Service instructions

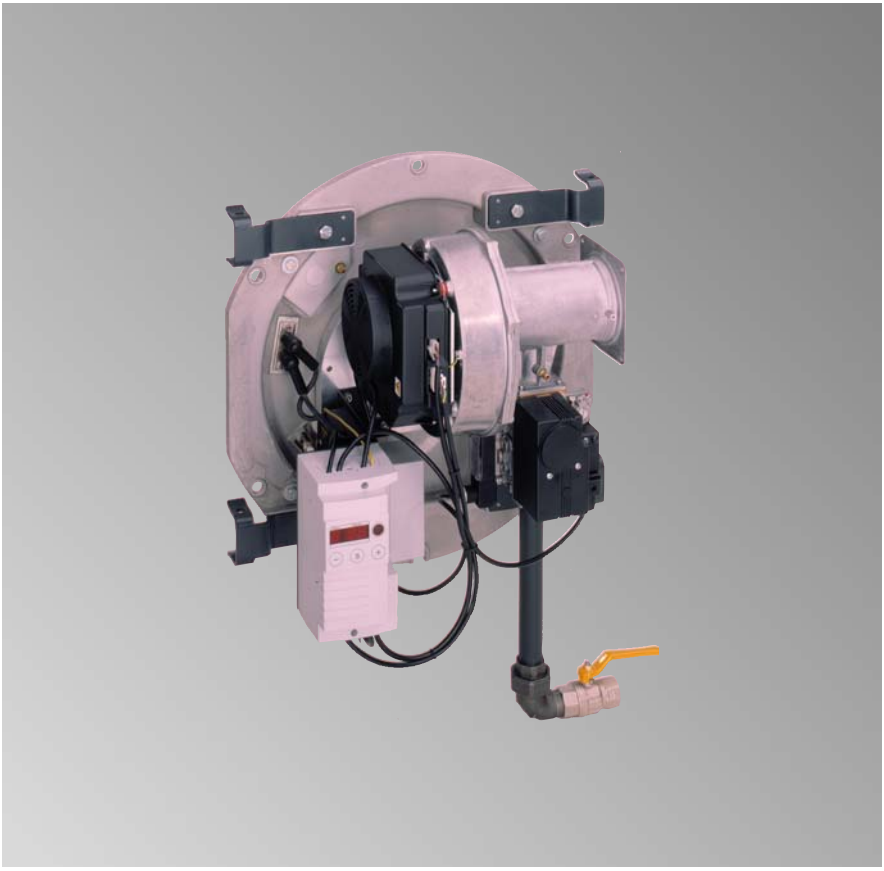
for heating engineers

VIESMANN

MatriX radiant burner
Pressure jet gas burner (type VM III)
for Vitocrossal 300 (type CT3)
Rated output 170 (187) kW

See notes on applicability, page 2.

MatriX radiant burner



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Please keep safe

Safety instructions

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

Work on the equipment
Installation, initial start-up, inspection, maintenance and repairs must only be carried out by a competent person (heating engineer/installation contractor).

Before working on the equipment/ heating system, isolate the mains electrical supply (e.g. by removing a separate mains fuse or by means of a mains electrical isolator) and safeguard against unauthorised reconnection.

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

Work on gas equipment
This must only be carried out by an approved contractor.
Observe all commissioning work specified for gas installations to TRGI or TRF and all local regulations.

Repair work
It is not permitted to carry out repairs on parts that fulfil a safety function.
Use only original Viessmann spare parts, or equivalent parts that have been approved by Viessmann.

Initial start-up
The initial start-up must be carried out by the system installer or a designated commissioning engineer. All actual values should be recorded in a commissioning/service report.

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.

⚠ ***Safety instructions***
In this instruction manual, this heading denotes information which must be observed to prevent accidents and material losses.

Applicability

from serial no.
7175475 3 00001 ␣␣␣

Operating and service documents

1. Complete and detach the customer registration card:
   - Give the system user this part for safe-keeping.
   - Retain the heating engineer part.
2. Keep all parts lists, operating and service instructions in the folder and hand this over to the system user.
   The installation instructions will not be required after the installation is completed, and may therefore be discarded.

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Steps – initial start-up, inspection and maintenance

For further instructions on individual steps, see pages indicated.

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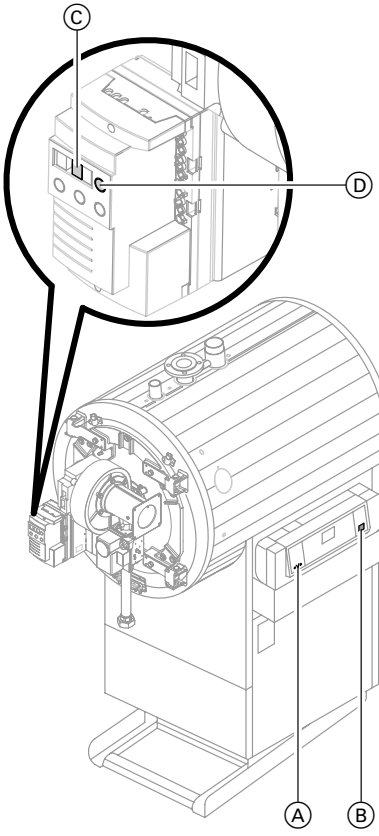
Further details regarding the individual steps

⚠ ***Safety instructions***
Measure the CO value before and after any work on gas appliances, to prevent any health hazards and to ensure perfect system condition.

Checking the burner adjustment with the boiler at operating temperature (min. 40°C) is essential.

Also carry out measurements at base load.

System start-up



Boiler control unit service instructions

1. Check the heating system pressure.

2. Open the gas shut-off valve.

3. Switch ON the mains electrical isolator (outside the installation room).

4. Switch ON system ON/OFF switch Ⓑ on the control unit. If fault indicator Ⓐ on the control unit illuminates, and burner control unit display Ⓒ flashes, initially implement a reset by pressing reset button Ⓓ on the gas burner control unit.

Please note:
During the initial start-up, the equipment can enter a fault state if it has insufficient gas in the supply line (fault lamp on the control unit illuminates).
Ventilate the gas supply line again and reset the gas burner control unit.

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Further details regarding the individual steps (cont.)

Checking gas type

1. Enquire the gas type and Wobbe index (Wo) from your gas supplier.
   - With **natural gas setting E**, the boiler can be operated in the Wobbe index range 12.0 to 16.1 kWh/m^3 (43.2 to 58.0 MJ/m^3).
   - With **natural gas setting LL**, the boiler can be operated in the Wobbe index range 10.0 to 13.1 kWh/m^3 (36.0 to 47.2 MJ/m^3).
2. The burner is set up in the factory for natural gas E. If necessary, convert the burner to a different gas type in accordance with details provided by your gas supplier (see page 7).
3. Record the gas type in the service report (from page 42).

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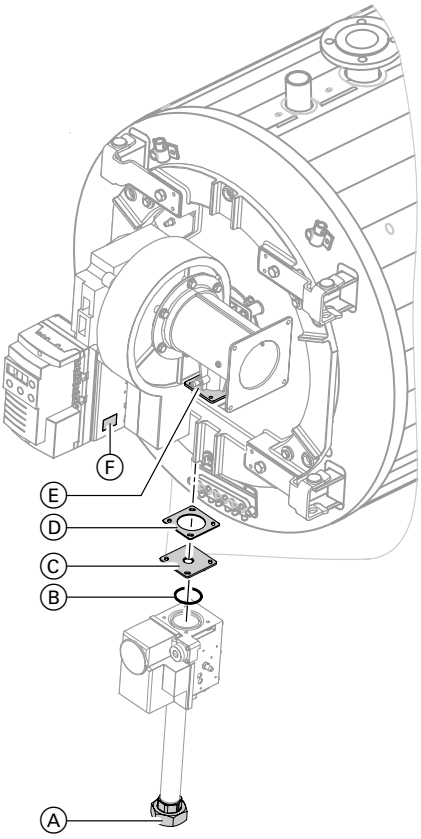
Further details regarding the individual steps (cont.)

Conversion to natural gas LL



1. Close the gas shut-off valve.
2. Switch OFF the system ON/OFF switch on the control unit.
3. Switch OFF the mains electrical isolator (outside the installation room) or the mains power supply and prevent unauthorised reconnection.
4. Release fixing Ⓐ.
5. Remove flange Ⓔ from the gas combination valve.
6. Remove restrictor Ⓒ together with rubber-cork gasket Ⓓ.
7. Secure the gas combination valve (without restrictor Ⓒ, but with O-ring Ⓑ and rubber cork gasket Ⓓ) on flange Ⓔ; for this, replace the factory-fitted screws M 5 × 16 for M 5 × 12 (see kit supplied).
8. Release fixing Ⓐ.
9. Affix the enclosed Adjusted to ... label Ⓕ above the existing label.
10. Start up the burner (see page 5).

⚠ ***Safety instructions***
Check all compression fittings for gas leaks.

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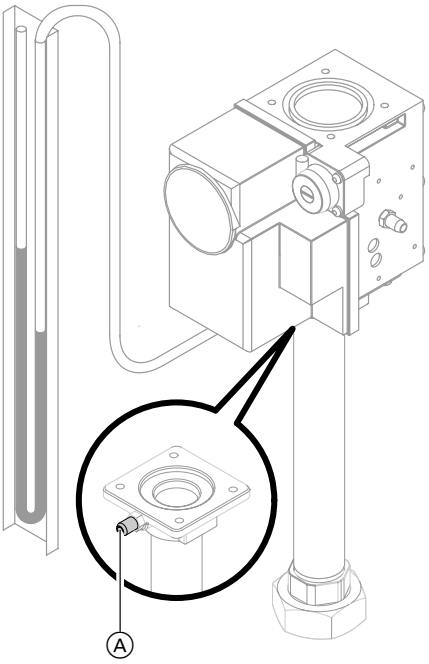
Further details regarding the individual steps (cont.)

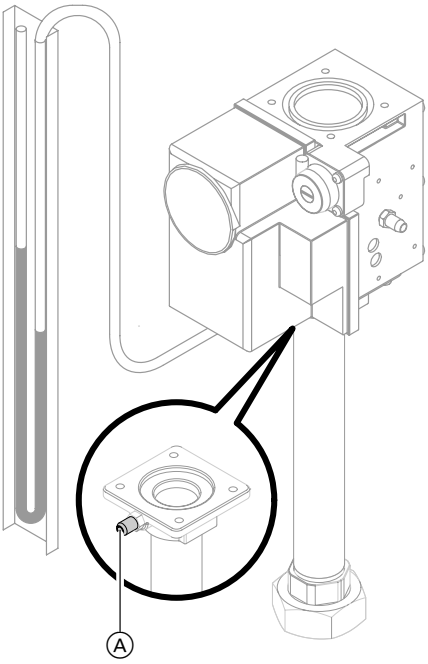
Checking static and supply pressure



Static pressure

1. Close the gas shut-off valve.
2. Release the screw inside test nipple Ⓐ, but do not fully remove.
3. Connect the U-shaped pressure gauge.
4. Open the gas shut-off valve.
5. Measure the static pressure (max. 60 mbar).
6. Record the actual values in the service report (from page 42).

Further details regarding the individual steps (cont.)



Supply pressure

7. Start up the burner.

Please note:
Initial start-up, see page 5.
Switch the burner to max. output; to do this, activate the emissions test switch on the control unit.

8. Check the supply pressure (flow pressure), see the table below.

Please note:
The supply pressure (flow pressure) should be between 20 and 50 mbar.
The gas governor is factory-set to 12 mbar.
Do not change this setting.

9. Record the actual values in the service report (from page 42).

10. Close the gas shut-off valve.

11. Remove the U-shaped pressure gauge and close test nipple Ⓐ.

Supply pressure (flow pressure)	**Remedy**
below 15 mbar	Do not change settings – contact gas supply company
15 to 20 mbar	Warning: The boiler may only be temporarily operated with these settings (emergency mode). Notify your gas supply company.
20 to 50 mbar	Boiler start-up
above 50 mbar	Install a separate gas governor with zero off upstream of the boiler, and regulate the pressure to 20 mbar. Notify your gas supply company.

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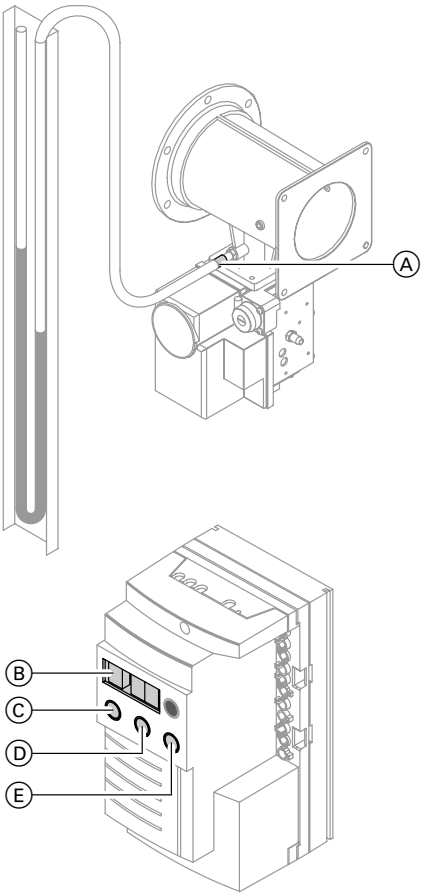
Further details regarding the individual steps (cont.)

Checking venturi vacuum pressure



1. Release the screw inside test nipple Ⓐ, but do not fully remove.

2. Connect the U-shaped pressure gauge to test nipple Ⓐ (vacuum).

3. Open the gas shut-off valve.

4. Start up the burner (see page 5).

5. Simultaneously press keys S Ⓓ and – Ⓒ.

Please note:
Display Ⓑ shows:
- *Status: d (= regular stop) and*
- *Service: Level of modulation in % (00. = 100% = full load, 00 = 0% = partial load)*

6. Press key + Ⓔ, until 00. shows in the display.
Burner is now at max. output.

7. Check the venturi vacuum pressure.

Please note:
At full load, the vacuum pressure should be
- *5.9 mbar for natural gas E,*
- *6.7 mbar for natural gas LL.*

During the adjustment, also check the gas throughput by means of a volumetric test.

8. Record the actual values in the service report (from page 42).

9. Press keys S Ⓓ and – Ⓒ simultaneously.
Burner is now in operating mode.

10. Close the gas shut-off valve.

11. Remove the U-shaped pressure gauge and close test nipple Ⓐ.

⚠ ***Safety instructions***
Check the test nipple and fittings for gas leaks.

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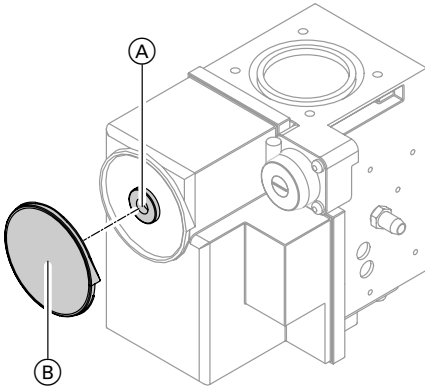
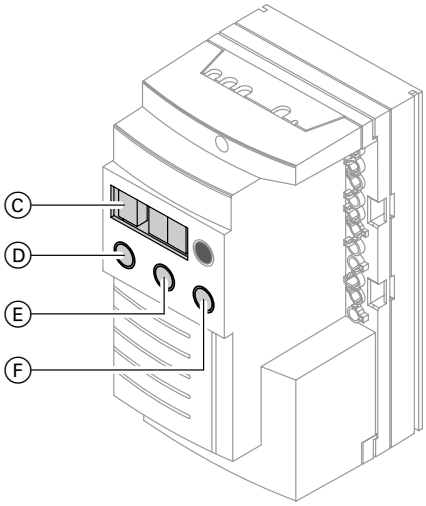
Further details regarding the individual steps (cont.)

Checking CO_2 content





1. Open the gas shut-off valve.

2. Start up the burner.

3. Press keys S Ⓔ and – Ⓓ simultaneously.

Please note:
Display Ⓒ shows:
- *Status: d (= regular stop) and*
- *Service: Level of modulation in % (00. = 100% = full load, 00 = 0% = partial load)*

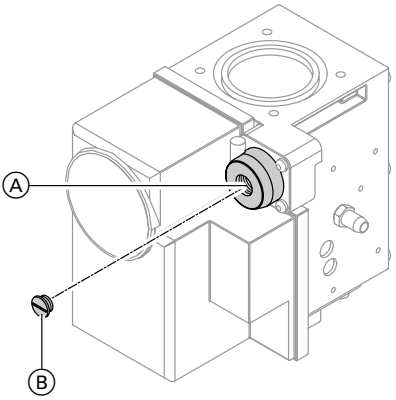
Full load

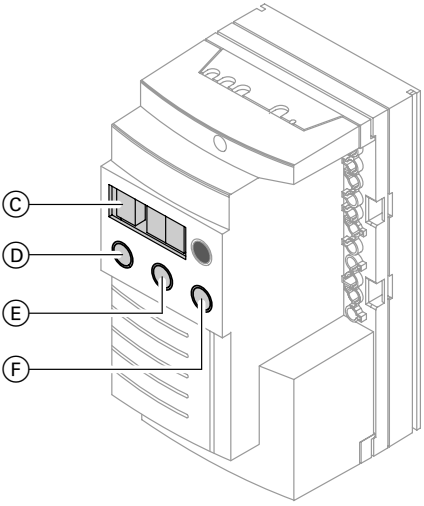
4. Press + Ⓕ until the service display has incremented to 00. (= 100%).

5. Measure the CO_2 content at the flue pipe.
The CO_2 should be 8.8 to 9.3%.

6. If the CO_2 content must be changed,
   - remove cap Ⓑ and
   - turn adjusting screw Ⓐ (Allen key 2.5 mm) until the CO_2 content is within the stated range:
     – Turning clockwise
     → CO_2 content drops,
     – Turning anti-clockwise
     → CO_2 content rises.

Further details regarding the individual steps (cont.)





Partial load

7. Press key – Ⓓ, until the service display has decremented to 00 (partial load).

8. Measure the CO_2 content at the flue pipe.

The CO_2 should be 8.8 to 9.3%.

9. If the CO_2 content must be changed,
- Unscrew cover Ⓑ and
- turn adjusting screw Ⓐ in small steps (Torx 40) until the CO_2 content is within the stated range.

10. Record the actual values in the service report (from page 42).

11. Press + Ⓕ until the service display shows 00. (= 100%).

12. Measure the CO_2 content. Repeat step 6, if the value is not 8.8 to 9.3%.

13. Record the actual values in the service report (from page 42).

14. Press keys S Ⓔ and – Ⓓ simultaneously.
Burner is now in operating mode.

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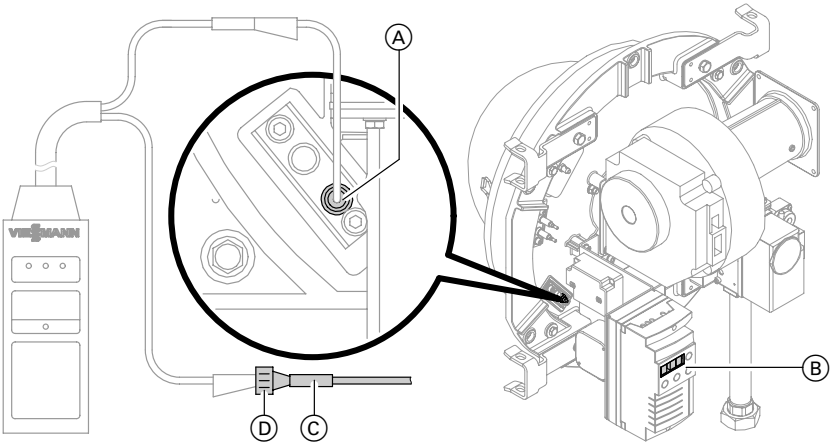
Further details regarding the individual steps (cont.)

Checking ionisation current



1. Switch OFF the mains electrical isolator.

2. Pull ionisation cable plug Ⓒ off.

3. Switch ON the mains electrical isolator.
   There must be a fault shutdown after a burner start has been attempted. Display Ⓑ flashes fault code F25.

4. Switch OFF the mains electrical isolator.

Please note:
Test cable no. 1 is required when checking with Testomatik-Gas equipment.
You can also carry out this check with a multimeter.

5. Push plug Ⓒ of the ionisation current lead into adaptor Ⓓ.

6. Plug socket Ⓐ of the test lead onto the ionisation electrode.

7. Switch the mains electrical isolator ON and check the ionisation current.

   Please note:
   Ionisation current
   - *min. 10 µA approx. 2 to 3 s after opening the gas valve,*
   - *min. 30 µA at full load,*
   - *min. 5 µA at partial load.*

8. Record the actual values in the service report (from page 42).

9. Switch the mains electrical isolator OFF, remove the test equipment and reconnect the plug connector of the ionisation cable.

10. Switch ON the mains electrical isolator.

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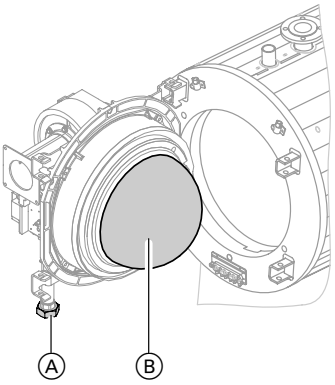
Further details regarding the individual steps (cont.)

System shutdown

1. Switch OFF the mains electric power or mains electrical isolator and safeguard against unauthorised reconnection.
2. Pull plug-connectors 41 and 90 off the burner.
3. Close the gas shut-off valve.

Checking burner gauze assembly



1. Release fixing Ⓐ from the gas supply pipe.
2. Loosen the screws on the boiler door and open it.
3. Check the wire mesh of burner gauze assembly Ⓑ for damage. Slight wavy deformations are nothing to worry about.
4. Replace burner gauze assembly Ⓑ, if required.

Installation instructions Burner component replacement

Cleaning the combustion chamber and hot gas flues, see boiler service instructions.

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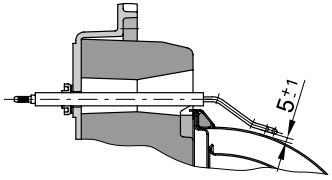
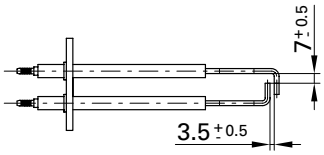
Further details regarding the individual steps (cont.)

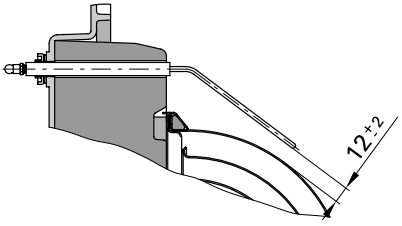
Checking ignition and ionisation electrodes

Ignition electrodes





Ionisation electrode

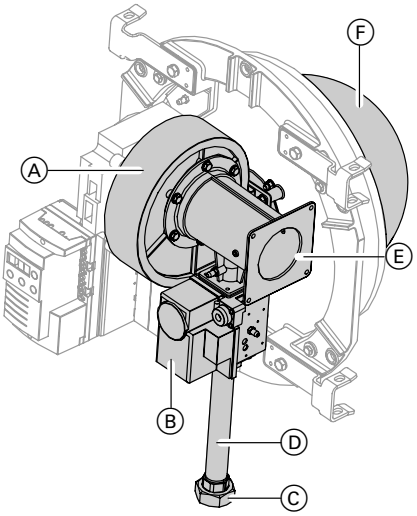


1. Check the ignition electrodes and the ionisation electrode for correct gap towards the burner gauze assembly and damage (replace, if necessary).

2. Close the boiler door and tighten the screws on the boiler door evenly and diagonally.

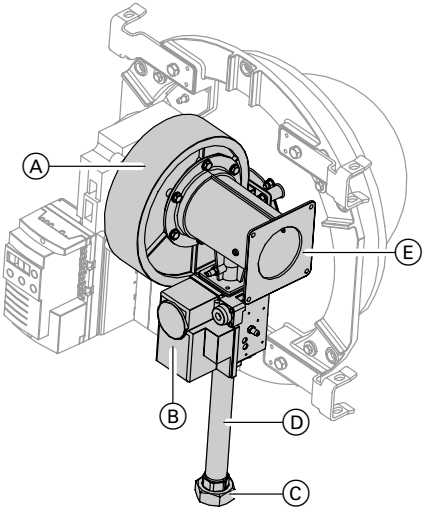
Further details regarding the individual steps (cont.)

Cleaning burner



1. Release fixing Ⓒ from gas supply pipe Ⓓ.
2. Unscrew venturi mixing tube Ⓔ from fan Ⓐ.
3. Remove venturi mixing tube Ⓔ with gas combination valve Ⓑ and gas supply pipe Ⓓ.
4. Remove fan Ⓐ.
5. Clean the fan housing and the impeller.
6. Clean the inside of burner gauze assembly Ⓕ with a vacuum cleaner, if required.

Burner installation



1. Install fan Ⓐ.
2. Secure venturi mixing tube Ⓔ with gas combination valve Ⓑ and gas supply pipe Ⓓ to fan Ⓐ.
3. Secure fixing Ⓒ on gas supply pipe Ⓓ.

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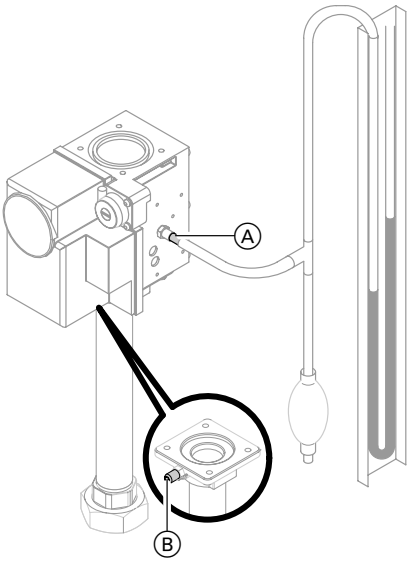
Further details regarding the individual steps (cont.)

Checking both valves of gas combination valve for leaks



1. Close the gas shut-off valve.

2. Release the screw in test nipple Ⓑ but do not remove.

3. Release the screw in test nipple Ⓐ but do not remove.

4. Connect the U-shaped pressure gauge with a manual pump to test nipple Ⓐ.

5. Gently activate the manual pump to create a test pressure of approx. 50 mbar.

6. Wait approx. 5 minutes for the temperature to level out, and then observe the display on the U-shaped pressure gauge:
If the displayed pressure does not fall within a further 5 min by more than 1 mbar, the gas combination valve is sound → continue with step 7).
Otherwise, the system leaks. In this case, return the gas combination valve to Viessmann Werke for tests.

7. After the test, close both test nipples by closing their respective screws.

⚠ ***Safety instructions***
Check the test nipple for gas leaks.

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Further details regarding the individual steps (cont.)

Checking all gas unions for leaks

1. Insert new gaskets in all fittings which have been opened, and tighten fittings.
2. Open the gas shut-off valve.
3. Check the inlet seals of the gas combination valve for leaks.
4. Start up the burner (see page 5).
5. Check the outlet seals of the gas combination valve for leaks.

Implementing final tests

1. Implement a final check in accordance with the steps on pages 11 to 13.
2. Record the actual values in the service report (from page 42).

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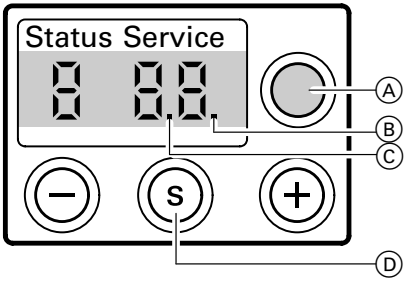
Gas burner control unit

Display and programming unit

Function
A display and programming unit is integrated into the burner control unit. The display indicates the respective operating conditions, the service and parameter conditions as well as any fault and error messages.

The display comprises three, seven-segment elements; four keys enable settings to be adjusted at different operating levels. A DIP switch on the rear of the display and programming unit enables burner parameters to be configured (for settings, see page 23).



Ⓐ Reset button
Ⓑ Decimal point
will be set if a display value exceeds 99
Ⓒ DHW cylinder LED
will be set if a value is saved
Ⓓ Selection key

Gas burner control unit (cont.)

Display	Status (1 digit)	Service (two digits)	See
Operating display in standard mode	Current operating state see following table	Display FL if a flame signal is present	Page 21
Operating display for operation deviating from the standard condition	Message code A to L see following table	—	—
Service display	Message code d see following table	Current modulation level	Page 22
Fault display	Message code F see following table Display flashes	Fault code display flashes see page 27 to 30	Page 25

Display Status	Operating condition
0	No heat demand Standby
1	Heat demand System tests Start-up decision
2	Idle state check Fan run-up
3	Pre-purge
4	Pre-ignition
5	Safety time
7	Mode
8	Post-purge

Display Status	Message code
A	Lack of gas
d	Control stop function active
F	Error
L	Air pressure switch standby position/flue gas backup

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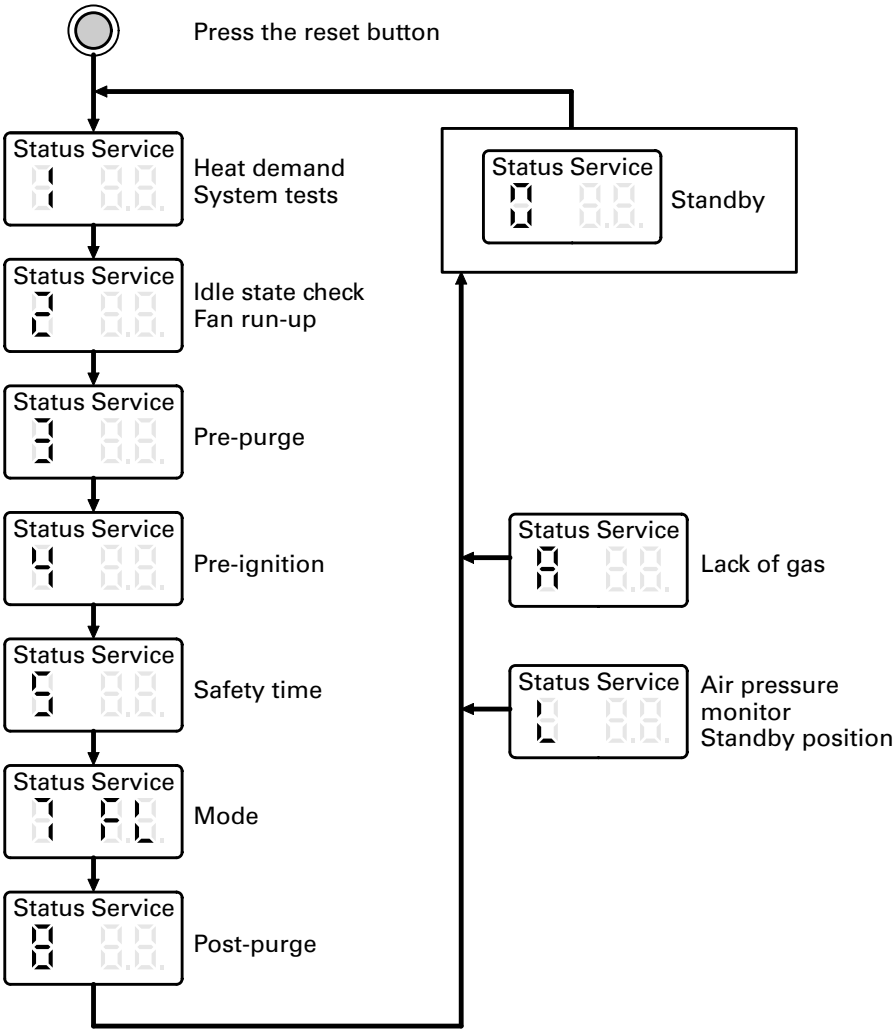
Gas burner control unit (cont.)

Operating display

See also tables on page 20.



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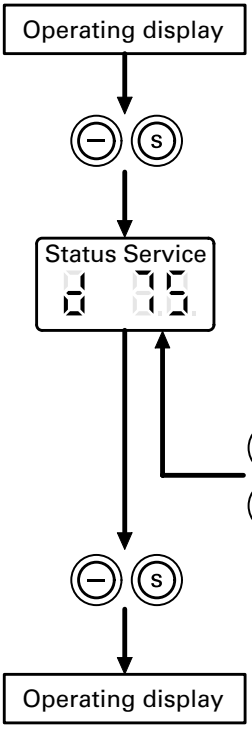
Gas burner control unit (cont.)

Service display

The service display can only be shown with the burner in operation, i.e. a heat demand from the control unit must be present.
During the service display, the burner will not respond to output changes from the control unit (regular stop mode).



Activate the service display by simultaneously pressing keys ⊖ and Ⓢ

Control stop mode
Under Service, the display shows the current level of modulation in %.
For this: 00 = 0% = partial load
and
00. (with decimal point after last figure)
= 100% = Full load

⊖ Reducing the modulation level

⊕ Increasing the modulation level

Simultaneously press keys ⊖ and Ⓢ

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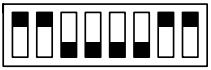
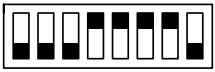
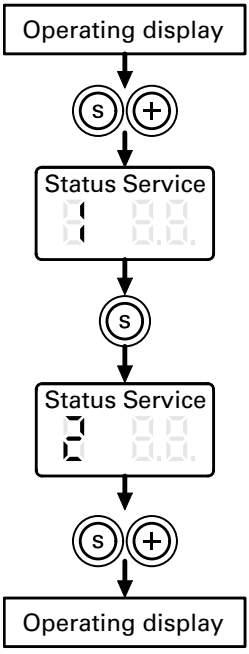
Gas burner control unit (cont.)

Setting the DIP switch or parameter set

Setting **Rated burner output**	**Setting** **Reduced burner output**
Parameter set 3 ≙ 170 (187) kW ON  1 2 3 4 5 6 7 8	Parameter set 8 ≙ 119 (131) kW ON  1 2 3 4 5 6 7 8

Displaying the selected parameter set

This display will be terminated, if no key is pressed within 20 seconds.



Simultaneously press keys Ⓢ and ⊕

Press key Ⓢ

Under the service display of the selected parameter set

Simultaneously press keys Ⓢ and ⊕

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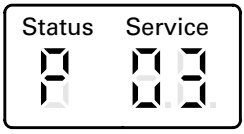
Gas burner control unit (cont.)

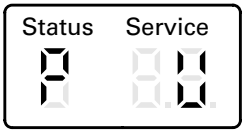
Confirming a parameter set

If
- a parameter set has been modified via the DIP switch or
- the burner control unit has been replaced,

a flashing P appears below status. The figures below service indicate the selected parameter set (see page 25).



U is shown below service if an invalid DIP switch setting has been selected



1. Check the DIP setting; if required change as on page 23.

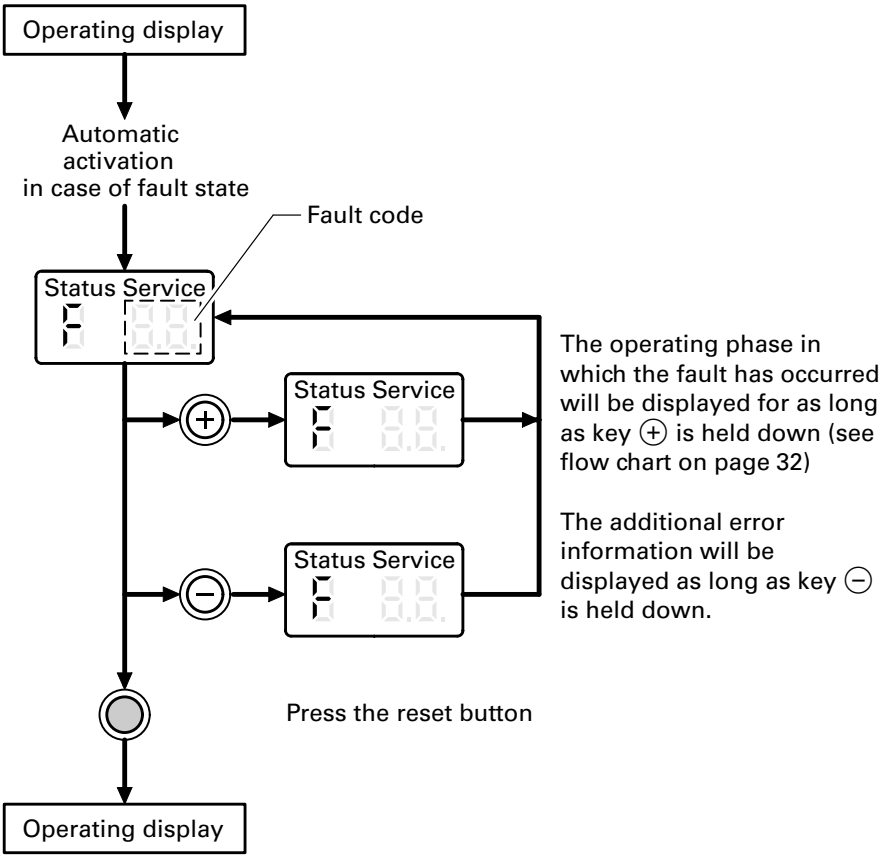
2. Press ⊖ and ⊕ simultaneously for approx. 2 s.
The selected parameter settings have been accepted when P no longer flashes, and the DHW LED is illuminated.

3. Press reset, then the operating display will be redisplayed.

Gas burner control unit (cont.)

Fault display

The fault display will be activated automatically if the burner control unit switches to a fault state. The last fault will then be displayed. The light segments of the display will flash.



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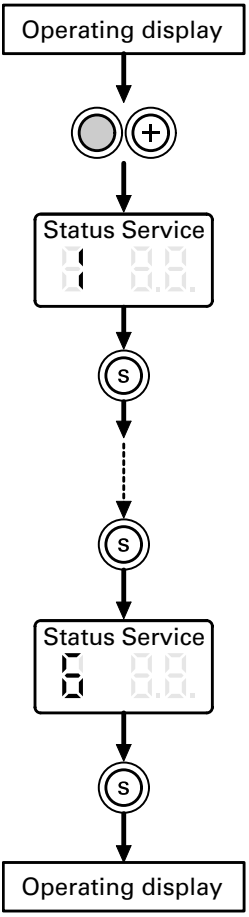
Gas burner control unit (cont.)

Fault memory

The last six faults are saved and may be called up.
The order of scans ranges from the last to the previous fault codes.
The fault memory display will be terminated, if no key is pressed within 20 seconds.



Simultaneously press the reset button and key ⊕.

Last fault

Press key Ⓢ

Press key Ⓢ

Sixth fault

Press key Ⓢ

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Diagnostics

Faults with fault display at the display and programming unit

General process error

Fault code	System characteristics	Cause	Remedy
20	Fan does not stop during the air pressure switch idle state check	Wind influence on fan	Check flue gas draught (chimney)
	Air pressure switch contact does not open	Air pressure switch faulty	Replace air pressure switch
21	Air pressure switch does not signal air pressure, fan does not run	Air pressure switch faulty	Replace air pressure switch
	Fan does not run	Fan faulty, cables faulty or broken	Check cables and replace fan, if required
22	Gas governor does not signal gas pressure	Gas shut-off valve closed, gas governor faulty	Open gas shut-off valve, check gas supply pressure and clean gas filter, if necessary
25	No flame after safety time, ionisation flame monitor signals no flame	Ionisation electrode incorrectly adjusted	Adjust ionisation electrode (see page 15)
		Ignition electrodes incorrectly adjusted	Adjust ignition electrodes (see page 15)
		Insulation body of ignition electrodes cracked	Replace ignition electrodes
		Incorrect gas type selected	Adjust gas type (see page 7)
		Gas combination valve does not open	Check gas combination valve and replace it, if required
		Combustion characteristics not ideal	Adjust burner (see page 11 and 12)
		Parameter set incorrectly adjusted	Adjust parameter set (see page 23 and 24)

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Diagnostics (cont.)

Fault code	System characteristics	Cause	Remedy
26	Ionisation flame monitor signals external light during start-up or after run-on time	Ignition cables short circuited	Remedy short circuit
		Ionisation cables or electrode short circuited	Remedy short circuit
		Gas combination valve leaks	Replace gas combination valve
		Parameter set incorrectly adjusted	Adjust parameter set (see page 23 and 24)
27	Flame extinguishes during operation	Incorrect gas type selected	Adjust gas type (see page 7)
		Burner gauze assembly faulty	Replace burner gauze assembly
		Parameter set incorrectly adjusted	Adjust parameter set (see page 23 and 24)
29	Burner control unit in fault state	Internal fault, gas governor input	Replace burner control unit
2A		Internal fault, air pressure switch input	
2b		Internal fault – flame monitor	
2C		Fault during safety inputs test	
2d		Internal fault – low voltage monitor	
2E		Internal fault – voltage failure monitor	
2F		Internal fault – heat demand	
31		Error in feedback from gas safety valves, output relay does not activate	

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Diagnostics (cont.)

Fault code	System characteristics	Cause	Remedy
32	Burner control unit in fault state	Error in feedback from auxiliary start-up valve, output relay does not activate	Replace burner control unit
35		Error in feedback from ignition, output relay does not activate	
36	Fan speed during start-up or operation stays outside its set range longer than 5 s, speed for ignition setting or start output during operation is not achieved	Fan faulty, cables faulty or broken	Check cables, replace fan
37	Fan does not reach set speed	Fan faulty, cables faulty or short circuited, fan blocked by debris	Check cables, replace fan, remove debris
42	Burner control unit remains in start-up position; no start-up in spite of heat demand	Safety chain broken	Check jumper (B2) of safety chain
4E	Burner control unit in fault state	Internal error	Replace burner control unit
Scrolling change-over display: 1 - 2 - 3 - 4 - 5 - 7	Constant start attempt	Cores L1 and N at control unit mains supply interchanged	Check mains supply and swap cores

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Diagnostics (cont.)

Internal system errors

Internal system errors are created if a perfect program sequence can no longer be guaranteed.

Fault code	Error in range	Cause	Remedy
01 and 02, 04 to 15, 70 to 79, 7A	Burner control unit	Internal system error	Replace burner control unit

Diagnostics (cont.)

Faults without fault display

Fault	Cause	Remedy
Combustion errors through pulsation	Gas throughput too high	Adjust gas throughput in accordance with rated boiler output
	Too little or too much air	
	Condensate backup in flue gas system	Checking condensate drain
	Flue gas draught incorrect	Check flue gas draught
Burner repeatedly starts and stops after safety time	Cores L1 and N at control unit mains supply interchanged	Check mains supply and swap cores
CO is formed or burner is very sooty	Too little or too much air	Correct setting. Check boiler room ventilation.
	Insufficient chimney draught	Check flue gas system
CO_2 content too low	Incorrect setting	Adjust nozzle pressure in accordance with type of gas used. Check whether burner has been adjusted to correct gas type and change gas restrictor, if necessary.
Flue gas temperature too high	Gas throughput too high	Adjust gas throughput in accordance with rated boiler output. Check conditions of secondary heating surfaces of boiler and clean, if necessary.

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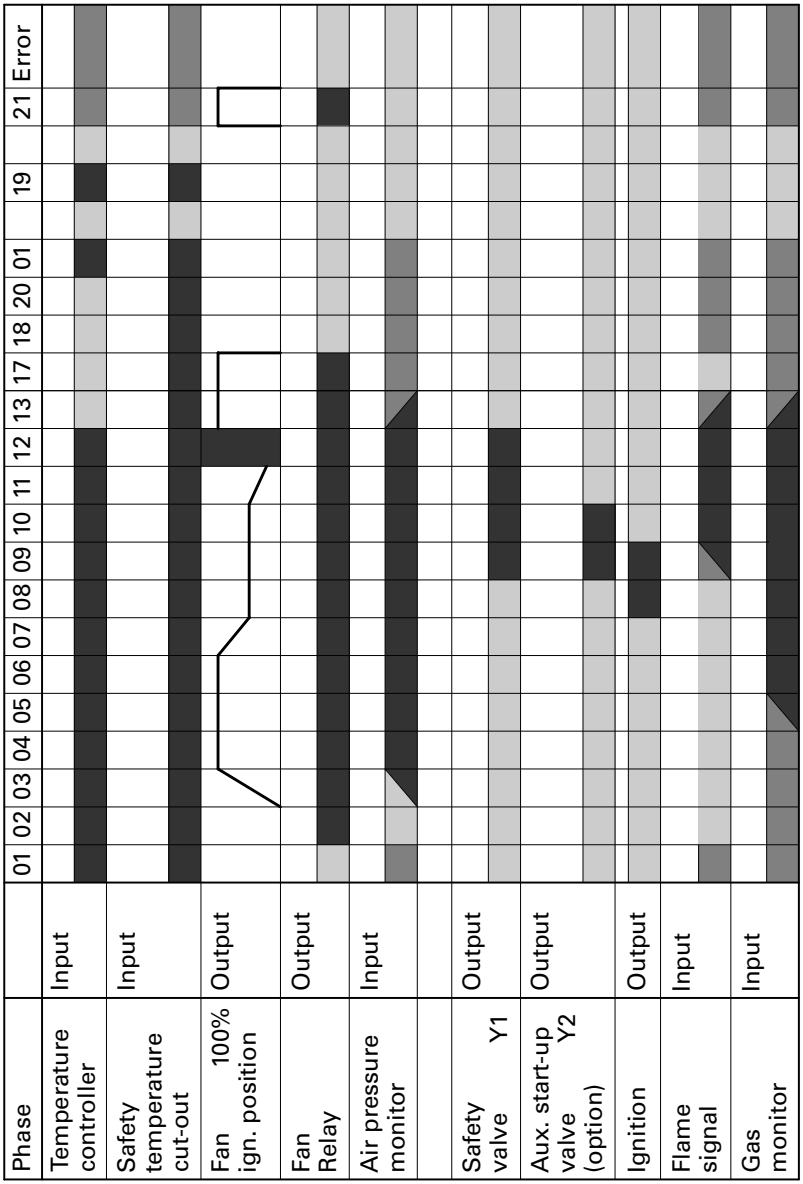
Gas burner control unit flow chart



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Gas burner control unit flow chart (cont.)

After the controller issues a heat demand, the following program sequence will be run:

Phase		Duration
01	Test for heat demand	1 s
02	Idle state check of the air pressure switch and the fan	1 to 30 s
03	Fan ramp up (a fault shutdown will be initiated, if the air pressure switch does not signal that the air pressure has reached a defined range within this time scale, or the fan does not reach its set speed)	1 to 30 s
04	Pre-purge I	5 s
05	Pre-purge II	1 s
06	Pre-purge III	30 s
07	Ignition position (the burner control unit will enter a fault state, if the fan does not reach its set speed)	1 to 30 s
08	Pre-ignition	2 s
09	Start-up safety time (safety time A) (enable safety valves at the start of the safety time A, safety time operation < 1 s)	2.8 s
10	Flame stabilisation in ignition position	20 s
11	Changeover to control operation (ramp up to the set speed programmed in the controller)	1 to 30 s
12	Operation (the system will be restarted after expiry of this time)	max. 23:59 h
13	Burner run-on time	max. 30 s
17	Post-purge	1 to 60 s
18	Restart lockout time	0 s
19	Gas shortage position	max. 30 min
20	Standby (a restart follows a heat demand, and the system will be restarted after expiry of this time)	max. 23:59 h
in case of fault shutdown from phase 09:		
21	Fan run-on prior to lockout	5 s

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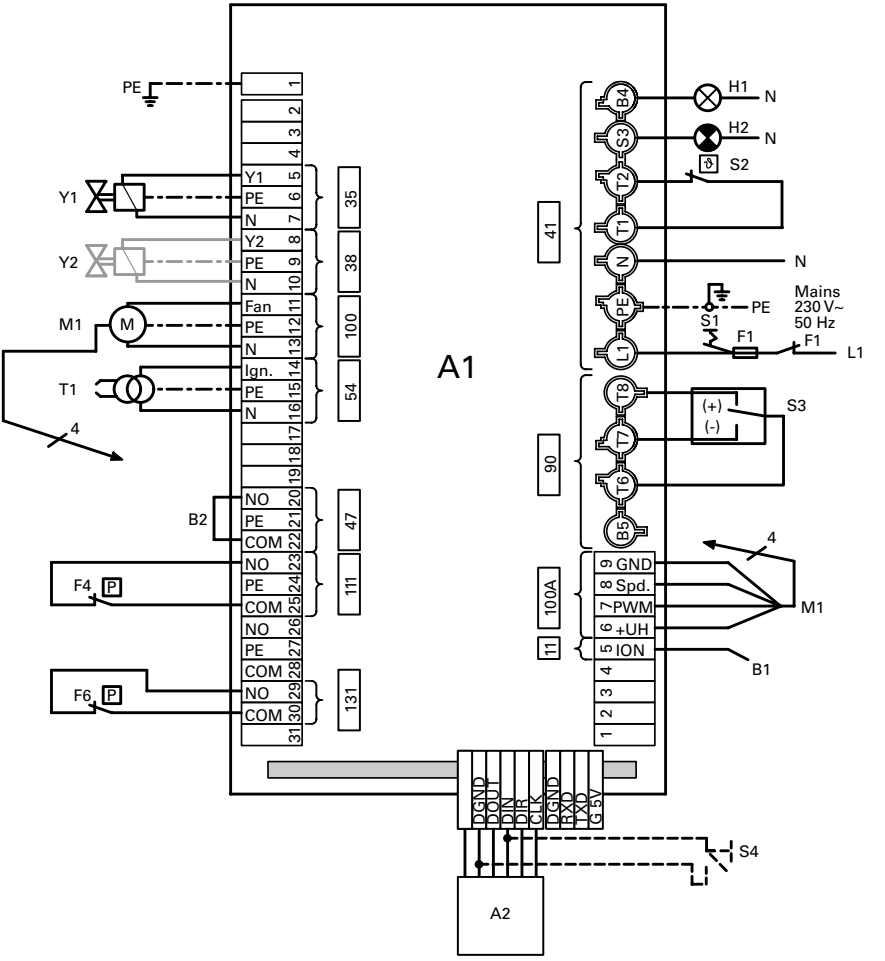
Gas burner control unit connection diagram



Legend

A1 Burner control unit MPA 51
A2 Display unit with reset function
H1 Operating message
H2 Fault message
B1 Flame monitoring through ionisation current
B2 Safety chain jumper
F1 Main fuse
F2 High limit safety cut-out
F4 Gas governor minimum pressure
F6 Air pressure switch
M1 Fan motor with PWM selection and feedback
S1 ON/OFF switch
S2 Thermostat
S3 Output control
T1 Ignition unit
Y1 Gas safety valve
Y2 Auxiliary start-up valve/air control pressure (option)

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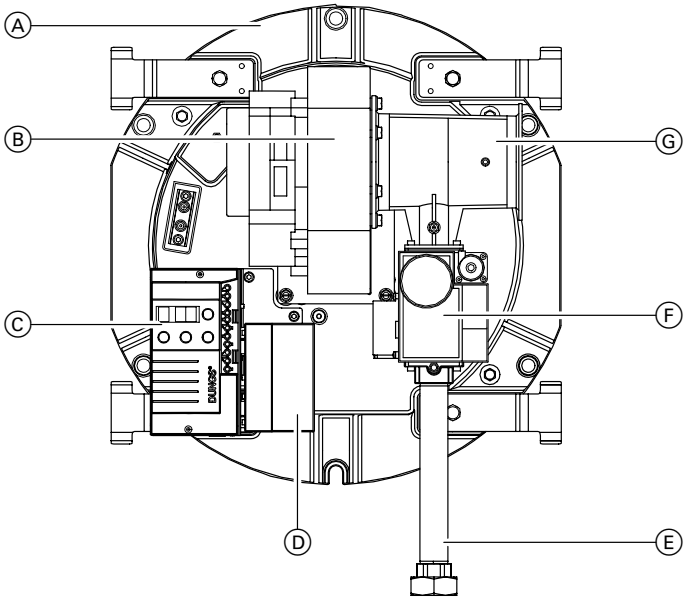
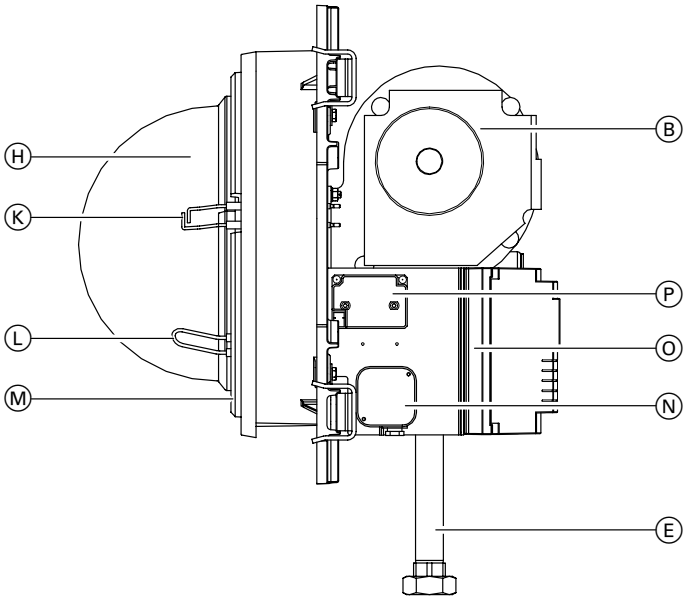
Component summary





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Component summary (cont.)

Ⓐ Boiler door
Ⓑ Fan
Ⓒ Display and programming unit
Ⓓ Flow restrictor box
Ⓔ Gas supply pipe
Ⓕ Gas combination valve
Ⓖ Venturi mixing pipe
Ⓗ Burner gauze assembly
Ⓚ Ignition electrodes
Ⓛ Ionisation electrode
Ⓜ Thermal insulation block
Ⓝ Air pressure switch
Ⓞ Burner control unit
Ⓟ Ignition unit

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Parts list

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

Parts
001 Boiler door
002 Insulating block
003 Gasket set 20 × 15 mm
004 Flow restrictor box
005 Small parts comprising: see adjacent
006 Burner gauze assembly
007 Graphite gasket
009 Fixing components
012 Ignition unit
013 Ignition cable
014 Ionisation cable
015 Ignition unit connecting cable
018 Gas combination valve connecting cables
020 Gas burner control unit MPA51
021 Display and control unit for gas burner control unit MPA51
022 Cable grommet for burner control unit MPA51
023 Fan motor
026 Venturi mixing pipe
028 Air pressure switch with connecting cable
029 Restrictor for natural gas E with gasket
031 Gas combination valve
035 Burner hood
036 Burner hood latches

005 Small parts comprising:
5a Threaded nipple
5b Dowel pin
5c Quick-acting fitting
5d Strain relief
5e Cheese-head screw M 6 × 10
5f Washer 6.4 mm
5g Cheese-head screw M 6 × 20
5h Washer B 6.4 mm
5k Hexagon screw
5l Washer 5.3 mm
5m Oval head screw A M 4 × 45
5n Screw EJOT-PT KBL 40
5o Countersunk screw M 8 × 16
5p Cheese-head screw M 4 × 20
5r Threaded hose ferrule
5s Gasket OL-⅛"
5t Protective threaded plug ∅ 8.5 mm
5u Protective threaded plug ∅ 7.3 mm

Wear parts
008 Ionisation electrode
010 Ignition electrode block
011 Gasket for electrode block

Parts not shown
016 Fan motor connecting cables

Ⓐ Type plate
Ⓑ Label Adjusted to ...

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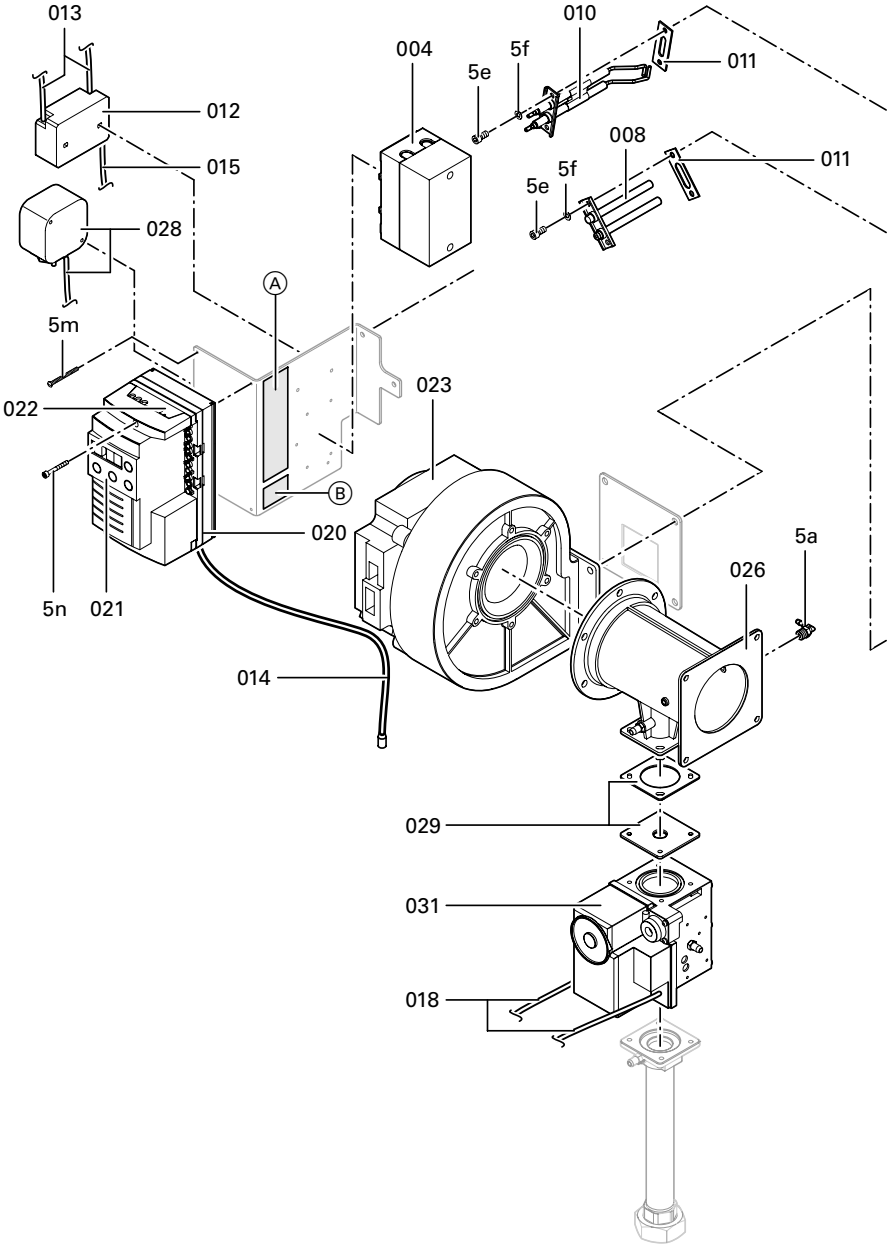
Parts list (cont.)



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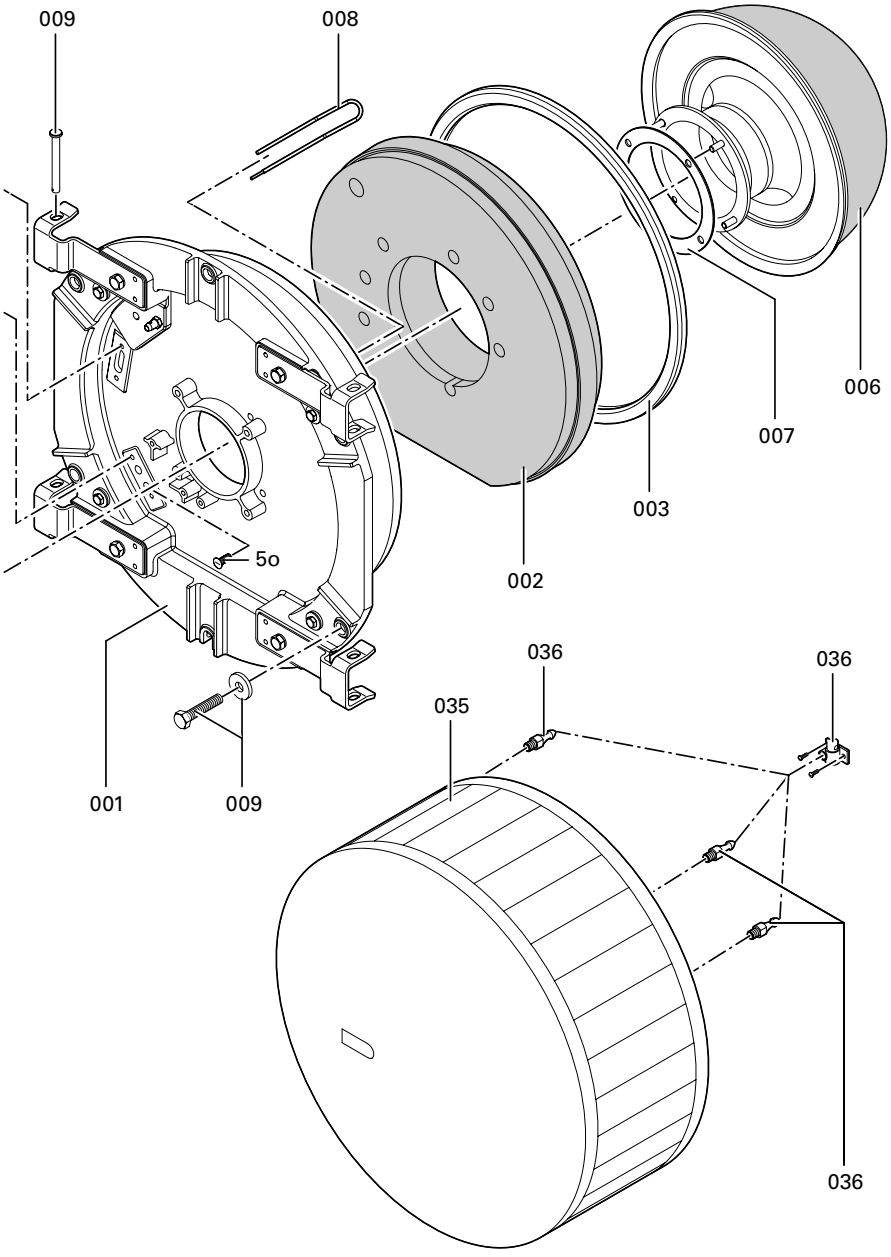
Parts list (cont.)



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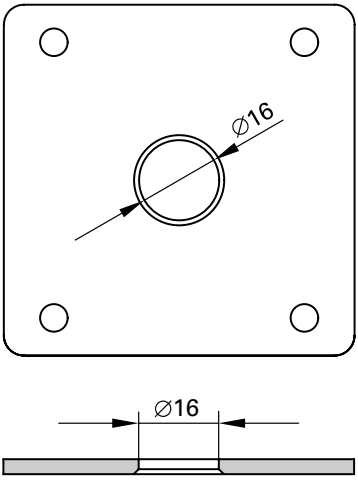
Specification

Rated output for heating water temperatures 80/60 °C	kW	170
Product ID		CE-0085 BL 0403
Burner type		VM III-4
Voltage	V	230
Frequency	Hz	50
Power consumption	W	200
Motor speed	rpm	1344-5216
Modulation range	%	25-100

Restrictor (natural gas E)



Commissioning/service report

Setting and test values			Set value	Initial start-up
		Date:		
		By:		
Static pressure		*mbar*	max. 60 mbar	
Supply pressure (flow pressure)				
☐ for natural gas E		*mbar*	20-50 mbar	
☐ for natural gas LL		*mbar*		
Tick gas type				
Venturi vacuum pressure at full load	Natural gas E	*mbar*	5.5-6.3 mbar	
	Natural gas LL	*mbar*	6.3-7.1 mbar	
Carbon dioxide content CO_2				
■ at higher rated output	actual	*% by vol.*	8.8-9.3 % by vol.	
	set	*% by vol.*		
■ at lower rated output	actual	*% by vol.*	8.8-9.3 % by vol.	
	set	*% by vol.*		
Oxygen content O_2				
■ at higher rated output	actual	*% by vol.*		
	set	*% by vol.*		
■ at lower rated output	actual	*% by vol.*		
	set	*% by vol.*		
Carbon monoxide content CO	actual	*ppm*		
	set	*ppm*		
Gross flue gas temperature	actual	*°C*		
	set	*°C*		
Ionisation current				
■ at partial load		*µA*	min. 5 µA	
■ at full load		*µA*	min. 30 µA	
Draught	actual	*hPa*		
	set	*hPa*		

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Commissioning/service report (cont.)

Setting and test values			Set value	Maint./service
		Date:		
		By:		
Static pressure		*mbar*	max. 60 mbar	
Supply pressure (flow pressure)				
☐ for natural gas E		*mbar*	20-50 mbar	
☐ for natural gas LL		*mbar*		
Tick gas type				
Venturi vacuum pressure at full load	Natural gas E	*mbar*	5.5-6.3 mbar	
	Natural gas LL	*mbar*	6.3-7.1 mbar	
Carbon dioxide content CO_2				
■ at higher rated output	actual	*% by vol.*	8.8-9.3 % by vol.	
	set	*% by vol.*		
■ at lower rated output	actual	*% by vol.*	8.8-9.3 % by vol.	
	set	*% by vol.*		
Oxygen content O_2				
■ at higher rated output	actual	*% by vol.*		
	set	*% by vol.*		
■ at lower rated output	actual	*% by vol.*		
	set	*% by vol.*		
Carbon monoxide content CO	actual	*ppm*		
	set	*ppm*		
Gross flue gas temperature	actual	*°C*		
	set	*°C*		
Ionisation current				
■ at partial load		*μA*	min. 5 μA	
■ at full load		*μA*	min. 30 μA	
Draught	actual	*hPa*		
	set	*hPa*		

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Maint./service	Maint./service	Maint./service	Maint./service

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Commissioning/service report (cont.)

Setting and test values			Set value	Maint./service
		Date:		
		By:		
Static pressure		*mbar*	max. 60 mbar	
Supply pressure (flow pressure)				
☐ for natural gas E		*mbar*	20-50 mbar	
☐ for natural gas LL		*mbar*		
Tick gas type				
Venturi vacuum pressure at full load	Natural gas E	*mbar*	5.5-6.3 mbar	
	Natural gas LL	*mbar*	6.3-7.1 mbar	
Carbon dioxide content CO_2				
■ at higher rated output	actual	*% by vol.*	8.8-9.3 % by vol.	
	set	*% by vol.*		
■ at lower rated output	actual	*% by vol.*	8.8-9.3 % by vol.	
	set	*% by vol.*		
Oxygen content O_2				
■ at higher rated output	actual	*% by vol.*		
	set	*% by vol.*		
■ at lower rated output	actual	*% by vol.*		
	set	*% by vol.*		
Carbon monoxide content CO	actual	*ppm*		
	set	*ppm*		
Gross flue gas temperature	actual	*°C*		
	set	*°C*		
Ionisation current				
■ at partial load		*μA*	min. 5 μA	
■ at full load		*μA*	min. 30 μA	
Draught	actual	*hPa*		
	set	*hPa*		

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Keyword index

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