VIESSMANN VITOPEND 100-W INSTALLATION AND SERVICE INSTRUCTIONS MANUAL

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for contractors

Vitopend 100-W
Type WH1D, 10.7 to 24.8 kW and 13.2 to 31 kW
Gas system and combi boilers
for balanced flue operation
Natural gas and LPG version

For applicability, see the last page

VITOPEND 100-W

5441 429 UAE 9/2012

Please keep safe.

Safety instructions

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

Safety instructions explained

Danger
This symbol warns against the risk of injury.

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

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

Target group

These instructions are exclusively designed for qualified personnel.
- Work on gas equipment must only be carried out by a qualified gas fitter.
- Work on electrical equipment must only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

Regulations

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

If you smell gas

Danger
Escaping gas can lead to explosions which may lead to serious injury.
- Do not smoke. Prevent naked flames and sparks. Never switch lights or electrical appliances ON or OFF.
- Close the gas shut-off valve.
- Open windows and doors.
- Remove all people from the danger zone.
- Notify your gas or electricity supplier from outside the building.
- Shut off the electricity supply to the building from a safe place (outside the building).

If you smell flue gas

Danger
Flue gas can lead to life-threatening poisoning.
- Shut down the heating system.
- Ventilate the boiler room.
- Close all doors in the living space.

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Safety instructions (cont.)

Working on the system

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

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

Repair work

Please note
Repairing components that 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 that have not been tested together with the heating system can compromise its function. Installing non-authorised components and non-approved modifications or conversions can compromise safety and may invalidate our warranty.
For replacements, use only original spare parts supplied or approved by Viessmann.

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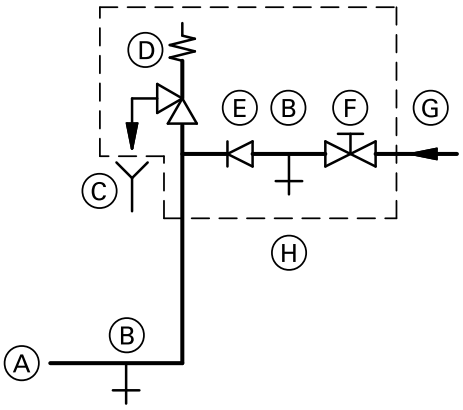
Product information

Vitopend 100-W, WH1D

Set up for operation with natural gas E.
May be converted to alternative gas types with a conversion kit.
The Vitopend 100-W should generally only be delivered to those countries specified on the type plate. For deliveries to alternative countries, an approved contractor, on his own initiative, must arrange individual approval in accordance with the law of the land.

Preparing for installation

Cold water installation



Ⓐ Cold water connection, boiler
Ⓑ Drain
Ⓒ Visible discharge pipe outlet point
Ⓓ Safety valve
Ⓔ Non-return valve
Ⓕ Shut-off valve
Ⓖ Cold water
Ⓗ Safety assembly

Safety assembly Ⓗ to DIN 1988 is required, if the mains water supply pressure exceeds 10 bar, and no DHW pressure reducing valve is installed (to DIN 4753).
Only use a non-return valve or a combined shut-off and non-return valve in conjunction with a safety valve.
If a safety valve is installed, remove the toggle from the cold water shut-off valve of the boiler, preventing the valve being closed manually.

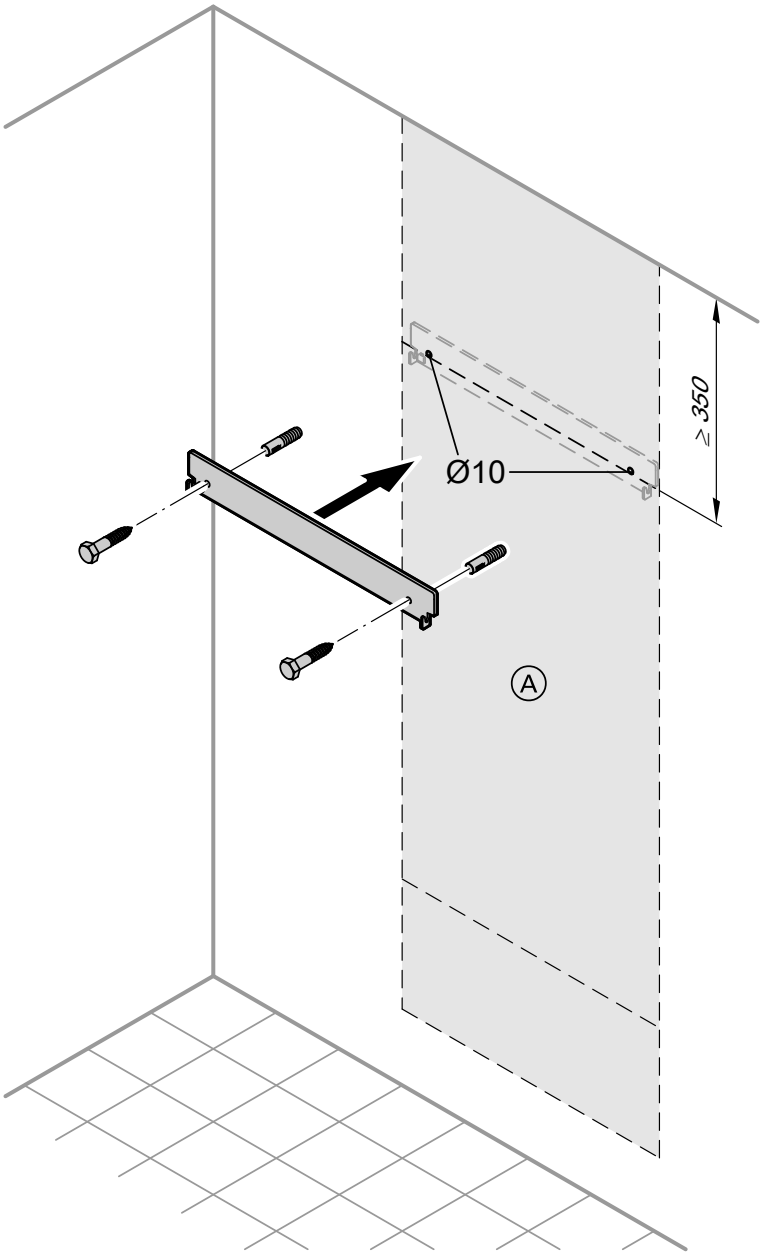
Anti-water hammer device

We recommend the installation of an anti-water hammer device near pressure shock generators if the pipework to which the boiler is connected comprises taps where water hammer may be created (e.g. pressure washers, washing machines or dishwashers).

Installing the boiler and making all connections

Please note
To prevent equipment damage,
install all pipework free of load and torque stresses.

Note
Prepare the gas, water and power connections using the installation template Ⓐ supplied.



Ⓐ Installation template

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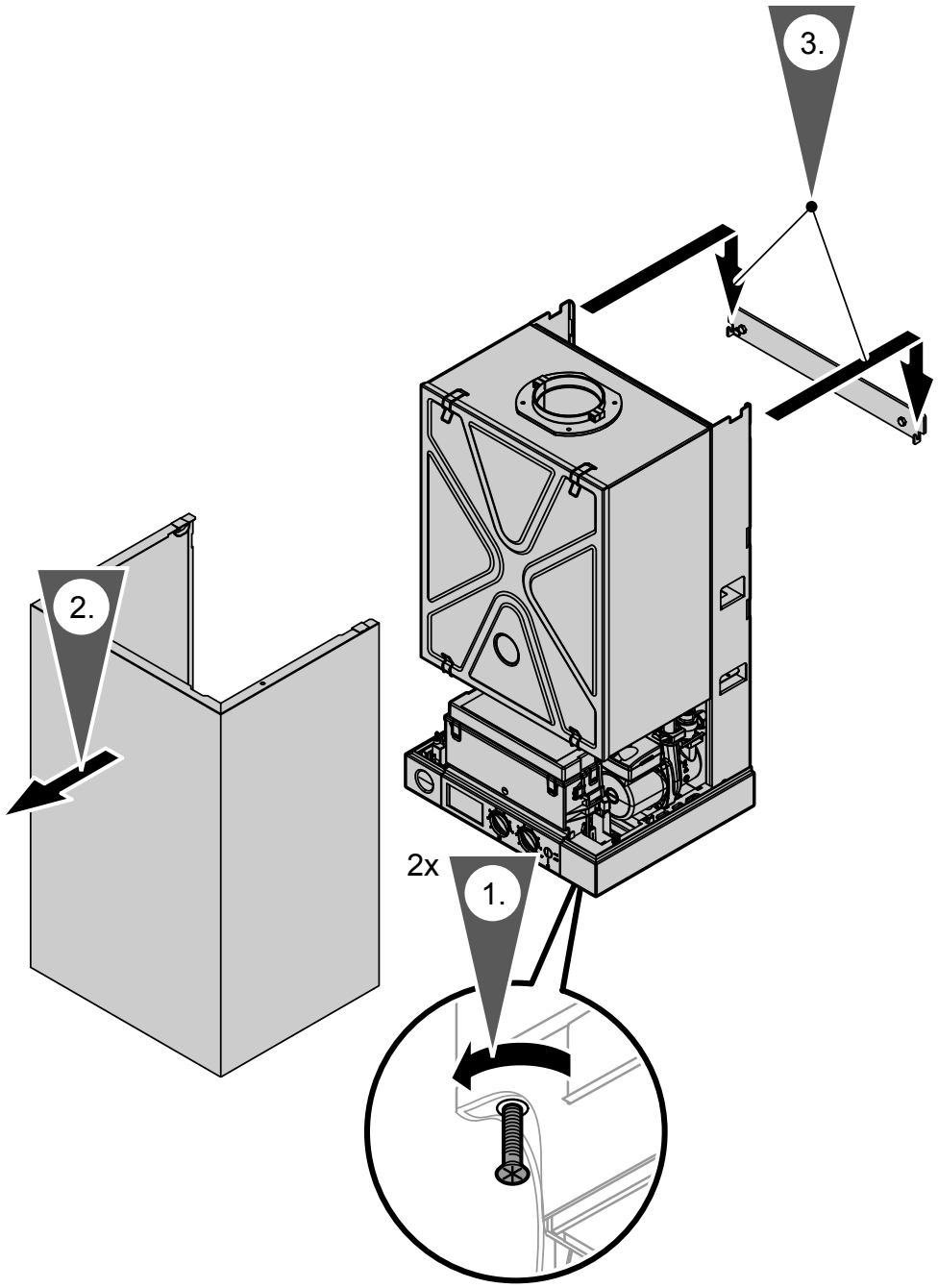
Installing the boiler and making all connections (cont.)

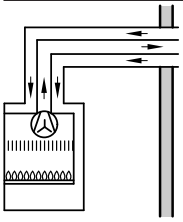
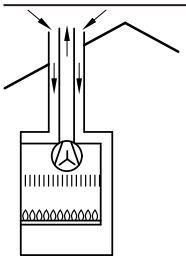
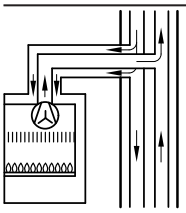


Flue gas connection

Prior to installation check whether a flue gas orifice plate is required (see the following table).

Flue gas connection (cont.)

Flue gas orifice plate (internal ∅)

Routing	Type (design)	Balanced flue system mm	24.8 kW Flue gas + ventilation air pipe length m	Restrictor ∅ mm	31 kW Flue gas + ventilation air pipe length m	Restrictor ∅ mm
 External wall connection	C_{12x}	60/100	≤ 1	41	≤ 1	47
			> 1 ≤ 3	44	> 1 ≤ 3	—
		80/125	≤ 10	41	≤ 6	46
					> 6 ≤ 8	—
 Vertical roof outlet	C_{32x}	60/100	≤ 1.25	43	≤ 2	47
			> 1.25 ≤ 5	44	> 2 ≤ 3	—
		80/125	≤ 1.25	38	≤ 1.25	44
			> 1.25 ≤ 11	41	> 1.25 ≤ 6	46
			> 11 ≤ 12	43	> 6 ≤ 10	—
 Connection to a concentric chimney	C_{42x}	60/100	≤ 2	44	≤ 2	44

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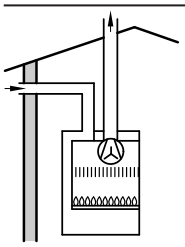
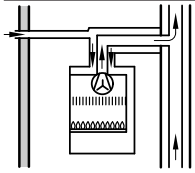
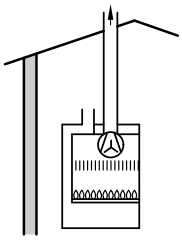
Flue gas connection (cont.)

Routing	Type (design)	Balanced flue system mm	24.8 kW Flue gas + ventilation air pipe length m	24.8 kW Restrictor ∅ mm	31 kW Flue gas + ventilation air pipe length m	31 kW Restrictor ∅ mm
 Flue gas over the roof, ventilation air from a different pressure area (outside wall)	C_{52x}	60/100	≤ 10	44	≤ 10	44
 Separate ventilation air and flue gas routing	C_{82x}	60/100	≤ 2 + ≤ 4	44	≤ 2 + ≤ 4	44
		80/125	≤ 2.5 + ≤ 4.5	44	≤ 2.5 + ≤ 4.5	44
 Flue gas over the roof, ventilation air from a different pressure area (indoor air)	B_{22}/ B_{32}		≤ 10	41	≤ 4	44
			> 10 ≤ 14	44	> 4 ≤ 12	46
			> 14 ≤ 30	46	> 12 ≤ 20	—

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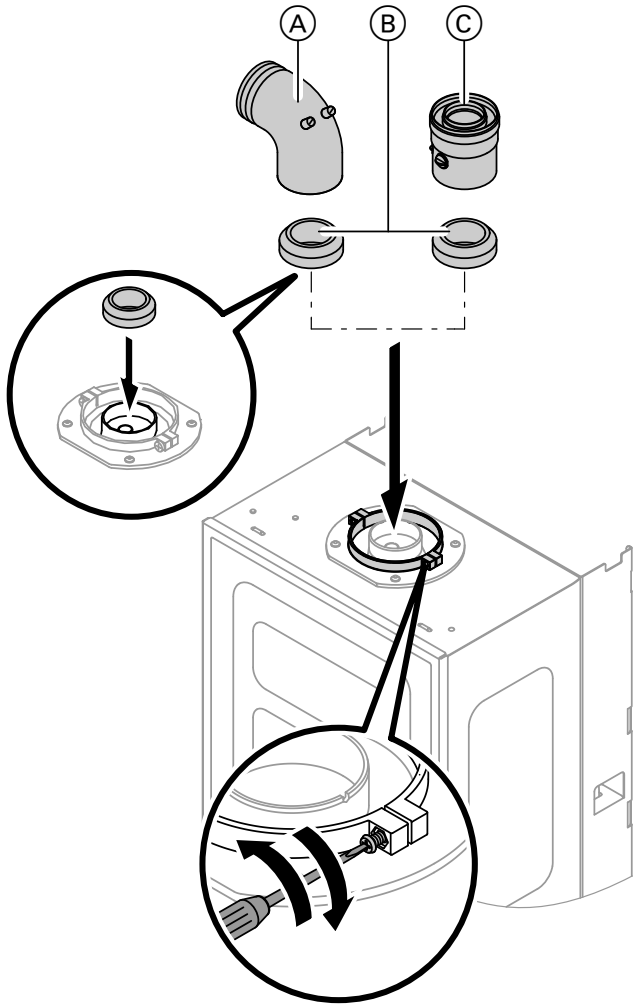
Flue gas connection (cont.)



Ⓐ Boiler flue connection bend for the horizontal installation of a flue system 60/100
Ⓑ Flue gas orifice plate
Ⓒ Coaxial boiler flue connection for the vertical installation of the flue systems 60/100 and 80/125

Install the flue system.

Flue system installation instructions

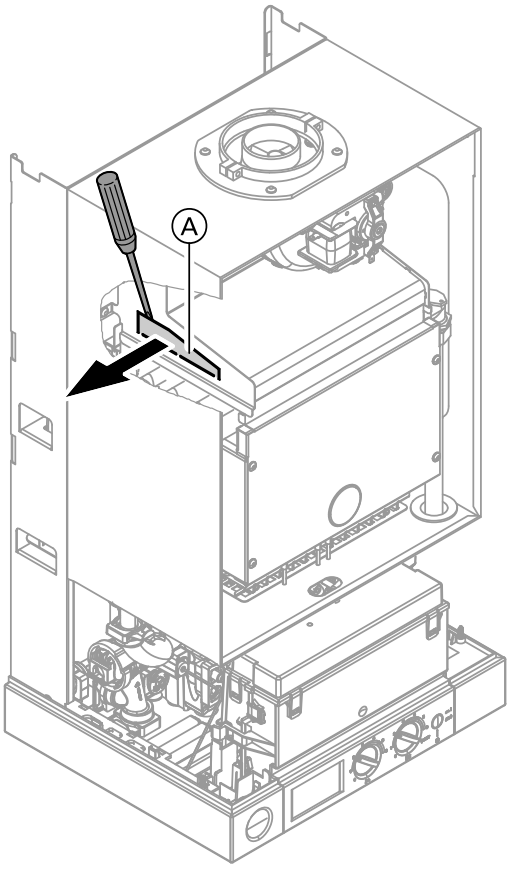
Note
*An inspection piece with condensate trap **must** be installed in the balanced flue and must be connected to the condensate drain.*

Balanced flue system 80/80 mm

Always thermally insulate the ventilation air pipe in unheated rooms.

Flue gas connection (cont.)

Opening the flue gas bypass

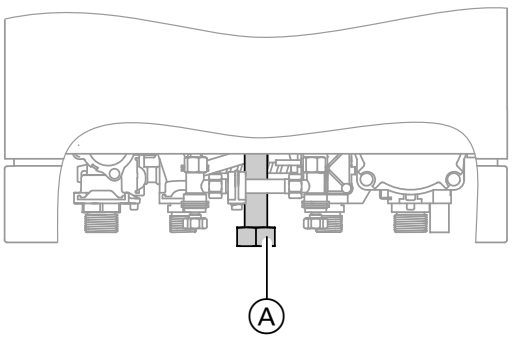


Ⓐ Sheet steel knock-out

Note

Only carry out the flue gas emissions test with fitted cover panel.

Gas connection



1. Fix gas shut-off valve to gas connection Ⓐ.
Torque 30 ±2 Nm.

Conversion to other gas types:
Conversion kit installation instructions

Gas connection (cont.)

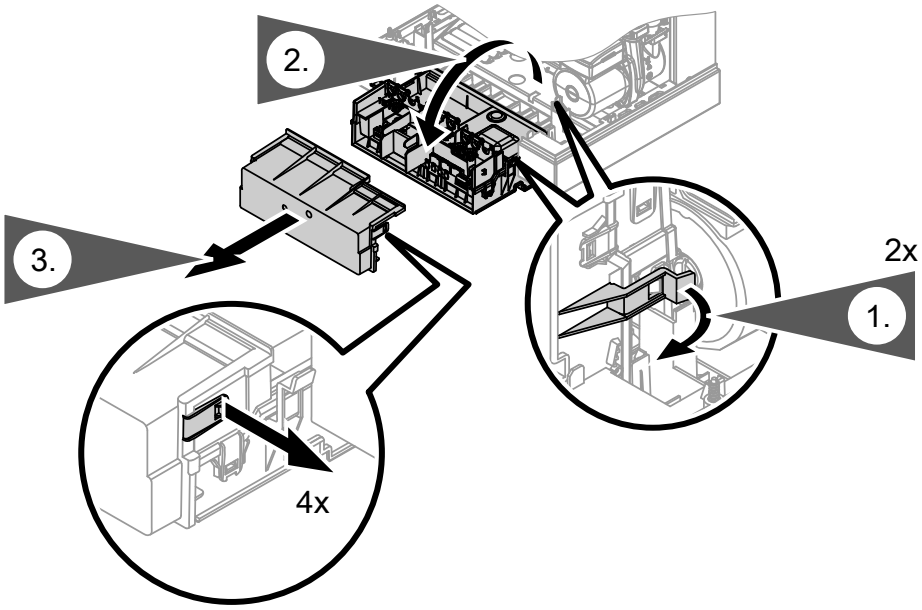
2. Carry out a tightness test.

Note
For the tightness test, use only suitable and approved leak detecting agents (EN 14291) and devices. Leak detecting agents with unsuitable constituents (e.g. nitrides, sulphides) can lead to material damage. Remove residues of the leak detecting agent after testing.

Please note
Excessive test pressure may damage the boiler and the gas valve.
Max. test pressure 150 mbar.
Where higher pressure is required for tightness tests, separate the boiler and the gas valves from the gas supply pipe (undo the fitting).

3. Vent the gas line.

Opening the control unit casing



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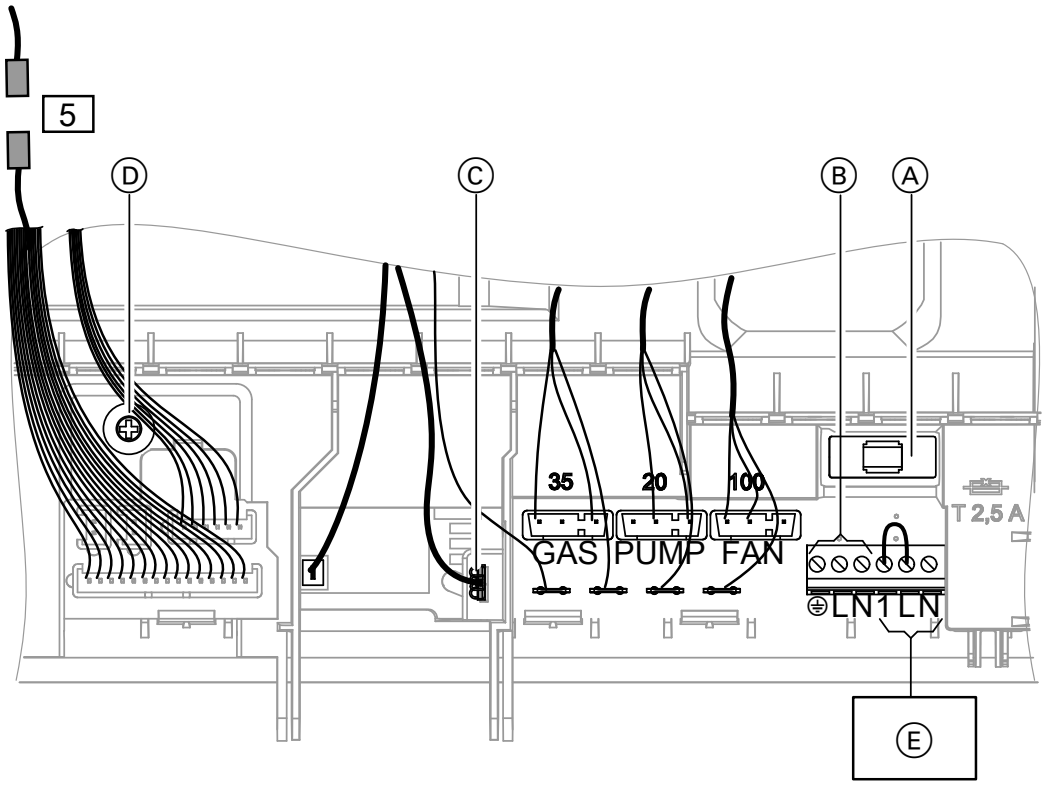
Electrical connections



Ⓐ Fuse 2.5 A (slow)
Ⓑ Power supply
Ⓒ Ionisation cable
Ⓓ Potentiometer
Ⓔ Accessories power supply (remove jumper when connecting)

Low voltage plug

5 Cylinder temperature sensor (if supplied)

Plug 230 V~

20 Circulation pump (internal connection)
35 Gas solenoid valve (internal connection)
100 Flue gas fan (internal connection)

Power supply (on-site)

Danger
Incorrect core allocation can result in serious injury and damage to the appliance.
Never interchange cores "L" and "N".

- Install a circuit breaker in the power supply line that simultaneously isolates all non-earthed conductors from the mains with at least 3 mm contact separation.
- Wire the power supply with a neutral conductor.

Electrical connections (cont.)

- Connect water pipes to the equipotential bonding of the house in question.
- Max. fuse rating 16 A.
- Recommended power cable:
  NYM-J 3 x 1.5 mm^2, max. fuse 16 A,
  230 V~, 50 Hz.

Power supply for accessories (on-site)

If the boiler is installed in a wet area, the power supply of accessories outside the wet area must not be connected at the control unit. The power supply connection for accessories can be made immediately at the control unit, if the boiler is installed outside wet areas. This connection is controlled directly with the system ON/OFF switch (max. 1A)
Recommended power cable:
NYM with the required number of conductors for the external connections.

Accessories:
- Vitotrol 100, type RT
- Vitotrol 100, type UTA
- Vitotrol 100, type UTDB
- Vitotrol 100, type UTDB-RF

Connection of accessories

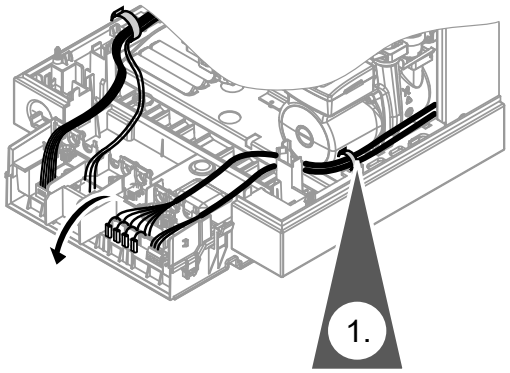

Accessory installation instructions

Note
When connecting a Vitotrol 100, remove the jumper between "1" and "L".

Routing power cables

Please note
If power cables touch hot components they will be damaged.
When routing and securing cables/leads on site, ensure that the maximum permissible temperatures for these cables/leads are not exceeded.

Electrical connections (cont.)



Note
Step 1: Secure power cable to the control unit support with the cable ties supplied.

Close and flip up the control unit.
Hook in and secure the front panel.

Steps - commissioning, inspection and maintenance

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

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•			**3. Checking the power supply**	
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•	•	•	**21. Checking the external LPG safety valve (if installed)**	

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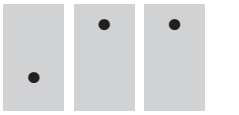
Steps - commissioning, inspection and… (cont.)



Page

Service

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Further details regarding the individual steps

Filling and venting the heating system

Please note
Unsuitable fill water increases the level of deposits and corrosion and may lead to boiler damage.
- Thoroughly flush the entire heating system prior to filling it with water.
- Only use fill water of potable quality.
- Soften fill water with hardness exceeding 16.8 °dH (3.0 mol/m^3), e.g. using a small softening system for heating water (see Vitoset price list).
- An antifreeze additive suitable for heating systems can be mixed with the fill water. The antifreeze manufacturer must verify its suitability, since otherwise damage to gaskets and diaphragms can occur as well as noise during heating operation. Viessmann accepts no liability for damage or consequential damage as a result.

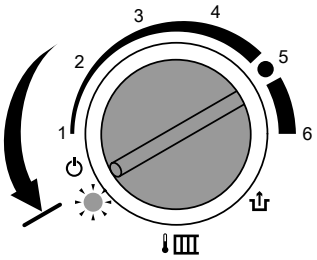
1. Check the pre-charge pressure of the diaphragm expansion vessel.

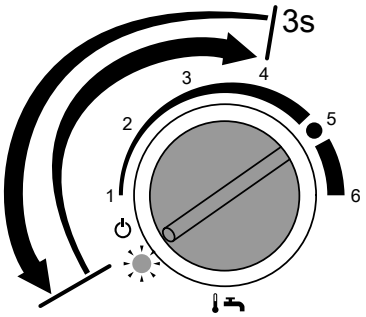
2. Close the gas shut-off valve.

3. Fill the heating system at the fill valve in the heating return (on-site).
   Minimum system pressure > 0.8 bar.

   Note
   If the control unit has not been switched ON prior to filling the system, then the servomotor of the diverter valve will still be in its central position, and the system will be completely filled.

4. If the control unit had already been switched ON before filling began:
   - Turn both rotary selectors simultaneously anticlockwise to the end stop.
   - Switch OFF the ON/OFF switch on the control unit and switch ON again after 3 s.





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Further details regarding the individual steps (cont.)

- Turn rotary selector "🌡🚿" approx. 3 s into the control range and then back again.

The servomotor of the diverter valve goes into its centre position.

Note
The pump runs for approx. 10 min.

5. After the system has been fully filled and vented, switch OFF the ON/OFF switch at the control unit.
6. Close fill tap in the heating return (on site).
7. Close the shut-off valves on the heating water side.

Checking the gas type

In the delivered condition, the boiler is preset for natural gas E.
The boiler can be operated in the Wobbe index range W_s 11.4 to 15.2 kWh/m³ (40.9 to 54.8 MJ/m³).

1. Check the gas type and Wobbe index (W_s) with your gas supply utility or LPG supplier and compare them with the details above.
2. Convert the burner to the available gas type in accordance with the details provided by the gas supply utility or your LPG supplier, if the details do not match.
3. Record the gas type in the "Reports" table.

Wobbe index range W_s

W_s	kWh/m³	MJ/m³
Natural gas H	12.7 to 15.2	45.6 to 54.8
LPG P	20.3 to 24.4	72.9 to 87.8

Note
The indicated Wobbe index W_s values apply to the following ambient conditions:
- *Air pressure: 1013 mbar*
- *Temperature: 15 °C*

Checking the static pressure and supply pressure

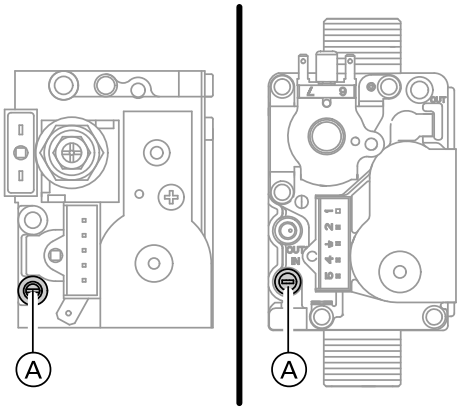
Danger
CO build-up as a result of incorrect burner adjustment can have serious health implications.
Carry out a CO test before and after work on gas appliances.

Further details regarding the individual steps (cont.)

Note
The cover plate must be fitted to prevent air infiltrating.

Operation with LPG
Flush the LPG tank twice during commissioning or replacement. Vent the tank and gas supply line thoroughly after flushing.

1. Close the gas shut-off valve.

2. 

   Release screw inside test nipple Ⓐ on the gas train, but do not remove it; then connect the pressure gauge.

3. Open the gas shut-off valve.

4. Test the static pressure and record it in the "Reports" table.
   Set value: max. 57.5 mbar

5. Start the boiler.

   Note
   During commissioning, the boiler can enter a fault state because of airlocks in the gas line.
   To reset, switch OFF the ON/OFF switch on the control unit and switch ON again after approx. 3 s. The ignition process will then be repeated.

6. Check the supply (flow) pressure.

   Set value:
   - Natural gas: 20/25 mbar
   - LPG: 28/30/37/50 mbar

   Note
   Use a suitable measuring device with a resolution of at least 0.1 mbar to check the supply pressure.

7. Record the actual value in the "Reports" table.
   Take the action shown in the following table.

8. Switch OFF the system at the control unit (the boiler shuts down), close the gas shut-off valve, remove the pressure gauge and close test nipple Ⓐ with the screw.

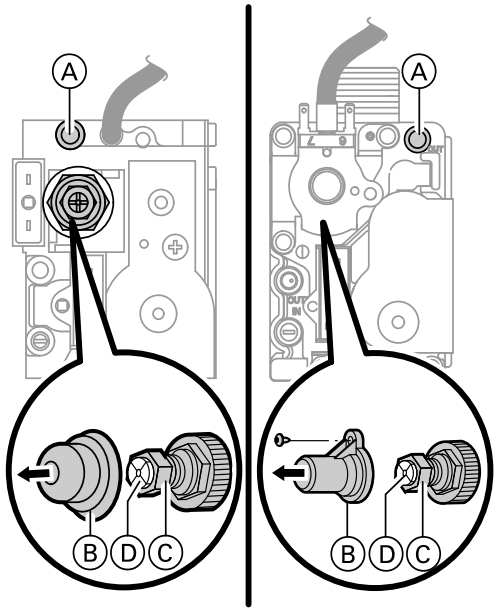
9. Open the gas shut-off valve and start the appliance.

   Danger
   Gas escaping from the test nipple leads to a risk of explosion.
   Check the test nipple for gas tightness.

Further details regarding the individual steps (cont.)

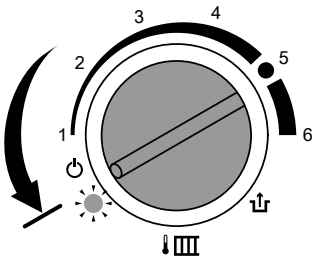
Supply pressure (flow pressure)		Action
For natural gas H	For LPG P	
Below 17 mbar	Below 25 mbar	Do not start the boiler. Notify your gas supply utility or LPG supplier.
17 to 25 mbar	25 to 45 mbar	Start the boiler.
Above 25 mbar	Above 45 mbar	Install a separate gas pressure governor upstream of the system and regulate the pre-charge pressure to 20 mbar for natural gas or 37 mbar for LPG. Notify your gas supply utility or LPG supplier.

Checking the nozzle pressure



Ⓐ Test nipple
Ⓑ Cap
Ⓒ Bolt
Ⓓ Phillips screw

1. Switch OFF the control unit ON/OFF switch (the boiler shuts down).



Turn the rotary selector "🌡" anti-clockwise as far as it will go.

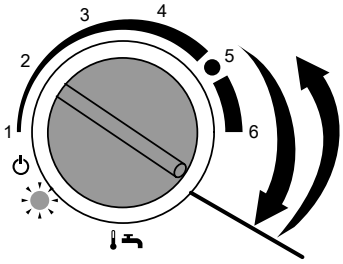
2. Close the gas shut-off valve.

3. Release the screw inside test nipple Ⓐ, but do not remove, then connect the pressure gauge.

4. Open the gas shut-off valve. Switch ON the system ON/OFF switch on the control unit.

Further details regarding the individual steps (cont.)

5. **Select the upper heating output:**



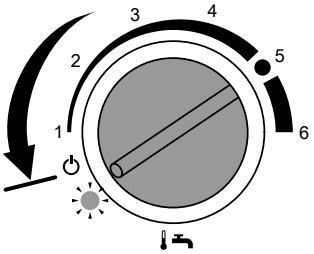
Turn rotary selector "🌡🚰" clockwise as far as it will go (leave at that position briefly), then turn it back.
"Serv" appears.

Note
The operation with the upper rated heating output is automatically reset after approx. 30 min or by switching the power OFF and ON again.

6. Remove cap Ⓑ from the gas train.

7. Test the nozzle pressure at the upper rated heating output. In case of deviations from the value shown in the following table, adjust screw Ⓒ (SW 10) for the upper rated heating output.

8. **Selecting the lower heating output:**
Note
Adjust the upper rated heating output before selecting the lower rated heating output. The operation with the lower rated heating output is automatically cancelled after approx. 30 min or by switching the power OFF and ON again.



Turn the rotary selector "🌡🚰" anticlockwise as far as it will go.
"Serv" appears.

9. Test the nozzle pressure at the lower rated heating output. In case of deviations from the value shown in the following table, adjust the nozzle pressure for the lower rated heating output using cross-head screw Ⓓ. Counterhold screw Ⓒ (SW 10).

10. Fit cap Ⓑ.

11. Check the setting values and record them in the "Reports" table.

12. Switch OFF the system at the control unit (the boiler shuts down), close the gas shut-off valve, remove the pressure gauge and close test nipple Ⓐ with the screw.

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Further details regarding the individual steps (cont.)

13. Turn the rotary selectors "🌡🚿" and "🌡▥" back to their original positions.

14. Open the gas shut-off valve and start the appliance.

Danger
Gas escaping from the test nipple leads to a risk of explosion.
Check the test nipple for gas tightness.

10.7 to 24.8 kW

Rated heating output		**kW**	**10.7**	**11**	**12**	**15**	**18**	**21**	**24.8**
Nozzle pressure based on a supply pressure of 20 mbar									
Gas	Nozzle ø in mm								
Natural gas H	1.25	mbar	2.6	2.9	3.4	5.3	7.6	10.3	13.5
Nozzle pressure based on a supply pressure of 37 mbar									
Gas	Nozzle ø in mm								
LPG P	0.84	mbar	5.6	6.0	6.8	10.4	14.8	20.2	26.4

13.2 to 31 kW

Rated heating output		**kW**	**13.2**	**15**	**18**	**21**	**24**	**27**	**31**
Nozzle pressure based on a supply pressure of 20 mbar									
Gas	Nozzle ø in mm								
Natural gas H	1.25	mbar	2.3	3.2	4.7	6.5	8.5	10.8	13.3
Nozzle pressure based on a supply pressure of 37 mbar									
Gas	Nozzle ø in mm								
LPG P	0.84	mbar	5.2	6.8	9.6	12.9	16.8	21.2	26.1

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Further details regarding the individual steps (cont.)

Note
The values in the nozzle pressure table apply to the following ambient conditions:

- *Air pressure: 1013 mbar*
- *Temperature: 15 °C*

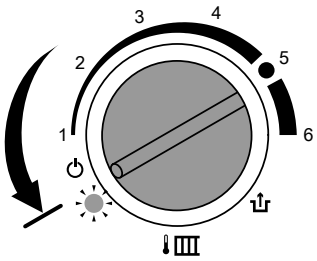
Wobbe index see page 19.

Setting the maximum heating output

Note
*The maximum output for **heating operation** can be limited. The limit is set via the modulation range.*

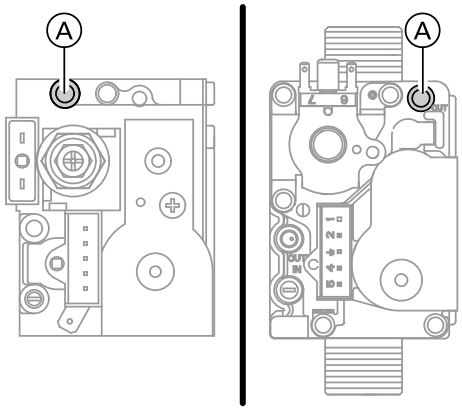
1. Switch OFF the control unit ON/OFF switch (the boiler shuts down).

2.



Turn the rotary selector "🌡" anti-clockwise as far as it will go.

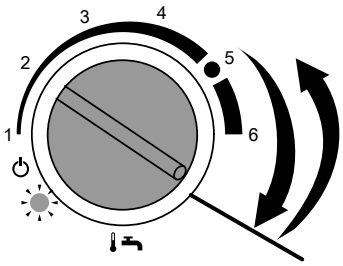
3.



Release the screw inside test nipple Ⓐ, but do not remove, then connect the pressure gauge.

4. Open the gas shut-off valve. Start the boiler.

5.



Turn rotary selector "🌡" clockwise as far as it will go (leave at that position briefly), then turn it back.
"Serv" appears.

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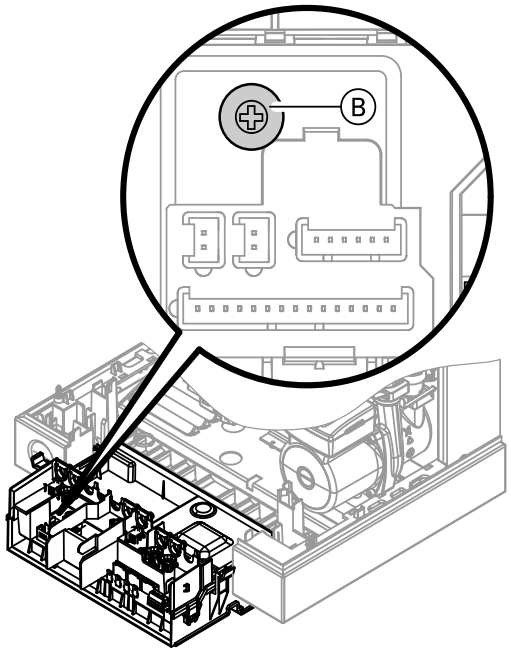
Further details regarding the individual steps (cont.)

6.



Turn potentiometer Ⓑ with a screwdriver anti-clockwise, until the nozzle pressure at the pressure gauge corresponds to the required heating output in accordance with the nozzle pressure table on page 23.

7. Close and flip up the control unit.

8. Switch OFF the ON/OFF switch on the control unit, close the gas shut-off valve, remove the pressure gauge and close test nipple Ⓐ.

9. Turn the rotary selectors "🌡🚿" and "🌡▥" back to their original positions.

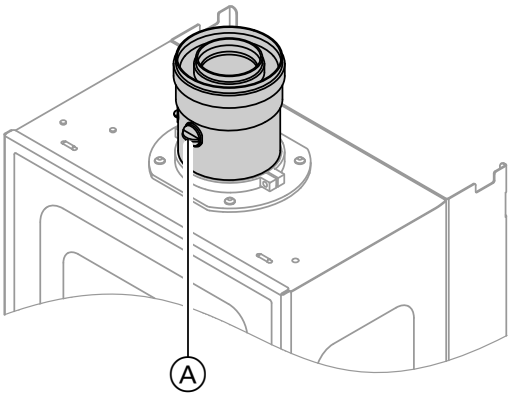
10. Record the adjustment of the max. heating output in the "Reports" table.

11. Open the gas shut-off valve and start the appliance.

⚠ **Danger**
Gas escaping from the test nipple leads to a risk of explosion.
Check the test nipple for gas tightness.

Further details regarding the individual steps (cont.)

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



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

Ⓐ Combustion air test point (ventilation air)

Draining the boiler or heating system

! **Please note**
Risk of scalding
Only drain the boiler or the heating system when the boiler water or the cylinder temperature has dropped below 40 °C.

Note
The boiler or the heating system can only be drained if the servomotor of the diverter valve is in its centre position (see page 18). As soon as the servomotor of the diverter valve is in its centre position, switch OFF the ON/OFF switch on the control unit to prevent the pump from running dry.

Checking and cleaning the burner

Switch OFF the main power supply and the ON/OFF switch at the control unit. Close the gas shut-off valve and safeguard against reopening.

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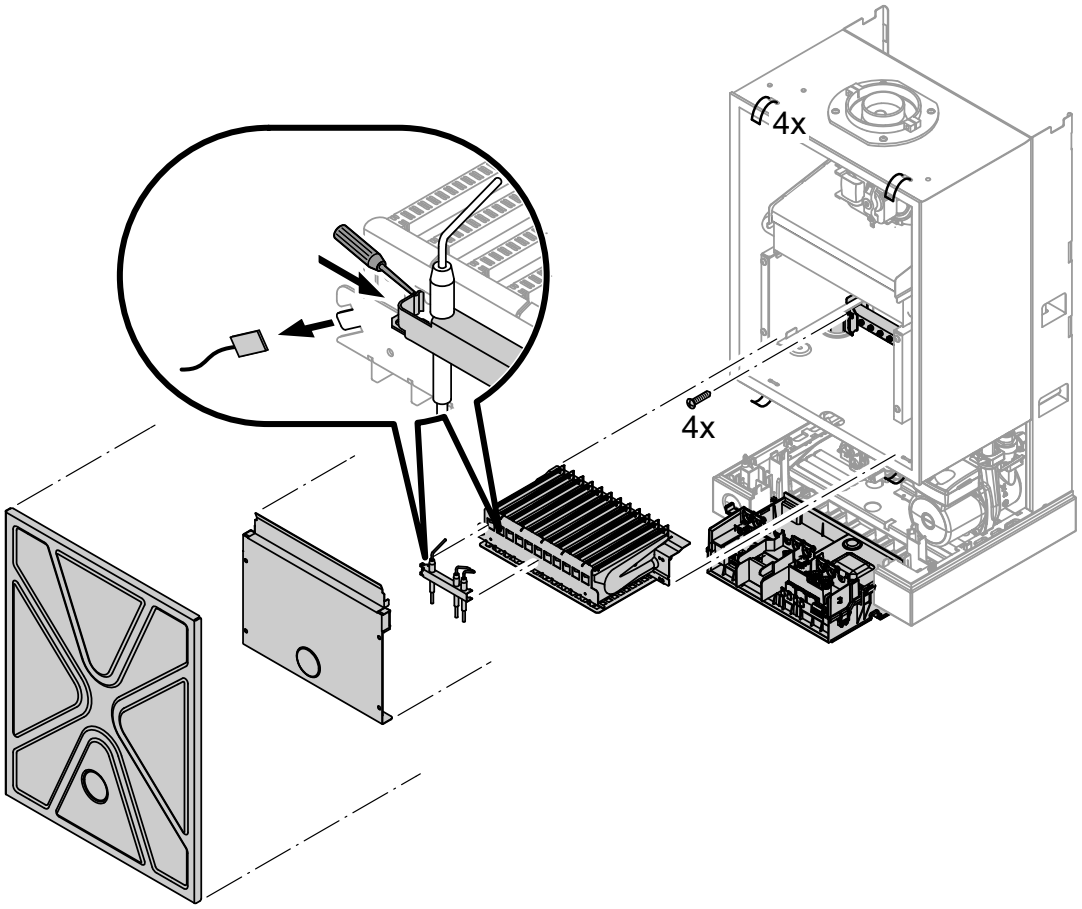
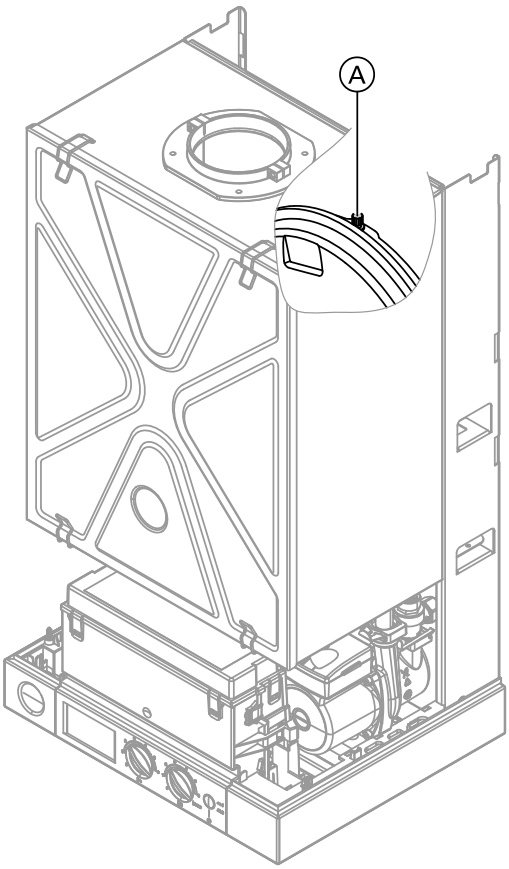
Further details regarding the individual steps (cont.)



Note
Clean the burner if required with compressed air or with a soapy solution.
Flush with clean water.
*Installation with **new** gaskets.*

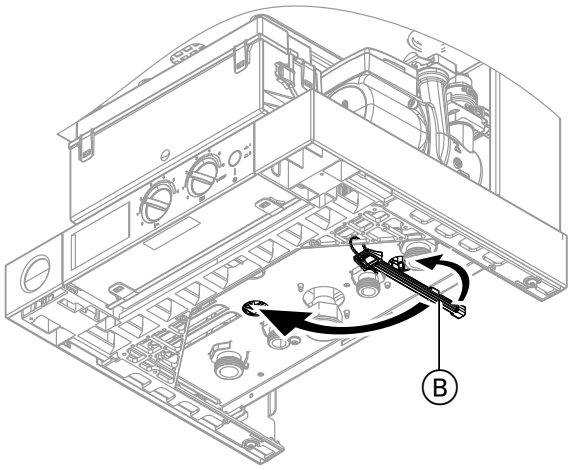
Further details regarding the individual steps (cont.)

Checking the diaphragm expansion vessel and system pressure



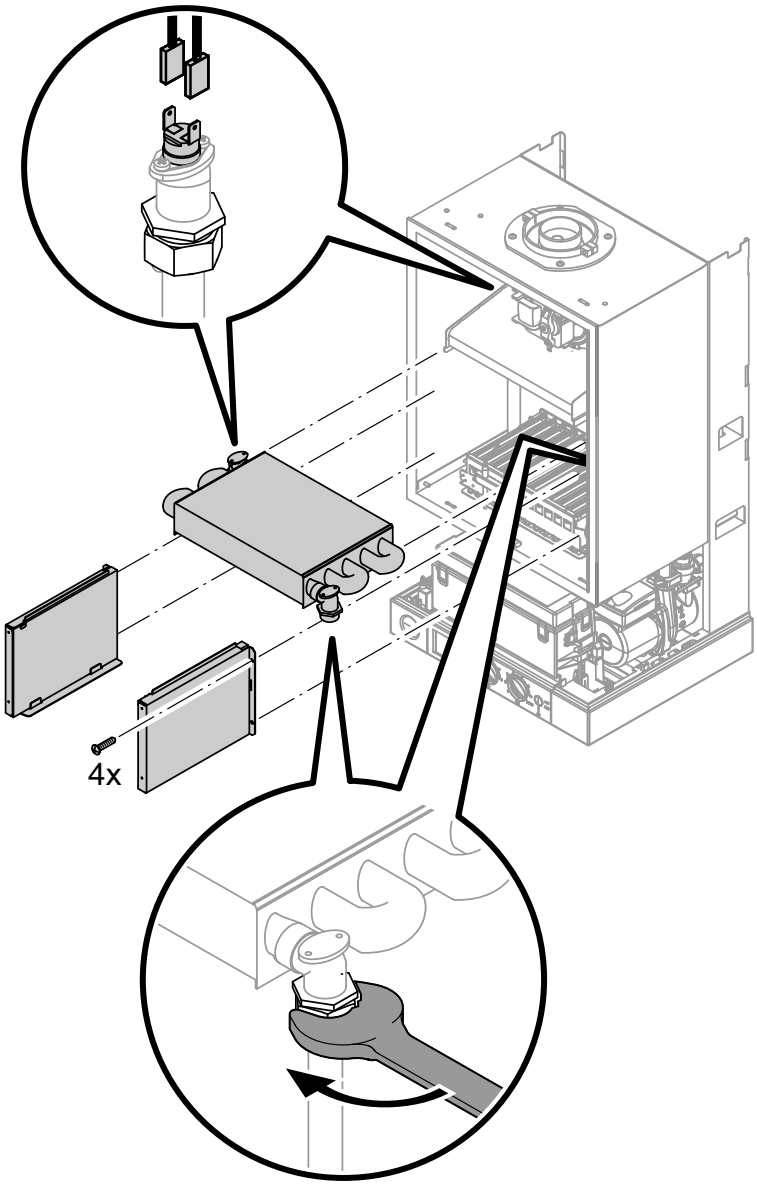
Check the diaphragm expansion vessel pre-charge pressure at test nipple Ⓐ and recharge if required.

Note
At the top-up valves, the gas combi boiler can be topped-up using key Ⓑ supplied.



Further details regarding the individual steps (cont.)

Checking and cleaning the flue gas heat exchanger

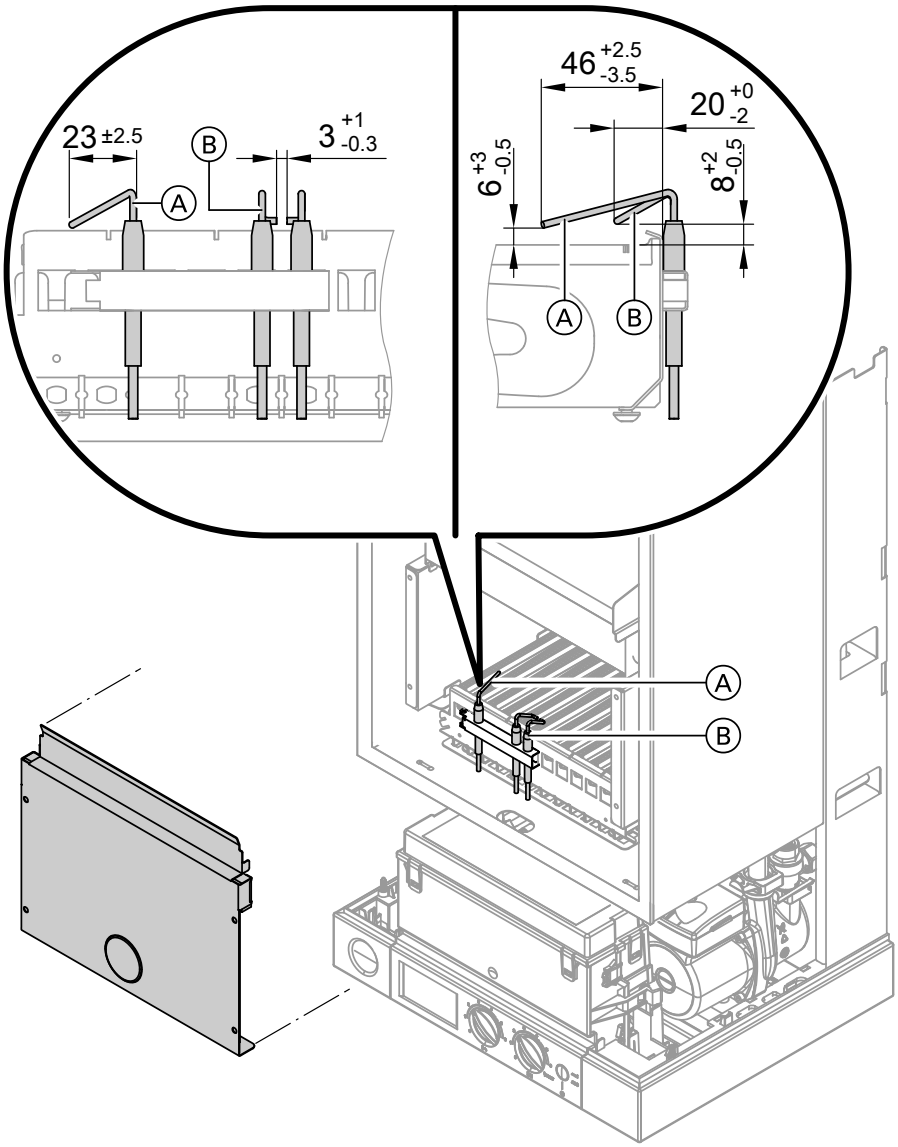


When undoing the fittings on the heating water side, counterhold the torque with a second open-ended spanner.

Note
Clean the flue gas heat exchanger if required, with compressed air or with a soapy solution and flush with clean water.
*Installation with **new** gaskets.*

Further details regarding the individual steps (cont.)

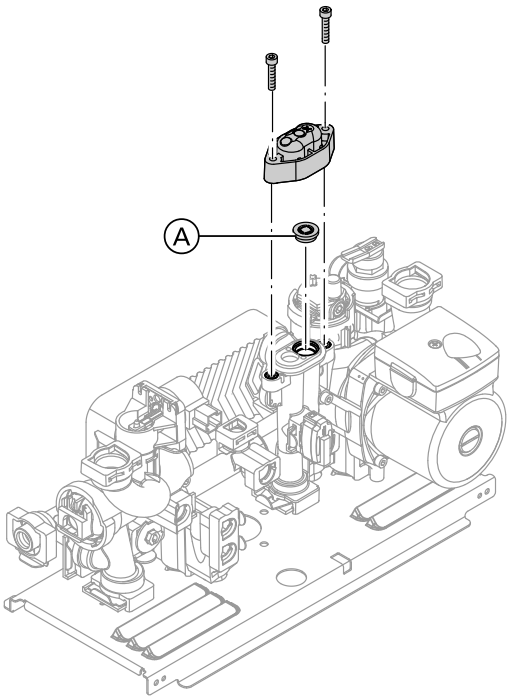
Checking and adjusting the ignition and ionisation electrodes



Note
Clean the ignition electrodes with a small brush or sandpaper.

Further details regarding the individual steps (cont.)

Flow limiter



If required, flush flow limiter Ⓐ with clean water.

Identification of flow limiter Ⓐ

Rated heating output	Flow rate	Colour
10.7 to 24.8 kW	10 l/min	Black
13.2 to 31 kW	12 l/min	Red

Checking all gas equipment for tightness at operating pressure

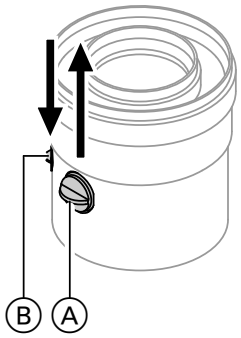
Danger
Escaping gas leads to a risk of explosion.
Check gas equipment for tightness.

Note
Only use suitable and approved leak detection agents (EN 14291) and devices to check for tightness. Leak detection agents with unsuitable constituents (e.g. nitrites, sulphides) can cause material damage. Remove residues of the leak detection agent after testing.

Further details regarding the individual steps (cont.)

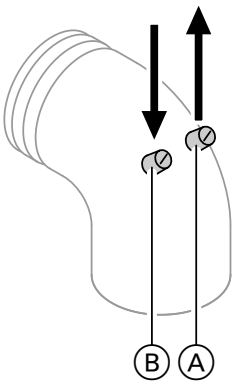
Flue gas emissions test

Coaxial boiler flue connection



Ⓐ Flue gas
Ⓑ Ventilation air

Boiler flue connection bend



1. Connect the flue gas analyser to the test port Ⓐ.

2. Open the gas shut-off valve. Start the boiler.

3. Select the upper heating output (see page 22).
   Measure the CO_2 or O_2 and CO content. Record the values in the "Reports" table.

4. Selecting the lower heating output (see page 22)
   Measure the CO_2 or O_2 and CO content. Record the values in the "Reports" table.

5. Switch OFF the ON/OFF switch on the control unit.
   Operation with the lower rated heating output is terminated.

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

Note
Operate the appliance with uncontaminated combustion air to prevent operating faults and damage.

If the actual value falls outside the permissible range, check the following:
- Balanced flue system for tightness (see page 26)
- Static and supply pressure (see page 19)
- Nozzle pressure (see page 21)

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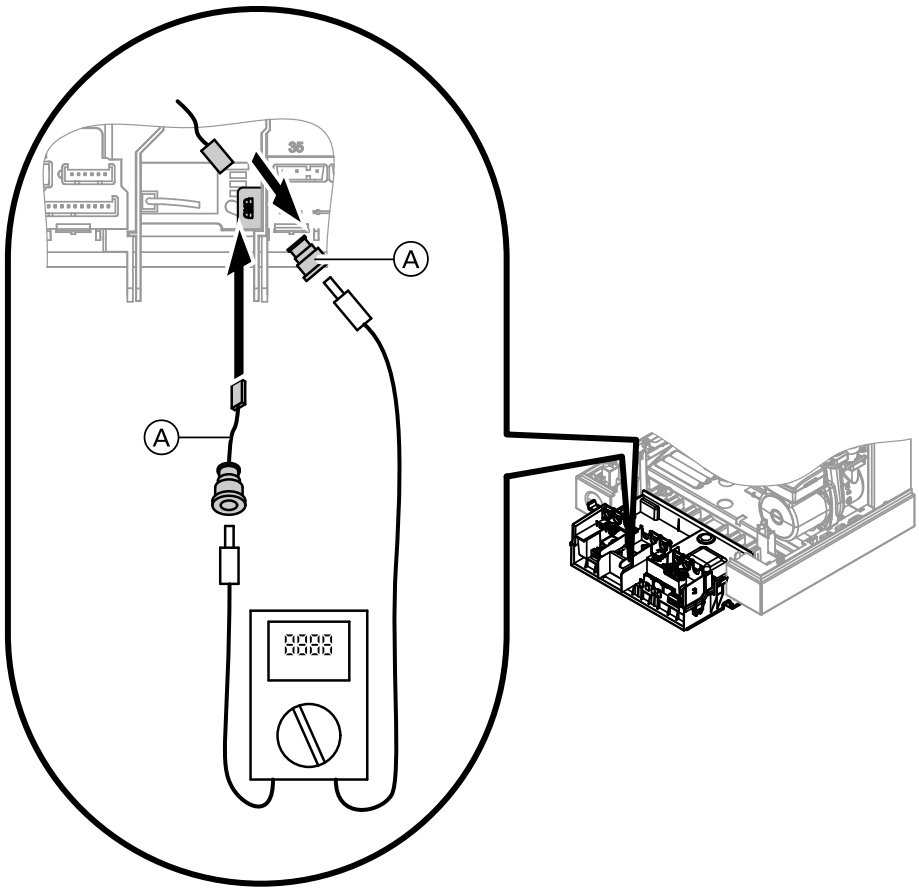
Further details regarding the individual steps (cont.)

Checking the ionisation current



Ⓐ Adaptor cable (available as accessory)

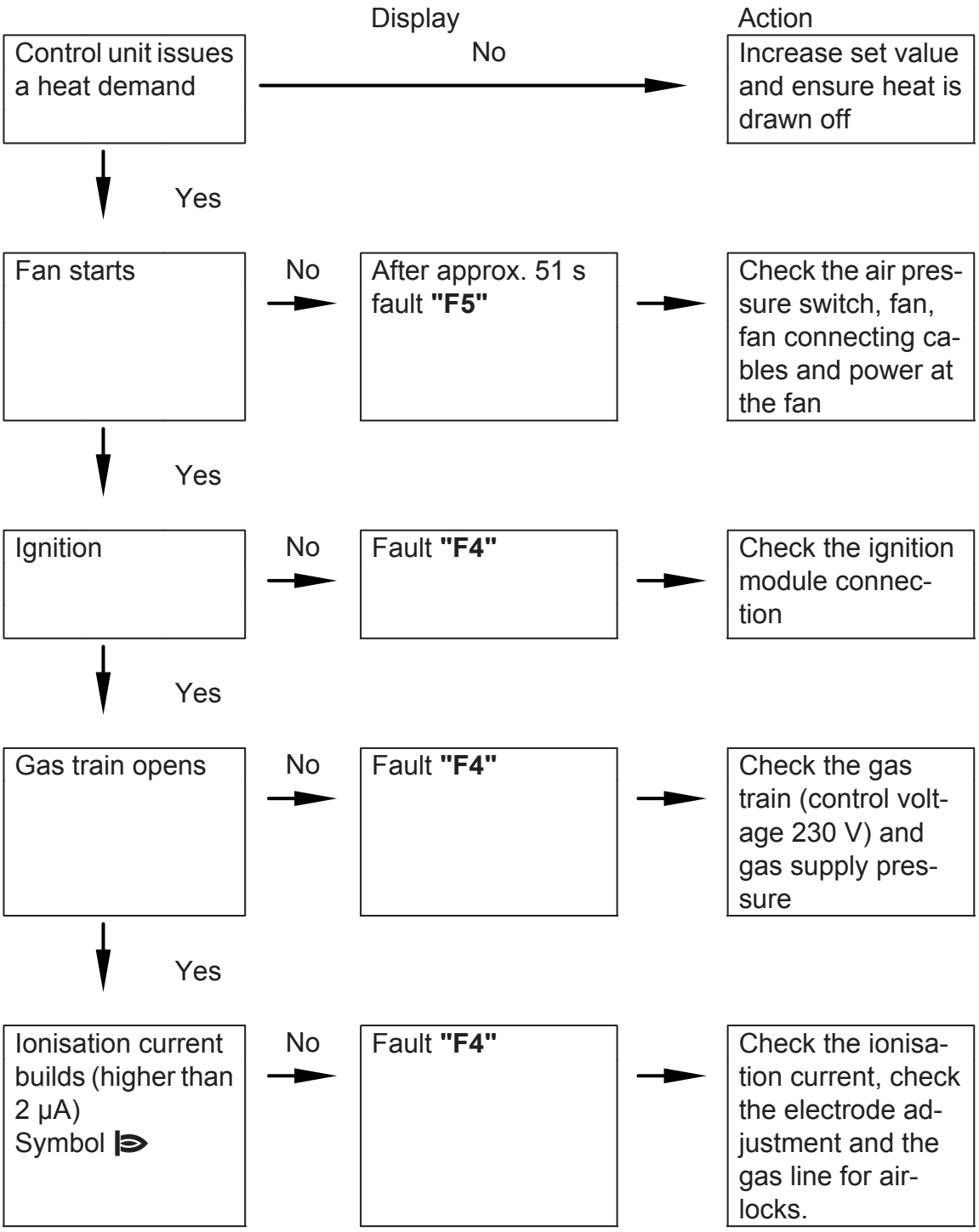
1. Connect the tester in accordance with the diagram.
2. Select the upper heating output (see page 22).
3. Ionisation current when the flame is first established: min. 4 µA
   If ionisation current < 4 µA: Check the electrode gap (see page 30).
4. Switch OFF the ON/OFF switch on the control unit.
   Operation with the upper rated heating output is terminated.
5. Record the actual value in the "Reports" table.

Further details regarding the individual steps (cont.)

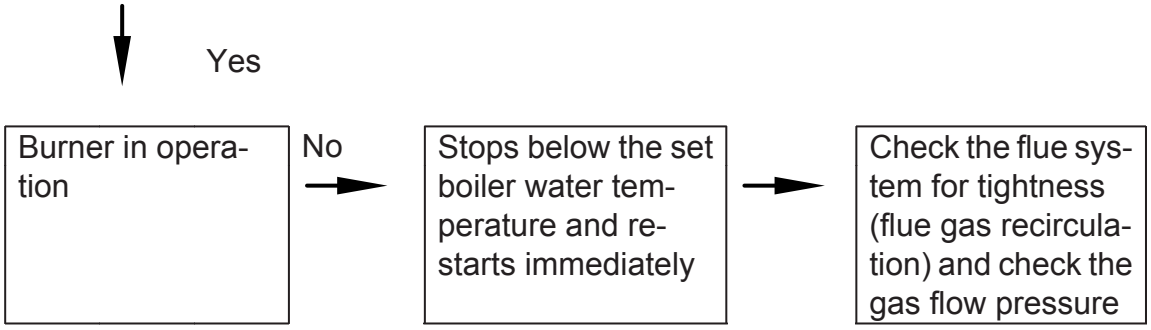
Instructing the system user

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

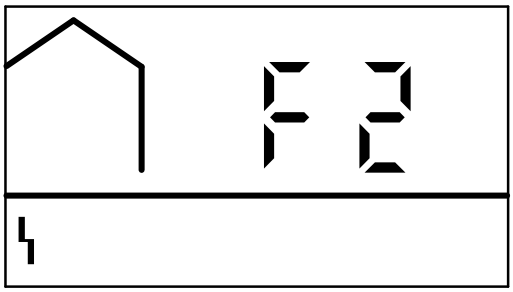
Function sequence and possible faults



Function sequence and possible faults (cont.)



Fault messages on the display



Faults are indicated by a flashing fault code (e.g. **"F2"**) and the fault symbol ϟ on the display.

Displayed fault code	System characteristics	Cause	Measures
0A	Burner blocked	Gas supply pressure too low	Check the gas pressure and the gas pressure switch
0C	Burner blocked	Mains voltage too low	Check the power supply
F2	Burner in a fault state	The temperature limiter has responded	Check heating system fill level. Check circulation pump. Vent the system. Check the temperature limiter (see page 40) and connecting cables. To reset, briefly turn rotary selector "🌡" clockwise as far as it will go and then back again.

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Fault messages on the display (cont.)

Displayed fault code	System characteristics	Cause	Measures
F3	Burner in a fault state	Flame signal is already present at burner start	Check ionisation electrode and connecting cable. Switch ON/OFF switch ⏻ OFF and ON again (or reset, see F2).
F4	Burner in a fault state	No flame signal	Check the ionisation electrode and connecting cables, check the gas pressure, check the gas train, check the ignition and ignition module. Switch ON/OFF switch ⏻ OFF and ON again (or reset, see F2).
F5	Burner control unit fault	The air pressure switch is closed during the burner start or does not close when the ignition load has been reached	Check the flue gas/ventilation air system, hoses, air pressure switch and connecting cables. Switch ON/OFF switch ⏻ OFF and ON again (or reset, see F2).
F30	Burner blocked	Short circuit, boiler water temperature sensor	Check the boiler water temperature sensor (see page 40).
F38	Burner blocked	Lead break, boiler water temperature sensor	Check the boiler water temperature sensor (see page 40).
F50	No DHW heating	Short circuit, cylinder temperature sensor (gas system boiler)	Check the sensor (see page 40).
F51	No DHW heating	Short circuit, outlet temperature sensor (gas combi boiler)	Check the sensor (see page 40).

Fault messages on the display (cont.)

Displayed fault code	System characteristics	Cause	Measures
F58	No DHW heating	Lead break, cylinder temperature sensor (gas system boiler)	Check the sensor (see page 40).
F59	No DHW heating	Lead break, outlet temperature sensor (gas combi boiler)	Check the sensor (see page 40).

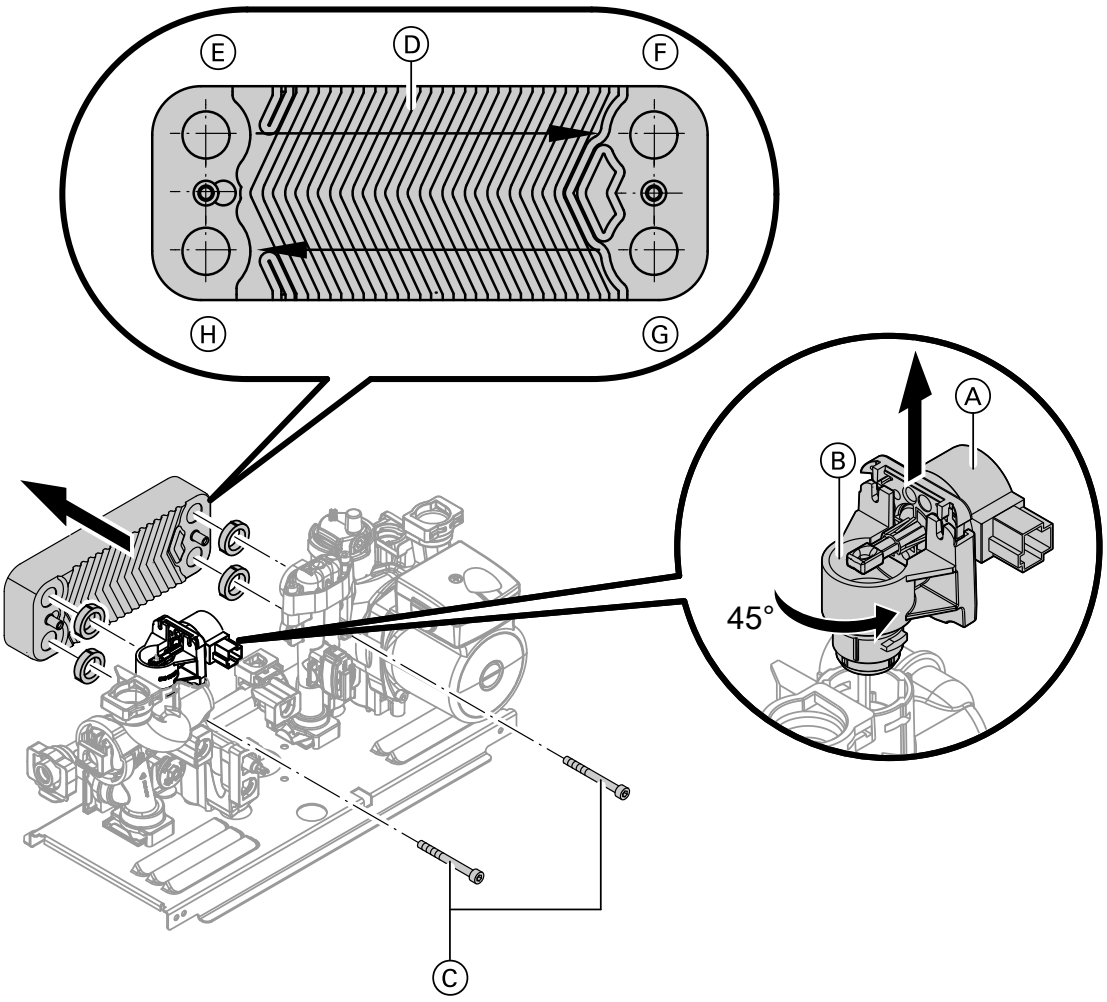
Repairs

Checking and cleaning the plate heat exchanger

Shut off and drain the boiler on the heating water and DHW sides.

Note
Residual water may drain from the plate heat exchanger.

Repairs (cont.)



Ⓔ Heating water flow
Ⓕ Heating water return
Ⓖ Cold water
Ⓗ DHW

Check the connections on the DHW side for scale build-up and the connections on the heating water side for contamination. Clean or replace the plate heat exchanger if required.

Replacing the plate heat exchanger

1. Push stepper motor Ⓐ slightly upwards.
2. Turn the stepper motor adaptor Ⓑ with stepper motor Ⓐ anti-clockwise by 1/8 of a turn and remove.
3. Remove two screws Ⓒ from the plate heat exchanger and remove plate heat exchanger Ⓓ with gaskets.

Repairs (cont.)

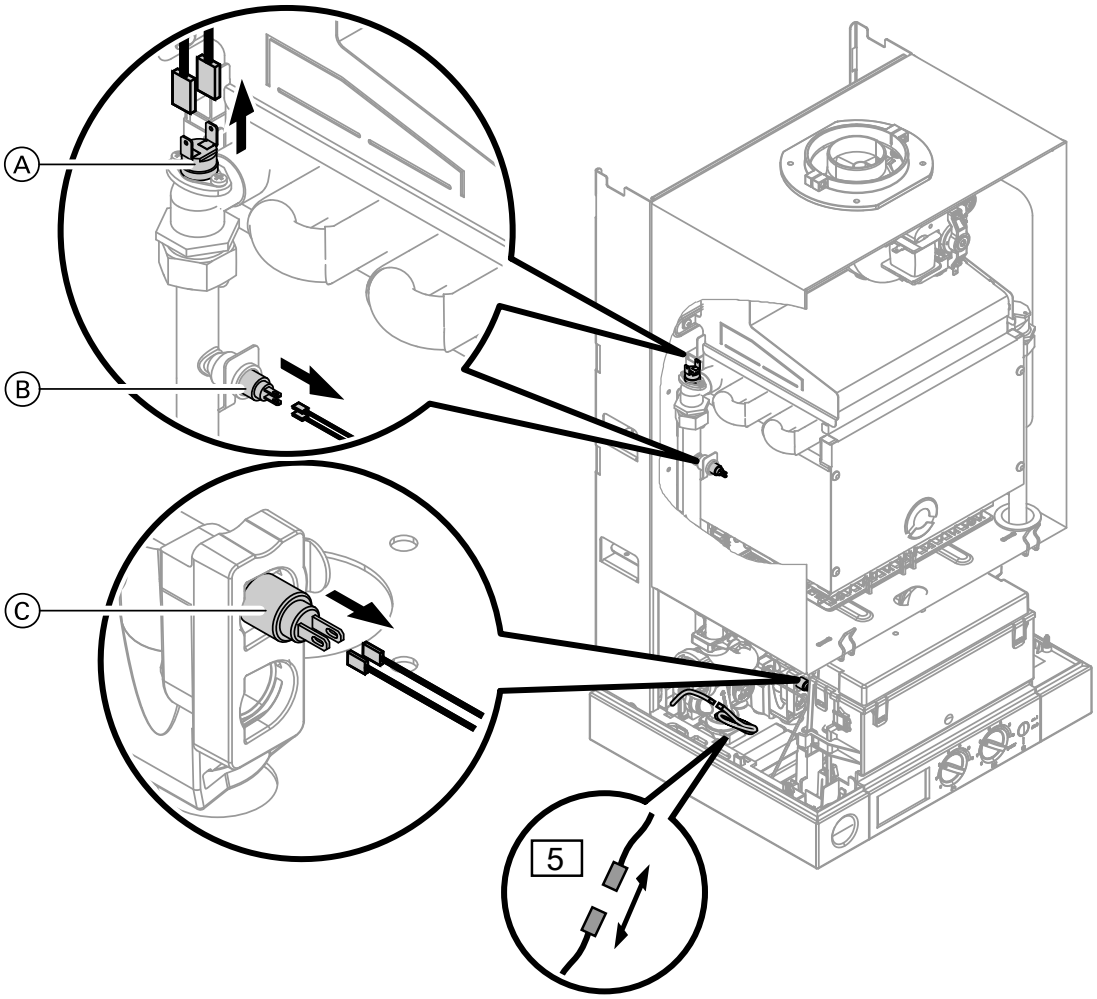
4. Install plate heat exchanger Ⓓ in reverse order using new gaskets. Fixing screw torque: 5.5 Nm.

   Note
   During installation, ensure that fixing holes are aligned and gaskets seated correctly.
   Mount the plate heat exchanger with the correct orientation. Observe the marking "Top".

5. Reassemble the boiler in reverse order.

6. Fill the boiler with water, flush (vent) and check for leaks.

Checking temperature limiter and sensors



Ⓐ Temperature limiter
Ⓑ Boiler water temperature sensor
Ⓒ Outlet temperature sensor (gas combi boiler)

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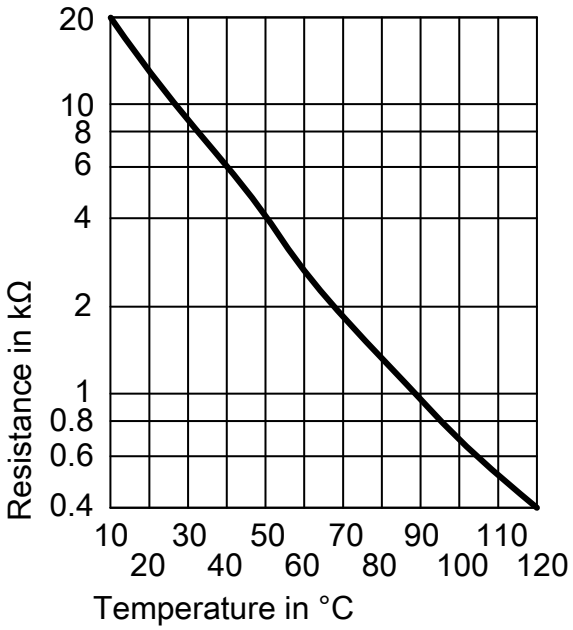
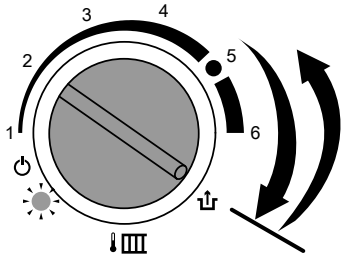
Repairs (cont.)

5 Cylinder temperature sensor (gas system boiler)



1. **Temperature limiter:**
   Check the temperature limiter, if the burner control unit cannot be reset after a fault shutdown, although the boiler water temperature is below approx. 90 °C.
   - Pull the leads from the sensor.
   - Check the continuity of the temperature limiter with a multimeter.
   - Remove the faulty temperature limiter.
   - Install a new temperature limiter.
   - 

     To reset, briefly turn rotary selector "🌡" clockwise as far as it will go and then back again. The ignition process will then be repeated.

Service

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Repairs (cont.)

2. **Boiler water temperature sensor:**
   - Pull the leads from the sensor.
   - Check the sensor resistance and compare actual values with the curve.
   - Replace the sensor in the case of severe deviation.

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

3. **Outlet temperature sensor (gas combi boiler):**
   - Pull the leads from the sensor.
   - Check the sensor resistance and compare actual values with the curve.
   - Replace the sensor in the case of severe deviation.

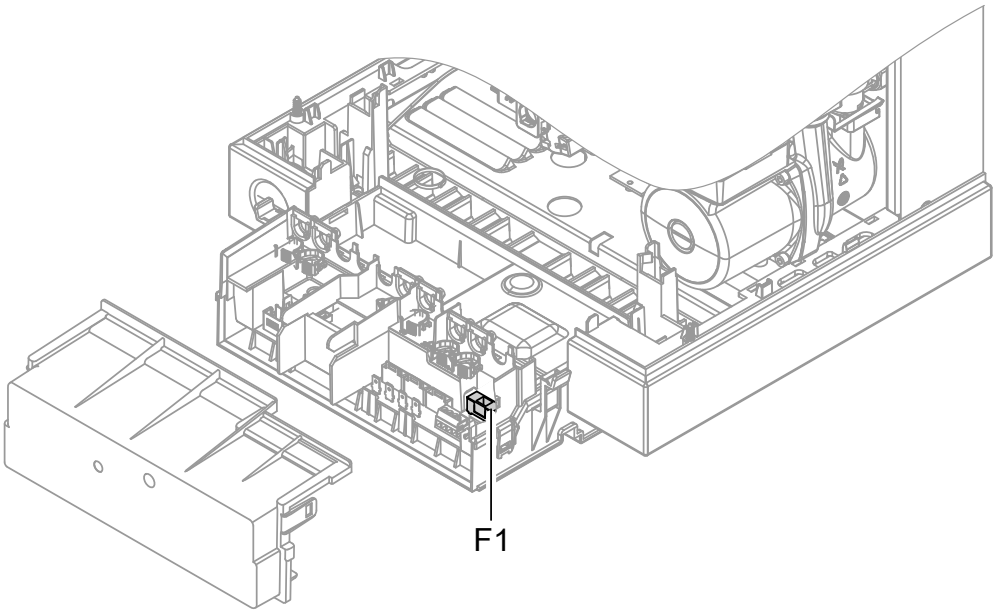
   Please note
   The outlet temperature sensor is immersed in the DHW (risk of scalding).
   Drain the DHW side of the boiler before replacing the sensor.

4. **Cylinder temperature sensor (gas system boiler):**
   - Pull plug [5] from the control unit cable harness.
   - Check the sensor resistance and compare actual values with the curve.
   - Replace the sensor in the case of severe deviation.

Checking the fuse

Note
Switch OFF the power.

Repairs (cont.)



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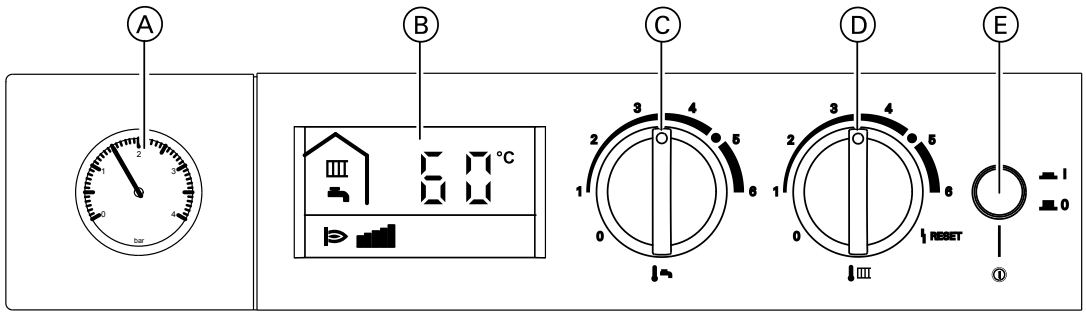
Control and display elements



Ⓐ Pressure gauge
Ⓑ Display
Ⓒ Rotary selector for DHW temperature
Ⓓ Rotary selector for heating water temperature
Ⓔ ON/OFF switch

Heating mode

The set boiler water temperature adjusted at rotary selector "🌡" will be maintained when a demand is raised by the room thermostat.

Note
The heating water temperature must be set sufficiently high for the required room temperature to be reached.

The boiler water temperature will be maintained at the default frost protection temperature when there is no demand.
The electronic temperature limiter inside the burner control unit limits the boiler water temperature to 84 °C.
Flow temperature setting range: 40 to 76 °C.

DHW heating

Gas system boiler

If the cylinder temperature drops 2.5 K below the set cylinder temperature, the burner and circulation pump switch on and the three-way valve changes over to DHW heating.

The set boiler water temperature is up to 20 K higher than the set cylinder temperature. If the actual cylinder temperature exceeds the set cylinder temperature by 2.5 K, the burner switches off and the circulation pump run-on time begins.

DHW heating (cont.)

Gas combi boiler

If the flow switch recognises that DHW is drawn off (> 3 l/min), the burner and circulation pump are switched ON and the three-way valve changes over to DHW heating.
The burner modulates to reach the DHW outlet temperature and is limited on the boiler side by the temperature limiter (84 °C).

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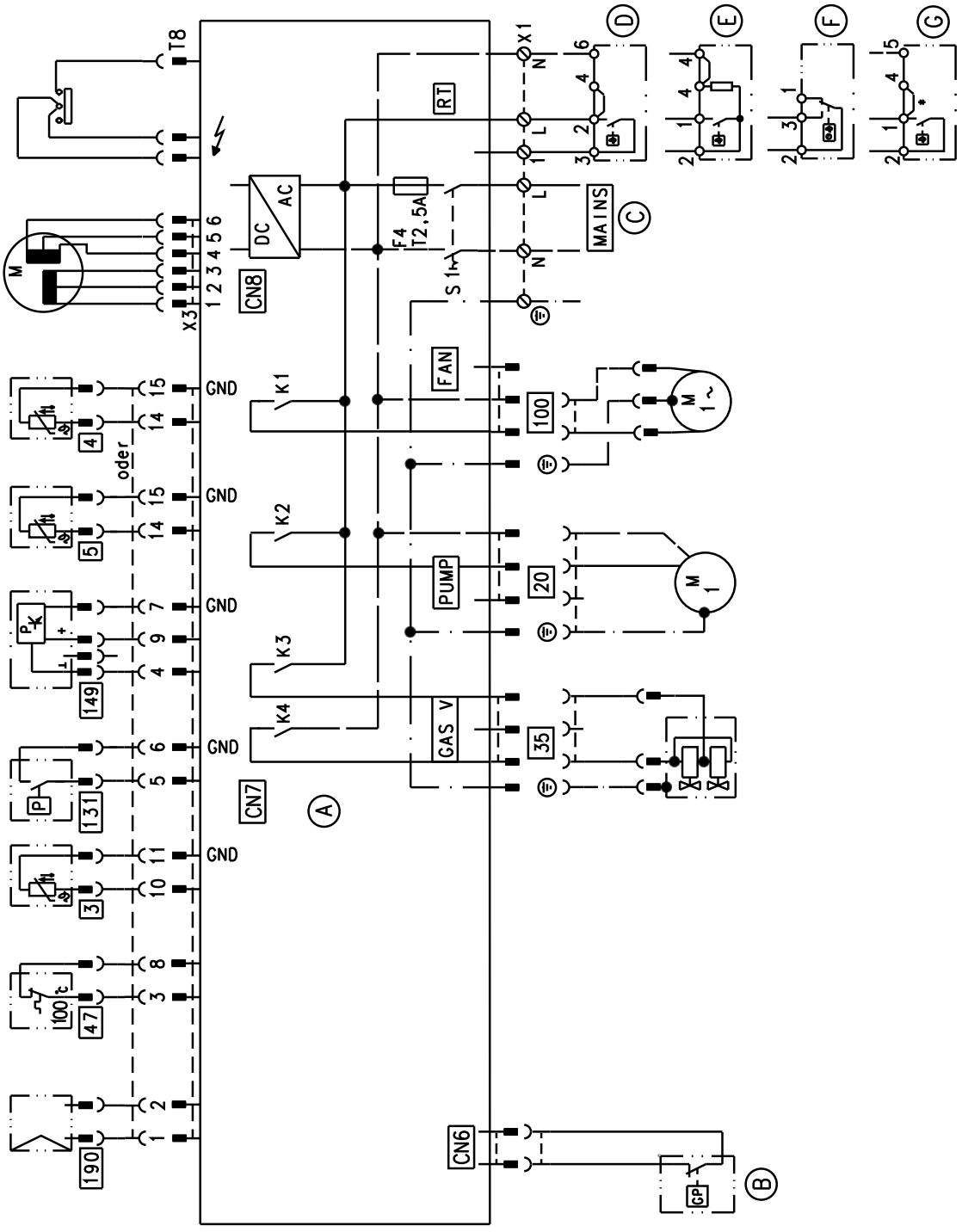
Connection and wiring diagram



Ⓐ PCB inside the boiler
Ⓑ Gas pressure switch (accessory)
Ⓒ Power supply
Ⓓ Vitotrol 100, UTA
Ⓔ Vitotrol 100, RT
Ⓕ Vitotrol 100, UTD
Ⓖ Vitotrol 100, UTD-RF
CN8 Stepper motor for diverter valve
T8 Ignition transformer and ionisation

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Connection and wiring diagram (cont.)

3	Boiler water temperature sensor	35	Gas solenoid valve
4	Outlet temperature sensor (only gas combi boilers)	47	Temperature limiter
		100	Fan
5	Cylinder temperature sensor (only gas system boilers)	131	Air pressure switch
		149	Flow switch
20	Internal circulation pump	190	Modulation coil

Parts lists

Information for ordering spare parts
Quote the part no. and serial no. (see type plate) and the position no. of the required part (as per this parts list). Standard parts are available from your local supplier.

Ⓐ Type plate
001 Temperature sensor
002 Temperature limiter
003 Burner
004 Flue gas collector
006 Connection pipe, diaphragm expansion vessel
007 Diaphragm expansion vessel
008 Air deflector, burner
010 Gas train
011 Pressure gauge
012 Temperature sensor
016 Cover panel
017 Combustion chamber insulation, front
018 Combustion chamber insulation, back
019 Combustion chamber insulation, l.h. and r.h.
020 Flue gas heat exchanger
021 Combustion chamber cover
022 Gas manifold natural gas E
024 Screw M4 x 10 (5 pce)
025 Fan
026 Pressure switch
027 Profiled gasket
028 Boiler flue connection flange
030 Toggle fastener (4 pce)
032 Pressure hose
034 Side panel, combustion chamber, l.h.
035 Side panel, combustion chamber, r.h.
036 Cover, ventilation air aperture
040 Gas manifold, natural gas LL/S/Lw/M
041 Gas manifold, natural gas Ls
042 Gas manifold, LPG
043 Flow connection pipe
044 Return connection pipe
045 Gas supply pipe
046 Safety valve connection pipe
047 Gas restrictor
048 Control unit support
049 Wall mounting bracket
050 Venturi nozzle
055 Quick-action air vent valve cartridge
056 Safety valve
057 Plate heat exchanger for gas combi boilers
058 Flow sensor for gas combi boilers
059 Stepper motor
060 Circulation pump head 5 m/6 m
061 Quadrant, top-up facility
062 Flow limiter for gas combi boilers
063 Gasket set, plate heat exchanger
064 Hydraulic block for gas combi boiler
065 Hydraulic block for gas system boiler
066 Shut-off valve
067 Top-up tap
068 Clip ∅ 8 (5 pce)
069 Clip ∅ 10 (5 pce)
070 Clip ∅ 13.5 (5 pce)
071 Bypass cartridge
072 Clip ∅ 18 (5 pce)
073 Special clip, safety valve (5 pce)
074 Clip ∅ 16 (5 pce)
080 Vitopend control unit
081 Cover, wiring chamber
082 Fuse (10 pce)
101 O-ring 17 x 4 (5 pce)
102 Gasket A10 x 15 x 1 (5 pce)
103 Gasket A96 x 150 x 3
104 Gasket A17 x 24 x 2 (5 pce)
105 O-ring 16 x 3 (5 pce)
106 O-ring 9.6 x 2.4 (5 pce)
107 O-ring 34 x 3 (5 pce)

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Parts lists (cont.)

108 O-ring 8 x 2 (5 pce)
109 Oval cap seal (5 pce)
111 Diaphragm grommet (5 pce)
112 Cable grommet (5 pce)
113 Gas connection diaphragm grommet (5 pce)
114 Screw M4 x 13 (5 pce)
115 Self-tapping screw 2.9 x 6.5 (5 pce)
116 Self-tapping screw 4.8 x 63 (5 pce)
117 Screw 50 x 12 (5 pce)
118 Cable clip (5 pce)
200 Front panel
201 Fixing clip
202 Logo
203 Complete sound insulation kit (only 24.8 kW)
314 Intermediate gas piece G¾ x R½
315 Intermediate gas piece G¾ x R¾
316 Heating water fittings for mounting panel
317 DHW fittings for mounting panel
318 Angle gas valve
319 Straight-through gas valve without thermally activated safety valve
320 Straight-through gas valve with thermally activated safety valve
328 Angle valve with plugs for flow and return
329 BDF valve
330 Gasket pack
331 Pack of pipe bends ∅ 15 and 18 mm
332 Pack of pipes ∅ 15 and 18 mm
333 Pipes ∅ 15, 18 and 22 mm (2 pce each)
334 Pipe bend ∅ 22 mm (2 pce)
335 Straight-through valve for cold water
336 Angle valve for cold water
337 Locking ring fittings ∅ 15 and 18 mm

Wearing parts
005 Ignition and ionisation electrode

Parts not shown
084 Cable harness CN7 for gas combi boiler
086 Cable harness CN7 for gas system boiler
087 Power cable, gas valve/auxiliary earth
088 Power cable, stepper motor
089 Fan connecting cable
090 Cable ties (10 pce)
100 O-ring 19.8 x 3.6 (5 pce)
250 Installation and service instructions
251 Operating instructions
300 Spray paint, Vitowhite
301 Touch-up paint stick, Vitowhite
321 Gas pressure switch
341 Installation instructions for installation aid
342 Installation instructions for mounting frame
343 Plate heat exchanger, solar kit
344 Solenoid valve, solar kit
345 Pack, pipe sections, solar kit
346 Cover, solar kit
347 Pack, corrugated pipes, solar kit
348 Ball valve R½, solar kit
349 Ball valve R¾, solar kit
350 Flow/return valve, solar kit
351 Pack, pipe bends, solar kit
352 Locking fittings, solar kit
353 Gas supply pipe, solar kit
354 Bypass, solar kit
355 Fitting, solar kit
356 Flow switch, solar kit
357 Installation instructions, solar kit

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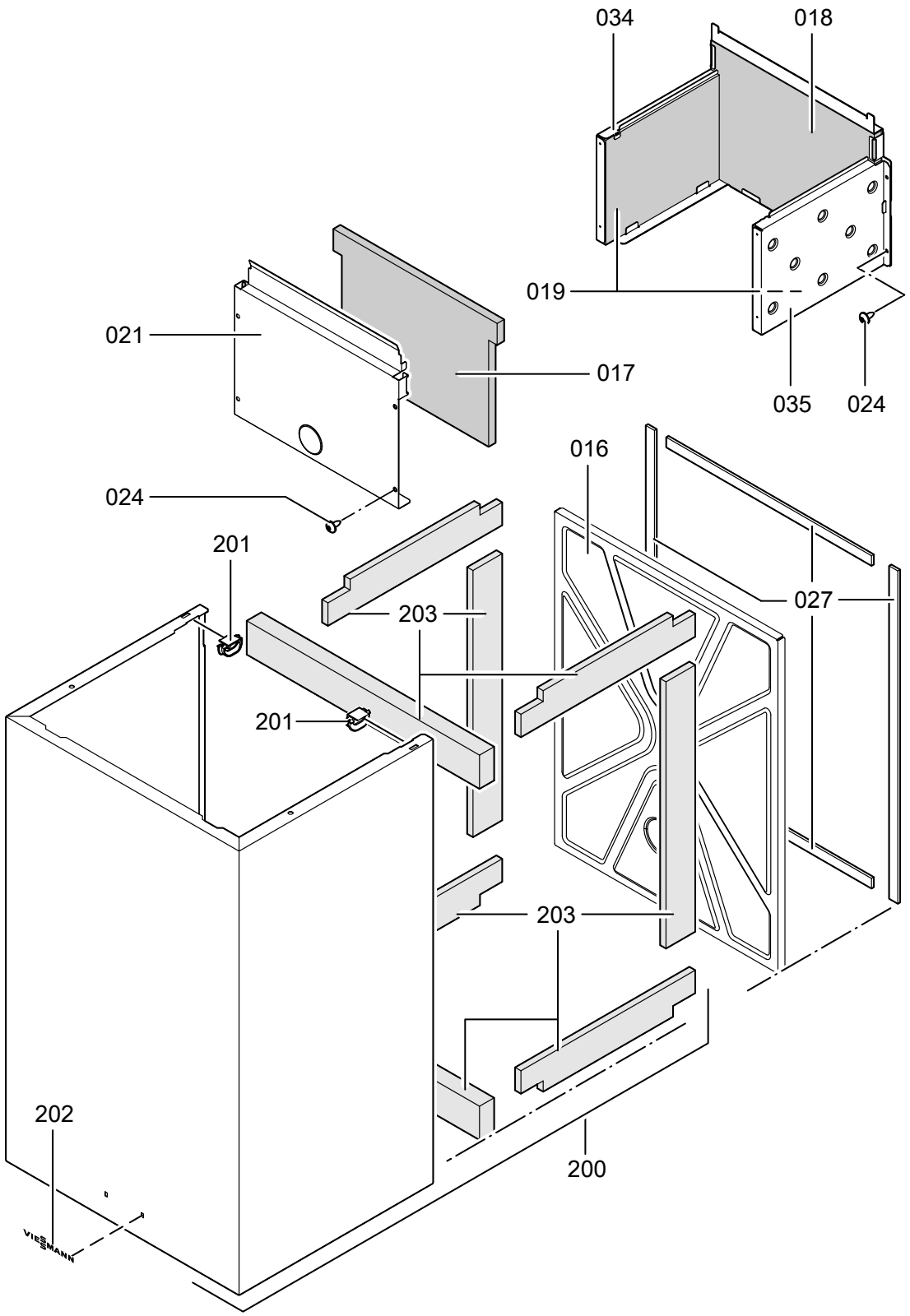
Parts lists (cont.)



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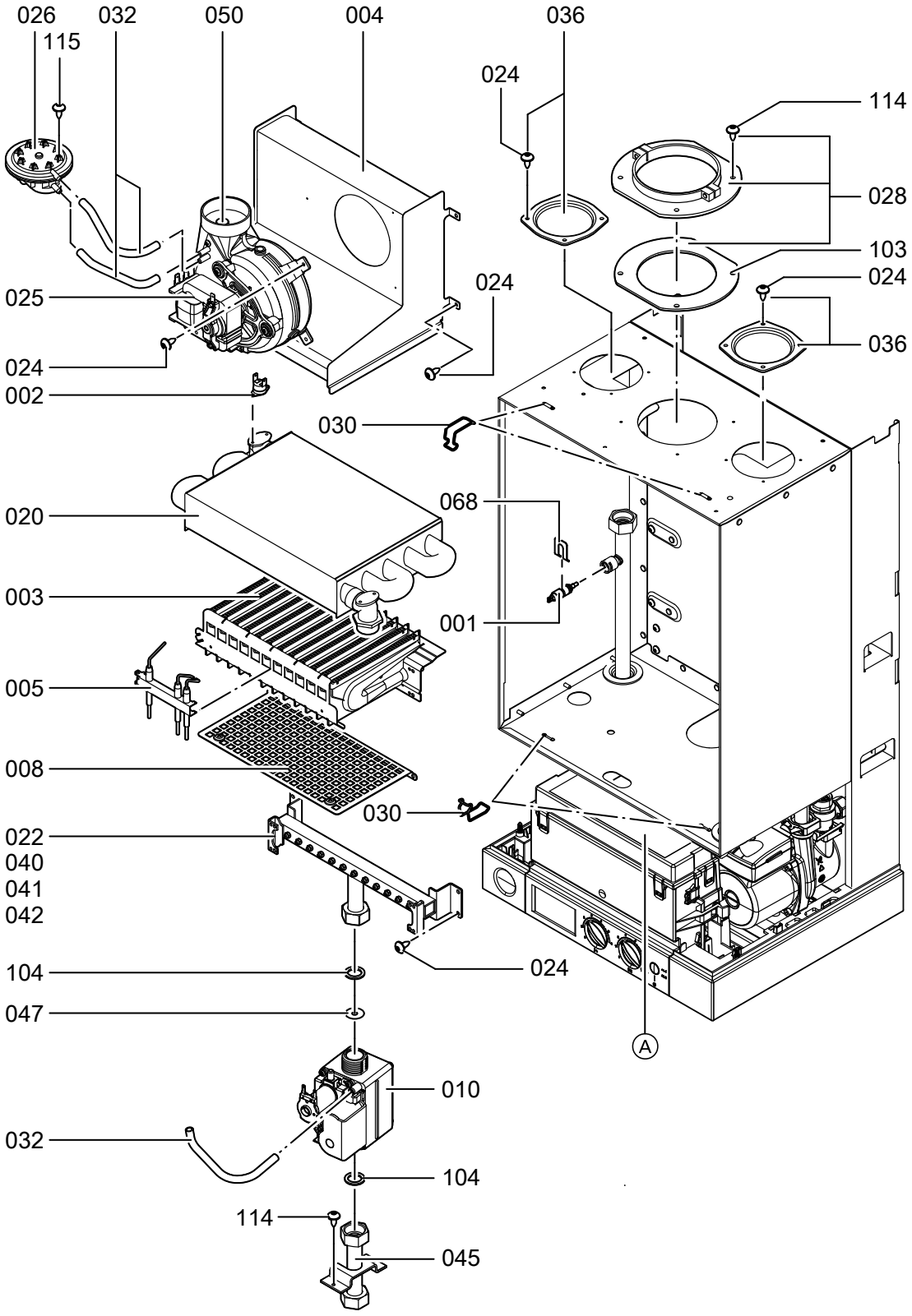
Parts lists (cont.)



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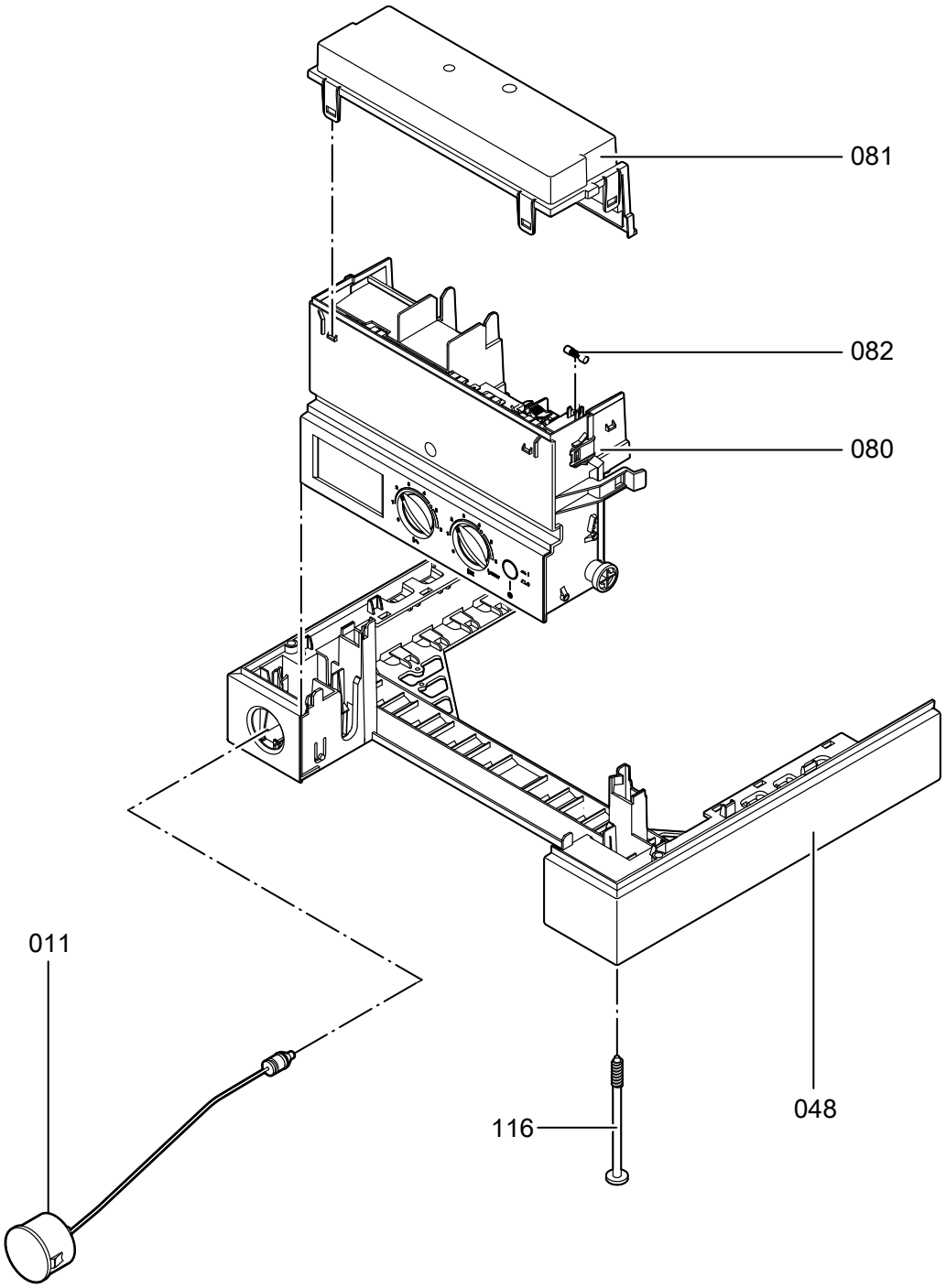
Parts lists (cont.)



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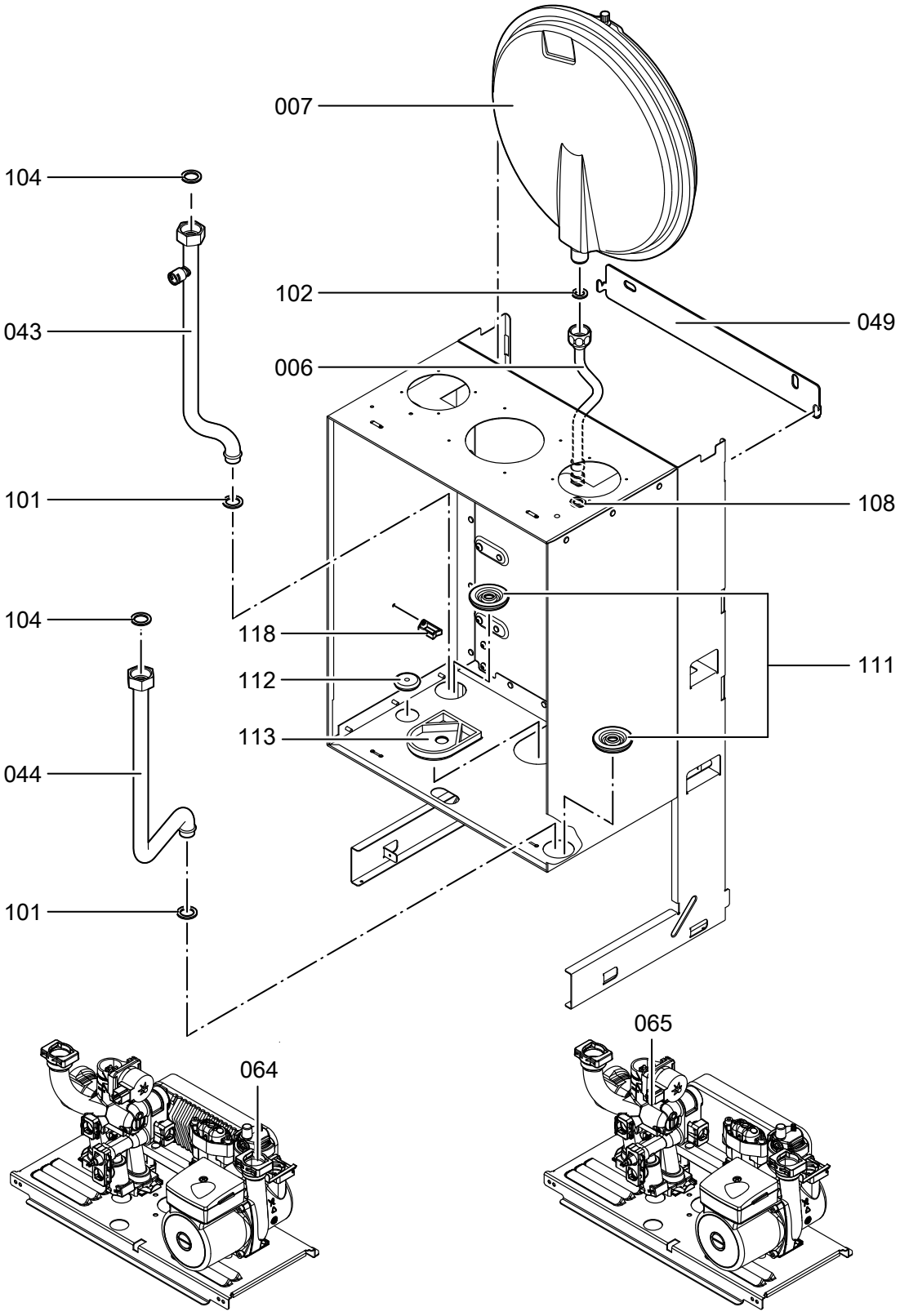
Parts lists (cont.)



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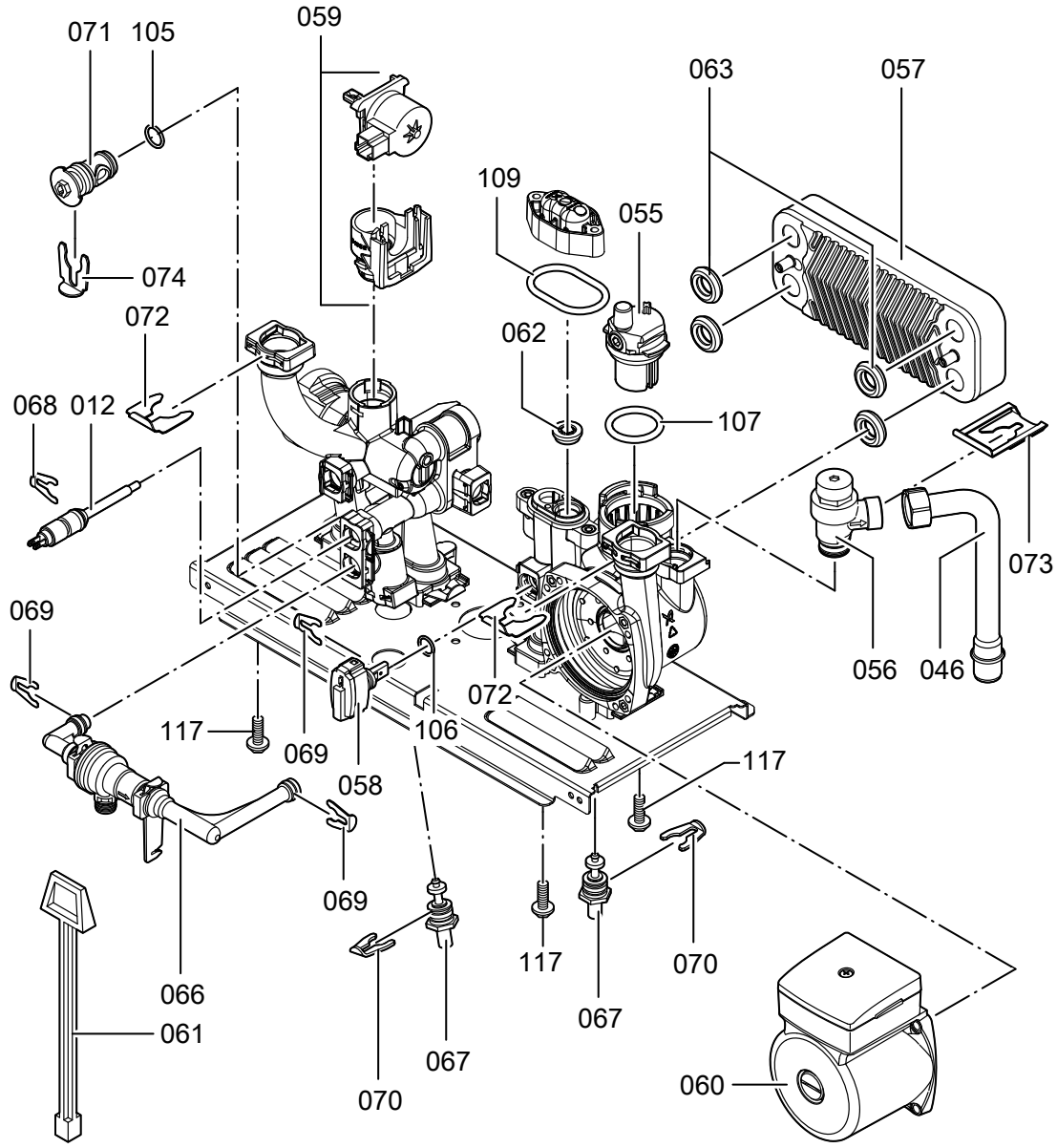
Parts lists (cont.)



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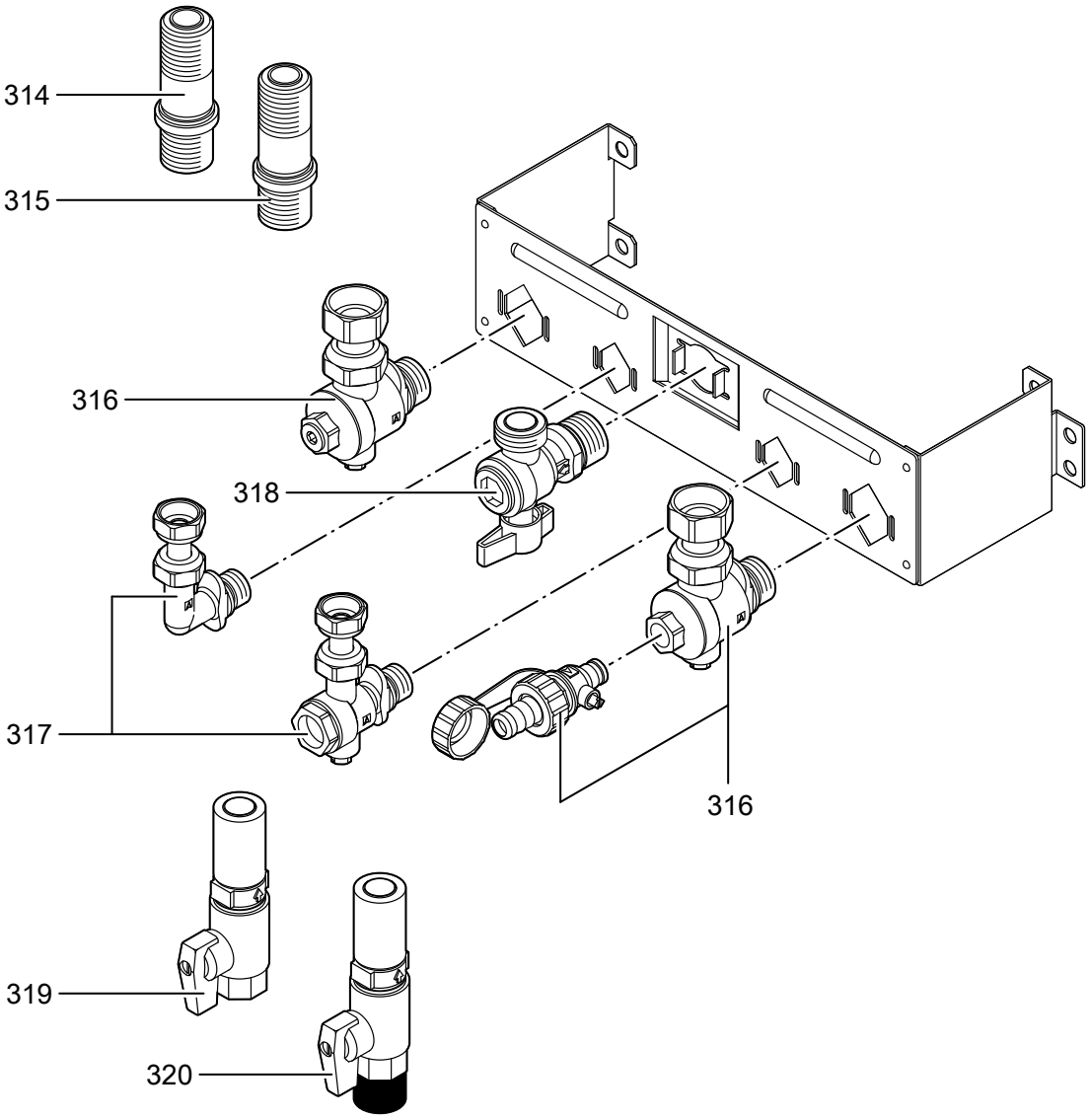
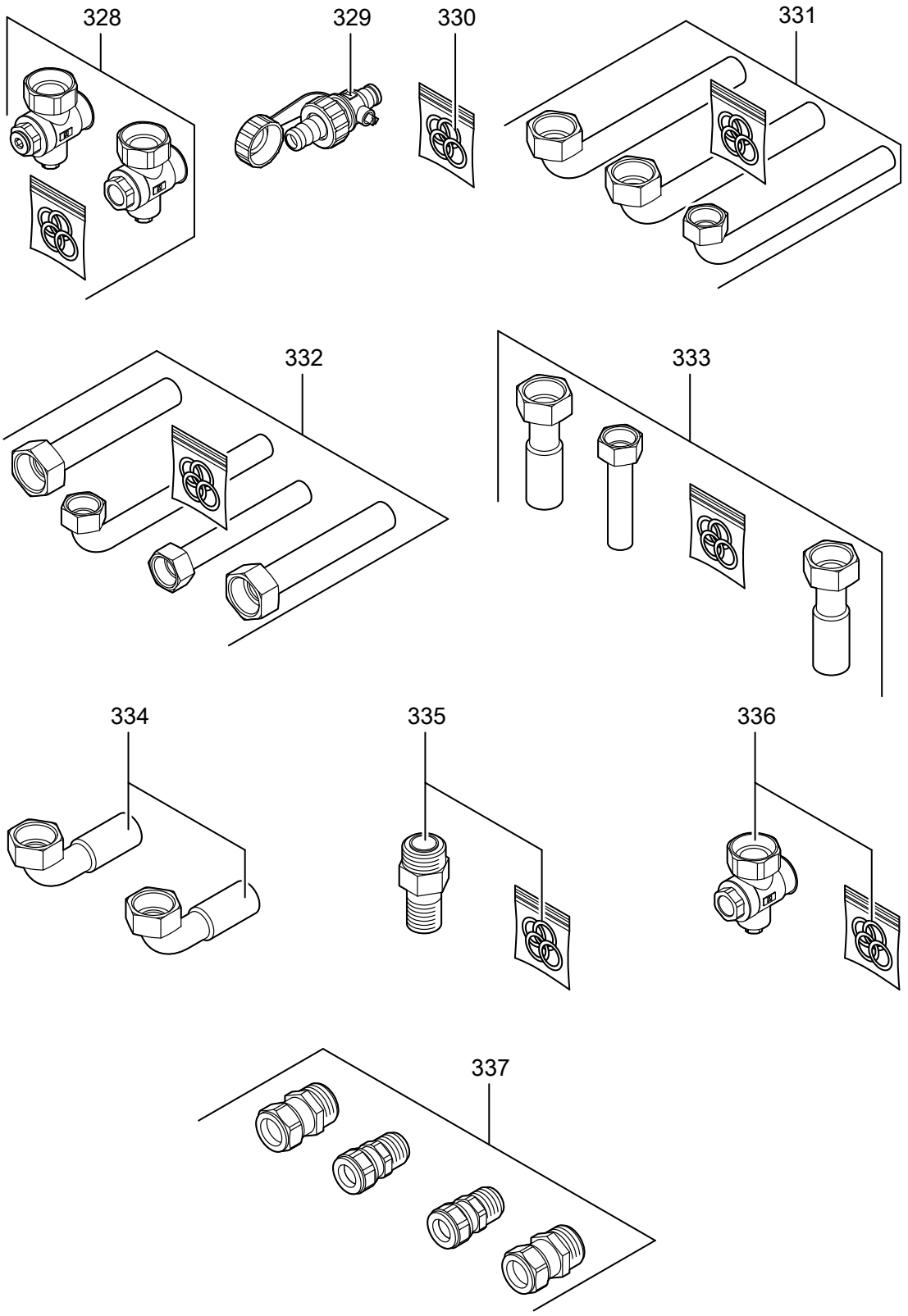
Parts lists (cont.)



Parts lists (cont.)



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Commissioning/service reports

Setting and test values	Date: By:	Set value	Commissioning	Maintenance/service
Static pressure	*mbar*	max. 57.5 mbar		
Supply pressure (flow pressure)				
☐ for natural gas H	*mbar*	17-25 mbar		
☐ for LPG P	*mbar*	25-45 mbar		
Tick gas type				
Carbon dioxide content CO_2				
■ at the lower rated heating output	*% by vol.*			
■ at the upper rated heating output	*% by vol.*			
Oxygen content O_2				
■ at the lower rated heating output	*% by vol.*			
■ at the upper rated heating output	*% by vol.*			
Carbon monoxide content CO				
■ at the lower rated heating output	*ppm*			
■ at the upper rated heating output	*ppm*			
Ionisation current	*µA*	min. 2 µA		
Max. heating output	kW			

Specification

Rated voltage	230 V
Rated frequency	50 Hz
Rated current	2.5 A
Safety category	I
IP rating	IP X 4 D to EN 60529
Permissible ambient temperature	
■ during operation	0 to +40 °C
■ during storage and transport	-20 to +65 °C
Electronic temperature limiter setting	84 °C
Temperature limiter setting	100 °C (fixed)

Temperature controller	40 to 76 °C
Power consumption incl. circulation pump	
■ 10.7 - 24.8 kW	max. 115 W
■ 13.2 - 31.0 kW	max. 140 W

Design	C_{12}, C_{12x}, C_{32}, C_{32x}, C_{42}, C_{42x}, C_{52}, C_{52x}, C_{62}, C_{62x}, C_{82}, C_{82x}, B_{22}, B_{32}
Category	II_{2H3P}

Note

The connection values are only for documentation purposes (e.g. in the gas contract application) or to estimate a supplementary volumetric settings check. Due to the factory settings, the gas pressure must not be altered from these values.

Connection values 10.7 to 24.8 kW

Rated heating output	**kW**	**10.7**	**11**	**12**	**15**	**18**	**21**	**24.8**
Rated heat input	kW	11.7	12.3	13.3	16.7	20.0	23.3	26.7
Connection values relative to the max. load								
Natural gas H	m^3/h	1.24	1.3	1.41	1.76	2.12	2.47	2.83
	l/min	20.43	21.4	23.3	29.1	34.92	40.74	46.62
LPG P	kg/h	0.91	0.96	1.04	1.3	1.56	1.82	2.09
Product ID		CE-0085 BQ 0447						

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Specification (cont.)

Connection values 13.2 to 31 kW

Rated heating output	**kW**	**13.2**	**15**	**18**	**21**	**24**	**27**	**31**
Rated heat input	kW	14.5	16.7	20.0	23.3	26.7	30.0	33.3
Connection values relative to the max. load								
Natural gas H	m^3/h	1.53	1.77	2.12	2.47	2.82	3.17	3.53
	l/min	25.29	29.18	34.94	40.74	46.56	52.38	58.2
LPG P	kg/h	1.13	1.31	1.56	1.82	2.08	2.35	2.61
Product ID		CE-0085 BQ 0447						

Service

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Declaration of Conformity for the Vitopend 100-W

We, Viessmann Werke GmbH & Co KG, D-35107 Allendorf, confirm as sole responsible body that the product **Vitopend 100-W** complies with the following standards:

EN 297	EN 55 014
EN 483	EN 60 335
EN 625	EN 61 000-3-2
EN 50 165:2001-08	EN 61 000-3-3

This product is designated **CE-0085 BQ 0447** in accordance with the following Directives:

2006/95/EC	2009/142/EC
2004/108/EC	92/ 42/EEC

This product meets the requirements of the Efficiency Directive (92/42/EEC) for **low temperature boilers**.

Allendorf, 01 August 2012

Viessmann Werke GmbH&Co KG

Authorised signatory Manfred Sommer

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Keyword index

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Keyword index (cont.)

Applicability

Serial No.:

7417733	7427722	7427726	7427729
7427731	7427733	7427734	7427735
7427736	7428244	7428246	7441834
7441883	7441884	7441885	7464530
7464531			

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5441 429 UAE Subject to technical modifications.

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