

### Datasheet

For part no. and prices: see pricelist



### **VITODENS 050-W** Type BPJD

**Gas condensing combi boiler**  
with integral DHW heating  
for natural gas and LPG

## Product description



- (A) Inox-Radial heat exchanger made from stainless steel - for high operational reliability, a long service life and high heating output on a very small footprint
- (B) Modulating stainless steel cylinder burner
- (C) Integral diaphragm expansion vessel
- (D) Variable speed combustion fan for quiet and economical operation
- (E) Integral HE circulation pump
- (F) Plate heat exchanger for DHW heating
- (G) Gas and water connections
- (H) Control unit with display

With the Vitodens 050-W, Viessmann now offers an attractively priced wall mounted gas condensing boiler with proven quality. An extensive range of accessories makes the Vitodens 050-W equally suitable for either new build or modernisation. It is offered with two output ratings (6.5 to 24 kW and 8.8 to 33 kW), as a combi boiler with an integral instantaneous water heater.

An electronic boiler control unit for room temperature-dependent mode and weather-compensated mode is already integrated into the Vitodens 050-W, along with a frost stat. The outside temperature sensor is available as an accessory.

The Vitodens 050-W features a low level of operating noise and its components are accessible from the front for service and maintenance.

With a height of only 707 mm, the Vitodens 050-W is one of the smallest wall mounted boilers in its class. Its compact dimensions recommend it as a replacement for outdated boilers in multi storey buildings – including up to six boilers on different floors connected to one vertical flue system.

The high quality stainless steel Inox-Radial heat exchanger efficiently converts the supplied energy into heat. Its efficiency is 97 % (H<sub>s</sub>) [gross cv]. The stainless steel cylinder burner therefore consumes relatively little natural gas, with lower CO<sub>2</sub> emissions and less impact on the environment as a result.

### Recommended applications

Property development, either modernisation or new build (replacement of water heaters in apartment buildings)

### Benefits at a glance

- Standard seasonal efficiency [to DIN]: up to 97 % (H<sub>s</sub>) [gross cv] / 108 % (H<sub>i</sub>) [net cv]
- Modulation range of 1:4
- Stainless steel cylinder burner and Inox-Radial heat exchanger made from stainless steel
- Easy-to-operate control unit with display
- High DHW convenience thanks to DHW booster function
- Compact dimensions, ideal for replacement of old boilers

### Delivered condition


Wall mounted gas condensing boiler with Inox-Radial heat exchanger, modulating stainless steel cylinder burner for natural gas and LPG to DVGW Code of Practice G260 [Germany], hydraulics with multi connect system and circulation pump.

Fully plumbed and wired. Colour of the epoxy-coated casing: white.

With diaphragm expansion vessel

Plate heat exchanger for DHW heating

### Tested quality

 CE designation according to current EC directives



ÖVGW Quality Mark pursuant to quality symbol regulation 1942 DRGBl. I for gas and water equipment

Meets the requirements for the "Blue Angel" eco-label RAL UZ 61.

## Specification

<b>Gas boiler, series B and C</b>			
<b>Category</b> II <sub>2H3P</sub> , II <sub>2ELWLS3P</sub> , I <sub>2E(S)</sub> , I <sub>3P</sub> , II <sub>2ESI3P</sub>			
<b>Type</b>		<b>BPJD</b>	
<b>Rated heating output range (to EN 677)</b>			
$T_F/T_R = 50/30\text{ °C}$	<b>kW</b>	<b>6.5 - 24.0</b>	<b>8.8 - 33.0</b>
$T_F/T_R = 80/60\text{ °C}$	<b>kW</b>	<b>5.9 - 21.9</b>	<b>8.0 - 30.1</b>
<b>Rated heating output range for DHW heating</b>		kW	5.9 - 29.0
<b>Rated heat input</b>		kW	6.1 - 22.4
<b>Product ID</b>		CE-0085CP0029	
<b>IP rating</b>		IP X4D to EN 60529	
<b>Efficiency</b>			
– at rated heating output (100 % $T_F/T_R = 80/60\text{ °C}$ )		97.6	97.5
– at partial load (30 % $T_F/T_R = 50/30\text{ °C}$ )		108.5	108.7
<b>Gas supply pressure</b>			
Natural gas	mbar	20	20
	kPa	2	2
LPG	mbar	50	50
	kPa	5	5
<b>Max. permiss. gas supply pressure<sup>*1</sup></b>			
Natural gas	mbar	25.0	25.0
	kPa	2.5	2.5
LPG	mbar	57.5	57.5
	kPa	5.75	5.75
<b>Min. permiss. gas supply pressure</b>			
Natural gas	mbar	10.0	10.0
	kPa	1.0	1.0
LPG	mbar	10.0	10.0
	kPa	1.0	1.0
<b>Sound power level (to EN 15036-1)</b>			
– at rated heating output		dB(A)	45
– at partial load		dB(A)	39
<b>Power consumption</b>			
– in delivered condition		W	56
– max.		W	72
<b>Weight</b>		kg	35
<b>Heat exchanger capacity</b>		l	2.2
<b>Nominal circulating water volume</b>		l/h	941
at $T_F/T_R = 80/60\text{ °C}$			1294
<b>Diaphragm expansion vessel</b>			
Capacity		l	8
Pre-charge pressure	bar	0.8	0.8
	kPa	80	80
<b>Permiss. operating pressure</b>		bar	3
		MPa	0.3
<b>Dimensions</b>			
Length	mm	350	350
Width	mm	400	400
Height	mm	707	707
Height with flue bend	mm	867	867
<b>Gas connection</b>		G	¾
<b>Standby instantaneous water heater</b>			
Hot and cold water connections		G	½
Permiss. operating pressure (DHW side)		bar	10
		MPa	1
Minimum pressure, cold water connection	bar	1.0	1.0
	MPa	0.1	0.1
Outlet temperature, adjustable		°C	30-60
DHW continuous output		kW	29.0
<b>Draw-off rate</b>		l/min	3.0-12.0
for DHW heating from 10 to 45 °C			3.0-14.3
Specific flow rate		l/min	13.8
at $\Delta T = 30\text{ K}$ (to EN 13203)			16.7

## Specification (cont.)

Gas boiler, series B and C Category II <sub>2H3P</sub> , II <sub>2ELwLs3P</sub> , I <sub>2E(S)</sub> , I <sub>3P</sub> , II <sub>2ESI3P</sub>		BPJD	
Type			
<b>Rated heating output range (to EN 677)</b>			
T <sub>F</sub> /T <sub>R</sub> = 50/30 °C	kW	6.5 - 24.0	8.8 - 33.0
T <sub>F</sub> /T <sub>R</sub> = 80/60 °C	kW	5.9 - 21.9	8.0 - 30.1
<b>Connection values</b> relative to max. load with gas			
Natural gas E	m <sup>3</sup> /h	2.4	3.3
LPG P	kg/h	1.8	2.4
<b>Flue gas parameters</b> <sup>*2</sup>			
<b>Flue gas category</b> to G 635/G 636		G <sub>52</sub> /G <sub>51</sub>	G <sub>52</sub> /G <sub>51</sub>
<b>Temperature</b> (at a return temperature of 30 °C)			
– at rated heating output	°C	45	45
– at partial load	°C	35	35
<b>Temperature</b> (at a return temperature of 60 °C)			
	°C	68	70
<b>Mass flow rate</b>			
Natural gas			
– at rated heating output (DHW heating)	kg/h	38.1	52.4
– at partial load	kg/h	14.6	17.6
LPG			
– at rated heating output (DHW heating)	kg/h	42.9	58.9
– at partial load	kg/h	15.9	19.4
<b>Available draught</b>			
	Pa	100	100
	mbar	1.0	1.0
<b>Standard seasonal efficiency [to DIN]</b> at T <sub>F</sub> /T <sub>R</sub> = 40/30 °C		Up to 97 (H <sub>s</sub> ) [gross cv] / 108 (H <sub>i</sub> ) [net cv]	
<b>Max. amount of condensate</b> to DWA-A 251		l/h	
		3.1	4.3
<b>Condensate connection (hose nozzle)</b>		Ø mm	
		20-24	20-24
<b>Flue outlet</b>		Ø mm	
		60	60
<b>Ventilation air connection</b>		Ø mm	
		100	100
<b>Energy efficiency class</b>			
– central heating		A	A
– DHW heating, draw-off profile L		A	A

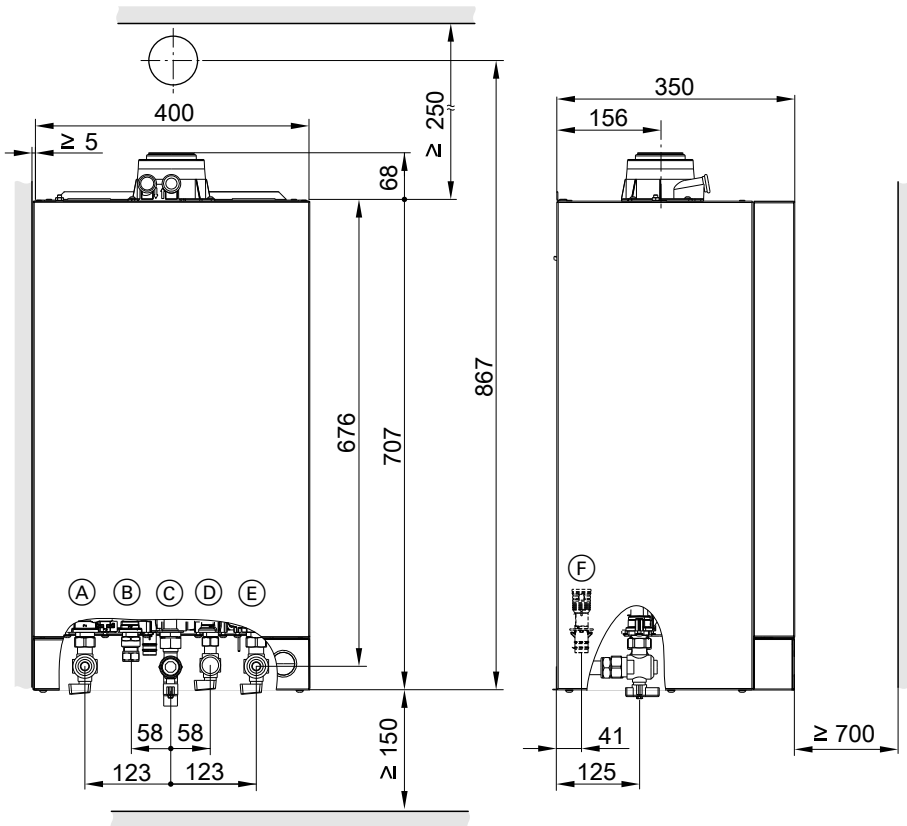
\*2 Calculation values for sizing the flue system to EN 13384.

Flue gas temperatures as actual gross values at 20 °C combustion air temperature.

The flue gas temperature at a return temperature of 30 °C is significant for the sizing of the flue system.

The flue gas temperature at a return temperature of 60 °C is used to determine the application range of flue pipes with maximum permissible operating temperatures.

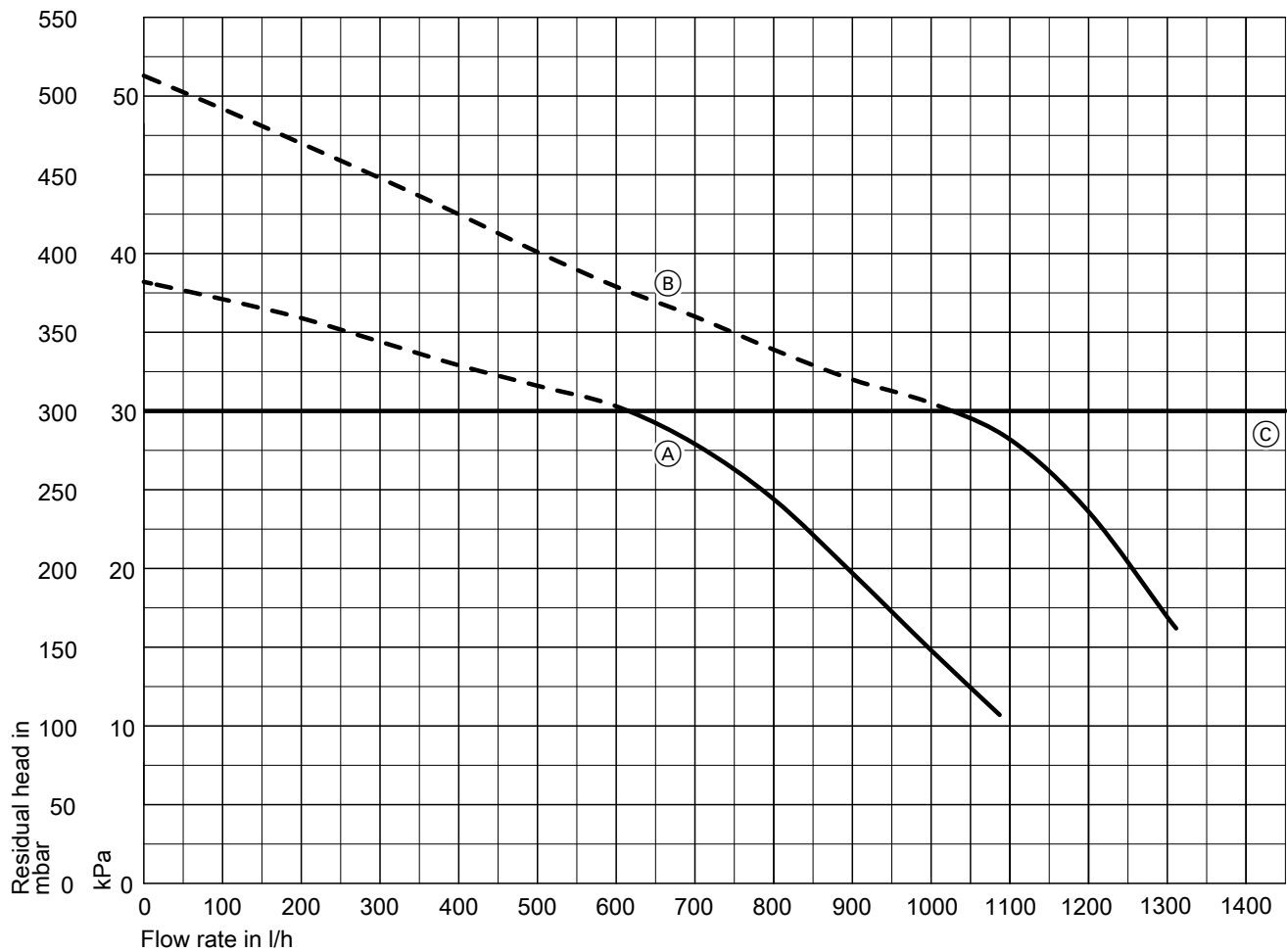
## Specification (cont.)



- (A) Heating flow G  $\frac{3}{4}$
- (B) DHW G  $\frac{1}{2}$
- (C) Gas connection G  $\frac{3}{4}$

- (D) Cold water G  $\frac{1}{2}$
- (E) Heating return G  $\frac{3}{4}$
- (F) Condensate drain/drain safety valve: plastic hose  $\varnothing$  22 mm

**Residual head of the integral circulation pump**



- Ⓐ 6.5 to 24 kW
- Ⓑ 8.8 to 33 kW
- Ⓒ Upper operational limit

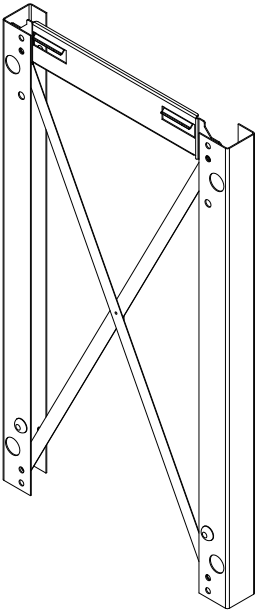
**Installation accessories**

**Mounting frame for installation on finished walls**

Part no. ZK01 500  
 Installed depth 50 mm

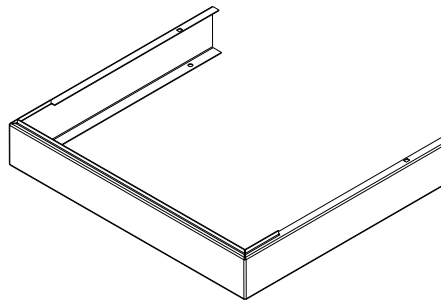
- Comprising:
- Fixings

## Installation accessories (cont.)



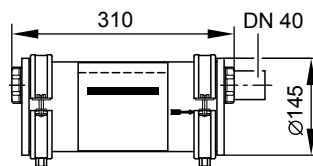
### Valve/fitting cover

- For installation without mounting frame  
**Part no. 7835 443**
- For installation with mounting frame  
**Part no. ZK01 501**



### Neutralising system

**Part no. 7252 666**  
With neutralising granulate



### Neutralising granulate

**Part no. 9524 670**  
2 x 1.3 kg

## Design information

### Siting

#### Siting conditions for open flue operation (appliance type B)

Type B<sub>23</sub> and B<sub>33</sub>

In rooms where **air contamination from halogenated hydrocarbons** may occur, such as hairdressing salons, printing shops, chemical cleaners, laboratories, etc., operate the Vitodens only as a room sealed system.

If in doubt, please contact us.

Never install the Vitodens in areas subject to very dusty conditions. The installation location must be kept free from frost and must be adequately ventilated.

Provide a condensate drain and a discharge pipe for the safety valve in the installation room.

## Design information (cont.)

The maximum ambient temperature of the system should not exceed 45 °C.

If these instructions are not observed, any consequential appliance damage directly related to any of these causes is excluded from our warranty.

### Installation room

#### Permissible:

- Siting on the same floor
- Living space with interconnected room air supply
- Adjacent rooms with interconnected room air supply (larders, basements, utility rooms, etc.)
- Adjacent rooms with apertures to the outside, up to 35 kW: supply air/extract air 150 cm<sup>2</sup> or 2 x 75 cm<sup>2</sup> each at the top and bottom of the same wall
- Attic rooms, but only with adequate minimum chimney height to DIN 18160 – 4 m above inlet (negative pressure operation)

#### Not permissible:

- Stairwells and communal hallways. Exception: single- and two-family houses of low height: top edge of top storey floor < 7 m above ground level
- Bathrooms and toilets without outside windows with shaft ventilation
- Rooms where explosive or flammable materials are stored
- Rooms that are ventilated mechanically or via individual duct systems to DIN 18117-1

### Observe all local fire regulations.

#### Connection on the flue gas side

For further details, see the technical guide on flue systems for the Vitodens.

The connection piece to the chimney should be as short as possible. Therefore position the Vitodens as closely to the chimney as possible.

No special protective measures or clearances towards combustible objects, e.g. furniture, packaging, etc., need to be taken/observed. The surface temperatures of the Vitodens and the flue system do not exceed 85 °C at any point.

## Operation of the Vitodens in wet areas

The Vitodens is permitted to be installed in wet rooms (e.g. bath or shower rooms).

When installing the Vitodens in wet areas, observe the safety zones and minimum wall clearances according to VDE 0100 [or local regulations] (see also "Electrical safety zone").

- Room sealed operation:
  - Protection rating IP X4 D, splashproof
  - The appliances may be installed in safety zone 1 if hosed water (e.g. from massage showers) is prevented.
- Open flue operation:
  - The appliances must not be installed in safety zone 1 or safety zone 2.

### Extractors

When installing appliances with extraction to the outside (cooker hoods, extractor fans, etc.), ensure that air extraction will not create negative pressure inside the installation room. A return flow of flue gases could otherwise result if the ventilation system and the Vitodens are operated simultaneously. In such cases, install an **interlock circuit**.

### Installation conditions for room sealed operation (appliance type C)

Type C<sub>13</sub>, C<sub>33</sub>, C<sub>43</sub>, C<sub>63</sub>, C<sub>83</sub> or C<sub>93</sub> to TRGI 2008

The Vitodens can be installed for **room sealed** operation **irrespective** of the size and ventilation of the installation room.

Suitable siting locations include:

- Recreational rooms and other living spaces
- Ancillary rooms without own ventilation
- Cupboards (open at the top)
- Recesses without compulsory clearance towards combustible materials
- Attic rooms (pitched attics and long panes) where the balanced flue pipe can be routed directly through the roof

Since the flue pipe connection for room sealed operation is surrounded by combustion air (coaxial pipe), no clearances towards combustible materials need be maintained. For further details, see the technical guide on flue systems for the Vitodens.

The installation area must be safe from the risk of frost.

Provide a condensate drain and a discharge pipe for the safety valve in the installation room.

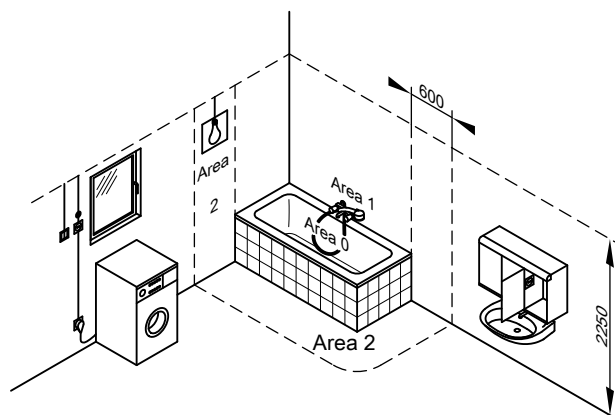
Electrical interlocks for extractors (extractor hoods, etc.) are not required with room sealed operation.

### Installation in a garage

Tests carried out by the Gaswärme-Institut e.V., Essen, have confirmed that the Vitodens is suitable for installation in garages.

When installing this boiler in garages, maintain a clearance between the floor and the burner of at least 500 mm. Install a frame or deflector (provided on site) to protect the boiler against mechanical damage.

### Electrical safety zone



Electrical equipment in rooms containing a bathtub or a shower must be installed in such a way that users cannot be exposed to dangerous body currents.

VDE 0100 specifies that cables supplying permanently installed consumers in zones 1 and 2 should only be run vertically and routed into the equipment from the back.



## Design information (cont.)

### Electrical connection

The power supply must comply with the requirements of your local power supply utility and current VDE [or local] regulations. Protect the power cable with a fuse with a maximum rating of 10 A. We recommend installing an AC/DC-sensitive RCD (RCD class B) for DC (fault) currents that can occur with energy efficient equipment.

Make the power supply (230 V~, 50 Hz) via a permanent connection. In the delivered condition, the power cable is connected. The accessories are connected at the terminals on the underside of the appliance.

### Recommended leads/cables

2-core min. 0.75 mm<sup>2</sup> for:

- Outside temperature sensor
- Vitotrol 100, type RT LV

- Vitotrol 100, type UTA LV
- Vitotrol 100, type UTDB

### Gas connection

Gas installations must only be carried out by a registered gas fitter authorised by the relevant gas supply utility. Connect and size the mains gas according to TRGI 2008 or TRF 1996 [or local regulations].

Max. test pressure 150 mbar (15 kPa). We recommend installing a gas filter to DIN 3386 into the gas line.

### Minimum clearances

Maintain a clearance of 700 mm in front of the Vitodens for maintenance purposes.

No maintenance clearances are required to the left or right of the Vitodens.

### Connections on the water side

#### Connections on the DHW side

The instantaneous water heater provides direct DHW heating. When using galvanised pipes, observe that the instantaneous water heater is designed as a stainless steel plate heat exchanger with copper solder joints (observe the flow rule). In existing installations (modernisation projects), the risk of electrolytic corrosion is low, since a protective layer will have formed on the inside of the pipes. From a water hardness of 20 °dH [3.58 mmol/l] and higher, we recommend the use of a water treatment system in the cold water line when heating DHW.

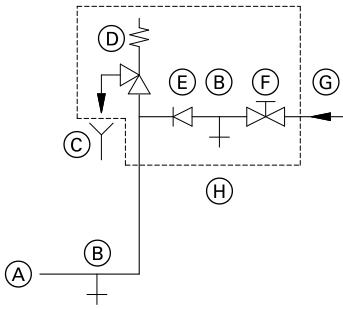
Please note that regional water supply utilities frequently specify an average water hardness. Higher levels of water hardness may therefore occur from time to time. This may make the use of a water treatment facility advisable even from 17 °dH (> 3.0 mol/m<sup>3</sup>) upwards.

#### Information on water quality

During DHW heating, settling of lime on the surfaces of the plate heat exchanger cannot be completely prevented. The tendency towards limescale build-up depends on various conditions, predominantly on the substances contained in the water, the amount of water that is heated (DHW consumption) and the DHW temperature. Although scale deposits inside the plate heat exchanger are generally minor enough not to cause any reduction in DHW output, such impairment cannot be excluded with increased water hardness. From a water hardness of 20 °dH (3.5 mol/m<sup>3</sup>) and higher, we therefore recommend the use of DHW cylinders with internal indirect coils or a water treatment system in the cold water supply when heating DHW.

## Design information (cont.)

### Cold water installation



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

A safety valve to DIN 1988 is only required if the mains water supply pressure exceeds 10 bar (1 MPa) and no DHW pressure reducing valve is installed (to DIN 4753).

Install a safety valve if the cold water supply is equipped with a non-return valve. In addition remove the toggle from the cold water shut-off valve.

Non-return valves are commonly found in pressure reducers and combined shut-off and non-return valves.

### DHW circulation for gas condensing combi boilers

Due to the low water content of plate heat exchangers, the connection of DHW circulation pipes is **not recommended** for gas condensing combi boilers.

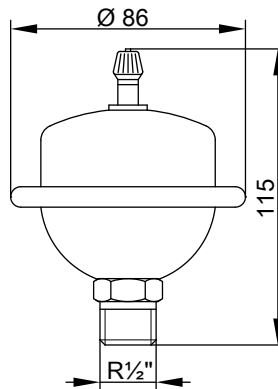
### Condensate connection

Route the condensate drain pipe with a constant fall. Route the condensate from the flue system together with the boiler condensate directly or (if installed) via a neutralising system (accessories) to the public sewage system.

#### Note

A pipe vent valve **must** be installed between the siphon and the neutralising system.

### Shock arrestor

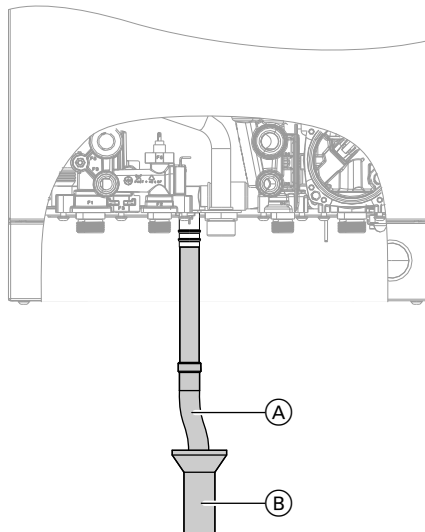


If the pipework to which the Vitodens is connected also supplies draw-off points at which water hammers may occur (e.g. pressure washers, washing machines or dishwashers): Install shock arrestors near the source of the water hammer (recommended).

Flexofit S made by Flamco-Flexcon  
or

Reflex made by Winkelmann + Pannhoff GmbH  
(available from your local dealer).

Even the low heat losses of thermally insulated DHW circulation lines (to EnEV) lead to a higher cycling frequency for the gas condensing combi boiler (reheating).



- (A) Drain hose (Vitodens standard delivery)
- (B) Tundish kit (accessories)

### Condensate drain and neutralisation

During heating operation, condensate with pH values between 4 and 5 is formed in the condensing boiler and in the flue.

## Design information (cont.)

The condensate should be drained in accordance with appropriate regulations.

Code of Practice DWA-A 251 on "Condensate from condensing boilers", which is generally based on the local waste water regulations [in Germany], determines conditions for draining condensate from condensing boilers into the public sewer system.

The composition of condensate drained from Vitodens condensing boilers meets the requirements specified in Code of Practice DWA-A 251.

The condensate drain pipe to the sewer connection must be freely accessible for inspection.

It must be installed with a continuous fall and must contain a stench trap.

Also provide a suitable facility for extracting samples. Condensate drain pipes must only be made from corrosion-resistant materials (e.g. reinforced hoses).

**Never use any zinc-plated materials or those containing copper for pipes, connection pieces, etc.**

A trap is installed in the condensate drain to prevent flue gases escaping.

Local water regulations and/or specific technical circumstances may prescribe designs which vary from those described in the above Codes of Practice.

Contact your local authority responsible for waste water management in good time prior to installation, to find out about local regulations.

### Condensate from gas combustion equipment up to 200 kW combustion output

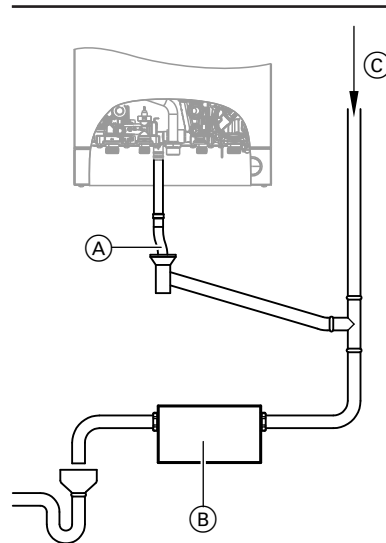
Up to a rated heating output of 200 kW, the condensate from a gas condensing boiler can generally be introduced into the public sewage system without prior neutralisation.

Domestic drainage systems must be made from materials that are resistant to acidic condensate.

According to the Code of Practice DWA-A 251, these materials include:

- Clay pipes
- Hard PVC pipes
- PVC pipes
- PE HD pipes
- PP pipes
- ABS/ASA pipes
- Stainless steel pipes
- Borosilicate pipes

### Neutralising system



- (A) Condensate drain
- (B) Neutralising system
- (C) Ventilation via the roof

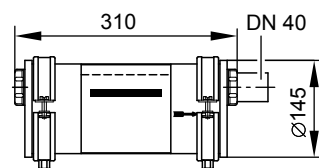
The Vitodens can (if required) be supplied with a separate neutralising system (accessories). Any condensate is piped to and processed in the neutralising system.

The condensate drain pipe to the sewer connection must be accessible for inspection. Install it with a fall and a stench trap on the sewer side, and provide a suitable facility for extracting samples.

Install a condensate lifting pump if the Vitodens has been installed below the waste water anti-flooding level.

Since the consumption of neutralising granulate depends on the operating mode of the system, carry out regular checks during the first year of operation to determine the required top-up volume. One fill can last longer than one year.

### Neutralising system



## Hydraulic connection

### General information

#### System design

Viessmann condensing boilers can generally be installed in any fully pumped hot water heating system (sealed unvented system).

The circulation pump is an integral part of the appliance.

Minimum system pressure 1.0 bar (0.1 MPa).

The boiler water temperature is limited to 80 °C.

To minimise distribution losses, we recommend sizing the heat distribution system to a max. flow temperature of 70 °C.

Due to the immediate capturing of the room-influencing factors, we recommend using the Vitodens in conjunction with the Vitotrol 100 for apartments with less than 80 m<sup>2</sup> living space or for low energy houses with low heat demand.

### Chemical anti-corrosion agents

In correctly installed and operated sealed unvented heating systems corrosion is generally avoided.

Never use chemical anti-corrosion additives.

Some manufacturers of plastic pipes recommend the use of chemical additives. In such cases, only use anti-corrosion additives offered by the heating trade that have been approved for boilers with DHW heating via single-walled heat exchangers (instantaneous water heater or DHW cylinder).

For this, observe the VDI guideline 2035 [or local regulations].

### Heating circuits

For heating systems with plastic pipes, we recommend the use of impermeable pipes to prevent the diffusion of oxygen through the pipe walls.

Install a dirt separator in underfloor heating systems.

## Design information (cont.)

Install a temperature limiter in the flow of the underfloor heating circuit to restrict the maximum temperature. Observe the requirements of DIN 18560-2 [or local regulations].

### Plastic pipework for radiators

We also recommend the use of a temperature limiter to restrict the maximum temperature for plastic pipework in heating circuits with radiators.

### Attic heating centre

The installation of a low water indicator, compulsory according to the DVGW [Germany], is not required when installing boilers in an attic heating centre.

The boilers are protected against water shortage in accordance with EN 12828.

### Safety valve

A safety valve in accordance with TRD 721 is integrated in the Vitodens (opening pressure 3 bar (0.3 MPa)).

Route the discharge pipe in accordance with EN 12828 into a drain outlet (drain outlet kit available as an accessory). The drain outlet incorporates a siphon as a stench trap.

### Low water indicator

According to EN 12828, a low water indicator can be omitted for boilers up to 300 kW, as long as heating can be reliably prevented when there is a water shortage.

Viessmann condensing boilers are equipped with a low water indicator (boil-dry protection). Tests have verified that the burner will be automatically switched off in the event of water shortage due to a leak in the heating system and simultaneous burner operation, before the boiler or the flue system reaches unacceptably high temperatures.

### Water quality/frost protection

Unsuitable fill and top-up water increases the level of deposits and corrosion and may lead to boiler damage.

Observe VDI 2035 regarding quality and amount of heating water, including fill and top-up water.

- Flush the heating system thoroughly before filling.
- Only fill with water of potable quality.
- Fill and top-up water with a water hardness in excess of the following values must be softened, e.g. with the small softening system for heating water (see the Viessmann Vitoset pricelist):

#### Total permissible hardness of the fill and top-up water

Total heating output kW	Specific system volume		
	< 20 l/kW	≥ 20 l/kW to < 50 l/kW	≥ 50 l/kW
≤ 50	≤ 3.0 mol/m <sup>3</sup> (16.8 °dH)	≤ 2.0 mol/m <sup>3</sup> (11.2 °dH)	< 0.02 mol/m <sup>3</sup> (0.11 °dH)

- For systems with a specific system volume in excess of 20 l/kW heating output, use the output of the smallest boiler in multi boiler systems.
- Antifreeze suitable for heating systems can be added to the fill water. The antifreeze manufacturer must verify its suitability, since otherwise damage to gaskets and diaphragms can occur as well as noisy heating operation. Viessmann accepts no liability for any resulting damage or consequential losses.

When designing the system, observe the following:

- Install shut-off valves in the different sections. This prevents the need for draining all the heating water in the case of repairs or system expansion.

Operating information:

- Commission the system step by step, starting with the lowest boiler output and a high heating water flow rate. This prevents localised concentration of limescale deposits on the boiler heating surfaces.
- During expansion or repair work, only drain the necessary pipe-work sections.
- Where water treatment is required, treat even the first fill of the heating system prior to commissioning. This also applies to any subsequent filling, e.g. when adding top-up water or after a repair, or for any system expansion.
- Check, clean and activate filters, dirt traps and other blow-down or separating facilities in the heating water circuit more frequently after commissioning or, in case of new installations, later on in accordance with any water treatment applied (e.g. water softening).

### Installation examples

Never install the Vitodens 050-W in dual mode systems with solid fuel boilers.

### Expansion vessels

In accordance with EN 12828, water heating systems must be equipped with a pressure expansion vessel.

Determine the size of the expansion vessel to be installed in accordance with EN 12828.

If the integral expansion vessel is insufficient, install a suitably sized expansion vessel on site.

## Intended use

The appliance is only intended to be installed and operated in sealed unvented heating systems that comply with EN 12828, with due attention paid to the associated installation, service and operating instructions. It is only designed for the heating of water that is of potable water quality.

Intended use presupposes that a fixed installation in conjunction with permissible, system-specific components has been carried out.

Commercial or industrial usage for a purpose other than heating the building or DHW shall be deemed inappropriate.

Any usage beyond this must be approved by the manufacturer in each individual case.

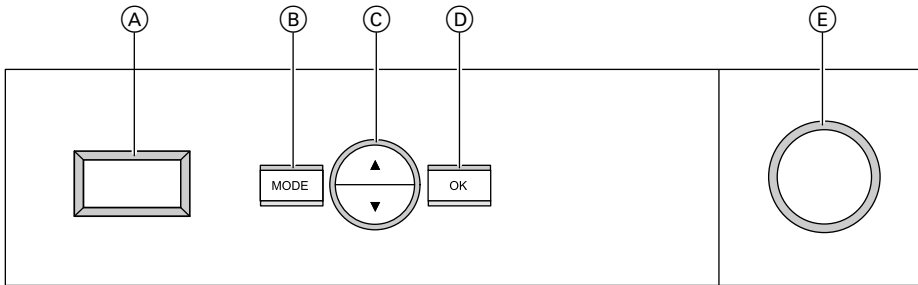
Incorrect usage or operation of the appliance (e.g. the appliance being opened by the system user) is prohibited and will result in an exclusion of liability. Incorrect usage also occurs if the components in the heating system are modified from their intended use (e.g. if the flue gas and ventilation air paths are sealed).

## Control unit

### Control unit for constant temperature or weather-compensated operation

#### Layout and functions

#### Layout



- (A) Display
- (B) Button for selecting/exiting a function
- (C) Buttons for changing/selecting a value

#### Programming unit:

- Adjustment of:
  - DHW temperature
  - Boiler water temperature or room temperature
  - Parameters
  - Service functions
  - Reset function
- Display of:
  - Boiler water temperature
  - DHW temperature
  - Operating states
  - Diagnostic details
  - Fault messages

#### Functions

- In conjunction with room temperature controller:
  - room temperature-dependent control of boiler water temperature and/or flow temperature
- In conjunction with outside temperature sensor:
  - weather-compensated control of boiler water temperature and/or flow temperature
- Control of a heating circuit without mixer
- Electronic maximum temperature limiter (permanently set)
- Demand-dependent heating circuit pump and burner shutdown control
- Pump anti-seizing protection
- Frost protection monitoring of the boiler
- Integral diagnostic system

#### Control characteristics

PI characteristics with modulating output

#### Time switch

A separate time switch (accessories) is available for installation in the control unit support.

#### Setting the operating programs

The boiler frost protection (see frost protection function) applies to all operating programs.

The following operating programs can be selected by changing the set value:

- Heating and DHW
- Only DHW

- (D) Button for accepting a value/confirming a selection
- (E) Pressure gauge

#### Frost protection function

Only in conjunction with an outside temperature sensor (accessories):

- The frost protection function will be started when the outside temperature falls below approx. +5 °C. With active frost protection, the heating circuit pump will be switched on and the boiler water is maintained at a lower temperature of approx. 20 °C.

#### Summer mode

The burner will only start when DHW is drawn.

#### Boiler water temperature sensor

The boiler water temperature sensor is connected to the control unit and built into the boiler.

#### Specification

Sensor type	Viessmann NTC 10 kΩ at 25 °C
Permissible ambient temperature	
- Operation	0 to +130 °C
- Storage and transport	-20 to +70 °C

#### Control unit specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Protection class	I
Permissible ambient temperature	
- During operation	-5 to +40 °C
	Installation in living spaces or boiler rooms (standard ambient conditions)
- During storage and transport	-35 to +65 °C
Setting of electronic temperature limiter	100 °C (change not possible)
DHW temperature setting range	30 to 60 °C

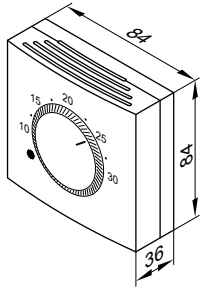
## Control unit accessories

### Vitotrol 100 RT LV

**Part no. ZK01 502**

Room thermostat with switching output (two-point output)  
Install the Vitotrol 100 in the main living room on an internal wall opposite radiators, but not inside shelf units, recesses, immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.).

Control unit connection:  
■ 2-core lead for low voltage



**Specification**

Rated voltage	24 V–
Rated breaking capacity of the contact	Max. 200 mA
IP rating	IP 30 according to EN 60529
	Ensure through design/installation
Permissible ambient temperature	
– During operation	0 to +50 °C
– During storage and transport	–20 to +60 °C
Set value setting range for standard mode and reduced mode	10 to 30 °C

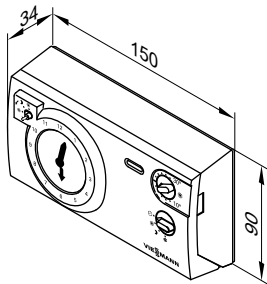
### Vitotrol 100, type UTA-LV

**Part no. Z013 179**

Room thermostat  
■ With switching output (two-point output)  
■ With analogue time switch  
■ With adjustable individual day program  
■ Standard switching times are factory-set (individually programmable)  
■ Shortest switching interval 15 minutes

Install the Vitotrol 100 in the main living room on an internal wall opposite radiators, but not inside shelf units, recesses, immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.).

Control unit connection:  
■ 2-core lead for low voltage  
■ Rated voltage 24 V–



**Specification**

Rated voltage	3 V– 2 LR6/AA batteries
Rated breaking capacity of the contact	Max. 200 mA
IP rating	IP 20 to EN 60529
	Ensure through design/installation
Permissible ambient temperature	
– During operation	0 to +40 °C
– During storage and transport	–20 to +60 °C
Set value setting range for standard mode and reduced mode	10 to 30 °C
Set room temperature in standby mode	6 °C

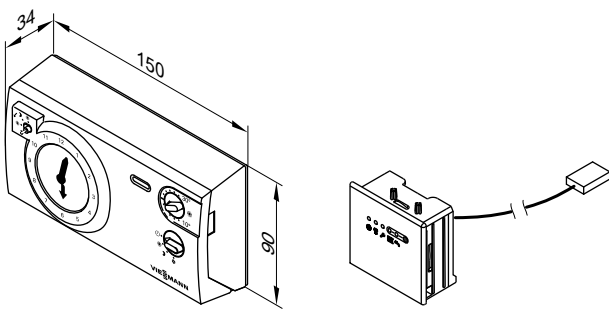
### Vitotrol 100, type UTA-RF

**Part no. Z013 180**

Room thermostat with integral wireless transmitter and separate wireless receiver  
■ With switching output (two-point output)  
■ With analogue time switch  
■ With adjustable individual day program  
Installation in the main living room on an internal wall opposite radiators. Never install inside shelving units, in recesses, or immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.). Operation independent of mains power supply

Wireless receiver for installation in the control unit support

## Control unit accessories (cont.)



### Specification

Rated voltage	3 V– 2 LR6/AA batteries
IP rating	IP 20 to EN 60529; ensure through design/installation
Permissible ambient temperature	
– During operation	0 to +40 °C
– During storage and transport	–20 to +60 °C
Set value setting range for standard mode and reduced mode	10 to 30 °C
Set room temperature in standby mode	6 °C

## Vitotrol 100, type UTDB

### Part no. Z007 691

Room temperature controller

- With switching output (two-point output)
- With digital time switch
- With individual day and seven-day program
- Operation with user prompts:
  - 3 preselected time programs, individually adjustable
  - Constant manual mode with adjustable set room temperature
  - Frost protection mode
  - Holiday program
- With selector keys for party and economy mode

Installation in the main living room on an internal wall opposite radiators. Never install inside shelving units, in recesses, or immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.).

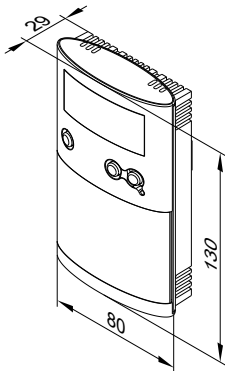
Operation independent of mains power supply

Control unit connection:

2-core lead for low voltage.

### Specification

Rated voltage	3 V– 2 LR6/AA batteries
Rated breaking capacity of the floating contact	
– Max.	6(1) A, 230 V~
– Min.	1 mA, 5 V–
IP rating	IP 20 to EN 60529; ensure through design/installation
Function type	RS type 1B to EN 60730-1
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–25 to +65 °C
Setting range	
– Comfort temperature	10 to 40 °C
– Setback temperature	10 to 40 °C
– Frost protection temperature	5 °C
Power reserve during battery change	3 min



## Vitotrol 100, type UTDB-RF2

### Part no. Z013 181

Room temperature controller with integral wireless transmitter and wireless receiver for installation in the control unit support

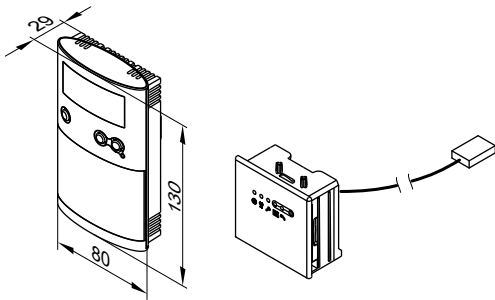
- With digital time switch
- With individual day and seven-day program
- Operation with user prompts:
  - 3 preselected time programs, individually adjustable
  - Constant manual mode with adjustable set room temperature
  - Frost protection mode
  - Holiday program
- With selector keys for party and economy mode

Installation in the main living room on an internal wall opposite radiators. Never install inside shelving units, in recesses, or immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.).

Operation independent of mains power supply

Wireless receiver with relay state indication.

## Control unit accessories (cont.)



### Specification, room temperature controller

Rated voltage	3 V– 2 LR6/AA batteries
Transmission frequency	868 MHz
Transmission	< 10 mW
Range	Approx. 25 to 30 m inside buildings, subject to construction
IP rating	IP 20 to EN 60529; ensure through design/installation

Function type	RS type 1B to EN 60730-1
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–25 to +65 °C
Setting range	
– Comfort temperature	10 to 40 °C
– Setback temperature	10 to 40 °C
– Frost protection temperature	5 °C
Power reserve during battery change	3 min

### Wireless receiver

- For installation in the control unit support
- With power cable and connector for connection to the control unit

## Outside temperature sensor

### Part no. ZK01 505

Installation location:

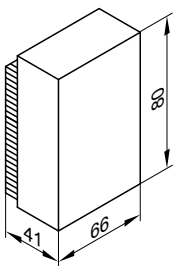
- North or north-west facing wall of the building
- 2 to 2.5 m above the ground, for multi storey buildings in the upper half of the second floor

Connection:

- 2-core lead, length max. 35 m with a cross-section of 1.5 mm<sup>2</sup> copper.
- Never route this lead immediately next to 230/400 V cables

### Specification

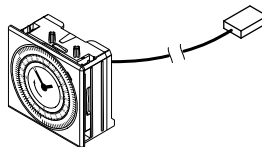
IP rating	IP 43 to EN 60529; ensure through design/installation
Sensor type	Viessmann NTC 10 kΩ, at 25 °C
Permissible ambient temperature during operation, storage and transport	–40 to +70 °C



## Analogue time switch

### Part no. ZK01 506

- Single channel time switch with individual day program
- For installation in the control unit support
- With connecting cable and connector for connection to the control unit



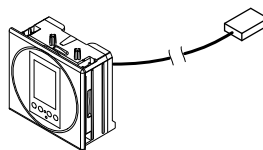


## Control unit accessories (cont.)

### Digital time switch

#### Part no. ZK01 507

- Two-channel time switch with seven-day program
- For installation in the control unit support
- With connecting cable and connector for connection to the control unit



### Electrical terminal box 230 V

#### Part no. ZK02 156

Relays the heat demand from the room temperature controller (clock thermostat) to the OpenTherm connection of the control unit.

- For installation inside the control unit
- With connecting cable and connector for connection to the control unit
- With connecting cable for connection to the room temperature controller

Subject to technical modifications.

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