

# Installation Instructions

for the installer

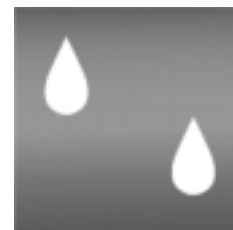
# VIESSMANN

**Vitodens 100**

**Type WB1**

Wall-mounted, gas-fired condensing boiler

Natural gas and LPG version



## VITODENS 100



## General information

### Safety instructions



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

#### Safety regulations

Please observe all relevant safety requirements defined by DIN, DIN EN, DVGW, TRF and VDE (GB: British Standards codes of practice). See also the red sheet headed "Important safety information" in the enclosed documents or in the "Vitotec planning documentation" ring binder.

In certain countries, boilers and burners must be registered or issued with a permit in accordance with national regulations.

#### Boiler location

Please refer to the technical data sheet or technical guide for details of the conditions which must be fulfilled by the room in which the boiler is installed.

#### Work on the equipment

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

Before work is undertaken on the equipment/heating system, the mains voltage must be switched off (e.g. at the separate fuse or mains electrical isolator switch) and measures taken to prevent it from being switched on again.

Disconnection must be carried out by means of an isolating device which simultaneously isolates all non-earthed conductors with at least 3 mm contact separation.

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

Electrical components provided by the customer must be type-tested.

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

#### Gas installation work

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

#### Safety instruction!

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

#### Caution!

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



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

### Product information

#### Type WB1 0000 to WB1 3999

Gas central heating boiler suitable for domestic hot water applications with separate DHW cylinder (accessory).

#### Type WB1 4000 to WB1 7999

Gas combination boiler for central heating and domestic hot water applications with integrated instantaneous water heater.

Gas-fired condensing boiler for sealed heating systems conforming to DIN 4751. Suitable only for fully pumped heating systems.

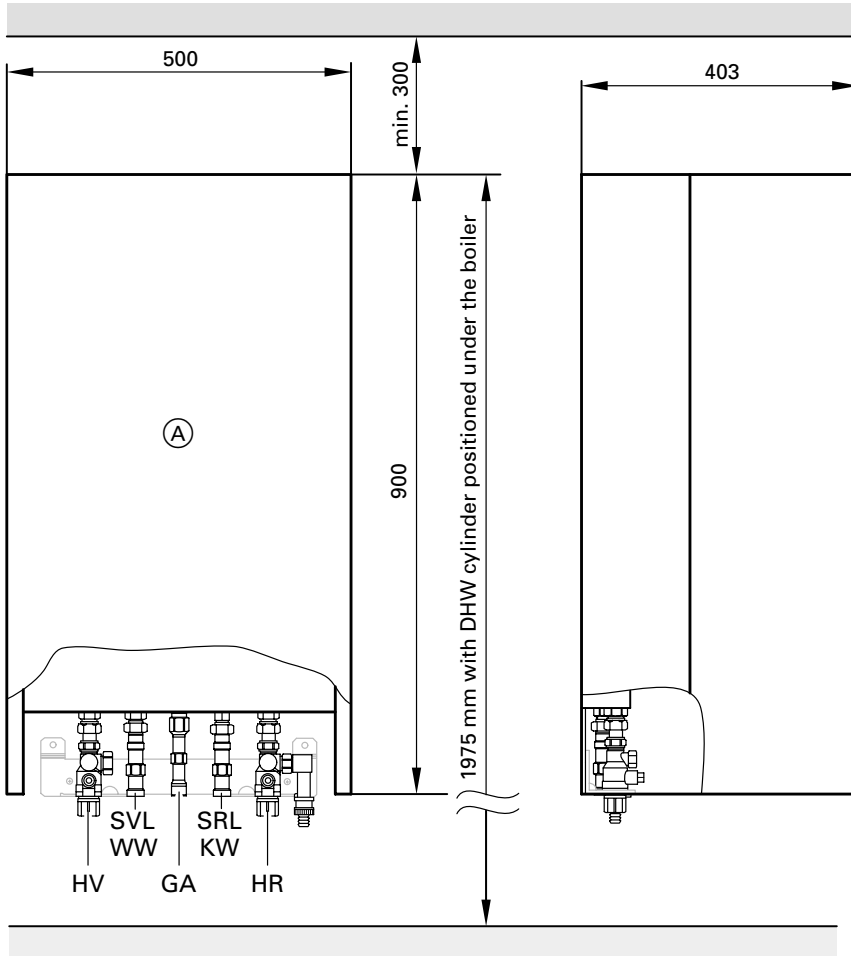
The Vitodens 100 is preset for operation with natural gas E and can be converted for operation with natural gas LL or with LPG with a conversion kit.

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# Boiler

## Preparing the connections

### Gas/water connections



See installation instructions for the mounting aid or mounting frame regarding preparation of the gas, water and electrical connections on site.

A room height of 2300 mm is required for installation of the boiler with the domestic hot water cylinder positioned under the boiler. It is not necessary to observe a minimum clearance from combustible materials as the maximum permissible surface temperature of 85 °C is not exceeded at the rated output. If the Vitodens boiler is to be installed in a bathroom or shower room, it should be positioned so that it cannot be touched by anyone using the bath, shower or hand wash basin (see safety zones and minimum wall clearances as defined by VDE 0100).

The maximum ambient temperature should not exceed 35 °C.

Ⓐ Boiler dimensions

#### Legend

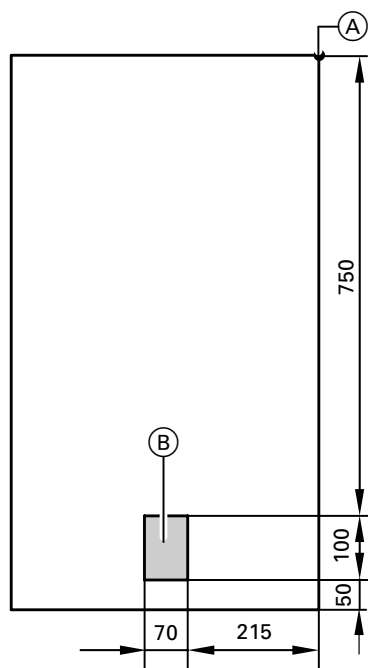
GA Gas connection, 1/2" dia.  
 HR Heating return, 3/4" coupling  
 HV Heating flow, 3/4" coupling

Gas combination boiler only:  
 KW Cold water, 1/2" coupling  
 WW Hot water, 1/2" coupling

Gas central heating boiler only:  
 SRL Cylinder return, 3/4" coupling  
 SVL Cylinder flow, 3/4" coupling

## Preparing the connections (continued)

### Electrical connections



- Ⓐ Reference point for top of boiler
- Ⓑ Entry point for electrical cables

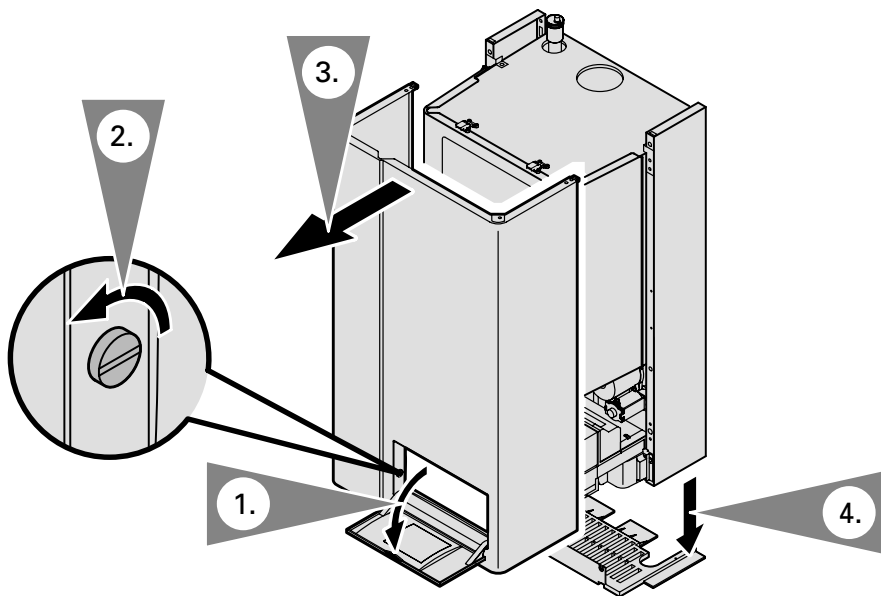
- Carry out mains electrical connection (230 V~ 50 Hz) via a fixed connection.
- Run cables under plaster (recommendation).
- Leave cables in shaded area (see drawing) protruding at least 1200 mm from the wall.

**Please note:**

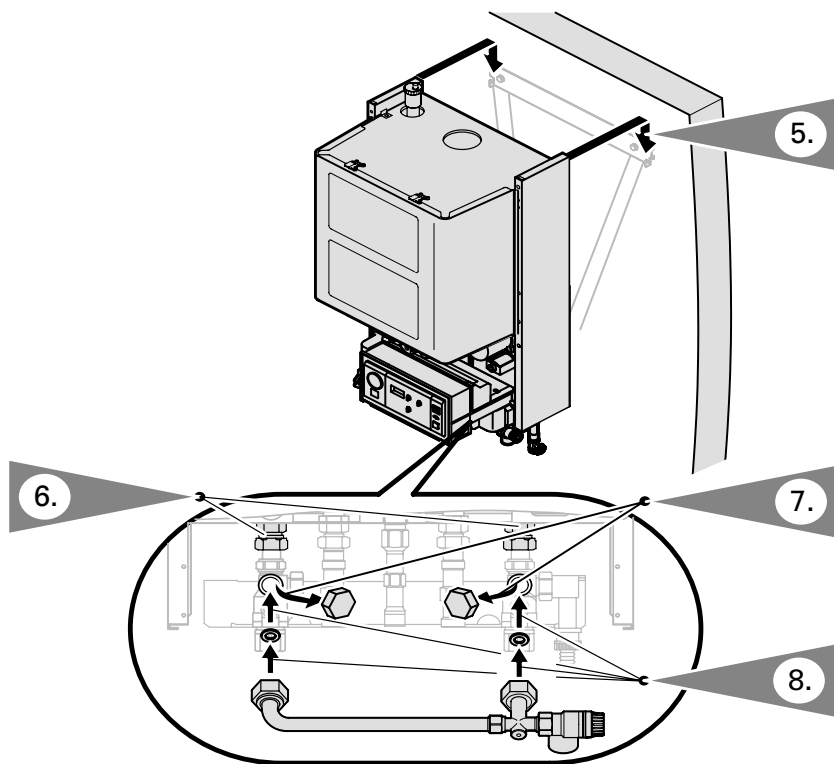
Use the following cables:  
 NYM-J 3 x 1.5 mm<sup>2</sup> (GB: Cables to BS 6500 Table 9) for mains power cables.

NYM with the required number of conductors for external connections (GB: Cables to BS 6500 Table 9) according to the equipment to be connected.

## Wall mounting



1. Open the hinged cover on the control unit (press briefly with fingertip).
2. Unlock the closure.
3. Remove the front panel.
4. Unscrew the guard panel and pull off towards you.



5. Hook the boiler onto the mounting.
6. Connect the boiler to the fittings.

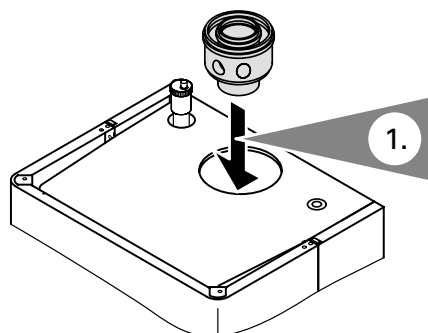


*See installation instructions for mounting aid or mounting frame*

7. Unscrew the front caps from the heating flow and return.
8. Screw on safety valve with seals.

## Connections

### Flue gas connections

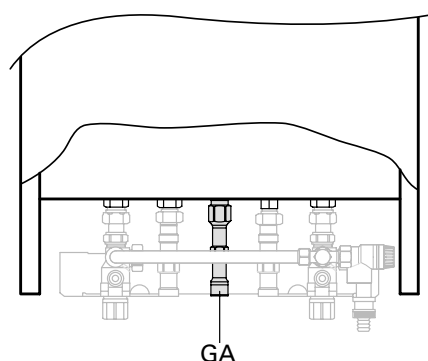


1. Place the boiler connection adaptor in position.
2. Connect the flue system.



See installation instructions for flue system

### Gas connection



GA Gas connection

1. Connect up the gas in accordance with TRGI '86/96 (for natural gas) or TRF 1996 (for LPG) (GB: British Standards codes of practice).

Conversion to other gas type:  
See service instructions



2. Seal in the gas shut-off valve.

3. Test for gas soundness.
4. Bleed air from the gas supply pipe.

#### **Please note:**

According to TRF 1996-Vol. 2 – valid since 1st September 1997 – an external safety solenoid valve is no longer required for **boilers installed below ground level**.

However, the external safety solenoid valve has proved so effective in achieving a high standard of safety that we shall continue to recommend its installation in conjunction with the adaptor (Part No. 7404 582) in situations where the boiler is installed below ground level.

#### **⚠ Safety instruction!**

##### **Max. test pressure 150 mbar.**

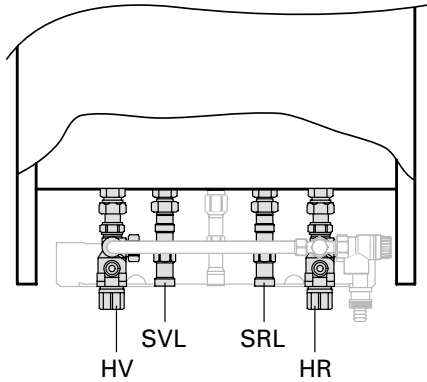
If a higher pressure is required for detecting leaks in the gas connection pipe (e.g. for the preliminary test and main test in accordance with TRGI '86/96 or TRF 1996), disconnect the boiler and gas fittings from the mains gas pipe and unscrew the screwed connection.

It is not sufficient to close the gas shut-off valve as there is a risk that the pressure will reach and destroy the fittings.

Damage due to excessively high pressure is not covered by the warranty.

## Connections (continued)

### Heating water connections



HV Heating flow  
HR Heating return  
SVL Cylinder flow  
SRL Cylinder return

#### Heating circuits

1. Thoroughly flush out the heating system (especially before connecting up the boiler to an existing system).
2. Connect the boiler to the heating system.  
Max. operating pressure ..... 3 bar  
Test pressure ..... 4 bar

**⚠ Safety instruction as per DIN 4751!**

*The blow-off line of the safety valve must be designed and constructed so as to prevent the possibility of increases in pressure.*

*Outflowing water must be discharged safely, with the outlet point of the blow-off line positioned so that it is clearly visible. A low water indicator to DIN 4751-3 is not required.*

**Please note:**

*No chemical corrosion inhibitors should be used.*

#### Domestic hot water cylinder (for gas central heating boiler)

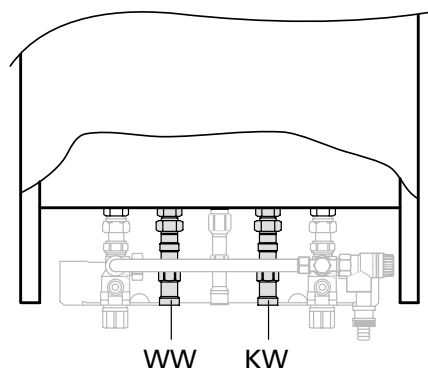


*See installation instructions for the DHW cylinder and the connection kit for the DHW cylinder*



## Connections (continued)

### Domestic hot water connections



WW Hot water  
KW Cold water

Connect the pre-installed cold and hot water connections to the boiler.

Max. operating pressure (secondary circuit) ..... 10 bar  
Test pressure ..... 15 bar

#### **⚠ Caution!**

*The instantaneous water heater is designed as a plate-type heat exchanger with copper components. Do not use galvanized pipes and fittings for the hot water distribution system.*

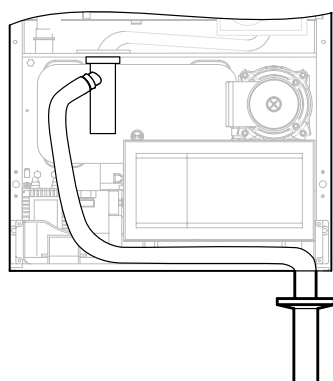
*In cases where existing systems are being modernized, the risk of electrolytic corrosion is minimal as a protective film will have formed in the pipes.*

#### **Please note:**

*It is not necessary to install safety equipment to DIN 1988 unless the mains drinking water supply pressure exceeds 10 bar and no pressure reducing valve is used (as per DIN 4753).*

*A safety valve must be used if a non-return valve is installed in the cold water supply. In addition, the toggle on the cold water shut-off valve must be removed. Non-return valves are used, for example, in pressure reducers and combined non-chokable valves with non-return valve.*

### Condensate connections



1. Install the condensate drain pipe with a suitable gradient.

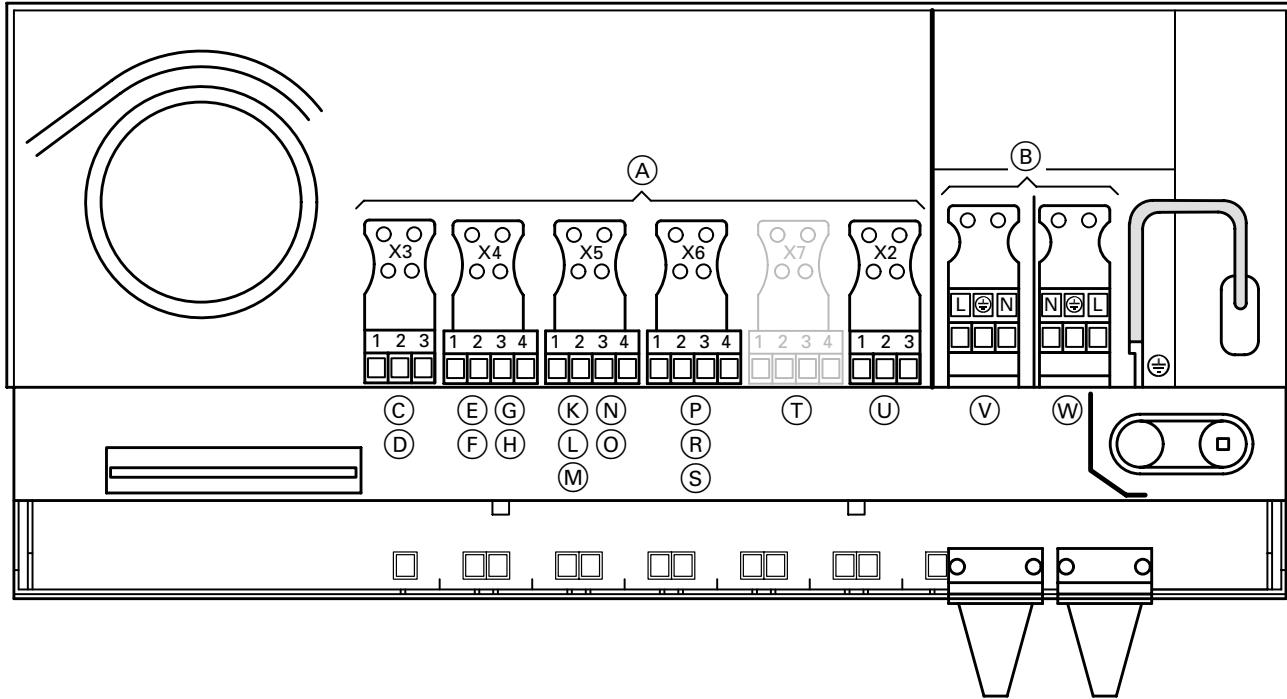
2. Discharge the condensate from the flue system (if drain installed) together with the condensate from the boiler into the drainage system either directly or (if required) via a neutralizing unit (accessory).

#### **Please note:**

*A pipe ventilation facility **must** be arranged between the siphon trap and the neutralizing unit.*

## Electrical connections

### Overview of electrical connections and plug-in connectors



- |  |  |   |
|--|--|---|
| Ⓐ Low voltage  | Ⓗ A clock thermostat                                     | Ⓓ External blocking   |
| Ⓑ Mains voltage  | Ⓚ DHW circulation pump* <sup>1</sup>                     | Ⓢ Outdoor temperature sensor  |
| Ⓒ M clock thermostat   | Ⓛ Extension kit for heating circuit<br>with mixing valve | Ⓣ Cylinder temperature sensor   |
| Ⓓ WS/RS remote control unit  | Ⓜ Dekamatik-HK   | Ⓤ External safety valve for LPG/<br>interlocking of exhaust air units* <sup>1</sup> |
| Ⓔ F clock thermostat   | Ⓝ Solartrol  | Ⓥ Mains connection for accessories<br>(230 V~ 50 Hz)                                |
| Ⓕ External changeover of the heat-<br>ing program/External request | Ⓖ Vitocom  | Ⓦ Mains connection (230 V~ 50 Hz)   |
| Ⓖ Central fault indicator* <sup>1</sup>                            | Ⓟ Wall mounting fixture                                  |   |

\*<sup>1</sup>The connection extension adaptor, Part No. 7404 582, is required for connection purposes. Direct connection is not permissible.

#### Notes on connection of accessories



For details of the other installation steps involved, please refer also to the separate installation instructions provided with the accessories concerned.

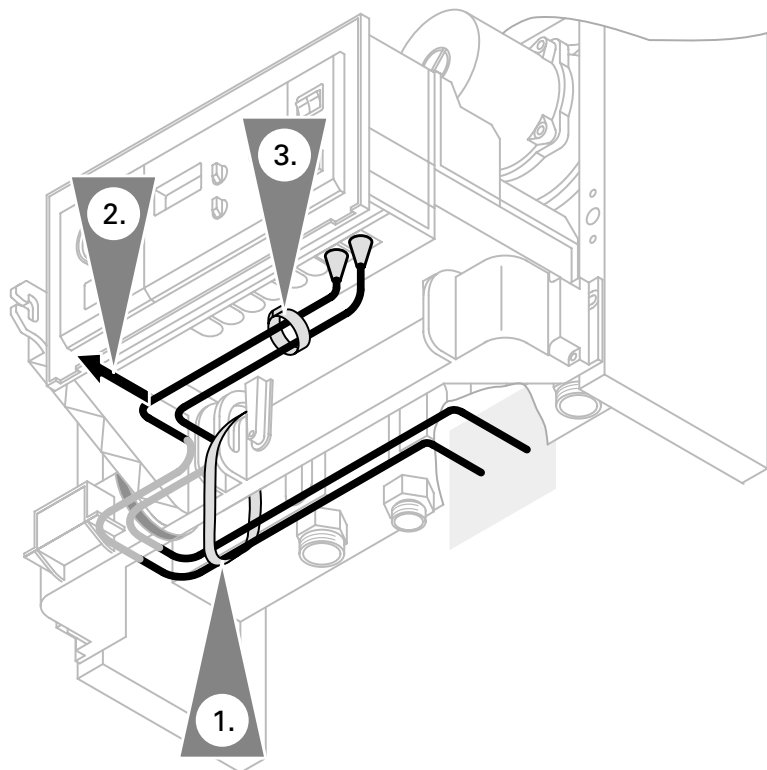
Accessories or switch contacts which are connected to the same contacts of a connector can only be used as alternative facilities.

## Electrical connections (continued)

### Routing of the connecting cables

**⚠ Safety instruction:**

When running and securing the connecting cables on site, take care to ensure that the maximum permissible temperatures of the cables are not exceeded.



1. Secure the cables coming out of the wall to the transverse bracket with cable ties.

2. Pull the cables forward between the support arm and the control unit.

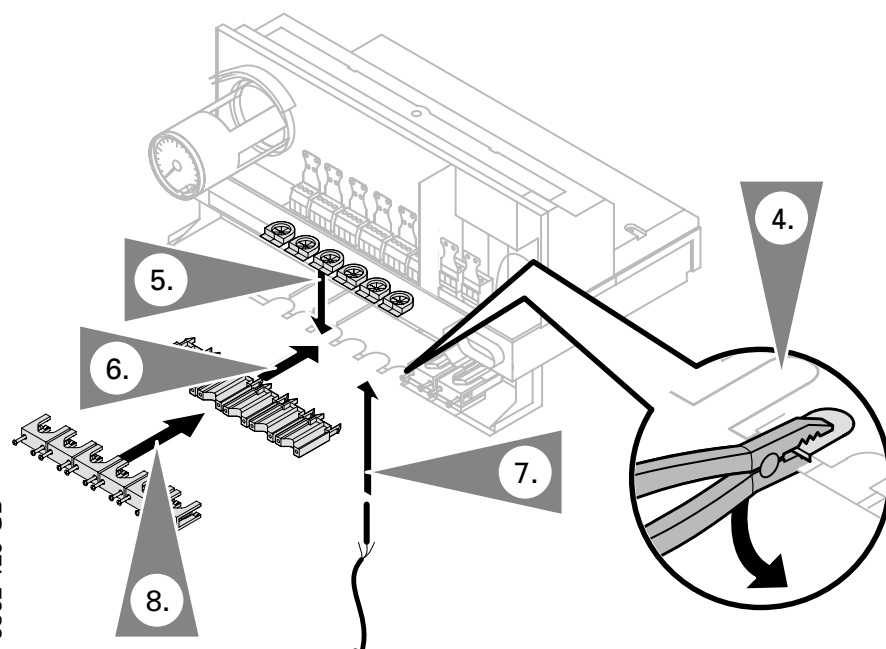
**Please note:**

It is essential to route the cables as shown in the drawing to guarantee the correct freedom of movement of the control unit. Take care to avoid kinking the capillaries of the manometer.

3. The cables below the control unit should be secured together with cable ties.

**Please note:**

Do **not** secure cables in the vicinity of the control unit to the transverse bracket.



4. Break off the necessary number of tabs to provide openings in the case for the external cables to be connected (see page 10).

5. Fit the necessary bushings.

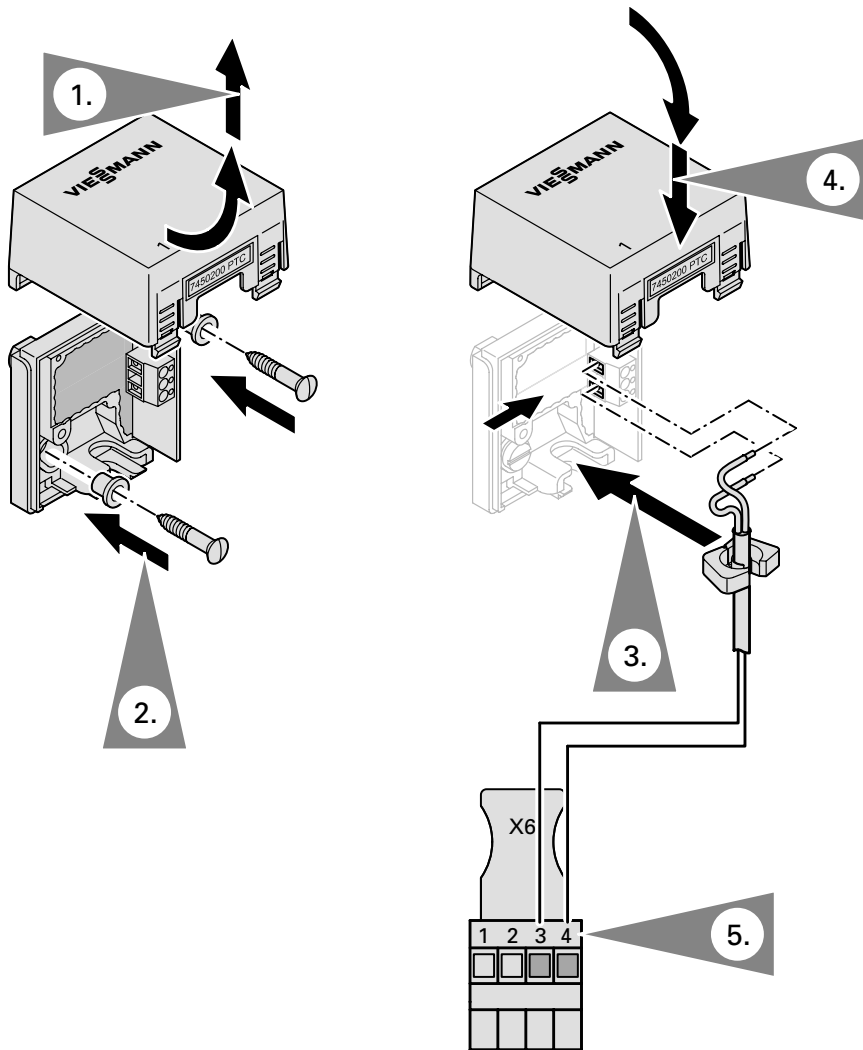
6. Fit the bottom parts of the strain relief clamps at the corresponding bushings.

7. Run the cables into the control case through the corresponding bushings.

8. Screw on the top parts of the strain relief clamps.

## Connections to control unit

### Outdoor temperature sensor



1. Remove the cap.
2. Mount the bottom part of the case (cable entry must point downwards).

**Please note:**

The outdoor temperature sensor should be mounted 2 to 2.5 metres above ground level on the north or north-west facing wall of the building. In the case of multi-storey buildings, it should be mounted in the upper half of the second storey. Make sure that the sensor is not located over windows, doors and air vents, nor immediately beneath a balcony or guttering. The outdoor temperature sensor must not be plastered over. If mounting on an unplastered wall, make allowances for thickness of plaster or remove sensor before plastering wall.

3. Connect the cable to the terminals (the wires are interchangeable).  
Cable:  
2 × 1.5 mm<sup>2</sup>, max. 35 m long,  
copper.

**Please note:**

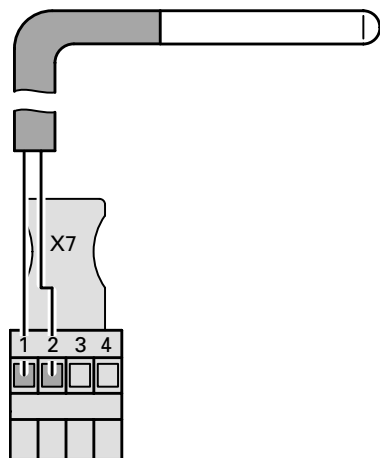
Do not run the cable immediately next to 230/400 V cables.

4. Place cap over base and snap on.
5. Connect the outdoor temperature sensor to the connector "X6" (the wires are interchangeable).

## Connections to control unit (continued)

### Cylinder temperature sensor

Accessory



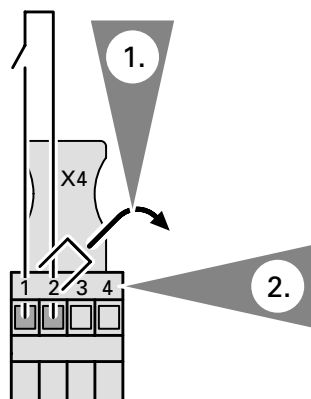
**Please note:**



Install the sensor in the domestic hot water cylinder as described in the separate installation instructions.

1. Insert connector "X7" of the cylinder temperature sensor in "X7".

### External changeover of the heating program/External request



**Please note:**

The load capacity of the connection is 10 mA at 24 V-.

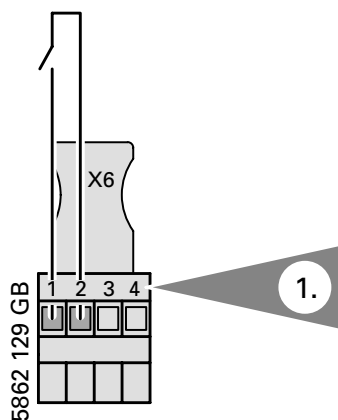
For external request function:



See service instructions with regard to changing the coding addresses.

1. Remove jumper between "X4.1" and "X4.2".
2. Connect switch contact to connector "X4".

### External blocking



1. Connect the switch contact to connector "X6".

**Please note:**

The floating contact must be provided on site.



See service instructions regarding changes to the plug-in jumper "X6" and coding addresses.

## Mains electrical connections

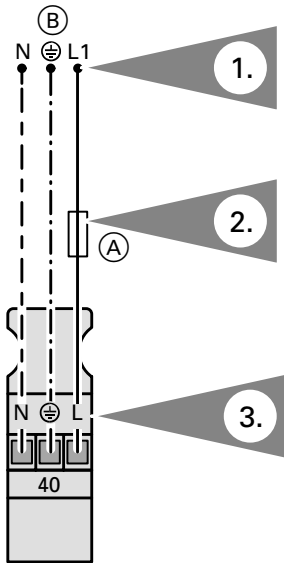
### Mains electrical connection of control unit

**⚠ Safety instruction:**

**WARNING: THIS EQUIPMENT MUST BE EARTHED.**

Please observe current I.E.E. regulations and any local regulations which apply when connecting this equipment to the mains.

The mains power cable must be protected by a fuse with a maximum rating of 16 A.



- (A) Fuse, max. 16 A
- (B) Mains voltage 230 V~ 50 Hz

1. Connect to the mains (230 V~ 50 Hz) via a fixed connection.

**⚠ Caution!**

Take care not to interchange wires "L1" and "N".

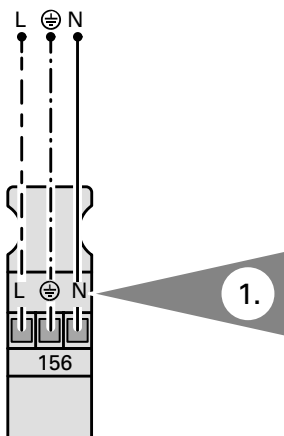
2. Check whether the mains power cable to the control unit is fitted with a fuse with a maximum rating of 16 A.
3. Connect mains power cable to connector "40" (green/yellow wire must be longer than the rest).

### Mains electrical connection of accessories

**⚠ Safety instruction:**

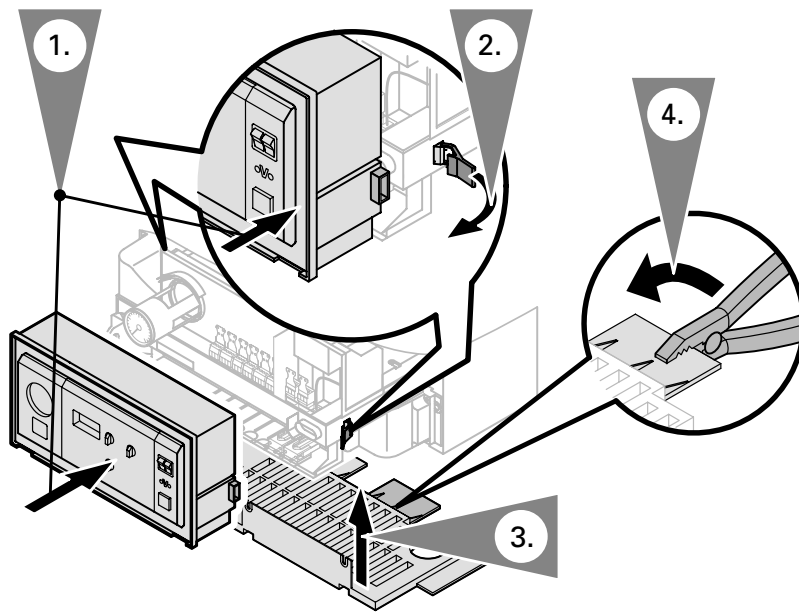
Where the boiler is installed in a bathroom or shower room, the connection of accessories to the mains must not be carried out at the control unit.

Where the boiler is installed outside such rooms, accessories can be connected to the mains directly at the control unit. This connection is switched by means of the heating system on/off switch (max. 3 A).



1. Connect the mains power cable to connector "156" (green/yellow wire must be longer than the rest).

## Mounting the programming unit of the control unit



**Please note:**

*The control unit is packed separately.*

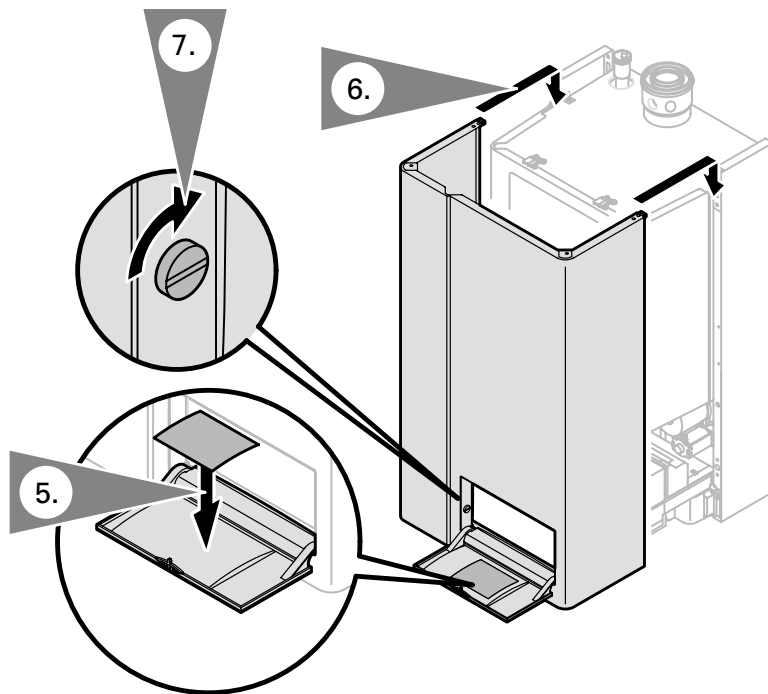
1. Position the control unit case in the guideways on the side and push back.

**Please note:**

*When this is done, the electrical connection of the control unit components takes place automatically.*

*Do not kink the capillaries of the manometer.*

2. Lock the catches on the side.
3. Screw on the guard panel.
4. If necessary, break off the tabs.



5. A sticker containing an overview of the user controls is supplied with the control unit. Affix the sticker **from inside** to the hinged cover on the front panel.

6. Hook on the front panel.

7. Lock the turnlock fastener.

## Start-up and adjustments



*See service instructions for details of start-up and adjustments.*

## Appendix

### Technical data

		Gas central heating boiler	Gas combination boiler
<b>Rated output range</b>			
$t_f/t_r = 75/60\text{ °C}$	kW	8-24	8-24
$t_f/t_r = 40/30\text{ °C}$	kW	8.9-25.7	8.9-25.7
<b>Gas supply pressure</b>			
Natural gas	mbar	20	20
LPG	mbar	50	50
<b>Max. gas supply pressure</b> <sup>*1</sup>	mbar	57.5	57.5
<b>Max. test pressure</b>	mbar	150	150
<b>Boiler connections</b>			
Boiler flow and return	Ø"	¾	¾
Cylinder flow and return	Ø"	¾	—
Cold and hot water	Ø"	—	½
<b>Gas connection</b>	Ø"	½	½
<b>Max. operating pressure</b>			
Heating water (primary circuit)	bar	3	3
Domestic hot water (secondary circuit)	bar	—	10
<b>Test pressure</b>			
Heating water (primary circuit)	bar	4.5	4.5
Domestic hot water (secondary circuit)	bar	—	15
<b>Minimum system pressure</b>			
Heating water (primary circuit)	bar	0.8	0.8
Domestic hot water (secondary circuit)	bar	—	1.0
<b>Flue gas values</b> <sup>*2</sup>			
Temperature <sup>*3</sup>			
■ with return temperature of 30 °C			
– at rated output	°C	55	55
– at min. output	°C	32	32
■ with return temperature of 60 °C	°C	78	78
Mass flow rate with			
■ natural gas			
– at rated output	kg/h	42.0	42.0
– at min. output	kg/h	14.0	14.0
■ LPG			
– at rated output	kg/h	46.4	46.4
– at min. output	kg/h	15.4	15.4
<b>Available draught</b>	Pa mbar	100 1	100 1
<b>Flue outlet ID</b>	mm	80	80
<b>Ventilation pipe ID</b>	mm	125	125

<sup>\*1</sup>If the gas supply pressure is higher than the maximum permitted value, a separate gas governor must be installed upstream of the system.

<sup>\*2</sup>Values for sizing the flue system according to DIN 4705, based on 9% CO<sub>2</sub> with natural gas.

<sup>\*3</sup>Flue gas temperatures measured as gross values at 20° C combustion air temperature.

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