Installation and service instructions

for heating engineers
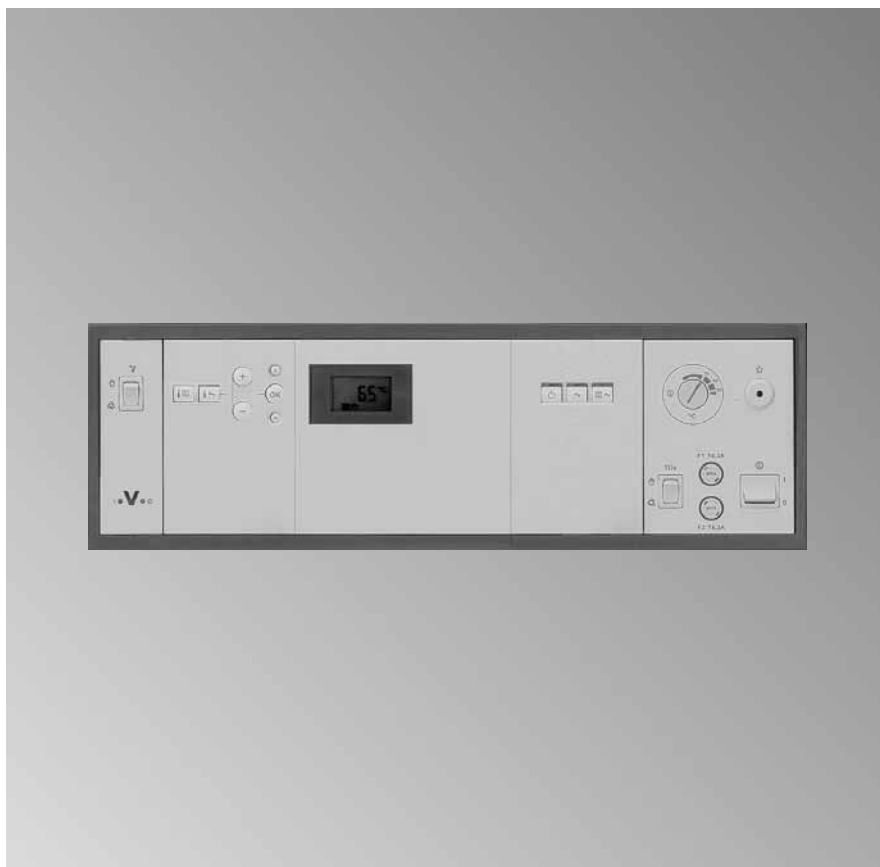
Vitotronic 100
Type GC1
Digital boiler control unit

See applicability, page 168.

VITOTRONIC 100

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 registered gas fitter.
- Electrical work 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,
- regulations issued by professional bodies,
- all current safety regulations as defined by DIN, EN, DVGW, TRGI, TRF, VDE and all locally applicable standards.

If you notice the smell of gas

⚠️ **Danger**
Escaping gas can lead to explosions which may lead to serious injury.
- Do not smoke! Prevent naked flames and sparks. Never switch electrical lights or equipment.
- Open windows and doors.
- Close the gas shut-off valve.
- Shut down the heating system.
- Remove all people from the danger zone.
- Observe the safety regulations of your local gas supplier found on the gas meter.

Safety instructions (cont.)

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.

Working on the heating system

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

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/
conversions can compromise
safety and may infringe our
warranty conditions.
For replacements, use only
original spare parts from
Viessmann or those which are
approved by Viessmann.

Index

Index (cont.)

Product information

This document describes Vitotronic 100 when used
- in a single boiler system and
- in a multi-boiler system with higher third party control unit.

These instructions are **not** required in multi-boiler systems with Vitotronic 333.

These application examples are merely recommendations, and must therefore be checked on site for completeness and function.
Connect three-phase consumers via additional contactors.

Summary of system versions

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Single boiler systems			
1	Vitoplex	Therm-Control	8
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System version 1

System with Therm-Control
Vitoplex 100, type SX1, up to 460 kW, Vitoplex 200, type SX2, up to 560 kW
and Vitoplex 300, type TX3
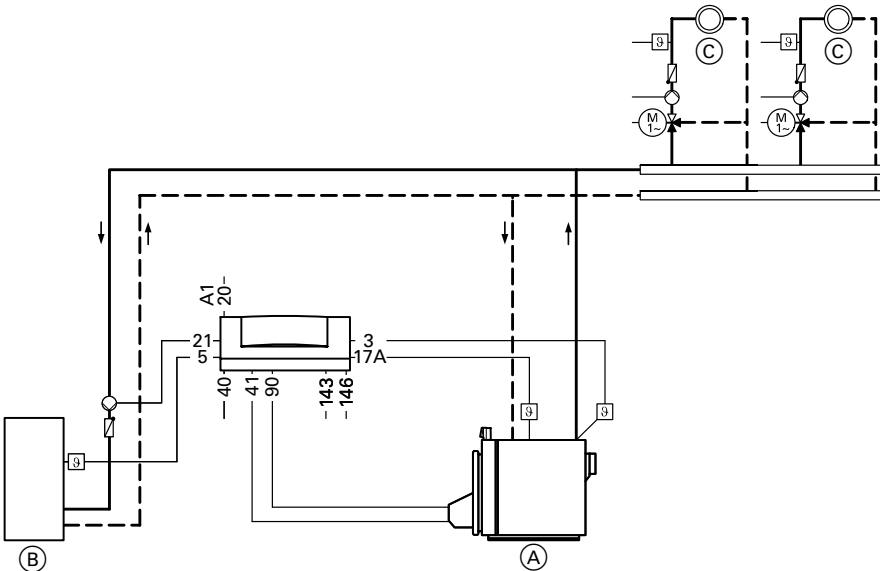
Ⓐ Boiler with Vitotronic 100
Ⓑ DHW cylinder
Ⓒ Heating circuit with mixer

Plug

3		Boiler water temperature sensor
5		Cylinder temperature sensor
17	A	Temperature sensor Therm-Control
20	A1	Mixers closed with external heating circuit control units
21		Cylinder primary pump (accessories)
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
90		Burner stage 2/mod.
143/146		External hook-up (see page 69)

System version 1 (cont.)

Required coding

02 :	2	Modulating burner operation*1
03 :	1	Oil fired operation (irreversible)*1
0d :	1	Therm-Control controls the mixers of downstream heating circuits

Automatic changeover

00 :	2	With DHW cylinder
4A:	1	Connecting the Therm-Control temperature sensor to plug 17 A

*1If required.

System version 1 (cont.)

Possible applications

Heating systems with distributor installed close to the boiler. The boiler water volume flow must be able to be reduced.

If the factory-set temperatures are not reached at the Therm-Control temperature sensor, Therm-Control will activate the heating circuit control unit(s) or the heating circuit pump(s). In the start-up phase (e.g. during commissioning or after a night or weekend shutdown), the boiler water volume flow must be reduced by at least 50%.
The boiler is best protected when regulating the heating circuits via Vitotronic 050 connected to the boiler control unit. No additional on-site protective measures are required.

Therm-Control

Wiring in heating systems with heating circuit control units which are not connected to the boiler control unit via the LON BUS. Required coding: "4C: 2".
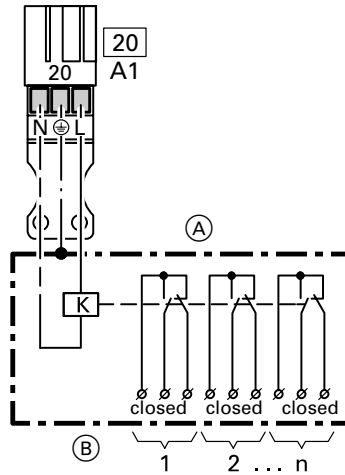
[20] A1   Mixers closed
Ⓐ   Contactor relay,
         part no. 7814 681
Ⓑ   Downstream heating circuit
         controller, contact closed:
         Signal for "Mixer closed"

System version 2
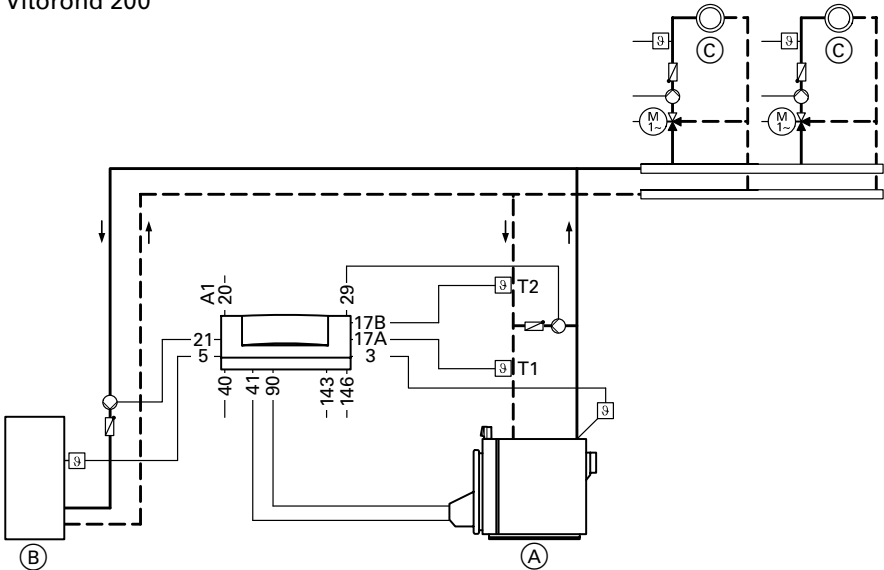
Raising the return temperature with a shunt pump
Vitogas 100
Vitomax 100, Vitomax 200 and Vitomax 300
Vitoplex 100, type SX1, Vitoplex 200, type SX2, and Vitoplex 300, type TX3
Vitorond 200

Ⓐ Boiler with Vitotronic 100
Ⓑ DHW cylinder
Ⓒ Heating circuit with mixer

Plug

3	Boiler water temp. sensor	29	Shunt pump
5	Cylinder temp. sensor (accessories)	40	Mains electrical connection, 230V~/50 Hz
17 A	Temperature sensor T1*1	41	Burner stage 1
17 B	Temperature sensor T2	90	Burner stage 2/mod.
20 A1	Mixers closed with external heating circuit control units	143/146	External hook-up (see page 69)
21	Cylinder primary pump (accessories)		

*1For Vitoplex, an immersion sensor is part of the standard delivery. The sensor well delivered with the boiler can be removed for application as T1 (seal port with a plug).

System version 2 (cont.)

Required coding

02 :	2	Modulating burner operation[1]
03 :	1	Oil fired operation (irreversible)[1]
0d :	1	The temperature sensor on plug 17 A controls the mixers of downstream heating circuits

Automatic changeover

00 :	2	With DHW cylinder
4A:	1	Connecting temperature sensor T1 to plug 17 A
4b :	1	Connecting temperature sensor T2 to plug 17 B

[1]If required.

System version 2 (cont.)

Possible applications

Heating systems with distributor installed close to the boiler. The boiler water volume flow must be able to be reduced.

Temperature sensor T2 activates the shunt pump, if the actual temperature falls below the required minimum return temperature. If the minimum return temperature is not reached, even if the return temperature is raised, the volume flow must be reduced by at least 50% via temperature sensor T1.

Size the shunt pump to approx. 30% of the total throughput capacity of the boiler.

Temperature sensor T1

Wiring in heating systems with heating circuit control units which are not connected to the boiler control unit via the LON BUS. Required coding: "4C: 2".
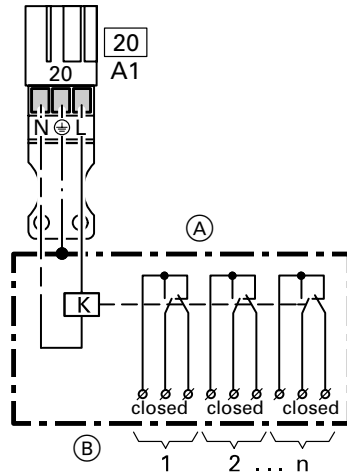
20 A1 Mixers closed
Ⓐ   Contactor relay,
       part no. 7814 681
Ⓑ   Downstream heating circuit controller, contact closed: Signal for "Mixer closed".

System version 3

Raising the return temperature with shunt pump and three-way mixer
Vitogas 100
Vitomax 100, Vitomax 200 and Vitomax 300
Vitoplex 100, type SX1, Vitoplex 200, type SX2, and Vitoplex 300, type TX3
Vitorond 200

Ⓐ Boiler with Vitotronic 100
Ⓑ DHW cylinder
Ⓒ Heating circuit with mixer

Plug

3		Boiler water temperature sensor	40		Mains electrical connection, 230V~/50 Hz
5		Cylinder temperature sensor (accessories)	41		Burner stage 1
17	A	Temperature sensor T1[1]	52	A1	Mixer motor return temperature raising facility
17	B	Temperature sensor T2	90		Burner stage 2/mod.
21		Cylinder primary pump (accessories)	143/146		External hook-up (see page 69)
29		Shunt pump			

[1]For Vitoplex, an immersion sensor is part of the standard delivery. The sensor well delivered with the boiler can be removed for application as T1 (seal port with a plug).

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System version 3 (cont.)

Required coding

02 :	2	Modulating burner operation[1]
03 :	1	Oil fired operation (irreversible)[1]
0C :	1	Constant return temperature control

Automatic changeover

00 :	2	With DHW cylinder
4A:	1	Connecting temperature sensor T1 to plug 17 A
4b :	1	Connecting temperature sensor T2 to plug 17 B

Possible applications
Heating systems where downstream heating circuits cannot be controlled, e.g. older heating systems or nurseries.

Temperature sensor T2 activates the shunt pump if the actual temperature falls below the required minimum return temperature. If this does not achieve the required minimum return temperature, temperature sensor T1 closes the three-way mixer in proportion and therefore safeguards the minimum return temperature.

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[1]If required.

System version 4

System with Therm-Control
Vitoplex 100, type SX1, to 460 kW, Vitoplex 200, type SX2, to 560 kW,
and Vitoplex 300, type TX3
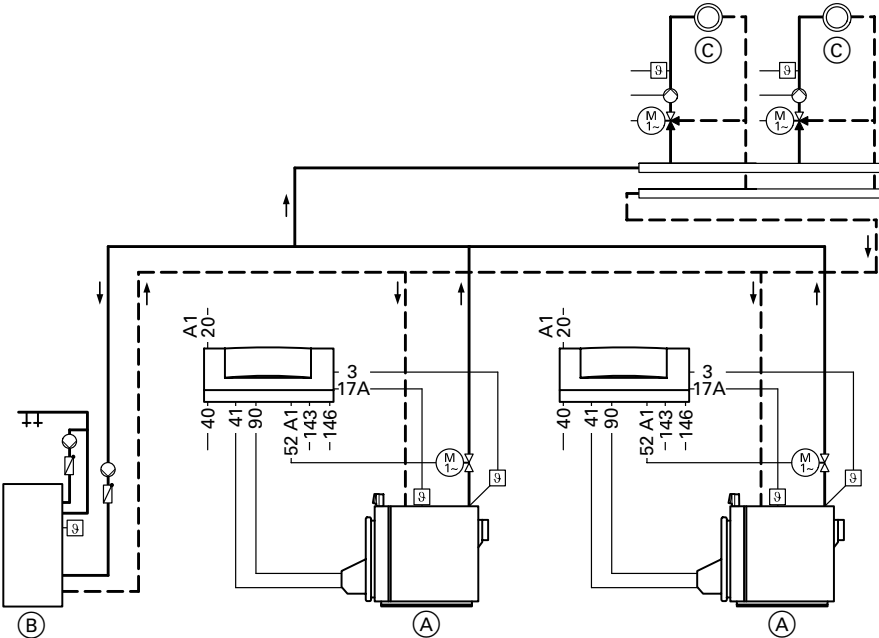
Ⓐ Boiler with Vitotronic 100
Ⓑ DHW cylinder
Ⓒ Heating circuit with mixer

Plug

3		Boiler water temperature sensor
17	A	Temperature sensor Therm-Control
20	A1	Mixers closed with external heating circuit control units
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
52	A1	Motorised butterfly valve
90		Burner stage 2/mod.
143/146		External hook-up (see page 69)

System version 4 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding		
01 :	2	Multi-boiler system with cascade control via LON BUS
01 :	3	Multi-boiler system with external cascade control via switching contacts
02 :	2	Modulating burner operation[*1]
03 :	1	Oil fired operation (irreversible)[*1]
Automatic changeover		
4A:	1	Connecting the Therm-Control temperature sensor to plug 17 A

---

*1If required.

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System version 4 (cont.)

Possible applications

Heating systems with distributor installed close to the boiler. The boiler water volume flow will be reduced by the motorised butterfly valve.
In multi-boiler system without Vitotronic 333, cascade and cylinder control must be provided by a higher control unit.

If the factory-set temperatures are not reached at the Therm-Control temperature sensor, Therm-Control will regulate the motorised butterfly valves. Where Therm-Control cannot affect the motorised butterfly valves it must, instead, regulate the mixers of the downstream heating circuits. In the start-up phase (e.g. during commissioning or after a night or weekend shutdown), the boiler water volume flow must be reduced by at least 50 %.

The boiler is best protected when regulating the heating circuits via Vitotronic 050 connected to the boiler control unit.
No additional on-site protective measures are required.
Required coding: "0d: 1".

Therm-Control

Wiring in heating systems with heating circuit control units which are not connected to the boiler control unit via the LON BUS.
Required coding:
"0d: 1" and "4C: 2".
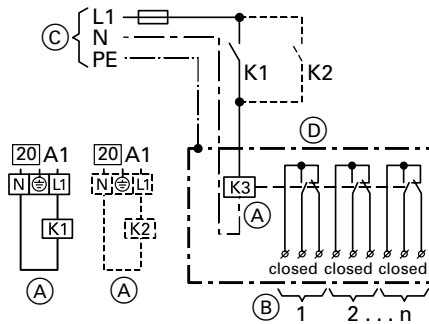
20 A1 Mixers closed
Ⓐ   Contactor relay,
     part no. 7814 681
Ⓑ   Downstream heating circuit
     controller, contact closed:
     Signal for "Mixer closed".
Ⓒ   Mains electrical connection
     230V~/50 Hz
Ⓓ   Junction box, on site

System version 5

Raising the return temperature for each boiler with a shunt pump
Vitogas 100
Vitomax 100, Vitomax 200 and Vitomax 300
Vitoplex 100, type SX1, Vitoplex 200, type SX2, and Vitoplex 300, type TX3
Vitorond 200

Ⓐ Boiler with Vitotronic 100
Ⓑ DHW cylinder
Ⓒ Heating circuit with mixer

Plug

3		Boiler water temperature sensor	40		Mains electrical connection, 230V~/50 Hz
17	A	Temperature sensor T1	41		Burner stage 1
17	B	Temperature sensor T2	52	A1	Motorised butterfly valve
20	A1	Mixers closed with external heating circuit control units	90		Burner stage 2/mod.
			143 / 146		External hook-up (see page 69)
29		Shunt pump			

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System version 5 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding		
01 :	2	Multi-boiler system with cascade control via LON BUS
01 :	3	Multi-boiler system with external cascade control via switching contacts
02 :	2	Modulating burner operation[*1]
03 :	1	Oil fired operation (irreversible)[*1]
Automatic changeover		
4A:	1	Connecting temperature sensor T1 to plug 17 A
4b :	1	Connecting temperature sensor T2 to plug 17 B

[*1]If required.

System version 5 (cont.)

Possible applications

Heating systems with distributor installed close to the boiler. The boiler water volume flow will be reduced by the motorised butterfly valve.

In multi-boiler system without Vitotronic 333, cascade and cylinder control must be provided by a higher control unit.

Temperature sensor T2 activates the shunt pump, if the actual temperature falls below the required minimum return temperature. If the minimum return temperature is not reached even if the return temperature is raised, the volume flow must be reduced by at least 50% via temperature sensor T1, via the butterfly valve or the heating circuit control units. Where the temperature sensor T1 cannot control the butterfly valve it must, instead, regulate the mixers of the downstream heating circuits.

Size the shunt pump to approx. 30% of the total throughput capacity of the boiler.

The boiler is best protected when regulating the heating circuits via Vitotronic 050 connected to the boiler control unit.

No additional on-site protective measures are required.

Required coding: "0d: 1".

Temperature sensor T1

Wiring in heating systems with heating circuit control units which are not connected to the boiler control unit via the LON BUS.

Required coding:

"0d: 1" and "4C: 2".
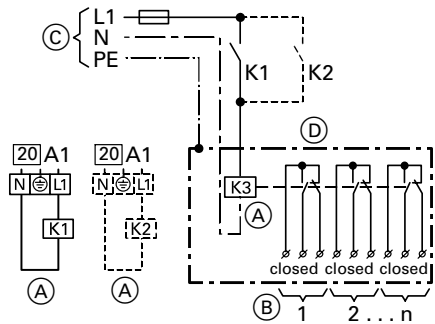
20	A1	Mixers closed
A		Contactor relay, part no. 7814 681
B		Downstream heating circuit controller, contact closed: Signal for "Mixer closed".
C		Mains electrical connection 230V~/50 Hz
D		Junction box, on site

System version 6

Raising the return temperature with a common shunt pump
Vitomax 100, Vitomax 200 and Vitomax 300
Vitoplex 100, type SX1, Vitoplex 200, type SX2, and Vitoplex 300, type TX3

Ⓐ Boiler with Vitotronic 100
Ⓑ DHW cylinder
Ⓒ Heating circuit with mixer

Plug

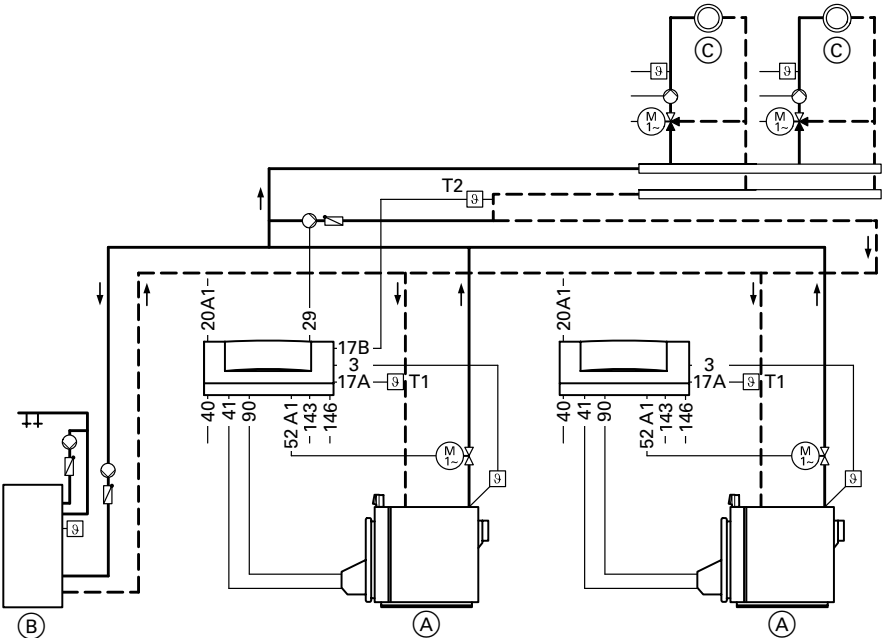|		
3		Boiler water temperature sensor
17	A	Temperature sensor T1
17	B	Temperature sensor T2
20	A1	Mixers closed with external heating circuit control units
29		Shunt pump
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
52	A1	Motorised butterfly valve
90		Burner stage 2/mod.
143/146		External hook-up (see page 69)

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System version 6 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding	
01 : 2	Multi-boiler system with cascade control via LON BUS
01 : 3	Multi-boiler system with external cascade control via switching contacts
02 : 2	Modulating burner operation[*1]
03 : 1	Oil fired operation (irreversible)[*1]
0d : 1	The temperature sensor on plug 17 A controls the mixers of downstream heating circuits
2d : 1	Only with Vitotronic 100 for boiler 1: Shunt pump control function ON, independent of boiler enabled/disabled
Automatic changeover	
4A: 1	Connecting temperature sensor T1 to plug 17 A
4b : 1	Only with Vitotronic 100 for boiler 1: Connecting temperature sensor T2 to plug 17 B

*1*If required.*

System version 6 (cont.)

Possible applications
Heating systems with distributor installed close to the boiler. The boiler water volume flow must be able to be reduced via the heating circuits.
In multi-boiler system without Vitotronic 333, cascade and cylinder control must be provided by a higher control unit.

Temperature sensor T2 activates the shunt pump, if the actual temperature falls below the required minimum return temperature. If the required minimum return temperature is still not achieved, the boiler water volume flow must be reduced via temperature sensors T1.

Size the shunt pump to approx. 30% of the total throughput capacity of the boiler.

The boiler is best protected when regulating the heating circuits via Vitotronic 050 connected to the boiler control unit.
No additional on-site protective measures are required.

Temperature sensor T2 and the shunt pump must be connected to one of the Vitotronic 100 if an external cascade control unit is used.

Temperature sensor T1
Wiring for reducing the volume flow in heating systems with heating circuit control units, which are not connected to the boiler control unit via the LON BUS.
Required coding: "0d: 1" and "4C: 2".
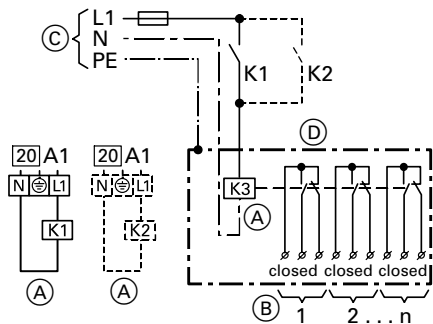
20 A1 Mixers closed
Ⓐ   Contactor relay,
      part no. 7814 681
Ⓑ   Downstream heating circuit controller, contact closed: Signal for "Mixer closed".
Ⓒ   Mains electrical connection 230V~/50 Hz
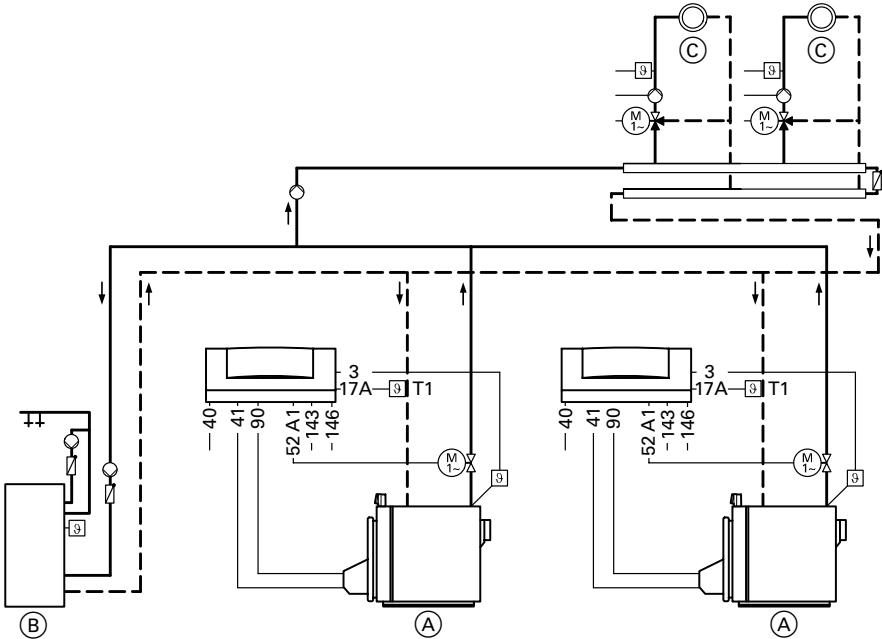Ⓓ   Junction box, on site

System version 7

Distribution pump and low pressure distributor
Vitogas 100
Vitomax 100, Vitomax 200 and Vitomax 300
Vitoplex 100, type SX1, Vitoplex 200, type SX2, and Vitoplex 300, type TX3
Vitorond 200

Ⓐ Boiler with Vitotronic 100
Ⓑ DHW cylinder
Ⓒ Heating circuit with mixer

Plug

3		Boiler water temperature sensor
17	Ⓐ	Temperature sensor T1
20	A1	Mixers closed with external heating circuit control units
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
52	A1	Motorised butterfly valve
90		Burner stage 2/mod.
143 / 146		External hook-up (see page 69)

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System version 7 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding	
01 : 2	Multi-boiler system with cascade control via LON BUS
01 : 3	Multi-boiler system with external cascade control via switching contacts
02 : 2	Modulating burner operation[*1]
03 : 1	Oil fired operation (irreversible)[*1]
0d : 1	Temperature sensor T1 controls the mixers of downstream heating circuits
Automatic changeover	
4A: 1	Connecting temperature sensor T1 to plug 17 A

*1If required.

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System version 7 (cont.)

Possible applications

If the distributor is located in remote sub-stations (> 20 m). The heat transfer to the heating circuits must be able to be reduced. In multi-boiler system without Vitotronic 333, cascade and cylinder control must be provided by a higher control unit. The distribution pump will be regulated by the higher control unit. It must be started when a boiler is enabled.
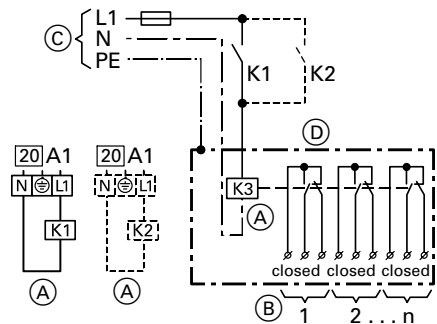
Temperature sensor T1 reduces or closes the mixer if the required minimum return temperature is not achieved. Size the distribution pump to 110 % of the total heating system flow rate.

The boiler is best protected when regulating the heating circuits via Vitotronic 050 connected to the boiler control unit.
No additional on-site protective measures are required.

Temperature sensor T1

Wiring for reducing the volume flow in heating systems with heating circuit control units, which are not connected to the boiler control unit via the LON BUS.
Required coding: "0d: 1" and "4C: 2".

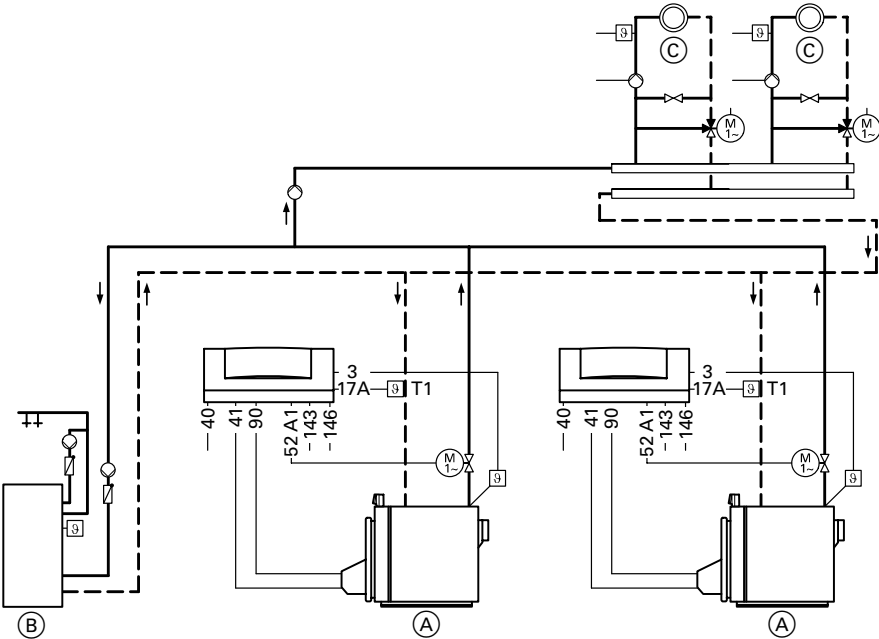| 20 | A1 | Mixers closed |
A		Contactor relay, part no. 7814 681
B		Downstream heating circuit controller, contact closed: Signal for "Mixer closed".
C		Mains electrical connection 230V~/50 Hz
D		Junction box, on site

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System version 8

Distribution pump and injection control
Vitogas 100
Vitomax 100, Vitomax 200 and Vitomax 300
Vitoplex 100, type SX1, Vitoplex 200, type SX2, and Vitoplex 300, type TX3
Vitorond 200

(A) Boiler with Vitotronic 100
(B) DHW cylinder
(C) Heating circuit with mixer

Plug

3		Boiler water tempe. sensor
17	A	Temperature sensor T1
20	A1	Mixers closed with external heating circuit control units
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
52	A1	Motorised butterfly valve
90		Burner stage 2/mod.
143/146		External hook-up (see page 69)

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System version 8 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding		
01 :	2	Multi-boiler system with cascade control via LON BUS
01 :	3	Multi-boiler system with external cascade control via switching contacts
02 :	2	Modulating burner operation[*1]
03 :	1	Oil fired operation (irreversible)[*1]
0d :	1	Temperature sensor T1 controls the mixers of downstream heating circuits
Automatic changeover		
4A:	1	Connecting temperature sensor T1 to plug 17 A

[*1]*If required.*

System version 8 (cont.)

Possible applications

If the distributor is located in remote sub-stations (>20 m), and the heating circuits require heat immediately after a demand is present, e.g. blown air heaters. The heat transfer to the heating circuits must be able to be reduced. The cascade and cylinder control must be provided by a higher control unit.

The distribution pump will be regulated by the higher control unit. It must be started when a boiler is enabled.

If the actual temperature falls below the required minimum return temperature, temperature sensor T1 reduces or closes the mixer in proportion.

Size the distribution pump to 110 % of the total heating system flow rate.

The injection circuit provides heat to the consumers immediately upon demand. For this purpose, the three-way mixer will be controlled.
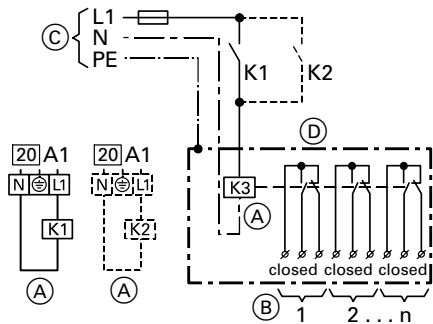
The boiler is best protected when regulating the heating circuits via Vitotronic 050 connected to the boiler control unit.

No additional on-site protective measures are required.

Temperature sensor T1

Wiring for reducing the volume flow in heating systems with heating circuit control units, which are not connected to the boiler control unit via the LON BUS.

Required coding: "0d: 1" and "4C: 2".

20 A1 Mixers closed
Ⓐ   Contactor relay,
         part no. 7814 681
Ⓑ   Downstream heating circuit
         controller, contact closed:
         Signal for "Mixer closed".
Ⓒ   Mains electrical connection
         230V~/50 Hz
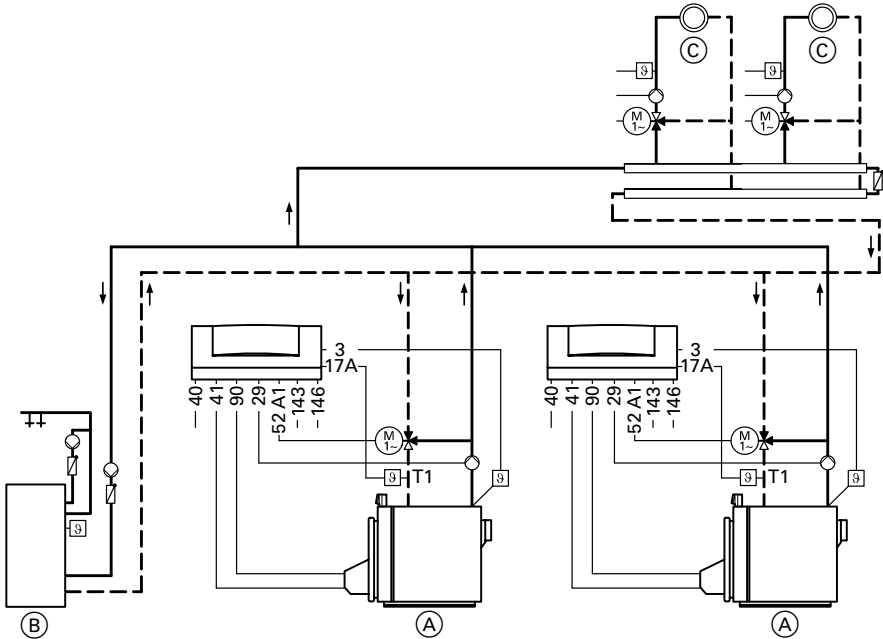Ⓓ   Junction box, on site

System version 9

Raising the return temperature with a three-way mixing valve

Vitogas 100

Vitomax 100, Vitomax 200 and Vitomax 300

Vitoplex 100, type SX1, Vitoplex 200, type SX2, and Vitoplex 300, type TX3

Vitorond 200

(A) Boiler with Vitotronic 100
(B) DHW cylinder
(C) Heating circuit with mixer

Plug

3		Boiler water temperature sensor
17	A	Temperature sensor T1
29		Boiler circuit pump
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
52	A1	Three-way mixing valve
90		Burner stage 2/mod.
143 / 146		External hook-up (see page 69)

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System version 9 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding		
01 :	2	Multi-boiler system with cascade control via LON BUS
01 :	3	Multi-boiler system with external cascade control via switching contacts
02 :	2	Modulating burner operation[*1]
03 :	1	Oil fired operation (irreversible)[*1]
0C :	1	Constant return temperature control
4d :	2	Boiler circuit pump on plug 29
Automatic changeover		
4A:	1	Connecting temperature sensor T1 to plug 17 A

Possible applications
e.g. older heating systems and/or systems in nurseries where downstream heating circuits cannot be controlled.
The cascade and cylinder control must be provided by a higher control unit.
Temperature sensor T1 closes the three-way mixing valve in proportion and therefore ensures boiler protection if the required minimum return temperature is not achieved.

Note
Size the boiler circuit pumps for each boiler so that their volume flow is at least as large as the max. total heating circuit volume flow. Recommendation: 110 %
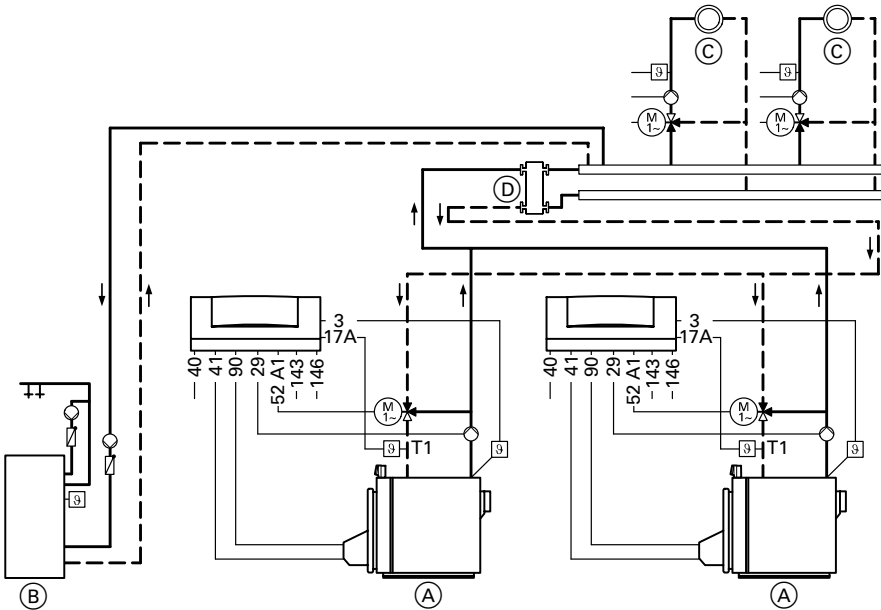
[*1]If required.

System version 10

Raising the return temperature with a low loss header and a three-way mixing valve
Vitogas 100
Vitomax 100, Vitomax 200 and Vitomax 300
Vitoplex 100, type SX1, Vitoplex 200, type SX2, and Vitoplex 300, type TX3
Vitorond 200

Ⓐ Boiler with Vitotronic 100
Ⓑ DHW cylinder
Ⓒ Heating circuit with mixer
Ⓓ Low loss header

Plug

3		Boiler water temperature sensor
17	A	Temperature sensor T1
29		Boiler circuit pump
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
52	A1	Three-way mixing valve
90		Burner stage 2/mod.
143 / 146		External hook-up (see page 69)

System version 10 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding	
01 : 2	Multi-boiler system with cascade control via LON BUS
01 : 3	Multi-boiler system with external cascade control via switching contacts
02 : 2	Modulating burner operation[*1]
03 : 1	Oil fired operation (irreversible)[*1]
0C : 1	Constant return temperature control
4d : 2	Boiler circuit pump on plug 29
Automatic changeover	
4A: 1	Connecting temperature sensor T1 to plug 17 A

Possible applications
For example, older systems or systems in nurseries where the hydraulic conditions cannot be clearly defined and/or systems where downstream heating circuits cannot be controlled.
The cascade and cylinder control must be provided by a higher control unit.

Temperature sensor T1 closes the three-way mixing valve in proportion and therefore ensures boiler protection if the required minimum return temperature is not achieved. Boiler and downstream heating circuits are hydraulically coupled together. The flow temperature is controlled by the temperature sensor (cascade control unit) in the low loss header.
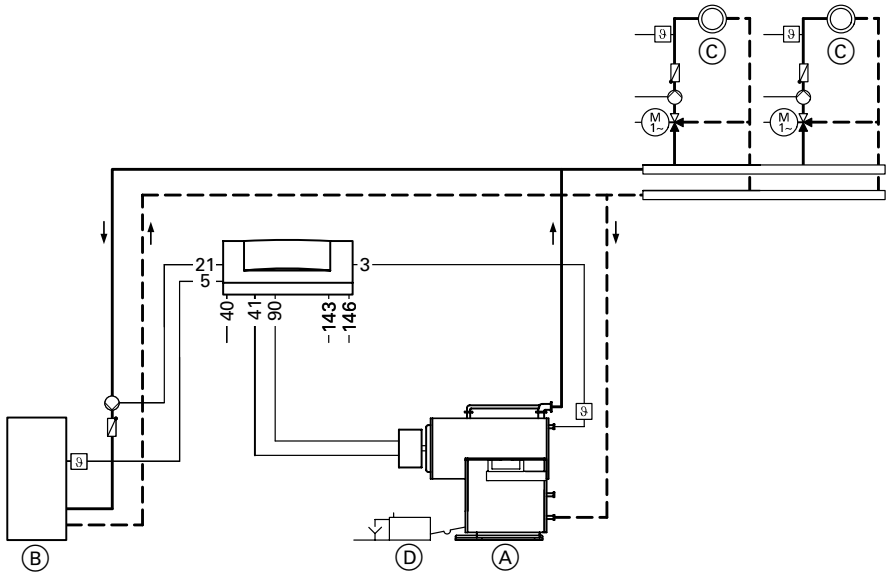
Note
Size the boiler circuit pumps for each boiler so that their volume flow is at least as large as the max. total heating circuit volume flow. Recommendation: 110 %

[*1]*If required.*

System version 11

System with Vitocrossal 300

(A) Boiler with Vitotronic 100
(B) DHW cylinder
(C) Heating circuit with mixer
(D) Neutralising system

Plug

3	Boiler water temperature sensor
5	Cylinder temperature sensor (accessories)
21	Cylinder primary pump (accessories)
40	Mains electrical connection, 230V~/50 Hz
41	Burner stage 1
90	Burner stage 2/mod.
143/146	External hook-up (see page 69)

System version 11 (cont.)

Required coding

02 :	2	Modulating burner operation*1
0d :	0	Without Therm-Control

Automatic changeover

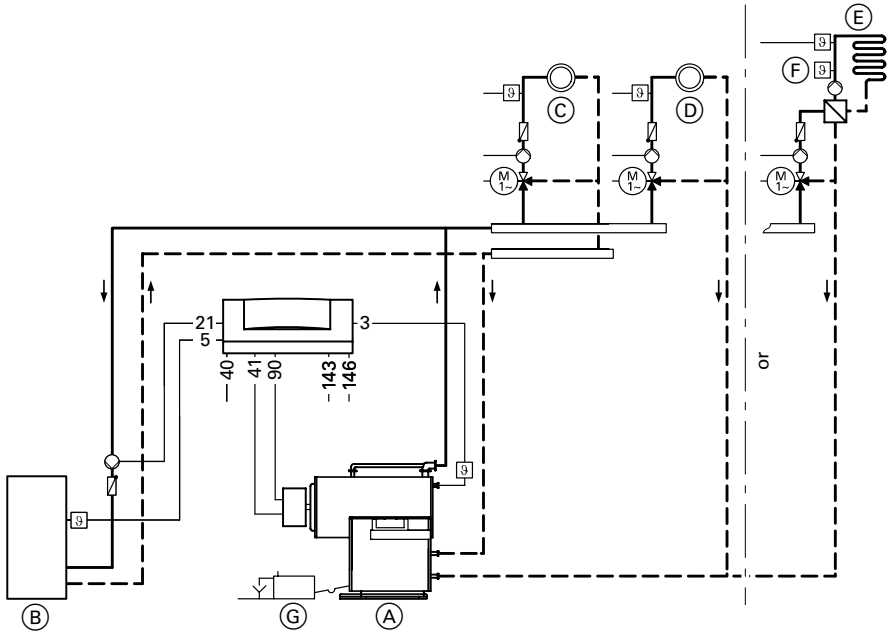|		
00 :	2	With DHW cylinder

Vitocrossal 300 is operated via the
boiler control unit – two-stage or
modulating burners are regulated.

*1If required.

System version 12

Several heating circuits and one low temperature heating circuit
Vitocrossal 300

(A) Boiler with Vitotronic 100
(B) DHW cylinder
(C) Heating circuit with mixer
(D) Low temperature heating circuit
or
(E) Underfloor heating circuit with mixer
(F) Temperature limiter (max. limit)
(G) Neutralising system

Plug

3	Boiler water temperature sensor
5	Cylinder temperature sensor (accessories)
21	Cylinder primary pump (accessories)
40	Mains electrical connection, 230V~/50 Hz
41	Burner stage 1
90	Burner stage 2/mod.
143/146	External hook-up (see page 69)

System version 12 (cont.)

Required coding

02 : 2	Modulating burner operation[1]
0d : 0	Without Therm-Control

Automatic changeover

00 : 2	With DHW cylinder

Possible applications
For heating circuits with varying temperatures.

Vitocrossal 300 is operated via the boiler control unit – two-stage or modulating burners are regulated.

Vitocrossal 300 is equipped with two return connectors. The heating circuits with the higher return temperature are connected to the upper return connector, and those with lower return temperatures to the lower return connector. Note: connect at least 15% of the rated output to the lower return connector.

[1]If required.

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System version 13

Several heating circuits and one low temperature heating circuit
Vitocrossal 300
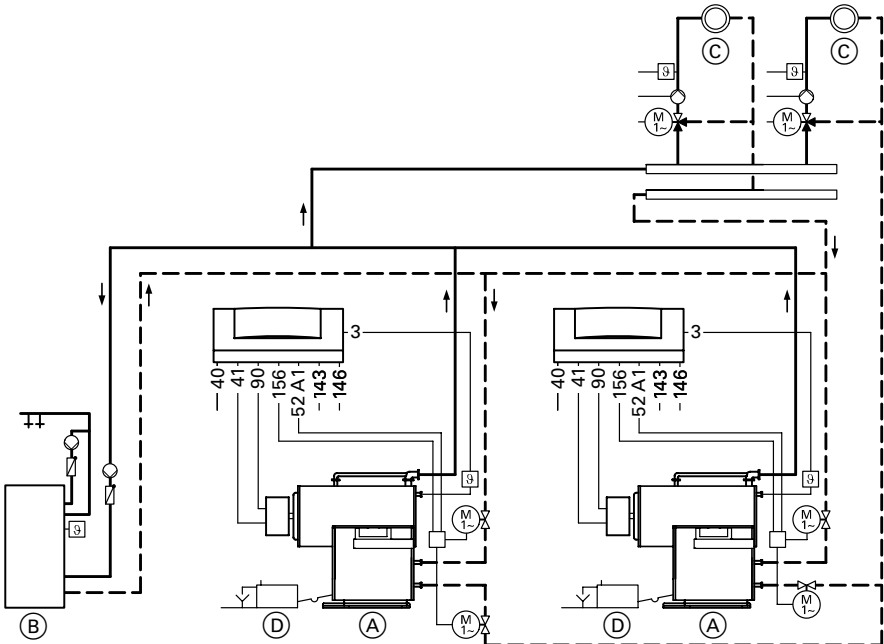
(A) Boiler with Vitotronic 100
(B) DHW cylinder
(C) Heating circuit with mixer
(D) Neutralising system

Plug

3	Boiler water temperature sensor
40	Mains electrical connection, 230V~/50 Hz
41	Burner stage 1
52 A1	Motorised butterfly valve
90	Burner stage 2/mod.
143/146	External hook-up (see page 69)
156	Power supply, accessories

System version 13 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding

01 :	2	Multi-boiler system with cascade control via LON BUS
01 :	3	Multi-boiler system with external cascade control via switching contacts
02 :	2	Modulating burner operation[*1]
0d :	0	Without Therm-Control

Possible applications

If the distributor is located in remote sub-stations (> 20 m). The heat transfer to the heating circuits must be able to be reduced.
The cascade and cylinder control must be provided by a higher control unit.

Vitocrossal 300 are operated via the boiler control unit – two-stage or modulating burners are regulated.

Vitocrossal 300 are equipped with two return connectors. The heating circuits with the higher return temperature are connected to the upper return connector, and those with lower return temperatures to the lower return connector. Note: connect at least 15% of the rated output to the lower return connector.

Motorised butterfly valve
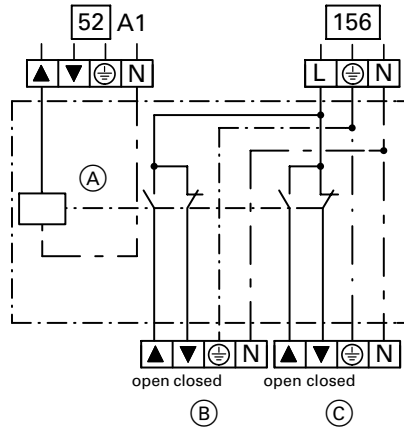
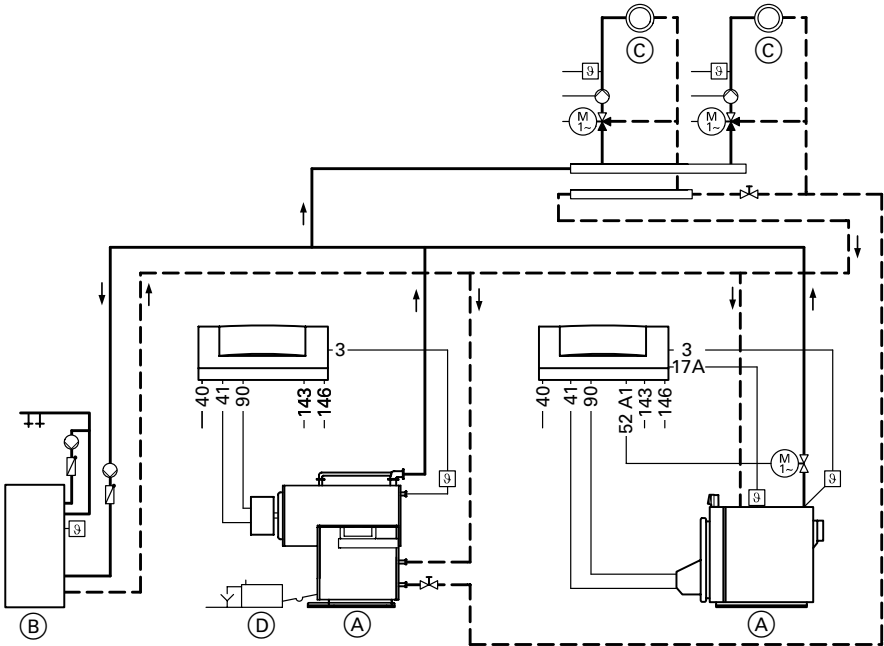|	
52 A1	Plug on Vitotronic 100
156	Plug on Vitotronic 100
Ⓐ	Contactor relay, part no. 7814 681
Ⓑ	Motorised butterfly valve 1
Ⓒ	Motorised butterfly valve 2

*1If required.

System version 14

Several heating circuits and one low temperature heating circuit
Vitocrossal 300
Vitoplex 100, type SX1, Vitoplex 200, type SX2, Vitoplex 300, type TX3

(A) Boiler with Vitotronic 100
(B) DHW cylinder
(C) Heating circuit with mixer
(D) Neutralising system

Plug

3		Boiler water temperature sensor
17	A	Temperature sensor Therm-Control
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
52	A1	Motorised butterfly valve
90		Burner stage 2/mod.
143/146		External hook-up (see page 69)

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System version 14 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding	
01 : 2	Multi-boiler system with cascade control via LON BUS
01 : 3	Multi-boiler system with external cascade control via switching contacts
02 : 2	Modulating burner operation[*1]
03 : 1	Only with Vitotronic 100 for Vitoplex:[*1] Oil fired operation (irreversible)
0d : 0	Only with Vitotronic 100 for Vitocrossal 300: Without Therm-Control
Automatic changeover	
4A: 1	Only with Vitotronic 100 for Vitoplex: Connecting the Therm-Control temperature sensor to plug 17 A

*1If required.

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System version 14 (cont.)

Possible applications
The cascade and cylinder control must be provided by a higher control unit.

The Vitocrossal 300 (lead boiler) and the next low temperature boiler should be operated via a weather-compensated control system with modulating boiler water temperature and load-dependent sequential control – two-stage or modulating burners are regulated.

Vitocrossal 300 is equipped with two return connectors. The heating circuits with the higher return temperature are connected to the upper return connector and those with lower return temperatures to the lower return connector. Note: connect at least 15% of the rated output to the lower return connector.

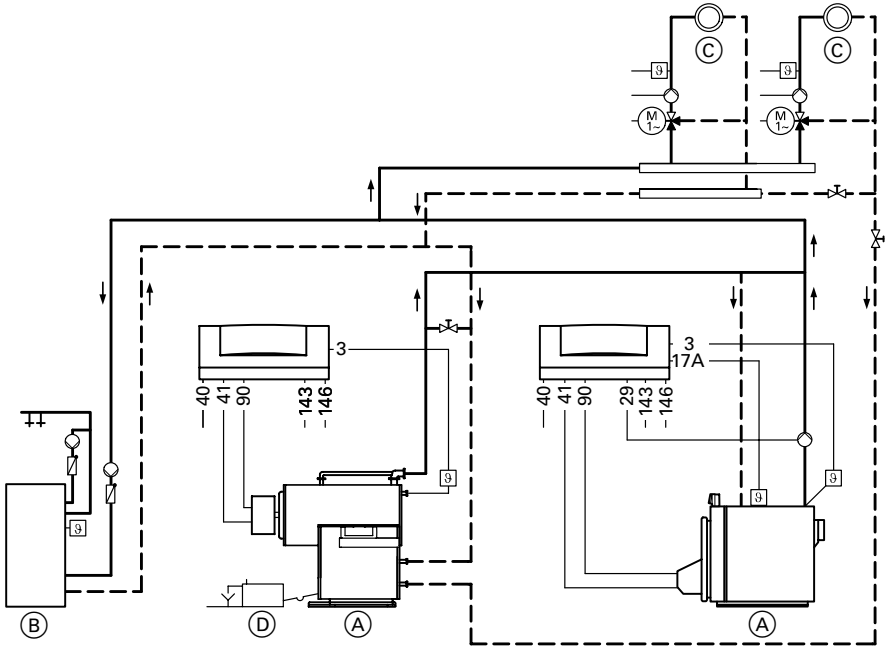The Therm-Control temperature sensor of the low temperature boiler controls the motorised butterfly valve and must reduce the **boiler water volume flow** of the low temperature boiler during the **start-up phase** (e.g. during commissioning or after night or weekend shutdown).

System version 15

Several heating circuits, one low temperature heating circuit and low temperature boiler with shunt pump
Vitocrossal 300
Vitogas 100
Vitomax 100
Vitoplex 100, type SX1, Vitoplex 200, type SX2, and Vitoplex 300, type TX3
Vitorond 100
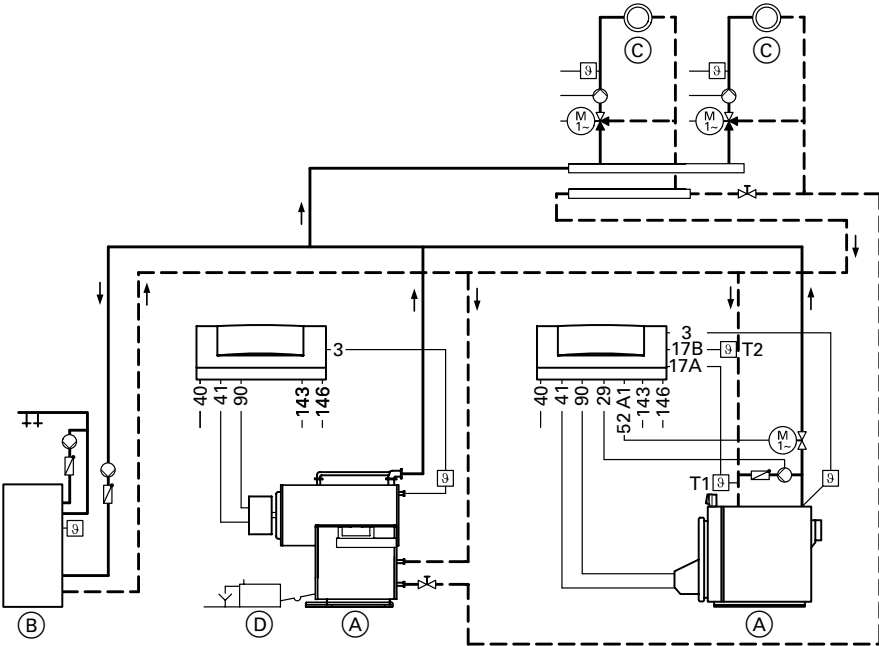
Ⓐ Boiler with Vitotronic 100
Ⓑ DHW cylinder
Ⓒ Heating circuit with mixer
Ⓓ Neutralising system

Plug

3		Boiler water temperature sensor
17	A	Temperature sensor T1
17	B	Temperature sensor T2
29		Shunt pump
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
52	A1	Motorised butterfly valve
90		Burner stage 2/mod.
143/146		External hook-up (see page 69)

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System version 15 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding	
01 : 2	Multi-boiler system with cascade control via LON BUS
01 : 3	Multi-boiler system with external cascade control via switching contacts
02 : 2	Modulating burner operation[*1]
03 : 1	Only with Vitotronic 100 for low temperature boilers: Oil fired operation (irreversible)[*1]
0d : 0	Only with Vitotronic 100 for Vitocrossal 300: Without Therm-Control
Automatic changeover	
4A: 1	Only with Vitotronic 100 for low temperature boilers: Connecting temperature sensor T1 to plug 17 A
4b : 1	Only with Vitotronic 100 for low temperature boilers: Connecting temperature sensor T2 to plug 17 B

[*1]*If required.*

System version 15 (cont.)

Possible applications
The cascade and cylinder control must be provided by a higher control unit.

The Vitocrossal 300 (lead boiler) and the next low temperature boiler should be operated via a weather-compensated control system with modulating boiler water temperature and load-dependent sequential control – two-stage or modulating burners are regulated.

Vitocrossal 300 is equipped with two return connectors. The heating circuits with the higher return temperature are connected to the upper return connector and those with lower return temperatures to the lower return connector. Note: connect at least 15% of the rated output to the lower return connector.

The return temperature raising facility is available as an accessory or must be provided on site. Raise the return temperature through a shunt-pump and by closing the butterfly valve. Temperature sensor T1 controls the butterfly valve. Temperature sensor T2 switches the shunt pump.

System version 16

Several heating circuits, one low temperature heating circuit plus Vitoplex with Therm-Control and boiler circuit pump
Vitocrossal 300
Vitoplex 100 (90 to 500 kW), Vitoplex 200 and Vitoplex 300, type TX3 (80 to 1750 kW)

(A) Boiler with Vitotronic 100
(B) DHW cylinder
(C) Heating circuit with mixer
(D) Neutralising system

Plug

3		Boiler water temperature sensor
17	A	Therm-Control temperature sensor
29		Boiler circuit pump
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
90		Burner stage 2/mod.
143 / 146		External hook-up (see page 69)

System version 16 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding	
01 : 2	Multi-boiler system with cascade control via LON BUS
01 : 3	Multi-boiler system with external cascade control via switching contacts
02 : 2	Modulating burner operation[*1]
03 : 1	Only with Vitotronic 100 for Vitoplex: Oil fired operation (irreversible)[*1]
0d : 0	Only with Vitotronic 100 for Vitocrossal 300: Without Therm-Control
4d : 3	Only with Vitotronic 100 for Vitoplex: Boiler circuit pump with butterfly valve function on plug 29
Automatic changeover	
4A: 1	Only with Vitotronic 100 for Vitoplex: Connecting the Therm-Control temperature sensor to plug 17 A

[*1]If required.

System version 16 (cont.)

Possible applications
For heating circuits with temperature differentials $\geqq$ 20 K.

The cascade and cylinder control must be provided by a higher control unit.

The Vitocrossal 300 (lead boiler) and the next low temperature boiler should be operated via a weather-compensated control system with modulating boiler water temperature and load-dependent sequential control – two-stage or modulating burners are regulated.

Vitocrossal 300 are equipped with two return connectors. The heating circuits with the higher return temperature are connected to the upper return connector and those with lower return temperatures to the lower return connector. Note: connect at least 15% of the rated output to the lower return connector.

The Therm-Control temperature sensor of the low temperature boiler regulates the boiler circuit pump. The boiler circuit pump is switched OFF when the Therm-Control temperature defaulted by the boiler coding card is not achieved.

System version 17

Three-way mixing valve, several heating circuits and one low temperature heating circuit
Vitocrossal 300
Vitomax 100, Vitomax 200 and Vitomax 300
Vitoplex 100, type SX1, Vitoplex 200, type SX2, and Vitoplex 300, type TX3
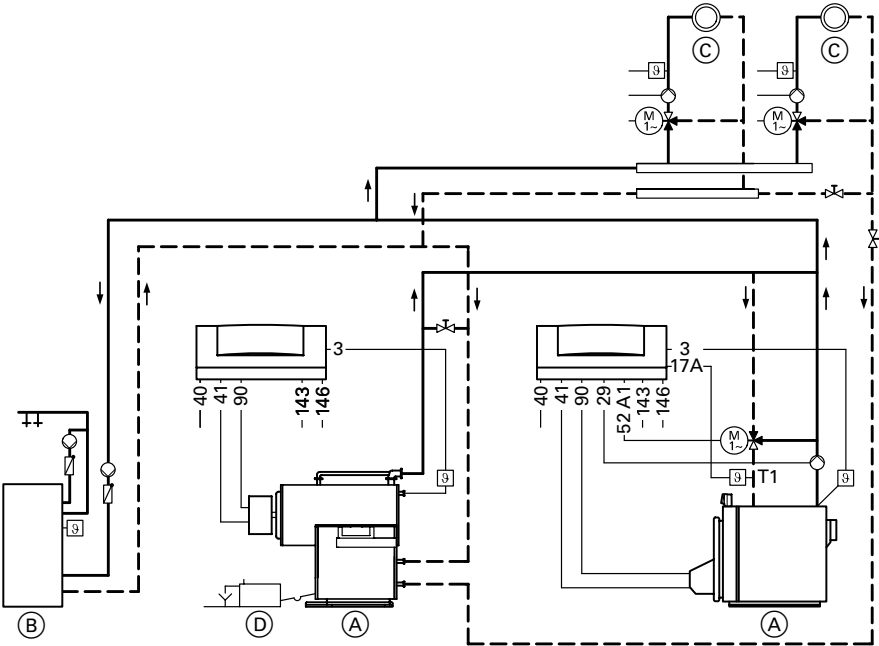
Ⓐ Boiler with Vitotronic 100
Ⓑ DHW cylinder
Ⓒ Heating circuit with mixer
Ⓓ Neutralising system

Plug

3		Boiler water temperature sensor
17	Ⓐ	Temperature sensor T1
29		Boiler circuit pump
40		Mains electrical connection, 230V~/50 Hz
41		Burner stage 1
52	A1	Three-way mixing valve
90		Burner stage 2/mod.
143 / 146		External hook-up (see page 69)

System version 17 (cont.)

Codes must be set on **every** Vitotronic 100.

Required coding		
01 :	2	Multi-boiler system with cascade control via LON BUS
01 :	3	Multi-boiler system with external cascade control via switching contacts
02 :	2	Modulating burner operation[*1]
03 :	1	Only with Vitotronic 100 for low temperature boilers: Oil fired operation (irreversible)[*1]
0C :	1	Only with Vitotronic 100 for low temperature boilers: Constant return temperature control
0d :	0	Only with Vitotronic 100 for Vitocrossal 300: Without Therm-Control
4d :	2	Only with Vitotronic 100 for low temperature boilers: Boiler circuit pump on plug 29
Automatic changeover		
4A:	1	Only with Vitotronic 100 for low temperature boilers: Connecting temperature sensor T1 to plug 17 A

[*1]If required.

System version 17 (cont.)

Possible applications
For heating circuits with temperature differentials ≧ 20 K.
The cascade and cylinder control must be provided by a higher control unit.

The Vitocrossal 300 (lead boiler) and the next low temperature boilers should be operated via a weather-compensated control system with modulating boiler water temperature and load-dependent sequential control – two-stage or modulating burners are regulated.

Vitocrossal 300 are equipped with two return connectors. The heating circuits with the higher return temperature are connected to the upper return connector and those with lower return temperatures to the lower return connector. Note: connect at least 15% of the rated output to the lower return connector.

Temperature sensor T1 records the return temperature.
The boiler control unit regulates the three-way mixing valve to ensure that the system never falls below the minimum return temperature.

DHW heating with a cylinder storage system

Only in conjunction with single boiler systems
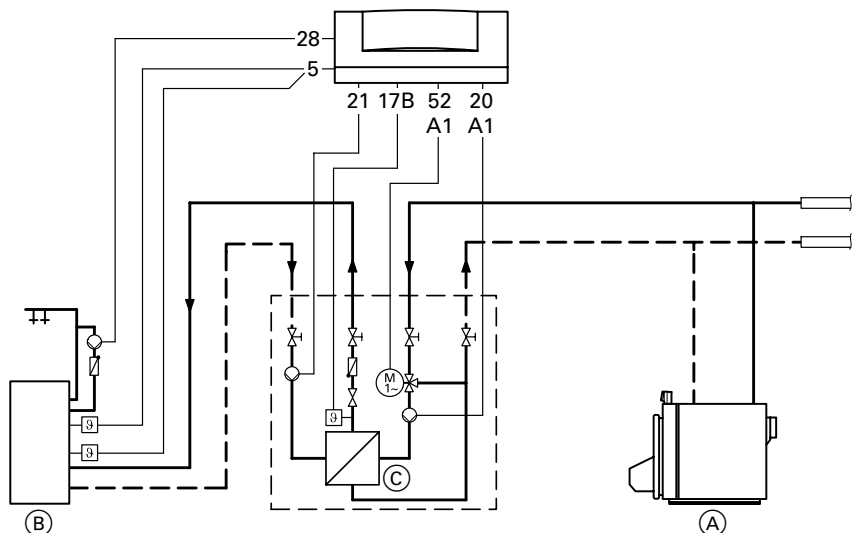
Ⓐ Boiler with Vitotronic 300
Ⓑ Vitocell-L 300
Ⓒ Vitotrans 222

Plug
5 Terminals 1 and 2:
   Cylinder temperature
   sensor 1 (top)
   Terminals 2 and 3:
   Cylinder temperature
   sensor 2 (bottom)
17 B Temperature sensor
   Vitotrans 222
20 A1 Primary pump
21 Secondary pump
28 DHW circulation pump
52 A1 Motor for three-way mixing
   valve

Possible applications
In systems with temporarily high
DHW demand and large cylinder
capacity with offset heating and
draw-off times.

DHW heating with a cylinder storage system (cont.)

Required coding

4C :	1	Primary pump connection on plug 20 A1
4E :	1	Motor connection for three-way mixing valve on plug 52 A1
55 :	3	Cylinder thermostat – cylinder storage system

Automatic changeover

4b :	1	Connection of temperature sensor Vitotrans 222 on plug 17 B

In conjunction with system version 2.
The sensor input 17 B is used to control Vitotrans 222. Therefore, the shunt pump must be controlled by a separate thermostat.
Required coding: "4d: 2"

In conjunction with system version 3.
A separate Vitotronic 050 must be used for controlling the Vitotrans 222. The boiler control unit regulates the constant raising of the return temperature (see also coding address "4E").
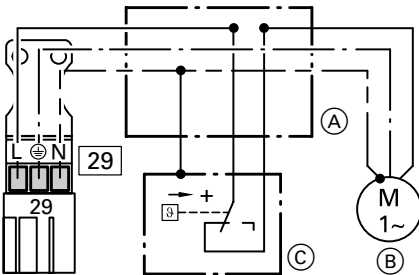
(A) Junction box, on site
(B) Shunt pump
(C) Control thermostat,
      part no. Z001 886

System with flue gas/water heat exchanger

With shunt pump
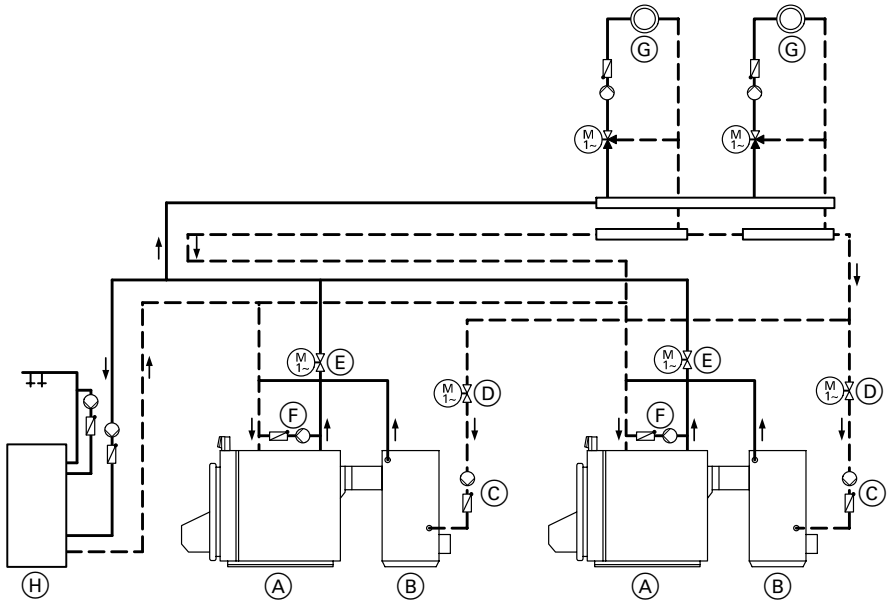
With boiler circuit pump
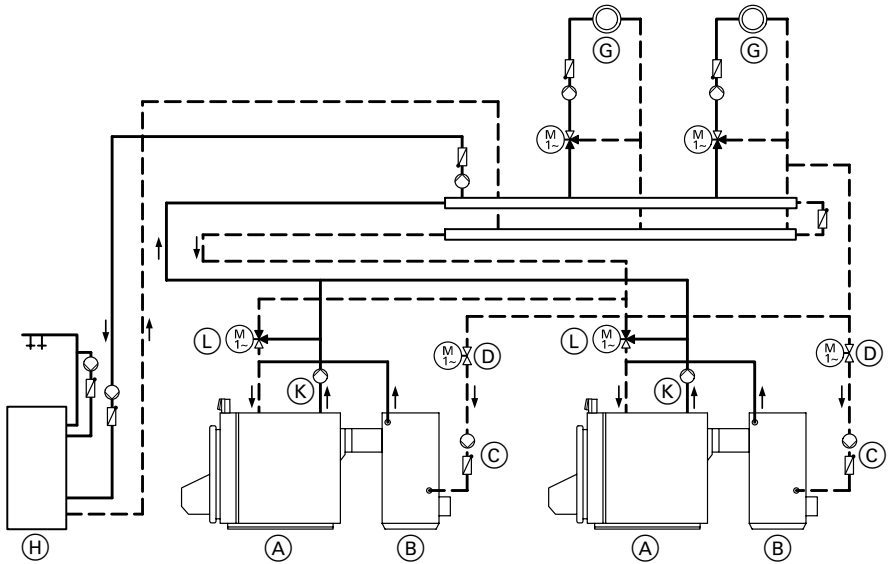
System with flue gas/water heat exchanger (cont.)

Ⓐ Boiler with Vitotronic 100
Ⓑ Vitotrans 333 (flue gas/water
    heat exchanger)
Ⓒ Circulation pump –
    Vitotrans 333
Ⓓ Motorised butterfly valve
    Vitotrans 333
Ⓔ Motorised boiler butterfly
    valve
Ⓕ Shunt pump
Ⓖ Low temperature heating
    circuit
Ⓗ DHW cylinder
Ⓚ Boiler circuit pump
Ⓛ Three-way mixing valve
Ⓜ Contactor relay,
    part no. 7814 681
[20]A1 for circulation pump – flue
    gas/water heat exchanger
    (Vitotronic 100)

Required coding:
Adjust on every Vitotronic 100 with
Vitotrans 333 "4C : 3".

**Circulation pump and motorised
butterfly valve – Vitotrans 333**
The circulation pump is started in
parallel to the burner.
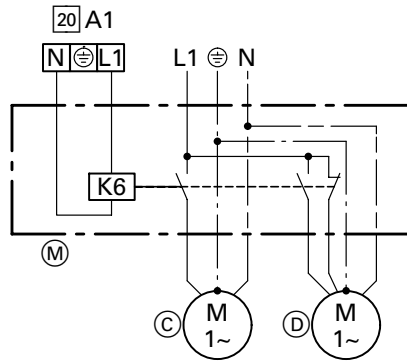
Note
*Arrange the system designs on site
so that output [20] A1 must be used
as switching contact or heating
circuit pump connection.*

Summary of electrical connections

145

17 | B
17 | A
5
3/2
15
143
146

21
52 | A1/M1
20 | A1/M1
29
50
40
156
156

150

151
90
41
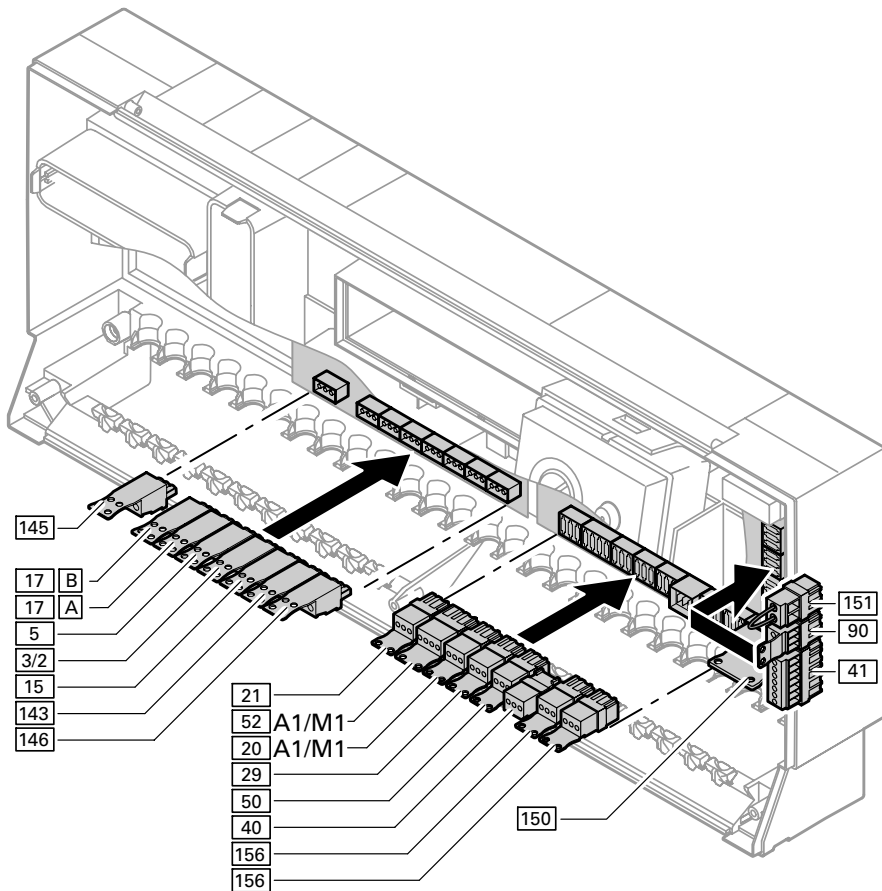
Summary of electrical connections (cont.)

Main PCB low voltage

3	Boiler water temperature sensor
5	Cylinder temperature sensor Cylinder temperature sensor 2 for cylinder storage system (accessories)
15	Flue gas temperature sensor (accessories)
17 A	Temperature sensor of Therm-Control or Return temperature sensor T1 (accessories)
17 B	Return temperature sensor T2 (accessories) or cylinder storage system temperature sensor
143	External hook-up
145	KM BUS user, e.g. plug-in adaptor for external safety equipment
146	External hook-up

Main PCB 230V~

20 A1	Cylinder primary pump or Circulation pump – flue gas/water heat exchanger or switching output
21	Cylinder primary pump (accessories)
29	Shunt pump (on site) or Boiler circuit pump (on site)
40	Power supply
41	Burner stage 1
50	Central fault message
52 A1	Butterfly valve or Motor for three-way mixer for raising the return temperature or Motor for three-way mixing valve Cylinder storage system
90	Burner stage 2/mod.
150	External connections, e.g. supplementary safety equipment
151	Safety chain, zero volt (230 V)
156	Power supply for accessories

When connecting external switching contacts or components to the low voltage circuit of the control unit, please observe the safety requirements of protection class II, i.e. 8.0 mm air gap/creep path or 2.0 mm insulation thickness from 'live' components.

Ensure a safe electrical separation for all on-site components (incl. PC/laptops) to conform to EN 60 335 or IEC 65.

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Inserting cables and applying strain relief

Installing the control unit on the boiler
Route cables from below through the front panel of the boiler into the wiring chamber of the control unit.

Installing the control unit on the boiler side
Route cables from below, out of the cable channel into the control unit.
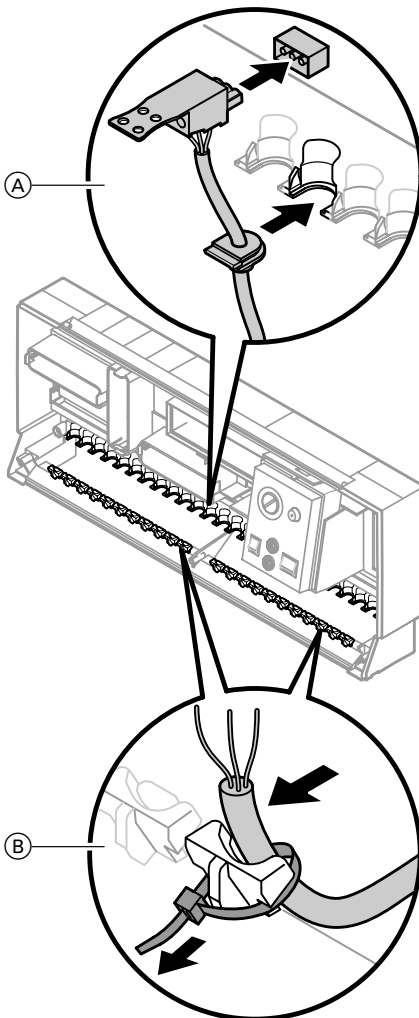
Ⓐ Cables with moulded strain relief
Ⓑ On-site cables
Strip a maximum of 100 mm off the cable insulation.

Inserting the boiler coding card

Only use the boiler coding card included with the boiler.

Boiler	Coding card	Part no.
Vitocrossal 300, type CM3	1042	7820 146
Vitocrossal 300, type CR3	1041	7820 145
Vitocrossal 300, type CT3	1040	7820 144
Vitocrossal 300, type CU3	1042	7820 146
Vitogas 100	1050	7820 147
Vitomax 100	1030	7820 143
Vitomax 200	1060	7820 382
Vitomax 300	1070	7820 383
Vitoplex 100, type SX1	1001	7820 140
Vitoplex 200, type SX2	1001	7820 140
Vitoplex 300, type TX3	1010	7820 141
Vitorond 200, type VD2	1020	7820 142
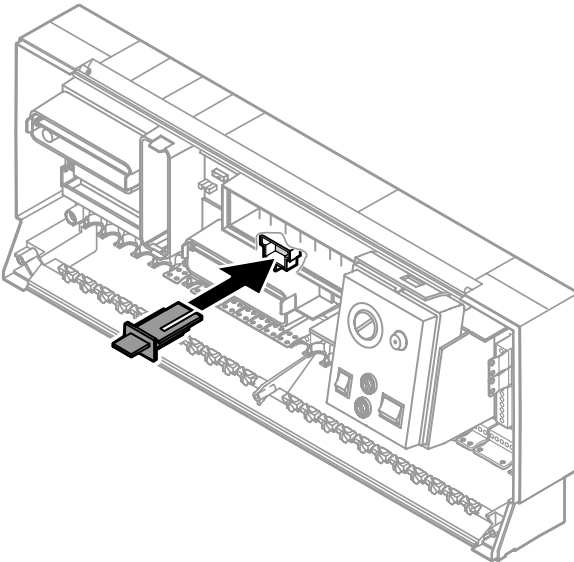
Insert the boiler coding card
through the cut-out in the cover
into slot "X7".

Changing the high limit safety cut-out setting (if required)

The high limit safety cut-out is supplied with a factory setting of 120 ºC.

! **Please note**
If the high limit safety cut-out is to remain set to 120 ºC, also install a minimum pressure limiter (see page 84 and 136), to prevent injury and material losses.

Note
Vitocrossal 300 and Vitogas 100 must be changed over to 110 ºC.

	Low temperature boiler			Vitogas 100, Vitocrossal 300	
High limit safety cut-out	120 ºC	110 ºC	100 ºC	110 ºC	100 ºC
Thermostat (see page 65)	110 ºC	100 ºC	87 ºC	100 ºC	87 ºC
Electronic max. temperature limit Coding address "06" (see page 142)	105 ºC	95 ºC	85 ºC	95 ºC	85 ºC
Max. temperature of on-site control unit	100 ºC	90 ºC	80 ºC	90 ºC	80 ºC

Changing the high limit safety cut-out setting (cont.)

Conversion to 110 or 100 ºC (make T&G)
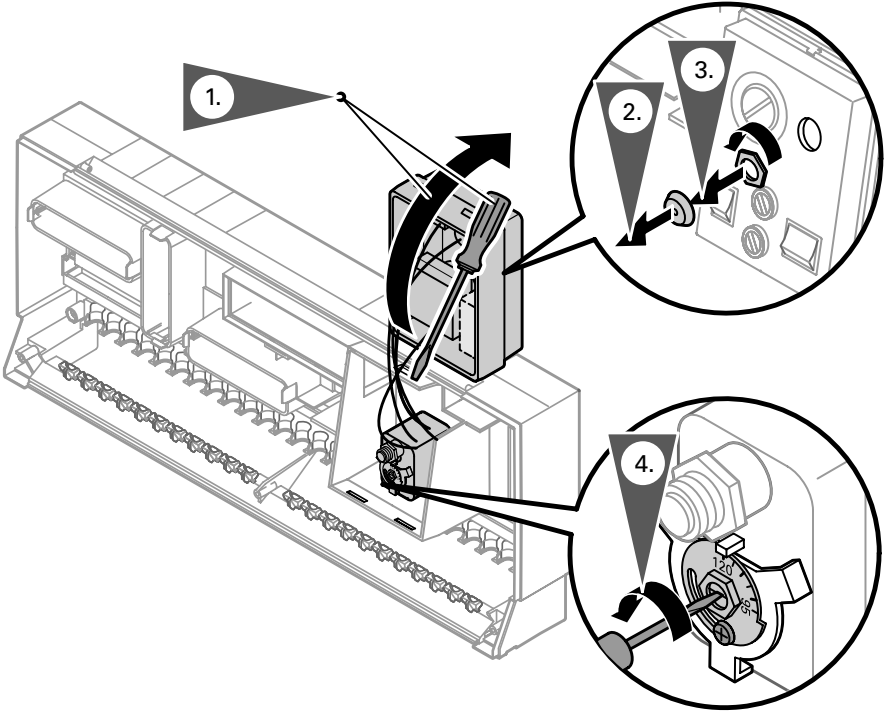
Changing the high limit safety cut-out setting (cont.)

Change to 110 or 100 ºC make EGO
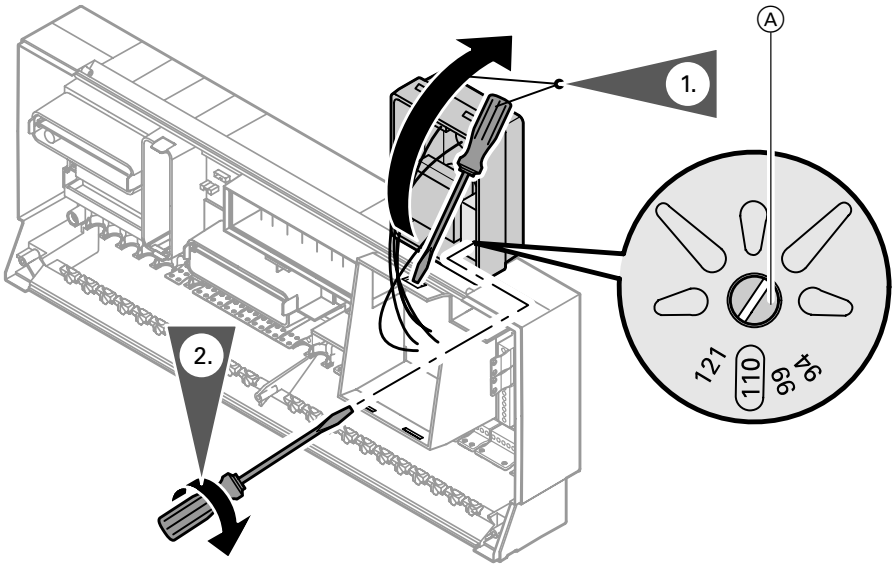
Ⓐ Slotted screw

1. Release the safety assembly and pivot it up.

2. Turn the slotted screw until the slot points to 110 or 100 ºC (once adjusted, the high limit safety cut-out **cannot** be reset).

Changing the high limit safety cut-out setting (cont.)

Conversion to 110 or 100 ºC, make JUMO
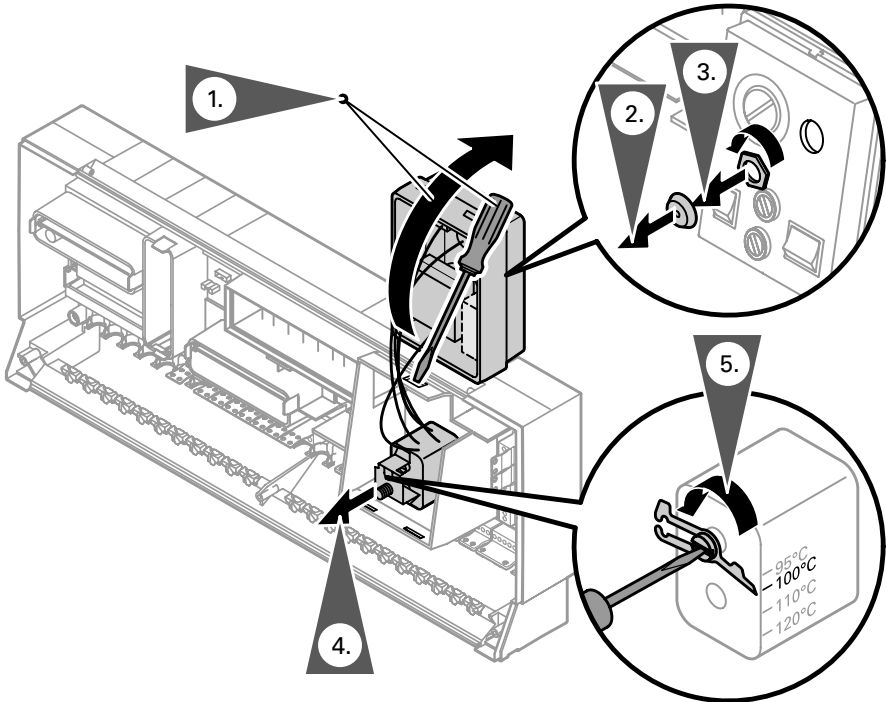
1. Release the safety assembly.

2. Remove reset button cover "⬆".

3. Release the nut.

4. Remove the high limit safety cut-out.

5. Turn the screw until the indicator points to 110 or 100 ºC.

Changing the control thermostat setting (if required)

Conversion to 100 or 110 °C

In the delivered condition, the control thermostat is set to 95 °C.
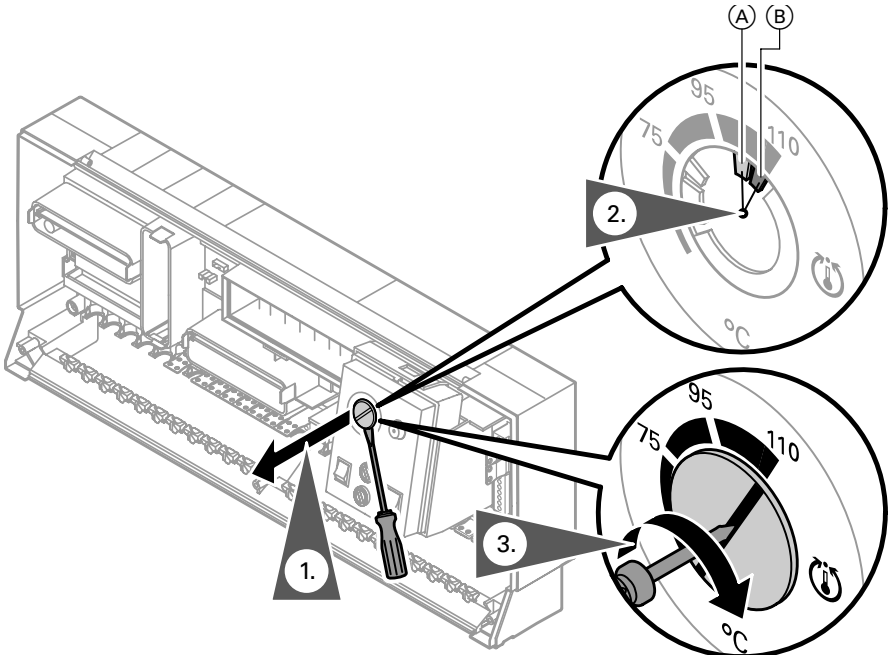
1. Lever out and remove rotary selector "🕙".

2. Using a pair of pointed pliers, break off the cams from the stop dial which are identified in the illustration.

Ⓐ	75 to 100 °C
Ⓐ, Ⓑ	75 to 110 °C

Note
Observe the setting of coding address "06".

3. Fit rotary selector "🕙", so that the marking lies at the centre of the

selected range.
Turn rotary selector "🕙" clockwise to the end stop.

❗ Please note
Excessive DHW temperatures can damage the DHW cylinder. If the system is operated in conjunction with a DHW cylinder, ensure that the maximum permissible DHW temperature is not exceeded. If necessary, install suitable safety equipment for this purpose.

Sensor connection
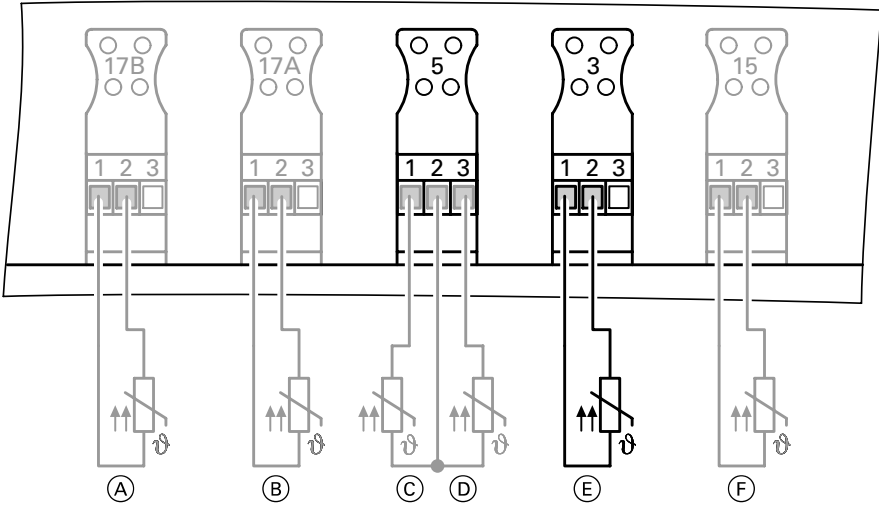
Ⓐ Temperature sensor T2 or
Temperature sensor – cylinder
storage system
Ⓑ Therm-Control temperature
sensor or temperature sensor T1
Ⓒ Cylinder temperature sensor
(accessories)
Ⓓ Cylinder temperature sensor 2 in
conjunction with a cylinder
storage system (accessories)
Ⓔ Boiler water temperature sensor
Ⓕ Flue gas temperature sensor
(accessories)

Pump connection

Available pump connections

20 Cylinder primary pump
   or
   Circulation pump – flue gas/water heat exchanger
21 Cylinder primary pump
29 Shunt pump or boiler circuit pump

Pumps 230 V~
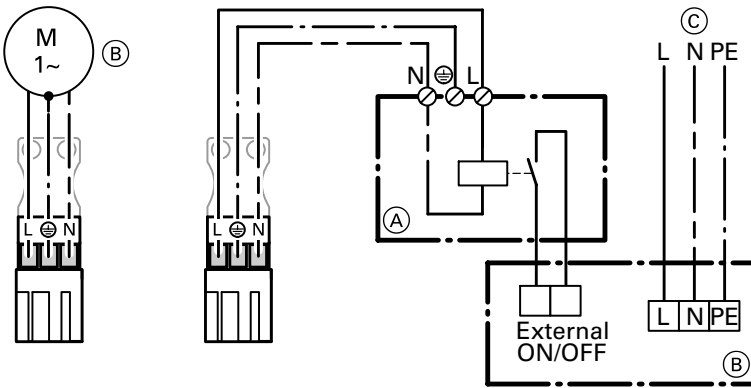
Pumps 400 V~
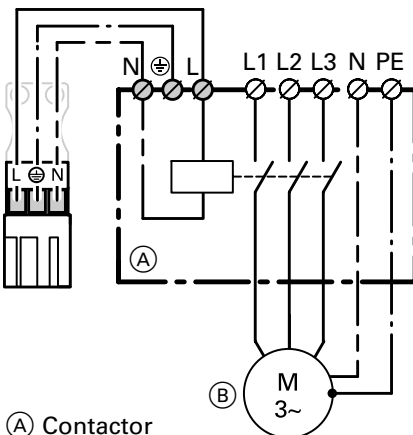
Rated current: 4 (2) A~
Recommended connecting
cable: H05VV-F3G 0.75 mm^2
                or
                H05RN-F3G 0.75 mm^2

For controlling the contactor
Rated voltage: 230 V~
Rated current: 4 (2) A ~
Recommended connecting
cable: H05VV-F3G 0.75 mm^2
                or
                H05RN-F3G 0.75 mm^2

Ⓐ Contactor
Ⓑ Pump
Ⓒ Mains supply in accordance with
   manufacturer's instructions

Connecting an actuator with three-point output

Use as:
- Butterfly valve
- Mixer motor
- Three-way mixing valve
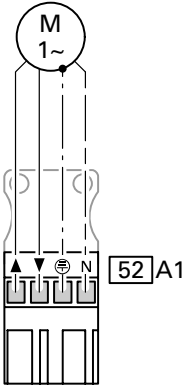
Rated voltage:	230 V~
Rated current:	max. 0.2 (0.1) A
Recommended connecting cable:	H05VV-F4G 0.75 mm^2 or H05RN-F4G 0.75 mm^2
Run-time:	5 to 199 s, adjustable via coding address "40" (delivered condition 125 s)

▲ Open
▼ Closed

External hook-up in single boiler systems

Operation with a two-stage burner

Zero volt contacts of the higher control unit:

Burner stage 1 ON

Burner stage 2 ON

External changeover of stepped/ modulating burners

External start-up depending on load

143   146
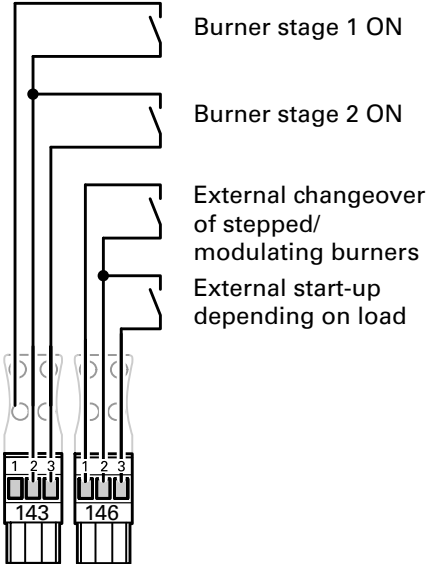
The connections on plug 143 and 146 are required when connecting an external hook-up. The cylinder thermostat is activated when the cylinder temperature sensor (accessories) is connected.

Control unit settings

Coding "01:   1" (delivered condition) **The boiler water temperature must be set to the lower value.** The low temperature boiler is held at the required minimum temperature.

The high limit safety cut-out settings and other settings are subject to the system equipment and the safety equipment in accordance with DIN 4751-2.

External hook-up in single boiler systems (cont.)

Starting burner stage 1

Contact closed:
Burner stage 1 is started. Burner stage 2 will only be started for maintaining the minimum temperature. The boiler water temperature is limited by the electronic maximum temperature limiter, if it is set below that of mechanical control thermostat "(i)".
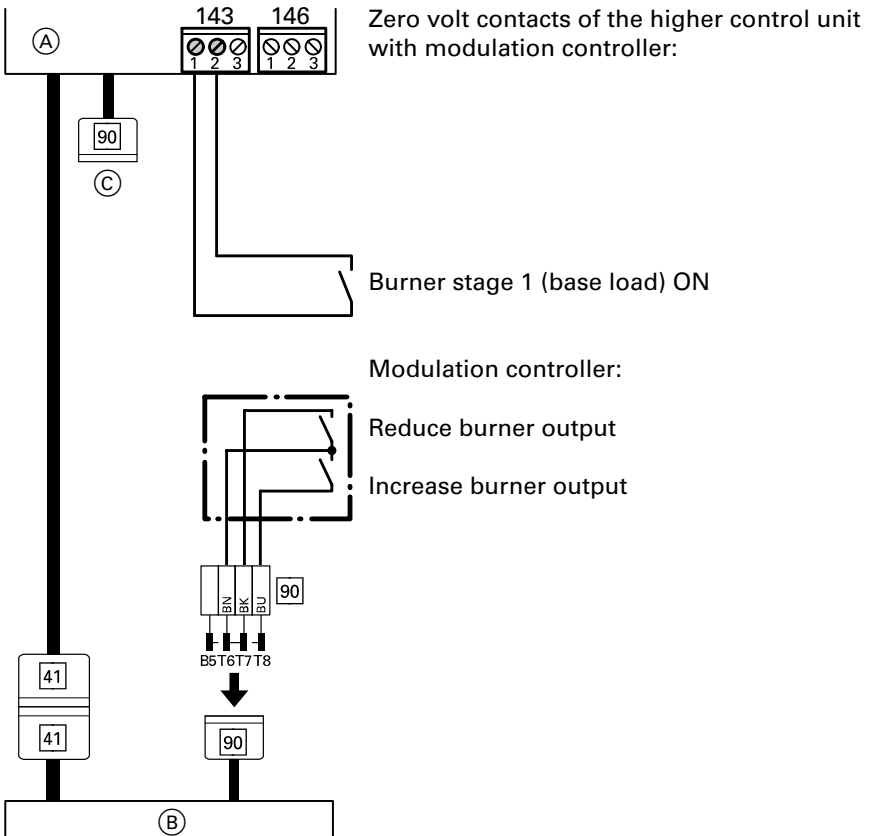
Contact opened:
Burner stage 1 is shut down.

Starting burner stage 1 and 2

Contact closed:
Both burner stages are switched ON. The boiler water temperature is limited by the electronic maximum temperature limiter, if it is set below that of mechanical control thermostat "(i)".
Burner stage 2 is shut down 2 K sooner.

Contact opened:
Burner stages 1 and 2 are switched OFF.

External changeover of stepped/modulating burners

Contact open: mod. operation
Contact closed: two-stage operation
Code "02:   2" (modulating burner) **must** be selected.

Note
Even if the contact is closed, scanning the type of burner will continue to display "modulating".

External start-up depending on load

Upon closing the zero volt contact, the burner will be regulated to a required set boiler water temperature, subject to load. The set boiler water temperature is adjusted via code "9b".
The boiler water temperature is limited via the selected maximum boiler water temperature or the mechanical thermostat "(i)".

External hook-up in single boiler systems (cont.)

Low temperature boiler – operation with a modulating burner

Connection modulating burner:
- Burner stage 1 41 of Vitotronic 100
- Plug-in connector 90 from Vitotronic 100 via the modulation controller (on site) to burner plug-in connector 90.
- Adjust the minimum temperatures at the higher control unit with the modulation controller 5 K higher than the lower boiler water temperature.

Zero volt contacts of the higher control unit with modulation controller:

Burner stage 1 (base load) ON

Modulation controller:

Reduce burner output

Increase burner output

Ⓐ Vitotronic 100
Ⓑ Burner control

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External hook-up in single boiler systems (cont.)

Control unit settings

Code "01:   1"
(delivered condition)
Code "02:   1"
(delivered condition)

The boiler water temperature must be set to the lower value. The boiler is held at the required minimum temperature.

The high limit safety cut-out settings and other settings are subject to the system equipment and the safety equipment in accordance with DIN 4751-2.

Starting burner stage 1

Contact closed:
Burner stage 1 is started. To maintain the minimum temperature, the burner is switched to full load via Vitotronic 100. An external modulation controller regulates the load-dependent modulation.
The boiler water temperature is limited by the electronic maximum temperature limiter, if it is set below that of mechanical control thermostat "Ⓘ".

Contact opened:
Burner stage 1 is shut down.

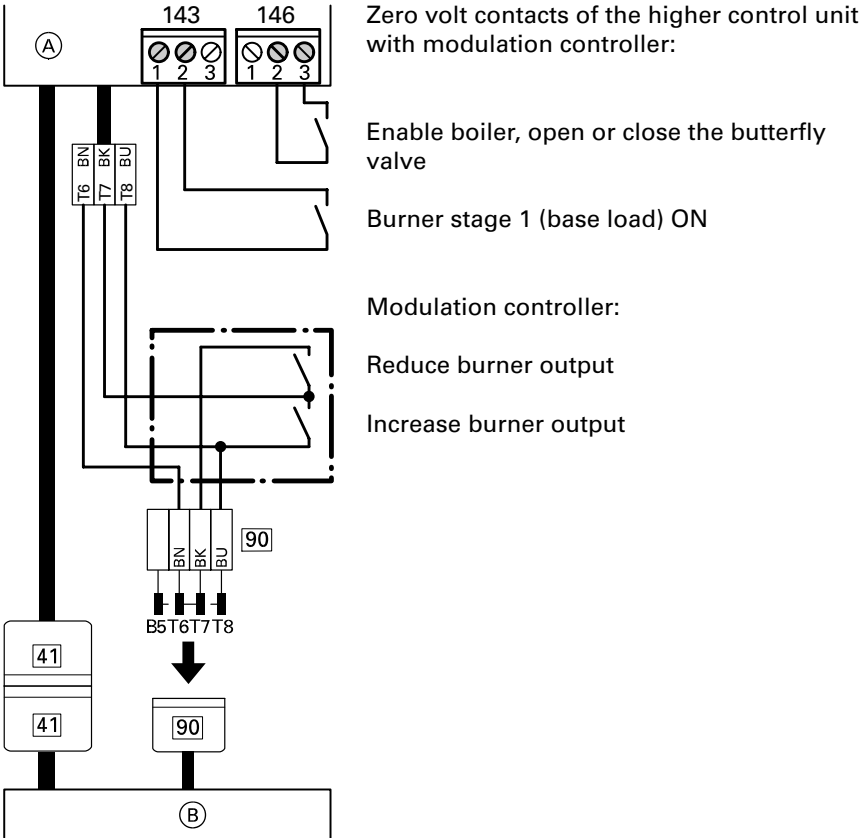## External hook-up in single boiler systems (cont.)

Vitocrossal 300 – operation with a modulating burner

Connection modulating burner:
- Burner stage 1 41 of Vitotronic 100
- Plug-in connector 90 of
  Vitotronic 100 remains unused
- Burner stage 2 90 modulating
  under the control of the on-site
  modulation controller

Zero volt contacts of the higher control unit
with modulation controller:

Burner stage 1 (base load) ON

Modulation controller:

Reduce burner output

Increase burner output

Ⓐ Vitotronic 100
Ⓑ Burner control
Ⓒ unused

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External hook-up in single boiler systems (cont.)

Control unit settings

Code "01:   1"
(delivered condition)

**The boiler water temperature must
be set to the lower value.**

The high limit safety cut-out settings
and other settings are subject to the
system equipment and the safety
equipment in accordance with
DIN 4751-2.

Starting burner stage 1

Contact closed:
Burner stage 1 is started. An external
modulation controller regulates the
load-dependent modulation. The
boiler water temperature is limited
by the electronic maximum
temperature limiter, if it is set below
that of mechanical control
thermostat "🕐".

Contact opened:
Burner stage 1 is shut down.

External hook-up in multi-boiler systems without LON

Operation with a two-stage burner

Zero volt contacts of the higher control unit:

Burner stage 1 ON

Burner stage 2 ON

Enable boiler, open or close the butterfly valve
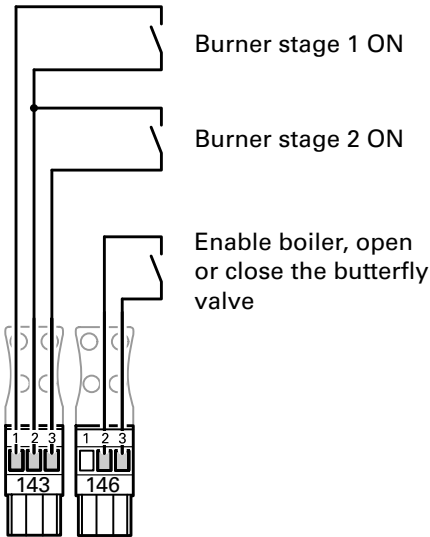
The connections on plug 143 and 146 are required when connecting an external hook-up. The DHW cylinder temperature and the load-dependent cascade control must be regulated by an external control unit.

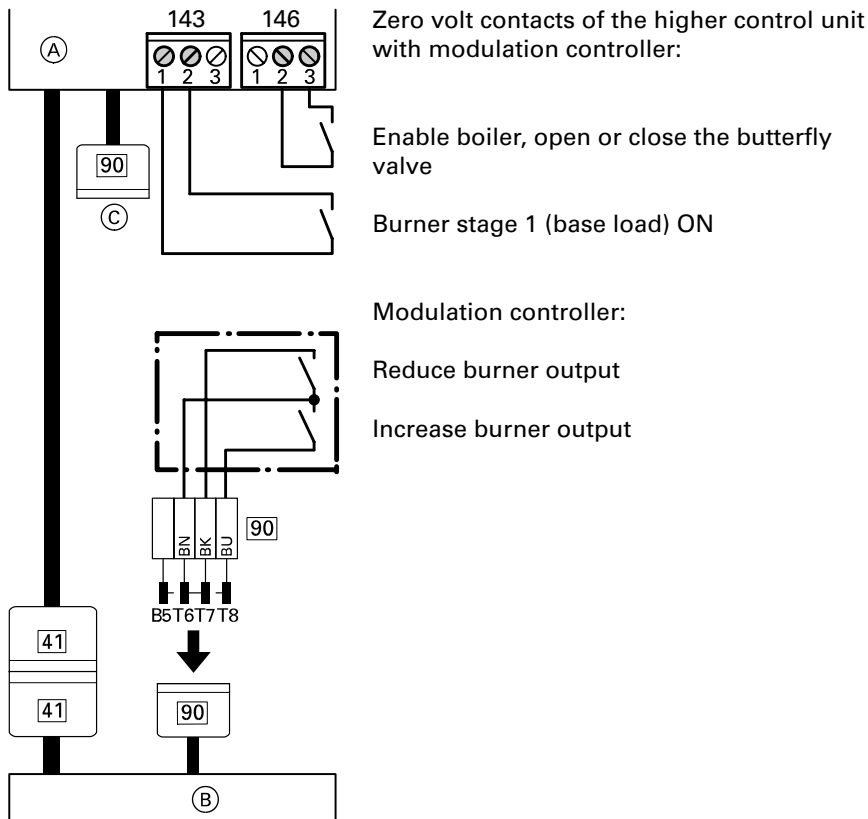**!** **Please note**
The contact "Boiler enable" must be provided in multi-boiler systems to prevent boiler damage. This contact **must** always be closed on the lead boiler.

Adjustments on every control unit

Set code "01: 3".
The high limit safety cut-out settings and other settings are subject to the system equipment and the safety equipment in accordance with DIN 4751-2.

Starting burner stage 1

Contact closed:
Burner stage 1 is started. Burner stage 2 is switched ON only for maintaining the minimum temperature (only for low temperature boilers).
The boiler water temperature is

limited by the electronic maximum temperature limiter, if it is set below that of mechanical control thermostat "🕐".

Contact opened:
Burner stage 1 is shut down.

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Installation

External hook-up in multi-boiler systems without LON (cont.)

Starting burner stage 1 and 2
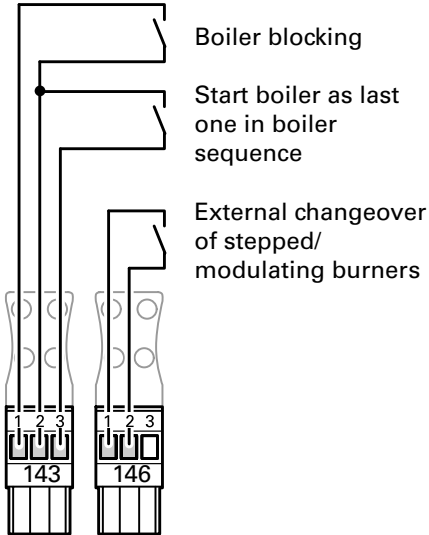
Contact closed:
Both burner stages are switched ON.
The boiler water temperature is
limited by the electronic maximum
temperature limiter, if it is set below
that of mechanical control
thermostat "(i)".
Burner stage 2 is shut down 2 K
sooner.

Contact opened:
Burner stages 1 and 2 are shut down.

Enable boiler, butterfly valve

Contact closed:
■ Vitocrossal 300:
  The butterfly valve opens.
■ Low temperature boiler:
  Initially, the pre-heat function for
  lag boilers is activated. After the
  pre-heat function has expired, the
  minimum boiler water temperature
  will be maintained, and the burner
  stages can be controlled externally.
  The butterfly valve opens.

Contact opened:
The butterfly valve is closed after
approx. 5 min.
Burner stages cannot be switched
ON externally; a minimum
temperature will not be maintained.

External hook-up in multi-boiler systems without LON (cont.)

Low temperature boiler – operation with a modulating burner

Connection modulating burner:
- Burner stage 1 $\boxed{41}$ of Vitotronic 100
- Plug-in connector $\boxed{90}$ from Vitotronic 100 via the modulation controller (on site) to burner plug-in connector $\boxed{90}$.
- Adjust the minimum temperatures at the higher control unit with the modulation controller 5 K higher than the lower boiler water temperature.

The DHW cylinder temperature and the load-dependent cascade control must be controlled by an external control unit.

! **Please note**
The contact "Boiler enable" must be provided in multi-boiler systems to prevent boiler damage. This contact **must** always be closed on the lead boiler.

External hook-up in multi-boiler systems without LON (cont.)

Zero volt contacts of the higher control unit with modulation controller:

Enable boiler, open or close the butterfly valve

Burner stage 1 (base load) ON

Modulation controller:

Reduce burner output

Increase burner output

Ⓐ Vitotronic 100
Ⓑ Burner control

External hook-up in multi-boiler systems without LON (cont.)

Adjustments on every control unit

Set code "01:   3"
code "02:   1"
(delivered condition)

The high limit safety cut-out settings and other settings are subject to the system equipment and the safety equipment in accordance with DIN 4751-2.

Enable boiler, butterfly valve

Contact closed:
Initially, the pre-heat function for lag boilers is activated. After the pre-heat function has expired, the minimum boiler water temperature will be maintained, and the burner stages can be controlled externally.

Contact opened:
The butterfly valve is closed after approx. 5 min. Burner stages cannot be switched ON externally; a minimum temperature will not be maintained.

Starting burner stage 1

Contact closed:
Burner stage 1 is started. Full load is switched ON only for maintaining the minimum temperature. The boiler water temperature is limited by the electronic maximum temperature limiter, if it is set below that of mechanical control thermostat "☉".

Contact opened:
Burner stage 1 is shut down.

Installation

Vitocrossal 300 – operation with a modulating burner

Connection modulating burner:
- Burner stage 1 $\boxed{41}$ of Vitotronic 100
- Plug-in connector $\boxed{90}$ of Vitotronic 100 remains unused
- Burner stage 2 $\boxed{90}$ modulating under the control of the on-site modulation controller
- Burner stage 1 is enabled by the modulation controller via external demand $\boxed{146}$.

The DHW cylinder temperature and the load-dependent cascade control must be controlled by an external control unit.

> **!** **Please note**
> The contact "Boiler enable" must be provided in multi-boiler systems to prevent boiler damage. This contact **must** always be closed on the lead boiler.

External hook-up in multi-boiler systems without LON (cont.)

Zero volt contacts of the higher control unit with modulation controller:

Enable boiler, open or close the butterfly valve

Burner stage 1 (base load) ON

Modulation controller:

Reduce burner output

Increase burner output

Ⓐ Vitotronic 100
Ⓑ Burner control
Ⓒ unused

External hook-up in multi-boiler systems without LON (cont.)

Adjustments on every control unit

Set code "01:   3".

The high limit safety cut-out settings and other settings are subject to the system equipment and the safety equipment in accordance with DIN 4751-2.

Enable boiler, butterfly valve

Contact closed:
The burner can be externally switched. The butterfly valve opens.

Contact opened:
The butterfly valve is closed after approx. 5 min. Burner stages cannot be started externally.

Starting burner stage 1

Contact closed:
Burner stage 1 is started. The boiler water temperature is limited by the electronic maximum temperature limiter, if it is set below that of mechanical control thermostat "⏲".

Contact opened:
Burner stage 1 is shut down.

External hook-up in multi-boiler systems with LON

Zero volt contacts of the higher control unit:

Boiler blocking

Start boiler as last one in boiler sequence

External changeover of stepped/ modulating burners

```
1 2 3   1 2 3
143     146
```

Control unit settings
Set code "01:   2".

Starting boiler as last one in boiler sequence

Contact closed:
The boiler is started as the last one in the boiler sequence.
The heat demand of the heating system is being met by the other boilers. This boiler is started if the other boilers do not provide sufficient heat.

Contact opened:
The boiler is reinstated into the current boiler sequence.

Boiler blocking

Contact closed:
The boiler is blocked.
It is taken out of the boiler sequence, i.e. the butterfly valve or the three-way mixing valve for constant return temperature control is closed; shunt or boiler circuit pumps are switched OFF. The other boilers must provide the required heating.

! **Please note**
The heating system is **no longer** protected against frost if all boilers are blocked or there are no other available boilers.

Contact opened:
The boiler is reinstated into the current boiler sequence.

External changeover of stepped/modulating burners

Contact open: mod. mode
Contact closed: two-stage operation
Code "02:   2" (modulating burner) **must** be selected.

Note
Even if the contact is closed, scanning the type of burner will continue to display "modulating".

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External connections on plug 150

! **Please note**
'Live' contacts lead to short circuits or phase failure.
The external connections must be **zero volt**.

Plug 150 **must** remain plugged in, even if no connection is made.
The plug-in adaptor for external safety equipment can be used for connecting
several pieces of safety equipment (see page 136).
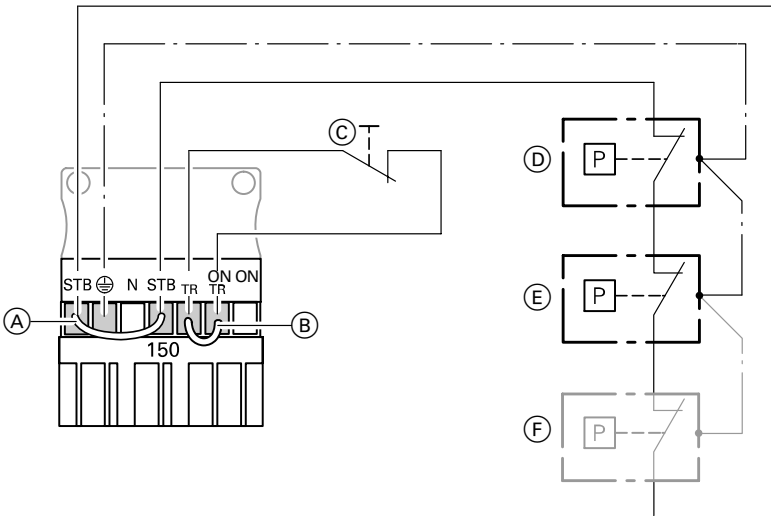
Ⓐ Jumper "STB" – "STB"
Ⓑ Jumper "TR"– "ON/TR"
Ⓒ External blocking
   (zero volt contact)
Ⓓ Low water indicator
Ⓔ Maximum pressure limiter
Ⓕ Supplementary external safety
   equipment

External safety equipment
■ Remove jumper "STB" – "STB".
■ Connect electrical safety
   equipment in series.

Emergency mode
Change jumper "TR" – "ON/TR" to
"TR" – "ON".

External burner blocking
■ Remove jumper "TR" – "TR".
■ Connect the zero volt contact.
   Opening this contact leads to a
   controlled shutdown.

External connections on plug 150 (cont.)

! **Please note**
Connecting an external control unit can damage the boiler. Connect only safety shutdown equipment, e.g. temperature limiter, to these terminals.

When the heating system is shut down, the heating system is **not protected against frost**, and the boiler is not held at the lower boiler water temperature.
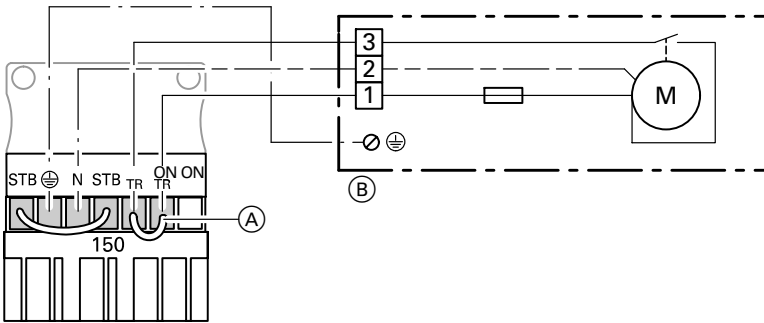
Ⓐ Jumper "TR" – "ON/TR"
Ⓑ Motorised flue gas damper

Motorised flue gas damper
■ Remove jumper "TR" – "ON/TR".
■ Connect the motorised flue gas damper.

Connecting central fault messaging to plug 50
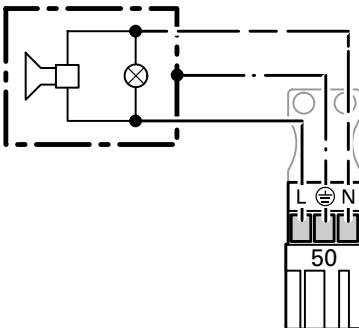
Rated voltage:	230V~
Rated current:	max. 4 (2) A~
Recommended connecting cable:	H05W-F3G 0.75 mm^2 or H05RN-F3G 0.75 mm^2

Plugging in the LON communication module   (if required)
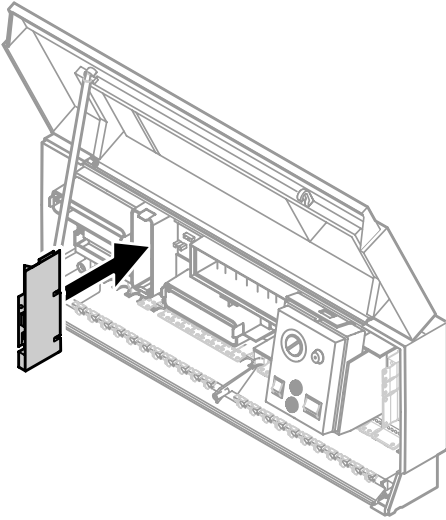
Plug in the LON communication module in accordance with the illustration in the control unit.

Making the LON connection

The Viessmann LON system is designed for "Line" BUS topology, i.e. with terminators at both ends.

Connection with Viessmann LON cable
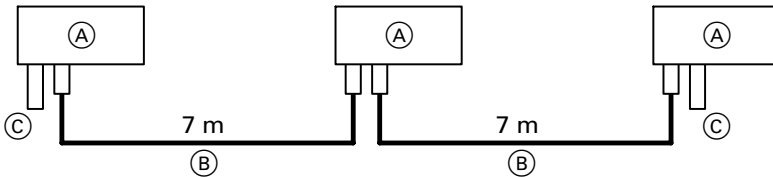
Ⓐ Control unit or Vitocom
Ⓑ LON cable
Ⓒ Terminator

Connection with
- **Viessmann LON cable and**
- **Viessmann LON coupling**
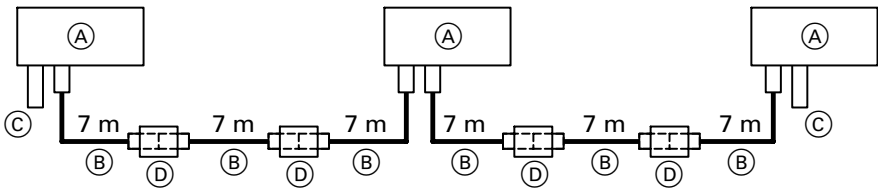
Ⓐ Control unit or Vitocom
Ⓑ LON cable (max. 3 cables
  between 2 devices)
Ⓒ Terminator
Ⓓ LON coupling

Making the LON connection (cont.)

Connection with
- **Viessmann LON cable,**
- **on-site cable and**
- **Viessmann socket**

for extensions up to 900 m long
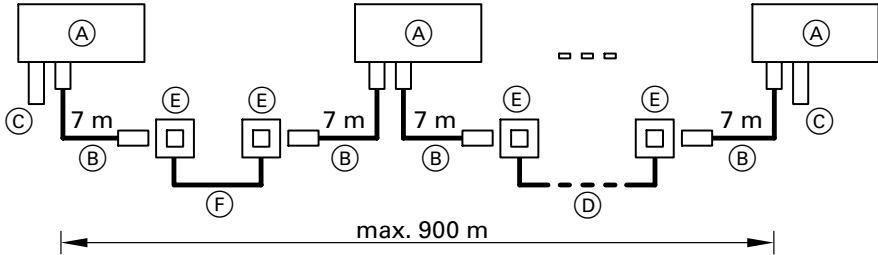
Ⓐ Control unit or Vitocom
Ⓑ LON cable, part no. 7143 495
Ⓒ Terminator
(standard delivery for
Vitotronic 333)
Ⓓ Up to 99 users and the
corresponding number of
junction boxes and cables
Ⓔ Viessmann junction boxes,
part no. 7171 784

Note
*Observe the requirements for cabling
and operation of the LON interface
FTT-10A (see www.echelon.com).*

Ⓕ Connecting cable (on site)
Cable types:
- J-Y(St)Y 2 × 2 × 0.8 mm
(telephone cable)
- TIA 568 A Cat. 5 cable

Note
*The Viessmann LON system always
requires the cores "1" (orange) and
"2" (orange/white) and the screen.
Cores are interchangeable.*

Connecting an AC burner

Pressure-jet oil/gas burners

Connect the burner in accordance with the DIN 4791 or local regulations.
The burner cables are included in the standard boiler delivery.
Max. power consumption 6 (3) A.
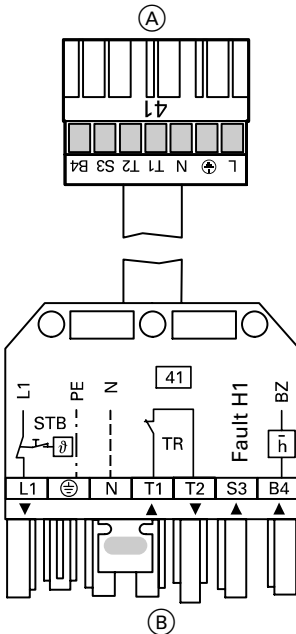
Ⓐ To control unit
Ⓑ To burner

Terminal codes

L1	Phase via high limit safety cut-out to the burner
PE	Earth conductor to burner
N	Neutral conductor to burner
T1, T2	Control chain
S3	Burner fault
B4	Hours run meter
▼	Signal pass direction: Control unit → burner
▲	Signal pass direction: Burner → control unit

Equipment codes

STB	High limit safety cut-out of control unit
TR	Control thermostat of the control unit
H1	Burner fault signal
BZ	Hours run meter

Burner without plug
Install the mating plug supplied by
Viessmann or the burner manufacturer;
connect the burner cable.

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Connecting an AC burner (cont.)
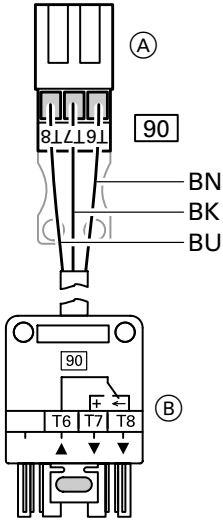
Ⓐ To control unit
Ⓑ To burner

Terminal codes

T6, T8 Control chain
         Burner stage 2 ON
         or
         Modulation controller open

T6, T7 Control chain
         Burner stage 2 OFF
         or
         Modulation controller closed

▼   Signal pass direction:
         Control unit → burner

▲   Signal pass direction:
         Burner → control unit

Colour coding to DIN IEC 60 757

BK   black
BN   brown
BU   blue

Connecting an AC burner (cont.)

Atmospheric burner

The burner cables are included in the standard boiler delivery.
Max. power consumption 6 (3) A.
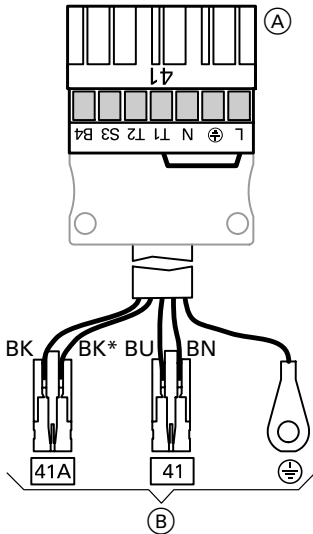
BK → B4
BK* → S3
BU → N
BN → T2

Ⓐ To control unit
Ⓑ To burner

Terminal codes

L	Phase via high limit safety cut-out to the burner
PE	Earth conductor to burner
N	Neutral conductor to burner
T1, T2	Control chain
S3	Burner fault
B4	Hours run meter
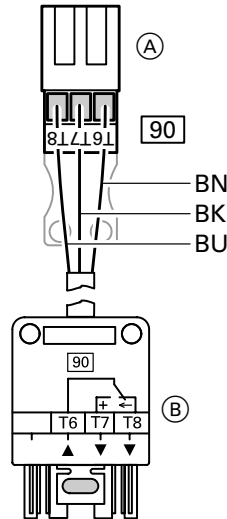
Colour coding to DIN IEC 60 757

BK	black
BK*	black with imprint
BN	brown
BU	blue

Terminal codes

T6, T8	Control chain Burner stage 2 ON via two point controller
T6, T7	Control chain Burner stage 2 OFF
▼	Signal pass direction: Control unit → burner
▲	Signal pass direction: Burner → control unit

Connecting a three-phase burner – zero volt safety chain

! Please note
A jumper in the burner may possibly have to be removed from the external conductor to the control voltage.
Observe the details of the burner supplier.

Ⓐ Control unit
(legend see page 161)
Ⓑ Main contactor (on site)
Ⓒ Three-phase burner
Ⓓ Three-phase burner supply
Ⓔ Main contactor control
Ⓕ Safety chain (STB) zero volt
Ⓖ Control chain stage 1/base load
Ⓗ Burner fault message
Ⓚ Hours run counter stage 1
Ⓛ Base load/full load

40 Control unit power supply
41 Burner, stage 1
90 Burner, stage 2
150 Plug for external connections
ⓐ external safety equipment[1]
151 Safety chain, zero volt[1]

[1]Remove jumper when making this connection.

Connecting a three-phase burner– safety chain not zero volt

❗ Please note
A jumper in the burner may possibly have to be removed from the external conductor to the control voltage.
Observe the details of the burner supplier.
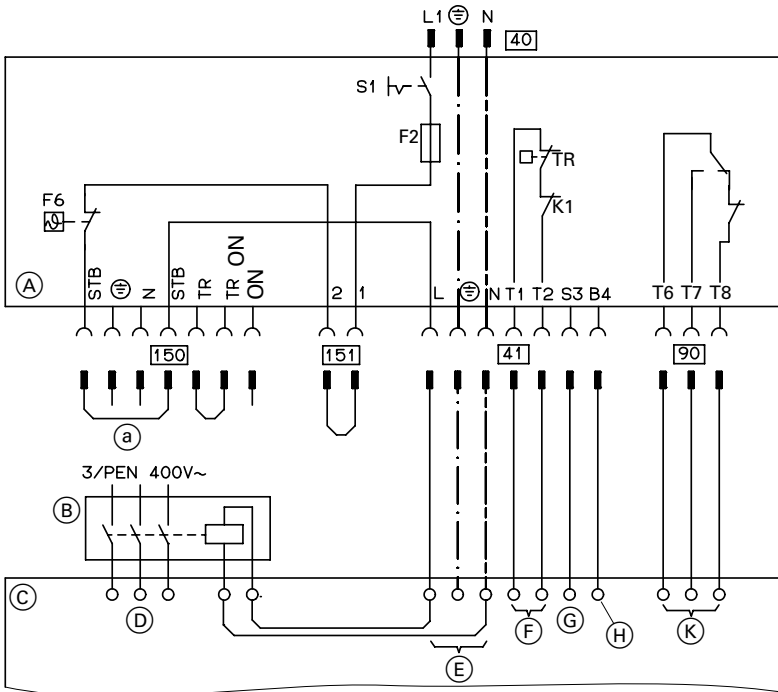
Ⓐ Control unit
(legend see page 161)
Ⓑ Main contactor (on site)
Ⓒ Three-phase burner
Ⓓ Three-phase burner supply
Ⓔ Main contactor control
Ⓕ Control chain stage 1/base load
Ⓖ Burner fault message
Ⓗ Hours run counter stage 1
Ⓚ Base load/full load

40 Control unit power supply
41 Burner, stage 1
90 Burner, stage 2
150 Plug for external connections
ⓐ external safety equipment[1]
151 Safety chain (STB)

[1]Remove jumper when making this connection.

Power supply

Regulations
Carry out the power supply connection and all earthing measures (e.g. fault current circuit) in accordance with IEC 364, the requirements of your local electricity supplier, VDE regulations or local regulations. Protect the power supply cable to the control unit with an appropriate fuse.

Mains isolator requirements (if necessary)
For combustion equipment to DIN VDE 0116, the mains isolator fitted on site must comply with the requirements of DIN VDE 0116 "Section 6" [or local regulations].
Install the mains isolator outside the installation area. It must simultaneously isolate **all** non-earthed conductors with at least 3 mm contact separation.

Recommended power supply cable (on site)
3-core cable:
- H05VV-F3G 1.5 mm^2
- H05RN-F3G 1.5 mm^2

1. Check that the power supply cable to the control unit is protected with the correct fuse.

2. Connect the mains supply cable inside the junction box (on site) and in plug 40.

⚠️ **Danger**
Incorrect core allocations can cause major damage to the equipment.
Do not interchange cores "L1" and "N":
L1: brown
N: blue
PE: green/yellow

3. Insert plug 40 into the control unit.
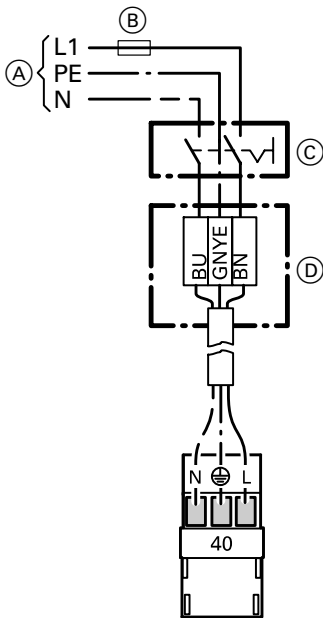
Ⓐ Mains voltage 230 V~/50 Hz
Ⓑ Fuse
Ⓒ Main isolator, 2-pole (on site)
Ⓓ Junction box (on site)

Colour coding to DIN IEC 60 757
BN   brown
BU   blue
GNYE green/yellow

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Installing the control unit front

X20

X10
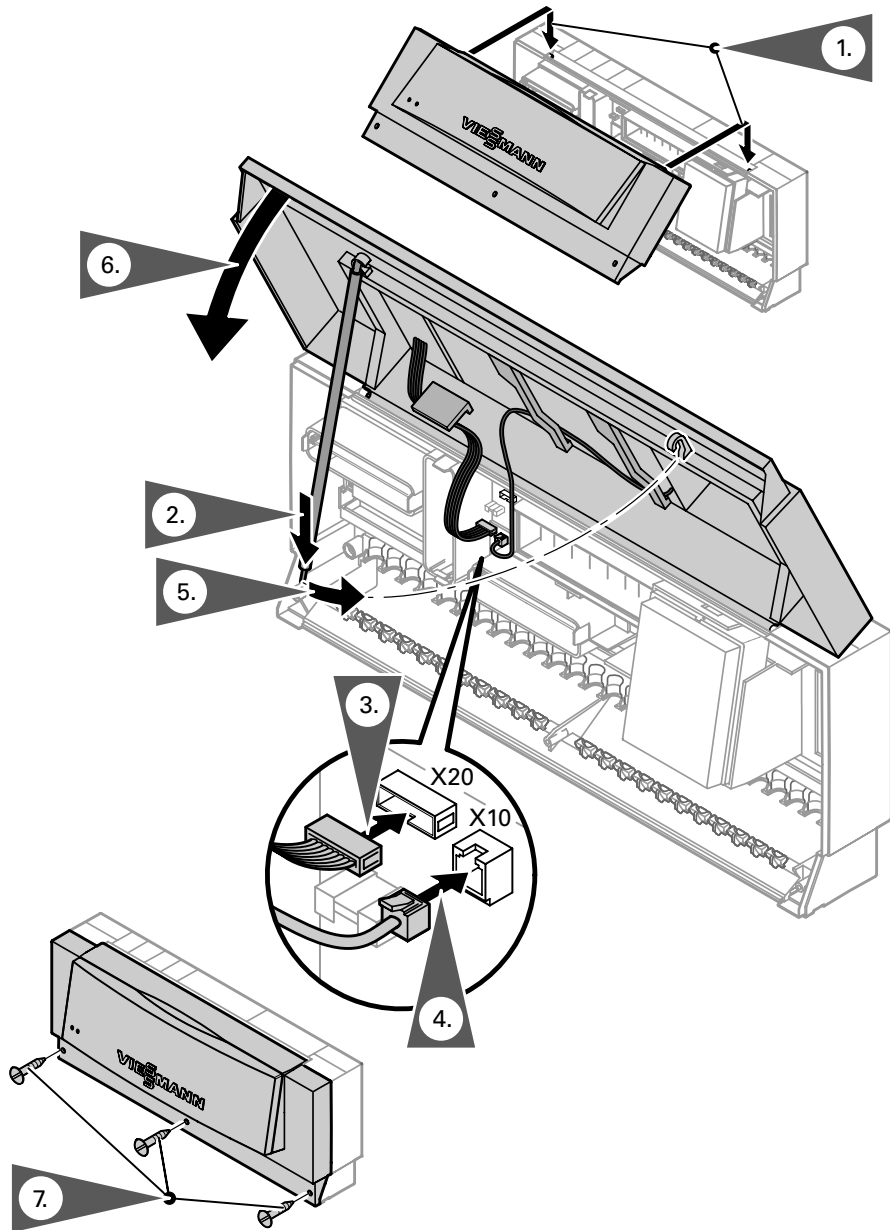
Opening the control unit
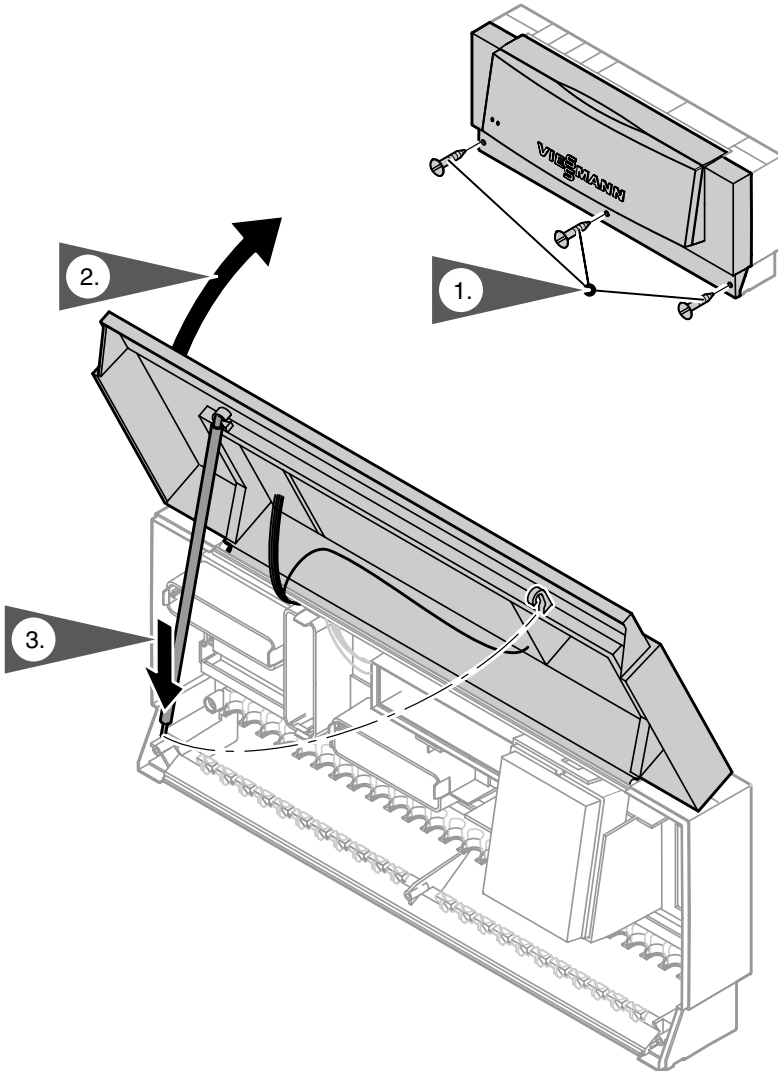
Controls and display elements
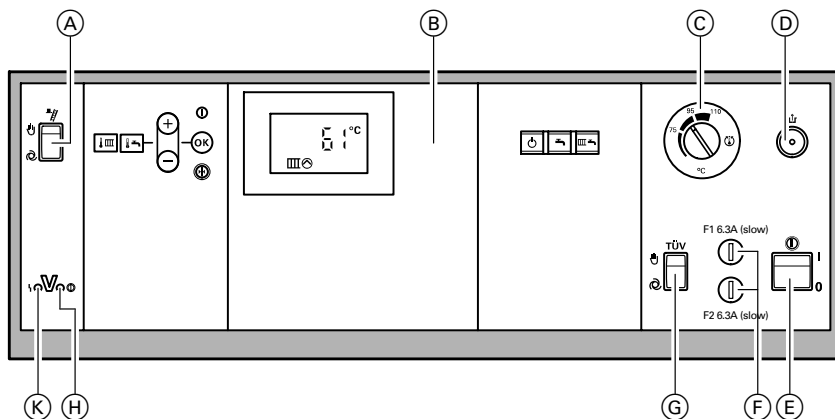
A Emissions test switch
B User interface:

🌡️▥	Boiler water temperature (N/A for multi-boiler systems)
🌡️🚰	DHW temperature (N/A for multi-boiler systems)
⏻	Standby mode
🚰	DHW only (N/A for multi-boiler systems)
▥🚰	Heating and DHW

+ / − Adjusting values
ⓘ   Information
Ⓞⓚ   Confirmation
✳   Standard settings
C Control thermostat
D Excess temperature reset
E ON/OFF switch
F Fuses F1, F2
G TEST key
H ON indicator (green)
K Fault indicator (red)

Commissioning

Checking the high limit safety cut-out

Hold down the "**TÜV**" test key during this test (position "✋"). There must be a minimum flow.
The minimum circulation volume should be 10 % of the circulation volume at rated output.
Reduce the heat consumption as far as possible. Control thermostat "🌡" is now bypassed.
The burner remains switched ON until the boiler water temperature has reached the safety temperature and the high limit safety cut-out has switched OFF.

After the burner has been shut down by the high limit safety cut-out,
■ Release the "**TÜV**" test key,
■ wait until the boiler water temperature has fallen 15 to 20 K (Kelvin) below the set safety temperature, then reset the high limit safety cut-out by pressing button "⬆".

Integrating the control unit into the LON system

The LON communication module (accessories) must be plugged in (see page 128).

Note
Data transfer via the LON system can take several minutes.

Setting the system type

In code 1, set coding address "01".
Code 1, see page 139.

Setting up a LON user number

In code 1, set the LON user number via coding address "77".

In a LON system, the same number **cannot** be allocated twice.

Integrating the control unit into the LON system (cont.)

Updating the LON user list.

Only possible if all users are connected and the control unit is programmed as fault manager (code "79: 1").

1. Press 🔙 and ⓄⓀ simultaneously for approx. 2 s.
User check initiated (see page 100).

2. Press ⊛.
The user list is updated after approx. 2 min.
User check completed.

Example of a single boiler system with Vitotronic 050 and Vitocom 300

Vitotronic 100   Vitotronic 050   Vitotronic 050   Vitocom

LON   LON   LON
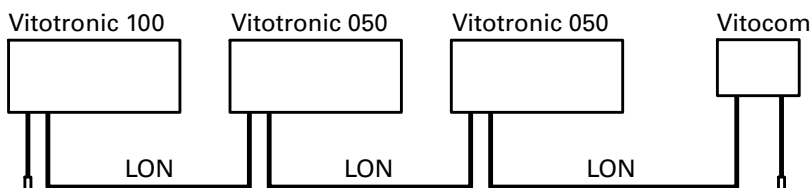
User no. 1 Code "77: 1"	User no. 10 Code "77: 10"	User no. 11 **Set** code "77: 11"	User no. 99
Control unit is fault manager[1] **Set** code "79: 1"	Control unit is not fault manager[1] Code "79: 0"	Control unit is not fault manager[1] Code "79: 0"	Device is fault manager
Viessmann System number Code "98: 1"	Viessmann System number Code "98: 1"	Viessmann System number Code "98: 1"	——
Fault monitoring LON system code "9C: 20"	Fault monitoring LON system code "9C: 20"	Fault monitoring LON system code "9C: 20"	——

[1]In each heating system, **only one Vitotronic** may be programmed as fault manager.

Carrying out a user check (in conjunction with the LON system)

Communication with the system devices connected to the fault manager is tested with a user check.
Preconditions:
■ The control unit must be programmed as fault manager (code "79: 1").
■ The LON user number must be programmed in all control units (see page 98).
■ The fault manager user list must be up to date (see page 98).

Consecutive list number

User number
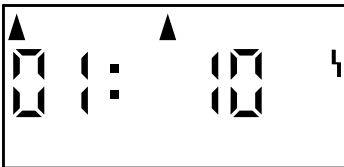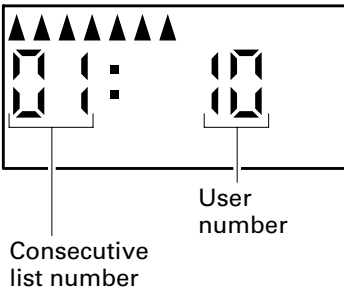
1. Press ⬑ and ⊛ simultaneously for approx. 2 s.
   User check initiated, all 7 arrows are displayed.

2. Select the required user with ⊕ or ⊖.

3. Activate check with ⊛.
   The arrows in the display flash, until the check is completed. The display and all key illuminations of the selected user flash for approx. 60 s.
   ■ The arrows stop flashing if both devices communicate with each other.
   ■ The display shown will appear if no communication is established. Check the LON connection and encoding (see page 98).

4. For checking further users, proceed as described under items 2 and 3.

5. Press ⬑ and ⊛ simultaneously for approx. 1 s.
   User check completed.

Matching the coding addresses to the system version

In code 2, set the following coding addresses:
Code 2 see page 141.
″00″ System design
″01″ Single or multi-boiler system
″02″ Burner type
″03″ Oil or gas operation
″07″ Boiler number (only for multi-boiler systems)
″0C″ Return temperature raising
″0d″ Therm-Control regulates ...
″4C″ Function plug 20
″4d″ Function plug 29
″4E″ Function plug 52
″77″ LON user number
″79″ Fault manager
″98 Viessmann system number
″9C″ Monitoring LON users

Note
The control unit must be matched to the system equipment.
See codes 1 and 2 from page 139.

Matching the coding addresses to the system version (cont.)

Matching the control unit to a two-stage burner

1. Start up the burner.

2. Set the emissions test switch to "🖐" (see page 127).

3. Determine the maximum burner output through the fuel consumption. Record the relevant value.

4. Set the emissions test switch to "♨".

5. Press 🔘 and ⓄⓀ simultaneously for approx. 2 s. Relay test is activated.

6. Activate the "Burner stage 1 **ON**" function with ⊕ (display:).

7. Determine the minimum burner output (base load) through the fuel consumption. Record the relevant value.

8. Press ⓄⓀ. Relay test is completed.

9. Set the established values in code 2, see the table below and page 142.

Address	Setting of
08	Units and tens of the determined maximum output; e.g. max. output: 225 kW– select: 25 Values including 199 kW can be entered directly.
09	Hundreds of the determined maximum output; e.g. set the max. output: 225 kW– here: 2
0A	Relationship between base output and max. output in percent; e.g. Base output: 135 kW Max. output: 225 kW $\dfrac{135 \text{ kW}}{225 \text{ kW}} \cdot 100\ \% \ = \ 60\ \%$

Matching the coding addresses to the system version (cont.)

Matching the control unit to a modulating burner

Note
The burner must be fully adjusted. To achieve a wide modulating range, set the minimum output as low as possible (take the chimney and flue gas system into account).

1. Start up the burner.

2. Set the emissions test switch to "✋" (see page 127).

3. Wait, until the burner actuator is set to maximum output.

4. Determine the maximum burner output through the fuel consumption.
Record the relevant value.

5. Press 🔘 and ⊗ simultaneously for approx. 2 s.
Relay test is activated.

6. Activate the "mod. burner **closed**" function with ⊕ (display shows: ꛴), and set the emissions test switch to "🔥". Check the time it takes until the actuator is at minimum output.
Record the relevant value.

7. Determine the minimum burner output (base load) through the fuel consumption.
Record the relevant value.

8 Activate the "Mod. burner **open**" function with ⊖ (display: ꛯ), and after ⅓, the time checked under item 5, activate the "Mod. burner **neutral** function" (display: ꛳) with ⊕ (stop actuator).

9. Determine the partial output through the fuel consumption.
Record the relevant value.

10. Press ⊗.
Relay test is completed.

11. Set the determined values in code 2, see page 104 and page 142.

Address	Setting of
08	Units and tens of the determined maximum output; e.g. max. output: 225 kW– select: 25 Values up to and including 199 kW can be entered directly.
09	Hundreds of the determined maximum output; e.g. max. output: 225 kW– here: 2
15	Determined run time in seconds
0A	Relationship between base output and max. output in percent; e.g. Base output: 72 kW Max. output: 225 kW $\dfrac{72\ kW}{225\ kW} \cdot 100\ \% \ = \ 32\ \%$
05	Relationship between partial output and max. output in percent; e.g. Partial output: 171 kW Max. output: 225 kW $\dfrac{171\ kW}{225\ kW} \cdot 100\ \% \ = \ 76\ \%$

Checking outputs (actuators) and sensors

Relay test

1. Press ⏻ and (OK) simultaneously
for approx. 2 s.
Relay test is activated.

2. Control relay outputs
with ⊕ or ⊖.

3. Press (OK).
Relay test is completed.

Checking outputs (actuators) and sensors (cont.)

The following relay outputs can be controlled subject to system design:

Display indication	Relay function
1	Burner or stage1 ON
2	Burner stage 1 and 2 ON or modulation open
3	Burner modulation neutral
4	Burner stage 1 ON (modulation closed)
5	Output 20 ON
6	Output 29 ON
7	Output 52 open
8	Output 52 neutral
9	Output 52 closed
10	Cylinder primary pump ON
11	Central fault message ON

Checking sensors

1. Press (i).
Scanning operating conditions is active, see page 109.

2. Scan the actual temperatures with (+) or (−).

3. Press (i).
Scanning is completed.

Service level summary

Function	Entry	Exit	Page
User check in conjunction with a LON system	Press ⬅ and ⓞⓚ simultaneously for approx. 2 s	Press ⬅ and ⓞⓚ simultaneously for approx. 1 s	100
Relay test	Press ⭘ and ⓞⓚ simultaneously for approx. 2 s	Press ⓞⓚ	104
Temperatures, boiler coding card and brief scans	Press ⭘ and ▥⬅ simultaneously for approx. 2 s	Press ⓞⓚ	107
Operating conditions	Press ⓘ	Press ⓘ	109
Maintenance display		Press ⓞⓚ	111
Calling up acknowledged fault messages	Press ⓞⓚ for approx. 2 s	Press ⓞⓚ	111
Troubleshooting		Press ⓞⓚ	112
Calling up acknowledged fault messages	Press ⓞⓚ for approx. 2 s	Press ⓞⓚ	112
Fault history	Press ▥⬅ and ⓞⓚ simultaneously for approx. 2 s	Press ⓞⓚ	121
Resetting codes to the delivered condition	Press ⬅ and ▥⬅ simultaneously for approx. 2 s; press ✳	⸺	139
Code 1	Press ⭘ and ⬅ simultaneously for approx. 2 s	Press ⭘ and ⬅ simultaneously for approx. 1 s	139
Code 2	Press ⬅ and ▥⬅ simultaneously for approx. 2 s	Press ⬅ and ▥⬅ simultaneously for approx. 1 s	141

Temperatures, boiler coding card and brief scans

1. Press ⏻ and ▣◥ simultaneously for approx. 2 s.
Entering the diagnostics level.

3. Press ⊛.
Leaving the diagnostics level.

2. Select the required scan with ⊕ or ⊖.

Subject to the system equipment level, the following values can be scanned:
(for brief scans, see page 108):

Display indication	Description	Notes
0 8 8 8 8 8	Brief scan 0	Only with LON communication module
1 8 8 8 8 8	Brief scan 1	Only with LON communication module
2 8 8 8 8 8	Brief scan 2	Only with LON communication module
3 6 5 °C	Set boiler water temperature	Effective set value incl. boiler protection
H 7 0 °C	Maximum demand temperature	——
4 8 8 8	Brief scan 4	——
5 5 5 °C	Set DHW temperature	——
8 2 3 0 °C	Maximum flue gas temperature	See coding address "1F"; can be reset to the current value with ⊛
b 8 d 8	Quick scan b/d	——
C 1 0 1 0	Boiler coding card	——
L 8 8 8	Brief scan L	——
∅ 8 8 8 8 8	Brief scan ∅	——

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

Brief scans

0	N/A	LON user number		Software version Communications coprocessor	SNVT configuration 0 = Auto 1 = Tool
1	N/A	Subnet address/system no.		Node address	
2	N/A	Number of LON users		Software version Communication module LON	
4	Software version Solar control unit	Software version Remote control	System designs (see coding address "00")	Software version Programming unit	Software version Control unit
6	N/A	Burner 0 = Off 1 = Stage 1/ base load 2 = Stage 2/ full load	N/A	d	Butterfly valve 0 = Off 1 = Preheating 2 = Control closed 3 = Control 4 = Control open 5 = Open 6 = Run-on
L	N/A	N/A	Output reduction 0 = Off; 1 to 100%		
o	N/A	Equipment recognition hexadecimal: A0 decimal: 160		Test code for Viessmann service engineer	

Scanning operating conditions

1. Press ⓘ.
Scanning operating conditions is
active.

2. Select the required operating
condition scan with ⊕ or ⊖.

3. Press ⓘ.
Scanning operating conditions is
completed.

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

Display indication	Description	Notes
0 0 1	LON user no.	Only with LON communication module
3 6 5 °C	Actual boiler water temperature	—
5 5 0 °C	Actual cylinder temperature (cylinder temperature sensor 1)	Only in conjunction with cylinder temperature sensor
5 a 4 5 °C	Actual cylinder temperature (cylinder temperature sensor 2)	Only in conjunction with cylinder temperature sensor
5 b 4 5 °C	Actual solar cylinder temperature	Only in conjunction with solar heating system
5 C 1 3 0 °C	Actual solar collector temperature	Only in conjunction with solar heating system
6 5 5 °C	Return temperature 17A (return temperature sensor 1)	Only with return temperature sensor
8 1 9 0 °C	Flue gas temperature	Only with flue gas temperature sensor
9 6 0 °C	Return temperature 17B (return temperature sensor 2)	Only with return temperature sensor
▲ 0 6 3 5 7 2 h	Hours run, burner (stage 1)	The hours run can be reset to "0" with ⊛. Hours run are only approximate values

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Scanning operating conditions (cont.)

| Display indication	Description	Notes
▲ ▲ 0 0 9 5 7 2 h	Hours run, burner (stage 2)	The hours run can be reset to "0" with (✳). Hours run are only approximate values
▲ ▲ ▲ 0 3 0 4 1 7	Burner starts	The burner starts can be reset to "0" with (✳)
▲ ▲ ▲ ▲ 0 3 0 5 8 5	Consumption	Display only, if "26" or "29" has been set via coding address (only for two-stage operation). Consumption can be reset to "0" with (✳)
▲ ▲ ▲ ▲ ▲ 0 0 1 4 1 7 h	Hours run, solar circuit pump	Only in conjunction with solar heating system
▲ ▲ ▲ ▲ ▲ ▲ 0 0 2 8 5 0	Solar energy in kWh	Only in conjunction with solar heating system

Scanning and resetting maintenance displays

After limits set up via coding addresses "1F", "21" and "23" (see page 144) have been reached, the programming unit display flashes one of the following messages, and the red fault indicator flashes.

Note
Set code "24:1" and then code "24:0", if maintenance is implemented before "Service" is displayed; the set maintenance parameters for hours run and intervals are reset to 0.

Display indication	Description
A 245 °C	Max. flue gas temp. has been reached
355 0 h	Burner hours run have been reached
12 🕐	Interval (e.g. 12 months) has been reached

1. Scan maintenance messages with ⊕ or ⊖.

2. Press OK.
The "Service" display extinguishes, and the red fault indicator continues to flash.

Note
An acknowledged maintenance message can be redisplayed by pressing OK (approx. 2 s).

After maintenance has been carried out

1. Reset code "24:1" (see page 145) to "24:0".

Note
If coding address "24" is not reset, a new "Service" message will be displayed on Monday morning.

2. If required:
  - Press ⓘ.
  - Reset burner hours run and burner starts with ✳ (see page 109).
  - Press ⓘ.

3. If required:
  - Press ⏻ and ▥↩ simultaneously for approx. 4 s
  - Max. flue gas temperature (🬀) reset with ✳ to the actual value (see page 107).
  - Press OK.

Faults which are displayed at the programming unit

The red fault indicator flashes for every fault.
A fault code flashes in the display if a fault message has been issued (see page 113).

1 Fault number
38 Fault code
ᚒ Fault symbol

Call up further fault codes with ⊕ or ⊖.
A fault can be acknowledged with ⓄⓀ. The fault message in the display will be hidden, but the red fault indicator continues to flash.
A central fault messaging facility connected to plug ⁗50⁗ will be switched OFF.
A new fault message will be displayed if an acknowledged fault is not removed by the following morning.

Calling up acknowledged fault messages
Press ⓄⓀ for approx. 2 s.
The fault will then be displayed.
Select the acknowledged fault with ⊕ or ⊖.

Faults which are displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
0F	Control mode	Maintenance "0F" is only displayed in fault history.	Carry out maintenance **Note** *Set code "24:0" after maintenance.*
30	Burner is started and stopped via a control thermostat	Short circuit Boiler water temperature sensor	Check boiler water temperature sensor (see page 130)
38		Lead broken Boiler water temperature sensor	
50	Cylinder primary pump ON: Set cylinder temperature = set boiler water temperature, priority control is cancelled or With cylinder storage system: Cylinder heating is started and stopped by cylinder temp. sensor 2	Short circuit Cylinder temp. sensor 1	Check cylinder temp. sensor (see page 130)
51	With cylinder storage system: Cylinder heating is started and stopped by cylinder temp. sensor 1	Short circuit Cylinder temp. sensor 2	

Faults which are displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
58	Cylinder primary pump ON: Set cylinder water temperature = set boiler water temperature, priority control is cancelled or With cylinder storage system: Cylinder heating is started and stopped by cylinder temp. sensor 2	Lead broken Cylinder temp. sensor 1	Check cylinder temp. sensor (see page 130)
59	With cylinder storage system: Cylinder heating is started and stopped by cylinder temp. sensor 1	Lead broken Cylinder temp. sensor 2	
60	Boiler at maximum temperature, no output reduction, return control OFF	Short circuit Temperature sensor 17 A	Check temperature sensor (see page 131). Without temperature sensor Set code "4A:0"
68		Lead broken Temperature sensor 17 A	
70	Shunt pump constantly ON With cylinder storage system: Mixer primary circuit closed, no DHW heating	Short circuit Temperature sensor 17 B	Check temperature sensor (see page 131). Without temperature sensor Set code "4b:0"
78		Lead broken Temperature sensor 17 B	

Faults which are displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
92	Control mode Only solar control unit fault codes will be displayed	Short circuit Collector temperature sensor, connects to S1 (Vitosolic)	Check solar control unit sensor
93		Short circuit Cylinder temperature sensor, connects to S2 (Vitosolic)	
94		Short circuit Temperature sensor, connects to S3 (Vitosolic)	
9A		Lead broken Collector temperature sensor, connects to S1 (Vitosolic)	
9b		Lead broken Cylinder temperature sensor, connects to S2 (Vitosolic)	
9C		Lead broken Temperature sensor, connects to S3 (Vitosolic)	
9F		Error Solar control unit; displayed if an error without fault code occurs at solar control unit	Check solar control unit

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Faults which are displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
ΠΠ	Control mode	Therm-Control configuration error Plug 17 A of Therm-Control temperature sensor not inserted	Insert plug 17 A Code "0d:0" must be set for Vitocrossal
Πb	Controlled operation, perhaps DHW cylinder cold	Cylinder storage system configuration error: Code "55:3" has been set, but plug 17 B is not plugged in and/or Code "4C:1" and "4E:1" have not been set	Insert plug 17 B and check code
ΠC	Control mode	Return temperature raising configuration error: Code "0C:1" has been set, but plug 17 A is not plugged in and/or Code "4E:0" is not set	Insert plug 17 A and check code
Πd		Butterfly valve configuration error: Code "0C:2", "0C:3" or "0C:4" is set and Code "4E:1" is set	With butterfly valve: Code "4E:0" is set Without butterfly valve: Set code "0C:0" or "0C:1"
b0		Short circuit Flue gas temperature sensor	Check flue gas temperature sensor (see page 132)

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Faults which are displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
b1	Control mode	Communication error Programming unit	Check connections and replace programming unit if necessary (see page 128)
b4	Emissions test mode	Internal electronics fault	Check electronics PCB. Replace, if required
b5	Control mode		
b6	Constant mode	Invalid hardware ID	Set code "92:160"
b7	Boiler is regulated by control thermostat	Boiler coding card faulty	Plug in boiler coding card or replace it, if faulty (see page 60)
b8	Control mode	Lead broken Flue gas temperature sensor	Checking flue gas temperature sensor (see page 132). Without flue gas temperature sensor Set code "1F : 0"
bF		Incorrect LON communication module	Replace communication module (see page 128)
C1	Boiler cools down	External safety device	Connection Check plug 150 and external safety equipment (see page 84)
C2	Control mode	Lead broken KM BUS to solar control unit	Check KM BUS cable and solar control unit Without solar control unit, set code "54 : 0"

Faults which are displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
⎕4	Control mode	Communication with function extension 0-10 V faulty	Check connections and cables/leads; if required replace function extension (see page 133). Without function extension, set code "9d : 0"
⎕8	Boiler cools down	Error Low water indicator	Check water level in system, reset low water indicator (see page 136)
⎕9		Fault Maximum pressure limiter	Check system pressure, reset maximum pressure limiter (see page 136)
⎕A		Fault Minimum pressure limiter or maximum pressure limiter 2	Check system pressure; reset minimum or maximum pressure limiter (see page 136)
⎕b		Fault Additional high limit safety cut-out, temperature limiter or flue gas damper	Check system temperature; reset high limit safety cut-out or flue gas damper (see page 136)

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Faults which are displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
⸢Ɛ	Control mode	Communication fault – plug-in adaptor for external safety equipment	Check plug-in adaptor for external safety equipment (see page 135) and connecting cable. Without plug-in adaptor, set code "94 : 0"
⸢F		Fault LON communication module	Replace communication module (see page 128). Without communication module Set code "76 : 0"
d1	Boiler cools down	Burner fault	Check burner (see page 89)
d4		High limit safety cut-out has responded or fuse/ MCB F2 has blown/tripped	Check high limit safety cut-out or burner, burner loop and fuse F2 (see page 61)
d6	Control mode	Fault at "DE1"	Check connections at inputs "DE1" to "DE3" in plug-in adaptor for **external safety** equipment (see page 135)
d7		Fault at "DE2"	
d8		Fault at "DE3"	

Faults which are displayed at the programming unit (cont.)

LON users fault messages

Only if the control unit is the fault manager (code "79:1").

```
EE      10     4
```

Fault code	System characteristics	Cause	Remedy
01 to 98	Control mode	A user fault has occurred, e.g. 12 (Vitotronic 050)	Download fault code to user — Installation and service instructions of the relevant control unit
		No connection to the user	– Check coding (see page 99) – Check connecting LON cable – Update user list (see page 99) – Carrying out a user check (see page 100)

Faults which are displayed at the programming unit (cont.)

Fault code	System characteristics	Cause	Remedy
99	Control mode	Fault message active at Vitocom 300	Check external connections at Vitocom 300
		No connection to Vitocom 300	– Check coding (see page 99) – Check connecting LON cable – Update user list (see page 99) – Carry out a user check (see page 100)

Downloading fault codes from the fault memory (fault history)

The most recent 10 faults are saved and may be called up.
Faults are sorted by date. The most recent fault is thus fault number 1.
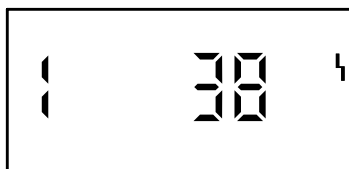
1. Press ▣↰ and ⑩ simultaneously for approx. 2 s.

2. Call up individual fault codes with ⊕ or ⊖.

Note
All saved fault codes can be deleted with ⊛.

3. Press ⑩.

Boiler water temperature control

Brief description

The boiler water temperature is regulated by controlling the two-stage or modulating burner. Several defaults determine the set boiler water temperature:

- Set defaults at key ⌷▥ of the control unit
- Set defaults at key ⌷⎘ of the control unit
- Demands from Vitotronic 050 heating circuit controllers, which are connected to the control unit via LON BUS
- Dropping below the set return temperature/boiler water temperature

Coding addresses which influence the boiler water temperature control
02 to 06, 08 to 0A, 13 to 1C
For a description, see page 140.

Boiler water temperature control (cont.)

Functions

The boiler water temperature is recorded by three sensors separately, which are inserted into a multiple sensor well:
- High limit safety cut-out (STB) (liquid expansion)
- Control thermostat TR (liquid expansion)
- Boiler water temperature sensor KTS (change in resistance PT 500)

Upper control range limits
- High limit safety cut-out STB 120 °C, adjustable to 110 or 100 °C
- Thermostat TR 95 °C, adjustable to 100 or 110 °C
- Electronic maximum limit Setting range: 20 to 127 °C Changes via coding address "06".

Lower control range limit
In standard mode and when frost protection is active, the control unit regulates the boiler water temperature subject to the respective boiler.

Control sequence

Boiler goes cold
(set value –2 K)
The burner start signal is set at the set boiler water temperature less 2 K, and the burner starts its own monitoring program.
The burner start may be delayed by a few minutes subject to the number of the auxiliary circuits and the combustion type.

Boiler heats up
The burner shutdown point is determined by the shutdown differential (coding address "13").

Cylinder temperature control (only for single boiler systems)

Brief description

The cylinder thermostat operates with a constant temperature. It is the result of starting and stopping the cylinder primary pump.
The switching differential is ±2.5 K.

During cylinder heating, a constant upper boiler water temperature will be set (20 K higher than the set cylinder temperature, adjustable via coding address "60").

Coding addresses which influence the cylinder thermostat
4E, 54, 55, 56, 58 to 5A, 60 to 63, 67 to 69.
For a description, see page 147.

Functions

Frost protection
The DHW cylinder will be heated to 20 ºC if the DHW temperature drops below 5 ºC.

Auxiliary function for DHW heating
This function is enabled by providing a second set DHW temperature via coding address "58" and by determining a time via coding address "63".
Heating up with the auxiliary function takes place with the first heating up of the cylinder each day.

Set DHW temperature
The set DHW temperature can be adjusted between 10 and 60 ºC. The set range can be extended to 95 ºC via coding address "56".

System with cylinder storage system
The above functions also apply in conjunction with cylinder storage systems.

Set the following codes:
"4C: 1", "4E: 1", "55: 3"
(see page 146).

System with Vitosolic
A third set DHW temperature can be defaulted via coding address "67". Reheating will be suppressed above the selected temperature. The DHW cylinder will only be heated by the solar heating system.

Cylinder temperature control (only for single boiler systems) (cont.)

Control sequence

- The cylinder primary pump runs on after cylinder heating, until
  - the difference between the boiler water and the DHW temperature is less than 7 K or
  - the weather-compensated set flow temperature has been reached or
  - the actual temperature is 5 K higher than the set DHW temperature or
  - the maximum run-on time (adjustable via coding address "62") has been reached.
- Without the cylinder primary pump running on (code "62:0")

Code "55:0"
Cylinder heating

DHW cylinder goes cold
(set value –2.5 K, adjustable via coding address "59")

The set boiler water temperature is adjusted 20 K higher than the set DHW temperature (adjustable via coding address "60").
- Starting the cylinder primary pump subject to boiler water temperature (code "61:0"):
  The pump starts when the boiler water temperature is 7 K higher than the DHW temperature.
- Immediate start of the cylinder primary pump (code "61:1").

The DHW cylinder is hot
(set value +2.5 K)

The set boiler water temperature is returned to the programmed set value.

Code "55:1":
Adaptive cylinder heating

With adaptive cylinder heating, the speed of the temperature rise during DHW heating is taken into account. Also taken into account is the question of whether the boiler will be required to supply heat after the cylinder has been heated up or whether residual boiler heat should be transferred to the DHW cylinder. Accordingly, the control unit determines the burner and pump shutdown points to prevent the set DHW temperature being substantially exceeded after the cylinder has been heated up.

Cylinder temperature control (only for single boiler systems) (cont.)

Code "55:2":
Cylinder temperature control with
2 cylinder temperature sensors

Cylinder temperature sensor 1
enables the cylinder primary pump,
and is evaluated for stop conditions
during the pump run-on time.
Cylinder temperature sensor 2
(inside the cold water inlet) is
designed to start cylinder heating
prematurely when large volumes of
DHW are drawn off as well as to stop
cylinder heating prematurely, if no
DHW is drawn.
Select starting and stopping points
via coding addresses "68" and "69".

Code "55:3"
Cylinder thermostat – cylinder
storage system

DHW cylinder goes cold
(set value –2.5 K; adjustable via
coding address "59"),
■ The set boiler water temperature is
  adjusted 20 K higher than the set
  DHW temperature (adjustable via
  coding address "60").
■ The cylinder primary pump is
  switched ON.

■ The three-way mixing valve opens
  and then regulates to the defaulted
  set value.
■ The cylinder primary pump cycles
  (short term ON and OFF) until the
  set flow temperature has been
  reached (set DHW temperature
  + 5 K), then it runs constantly.
  If, during cylinder heating, the
  actual value stays below the
  required set temperature, then the
  cylinder primary pump will
  temporarily cycle again.

The DHW cylinder is hot
Cylinder temperature sensor 1:
Actual value $\geqq$ set value
and
Cylinder temperature sensor 2:
Actual value > set value –1.5 K)
■ The set boiler water temperature is
  reset to the weather-compensated
  value,
■ The cylinder primary pump is
  switched OFF:
  – Immediately, if the three-way
    mixing valve is fully open
    or
  – after expiry of a run-on time
    adjustable via code "62".

Components from the parts list

For parts list, see page 153.

Main PCB 230 V~

The main PCB comprises:
- Relays and outputs for controlling pumps, actuators and the burner
- Slot for power supply unit and boiler control unit

Main PCB low voltage

The main PCB comprises:
- Connection plug for sensors, communication connections and external hook-up
- Slots for electronics PCB, power supply PCB, LON communication module, programming unit, boiler coding card and Optolink PCB

Power supply unit PCB

The power supply unit PCB comprises the low voltage supply for all electronic equipment.

Safety assembly

The safety assembly comprises:
- High limit safety cut-out
- Control thermostat
- Fuses
- ON/OFF switch
- TEST key

Electronics PCB

Microprocessor with software

When replacing the PCB:
1. Record the codes and adjustments made at the control unit.

2. Replace the PCB.

3. Set code "8A:176", and coding address "92" to "92:160".

Optolink/emissions test switch PCB

The PCB comprises:
- Burner standby display
- Fault display
- Optolink laptop interface
- Emissions test switch

Emissions test switch for testing flue gas with briefly raised boiler water temperature.
The following functions are triggered in position "🖐":
- Burner start-up (may be delayed through fuel oil preheating, Vitoair draught stabiliser or flue gas damper)
- Starting all pumps
- Control of the boiler water temperature by the "🕐" control thermostat

Components from the parts list (cont.)

Programming unit

Setting the:
- Heating program
- Set values
- Coding

Displaying:
- Temperatures
- Operating conditions
- Faults

Fuses

F1: 6.3 A (slow), 250 V,
max. power loss $\leqq$ 2.5 W,
to protect the actuators, pumps, and
all electronics

F2: 6.3 A (slow), 250 V,
max. power loss $\leqq$ 2.5 W,
to protect the burner

Burner connecting cables

For boilers with
- Pressure-jet oil/gas burners,
  connection see page 89.
- Atmospheric burner,
  connection see page 91.

Plug 150

For the connection of external safety
equipment, see page 84.

LON communication module
(accessories)

Electronics PCB for data exchange
with additional control units or
Vitocom 300.
A communications interruption will
be indicated.

High limit safety cut-out

- Type STB 56.10525.570, make EGO,
  DIN STB 10602000
  or
  EM-80-V-TK/b7-1 60002843,
  make JUMO, DIN STB 82699
  or
  Type 965.122X6.01A, make T&G,
  DIN STB 98103
- In the delivered condition
  set to 120 ºC, adjustable to
  110 and 100 ºC (see page 61)
- Electro-mechanical temperature
  switch according to the liquid
  expansion principle with lockout
- Intrinsically safe; also lockout in
  case of capillary tube leaks or
  ambient temperatures below –10 ºC
- Limits the boiler water temperature
  to the maximum permissible value
  by shutdown and lockout
- Central fixing M10, capillary tube
  3600 mm long
  probe $\varnothing$ 3 mm, 180 mm long
- Electrical test in accordance with
  VDE 0701 (or local regulations)
- Function test with TEST key
  (see page 98)

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Components from the parts list (cont.)

TEST key

For testing the high limit safety cut-out.
For a description, see page 98.

Control thermostat

- Type TR 55.18029.020, make EGO, DIN TR 110302
  or
  EM-1-TK/b1 60002846, make JUMO, DIN TR 77703
  or
  Type 751.X32X6.01A, make T&G, DIN TR 96803
- Set to 95 ºC in the delivered condition; adjustable to 100 and 110 ºC (see page 65)

  Note
  Adjust downwards at least 20 K higher than the DHW temperature, upwards at least 15 K lower than the high limit safety cut-out.

- Electro-mechanical temperature switch according to the liquid expansion principle
- Controls the maximum boiler water temperature (e.g. in emissions test mode)
- Flattened 6 mm settings axis, setting tools pushed onto the front of the axis
- Capillary tube 3600 mm long probe $\varnothing$ 3 mm, 180 mm long
- Electrical test in accordance with VDE 0701 (or local regulations)
- Function test with emissions test key (see page 97)

Components from the parts list (cont.)

Boiler water temperature sensor and cylinder temperature sensor

Connection
See page 66.

Checking sensor
1. Pull plug $\boxed{3}$ or $\boxed{5}$.

2. Check the sensor resistance at terminals "1" and "2" or "2" and "3" (if a second cylinder temperature sensor has been connected) of the plug.

3. Compare the test result with the actual temperature (for scanning, see page 107).
Check the installation and replace sensor, if necessary, in case of severe deviation.
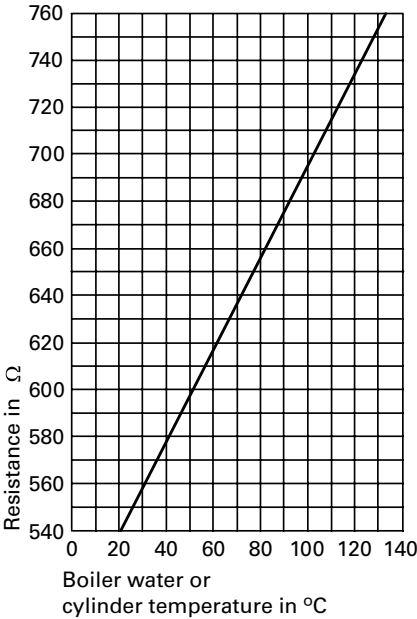
Specification
Protection: IP 32
Permiss. ambient temperature
■ during operation
  – boiler water
  temperature sensor: 0 to +130 °C
  – cylinder
  temperature sensor: 0 to + 90 °C
■ during storage
  and transport: –20 to + 70 °C

Resistance in Ω — Boiler water or cylinder temperature in °C

Components from the parts list (cont.)

Contact temperature sensor and immersion temperature sensor

For recording the return temperature.

Connection
See page 66.

Checking sensor
1. Pull plug 17.

2. Check the sensor resistance at terminals "1" and "2" of the plug.

3. Compare the test result with the actual temperature (for scanning, see page 107).
Check the installation and replace sensor, if necessary, in case of severe deviation.
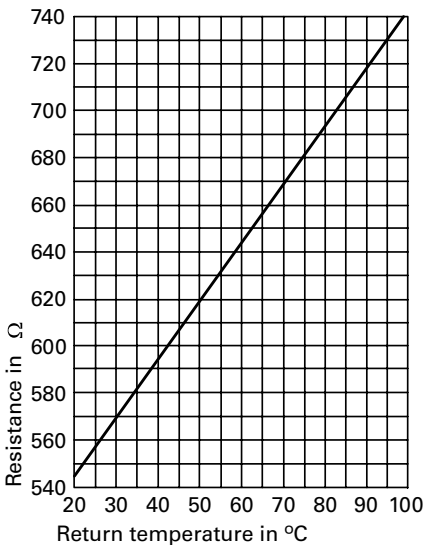
Specification
Protection: IP 32
Permiss. ambient
temperature
■ during operation: 0 to +100 °C
■ during storage and
   transport: −20 to + 70 °C

(graph: Resistance in Ω vs Return temperature in °C)

Flue gas temperature sensor, part no. 7450 630

The sensor records the flue gas temperature and monitors the set limit.

Connection
See page 66.

Checking the flue gas temperature sensor
1. Pull plug 15.

2. Check the sensor resistance at terminals "1" and "2" of the plug.

3. Compare the test result with the actual temperature (for scanning, see page 107).
Check the installation and replace sensor, if necessary, in case of severe deviation.
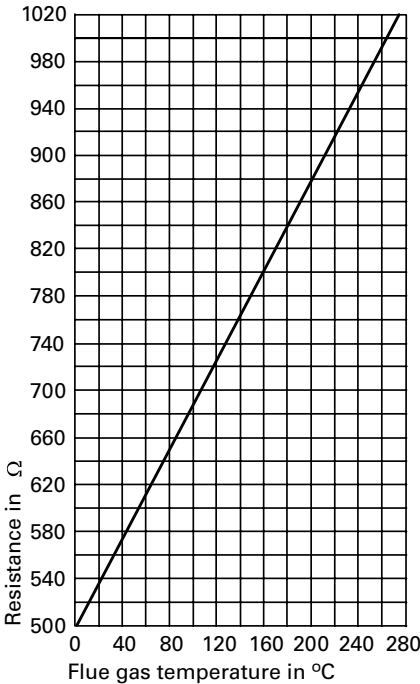
Specification
Protection: IP 60
Permiss. ambient temperature
■ during operation: 0 to +600 °C
■ during storage and transport: −20 to + 70 °C

Resistance in Ω vs. Flue gas temperature in °C

(Graph: Resistance in Ω on the y-axis from 500 to 1020, Flue gas temperature in °C on the x-axis from 0 to 280, showing a linear increasing relationship.)

Boiler coding card

To match the control unit function to the boiler (see page 60).

Function extension 0-10 V, part no. 7174 718

To default an additional set system temperature via a
0-10 V input for a range from 10 to 100 ºC or 30 to 120 ºC.
For signalling reduced mode.
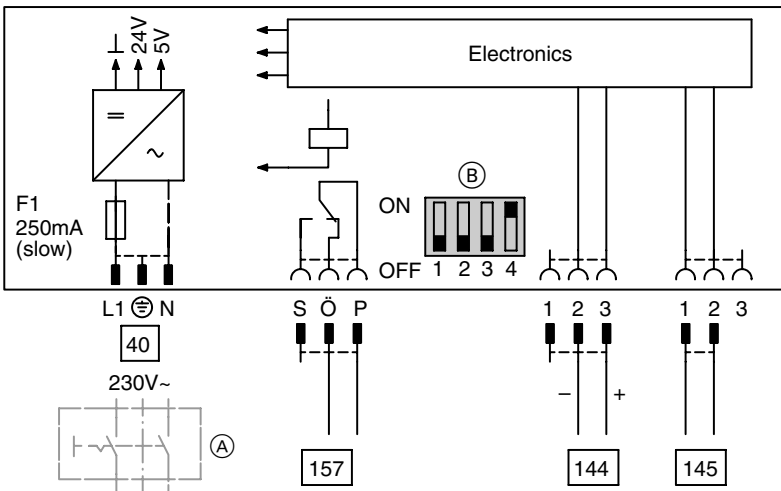
40	Power supply
144	0-10 V input
145	KM BUS
157	Zero volt contact

Ⓐ Mains isolator (if required)
Ⓑ DIP switch (see table)

DIP switch		Function
4	ON	Set value default 10 to 100 ºC
4	OFF	Set value default 30 to 120 ºC

Function extension 0-10 V (cont.)

Boiler system with	Function	Condition at Vitotronic
Vitotronic 100	Demands to the boiler in accordance with the set operating mode and set temperature; the 0-10 V hook-up creates an additional set value	Code "01:1"

Multi-boiler system with external cascade	Function	Preconditions
Vitotronic 100 with enable command via 0-10 V signal	Boiler control via 0-10 V hook-up: **0 to 1 V** ■ Boiler blocked ■ Butterfly valve closed ■ Boiler circuit or shunt pump OFF **1 to 10 V** ■ Boiler water temperature default ■ Enable boiler; the boiler is held at its minimum temperature ■ Butterfly valve open ■ Boiler circuit or shunt pump enabled	Code "01:3" at Vitotronic 100 ***Note*** *On the lead boiler, the voltage must be higher than 1 V.*
Vitotronic 100 with 0-10 V signal and enable via switching output 146	The boiler is enabled; the boiler is held at its minimum temperature 1-10 V additional temperature default	■ Code "01:3" at Vitotronic 100 ■ Contact at terminal 2 and 3 of plug 146 **closed** ***Note*** *This contact must always be closed on the lead boiler.*

Plug-in adaptor for external safety equipment, part no. 7143 526

For the connection of external safety equipment to DIN 4751-2
- Low water indicator
- Maximum pressure limiter
- Minimum pressure limiter
- Additional high limit safety cut-out
In addition for the connection of
- Controlled external burner shutdown
- Three external fault messages.

Upper part of the plug-in adaptor

Zero volt contact on plug 103.
The plug-in adaptor is automatically recognised by the control unit as a KM BUS user.

Any central fault message module connected to plug 50 (230 V~) will also be switched ON.

Ⓐ Wiring chamber
Ⓑ External fault message
Ⓒ KM BUS cable to the control unit

Plug-in adaptor for external safety equipment (cont.)

Lower part of the plug-in adaptor
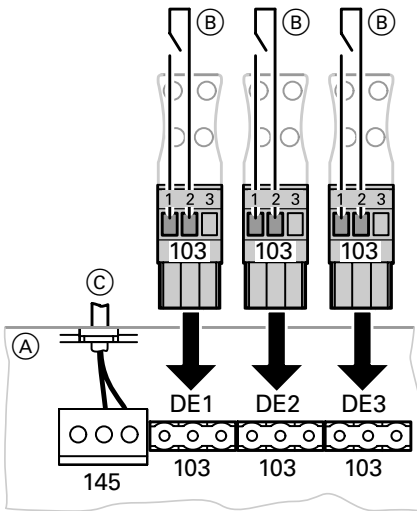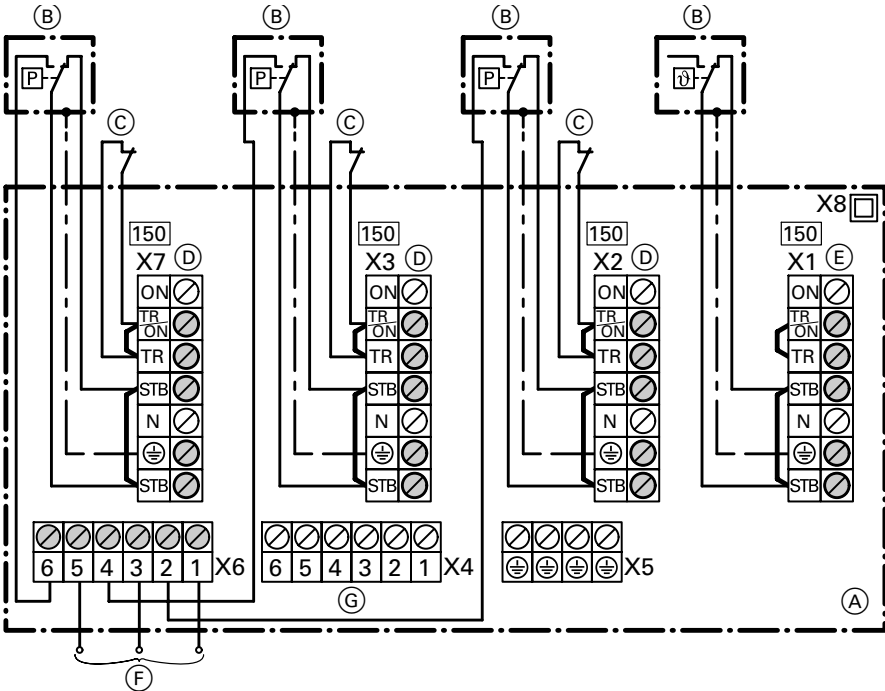
(A) Wiring chamber
(B) External safety equipment
   X1 Additional high limit safety cut-out, temperature limiter or flue gas damper
   X2 Minimum or maximum pressure limiter
   X3 Maximum pressure limiter
   X7 Low water indicator
(C) External controlled shutdown
(D) Plug 150
(E) Plug 150 of the control unit
(F) To the control panel or to the reporting facility
(G) Connection for cable with plug 150 to the control unit

■ Remove the corresponding jumper when connecting the external safety equipment.

■ When connecting a motorised flue gas damper, plug 150 of the flue gas damper is inserted into socket "X1" of the plug-in adaptor.

Note
Every socket "X1", "X2", "X3" and "X7" must contain a plug 150.

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Vitoair draught stabiliser, part no. 7338 725 and 7339 703
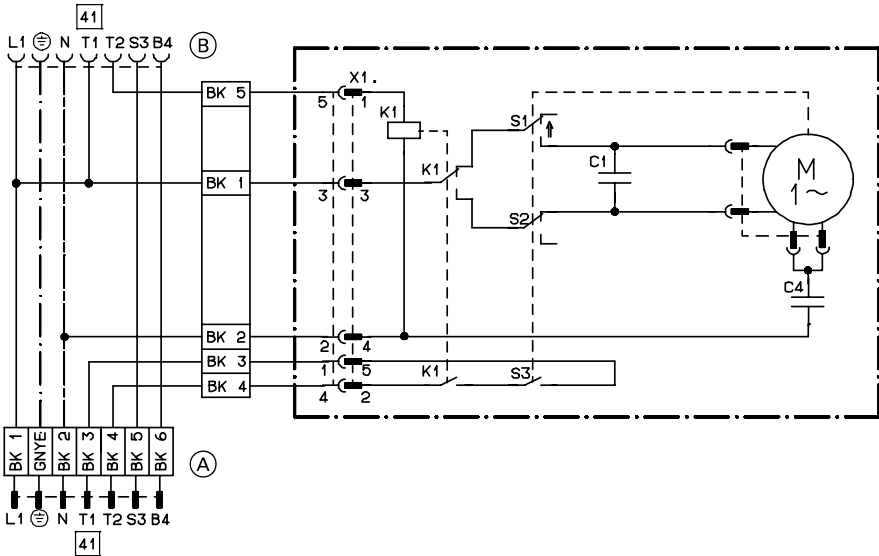
Ⓐ To the burner
Ⓑ To the control unit

Colour coding to DIN IEC 60 757
BK   black
GN/YE   green/yellow

Function check
Press the motor rotary selector and turn it to its central position.
■ Enable burner from control unit →
The rotary selector should move towards "⊻".

■ Burner OFF →
The rotary selector should move towards "⊥".

In emergency mode
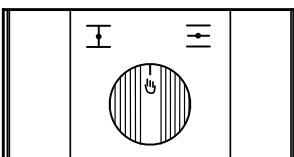
Press rotary selector on the motor and turn clockwise to the limit stop beyond position "⊻".

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Motorised flue gas damper, part no. 9586 973 and 9586 974
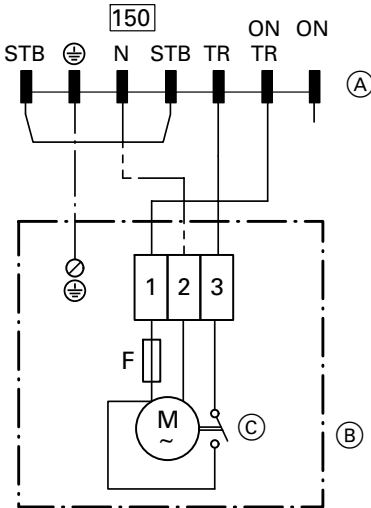
When connecting, remove jumper
"TR" – "ON/TR".

Ⓐ To control unit
Ⓑ Flue gas damper motor
Ⓒ Limit switch

Function check

The burner may only start after the flue gas damper has opened 90% of the pipe cross-section and the limit switch has been activated.

You can check the switch function by measuring its voltage:
Flue gas damper closed (switch open) – no voltage at terminal 3.
Flue gas damper open (switch closed) – voltage at terminal 3.

Resetting codes to the delivered condition

1. Press ⬒ and ⬒ simultaneously for approx. 2 s, until the first two arrows appear in the display.

2. Press ⊛.

Code 1

Calling up code 1

1. Press ⟳ and ⬒ simultaneously for approx. 2 s, until the first arrow appears in the display.
Access to coding level 1.

2. Select the required coding address with ⊕ or ⊖,
the address flashes;
confirm with ⓞⓚ,
the value flashes.

3. Change the value with ⊕ or ⊖; confirm with ⓞⓚ.
The value is saved and does not flash for approx. 2 s. Then the display flashes again. Further addresses can now be selected with ⊕ or ⊖.

4. Press ⟳ and ⬒ simultaneously for approx. 1 s.
Exit coding level 1.

Summary

Coding in the delivered condition		Possible change		
System design				
00:	1	Boiler control without DHW heating	00:	0	set automatically, if "01:2" or "01:3" has been programmed
			00:	2	Boiler control with DHW heating
System type				
01:	1	Single boiler system	01:	2	Multi-boiler system with cascade control via LON BUS (e.g. Vitotronic 333, type MW1)
			01:	3	Multi-boiler system with external cascade control via switching contacts (input 143 and 146)

Code 1 (cont.)

Coding in the delivered condition		Possible change		
Boiler/burner				
02: 1	Two-stage burner	02: 0	Single stage burner	
		02: 2	Modulating burner	
03: 0	Gas fired operation	03: 1	Oil fired operation (irreversible)	
		03: 2	Set automatically, if incorrect boiler coding card inserted	
Burner (mod.) (see page 103)				
05: 70	Burner curve	05: 0	Linear burner curve	
		05: 1 to 05: 99	Non-linear burner curve (see page 103): $$\frac{P_T \text{ in kW}}{P_{max} \text{ in kW}} \cdot 100\,\%$$ $= P_T$ in % P_T Partial load at ⅓ of the actuator operating time P_{max} Maximum output	
Boiler/burner				
06: 87	Max. boiler water temperature limit 87 ºC	06: 20 to 06:127	Maximum boiler water temperature limit adjustable from 20 to 127 ºC	
Boiler				
07: 1	Consecutive boiler number in multi-boiler systems (in conjunction with coding address ″01″)	07: 2 to 07: 4	Consecutive boiler number in multi-boiler systems (in conjunction with coding address ″01″)	
General				
40:125	Operating time for butterfly valve actuator, three-way mixer or mixer motor in conjunction with return temp. control 125 s	40: 5 to 40:199	Operating time adjustable from 5 to 199 s	
77: 1	LON user number	77: 2 to 77: 99	LON user number, adjustable from 1 to 99 **Note** *Allocate each number **only once**.*	

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Code 2

Calling up code 2

1. Press ⬑ and ▥⬑ simultaneously for approx. 2 s, until the first two arrows appear in the display; confirm with ⊙⊠.
Access to coding level 2.

2. Select the required coding address with ⊕ or ⊖,
the address flashes;
confirm with ⊙⊠,
the value flashes.

3. Change the value with ⊕ or ⊖;
confirm with ⊙⊠.
The value is saved and does not flash for approx. 2 s. Then the display flashes again. Further addresses can now be selected with ⊕ or ⊖.

4. Press ⬑ and ▥⬑ simultaneously for approx. 1 s.
Exit coding level 2.

Overview

Coding in the delivered condition		Possible change		
System design				
00:	1	Boiler control without DHW heating	00:	0	Set automatically, if "01:2" or "01:3" has been programmed
			00:	2	Boiler control with DHW heating
System type				
01:	1	Single boiler system	01:	2	Multi-boiler system with cascade control via LON BUS (e.g. Vitotronic 333, type MW1)
			01:	3	Multi-boiler system with cascade control via switching contacts (input 143 and 146)
Boiler/burner				
02:	1	Two-stage burner	02:	0	Single stage burner
			02:	2	Modulating burner
03:	0	Gas fired operation	03:	1	Oil fired operation (irreversible)
			03:	2	Set automatically, if an incorrect boiler coding card is inserted

Code 2 (cont.)

Coding in the delivered condition		Possible change		
Boiler/burner (cont.)				
04:[1]	Switching hysteresis (Note see page 151)	04:	0	Switching hysteresis 4 K
		04: 04:	1 2	Heat demand-dependent switching hysteresis: ERB50 function (values from 6 to 12 K) ERB80 function (values from 6 to 20 K)
Burner (mod.) (see page 103)				
05: 70	Burner curve	05:	0	Linear burner curve
		05: to 05:	1 99	Non-linear burner curve: $\dfrac{P_T \text{ in kW}}{P_{max} \text{ in kW}} \cdot 100\ \%$ $= P_T$ in % P_T Partial output at ⅓ of the actuator operating time P_{max} Maximum output
Boiler/burner				
06: 87	Maximum boiler water temperature limit 87 ºC	06: 20 to 06:127		Maximum boiler water temperature limit adjustable from 20 to 127 ºC
Boiler				
07: 1	Consecutive boiler number in multi-boiler systems (in conjunction with coding address "01")	07: to 07:	2 4	Consecutive boiler number in multi-boiler systems (in conjunction with coding address "01")
Burner (two-stage/mod.) (see page 102)				
08:[1]	Maximum burner output in kW	08: to 08:199	0	Maximum output adjustable from 0 to 199 kW; 1 step ≙ 1 kW

[1]The delivered condition is defaulted by the boiler coding card.

Code 2 (cont.)

Coding in the delivered condition		Possible change	
Burner (two-stage/mod.) (see page 102) (cont.)			
09:[1]	Maximum burner output in kW	09: 0 to 09:199	Maximum output adjustable from 0 to 19 900 kW; 1 step $\triangleq$ 100 kW
0A:[1]	Burner base output in percent	0A: 0 to 0A:100	$\dfrac{P_G \text{ in kW}}{P_{max} \text{ in kW}} \cdot 100\ \%$ $= P_G$ in % P_G Base load P_{max} Maximum output
Boiler			
0C: 5	Butterfly valve modulating independently of the set boiler water temperature	0C: 0	No function
		0C: 1	Constant control of return temperature
		0C: 2	Time-controlled butterfly valve
		0C: 3	Butterfly valve controlled via boiler water temp.
		0C: 4	Butterfly valve modulating subject to the set boiler water temperature
0d: 2	With Therm-Control, affects the butterfly valve (function inactive, if "0C: 1" has been programmed)	0d: 0	Without Therm-Control
		0d: 1	With Therm-Control, affects the mixers of downstream heating circuits
Boiler/burner			
13:[1]	Shutdown differential in K The burner is switched OFF when the set boiler water temperature is exceeded	13: 0	Without shutdown differential
		13: 2 to 13: 20	Shutdown differential, adjustable from 2 to 20 K
Burner			
14:[1]	Minimum operating time in min	14: 0 to 14: 15	Minimum operating time adjustable from 0 to 15 min

[1]*The delivered condition is defaulted by the boiler coding card.*

Code 2 (cont.)

Coding in the delivered condition		Possible change	
Boiler/burner (mod.) (see page 103)			
15: 10	Actuator operating time 10 s	15: 5 to 15:199	Operating time adjustable from 5 to 199 s; for Vitocrossal 300, type CV3, with MatriX burner set "15:19"
Burner (two-stage/mod.)			
16:[1]	Burner offset in K temporary reduction of the set boiler water temperature after burner start	16: 0 to 16: 15	Adjustable offset for start-up optimisation from 0 to 15 K
1A:[1]	Start-up optimisation in min	1A: 0 to 1A: 60	Adjustable start-up optimisation from 0 to 60 min
Burner			
1b: 60	Time from burner ignition to control unit start 60 s	1b: 0 to 1b:199	Controller delay, adjustable from 0 to 199 s
1C:120	Do not adjust		
Boiler			
1F: 0	With flue gas temp. sensor: The flue gas temperature is not monitored for burner maintenance indication	1F: 1 to 1F: 50	A maintenance requirement is indicated when this flue gas temperature is exceeded; adjustable from 10 to 500 °C; 1 step $\triangle$ 10 °C
Boiler/burner			
21: 0	No hours run interval for burner maintenance	21: 1 to 21:100	Number of burner hours run before a service is required; adjustable from 100 to 10 000 h; 1 step $\triangle$ 100 h

[1]The delivered condition is defaulted by the boiler coding card.

Code 2 (cont.)

Coding in the delivered condition		Possible change	
Boiler/burner			
23: 0	No time interval for burner maintenance	23: 1 to 23: 24	Adjustable time interval from 1 to 24 months
24: 0	No maintenance display	24: 1	Maintenance indication in display (address is automatically set and must be manually reset after maintenance)
Boiler/burner (two-stage)			
26: 0	Burner fuel consumption (stage 1); no count, if "26: 0" **and** "27: 0" have been programmed	26: 1 to 26: 99	Input of 0.1 to 9.9; 1 step $\triangleq$ 0.1 litres or gallons/h[1]
27: 0		27: 1 to 27:199	Input of 10 to 1990; 1 step $\triangleq$ 10 litres or gallons/h[1]
Boiler/burner			
28: 0	No burner interval ignition	28: 1	The burner will be force-started for 30 s after 5 h
Boiler/burner (two-stage)			
29: 0	Burner fuel consumption (stage 2); no count, if "29: 0" **and** "2A: 0" have been programmed	29: 1 to 29: 99	Input of 0.1 to 9.9; 1 step $\triangleq$ 0.1 litres or gallons/h[1]
2A: 0		2A: 1 to 2A:199	Input of 10 to 1990; 1 step $\triangleq$ 10 litres or gallons/h[1]
General			
2b: 5	Maximum preheating time of the butterfly valve 5 min	2b: 0	No preheating time
		2b: 1 to 2b: 60	Pre-heat time adjustable from 1 to 60 min
2C: 5	Maximum run-on time of butterfly valve 5 min	2C: 0	No run-on time
		2C: 1 to 2C: 60	Run-on time adjustable from 1 to 60 min

[1]*The fuel consumption can only be scanned in conjunction with Vitosoft or Vitocom.*

Code 2 (cont.)

Coding in the delivered condition		Possible change	
Boiler			
2d: 0	Shunt pump control function only ON if boiler is enabled	2d: 1	Shunt pump control function ON, independent of whether boiler is enabled or not
General			
40:125	Operating time for butterfly valve actuator, three-way mixer or mixer motor in conjunction with return temperature control 125 s	40: 5 to 40:199	Operating time adjustable from 5 to 199 s
4A: 0	Sensor 17 A not installed	4A: 1	Sensor 17 A installed (e.g. Therm-Control temp. sensor); automatic recognition
4b: 0	Sensor 17 B not installed	4b: 1	Sensor 17 B installed (e.g. temperature sensor T2); automatic recognition
4C: 2	Connection to plug 20 A1: Therm-Control switching contact	4C: 1	Primary pump – cylinder storage system
		4C: 3	Circulation pump – flue gas/water heat exchanger
4d: 1	Connection on plug 29: Shunt pump	4d: 2	Boiler circuit pump
		4d: 3	Boiler circuit pump with butterfly valve function
4E: 0	Connection on plug 52: Butterfly valve or three-way mixing valve for raising the return temperature	4E: 1	Three-way mixing valve cylinder storage system
4F: 5	Run-on time shunt, boiler circuit or distribution pump 5 min	4F: 0	No pump run-on
		4F: 1 to 4F: 60	Run-on time adjustable from 1 to 60 min
54: 0	Without solar control unit	54: 1	With Vitosolic 100; automatic recognition

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Code 2 (cont.)

Coding in the delivered condition		Possible change		
DHW				
55:	0	Cylinder heating, hysteresis ± 2.5 K	55:	1	Adaptive cylinder heating active (speed of temp. rise for cylinder temperature is taken into account during DHW heating)
			55:	2	Cylinder temperature control with 2 cylinder temperature sensors
			55:	3	Cylinder temperature control cylinder storage system
56:	0	Setting range for DHW temperature 10 to 60 ºC	56:	1	DHW temperature setting range 10 to 95 ºC **Notes** ■ Observe the max. permissible DHW temperature ■ Change control thermostat "🛈"
58:	0	Without auxiliary function for DHW heating	58: 1 to 58: 95		Input of a second set DHW value; adjustable from 1 to 95 ºC (observe coding address "56" and section "Additional function" on page 124)
59:	0	Cylinder heating: Starting point – 2.5 K K Shutdown point + 2.5 K	59: 1 to 59: 10		Starting point adjustable from 1 to 10 K below the set value
5A:	0	No function	5A:	1	Flow temperature demand of DHW cylinder is maximum system value
60: 20		During DHW heating, boiler water temperature is max. 20 K higher than set DHW temperature	60: 10 to 60: 50		The difference between the boiler water temperature and the set DHW temperature is adjustable from 10 to 50 K

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Code 2 (cont.)

Coding in the delivered condition		Possible change	
DHW (cont.)			
61: 1	The cylinder primary pump starts immediately	61: 0	The cylinder primary pump will be switched ON subject to the boiler water temperature
62: 10	The cylinder primary pump will run on for a max. of 10 min	62: 0	Cylinder primary 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	63: 1	Additional function: 1 × daily
		63: 2 to 63: 14	every 2 days to every 14 days
		63: 15	2 × daily
67: 40	With Vitosolic: Third set DHW temperature at 40 °C. Reheating will be suppressed above the selected temperature. The DHW cylinder is heated exclusively by the solar heating system.	67: 0	Without a third set DHW temperature
		67: 1 to 67: 95	Input of a third set DHW value; adjustable from 1 to 95 °C (subject to the setting of coding address "56")
68: 8	With 2 cylinder temperature sensors (coding "55:2"): cylinder heating switch-off point with set value × 0.8	68: 2 to 68: 10	Factor adjustable from 0.2 to 1; 1 step ≙ 0.1
69: 7	With 2 cylinder temperature sensors (coding "55:2"): cylinder heating starting point with set value × 0.7	69: 1 to 69: 9	Factor adjustable from 0.1 to 0.9; 1 step ≙ 0.1

Code 2 (cont.)

Coding in the delivered condition		Possible change		
General				
76:	0	Without communication module	76:	1	With LON communication module; will be recognised automatically
			76:	2	Do not adjust.
77:	1	LON user number	77: 2 to 77: 99		LON user number, adjustable from 1 to 99 **Note** *Allocate each number **only once**.*
78:	1	Enable LON communication	78:	0	Disable LON communication
79:	0	Control unit is not fault manager	79:	1	Control unit is fault manager
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 minimum fault duration before a fault message is issued, is adjustable from 10 to 995 s; 1 step $\triangleq$ 5 s
88:	0	Temperature displayed in °C (Celsius)	88:	1	Temperature displayed in °F (Fahrenheit)
8A:175		Do not adjust			
92:160		Do not adjust Address will only be displayed if "8A:176" has been programmed.			
93:	0	Emissions test function and service indication do not affect central fault messages	93:	1	Emissions test function/ service indication does affect central fault messages
94:	0	Without plug-in adaptor for external safety equipment	94:	1	With plug-in adaptor for external safety equipment; will be recognised automatically

Code 2 (cont.)

Coding in the delivered condition		Possible change	
General (cont.)			
98: 1	Viessmann system number (in conjunction with monitoring of several systems via Vitocom 300)	98: 1 to 98: 5	System number adjustable from 1 to 5
9b: 0	External default of the set flow temperature via plug 146	9b: 1 to 9b:127	Set flow temperature in case of external demand via plug 146 adjustable from 1 to 127 ºC
9C: 20	LON user monitoring When there is no response from a user, values defaulted by the control unit continue to be used for a further 20 min. Only then will a fault message be triggered.	9C: 0	No monitoring
		9C: 5 to 9C: 60	Time adjustable from 5 to 60 min
9d: 0	Without function extension 0-10 V	9d: 1	With function extension; automatic recognition

Burner switching hysteresis

Switching hysteresis 4 K (04:0)

Burner
ON
OFF
Time

+2
ϑ set
-2

low
heat demand
average
heat demand
high
heat demand
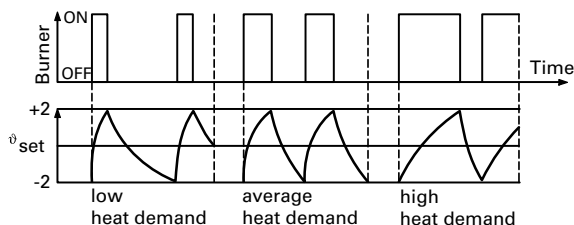
Heat-demand dependent switching hysteresis (only with outside temp. sensor)

ERB50 function (04:1)
Subject to heat demand, values between 6 and 12 K result.

Burner
ON
OFF
Time

+9
+3
ϑ set
-3

low
heat demand
average
heat demand
high
heat demand
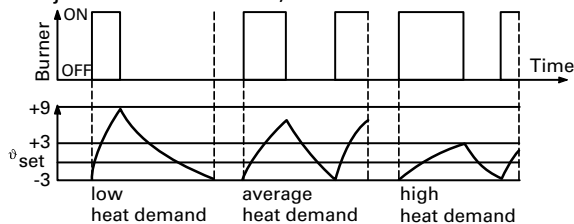
ERB80 function (04:2)
Subject to heat demand, values between 6 and 20 K result.

Burner
ON
OFF
Time

+17

+3
ϑ set
-3

low
heat demand
average
heat demand
high
heat demand
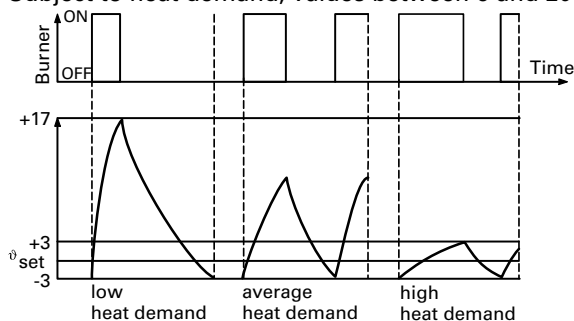
The heat demand-dependent switching hysteresis, therefore, takes the boiler load into account.
The switching hysteresis, i.e. the burner operating time, is varied subject to the current heat demand.

Coding

Parts list

When ordering spare parts
Quote the part no. and serial no. (see type plate Ⓐ) as well as the item no. of the required parts (as per this parts list).
Obtain standard parts from your local supplier.

Parts
001 Hinge
004 Rotary selector
     control thermostat
005 Cover plug for high limit safety
     cut-out
006 Stop dial for control thermostat
008 Support stay
011 Safety valve with wiring
013 Housing front with frame
     (with item 001)
014 PCB cover
015 Front flap
016 Casing back
018 Programming unit
024 Fuse holder cap for control fuse
025 Fuse holder for control fuse
030 High limit safety cut-out
031 Control thermostat
037 Key, single-pole
     (**"TÜV"** test key)
038 2-pole switch (ON/OFF switch)
042 Boiler water temperature sensor
     with plug 3
043 Cylinder temperature sensor
     with plug 5
049 Main PCB low voltage
050 Electronics PCB
051 Optolink and
     emissions test switch

052 Main PCB 230V~
054 Power supply unit PCB
056 Communication module LON
065 Burner supply cable with
     plug 41 (for boilers with
     pressure-jet oil/gas burners)
     and burner supply cable with
     plug 90
067 Immersion temperature sensor
068 Return-contact temperature
     sensor
071 Burner supply cable with
     plug 41 (for boilers with
     intermittent ignition system)
     and burner supply cable with
     plug 90
074 Connecting cable
092 Fuse 6.3 A (slow)/250 V~

Parts not shown
081 Operating instructions
084 Installation and service
     instructions
093 LON cable
094 Terminator (2 pieces)
100 Plugs for sensors (3 pieces)
101 Plugs for pumps (3 pieces)
102 Plugs 52 (3 pieces)
103 Mains output plugs 156
     (3 pieces)
104 Mains supply plugs 40
     (3 pieces)
105 Plug 150
106 Plugs 50 (3 pieces)
108 Plugs 143, 145 and 146
109 Burner plugs 41, 90, 151
     and 191

Ⓐ Type plate

153

Parts list (cont.)

051 018 074 001 013 008

015

001

004 006 037 011 030 031

038

005

025

092

024

042 043 065

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Parts list (cont.)

049

016

056

050

052

054

014

014

013

Ⓐ

067

068

071

Summary

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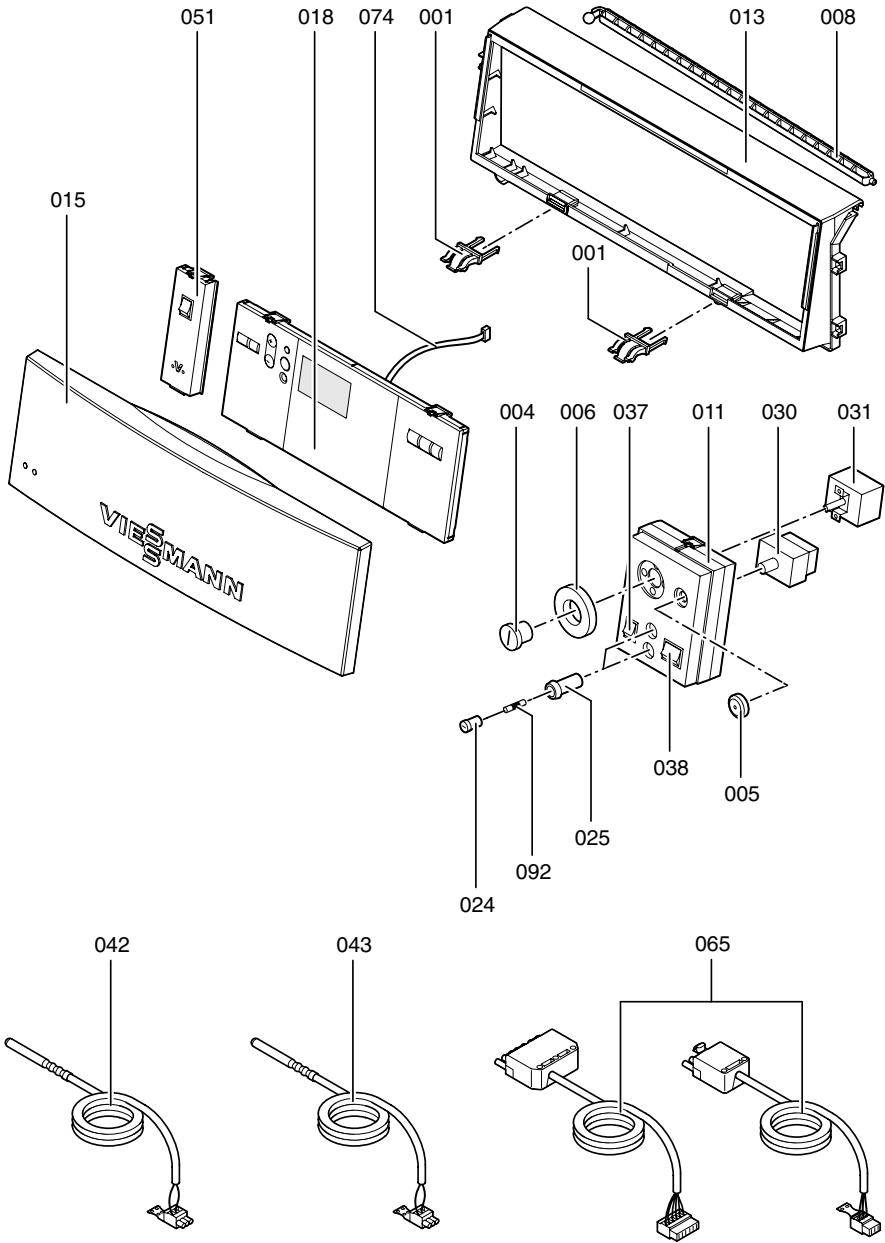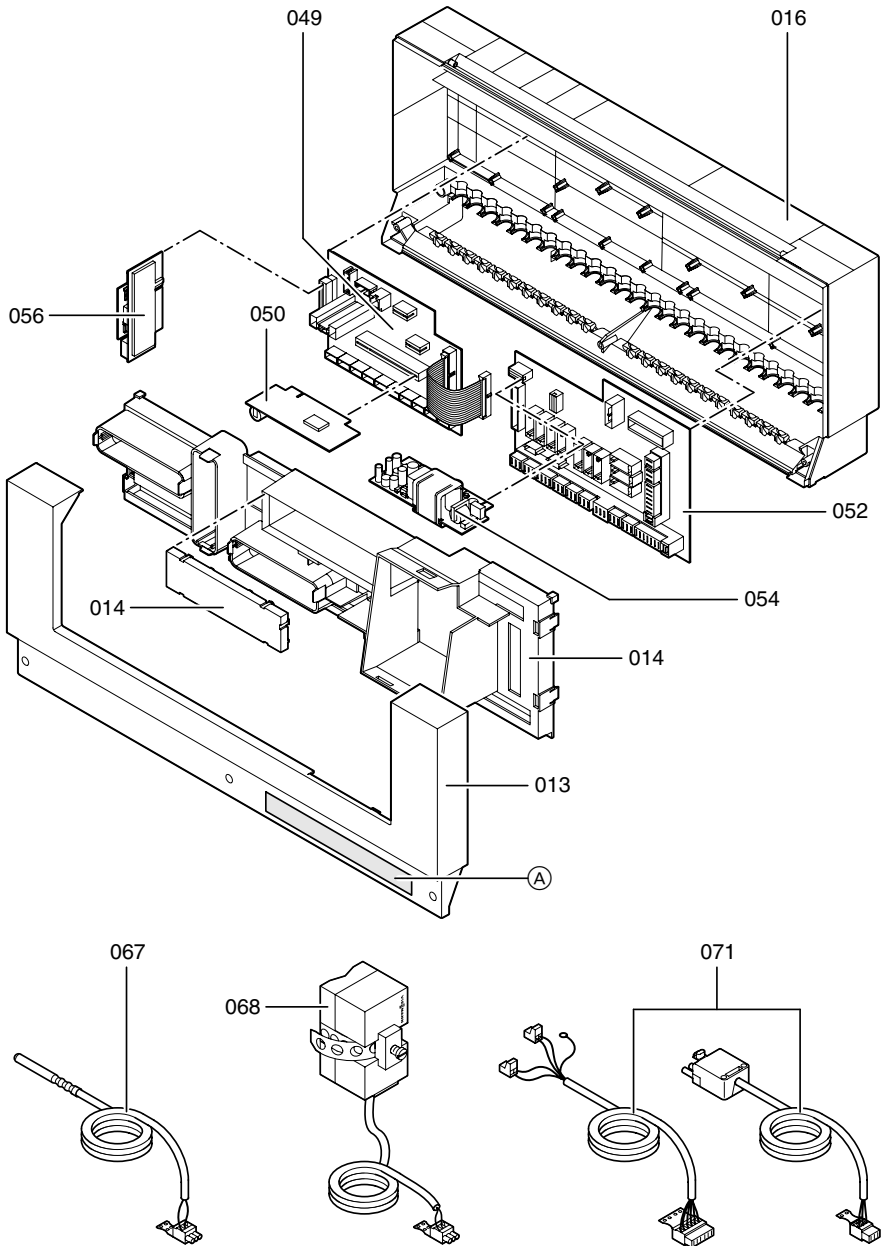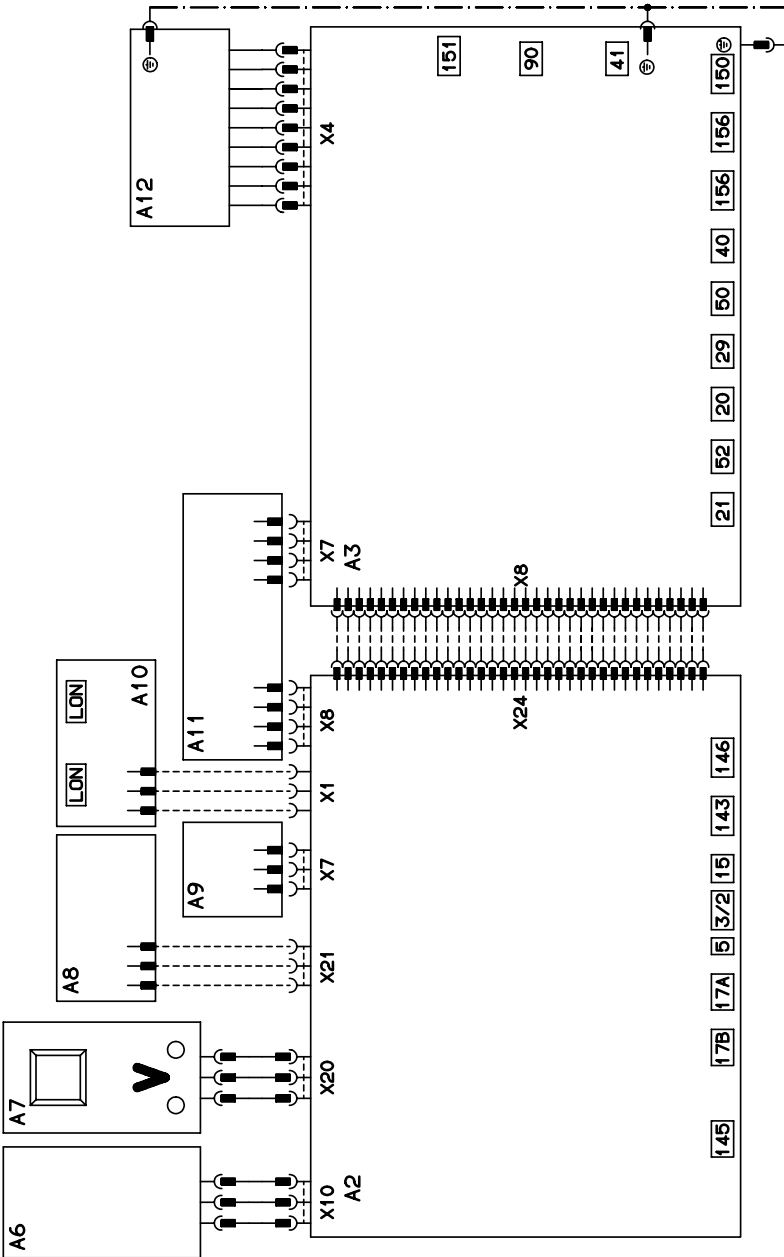
Summary (cont.)

A2 Main PCB low voltage
A3 Main PCB 230 V~
A6 Programming unit
A7 Optolink/emissions
    test switch PCB
A8 Electronics PCB
A9 Boiler coding card
A10 LON communication module
A11 Power supply unit PCB
A12 Boiler control unit

Main PCB low voltage

A11

X8
1 GND
2 5.7V
3 22.5V
33V

X24
34pol.

X21 A8

X7 A9

A6

X10

24V
24VSP

X20
A2

A7
S3
V2
V1

X1
A10

X25 146
X19 143
X4 15
X3 3/2
X6 5
X5 17 A
X23 17 B
X18 145

LON

LON

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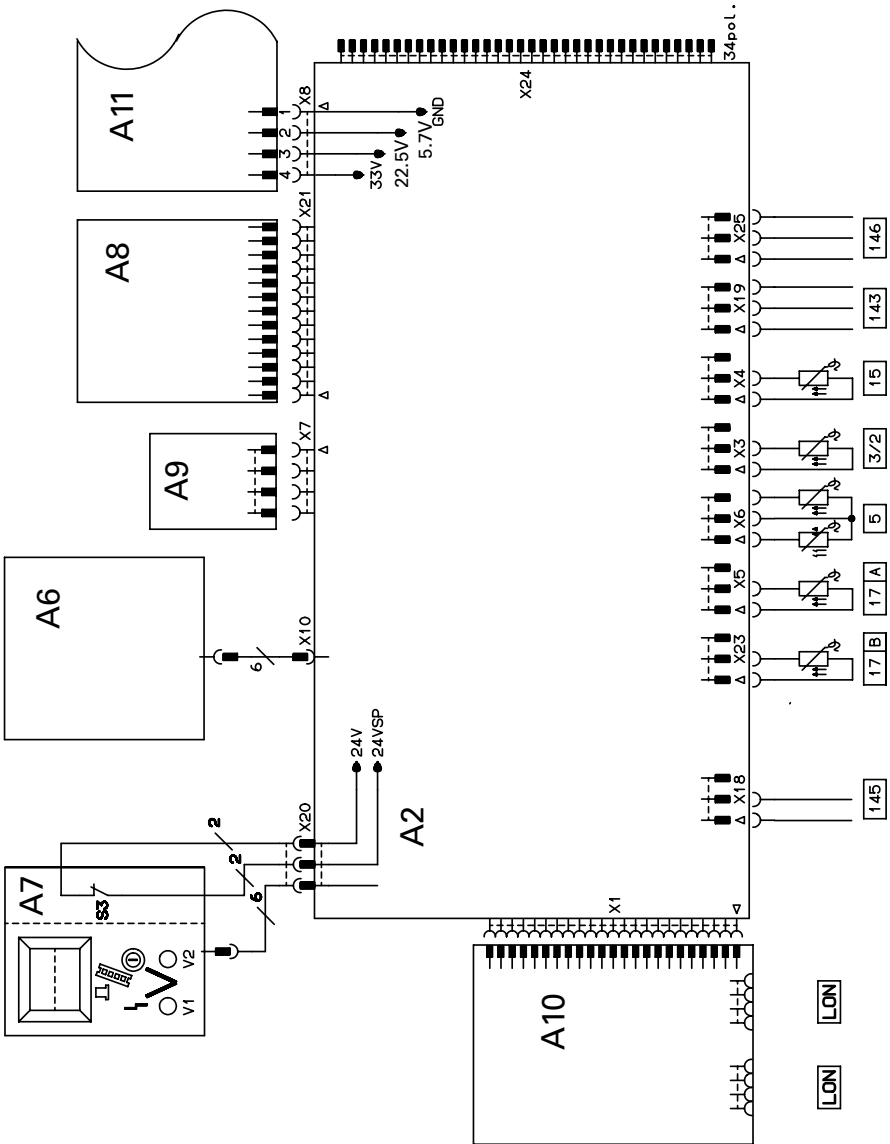
Main PCB low voltage (cont.)

3	Boiler water temperature sensor
5	Cylinder temperature sensor (accessories) / cylinder temperature sensor 2 for a cylinder storage system
15	Flue gas temperature sensor (accessories)
17 A	Temperature sensor of Therm-Control or Temperature sensor T1
17 B	Temperature sensor T2 or Temperature sensor – cylinder storage system
143	External hook-up
145	KM BUS user (accessories)
146	External hook-up
LON	Interconnecting cable for data exchange between control units
S3	Emissions test switch "⚡"
V1	Fault indicator (red)
V2	ON indicator (green)

Main PCB 230 V~

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Main PCB 230 V~ (cont.)

20 Switching output
or
Primary pump, cylinder storage
system
or
Circulation pump, flue
gas/water heat exchanger
21 Cylinder primary pump
29 Shunt or boiler circuit pump
(on site)
40 Power supply, 50 Hz
41 Oil/gas burner, connection
to DIN 4791
50 Central fault message (on site)
52 Butterfly valve
or
Constant return
temperature control
or
Mixing valve, cylinder storage
system
90 Burner stage 2/mod.
150 External connections
ⓐ External safety equipment
(remove jumper
when connecting safety
equipment)
ⓑ External controlled
shutdown
(remove jumper when
connecting
these devices)
ⓒ External burner start
(stage 1)
151 Safety chain 230 V
156 Power supply for accessories

F1 Fuse for electronics, pumps
and accessories (via
plug 156)
F2 Fuse for burner
F6 High limit safety
cut-out "🔥" 120 ºC
(100 or 110 ºC)
F7 Control thermostat "🕐"
95 ºC
(100 ºC, 110 ºC)
K1-K10 Relays
S1 ON/OFF switch "◎"
S2 TEST key

Specification

Rated voltage: 230 V~
Rated frequency: 50 Hz
Rated current: 2 (6) A ~
Power
consumption: 5 W
Safety class: I
Protection level: IP 20 D to EN 60529, safeguard through appropriate design and installation
Function: Type 1 B to EN 60730-1

Permissible ambient temperature
■ in operation: 0 to 40 °C
Use in living space and boiler rooms (standard ambient conditions)
■ during storage and transport: –20 to 65 °C

Rated capacity of relay outputs at 230 V~ for
■ Switching output
or
Primary pump
cylinder storage
system
or
Circulation pump
Flue gas/
water heat
exchanger [20]: 4 (2) A 230 V~[*1]
■ Cylinder
primary
pump [21]: 4 (2) A 230 V~[*1]
■ Shunt
or boiler
circuit
pump [29]: 4 (2) A 230 V~[*1]
■ Central
fault
message [50]: 4 (2) A 230 V~[*1]
■ Butterfly
valve [52]: 1 (0.5) A 230 V~[*1]
or
Constant return
temperature
control
or
Three-way valve
cylinder storage
system [52]: 0.2 (0.1) A 230 V~[*1]
■ Burner
plug [41]: 6 (3) A 230 V~
plug [90]:
– two-stage: 1 (0.5) A 230 V~
– modulating: 0.2 (0.1) A 230 V~

*1 Total max. 6 A 230 V~.

Keyword index

Keyword index (cont.)

Keyword index (cont.)

Keyword index (cont.)

Applicability

Vitotronic 100, type GC1
Only for integration/installation on/in Viessmann boilers.

For control unit
Part no. 7187 094