault code	Const.	Weath.-comp.	System characteristics	Cause	Measures
bA		X	Mixer M2 regulates to a flow temperature of 20 °C	Communication fault - extension kit for heating circuit with mixer M2	Check the extension kit connections and coding. Start the extension kit.
bC		X	Control mode without remote control	Communication fault - Vitotrol remote control, heating circuit A1	Check connections, cable, coding address "A0" and remote control DIP switches (see page 101).
bd		X	Control mode without remote control	Communication fault - Vitotrol remote control, heating circuit with mixer M2	Check connections, cable, coding address "A0" and remote control DIP switches (see page 101).
bE		X	Control mode	Vitotrol remote control incorrectly programmed	Check remote control DIP switch settings (see page 101).
bF		X	Control mode	Incorrect LON communication module	Replace the LON communication module.
C2	X	X	Control mode	Communication fault - solar control unit	Check connections and coding address "54".

Fault codes (cont.)

Display fault code	Const.	Weath.-comp.	System characteristics	Cause	Measures
C5	X	X	Control mode, max. pump speed	Communication fault – variable speed internal pump	Check coding address "30" settings; check the DIP switch settings in the pump wiring chamber: Switch 1: OFF (delivered condition) Switch 2: OFF (delivered condition)
C6		X	Control mode, max. pump speed	Communication fault - variable speed circulation pump, heating circuit M2	Check coding address "E5" settings; check the DIP switch settings in the pump wiring chamber: Switch 1: OFF Switch 2: ON
C7	X	X	Control mode, max. pump speed	Communication fault - variable speed circulation pump, heating circuit A1	Check coding address "E5" settings; check the DIP switch settings in the pump wiring chamber: Switch 1: ON Switch 2: OFF
Cd	X	X	Control mode	Communication fault Vitocom 100 (KM BUS)	Check connections and the Vitocom 100.
CE	X	X	Control mode	Communication fault - ext. extension	Check connections and settings of coding address "2E".

Fault codes (cont.)

Display fault code	Const.	Weath.-comp.	System characteristics	Cause	Measures
CF		X	Control mode	Communication fault - LON communication module	Replace the LON communication module.
dA		X	Control mode without room influence	Room temperature sensor, heating circuit A1 shorted out	Check the room temperature sensor, heating circuit A1.
db		X	Control mode without room influence	Room temperature sensor, heating circuit with mixer M2 shorted out	Check the room temperature sensor, heating circuit with mixer M2.
dd		X	Control mode without room influence	Room temperature sensor, heating circuit A1 lead broken	Check the room temperature sensor, heating circuit A1 and the remote control DIP switch settings (see page 101).
dE		X	Control mode without room influence	Room temperature sensor, heating circuit with mixer M2 lead broken	Check the room temperature sensor, heating circuit with mixer M2 and the remote control DIP switch settings (see page 101).
E4	X	X	Burner blocked	Supply voltage fault	Replace the control unit.

Fault codes (cont.)

Display fault code	Const.	Weath.-comp.	System characteristics	Cause	Measures
E5	X	X	Burner blocked	Internal fault	Check the ionisation electrode and leads. Check the flue system for soundness. Press RESET.
E6	X	X	Burner in a fault state	Balanced flue system blocked	Check the balanced flue system. Check the differential pressure sensor. Press RESET.
F0	X	X	Burner blocked	Internal fault	Replace the control unit.
F1	X	X	Burner in a fault state	Flue gas temperature limiter has responded.	Check the heating system filling level. Vent the system. Press RESET button after the flue gas system has cooled down.
F2	X	X	Burner in a fault state	The temperature limiter has responded.	Check the heating system filling level. Check the circulation pump. Vent the system. Check the temperature limiter and connecting cables. Press RESET.
F3	X	X	Burner in a fault state	Flame signal is already present at burner start.	Check the ionisation electrode and lead. Press RESET.

Fault codes (cont.)

Display fault code	Const.	Weath.-comp.	System characteristics	Cause	Measures
F4	X	X	Burner in a fault state	No flame signal	Check the ionisation electrode and lead, measure the ionisation current, check the gas pressure, check the gas combination valve, ignition, ignition module, ignition electrodes and the condensate drain. Press ⇫ RESET.
F7	X	X	Burner blocked	Differential pressure sensor faulty	Check the differential pressure sensor and connecting lead (see page 85).
F8	X	X	Burner in a fault state	The fuel valve closes too late.	Check the gas train. Check both control paths. Press ⇫ RESET.
F9	X	X	Burner in a fault state	Fan speed too low during burner start	Check the fan, check the fan connecting cables and supply, check the fan control. Press ⇫ RESET.
FA	X	X	Burner in a fault state	Fan not at standstill	Check the fan, fan connecting cables and fan control. Press ⇫ RESET.

Fault codes (cont.)

Display fault code	Const.	Weath.-comp.	System characteristics	Cause	Measures
Fd	X	X	Burner blocked	Fault at the burner control unit	Check the ignition electrodes and connecting cables/leads; check whether there are strong interference (EMC) fields near the equipment; press RESET ⇫. Replace the control unit if the fault persists.
FE	X	X	Burner blocked or in a fault state	Strong interference (EMC) field nearby or faulty main PCB	Start the equipment again. Replace the control unit if the equipment will not restart.
FF	X	X	Burner blocked or in a fault state	Strong interference (EMC) field nearby, or internal fault	Start the equipment again. Replace the control unit if the equipment will not restart.

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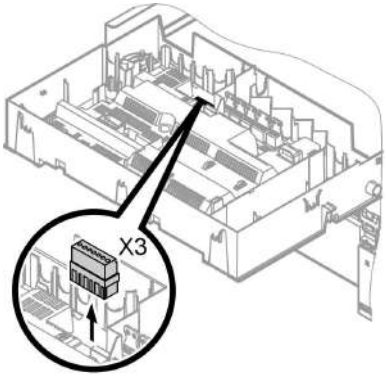
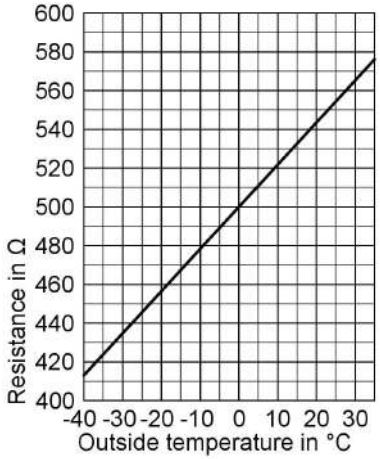
Repairs

Checking the outside temperature sensor (weather-compensated control unit)





1. Pull plug "X3" from the control unit.
2. Test the resistance of the outside temperature sensor across terminals "X3.1" and "X3.2" on the disconnected plug and compare it with the curve.
3. Where actual values strongly deviate from the curve values, disconnect the wires at the sensor and repeat test immediately at the sensor.
4. Subject to result, replace the lead or the outside temperature sensor.

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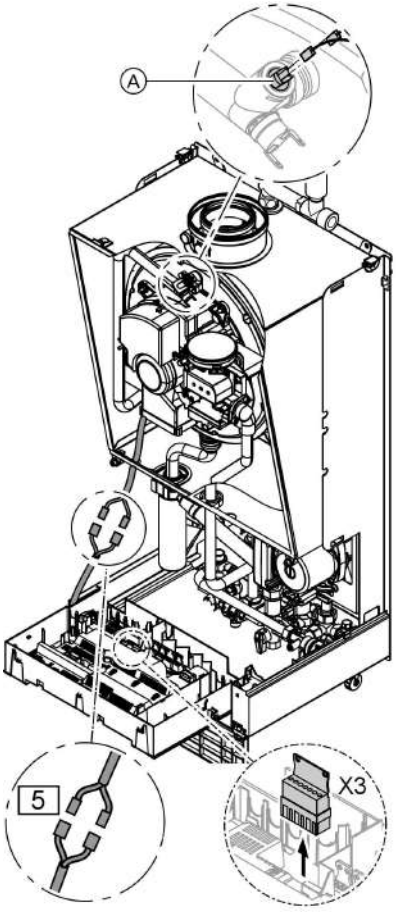
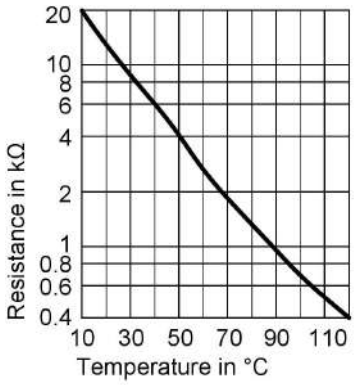
Repairs (cont.)

Checking the boiler water temperature sensor, cylinder temperature sensor or the flow temperature sensor of a low loss header



1. ■ Boiler water temperature sensor: Pull the leads from boiler water temperature sensor Ⓐ and check the resistance.
   ■ Cylinder temperature sensor: Pull plug [5] from the cable harness at the control unit and check the resistance.
   ■ Flow temperature sensor: Pull plug "X3" from the control unit and check the resistance across terminals "X3.4" and "X3.5".

Repairs (cont.)



2. Check the sensor resistance and compare the actual values with the curve.

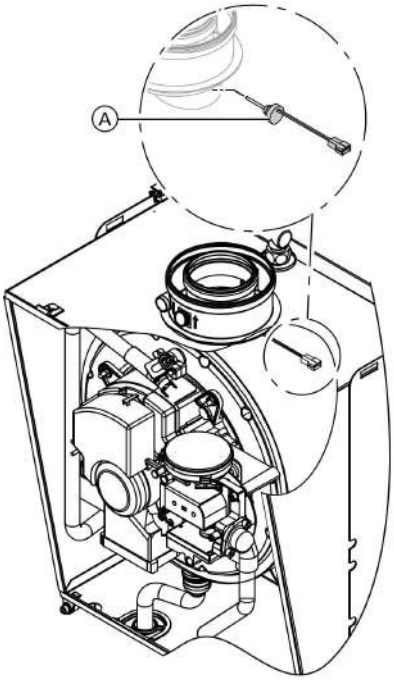
3. Replace the sensor in case of severe deviation.

Danger
The boiler water temperature sensor is immersed in the heating water (risk of scalding).
Drain the boiler before replacing the sensor.

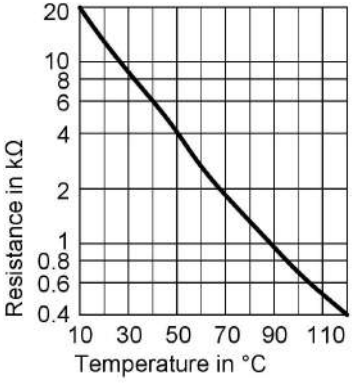
Checking the flue gas temperature sensor

The flue gas temperature sensor locks out the boiler when the permissible flue gas temperature is exceeded. Reset the interlock after the flue gas system has cooled down by pressing the reset button.

Repairs (cont.)



1. Pull the leads from flue gas temperature sensor Ⓐ.



2. Check the sensor resistance and compare it with the curve.

3. Replace the sensor in case of severe deviation.

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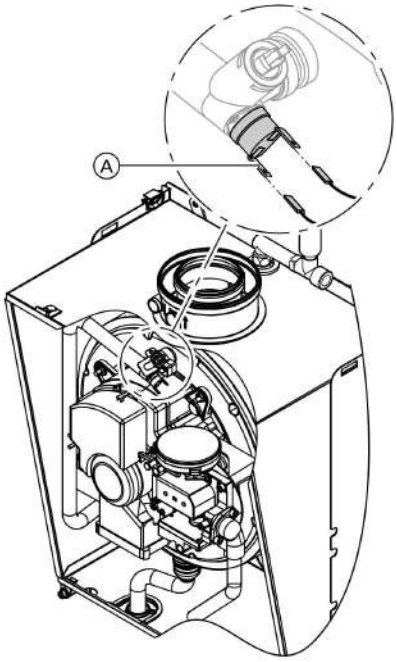
Repairs (cont.)

Checking the temperature limiter

Check the temperature limiter, if the burner control unit cannot be reset after a fault shutdown, although the boiler water temperature is below approx. 75 °C.



1. Pull the leads from temperature limiter Ⓐ.
2. Check the continuity of the temperature limiter with a multimeter.
3. Remove the faulty temperature limiter.
4. Install a new temperature limiter.
5. After commissioning, press reset button ⇫ at the control unit.

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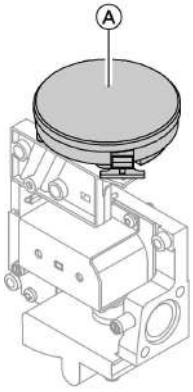
Repairs (cont.)

Checking and replacing the differential pressure sensor

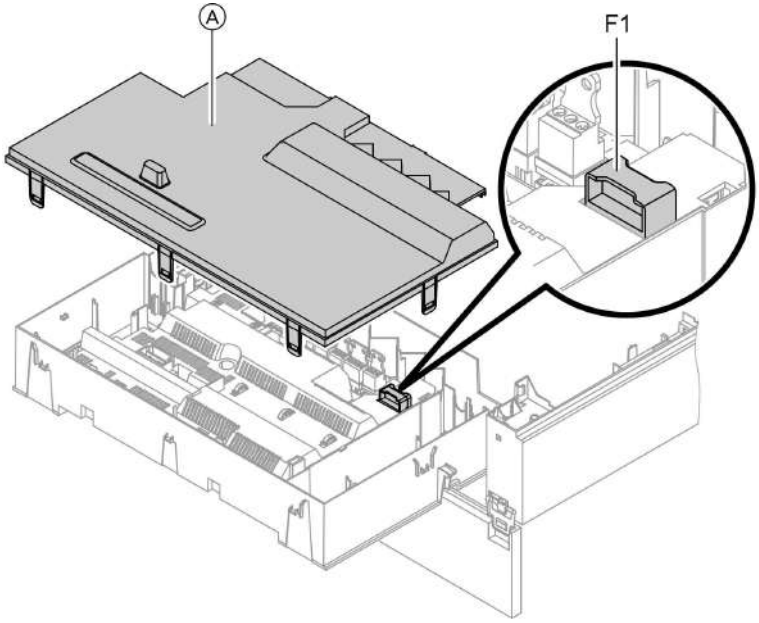


In the event of fault messages that concern the differential pressure sensor, check the following:

- Seat of differential pressure sensor Ⓐ
- Plug-in electrical connection

If the fault persists, replace the differential pressure sensor.

Checking the fuse

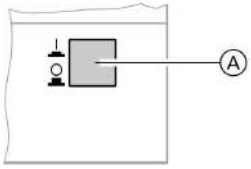


Repairs (cont.)

1. Switch OFF the power.
2. Release the side closures and pivot the control unit down.
3. Remove cover Ⓐ.
4. Check fuse F1 (see connection and wiring diagram).

Extension kit for heating circuit with mixer

Checking the rotational direction of the mixer motor



1. Switch ON/OFF switch Ⓐ at the extension kit first OFF and then ON again. The device will carry out the following self-test:
   - Mixer "Close" (150 s)
   - Pump "ON" (10 s)
   - Mixer "Open" (10 s)
   - Mixer "Close" (10 s)

   Then standard control mode resumes.
2. Note the rotational direction of the mixer motor during its self-test. Then set the mixer manually to "Open" again.

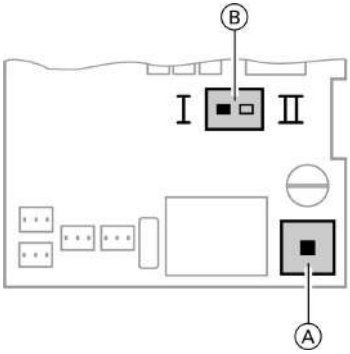
   Note
   The flow temperature sensor must now capture a higher temperature. If the temperature drops, either the motor is turning in the wrong direction or the mixer set is incorrectly fitted.

   Mixer installation instructions

Changing the rotational direction of the mixer motor (if required)

Danger
An electric shock can be life-threatening.
Before opening the equipment, switch OFF the ON/OFF switch and mains voltage, for example at the fuse or the main isolator.

Repairs (cont.)



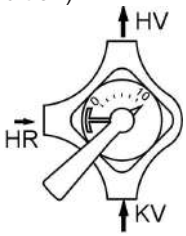
Ⓐ ON/OFF switch
Ⓑ Rotational direction switch

1. Remove the lower and upper housing cover of the extension kit.

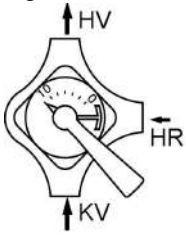
   Extension kit installation instructions

2. **Change over the rotational direction switch:**

   Switch position I for central heating return from the left (delivered condition).



Switch position II for central heating return from the right.

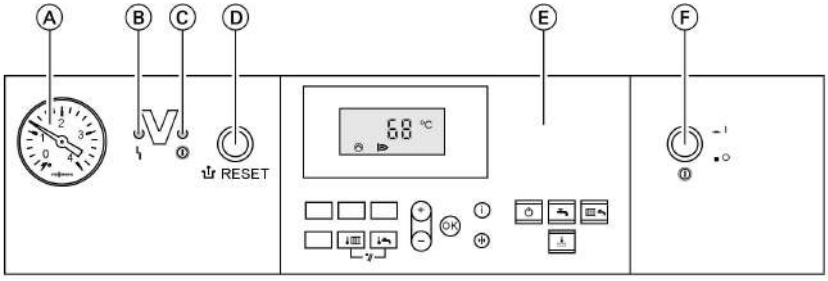


Checking the Vitotronic 050 (accessories)

The Vitotronic 050 is connected to the control unit via the LON. To test the connection, implement a user check at the boiler control unit (see page 34).

Constant temperature control unit

Control and display elements



Ⓐ Pressure gauge
Ⓑ Fault display (red)
Ⓒ ON indicator (green)
Ⓓ Reset button
Ⓔ User interface
Ⓕ ON/OFF switch

Keys at the user interface:

	Set boiler water temperature		Heating and DHW
	Set DHW temperature		No function
+	Emissions test function	⊖/⊕	Setting values
	Standby mode	OK	Confirmation
	DHW only	i	Information
			Standard settings (Reset)

Heating mode

The selected set boiler water temperature will be maintained when a demand is being raised by the room thermostat and the heating program is set to DHW and central heating "". The boiler water temperature will be maintained at the default frost protection temperature when there is no demand.

The boiler water temperature will be limited:
- To 74 °C by the control thermostat inside the burner control unit.
- To 82 °C by the electronic temperature limiter inside the burner control unit.
- To 100 °C by the temperature limiter in the safety chain (interlocks the burner control unit).

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Constant temperature control unit (cont.)

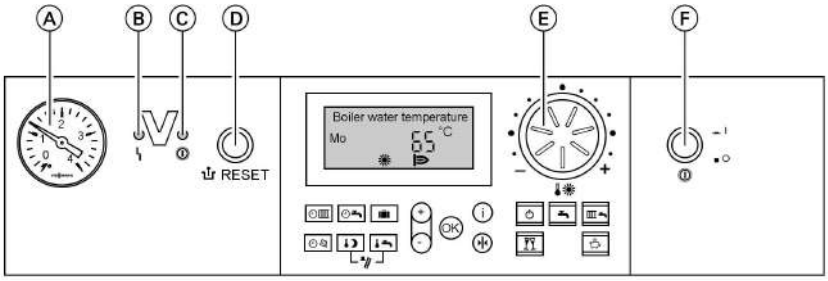
DHW heating

The burner, the circulation pump and the three-way valve are started or changed over, if the cylinder temperature lies 2.5 K below the set cylinder temperature.

The set boiler water temperature is adjusted 20 K higher than the set DHW temperature (adjustable via coding address "60"). The burner will be switched OFF and the circulation pump run-on time will begin, if the actual cylinder temperature exceeds the set cylinder temperature by 2.5 K.

Weather-compensated control unit

Control and display elements



Ⓐ Pressure gauge
Ⓑ Fault display (red)
Ⓒ ON indicator (green)
Ⓓ Reset button
Ⓔ User interface
Ⓕ Rotary selector for the standard room temperature
Ⓖ ON/OFF switch

Keys at the user interface:

- Central heating time program
- DHW heating and DHW circulation pump time programs (if connected to the control unit)
- Holiday program
- Date/time
- Reduced room temperature
- Set DHW temperature
- Emissions test function
- Standby mode
- DHW only
- Heating and DHW
- Party mode
- Economy mode

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Weather-compensated control unit (cont.)

⊖/⊕ Setting values
OK Confirmation
ⓘ Information
Standard settings (Reset)

Heating mode

The control unit determines a set boiler water temperature subject to outside temperature or room temperature (if a room temperature-dependent remote control is connected) and to the slope/level of the heating curve. The determined set boiler water temperature is transferred to the burner control unit. From the set and actual boiler water temperatures, the burner control unit calculates the modulation level and regulates the burner accordingly.

The boiler water temperature will be limited:
- To 74 °C by the control thermostat inside the burner control unit.
- To 82 °C by the electronic temperature limiter inside the burner control unit.
- To 100 °C by the temperature limiter in the safety chain (interlocks the burner control unit).

DHW heating

The burner, the circulation pump and the three-way valve are started or changed over, if the cylinder temperature lies 2.5 K below the set cylinder temperature.

The set boiler water temperature is adjusted 20 K higher than the set DHW temperature (adjustable via coding address "60"). The burner will be switched OFF and the circulation pump run-on time will begin, if the actual cylinder temperature exceeds the set cylinder temperature by 2.5 K.

Boosting DHW heating

The booster heating function is activated if a switching period is selected for the fourth time phase.

The set temperature value for the heating boost is adjustable in coding address "58".

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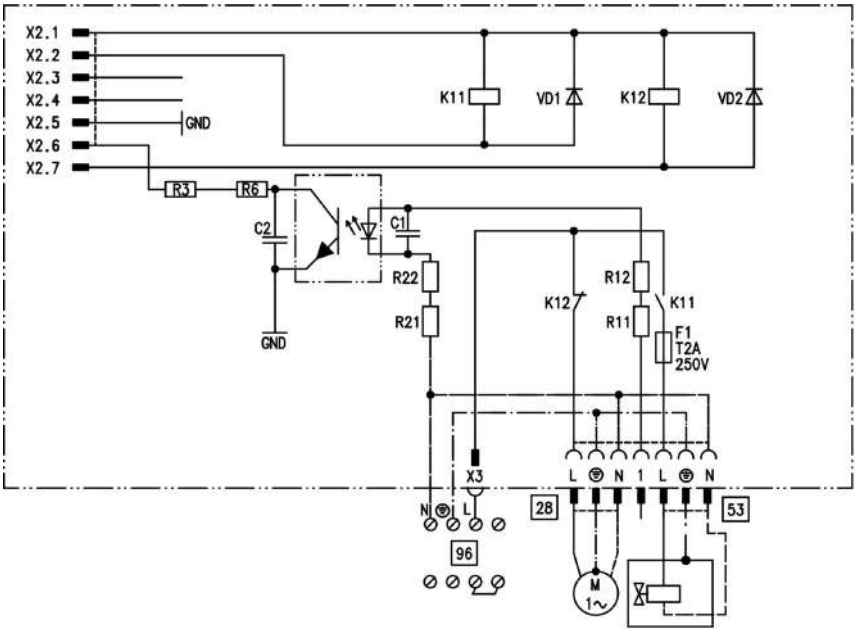
Extensions for external connections (accessories)

Internal extension H1



The internal extension H1 is integrated into the control unit casing. The following alternative functions can be connected to relay output 28. The function is allocated via coding address "53":

- Central fault message (code 53:0)
- Cylinder primary pump (coding 53:3)
- DHW circulation pump (code 53:1, delivered condition)
- Heating circuit pump for a heating circuit without mixer (code 53:2)

An external safety valve can be connected to 53.

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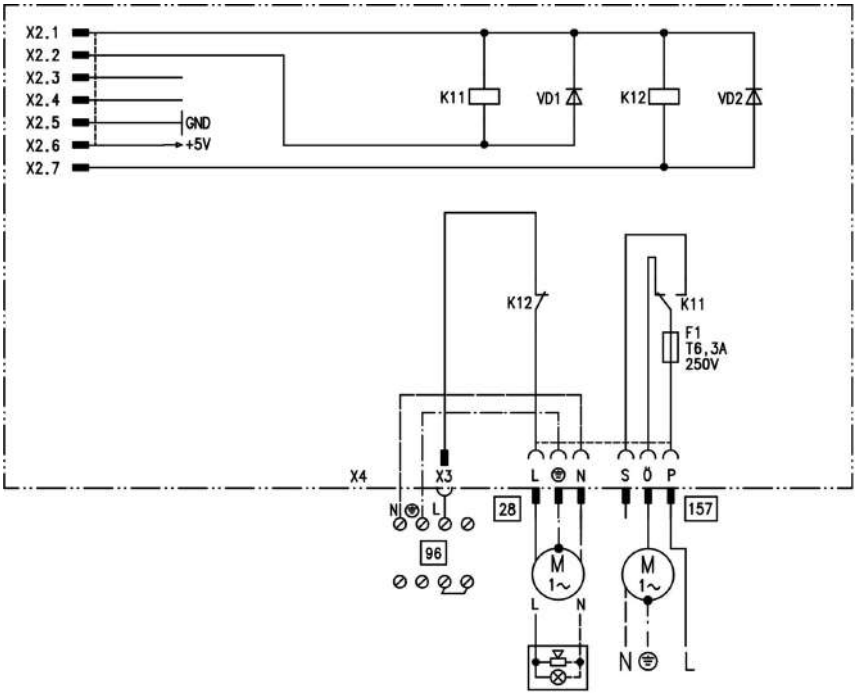
Extensions for external connections . . . (cont.)

Internal extension H2



The internal extension is integrated into the control unit housing. The following alternative functions can be connected to relay output 28. The function is allocated via coding address "53":

- Central fault message (coding address "53:0")
- DHW circulation pump (coding address "53:1") (only for weather-compensated operation)
- Heating circuit pump for heating circuit without mixer (coding address "53:2")
- Cylinder primary pump (coding address "53:3")

An extractor can be switched OFF via connection 157 when the burner starts.

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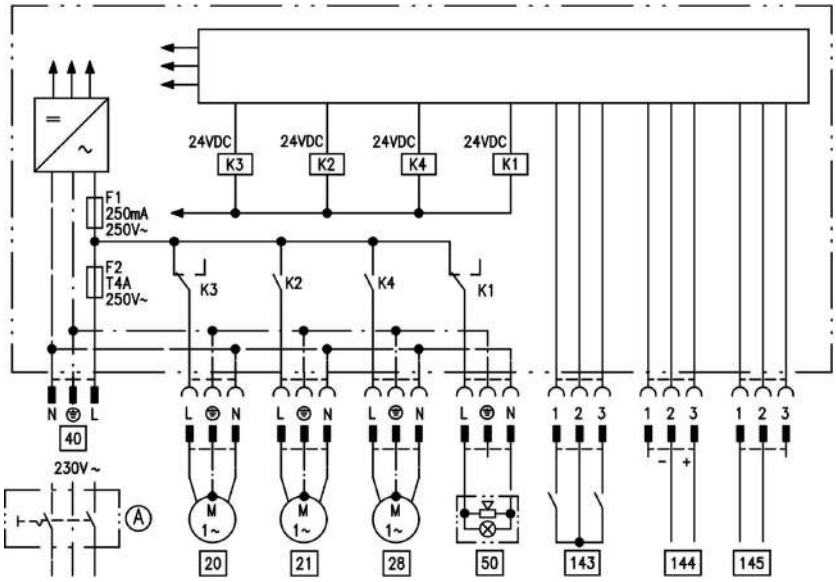
Extensions for external connections . . . (cont.)

External extension H1



The external extension is connected to the boiler control unit via the KM BUS. The following functions can be controlled or processed simultaneously via the extension:

- Ⓐ ON/OFF switch (on site)
- [20] Heating circuit pump for the heating circuit without mixer
- [21] Cylinder primary pump
- [28] DHW circulation pump (only for weather-compensated operation)
- [40] Power supply
- [50] Central fault message
- [143] ■ External blocking (terminals 2 - 3)
  ■ External demand (terminals 1 - 2)
  ■ External heating program changeover (terminals 1 - 2) (only for weather-compensated operation)
  The allocation of the function "External heating program changeover" is set via coding address "91".
- [144] External set value 0 to 10 V
- [145] KM BUS

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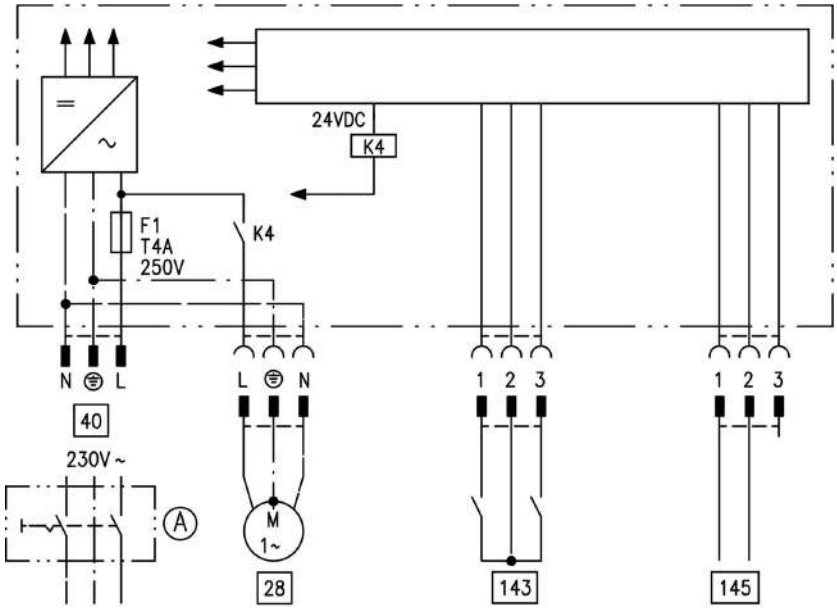
Extensions for external connections . . . (cont.)

External extension H2



The external extension is connected to the boiler control unit via the KM BUS. The following functions can be controlled or processed simultaneously via the extension:

Ⓐ ON/OFF switch (on site)

28 DHW circulation pump (only for weather-compensated operation)

40 Power supply

143
- External blocking (terminals 2 - 3)
- External demand (terminals 1 - 2)
- External heating program changeover (terminals 1 - 2) (only for weather-compensated operation)

  The allocation of the function "External heating program changeover" is set via coding address "91".

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Control functions

External heating program changeover

The "External heating program changeover" function is connected via external extension input "143". You can select which heating circuits the heating program changeover affects in coding address "91":

Heating program changeover	Coding
No changeover	91:0
Heating circuit without mixer A1	91:1
Heating circuit with mixer M2	91:2
Heating circuit without mixer and heating circuit with mixer	91:3

You can select which direction the heating program changeover takes in coding address "D5":

Heating program changeover	Coding
Changeover towards "Permanently reduced" or "Permanent standby" mode (subject to the selected set value)	d5:0
Changeover towards "Constant heating mode"	d5:1

The duration of the heating program changeover can be adjusted in coding address "F2":

Heating program changeover	Coding
No heating program changeover	F2:0
Duration of the heating program changeover 1 to 12 hours	F2:1 to F2:12

The operating mode changeover remains active for as long as the contact remains closed, but at least as long as the duration selected in coding address "F2".

Control functions (cont.)

External blocking

The "External blocking" function is connected via the external extension input "143".

In coding address "32", you can select the influence the "Ext. blocking" signal should have on the connected circulation pumps.

External demand

The "External demand" function is connected via the external extension input "143".
In coding address "34", you can select the influence the "Ext. demand" signal should have on the connected circulation pumps.

The minimum set boiler water temperature in case of external demand is selected in coding address "9b".

Venting program

During the venting program, the circulation pump will be alternately switched ON and OFF for 30 s respectively over a period of 20 min.
For a certain period, the diverter valve is alternately set towards heating and DHW heating. The burner is switched OFF during the venting program.

The venting program is activated via coding address "2F:1". The program is automatically disabled after 20 min, and coding address "2F" is set to "0".

Filling program

In the delivered condition, the diverter valve is set to its central position, enabling the system to be filled completely. After switching ON the control unit, the diverter valve no longer goes into its central position.

Afterwards, the diverter valve can be moved via coding address "2F:2" into the central position. In this position, the control unit can be switched OFF, and the system can be filled completely.

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Control functions (cont.)

Filling with the control unit switched ON

If the system is to be filled with the control unit switched ON, the diverter valve will be moved to its central position via coding address "2F:2" and the pump will be started.

The burner shuts down if this function is enabled via coding address "2F". The program is automatically disabled after 20 min, and coding address "2F" is set to "0".

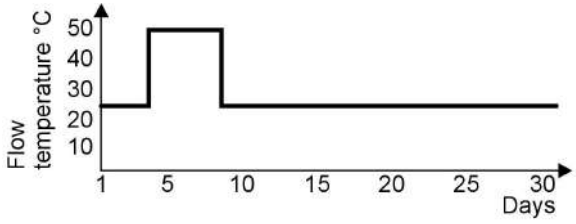
Screed drying function

The screed function enables screeds to be dried. For this, always observe the details specified by the screed manufacturer.
When the screed function is activated, the heating circuit pump of the mixer circuit is switched ON and the flow temperature will be held at the selected profile. After completion (30 days), the mixer circuit will again be regulated automatically via the set parameters.
Observe EN 1264. The report to be provided by the heating contractor must contain the following heat-up details:

- Heat-up data with respective flow temperatures
- Max. flow temperature achieved
- Operating condition and outside temperature during handover

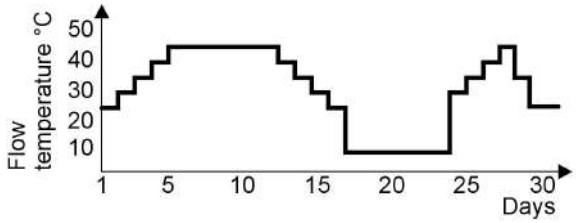
The various temperature profiles are adjustable via coding address "F1". The function continues after power failure or after the control unit has been switched OFF. "Heating and DHW" will be started after the screed function has been terminated or if coding address "F1:0" is manually adjusted.

Temperature profile 1: (EN 1264-4) coding address "F1:1"

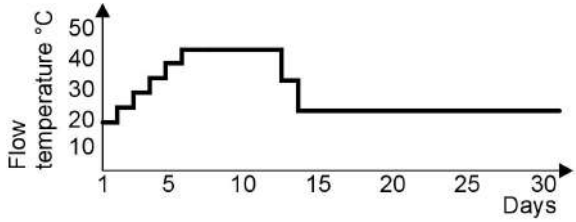


Control functions (cont.)

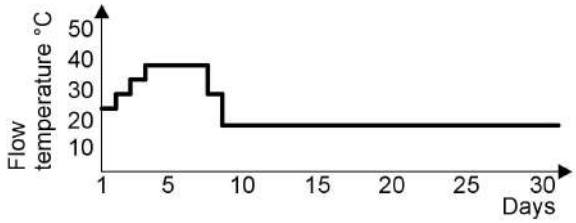
Temperature profile 2: (ZV parquet and flooring technology) coding address "F1:2"



Temperature profile 3: Coding address "F1:3"



Temperature profile 4: Coding address "F1:4"



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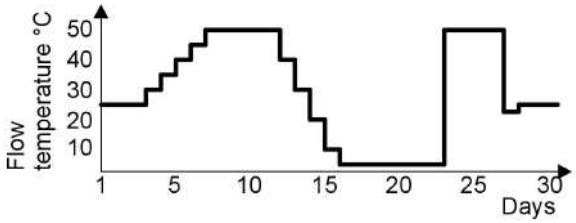
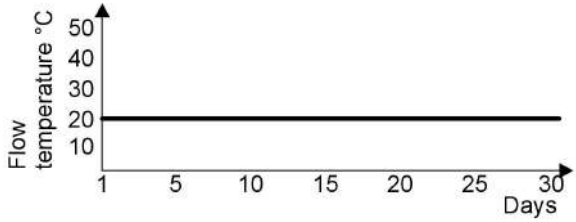
Control functions (cont.)

Temperature profile 5: Coding address "F1:5"



Temperature profile 6 (delivered condition): Coding address "F1:6"



Raising the reduced room temperature

During operation with reduced room temperature, the reduced set room temperature can be automatically raised subject to the outside temperature. The temperature is raised in accordance with the selected heating curve, but no higher than the set standard room temperature.

The outside temperature limits for the start and end of the temperature raising can be adjusted via coding addresses "F8" and "F9".

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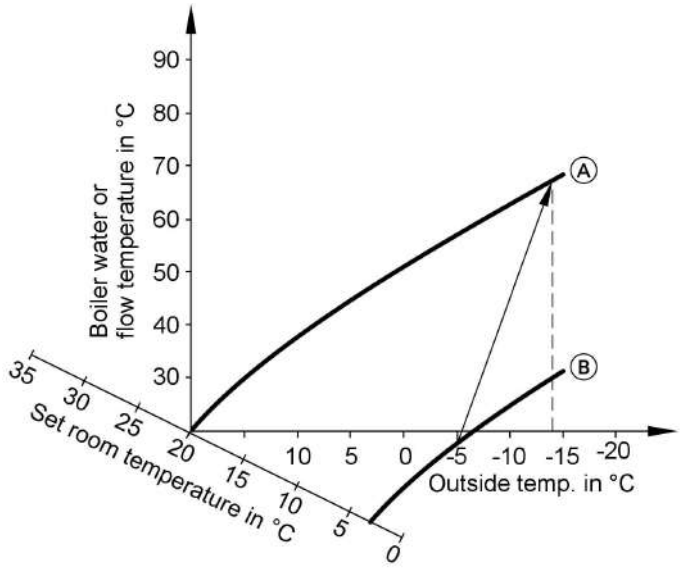
Control functions (cont.)

Example using the settings in the delivered condition



Ⓐ Heating curve for operation with standard room temperature

Ⓑ Heating curve for operation with reduced room temperature

Reducing the heat-up time

During the transition from operation with reduced room temperature to operation with standard room temperature, the boiler water or flow temperature will be raised in accordance with the selected heating curve. The boiler water or flow temperature can be automatically increased.

The value and duration of the additional increase of the set boiler water temperature or flow temperature can be adjusted in coding addresses "FA" and "Fb".

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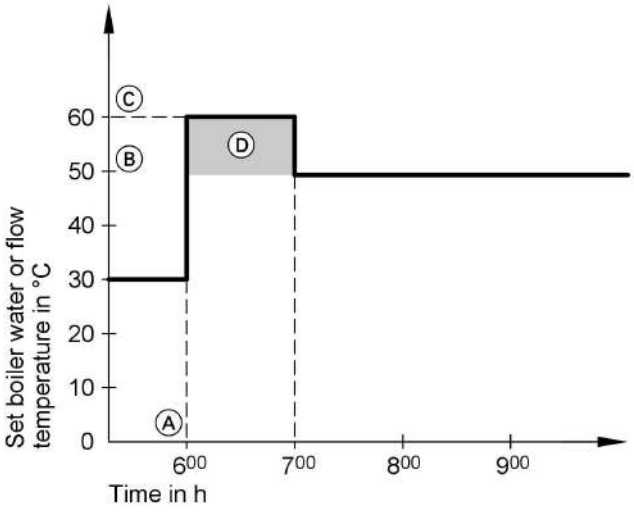
Control functions (cont.)

Example using the settings in the delivered condition



Ⓐ Start of operation with standard room temperature
Ⓑ Set boiler water or flow temperature in accordance with the selected heating curve
Ⓒ Set boiler water or flow temperature in accordance with coding address "FA":
50 °C + 20 % = 60 °C
Ⓓ Duration of operation with raised set boiler water or flow temperature in accordance with coding address "Fb":
60 min

Remote control DIP switches

The DIP switches are located on the PCB in the top part of the casing.

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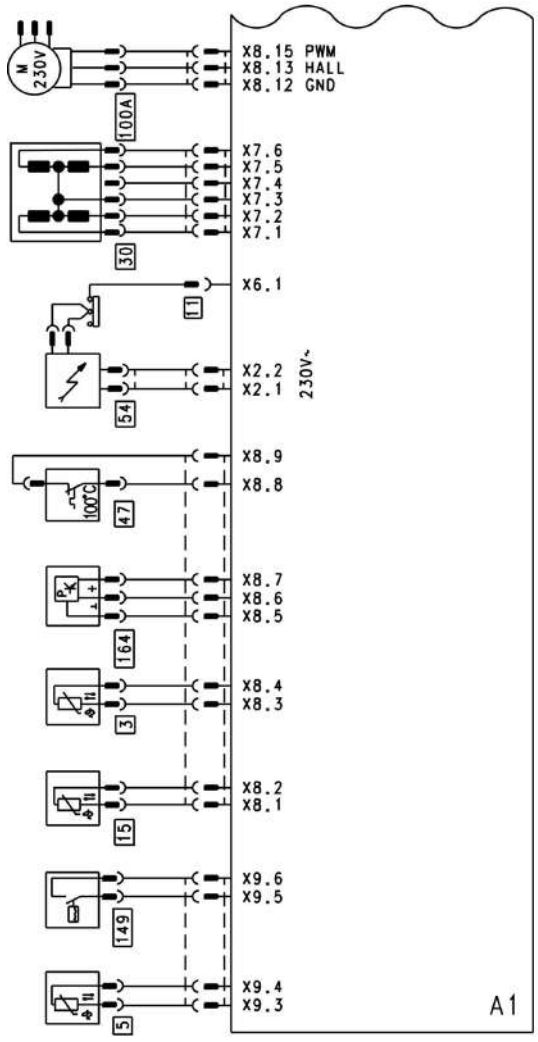
Remote control DIP switches (cont.)

Remote control	DIP switch setting
The remote control affects the heating circuit without mixer A1	
The remote control affects the heating circuit with mixer M2	
When connecting a separate room temperature sensor, set DIP switch "3" to "ON".	

Connection and wiring diagram – internal connections



A1 Main PCB
X... Electrical interfaces
3 Boiler water temperature sensor
4 DHW outlet sensor
5 Cylinder temperature sensor (plug on the cable harness)
11 Ionisation electrode
15 Flue gas temperature sensor
30 Stepper motor for diverter valve
47 Temperature limiter
54 Ignition unit
100 Fan motor

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Connection and wiring diagram – internal . . . (cont.)

149 Flow switch
164 Differential pressure sensor

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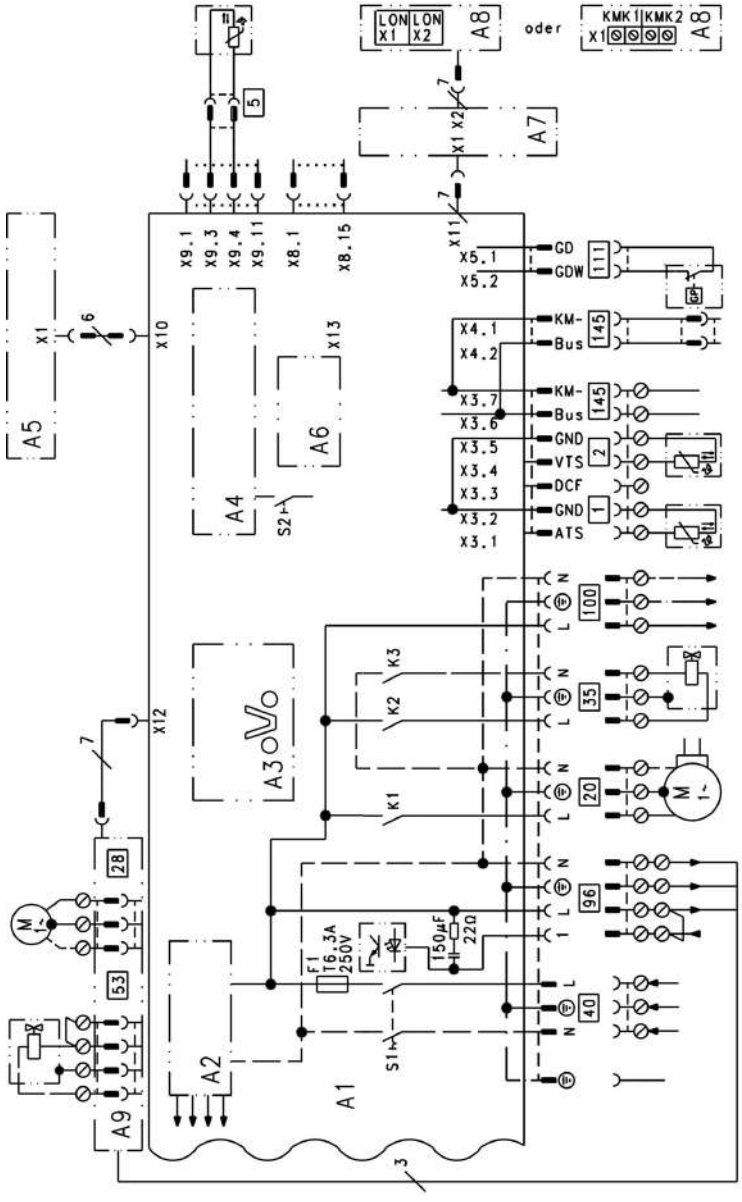
Connection and wiring diagram – external connections



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A1 Main PCB

A2 Power supply unit

Connection and wiring diagram – external . . . (cont.)

A3 Optolink
A4 Burner control unit
A5 Programming unit
A6 Coding card
A7 Connection adaptor
A8 LON communication module
S1 ON/OFF switch
S2 Reset button
X... Electrical interfaces
[1] Outside temperature sensor
[2] Flow temperature sensor, low loss header
[5] Cylinder temperature sensor
[20] Internal circulation pump
[28] DHW circulation pump
or
External heating circuit pump
or
Cylinder primary pump
or
Central fault message
[35] Gas solenoid valve
[40] Power supply
[53] External LPG safety valve (if installed)
[96] Power supply accessories and Vitotrol 100
[100] Fan motor
[111] Gas pressure switch
[145] KM BUS

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Parts lists

Spare parts information
Quote the part and serial no. (see type plate) and the item number of the required part (as per this parts list). Obtain standard parts from your local supplier.

001 Quick-acting air vent valve
002 Heating water flow connecting pipe
003 Temperature limiter
004 Temperature sensor
005 Boiler flue connection grommets
007 Profiled gasket
009 Locking spring
010 Pump motor
012 Flue gas temperature sensor
013 Siphon
014 Heat exchanger
017 O-ring 28 x 2.5
018 Condensate hose
019 Boiler flue connection plug
022 Pressure gauge
025 Linear stepper motor
026 Boiler flue connection (with items 019, 035, 036)
027 Diaphragm expansion vessel connection assembly
028 Retainer, plug-in connector
029 Front panel (with item 030)
030 Fixing clip
031 Hook-in lock (set)
032 Cover profile (with item 007)
033 Gas supply pipe
034 Return pipe
035 Ventilation air gasket ∅ 125 mm
036 Flue gas gasket ∅ 80 mm
037 Clip nut
038 Plug-in connector gaskets (set)
051 Burner (with items 050 and 052 to 067)
052 Ignition unit
055 Burner gauze assembly
056 Fan
057 Differential pressure sensor
058 Gas combination valve
059 Conversion kit for natural gas E (gas restrictor)
060 Conversion kit for natural gas LL (gas restrictor)
061 Conversion kit for LPG P (gas restrictor)
064 Burner gauze gasket
065 Pressure transmitter adaptor
066 Air damper inside a frame
067 Pressure sensor adaptor
080 Vitodens control unit
081 Back cover
082 Support
083 Flap
084 Pressure gauge retainer
085 Clip
086 Hinge
087 Internal extension H1
088 LON communication module (accessories)
089 Connection adaptor
090 Coding card
091 Fuses (10 pce.)
092 Programming unit for constant temperature mode
093 Programming unit for weather-compensated mode
095 Locking clips (10 pce.)
102 Access guard
110 Outside temperature sensor
120 Fuse holder
130 Cover

Wearing parts
050 Burner gasket
053 Ignition electrode with gasket
054 Ionisation electrode with gasket
062 Burner maintenance set
063 Set of small burner parts

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Parts lists (cont.)

Parts not shown

016 Special grease
039 Fixing parts (set)
097 Cable harness X8/X9
098 Cable harness 100/35/34 (auxiliary earth)
099 Stepper motor connecting cable
100 Cable harness ionisation/KM BUS (internal)
101 Internal ionisation cable
103 Adaptor, ionisation current test cable
107 Cascade module
126 Mating plug
127 Cable fixing
150 Installation instructions
151 Service instructions
153 Operating instructions for constant temperature mode
154 Operating instructions for weather-compensated mode
156 Touch-up paint stick, Vitowhite
157 Spray paint, Vitowhite
Ⓐ Type plate

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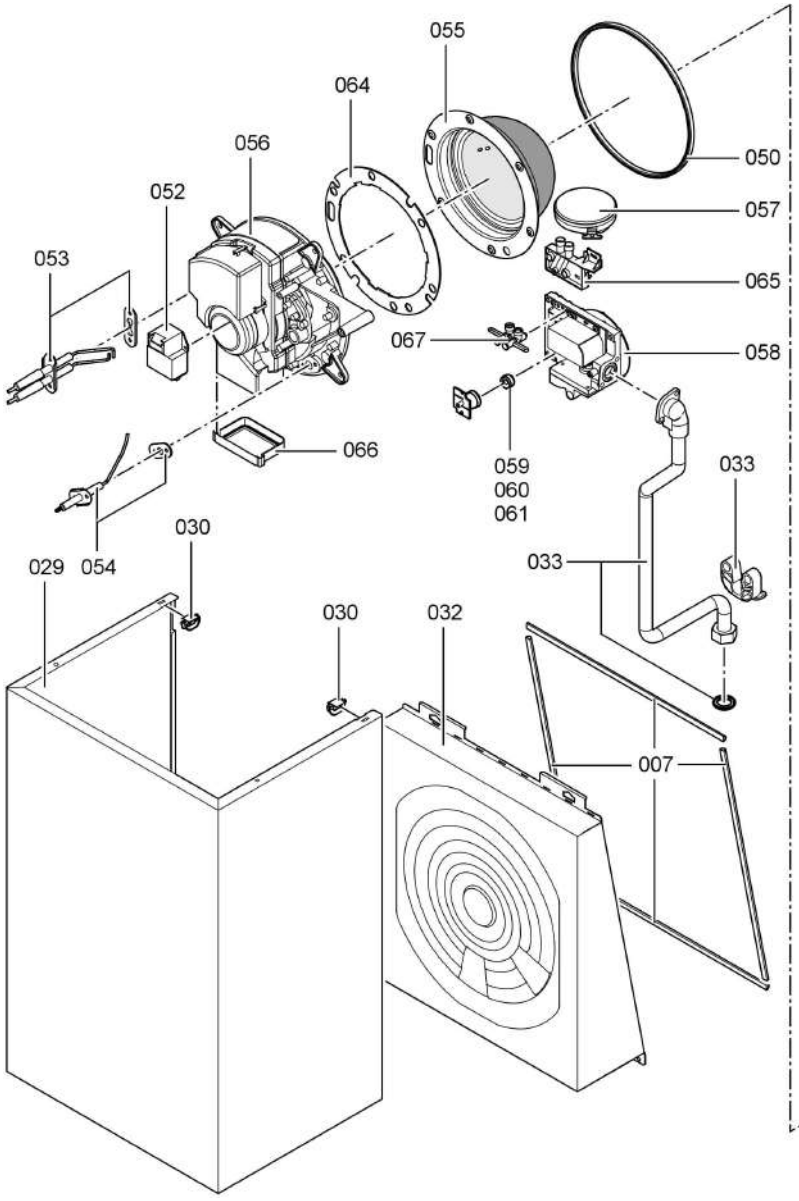
Parts lists (cont.)



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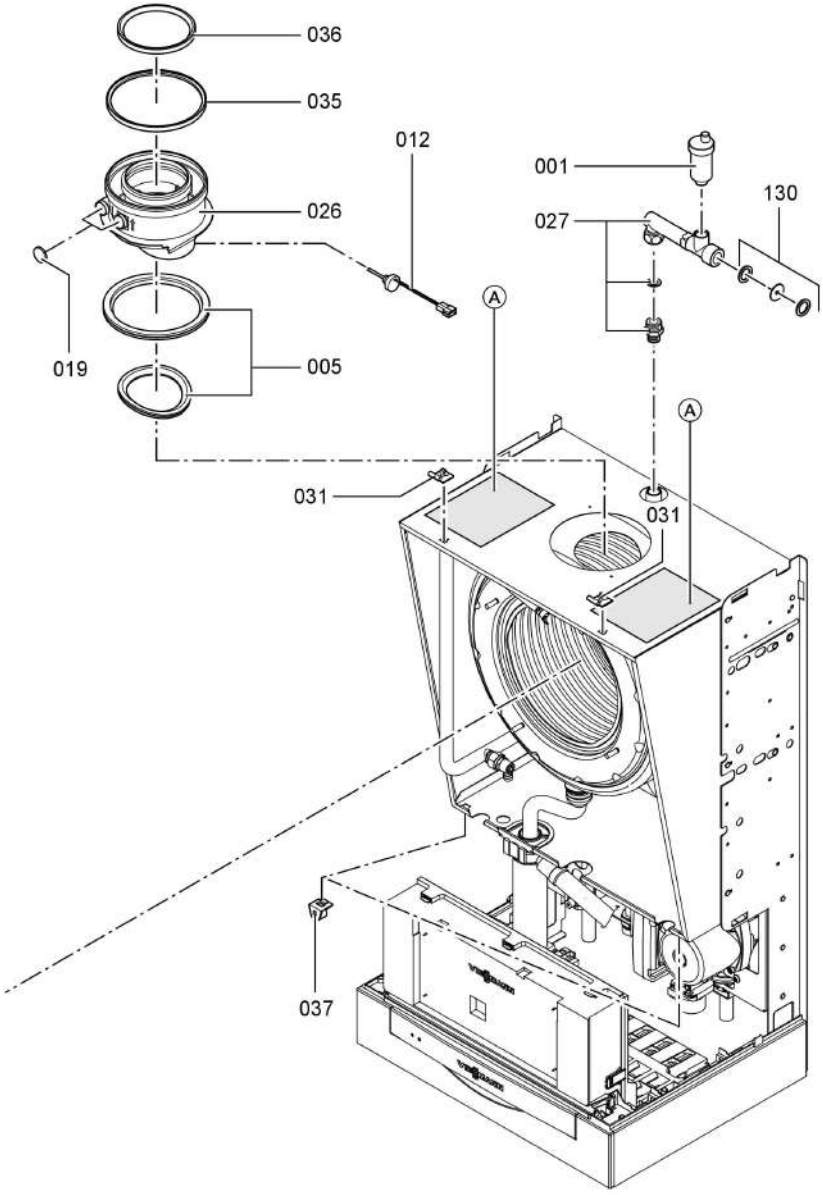
Parts lists (cont.)



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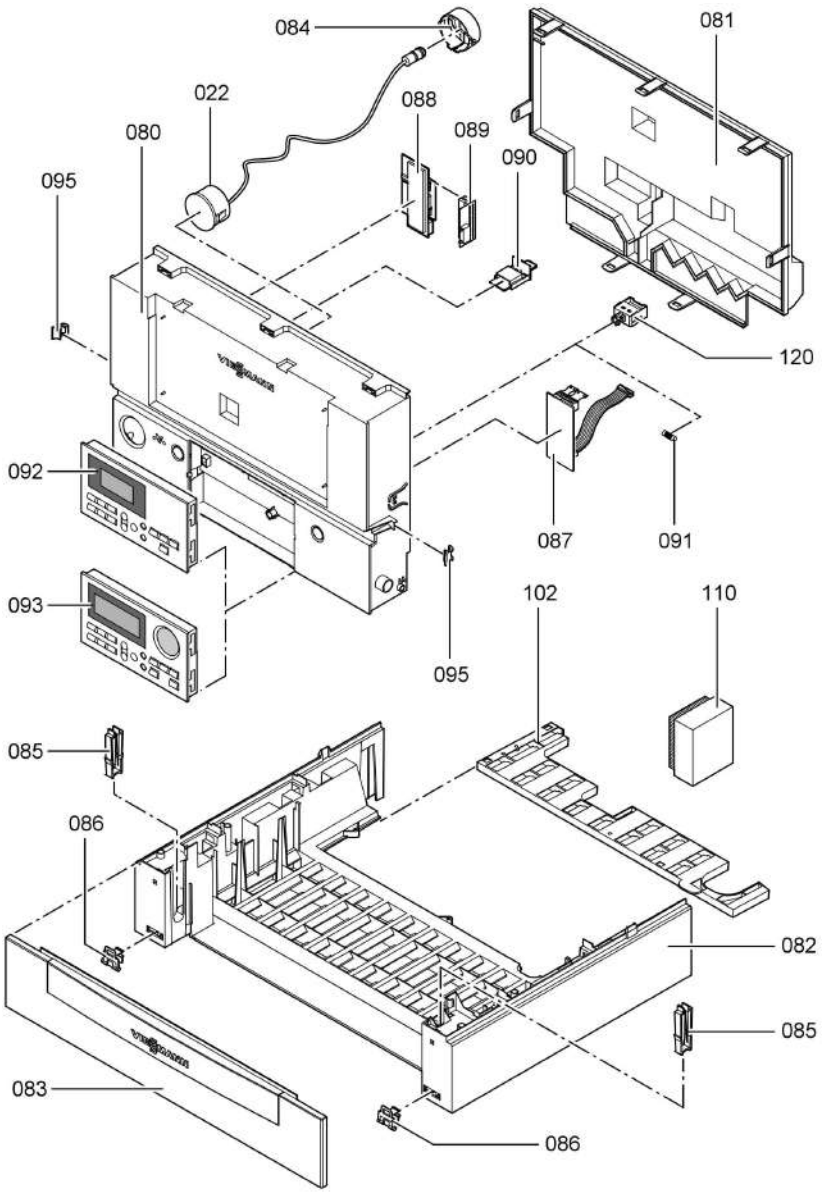
Parts lists (cont.)



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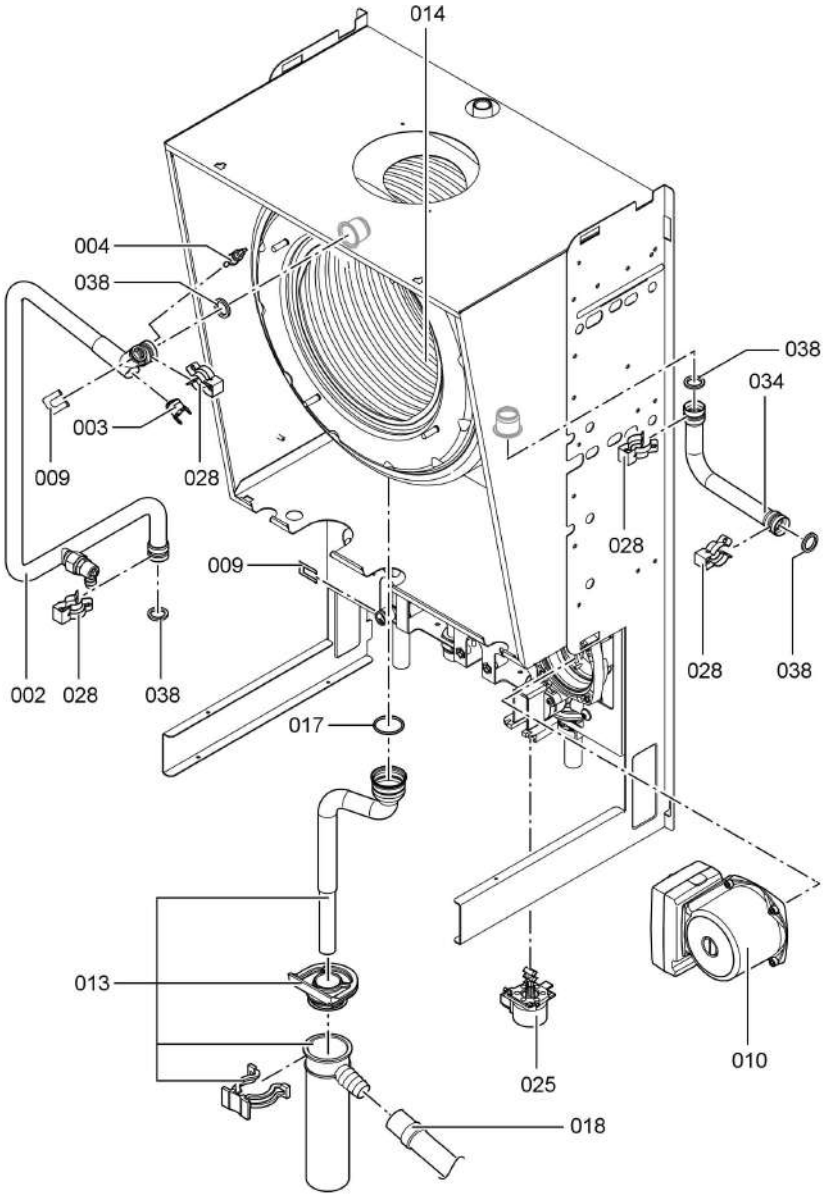
Parts lists (cont.)



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Commissioning/service reports

Setting and test values	Date: By:	Set value	Commissioning	Service
Static pressure	*mbar*	max. 57.5 mbar		
Supply pressure (flow pressure)				
☐ for natural gas E	*mbar*	17.4-57.5 mbar		
☐ for natural gas LL	*mbar*	17.4-57.5 mbar		
☐ for LPG	*mbar*	42.5-57.5 mbar		
Tick gas type **Carbon dioxide content CO_2**				
■ at the lower rated output	*% vol.*			
■ at the upper rated output	*% vol.*			
Oxygen content O_2				
■ at the lower rated output	*% vol.*			
■ at the upper rated output	*% vol.*			
Carbon monoxide content CO				
■ at the lower rated output	*ppm*			
■ at the upper rated output	*ppm*			
Ionisation current	*µA*	min. 4 µA		

Specification

Rated voltage:	230 V~	Electronic temperature limiter setting:	82 °C (fixed)
Rated frequency:	50 Hz		
Rated current:	6.0 A~	Temperature limiter setting:	100 °C (fixed)
Safety class:	I	Line fuse (mains):	max. 16 A
Protection:	IP X 4 D to EN 60529		

Permissible ambient temperature
- during operation: 0 to +40 °C
- during storage and transport: -20 to +65 °C

Power consumption
- Circulation pump: max. 115 W
- Burner: max. 60 W
- Control unit: max. 10 W

Gas fired boiler, category II 2ELL3P

Rated output range Tv/TR 50/30 °C		**kW**	**6.6 to 26**	**8.7 to 35**
Rated thermal load range		kW	6.3 to 24.7	8.3 to 33.3
Connection values				
Relative to the max. load with	with H_{uB}			
Natural gas E	9.45 kWh/m³ 34.02 MJ/m³	m³/h	2.61	3.52
Natural gas LL	8.13 kWh/m³ 29.25 MJ/m³	m³/h	3.04	4.10
LPG	12.79 kWh/kg 46.04 MJ/kg	kg/h	1.94	2.60
Product ID			CE-0085 BO 0338	

Note

The supply values are only for documentation purposes (e.g. in the gas contract application) or to estimate the supplementary volumetric settings. Because of factory settings, the gas pressure must not be altered from these values. Reference: 15 °C, 1013 mbar.

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Specification (cont.)

Product characteristics (to EnEV [Germany])

Rated output range	kW	6.6 to 26	8.7 to 35
Efficiency η at			
■ 100 % of rated output	%	96.0	96.1
■ 30 % of rated output	%	107.4	108.3
Standby loss $q_{B,70}$ (max. limit according to EnEV [Germany])	%	0.7	0.5
Power consumption (max. limit according to EnEV [Germany]) at			
■ 100 % of rated output	W	207	238
■ 30 % of rated output	W	69	79

Declaration of conformity

Declaration of conformity for the Vitodens 300

We, Viessmann Werke GmbH&Co KG, D-35107 Allendorf, confirm as sole responsible body that the product **Vitodens 300** complies with the following standards:

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

In accordance with the following Directives, this product is designated with **CE-0085**:

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

This product meets the requirements of the Efficiency Directive (92/42/EEC) for **condensing boilers**.
The **product characteristics** determined as system values for the Vitodens 300 as part of EC type testing according to the Efficiency Directive (see specification table) can be used for the energy assessment of heating and ventilation equipment to DIN V 4701–10.

Allendorf, 1 June 2006

Viessmann Werke GmbH&Co KG

pp. Manfred Sommer

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Manufacturer's certificate according to the 1st BImSchV [Germany]

We, Viessmann Werke GmbH&Co KG, D-35107 Allendorf, confirm that the product **Vitodens 300** meets the NO_x limits specified by the 1st BImSchV paragraph 7 (2) [Germany].

Allendorf, 1 June 2006

Viessmann Werke GmbH&Co KG

pp. Manfred Sommer

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Keyword index

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Keyword index (cont.)

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Applicability

Gas fired condensing boiler
Type WB3B
6.6 to 26 kW
from serial no.
7194 468 5 00001
8.7 to 35 kW
from serial no.
7194 469 5 00001

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5692 643 GB Subject to technical modifications.