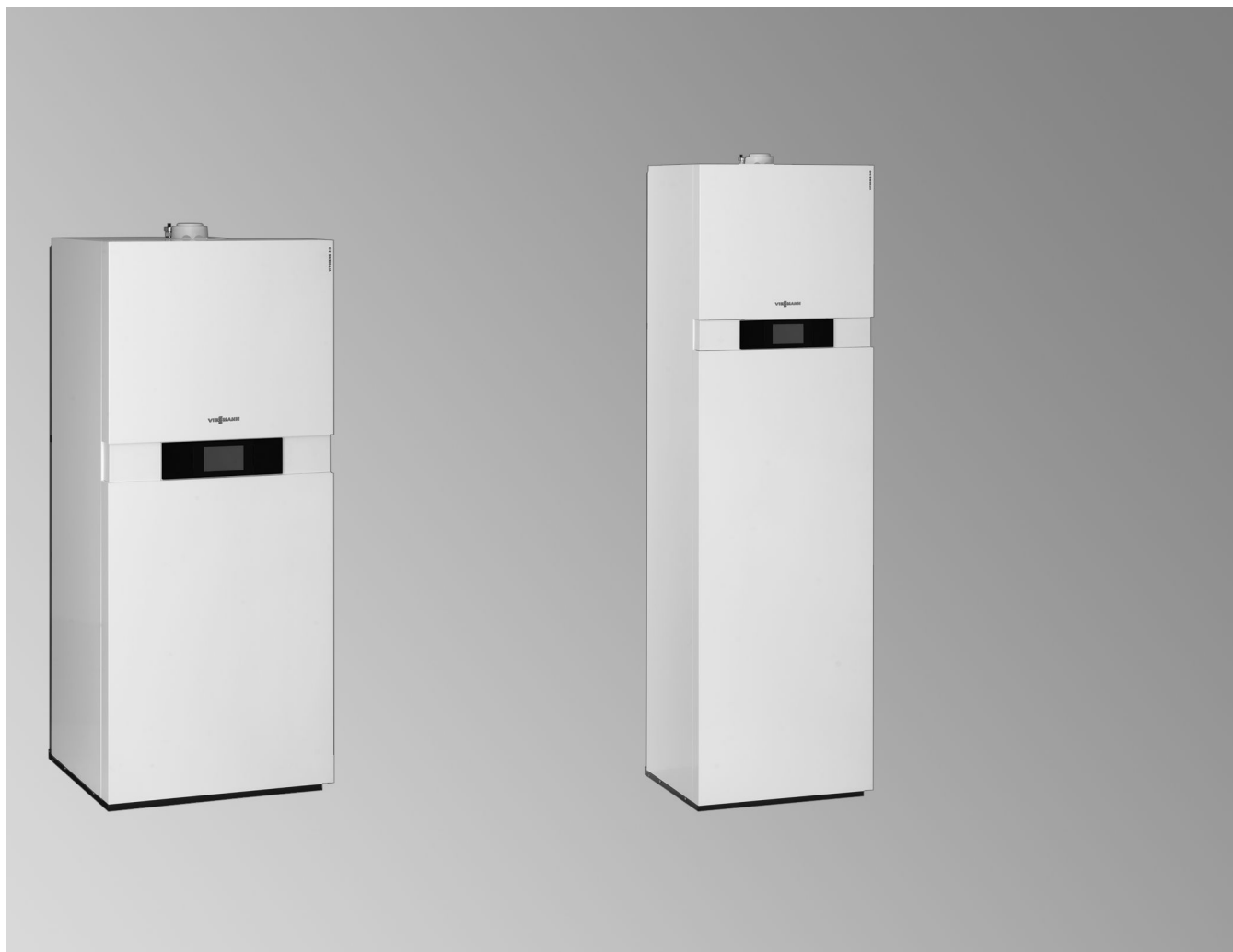


Technical guide

**VITODENS 222-F** Type B2TB

Gas condensing storage combi boiler
1.9 to 35.0 kW
For natural gas and LPG

VITODENS 222-F Type B2SB

Gas condensing storage combi boiler
1.9 to 26.0 kW
For natural gas and LPG

VITODENS 242-F Type B2UB

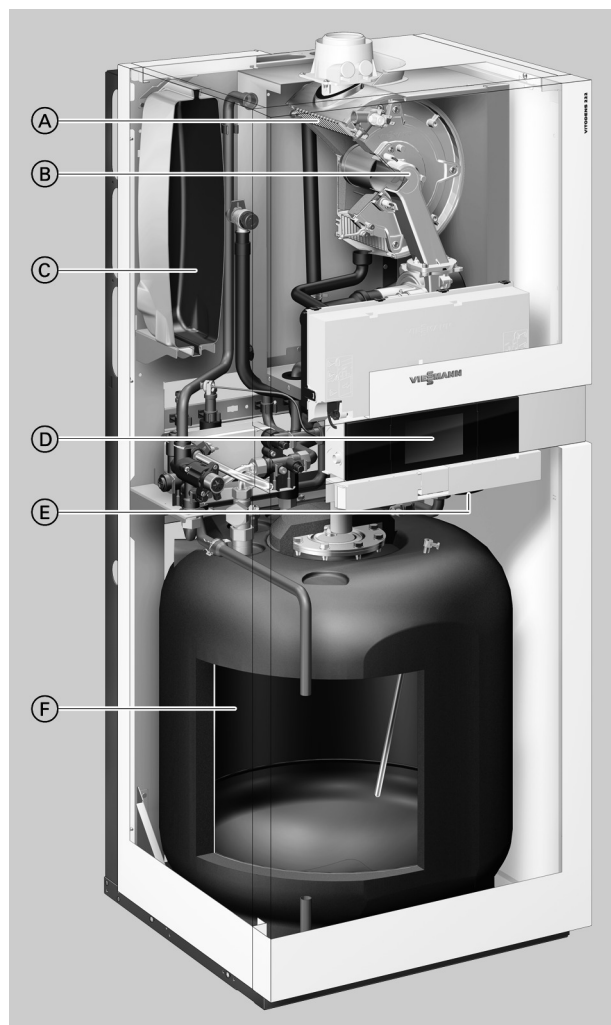
Gas/solar condensing storage combi boiler with solar
DHW heating
1.9 to 26.0 kW
For natural gas and LPG

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1.1 Product description



- Ⓐ 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
- Ⓑ Modulating MatriX cylinder burner with intelligent Lambda Pro Control Plus combustion controller for clean combustion and quiet operation
- Ⓒ Integral diaphragm expansion vessel
- Ⓓ Digital boiler control unit
- Ⓔ Integral variable speed high efficiency circulation pump
- Ⓕ DHW loading cylinder

The Vitodens 222-F gas condensing storage combi boiler is designed specifically for heating system modernisation projects and as a replacement for older gas boilers with cylinders installed below. With an output of up to 35 kW, this heating centre is designed for high DHW convenience.

The integral loading cylinder with 100 l capacity (up to 26 kW) or 130 l capacity (35 kW) offers the DHW convenience of a separate DHW cylinder approximately twice the size.

As with all Viessmann storage combi boilers, the Vitodens 222-F gas condensing boiler requires very little space, as its width and depth correspond to the dimensions of standard kitchen units. The proven MatriX cylinder burner with Lambda Pro Control Plus combustion controller automatically adjusts to varying gas qualities and ensures a constantly high standard seasonal efficiency [to DIN] of 98 % (H_s) [gross cv].

Recommended applications

- Installation in detached and terraced houses
- New build (e.g. prefabricated houses and developer projects): Installation in utility rooms and attics
- Modernisation: Replacement of gas system boilers, floorstanding atmospheric gas boilers and oil/gas boilers with DHW cylinders installed below.

Benefits at a glance

- Standard seasonal efficiency [to DIN]: Up to 98 % (H_s) [gross cv]
- Durable and efficient thanks to the Inox-Radial heat exchanger

- Modulating MatriX cylinder burner with a long service life thanks to stainless steel MatriX gauze
 - Tolerant to high temperature loads
 - Modulation range down to 01:19 (35 kW)
- High DHW convenience through enamelled loading cylinder with 100 l capacity (35 kW: 130 l capacity)
- Power saving, high efficiency circulation pump
- New, innovative operating concept using colour touchscreen with plain text and graphic display, commissioning assistant and displays for energy consumption, as well as alternative operation from a mobile end device
- Web-enabled through Vitoconnect (accessories) for operation and service via Viessmann apps
- Lambda Pro Control Plus combustion controller for all gas types – saves on costs by extending the inspection interval to 3 years [in Germany]
- Automatic flue adaptor
- No lateral service clearance required
- Assembly kit (accessories) with the dimensions and design of the appliance, for the connection of one regulated and one unregulated heating circuit

Delivered condition

Gas condensing boiler with Inox-Radial stainless steel heat exchanger, modulating MatriX cylinder burner for natural gas and LPG to DVGW Code of Practice G260 [Germany], expansion vessel, variable speed high efficiency circulation pump and integral DHW loading cylinder. Fully plumbed and wired.

Vitodens 222-F, type B2TB (cont.)

White epoxy-coated casing.

Packed separately:

Vitotronic 100 for constant temperature operation

or

Vitotronic 200 for weather-compensated operation.

Preset for operation with natural gas. Conversion within gas groups E/LL is not required. The conversion to LPG is made at the control unit (a conversion kit is not required).

Accessories required (order separately)

Installation on finished walls

- Connection set for installation on finished walls, for upward connection
or
- Connection set with pre-mounting bracket for installation on finished walls, for upward connection
or
- Connection set for installation on finished walls, for connection to the left or right
or

- Connection set with pre-mounting bracket for installation on finished walls, for connection to the left or right
or
- Connection set with pre-mounting bracket for installation on finished walls, for downward connection
or
- Assembly kit with mixer

Installation on unfinished walls

- Connection set for unfinished walls
or
- Assembly kit with mixer

Tested quality



CE designation according to current EC Directives



ÖVGW Quality Mark for gas and water equipment

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

1.2 Specification

Gas boiler, type B and C, category II _{2N3P}		Values in () when operating with LPG P			
Rated heating output range (to EN 15502-1)					
T _F /T _R = 50/30 °C	kW	1.9 - 13.0	1.9 - 19.0	2.6 - 26.0	1.8 (3.5) - 35.0
T _F /T _R = 80/60 °C	kW	1.7 - 12.1	1.7 - 17.6	2.4 - 24.1	1.6 (3.2) - 32.5
Rated heating output for DHW heating	kW	1.7 - 17.2	1.7 - 17.2	2.4 - 29.3	1.6 (3.2) - 33.5
Rated heat input	kW	1.8 - 17.9	1.8 - 17.9	2.5 - 30.5	1.7 (3.3) - 34.9
Product ID		CE-0085CN0050			
IP rating		IP X4 to EN 60529			
Gas supply pressure					
Natural gas	mbar	20	20	20	20
	kPa	2	2	2	2
LPG	mbar	50	50	50	50
	kPa	5	5	5	5
Max. permissible gas supply pressure^{*1}					
Natural gas	mbar	25.0	25.0	25.0	25.0
	kPa	2.5	2.5	2.5	2.5
LPG	mbar	57.5	57.5	57.5	57.5
	kPa	5.75	5.75	5.75	5.75
Sound power level (to EN ISO 15036-1)					
– At partial load	dB(A)	35	35	40	37
– At rated heating output (DHW heating)	dB(A)	39	41	48	52
Power consumption					
– In the delivered condition	W	28	42	65	95
– Max.	W	126	126	148	163
Weight	kg	129	129	132	141
Heat exchanger capacity	Litre	1.8	1.8	2.4	2.8
Max. flow temperature	°C	74	74	74	74
Max. flow rate (Limit for the use of hydraulic separation)	l/h	1200	1200	1400	1600
Nominal circulating water volume At T _F /T _R = 80/60 °C	l/h	507	739	1018	1361
Expansion vessel					
Capacity	Litre	12	12	12	12
Pre-charge pressure	bar	0.75	0.75	0.75	0.75
	kPa	75	75	75	75
Permiss. operating pressure (on the heating water side)	bar	3	3	3	3
	MPa	0.3	0.3	0.3	0.3
Connections (with connection accessories)					
Boiler flow and return	R	¾	¾	¾	¾
Cold water and DHW	R	½	½	½	½
DHW circulation	R	½	½	½	½
Dimensions					
Length	mm	595	595	595	595
Width	mm	600	600	600	600
Height	mm	1426	1426	1426	1626
Gas connection (with connection accessories)	R	½	½	½	½
DHW loading cylinder					
Capacity	Litre	100	100	100	130
Permiss. operating pressure (DHW side)	bar	10	10	10	10
	MPa	1	1	1	1
Continuous DHW output	kW	17.2	17.2	29.3	33.5
For DHW heating from 10 to 40 °C	l/h	493	493	840	960
Performance factor N _L		1.8	1.8	3.0	4.8
Initial DHW output	l/10 min	182	182	230	273
Connection values relative to max. load					
With gas					
Natural gas E	m ³ /h	1.89	1.89	3.23	3.69
Natural gas LL	m ³ /h	2.20	2.20	3.75	4.30
LPG P	kg/h	1.40	1.40	2.38	2.73

^{*1} If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.

Vitodens 222-F, type B2TB (cont.)

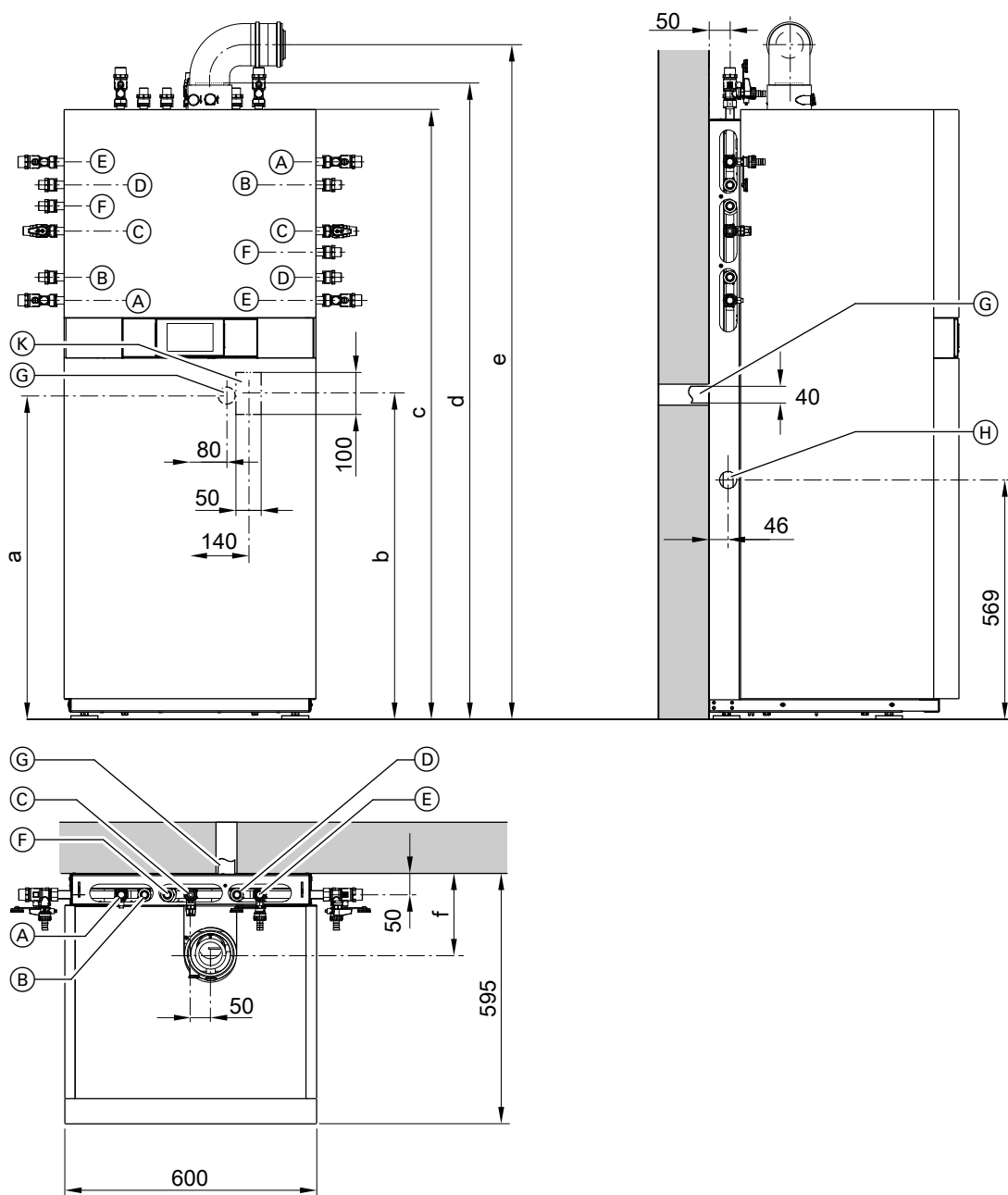
Gas boiler, type B and C, category II _{2N3P}					
Rated heating output range (to EN 15502-1)		Values in () when operating with LPG P			
T _F /T _R = 50/30 °C	kW	1.9 - 13.0	1.9 - 19.0	2.6 - 26.0	1.8 (3.5) - 35.0
T _F /T _R = 80/60 °C	kW	1.7 - 12.1	1.7 - 17.6	2.4 - 24.1	1.6 (3.2) - 32.5
Flue gas parameters ^{*2}					
Flue gas category to G 635/G 636		G ₅₂ /G ₅₁	G ₅₂ /G ₅₁	G ₅₂ /G ₅₁	G ₅₂ /G ₅₁
Temperature (at a return temperature of 30 °C)					
– At rated heating output	°C	45	45	45	45
– At partial load	°C	35	35	35	35
Temperature (at a return temperature of 60 °C)		68	68	68	70
Mass flow rate					
– For natural gas					
– At rated heating output (DHW heating)	kg/h	31.8	31.8	54.3	62.1
– At partial load	kg/h	5.5	5.5	8.7	8.7
– For LPG					
– At rated heating output (DHW heating)	kg/h	30.2	30.2	51.5	58.9
– At partial load	kg/h	7.6	7.6	14.0	14.0
Available draught		250	250	250	250
	mbar	2.5	2.5	2.5	2.5
Max. amount of condensate					
To DWA-A 251	l/h	2.3	2.5	4.3	4.9
Condensate connection (hose nozzle)	Ø mm	20-24	20-24	20-24	20-24
Flue outlet	Ø mm	60	60	60	60
Ventilation air connection	Ø mm	100	100	100	100
Standard seasonal efficiency [to DIN] at		up to 98 (H _s) [gross cv]			
T _F /T _R = 40/30 °C	%				
Energy efficiency class					
– Heating		A	A	A	A
– DHW heating, draw-off profile XL		A	A	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.



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

- (E) Heating return R $\frac{3}{4}$
- (F) DHW circulation R $\frac{1}{2}$ (separate accessories)
- (G) Condensate drain facing backwards into the wall
- (H) Condensate drain to the side
- (K) Wiring area

Rated heating output kW	a mm	b mm	c mm	d mm	e mm	f mm
13 to 19	745	750	1426	1466	1572	201
26	745	750	1426	1466	1572	224
35	945	950	1626	1666	1772	224

Note

The dimensioned drawing shows example fittings for installation on finished walls, for upward connection and connection to the left/right. Order the connection sets separately as accessories.

For the dimensions of the individual connection sets, see the design information.

If using the connection set with pre-mounting bracket for downward connections on finished walls, maintain a wall clearance of 70 mm.

Note

All height dimensions have a tolerance of +7 mm on account of the adjustable feet.

Note

Height dimensions in combination with a balanced flue bend Ø 60/100 mm. In combination with a balanced flue bend Ø 60/100 mm, the total height is reduced by 10 mm.

Vitodens 222-F, type B2TB (cont.)

Variable speed heating circuit pump in the Vitodens 222-F

The integral circulation pump is a highly efficient pump with substantially lower power consumption than conventional pumps.

The pump speed and consequently the pump rate are regulated subject to the outside temperature and the switching times for heating or reduced mode. The control unit transmits the current default settings to the circulation pump via an internal data bus.

The min. and max. speed and the speed in reduced mode can be adjusted using codes at the control unit of the existing heating system.

In the delivered condition, the minimum pump rate (coding address "E7") and the maximum pump rate (coding address "E6") are set to the following values:

Rated heating output in kW	Speed settings in the delivered condition in %	
	Min. pump rate	Max. pump rate
13	45	60
19	45	65
26	45	80
35	45	90

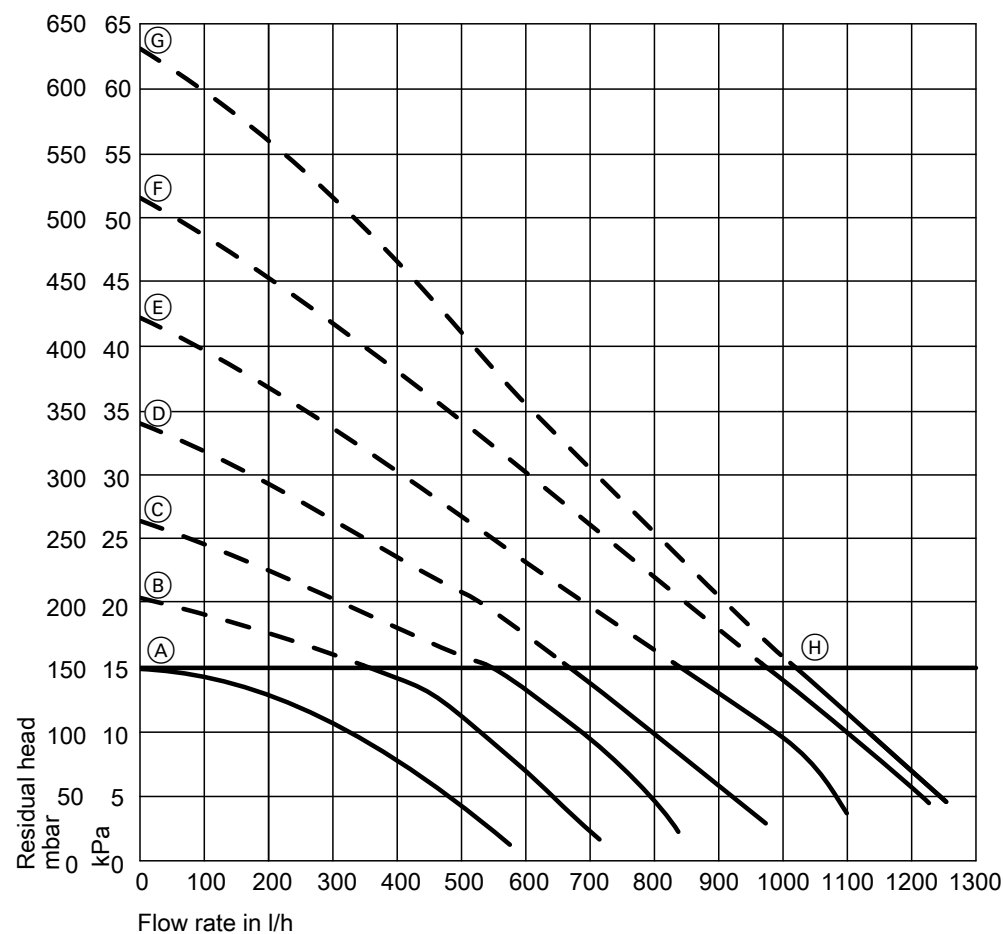
Note

In conjunction with a low loss header, heating water buffer cylinder and heating circuits with mixer, the internal circulation pump runs at a constant speed. The speed can be adjusted subject to demand by changing the code at the control unit.

Specification circulation pump

Rated heating output	kW	13	19	26	35
Circulation pump	Type	UPM3 15-75	UPM3 15-75	UPM3 15-75	UPM3 15-75
Rated voltage	V~	230	230	230	230
Power consumption					
– max.	W	60	60	60	60
– min.	W	2	2	2	2
– Delivered condition	W	12	20	38	45
Energy efficiency class		A	A	A	A
Energy efficiency index (EEI)		≤ 0.20	≤ 0.20	≤ 0.20	≤ 0.20

Residual head of the integral circulation pump



(H) Upper operational limit

Vitodens 222-F, type B2TB (cont.)

Curve	Pump rate, circulation pump	Coding address setting "E6"
Ⓐ	40 %	E6:040
Ⓑ	50 %	E6:050
Ⓒ	60 %	E6:060
Ⓓ	70 %	E6:070
Ⓔ	80 %	E6:080
Ⓕ	90 %	E6:090
Ⓖ	100 %	E6:100

2.1 Product description



- Ⓐ 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
- Ⓑ Modulating MatriX cylinder burner with intelligent Lambda Pro Control Plus combustion controller for clean combustion and quiet operation
- Ⓒ Integral diaphragm expansion vessel
- Ⓓ Digital boiler control unit
- Ⓔ Integral variable speed high efficiency circulation pump
- Ⓕ DHW cylinder with internal indirect coil

The Vitodens 222-F storage combi boiler combines the benefits of the Vitodens 200-W with the high level of DHW convenience of a separate DHW cylinder.

As with all Viessmann storage combi boilers, the Vitodens 222-F gas condensing boiler requires very little space, as its width and depth correspond to the dimensions of standard kitchen units. The proven MatriX cylinder burner with Lambda Pro Control Plus combustion controller automatically adjusts to varying gas qualities and ensures a constantly high standard seasonal efficiency [to DIN] of 98 % (H_s) [gross cv].

The Vitodens 222-F, type B2SB with integral 130 l cylinder with internal indirect coil is particularly suitable for hard water areas. Due to its smooth surface the internal indirect coil is resistant to lime-scale deposits.

Recommended applications

- Installation in detached and terraced houses
- New build (e.g. prefabricated houses and developer projects): Installation in utility rooms and attics
- Modernisation: Replacement of gas system boilers, floorstanding atmospheric gas boilers and oil/gas boilers with DHW cylinders installed below
- For use in areas with a water hardness of > 20 °dH (3.58 mol/m³)

Benefits at a glance

- Standard seasonal efficiency [to DIN]: Up to 98 % (H_s) [gross cv]
- Durable and efficient thanks to the Inox-Radial heat exchanger
- Modulating MatriX cylinder burner with a long service life thanks to stainless steel MatriX gauze
 - Tolerant to high temperature loads
 - Modulation range down to 01:10 (26 kW)
- Enamelled DHW cylinder with internal indirect coil and 130 l capacity (N_L factor up to 1.8)
- Power saving, high efficiency circulation pump
- New, innovative operating concept using colour touchscreen with plain text and graphic display, commissioning assistant and displays for energy consumption, as well as alternative operation from a mobile end device
- Web-enabled through Vitoconnect (accessories) for operation and service via Viessmann apps
- Lambda Pro Control Plus combustion controller for all gas types – saves on costs by extending the inspection interval to 3 years [in Germany]
- Automatic flue adaptor

Vitodens 222-F, type B2SB (cont.)

- No lateral service clearance required
- Assembly kit (accessories) with the dimensions and design of the appliance, for the connection of one regulated and one unregulated heating circuit

Delivered condition

Gas condensing boiler with Inox-Radial heat exchanger, modulating MatriX cylinder burner for natural gas and LPG to DVGW Code of Practice G260 [Germany], expansion vessel, variable speed high efficiency circulation pump and integral DHW cylinder. Fully plumbed and wired.

White epoxy-coated casing.

Packed separately:

Vitotronic 100 for constant temperature operation
or

Vitotronic 200 for weather-compensated operation.

Preset for operation with natural gas. Conversion within gas groups E/LL is not required. The conversion to LPG is made at the control unit (a conversion kit is not required).

Accessories required (order separately)

Installation on finished walls

- Connection set for installation on finished walls, for upward connection
or
- Connection set with pre-mounting bracket for installation on finished walls, for upward connection
or

- Connection set for installation on finished walls, for connection to the left or right
or
- Connection set with pre-mounting bracket for installation on finished walls, for connection to the left or right
or
- Connection set with pre-mounting bracket for installation on finished walls, for downward connection
or
- Assembly kit with mixer

Installation on unfinished walls

- Connection set for unfinished walls
or
- Assembly kit with mixer

Tested quality



CE designation according to current EC Directives



ÖVGW Quality Mark for gas and water equipment

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

2.2 Specification

Gas boiler, type B and C, category II_{2N3P}				
Rated heating output range (to EN 15502-1)				
$T_F/T_R = 50/30\text{ °C}$	kW	1.9 - 13.0	1.9 - 19.0	2.6 - 26.0
$T_F/T_R = 80/60\text{ °C}$	kW	1.7 - 12.1	1.7 - 17.6	2.4 - 24.1
Rated heating output for DHW heating	kW	1.7 - 17.2	1.7 - 17.2	2.4 - 23.7
Rated heat input	kW	1.8 - 17.9	1.8 - 17.9	2.5 - 24.7
Product ID		CE-0085CN0050		
IP rating		IP X4 to EN 60529		
Gas supply pressure				
Natural gas	mbar	20	20	20
	kPa	2	2	2
LPG	mbar	50	50	50
	kPa	5	5	5
Max. permissible gas supply pressure^{*3}				
Natural gas	mbar	25.0	25.0	25.0
		2.5	2.5	2.5
LPG	mbar	57.5	57.5	57.5
		5.75	5.75	5.75
Sound power level (to EN ISO 15036-1)				
– At partial load	dB(A)	33	33	42
– At rated heating output (DHW heating)	dB(A)	39	41	48
Power consumption				
– In the delivered condition	W	28	42	65
– Max.	W	86	86	95
Weight		kg	139	142
Heat exchanger capacity		Litre	1.8	2.4
Max. flow temperature		°C	74	74
Max. flow rate (Limit for the use of hydraulic separation)		l/h	1200	1400
Nominal circulating water volume At $T_F/T_R = 80/60\text{ °C}$		l/h	537	1018
Expansion vessel				
Capacity	Litre	12	12	12
Pre-charge pressure	bar	0.75	0.75	0.75
	kPa	75	75	75
Permiss. operating pressure (on the heating water side)		bar	3	3
		MPa	0.3	0.3
Connections (with connection accessories)				
Boiler flow and return	R	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
Cold water and DHW	R	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
DHW circulation	R	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Dimensions				
Length	mm	595	595	595
Width	mm	600	600	600
Height	mm	1626	1626	1626
Gas connection (with connection accessories)		R	$\frac{1}{2}$	$\frac{1}{2}$
DHW cylinder				
Capacity	Litre	130	130	130
Permiss. operating pressure (DHW side)	bar	10	10	10
	MPa	1	1	1
Continuous DHW output	kW	17.2	17.2	23.7
For DHW heating from 10 to 40 °C	l/h	493	493	680
Performance factor N_L ^{*4}		1.3	1.3	1.8
Initial DHW output	l/10 min	153	153	182
For DHW heating from 10 to 40 °C				

^{*3} If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.

^{*4} At 70 °C average boiler water temperature and cylinder storage temperature $T_{cyl} = 60\text{ °C}$.

DHW performance factor N_L depends on cylinder storage temperature T_{cyl} .

Standard values: $T_{cyl} = 60\text{ °C} \rightarrow 1.0 \times N_L$ $T_{cyl} = 55\text{ °C} \rightarrow 0.75 \times N_L$ $T_{cyl} = 50\text{ °C} \rightarrow 0.55 \times N_L$ $T_{cyl} = 45\text{ °C} \rightarrow 0.3 \times N_L$.

Vitodens 222-F, type B2SB (cont.)

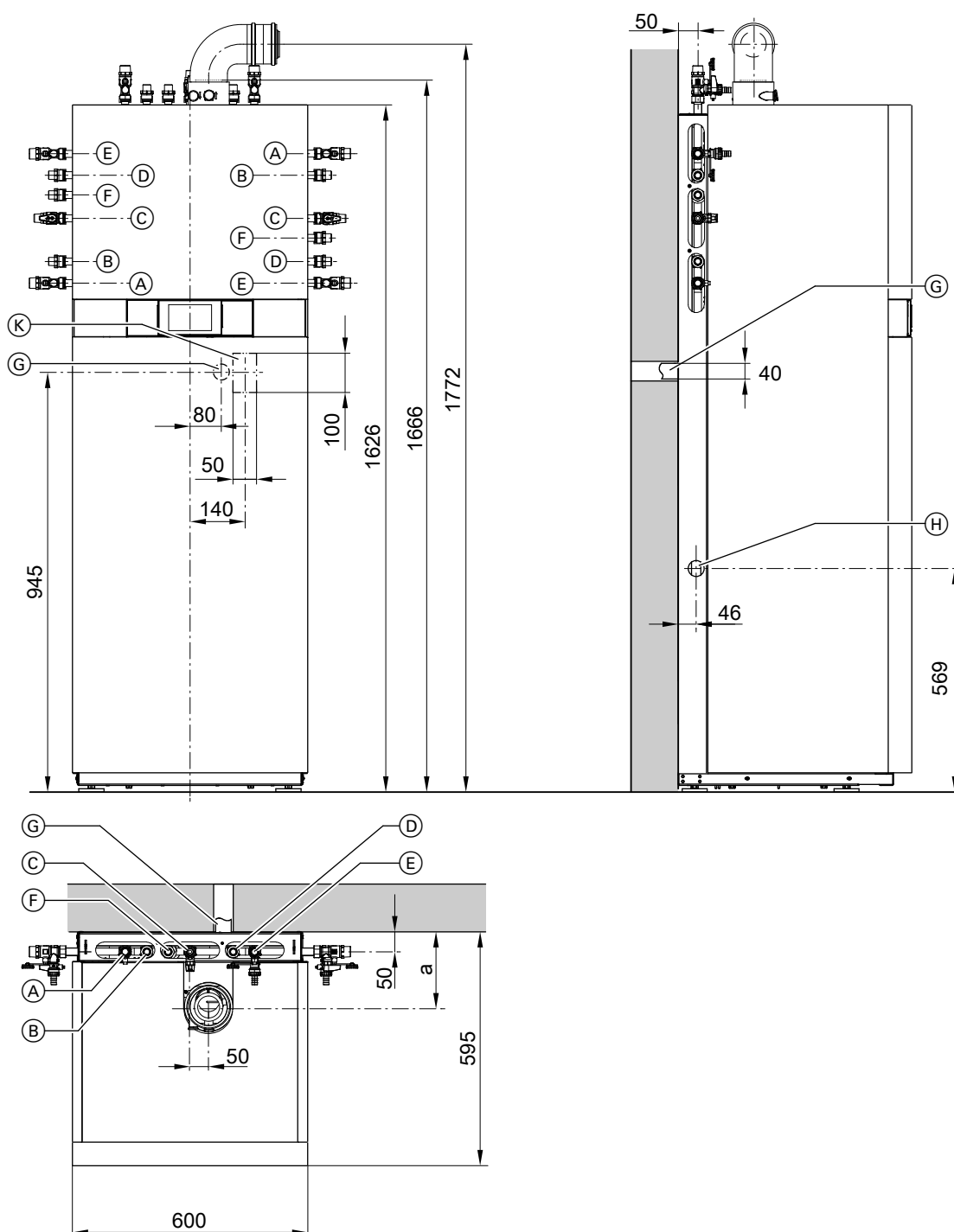
Gas boiler, type B and C, category II_{2N3P}				
Rated heating output range (to EN 15502-1)				
T_F/T_R = 50/30 °C	kW	1.9 - 13.0	1.9 - 19.0	2.6 - 26.0
T_F/T_R = 80/60 °C	kW	1.7 - 12.1	1.7 - 17.6	2.4 - 24.1
Connection values				
relative to max. load				
With gas				
Natural gas E	m ³ /h	1.89	1.89	2.61
Natural gas LL	m ³ /h	2.06	2.20	3.04
LPG P	kg/h	1.31	1.40	1.93
Flue gas parameters^{*2}				
Flue gas category to G 635/G 636		G ₅₂ /G ₅₁	G ₅₂ /G ₅₁	G ₅₂ /G ₅₁
Temperature (at 30 °C return temperature)				
– At rated heating output	°C	45	45	45
– At partial load	°C	35	35	35
Temperature (at a return temperature of 60 °C)		68	68	70
Mass flow rate				
– For natural gas				
– At rated heating output	kg/h	31.8	31.8	43.9
– At partial load	kg/h	5.5	5.5	8.7
– For LPG				
– At rated heating output	kg/h	30.2	30.2	41.7
– At partial load	kg/h	7.6	7.6	14.0
Available draught				
	Pa	250	250	250
	mbar	2.5	2.5	2.5
Max. amount of condensate				
To DWA-A 251		2.3	2.5	3.5
Condensate connection (hose nozzle)		20-24	20-24	20-24
Flue outlet		60	60	60
Ventilation air connection		100	100	100
Standard seasonal efficiency [to DIN] at		up to 98 (H _s) [gross cv]		
T _F /T _R = 40/30 °C				
Energy efficiency class				
– Heating		A	A	A
– DHW heating, draw-off profile XL		A	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.



- (A) Heating flow R $\frac{3}{4}$
- (B) DHW R $\frac{1}{2}$
- (C) Gas connection R $\frac{1}{2}$
- (D) Cold water R $\frac{1}{2}$
- (E) Heating return R $\frac{3}{4}$
- (F) DHW circulation R $\frac{1}{2}$ (separate accessories)
- (G) Condensate drain facing backwards into the wall
- (H) Condensate drain to the side
- (K) Wiring area

Rated heating output kW	a mm
13 and 19	201
26	224

Note

The dimensioned drawing shows example fittings for installation on finished walls, for upward connection and connection to the left/right. Order the connection sets separately as accessories. For the dimensions of the individual connection sets, see the design information.

If using the connection set with pre-mounting bracket for downward connections on finished walls, maintain a wall clearance of 70 mm.

Note

All height dimensions have a tolerance of +7 mm on account of the adjustable feet.

Vitodens 222-F, type B2SB (cont.)

Note

Height dimensions in combination with a balanced flue bend
 \varnothing 60/100 mm. In combination with a balanced flue bend
 \varnothing 60/100 mm, the total height is reduced by 10 mm.

Variable speed heating circuit pump in the Vitodens 222-F

The integral circulation pump is a highly efficient pump with substantially lower power consumption than conventional pumps.

The pump speed and consequently the pump rate are regulated subject to the outside temperature and the switching times for heating or reduced mode. The control unit transmits the current default settings to the circulation pump via an internal data bus.

The min. and max. speed and the speed in reduced mode can be adjusted using codes at the control unit of the existing heating system.

In the delivered condition, the minimum pump rate (coding address "E7") and the maximum pump rate (coding address "E6") are set to the following values:

Rated heating output in kW	Speed settings in the delivered condition in %	
	Min. pump rate	Max. pump rate
13	45	60
19	45	65
26	45	80

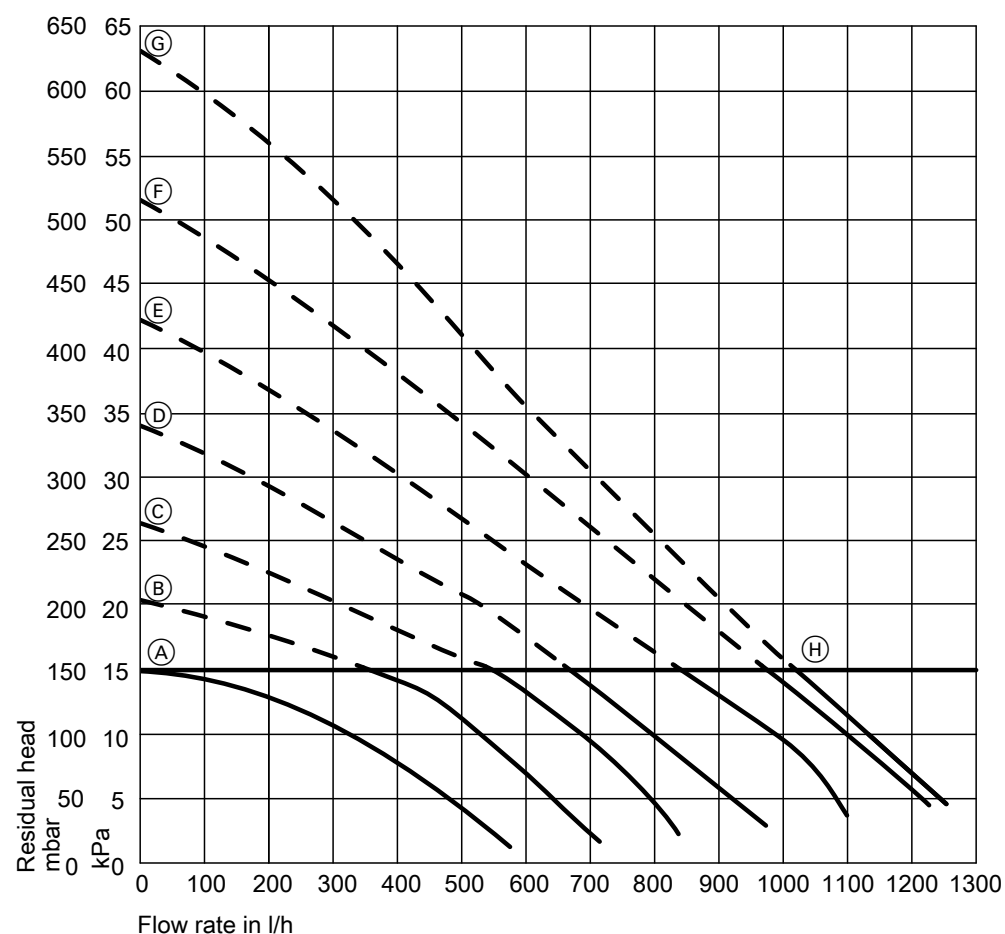
Note

In conjunction with a low loss header, heating water buffer cylinder and heating circuits with mixer, the internal circulation pump runs at a constant speed. The speed can be adjusted subject to demand by changing the code at the control unit.

Specification circulation pump

Rated heating output	kW	13	19	26
Circulation pump	Type	UPM3 15-75	UPM3 15-75	UPM3 15-75
Rated voltage	V~	230	230	230
Power consumption				
– max.	W	60	60	60
– min.	W	2	2	2
– Delivered condition	W	12	20	38
Energy efficiency class		A	A	A
Energy efficiency index (EEI)		≤ 0.20	≤ 0.20	≤ 0.20

Residual head of the integral circulation pump



(H) Upper operational limit

Vitodens 222-F, type B2SB (cont.)

Curve	Pump rate, circulation pump	Coding address setting "E6"
Ⓐ	40 %	E6:040
Ⓑ	50 %	E6:050
Ⓒ	60 %	E6:060
Ⓓ	70 %	E6:070
Ⓔ	80 %	E6:080
Ⓕ	90 %	E6:090
Ⓖ	100 %	E6:100

3.1 Product description



- Ⓐ 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
- Ⓑ Modulating MatriX gas burner for extremely clean combustion
- Ⓒ Integral diaphragm expansion vessel
- Ⓓ Digital boiler control unit
- Ⓔ Integral solar circuit pump
- Ⓕ Dual mode DHW cylinder

The Vitodens 242-F gas condensing storage combi boiler for installation against the wall is affordable, compact, efficient and solar-compatible. This storage combi boiler is factory-prepared for direct connection of a solar thermal system. The solar control module is already integrated and is regulated via the Vitotronic control unit. The 170 l dual mode DHW cylinder provides a high level of DHW convenience. For ease of handling the Vitodens 242-F can be transported in two parts.

Recommended applications

- Installation in detached and terraced houses
- New build (e.g. prefabricated houses and developer projects):
Installation in utility rooms

Benefits at a glance

- Gas condensing storage combi boiler with integral solar cylinder
- Standard seasonal efficiency [to DIN]: Up to 98 % (H_s) [gross cv]

- Durable and efficient thanks to the Inox-Radial stainless steel heat exchanger
- MatriX cylinder burner with Lambda Pro Control Plus combustion controller for permanently high efficiency and clean combustion – Modulation range down to 1:10
- Power saving, high efficiency circulation pumps for heating circuit and solar circuit
- Enamelled dual mode loading cylinder with 170 l capacity
- New, innovative operating concept using colour touchscreen with plain text and graphic display, commissioning assistant and displays for energy consumption, as well as alternative operation from a mobile end device
- Web-enabled through Vitoconnect (accessories) for operation and service via Viessmann apps
- Automatic flue adaptor
- Can be split for easier handling

Vitodens 242-F, type B2UB (cont.)

- Solar coverage > 50 %
- Assembly kit (accessories) with the dimensions and design of the appliance, for the connection of one regulated and one unregulated heating circuit

Delivered condition

Gas condensing boiler with Inox-Radial heat exchanger, MatriX cylinder burner for natural gas and LPG to DVGW Code of Practice G260 [Germany], expansion vessel, variable speed heating circuit pump and solar circuit pump, heat transfer medium drip pan, solar side safety valve, Vitotronic 200 for weather-compensated operation, solar control module and integral DHW solar cylinder. Fully plumbed and wired. White epoxy-coated casing.

Preset for operation with natural gas. Conversion within gas groups E/LL is not required. The conversion to LPG is made at the control unit (a conversion kit is not required).

Accessories required (order separately)

Installation on finished walls

- Connection set for installation on finished walls, for upward connection
or
- Connection set with pre-mounting bracket for installation on finished walls, for upward connection
or

- Connection set for installation on finished walls, for connection to the left or right
or
- Connection set with pre-mounting bracket for installation on finished walls, for connection to the left or right
or
- Assembly kit with mixer

Installation on unfinished walls

- Connection set for unfinished walls
or
- Assembly kit with mixer

Tested quality



CE designation according to current EC Directives



ÖVGW Quality Mark for gas and water equipment

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

3.2 Specification

Gas boiler, type B and C, category II_{2N3P}				
Rated heating output range (to EN 15502-1)				
$T_F/T_R = 50/30\text{ °C}$	kW	1.9 - 13.0	1.9 - 19.0	2.6 - 26.0
$T_F/T_R = 80/60\text{ °C}$	kW	1.7 - 12.1	1.7 - 17.6	2.4 - 24.1
Rated heating output for DHW heating	kW	1.7 - 17.2	1.7 - 17.2	2.4 - 29.3
Rated heat input	kW	1.8 - 17.9	1.8 - 17.9	2.5 - 30.5
Product ID		CE-0085CN0050		
IP rating		IP X4 to EN 60529		
Gas supply pressure				
Natural gas	mbar	20	20	20
	kPa	2	2	2
LPG	mbar	50	50	50
	kPa	5	5	5
Max. permissible gas supply pressure^{*5}				
Natural gas	mbar	25.0	25.0	25.0
	kPa	2.5	2.5	2.5
LPG	mbar	57.5	57.5	57.5
	kPa	5.75	5.75	5.75
Sound power level (to EN ISO 15036-1)				
– At partial load	dB(A)	33	33	35
– At rated heating output (DHW heating)	dB(A)	39	41	48
Power consumption				
– In the delivered condition	W	28	42	65
– Max.	W	181	181	203
Weight				
– Total (with casing)	kg	161	161	165
– Heat cell module	kg	42	42	46
– Cylinder module	kg	95	95	95
Heat exchanger capacity		Litre	1.8	2.4
Solar circuit capacity		Litre	9.9	9.9
Max. flow temperature		°C	74	74
Max. flow rate (Limit for the use of hydraulic separation)		l/h	1200	1400
Nominal circulating water volume At $T_F/T_R = 80/60\text{ °C}$		l/h	507	1018
Expansion vessel				
Capacity	Litre	12	12	12
Pre-charge pressure	bar	0.75	0.75	0.75
	kPa	75	75	75
Permiss. operating pressure				
– Heating circuit	bar	3	3	3
	MPa	0.3	0.3	0.3
– Solar circuit	bar	6	6	6
	MPa	0.6	0.6	0.6
Connections (with connection accessories)				
Boiler flow and return	R	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
Solar flow and return	R/Ø mm	$\frac{3}{4}/22$	$\frac{3}{4}/22$	$\frac{3}{4}/22$
Cold water and DHW	R	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
DHW circulation	R	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Dimensions				
Length	mm	595	595	595
Width	mm	600	600	600
Height	mm	1876	1876	1876
Height when tilted	mm	2000	2000	2000
Gas connection (with connection accessories)		R	$\frac{1}{2}$	$\frac{1}{2}$

^{*5} If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.

Vitodens 242-F, type B2UB (cont.)

Gas boiler, type B and C, category II _{2N3P}				
Rated heating output range (to EN 15502-1)				
$T_F/T_R = 50/30\text{ °C}$	kW	1.9 - 13.0	1.9 - 19.0	2.6 - 26.0
$T_F/T_R = 80/60\text{ °C}$	kW	1.7 - 12.1	1.7 - 17.6	2.4 - 24.1
DHW cylinder				
Capacity	Litre	170	170	170
Permiss. operating pressure (DHW side)	bar	10	10	10
	MPa	1	1	1
Continuous DHW output	kW	17.2	17.2	29.3
For DHW heating from 10 to 40 °C	l/h	493	493	840
Performance factor N_L^{*6}		1.4	1.4	2.0
Initial DHW output	l/10 min	164	164	190
For DHW heating from 10 to 40 °C				
Connection values				
relative to max. load				
With gas				
Natural gas E	m ³ /h	1.89	1.89	3.23
Natural gas LL	m ³ /h	2.20	2.20	3.75
LPG P	kg/h	1.40	1.40	2.39
Flue gas parameters^{*2}				
Flue gas category to G 635/G 636		G_{52}/G_{51}	G_{52}/G_{51}	G_{52}/G_{51}
Temperature (at a return temperature of 30 °C)				
– At rated heating output	°C	45	45	45
– At partial load	°C	35	35	35
Temperature (at a return temperature of 60 °C)	°C	68	68	70
Mass flow rate				
– For natural gas				
– At rated heating output	kg/h	31.8	31.8	43.9
– At partial load	kg/h	5.5	5.5	8.7
– For LPG				
– At rated heating output	kg/h	30.2	30.2	41.7
– At partial load	kg/h	7.6	7.6	14.0
Available draught				
	Pa	250	250	250
	mbar	2.5	2.5	2.5
Max. amount of condensate				
To DWA-A 251	l/h	2.3	2.5	4.3
Condensate connection (hose nozzle)	Ø mm	20-24	20-24	20-24
Flue outlet	Ø mm	60	60	60
Ventilation air connection	Ø mm	100	100	100
Standard seasonal efficiency [to DIN] at		up to 98 (H _s) [gross cv]		
$T_F/T_R = 40/30\text{ °C}$	%			
Energy efficiency class				
– Heating		A	A	A
– DHW heating, draw-off profile XL		A	A	A

^{*6} At 70 °C average boiler water temperature and cylinder storage temperature $T_{cyl} = 60\text{ °C}$.

DHW performance factor N_L depends on cylinder storage temperature T_{cyl} .

Standard values: $T_{cyl} = 60\text{ °C} \rightarrow 1.0 \times N_L$ $T_{cyl} = 55\text{ °C} \rightarrow 0.75 \times N_L$ $T_{cyl} = 50\text{ °C} \rightarrow 0.55 \times N_L$ $T_{cyl} = 45\text{ °C} \rightarrow 0.3 \times N_L$.

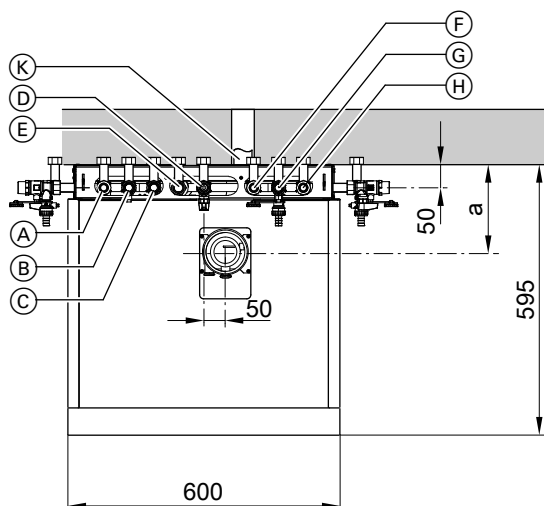
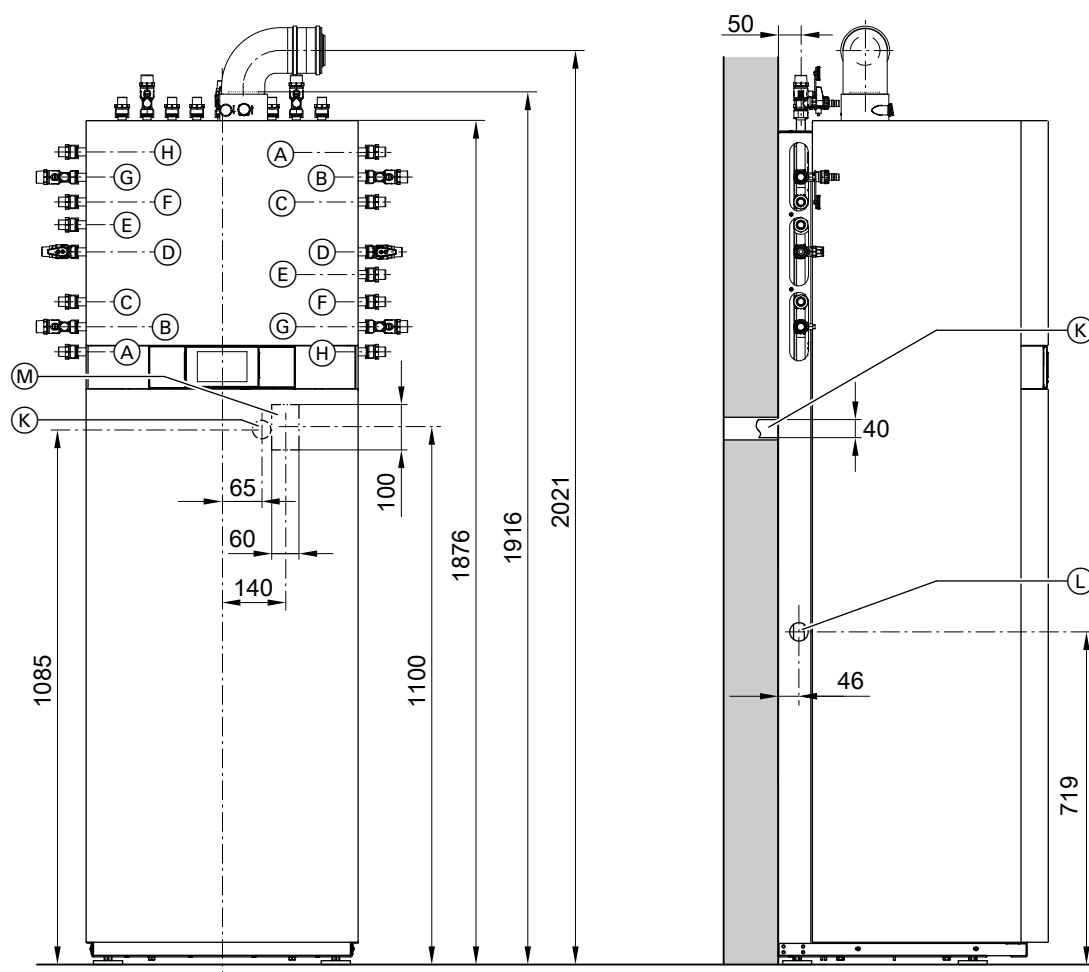
^{*2} Calculation values for sizing the flue system to EN 13384.

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.

Vitodens 242-F, type B2UB (cont.)



- (A) Solar return R $\frac{3}{4}$ "/Ø 22 mm
- (B) Heating flow R $\frac{3}{4}$ "
- (C) DHW R $\frac{1}{2}$ "
- (D) Gas connection R $\frac{1}{2}$ "
- (E) DHW circulation R $\frac{1}{2}$ " (separate accessories)

- (F) Cold water R $\frac{1}{2}$ "
- (G) Heating return R $\frac{3}{4}$ "
- (H) Solar flow R $\frac{3}{4}$ "/Ø 22 mm
- (K) Condensate drain facing backwards into the wall
- (L) Condensate drain to the side
- (M) Wiring area

Rated heating output kW	a mm
13 and 19	201
26	224

Vitodens 242-F, type B2UB (cont.)

Note

The dimensioned drawing shows example fittings for installation on finished walls, for upward connection and connection to the left/right. Order the connection sets separately as accessories.

For the dimensions of the individual connection sets, see the design information.

Note

All height dimensions have a tolerance of +7 mm on account of the adjustable feet.

Variable speed heating circuit pump in the Vitodens 242-F

The integral circulation pump is a highly efficient pump with substantially lower power consumption than conventional pumps.

The pump speed and consequently the pump rate are regulated subject to the outside temperature and the switching times for heating or reduced mode. The control unit transmits the current default settings to the circulation pump via an internal data bus.

The min. and max. speed and the speed in reduced mode can be adjusted using codes at the control unit of the existing heating system.

In the delivered condition, the minimum pump rate (coding address "E7") and the maximum pump rate (coding address "E6") are set to the following values:

Rated heating output in kW	Speed settings in the delivered condition in %	
	Min. pump rate	Max. pump rate
13	45	60
19	45	65
26	45	80

Note

Height dimensions in combination with a balanced flue bend Ø 60/100 mm. In combination with a balanced flue bend Ø 60/100 mm, the total height is reduced by 10 mm.

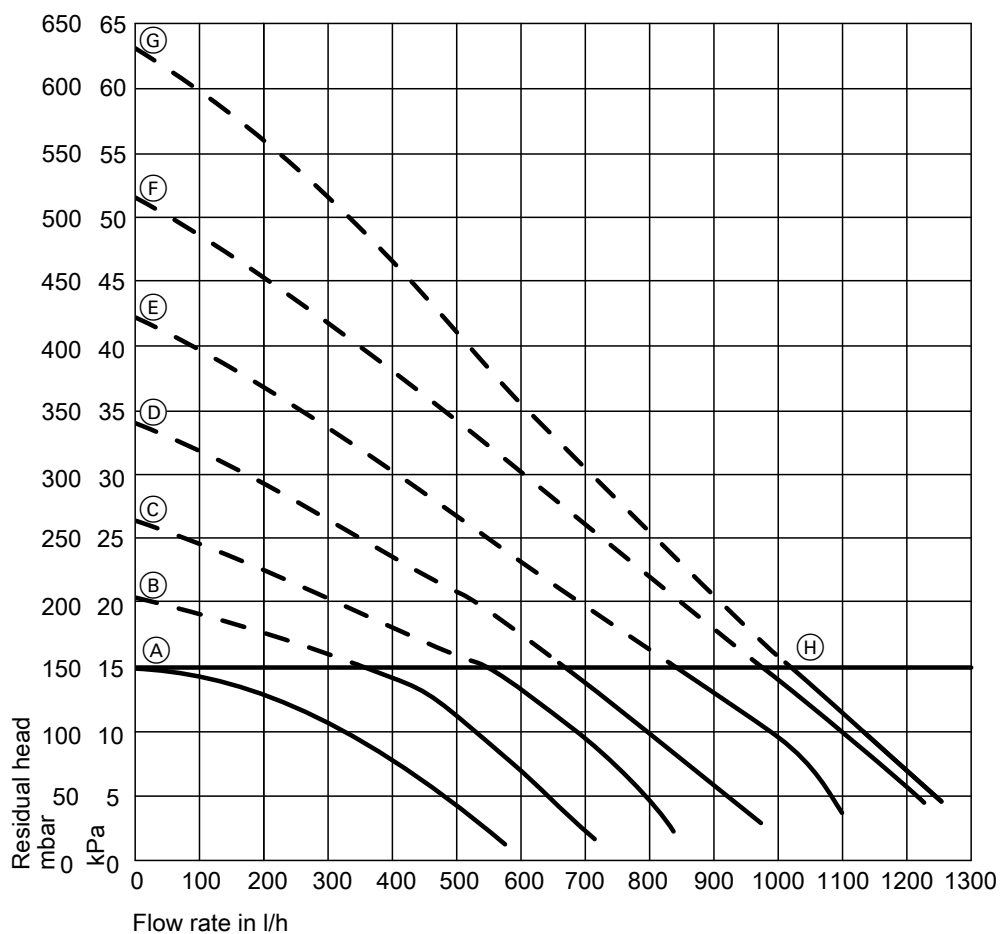
Note

In conjunction with a low loss header, heating water buffer cylinder and heating circuits with mixer, the internal circulation pump runs at a constant speed. The speed can be adjusted subject to demand by changing the code at the control unit.

Specification circulation pump

Rated heating output	kW	13	19	26
Circulation pump	Type	UPM3 15-75	UPM3 15-75	UPM3 15-75
Rated voltage	V~	230	230	230
Power consumption				
– max.	W	60	60	60
– min.	W	2	2	2
– Delivered condition	W	12	20	38
Energy efficiency class		A	A	A
Energy efficiency index (EEI)		≤ 0.20	≤ 0.20	≤ 0.20

Residual head of the integral circulation pump



(H) Upper operational limit

Curve	Pump rate, circulation pump	Coding address setting "E6"
(A)	40 %	E6:040
(B)	50 %	E6:050
(C)	60 %	E6:060
(D)	70 %	E6:070
(E)	80 %	E6:080
(F)	90 %	E6:090
(G)	100 %	E6:100

Variable speed solar circuit pump in the Vitodens 242-F

The integral solar circuit pump is a highly efficient circulation pump with substantially lower power consumption than conventional pumps.

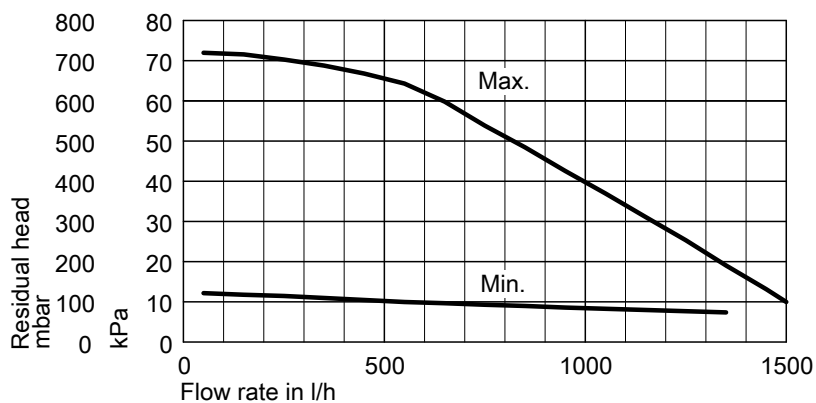
The min. and max. speed and thus the pump rate are set via codes on the control unit. The control unit transmits the current default settings to the circulation pump via an internal data bus.

In the delivered condition, the minimum pump rate (coding address "05" in the solar group) is set to 30 %. The maximum pump rate (coding address "06" in the solar group) is set to 100 %.

Type	VI Solar PM2		
			15-85
Rated voltage		V~	230
Power consumption	max.	W	55
	min.	W	3
Energy efficiency class	A		

Vitodens 242-F, type B2UB (cont.)

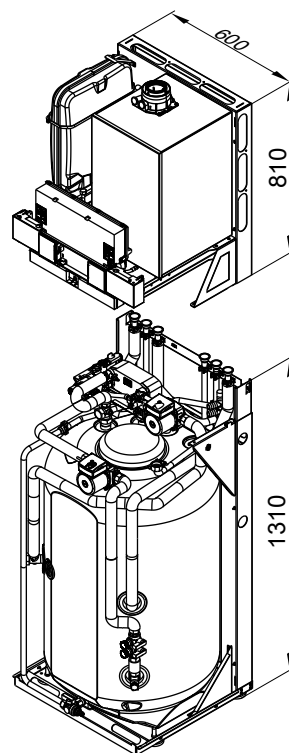
Residual head of the integral solar circuit pump



Handling the Vitodens 242-F in tight spaces

If required the heat cell and cylinder can be separated for easier handling at the installation location.

For the weight of the individual parts, see the specification.



Installation accessories

4.1 Installation accessories Vitodens 222-F and Vitodens 333-F

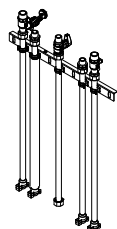
Connection set for installation on finished walls, for upward connection

Part no. 7348566

Components:

- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2



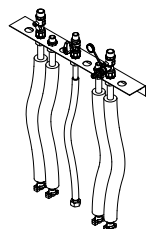
Connection set with pre-mounting bracket for installation on finished walls, for upward connection

Part no. 7355317

Components:

- Connection panel
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2



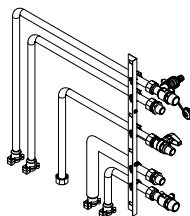
Connection set for installation on finished walls, for connection to the left or right

Part no. 7350854

Components:

- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2



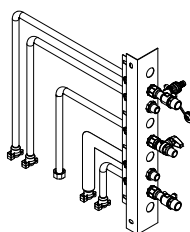
Connection set with pre-mounting bracket for installation on finished walls, for connection to the left or right

Part no. 7354403

Components:

- Connection panel
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2



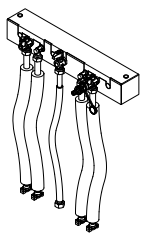
Connection set with pre-mounting bracket for installation on finished walls, for downward connection

Part no. ZK01792

Components:

- Connection panel
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve and air vent valve
- 2 connectors for DHW
- Angle gas valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2



Note

This type of installation requires a wall clearance of 70 mm behind the heat generator.

Connection set for unfinished walls

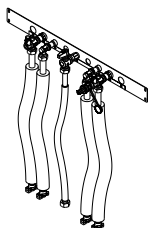
Part no. 7351625

Comprising:

- Mounting plate
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- Angle gas valve with thermally activated safety shut-off valve

Connections (male thread)

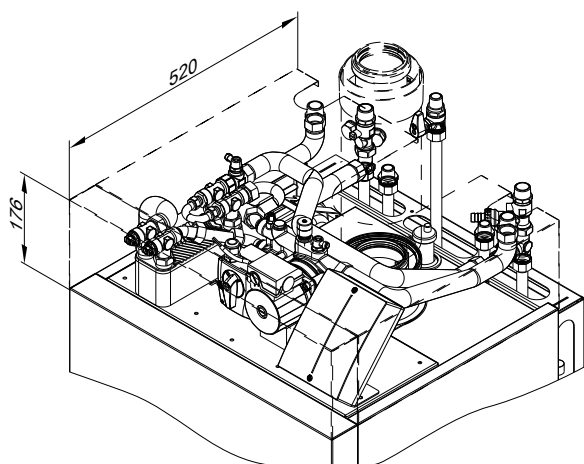
Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2



Assembly kit with mixer

For installation on finished walls

Part no. Z009888

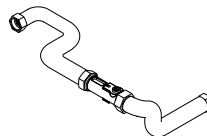


Assembly kit accessories

Line regulating valve with flow indicator

Part no. 7452078

For hydronic balancing of the heating circuits



Contact temperature limiter

Part no. 7425493

Maximum temperature limiter for underfloor heating circuits

Contact temperature limiter with 1.5 m long connecting lead

Specification assembly kit with mixer

Assembly for heat distribution via one heating circuit with mixer and one heating circuit without mixer, designed to match the appliance. For installation on the boiler.

Comprising:

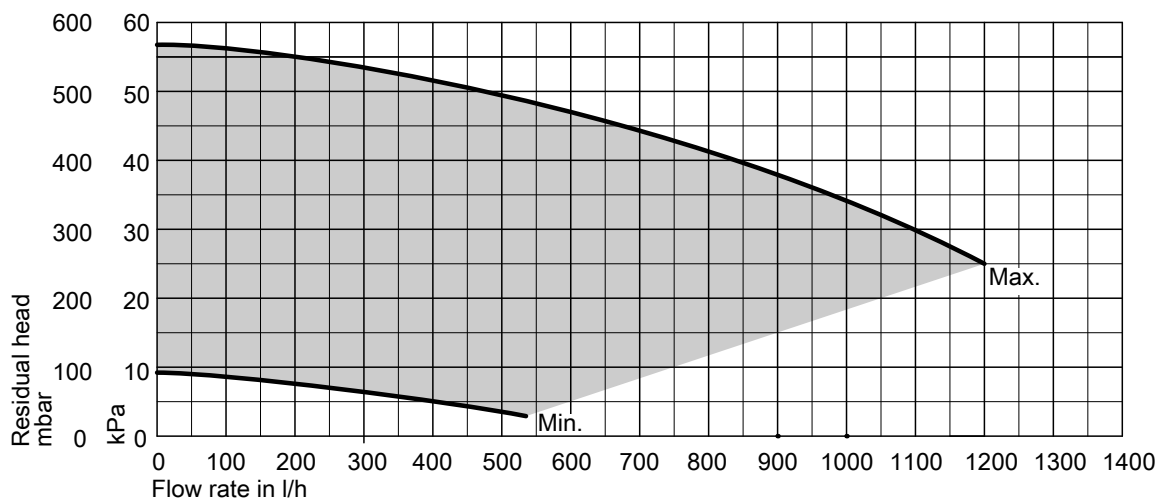
- Plate heat exchanger for system separation of the heating circuit with mixer
- Variable speed high efficiency circulation pump for the heating circuit with mixer
- 3-way mixer with mixer motor
- Mixer PCB, capable of communicating with Vitotronic 200 via KM-BUS
- Adjustable bypass
- Connection set for installation on finished or unfinished walls, with:
 - Connection pipes
 - Shut-off valves for heating water flow and return, with boiler drain & fill valve
 - 2 connectors for DHW
 - Gas shut-off valve with thermally activated safety shut-off valve
- Flow temperature sensor
- Cover, designed to match appliance
- Balanced flue extension, boiler flue connection

The heating circuit without mixer is supplied by the integral circulation pump of the Vitodens. For an installation scheme for operation with the assembly kit, see www.viessmann-schemen.com.

The assembly kit can only be used in conjunction with the Vitotronic 200.

Max. transferable heating output of the heating circuit with mixer (ΔT 10 K)	kW	14
Max. flow rate of the heating circuit with mixer (ΔT 10 K)	l/h	1200
Permiss. operating pressure	bar	3
Max. power consumption	W	48
Connections (male thread)		
– Gas	R	1/2
– Heating water	R	3/4
– DHW	R	1/2
Weight (incl. packaging)	kg	20

Residual head of the integral circulation pump for the heating circuit with mixer



Calculating the transferable heating output (examples)

The maximum heating output that can be transferred via the plate heat exchanger of the assembly kit is 14 kW. For balanced flow rates between the regulated heating circuit (assembly kit) and the unregulated heating circuit (radiator heating circuit), the pressure drop in the assembly kit must be increased.

For this, the line regulating valve with flow indicator available as an accessory can be fitted to the primary side of the plate heat exchanger, i.e. between the flow and return. The nominal circulation water volume of the boiler (see specification), minus the flow rate through the plate heat exchanger of the assembly kit, results in the flow rate of the unregulated heating circuit.

Example:

Vitodens 222-F, 26 kW

- Nominal amount of circulation water at ΔT 20 K: 1018 l/h
- Heating output for regulated heating circuit (assumed): 13 kW
- Resulting flow rate, primary side, plate heat exchanger at ΔT 20 K: 560 l/h \pm 9.3 l/min (to be set via the line regulating valve)
- Flow rate of the unregulated heating circuit: 1018 l/h – 560 l/h = 458 l/h

Connection set for DHW circulation pump

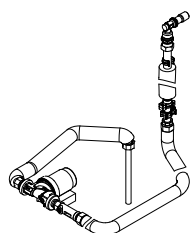
Part no. 7514306

For installation in the appliance

Components:

- High efficiency circulation pump
- Flow regulating valve
- Pipe assembly with thermal insulation

Connection R ½ (male thread)



Note

Vitodens with loading cylinder or solar cylinder also requires an AM1 or EA1 extension for connection to the Vitotronic.

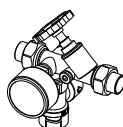
Safety assembly to DIN 1988

DN 15

Components:

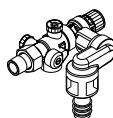
- Shut-off valve
- Non-return valve and test connector
- Pressure gauge
- Diaphragm safety valve

For on-site installation on finished walls



- 10 bar (1.0 MPa)
Part no. 7219722
- (A) 6 bar (0.6 MPa)
Part no. 7265023

For installation on unfinished walls in conjunction with the connection set



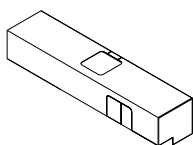
- 10 bar (1.0 MPa)
Part no. 7351842
- (A) 6 bar (0.6 MPa)
Part no. 7351840

Valve/fittings cover

Part no. 7352257

For connection set for installation on unfinished walls
Not for use in conjunction with filling facility

Installation accessories (cont.)

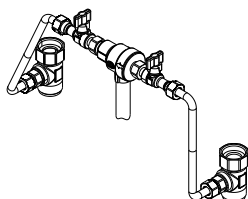


Filling device with pipe separator

For fitting to the connection sets

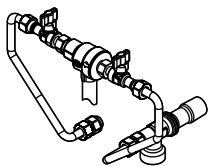
- For installation on finished walls (not for downward connection on finished walls)

Part no. 7356492



- For downward connection on unfinished and finished walls

Part no. 7356902



Connection set for external heating water expansion vessel

Part no. 7301709

Expansion vessel connection: R ½

Only for use with Vitodens 333-F

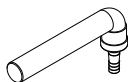


Connection bend for condensate drain

Part no. 7461025

Connection line from the appliance: DN 20

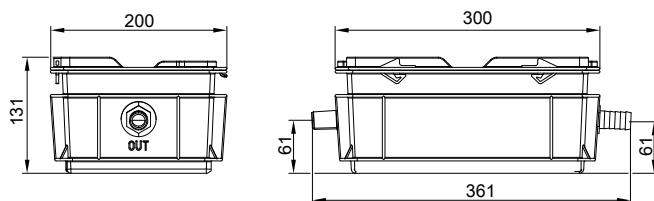
Drain connection: DN 40



Neutralising system with wall mounting bracket

Part no. ZK03652

With neutralising granulate



Neutralising granulate

Part no. ZK03654

2.5 kg

To match the neutralising system, part no. ZK03652

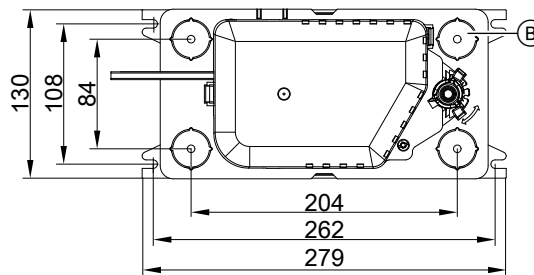
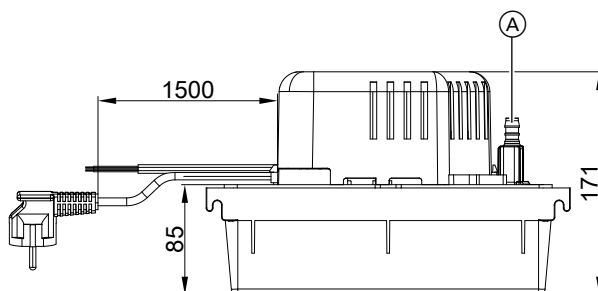
Condensate lifting system

Part no. ZK02486

Automatic condensate lifting system for condensate with a pH value ≥ 2.5 from gas condensing boilers

Components:

- Condensate container 2.0 l
- Centrifugal pump
- Non-return valve
- Connecting cable (1.5 m long) for fault messages
- Power cable (1.5 m long) with plug
- 4 connection apertures \varnothing 30 mm for condensate drain with connector \varnothing max. 40 mm)
- Drain hose \varnothing 10 mm (5 m long)



(A) Condensate drain

(B) 4 x condensate inlet with drain plug

Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Power consumption	70 W
IP rating	IP 20

Installation accessories (cont.)

Permissible medium temperature	+65 °C
Max. head	50 kPa
Max. pump rate	500 l/h
Alarm contact	Changeover contact (floating), breaking capacity 250 V/4 A

Service accessories for automatic hydronic balancing

See pricelist.

CO limiter

For Vitodens 222-F

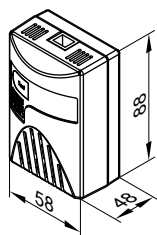
Part no. ZK02193

Monitoring device for safety shutdown of the boiler in the event of escaping carbon monoxide.

Wall mounting in the ceiling area near the boiler.

Components:

- Casing with integral CO sensor, electronic signal generation and displays for operation, faults and alarm
- Fixing materials
- Heat generator communication cable (2.5 m)



Specification

Rated voltage	24 V from the control unit
Alarm threshold	55 ppm CO to EN 50291-1
Signal	PWM signal, evaluated by the control unit
Protection class	II
IP rating	IP 20 to EN 60529
Permissible ambient temperature	0 °C to 40 °C

For Vitodens 333-F

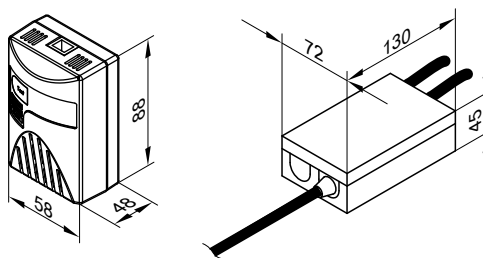
Part no. Z015500

Monitoring device for safety shutdown of the boiler in the event of escaping carbon monoxide.

Wall mounting in the ceiling area near the boiler.

Components:

- Casing with
 - Integral CO sensor
 - Mode, fault and alarm indicators
 - Acoustic alarm system
- Communication cable for interface (2.5 m).
- Interface inside the casing with power cable (1.2 m) and connecting lead for burner shutdown relay (1.2 m)
- Fixing materials

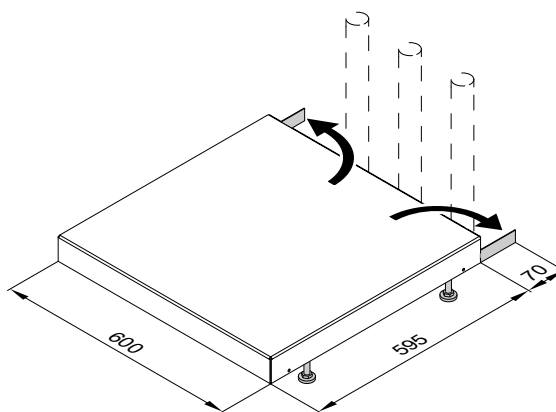


Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Power consumption	2 W
Rated breaking capacity of the relay output	8 A 230 V~
Alarm threshold	55 ppm CO to EN 50291-1
Protection class	II
IP rating	IP 20 to EN 60529; ensure through design/installation.
Permissible ambient temperature	0 °C to 40 °C

Boiler plinth

Part no. 7352259

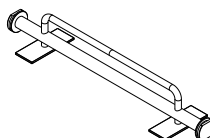


- For siting the appliance on unfinished floors
- Height adjustable, for screed heights from 10 to 18 cm
- With spacer for installation on finished walls, for downward connection

Transport aid

Part no. 7425341

To facilitate transportation of storage combi boilers



Small softening system for heating water

For filling heating circuits

See Vitoset pricelist.

Plate heat exchanger flushing system

Part no. 7373005

Installation accessories (cont.)

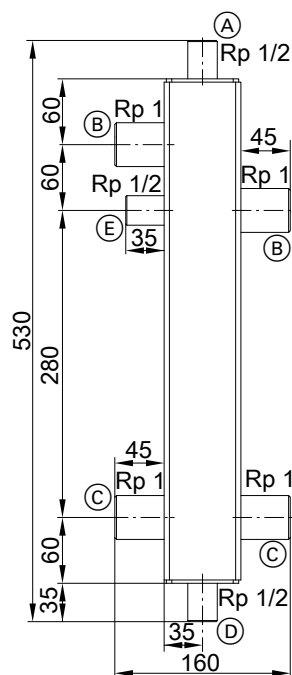
For cleaning the plate heat exchanger of the Vitodens with loading cylinder

Low loss headers

Low loss header, type Q60

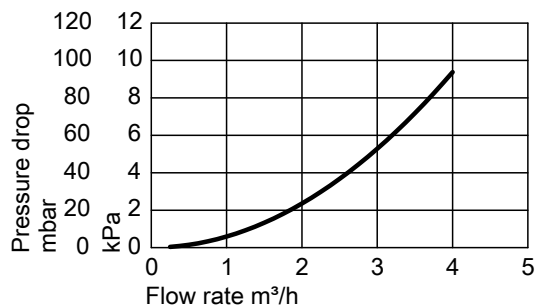
Part no. ZK03679

- Flow rate up to 3 m³/h
 - R 1 female connector
 - 3 female connections Rp 1/2 for air vent valve, drain outlet and sensor well
 - With air vent valve and sensor well for temperature sensor
 - With EPP thermal insulation to EnEV
- The connection to the heat generator is made on site.



- (A) Ventilation Rp 1/2
- (B) Heating water flow R 1 female thread
- (C) Heating water return R 1 female thread
- (D) Drain Rp 1/2
- (E) Sensor well Rp 1/2

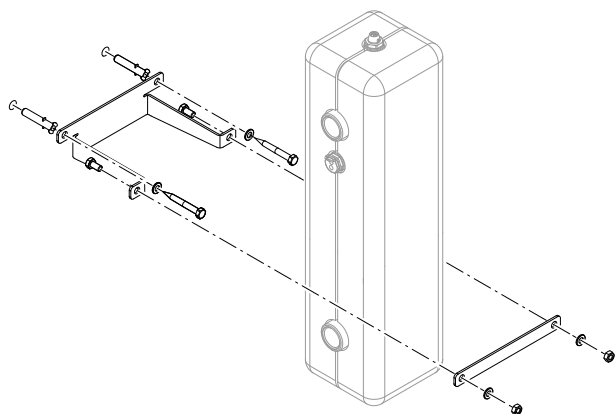
Pressure drop



Wall mounting bracket low loss header, type Q60

Part no. ZK03682

With fixing materials

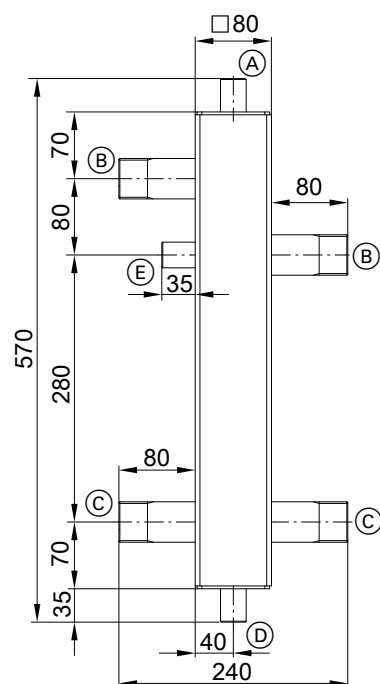
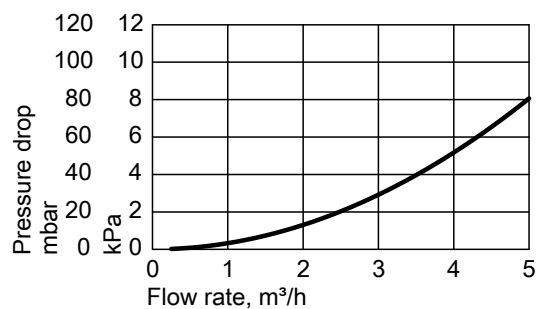


Low loss header, type Q80

Part no. ZK03680

- Flow rate up to 4.5 m³/h
 - Connector R 1¼ (male)
 - 3 Rp ½ female connections for air vent valve, drain outlet and sensor well
 - With air vent valve and sensor well for temperature sensor
 - With EPP thermal insulation to EnEV
- The connection between boiler and low loss header must be made on site.

Pressure drop

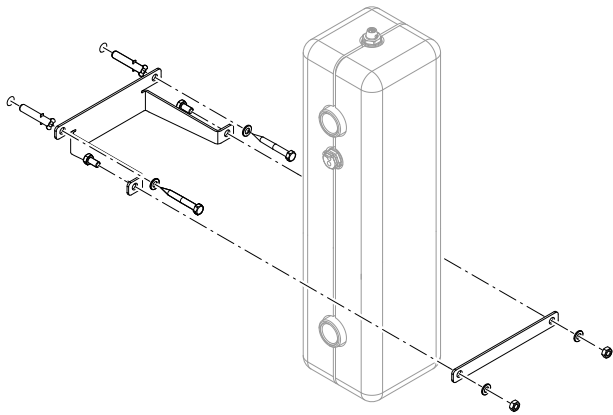


- Ⓐ Air vent valve Rp ½
- Ⓑ Heating water flow R 1¼ (male)
- Ⓒ Heating water return R 1¼ (male)
- Ⓓ Drain Rp ½
- Ⓔ Sensor well Rp ½

Wall mounting support for low loss header, type Q80

Part no. ZK03683

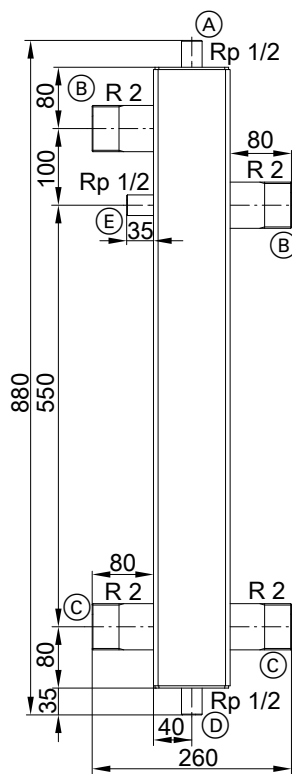
With fixing materials



Low loss header, type Q100

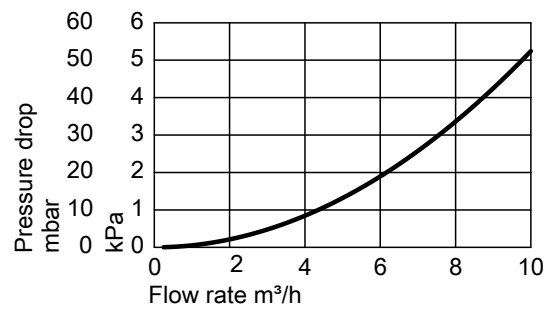
Part no. ZK03681

- Flow rate up to 8 m³/h
 - R 2 male connector
 - 3 female connections Rp 1/2 for air vent valve, drain outlet and sensor well
 - With air vent valve and sensor well for temperature sensor
 - With EPP thermal insulation to EnEV
- The connection to the heat generator is made on site.



- (A) Ventilation Rp 1/2
- (B) Heating water flow R 2 male thread
- (C) Heating water return R 2 male thread
- (D) Drain Rp 1/2
- (E) Sensor well Rp 1/2

Pressure drop

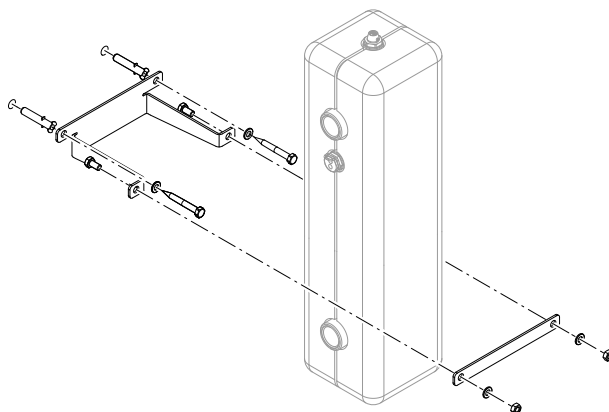


Installation accessories (cont.)

Wall mounting bracket low loss header, type Q100

Part no. ZK03684

With fixing materials



Flue gas cascade (positive pressure) for multi boiler systems with Vitodens 222-F

Comprising:

- Back draught safety device for each boiler
- Flue gas header
- End piece with condensate drain and trap

2-boiler system

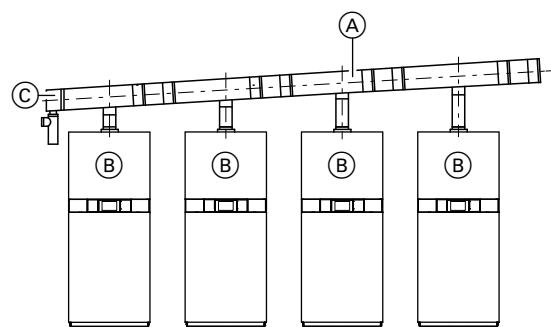
- System size 110
Part no. ZK01944
- System size 160
Part no. Z008385

3-boiler system

- System size 110
Part no. ZK01945
- System size 160
Part no. Z008386

4-boiler system

- System size 110
Part no. ZK01946
- System size 160
Part no. Z008387



- (A) Flue gas header
- (B) Back draught safety device (for installation in the Vitodens 222-F)
- (C) End piece with trap

4.2 Installation accessories Vitodens 242-F

Connection set for installation on finished walls, for upward connection

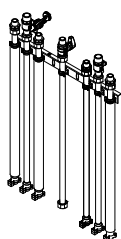
Part no. 7348552

Comprising:

- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- 2 connectors (threaded) and 2 connectors (smooth pipe) for solar flow and return
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)

Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2
Solar	R	3/4
	Ø mm	22



Connection set with pre-mounting bracket for installation on finished walls, for upward connection

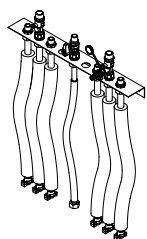
Part no. 7351778

Comprising:

- Fitting assembly
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- 2 connectors (threaded) and 2 connectors (smooth pipe) for solar flow and return
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)

Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2
Solar	R	3/4
	Ø mm	22



Connection set for installation on finished walls, for connection to the left or right

Part no. 7347985

Comprising:

- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve

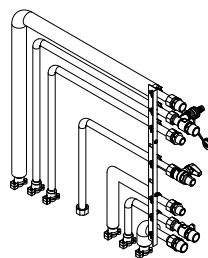
- 2 connectors for DHW

- 2 connectors (threaded) and 2 connectors (smooth pipe) for solar flow and return

- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)

Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2
Solar	R	3/4
	Ø mm	22



Connection set with pre-mounting bracket for installation on finished walls, for connection to the left or right

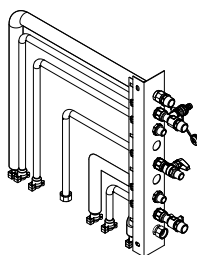
Part no. 7354386

Comprising:

- Fitting assembly
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- 2 connectors (threaded) and 2 connectors (smooth pipe) for solar flow and return
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)

Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2
Solar	R	3/4
	Ø mm	22



Connection set for unfinished walls

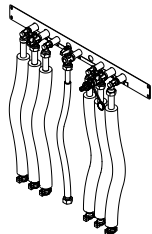
Part no. 7353065

Comprising:

- Mounting plate
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- 2 connectors for solar flow and return
- Gas shut-off valve with thermally activated safety shut-off valve

Installation accessories (cont.)

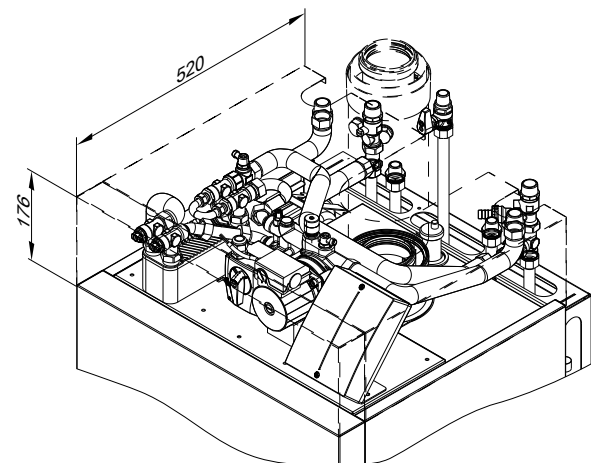
Connections (male thread)		
Gas	R	1/2
Heating water	R	3/4
DHW	R	1/2
Solar	R	3/4



Assembly kit with mixer

For installation on finished walls

Part no. Z009891

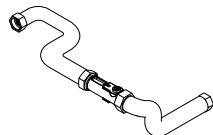


Assembly kit accessories

Line regulating valve with flow indicator

Part no. 7452078

For hydronic balancing of the heating circuits



Contact temperature limiter

Part no. 7425493

Maximum temperature limiter for underfloor heating circuits
Contact temperature limiter with 1.5 m long connecting lead

Contact temperature limiter

Part no. 7425494

Maximum temperature limiter for underfloor heating circuits
Contact temperature limiter with 1.5 m long connecting lead

Specification assembly kit with mixer

Assembly for heat distribution via one heating circuit with mixer and one heating circuit without mixer, designed to match the appliance.
For installation on the boiler.

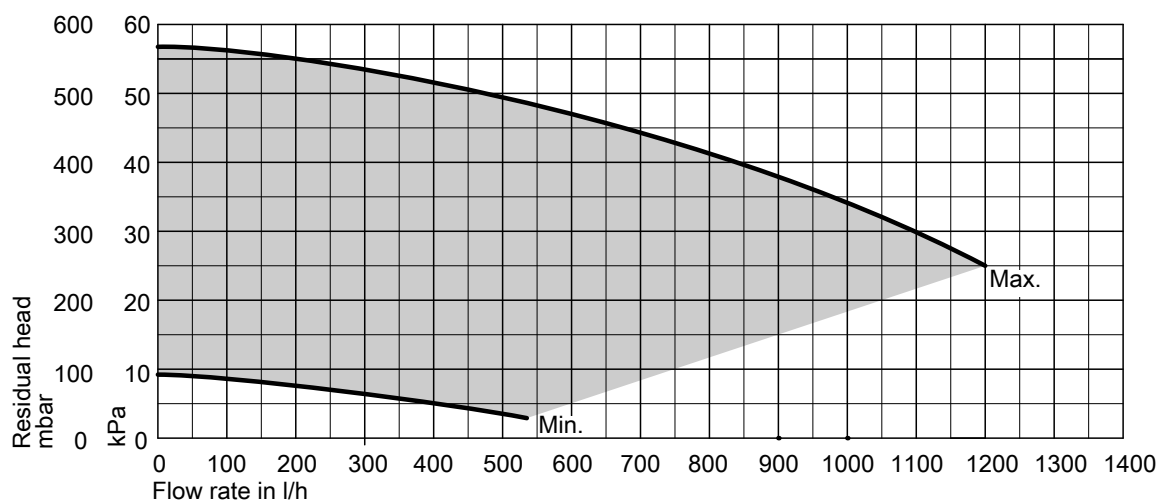
Comprising:

- Plate heat exchanger for system separation of the heating circuit with mixer
- Variable speed high efficiency circulation pump for the heating circuit with mixer
- 3-way mixer with mixer motor
- Mixer PCB, capable of communicating with Vitotronic 200 via KM-BUS
- Adjustable bypass
- Connection set for installation on finished or unfinished walls, with:
 - Connection pipes
 - Shut-off valves for heating water flow and return, with boiler drain & fill valve
 - 2 connectors for DHW
 - 2 connectors and 2 smooth pipe connectors, only for installation on finished walls for solar flow and return
 - Gas shut-off valve with thermally activated safety shut-off valve
- Flow temperature sensor
- Cover, designed to match appliance
- Balanced flue extension, boiler flue connection

The heating circuit without mixer is supplied by the integral circulation pump of the Vitodens. For an installation scheme for operation with the assembly kit: See www.viessmann-schemen.com.

Max. transferable heating output of the heating circuit with mixer (ΔT 10 K)	kW	14
Max. flow rate of the heating circuit with mixer (ΔT 10 K)	l/h	1200
Permiss. operating pressure	bar	3
Max. power consumption	W	48
Connections (male thread)		
– Gas	R	1/2
– Heating water	R	3/4
– DHW	R	1/2
– Solar	R	3/4
	Ø mm	22
Weight (incl. packaging)	kg	20

Residual head of the integral circulation pump for the heating circuit with mixer



Calculating the transferable heating output (examples)

The maximum heating output that can be transferred via the plate heat exchanger of the assembly kit is 14 kW. For balanced flow rates between the regulated heating circuit (assembly kit) and the unregulated heating circuit (radiator heating circuit), the pressure drop in the assembly kit must be increased.

For this, the line regulating valve with flow indicator available as an accessory can be fitted to the primary side of the plate heat exchanger, i.e. between the flow and return. The nominal circulation water volume of the boiler (see specification), minus the flow rate through the plate heat exchanger of the assembly kit, results in the flow rate of the unregulated heating circuit.

Example:

Vitodens 242-F, 5.2-26 kW

- Nominal amount of circulation water at ΔT 20 K: 1018 l/h
- Heating output for regulated heating circuit (assumed): 13 kW
- Resulting flow rate, primary side, plate heat exchanger at ΔT 20 K: 560 l/h \approx **9.3 l/min** (to be set via the line regulating valve)
- Flow rate of the unregulated heating circuit: 1018 l/h – 560 l/h = 458 l/h

Connection set for DHW circulation pump

Part no. 7514916

For installation in the Vitodens

Comprising:

- High efficiency circulation pump
- Flow regulating valve
- Pipe assembly with thermal insulation

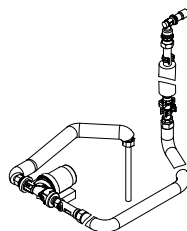
Connection R ½ (male thread)

For installation in the DHW circulation pipe, see page 64.

Note

An additional AM1 or EA1 extension is required for connection to the Vitotronic.

If required, scalding protection must be installed on site. Automatic thermostatic mixing valves, part no. 7438 940 and ZK01 815, cannot be used.



DHW circulation connection set

Part no. ZK03115

For installation in the Vitodens

For installation with on-site DHW circulation pump

Comprising:

- Flow regulating valve
- Pipe assembly without thermal insulation

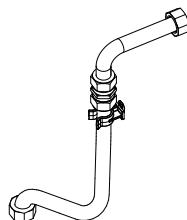
Connection R ½ (male thread)

For installation in the DHW circulation pipe, see page 64.

Note

If required, scalding protection must be installed on site. Automatic thermostatic mixing valves, part no. 7438 940 and ZK01 815, cannot be used.

If used, maintain a wall clearance of 140 mm.



Safety assembly to DIN 1988

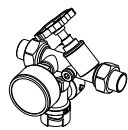
DN 15

Comprising:

- Shut-off valve
- Non-return valve and test connector
- Pressure gauge
- Diaphragm safety valve

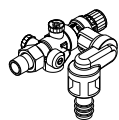
Installation accessories (cont.)

For on-site installation on finished walls



- 10 bar (1 MPa)
Part no. 7219722
- (A) 6 bar (0.6 MPa)
Part no. 7265023

For installation on unfinished walls in conjunction with the connection set

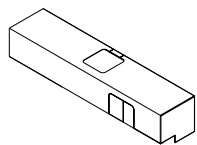


- 10 bar (1 MPa)
Part no. 7351842
- (A) 6 bar (0.6 MPa)
Part no. 7351840

Valve/fittings cover

Part no. 7352257

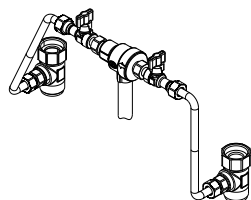
For connection set for installation on unfinished walls
Not for use in conjunction with filling facility



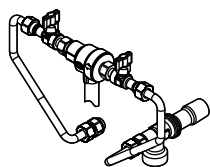
Filling device with pipe separator

For fitting to the connection sets

- For installation on finished walls (not for downward connection on finished walls)
Part no. 7356492



- For downward connection on unfinished and finished walls
Part no. 7356902



Automatic thermostatic mixing valve

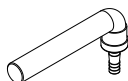
Part no. 7265058

Connection: \varnothing 22 mm
Setting range: 35 to 65 °C

Connection bend for condensate drain

Part no. 7461025

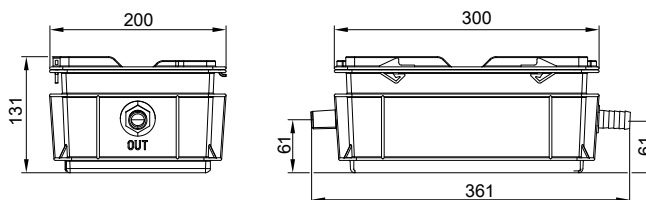
Connection line from the appliance: DN 20
Drain connection: DN 40



Neutralising system with wall mounting bracket

Part no. ZK03652

With neutralising granulate



Neutralising granulate

Part no. ZK03654

2.5 kg
To match the neutralising system, part no. ZK03652

Condensate lifting system

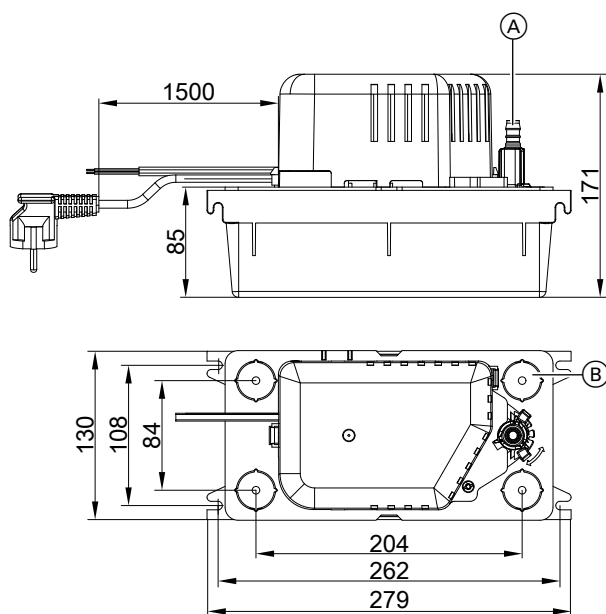
Part no. ZK02486

Automatic condensate lifting system for condensate with a pH value ≥ 2.5 from gas condensing boilers

Components:

- Condensate container 2.0 l
- Centrifugal pump
- Non-return valve
- Connecting cable (1.5 m long) for fault messages
- Power cable (1.5 m long) with plug
- 4 connection apertures \varnothing 30 mm for condensate drain with connector \varnothing max. 40 mm)
- Drain hose \varnothing 10 mm (5 m long)

Installation accessories (cont.)



- (A) Condensate drain
(B) 4 x condensate inlet with drain plug

Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Power consumption	70 W
IP rating	IP 20
Permissible medium temperature	+65 °C
Max. head	50 kPa
Max. pump rate	500 l/h
Alarm contact	Changeover contact (floating), breaking capacity 250 V/4 A

CO limiter

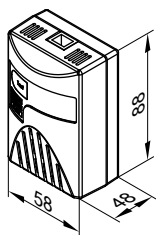
Part no. ZK02193

Monitoring device for safety shutdown of the boiler in the event of escaping carbon monoxide.

Wall mounting in the ceiling area near the boiler.

Components:

- Casing with integral CO sensor, electronic signal generation and displays for operation, faults and alarm
- Fixing materials
- Heat generator communication cable (2.5 m)

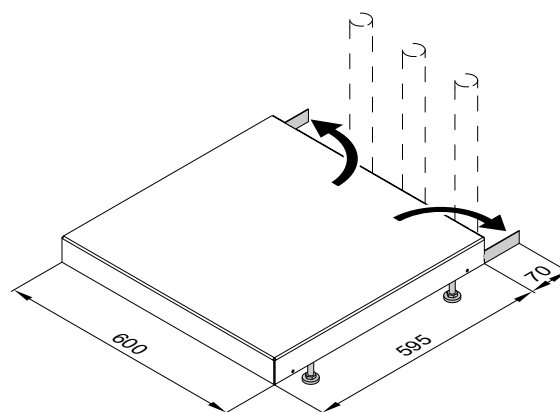


Specification

Rated voltage	24 V from the control unit
Alarm threshold	55 ppm CO to EN 50291-1
Signal	PWM signal, evaluated by the control unit
Protection class	II
IP rating	IP 20 to EN 60529
Permissible ambient temperature	0 °C to 40 °C

Boiler plinth

Part no. 7352259

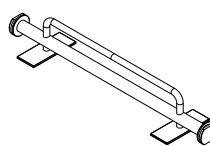


- For siting the appliance on unfinished floors
- Height adjustable, for screed heights from 10 to 18 cm
- With spacer for installation on finished walls, for downward connection

Transport aid

Part no. 7425341

To facilitate transportation of storage combi boilers



Small softening system for heating water

For filling heating circuits

See Vitoset pricelist.

Plate heat exchanger flushing system

Part no. 7373005

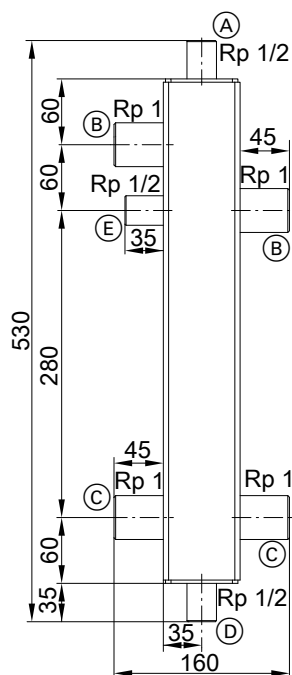
For cleaning the plate heat exchanger

Low loss headers

Low loss header, type Q60

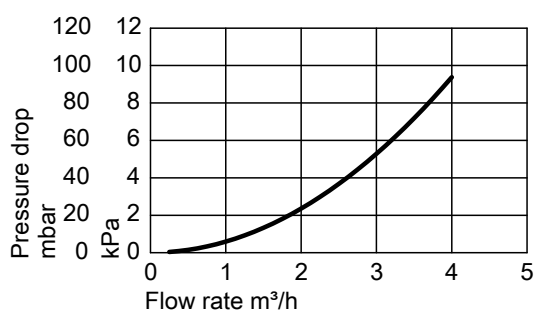
Part no. ZK03679

- Flow rate up to 3 m³/h
 - R 1 female connector
 - 3 female connections Rp ½ for air vent valve, drain outlet and sensor well
 - With air vent valve and sensor well for temperature sensor
 - With EPP thermal insulation to EnEV
- The connection to the heat generator is made on site.



- Ⓐ Ventilation Rp ½
- Ⓑ Heating water flow R 1 female thread
- Ⓒ Heating water return R 1 female thread
- Ⓓ Drain Rp ½
- Ⓔ Sensor well Rp ½

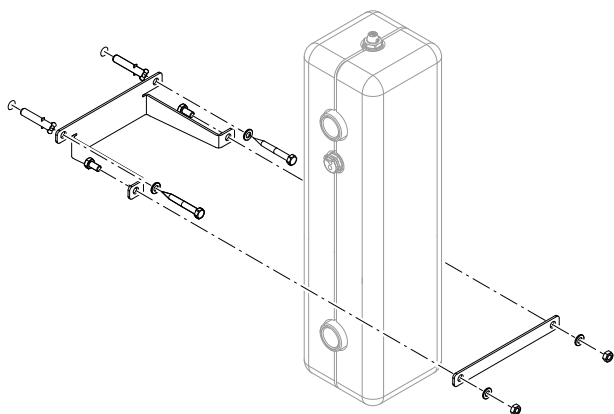
Pressure drop



Wall mounting bracket low loss header, type Q60

Part no. ZK03682

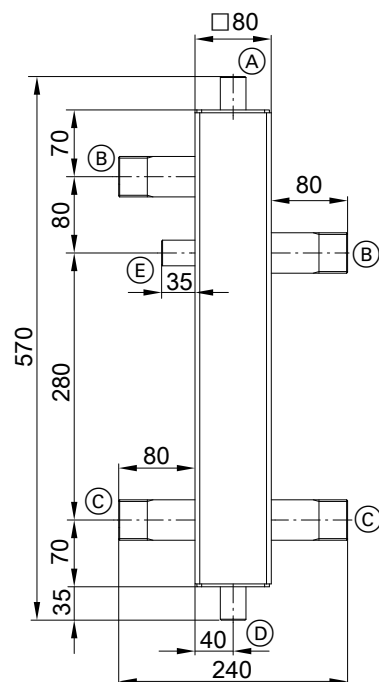
With fixing materials



Low loss header, type Q80

Part no. ZK03680

- Flow rate up to 4.5 m³/h
 - Connector R 1¼ (male)
 - 3 Rp ½ female connections for air vent valve, drain outlet and sensor well
 - With air vent valve and sensor well for temperature sensor
 - With EPP thermal insulation to EnEV
- The connection between boiler and low loss header must be made on site.



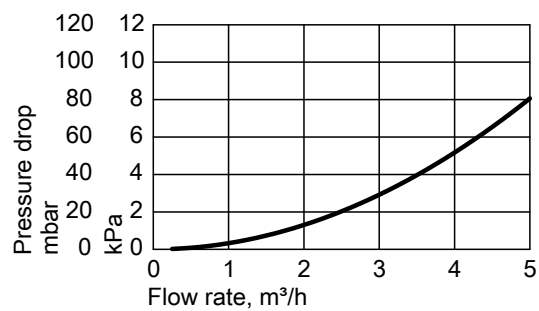
- (A) Air vent valve Rp ½
- (B) Heating water flow R 1¼ (male)
- (C) Heating water return R 1¼ (male)
- (D) Drain Rp ½
- (E) Sensor well Rp ½

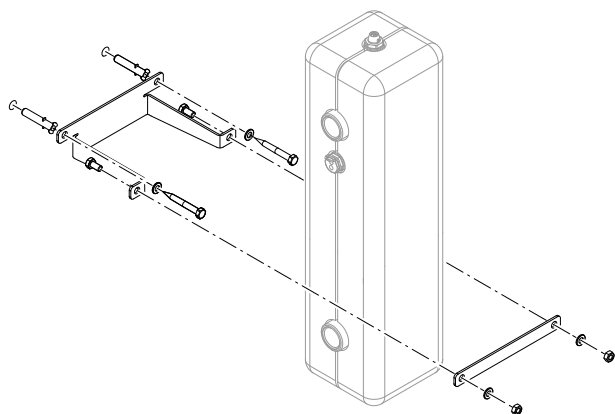
Wall mounting support for low loss header, type Q80

Part no. ZK03683

With fixing materials

Pressure drop



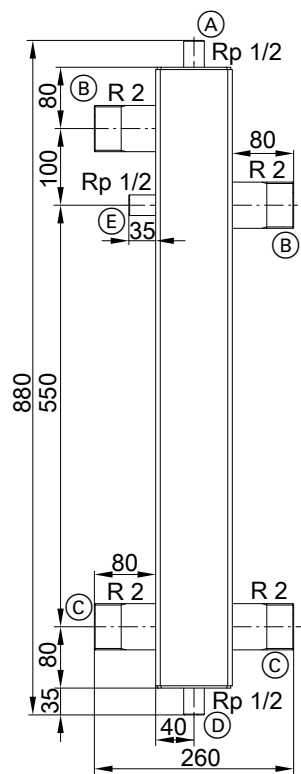
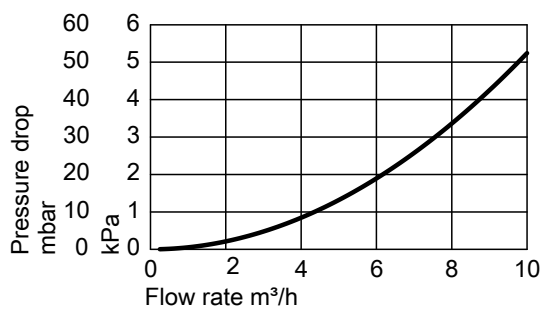


Low loss header, type Q100

Part no. ZK03681

- Flow rate up to 8 m³/h
 - R 2 male connector
 - 3 female connections Rp 1/2 for air vent valve, drain outlet and sensor well
 - With air vent valve and sensor well for temperature sensor
 - With EPP thermal insulation to EnEV
- The connection to the heat generator is made on site.

Pressure drop



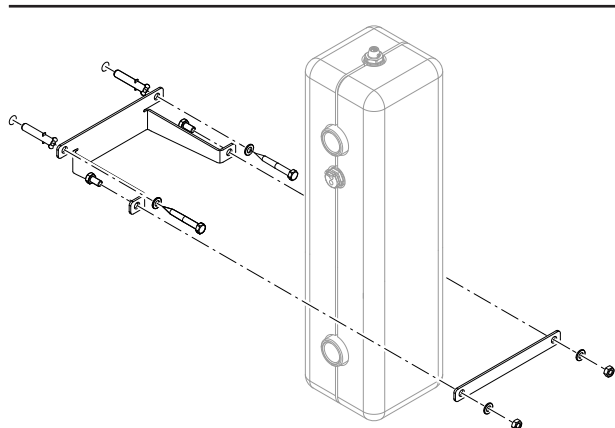
- (A) Ventilation Rp 1/2
- (B) Heating water flow R 2 male thread
- (C) Heating water return R 2 male thread
- (D) Drain Rp 1/2
- (E) Sensor well Rp 1/2

Installation accessories (cont.)

Wall mounting bracket low loss header, type Q100

Part no. ZK03684

With fixing materials



Design information

5.1 Siting, installation

Siting conditions for open flue operation (appliance type B)

Type B₂₃ and B₃₃

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 Viessmann.

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.

Max. ambient temperature of the system 35 °C.

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

- (A) When installing in Austria, observe all current safety regulations as defined by ÖVGW-TR Gas (G1), ÖNORM, ÖVGW, ÖVE and locally applicable standards.

Installation room

Permissible:

- Boiler installation 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 vents to the outside:
Ventilation air/extract air 150 cm² or 2 x 75 cm² each at the top and bottom of the same wall
- Attic rooms, but only with adequate minimum chimney height, acc. to DIN 18160 – 4 m above inlet (negative pressure operation).

Not permissible:

- Stairwells and communal hallways. Exception: Detached and two-family houses of low height (top edge of floor in the top storey < 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

The connection piece to the chimney should be as short as possible. Consequently, position the Vitodens as close as possible to the chimney.

The flue pipe should be designed to be as straight as possible. If bends are unavoidable, do not install the bends directly one after another. It must be possible to test and clean the entire flue gas path.

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

For **flue gas cascades or multiple connections** to a single flue system, install the back draught safety device (available as an accessory) in every boiler.

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

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 result if the ventilation system and the Vitodens are operated simultaneously. In such cases, install an **interlock circuit** (see page 45).

Safety equipment for the installation room

Viessmann heat generators are tested and approved in accordance with all safety regulations and are therefore fail-safe. Unpredictable, external factors may, in the rarest of cases, lead to the potentially harmful escape of carbon monoxide (CO). For this case, we recommend using a CO limiter. This can be ordered as a separate accessory.

Siting conditions for room sealed operation (appliance type C)

Type C_{13x}, C_{33x}, C_{14(3)x}, C_{53x}, C_{63x}, C_{83x} or C_{93x} to TRGI 2008
The Vitodens can be installed for **room sealed** operation **independent** of the size and ventilation of the installation room.

Installation room

Suitable siting locations include:

- Recreational rooms and other living spaces
- Ancillary rooms without their 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

The installation room 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.

Connection on the flue gas side

The flue pipe should be designed to be as short and straight as possible.

If bends are unavoidable, do not install them directly one after another. The entire flue gas path must be able to be checked and cleaned as required.

Since the flue pipe connection for balanced flue operation is surrounded by combustion air (coaxial pipe), maintaining clearances towards combustible components is not required.

Ventilation air ducts with which oil or solid fuel boilers were previously used must not contain any sulphur or soot deposits on the inner surfaces of the chimney. Sulphur and soot deposits cause faults. If thorough cleaning is not possible, a balanced flue pipe must be laid through the shaft. Alternatively, a separate balanced flue can be routed. Viessmann accepts no liability for damages caused by a failure to observe these stipulations.

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

Use of third party flue systems

Every approved flue system can be used for type C6. These flue systems are not tested together with the boilers and do not have system certification in accordance with EC Gas Appliances Directive 2009/142/EC.

If used, follow the design specifications in the Viessmann "Flue systems" technical guide for appliance types C_{13x}, C_{33x}, C_{14(3)x}, C_{53x}, C_{63x}, C_{83x} and C_{93x}, and observe appliance-specific specifications. If aluminium flue pipes are used, a condensate trap must additionally be installed above the boiler flue connection.

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 a garage, 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.

Safety equipment for the installation room

Viessmann heat generators are tested and approved in accordance with all safety regulations and are therefore fail-safe. Unpredictable, external factors may, in the rarest of cases, lead to the potentially harmful escape of carbon monoxide (CO). For this case, we recommend using a CO limiter. This can be ordered as a separate accessory.

Operation of the Vitodens in wet rooms

■ Room sealed operation:

The Vitodens is approved for installation in wet rooms (IP rating: IP X4, splashproof).

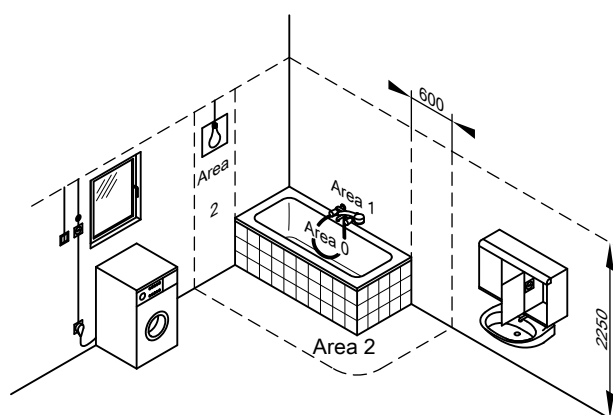
The boiler may be installed in safety zone 1 if hosed water (e.g. from massage showers) is prevented.

■ Open flue operation:

The boiler may only be installed in safety zone 1 or 2 if additional splash protection (part no. 7590109) is fitted.

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

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 (A): ÖVE regulations).

Protect the power cable with a fuse with a max. rating of 16 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. Connect the supply cables and accessories at the terminals inside the boiler.

For information on the cable entry area, see the dimensioned drawing in the specification section of the appropriate boiler.

Recommended cables

Flexible cable 3 x 1.5 mm ²	2-core min. 0.75 mm ²	4-core 1.5 mm ² or 3-core 1.5 mm ² without green/yellow wire
<ul style="list-style-type: none"> Power cables (incl. for accessories) A flexible cable (1.5 m long) is connected to the Vitodens 222-F and 242-F in the delivered condition DHW circulation pump 	<ul style="list-style-type: none"> AM1 or EA1 extension Outside temperature sensor Vitotronic 200-H (LON) Extension kit for heating circuit with mixer (KM-BUS) Vitotrol 100, type UTDB Vitotrol 200-A Vitotrol 300-A Wireless base station 	<ul style="list-style-type: none"> Vitotrol 100, type UTDB-RF Vitotrol 100, type UTA

Interlock switch

Install an interlock for open flue operation if an extractor (e.g. cooker hood) is fitted any room that is part of the interconnected combustion air supply.

For this, the internal H2 extension (accessories) can be used. This switches the extractors off when the burner is started.

Power supply for accessories

The power supply for accessories can be provided directly at the control unit.

This connection is switched by the system ON/OFF switch.

If the total system current exceeds 6 A, connect one or more extensions directly to the mains supply via an ON/OFF switch.

Where the boiler is sited in a wet room, the power supply connection of accessories must not be made at the control unit.

Additional requirements when siting boilers operated with LPG in rooms below ground level

According to TRF 1996 Vol. 2 – valid as of 1 September 1997 – an external safety solenoid valve is no longer required when installing the Vitodens below ground level.

However, the high safety standard derived from the use of an external safety solenoid valve has proved to be valuable. We therefore recommend the continued installation of an external safety solenoid valve when installing the Vitodens in rooms below ground level. The internal H1 extension is required for connection.

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].

(A) Connect the mains gas according to ÖVGW-TR Gas (G1) and the regionally applicable Building Regulations.

Max. test pressure 150 mbar (15 kPa).

We recommend installing a gas filter to DIN 3386 into the gas line.

The gas shut-off valves supplied with the Vitodens are equipped with integral thermally activated safety shut-off valves.

Gas supply pipe

The following table is designed to assist in the approximate sizing of the on-site gas supply pipe.

For each 90° bend 1 m is deducted from the max. possible pipe length.

Checking your calculations against TRGI and TRF [or local regulations] is recommended.

Thermally activated safety shut-off valve

According to paragraph 4, section 5 of the FeuVo 2008 [or local regulations], thermally activated shut-off equipment must be installed in combustion equipment or in gas supply lines immediately upstream of the combustion equipment. This equipment must shut off the gas supply if the external temperature exceeds 100 °C. The valves must isolate the gas supply for at least 30 min up to a temperature of 650 °C. This is intended to prevent the formation of explosive gas mixtures in the event of a fire.

Rated heat input kW	Gas type	Supply values		Nominal diameter of the gas supply pipe		
		m ³ /h	kg/h	DN 15	DN 20	DN 25
16.7	Natural gas E	1.77		13	60	–
	Natural gas LL	2.05		8	40	127
	LPG		1.31	80	–	–
17.9	Natural gas E	1.89		8	40	127
	Natural gas LL	2.20		6	28	91
	LPG		1.40	62	–	–

Design information (cont.)

Rated heat input	Gas type	Supply values		Nominal diameter of the gas supply pipe		
kW		m³/h	kg/h	DN 15	DN 20	DN 25
				Max. possible pipe length in m		
24.7	Natural gas E	2.61		6	28	91
	Natural gas LL	3.04		4	21	68
	LPG		1.93	36	156	–
30.5	Natural gas E	3.23		4	21	68
	Natural gas LL	3.75		–	16	53
	LPG		2.38	23	100	–
34.9	Natural gas E	3.86		4	21	68
	Natural gas LL	4.49		–	16	53
	LPG		2.85	23	100	–

Sizing recommendation, gas flow switch

In supply areas with H_{IB} below 8.6 kWh/m³ and gas appliances compliant with category I_{2N}, determine a fictitious rated heat input. This fictitious rated heat input results from the rated heat input (Q_{NB}) of the appliance, multiplied by a factor of 1.14 (ratio H_{IB} 8.6/7.55). Use this fictitious rated heat input to select the gas flow switch and design the pipework to TRGI 2008 [or local regulations].

Rated heating output

kW

11 to 19

26

35

Gas flow switch For natural gas

GS 4

GS 6

GS 10

The sizing recommendation for the gas flow switch does not negate the requirement for sizing the pipework correctly.

Minimum clearances

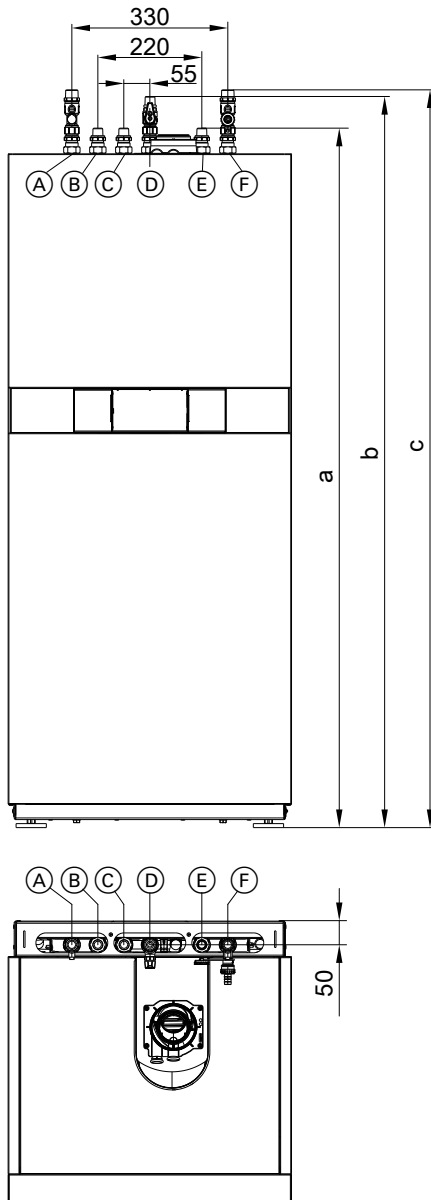
- Space required in front of the Vitodens for maintenance:
Min. 700 mm
- **No** maintenance clearances are required to the left or right of the Vitodens.
- In order to ensure a contact-proof design in accordance with the Low Voltage Directive, install the boiler with its back flush to the wall.

Design information (cont.)

Installation Vitodens 222-F and 333-F

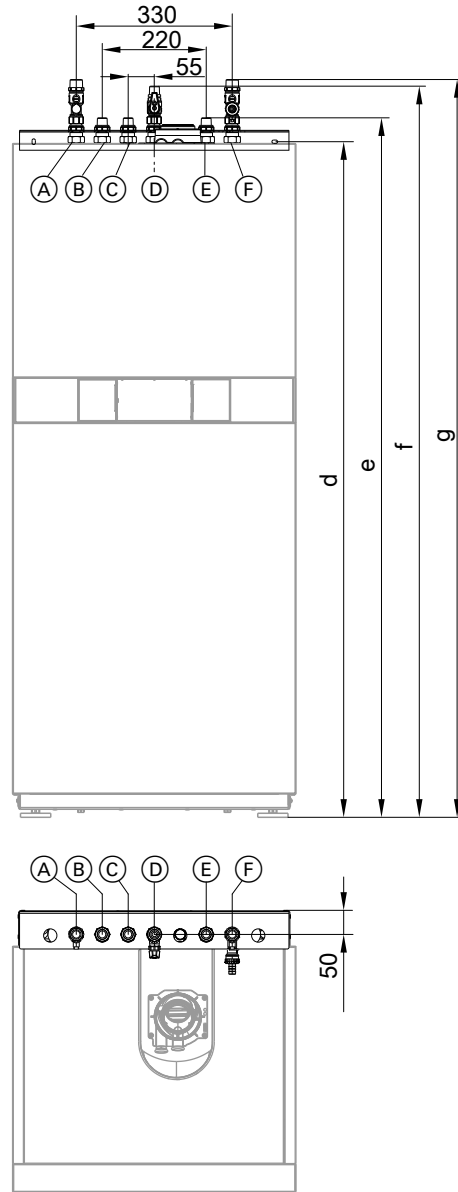
Connection sets for installation on finished walls, for upward connection

Connection set without pre-mounting bracket, part no. 7348566



- (A) Heating flow R $\frac{3}{4}$
- (B) DHW R $\frac{1}{2}$
- (C) DHW circulation R $\frac{1}{2}$ (separate accessory)

Connection set with pre-mounting bracket for pre-installation in unfinished buildings, part no. 7355317



- (D) Gas connection R $\frac{1}{2}$
- (E) Cold water R $\frac{1}{2}$
- (F) Heating return R $\frac{3}{4}$

Type	a mm	b mm	c mm	d mm	e mm	f mm	g mm
Vitodens 222-F, B2TB							
- 13 to 26 kW	1477	1514	1526	1440	1480	1561	1573
- 35 kW	1677	1714	1726	1640	1680	1761	1773
Vitodens 222-F, B2SB	1677	1714	1726	1640	1680	1761	1773
Vitodens 333-F, B3TB	1477	1514	1526	1440	1480	1561	1573

Note

The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

For connecting the on-site gas, heating water and DHW lines from above.

Design information (cont.)

Connection set comprising:

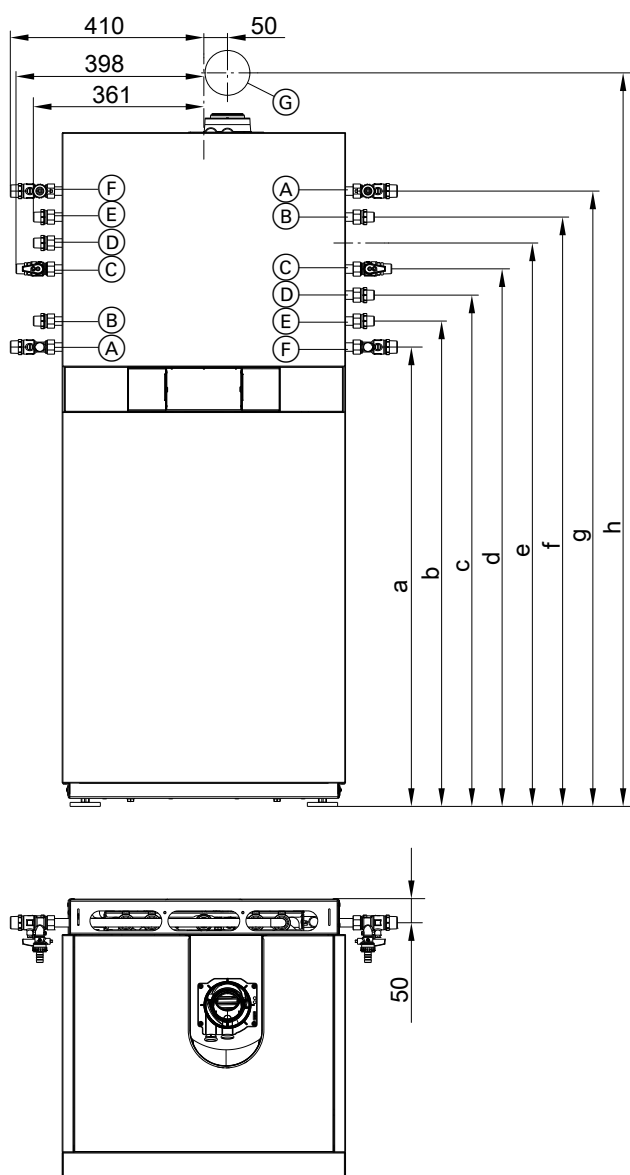
- Fitting assembly (only for part no. 7355317)
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve

- 2 connectors for DHW

- Gas shut-off valve with thermally activated safety shut-off valve

Connection sets for installation on finished walls, for connection to the left or right

Connection set without pre-mounting bracket, part no. 7350854



- (A) Heating flow R $\frac{3}{4}$
- (B) DHW R $\frac{1}{2}$
- (C) DHW circulation R $\frac{1}{2}$ (separate accessory)
- (D) Gas connection R $\frac{1}{2}$

- (E) Cold water R $\frac{1}{2}$
- (F) Heating return R $\frac{3}{4}$
- (G) Balanced flue connection (towards the back)

Type	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm
Vitodens 222-F, B2TB								
- 13 to 26 kW	972	1027	1082	1137	1192	1247	1302	1571
- 35 kW	1172	1227	1282	1337	1392	1447	1502	1771
Vitodens 222-F, B2SB	1172	1227	1282	1337	1392	1447	1502	1771
Vitodens 333-F, B3TB	972	1027	1082	1137	1192	1247	1302	1571

Design information (cont.)

Note

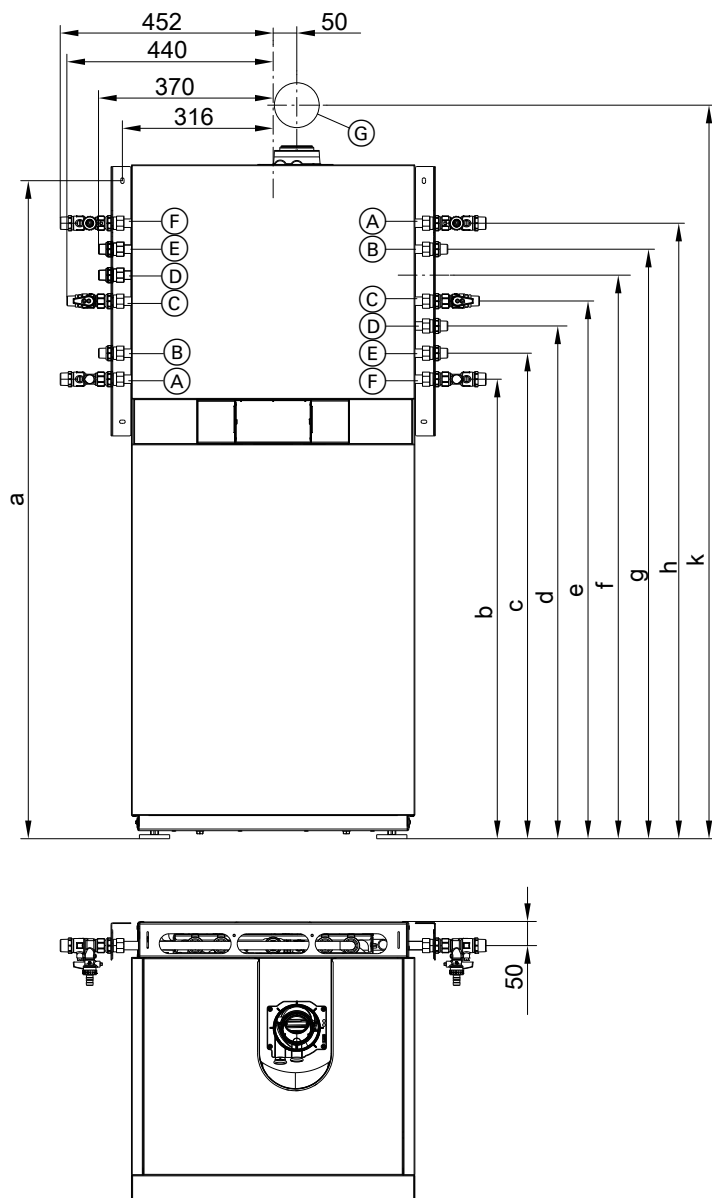
The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

For connecting on-site lines on the gas, heating water and DHW sides from the left or right.

Connection set comprising:

- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- Gas shut-off valve with thermally activated safety shut-off valve

Connection set with pre-mounting bracket for pre-installation in unfinished buildings, part no. 7354403



- (A) Heating flow R $\frac{3}{4}$
- (B) DHW R $\frac{1}{2}$
- (C) DHW circulation R $\frac{1}{2}$ (separate accessory)
- (D) Gas connection R $\frac{1}{2}$

- (E) Cold water R $\frac{1}{2}$
- (F) Heating return R $\frac{3}{4}$
- (G) Balanced flue connection (towards the back)

Type	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	k mm
Vitodens 222-F, B2TB									
- 13 to 26 kW	1402	972	1027	1082	1137	1192	1247	1302	1571
- 35 kW	1602	1172	1227	1282	1337	1392	1447	1502	1771
Vitodens 222-F, B2SB	1602	1172	1227	1282	1337	1392	1447	1502	1771
Vitodens 333-F, B3TB	1402	972	1027	1082	1137	1192	1247	1302	1571

Design information (cont.)

Note

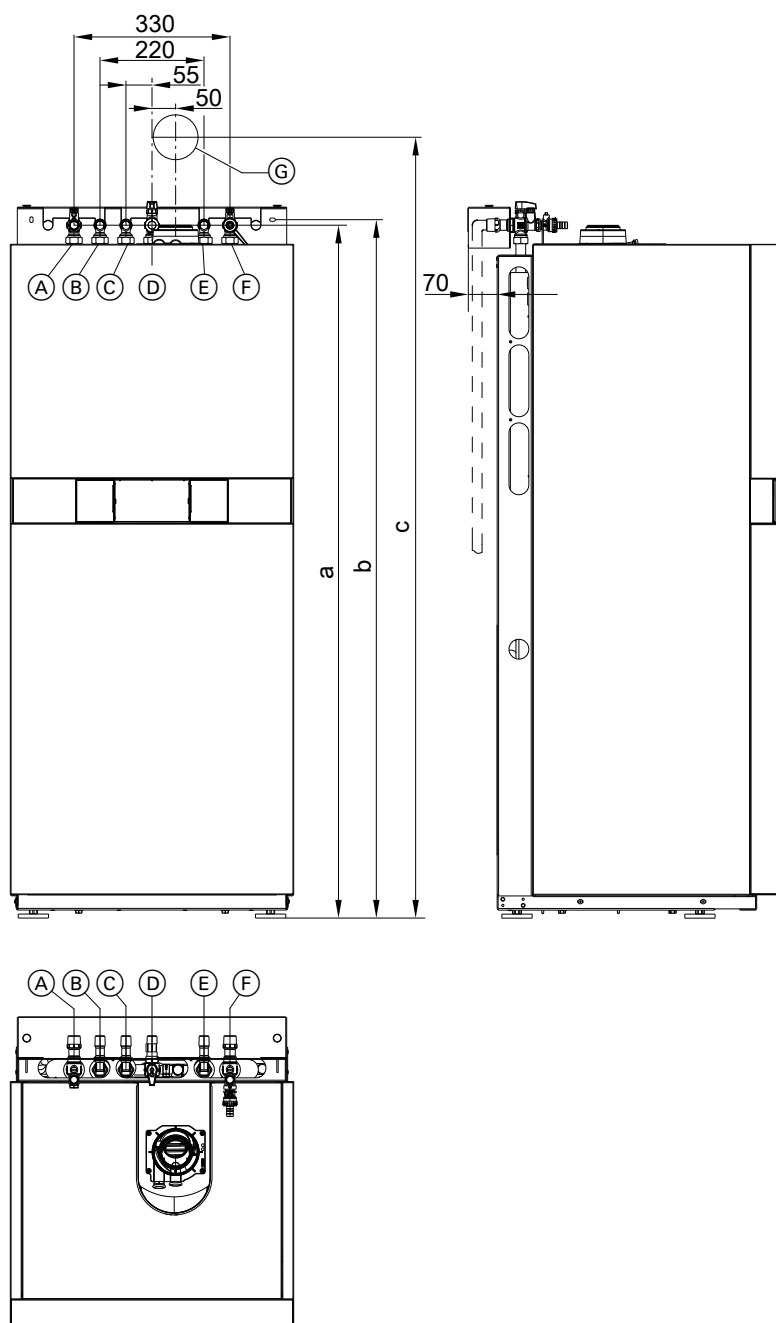
The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

For connecting on-site lines on the gas, heating water and DHW sides from the left or right.

Connection set comprising:

- Fitting assembly
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- Gas shut-off valve with thermally activated safety shut-off valve

Connection set for surface mounting (downward connection) with pre-mounting bracket, for pre-installation in unfinished buildings, part no. ZK01792



- (A) Heating flow R $\frac{3}{4}$
- (B) DHW R $\frac{1}{2}$
- (C) DHW circulation R $\frac{1}{2}$ (separate accessory)
- (D) Gas connection R $\frac{1}{2}$
- (E) Cold water R $\frac{1}{2}$
- (F) Heating return R $\frac{3}{4}$
- (G) Balanced flue connection towards the back

Type	a mm	b mm	c mm
Vitodens 222-F, B2TB - 13 to 26 kW	1463	1475	1571
- 35 kW	1663	1675	1771
Vitodens 222-F, B2SB	1663	1675	1771
Vitodens 333-F, B3TB	1463	1475	1571

Design information (cont.)

A wall clearance of 70 mm is required behind the Vitodens.

Note

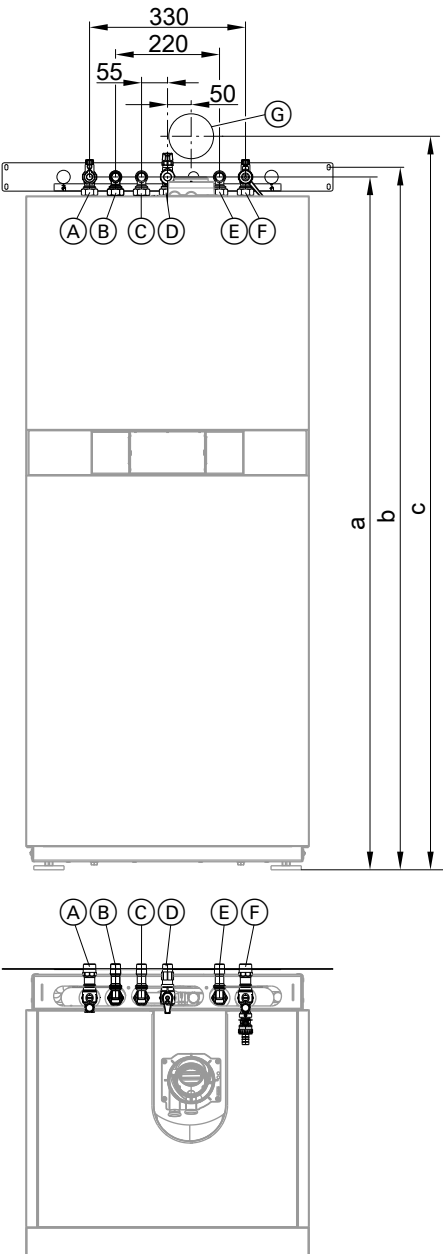
The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

For connecting the on-site gas, heating water and DHW lines from below.

Connection set comprising:

- Fitting assembly
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve and air vent valve
- 2 connectors for DHW
- Angle gas valve with thermally activated safety shut-off valve

Connection set for flush mounting with mounting plate, for pre-installation in unfinished buildings, part no. 7351625



- (A) Heating flow R $\frac{3}{4}$
- (B) DHW R $\frac{1}{2}$
- (C) DHW circulation R $\frac{1}{2}$ (separate accessory)
- (D) Gas connection R $\frac{1}{2}$
- (E) Cold water R $\frac{1}{2}$
- (F) Heating return R $\frac{3}{4}$
- (G) Balanced flue connection towards the back

Type	a mm	b mm	c mm
Vitodens 222-F, B2TB - 13 to 26 kW	1475	1496	1571
- 35 kW	1675	1696	1771
Vitodens 222-F, B2SB	1675	1696	1771
Vitodens 333-F, B3TB	1475	1496	1571

Design information (cont.)

Note

The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

For connecting the on-site gas, heating water and DHW lines in the wall.

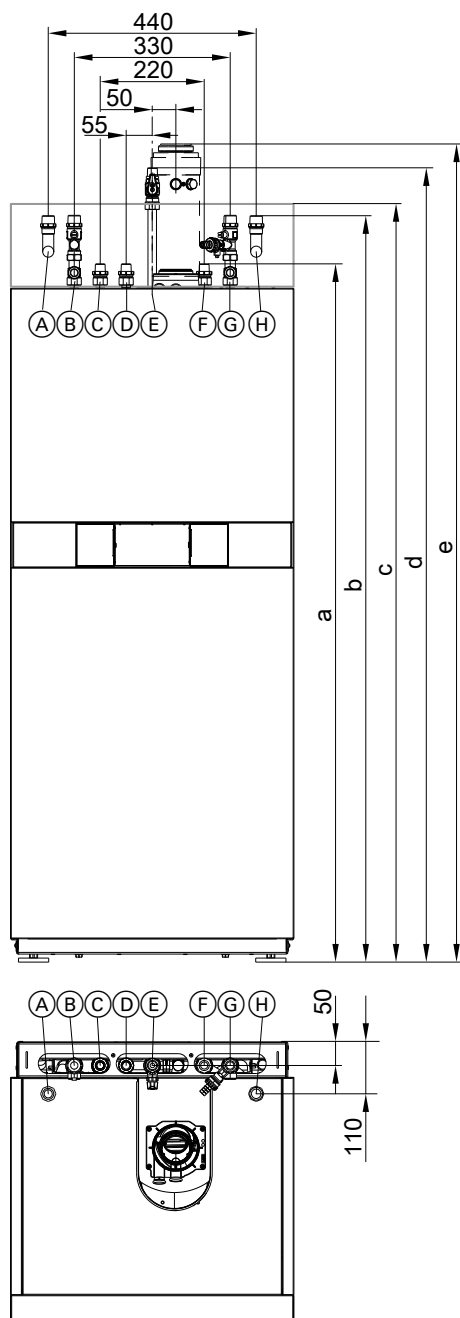
Note

In place of the connection bend for cold water, a safety assembly (separate accessories) can be fitted.

Assembly kit with mixer for surface mounting, part no. Z009888

Connection set comprising:

- Mounting plate
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- Angle gas valve with thermally activated safety shut-off valve



- (A) Heating flow, heating circuit with mixer R $\frac{3}{4}$
- (B) Heating flow, heating circuit without mixer R $\frac{3}{4}$
- (C) DHW R $\frac{1}{2}$
- (D) DHW circulation R $\frac{1}{2}$ (separate accessory)

- (E) Gas connection R $\frac{1}{2}$
- (F) Cold water R $\frac{1}{2}$
- (G) Heating return, heating circuit without mixer R $\frac{3}{4}$
- (H) Heating return, heating circuit with mixer R $\frac{3}{4}$

Design information (cont.)

Type	a mm	b mm	c mm	d mm	e mm
Vitodens 222-F, B2TB					
- 13 to 26 kW	1477	1580	1602	1672	1725
- 35 kW	1677	1780	1802	1872	1925
Vitodens 222-F, B2SB	1677	1780	1802	1872	1925
Vitodens 333-F, B3TB	1477	1580	1602	1672	1725

Note

The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

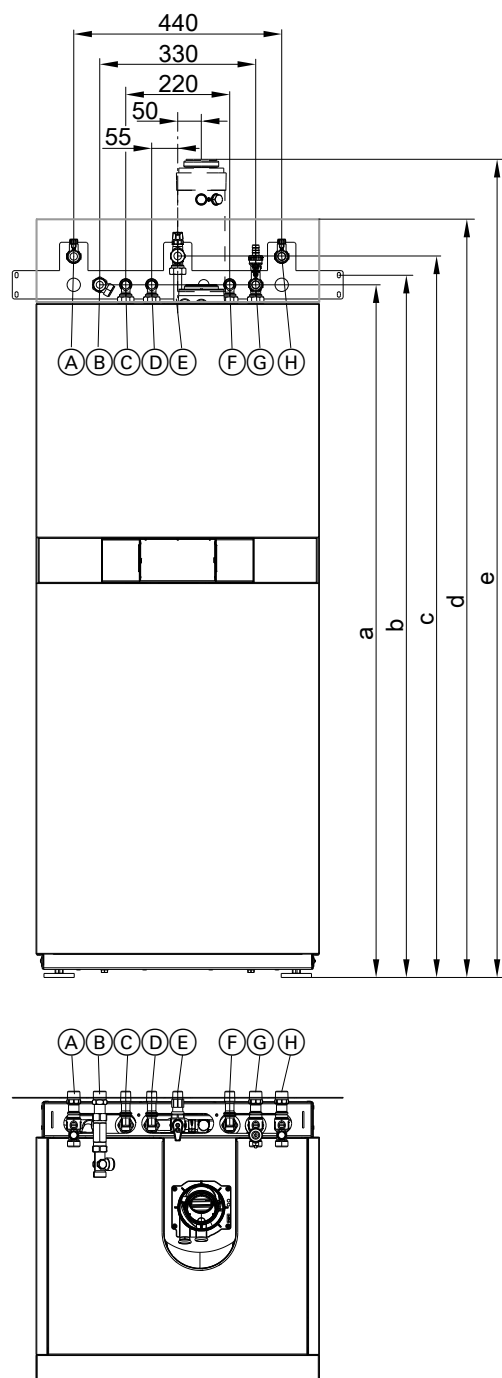
For connecting the on-site gas, heating water and DHW lines from above.

Assembly kit comprising:

- Plate heat exchanger for system separation of the heating circuit with mixer
- Variable speed high efficiency circulation pump for the heating circuit with mixer
- 3-way mixer with mixer motor
- Mixer PCB, capable of communicating with Vitotronic 200 via KM-BUS
- Adjustable bypass
- Connection set for installation on finished or unfinished walls, with:
 - Connection pipes
 - Shut-off valves for heating water flow and return, with boiler drain & fill valve
 - 2 connectors for DHW
 - Gas shut-off valve (R ½) with thermally activated safety shut-off valve
- Flow temperature sensor
- Cover, designed to match appliance
- Balanced flue extension, boiler flue connection

Design information (cont.)

Assembly kit with mixer – flush mounting with mounting plate, for pre-installation in unfinished buildings, part no. Z009889



- (A) Heating flow, heating circuit with mixer R $\frac{3}{4}$
- (B) Heating flow, heating circuit without mixer R $\frac{3}{4}$
- (C) DHW R $\frac{1}{2}$
- (D) DHW circulation R $\frac{1}{2}$ (separate accessory)

- (E) Gas connection R $\frac{1}{2}$
- (F) Cold water R $\frac{1}{2}$
- (G) Heating return, heating circuit without mixer R $\frac{3}{4}$
- (H) Heating return, heating circuit with mixer R $\frac{3}{4}$

Type	a mm	b mm	c mm	d mm	e mm
Vitodens 222-F, B2TB					
- 13 to 26 kW	1475	1496	1535	1602	1725
- 35 kW	1675	1696	1735	1802	1925
Vitodens 222-F, B2SB	1675	1696	1735	1802	1925
Vitodens 333-F, B3TB	1475	1496	1535	1602	1725

Design information (cont.)

Note

The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

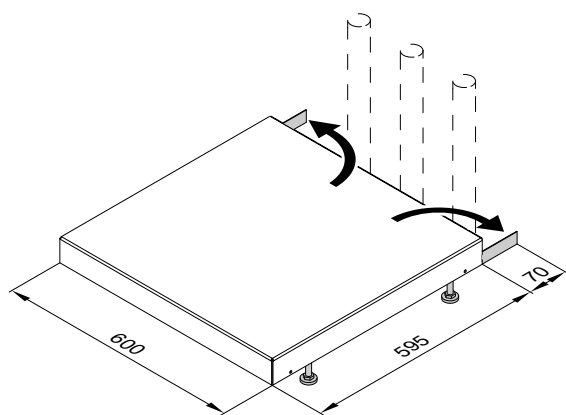
For connecting the on-site gas, heating water and DHW lines in the wall.

Assembly kit comprising:

- Plate heat exchanger for system separation of the heating circuit with mixer
- Variable speed high efficiency circulation pump for the heating circuit with mixer
- 3-way mixer with mixer motor

Boiler plinth

Part no. 7352259



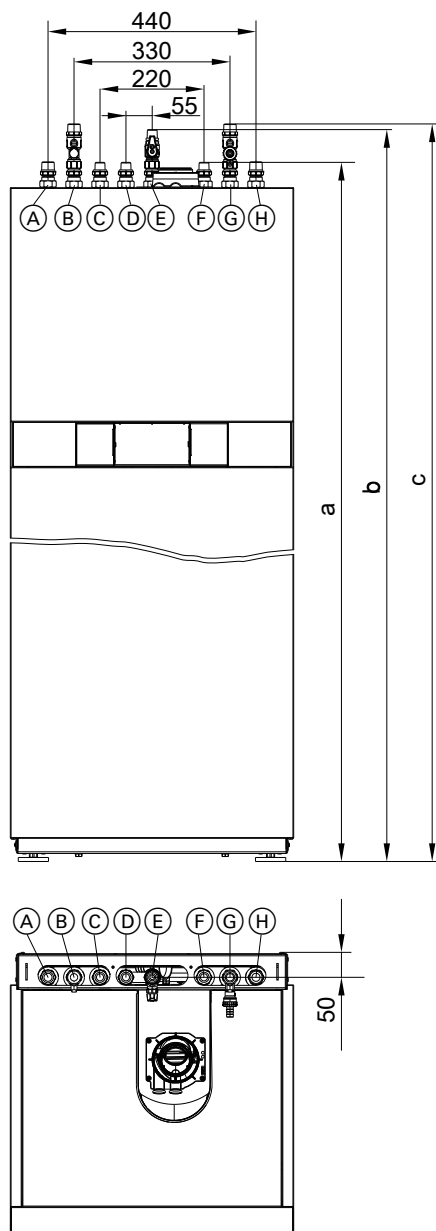
- Mixer PCB, capable of communicating with Vitotronic 200 via KM-BUS
- Adjustable bypass
- Connection set for installation on finished or unfinished walls, with:
 - Connection pipes
 - Shut-off valves for heating water flow and return, with boiler drain & fill valve
 - 2 connectors for DHW
 - Gas shut-off valve (R ½) with thermally activated safety shut-off valve
- Flow temperature sensor
- Cover, designed to match appliance
- Balanced flue extension, boiler flue connection
- For siting the appliance on unfinished floors
- Height adjustable, for screed heights from 10 to 18 cm
- With spacer for installation on finished walls, for downward connection

Design information (cont.)

Installation Vitodens 242-F

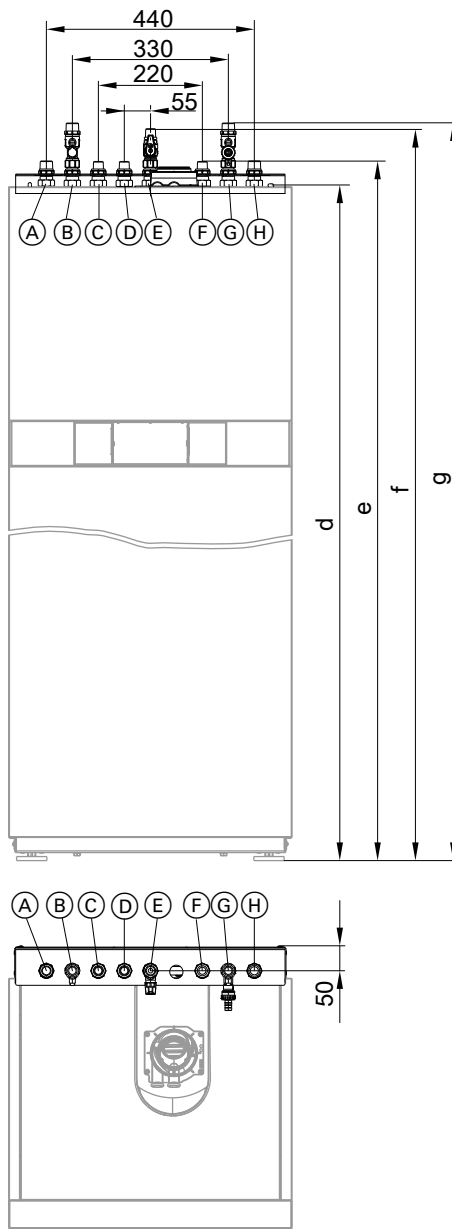
Connection sets for installation on finished walls, for upward connection

Connection set without pre-mounting bracket, part no. 7348552



- (A) Solar return R $\frac{3}{4}$ "/Ø 22 mm
- (B) Heating flow R $\frac{3}{4}$ "
- (C) DHW R $\frac{1}{2}$ "
- (D) DHW circulation R $\frac{1}{2}$ " (separate accessory)

Connection set with pre-mounting bracket for pre-installation in unfinished buildings, part no. 7351778



- (E) Gas connection R $\frac{1}{2}$ "
- (F) Cold water R $\frac{1}{2}$ "
- (G) Heating return R $\frac{3}{4}$ "
- (H) Solar flow R $\frac{3}{4}$ "/Ø 22 mm

Type	a mm	b mm	c mm	d mm	e mm	f mm	g mm
Vitodens 242-F, B2UB	1927	1964	1976	1890	1940	2011	2023

Note

The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

For connecting the on-site gas, heating water and DHW lines from above.

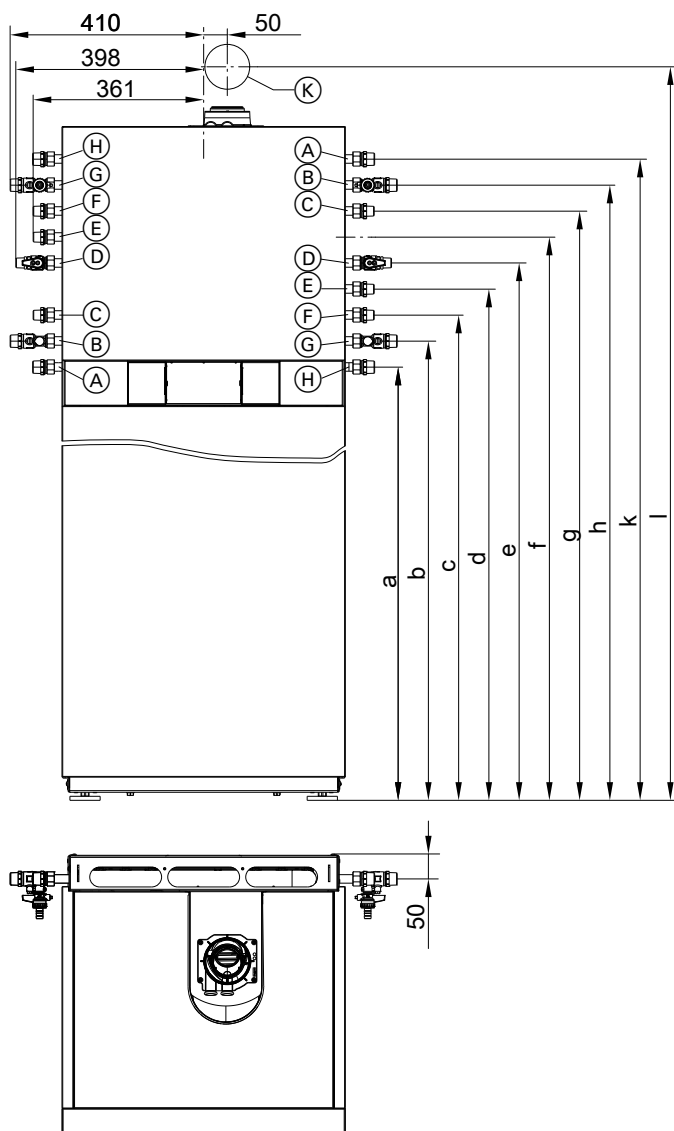
Connection set comprising:

- Fitting assembly (only for part no. 7351778)
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- 2 connectors each for solar flow and return (R $\frac{3}{4}$ "/Ø 22 mm)
- Gas shut-off valve with thermally activated safety shut-off valve

Design information (cont.)

Connection sets for installation on finished walls, for connection to the left or right

Connection set without pre-mounting bracket, part no. 7347985



- (A) Solar return R $\frac{3}{4}$ "/Ø 22 mm
- (B) Heating flow R $\frac{3}{4}$ "
- (C) DHW R $\frac{1}{2}$ "
- (D) Gas connection R $\frac{1}{2}$ "
- (E) DHW circulation R $\frac{1}{2}$ " (separate accessory)

- (F) Cold water R $\frac{1}{2}$ "
- (G) Heating return R $\frac{3}{4}$ "
- (H) Solar flow R $\frac{3}{4}$ "/Ø 22 mm
- (K) Balanced flue connection towards the back

Type	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	k mm	l mm
Vitodens 242-F, B2UB	1367	1422	1477	1532	1587	1592	1696	1752	1807	2021

Note

The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

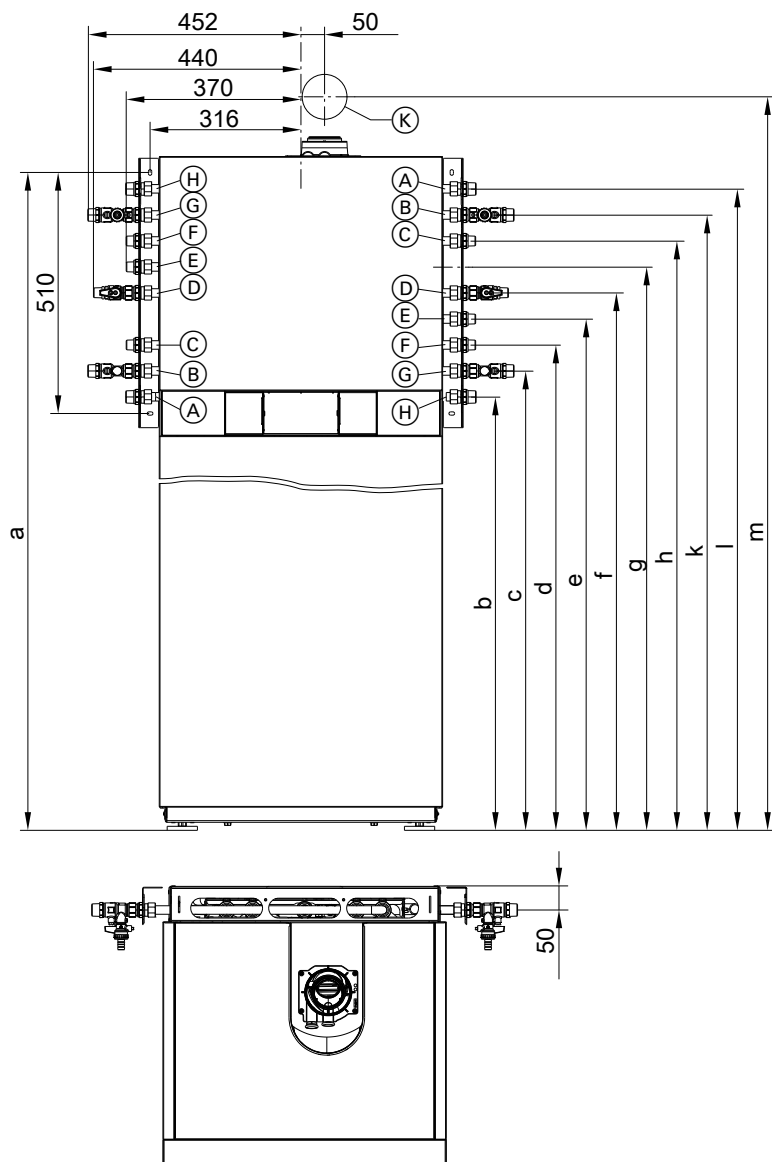
For connecting on-site lines on the gas, heating water and DHW sides from the left or right.

Connection set comprising:

- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- 2 connectors each for solar flow and return (R $\frac{3}{4}$ "/Ø 22 mm)
- Gas shut-off valve with thermally activated safety shut-off valve

Design information (cont.)

Connection set with pre-mounting bracket for pre-installation in unfinished buildings, part no. 7354386



- (A) Solar return R $\frac{3}{4}$ "/Ø 22 mm
- (B) Heating flow R $\frac{3}{4}$ "
- (C) DHW R $\frac{1}{2}$ "
- (D) Gas connection R $\frac{1}{2}$ "
- (E) DHW circulation R $\frac{1}{2}$ " (separate accessory)

- (F) Cold water R $\frac{1}{2}$ "
- (G) Heating return R $\frac{3}{4}$ "
- (H) Solar flow R $\frac{3}{4}$ "/Ø 22 mm
- (K) Balanced flue connection towards the back

Type	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	k mm	l mm	m mm
Vitodens 242-F, B2UB	1852	1367	1422	1477	1532	1587	1592	1696	1752	1807	2021

Note

The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

For connecting on-site lines on the gas, heating water and DHW sides from the left or right.

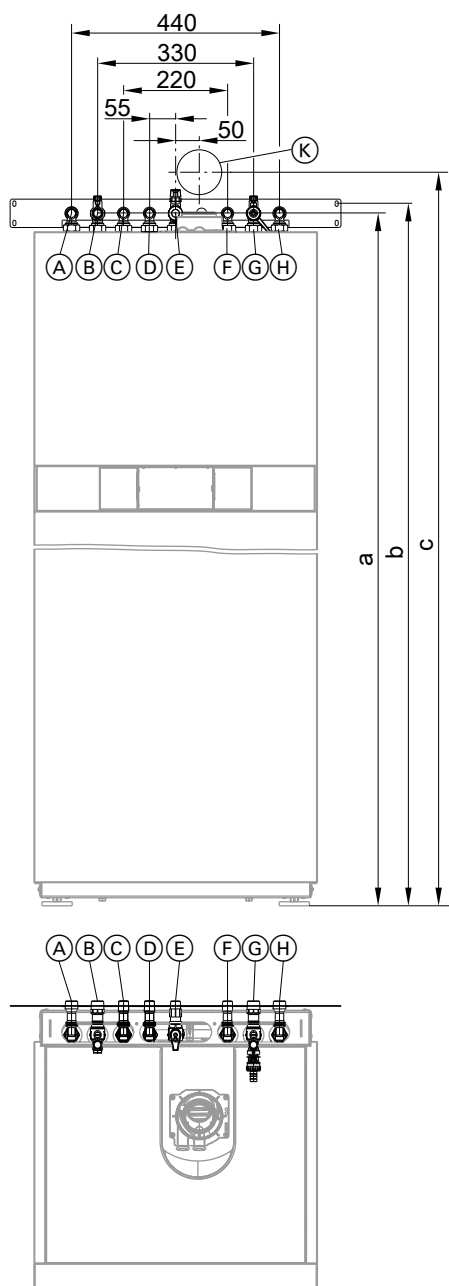
Connection set comprising:

- Fitting assembly (only for part no. 7354386)
- Connection pipes

- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- 2 connectors each for solar flow and return (R $\frac{3}{4}$ "/Ø 22 mm)
- Gas shut-off valve with thermally activated safety shut-off valve

Design information (cont.)

Connection set for flush mounting with mounting plate, for pre-installation in unfinished buildings, part no. 7353065



- (A) Solar return R $\frac{3}{4}$
- (B) Heating flow R $\frac{3}{4}$
- (C) DHW R $\frac{1}{2}$
- (D) DHW circulation R $\frac{1}{2}$ (separate accessory)
- (E) Gas connection R $\frac{1}{2}$
- (F) Cold water R $\frac{1}{2}$
- (G) Heating return R $\frac{3}{4}$
- (H) Solar flow R $\frac{3}{4}$
- (K) Balanced flue connection towards the back

Type	a mm	b mm	c mm
Vitodens 242-F, B2UB	1925	1946	2021

Note

The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

For connecting the on-site gas, heating water and DHW lines in the wall.

Note

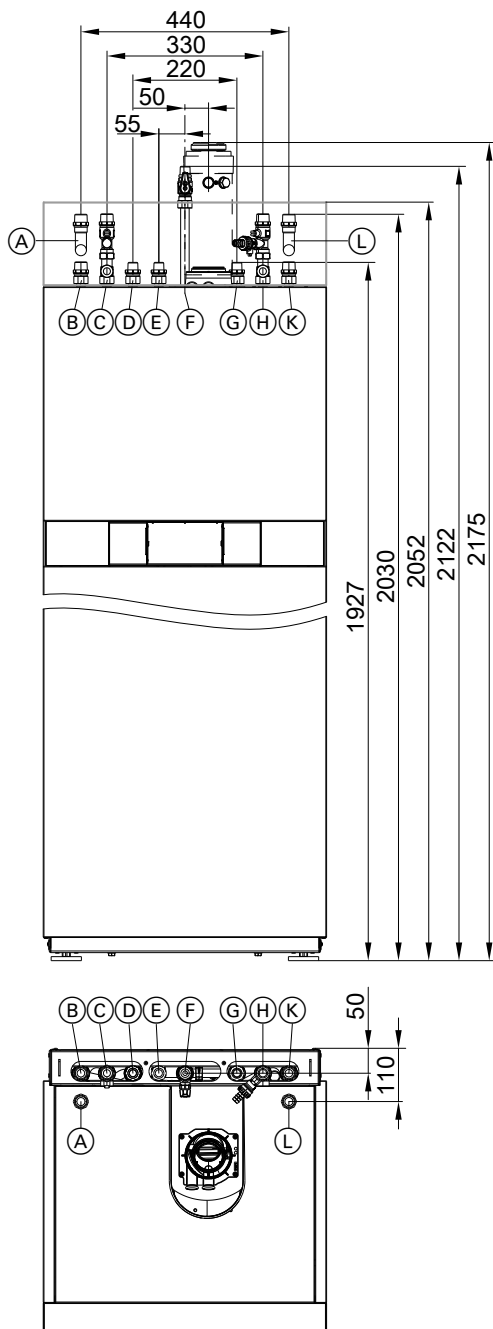
In place of the connection bend for cold water, a safety assembly (separate accessories) can be fitted.

Connection set comprising:

- Mounting plate
- Connection pipes
- Shut-off valves for heating water flow and return, with boiler drain & fill valve
- 2 connectors for DHW
- 2 connectors for solar flow and return
- Angle gas valve with thermally activated safety shut-off valve

Design information (cont.)

Assembly kit with mixer for surface mounting, part no. Z009891



- (A) Heating flow, heating circuit with mixer R ¾
- (B) Solar return R ¾/Ø 22 mm
- (C) Heating flow, heating circuit without mixer R ¾
- (D) DHW R ½
- (E) DHW circulation R ½ (separate accessory)
- (F) Gas connection R ½
- (G) Cold water R ½
- (H) Heating return, heating circuit without mixer R ¾
- (K) Solar flow R ¾/Ø 22 mm
- (L) Heating return, heating circuit with mixer R ¾

Note

The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

For connecting the on-site gas, heating water and DHW lines from above.

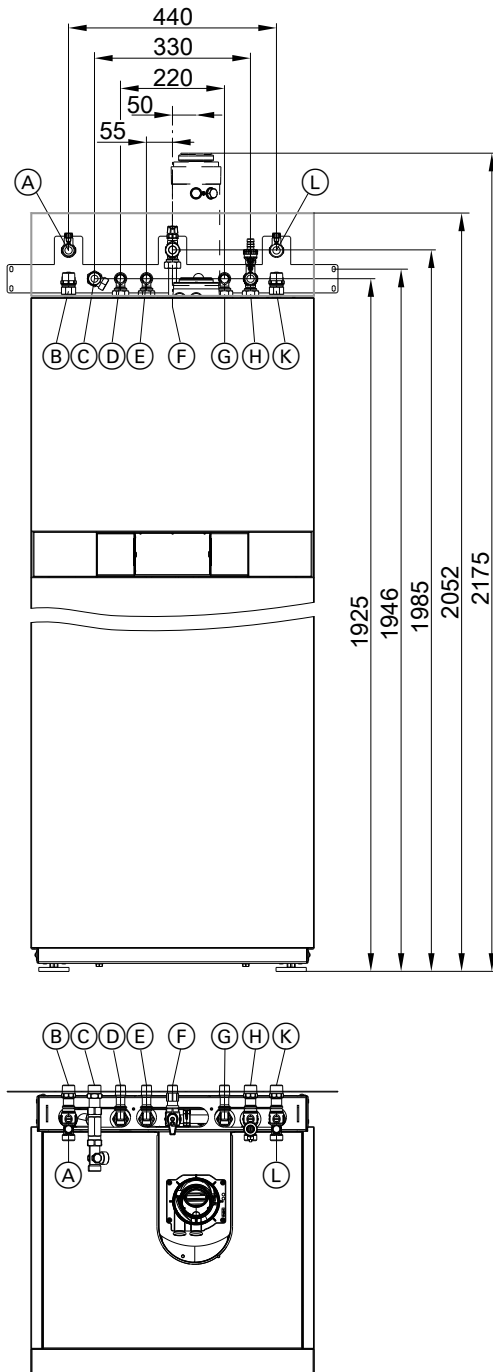
Assembly kit comprising:

- Plate heat exchanger for system separation of the heating circuit with mixer
- Variable speed high efficiency circulation pump for the heating circuit with mixer
- 3-way mixer with mixer motor
- Mixer PCB, capable of communicating with Vitotronic 200 via KM-BUS
- Adjustable bypass
- Connection set for installation on finished or unfinished walls, with:
 - Connection pipes
 - Shut-off valves for heating water flow and return, with boiler drain & fill valve
 - 2 connectors for DHW
 - 2 connectors for solar flow and return
 - Gas shut-off valve with thermally activated safety shut-off valve
- Flow temperature sensor

Design information (cont.)

- Cover, designed to match appliance
- Balanced flue extension, boiler flue connection

Assembly kit with mixer – flush mounting with mounting plate, for pre-installation in unfinished buildings, part no. Z009892



- (A) Heating flow, heating circuit with mixer R $\frac{3}{4}$
- (B) Solar return R $\frac{3}{4}$
- (C) Heating flow, heating circuit without mixer R $\frac{3}{4}$
- (D) DHW R $\frac{1}{2}$
- (E) DHW circulation R $\frac{1}{2}$ (separate accessory)
- (F) Gas connection R $\frac{1}{2}$
- (G) Cold water R $\frac{1}{2}$
- (H) Heating return, heating circuit without mixer R $\frac{3}{4}$
- (K) Solar flow R $\frac{3}{4}$
- (L) Heating return, heating circuit with mixer R $\frac{3}{4}$

Note

The adjustable feet give the height measurements of the connections a tolerance of + 7 mm.

For connecting the on-site gas, heating water and DHW lines in the wall.

Assembly kit comprising:

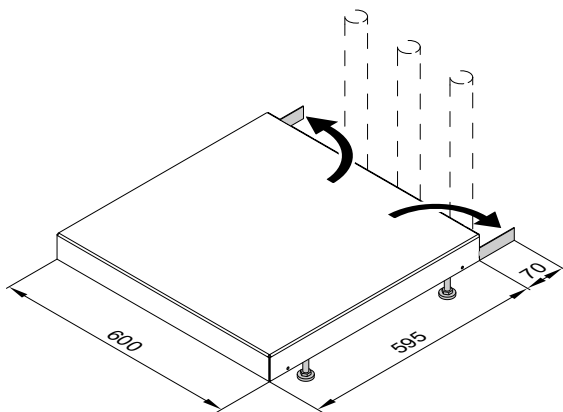
- Plate heat exchanger for system separation of the heating circuit with mixer
- Variable speed high efficiency circulation pump for the heating circuit with mixer

Design information (cont.)

- 3-way mixer with mixer motor
- Mixer PCB, capable of communicating with Vitotronic 200 via KM-BUS
- Adjustable bypass
- Connection set for installation on finished or unfinished walls, with:
 - Connection pipes
 - Shut-off valves for heating water flow and return, with boiler drain & fill valve
 - 2 connectors for DHW
 - 2 connectors for solar flow and return
 - Gas shut-off valve (R ½) with thermally activated safety shut-off valve

Boiler plinth

Part no. 7352259



- Flow temperature sensor
- Cover, designed to match appliance
- Balanced flue extension, boiler flue connection

- For siting the appliance on unfinished floors
- Height adjustable, for screed heights from 10 to 18 cm
- With spacer for installation on finished walls, for downward connection

5.2 Decision making aids for DHW heating

To provide the perfect solution for every situation, the Vitodens can be supplied with an integral DHW loading cylinder, an integral DHW cylinder with internal indirect coil or an integral solar cylinder (see product description). Various factors should be taken into consideration when designing heating systems and deciding between a gas system boiler with integral DHW loading cylinder or integral DHW cylinder:

- DHW demand, convenience
- Use of the various connected draw-off points
- Distance of the draw-off points from the boiler
- System modernisation
- Space requirement
- Water quality

Information on water quality

Vitodens with loading cylinder:

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/m³) 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.

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/m³) upwards.

Design information (cont.)

Vitodens selection table

		Vitodens 222-F, type B2SB with integral DHW cyl- inder with internal indirect coil	Vitodens 222-F, type B2TB and Vitodens 333-F, type B3TB with in- tegral DHW load- ing cylinder	Vitodens 242-F and Vitodens 343-F with integral solar cylinder
DHW demand, con- venience	DHW demand for an apartment	+	+	+
	DHW demand for a detached house	+	+	+
	Centralised DHW demand for an apartment building	+	–	+
	Decentralised DHW demand for an apartment building	+	0	–
Use of the various connected draw-off points	One draw-off point	0	0	0
	Several draw-off points, not used simultaneously	+	+	+
	Several draw-off points, used simultaneously	+	+	+
Distance of draw-off point from boiler	Up to 7 m (excl. DHW circulation pipe)	–	–	–
	With DHW circulation pipe	+	+	+
Modernisation project	DHW cylinder installed	+	–	–
	Replacement of an existing combi boiler	–	0	–
Space requirement	Low space requirement (siting in recesses)	0	0	0
	Sufficient space available (installation room)	+	+	+
Solar DHW heating can be connected	Connection to a dual mode DHW cylinder	+	–	–
	Connection to the integral DHW cylinder	–	–	+

+ = recommended

0 = recommended under certain conditions

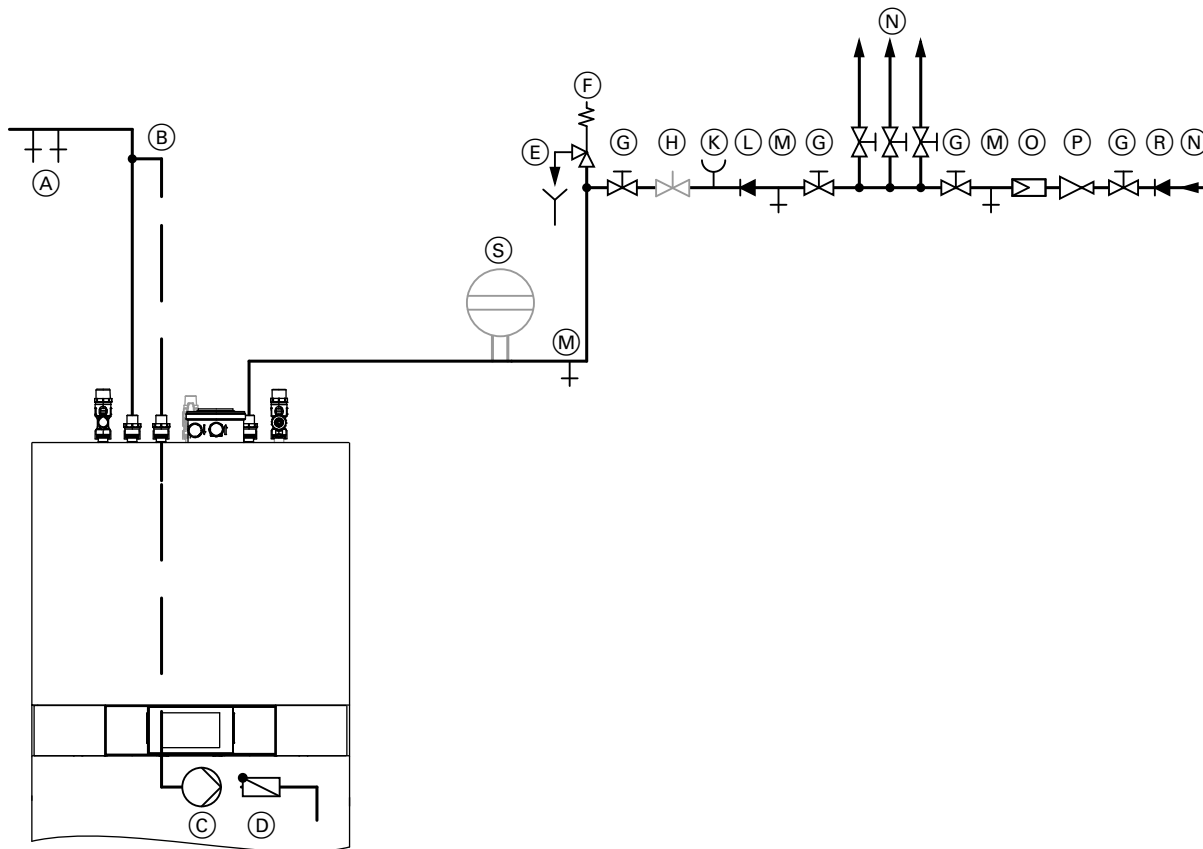
– = not recommended

5.3 Connections on the water side

Connections on the DHW side

If using galvanised pipes, please note that plate heat exchangers with copper solder joints are integrated into the Vitodens 222-F (B2TB), 333-F, 343-F and 242-F with cylinder loading system (observe the flow rule).

Cold water installation



For connection locations, see the relevant connection set

- | | |
|--|--|
| (A) DHW | (K) Pressure gauge connection |
| (B) DHW circulation pipe | (L) Non-return valve |
| (C) DHW circulation pump | (M) Drain |
| (D) Spring-loaded check valve | (N) Cold water |
| (E) Visible discharge pipe outlet point (tundish) | (O) Drinking water filter |
| (F) Safety valve | (P) Pressure reducer |
| (G) Shut-off valve | (R) Non-return valve/pipe separator |
| (H) Flow regulating valve
(We recommend installation and adjustment of the maximum water flow rate in accordance with the peak draw-off rate of the DHW cylinder (see "Specification")) | (S) Diaphragm expansion vessel, suitable for potable water |

Note

- The DHW circulation pump connection set (accessories) contains a DHW circulation pump (C) and check valve (D). The components are installed in the boiler.
- The DHW circulation pump (C) and check valve (D) from the DHW circulation pump connection set (accessories) must be installed on site.

DHW circulation

DHW circulation pipes increase DHW convenience and reduce water consumption. These advantages result from the immediate availability of DHW at the tap/draw-off point. However, poor thermal insulation of the DHW circulation pipe can lead to substantial heat losses.

Safety valve

The safety valve **must** be installed.

We recommend installing the safety valve above the top edge of the cylinder. This protects the valve against contamination, scaling and high temperatures. It also means that the DHW cylinder does not need to be drained when working on the safety valve.

With a **line length of 7 m** or longer, we recommend the installation of a DHW circulation pipe with appropriate thermal insulation in accordance with the German Energy Saving Ordinance (EnEV). The Energy Saving Ordinance specifies that the DHW circulation pipe should include a circulation pump, a check valve and a time switch for shutting down DHW circulation during the night.

Only use the DHW circulation pump connection set, available as an accessory, for installation in the boiler. The circulation pump is then controlled by the boiler control unit.

Design information (cont.)

The flow rate of the DHW circulation pump must not exceed **1.5 l/min**.

Power supply for DHW circulation pump

*DHW circulation pumps with their own internal control unit must be connected to a separate power supply. Mains connection via the Vitotronic control unit or Vitotronic accessories is **not** permissible.*

Installation scheme for DHW circulation, see page 64.

5.4 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.

For routing the condensate connection, see the relevant chapter on "pre-installation in unfinished buildings".

Note

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

Condensate drain pipe and neutralisation

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

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 sampling.

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

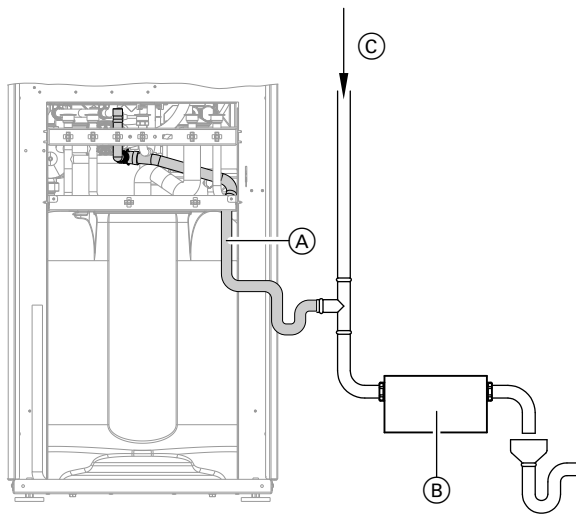
Up to a rated heating output of 200 kW, the condensate from a gas condensing boiler can generally be introduced into the public sewage system without prior neutralisation.

Also ensure that your domestic drainage systems are 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



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

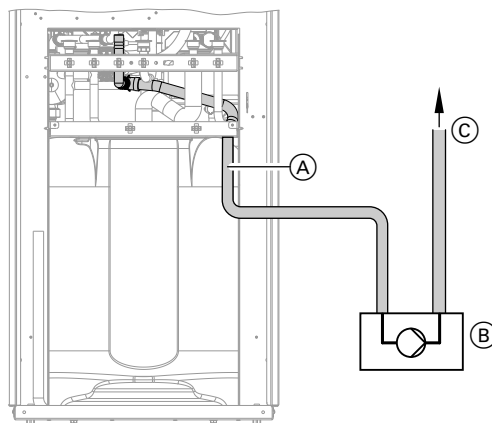
The Vitodens can be supplied with a separate neutralising system (accessories). Any condensate is piped to and processed in the neutralising system.

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 system (available as an accessory) 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.

Condensate lifting system (accessories)



- Ⓐ Condensate inlet
- Ⓑ Condensate lifting system
- Ⓒ Condensate drain

5.5 Hydraulic connection

General

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 Vitodens.

Minimum system pressure 1.0 bar (0.1 MPa).

The boiler water temperature is limited to 82 °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 with constant temperature control unit in conjunction with the Vitotrol 100 for apartments with less than 80 m² living space or for low energy houses with a low heat demand. The heat generator must be correctly sized and selected.

Chemical anti-corrosion agents

According to VDI guideline 2035, the design of heating systems must ensure they are sealed against corrosion. Additives in the heating water (additives, chemicals) as corrosion protection measures are normally not necessary.

Exception: In systems without system separation, for example, additives can be considered.

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.

Design information (cont.)

Provide system separation in heating systems with plastic pipes that are permeable to oxygen (DIN 4726). A separate heat exchanger for this purpose is available.

Install a dirt separator in underfloor heating systems. See Viessmann Vitoset pricelist.

Underfloor heating systems and heating circuits with very large water content (>15 l/kW) should be connected to the condensing boiler via a 3-way mixer. See technical guide "Control of underfloor heating systems" or the relevant sample applications.

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 Viessmann condensing boiler (opening pressure 3 bar (0.3 MPa)).

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 guideline 2035 regarding the quality and volume of heating water, incl. fill and top-up water.

- Flush the heating system thoroughly before filling.
- Only fill with water of potable quality.
- VDI guideline 2035 recommends water softening treatment to prevent harmful scaling in the heating water. Additives to stabilise hardness do not remove the scale forming chemicals from the heating water. 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 ³ (16.8 °dH)	≤ 2.0 mol/m ³ (11.2 °dH)	< 0.02 mol/m ³ (0.11 °dH)
> 50 to ≤ 200	≤ 2.0 mol/m ³ (11.2 °dH)	≤ 1.5 mol/m ³ (8.4 °dH)	< 0.02 mol/m ³ (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.
- Special antifreeze (category 1 to 3) suitable for heating systems can be added to the fill water. The use of glycols without sufficient inhibition and buffering is not permitted. The suitability of the antifreeze must be confirmed by the manufacturer. If antifreeze is added, more monitoring and maintenance is necessary. Observe the manufacturer's instructions. Viessmann accepts no liability for damage and malfunctions caused by unsuitable or incorrectly dosed antifreeze, or incorrect maintenance.
- EN 1717 and DIN 1988-100 must be observed if the heating water is used simultaneously as a heat transfer medium for DHW heating.
- When disposing of heating water that contains additives, check whether it may be discharged into the public drain network once it has been treated again.

When designing the system, observe the following:

- Install shut-off valves in each section. This prevents the need for draining all the heating water in the case of repairs or system expansion.
- In systems > 50 kW, install a water meter to record the volume of fill and top-up water. Record the amount of water filled into the system and the water hardness.

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 heating surfaces.
- In multi boiler systems, start all boilers simultaneously to prevent the total amount of limescale deposits settling in the heat exchanger of just one boiler.
- 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 and in new installations. Later on this can be carried out subject to the requirements of the water treatment applied (e.g. water softening).

Installation examples

See www.viessmann-schemen.com.

Expansion vessels for the heating circuit

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

A diaphragm expansion vessel is integrated into the Vitodens. Capacity: 12 l

Design information (cont.)

Pre-charge pressure: 0.75 bar (0.075 MPa)

Determine the required 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.

Note

When hydraulically connecting the diaphragm expansion vessel, there must always be a connection between the diaphragm expansion vessel and the heat generator. For example, when the thermostat valves are closed and if the 3-way diverter valve is set to DHW heating.

Low loss header

Application

Design rules for system hydraulics:

- When balancing the low loss header, adjust the flow rate on the equipment side to approx. 10 to 30 % below the flow rate on the system side (reducing the return temperature).
- The low loss header should be sized for the max. flow rate which may occur in the overall system.

The low loss header separates the heat generator circuit (boiler circuit) from the downstream heating circuits.

Install a low loss header if the max. flow rate of an individual design is greater than the corresponding value shown in the "Specification" table.

For installation schemes in conjunction with low loss headers, see "System examples".

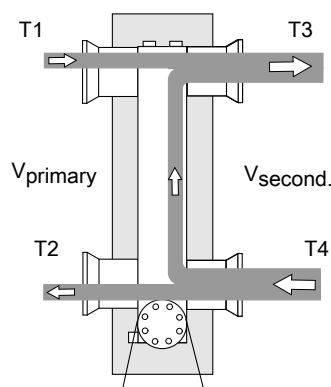
Heat generator circuit

The circulation pump in the Vitodens must be able to deliver the required water volume against the (mostly low) pressure drop of the heat generator circuit; the pressure drop of the low loss header is negligible. The pump diagrams serve to determine the correct residual head for the internal pipe diameters, subject to the water volume circulating in the boiler circuit.

Heating circuit

The heating circuit pumps to be installed on site must be able to deliver the water volume in the heating circuits against their pressure drop. They must be sized accordingly.

Principle of operation



V_{primary}	Heating water volume in the boiler circuit (approx. 10 to 30 % less than $V_{\text{secondary}}$)
$V_{\text{secondary}}$	Heating water volume, heating circuit
T_1	Flow temperature, boiler circuit
T_2	Return temperature, boiler circuit
T_3	Flow temperature, heating circuit
T_4	Return temperature, heating circuit
Q_{primary}	Amount of heat supplied by the boiler
$Q_{\text{secondary}}$	Amount of heat transferred by the heating circuit

V_{primary}	$< V_{\text{secondary}}$
T_1	$> T_3$
T_2	$\approx T_4$
Q_{primary}	$= Q_{\text{secondary}}$

Note

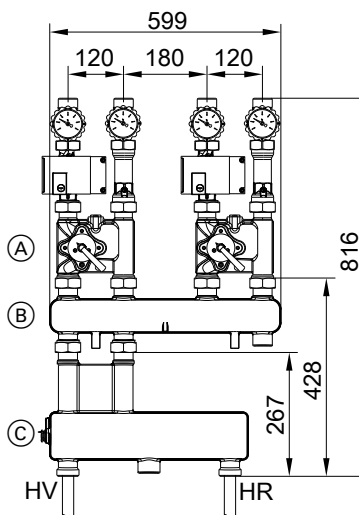
Thermometers in the flow and return to the low loss header make adjustments easier.

Low loss headers

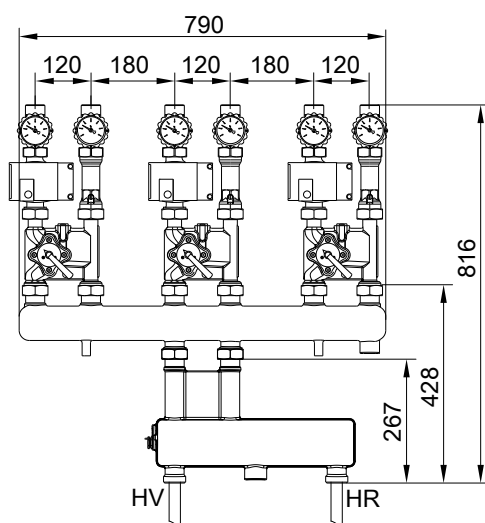
See Vitodens installation accessories, page 31

Low loss header in conjunction with Divicon

	Max. flow rate in m³/h
Low loss header	
– R ¾	4.5
– R 1	4.5
– R 1¼	7.5
Divicon heating circuit distributor	
– R ¾	1.0
– R 1	1.5
– R 1¼	2.5



HR	Heating return
HV	Heating flow
(A)	Divicon heating circuit distributor
(B)	Manifold
(C)	Low loss header



HR Heating return
HV Heating flow

Expansion vessel and heat sink for the solar circuit

Stagnation in solar thermal systems

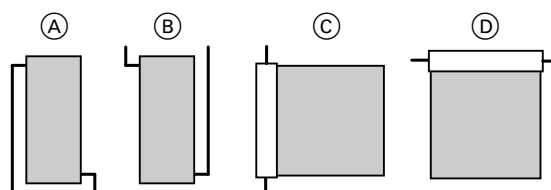
All safety equipment in a solar thermal system must be designed for stagnation. If, during insolation on the solar collector array, heat can no longer be transferred within the system, the solar circuit pump stops and the solar thermal system goes into stagnation. Longer system idle times, e.g. due to faults or incorrect operation, can never be completely ruled out. This results in a rise in temperature up to the maximum solar collector temperature. Energy yield and loss are then the same. In the solar collectors, temperatures are reached that exceed the boiling point of the heat transfer medium. For this reason, solar thermal systems must be designed to be fail-safe in accordance with the relevant regulations.

Being fail-safe means the following:

- The solar thermal system must not be damaged by stagnation.
- The solar thermal system must not pose any risk during stagnation.
- Following stagnation, the solar thermal system must automatically return to operation.
- Solar collectors and pipework must be engineered for the temperatures expected during stagnation.

A lower system pressure is beneficial where stagnation characteristics are concerned: **1 bar** (0.1 MPa) positive pressure during filling (temperature of heat transfer medium approx. 20 °C) at the solar collector is adequate.

A definitive parameter when designing pressure maintenance and safety equipment is the steam-producing power. This indicates the power of the solar collector array, which during stagnation is transferred to the pipework in the form of steam. The maximum steam-producing power is influenced by the draining characteristics of the solar collectors and the array. Subject to solar collector type and hydraulic connection, different steam-producing power levels can occur (see diagram below).



- (A) Flat-plate collector without liquid pocket
Steam-producing power = 60 W/m²
- (B) Flat-plate collector with liquid pocket
Steam-producing power = 100 W/m²
- (C) Vacuum tube collector, header casing at the side
Steam-producing power = 100 W/m²
- (D) Vacuum tube collector, header casing at the top
Steam-producing power = 200 W/m²

The length of pipe that holds steam during stagnation (steam spread) is calculated from the balance between the steam-producing power of the solar collector array and the heat loss from the pipework. The actual values assumed for the loss from a solar circuit pipe made from copper and 100 % insulated with commercially available material are as follows:

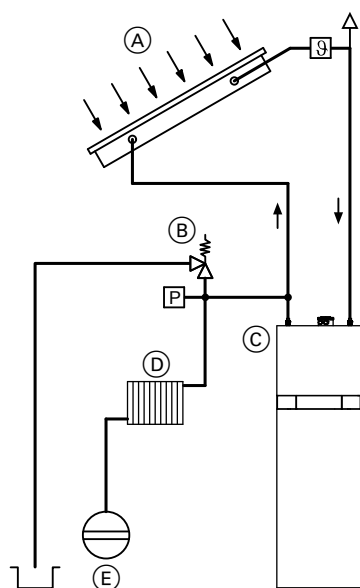
Dimensions	Heat loss in W/m
12 x 1/15 x 1/18 x 1	25
22 x 1/28 x 1.5	30

Design information (cont.)

- Steam spread is **less** than the pipe run in the solar circuit (flow and return) between solar collector and expansion vessel:
The steam cannot reach the expansion vessel in the event of stagnation. The displaced volume (solar collector array and pipework filled with steam) must be taken into account when sizing the expansion vessel.
- Steam spread is **greater** than the pipe run in the solar circuit (flow and return) between solar collector and expansion vessel:
Include a cooling line (heat sink) in the design, to protect the expansion vessel diaphragms against thermal overload (see diagrams below). Steam condenses in this cooling line and reduces the temperature of the liquefied heat transfer medium to below 70 °C.

Expansion vessel and heat sink in the return

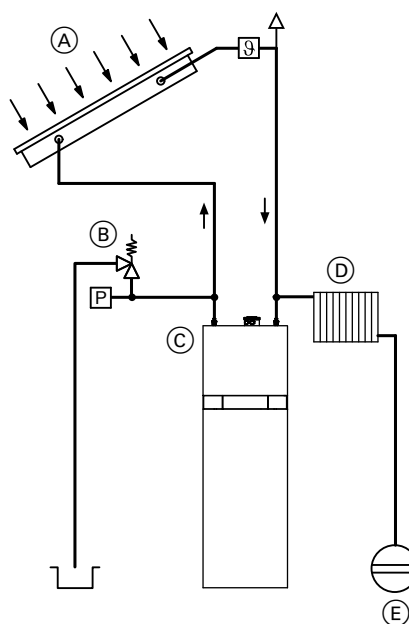
The steam can spread through the flow and return.



- (A) Solar collector
- (B) Safety valve
- (C) Vitodens
- (D) Heat sink
- (E) Expansion vessel

Expansion vessel and heat sink in the flow

The steam can only spread through the flow.



The necessary residual cooling capacity is determined from the differential between the steam-producing power of the solar collector array and the heat dissipation of the pipework up to the connection point for the expansion vessel and the heat sink.

Note

The SOLSEC program is available at www.viessmann.com for calculating the residual cooling capacity and sizing the heat sink.

This program offers three suggestions for implementation:

- Sufficiently long, uninsulated pipework branching to the expansion vessel
- A sufficiently large pre-cooling vessel, in relation to the cooling capacity
- A correctly sized heat sink

For the heat sink, standard radiators with an output calculated at 115 K are assumed. For greater clarity, the program indicates the heating output at 75/65 °C.

Note

Due to the expected high surface temperatures, Viessmann stagnation heat sinks (see Vitosol technical guide) are equipped with a plate that receives no flow, for protection against accidental contact. If commercially available radiators are used, protection against accidental contact must be provided. In addition, the connections must be diffusion-proof.

Specification for heat sinks

	Output at 75/65 °C in W	Cooling capacity during stagnation in W	Liquid content in l
Stagnation heat sink – Type 21	482	964	
Pre-cooling vessel	—	450	

Design information (cont.)

Expansion vessel

The expansion vessel can be calculated once the steam spread has been determined and any heat sinks that may be used have been taken into consideration.

The required volume is determined by the following factors:

- Expansion of the heat transfer medium in its liquid state
- Liquid seal
- Expected steam volume, taking account of the static head of the system
- Pre-charge pressure

$$V_{dev} = (V_{col} + V_{dpipe} + V_e + V_{fv}) \cdot Df$$

V_{dev} Nominal volume of the expansion vessel in l

V_{col} Liquid content of the solar collectors in l

V_{dpipe} Content of the pipework subject to steam loads in l
(Calculated from the steam spread and the pipework content per m pipe length)

V_e Increase in the volume of the heat transfer medium in its liquid state in l

$$V_e = V_a \cdot \beta$$

V_a System volume (content of the solar collectors, the heat exchanger and the pipework)

β Expansion factor
 $\beta = 0.13$ for Viessmann heat transfer medium from -20 to 120 °C

V_{fv} Liquid seal in the expansion vessel in l
(4 % of the system volume, min. 3 l)

Df Pressure factor
 $(p_e + 1) : (p_e - p_o)$

p_e Max. system pressure at the safety valve in bar (90 % of the safety valve response pressure)

p_o System pre-charge pressure
 $p_o = 1 \text{ bar} + 0.1 \text{ bar/m static head}$

To determine the steam volume in the pipework, the capacity per m of pipe must be taken into consideration.

Copper pipe	Dim.	12 × 1	15 × 1	18 × 1	22 × 1	28 × 1.5	35 × 1.5	42 × 1.5
		DN 10	DN 13	DN 16	DN 20	DN 25	DN 32	DN 40
Capacity	l/m pipe	0.079	0.133	0.201	0.314	0.491	0.804	1.195

Corrugated stainless steel pipe	Dim.	DN 16
Capacity	l/m pipe	0.25

For the liquid content of the solar collectors, see the Vitosol technical guide.

For further information, see the Vitosol technical guide.

Quick selection of expansion vessel and heat sink

The details in the following table are standard values. They allow quick estimates at the design and calculation stage. We recommend verifying the values with appropriate calculations. The selection refers to a hydraulic system with a liquid "bag" and use of a 6 bar safety valve.

Note

Check the size of the expansion vessel on site.

Vitosol 100-FM/200-FM, type SV

Absorber area in m ²	Static head in m	System capacity in l	Recom. expansion vessel capacity in l	Recom. heat sink (see page 70)
2.01 and 2.3	5	22.3	18	—
	10	25.7	25	—
	15	29.2	—	—
4.02 and 4.6	5	24.7	25	2 m uninsulated pipe
	10	27.6	—	—
	15	31.0	—	—
6.03 and 6.9	5	28.5	40	Type 21
	10	29.6	—	0.6 m uninsulated pipe
	15	32.9	—	—

Vitosol 100-FM/200-FM, type SH

Absorber area in m ²	Static head in m	System capacity in l	Recom. expansion vessel capacity in l	Recom. heat sink (see page 70)
2.3	5	22.9	18	—
	10	26.4	25	—
	15	29.8	—	—
4.6	5	26.0	40	2 m uninsulated pipe
	10	28.9	—	—
	15	32.3	—	—
6.9	5	30.5	40	Type 21
	10	31.5	—	0.6 m uninsulated pipe
	15	34.8	50	—

Design information (cont.)

Vitosol 200-TM, type SPEA

Absorber area in m ²	Static head in m	System capacity in l	Recom. expansion vessel capacity in l	Recom. heat sink (see page 70)
1.63	5	25.1	25	1.5 m uninsulated pipe
	10	28.1	40	—
	15	31.6	—	—
3.03	5	29.2	40	Type 21
	10	30.1	50	—
	15	33.6	—	—
3.78 and 4.29	5	31.8	40	Type 21
	10	34.9	50	—
	15	35.8	80	—

Vitosol 300-TM, type SP3C

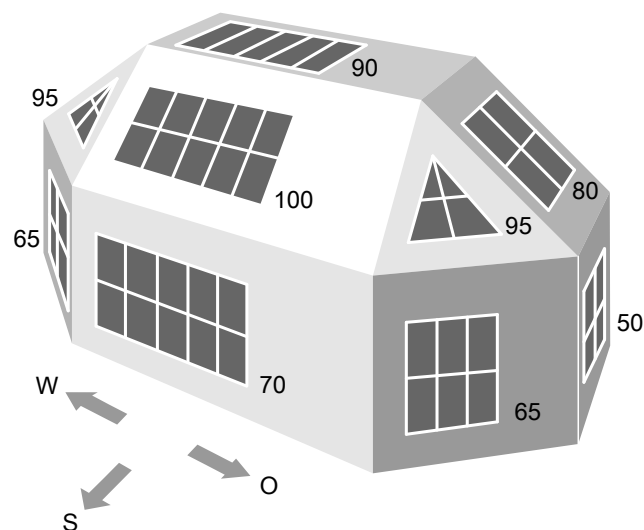
Absorber area in m ²	Static head in m	System capacity in l	Recom. expansion vessel capacity in l	Recom. heat sink (see page 70)
1.26 and 1.51	5	21.7	18	—
	10	25.1	—	—
	15	28.6	25	—
3.03	5	22.3	18	—
	10	25.7	25	—
	15	29.2	—	—
3.78 and 4.29	5	23.3	25	1.5 m uninsulated pipe
	10	23.6	—	—
	15	29.8	40	—

Low loss header

See the Vitodens 200-W and 300-W technical guide.

5.6 Sizing the solar thermal system

Influence of orientation, inclination and shade



The yield depends on where the solar collectors are installed. The highest yields result from south facing, pitched roofs. In comparison, a roof with east-west orientation achieves only approx. 80 % yield. Depending on the purpose of the solar thermal system, we recommend the following optimum angles of inclination for the collectors:

- Solar thermal system for DHW heating
30 to 45°

This small collector angle of inclination takes the higher position of the sun in summer into account.

- Solar thermal system for central heating backup
45 to 60°

Taking the lower position of the sun in spring, autumn and winter into account.

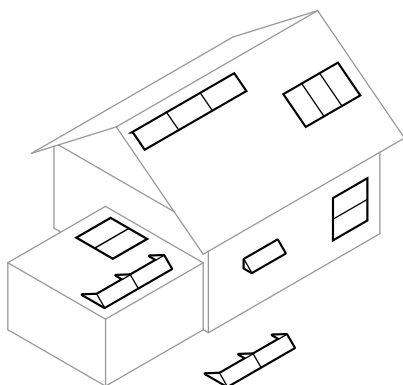
The deliberately large collector angle of inclination reduces periods of stagnation in summer.

Shade reduces the energy yield

Position and size the solar collector array so that the effect of neighbouring buildings, trees, etc. that cast a shade is minimised.

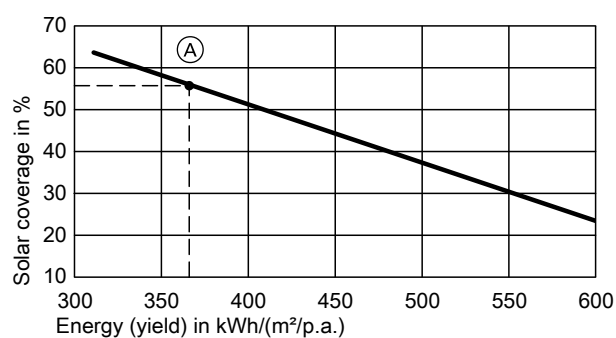
Design information (cont.)

Installation options



For installation on walls or for horizontal installation on flat roofs, we recommend sizing the solar collector area 20 to 30 % larger. The Viessmann "ESOP" calculation program can be used to compare different yields.

Solar coverage



The solar coverage indicates what percentage of the annually required energy for DHW and central heating can be covered by the solar thermal system.

Designing a solar thermal system always entails finding a good compromise between yield and solar coverage. The higher the selected solar coverage, the more conventional energy is saved. However, this is linked to an excess of heat in summer. This means a lower average solar collector efficiency and consequently lower yields (energy in kWh) per m² absorber area.

(A) Conventional sizing for DHW systems in detached houses

DHW demand of apartments

The following details are required for an estimation of the required solar collector area.

DHW demand:

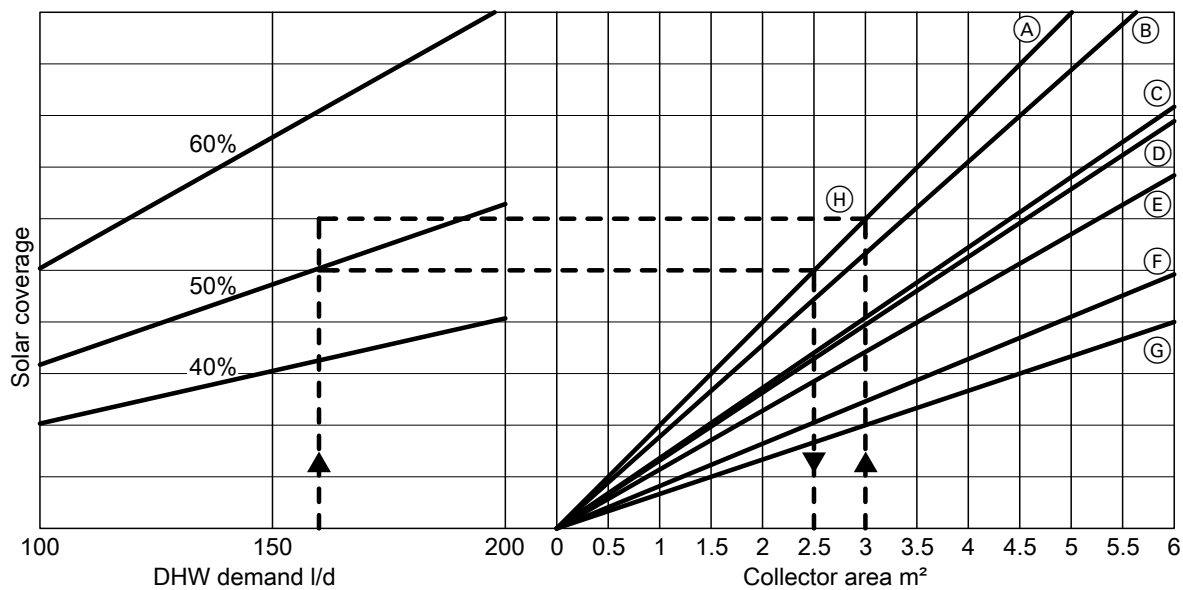
- Standard demand: 30 - 40 l/day and person
- Higher demand: 40 - 60 l/day and person

Determining the required solar collector area

Note

Select the solar collector area only within **sizing limit** (H), since oversized solar collector areas can lead to stagnation.

Example for the following sizing aids: Detached house with 4 occupants, Vitosol 300-T solar collectors.



- | | |
|---------------------------------------|----------------------------------|
| (A) South 30° | (D) South-west 90° and south 90° |
| (B) South-west 30° and south-east 30° | (E) South-east 90° |
| (C) West 30° and east 30° | (F) West 90° |
| | (G) East 90° |

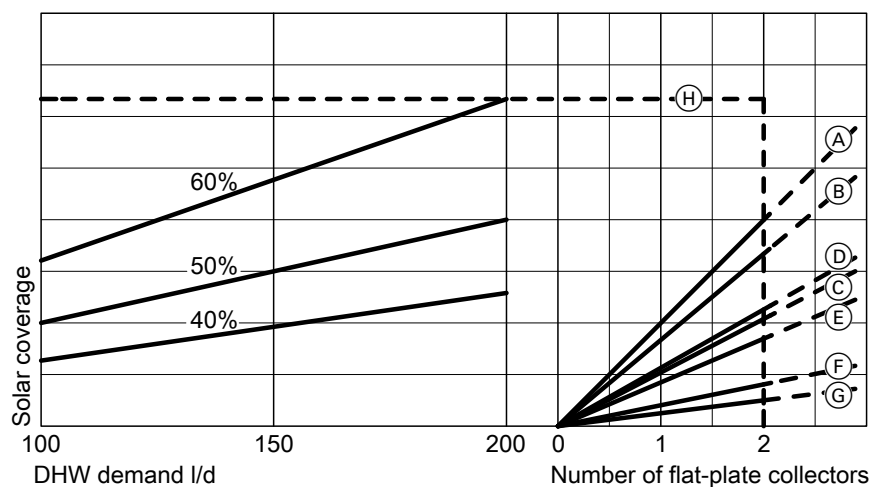
- Determine the DHW demand (see page 73).
Assumption: 40 l/day and person \approx 160 l/day.
- Draw a vertical line to the required solar coverage (assumption: 50 %).
- Draw a horizontal line to the existing roof orientation/inclination (assumption: South 30°).
- Extend the intersection downwards and read off the required solar collector area.
The example results in 2.5 m².
- Selection of the solar collector area that is physically possible:
In the example 3.0 m².
- Draw a vertical line from the selected solar collector area (3.0 m²) to the intersection with the existing roof orientation.
- Draw a horizontal line to the intersection with the line of the DHW demand and read off the achievable coverage.
In the example approx. 53 %.

Sizing aid for the Vitodens 242-F

Sizing for Germany, Belgium, Poland, Lithuania, Latvia, Slovakia, Czech Republic and northern/central France
Reference location Würzburg (DE)

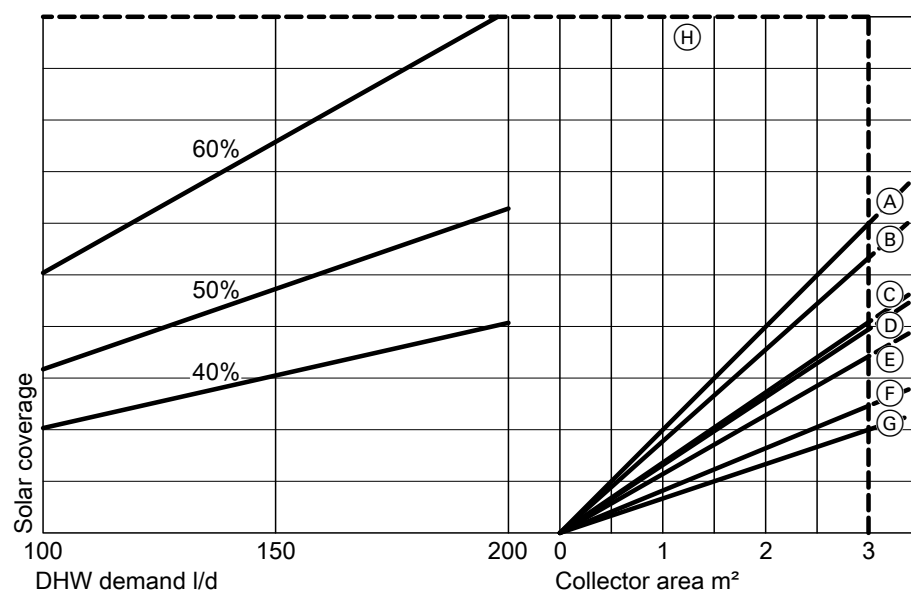
Design information (cont.)

Solar collector type Vitosol 100-FM and 200-FM



- (A) South 30°
- (B) South-west 30° and south-east 30°
- (C) West 30° and east 30°
- (D) South-west 90° and south 90°
- (E) South-east 90°
- (F) West 90°
- (G) East 90°
- (H) Sizing limit

Solar collector type Vitosol 200-TM and 300-TM

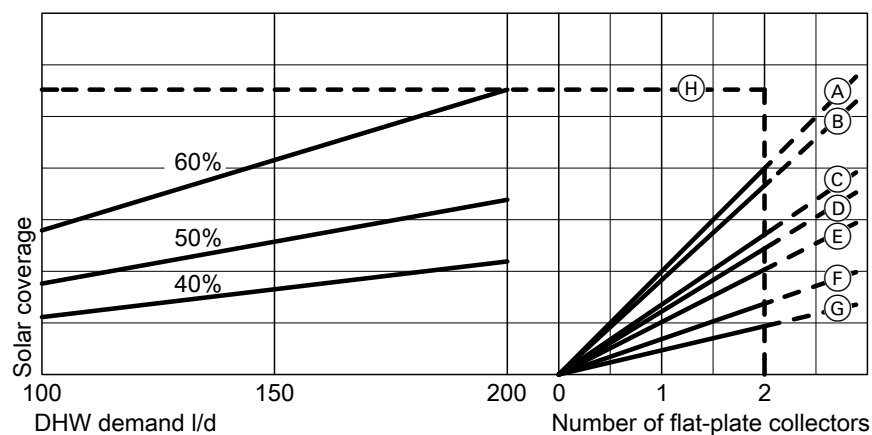


- (A) South 30°
- (B) South-west 30° and south-east 30°
- (C) West 30° and east 30°
- (D) South-west 90° and south 90°
- (E) South-east 90°
- (F) West 90°
- (G) East 90°
- (H) Sizing limit

Sizing for the regions Northern Italy, Hungary and Slovenia
Reference location Milan (IT)

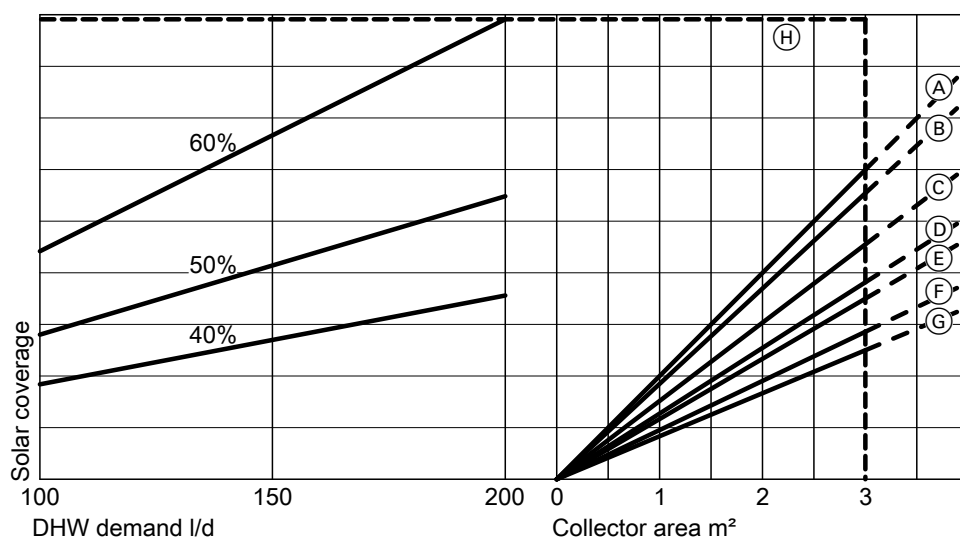
Design information (cont.)

Solar collector type Vitosol 100-FM and 200-FM



- | | |
|---------------------------------------|--------------------|
| (A) South 30° | (E) South-east 90° |
| (B) South-west 30° and south-east 30° | (F) West 90° |
| (C) West 30° and east 30° | (G) East 90° |
| (D) South-west 90° and south 90° | (H) Sizing limit |

Solar collector type Vitosol 200-TM and 300-TM

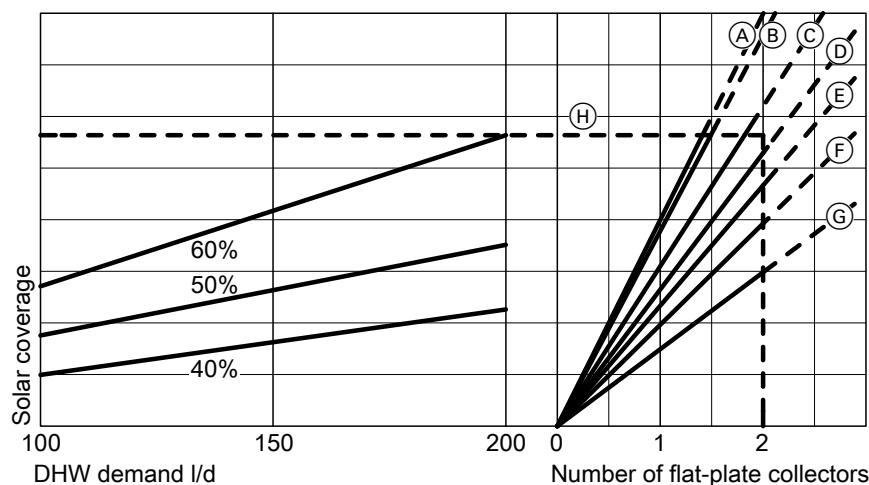


- | | |
|---------------------------------------|--------------------|
| (A) South 30° | (E) South-east 90° |
| (B) South-west 30° and south-east 30° | (F) West 90° |
| (C) West 30° and east 30° | (G) East 90° |
| (D) South-west 90° and south 90° | (H) Sizing limit |

Sizing for southern France, central/southern Italy and Turkey
Reference location Madrid (ES)

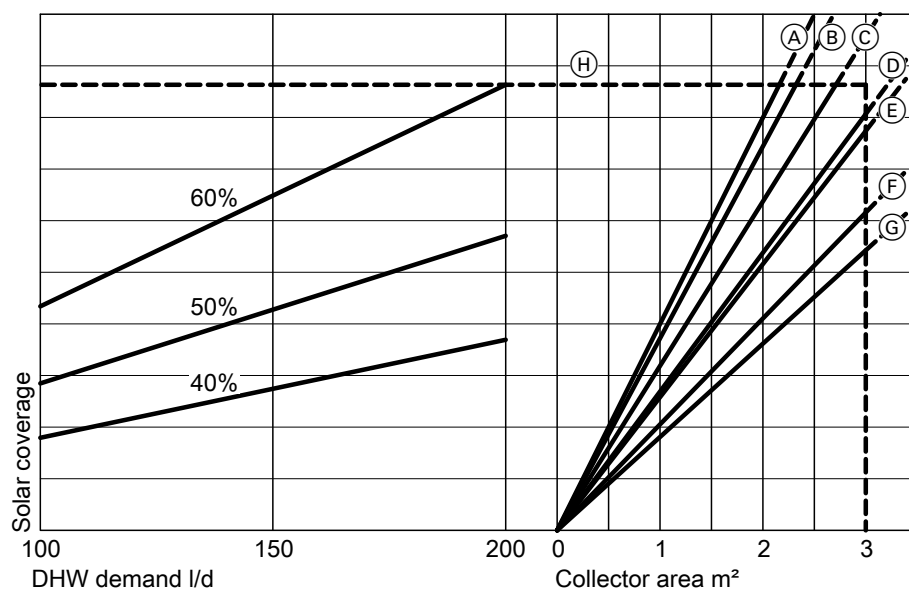
Design information (cont.)

Solar collector type Vitosol 100-FM and 200-FM



- | | |
|---------------------------------------|--------------------|
| (A) South 30° | (E) South-east 90° |
| (B) South-west 30° and south-east 30° | (F) West 90° |
| (C) West 30° and east 30° | (G) East 90° |
| (D) South-west 90° and south 90° | (H) Sizing limit |

Solar collector type Vitosol 200-TM and 300-TM



- | | |
|---------------------------------------|--------------------|
| (A) South 30° | (E) South-east 90° |
| (B) South-west 30° and south-east 30° | (F) West 90° |
| (C) West 30° and east 30° | (G) East 90° |
| (D) South-west 90° and south 90° | (H) Sizing limit |

5.7 Intended use

The appliance is intended solely for installation and operation 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 heating up heating 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.

Design information (cont.)

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 units

6.1 Vitotronic 100, type HC1B, for constant temperature operation

In conjunction with Vitodens 222-F.

Layout and functions

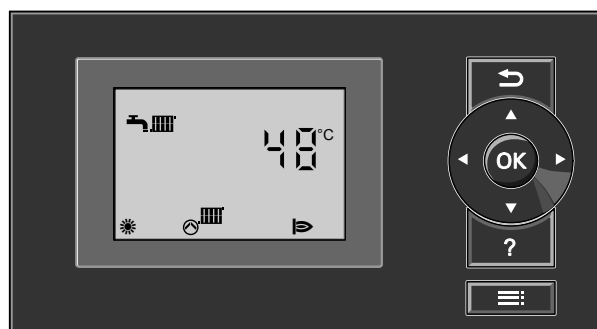
Modular structure

The control unit is integrated into the boiler.

The control unit comprises a standard unit, electronics modules and a programming unit.

Standard unit:

- ON/OFF switch
- Optolink laptop interface
- Operating and fault indicators
- Reset button
- Fuses



Programming unit:

- Easy operation through display with large font and depiction with good contrast
- Removable programming unit; can be mounted as option on the wall with separate accessory
- Menu prompts through pictograms
- Operating keys for:
 - Navigation
 - Confirmation
 - Settings/menu
- Settings:
 - Boiler water temperature
 - DHW temperature
 - Operating program
 - Codes
 - Actuator tests
 - Test mode
- Displaying:
 - Boiler water temperature
 - DHW temperature
 - Operating data
 - Diagnostic details
 - Fault messages

Functions

- Electronic boiler control unit for operation at a constant boiler water temperature
- Room temperature-dependent operation requires a Vitotrol 100, type UTA, UTDB or UTDB-RF (according to EnEV [Germany])
- Heating system frost protection
- Anti-seizing pump protection
- Integral diagnostic system
- Cylinder thermostat with priority
- Control of solar DHW heating and central heating backup in conjunction with the solar control module, type SM1
- Auxiliary function for DHW heating (short-term heating to a higher temperature)
- Maintenance display
- External starting and blocking (in conjunction with extension EA1)

Control characteristics

PI characteristics with modulating output

Setting the heating programs

The heating system frost protection (see frost protection function) applies to all heating programs.

The following heating programs can be selected:

- Heating and DHW
- Only DHW
- Standby mode

Frost protection function

The frost protection function is active in all heating programs.

The burner is switched ON at a boiler water temperature of 5 °C and will be switched OFF again at a boiler water temperature of 20 °C.

The circulation pump will be switched ON simultaneously with the burner and switched OFF after a delay.

The DHW cylinder will be heated to approx. 20 °C.

To protect the system against frost, the circulation pump may be started at certain intervals (up to 24 times per day) for periods of approx. 10 minutes.

Summer mode

Operating program "☀"

The burner starts only when the DHW cylinder needs to be heated up.

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 units (cont.)

Cylinder temperature sensor

For Vitodens with loading cylinder or solar cylinder also an additional outlet temperature sensor.

These sensors are connected to the control unit and built into the boiler or cylinder.

Specification

IP rating	IP 32
Sensor type	Viessmann NTC 10 kΩ at 25 °C

Permissible ambient temperature	
– During operation	0 to +90 °C
– During storage and transport	–20 to +70 °C

Specification Vitotronic 100, type HC1B

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	6 A
Protection class	I
Function type	Type 1 B to EN 60730-1
Permissible ambient temperature	
– During operation	0 to +40 °C Installation in living spaces or boiler rooms (standard ambient conditions)
– During storage and transport	–20 to +65 °C

Electronic temperature limiter setting (heating mode)	82 °C (change not possible)
DHW temperature setting range	
– Vitodens with loading cylinder	10 to 63 °C
– Vitodens with DHW cylinder with internal indirect coil	10 to 68 °C

6.2 Vitotronic 200, type HO2C, for weather-compensated operation

Design and functions

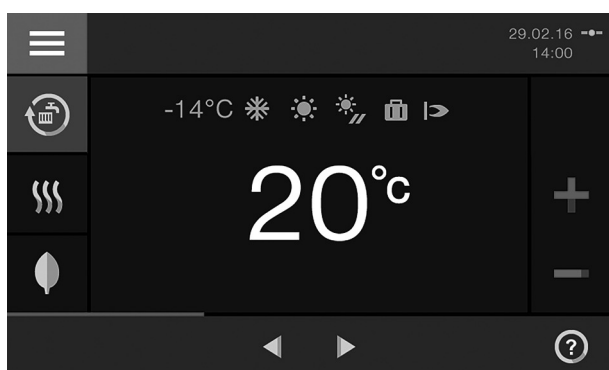
Modular design

The control unit is integrated into the boiler.

The control unit comprises a standard unit, electronics modules and a programming unit with 5-inch colour touchscreen.

Standard unit:

- ON/OFF switch
- Optolink laptop interface
- Only for Vitodens 333-F and 343-F: LAN interface
E.g. for remote control of the heating system by the Vitotrol Plus app (operating system iOS 7.0 or Android 4.0).
- Operating and fault display
- Reset button
- Fuses



Programming unit:

- Easy operation thanks to:
 - Colour touchscreen with plain text and graphic display
 - Large font and colour depiction for good contrast
 - Context-sensitive help
- With digital time switch

- Setting:
 - Room temperature
 - Reduced room temperature
 - DHW temperature
 - Operating program
 - Time programs for central heating, DHW heating and DHW circulation
 - Economy mode (ECO)
 - Comfort mode
 - Holiday program
 - Heating curves
 - Favourites menu
 - Parameters with plain text display
 - Actuator tests
 - Test mode
- Display:
 - Boiler water temperature
 - DHW temperature
 - Energy cockpit with indication of:
 - Energy yields
 - Energy consumption
 - Operating data
 - Diagnostic details
 - Fault messages

■ Available languages:

- German
- Czech
- Danish
- English
- French
- Italian
- Dutch
- Polish
- Slovak
- Swedish
- Estonian
- Croatian
- Latvian
- Lithuanian
- Bulgarian
- Romanian
- Russian
- Slovenian
- Spanish
- Turkish
- Hungarian

Functions

- Weather-compensated control of the boiler water and/or flow temperature
- Control of one heating circuit without mixer and two heating circuits with mixer
- Electronic maximum and minimum temperature limit
- Demand-dependent heating circuit pump and burner shutdown control
- Adjustment of a variable heating limit
- Pump anti-seizing protection
- Frost protection monitoring for the heating system
- Setting of the control method for the integral circulation pump
- Integral diagnostic system
- Flow rate monitoring (only for Vitodens 333-F and 343-F)
- Commissioning using commissioning assistant with display of the installed hydraulic scheme.
- Simplified performance of automated hydronic balancing. In conjunction with service case and extension kit (accessories).
- Communication via LAN interface (included in standard delivery for Vitodens 333-F and 343-F) or WLAN interface Vitoconnect 100, type OPTO1 (accessories). See the following chapter "Connectivity".
- Service indicator
- Cylinder temperature controller with priority control
- In conjunction with solar control module, type SM1 (only for Vitodens 242-F and 343-F):
 - Control of solar DHW heating and central heating backup
 - Graphic representation of the solar energy yield
- Auxiliary function for DHW heating (short-term heating to a higher temperature)
- Screed drying program
- Connection option for DHW circulation pump to control unit (only for Vitodens 333-F and 343-F)
- External starting and blocking (in conjunction with EA1 extension)

To reduce the heat-up output, the reduced room temperature is raised when outside temperatures are low. To shorten the heat-up time after a setback phase the flow temperature is raised for a limited time.

According to the German Energy Saving Ordinance, the temperature in each room must be individually controlled, e.g. by means of thermostatic valves.

Connectivity

- Vitoconnect 100, type OPTO1 (accessories):
WLAN interface for remote control of the heating system via the Vitotrol Plus or ViCare app. For further information, see the data communication technical guide. Suitable for all Vitodens 2xx and Vitodens 3xx.
- Integral LAN interface in Vitodens 333-F and 343-F (until 08/2016).
If LON communication (e.g. Vitogate or Vitotronic 200-H) is required, replace the integral LAN module with the LON communication module (accessories). If an internet connection is also required, a Vitocom must be ordered separately.

Control characteristics

PI characteristics with modulating output

Time switch

Digital time switch (integrated into the programming unit)

- Individual day and seven-day program
- Automatic summer/wintertime changeover
- Automatic function for DHW heating and DHW circulation pump
- Time, day and standard switching times for central heating, DHW heating and the DHW circulation pump are factory-set
- Switching times are individually programmable, i.e. up to four switching periods per day

Shortest switching interval: 10 minutes

Power reserve: 14 days

Setting the operating programs

The heating system frost protection (see frost protection function) applies to all heating programs.

The following heating programs can be selected:

- Heating and DHW
- Only DHW
- Standby mode

External heating program changeover in conjunction with EA1 extension.

Frost protection function

- The frost protection function will be started when the outside temperature drops below approx. +1 °C.
With frost protection, the heating circuit pump is switched ON and the boiler water is maintained at a lower temperature of approx. 20 °C.
The DHW cylinder will be heated to approx. 20 °C.
- The frost protection function will be stopped when the outside temperature rises above approx. +3 °C.

Summer mode

Operating program "☀"

The burner starts only when the DHW cylinder needs reheating or when DHW is drawn from a gas condensing combi boiler.

Adjusting the heating curves (slope and level)

The Vitotronic 200 controls the boiler water temperature (= flow temperature of the heating circuit without mixer) **and** the flow temperature of the heating circuits with mixer (in conjunction with the extension kit for one heating circuit with mixer) in weather-compensated mode. The boiler water temperature is automatically boosted by between 0 and 40 K higher than the currently required set flow temperature (delivered condition 8 K).

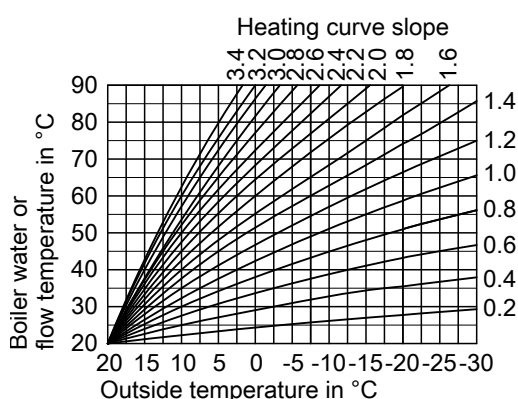
The flow temperature required to reach a specific room temperature depends on the heating system and the thermal insulation of the building to be heated.

Adjusting the heating curves matches the boiler water temperature and the flow temperature to these operating conditions.

Heating curves:

The upper boiler water temperature is limited by the temperature limiter and the temperature set at the electronic maximum thermostat. The flow temperature cannot exceed the boiler water temperature.

Control units (cont.)



Heating systems with low loss header

When using hydraulic separation (low loss header), connect a temperature sensor for use in the low loss header.

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

Cylinder temperature sensor

For Vitodens with loading cylinder or solar cylinder also an additional outlet temperature sensor.

These sensors are connected to the control unit and built into the boiler or cylinder.

Specification

IP rating	IP 32
Sensor type	Viessmann NTC 10 kΩ at 25 °C

Specification Vitotronic 200, type HO2C

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	6 A
Protection class	I
Permissible ambient temperature	
– During operation	0 to +40 °C Installation in living spaces or boiler rooms (standard ambient conditions)
– During storage and transport	–20 to +65 °C
Electronic temperature limiter setting (heating mode)	82 °C (change not possible)

Solar control module, type SM1

Included in the standard delivery of the Vitodens 242-F

Permissible ambient temperature

– During operation	0 to +90 °C
– During storage and transport	–20 to +70 °C

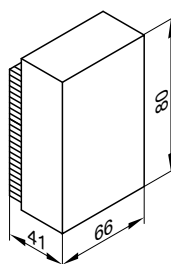
Outside temperature sensor

Installation site:

- 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 up to 35 m with a cross-section of 1.5 mm² (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

Note

The hardwired outside temperature sensor is included in the delivered condition. Alternatively, the wireless outside temperature sensor can be used; see accessories.

DHW temperature setting range

– Vitodens with loading cylinder	10 to 63 °C
– Vitodens with DHW cylinder with internal indirect coil	10 to 68 °C

Heating curve setting range

Slope	0.2 to 3.5
Level	–13 to 40 K

Structure

The solar control module contains:

- PCB
- Terminals for:
 - 2 sensors
 - Solar circuit pump

Control units (cont.)

- KM BUS
- Power supply (on-site ON/OFF switch)
- PWM output for switching the solar circuit pump

The standard delivery includes the collector temperature sensor and cylinder temperature sensor.

Collector temperature sensor

For connection inside the appliance

On-site extension of the connecting lead:

- 2-core lead, length up to 60 m with a cross-section of 1.5 mm² (copper)
- Never route this lead immediately next to 230/400 V cables

Lead length	2.5 m
IP rating	IP 32 to EN 60529; ensure through design/installation
Sensor type	Viessmann NTC 20 kΩ at 25 °C
Permissible ambient temperature	
– During operation	–20 to +200 °C
– During storage and transport	–20 to +70 °C

Cylinder temperature sensor

Installed in the Vitodens and connected.

IP rating	IP 32 to EN 60529; ensure through design/installation
Sensor type	Viessmann NTC 10 kΩ at 25 °C
Permissible ambient temperature	

– During operation	0 to +90 °C
– During storage and transport	–20 to +70 °C

Functions

- Switching the solar circuit pump
- Electronically limiting the temperature in the DHW cylinder (safety shutdown at 90 °C)
- Collector safety shutdown
- Solar circuit pump speed control with PWM input
- Suppressing reheating of the DHW cylinder by the boiler (auxiliary function for DHW heating is possible)
- Output statement and diagnostic system

Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	1.5 W
Protection class	II
IP rating	IP 20 to EN 60529; ensure through design/installation
Function type	Type 1B to EN 60730-1
Permiss. ambient temperature	
– During operation	0 to +40 °C, use in the living space or boiler room (standard ambient conditions)
– During storage and transport	–20 to +65 °C
Rated relay output breaking capacity	
– Semi-conductor relay 1	1 (1) A, 230 V~
– Total	max. 2 A

6.3 Vitotronic accessories

Allocation to control unit types

Vitotronic Type	100 HC1B	200 HO1B	200 HO2C
Accessories			
Vitotrol 100, type UTA	x		
Vitotrol 100, type UTDB	x		
External H4 extension	x		
Vitotrol 100, type UTDB-RF	x		
Vitotrol 200-A		x	x
Vitotrol 300-A		x	x
Vitotrol 200-RF		x	x
Wireless base station		x	x
Wireless repeater		x	x
Room temperature sensor for Vitotrol 300-A		x	x
Immersion temperature sensor	x	x	x
KM-BUS distributor	x	x	x
Extension kit, mixer with integral mixer motor		x	x
Extension kit, mixer for separate mixer motor		x	x
Immersion thermostat for underfloor heating systems		x	x
Contact thermostat for underfloor heating systems		x	x
Internal H1 extension	x	x	x ^{*7}
Internal H2 extension	x	x	x
AM1 extension	x	x	x
EA1 extension	x	x	x
LON cable		x	x
LON coupling		x	x
LON plug-in connector		x	x
LON socket		x	x
Terminator		x	x

^{*7} Included in standard delivery.

Control units (cont.)

Vitotronic	100	200	200
Type	HC1B	HO1B	HO2C
Accessories			
LON communication module		x	x
Vitoconnect 100, type OPTO1		x	x

Note

For further information on communication technology, see the "Data communication" technical guide.

Vitotrol 100, type UTA

Part no. 7170149

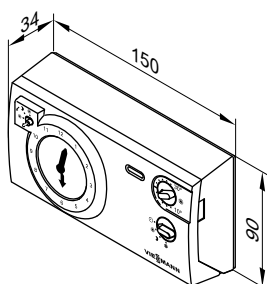
Room thermostat

- 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

The Vitotrol 100 is installed in the main living room on an internal wall opposite radiators, although never inside shelving units, in recesses, or immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.).

Control unit connection:

3-core cable with a cross-section of 1.5 mm² (no green/yellow wire) for 230 V~.



Specification

Rated voltage	230 V/50 Hz
Rated breaking capacity of the contact	6(1) A 250 V~
IP rating	IP 20 to EN 60529 Ensure through design/installation
Permissible ambient temperature	
– Operation	0 to +40 °C
– 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. Z007691

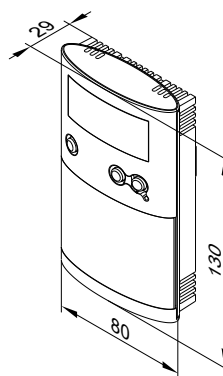
Room temperature controller

- 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 (two 1.5 V round alkaline cells, type LR6/AA, battery life approx. 1.5 years).

Control unit connection:

2-core cable with a cross-section of 0.75 mm² for 230 V~.



Specification

Rated voltage	3 V– Battery LR6/AA
Rated breaking capacity of the floating contact	
– max.	6(1) A, 230 V~
– min.	1 mA, 5 V–

Control units (cont.)

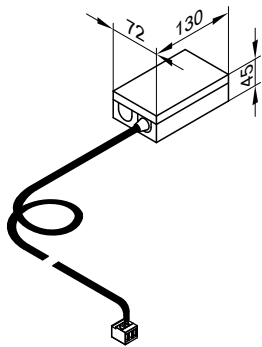
IP rating	IP 20 to EN 60529 Ensure through design/installation
Function type	RS type 1B to EN 60730-1
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–25 to +65 °C

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

External H4 extension

Part no. 7197227

- Connection extension for connecting the Vitotrol 100, type UTDB or 24 V clock thermostats via a LV lead
- With cable (0.5 m long) and plug for the connection to the control unit



Specification

Rated voltage	230 V~
Output voltage	24 V~
Rated frequency	50 Hz
Power consumption	2.5 W
Load 24 V~ (max.)	10 W
Safety category	I
IP rating	IP 41
Permissible ambient temperature	
– Operation	0 to +40 °C Installation in living spaces or boiler rooms (standard ambient conditions)
– Storage and transport	–20 to +65 °C

Vitotrol 100, type UTDB-RF

Part no. Z007692

Room temperature controller with integral wireless transmitter and receiver

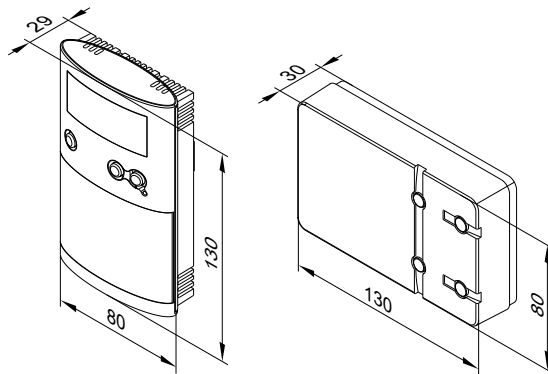
- With digital time switch
- With individual day and seven-day program
- Operation with user prompts:
 - 3 preselected time programs, individually adjustable
 - Constant manual mode with adjustable set room temperature
 - Frost protection mode
 - Holiday program
- With selector keys for party and economy 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.). Room temperature controller operation independent of mains power supply (two 1.5 V round alkaline cells, type LR6/AA, battery life approx. 1.5 years).

Receiver with relay state indication.

Connection of the receiver to the control unit (subject to control unit type):

- 4-core cable with a cross-section of 1.5 mm² for 230 V~ or
- 3-core cable without green/yellow wire for 230 V~ or
- 2-core lead with a cross-section of 0.75 mm² for LV for the connection to the control unit, plus an additional 2-core cable for the 230 V~ power supply



Specification, room temperature controller

Rated voltage	3 V–
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

Control units (cont.)

Specification, receiver

Operating voltage	230 V~± 10 % 50 Hz
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

Safety category	II to EN 60730-1 subject to correct installation
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–25 to +65 °C

Notes regarding room temperature hook-up (RS function) for remote control units

Never activate the RS function for underfloor heating circuits (inertia).

In heating systems with a heating circuit without mixer and heating circuits with mixer, the RS function must only affect the heating circuit with mixer.

Information on the Vitotrol 200-A and Vitotrol 300-A

For every heating circuit in a heating system, a Vitotrol 200-A or Vitotrol 300-A can be used.

The Vitotrol 200-A can regulate one heating circuit; the Vitotrol 300-A up to three heating circuits.

Up to two remote controls can be connected to the control unit.

Note

Hardwired remote control units cannot be combined with the wireless base station.

Vitotrol 200-A

Part no. Z008341

KM BUS subscriber

■ Displays:

- Room temperature
- Outside temperature
- Operating condition

■ Settings:

- Set room temperature for standard mode (normal room temperature)

Note

The set room temperature for reduced mode (reduced room temperature) is set at the control unit.

- Operating program

■ Party and economy mode can be enabled via keys

■ Integral room temperature sensor for room temperature hook-up (only for one heating circuit with mixer)

Installation location:

■ Weather-compensated mode:

installation anywhere in the building

■ Room temperature hook-up:

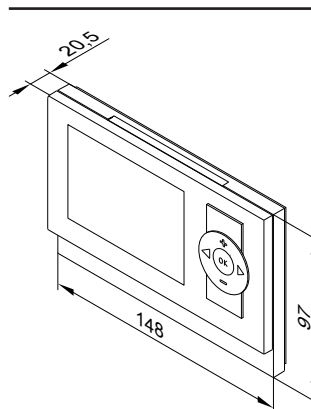
the integral room temperature sensor captures the actual room temperature and effects any necessary correction of the flow temperature.

The captured room temperature depends on the installation site:

- Main living room on an internal wall opposite radiators
- Not on shelves or in recesses
- Never in the immediate vicinity of doors or close to heat sources (e.g. direct insolation, fireplace, TV set, etc.).

Connection:

- 2-core lead, length max. 50 m (even if connecting several remote control units)
- Never route this cable immediately next to 230/400 V cables.
- LV plug as standard delivery



Specification

Power supply	Via KM BUS
Power consumption	0.2 W
Protection class	III
IP rating	IP 30 to EN 60529; ensure through design/installation
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–20 to +65 °C
Setting range of the set room temperature for standard mode	3 to 37 °C

Notes

- If the Vitotrol 200-A is to be used for room temperature hook-up, site the device in a main living room (lead room).
- Connect a maximum of 2 Vitotrol 200-A units to the control unit.

Vitotrol 300-A

Part no. Z008342

KM BUS subscriber

Control units (cont.)

- Displays:
 - Room temperature
 - Outside temperature
 - Operating program
 - Operating condition
 - Graphic illustration of the solar energy yield in conjunction with the solar control module, type SM1
- Settings:
 - Set room temperature for standard mode (normal room temperature) and reduced mode (reduced room temperature)
 - Set DHW temperature
 - Operating program, switching times for heating circuits, DHW heating and DHW circulation pump plus further settings via plain text menu on the display
- Party and economy mode can be enabled via the menu
- Integral room temperature sensor for room temperature hook-up (only for one heating circuit with mixer)

Installation location:

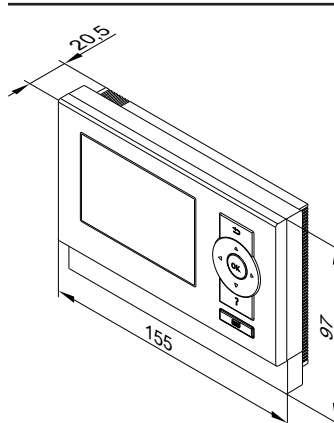
- Weather-compensated mode:
 - installation anywhere in the building
- Room temperature hook-up:
 - the integral room temperature sensor captures the actual room temperature and effects any necessary correction of the flow temperature.

The captured room temperature depends on the installation site:

- Main living room on an internal wall opposite radiators
- Not on shelves or in recesses
- Never in the immediate vicinity of doors or close to heat sources (e.g. direct insolation, fireplace, TV set, etc.).

Connection:

- 2-core lead, length max. 50 m (even if connecting several remote control units)
- Never route this cable immediately next to 230/400 V cables.
- LV plug as standard delivery



Specification

Power supply via KM BUS	
Power consumption	0.5 W
Protection class	III
IP rating	IP 30 to EN 60529; ensure through design/installation
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–20 to +65 °C
Setting range for set room temperature	3 to 37 °C

Information regarding Vitotrol 200-RF

Wireless remote control units with integral wireless transmitter for operation with the wireless base station or the integral wireless interface.

A Vitotrol 200-RF can be used for each heating circuit in a heating system.

The Vitotrol 200-RF can control one heating circuit.

Up to three wireless remote controls can be connected to the control unit.

Note

The wireless remote controls **cannot** be combined with hardwired remote control units.

Vitotrol 200-RF

Part no. Z011219

Wireless subscriber

- Displays:
 - Room temperature
 - Outside temperature
 - Operating condition
 - Wireless signal reception quality
- Settings:
 - Set room temperature for standard mode (normal room temperature)

Note

The set room temperature for reduced mode (reduced room temperature) is set at the control unit.

- Operating program

- Party and economy mode can be enabled via keys
- Integral room temperature sensor for room temperature hook-up (only for one heating circuit with mixer)

Installation location:

- Weather-compensated mode:
 - Installation anywhere in the building
- Room temperature hook-up:
 - The integral room temperature sensor captures the room temperature and effects any necessary correction of the flow temperature.

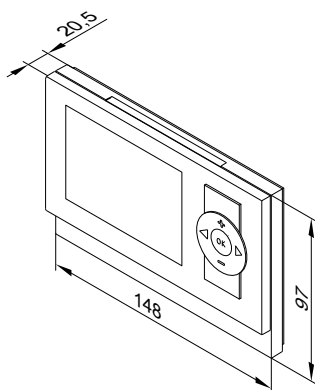
The captured room temperature depends on the installation site:

- Main living room on an internal wall opposite radiators
- Not on shelves or in recesses
- Never in the immediate vicinity of doors or close to heat sources (e.g. direct insolation, fireplace, TV set, etc.)

Note

Observe the "Wireless accessories" technical guide.

Control units (cont.)



Specification

Power supply	2 AA batteries 3 V
Radio frequency	868 MHz
Wireless range	See "Wireless accessories" technical guide
Protection class	III
IP rating	IP 30 to EN 60529; ensure through design/installation
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–20 to +65 °C
Setting range of the set room temperature for standard mode	3 to 37 °C

Wireless base station

Part no. Z011413

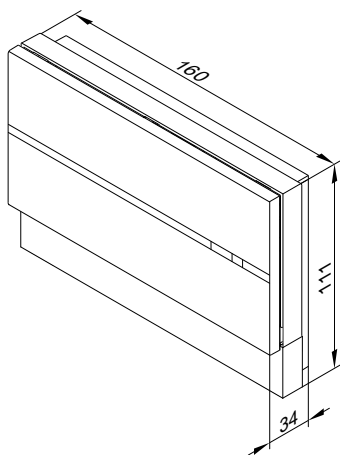
KM-BUS subscribers

For communication between the Vitotronic control unit and Vitotrol 200-RF wireless remote control.

For up to 3 wireless remote control units. Not in conjunction with a hardwired remote control unit.

Connection:

- 2-core lead, length up to 50 m (even when connecting several KM-BUS subscribers).
- Never route this cable immediately next to 230/400 V cables.



Specification

Power supply via KM-BUS	
Power consumption	1 W
Radio frequency	868 MHz
Protection class	III
IP rating	IP 20 to EN 60529; ensure through design/installation
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–20 to +65 °C

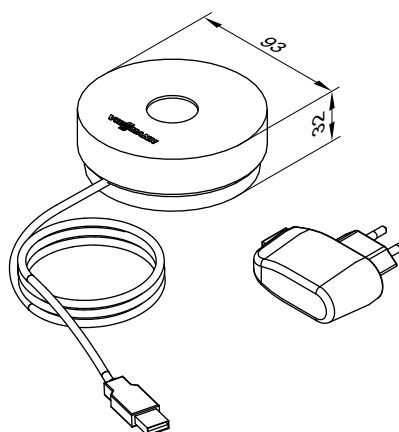
Wireless repeater

Part no. 7456538

Mains operated wireless repeater to increase the wireless range and for use in areas where wireless communication is difficult. Observe the "Wireless accessories" technical guide.

Do not use more than one wireless repeater per Vitotronic control unit.

- For preventing strongly diagonal angles of penetration of the radio signals through steel reinforced concrete ceilings/floors and/or multiple walls
- For circumventing large metallic objects situated between the wireless components.



Control units (cont.)

Specification

Power supply	230 V~/5 V $\overline{\text{=}}$ via plug-in power supply unit
Power consumption	0.25 W
Radio frequency	868 MHz
Lead length	1.1 m with plug
Safety category	II
IP rating	IP 20 to EN 60529; ensure through design/installation
Permissible ambient temperature	
– Operation	0 to +55 °C
– Storage and transport	–20 to +75 °C

Room temperature sensor

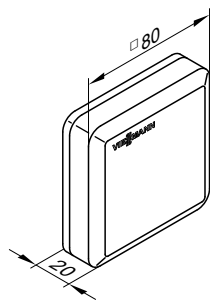
Part no. 7438537

Separate room temperature sensor as supplement to the Vitotrol 300A; to be used if the Vitotrol 300A cannot be installed inside the main living room or in a suitable position for temperature capture and adjustment.

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 insolation, fireplace, TV set, etc. Connect the room temperature sensor to the Vitotrol 300A.

Connection:

- 2-core lead with a cross-section of 1.5 mm² (copper)
- Max. lead length from the remote control: 30 m
- Never route this cable immediately next to 230/400 V cables.



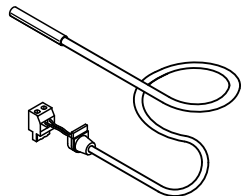
Specification

Protection class	III
IP rating	IP 30 to EN 60529; ensure through design/installation
Sensor type	Viessmann NTC 10 k Ω at 25 °C
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–20 to +65 °C

Immersion temperature sensor

Part no. 7438702

To capture a temperature in a sensor well



Specification

Lead length	5.8 m, fully wired
IP rating	IP 32 to EN 60529; ensure through design/installation
Sensor type	Viessmann NTC 10 k Ω , at 25 °C
Permissible ambient temperature	
– Operation	0 to +90 °C
– Storage and transport	–20 to +70 °C

Immersion temperature sensor

Part no. 7179488

To capture the low loss header temperature

Specification

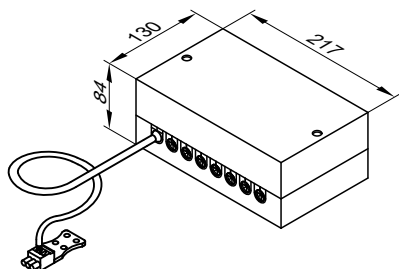
Lead length	3.75 m, fully wired
IP rating	IP 32 to EN 60529; ensure through design/installation
Sensor type	Viessmann NTC 10 k Ω at 25 °C
Permissible ambient temperature	
– Operation	0 to +90 °C
– Storage and transport	–20 to +70 °C

Control units (cont.)

KM BUS distributor

Part no. 7415028

For the connection of 2 to 9 devices to the control unit KM-BUS



Specification

Lead length	3.0 m, fully wired
IP rating	IP 32 to EN 60529; ensure through design/installation
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–20 to +65 °C

Mixer extension kit with integral mixer motor

Part no. ZK02940

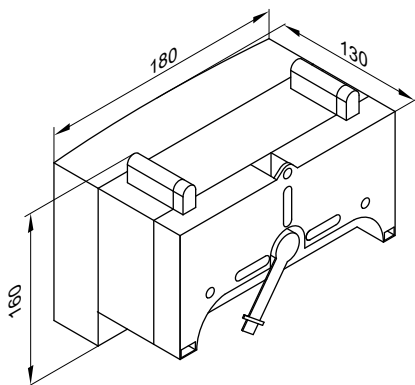
KM-BUS subscribers

Components:

- Mixer PCB with mixer motor for Viessmann mixer DN 20 to DN 50 and R ½ to R 1¼
- Flow temperature sensor (contact temperature sensor)
- Plug for connecting the heating circuit pump
- Power cable (3.0 m long) with plug
- Bus connecting cable (3.0 m long) with plug

The mixer motor is mounted directly onto the Viessmann mixer DN 20 to DN 50 and R ½ to R 1¼.

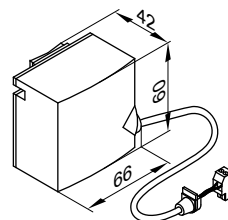
Mixer PCB with mixer motor



Specification, mixer PCB with mixer motor

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	5.5 W
IP rating	IP 32D to EN 60529; ensure through design/installation
Protection class	I
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–20 to +65 °C
Rated breaking capacity of the relay output for heating circuit pump [20]	2(1) A, 230 V~
Torque	3 Nm
Runtime for 90° <	120 s

Flow temperature sensor (contact temperature sensor)



Secured with a tie.

Specification, flow temperature sensor

Cable length	2.0 m, fully wired
IP rating	IP 32D to EN 60529; ensure through design/installation
Sensor type	Viessmann NTC 10 kΩ at 25 °C
Permissible ambient temperature	
– Operation	0 to +120 °C
– Storage and transport	–20 to +70 °C

Control units (cont.)

Mixer extension kit for separate mixer motor

Part no. ZK02941

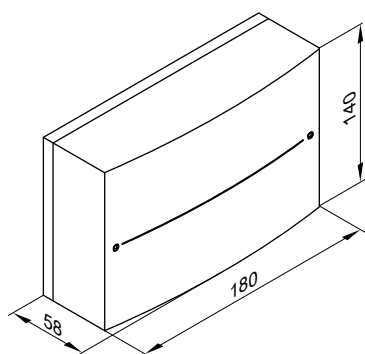
KM-BUS subscribers

For connecting a separate mixer motor

Components:

- Mixer PCB for connecting a separate mixer motor
- Flow temperature sensor (contact temperature sensor)
- Plug for connecting the heating circuit pump and the mixer motor
- Power cable (3.0 m long) with plug
- Bus connecting cable (3.0 m long) with plug

Mixer PCB



Specification mixer PCB

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	1.5 W
IP rating	IP 20D to EN 60529, ensure through design/installation
Protection class	I

Permissible ambient temperature

– Operation	0 to +40 °C
– Storage and transport	–20 to +65 °C

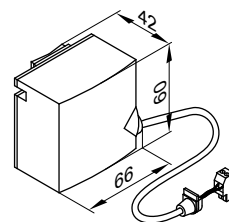
Rated relay output breaking capacity

– Heating circuit pump [20]	2(1) A, 230 V~
– Mixer motor	0.1 A, 230 V~

Required runtime of the mixer motor for 90° <

Approx. 120 s

Flow temperature sensor (contact temperature sensor)



Secured with a tie.

Specification, flow temperature sensor

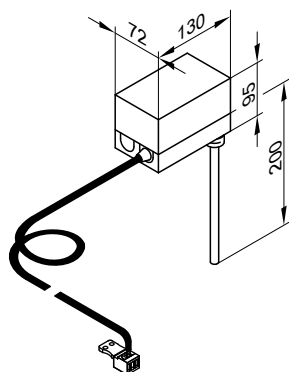
Cable length	5.8 m, fully wired
IP rating	IP 32D to EN 60529; ensure through design/installation
Sensor type	Viessmann NTC 10 kΩ at 25 °C
Permissible ambient temperature	
– Operation	0 to +120 °C
– Storage and transport	–20 to +70 °C

Immersion thermostat

Part no. 7151728

May be used as a maximum temperature limiter for underfloor heating systems.

The temperature limiter is integrated into the heating flow. If the flow temperature is too high, the temperature limiter switches off the heating circuit pump.



Specification

Cable length	4.2 m, fully wired
Setting range	30 to 80 °C
Switching differential	Max. 11 K
Breaking capacity	6(1.5) A, 250 V~
Setting scale	Inside the enclosure
Stainless steel sensor well (male thread)	R ½ x 200 mm
DIN reg. no.	DIN TR 1168

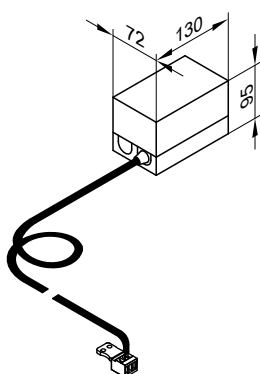
Contact thermostat

Part no. 7151729

May be used as a maximum temperature limiter for underfloor heating systems (only in conjunction with metal pipes).

The temperature limiter is integrated into the heating flow. If the flow temperature is too high, the temperature limiter switches off the heating circuit pump.

Control units (cont.)



Specification

Lead length	4.2 m, fully wired
Setting range	30 to 80 °C
Switching differential	Max. 14 K
Breaking capacity	6(1.5) A, 250 V~
Setting scale	Inside the casing
DIN reg. no.	DIN TR 1168

Internal H1 extension

Part no. 7498513

The internal H1 extension is part of the standard delivery and is integrated (not for Vitodens 222-F and 242-F).

Using the extension enables the following functions to be achieved:

Function	Rated breaking capacity of the relay output
– Connection of an external safety solenoid valve (LPG)	1(0.5) A 250 V~
And one of the following functions:	2(1) A 250 V~
– Connection of a heating circuit pump for a directly connected heating circuit	
– Connection of a central fault message	
– Only with Vitotronic 200, type HO1B and HO2C:	
– Connection of a DHW circulation pump	

Specification

Rated voltage	230 V~
Rated frequency	50 Hz

Internal H2 extension

Part no. 7498514

PCB for installation in the control unit, in place of the integral internal H1 extension.

Using the extension enables the following functions to be achieved:

Function	Rated breaking capacity of the relay output
– External extractor interlock	6(3) A 250 V~
And one of the following functions:	2(1) A 250 V~
– Connection of a heating circuit pump for a directly connected heating circuit	
– Connection of a central fault message	
– Only with Vitotronic 200, type HO1B and HO2C:	
– Connection of a DHW circulation pump	

Power supply for DHW circulation pump

DHW circulation pumps with their own internal control unit must be connected to a separate power supply. Mains connection via the Vitotronic control unit or Vitotronic accessories is **not** permissible.

Specification

Rated voltage	230 V~
Rated frequency	50 Hz

AM1 extension

Part no. 7452092

Function extension inside enclosure for wall mounting.

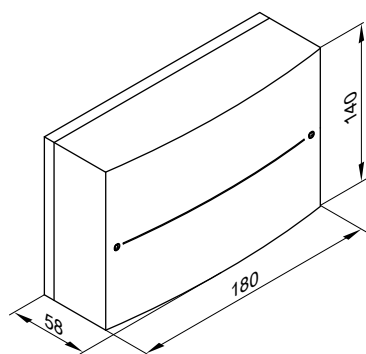
Using the extension enables up to two of the following functions to be achieved:

- Switching the DHW circulation pump (only with Vitotronic 200, type HO1B and HO2C)
- Switching of heating circuit pump for a directly connected heating circuit
- Switching the circulation pump for cylinder heating (not for boilers with integral DHW cylinder)

Power supply for DHW circulation pump

DHW circulation pumps with their own internal control unit must be connected to a separate power supply. Mains connection via the Vitotronic control unit or Vitotronic accessories is **not** permissible.

Control units (cont.)



Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	4 A
Power consumption	4 W
Rated relay output breaking capacity	2(1) A, 250 V~ each, total max. 4 A~
Safety category	I
IP rating	IP 20 D to EN 60529, ensure through design/installation
Permissible ambient temperature	
– Operation	0 to +40 °C Installation in living spaces or boiler rooms (standard ambient conditions)
– Storage and transport	–20 to +65 °C

EA1 extension

Part no. 7452091

Function extension inside enclosure for wall mounting.

Using the inputs and outputs allows up to 5 functions to be achieved:

- 1 switching output (floating changeover contact)
 - Central fault message output
 - Switching a feed pump to a substation
 - Switching the DHW circulation pump (only with Vitotronic 200, type HO1B and HO2C)

- 1 analogue input (0 to 10 V)
 - Specifying set boiler water temperature

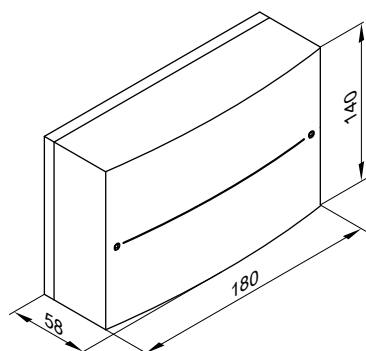
- 3 digital inputs
 - External operating mode changeover for 1 to 3 heating circuits (only with Vitotronic 200, type HO1B and HO2C)
 - External blocking
 - External blocking with central fault message
 - Minimum boiler water temperature demand
 - Fault messages
 - Brief operation of DHW circulation pump (only with Vitotronic 200, type HO1B and HO2C)

Power supply for DHW circulation pump

DHW circulation pumps with their own internal control unit must be connected to a separate power supply. Mains connection via the Vitotronic control unit or Vitotronic accessories is **not** permissible.

Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	4 W
Rated breaking capacity of the relay output	2(1) A, 250 V~
Safety category	I
IP rating	IP 20 D to EN 60529, ensure through design/installation
Permissible ambient temperature	
– Operation	0 to +40 °C Installation in living spaces or boiler rooms (standard ambient conditions)
– Storage and transport	–20 to +65 °C

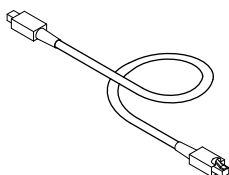


Control units (cont.)

LON connecting cable for data exchange between control units

Part no. 7143495

Cable length 7 m, fully wired.



Extension of the connecting cable

- Installation spacing 7 to 14 m:
 - 2 connecting cables (7.0 m long)
Part no. 7143495
 - 1 LON coupling RJ45
Part no. 7143496
- Installation spacing 14 to 900 m with plug-in connectors:
 - 2 LON plug-in connectors
Part no. 7199251
 - 2-core cable:
CAT5, screened
or
Solid conductor AWG 26-22/0.13 mm² to 0.32 mm²,
conductor AWG 26-22/0.14 mm² to 0.36 mm²
Ø 4.5 mm - 8 mm
on site
- Installation spacing 14 to 900 m with junction boxes:
 - 2 connecting cables (7.0 m long)
Part no. 7143495
 - 2-core cable:
CAT5, screened
or
Solid conductor AWG 26-22/0.13 mm² to 0.32 mm²,
conductor AWG 26-22/0.14 mm² to 0.36 mm²
Ø 4.5 mm to 8 mm
on site
 - 2 LON sockets RJ45, CAT6
Part no. 7171784

Terminator (2 pce)

Part no. 7143497

For terminating the LON bus at the first and last control unit.

LON communication module

Part no. 7179113

PCB for data exchange with the Vitotronic 200-H and for connection to higher level building management systems.

Vitoconnect 100, type OPTO1

Part no. Z014 494

- Internet interface for remote control of a heating system with 1 heat generator via WLAN with DSL router
- Compact device for wall mounting
- For system operation with **ViCare app** and/or **Vitoguide**

Functions when operating with the ViCare app

- Calling up the temperatures of connected heating circuits
- Intuitive adjustment of desired temperatures and time programs for central heating and DHW heating
- Easy transmission of system data, e.g. fault messages via email or telephone communication with the heating contractor
- Heating system fault reporting by push notification

The ViCare app supports the following end devices:

- End devices with Apple iOS operating system
- End devices with Google Android operating system

Note

- For compatible versions, see App Store or Google Play
- For further information, see www.vicare.info and technical guide "Connectivity with WLAN and Vitoconnect".

Functions when operating with Vitoguide

- Monitoring of heating system following enabling of the system by the system user
- Access to operating programs, set values and time programs
- Scanning system information for all connected heating systems
- Display and forwarding of fault messages in plain text

Vitoguide supports the following end devices:

- Terminal devices with a screen size of 8 inches or larger

Note

For more information, see www.vitoguide.info.

Control units (cont.)

Standard delivery

- WLAN module for connection with the DSL router, for wall mounting
- Connection line with Optolink/USB (WLAN module/boiler control unit, 3 m long)
- Power cable with plug-in power supply unit (1 m long)

On-site requirements

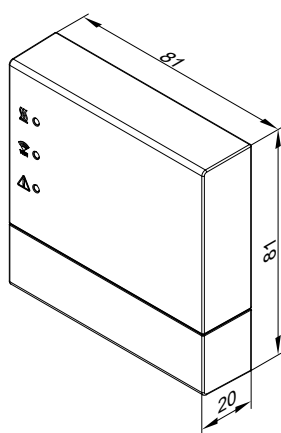
- Compatible heating system with Vitoconnect 100, type OPTO1

Note

For supported control units, see www.viessmann.com/vitoconnect

- Before commissioning, check the system requirements for communication via local IP networks/WLAN.
- Internet connection with flat rate data (**without time or volume restrictions**)

Specification



Note

For further information on communication technology, see the "Data communication" technical guide.

Specification

Power supply via plug-in power supply unit	230 V~/5 V $\overline{\text{---}}$
Rated current	1 A
Power consumption	5 W
Protection class	II
IP rating	IP 30 to EN 60529; ensure through design/installation.
Permissible ambient temperature	
– Operation	–5 to +40 °C Installation in living spaces or installation rooms (standard ambient conditions)
– Storage and transport	–20 to +60 °C
WLAN frequency	2.4 GHz

Appendix

7.1 Regulations / Directives

Regulations and directives

We, Viessmann Werke GmbH & Co. KG, declare that the Vitodens gas condensing boilers have been tested and approved in accordance with currently applicable directives/regulations, standards and technical rules.

Observe all engineering standards and statutory requirements applicable to the installation and operation of this system in your country. Only qualified contractors should carry out the installation, the mains gas and flue gas connections, the commissioning, the electrical connection as well as general maintenance and repair work.

The installation of a condensing boiler may need to be notified to and approved by your local gas supply utility.

In some regions, permits may be required for the flue system and condensate drain into the public sewage system.

In some countries, the relevant flue gas inspector and water authorities must be informed prior to commencing the installation.

We recommend that maintenance and cleaning procedures are performed annually. As part of the maintenance procedure, check the correct function of the entire system. Remedy any faults.

Condensing boilers must only be operated with specially designed, tested and approved flue pipes.

Only an authorised contractor may convert this boiler for use in countries other than those stated on the type plate. That contractor must also arrange the approval in accordance with the statutes of the relevant country.

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Subject to technical modifications.

Viessmann Werke GmbH & Co. KG
D-35107 Allendorf
Telephone: +49 6452 70-0
Fax: +49 6452 70-2780
www.viessmann.com

Viessmann Limited
Hortonwood 30, Telford
Shropshire, TF1 7YP, GB
Telephone: +44 1952 675000
Fax: +44 1952 675040
E-mail: info-uk@viessmann.com