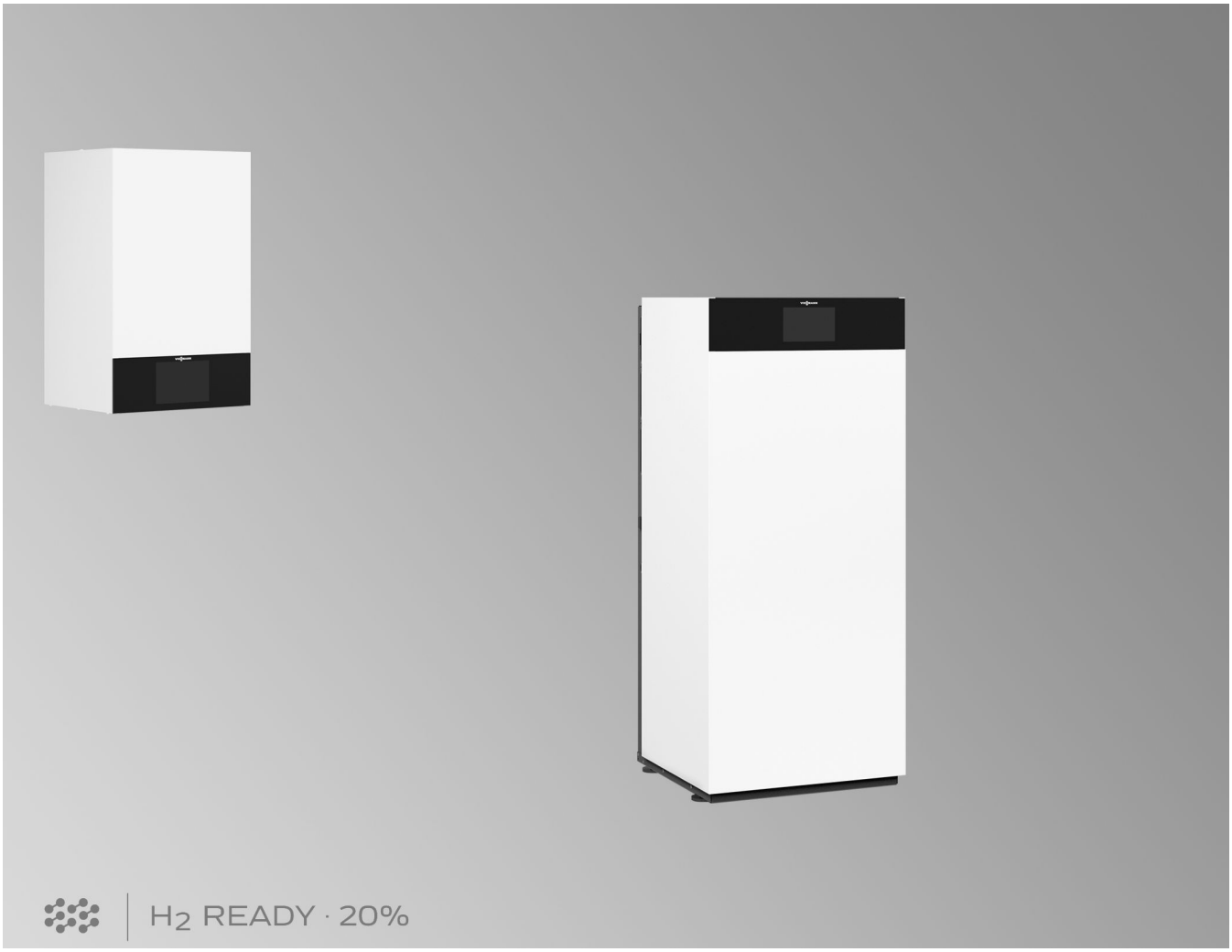
VIESMANN

VITODENS
Gas condensing boilers

Technical guide



VITODENS 200-W Type B2HF, B2KF

Wall mounted gas condensing boiler
2.5 to 32.0 kW
For natural gas and LPG

VITODENS 222-W Type B2LF

Wall mounted gas condensing boiler
2.5 to 32.0 kW
For natural gas and LPG

VITODENS 222-F Type B2SF

Gas condensing storage combi boiler
2.5 to 25.0 kW
For natural gas and LPG

VITODENS 222-F Type B2TF

Gas condensing storage combi boiler
2.5 to 25.0 kW
For natural gas and LPG

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1.1 Product description

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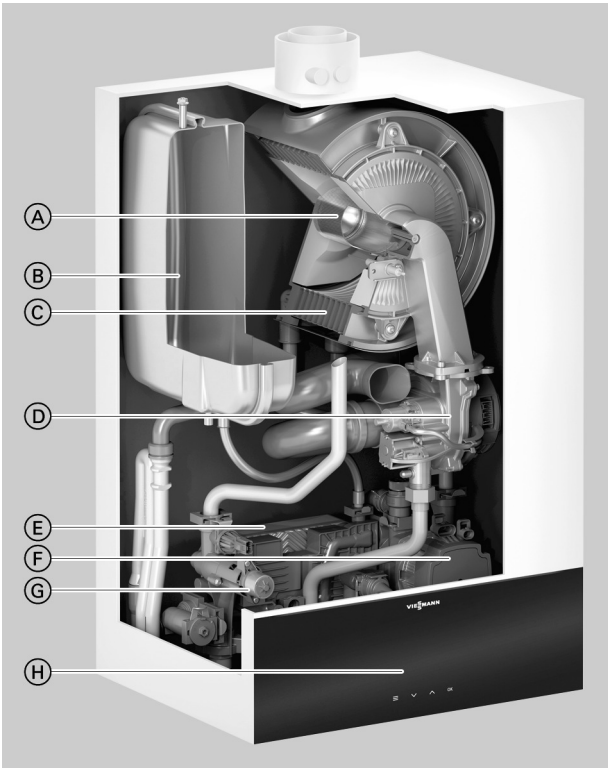
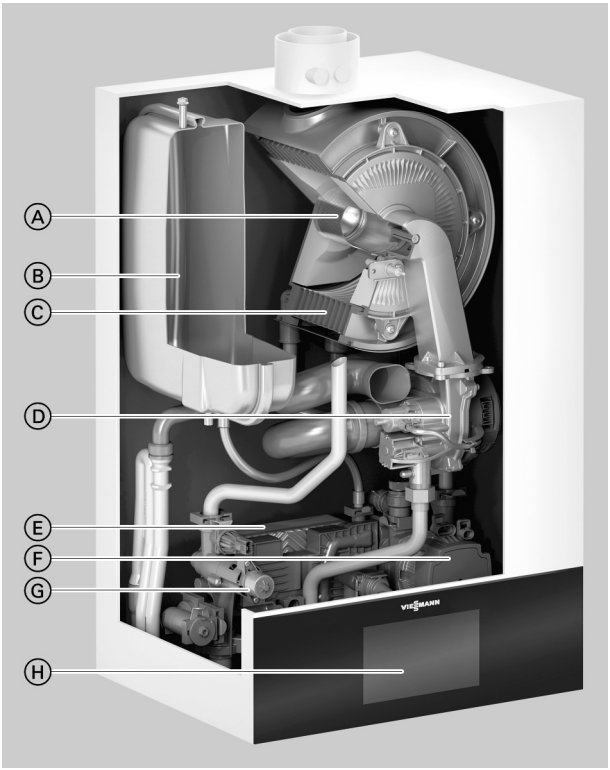
Control unit with 3.5 inch screen



Ⓐ Modulating MatriX-Plus gas burner with intelligent Lambda Pro Plus combustion controller for extremely clean combustion and quiet operation
Ⓑ Integral diaphragm expansion vessel
Ⓒ 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
Ⓓ Variable speed combustion air fan for quiet and economical operation
Ⓔ Plate heat exchanger for DHW heating (gas condensing combi boiler)
Ⓕ Integral, variable speed high efficiency circulation pump
Ⓖ Hydraulics
Ⓗ Digital boiler control unit with 3.5 inch black/white screen

Control unit with 7 inch screen



Ⓐ Modulating MatriX-Plus gas burner with intelligent Lambda Pro Plus combustion controller for extremely clean combustion and quiet operation
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Ⓔ Plate heat exchanger for DHW heating (gas condensing combi boiler)
Ⓕ Integral, variable speed high efficiency circulation pump
Ⓖ Hydraulics
Ⓗ Digital boiler control unit with 7 inch greyscale touchscreen

Vitodens 200-W (cont.)

The top model among the wall mounted gas condensing boilers is the Vitodens 200-W. The MatriX-Plus gas burner and Inox-Radial heat exchanger made of stainless steel are a combination that guarantees high efficiency and a high level of heating convenience over the long term.
All sizes of the Vitodens 200-W are equipped with the automatic Lambda Pro Plus combustion controller. Modulation range down to 1:13 (32 kW).
The integral, variable speed high efficiency circulation pump reduces power consumption by up to 70 %.

Recommended applications
- Modernisation of heating systems on single floors or in detached houses with high demands for central heating and DHW convenience
- Systems with little space available for the heat generator or tight (flexible) installation locations (e.g. attic or inside furniture)
- Replacement of existing floorstanding boilers in various systems, also with several heating circuits and underfloor heating

Benefits at a glance
- Seasonal central heating energy efficiency η_S up to 94 % (label A).
- Low cycling frequency, even with low heat demand, through optimised pauses and wide modulation range down to 1:13 (32 kW)
- Durable and efficient thanks to Inox-Radial stainless steel heat exchanger
- MatriX-Plus gas burner with Lambda Pro Plus combustion controller for permanently high efficiency and clean combustion.
- Power saving, high efficiency circulation pump
- 7 inch greyscale touchscreen or 3.5 inch black/white screen with plain text and graphic display, commissioning assistant, energy consumption indicators and the option of operation from a mobile device
- Web-enabled through integral WiFi interface for operation and service via Viessmann app
- Local access for service and commissioning via Viessmann apps (without active internet connection)
- Individual room control via ViCare app for up to 20 rooms in combination with ViCare Smart Climate accessory
- Hybrid ready – all set for the easy addition of renewable energy or integration into hybrid systems consisting of a heat pump and solar thermal collectors.

Delivered condition
Wall mounted gas condensing boiler with Inox-Radial heat exchanger, modulating MatriX-Plus gas burner for natural gas and LPG to DVGW Code of Practice G260 [Germany], hydraulics and variable speed high efficiency circulation pump.
Weather-compensated or constant temperature control unit with integral WiFi interface.
Fully plumbed and wired. Colour of the epoxy-coated casing: Vitopearlwhite.
Integral diaphragm expansion vessel (10 l capacity).
Preset for operation with natural gas. A conversion within the gas groups E/LL is not necessary (operation with natural gas with a hydrogen blend of up to 20 % by volume is still possible). The conversion to LPG is made at the control unit (a conversion kit is not required).

Accessories required (order separately)

Vitodens installation directly on a wall

Pre-plumbing jig for surface mounting:
- With fixings
- With valves/fittings
- With boiler drain & fill valve
- With gas shut-off valve with thermally activated safety shut-off valve

Valves/fittings for surface mounting:
- With valves/fittings
- With boiler drain & fill valve
- With gas shut-off valve with thermally activated safety shut-off valve

Valves/fittings for flush mounting:
- With valves/fittings
- With boiler drain & fill valve
- With gas shut-off valve with thermally activated safety shut-off valve

Mounting frame for surface mounting (installed depth 90 mm):
- With fixings
- With valves/fittings
- With boiler drain & fill valve
- With angle gas valve with thermally activated safety shut-off valve

Vitodens installation in front of a wall

Plumbing wall mounting frame (installed depth 110 mm):
- With fixings

A pre-plumbing jig or valves/fittings for surface mounting/flush mounting must be ordered separately for the plumbing wall mounting frame.

Tested quality
CE designation according to current EU Directives
Meets the requirements for the "Blue Angel" ecolabel to RAL UZ 61.

Note for multiple connection (vertical) and cascades (horizontal)

Note
*If multiple appliances are to be connected to a common flue system, the **multiple connection** version of the appliance will be required. Using appliances for single connection, or operating a mix of appliances for single and multiple connection, on a common flue system is **not permitted**.*
*The multiple connection version is already fitted with an internal back draught safety device. When installing with multiple connections, it is **essential** to add an additional back draught safety device for the boiler flue connection to the order for each appliance. The multiple connection version cannot be operated with LPG.*

1.2 Specification

Gas condensing system boiler

1

Use with single connection					
Gas boiler, type B and C, category II_{2N3P}					
Type		**B2HF**			
Rated heating output range (details to EN 15502)					
T_F/T_R = 50/30 °C					
Natural gas	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
LPG	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
T_F/T_R = 80/60 °C					
Natural gas	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**	**2.2 to 29.3**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**	**2.2 to 29.3**
Rated heating output for DHW heating					
Natural gas	kW	2.2 to 17.5	2.2 to 17.5	2.2 to 23.0	2.2 to 29.3
LPG	kW	2.2 to 17.5	2.2 to 17.5	2.2 to 23.0	2.2 to 29.3
Rated heat input (Qn)					
Natural gas	kW	2.3 to 10.3	2.3 to 17.8	2.3 to 23.4	2.3 to 29.9
LPG	kW	2.3 to 10.3	2.3 to 17.8	2.3 to 23.4	2.3 to 29.9
Rated heat input for DHW heating (Qnw)	kW	17.8	17.8	23.4	29.9
Product ID		CE-0085CT0017			
IP rating to EN 60529		IP X4			
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. permiss. 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)	31.9	31.9	31.9	31.9
At rated heating output (DHW heating)	dB(A)	42.3	42.3	46.1	48.4
Power consumption	W	40	48	67	113
(in the delivered condition)					
Rated voltage	V	230			
Rated frequency	Hz	50			
Appliance fuse protection	A	6.3			
Backup fuse (power supply)	A	16			
Communication module (integral)					
WiFi frequency band	MHz	2400 to 2483.5			
Max. transmission power	dBm	17			
Low power radio frequency band	MHz	2400 to 2483.5			
Max. transmission power	dBm	6			
Supply voltage	V ⎓	24			
Power consumption	W	4			
Electronic temperature limiter setting (TN)	°C	91			
Electronic temperature limiter setting	°C	110			
Electronic flue gas temperature limiter setting	°C	110			
Weight					
– Excl. heating water and packaging	kg	33.0	33.0	33.0	33.0
– Incl. heating water	kg	38.6	38.6	38.6	38.6
Water capacity (excl. diaphragm expansion vessel)	l	3.0	3.0	3.0	3.0
Max. flow temperature	°C	82	82	82	82
Max. flow rate	l/h	See residual head graph			
(Limit for the use of hydraulic separation)					
Nominal circulating water volume	l/h	434	752	988	1259
At T_F/T_R = 80/60 °C					
Diaphragm expansion vessel					
Capacity	l	10	10	10	10
Pre-charge pressure	bar	0.75	0.75	0.75	0.75
	kPa	75	75	75	75

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

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Use with single connection

Gas boiler, type B and C, category II_{2N3P}					
Type		**B2HF**			
Rated heating output range (details to EN 15502)					
T_F/T_R = 50/30 °C					
Natural gas	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
LPG	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
T_F/T_R = 80/60 °C					
Natural gas	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**	**2.2 to 29.3**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**	**2.2 to 29.3**
Permiss. operating pressure	bar	3	3	3	3
	MPa	0.3	0.3	0.3	0.3
Dimensions					
Length	mm	360	360	360	360
Width	mm	450	450	450	450
Height	mm	700	700	700	700
Gas connection	R	¾	¾	¾	¾
Supply values					
Relative to the max. load and 1013 mbar/15 °C					
With gas					
Natural gas E	m^3/h	1.88	1.88	2.48	3.16
Natural gas LL	m^3/h	2.19	2.19	2.88	3.68
LPG	kg/h	1.38	1.38	1.82	2.32
Flue gas parameters					
Temperature (at a return temperature of 30 °C)					
– At rated heating output	°C	39	41	46	59
– At partial load	°C	38	38	38	38
Temperature (at a return temperature of 60 °C, for DHW heating)	°C	64	65	67	72
Flue gas superheating temperature	°C	120	120	120	120
Mass flow rate (for DHW heating)					
Natural gas					
– at max. heating output	kg/h	31.7	31.7	41.6	54.9
– at partial load, single connection	kg/h	4.3	4.3	4.3	4.3
LPG					
– at max. heating output	kg/h	30.1	30.1	41.0	53.9
– at partial load, single connection	kg/h	3.9	3.9	3.9	3.9
Available draught, single connection[*2]	Pa	77	200	341	600
	mbar	0.77	2.0	3.41	6.0
Max. amount of condensate	l/h	2.5	2.5	3.3	4.2
To DWA-A 251					
Condensate connection (hose nozzle)	Ø mm	20 - 24	20 - 24	20 - 24	20 - 24
Flue gas connection	Ø mm	60	60	60	60
Ventilation air connection	Ø mm	100	100	100	100
Standard seasonal efficiency [to DIN] at					
T_F/T_R = 40/30 °C	%	Up to 98 (H_s) [gross cv]			
Energy efficiency class		A	A	A	A
Seasonal central heating energy efficiency	ηs (%)	92	93	94	94

Note

With appliances for use in multiple connection (vertical) and cascades (horizontal), the specifications in the table ***above*** *apply, with the exception of the following data; see page 7:*

Use with multiple connection

Gas boiler, type B and C, category II_{2N3P}					
Type		**B2HF**			
Rated heating output range (to EN 15502)					
T_F/T_R = 50/30 °C					
Natural gas	**kW**	**5.6 to 11.0**	**5.6 to 19.0**	**5.6 to 25.0**	**5.6 to 32.0**
T_F/T_R = 80/60 °C					
Natural gas	**kW**	**5.1 to 10.1**	**5.1 to 17.5**	**5.1 to 23.0**	**5.1 to 29.3**
Rated heating output for DHW heating					
Natural gas	kW	5.1 to 17.5	5.1 to 17.5	5.1 to 23.0	5.1 to 29.3
Rated heat input (Qn)					
Natural gas	kW	5.3 to 10.3	5.3 to 17.8	5.3 to 23.4	5.3 to 29.9

*[*2] CH: The appliance has the following positive pressure (in Pascal) at the flue gas outlet: 200 Pa (2.0 mbar)*

1

Use with multiple connection

Gas boiler, type B and C, category II_{2N3P}					
Type		**B2HF**			
Rated heating output range (to EN 15502)					
T_F/T_R = 50/30 °C					
Natural gas	**kW**	**5.6 to 11.0**	**5.6 to 19.0**	**5.6 to 25.0**	**5.6 to 32.0**
T_F/T_R = 80/60 °C					
Natural gas	**kW**	**5.1 to 10.1**	**5.1 to 17.5**	**5.1 to 23.0**	**5.1 to 29.3**
Mass flow rate (for DHW heating)					
Natural gas					
– At max. heating output	kg/h	31.7	31.7	41.6	54.9
– At partial load, multiple connection, positive pressure	kg/h	9.7	9.7	9.7	9.7
Available draught C_{10} (at interface with header system)	Pa	25	25	25	25
	mbar	0.25	0.25	0.25	0.25
Minimal permissible differential pressure between flue gas outlet and air inlet for flue system to C_{10}	Pa	-200*3	-200*3	-200*3	-200*3
	mbar	2.0	2.0	2.0	2.0

Note

The supply values are only for reference (e.g. in the gas contract application) or for a supplementary, rough estimate to check the volumetric settings. Due to factory settings, the gas pressure must not be altered from these values. Reference: 15 °C, 1013 mbar (101.3 kPa).

Gas condensing combi boiler

Use with single connection

Gas boiler, type B and C, category II_{2N3P}				
Type		**B2KF**		
Rated heating output range (details to EN 15502)				
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
LPG	**kW**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**2.2 to 17.5**	**2.2 to 23.0**	**2.2 to 29.3**
LPG	**kW**	**2.2 to 17.5**	**2.2 to 23.0**	**2.2 to 29.3**
Rated heating output for DHW heating				
Natural gas	kW	2.2 to 26.2	2.2 to 30.4	2.2 to 33.5
LPG	kW	2.2 to 26.2	2.2 to 30.4	2.2 to 33.5
Rated heat input (Qn)				
Natural gas	kW	2.3 to 17.8	2.3 to 31.7	2.3 to 34.9
LPG	kW	2.3 to 17.8	2.3 to 31.7	2.3 to 34.9
Rated heat input for DHW heating (Qnw)	kW	27.3	31.7	34.9
Product ID		CE-0085CT0017		
IP rating to EN 60529		IP X4		
Gas supply pressure				
Natural gas	mbar	20	20	20
	kPa	2	2	2
LPG	mbar	50	50	50
	kPa	5	5	5
Max. permiss. gas supply pressure*4				
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)	31.9	31.9	31.9
At rated heating output (DHW heating)	dB(A)	49.1	50	50.4
Power consumption (in the delivered condition)	W	48	67	113
Rated voltage	V	230		

*3 -100 Pa reserved for wind pressure

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

Use with single connection				
Gas boiler, type B and C, category II_{2N3P}				
Type		**B2KF**		
Rated heating output range (details to EN 15502)				
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
LPG	**kW**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**2.2 to 17.5**	**2.2 to 23.0**	**2.2 to 29.3**
LPG	**kW**	**2.2 to 17.5**	**2.2 to 23.0**	**2.2 to 29.3**
Rated frequency	Hz	50		
Appliance fuse protection	A	6.3		
Backup fuse (power supply)	A	16		
Communication module (integral)				
WiFi frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	17		
Low power radio frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	6		
Supply voltage	V ⎓	24		
Power consumption	W	4		
Electronic temperature limiter setting (TN)	°C	91		
Electronic temperature limiter setting	°C	110		
Electronic flue gas temperature limiter setting	°C	110		
Weight				
– Excl. heating water and packaging	kg	34.0	34.0	34.0
– Incl. heating water	kg	40.1	40.1	40.1
Water capacity (excl. diaphragm expansion vessel)	l	3.0	3.0	3.0
Max. flow temperature	°C	82	82	82
Max. flow rate (Limit for the use of hydraulic separation)	l/h	See residual head graph		
Nominal circulating water volume At T_F/T_R = 80/60 °C	l/h	752	988	1259
Diaphragm expansion vessel				
Capacity	l	10	10	10
Pre-charge pressure	bar	0.75	0.75	0.75
	kPa	75	75	75
Permiss. operating pressure	bar	3	3	3
	MPa	0.3	0.3	0.3
Dimensions				
Length	mm	360	360	360
Width	mm	450	450	450
Height	mm	700	700	700
Gas connection	R	¾	¾	¾
Standby instantaneous water heater				
DHW and cold water connections	G	½	½	½
Permiss. operating pressure (DHW side)	bar	10	10	10
	MPa	1	1	1
Minimum pressure, cold water connection	bar	1.0	1.0	1.0
	MPa	0.1	0.1	0.1
Outlet temperature, adjustable	°C	30-60	30-60	30-60
Continuous DHW output	kW	30.3	31.5	35.4
Spec. water flow rate (D) At ΔT = 30 K (to EN 13203-1)	l/min	14.45	15.59	17.04
Supply values Relative to the max. load and 1013 mbar/15 °C				
With gas				
Natural gas E	m^3/h	2.89	3.35	3.69
Natural gas LL	m^3/h	3.36	3.90	4.29
LPG	kg/h	2.12	2.46	2.71

1

Use with single connection

Gas boiler, type B and C, category II_{2N3P}				
Type		**B2KF**		
Rated heating output range (details to EN 15502)				
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
LPG	**kW**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**2.2 to 17.5**	**2.2 to 23.0**	**2.2 to 29.3**
LPG	**kW**	**2.2 to 17.5**	**2.2 to 23.0**	**2.2 to 29.3**
Flue gas parameters				
Temperature (at a return temperature of 30 °C)				
– At rated heating output	°C	41	46	59
– At partial load	°C	38	38	38
Temperature (at a return temperature of 60 °C, for DHW heating)	°C	70	74	77
Flue gas superheating temperature	°C	120	120	120
Mass flow rate (for DHW heating)				
Natural gas				
– at max heating output	kg/h	49.3	57.3	62.1
– at partial load (single connection)	kg/h	4.3	4.3	4.3
LPG				
– at max heating output	kg/h	49.2	57.1	61.1
– at partial load (single connection)	kg/h	3.9	3.9	3.9
Available draught[*5]	Pa	200	341	387
	mbar	2.0	3.41	3.87
Available draught C_{10} (at collector pipe system interface)	Pa	25	25	25
	mbar	0.25	0.25	0.25
Max. amount of condensate To DWA-A 251	l/h	2.5	3.3	4.2
Condensate connection (hose nozzle)	Ø mm	20 to 24	20 to 24	20 to 24
Flue gas connection	Ø mm	60	60	60
Ventilation air connection	Ø mm	100	100	100
Standard seasonal efficiency [to DIN] at				
T_F/T_R = 40/30 °C	%	Up to 98 (H_s) [gross cv]		
Energy efficiency class		A	A	A
Seasonal central heating energy efficiency η_S	%	93	93	94

Note

With appliances for use in multiple connection (vertical) and cascades (horizontal), the specifications in the table "Use with single connection" apply, with the exception of the specifications in the table below "Use with multiple connection".

Use with multiple connection

Gas boiler, type B and C, category II_{2N3P}				
Type		**B2KF**		
Rated heating output range (to EN 15502)				
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**5.6 to 19.0**	**5.6 to 25.0**	**5.6 to 32.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**5.1 to 17.5**	**5.1 to 23.0**	**5.1 to 29.3**
Rated heating output for DHW heating				
Natural gas	kW	5.1 to 26.2	5.1 to 30.4	5.1 to 33.5
Rated heat input (Qn)				
Natural gas	kW	5.3 to 17.8	5.3 to 31.7	5.3 to 34.9
Mass flow rate (for DHW heating)				
Natural gas				
– At max. heating output	kg/h	49.3	57.3	62.1
– At partial load (multiple connection, positive pressure)	kg/h	9.7	9.7	9.7
Available draught C_{10} (at header system interface)	Pa	25	25	25
	mbar	0.25	0.25	0.25
Minimal permissible differential pressure between flue gas outlet and air inlet for flue system to C_{10}	Pa	-200[*6]	-200[*6]	-200[*6]
	mbar	2.0	2.0	2.0

*[*5] CH: The appliance has the following positive pressure (in Pascal) at the flue gas outlet: 200 Pa (2.0 mbar)*

*[*6] -100 Pa reserved for wind pressure*

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Note

The supply values are only for reference (e.g. in the gas contract application) or for a supplementary, rough estimate to check the volumetric settings. Due to factory settings, the gas pressure must not be altered from these values. Reference: 15 °C, 1013 mbar (101.3 kPa).

Permissible CO_2 or O_2 content

Operation with natural gas

Rated heating output (kW)	CO_2 content (%)		O_2 content (%)	
	Upper heating output	Lower heating output	Upper heating output	Lower heating output
11	7.3 to 10.5	7.5 to 10.5	2.1 to 7.9	2.1 to 7.6
19	7.3 to 10.5	7.5 to 10.5	2.1 to 7.9	2.1 to 7.6
25	7.3 to 10.5	7.5 to 10.5	2.1 to 7.9	2.1 to 7.6
32	7.3 to 10.5	7.5 to 10.5	2.1 to 7.9	2.1 to 7.6

Operation with LPG

- CO_2 content: 8.4 to 11.8 %
- O_2 content: 3.1 to 8.1 %

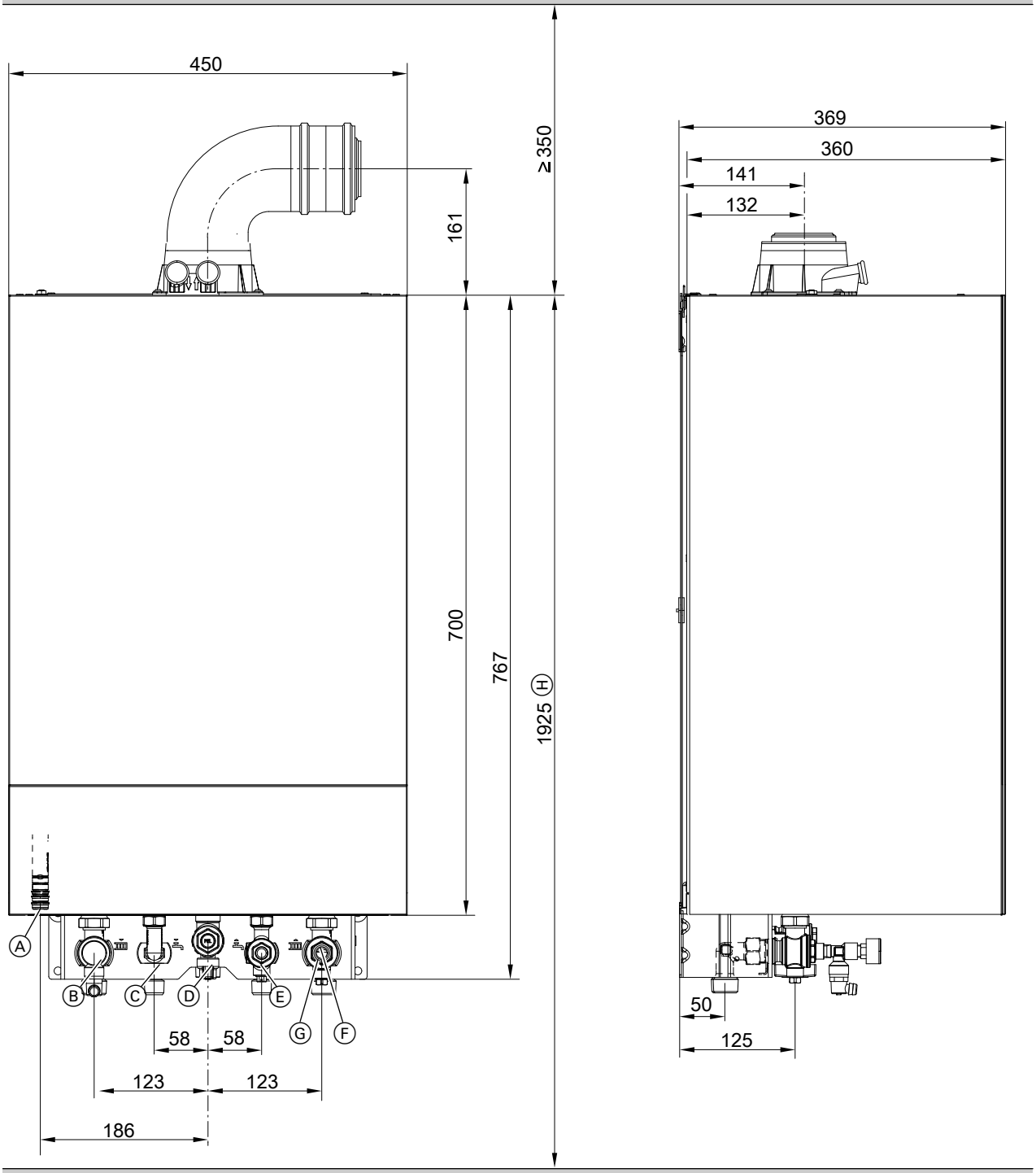

Illustration shows a gas condensing combi boiler

Ⓐ Condensate drain
Ⓑ Heating flow
Ⓒ DHW (gas condensing combi boiler)
Cylinder flow (gas condensing system boiler)
Ⓓ Gas connection
Ⓔ Cold water (gas condensing combi boiler)
Cylinder return (gas condensing system boiler)
Ⓕ Heating return
Ⓖ Filling/draining
Ⓗ Dimension for siting with DHW cylinder below the boiler

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Note
The appliance is delivered fitted with a flexible power cable (2 m long). Lay the required power cables on site and route them into the boiler through the underside.

Variable speed heating circuit pump in the Vitodens 200-W
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 controlled subject to the outside temperature and the switching times for heating mode or reduced mode. The control unit transmits the currently specified speeds to the circulation pump via a PWM signal.
The min. and max. speeds and the speed for reduced mode can be matched to the existing heating system via parameters at the control unit.

Setting (%) in group heating circuit 1:
- Min. speed: Parameter 1102.0
- Max. speed: Parameter 1102.1

- In the delivered condition, the minimum pump rate and the maximum pump rate are set to the following values:

Note
The minimum speed of 60 % is not undershot, in order to ensure the required flow rate via the internal overflow valve. Having the minimum pump rate set to 40 % ensures that the pump works more energy efficiently in weather-compensated mode.

Rated heating output in kW	Speed settings in the delivered condition in %	
	Min. pump rate	Max. pump rate
11	40	60
19	40	65
25	40	75
32	40	100

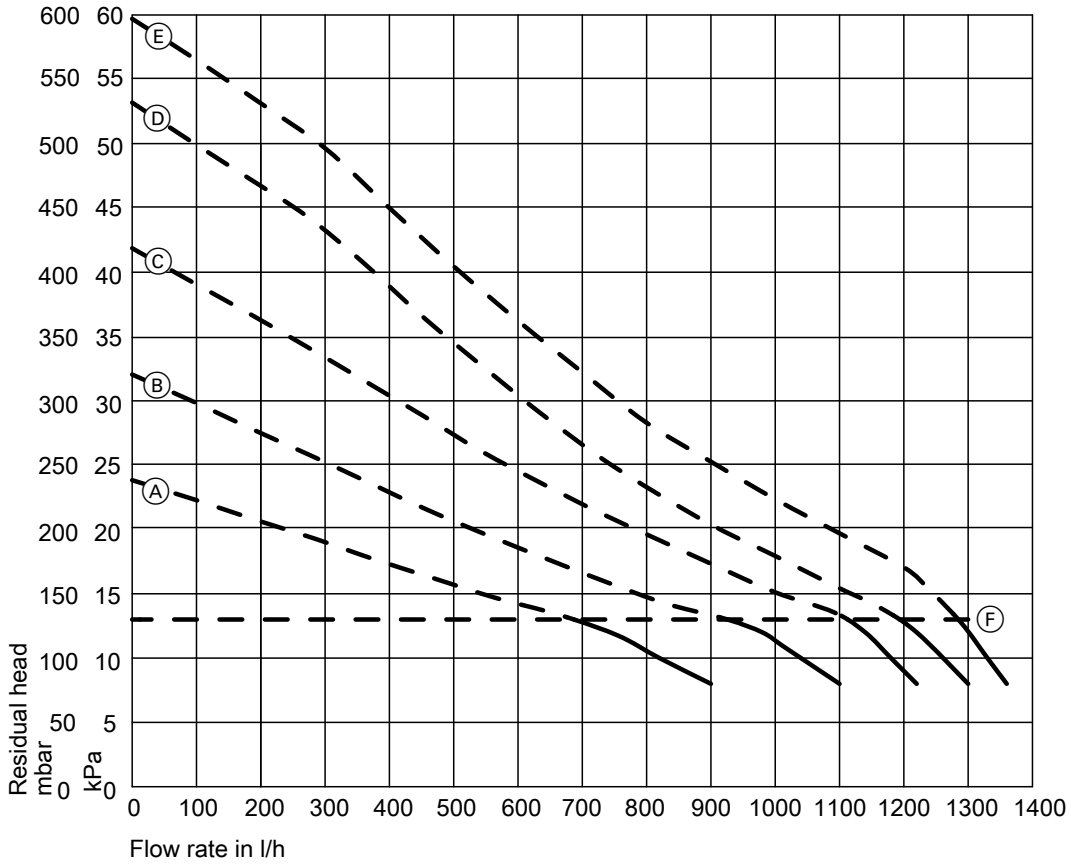
- In conjunction with a low loss header, heating water buffer cylinder and heating circuits with mixer, the internal circulation pump runs at a constant speed.

Specification – circulation pump

Rated heating output	**kW**	**11**	**19**	**25**	**32**
Type		**B2HF**	**B2HF B2KF**	**B2HF B2KF**	**B2HF B2KF**
Circulation pump	**Type**	**UPM4 15-75**	**UPM4 15-75**	**UPM4 15-75**	**UPM4 15-75**
Rated voltage	V~	230	230	230	230
Power consumption					
– max.	W	63	63	63	63
– min.	W	2	2	2	2
– Delivered condition	W	17.5	22.2	33.4	63.0
Energy efficiency class		A	A	A	A
Energy efficiency index (EEI)		≤ 0.20	≤ 0.20	≤ 0.20	≤ 0.20

Vitodens 200-W (cont.)

Residual head of integral circulation pump



Ⓕ Upper operational limit (integral bypass opens)

Curve	Pump rate of circulation pump
Ⓐ	60 %
Ⓑ	70 %
Ⓒ	80 %
Ⓓ	90 %
Ⓔ	100 %

Standby instantaneous water heater (gas condensing combi boiler)

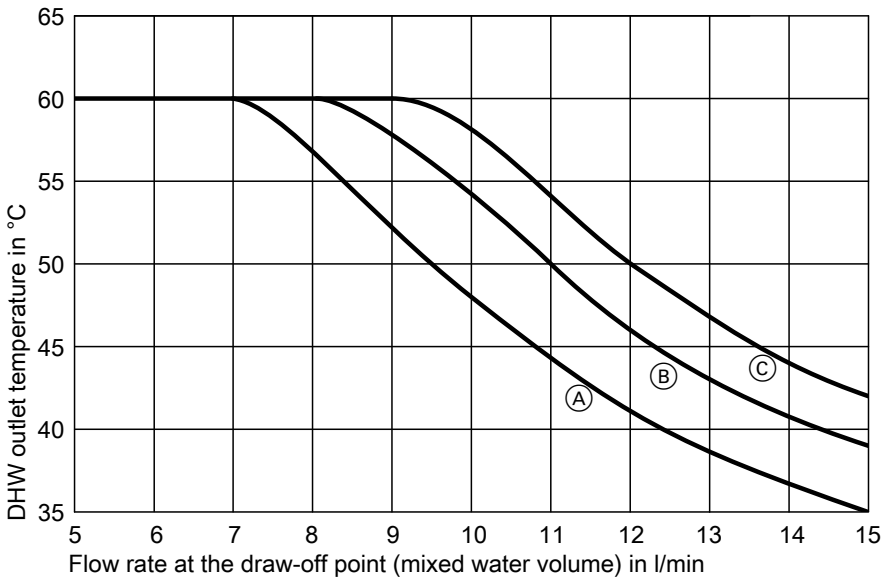
A standby instantaneous water heater is integrated into the Vitodens 200-W, type B2KF.

Output levels

Rated heating output, gas condensing combi boiler	kW	19.0	25.0	32.0
Continuous DHW output	kW	26.2	30.4	33.5
for DHW heating from 10 to 45 °C	l/h	737	775	839
Draw-off rate	l/min	3-12	3-14	3-16
Outlet temperature, adjustable	°C	30-60	30-60	30-60

Vitodens 200-W (cont.)

DHW temperature subject to flow rate



Ⓐ Vitodens 200-W, 19 kW
Ⓑ Vitodens 200-W, 25 kW
Ⓒ Vitodens 200-W, 32 kW

The graph illustrates the changes in the outlet temperature, subject to the flow rate at the draw-off point.
If a greater volume of water is required, cold water needs to be admixed, which reduces the outlet temperature.

The illustrated outlet temperature characteristics are based on a cold water inlet temperature of 10 °C.

2.1 Product description

Control unit with 3.5 inch screen

Ⓐ Loading cylinder made from stainless steel
Ⓑ 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-Plus gas burner with intelligent Lambda Pro Plus combustion controller for extremely clean combustion and quiet operation
Ⓓ Integral diaphragm expansion vessel
Ⓔ Variable speed combustion air fan for quiet and economical operation
Ⓕ Plate heat exchanger
Ⓖ Hydraulics with integral, variable speed high efficiency circulation pump
Ⓗ Digital boiler control unit with 3.5 inch black/white screen

Control unit with 7 inch screen

Ⓐ Loading cylinder made from stainless steel
Ⓑ 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-Plus gas burner with intelligent Lambda Pro Plus combustion controller for extremely clean combustion and quiet operation
Ⓓ Integral diaphragm expansion vessel
Ⓔ Variable speed combustion air fan for quiet and economical operation
Ⓕ Plate heat exchanger
Ⓖ Hydraulics with integral, variable speed high efficiency circulation pump
Ⓗ Digital boiler control unit with 7 inch greyscale touchscreen

Vitodens 222-W (cont.)

The Vitodens 222-W is a particularly space saving, wall mounted gas condensing storage combi boiler for situations where high DHW convenience is required. The heat cell comprises the proven stainless steel Inox-Radial heat exchanger, the modulating MatriX-Plus gas burner and the automatic Lambda Pro Control Plus combustion controller.
The integral 46 l stainless steel loading cylinder offers the same DHW convenience as a separate 150 l DHW cylinder with internal indirect coil. DHW is available immediately and constantly at the required temperature, even simultaneously at different draw-off points. In addition to the loading cylinder, all the most important system components, such as the heating water expansion vessel, pumps and safety valves, are integrated and fully fitted. All this – with a total weight of max. 68 kg and in a casing that fits into a standard 600 mm wide kitchen unit space.

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.
- Replacement of boilers in various types of systems, including those with several heating circuits and underfloor heating

Benefits at a glance
- Seasonal central heating energy efficiency η_S up to 94 % (label A).
- Low cycling frequency, even with low heat demand, due to optimised pauses and a wide modulation range down to 1:13
- Durable and efficient thanks to Inox-Radial stainless steel heat exchanger
- MatriX-Plus gas burner with Lambda Pro Plus combustion controller for permanently high efficiency and clean combustion.
- Power saving, high efficiency circulation pump
- 7 inch greyscale touchscreen or 3.5 inch black/white screen with plain text and graphic display, commissioning assistant, energy consumption indicators and the option of operation from a mobile device
- Web-enabled through integral WiFi interface for operation and service via Viessmann app
- Individual room control via ViCare app for up to 20 rooms in combination with ViCare Smart Climate accessory

Delivered condition
Gas condensing boiler with Inox-Radial heat exchanger, modulating MatriX-Plus gas burner for natural gas and LPG to DVGW Code of Practice G260 [Germany], expansion vessel, variable speed high efficiency circulation pump and integral stainless steel DHW loading cylinder. Fully plumbed and wired.
Weather-compensated or constant temperature control unit with integral WiFi interface.
Colour of the epoxy-coated casing: Vitopearlwhite.
Integral diaphragm expansion vessel (10 l capacity).
Preset for operation with natural gas. A conversion within the gas groups E/LL is not necessary (operation with natural gas with a hydrogen blend of up to 20 % by volume is still possible). The conversion to LPG is made at the control unit (a conversion kit is not required).

Accessories required (order separately)

Pre-plumbing jig with:
- Fixings
- Valves/fittings
- DHW safety valve
- Boiler drain & fill valve
- Gas shut-off valve with thermally activated safety shut-off valve

For either surface or flush mounting

Tested quality
CE designation according to current EU Directives
Meets the requirements for the "Blue Angel" ecolabel to RAL UZ 61.

Note for multiple connection (vertical) and cascades (horizontal)

Note
*If multiple appliances are to be connected to a common flue system, the **multiple connection** version of the appliance will be required. Using appliances for single connection, or operating a mix of appliances for single and multiple connection, on a common flue system is **not permitted**.*
*The multiple connection version is already fitted with an internal back draught safety device. When installing with multiple connections, it is **essential** to add an additional back draught safety device for the boiler flue connection to the order for each appliance. The multiple connection version cannot be operated with LPG.*

2.2 Specification

Use with single connection					
Gas boiler, type B and C, category II_{2N3P}					
Type		**B2LF**			
Rated heating output range (details to EN 15502) T_F/T_R **= 50/30 °C (P(50/30))**					
Natural gas	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
LPG	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
T_F/T_R **= 80/60 °C (Pn(80/60))**					
Natural gas	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
Rated heating output for DHW heating					
Natural gas	kW	2.2 to 17.5	2.2 to 17.5	2.2 to 23.0	2.2 to 29.3
LPG	kW	2.2 to 17.5	2.2 to 17.5	2.2 to 23.0	2.2 to 29.3
Rated heat input (Qn)					
Natural gas	kW	2.3 to 10.3	2.3 to 17.8	2.3 to 23.4	2.3 to 29.9
LPG	kW	2.3 to 10.3	2.3 to 17.8	2.3 to 23.4	2.3 to 29.9
Rated heat input for DHW heating (Qnw)	kW	17.8	17.8	23.4	29.9
Product ID		CE-0085CT0017			
IP rating		IP X1 to EN 60529			
NO_X	Class	6	6	6	6
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. permiss. gas supply pressure[*7]					
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
Rated voltage	V	230			
Rated frequency	Hz	50			
Appliance fuse protection	A	6.3			
Backup fuse (power supply)	A	16			
Communication module (integral)					
WiFi frequency band	MHz	2400 to 2483.5			
Max. transmission power	dBm	17			
Low power radio frequency band	MHz	2400 to 2483.5			
Max. transmission power	dBm	6			
Supply voltage	V ⎓	24			
Power consumption	W	4			
Power consumption (delivered condition)	W	40	53	73	113
Permissible ambient temperature					
– During operation	°C	+5 to +40			
– During storage and transport	°C	-5 to +60			
Electronic temperature limiter setting (TN)	°C	91			
Electronic temperature limiter setting	°C	110			
Electronic flue gas temperature limiter setting	°C	110			
Weight					
– Excl. heating water and DHW	kg	67.8	67.8	67.8	67.8
– Incl. heating water and DHW	kg	120.0	120.0	120.0	120.0
Water capacity (excl. diaphragm expansion vessel)	l	3.0	3.0	3.0	3.0
Max. flow temperature	°C	82	82	82	82
Max. flow rate (Limit for the use of hydraulic separation)	l/h	See residual head graphs			
Nominal circulating water volume At T_F/T_R = 80/60 °C	l/h	434	752	988	1259
Expansion vessel					
Capacity	l	10	10	10	10
Pre-charge pressure	bar	0.75	0.75	0.75	0.75
	kPa	75	75	75	75
Permiss. operating pressure	bar	3	3	3	3
	MPa	0.3	0.3	0.3	0.3
Connections (with connection accessories)					

[*7] *If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.*

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Use with single connection					
Gas boiler, type B and C, category II_{2N3P}					
Type		**B2LF**			
Rated heating output range (details to EN 15502)					
T_F/T_R = 50/30 °C (P(50/30))					
Natural gas	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
LPG	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**	**2.5 to 32.0**
T_F/T_R = 80/60 °C (Pn(80/60))					
Natural gas	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
Boiler flow and return	R	¾	¾	¾	¾
Cold water and DHW	G	½	½	½	½
Dimensions					
Length	mm	500	500	500	500
Width	mm	600	600	600	600
Height	mm	950	950	950	950
Gas connection (with connection accessories)	R	¾	¾	¾	¾
DHW loading cylinder					
Capacity	l	46	46	46	46
Permiss. operating pressure (DHW side)	bar	10	10	10	10
	MPa	1	1	1	1
Continuous DHW output	kW	21.6	26.6	30.3	33.9
for DHW heating from 10 to 45 °C	l/h	526.8	643.2	726.6	813.6
Performance factor N_L *8		1.1	1.2	1.5	1.7
Initial DHW output for DHW heating from 10 to 45 °C	l/10 min	148.0	154.2	170.3	180.8
Supply values					
Relative to the max. load and 1013 mbar/15 °C					
Natural gas E	m^3/h	2.40	2.89	3.35	3.69
Natural gas LL	m^3/h	2.79	3.36	3.90	4.29
LPG	kg/h	1.76	2.12	2.46	2.71
Flue gas parameters					
Temperature (at a return temperature of 30 °C)					
– At rated heating output	°C	39	41	46	59
– At partial load	°C	38	38	38	38
Temperature (at a return temperature of 60 °C)	°C	67	70	74	77
Flue gas superheating temperature	°C	120	120	120	120
Mass flow rate (for DHW heating)					
Natural gas					
– at max. heating output	kg/h	31.7	31.7	41.6	54.9
– at partial load, single connection	kg/h	4.3	4.3	4.3	4.3
LPG					
– At rated heating output	kg/h	39.8	49.2	57.1	61.1
– At partial load	kg/h	3.9	3.9	3.9	3.9
Available draught, single connection *9	Pa	77	200	341	600
	mbar	0.77	2.0	3.41	6.0
Max. amount of condensate To DWA-A 251	l/h	2.5	3.2	4.1	4.9
Condensate connection (hose nozzle)	Ø mm	20 to 24	20 to 24	20 to 24	20 to 24
Flue gas connection	Ø mm	60	60	60	60
Ventilation air connection	Ø mm	100	100	100	100
Standard seasonal efficiency [to DIN] at T_F/T_R = 40/30 °C	%	Up to 98 (H_s) [gross cv]			
Energy efficiency class					
– Heating		A	A	A	A
– DHW heating, draw-off profile XL		A	A	A	A
Seasonal central heating energy efficiency	ηs (%)	92	93	93	94

Note

*With appliances for use in multiple connection (vertical) and cascades (horizontal), the specification in the table **above** apply, with the exception of the following data – see table "Appliances for multiple connection" on page 20*

**8 At 70 °C average boiler water temperature and cylinder storage temperature Tcyl = 60 °C.*
DHW performance factor N_L depends on cylinder storage temperature Tcyl.
Standard values: Tcyl = 60 °C → 1.0 × N_L Tcyl = 55 °C → 0.75 × N_L Tcyl = 50 °C → 0.55 × N_L Tcyl = 45 °C → 0.3 × N_L.

**9 CH: The appliance has the following positive pressure (in Pascal) at the flue gas outlet: 200 Pa (2.0 mbar)*

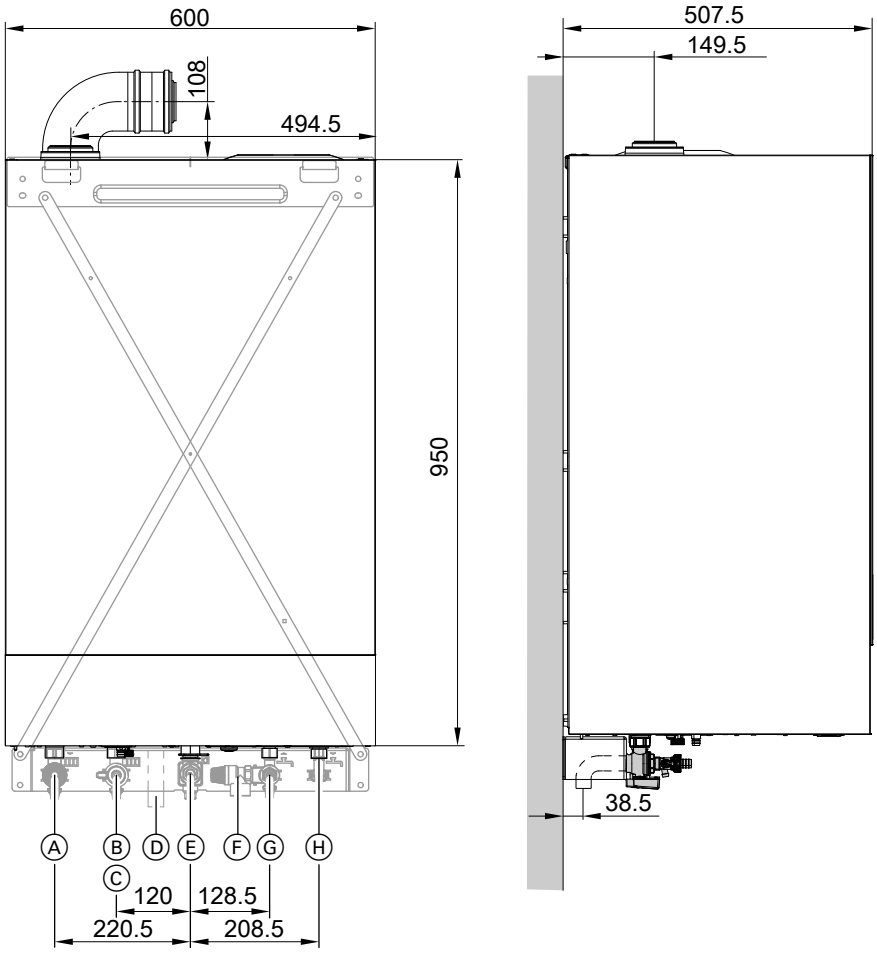
Use with multiple connection

Gas boiler, type B and C, category II_{2N3P}

Type		**B2LF**			
Rated heating output range (to EN 15502)					
T_F/T_R = 50/30 °C (P(50/30))					
Natural gas	**kW**	**5.6 to 11.0**	**5.6 to 19.0**	**5.6 to 25.0**	**5.6 to 32.0**
T_F/T_R = 80/60 °C (Pn(80/60))					
Natural gas	**kW**	**5.1 to 10.1**	**5.1 to 17.5**	**5.1 to 23**	**5.1 to 29.3**
Rated heating output for DHW heating					
Natural gas	kW	5.1 to 17.5	5.1 to 17.5	5.1 to 23.0	5.1 to 29.3
Rated heat input (Qn)					
Natural gas	kW	5.3 to 10.3	5.3 to 17.8	5.3 to 23.4	5.3 to 29.9
Mass flow rate (for DHW heating)					
Natural gas					
– At max. heating output	kg/h	31.7	31.7	41.6	54.9
– At partial load, multiple connection, positive pressure	kg/h	9.7	9.7	9.7	9.7
Available draught C_{10} (at header system interface)	Pa	25	25	25	25
	mbar	0.25	0.25	0.25	0.25
Minimal permissible differential pressure between flue gas outlet and air inlet for flue system to C_{10}	Pa	-200*10	-200*10	-200*10	-200*10

Note

The supply values are only for reference (e.g. in the gas contract application) or for a supplementary, rough estimate to check the volumetric settings. Due to factory settings, the gas pressure must not be altered from these values. Reference: 15 °C, 1013 mbar (101.3 kPa).



Ⓐ Heating flow
Ⓑ Heating return
Ⓒ Filling/draining

*10 -100 Pa reserved for wind pressure

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Ⓓ Condensate drain
Ⓔ Gas connection
Ⓕ Safety valve
Ⓖ Cold water
Ⓗ DHW

Note
Connection dimensions for surface mounting or flush mounting with the pre-plumbing jig, see chapter "Installation accessories".

Note
The appliance is delivered fitted with a flexible power cable (2.0 m long). Lay the required power cables on site and route them into the boiler through the back.

Variable speed heating circuit pump in the Vitodens 222-W

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 controlled subject to the outside temperature and the switching times for heating mode or reduced mode. The control unit transmits the currently specified speeds to the circulation pump via a PWM signal.
The min. and max. speeds and the speed for reduced mode can be matched to the existing heating system via parameters at the control unit.

Setting (%) in group heating circuit 1:
- Min. speed: Parameter 1102.0
- Max. speed: Parameter 1102.1

- In the delivered condition, the minimum pump rate and the maximum pump rate are set to the following values:

Note
The minimum speed of 60 % is not undershot, in order to ensure the required flow rate via the internal overflow valve. Having the minimum pump rate set to 40 % ensures that the pump works more energy efficiently in weather-compensated mode.

Rated heating output in kW	Speed settings in the delivered condition in %	
	Min. pump rate	Max. pump rate
11	40	60
19	40	70
25	40	80
32	40	100

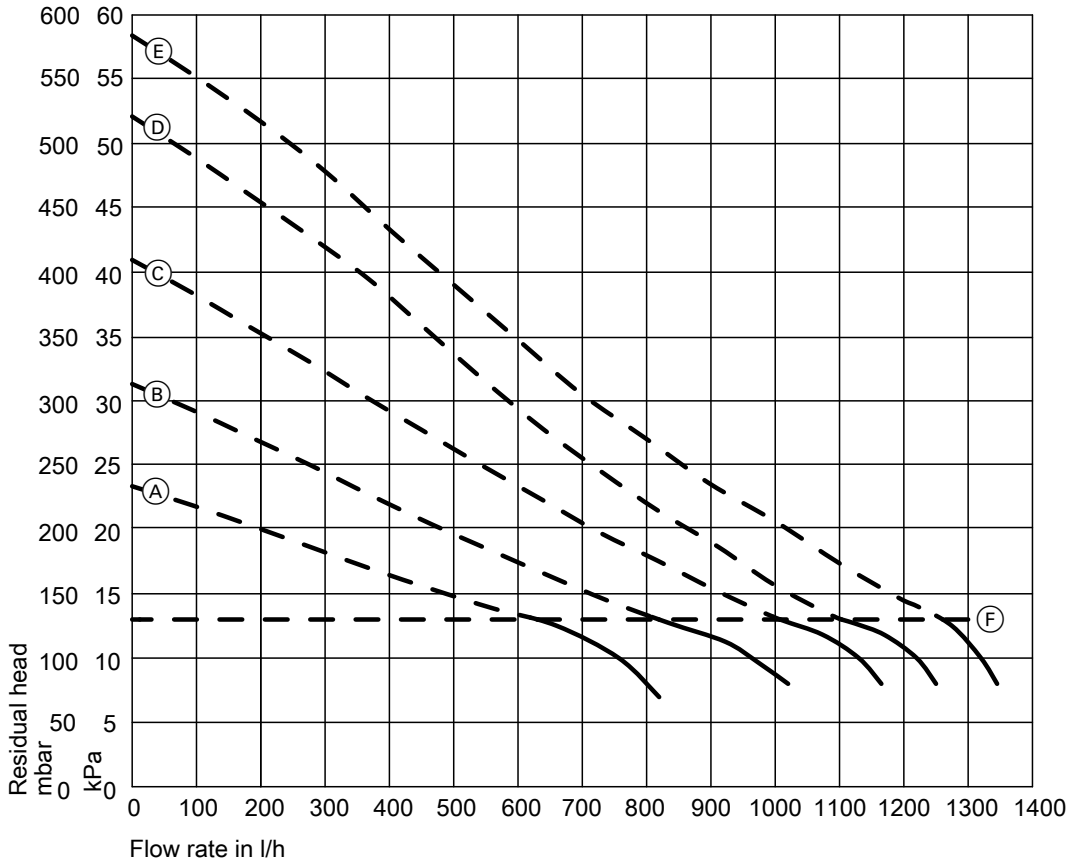
- In conjunction with a low loss header, heating water buffer cylinder and heating circuits with mixer, the internal circulation pump runs at a constant speed.

Specification – circulation pump

Rated heating output	**kW**	**11**	**19**	**25**	**32**
Circulation pump	**Type**	**UPM4 15-75**	**UPM4 15-75**	**UPM4 15-75**	**UPM4 15-75**
Rated voltage	V~	230	230	230	230
Power consumption					
– max.	W	63	63	63	63
– min.	W	2	2	2	2
– Delivered condition	W	17.5	27.6	39.5	63
Energy efficiency class		A	A	A	A
Energy efficiency index (EEI)		≤ 0.20	≤ 0.20	≤ 0.20	≤ 0.20

Vitodens 222-W (cont.)

Residual head of integral circulation pump

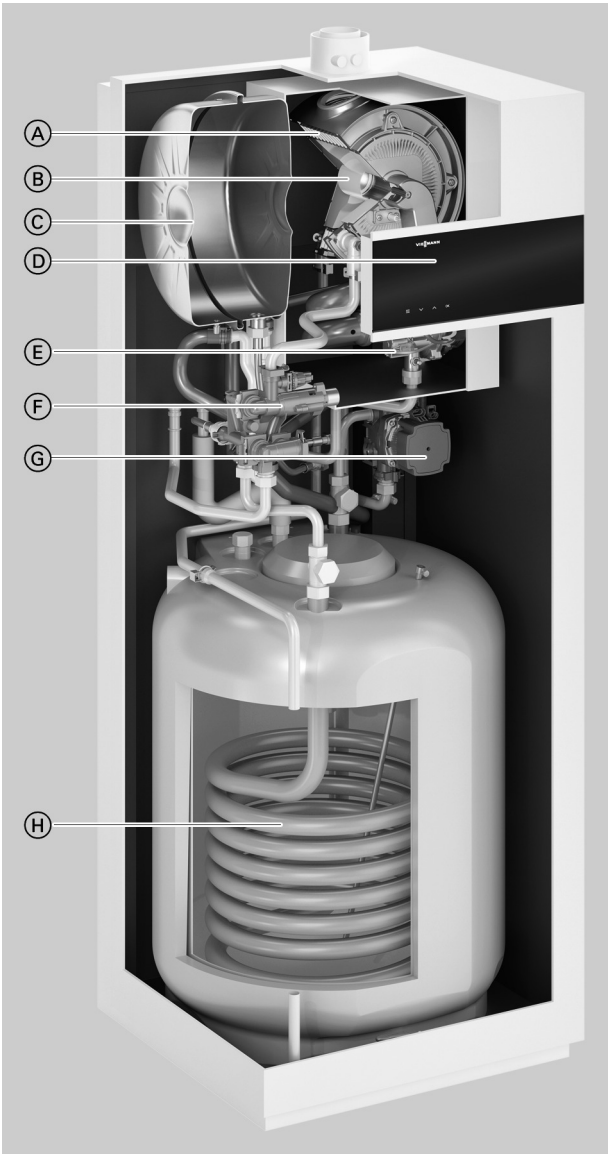


Ⓕ Upper operational limit (integral bypass opens)

Curve	Pump rate of circulation pump
Ⓐ	60 %
Ⓑ	70 %
Ⓒ	80 %
Ⓓ	90 %
Ⓔ	100 %

3.1 Product description

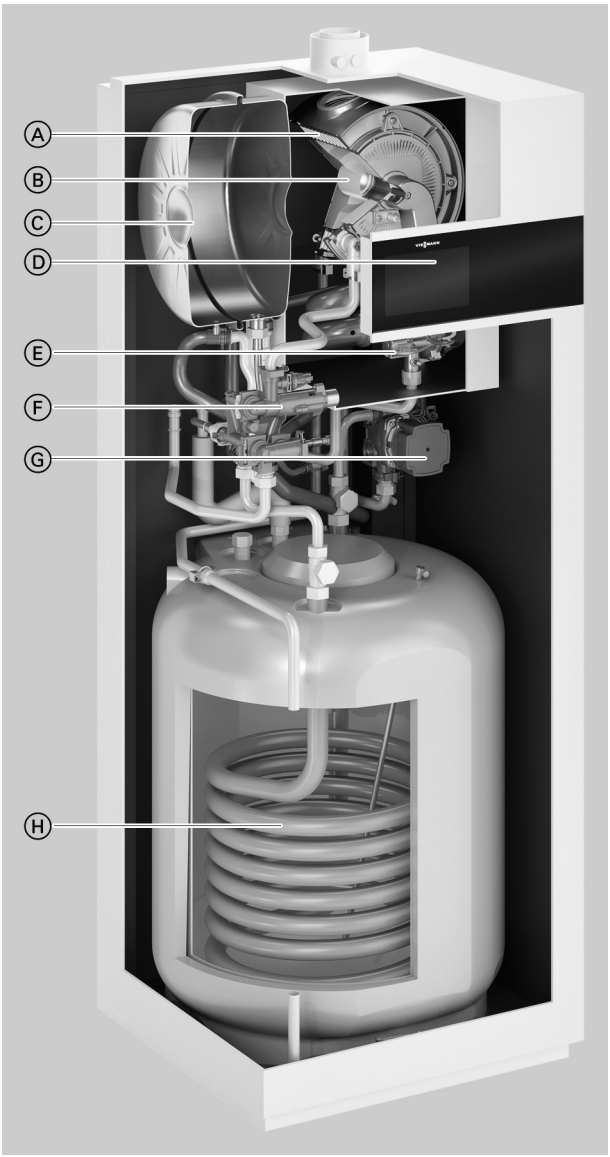
Control unit with 3.5 inch screen



Ⓐ 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-Plus gas burner for extremely clean combustion
Ⓒ Integral diaphragm expansion vessel
Ⓓ Digital boiler control unit with 3.5 inch black/white screen
Ⓔ Variable speed combustion air fan for quiet and economical operation
Ⓕ Hydraulics
Ⓖ Integral, variable speed high efficiency circulation pump
Ⓗ DHW cylinder

Vitodens 222-F, type B2SF (cont.)

Control unit with 7 inch screen



Ⓐ 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-Plus gas burner for extremely clean combustion
Ⓒ Integral diaphragm expansion vessel
Ⓓ Digital boiler control unit with 7 inch greyscale touchscreen
Ⓔ Variable speed combustion air fan for quiet and economical operation
Ⓕ Hydraulics
Ⓖ Integral, variable speed high efficiency circulation pump
Ⓗ DHW cylinder

3

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.
Fitted with the MatriX-Plus gas burner and stainless steel Inox-Radial heat exchanger, the Vitodens 222-F offers top technology for energy efficiency and a high level of heating and DHW convenience over the long term. The Lambda Pro Plus combustion controller and the variable speed high efficiency circulation pump ensure permanently high efficiency, reliable operation and low power consumption.
The Vitodens 222-F, type B2SF with integral 130 l cylinder with indirect coil is particularly suitable for hard water areas.
Due to its smooth surface the indirect coil is resistant to limescale 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.
- Replacement of boilers in various types of systems, including those with several heating circuits and underfloor heating

Benefits at a glance
- Seasonal central heating energy efficiency η_S up to 94 % (label A).
- Low cycling frequency, even with low heat demand, due to optimised pauses and a wide modulation range down to 1:13
- Durable and efficient thanks to Inox-Radial stainless steel heat exchanger
- MatriX-Plus gas burner with Lambda Pro Plus combustion controller for permanently high efficiency and clean combustion.
- Power saving, high efficiency circulation pump
- 7 inch greyscale touchscreen or 3.5 inch black/white screen with plain text and graphic display, commissioning assistant, energy consumption indicators and the option of operation from a mobile device
- Web-enabled through integral WiFi interface for operation and service via Viessmann app
- Assembly kit (accessories) with same dimensions and design as the boiler, for the connection of one regulated and one unregulated heating circuit
- Individual room control via ViCare app for up to 20 rooms in combination with ViCare Smart Climate accessory

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Vitodens 222-F, type B2SF (cont.)

Delivered condition
Gas condensing boiler with Inox-Radial heat exchanger, modulating MatriX-Plus gas 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.
Weather-compensated or constant temperature control unit with integral WiFi interface.
Colour of the epoxy-coated casing: Vitopearlwhite.
Integral diaphragm expansion vessel (18 l capacity).
Preset for operation with natural gas. A conversion within the gas groups E/LL is not necessary (operation with natural gas with a hydrogen blend of up to 20 % by volume is still possible). The conversion to LPG is made at the control unit (a conversion kit is not required).

Accessories required (order separately)

Surface mounting
- Connection set for surface mounting; upward connection
  or
- Connection set for surface mounting; connection to the left or right
  or
- Assembly kit with mixer

Flush mounting
- Connection set for flush mounting

Tested quality
CE designation according to current EU Directives
Meets the requirements for the "Blue Angel" ecolabel to RAL UZ 61.

Note for multiple connection (vertical) and cascades (horizontal)

Note
*If multiple appliances are to be connected to a common flue system, the **multiple connection** version of the appliance will be required. Using appliances for single connection, or operating a mix of appliances for single and multiple connection, on a common flue system is **not permitted**.*
*The multiple connection version is already fitted with an internal back draught safety device. When installing with multiple connections, it is **essential** to add an additional back draught safety device for the boiler flue connection to the order for each appliance. The multiple connection version cannot be operated with LPG.*

3.2 Specification

Use with single connection				
Gas boiler, type B and C, category II_{2N3P}				
Type		**B2SF**		
Rated heating output range (details to EN 15502)				
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**
LPG	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**
Rated heating output for DHW heating				
Natural gas	kW	2.2 to 17.5	2.2 to 17.5	2.2 to 23.0
LPG	kW	2.2 to 17.5	2.2 to 17.5	2.2 to 23.0
Rated heat input (Qn)				
Natural gas	kW	2.3 to 10.3	2.3 to 17.8	2.3 to 23.4
LPG	kW	2.3 to 10.3	2.3 to 17.8	2.3 to 23.4
Rated heat input for DHW heating (Qnw)	kW	17.8	17.8	23.4
Product ID		CE-0085CT0017		
IP rating to EN 60529		IP X4		
– In conjunction with assembly kit (accessories)		IP X1		
Gas supply pressure				
Natural gas	mbar	20	20	20
	kPa	2	2	2
LPG	mbar	50	50	50
	kPa	5	5	5
Max. permiss. gas supply pressure[*11]				
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)	38.8	38.8	38.8
– At rated heating output (DHW heating)	dB(A)	47.1	49.2	50.7
Rated voltage	V	230		
Rated frequency	Hz	50		
Appliance fuse protection	A	6.3		
Backup fuse (power supply)	A	16		
Communication module (integral)				
WiFi frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	17		
Low power radio frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	6		
Supply voltage	V ⎓	24		
Power consumption in the delivered condition (incl. circulation pump)	W	40	53	79
Permissible ambient temperature				
– During operation	°C	+5 to +35		
– During storage and transport	°C	-5 to +60		
Electronic temperature limiter setting (TN)	°C	91		
Electronic temperature limiter setting	°C	110		
Electronic flue gas temperature limiter setting	°C	110		
Weight				
– Excl. heating water and DHW	kg	132	132	132
Heating water capacity (excl. diaphragm expansion vessel)	l	3.0	3.0	3.0
Max. flow temperature	°C	82	82	82
Max. flow rate (Limit for the use of hydraulic separation)	l/h	See residual head graphs		
Nominal circulating water volume At T_F/T_R = 80/60 °C	l/h	434	752	988
Expansion vessel				
Capacity	l	18	18	18
Pre-charge pressure	bar	0.75	0.75	0.75
	kPa	75	75	75

*[*11] 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 B2SF (cont.)

Use with single connection

Gas boiler, type B and C, category II_{2N3P}				
Type		**B2SF**		
Rated heating output range (details to EN 15502)				
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**
LPG	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**
Permiss. operating pressure	bar	3	3	3
	MPa	0.3	0.3	0.3
Connections (with connection accessories)				
Boiler flow and return	R	¾	¾	¾
Cold water and DHW	R	½	½	½
DHW circulation	R	½	½	½
Dimensions				
Length	mm	595	595	595
Width	mm	600	600	600
Height	mm	1600	1600	1600
Gas connection (with connection accessories)	R	½	½	½
DHW cylinder				
Capacity	l	130	130	130
Permiss. operating pressure (DHW side)	bar	10	10	10
	MPa	1	1	1
Continuous DHW output	kW	17.1	21.3	24
for DHW heating from 10 to 45 °C	l/h	418.8	515.4	586.8
Performance factor N_L *12		1.4	1.5	1.7
Initial DHW output for DHW heating from 10 to 45 °C	l/10 min	167.0	170.3	179.5
Supply values				
Relative to the max. load and 1013 mbar/15 °C				
Natural gas E	m^3/h	1.92	2.40	3.12
Natural gas LL	m^3/h	2.23	2.79	3.63
LPG	kg/h	1.41	1.76	2.29
Flue gas parameters				
Temperature (at a return temperature of 30 °C)				
– At rated heating output	°C	39	41	46
– At partial load	°C	38	38	38
Temperature (at a return temperature of 60 °C)	°C	65	67	72
Flue gas superheating temperature	°C	120	120	120
Mass flow rate (for DHW heating)				
Natural gas				
– at max. heating output	kg/h	31.7	31.7	41.6
– at partial load, single connection	kg/h	4.3	4.3	4.3
LPG				
– At rated heating output	kg/h	30.6	39.8	53.2
– At partial load	kg/h	3.9	3.9	3.9
Available draught, single connection *13	Pa	77	200	341
	mbar	0.77	2.0	3.41
Max. amount of condensate To DWA-A 251	l/h	2.5	3.2	4.1
Condensate connection (hose nozzle)	Ø mm	20 to 24	20 to 24	20 to 24
Flue gas connection	Ø mm	60	60	60
Ventilation air connection	Ø mm	100	100	100
Standard seasonal efficiency [to DIN] at T_F/T_R = 40/30 °C	%	Up to 98 (H_s) [gross cv]		
Energy efficiency class				
– Heating		A	A	A
– DHW heating, draw-off profile XL		A	A	A
Seasonal central heating energy efficiency	ηs (%)	92	93	93

*12 *At 70 °C average boiler water temperature and cylinder storage temperature Tcyl = 60 °C.*
DHW performance factor N_L depends on cylinder storage temperature Tcyl.
Standard values: Tcyl = 60 °C → 1.0 × N_L Tcyl = 55 °C → 0.75 × N_L Tcyl = 50 °C → 0.55 × N_L Tcyl = 45 °C → 0.3 × N_L.

13 CH: The appliance has the following positive pressure (in Pascal) at the flue gas outlet: 200 Pa (2.0 mbar)

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Vitodens 222-F, type B2SF (cont.)

Note

*With appliances for use in multiple connection (vertical) and cascades (horizontal), the specification in the table **above** apply, with the exception of the following data – see table "Appliances for multiple connection" on page 28*

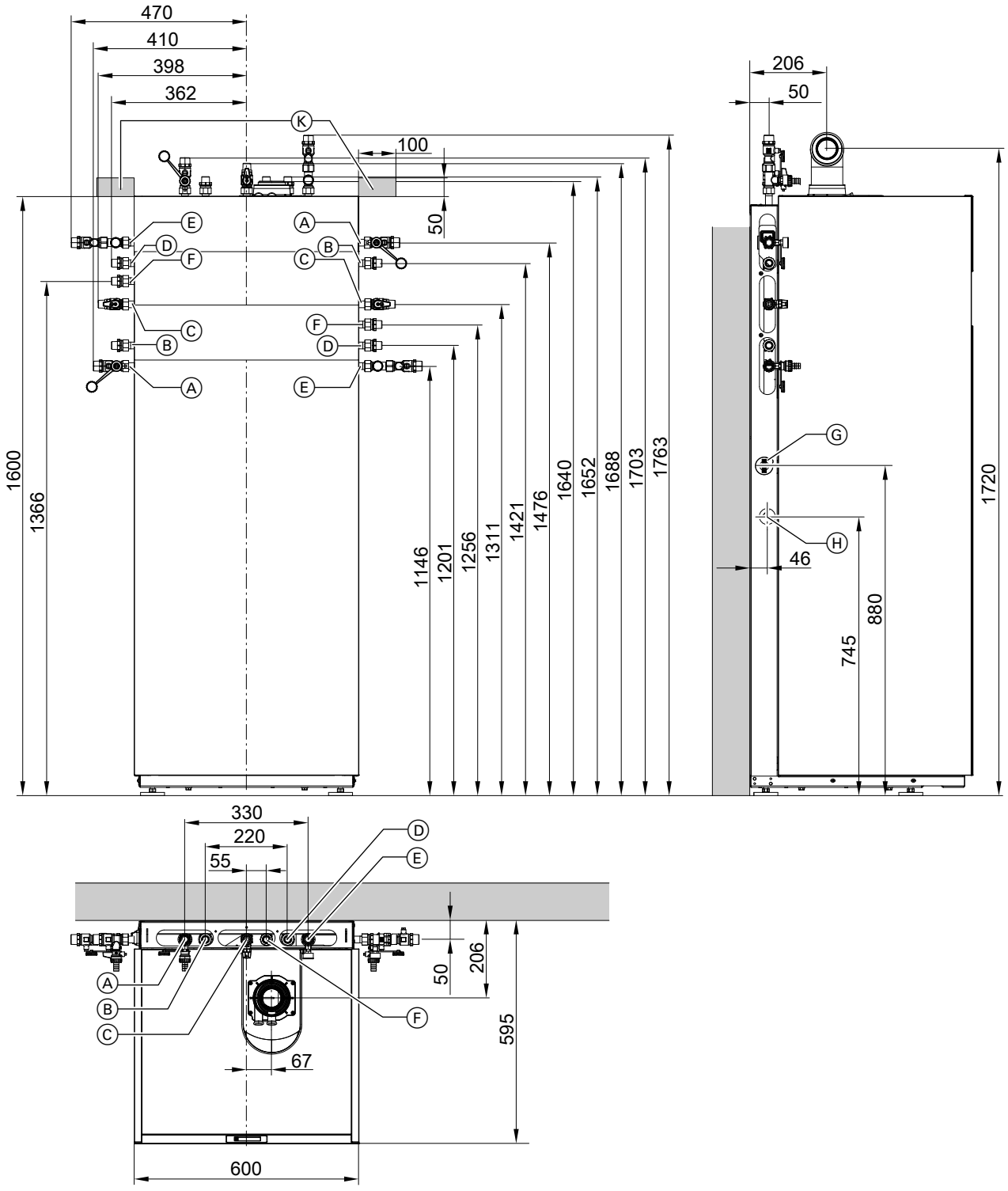
Use with multiple connection

Gas boiler, type B and C, category II_{2N3P}				
Type		**B2SF**		
Rated heating output range (to EN 15502) T_F/T_R **= 50/30 °C**				
Natural gas	**kW**	**5.6 to 11.0**	**5.6 to 19.0**	**5.6 to 25.0**
T_F/T_R **= 80/60 °C**				
Natural gas	**kW**	**5.1 to 10.1**	**5.1 to 17.5**	**5.1 to 23.0**
Rated heating output for DHW heating				
Natural gas	kW	5.1 to 17.5	5.1 to 17.5	5.1 to 23.0
Rated heat input (Qn)				
Natural gas	kW	5.3 to 10.3	5.3 to 17.8	5.3 to 23.4
Rated heat input for DHW heating (Qnw)	kW	17.8	17.8	23.4
Mass flow rate (for DHW heating)				
Natural gas				
– At max. heating output	kg/h	31.7	31.7	41.6
– At partial load, multiple connection, positive pressure	kg/h	9.7	9.7	9.7
Available draught C_{10} (at header system interface)	Pa	25	25	25
	mbar	0.25	0.25	0.25
Minimal permissible differential pressure between flue gas outlet and air inlet for flue system to C_{10}	Pa	-200*14	-200*14	-200*14

Note

The supply values are only for reference (e.g. in the gas contract application) or for a supplementary, rough estimate to check the volumetric settings. Due to factory settings, the gas pressure must not be altered from these values. Reference: 15 °C, 1013 mbar (101.3 kPa).

*14 -100 Pa reserved for wind pressure



Ⓐ Heating flow R ¾
Ⓑ DHW R ½
Ⓒ Gas connection R ½
Ⓓ Cold water R ½
Ⓔ Heating return R ¾
Ⓕ DHW circulation R ½ (separate accessories)
Ⓖ External plug
Ⓗ Condensate drain to the side
Ⓚ Area for electrical cables (on-site junction box)

Note
The dimensioned drawing shows an example of valves/fittings for surface mounting, upward connection and connection to the left/ right.
Order the connection sets separately as accessories.

Note
The appliance is delivered fitted with a flexible power cable (1.5 m long). Lay the required power cables on site and route them into the boiler through the back.

Note
All height dimensions have a tolerance of +15 mm on account of the adjustable feet.

Siting information
Site the Vitodens 222-F with its back flush against the wall.

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 mode or reduced mode. The control unit transmits the currently specified speeds to the circulation pump via a PWM signal.
The min. and max. speeds and the speed for reduced mode can be matched to the existing heating system via parameters at the control unit.

Setting (%) in group heating circuit 1:
- Min. speed: Parameter 1102.0
- Max. speed: Parameter 1102.1

- In the delivered condition, the minimum pump rate and the maximum pump rate are set to the following values:

Note
The minimum speed of 60 % is not undershot in order to ensure the required flow rate via the internal overflow valve. The minimum pump rate setting of 40 % ensures that the pump is more energy efficient in weather-compensated mode.

Rated heating output in kW	**Speed settings in the delivered condition in %**	
	Min. pump rate	**Max. pump rate**
11	40	60
19	40	70
25	40	85

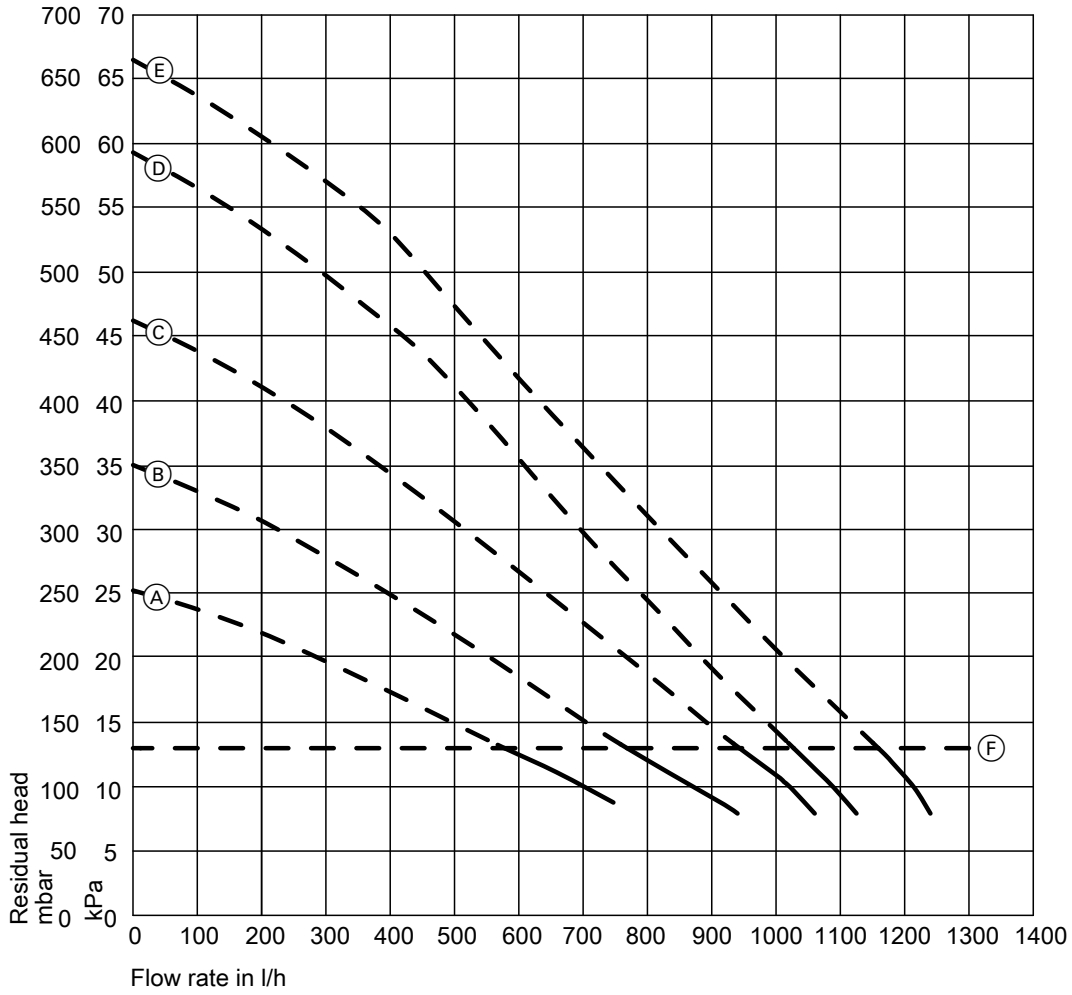
- In conjunction with a low loss header, heating water buffer cylinder and heating circuits with mixer, the internal circulation pump runs at a constant speed.

Specification – circulation pump

Rated heating output	**kW**	**11**	**19**	**25**
Circulation pump	**Type**	**UPM4 15-75**	**UPM4 15-75**	**UPM4 15-75**
Rated voltage	V~	230	230	230
Power consumption				
– Max.	W	63	63	63
– Min.	W	2	2	2
– Delivered condition	W	17.5	27.6	45.8
Energy efficiency class		A	A	A
Energy efficiency index (EEI)		≤ 0.20	≤ 0.20	≤ 0.20

Vitodens 222-F, type B2SF (cont.)

Residual head of integral circulation pump

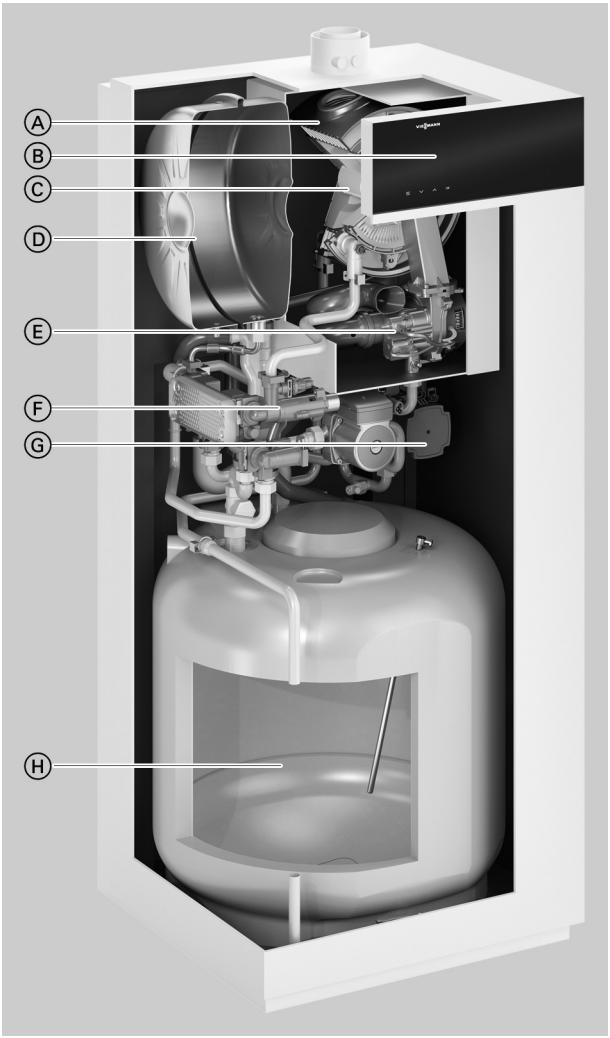


Ⓕ Upper operational limit (integral bypass opens)

Curve	Pump rate of circulation pump
Ⓐ	60 %
Ⓑ	70 %
Ⓒ	80 %
Ⓓ	90 %
Ⓔ	100 %

4.1 Product description

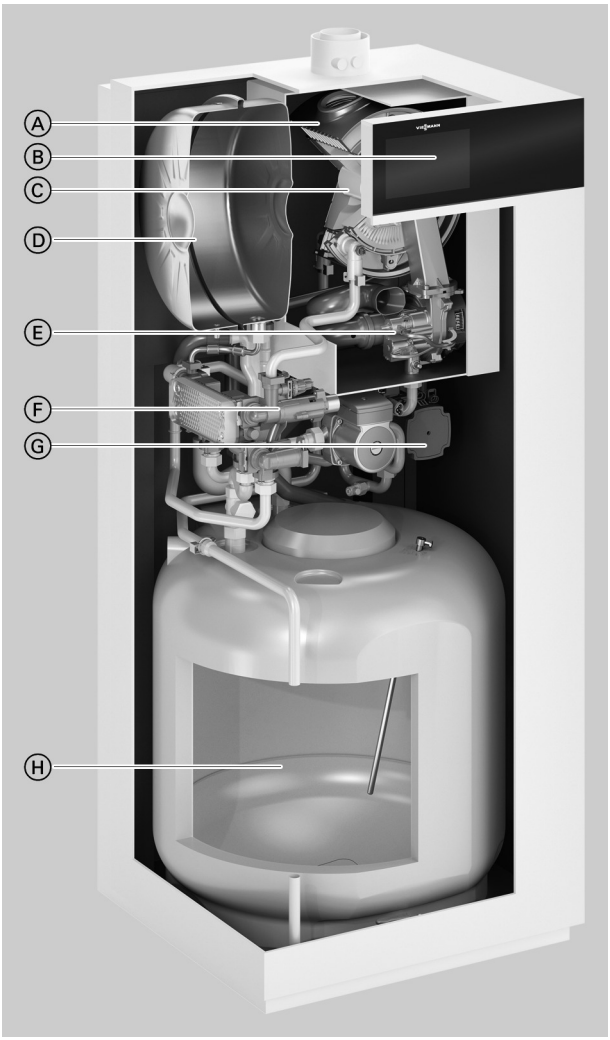
Control unit with 3.5 inch screen



Ⓐ 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
Ⓑ Digital boiler control unit with black/white screen
Ⓒ Modulating MatriX-Plus gas burner for extremely clean combustion
Ⓓ Integral diaphragm expansion vessel
Ⓔ Variable speed combustion air fan for quiet and economical operation
Ⓕ Hydraulics
Ⓖ Integral, variable speed high efficiency circulation pump
Ⓗ DHW loading cylinder

Vitodens 222-F, type B2TF (cont.)

Control unit with 7 inch screen



Ⓐ 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
Ⓑ Digital boiler control unit with 7 inch greyscale touchscreen
Ⓒ Modulating MatriX-Plus gas burner for extremely clean combustion
Ⓓ Integral diaphragm expansion vessel
Ⓔ Variable speed combustion air fan for quiet and economical operation
Ⓕ Hydraulics
Ⓖ Integral, variable speed high efficiency circulation pump
Ⓗ DHW loading cylinder

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.
Fitted with the MatriX-Plus gas burner and stainless steel Inox-Radial heat exchanger, the Vitodens 222-F offers top technology for energy efficiency and a high level of heating and DHW convenience over the long term. The Lambda Pro Plus combustion controller and the variable speed high efficiency circulation pump ensure permanently high efficiency, reliable operation and low power consumption. The integral DHW loading cylinder with 100 l capacity offers the same DHW convenience as a separate DHW cylinder approximately twice the size.

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.
- Replacement of boilers in various types of systems, including those with several heating circuits and underfloor heating

Benefits at a glance
- Seasonal central heating energy efficiency η_S up to 94 % (label A).
- Low cycling frequency, even with low heat demand, due to optimised pauses and a wide modulation range down to 1:13
- Durable and efficient thanks to Inox-Radial stainless steel heat exchanger
- MatriX-Plus gas burner with Lambda Pro Plus combustion controller for permanently high efficiency and clean combustion.
- Power saving, high efficiency circulation pump
- 7 inch greyscale touchscreen or 3.5 inch black/white screen with plain text and graphic display, commissioning assistant, energy consumption indicators and the option of operation from a mobile device
- Web-enabled through integral WiFi interface for operation and service via Viessmann app
- Assembly kit (accessories) with same dimensions and design as the boiler, for the connection of one regulated and one unregulated heating circuit
- Individual room control via ViCare app for up to 20 rooms in combination with ViCare Smart Climate accessory

Delivered condition
Gas condensing boiler with Inox-Radial heat exchanger, modulating MatriX-Plus gas 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.
Weather-compensated or constant temperature control unit with integral WiFi interface.
Colour of the epoxy-coated casing: Vitopearlwhite.

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Vitodens 222-F, type B2TF (cont.)

Integral diaphragm expansion vessel (18 l capacity).
Preset for operation with natural gas. A conversion within the gas groups E/LL is not necessary (operation with natural gas with a hydrogen blend of up to 20 % by volume is still possible). The conversion to LPG is made at the control unit (a conversion kit is not required).

Accessories required (order separately)

Surface mounting
- Connection set for surface mounting; upward connection
  or
- Connection set for surface mounting; connection to the left or right
  or
- Assembly kit with mixer

Flush mounting
- Connection set for flush mounting

Tested quality

CE designation according to current EU Directives

Meets the requirements for the "Blue Angel" ecolabel to RAL UZ 61.

Note for multiple connection (vertical) and cascades (horizontal)

Note
*If multiple appliances are to be connected to a common flue system, the **multiple connection** version of the appliance will be required. Using appliances for single connection, or operating a mix of appliances for single and multiple connection, on a common flue system is **not permitted**.*
*The multiple connection version is already fitted with an internal back draught safety device. When installing with multiple connections, it is **essential** to add an additional back draught safety device for the boiler flue connection to the order for each appliance. The multiple connection version cannot be operated with LPG.*

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4.2 Specification

Gas condensing storage combi boiler

Use with single connection				
Gas boiler, type B and C, category II_{2N3P}				
Type		**B2TF**		
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**
LPG	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**
Rated heating output for DHW heating				
Natural gas	kW	2.2 to 17.5	2.2 to 17.5	2.2 to 23.0
LPG	kW	2.2 to 17.6	2.2 to 22	2.2 to 28.6
Rated heat input (Qn)				
Natural gas	kW	2.3 to 10.3	2.3 to 17.8	2.3 to 23.4
LPG	kW	2.3 to 10.3	2.3 to 17.8	2.3 to 23.4
Rated heat input for DHW heating (Qnw)	kW	17.8	17.8	23.4
Product ID		CE-0085CT0017		
IP rating				
– **Balanced flue** operation		IP X4 to EN 60529		
– Open flue operation		IP X0 to EN 60529		
Protection class		I		
NO_X	Class	6		
Gas supply pressure				
Natural gas	mbar	20	20	20
	kPa	2	2	2
LPG	mbar	50	50	50
	kPa	2	5	5
Max. permiss. gas supply pressure*15				
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)	38.8	38.8	38.8
– At rated heating output (DHW heating)	dB(A)	47.1	49.2	50.7
Rated voltage	V	230		
Rated frequency	Hz	50		
Appliance fuse protection	A	6.3		
Backup fuse (power supply)	A	16		
Communication module (integral)				
WiFi frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	17		
Low power radio frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	6		
Supply voltage	V DC	24		
Power consumption	W	4		
Power consumption				
– In the delivered condition	W	40	53	79
Permissible ambient temperature				
– During operation	°C	+5 to +35		
– During storage and transport	°C	-5 to +60		
Electronic temperature limiter setting (TN)	°C	91		
Electronic temperature limiter setting	°C	110		
Electronic flue gas temperature limiter setting	°C	110		
Weight excl. heating water	kg	111.5		
Expansion vessel				
Capacity	l	18	18	18
Pre-charge pressure	bar	0.75	0.75	0.75
	kPa	75	75	75
Permiss. operating pressure, heating water side	bar	3		
(PMS)	MPa	0.3		
Dimensions				

*15 *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 B2TF (cont.)

Use with single connection

Gas boiler, type B and C, category II_{2N3P}				
Type		**B2TF**		
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**
LPG	**kW**	**2.5 to 11.0**	**2.5 to 19.0**	**2.5 to 25.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23.0**
Length	mm	595		
Width	mm	600		
Height	mm	1400		
Connections (with connection accessories)				
Boiler flow and return	R	¾		
Cold water and DHW	R	½		
DHW circulation	R	½		
Gas connection	R	¾		
Flue gas connection	Ø mm	60		
Condensate connection (hose nozzle)	Ø mm	20 to 24		
Ventilation air connection	Ø mm	100		
DHW loading cylinder				
Capacity	l	100	100	100
Permiss. operating pressure (DHW side)	bar	10	10	10
	MPa	1	1	1
Continuous DHW output	kW	14.8	19.7	26.5
for DHW heating from 10 to 45 °C	l/h	366	485	647
Performance factor N_L *16		1.2	1.4	2.1
Initial DHW output for DHW heating from 10 to 45 °C	l/10 min	154	164	196
Specific water flow rate	l/h	18.3	20.26	23.84
Max. DHW temperature	°C	60	60	60
Supply values				
Relative to the max. load and 1013 mbar/15 °C				
Natural gas E	m^3/h	1.92	2.40	3.12
Natural gas LL	m^3/h	2.23	2.79	3.63
LPG	kg/h	1.41	1.76	2.29
Flue gas parameters				
Temperature (at a return temperature of 30 °C)				
– At rated heating output	°C	39	41	46
– At partial load	°C	38	38	38
Temperature (at a return temperature of 60 °C)	°C	65	67	72
Flue gas superheating temperature	°C	120	120	120
Mass flow rate (for DHW heating)				
Natural gas				
– at max. heating output	kg/h	31.7	31.7	41.6
– at partial load, single connection	kg/h	4.3	4.3	4.3
LPG				
– At rated heating output	kg/h	30.6	39.8	53.2
– At partial load	kg/h	3.9	3.9	3.9
Available draught, single connection *17	Pa	77	200	341
	mbar	0.77	2.0	3.41
Max. amount of condensate To DWA-A 251	l/h	2.5	3.2	4.1
Standard seasonal efficiency [to DIN] at T_F/T_R = 40/30 °C	%	Up to 98 (H_s) [gross cv]		
Energy efficiency class				
– Heating		A		
– DHW heating, draw-off profile XL		A		
Seasonal central heating energy efficiency η_S	%	92	93	93

Note

With appliances for use in multiple connection (vertical) and cascades (horizontal), the specifications in the table "Use with single connection" apply, with the exception of the specifications in the table below "Use with multiple connection".

**16 At 70 °C average boiler water temperature and cylinder storage temperature Tcyl = 60 °C.*
DHW performance factor N_L depends on cylinder storage temperature Tcyl.
Standard values: Tcyl = 60 °C → 1.0 × N_L Tcyl = 55 °C → 0.75 × N_L Tcyl = 50 °C → 0.55 × N_L Tcyl = 45 °C → 0.3 × N_L.

**17 CH: The appliance has the following positive pressure (in Pascal) at the flue gas outlet: 200 Pa (2.0 mbar)*

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Vitodens 222-F, type B2TF (cont.)

Use with multiple connection

Gas boiler, type B and C, category II_{2N3P}				
Type		**B2TF**		
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**5.6 to 11.0**	**5.6 to 19.0**	**5.6 to 25.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**5.1 to 10.1**	**5.1 to 17.5**	**5.1 to 23.0**
Rated heating output for DHW heating				
Natural gas	kW	5.1 to 17.5	5.1 to 17.5	5.1 to 23.0
Rated heat input (Qn)				
Natural gas	kW	5.3 to 10.3	5.3 to 17.8	5.3 to 23.4
Rated heat input for DHW heating (Qnw)	kW	17.8	17.8	23.4
Mass flow rate (for DHW heating)				
Natural gas				
– At max. heating output	kg/h	31.7	31.7	41.6
– At partial load, multiple connection, positive pressure	kg/h	9.7	9.7	9.7
Available draught C_{10} (at header system interface)	Pa	25	25	25
	mbar	0.25	0.25	0.25
Minimal permissible differential pressure between flue gas outlet and air inlet for flue system to C_{10}	Pa	-200*18	-200*18	-200*18

Note

The supply values are only for reference (e.g. in the gas contract application) or for a supplementary, rough estimate to check the volumetric settings. Due to factory settings, the gas pressure must not be altered from these values. Reference: 15 °C, 1013 mbar (101.3 kPa).

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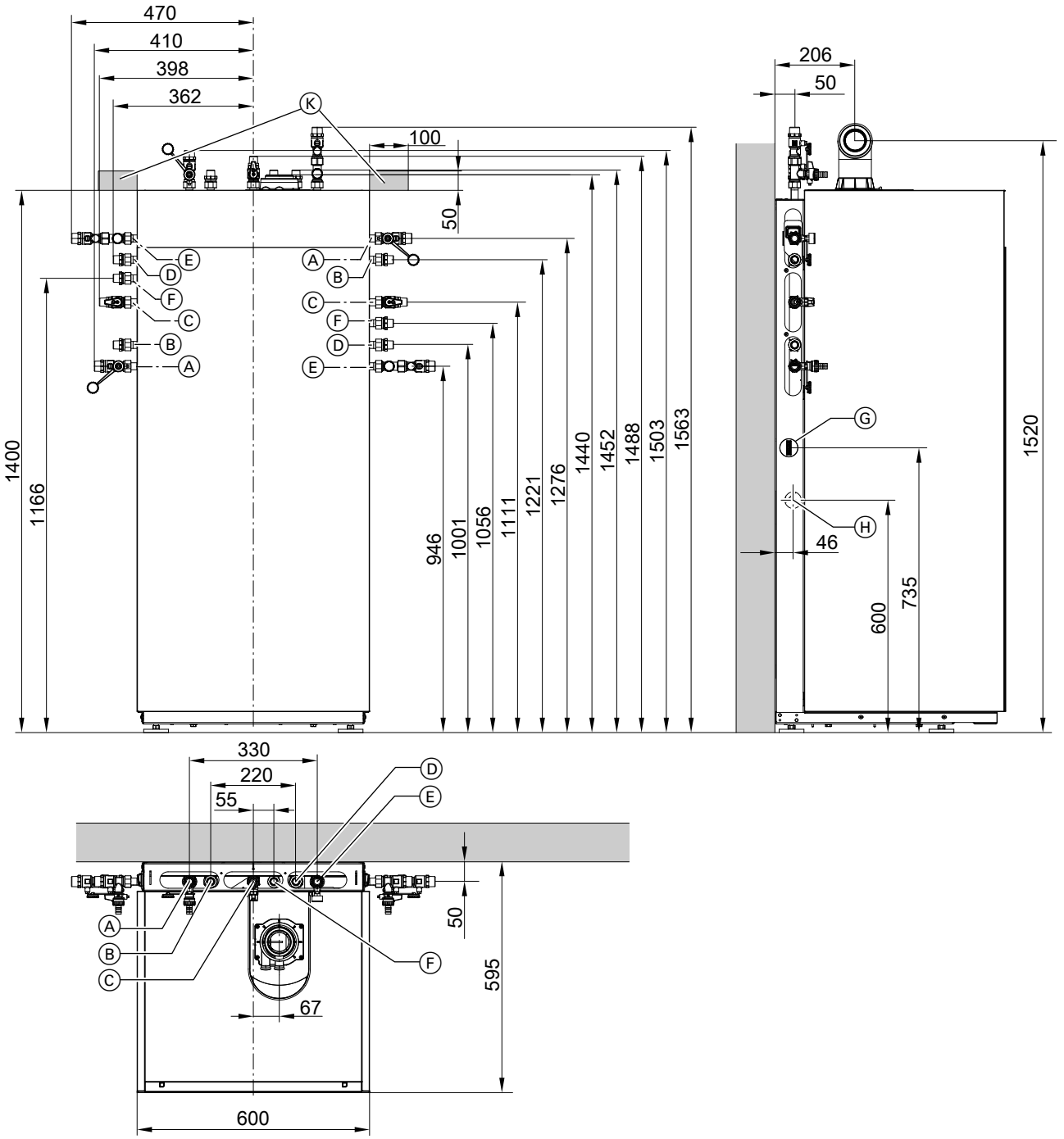
*18 -100 Pa reserved for wind pressure



Ⓐ Heating flow R ¾
Ⓑ DHW R ½
Ⓒ Gas connection R ½
Ⓓ Cold water R ½
Ⓔ Heating return R ¾
Ⓕ DHW circulation R ½ (separate accessories)
Ⓖ External plug
Ⓗ Condensate drain to the side
Ⓚ Area for electrical cables (on-site junction box)

Note
The dimensioned drawing shows an example of valves/fittings for surface mounting, upward connection and connection to the left/ right.
Order the connection sets separately as accessories.

Note
The appliance is delivered fitted with a flexible power cable (1.5 m long). Lay the required power cables on site and route them into the boiler through the back.

Note
All height dimensions have a tolerance of +15 mm on account of the adjustable feet.

Siting information
Site the Vitodens 222-F with its back flush against the wall.

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 mode or reduced mode. The control unit transmits the currently specified speeds to the circulation pump via a PWM signal.
The min. and max. speeds and the speed for reduced mode can be matched to the existing heating system via parameters at the control unit.

Setting (%) in group heating circuit 1:
- Min. speed: Parameter 1102.0
- Max. speed: Parameter 1102.1

- In the delivered condition, the minimum pump rate and the maximum pump rate are set to the following values:

Note
The minimum speed of 60 % is not undershot in order to ensure the required flow rate via the internal overflow valve. The minimum pump rate setting of 40 % ensures that the pump is more energy efficient in weather-compensated mode.

Rated heating output in kW	Speed settings in the delivered condition in %	
	Min. pump rate	Max. pump rate
11	40	60
19	40	70
25	40	85

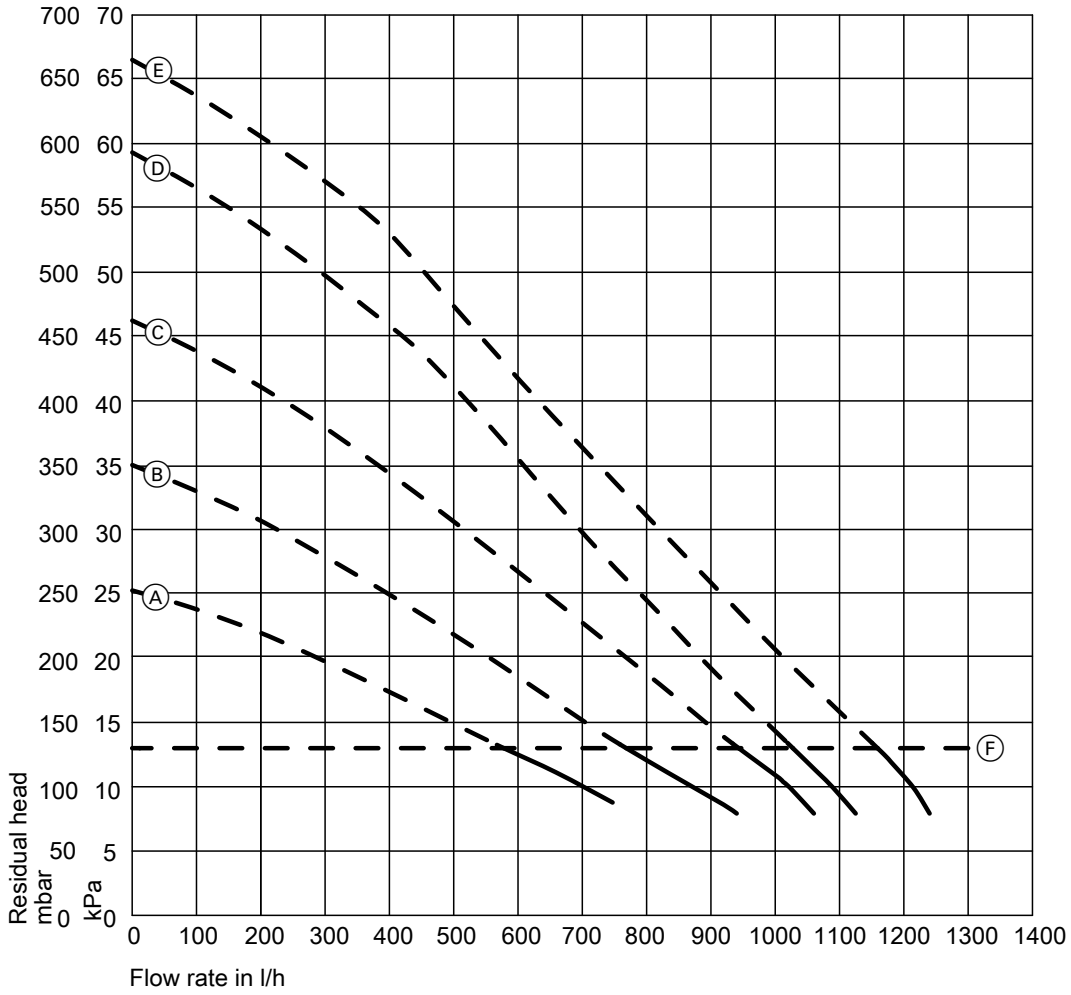
- In conjunction with a low loss header, heating water buffer cylinder and heating circuits with mixer, the internal circulation pump runs at a constant speed.

Specification – circulation pump

Rated heating output	kW	11	19	25
Circulation pump	Type	UPM4 15-75	UPM4 15-75	UPM4 15-75
Rated voltage	V~	230	230	230
Power consumption				
– Max.	W	63	63	63
– Min.	W	2	2	2
– Delivered condition	W	17.5	27.6	45.8
Energy efficiency class		A	A	A
Energy efficiency index (EEI)		≤ 0.20	≤ 0.20	≤ 0.20

Vitodens 222-F, type B2TF (cont.)

Residual head of integral circulation pump



Ⓕ Upper operational limit (integral bypass opens)

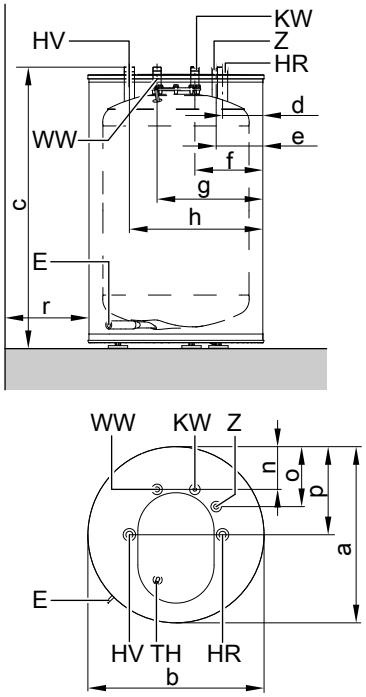
Curve	Pump rate of circulation pump
Ⓐ	60 %
Ⓑ	70 %
Ⓒ	80 %
Ⓓ	90 %
Ⓔ	100 %

5.1 Vitocell 100-W below the boiler

Specification for type CUGB, CUGB-A, 120 l and 150 l

Type		CUGB	CUGB-A	CUGB	CUGB-A
Cylinder capacity (AT: Actual water capacity)	**l**	**120**		**150**	
Heating water capacity	l	6.5		6.5	
Gross volume	l	126.5		156.5	
DIN registration no.		Applied for			
Connections (male thread)					
Heating water flow and return	R	1	1	1	1
Hot and cold water	R	¾	¾	¾	¾
DHW circulation	R	¾	¾	¾	¾
Permissible temperatures					
– Heating water side	°C	160	160	160	160
– DHW side	°C	95	95	95	95
Permissible operating pressure					
Heating water and DHW sides	bar	10	10	10	10
	MPa	1	1	1	1
Standby heat loss	kWh/24 h	1.02	0.87	1.04	0.85
Dimensions					
Length a	mm	582	634	634	634
Width b	mm	∅ 582	∅ 634	∅634	∅ 634
Height c	mm	929	929	958	958
Weight	kg	55	58	61	61
Heating surface	m^2	1.0	1.0	1.0	1.0
Energy efficiency class		B	A	B	A
Colour		Vitopearlwhite			

Dimensions of type CUGB, CUGB-A, 120 and 150 l



E Drain
HR Heating water return
HV Heating water flow
KW Cold water
WW DHW
TH Sensor well for cylinder temperature sensor (int. dia. 7 mm)
Z DHW circulation

Separate DHW cylinders for Vitodens 200-W (cont.)

Dimensions of type CUGB, CUGB-A

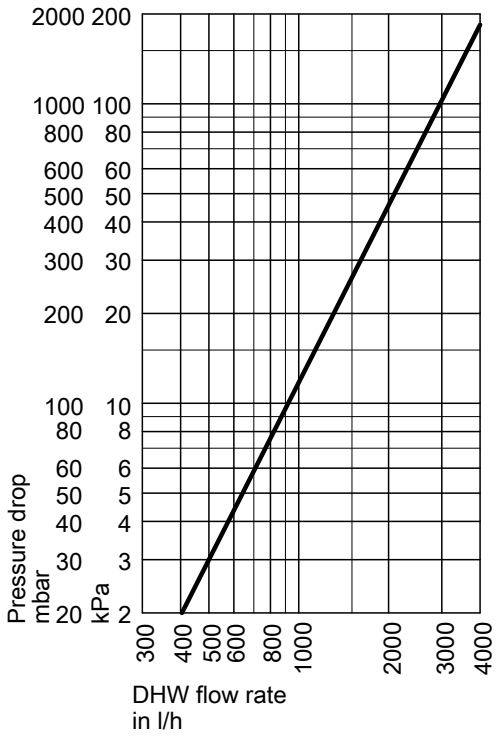
Type		CUGB	CUGB-A	CUGB	CUGB-A
Capacity		120 l		150 l	
a	mm	582	634	634	634
b	mm	582	634	634	634
c	mm	929	929	958	958
d	mm	137	163	163	163
e	mm	158	184	184	184
f	mm	229	255	255	255
g	mm	353	379	379	379
h	mm	445	471	471	471
n	mm	141	167	167	167
o	mm	198	224	224	224
p	mm	291	317	317	317
r	mm	100	100	100	100

DHW performance data at rated heating output

Type CUGB, CUGB-A

Rated heating output of the wall mounted appliance for DHW heating	**kW**	**16**	**18**	**19**	**22**	**24**	**25**	**32**
Continuous DHW output	kW	16	18	19	22	24	24	24
For DHW heating from 10 to 45 °C and an average boiler water temperature of 78 °C	l/h	390	440	465	540	590	590	590
Performance factor N_L to DIN 4708								
Cylinder capacity								
120 l		1.2	1.2	1.2	1.2	1.2	1.2	1.2
150 l		1.6	1.6	1.6	1.6	1.6	1.6	1.6
Peak output over 10 min								
Cylinder capacity								
120 l	l/10 min	153	153	153	153	153	153	153
150 l	l/10 min	173	173	173	173	173	173	173

Pressure drop on the DHW side



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Delivered condition

Delivered condition

Type CUGB, CUGB-A

DHW cylinder with **120 and 150 l** capacity:
- Fitted thermal insulation
- Sheet steel casing, epoxy-coated: Vitopearlwhite
- Adjustable feet
- Cylinder and internal indirect coil made from steel, corrosion protection through Ceraprotect enamel coating
- Additional cathodic protection with protective magnesium anode
- Welded sensor well for cylinder temperature sensor

5.2 Vitocell 100-V/100-W adjacent to the boiler

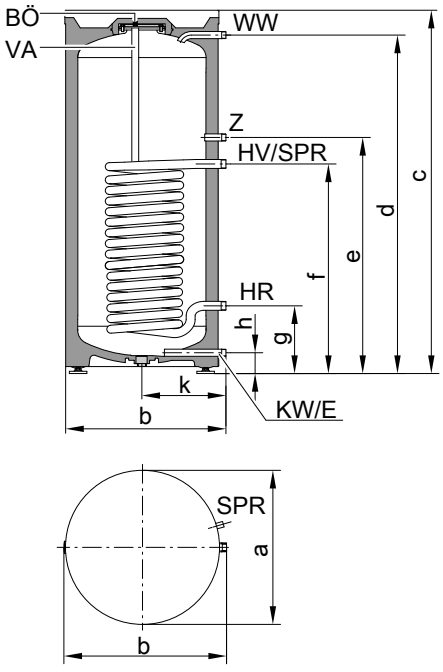
For further specifications: See the separate datasheet for the Vitocell 100-V/100-W.

Sizing entry points
The actual dimensions of the DHW cylinder may vary slightly due to manufacturing tolerances.

Specification

Type		**CVAA/CVAB-A**	**CVAA/CVAB-A**	**CVAB**
Cylinder capacity (AT: Actual water capacity)	**l**	**160**	**200**	**300**
Heating water capacity	l	5.5	5.5	10.0
Gross volume	l	165.5	205.5	310.0
DIN registration no.		Applied for		
Connections (male thread)				
Heating water flow and return	R	1	1	1
DHW and cold water	R	¾	¾	1
DHW circulation	R	¾	¾	1
Permissible temperatures				
– Heating water side	°C	160	160	160
– DHW side	°C	95	95	95
Permissible operating pressure				
– Heating water side	bar	25	25	25
	MPa	2.5	2.5	2.5
– DHW side	bar	10	10	10
	MPa	1	1	1
Standby heat loss	kWh/24 h	0.97/1.35	1.04/1.46	1.65
Dimensions				
Length a (∅)	mm	582/634	582/634	668
Width b	mm	607/637	607/637	706
Height c	mm	1128/1129	1348/1349	1687
Weight	kg	62/65	70/73	115
Energy efficiency class		B / A	B / A	B
Colour of the Vitocell 100-V				
– Vitographite		X (type CVAA only)	X (type CVAA only)	—
Colour of the Vitocell 100-W				
– Vitopearlwhite		X	X	X

Dimensions of type CVAA, CVAB-A, 160 and 200 l capacity



HR Heating water return
HV Heating water flow
KW Cold water
SPR Clamping device for securing immersion temperature sensors to the cylinder jacket, with fixing points for 3 immersion temperature sensors
VA Protective magnesium anode
WW DHW
Z DHW circulation

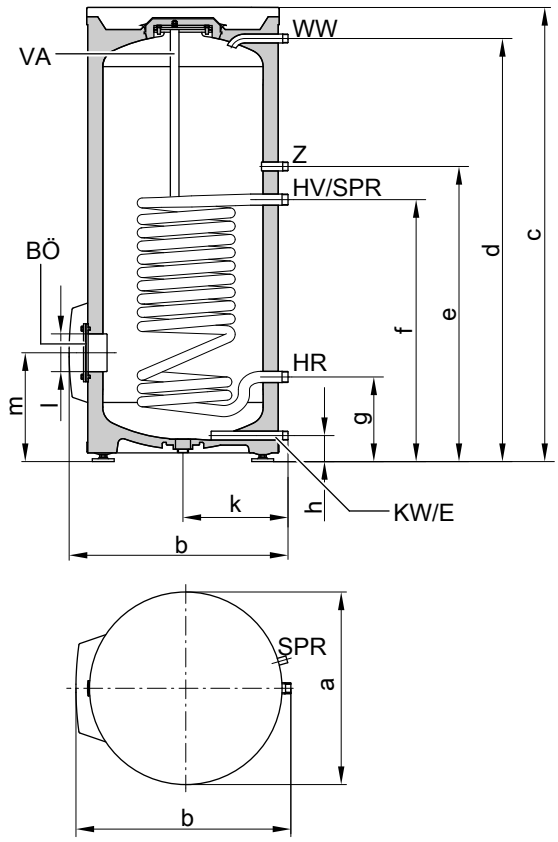
Dimensions of type CVAA, CVAB-A

Type			**CVAA**		**CVAB-A**	
Cylinder capacity		**l**	**160**	**200**	**160**	**200**
Length (∅)	a	mm	582	582	634	634
Width	b	mm	607	607	637	637
Height	c	mm	1128	1348	1129	1349
	d	mm	1055	1275	1055	1275
	e	mm	889	889	889	889
	f	mm	639	639	639	639
	g	mm	254	254	254	254
	h	mm	77	77	77	77
	k	mm	317	317	347	347

BÖ Inspection and cleaning aperture
E Drain

Separate DHW cylinders for Vitodens 200-W (cont.)

Dimensions of type CVAB, 300 l capacity



BÖ Inspection and cleaning aperture
E Drain

HR Heating water return
HV Heating water flow
KW Cold water
SPR Cylinder temperature sensor of the cylinder temperature controller or thermostat
VA Protective magnesium anode
WW DHW
Z DHW circulation

Dimensions of type CVAB

Cylinder capacity		**l**	**300**
Length (∅)	a	mm	668
Width	b	mm	706
Height	c	mm	1687
	d	mm	1607
	e	mm	1122
	f	mm	882
	g	mm	267
	h	mm	83
	k	mm	362
	l	mm	∅ 100
	m	mm	340

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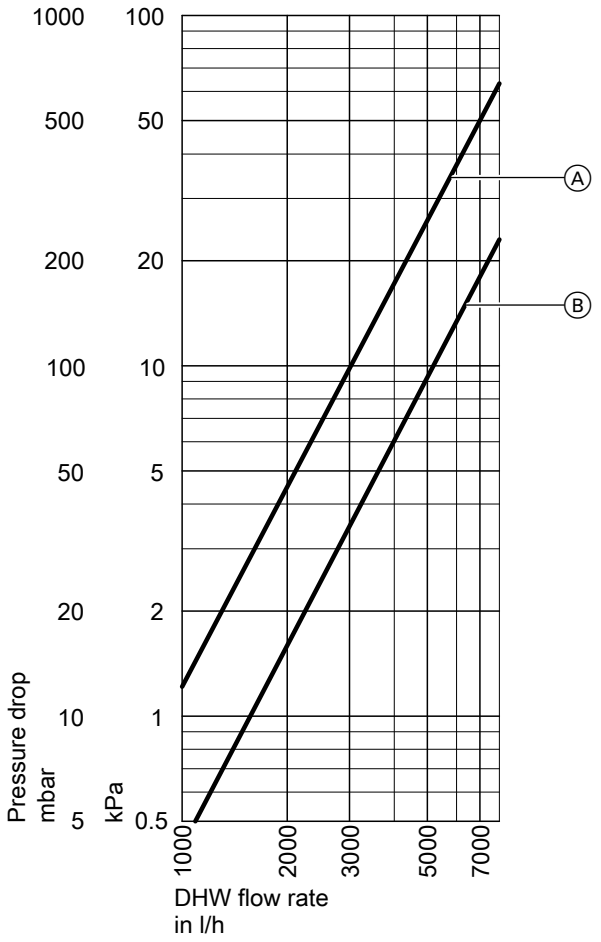
Separate DHW cylinders for Vitodens 200-W (cont.)

Pressure drop on the DHW side



Ⓐ 160 and 200 l
Ⓑ 300 l

DHW performance data at rated heating output

Rated heating output for DHW heating	**kW**	**17.5**	**23.0**	**29.3**
Continuous DHW output				
For DHW heating from 10 to 45 °C and an average boiler water temperature of 78 °C				
Cylinder capacity 160 and 200 l	kW	17.5	23.0	26
	l/h	425	555	638
Cylinder capacity 300 l	kW	17.5	23.0	29.3
	l/h	425	555	715
Performance factor N_L				
to DIN 4708				
Cylinder capacity 160 l		2.1	2.2	2.2
Cylinder capacity 200 l		3.1	3.2	3.2
Cylinder capacity 300 l		7.5	8.0	8.0
Peak output				
over 10 minutes				
Cylinder capacity 160 l	l/10 min	192	199	199
Cylinder capacity 200 l	l/10 min	233	236	236
Cylinder capacity 300 l	l/10 min	360	368	368

Separate DHW cylinders for Vitodens 200-W (cont.)

Delivered condition

Delivered condition

Type CVAA, CVAB-A

DHW cylinder with **160 and 200 l** capacity:
- Fitted thermal insulation
- Sheet steel casing, epoxy-coated: Vitopearlwhite
- Adjustable feet
- Cylinder and internal indirect coil made from steel, corrosion protection through Ceraprotect enamel coating
- Additional cathodic protection with protective magnesium anode
- Sensor well for cylinder temperature sensor and temperature controller (internal diameter 16 mm)

Type CVAB

DHW cylinder with **300 l** capacity:
- Fitted thermal insulation
- Sheet steel casing, epoxy-coated: Vitopearlwhite
- Adjustable feet
- Cylinder and internal indirect coil made from steel, corrosion protection through Ceraprotect enamel coating
- Additional cathodic protection with protective magnesium anode
- Sensor well for cylinder temperature sensor and temperature controller (internal diameter 16 mm)

5.3 Vitocell 300-V/300-W adjacent to the boiler

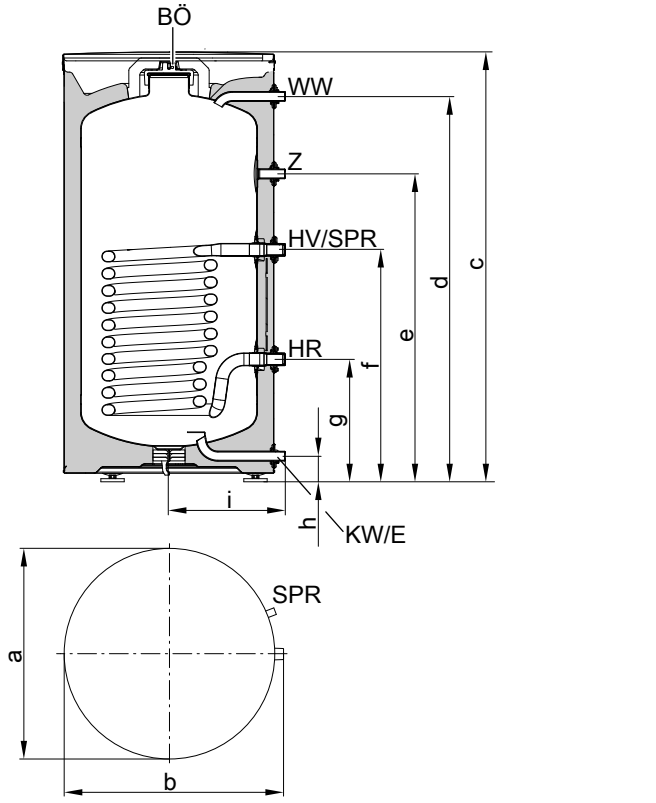
- Adjacent to the boiler
- Heated by an internal indirect coil; made from stainless steel

For further specifications, see the separate datasheet for the Vitocell 300-V/300-W.

Type		EVIB-A+		EVIB-A	
Cylinder capacity (AT: Actual water capacity)	**l**	**160**	**200**	**160**	**200**
Heating water capacity	l	7.4	7.4	7.4	7.4
Gross volume	l	167.4	207.4	167.4	207.4
DIN registration no.		Applied for			
Connections (male thread)					
Heating water flow and return	R	1	1	1	1
Cold water, DHW	R	¾	¾	¾	¾
DHW circulation	R	¾	¾	¾	¾
Permissible temperatures					
– Heating water side	°C	160	160	160	160
– DHW side	°C	95	95	95	95
Permissible operating pressure					
– Heating water side	bar	10	10	10	10
	MPa	1	1	1	1
– DHW side	bar	10	10	10	10
	MPa	1	1	1	1
Standby heat loss	kWh/24 h	0.71	0.75	0.98	1.04
Dimensions					
Length a (∅)	mm	634	634	634	581
Width b	mm	661	661	661	605
Height d	mm	1190	1410	1190	1410
Weight	kg	57	65	57	65
Energy efficiency class		A+	A+	A	A
Colour of the Vitocell 300-V					
– Vitosilver		X	X	X	X
– Vitographite		—	—	X	X
Colour of the Vitocell 300-W					
– Vitopearlwhite		X	X	X	X

Separate DHW cylinders for Vitodens 200-W (cont.)

Dimensions



BÖ Inspection and cleaning aperture
E Drain
HR Heating water return
HV Heating water flow
KW Cold water
SPR Clamping device for securing immersion temperature sensors to the cylinder jacket, with fixing points for 3 immersion temperature sensors per clamping device
WW DHW
Z DHW circulation

Cylinder capacity	l	160	200
a	mm	581	581
b	mm	605	605
c	mm	1189	1409
d	mm	1055	1275
e	mm	843	885
f	mm	635	635
g	mm	335	335
h	mm	70	70
i	mm	317	317

Pressure drop on the DHW side
See separate datasheet for the Vitocell 300-V/300-W.

DHW performance data at rated heating output

Rated heating output for DHW heating	kW	17.5	23.0	29.3
Continuous DHW output				
For DHW heating from 10 to 45 °C and an average boiler water temperature of 70 °C				
Cylinder capacity 160 l	kW	17.5	23.0	26
	l/h	425	555	630
Cylinder capacity 200 l	kW	17.5	23.0	28
	l/h	425	555	680
Performance factor N_L				
to DIN 4708				
Cylinder capacity 160 l		1.7	1.7	1.7
Cylinder capacity 200 l		2.9	2.9	2.9
Peak output				
over 10 minutes				
Cylinder capacity 160 l	l/10 min	177	177	177
Cylinder capacity 200 l	l/10 min	226	226	226

Delivered condition

Type EVIB-A, EVIB-A+

DHW cylinder with **160 and 200 l** capacity:
- Attached vacuum-insulated panels
- Sheet steel casing, epoxy-coated: Vitopearlwhite, Vitosilver and Vitographite
- Adjustable feet
- Cylinder and internal indirect coil made from stainless steel
- Clamping device for securing immersion temperature sensors to the cylinder jacket, with fixing points for 3 immersion temperature sensors

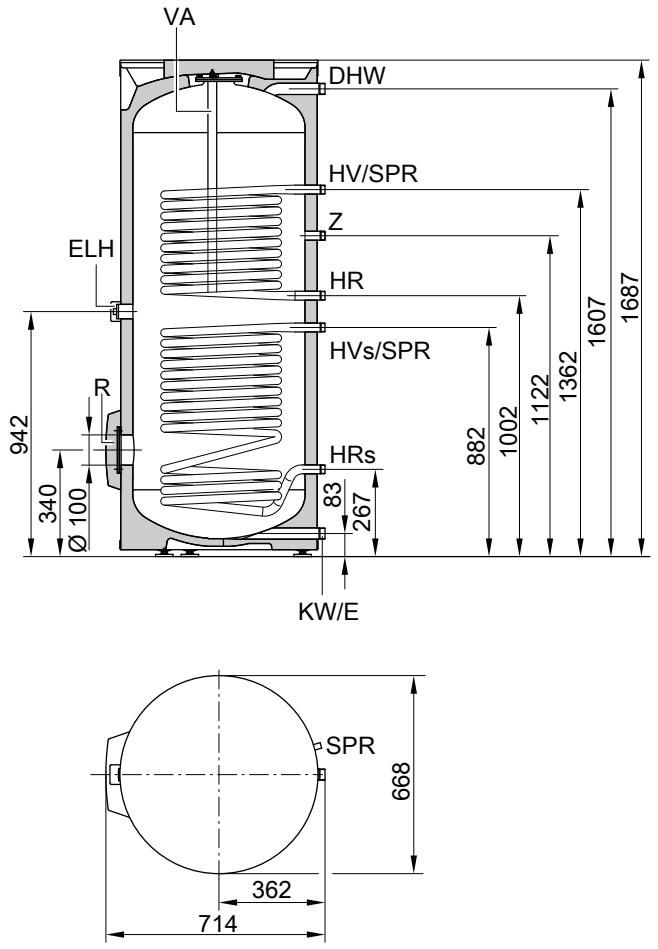
5.4 Vitocell 100-B/100-W adjacent to the boiler

For further specifications, see the separate datasheet for the Vitocell 100-B/100-W.

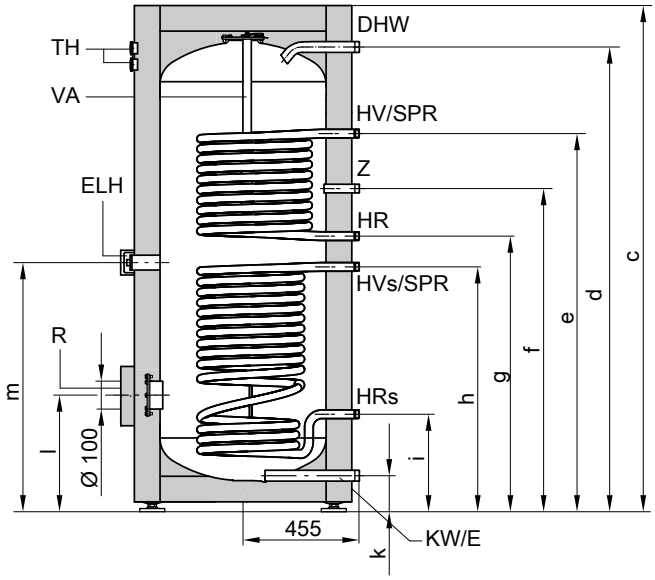
Type		CVBC	CVB
Cylinder capacity (AT: Actual water capacity)	**l**	**300**	**400**
Heating water capacity	l	16	17
Gross volume	l	316	417
DIN registration no.		Applied for	9W242/11-13 MC/E
Connections (male thread)			
Heating water flow and return	R	1	1
DHW and cold water	R	1	1¼
DHW circulation	R	1	1
Permissible temperatures			
– Heating water side	°C	160	160
– DHW side	°C	95	95
– Solar side	°C	160	160
Permissible operating pressure	bar	10	10
on the heating water, solar and DHW sides	MPa	1	1
Standby heat loss	kWh/24 h	1.65	1.80
Dimensions			
Length a (∅)	mm	667	859
Width b	mm	714	923
Height d	mm	1687	1624
Weight	kg	126	167
Energy efficiency class		B	B
Colour			
– Vitocell 100-B		Vitosilver	Vitopearlwhite
– Vitocell 100-W		Vitopearlwhite	—

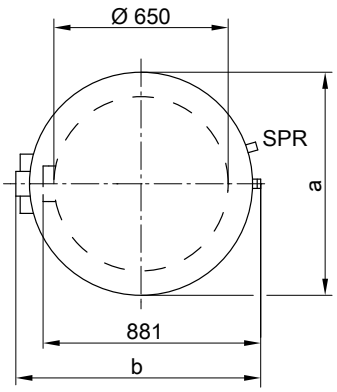
Separate DHW cylinders for Vitodens 200-W (cont.)

Dimensions of type CVB, 300 l capacity



Dimensions of type CVB, 400 l capacity





E Drain
ELH Immersion heater
HR Heating water return
HR_s Heating water return, solar thermal system
HV Heating water flow
HV_s Heating water flow, solar thermal system
KW Cold water
R Inspection and cleaning aperture with flange cover (also suitable for installation of an immersion heater)
SPR Clamping device for securing immersion temperature sensors to the cylinder jacket, with fixing points for 3 immersion temperature sensors
TH Thermometer (accessories)
VA Protective magnesium anode
WW DHW
Z DHW circulation

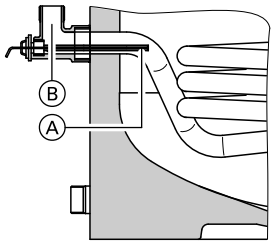
E Drain
ELH Connector for immersion heater
HR Heating water return
HR_s Heating water return, solar
HV Heating water flow
HV_s Heating water flow, solar
KW Cold water
R Inspection and cleaning aperture with flange cover (also suitable for installation of an immersion heater)
SPR Sensor well for cylinder temperature sensor and temperature controller (internal diameter 16 mm)
TH Thermometer (accessories)
VA Protective magnesium anode
WW DHW
Z DHW circulation

Dimensions of type CVB

Cylinder capacity	l	400
a	mm	∅ 859
b	mm	923
c	mm	1624
d	mm	1458
e	mm	1204
f	mm	1044
g	mm	924
h	mm	804
i	mm	349
k	mm	107
l	mm	422
m	mm	864

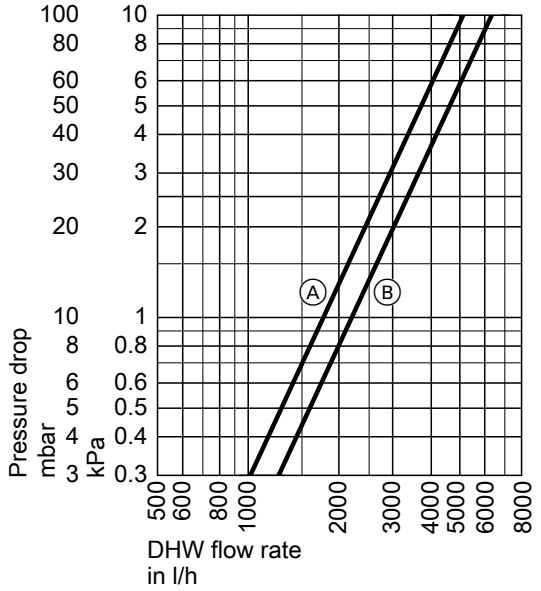
Separate DHW cylinders for Vitodens 200-W (cont.)

Recommended positioning of the cylinder temperature sensor for solar operation



Ⓐ Cylinder temperature sensor (solar control unit)
Ⓑ Threaded elbow with sensor well (standard delivery)

Pressure drop on the DHW side



Ⓐ 300 l capacity
Ⓑ 400 l capacity

DHW performance data at rated heating output

Rated heating output for DHW heating	**kW**	**17.5**	**23.0**	**29.3**
Continuous DHW output				
For DHW heating from 10 to 45 °C and an	kW	17.5	23.0	26
average boiler water temperature of 78 °C	l/h	425	555	638
Performance factor N_L **19*		1.4	1.4	1.4
to DIN 4708				
Peak output	l/10 min	164	164	164
over 10 minutes				

**19 Values for the upper indirect coil.*

Delivered condition

Delivered condition

Type CVBC

DHW cylinder with **300 l** capacity:
- Fitted thermal insulation
- Sheet steel casing, epoxy-coated: Vitopearlwhite or Vitosilver
- Adjustable feet
- Cylinder and internal indirect coil made from steel, corrosion protection through Ceraprotect enamel coating
- Additional cathodic protection with protective magnesium anode
- 2 clamping devices for securing immersion temperature sensors to the cylinder jacket, each with fixing points for 3 immersion temperature sensors
- Threaded elbow with sensor well: Internal diameter 6.5 mm
- Connection for installing an immersion heater: R 1 1/2

Type CVB

DHW cylinder with **400 l** capacity:
- Removable thermal insulation
- Polystyrene casing: Vitopearlwhite
- Adjustable feet
- Cylinder and internal indirect coil made from steel, corrosion protection through Ceraprotect enamel coating
- Additional cathodic protection with protective magnesium anode
- 2 integral welded sensor wells for cylinder temperature sensors or temperature controller with internal diameter 16 mm
- Threaded elbow with sensor well: Internal diameter 6.5 mm
- Connection for installing an immersion heater: R 1 1/2

6.1 Vitodens 200-W installation accessories

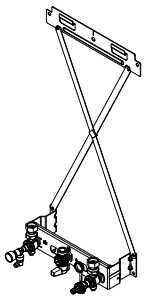
Pre-plumbing jigs

Pre-plumbing jig for surface mounting
For gas condensing system boiler

Part no. ZK04307

Comprising:
- Fixings
- Valves/fittings, heating flow/heating return
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾

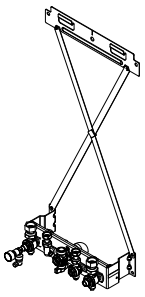


Pre-plumbing jig for surface mounting
For gas condensing combi boiler

Part no. ZK04919

Comprising:
- Fixings
- Valves/fittings, heating flow/heating return
- Valves/fittings, cold water/DHW
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾
Cold water/DHW	R	½



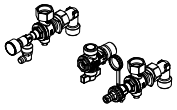
Valves/fittings

Valves/fittings for surface mounting
For gas condensing system boiler

Part no. ZK04669

Comprising:
- Valves/fittings, heating flow/heating return
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾

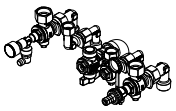


Valves/fittings for surface mounting
For gas condensing combi boiler

Part no. ZK04925

Comprising:
- Valves/fittings, heating flow/heating return
- Valves/fittings, cold water/DHW
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾
Cold water/DHW	R	½



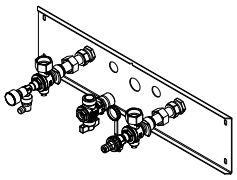
Installation accessories (cont.)

Valves/fittings for flush mounting

Part no. ZK04670
For gas condensing system boiler

Comprising:
- Valves/fittings, heating flow/heating return
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve
- Mounting plate, flush mounting

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾

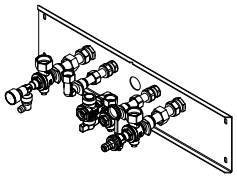


Valves/fittings for flush mounting
For gas condensing combi boiler

Part no. ZK04926

Comprising:
- Valves/fittings, heating flow/heating return
- Valves/fittings, cold water/DHW
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve
- Mounting plate, flush mounting

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾
Cold water/DHW	R	½



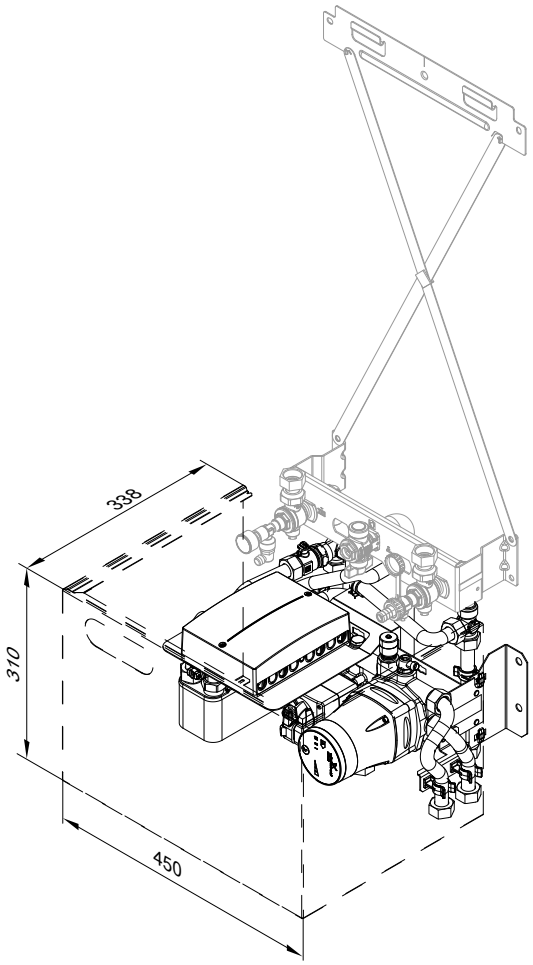
Sub-mounting kit with mixer

- For gas condensing system boiler
  Part no. ZK04304
- For gas condensing combi boiler
  Part no. ZK04928

For surface mounting

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 the control unit via PlusBus
- Valve for regulating the flow rates of both heating circuits
- Adjustable bypass
- Flow temperature sensor
- Cover with same design as the wall mounted boiler
- Installation template for quick and easy installation

Note
A pre-plumbing jig must be ordered separately in addition to the sub-mounting kit.
Not in conjunction with the plumbing wall mounting frame,
part no. ZK04309

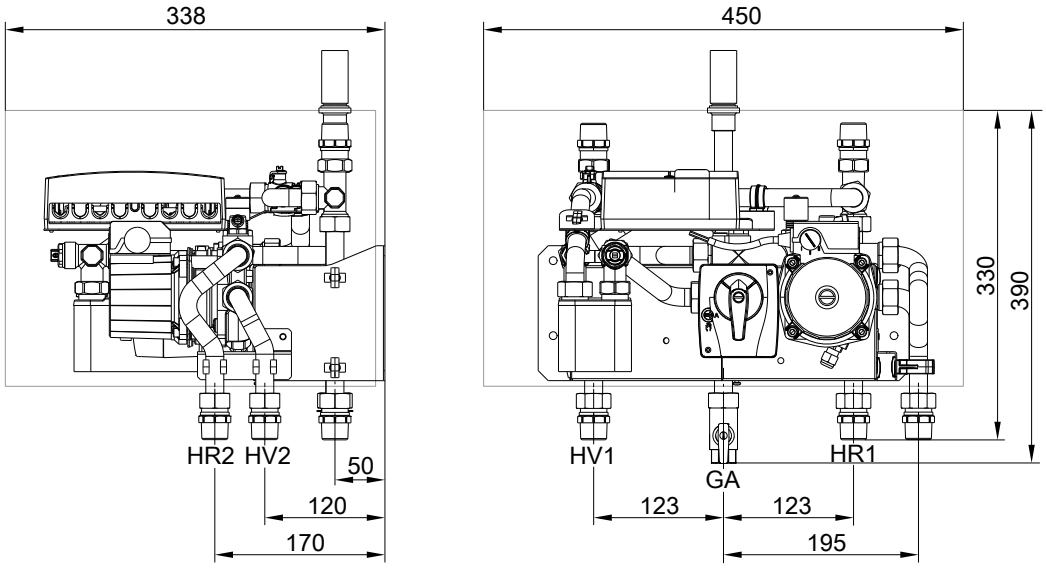


Sub-mounting kit accessories

Flow indicator
Part no. 7438927
To display the flow rate in the unregulated heating circuit with hydronic balancing of the heating circuits.

Contact temperature limiter
Part no. 7425493
Maximum temperature limiter for underfloor heating circuits.
With connecting cable, 1.5 m long.

Specification – sub-mounting kit with mixer
Assembly for heat distribution via one heating circuit with mixer and one heating circuit without mixer, with same design as the wall mounted boiler. For installation below the boiler.
The heating circuit without mixer is supplied by the integral circulation pump of the Vitodens. Installation scheme for operation with the sub-mounting kit: See **www.viessmann-schemes.com**.
The sub-mounting kit can only be used in conjunction with the surface mounted pre-plumbing jig.
Not in conjunction with the Vitocell 100-W DHW cylinder, type CUGA/CUGA-A below the boiler.

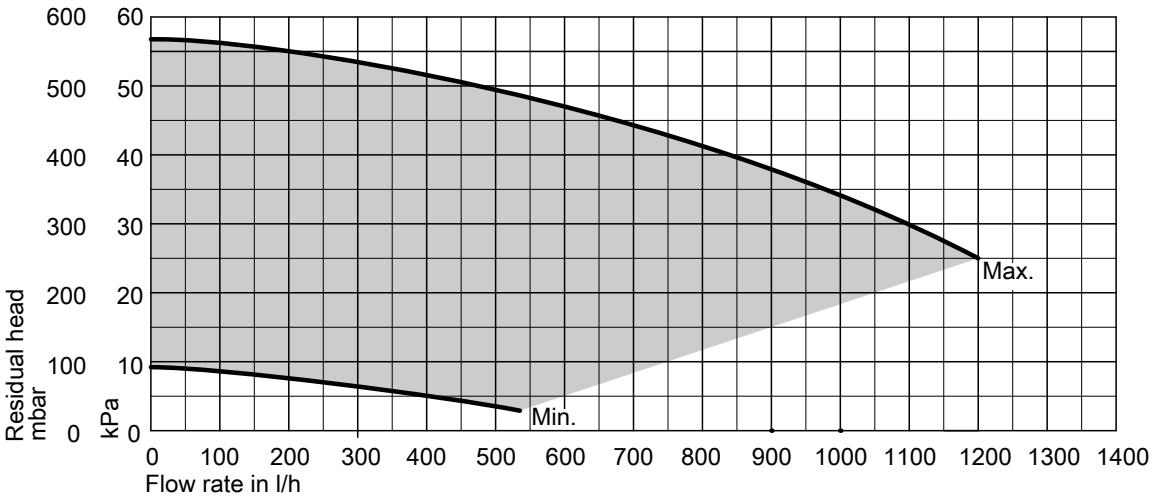


GA Gas connection R ¾
HR1 Heating return, heating circuit without mixer R ¾
HR2 Heating return, heating circuit with mixer R ¾
HV1 Heating flow, heating circuit without mixer R ¾
HV2 Heating flow, heating circuit with mixer R ¾

Installation accessories (cont.)

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 MPa	3 0.3
Max. power consumption (total)	W	48
Dimension a	mm	400
Weight (incl. packaging)	kg	17

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



Calculating the transferable heating output (examples)
The sub-mounting kit is equipped with an integral balancing valve. This allows the flow rate via the plate heat exchanger to the regulated heating circuit to be restricted as required.
The max. heating output that can be transferred via the plate heat exchanger of the sub-mounting kit is 14 kW. To achieve balanced flow rates between the regulated heating circuit (sub-mounting kit) and the unregulated heating circuit (radiator heating circuit), the pressure drop in the sub-mounting kit must be increased. The integral balancing valve is used for this purpose.
For accurate adjustment of the flow rates, a flow indicator (available as an accessory) can be installed in the flow line of the unregulated heating circuit. The nominal circulating water volume of the boiler (see specification), minus the flow rate through the plate heat exchanger of the sub-mounting kit, results in the flow rate of the unregulated heating circuit.

Example:

Vitodens 200-W, 2.5 - 25 kW
- Nominal circulating water volume at ΔT 20 K: 1076 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
- Flow rate of unregulated heating circuit (to be adjusted via the balancing valve): 1076 l/h – 560 l/h = **516 l/h**

Mounting frame

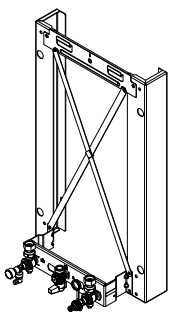
Mounting frame
For gas condensing system boiler

Part no. ZK04308

Comprising:
- Fixings
- Valves/fittings, heating flow/heating return
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Wall clearance 90 mm

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾



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Installation accessories (cont.)

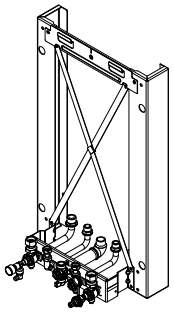
Mounting frame
For gas condensing combi boiler

Part no. ZK04922

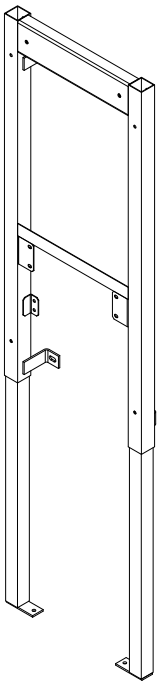
Comprising:
- Fixings
- Valves/fittings, heating flow/heating return
- Valves/fittings, cold water/DHW
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Wall clearance 90 mm

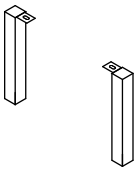
Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾
Cold water/DHW	R	½



Plumbing wall mounting frame
Part no. ZK04309
Suitable for wall mounting, plumbing wall installation anywhere in the room or in front of lightweight walls.
A pre-plumbing jig (part no. ZK04307) or valves/fittings (part no. ZK04669 or ZK04670) must be ordered separately in addition to the plumbing wall mounting frame.



Ceiling extension for plumbing wall mounting frame
Part no. ZK02546
For installation "anywhere" in the room

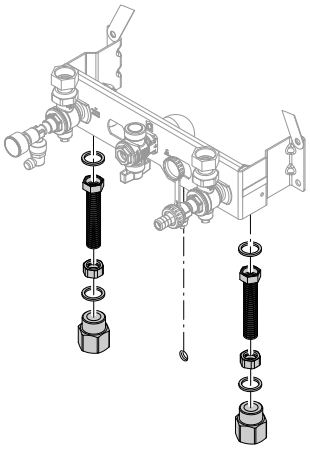


Further accessories

Hydraulic adaptor
Part no. ZK02587
For connection to on-site pipework with surface mounting

For replacing the older appliances below with the Vitodens 200-W:
- Pendola
- Vitopend (from 2004 onwards)
- Thermoblock-VC and VC 110 E/112 E
- Thermoblock-VCW
- Cerastar-ZR or Ceramini
- Cerastar-ZWR

Connection to on-site heating flow/heating return:
Connection pipes with union nuts and connection pieces Rp ¾ (female thread)
The pre-plumbing jig for surface mounting must be ordered separately.



Hydraulic adaptor
Part no. ZK02588
For connection to on-site pipework with flush mounting

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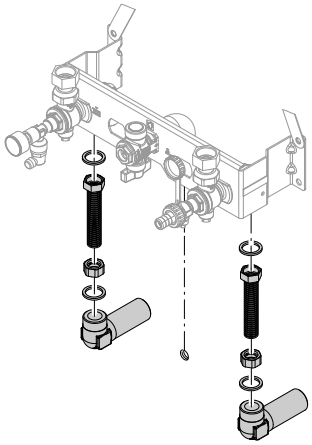
Installation accessories (cont.)

For replacing the older appliances below with the Vitodens 200-W:
- Pendola
- Vitopend (from 2004 onwards)
- Thermoblock-VC and VC 110 E/112 E
- Thermoblock-VCW
- Cerastar-ZR or Ceramini
- Cerastar-ZWR

Connection to on-site heating flow/heating return
Connection pipes with union nuts and connection elbows G ¾ (male thread)
The pre-plumbing jig for surface mounting must be ordered separately.



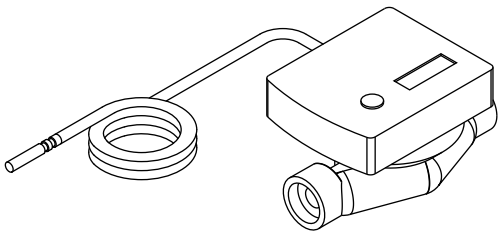
Straight-through gas valve R ½
Part no. ZK01989
For surface mounting
With integral, thermally activated safety shut-off valve.

Angle gas valve R ½
Part no. ZK01990
For flush mounting
With integral, thermally activated safety shut-off valve.

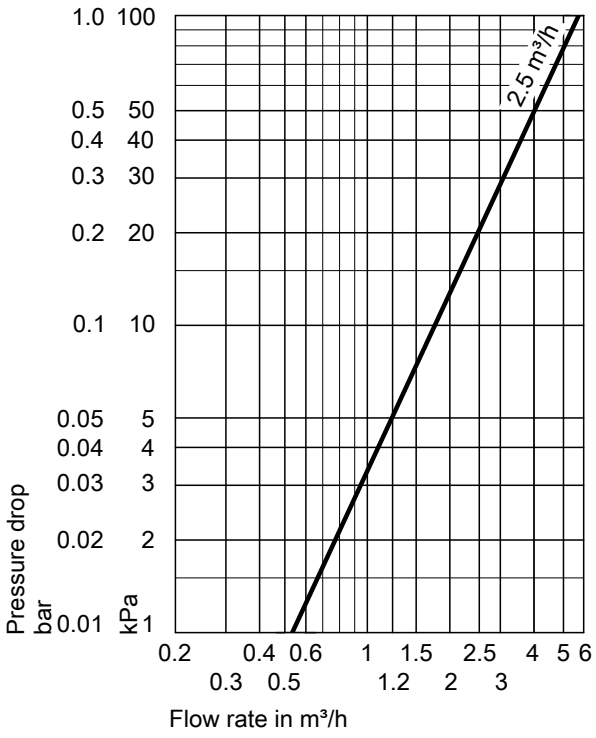
Heat meter
For installation in the connection line

Part no.	Suitable for DHW cylinders:
7172847	– Vitocell 100: Up to 500 l capacity – Vitocell 300: Up to 200 l capacity With connection accessories for G 1
7172848	– Vitocell 300: 300 to 500 l capacity With connection accessories for G 1¼

Components:
- Measuring unit with threaded connector for capturing the flow rate.
- Temperature sensor Pt1000, connected to the heat meter, sensor lead 1.5 m long.
- G 1 or G 1¼ connection accessories including ball valves.



Pressure drop



Specification

Nominal flow rate	2.5 m³/h
Lead length	1.5 m
IP rating	IP 54 to EN 60529; ensure through design/installation
Permissible ambient temperature	
– During operation	5 to 55 °C
– During storage and transport	–20 to +70 °C
Sensor type	Pt1000
Max. operating pressure	10 bar (1 MPa)
Nominal diameter	DN 20
Installed length	130 mm
Max. flow rate	5000 l/h
Minimum flow rate	
– Horizontal installation	50 l/h
– Vertical installation	50 l/h
Start-up value (for horizontal installation)	7 l/h
Battery life	Approx. 10 years

Safety assembly to DIN 1988
Comprising:
- Shut-off valve
- Non-return valve and test connector

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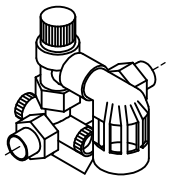
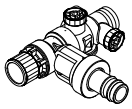
Installation accessories (cont.)

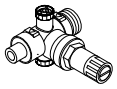
- Pressure gauge connector
- Diaphragm safety valve
  - 10 bar (1 MPa)
    - DN 15, up to 200 l cylinder capacity
      Part no. 7219722
    - DN 20, for 300 l cylinder capacity
      Part no. 7180662
  - Ⓐ 6 bar (0.6 MPa)
    - DN 15, up to 200 l cylinder capacity
      Part no. 7265023
    - DN 20, for 300 l cylinder capacity
      Part no. 7179666



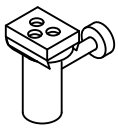
For Vitocell 100-W below the boiler
- 10 bar (1 MPa), DN 15, right angle version
  Part no. 7180097
- Ⓐ 6 bar (0.6 MPa), DN 15, right angle version
  Part no. 7179457



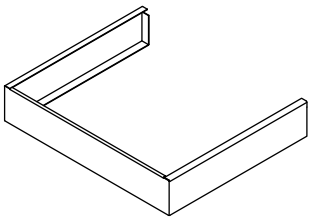
Pressure reducer (DN 15)
Part no. 7180148
To match right angle version of the safety assembly



Drain outlet kit
Part no. 7459591
Drain outlet with trap and rose. For connecting the drain lines of the safety valves and the condensate drain.
Drain connection G 1

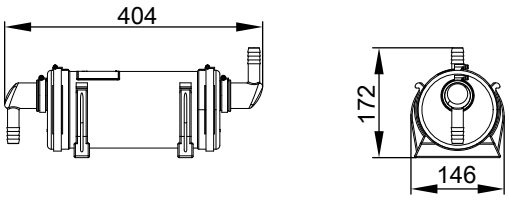


Valve/fittings cover
Part no. ZK04310
Cannot be used in conjunction with a DHW cylinder below the boiler



Neutralising system with wall mounting bracket

Part no. 7968318
- For condensing boilers up to 35 kW
- With neutralising granulate (2.6 kg)
- With connection elbows for DN 20 hose connection

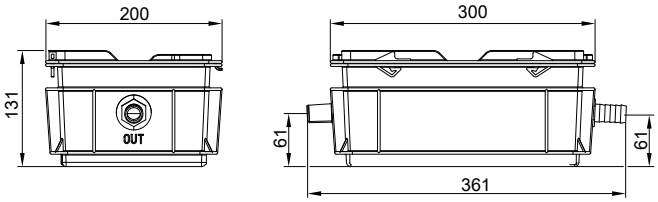


Neutralising granulate

Part no. 7857853
2 x 1.3 kg
Fits neutralising system part no. 7968318

Neutralising system with wall mounting bracket

Part no. ZK03652
- For condensing boilers up to 35 kW
- With neutralising granulate
- With connection elbows for DN 20 hose connection
- With 2 corrugated hoses with fixing clamps (∅19 mm, 0.7 to 1.95 m long)



Neutralising granulate

Part no. ZK03654
2.5 kg
To match the neutralising system, part no. ZK03652

Condensate lifting system

Part no. ZK02486
Automatic condensate removal pump for condensate with a pH value of ≥ 2.8 from gas condensing boilers

Components:
- Condensate container 2.0 l
- Centrifugal pump
- Non-return valve
- Connecting cable (1.5 m long) for fault messages

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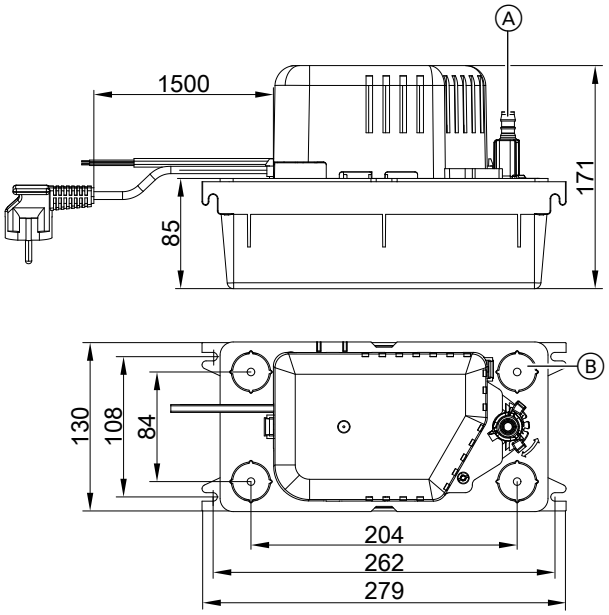
Installation accessories (cont.)

- Power cable (1.5 m long) with plug
- 4 connection apertures ∅ 30 mm for condensate drain with connector ∅ max. 40 mm)
- Drain hose ∅ 10 mm (5 m long)



Ⓐ Condensate drain
Ⓑ 4 x condensate inlet (closed in delivered condition)

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

Water spray protection

Part no. 7590109
To ensure adherence to the required protection class. Must be ordered separately for open flue operation.

Small softening system for heating water
For filling heating circuits
See Vitoset pricelist

Tool kit

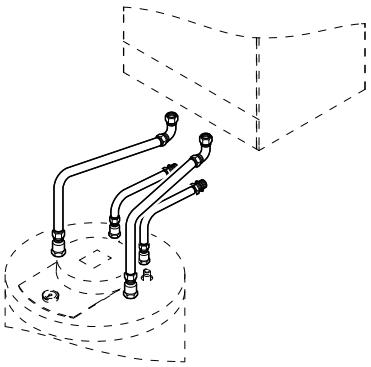
Part no.: ZK04569
For maintenance and service
Case with all tools required for maintenance and service: Screwdriver, extension and inserts

Connections between the Vitodens and the DHW cylinder

Connection set for Vitocell 100-W DHW cylinder, type CUGA and CUGA-A below the boiler, with connection pipes
Part no. ZK04709

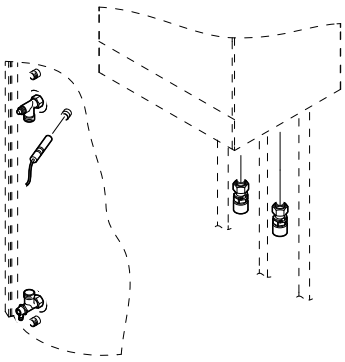
Comprising:
- Cylinder temperature sensor
- Connection pipes on the heating water side
- Connection pipes on the DHW side

Surface or flush mounting



Connection set for Vitocell 100-W and 200-W DHW cylinders adjacent to the boiler
Comprising:
- Cylinder temperature sensor
- Connection fittings

DHW cylinder to the **left or right** of the Vitodens
- Threaded fitting version
  Part no. ZK04710
- Solder version
  Part no. ZK04711



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6.2 Installation accessories for Vitodens 222-W

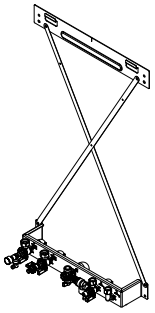
Pre-plumbing jigs

Pre-plumbing jig for surface mounting

Part no. ZK04929

Comprising:
- Fixings
- Valves/fittings, heating flow/heating return
- Diaphragm safety valve 10 bar (1 MPa)
- Valves/fittings, cold water/DHW
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾
Cold water/DHW	R	½



Mounting frame

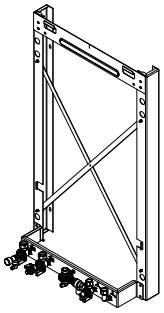
Mounting frame for surface mounting

Part no. ZK04931

Comprising:
- Fixings
- Valves/fittings, heating flow/heating return
- Diaphragm safety valve 10 bar (1 MPa)
- Valves/fittings, cold water/DHW
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Wall clearance 90 mm

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾
Cold water/DHW	R	½



Mounting frame for surface mounting

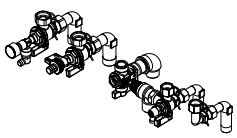
Valves/fittings

Valves/fittings for surface mounting

Part no. ZK04933

Comprising:
- Valves/fittings, heating flow/heating return
- Diaphragm safety valve 10 bar (1 MPa)
- Valves/fittings, cold water/DHW
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾
Cold water/DHW	R	½

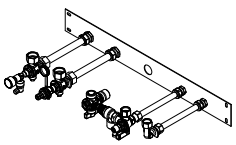


Valves/fittings for flush mounting

Part no. ZK04934

Comprising:
- Valves/fittings, heating flow/heating return
- Diaphragm safety valve 10 bar (1 MPa)
- Valves/fittings, cold water/DHW
- Boiler drain & fill valve
- Air vent valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve
- Mounting plate, flush mounting

Connections (male thread)		
Gas shut-off valve	R	¾
Heating flow/heating return	R	¾
Cold water/DHW	R	½

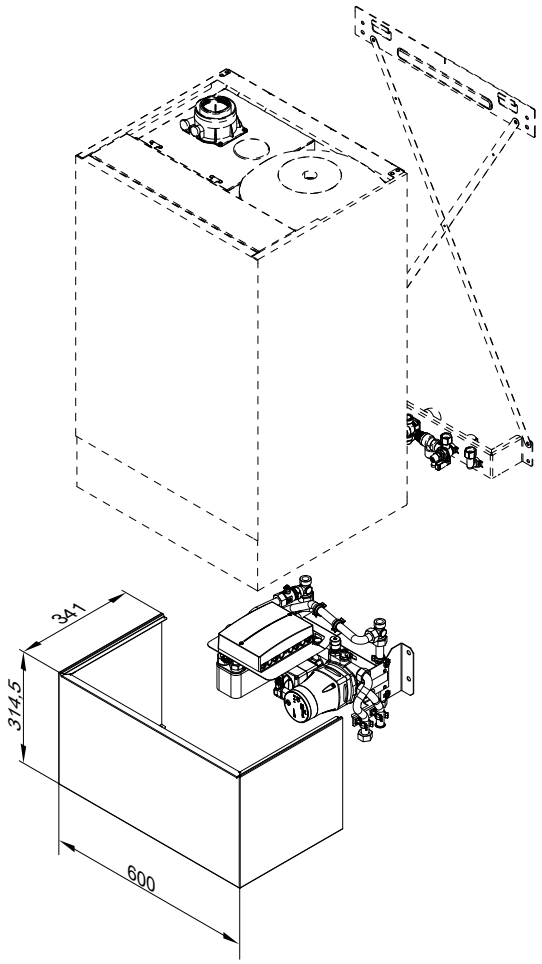


Sub-mounting kit with mixer for surface mounting

Sub-mounting kit
Part no. ZK04935

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 the control unit via PlusBus
- Valve for regulating the flow rates of both heating circuits
- Adjustable bypass
- Flow temperature sensor
- Cover with same design as the wall mounted boiler
- Installation template for quick and easy installation

Note
A pre-plumbing jig must be ordered separately in addition to the sub-mounting kit.



Sub-mounting kit accessories

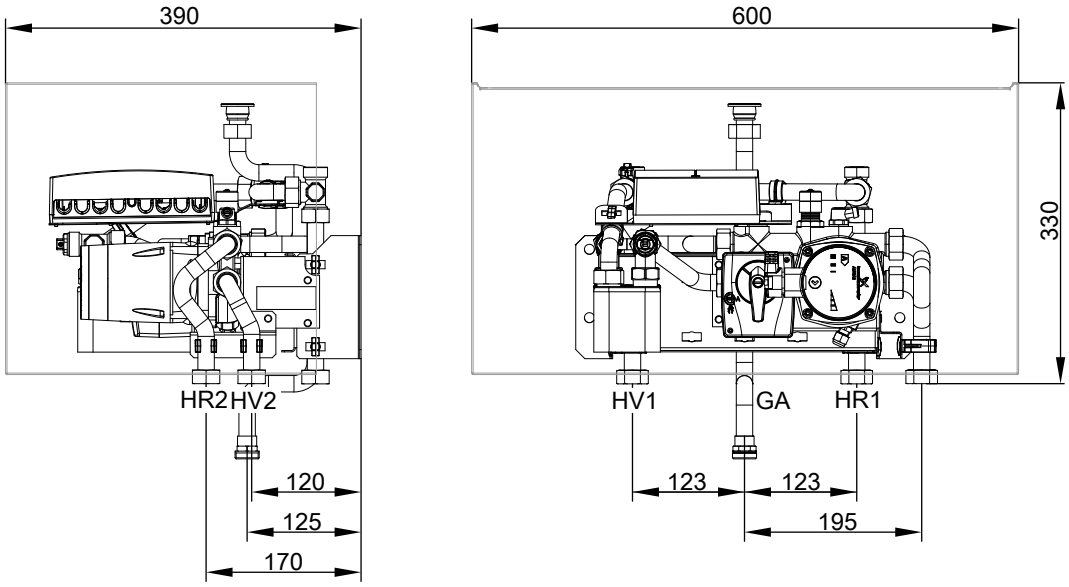
Flow indicator
Part no. 7438927
To display the flow rate in the unregulated heating circuit with hydronic balancing of the heating circuits.

Contact temperature limiter
Part no. 7425493
Maximum temperature limiter for underfloor heating circuits. With connecting cable, 1.5 m long.

Installation accessories (cont.)

Specification – sub-mounting kit with mixer
Assembly for heat distribution via one heating circuit with mixer and one heating circuit without mixer, with same design as the wall mounted boiler. For installation below the boiler.

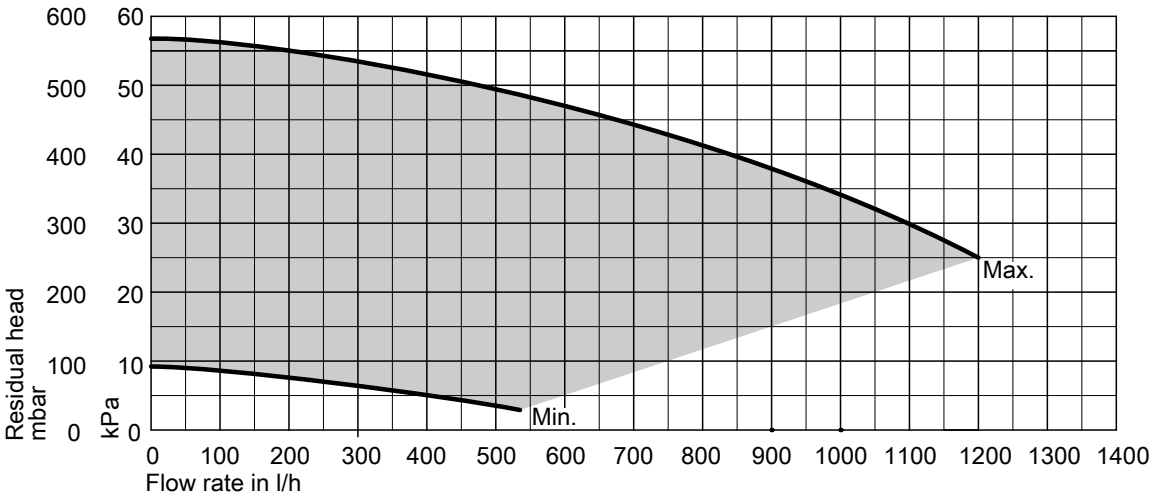
The heating circuit without mixer is supplied by the integral circulation pump of the Vitodens 222-W. Installation scheme for operation with the sub-mounting kit: See **www.viessmann-schemes.com**.



GA Gas connection Rp ½
HR1 Heating return, heating circuit without mixer R ¾
HR2 Heating return, heating circuit with mixer R ¾
HV1 Heating flow, heating circuit without mixer R ¾
HV2 Heating flow, heating circuit with mixer R ¾

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
	MPa	0.3
Max. power consumption (total)	W	48
Weight (incl. packaging)	kg	17

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



Calculating the transferable heating output (examples)
The sub-mounting kit is equipped with an integral balancing valve. This allows the flow rate via the plate heat exchanger to the regulated heating circuit to be restricted as required.

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Installation accessories (cont.)

The max. heating output that can be transferred via the plate heat exchanger of the sub-mounting kit is 14 kW. To achieve balanced flow rates between the regulated heating circuit (sub-mounting kit) and the unregulated heating circuit (radiator heating circuit), the pressure drop in the sub-mounting kit must be increased. The integral balancing valve is used for this purpose.
For accurate adjustment of the flow rates, a flow indicator (available as an accessory) can be installed in the flow line of the unregulated heating circuit. The nominal circulating water volume of the boiler (see specification), minus the flow rate through the plate heat exchanger of the sub-mounting kit, results in the flow rate of the unregulated heating circuit.

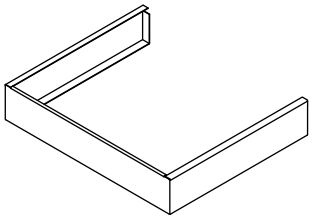
Example:

Vitodens 222-W, 2.5 - 25 kW
- Nominal circulating water volume at ΔT 20 K: 1076 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
- Flow rate of unregulated heating circuit (to be adjusted via the balancing valve): 1076 l/h – 560 l/h = **516 l/h**

Further accessories

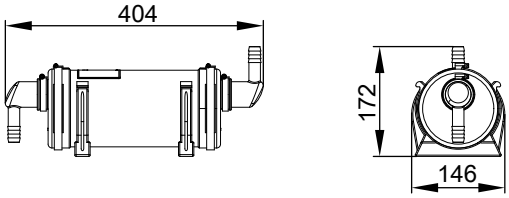
Valve/fittings cover

Part no. ZK04938



Neutralising system with wall mounting bracket

Part no. 7968318
- For condensing boilers up to 35 kW
- With neutralising granulate (2.6 kg)
- With connection elbows for DN 20 hose connection

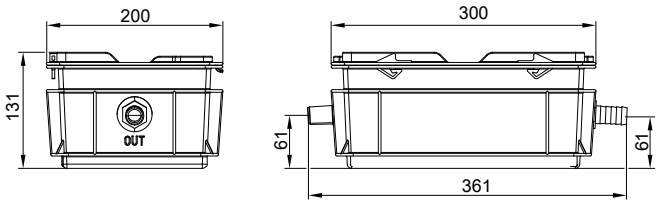


Neutralising granulate

Part no. 7857853
2 x 1.3 kg
Fits neutralising system part no. 7968318

Neutralising system with wall mounting bracket

Part no. ZK03652
- For condensing boilers up to 35 kW
- With neutralising granulate
- With connection elbows for DN 20 hose connection
- With 2 corrugated hoses with fixing clamps (∅19 mm, 0.7 to 1.95 m long)



Neutralising granulate

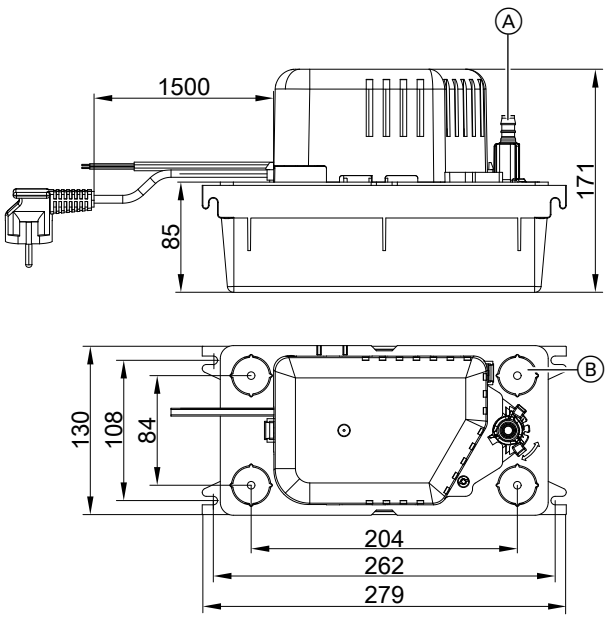
Part no. ZK03654
2.5 kg
To match the neutralising system, part no. ZK03652

Condensate lifting system

Part no. ZK02486
Automatic condensate removal pump for condensate with a pH value of ≥ 2.8 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 ∅ 30 mm for condensate drain with connector ∅ max. 40 mm)
- Drain hose ∅ 10 mm (5 m long)

Installation accessories (cont.)



Ⓐ Condensate drain
Ⓑ 4 x condensate inlet (closed in delivered condition)

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

Ventilation air cover

Part no. ZK04940
For parallel connection of flue pipe and ventilation air pipe
∅ 60/60 mm without parallel adaptor.

Water spray protection

Part no. 7590109
To ensure adherence to the required protection class. Must be ordered separately for open flue operation.

Plate heat exchanger flushing system
Part no. 7373005

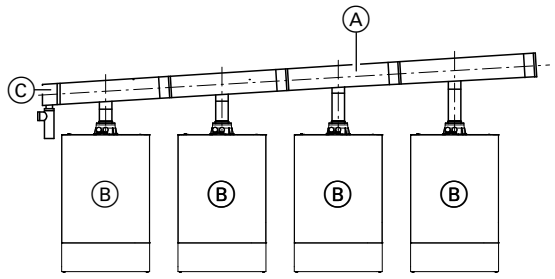
Small softening system for heating water
For filling heating circuits
See Vitoset pricelist

Tool kit

Part no.: ZK04569
For maintenance and service
Case with all tools required for maintenance and service: Screwdriver, extension and inserts

Flue gas cascade (positive pressure) for multi boiler systems with Vitodens 200-W and 222-W

Comprising:
- Back draught safety device for each boiler
- Flue gas header
- Terminal with condensate drain and trap



Ⓐ Flue gas header
Ⓑ Back draught safety device (for installation in the Vitodens)
Ⓒ Terminal with trap

- **Two-boiler system**
  - System size 110, **part no. ZK07147**
  - System size 160, **part no. ZK07148**
- **3-boiler system**
  - System size 110, **part no. ZK07151**
  - System size 160, **part no. ZK07152**
- **4-boiler system**
  - System size 110, **part no. ZK07155**
  - System size 160, **part no. ZK07156**

Note
See "Flue system" technical guide

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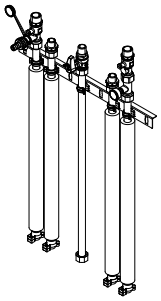
6.3 Installation accessories for Vitodens 222-F

Connection set for surface mounting; upward connection

Part no. ZK04311

Components:
- Connection pipes
- Shut-off valves for heating water flow and return
- 2 connectors for DHW
- Boiler drain & fill valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas	R	½
Heating water	R	¾
DHW	R	½

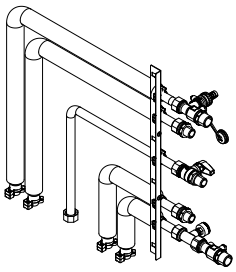


Connection set for surface mounting; connection to the left or right

Part no. ZK04312

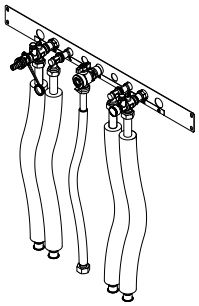
Components:
- Connection pipes
- Shut-off valves for heating water flow and return
- 2 connectors for DHW
- Boiler drain & fill valve
- Pressure gauge
- Gas shut-off valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas	R	½
Heating water	R	¾
DHW	R	½



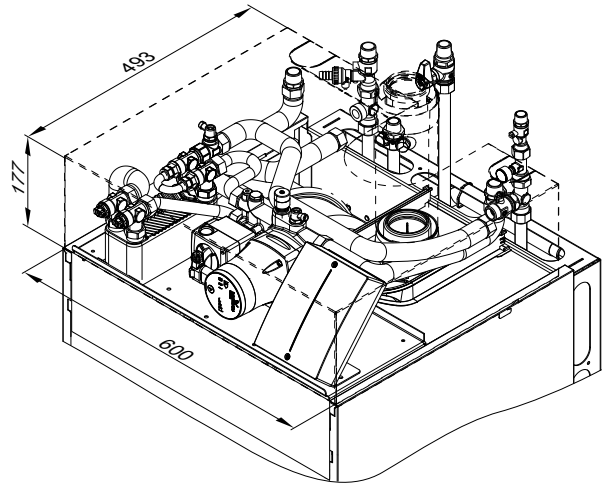
Connection set for flush mounting
Part no. ZK04313
Comprising:
- Mounting plate
- Connection pipes
- Shut-off valves for heating water flow and return
- 2 connectors for DHW
- Boiler drain & fill valve
- Pressure gauge
- Angle gas valve with thermally activated safety shut-off valve

Connections (male thread)		
Gas	R	¾
Heating water	R	¾
DHW	R	½



Assembly kit with mixer
Part no. ZK04324
For surface mounting

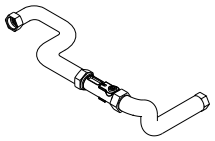
Comprising:
- Plate heat exchanger for system separation of the heating circuit with mixer
- Variable speed high efficiency circulation pump for the heating circuit with mixer
- 3-way mixer with mixer motor
- Mixer PCB, capable of communicating with the heat generator control unit via PlusBus
- Adjustable bypass
- Connection set for surface or flush mounting with:
  - Connection pipes
  - Shut-off valves for heating water flow and return
  - 2 connectors for DHW
  - Boiler drain & fill valve
  - Pressure gauge
  - Gas shut-off valve with thermally activated safety shut-off valve
- Flow temperature sensor
- Cover with same design as the boiler
- Balanced flue extension, boiler flue connection



Installation accessories (cont.)

Assembly kit accessories

Line regulating valve with flow indicator
Part no. 7452078
For hydronic balancing of the heating circuits



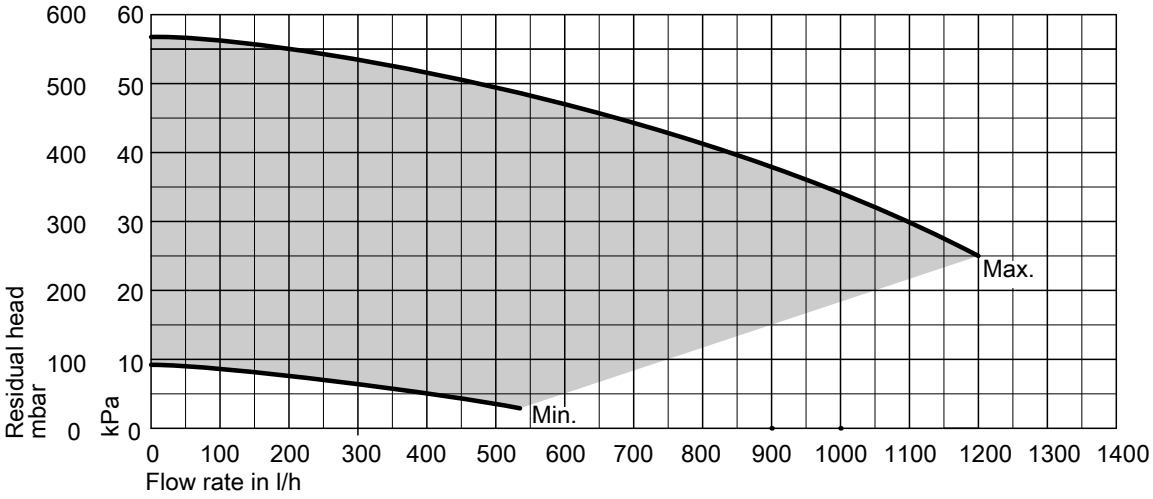
Contact temperature limiter
Part no. 7425493
Maximum temperature limiter for underfloor heating circuits
Contact temperature limiter with 1.5 m long connecting lead

Specification – assembly kit with mixer
Assembly for heat distribution via one heating circuit with mixer and one heating circuit without mixer, with same design as the boiler. For installation on the boiler.

The heating circuit without mixer is supplied by the integral circulation pump of the Vitodens.
Installation scheme for operation with the assembly kit: See **www.viessmann-schemes.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
	MPa	0.3
Max. power consumption	W	48
Connections (male thread)		
– Gas	R	½
– Heating water	R	¾
– DHW	R	½
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 max. heating output that can be transferred via the plate heat exchanger of the assembly kit is 14 kW. To achieve 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 circulating 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:

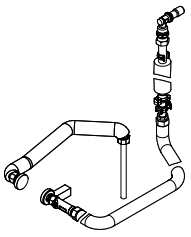
Vitodens 222-F, 2.5 - 25 kW
- Nominal circulating water volume at ΔT 20 K: 1076 l/h
- Heating output for regulated heating circuit (assumed): 13 kW
- Resulting flow rate, primary side, plate heat exchanger at ΔT 20 K: 560 l/h (to be set via the line regulating valve)
- Flow rate of the unregulated heating circuit: 1076 l/h – 560 l/h = 516 l/h

Connection set for DHW circulation pump

Part no. ZK04314
For installation in the appliance

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

Connection R ½ (male thread)



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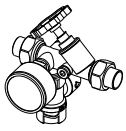
Installation accessories (cont.)

Note
Depending on the system equipment level, an EM-P1 extension (accessories) may be required to connect the DHW circulation pump.
See Vitodens system schemes at ***www.viessmann-schemes.com***

Safety assembly to DIN 1988
DN 15

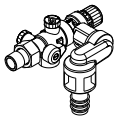
Components:
- Shut-off valve
- Non-return valve and test connector
- Pressure gauge
- Diaphragm safety valve

For on-site surface mounting



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

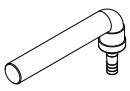
For flush mounting in conjunction with connection set



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

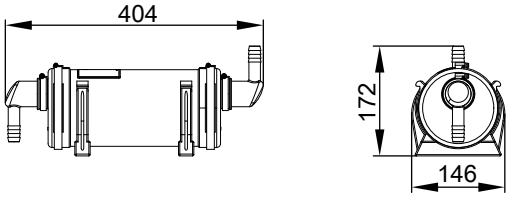
Connection bend for condensate drain

Part no. 7461025
Connection line from the appliance: DN 20
Drain connection: DN 40



Neutralising system with wall mounting bracket

Part no. 7968318
- For condensing boilers up to 35 kW
- With neutralising granulate (2.6 kg)
- With connection elbows for DN 20 hose connection

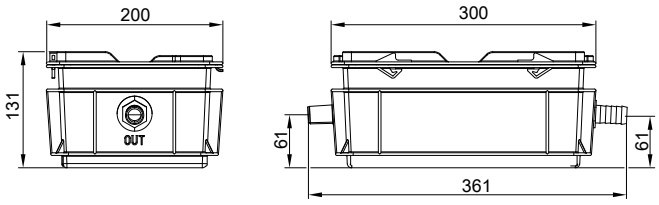


Neutralising granulate

Part no. 7857853
2 x 1.3 kg
Fits neutralising system part no. 7968318

Neutralising system with wall mounting bracket

Part no. ZK03652
- For condensing boilers up to 35 kW
- With neutralising granulate
- With connection elbows for DN 20 hose connection
- With 2 corrugated hoses with fixing clamps (∅19 mm, 0.7 to 1.95 m long)



Neutralising granulate

Part no. ZK03654
2.5 kg
To match the neutralising system, part no. ZK03652

Condensate lifting system

Part no. ZK02486
Automatic condensate removal pump for condensate with a pH value of ≥ 2.8 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 ∅ 30 mm for condensate drain with connector ∅ max. 40 mm)
- Drain hose ∅ 10 mm (5 m long)

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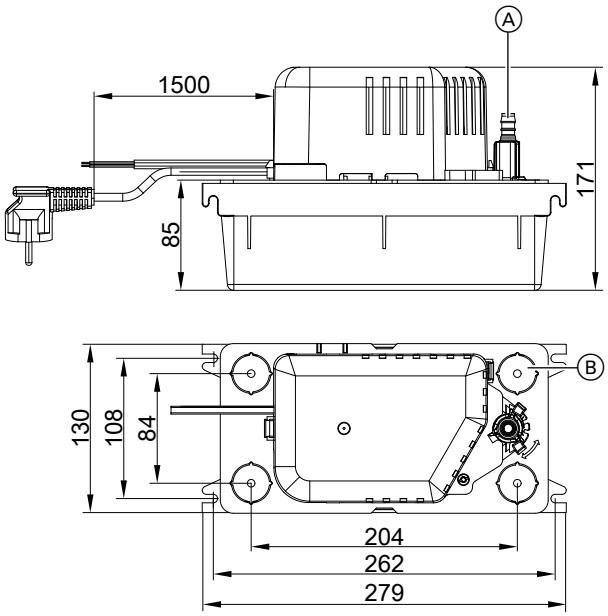
Installation accessories (cont.)



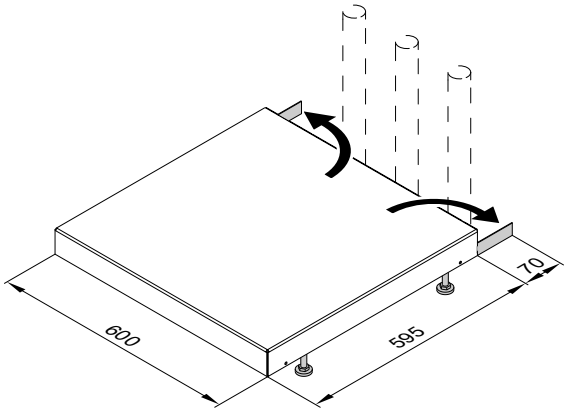
Ⓐ Condensate drain
Ⓑ 4 x condensate inlet (closed in delivered condition)

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

Boiler plinth

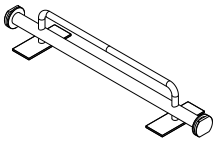
Part no. 7352259



- 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



Water spray protection

Part no. 7590109
To ensure adherence to the required protection class. Must be ordered separately for open flue operation.

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 of the Vitodens with loading cylinder

Tool kit

Part no.: ZK04569
For maintenance and service
Case with all tools required for maintenance and service: Screwdriver, extension and inserts

6

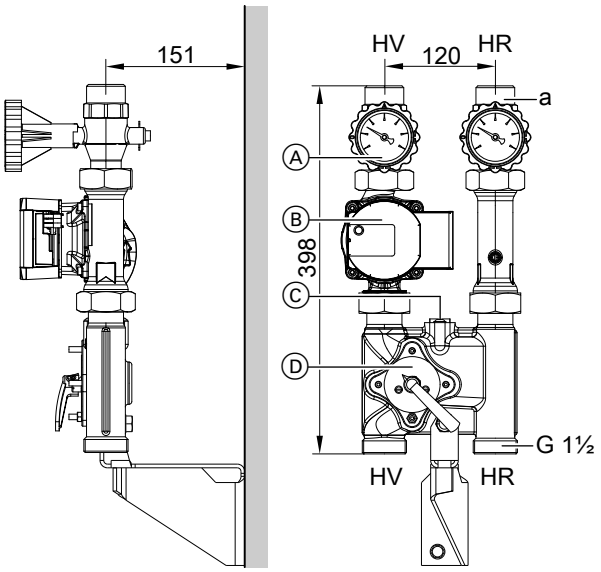
6.4 Divicon heating circuit distributor and low loss headers

Divicon heating circuit distributor

Layout and function

- Available with R ¾, R 1 and R 1¼ connections.
- With heating circuit pump, check valve, ball valves with integral thermometers and 3-way mixer or without mixer.
- Quick and simple installation due to pre-assembled unit and compact design.
- All-round thermal insulation shells for low radiation losses.
- High efficiency pumps and optimised mixer curve ensure low electricity costs and precise control characteristics.
- The bypass valve for hydraulic balancing of the heating system is available as an accessory and is provided as a threaded component for inserting into the prepared hole in the cast body.
- Individually wall mounted or with a double or triple manifold.
- Also available as a kit. For further details see the Viessmann pricelist.

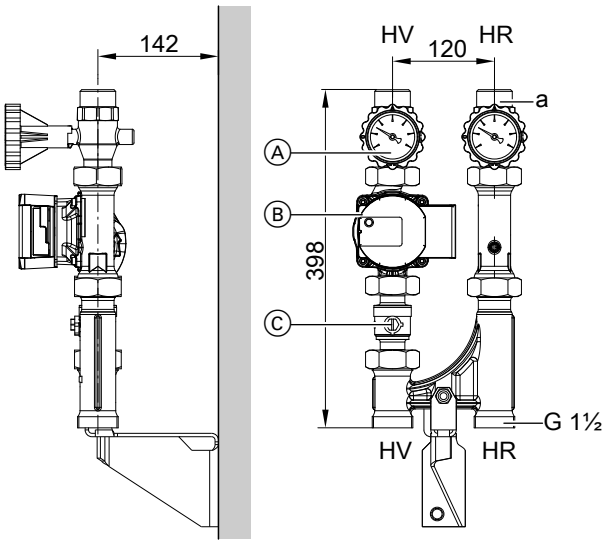
For part numbers in conjunction with the different circulation pumps, see the Viessmann pricelist.
The dimensions of the heating circuit distributor are the same, with or without mixer.



Divicon with mixer: Wall mounting, shown without thermal insulation and mixer extension kit

HR Heating return
HV Heating flow
Ⓐ Ball valves with thermometer (as operating element)
Ⓑ Circulation pump
Ⓒ Bypass valve (accessories)
Ⓓ Mixer-3

Heating circuit connection	**R**	**¾**	**1**	**1¼**
Flow rate (max.)	m^3/h	1.0	1.5	2.5
a (female)	Rp	¾	1	1¼
a (male)	G	1¼	1¼	2



Divicon without mixer: Wall mounting, shown without thermal insulation

HR Heating return
HV Heating flow
Ⓐ Ball valves with thermometer (as operating element)
Ⓑ Circulation pump
Ⓒ Ball valve

Heating circuit connection	**R**	**¾**	**1**	**1¼**
Flow rate (max.)	m^3/h	1.0	1.5	2.5
a (female)	Rp	¾	1	1¼
a (male)	G	1¼	1¼	2

Installation accessories (cont.)

Installation example: Divicon with triple manifold

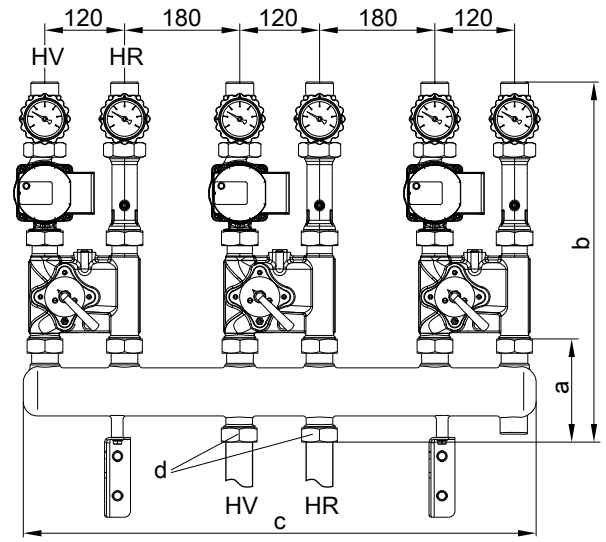
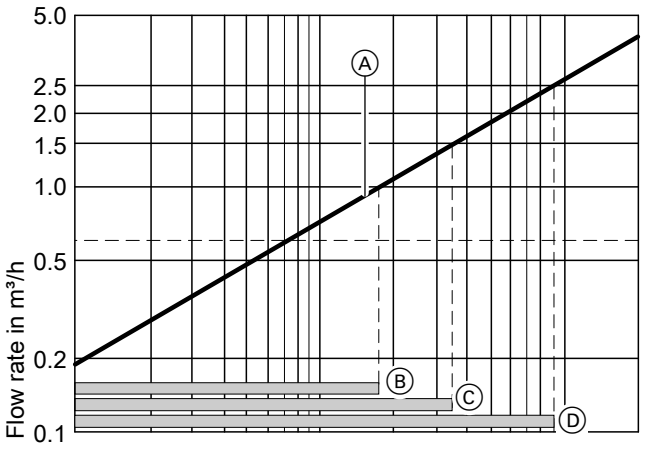


Diagram without thermal insulation

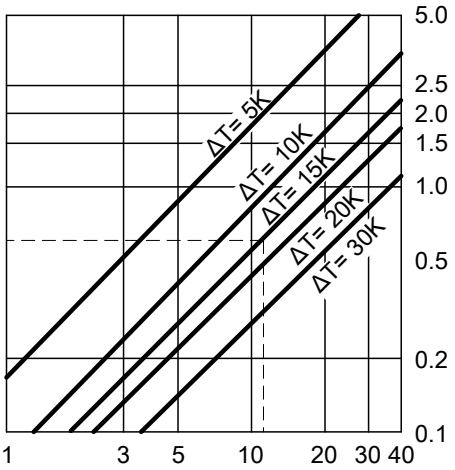
HR Heating return
HV Heating flow

Dim.	Manifold with heating circuit connection	
	R ¾ and R 1	R 1¼
a	135	183
b	535	583
c	784	784
d	G 1¼	G 2

Determining the required nominal diameter



Mixer control characteristics



Heating circuit output
in kW

Ⓐ Divicon with mixer-3
The operating ranges marked Ⓑ to Ⓓ provide optimum control characteristics with the Divicon mixer:
Ⓑ Divicon with mixer-3 (R ¾)
Operating range: 0 to 1.0 m³/h
Ⓒ Divicon with mixer-3 (R 1)
Operating range: 0 to 1.5 m³/h
Ⓓ Divicon with mixer-3 (R 1¼)
Operating range: 0 to 2.5 m³/h

Example:
Heating circuit for radiators with a heating output of $\dot{Q}$ = 11.6 kW
Heating system temperature 75/60 °C (ΔT = 15 K)

c Specific thermal capacity
$\dot{m}$ Mass flow rate

6

$\dot{Q}$ Heating output
$\dot{V}$ Flow rate

$$\dot{Q} = \dot{m} \cdot c \cdot \Delta T \qquad c = 1.163 \ \frac{Wh}{kg \cdot K} \qquad \dot{m} \triangleq \dot{V} \ (1\ kg \approx 1\ dm^3)$$

$$\dot{V} = \frac{\dot{Q}}{c \cdot \Delta T} = \frac{11600\ W \cdot kg \cdot K}{1.163\ Wh \cdot (75\text{-}60)\ K} = 665 \ \frac{kg}{h} \triangleq 0.665 \ \frac{m^3}{h}$$

Select the smallest possible mixer within the application limit with the value $\dot{V}$.

Circulation pump curves and pressure drop on the heating water side
The residual pump head results from the differential between the selected pump curve and the pressure drop curve of the respective heating circuit distributor and further components (pipe assembly, distributor, etc.).
The following pump graphs show the pressure drop curves of the different Divicon heating circuit distributors.
Maximum flow rate for Divicon:
- With R ¾ = 1.0 m^3/h
- With R 1 = 1.5 m^3/h
- With R 1 ¼ = 2.5 m^3/h

Example:
Flow rate $\dot{V}$ = 0.665 m^3/h

Selected:
- Divicon with mixer R ¾
- Wilo PARA 25/6 circulation pump, variable differential pressure operating mode and set to maximum delivery head
- Pump rate 0.7 m^3/h

Head of the relevant pump curve:	48 kPa
Divicon pressure drop:	3.5 kPa
Residual head:	48 kPa – 3.5 kPa = 44.5 kPa.

Note
For further components (pipe assembly, distributor, etc.) determine the pressure drop and deduct it from the residual head.

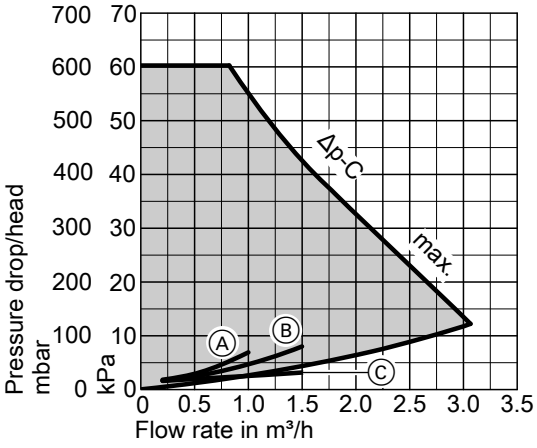
Differential pressure-dependent heating circuit pumps
According to the [German] Buildings Energy Act (GEG), circulation pumps in central heating systems must be sized in accordance with current technical rules.
Ecodesign Directive 2009/125/EC requires high efficiency circulation pumps to be used throughout Europe from 1 January 2013, if these pumps are not installed in the heat generator.

Design information
The use of differential pressure-dependent heating circuit pumps requires heating circuits with variable pump rates, e.g. single-line and twin-line heating systems with thermostatic valves and underfloor heating systems with thermostatic valves or zone valves.

Example result: Divicon with mixer-3 (R ¾)

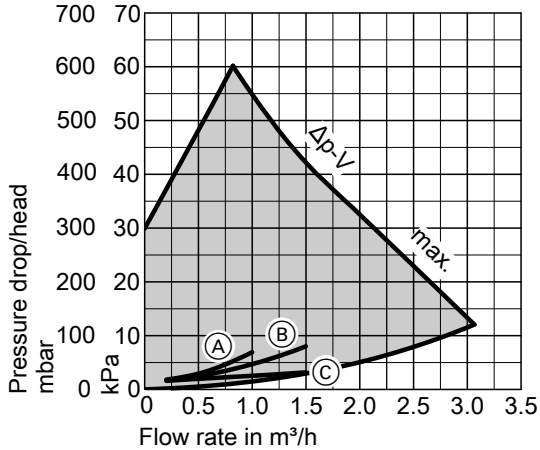
Wilo Para 25/6
- Particularly power saving, high efficiency circulation pump
- Energy efficiency index EEI ≤ 0.20

Operating mode: Constant differential pressure



Ⓐ Divicon R ¾ with mixer
Ⓑ Divicon R 1 with mixer
Ⓒ Divicon R ¾ and R 1 without mixer

Operating mode: Variable differential pressure

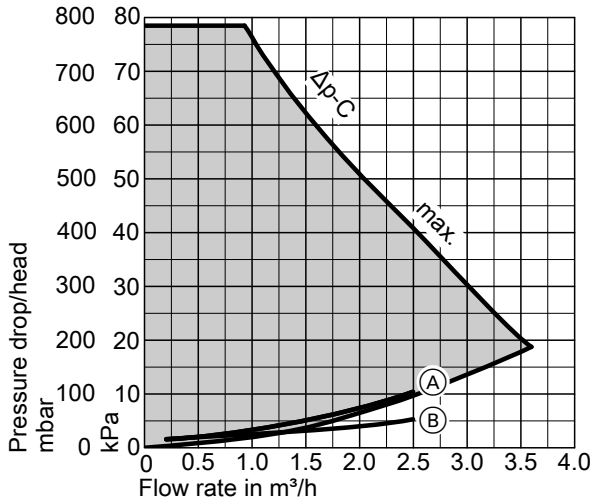


Ⓐ Divicon R ¾ with mixer
Ⓑ Divicon R 1 with mixer
Ⓒ Divicon R ¾ and R 1 without mixer

Installation accessories (cont.)

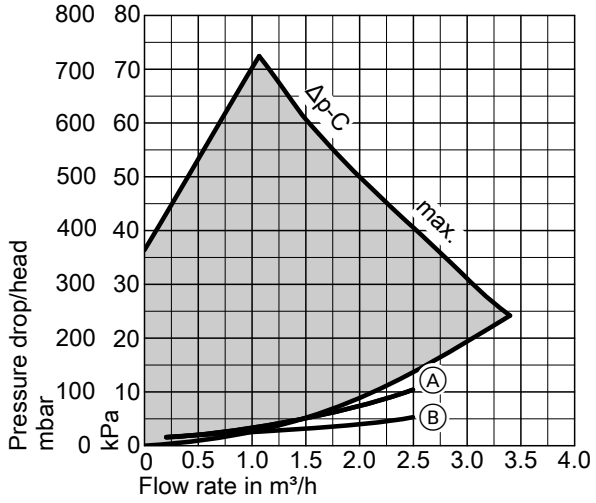
Wilo Para 25/8

Operating mode: Constant differential pressure
- Energy efficiency index EEI ≤ 0.20



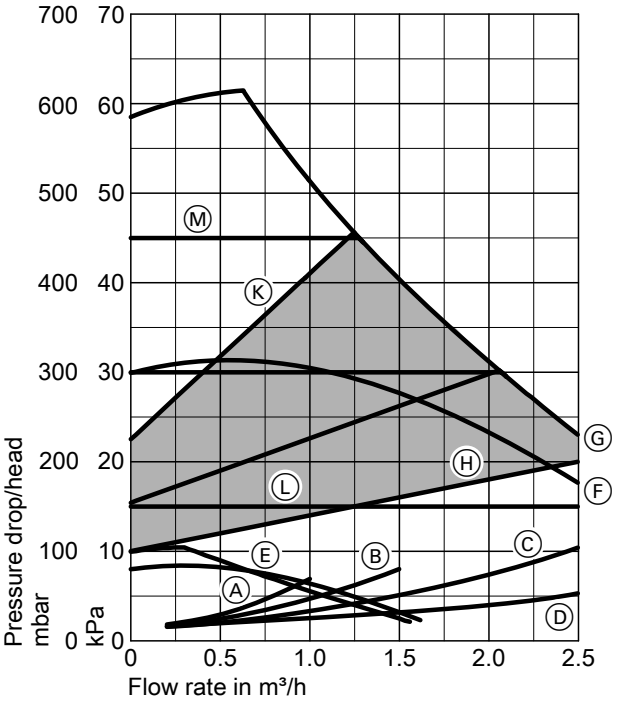
Ⓐ Divicon R 1¼ with mixer
Ⓑ Divicon R 1¼ without mixer

Operating mode: Variable differential pressure



Ⓐ Divicon R 1¼ with mixer
Ⓑ Divicon R 1¼ without mixer

Grundfos Alpha 2.1 25-60
- With power consumption display
- With Autoadapt function (automatic matching to the pipework)
- With night setback function
- Energy efficiency index EEI ≤ 0.20



Ⓐ Divicon R ¾ with mixer
Ⓑ Divicon R 1 with mixer
Ⓒ Divicon R 1¼ with mixer
Ⓓ Divicon R ¾, R 1 and R 1¼ without mixer
Ⓔ Stage 1
Ⓕ Stage 2
Ⓖ Stage 3
Ⓗ Min. proportional pressure
Ⓚ Max. proportional pressure
Ⓛ Min. constant pressure
Ⓜ Max. constant pressure

Bypass valve

Part no. 7464889
For hydronic balancing of the heating circuit with mixer. To be inserted into the Divicon.

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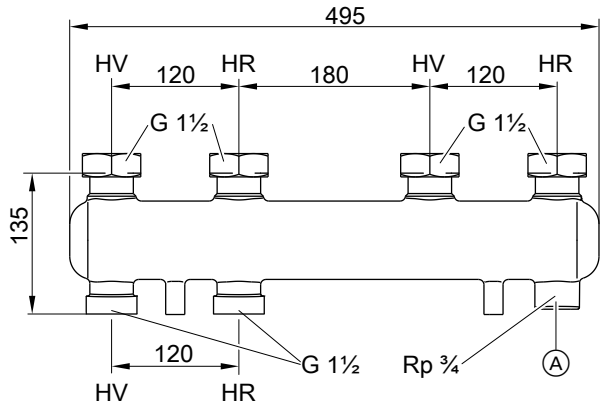
Installation accessories (cont.)

Manifold
Incl. thermal insulation.
For wall mounting with separately ordered wall mounting bracket.
The connection between boiler and manifold must be made on site.

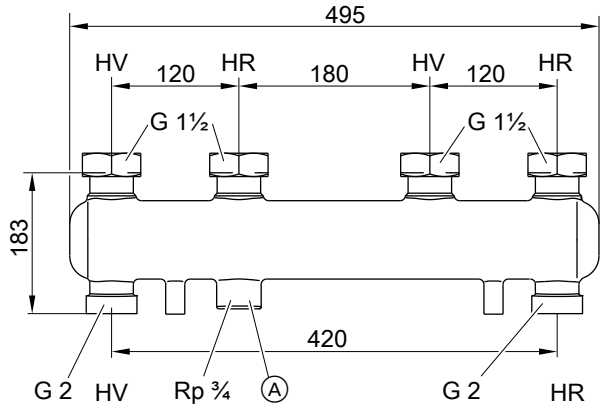
For 2 Divicon

Part no. 7460638 for Divicon R ¾ and R 1



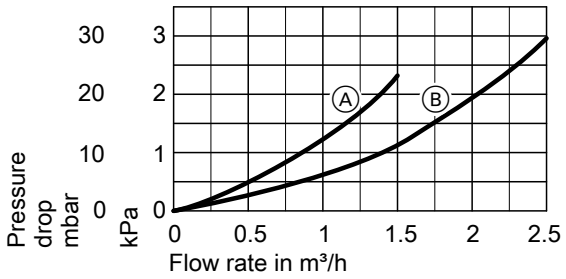
Ⓐ Connection option for expansion vessel
HV Heating water flow
HR Heating water return

Part no. 7466337 for Divicon R 1¼



Ⓐ Connection option for expansion vessel
HV Heating water flow
HR Heating water return

Pressure drop



Ⓐ Manifold for Divicon R ¾ and R 1
Ⓑ Manifold for Divicon R 1¼

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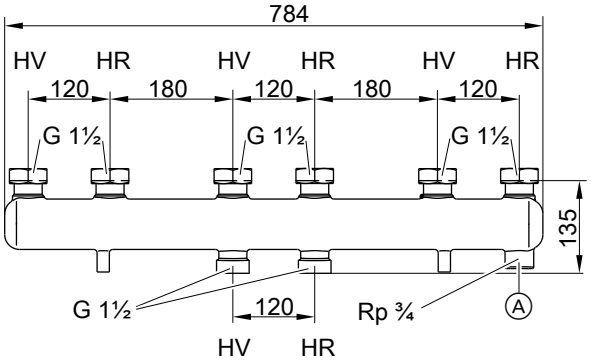
Installation accessories (cont.)

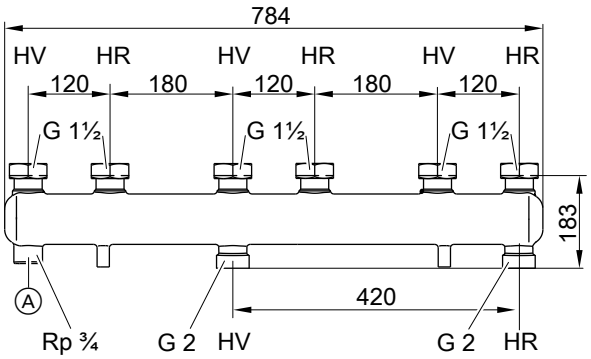
For 3 Divicon

Part no. 7460643 for Divicon R ¾ and R 1



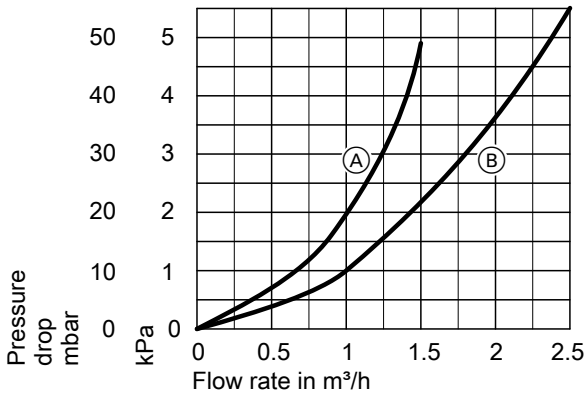
Ⓐ Connection option for expansion vessel
HV Heating water flow
HR Heating water return

Part no. 7466340 for Divicon R 1¼



Ⓐ Connection option for expansion vessel
HV Heating water flow
HR Heating water return

Pressure drop



Ⓐ Manifold for Divicon R ¾ and R 1
Ⓑ Manifold for Divicon R 1¼

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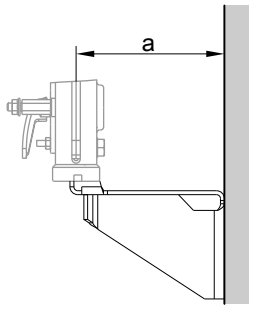
Installation accessories (cont.)

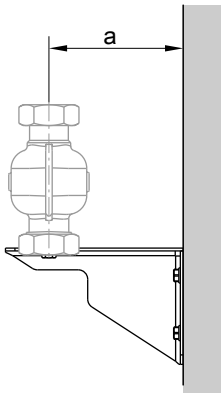
Wall mounting bracket

Part no. 7465894
For individual Divicon.
With screws and rawl plugs.



For Divicon		With mixer	Without mixer
a	mm	151	142

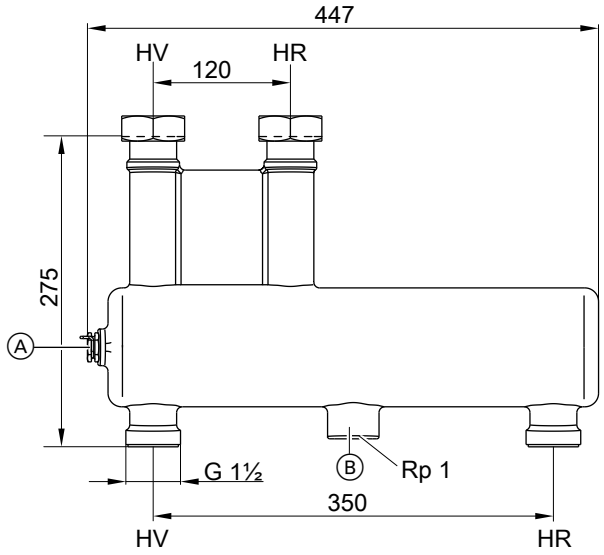
Part no. 7465439
For manifold.
With screws and rawl plugs.



For Divicon		R ¾ and R 1	R 1¼
a	mm	142	167

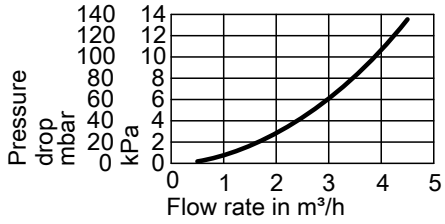
Low loss header

Part no. 7460649
Max. flow rate 4.5 m^3/h.
With thermal insulation and integral sensor well.
The connection between boiler and low loss header must be made on site.



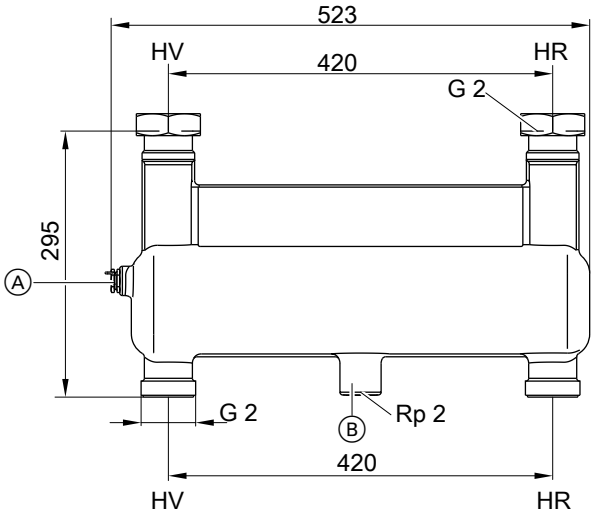
Ⓐ Sensor well
Ⓑ Optional blow-down
HV Heating water flow
HR Heating water return

Pressure drop

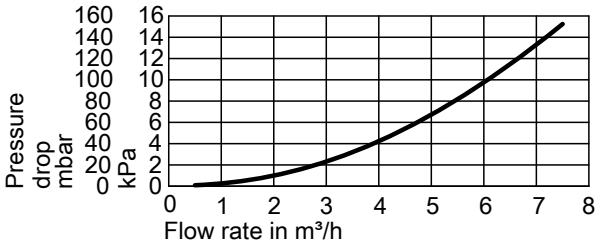


Installation accessories (cont.)

Part no. 7460648
Max. flow rate 7.5 m^3/h.
With thermal insulation and integral sensor well.
The connection between boiler and low loss header must be made on site.



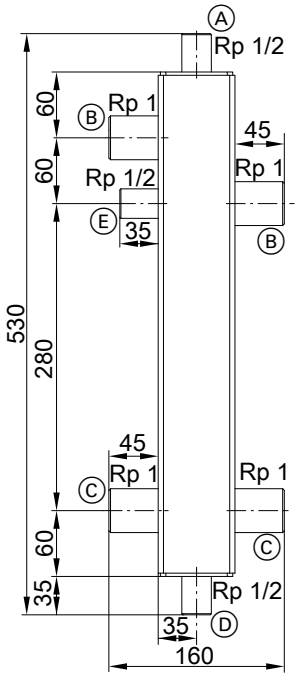
Pressure drop



Low loss header, type Q70

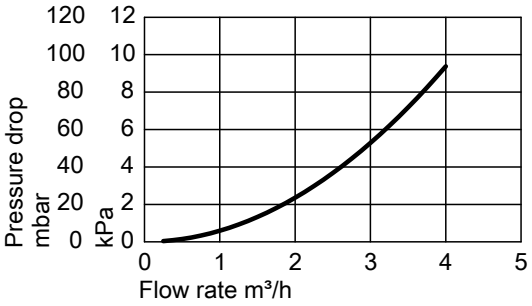
Part no. ZK03679
- Flow rate up to 3 m^3/h
- R 1 female connector
- 3 female connections Rp ½ for air vent valve, drain outlet and sensor well
- With air vent valve and sensor well for temperature sensor
- With EPP thermal insulation to GEG

The connection to the heat generator is made on site.



Ⓐ Air vent valve Rp ½
Ⓑ Heating water flow R 1 female thread
Ⓒ Heating water return R 1 female thread
Ⓓ Drain outlet Rp ½
Ⓔ Sensor well Rp ½

Pressure drop



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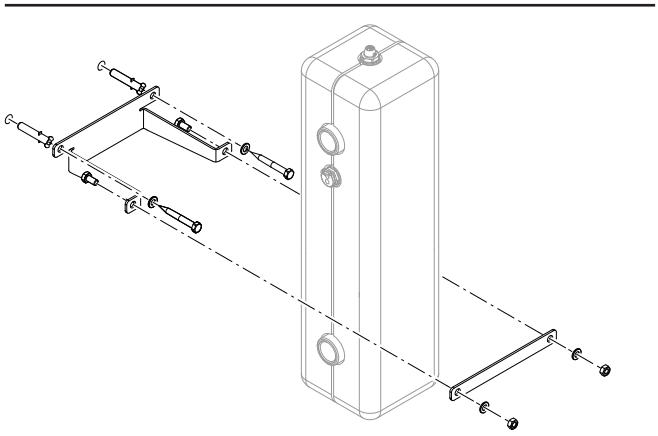
Installation accessories (cont.)

Wall mounting bracket for low loss header, type Q70

Part no. ZK03682
With fixing materials



Design information

7.1 Siting, installation

Siting conditions for open flue operation (appliance type B)

Type B_{23} and B_{33}
In rooms where **air contamination from halogenated hydrocarbons or organosilicon compounds (e.g. siloxanes)** may occur, such as hairdressing salons, printing shops, dry cleaners, laboratories, etc., the Vitodens may only be operated as a room sealed system.
If in doubt, please consult us.
Never install the Vitodens in areas subject to very dusty conditions.
The installation location must be kept free from frost and must be adequately ventilated.
Provide a condensate drain and a discharge pipe for the safety valve in the installation room.
The max. ambient temperature of the system must not exceed 40 °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.

Multi boiler systems with flue systems under negative pressure
Systems with several Vitodens with separate hydraulic connections require a flue gas cascade suitable for negative pressure or individual flue gas routing for each boiler.

Installation room

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

Not permissible:
- Stairwells and communal hallways. Exception: In 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. Therefore position the Vitodens as close to the chimney as possible. The flue should be designed to be as straight as possible. If bends are unavoidable, do not arrange these directly one after another. The entire flue gas path must be able to be checked and cleaned as required.
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 further details, see the technical guide on flue systems for the Vitodens.

Extractors
Operating appliances that extract air to the outside (extractor hoods, extractors, air conditioning units, etc.) can create negative pressure. If the boiler is operated at the same time, this can lead to a reverse flow of **flue gas**, which can cause life threatening poisoning.

To prevent the reverse flow of flue gas, fit an **interlock circuit** or take suitable steps to ensure an adequate supply of combustion air.

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.

Siting conditions for room sealed operation (appliance type C)

Type C_{13x}, $C_{14(3)x}$, C_{33x}, C_{43x}, C_{53x}, C_{63x}, C_{83x} or C_{93x} according to TRGI 2018
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
- Unventilated ancillary rooms
- Cabinets (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 free from the risk of frost.
The max. ambient temperature of the system must not exceed 40 °C.
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 should be designed as short and straight as possible.
If bends are unavoidable, do not install them directly one after another. It must be possible to test and clean the entire flue gas path as required.
Since the flue pipe connection for room sealed 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.
Sulphur and soot deposits cause operating faults.
If thorough cleaning is not possible, a balanced flue pipe must be laid through the shaft. Alternatively, lay separate ventilation air and flue gas pipes.
Viessmann accepts no liability for damages resulting from failure to observe these instructions.
Close off and seal any other connection apertures with appropriate materials.
This does not apply to any cleaning or inspection apertures that are provided with chimney cleaning covers and that are identified with an appropriate test mark.
For further details, see the technical guide on flue systems for the Vitodens.

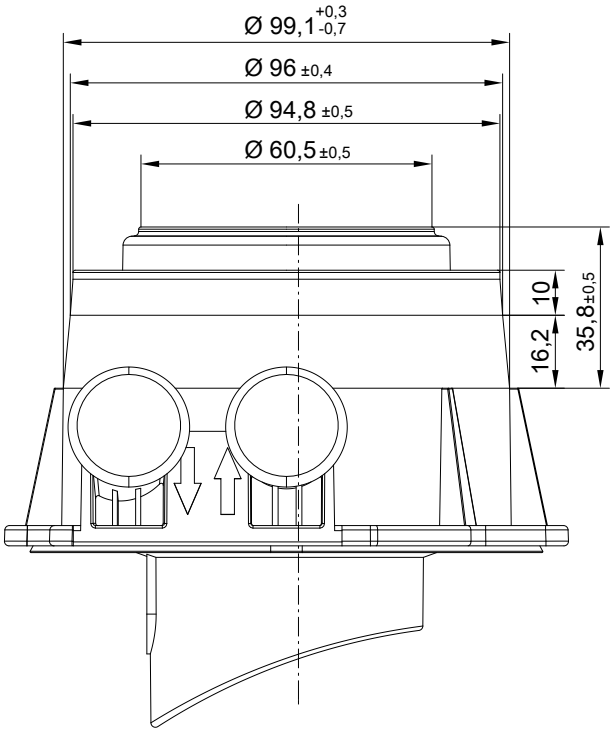
Balanced flue system for multiple connections $C_{14(3x)}$
For connecting multiple flues to a single balanced flue chimney (balanced flue system, positive pressure)
With a positive pressure $C_{14(3x)}$ multiple connection, the boilers may only be operated with natural gas. A back draught safety device must be installed in the flue gas connection and in the mixing shaft of the burner for each boiler.
For further details, see the technical guide on flue systems for the Vitodens.

Use of third party flue systems of type C_{63}/C_{63x}
Any approved flue system can be used for type C_{63}/C_{63x}. A system test of these flue systems with Viessmann heat generators has not been carried out, so there is no system certification in accordance with Gas Appliances Regulation (EU) 2016/426.

When implementing type C_{63}/C_{63x} with Viessmann heat generators, the following specifications must be observed and complied with:
- Viessmann design specifications for types C_{13x}, $C_{14(3)x}$, C_{33x}, C_{53x}, C_{83x} and C_{93x}
- Appliance-specific details of Viessmann heat generators, e.g. max. draughts, flue gas temperatures, mass flow rates, boiler flue connection tolerances
- Reverse flow of flue gas at the terminal of the flue system, even when it is windy: ≤ 10 %
- Wind protection devices for the supply of combustion air and the discharge of flue gas must not be installed on opposite walls of the building.

Flue pipes
- Flues made from plastic (PPS):
  Measures inside the equipment ensure that the flue gas temperature of 120 °C will never be exceeded. Flues made from plastic (PPS) with an approval for flue gas temperatures up to a maximum of 120 °C (type B) can therefore be used.
- Flues made from aluminium:
  Aluminium residues in the condensate can impair the function of the heat generator. A condensate trap must therefore be additionally installed above the boiler flue connection. The condensate trap must allow the condensate returned from the flue system to completely bypass the heat generator.

Dimensions of boiler flue gas connection



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.

Replacement of existing systems with type C_4 gas appliances

Replacement of existing systems with type C_4 gas appliances to EN 483 and EN 677 with additional requirements complying with DVGW G 635:2001 (positive pressure operation)
Existing appliances from systems with type C_4 gas appliances can be replaced with Vitodens 200-W, 222-W and 222-F appliances if the following conditions are met:

- The maximum rated heat input is less than or equal to the rated heat input of the existing gas appliance.
- Combustion-related sizing of the flue system is carried out based on EN 13384-2+A1.
- The flue gas temperature for sizing the balanced flue system to EN 13384-2 for partial and full load (minimum and maximum heat input) is set to 25 °C.
- The balanced flue system must be designated in accordance with DIN V 18160-1 and in a manner comparable with the requirements of EN 15287-2:2008, section 4.4. It must also be indicated that the appliance in question is a type $C_{(10)3x}$ appliance.

See **"Fig. 1"** as an example of a balanced flue system with concentric air/flue gas routing.
In addition to the designation for the flue system, a further plate must be affixed for each flue inlet, as shown in **"Fig. 2"**.

Fig. 1 – Example of a plate for designating balanced flue systems with concentric air/flue gas routing to EN 15287-2:2008

Warning – Do not cover or remove this plate.	
Flue system with concentric air/flue gas routing	
Flue system designation:	NSB EN 1587-2 T160-P1-W-1-O00

Warning – Do not cover or remove this plate.	
Nominal cross-section of flue shaft:	80 mm
Thermal resistance of flue shaft:	0.00 m² K/W
Flow resistance of flue shaft:	-
Installer/address/tel.:	_____
Date of installation:	_____
Additional details	
– Position of flue system	

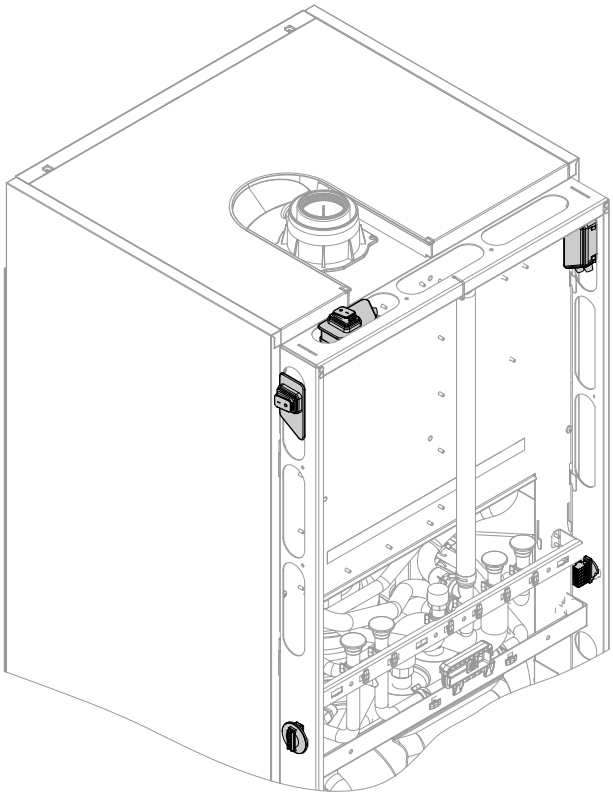
Fig. 2 – Example of a plate for designating flue inlets on balanced flue systems for gas appliances of type $_{(10)}/C_{(10))\_x}$

Manufacturer:	_____
Only suitable for:	$C_{(10)}/C_{(10))\_x}$ appliances
Maximum permissible mass flow rate:	15 g/s
Maximum permissible heat input:	35 kW
Temperature class:	T120
Caution – When removing the appliance, the openings of the combustion gas outlet and the air supply must be closed off separately.	

Siting the Vitodens 222-F in recesses

In the delivered condition, the ON/OFF switch and the electrical connections are located on the left-hand side of the appliance. The condensate drain can be routed out of either the right-hand or left-hand side of the appliance.
When installing in recesses, ensure that accessibility is guaranteed (recommended wall clearance 100 mm). Otherwise relocate the ON/OFF switch and electrical connections.
The ON/OFF switch can be relocated to the right-hand side or the top. The electrical connections can be relocated to the right-hand side.

Note
As of 09/2021, the plug for the electrical connections on the Vitodens 222-F is located inside the appliance.



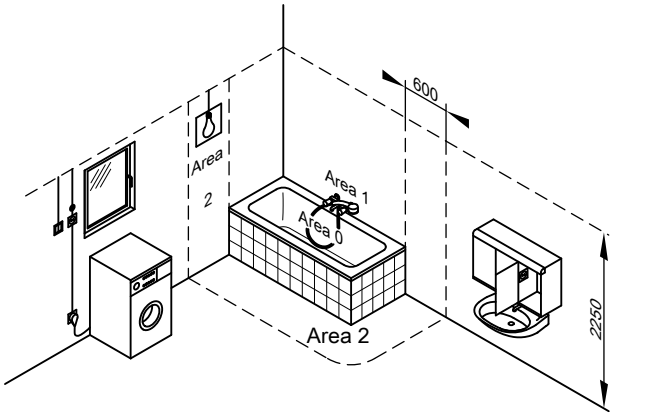
Operation of the Vitodens in wet rooms

Room sealed operation
- The Vitodens is approved for installation in wet rooms
- Vitodens 200-W, 222-F: Protection rating IP X4 splashproof
  The boiler may be installed in safety zone 1 if hosed water (e.g. from massage showers) is prevented.
- Vitodens 222-W: Protection rating IP X1
  The boiler must not be installed in safety zone 1 or 2.

Open flue operation
- Vitodens 200-W and 222-F may only be installed in safety zones 1 or 2 if additional splash protection (part no. 7590109) is fitted.
- Vitodens 222-F in conjunction with the assembly kit, and Vitodens 222-W, have protection rating IP X1.
  These systems must not be installed in safety zones 1 or 2.

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 shock 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.

Electrical connection

The power supply must comply with the requirements of your local power supply utility and current VDE [or local] regulations (Ⓐ: 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.

Flexible connecting cable included in standard delivery:
- Vitodens 200-W and 222-W: Approx. 2 m long
- Vitodens 222-F: Approx. 1.5 m long

It can be connected via an on-site junction box outside the appliance.
The power supply for the accessories is connected at the terminals in the appliance. The cables are inserted into the boiler through the underside (Vitodens 200-W and 222-W) or the back (Vitodens 222-F).

The outside temperature sensor, cylinder temperature sensor (Vitodens 200-W) and PlusBus to the accessories are connected to an external plug:
- Vitodens 200-W and 222-W: Plug on the underside
- Vitodens 222-F: Plug on the left of the frame; can be changed to the right

Note
As of 09/2021, the plug for the electrical connections on the Vitodens 222-F is located inside the appliance.

Recommended cables

NYM 3 G 1.5 mm²	2-core min. 0.75 mm²
– Power cables (accessories) – DHW circulation pump	– EM-EA1, EM-P1, EM-S1 (PlusBus) extension – Outside temperature sensor – Extension kit for heating circuit with mixer (PlusBus) – Vitotrol 200-E (PlusBus)

Interlock switch
Install an interlock for open flue operation if an extractor (e.g. cooker hood) is fitted in the room providing the combustion air interconnection.
The EM-EA1 extension (accessories) can be used for this. This switches any 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 2012 – 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 EM-EA1 extension (accessory) is required for this.

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 2018 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 in the gas line.

Thermally activated safety shut-off valve
According to paragraph 4, section 5 of the FeuVo 2008 [check local fire 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.

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

Gas connection line
Calculate the size of the on-site gas connection line using the gas supply values (specification).

Minimum clearances

Clearance for maintenance work and operating the ON/OFF switch:
- 700 mm in front of the boiler
- To the left or right of the boiler
  - Vitodens 200-W and 222-W: No clearance required
  - Vitodens 222-F: Min. 100 mm for operating the ON/OFF switch

Installation of the Vitodens 200-W

Accessories required in addition to installation with the pre-plumbing jig, valves/fittings or mounting frame:
Installation without DHW cylinder: Caps for cylinder flow and return

Installation with DHW cylinder: Connection set for DHW cylinder

Design information (cont.)

Pre-plumbing jig for surface mounting
With fixings, valves/fittings and gas shut-off valve R ¾ with integral, thermally activated safety shut-off valve.

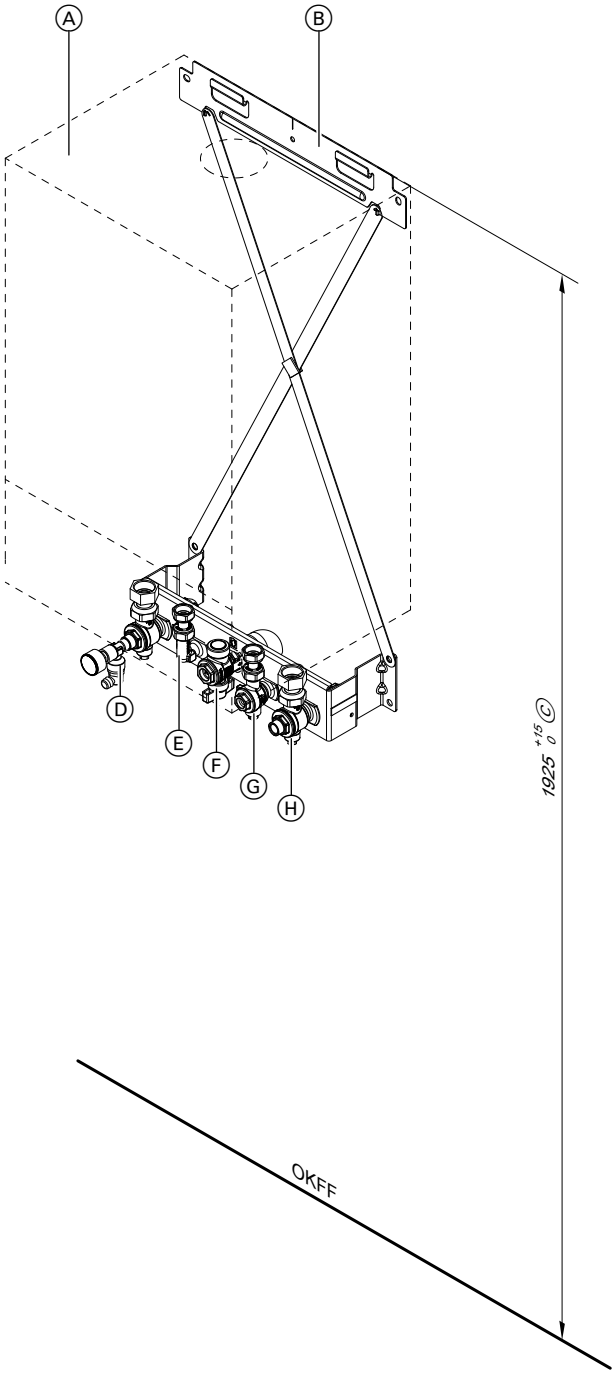


Illustration shows a gas condensing combi boiler

Ⓐ Vitodens
Ⓑ Pre-plumbing jig
Ⓒ Compulsory in conjunction with DHW cylinders below the boiler, otherwise recommendation only.
Ⓓ Heating flow R ¾ with pressure gauge and air vent valve
Ⓔ Cold water R ½
Ⓕ Gas connection R ¾
Ⓖ DHW R ½
Ⓗ Heating return R ¾ with boiler drain & fill valve
OKFF Top edge, finished floor

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Design information (cont.)

Valves/fittings for surface mounting
With valves/fittings and gas shut-off valve R ¾ with integral, thermally activated safety shut-off valve.

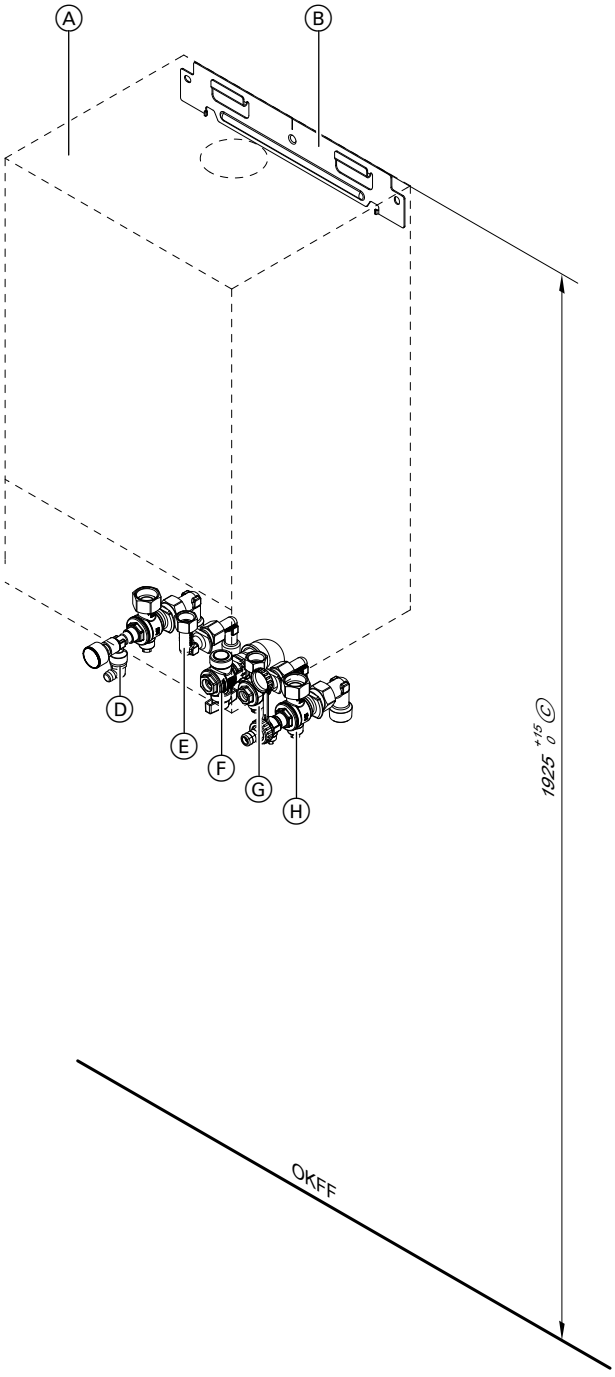


Illustration shows a gas condensing combi boiler

Ⓐ Vitodens
Ⓑ Pre-plumbing jig
Ⓒ Compulsory in conjunction with DHW cylinders below the boiler, otherwise recommendation only.
Ⓓ Heating flow R ¾ with pressure gauge and air vent valve
Ⓔ Cold water R ½
Ⓕ Gas connection R ¾
Ⓖ DHW R ½
Ⓗ Heating return R ¾ with boiler drain & fill valve
OKFF Top edge, finished floor

Valves/fittings for flush mounting
With valves/fittings, gas shut-off valve R ¾ with integral, thermally activated safety shut-off valve and mounting plate.

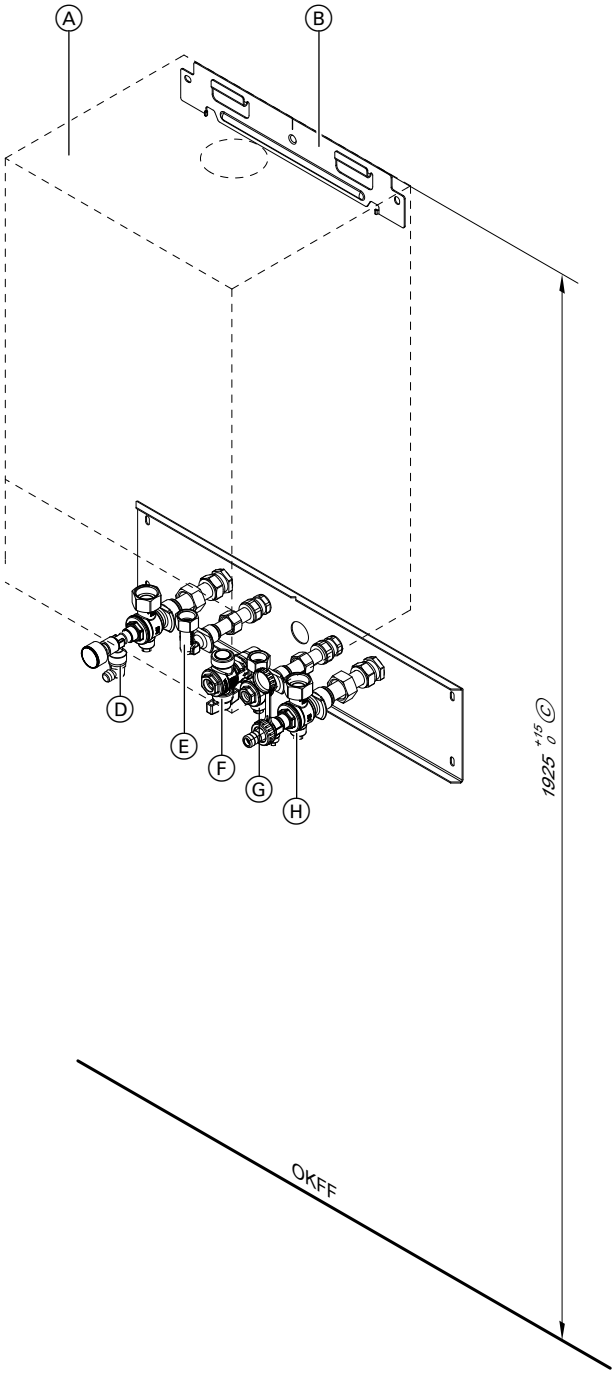


Illustration shows a gas condensing combi boiler

Ⓐ Vitodens
Ⓑ Pre-plumbing jig
Ⓒ Compulsory in conjunction with DHW cylinders below the boiler, otherwise recommendation only.
Ⓓ Heating flow R ¾ with pressure gauge and air vent valve
Ⓔ Cold water R ½
Ⓕ Gas connection R ¾
Ⓖ DHW R ½
Ⓗ Heating return R ¾ with boiler drain & fill valve
OKFF Top edge, finished floor

Mounting frame for surface mounting
With fixings, valves/fittings and gas shut-off valve R ¾ with integral, thermally activated safety shut-off valve.

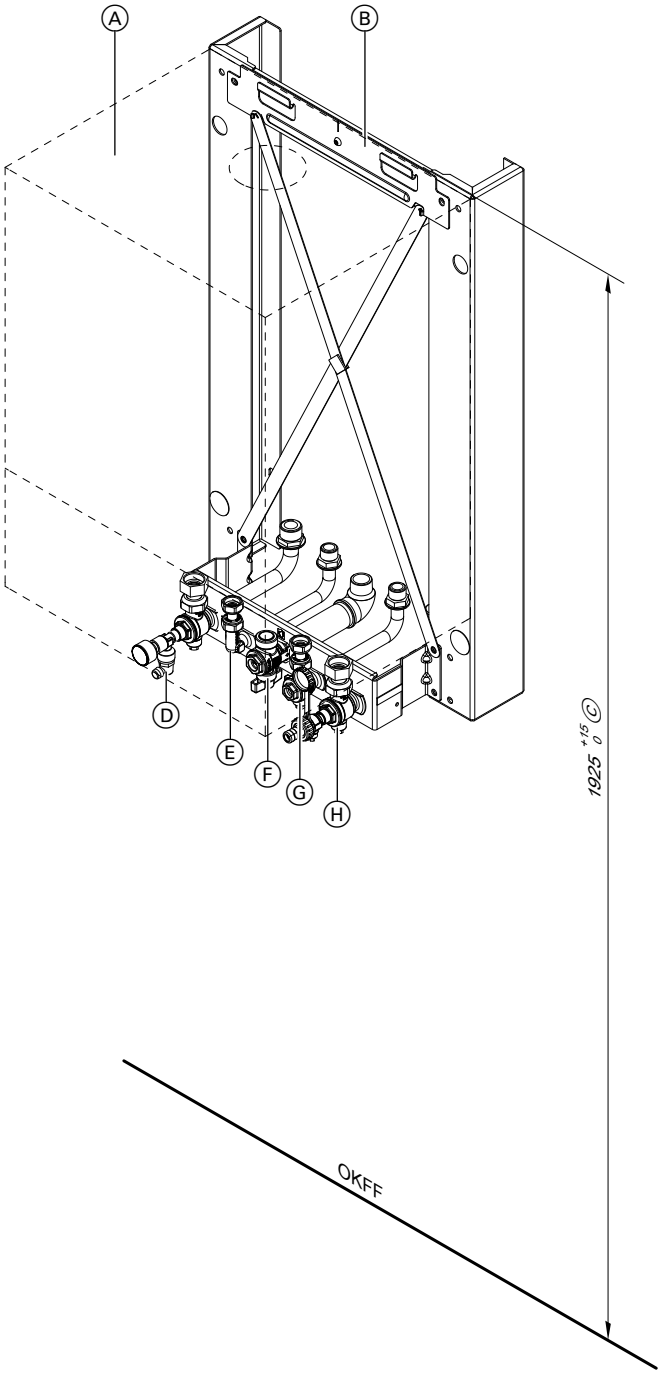


Illustration shows a gas condensing combi boiler

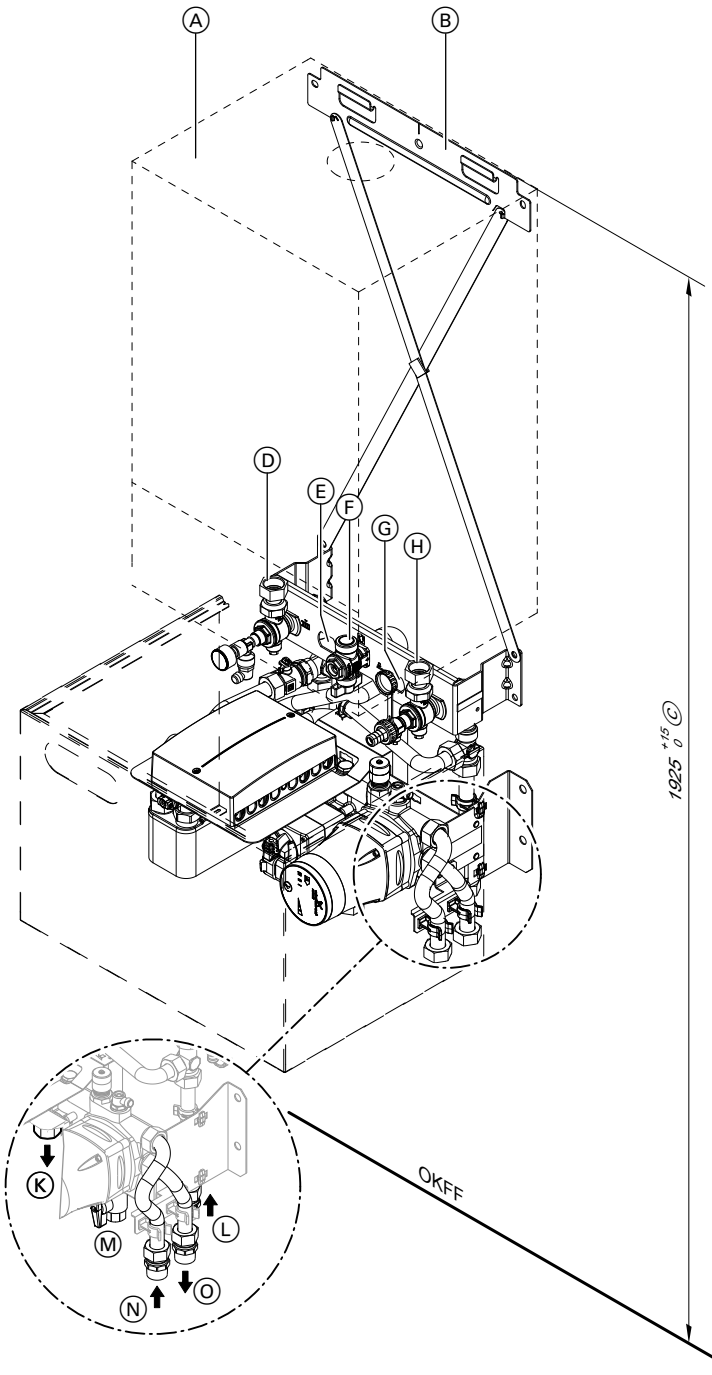
Ⓐ Vitodens
Ⓑ Mounting frame
Ⓒ Compulsory in conjunction with DHW cylinders below the boiler, otherwise recommendation only.
Ⓓ Heating flow R ¾ with pressure gauge and air vent valve
Ⓔ Cold water R ½
Ⓕ Gas connection R ¾
Ⓖ DHW R ½
Ⓗ Heating return R ¾ with boiler drain & fill valve
OKFF Top edge, finished floor

Installation with sub-mounting kit with mixer – surface mounting
Complete assembly for heat distribution via one heating circuit with mixer and one heating circuit without mixer, for installation below the Vitodens 200-W

Sub-mounting kit with:
- Plate heat exchanger for system separation of the heating circuit with mixer
- Variable speed high efficiency circulation pump
- 3-way mixer with mixer motor
- Adjustable bypass
- Mixer PCB, capable of communicating with the control unit via PlusBus
- Flow temperature sensor
- Valve for regulating the flow rates of both heating circuits
- Cover with same design as the wall mounted boiler
- Installation template

Additionally required accessories:
- Pre-plumbing jig with:
  – Fixings
  – Valves/fittings
  – Gas shut-off valve R ¾ with integral, thermally activated safety shut-off valve
- Connection set for DHW cylinders (if installed)

Sub-mounting kit **cannot** be used in conjunction with the Vitocell 100-W DHW cylinder below the boiler
For specification and accessories for the sub-mounting kit, see page 56.
Install a drain & fill valve on site in the flow of the heating circuit with mixer (HV2).



Ⓐ Vitodens
Ⓑ Pre-plumbing jig
Ⓒ Recommendation
Ⓓ Heating flow R ¾ with pressure gauge and air vent valve
Ⓔ Cylinder flow G ¾
Ⓕ Gas connection G ¾
Ⓖ Cylinder return G ¾
Ⓗ Heating return R ¾ with boiler drain & fill valve
Ⓚ Heating flow, heating circuit without mixer R ¾
Ⓛ Heating return, heating circuit without mixer R ¾
Ⓜ Gas connection R ¾
Ⓝ Heating return, heating circuit with mixer R ¾
Ⓞ Heating flow, heating circuit with mixer R ¾
OKFF Top edge, finished floor

Plumbing wall installation with a plumbing wall mounting frame
Suitable for wall mounting, plumbing wall installation anywhere in the room or in front of lightweight walls.
A pre-plumbing jig (part no. ZK04307) must be ordered separately in addition to the plumbing wall mounting frame.

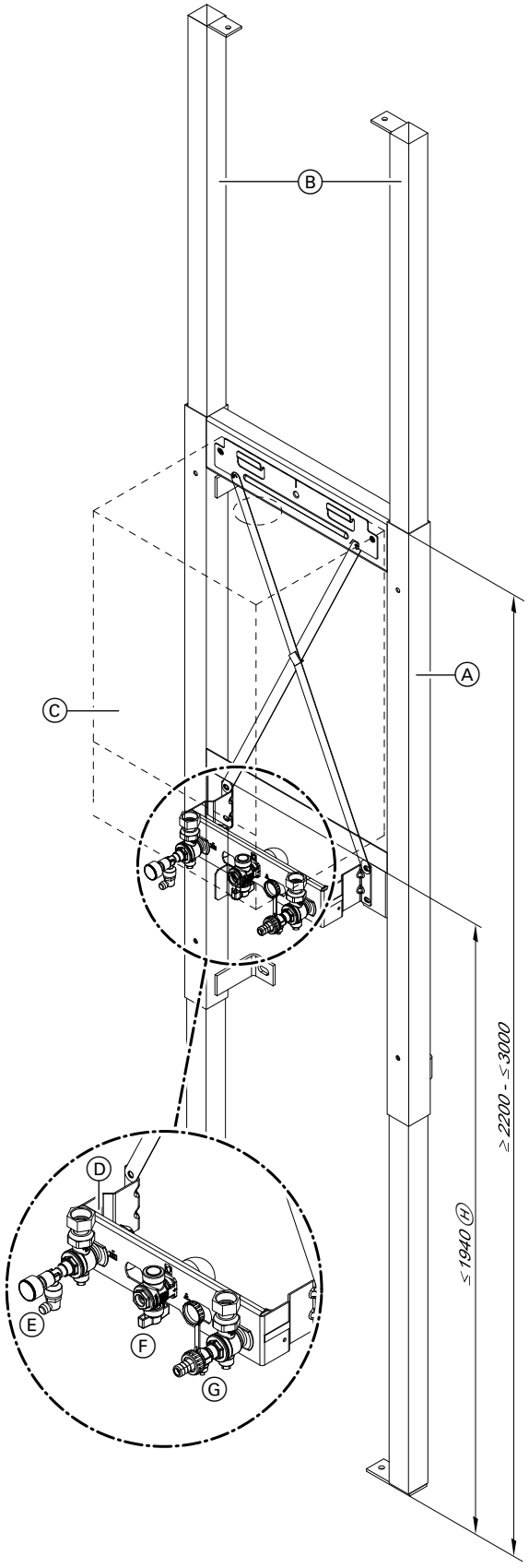


Illustration shows a gas condensing system boiler

Ⓐ Plumbing wall mounting frame
Ⓑ Extension for ceiling installation
Ⓒ Vitodens
Ⓓ Pre-plumbing jig
Ⓔ Heating flow R ¾ with pressure gauge and air vent valve
Ⓕ Gas connection R ¾
Ⓖ Heating return R ¾ with boiler drain & fill valve
Ⓗ In conjunction with DHW cylinder below the boiler, min. 1933 mm

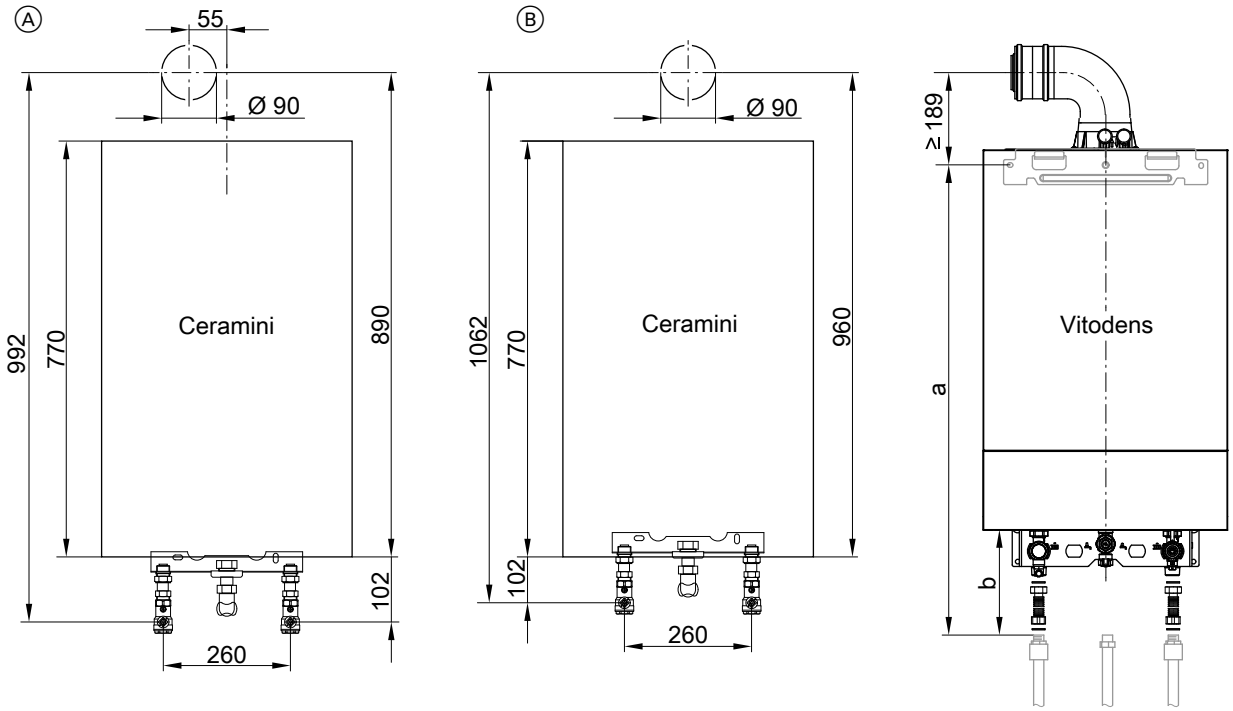
Replacing third party boilers with the Vitodens 200-W

Using an adaptor, the Vitodens hydraulic connections are compatible with Ceramini-Z-SR, Cerastar-ZR/-ZWR and Thermoblock-VC110E-/VC112E/-VC/-VCW boilers.
For modernisation projects, adaptors are available as accessories (see pricelist). These comprise connection components for the heating water and DHW sides and fixings for replacing the third party appliances listed below with a Vitodens. A pre-plumbing jig for surface mounting or valves/fittings for surface mounting must be ordered separately in addition to the Vitodens 200-W.
The installation work involved is no greater than replacement with a same-brand appliance.

Where a wall mounted gas boiler is replaced by a Vitodens 200-W gas condensing system boiler, the flue must also be replaced with a system that is suitable for "condensing operation" (see pricelist "Flue systems for the Vitodens").
Adapt the flue connections on site.

Note
For modernisation projects, the State Building Regulations [Germany] require the on-site installation of a gas shut-off valve with thermally activated shut-off facility.

Replacing a Ceramini-Z-SR with a Vitodens 200-W, 11 and 19 kW



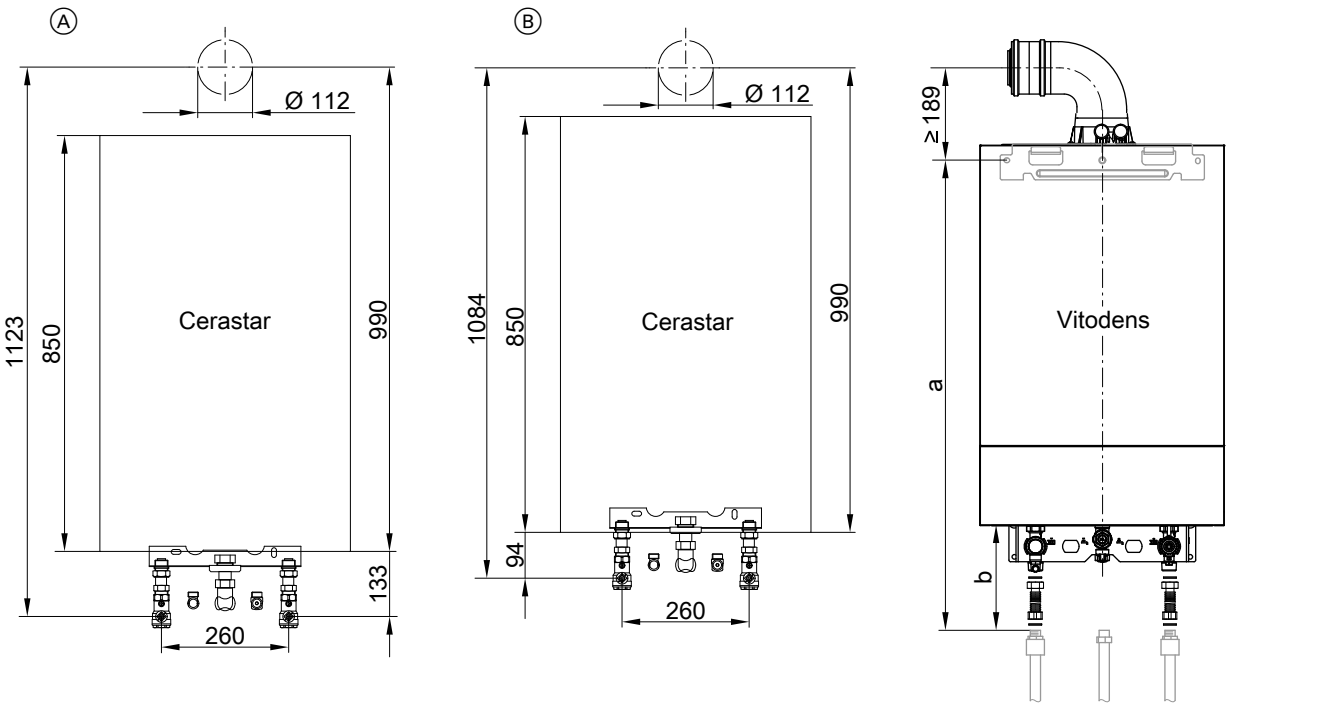
Ⓐ Open flue operation
Ⓑ Room sealed operation

Dim.		Flush mounting	Surface mounting
a	mm	$790^{+25/-0}$	$802^{+50/-0}$

Note
Height of flue gas connection in combination with balanced flue bend 60/100. If using a balanced flue inspection bend 60/100, the height is reduced by 10 mm.

Design information (cont.)

Replacing a Cerastar-ZR/-ZWR with a Vitodens 200-W, 25 and 32 kW



Ⓐ Open flue operation
Ⓑ Room sealed operation

Dim.		Flush mounting	Surface mounting
a	mm	$790^{+25/-0}$	$802^{+50/-0}$

Note
Height of flue gas connection in combination with balanced flue bend 60/100. If using a balanced flue inspection bend 60/100, the height is reduced by 10 mm.

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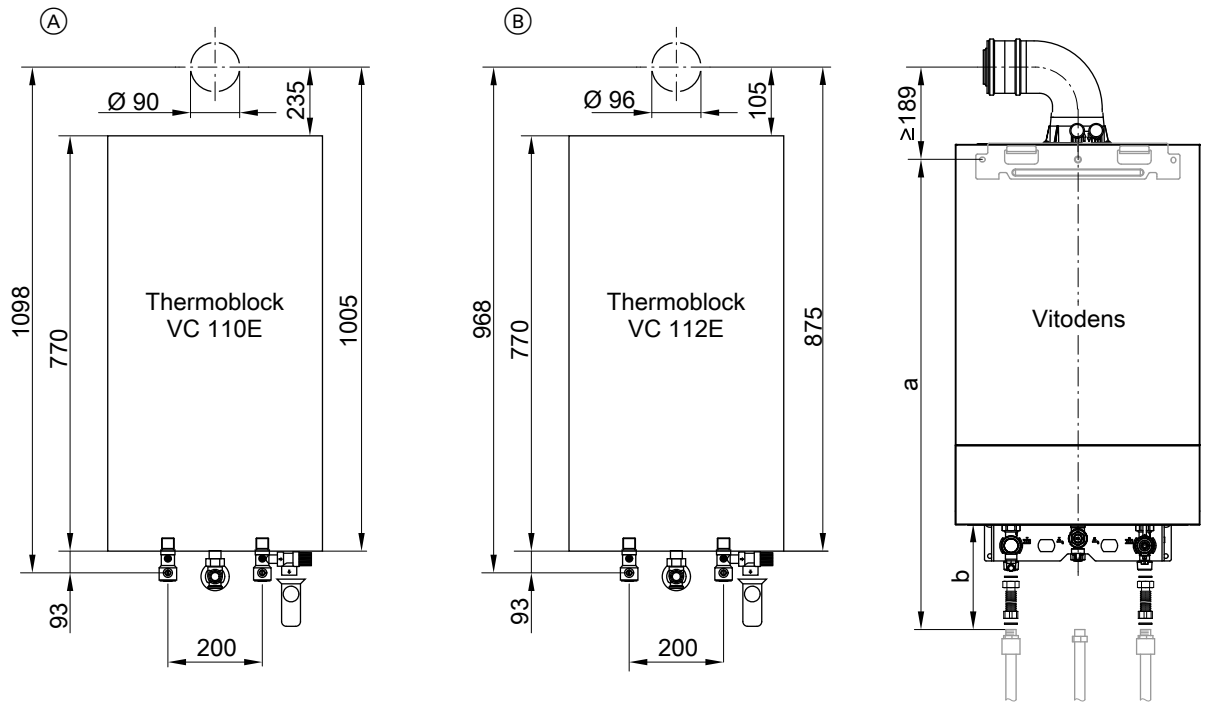
Design information (cont.)

Replacing a Thermoblock-VC110E/-VC112E with a Vitodens 200-W, 11 and 19 kW

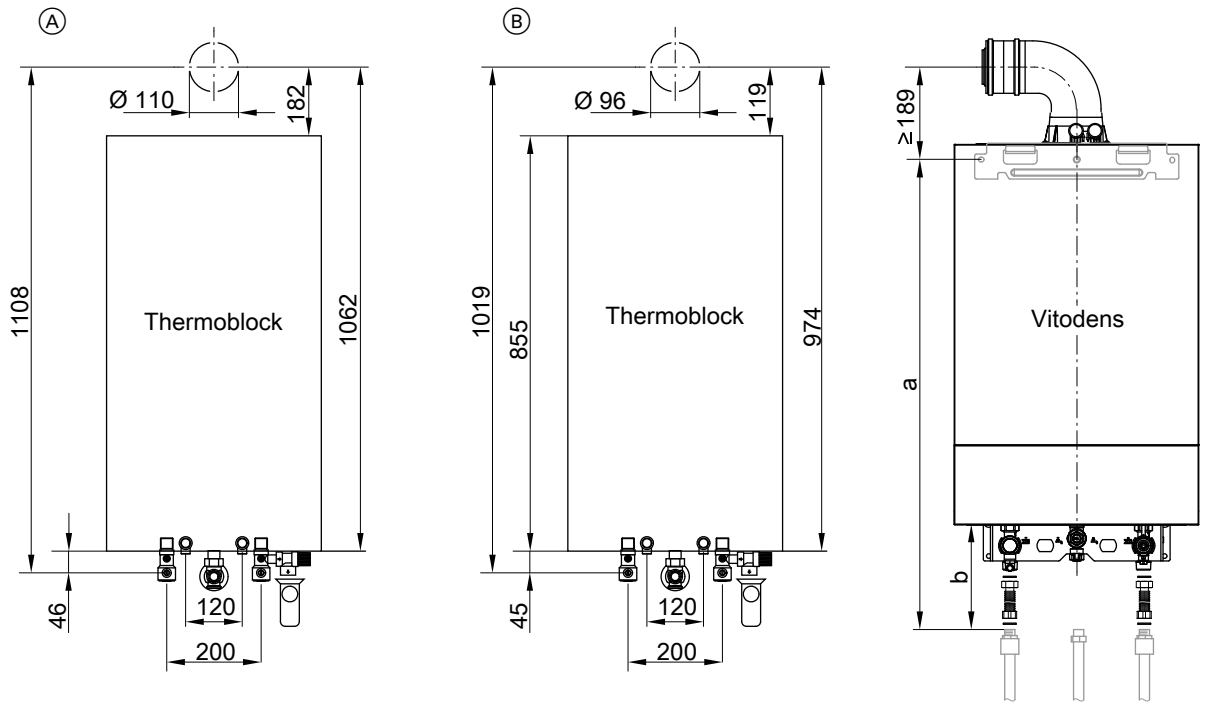


Ⓐ Open flue operation
Ⓑ Room sealed operation

Dim.		Flush mounting	Surface mounting
a	mm	$786^{+25/-0}$	$802^{+50/-0}$

Note
Height of flue gas connection in combination with balanced flue bend 60/100. If using a balanced flue inspection bend 60/100, the height is reduced by 10 mm.

Replacing a Thermoblock-VC/-VCW with a Vitodens 200-W, 25 and 32 kW



Ⓐ Open flue operation
Ⓑ Room sealed operation

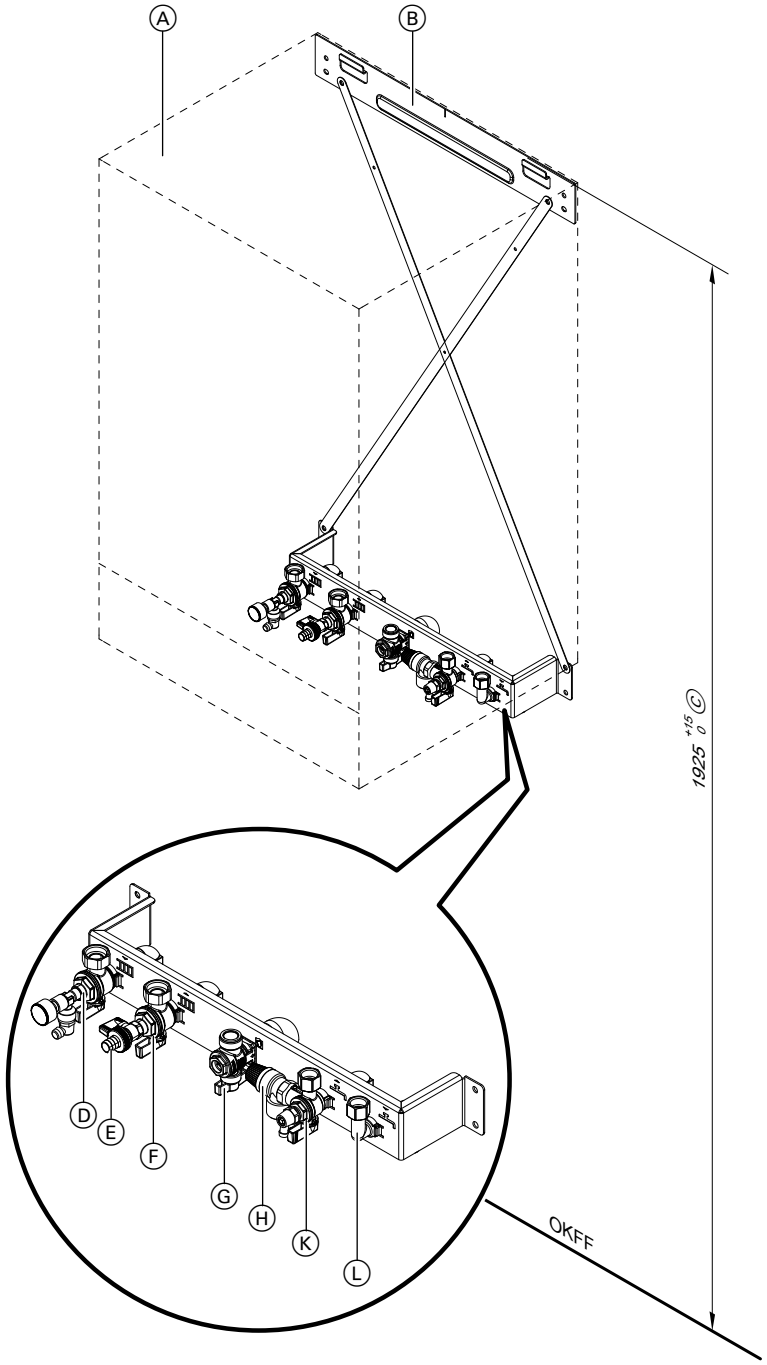
Dim.		Flush mounting	Surface mounting
a	mm	$786^{+25/-0}$	$802^{+50/-0}$

Note
Height of flue gas connection in combination with balanced flue bend 60/100. If using a balanced flue inspection bend 60/100, the height is reduced by 10 mm.

Pre-installation of the Vitodens 222-W

Pre-plumbing jig for surface mounting

Pre-plumbing jig, comprising:
- Fixings
- Valves/fittings
- Gas shut-off valve
- Safety valve on the DHW side



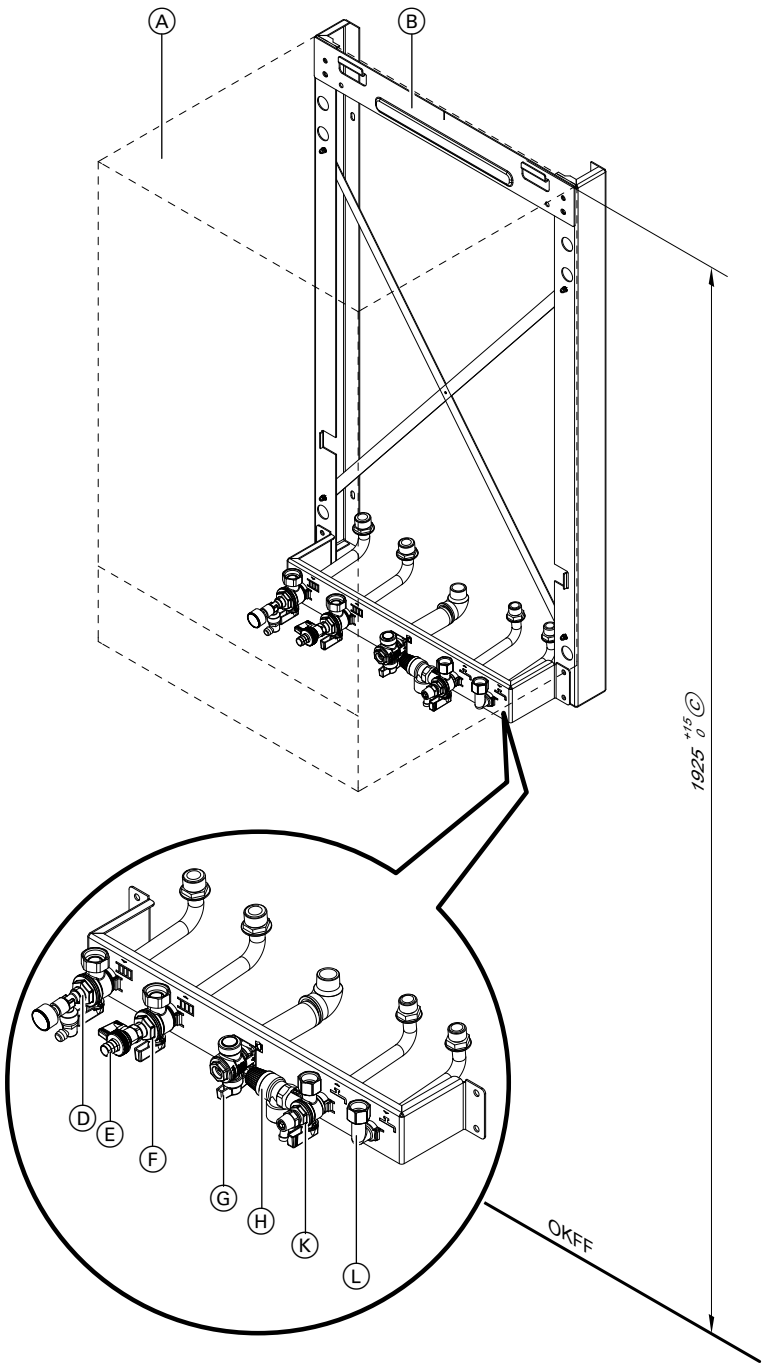
Ⓐ Vitodens
Ⓑ Pre-plumbing jig
Ⓒ Recommended installation height
Ⓓ Heating flow R ¾
Ⓔ Filling/draining
Ⓕ Heating return R ¾
Ⓖ Gas connection R ¾
Ⓗ Safety valve, DHW side
Ⓚ Cold water R ½
Ⓛ DHW R ½

Design information (cont.)

Mounting frame for surface mounting

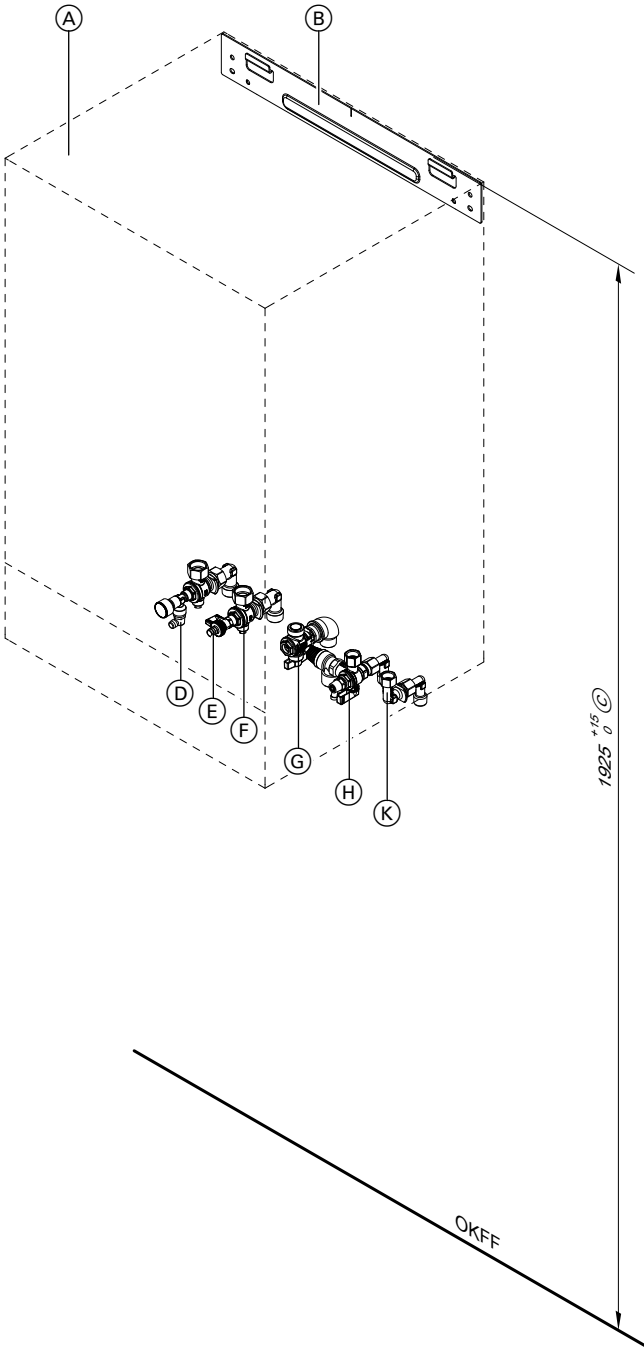
Mounting frame, comprising:
- Fixings
- Valves/fittings
- Gas shut-off valve
- Safety valve on the DHW side

Wall clearance 90 mm



Ⓐ Vitodens
Ⓑ Mounting frame
Ⓒ Recommended installation height
Ⓓ Heating flow R ¾
Ⓔ Filling/draining
Ⓕ Heating return R ¾
Ⓖ Gas connection R ¾
Ⓗ Safety valve, DHW side
Ⓚ Cold water R ½
Ⓛ DHW R ½

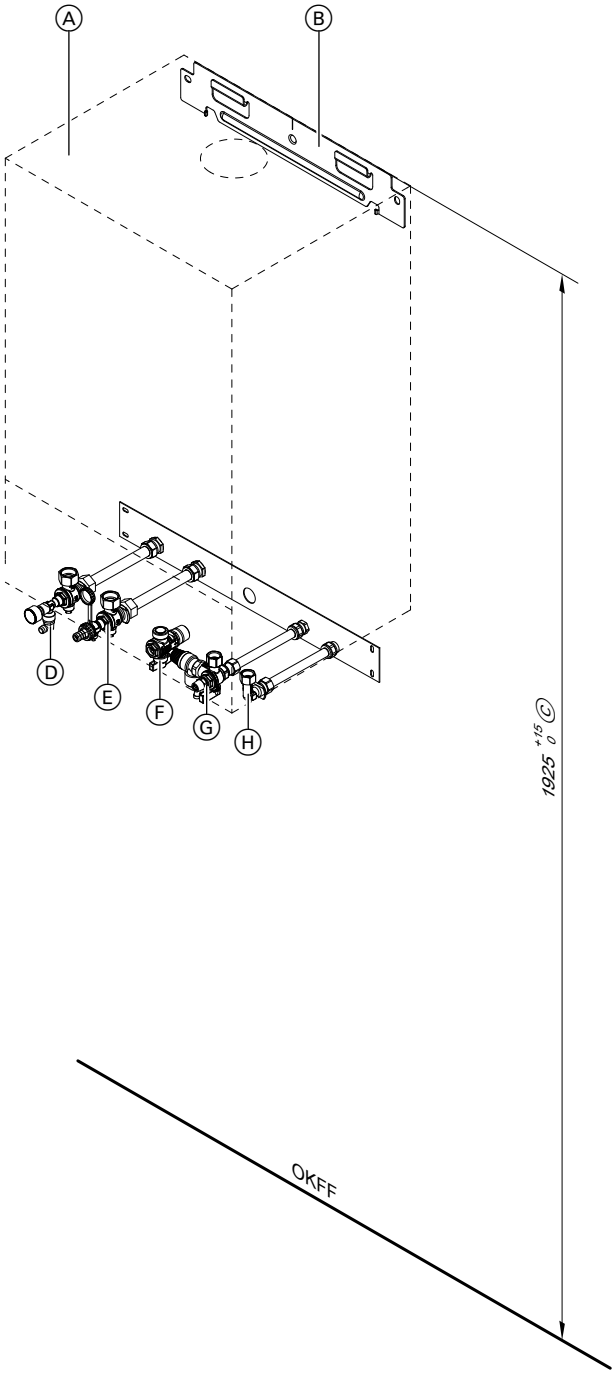
Valves/fittings for surface mounting
With valves/fittings and gas shut-off valve R ¾ with integral, thermally activated safety shut-off valve.



Ⓐ Vitodens
Ⓑ Wall mounting bracket (Vitodens standard delivery)
Ⓒ Recommended installation height
Ⓓ Heating flow R ¾
Ⓔ Filling/draining
Ⓕ Heating return R ¾
Ⓖ Gas connection R ¾
Ⓗ Safety valve, DHW side
Ⓚ Cold water R ½
Ⓛ DHW R ½
OKFF Top edge, finished floor

Design information (cont.)

Valves/fittings for flush mounting
With valves/fittings, gas shut-off valve R ¾ with integral, thermally activated safety shut-off valve and mounting plate.



Ⓐ Vitodens
Ⓑ Wall mounting bracket (Vitodens standard delivery)
Ⓒ Recommended installation height
Ⓓ Heating flow R ¾
Ⓔ Filling/draining
Ⓕ Heating return R ¾
Ⓖ Gas connection R ¾
Ⓗ Safety valve, DHW side
Ⓚ Cold water R ½
Ⓛ DHW R ½
OKFF Top edge, finished floor

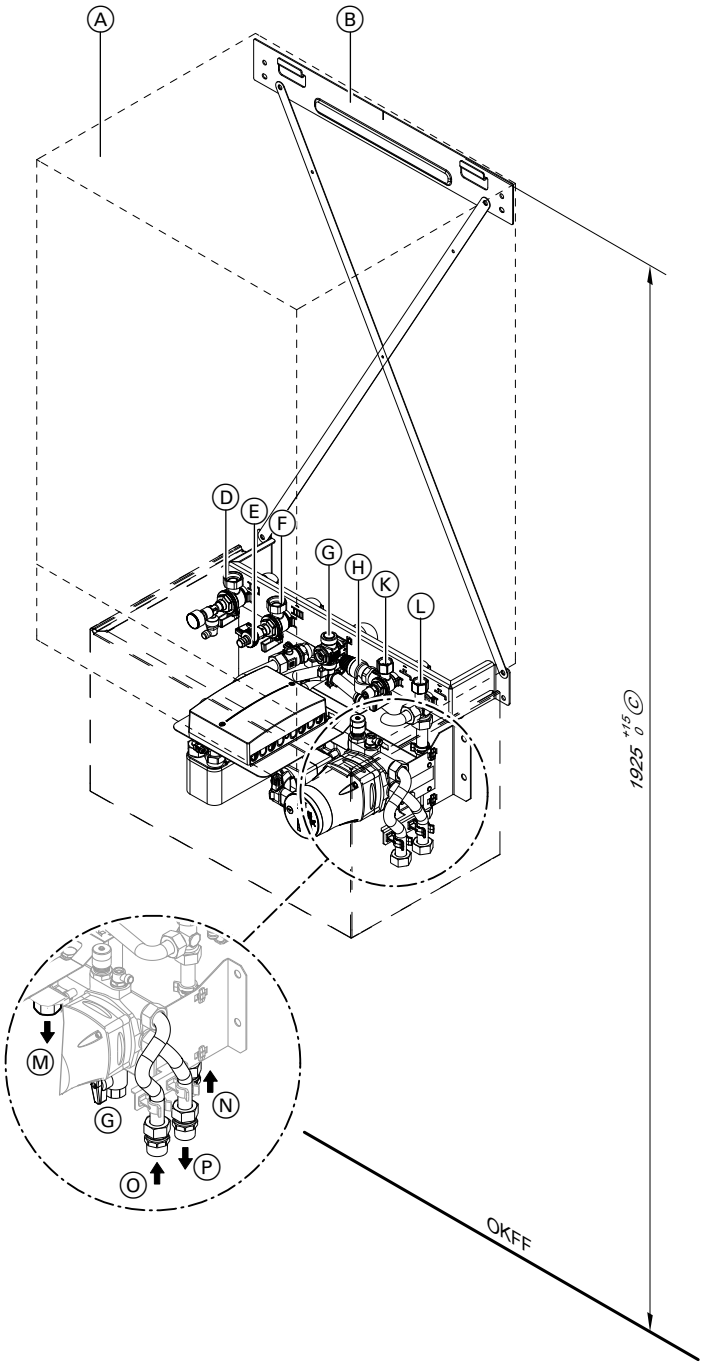
Installation with sub-mounting kit with mixer – surface mounting
Complete assembly for heat distribution via one heating circuit with mixer and one heating circuit without mixer, for installation below the Vitodens 222-W.

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

- Adjustable bypass
- Mixer PCB, capable of communicating with the control unit via PlusBus
- Flow temperature sensor
- Valve for regulating the flow rates of both heating circuits
- Cover with same design as the wall mounted boiler
- Installation template

Additionally required accessories:
- Pre-plumbing jig with:
  - Fixings
  - Valves/fittings
  - Gas shut-off valve R ¾ with integral, thermally activated safety shut-off valve

For specification and accessories for the sub-mounting kit, see page 63.
Install a drain & fill valve on site in the flow of the heating circuit with mixer (HV2).

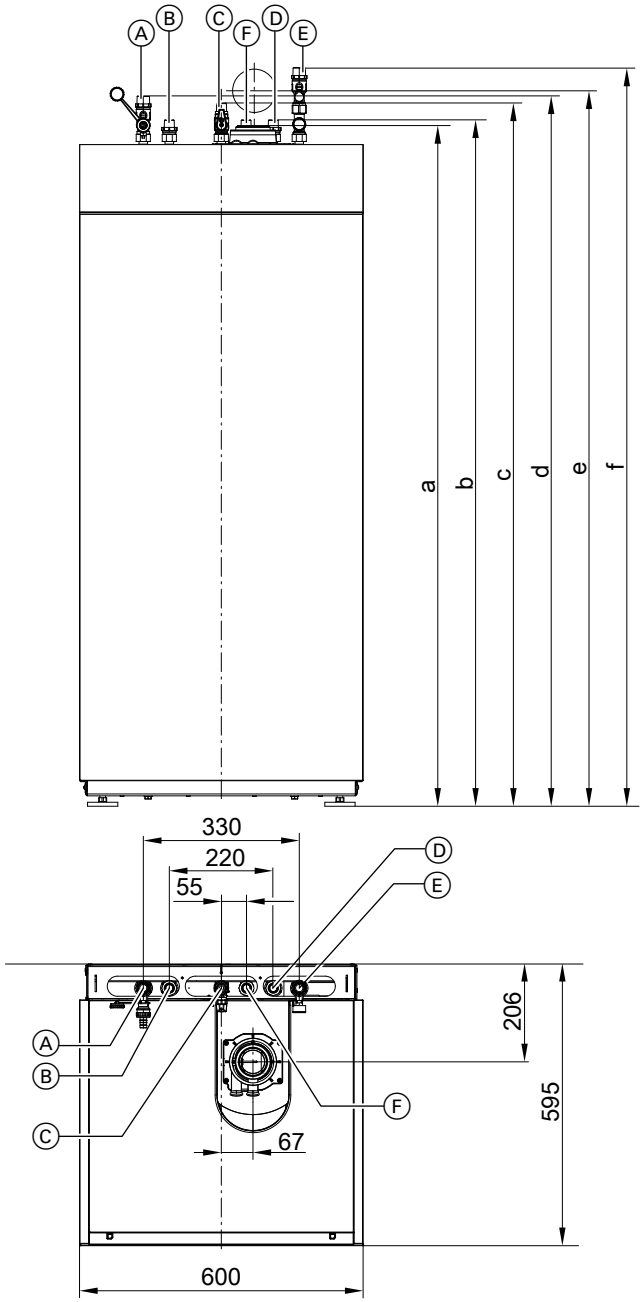


Ⓐ Vitodens
Ⓑ Pre-plumbing jig
Ⓒ Recommended installation height
Ⓓ Heating flow R ¾ with pressure gauge and air vent valve

Ⓔ Filling/draining
Ⓕ Heating return R ¾ with boiler drain & fill valve
Ⓖ Gas connection G ¾
Ⓗ Safety valve, DHW side
Ⓚ Cold water R ½
Ⓛ DHW R ½
Ⓜ Heating flow, heating circuit without mixer R ¾
Ⓝ Heating return, heating circuit without mixer R ¾
Ⓞ Heating return, heating circuit with mixer R ¾
Ⓟ Heating flow, heating circuit with mixer R ¾
OKFF Top edge, finished floor

Installation of the Vitodens 222-F

Connection set for surface mounting; upward connection
For connecting the on-site gas, heating water and DHW lines from above.



Ⓐ Heating flow R ¾
Ⓑ DHW R ½
Ⓒ Gas connection R ½
Ⓓ Cold water R ½
Ⓔ Heating return R ¾
Ⓕ DHW circulation R ½ (separate accessories)

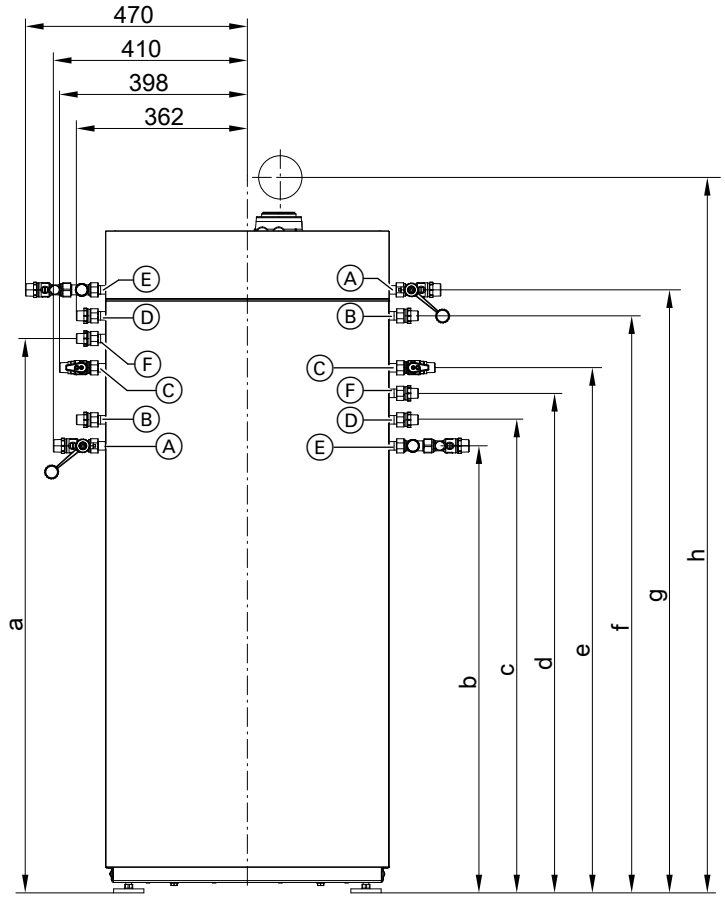
Vitodens 222-F	a mm	b mm	c mm	d mm	e mm	f mm
Type B2TF	1440	1452	1488	1503	1520	1563
Type B2SF	1640	1652	1688	1703	1720	1763

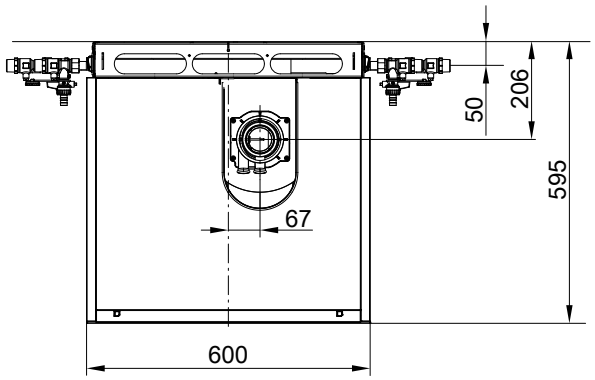
Note
All height dimensions have a tolerance of +15 mm on account of the adjustable feet.

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

Design information (cont.)

Connection set for surface mounting; connection to the left or right
For connecting the on-site gas, heating water and DHW lines from the left or right.





Ⓐ Heating flow R ¾
Ⓑ DHW R ½
Ⓒ Gas connection R ½
Ⓓ Cold water R ½
Ⓔ Heating return R ¾
Ⓕ DHW circulation R ½ (separate accessories)

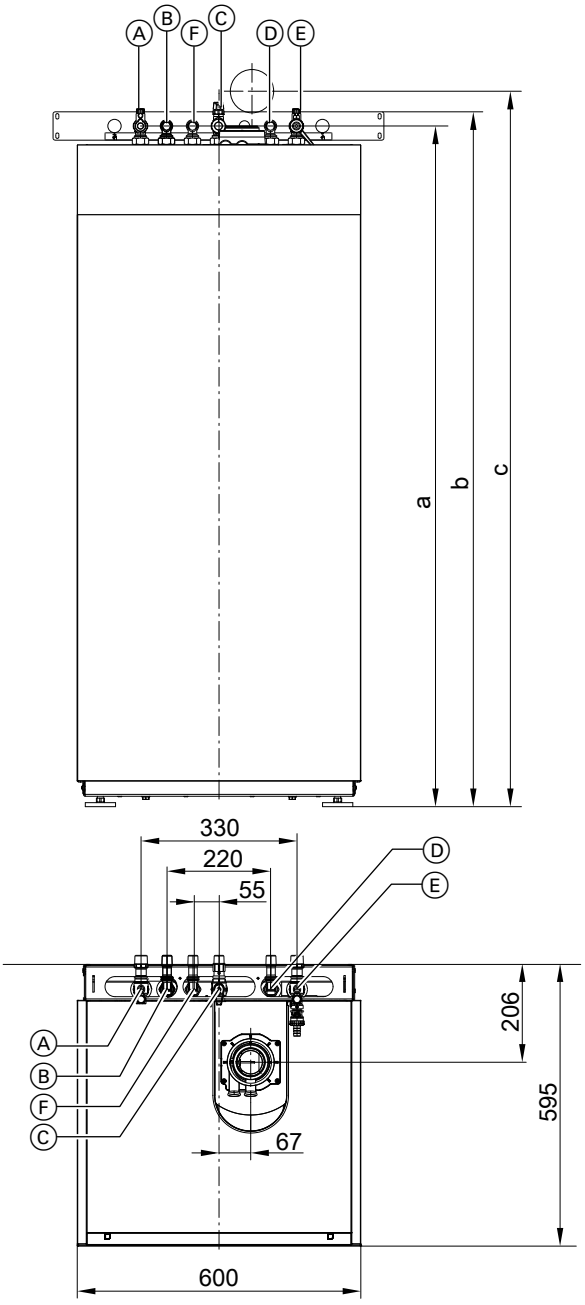
Vitodens 222-F	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm
Type B2TF	1166	946	1001	1056	1111	1221	1276	1520
Type B2SF	1366	1146	1201	1256	1311	1421	1476	1720

Note
All height dimensions have a tolerance of +15 mm on account of the adjustable feet.

Design information (cont.)

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



Ⓐ Heating flow R ¾
Ⓑ DHW R ½
Ⓒ Gas connection R ¾
Ⓓ Cold water R ½
Ⓔ Heating return R ¾
Ⓕ DHW circulation R ½ (separate accessories)

Vitodens 222-F	a mm	b mm	c mm
Type B2TF	1439	1469	1520
Type B2SF	1639	1669	1720

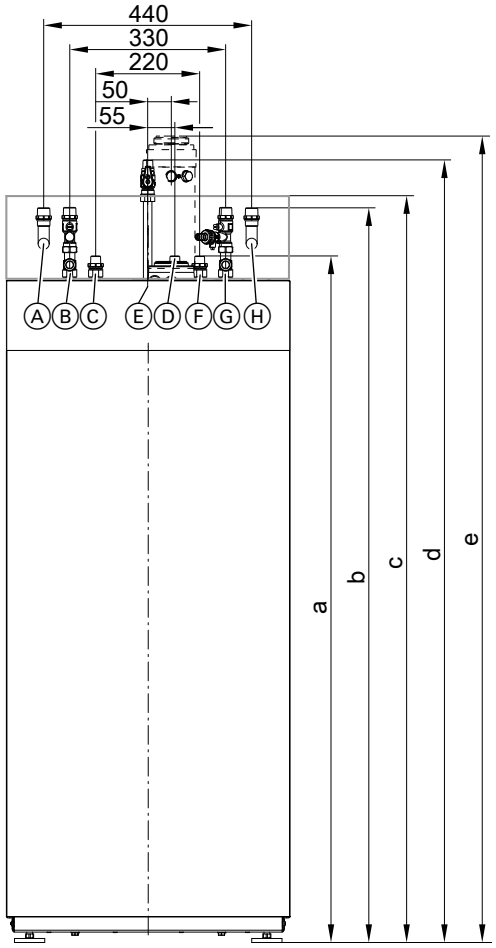
Design information (cont.)

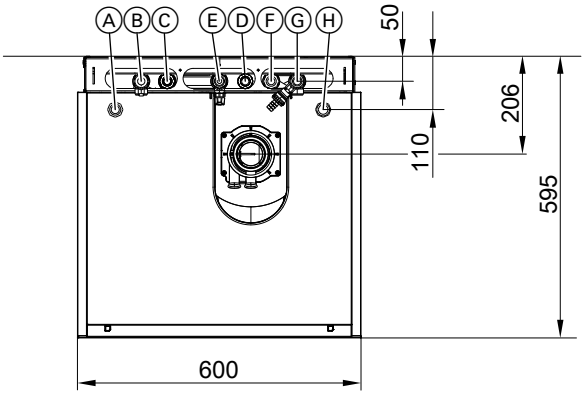
Note
All height dimensions have a tolerance of +15 mm on account of the adjustable feet.

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

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





Ⓐ Heating flow, heating circuit with mixer R ¾
Ⓑ Heating flow, heating circuit without mixer R ¾
Ⓒ DHW R ½
Ⓓ DHW circulation R ½ (separate accessories)
Ⓔ Gas connection R ½
Ⓕ Cold water R ½

Ⓖ Heating return, heating circuit without mixer R ¾
Ⓗ Heating return, heating circuit with mixer R ¾

Vitodens 222-F	a mm	b mm	c mm	d mm	e mm
Type B2TF	1455	1557	1577	1657	1685
Type B2SF	1655	1757	1777	1957	1885

Note
The adjustable feet give the height measurements of the connections a tolerance of + 15 mm.

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 the control unit via PlusBus
- Adjustable bypass
- Flow temperature sensor
- Connection set for surface mounting 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
- Balanced flue extension, boiler flue connection
- Cover with same design as the boiler

Note
In combination with the assembly kit, the Vitodens 222-F has protection class IP X1.

7.2 Decision-making aids for DHW heating

To provide the perfect solution for every situation, the Vitodens is available in the following versions:
- Vitodens 200-W
  – As a gas system boiler in combination with a separate DHW cylinder
  – As a gas condensing combi boiler with integral, direct DHW heating
- Vitodens 222-W
  With integral DHW loading cylinder
- Vitodens 222-F
  With integral DHW loading cylinder

Various factors should be taken into consideration when designing heating systems and deciding between a gas system boiler with a separate DHW cylinder or a gas system boiler with an integral DHW loading 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

Notes on water quality

During DHW heating, settling of lime on the surfaces of the plate heat exchanger cannot be completely prevented. The tendency towards limescale build-up depends on various conditions, predominantly on the substances contained in the water, the amount of water that is heated (DHW consumption) and the DHW temperature. Although scale deposits inside the plate heat exchanger are generally minor enough not to cause any reduction in DHW output, such impairment cannot be excluded with increased water hardness.
From a water hardness of 20 °dH (3.5 mol/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.

Selection table

		Vitodens 200-W gas condensing system boiler with separate DHW cylinder	Vitodens 222-W with integral DHW loading cylinder	Vitodens 222-F with integral DHW loading cylinder
DHW demand, convenience	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	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 (without DHW circulation pipe)	+	+	–
	With DHW circulation pipe	+	–	+

		Vitodens 200-W gas condensing system boiler with separate DHW cylinder	Vitodens 222-W with integral DHW loading cylinder	Vitodens 222-F with integral DHW loading cylinder
Modernisation	DHW cylinder installed	+	–	–
	Replacement of an existing combi boiler	–	0	0
Space requirement	Minimal space available (siting in a recess)	0	0	0
	Sufficient space available (installation room)	+	+	+
Solar DHW heating can be connected	Connection to dual mode DHW cylinder	+	–	–
	Connection to integral DHW cylinder	–	–	–

+ = recommended
0 = recommended under certain conditions
– = not recommended

Separate DHW cylinders

For greater DHW convenience, separate DHW cylinders are also available in Vitopearlwhite in the following versions:
- Below the boiler (120 or 150 l)
- Adjacent to the boiler (160, 200, 300 or 400 l)

Further DHW cylinders with up to 1000 l capacity are available in Vitosilver and may also be used in accordance with the available heating output.

The Vitodens 200-W is equipped at factory with a separate DHW cylinder for DHW heating. A diverter valve is integrated for this purpose.
For the connection of a separate DHW cylinder, a DHW cylinder connection set (incl. cylinder temperature sensor) must always be ordered separately.
For DHW cylinder specifications, see chapter "DHW cylinders".

Sizing the DHW cylinder

Determine the DHW cylinder size in accordance with the specific DHW demand.
Various combinations of taps/draw-off points can be applied.
If identical taps/draw-off points are combined, only take into account the individual draw-off point, not the combination.

The following summary enables an **approximate** sizing of the DHW cylinder:

Small households (1 to 2 occupants)	
Average households (3 to 4 occupants)	

Cylinder capacity in litres

	Bath 1600 to DIN 4471	Bath 1700 to DIN 4471	Small bath and sit bath	Large bath (1800 × 750 mm)	Shower cubicle with mixer tap and standard shower head	Shower cubicle with 1 shower head and 2 side nozzles	Washbasin	Bidet
Draw-off rate in W/h	5820	6510	4890	8720	1630	4070	700	810
Draw-off volume per use or useful capacity in l	140	160	120	200	40	100	17	20
Bath 1600	120				120	120	120	120
to DIN 4471	120				**120**	150/160	120	120
Bath 1700		120			120	120	120	120
to DIN 4471		120			120	120	120	120
Small bath and sit bath			120		120	120	120	120
			120		120	120	120	120
Large bath				120	120	120	120	120
(1800 × 750 mm)				200	150/160	200	150/160	150/160
Shower cubicle with mixer tap and standard shower head	120	120	120	120	120	120	120	120
	120	120	120	150/160	120	120	120	120
Shower cubicle with 1 shower head and 2 side nozzles	120	120	120		120	120	120	120
	150/160		150/160	200	120	120	120	120
Washbasin	120	120	120	120	120	120	120	120
	120	120	120	150/160	120	120	120	120
Bidet	120	120	120	120	120	120	120	120
	120	120	120	150/160	120	120	120	120

Example:
- Average household with 3 occupants
- Use of a bath 1600 with 140 l drawn
- Simultaneous operation of a shower with mixer tap and standard head with 40 l drawn

The table shows that in accordance with DIN 4708, the correct DHW cylinder would have a capacity of 120 l.

DHW cylinder selection tables

DHW cylinders with "-W" in the product name are supplied with a Vitopearlwhite finish. Appliances with "-B" or "-V" in the product name are supplied in Vitosilver (marked in grey in the table).

Vitodens 200-W gas system boilers, cylinder allocation

	Practical cylinder allocation (cylinder capacity in litres)		
Rated heating output range [kW]	**Up to 19.0**	**25.0**	**32.0**
Vitocell 100-W, (CUGA, CUGB, CUGB-A) below the boiler	100 120 150	100 120 150	100 120 150
Vitocell 100-W, (CUGA, CUGB, CUGB-A) below the boiler			
Vitocell 100-W (type CVAA, CVAB-A, CVAB) adjacent to the boiler	160 200 300	160 200 300	160 200 300
Vitocell 300-V/300-W (type EVIA-A, EVIB-A+) adjacent to the boiler	160 200	160 200	160 200
Vitocell 100-B/100-W (type CVB, CVBC) adjacent to the boiler, dual mode	300 400	300 400	300 400
Vitocell 340-M (type SVKC) heating water buffer cylinder with DHW heating	708/30	708/30	708/30
Vitocell 360-M (type SVSB) heating water buffer cylinder with DHW heating	708/30	708/30	708/30

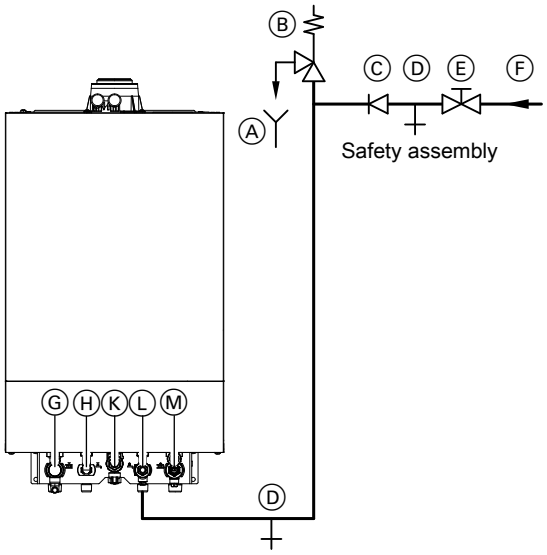
7.3 Connections on the water side

Connection on the DHW side

Vitodens 200-W gas condensing combi boiler
For the DHW connection, connection sets for surface or flush mounting are available as accessories. The instantaneous water heater provides direct DHW heating.
If used in conjunction with galvanised pipes, note that the instantaneous water heater is designed as a stainless steel plate heat exchanger with copper solder joints (observe the flow rule).
In existing installations (modernisation projects), the risk of electrolytic corrosion is low, since a protective layer will have formed on the inside of the pipes.

If DHW is to be drawn simultaneously from several points, we recommend the installation of a separate DHW cylinder in conjunction with the gas system boiler (see "Selection guide for DHW heating"). With water hardness of 20 °dH and higher, we recommend the use of a water treatment system in the cold water line when heating DHW.

Cold water installation of Vitodens 200-W gas condensing combi boiler



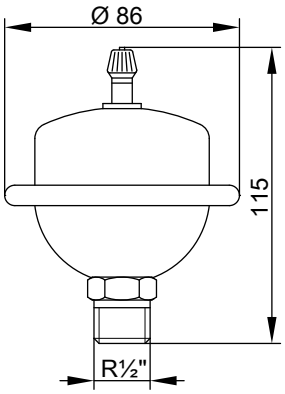
Ⓐ Visible drain pipe outlet point
Ⓑ Safety valve
Ⓒ Non-return valve
Ⓓ Drain
Ⓔ Shut-off valve
Ⓕ Cold water
Ⓖ Heating flow
Ⓗ DHW
Ⓚ Gas connection
Ⓛ Cold water
Ⓜ Heating return

A safety valve to DIN 1988 only has to be installed if the mains water supply pressure exceeds 10 bar (1 MPa), Ⓐ: 6 bar (0.6 MPa), and no DHW pressure reducing valve is used (in accordance with DIN 4753).

Install a safety valve if the cold water inlet is equipped with a non-return valve. In addition remove the toggle from the cold water shut-off valve.
Non-return valves are commonly found in pressure reducers and combined shut-off and non-return valves.

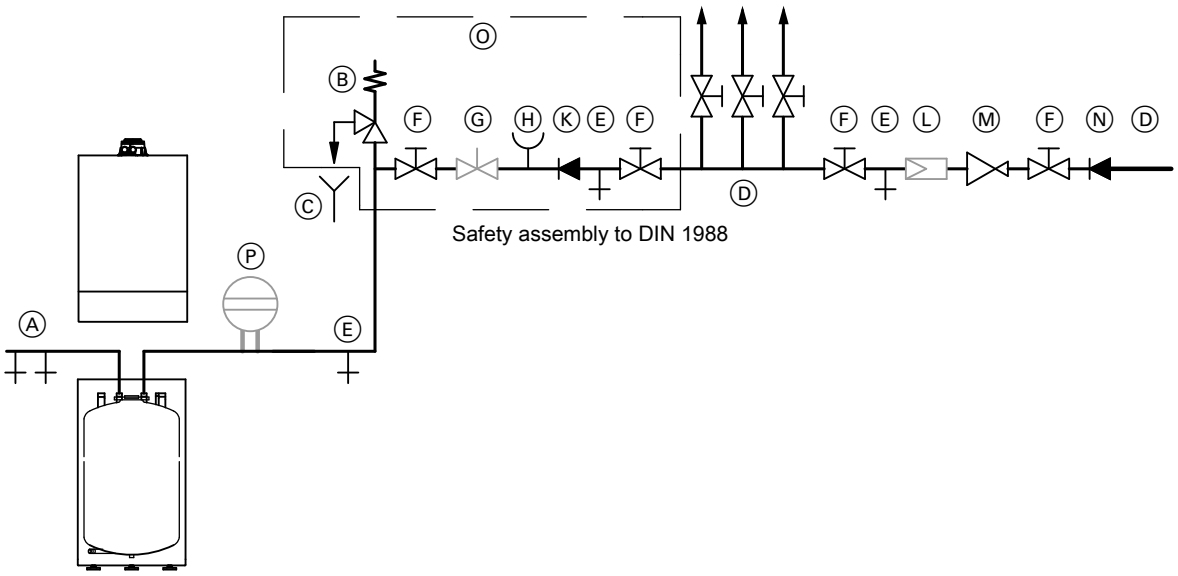
Note
DHW temperatures of over 60 °C may occur temporarily. Therefore we recommend installing additional anti-scalding protection in the DHW line.

Shock arrestor



If the pipework to which the Vitodens is connected also supplies draw-off points at which water hammer may occur (e.g. pressure washers, washing machines or dishwashers): Install shock arrestors near the source of the water hammer (recommended).
Flexofit S made by Flamco-Flexcon
or
Reflex made by Winkelmann + Pannhoff GmbH (available from your local dealer).

Vitodens 200-W connection on the DHW side with separate DHW cylinder and Vitodens 222-W with integral loading cylinder
Example:
DHW cylinder below the boiler (120 or 150 l) with safety assembly to DIN 1988



Ⓐ DHW
Ⓑ Safety valve
Included in the standard delivery of the pre-plumbing jig for **Vitodens 222-W**
Ⓒ Visible discharge pipe outlet point
Ⓓ Cold water
Ⓔ Drain
Ⓕ Shut-off valve
Ⓖ Flow regulating valve (installation recommended)
Ⓗ Pressure gauge connector
Ⓚ Non-return valve
Ⓛ Drinking water filter
Ⓜ Pressure reducer to DIN 1988-2, Dec. 1988 version
Ⓝ Non-return valve/pipe separator
Ⓞ Standard delivery of the safety assembly available as an accessory (for separate DHW cylinders only)
Ⓟ Diaphragm expansion vessel, suitable for potable water

Safety valve
The safety valve **must** be installed.

We recommend you install the safety valve higher than 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.

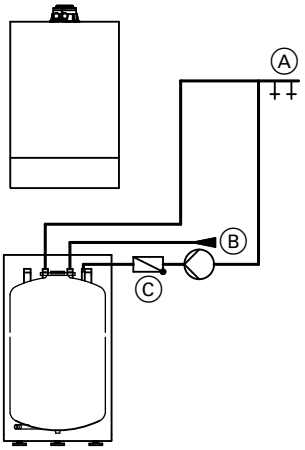
Drinking water filter
Install a drinking water filter to DIN 1988-200.

DHW circulation
Only in conjunction with the Vitodens 200-W. Cannot be used with the Vitodens 222-W because of the integral loading cylinder.
DHW circulation pipes increase DHW convenience and reduce water consumption. These benefits 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.
From a **pipe length** of **7 m** upwards, we recommend the installation of a DHW circulation pipe with appropriate thermal insulation in accordance with the Energy Saving Ordinance [Germany]. The Energy Saving Ordinance specifies that the DHW circulation pipe should include a circulation pump, check valve and time switch for stopping DHW circulation during the night.

Power supply for DHW circulation pump
DHW circulation pumps equipped with their own internal control unit must be connected via a separate power supply. Connecting the power supply via the heat generator control unit or its accessories is ***not*** *permissible.*

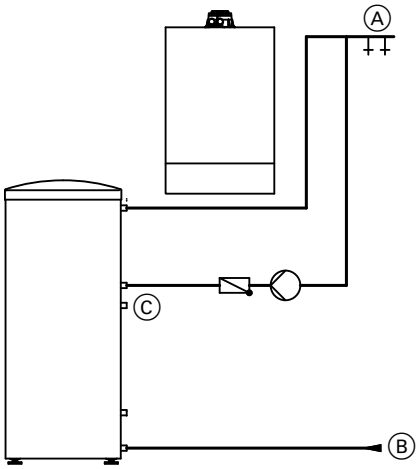
Using a non-return valve
If using a DHW cylinder adjacent to the boiler, we recommend installing a non-return valve in the heating water connection line to prevent the DHW cylinder cooling due to any recirculation that may occur.

Vitodens 200-W



DHW cylinder below the boiler

Ⓐ DHW
Ⓑ Cold water
Ⓒ DHW circulation



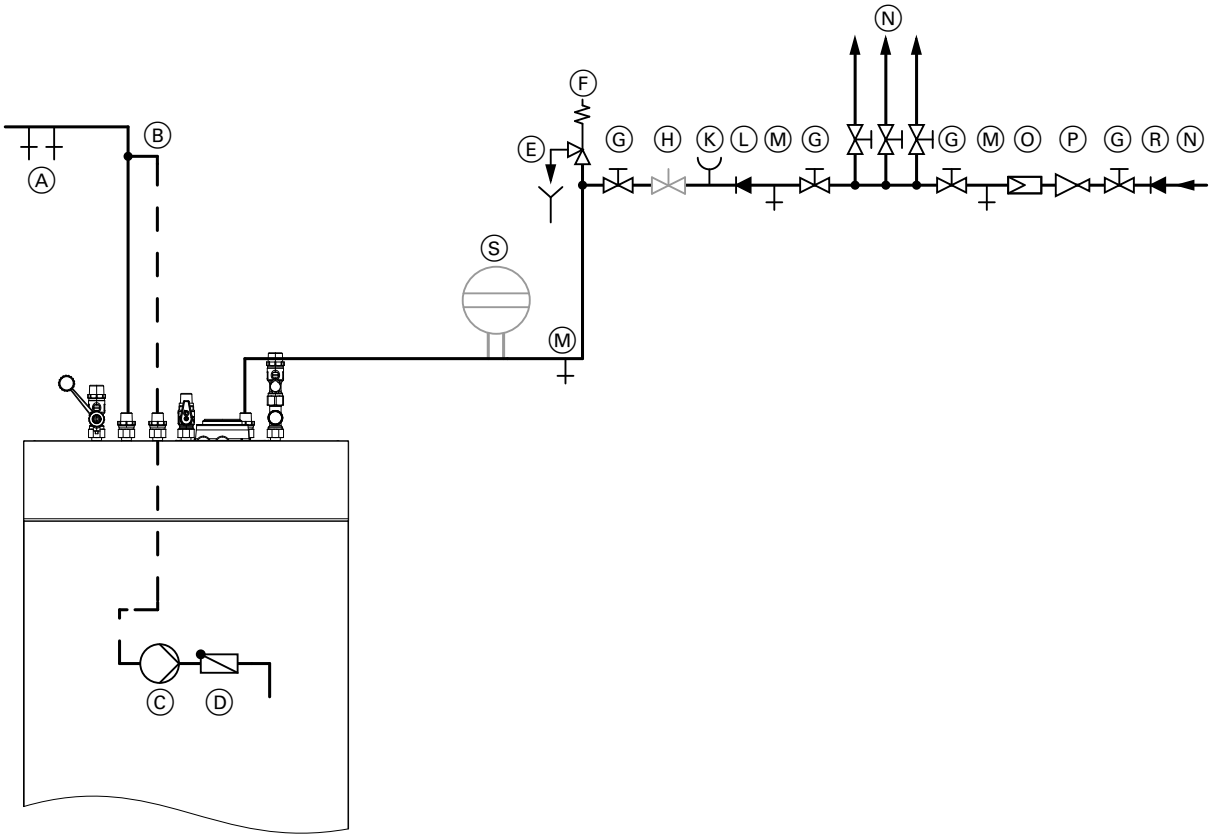
DHW cylinder adjacent to the boiler

Ⓐ DHW
Ⓑ Cold water
Ⓒ DHW circulation

Vitodens 222-F connection on the DHW side

If used in conjunction with zinc-plated pipes, note that copper brazed plate heat exchangers are integrated into the Vitodens 222-F with cylinder loading system (observe the flow rule).

Cold water installation



For connection locations, see the relevant connection set

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

Note
The DHW circulation pump connection set (accessories) contains a DHW circulation pump Ⓒ and check valve Ⓓ. The components are installed in the boiler.

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.

DHW circulation
DHW circulation pipes increase DHW convenience and reduce water consumption. These benefits 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.
From a **pipe length** of **7 m** upwards, we recommend the installation of a DHW circulation pipe with appropriate thermal insulation in accordance with the Energy Saving Ordinance [Germany]. The Energy Saving Ordinance specifies that the DHW circulation pipe should include a circulation pump, check valve and time switch for stopping DHW circulation during the night.

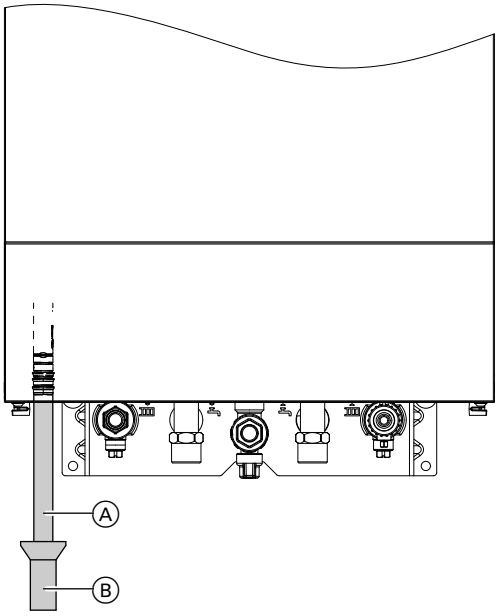
Only use the DHW circulation pump connection set, available as an accessory, for installation in the boiler. The circulation pump is then controlled by the boiler control unit.
The flow rate of the DHW circulation pump must not exceed **1.5 l/min**.
Installation scheme for DHW circulation, see page 111.

Power supply for DHW circulation pump
DHW circulation pumps equipped with their own internal control unit must be connected via a separate power supply. Connecting the power supply via the heat generator control unit or its accessories is ***not*** *permissible.*

7.4 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 via a neutralising system (if installed – accessories) to the public sewage system.

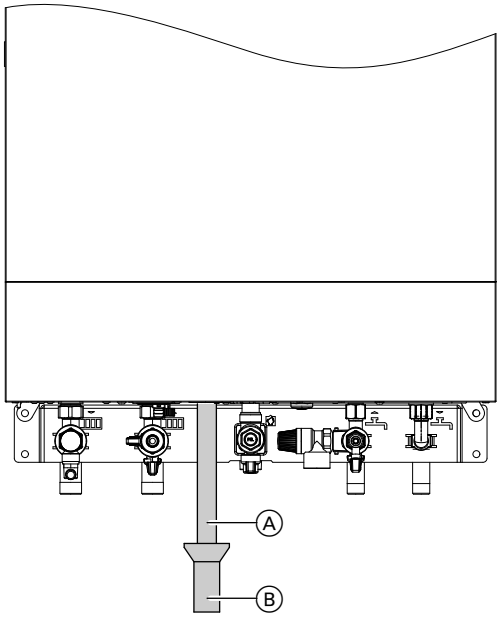
Vitodens 200-W



Ⓐ Drain hose (Vitodens standard delivery)
Ⓑ Drain outlet kit (accessories)

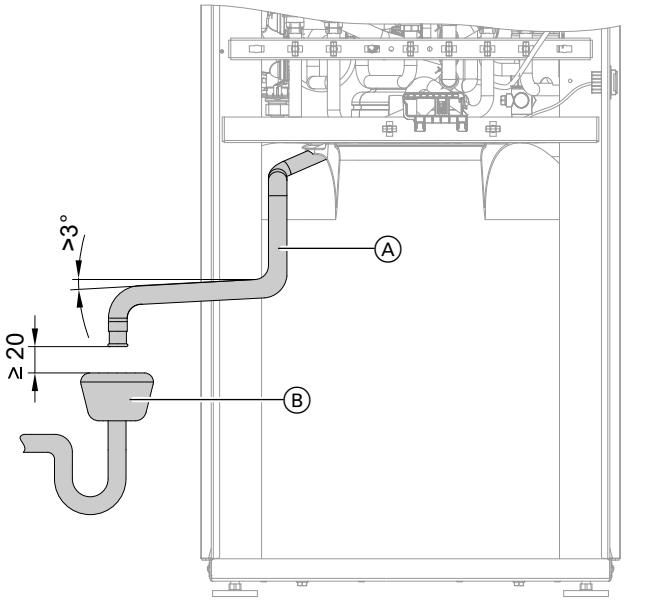
Note
A pipe vent ***must*** *be installed between the trap and the neutralising system.*

Vitodens 222-W



Ⓐ Drain hose (Vitodens standard delivery)
Ⓑ Drain outlet kit (accessories)

Vitodens 222-F



Ⓐ Drain hose (Vitodens standard delivery)
Ⓑ Trap and pipe vent

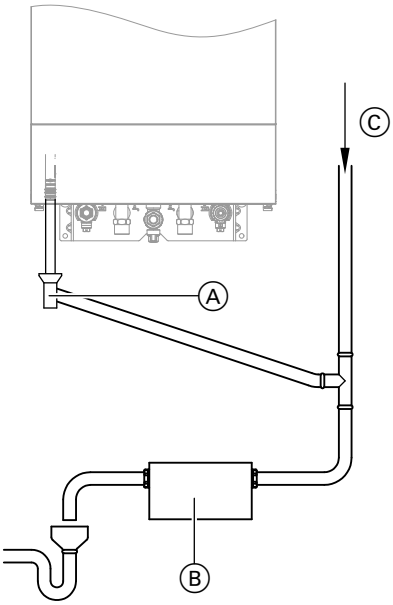
Condensate drain pipe and neutralisation

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 that vary from those described in the above Codes of Practice.
Contact your local authority responsible for waste water management in good time prior to installation, to find out about local regulations.

Condensate from gas combustion equipment up to 200 kW combustion output
Up to a rated heating output of 200 kW, the condensate from a gas condensing boiler can generally be introduced into the public sewage system without prior neutralisation.
Domestic drainage systems must be made from materials that are resistant to acidic condensate.

According to the Code of Practice DWA-A 251, these materials include:
- Vitrified clay pipes
- Hard PVC pipes
- PVC pipes
- PE HD pipes
- PE pipes
- ABS/ASA pipes
- Stainless steel pipes
- Borosilicate pipes

Neutralising system

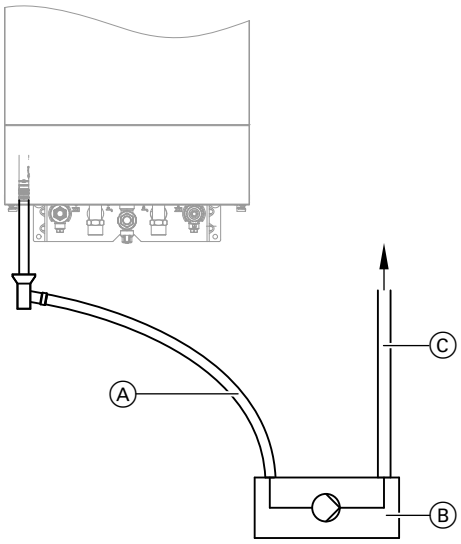


Ⓐ Condensate drain
Ⓑ Neutralising system
Ⓒ Ventilation via the roof

The Vitodens can (if required) be supplied with a separate neutralising system (accessories). Any condensate is piped to and processed in the neutralising system. Since the consumption of neutralising granulate depends on the system's operating mode, carry out regular checks during the first year of operation to determine the required top-up volumes. One fill can last longer than one year.

The condensate drain pipe to the sewer connection must be accessible for inspection. Install it with a fall and a stench trap on the sewer side, and provide a suitable facility for extracting samples.
Install a condensate lifting pump if the Vitodens has been installed below the waste water anti-flooding level. Condensate lifting pumps are available as accessories.

Condensate removal pump (accessories)



Ⓐ Condensate inlet
Ⓑ Condensate removal pump
Ⓒ Condensate drain

7.5 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 appliance.
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 capture of the room influence factors, we recommend using the Vitodens in conjunction with the Vitotrol 200-E for apartments with less than 80 m^2 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.

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 Vitodens (opening pressure 3 bar (0.3 MPa)).

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

Low water indicator
According to EN 12828, a low water indicator can be omitted for boilers up to 300 kW, as long as heating can be reliably prevented when there is a water shortage.
Viessmann condensing boilers are equipped with a low water indicator (boil-dry protection). Tests have verified that the burner will be automatically switched off in the event of water shortage due to a leak in the heating system and simultaneous burner operation, before the boiler or the flue system reaches unacceptably high temperatures.

Water quality/frost protection

Fill and top-up water
The quality of the fill and top-up water is one of the key factors for preventing damage caused by deposits or corrosion in the heating system.
In order to prevent system damage, the European standards and national guidelines for fill and top-up water must be observed right from the design stage, e.g. VDI 2035.

- Regular checks of the appearance, water hardness, conductivity and pH value of the heating water during operation lead to higher operational reliability and system efficiency. These properties must also be observed for the top-up water. According to VDI 2035, the quantity and properties of the top-up water must always be documented in the system log or maintenance reports.
- The basis for filling the heating system is tap water of potable water quality in line with Directive 98/83/EC and/or (EU) 2020/2184. For use as heating water, it is normally sufficient to soften the tap water. VDI 2035 specifies the maximum recommended concentrations of alkaline earths (hardeners), depending on the heating output and the specific system volume (ratio of the heating output of the heat generators to the heating water volume of the system): See the table below.
- We recommend always softening the fill and top-up water, as the water hardness can vary due to the mixture of different sources of supply, and the information provided by water supply utilities only gives average values. The information provided by water supply utilities is not sufficient for designing the system. In addition, it must be taken into account that the quantity of top-up water that will be added to the system during its service life cannot be predicted precisely at the design stage (especially in the case of existing heating circuits).
- If no aluminium or aluminium alloy components are installed, the heating water in systems with Viessmann heat generators does not need to be fully desalinated.
- The use of glycol as antifreeze without adequate inhibition and buffering is not permitted. The suitability of an antifreeze or other chemical additive should be certified by the manufacturer. Chemical additives in the heating water require more extensive monitoring and maintenance. Observe the manufacturer's instructions. Viessmann accepts no liability for damage or operational failure arising due to the use of unsuitable additives, incorrect dosing or poor maintenance.
- Chemical water treatments may only be planned and carried out by appropriately qualified specialist companies.

Total permissible hardness of the fill and top-up water according to VDI 2035

Total heating output of heat generator	Specific water capacity of heat generator*20	Specific system volume*21		
		≤ 20 l/kW	> 20 to ≤ 40 l/kW	> 40 l/kW
≤ 50 kW	≥ 0.3 l/kW	None	≤ 3.0 mol/m³ (16.8 °dH)	≤ 0.05 mol/m³ (0.3 °dH)
	< 0.3 l/kW	≤ 3.0 mol/m³ (16.8 °dH)	≤ 1.5 mol/m³ (8.4 °dH)	≤ 0.05 mol/m³ (0.3 °dH)
> 50 to ≤ 200 kW	—	≤ 2.0 mol/m³ (11.2 °dH)	≤ 1.0 mol/m³ (5.6 °dH)	≤ 0.05 mol/m³ (0.3 °dH)
> 200 to ≤ 600 kW	—	≤ 1.5 mol/m³ (8.4 °dH)	≤ 0.05 mol/m³ (0.3 °dH)	≤ 0.05 mol/m³ (0.3 °dH)
> 600 kW	—	≤ 0.05 mol/m³ (0.3 °dH)	≤ 0.05 mol/m³ (0.3 °dH)	≤ 0.05 mol/m³ (0.3 °dH)

Further requirements for the fill and top-up water independent of the heating output according to VDI 2035

Appearance
Clear, free of sedimented substances

Electrical conductivity
If the conductivity of the heating water is above **1500 µS/cm** due to a high salt content (e.g. in supply areas near the coast), desalination is necessary.

pH value

Materials in the system	pH value
Without aluminium alloys	8.2 to 10.0
With aluminium alloys	8.2 to 9.0

*20 *In the case of systems with several heat generators that have several different specific water capacities, the smallest specific water capacity is definitive.*
*21 *To calculate the specific system volume, the smallest individual heating output should be used for systems with several heat generators.*

Information about system design
- For softening the heating water, use softening systems with water flow meters: See Vitoset pricelist.
- During installation, ensure that individual pipework sections can be drained separately. This avoids the need to drain all the heating water in the case of maintenance and repair work.
- As the formation of sludge and magnetite in the heating water cannot generally be completely prevented during operation, we recommend the installation of suitable magnetic dirt separators: See Vitoset pricelist.

Notes on commissioning and operating the system
- In order to prevent corrosion by remaining flushing water, fill the system completely immediately after flushing.
- Even treated fill water contains oxygen and small amounts of foreign matter. In order to prevent local concentrations of corrosion products and other deposits on the heating surfaces of the heat generator, commission the system in stages with a high heating water flow rate. Start with the heat generator at its lowest output. For the same reason, in the case of multi boiler systems and cascades, commission all heat generators at the same time.
- If extending the system or conducting maintenance or repair work, only drain the pipework sections where absolutely necessary.
- Check and clean filters, dirt traps and other blow-down or separating facilities in the heating water circuit after filling and commissioning.
- Special regional regulations regarding fill and top-up water must be observed. When disposing of heating water containing additives, check whether additional treatment may be required before it is discharged into the public waste water system.

Installation examples
For installation examples, see "www.viessmann-schemes.com".
Never install the Vitodens 222-W in dual mode systems with solid fuel boilers.

Expansion vessels

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

An expansion vessel is integrated in the boilers:
- Vitodens 200-W and 222-W: Capacity 10 l
- Vitodens 222-F: Capacity 18 l

Pre-charge pressure in the delivered condition: 0.75 bar (0.075 MPa)
Determine the size of the expansion vessel to be installed in accordance with EN 12828.

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

Note
When hydraulically connecting the diaphragm expansion vessel, ensure that there is always 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". The 3-way diverter valve is installed in the heating water flow.

Low loss header

Usage

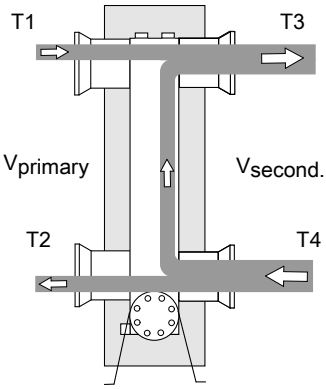
Design rules for system hydraulics:
- When balancing the low loss header, adjust the flow rate on the equipment side to approx. 10 to 30 % below the flow rate on the system side (reducing the return temperature).
- The low loss header should be sized for the max. flow rate which may occur in the overall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

The low loss header separates the heat generator circuit (boiler circuit) from the downstream heating circuits.
A low loss header must be used if the max. flow rate of an individual design is greater than the possible flow rate as shown on the relevant "Residual head" graph.
For installation schemes in conjunction with low loss headers, see "www.viessmann-schemes.com".

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 graphs are used to find the relevant residual head for determining the internal pipe diameters, subject to the water volume circulating in the heat generator 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 heat generator circuit (approx. 10 to 30 % less than $V_{secondary}$)
$V_{secondary}$	Heating water volume, heating circuit
T_1	Flow temperature, heat generator circuit
T_2	Return temperature, heat generator circuit
T_3	Flow temperature, heating circuit
T_4	Return temperature, heating circuit
$Q_{primary}$	Amount of heat supplied by the heat generator
$Q_{secondary}$	Amount of heat transferred by the heating circuit

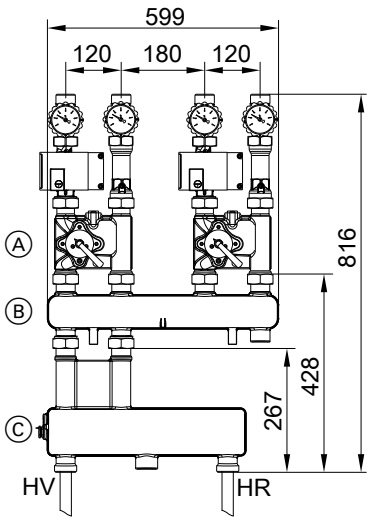
$V_{primary}$ $< V_{secondary}$
T_1 $> T_3$
T_2 $\simeq T_4$
$Q_{primary}$ $= Q_{secondary}$

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

Low loss header (separate accessories)
See Vitodens installation accessories, page 71

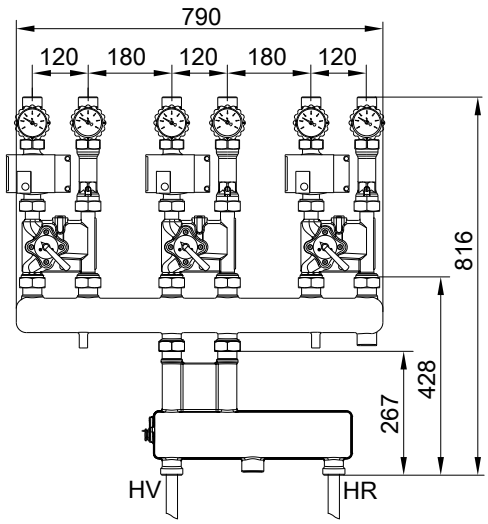
Low loss header in conjunction with Divicon

	Max. flow rate in m^3/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

Ⓐ Divicon heating circuit distributor
Ⓑ Manifold
Ⓒ Low loss header



HR Heating return
HV Heating flow

7.6 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 CECS 215-2017 and 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.

The appliance is intended exclusively for domestic or semi-domestic use; even users who have not had any instruction are able to operate the appliance safely.

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

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

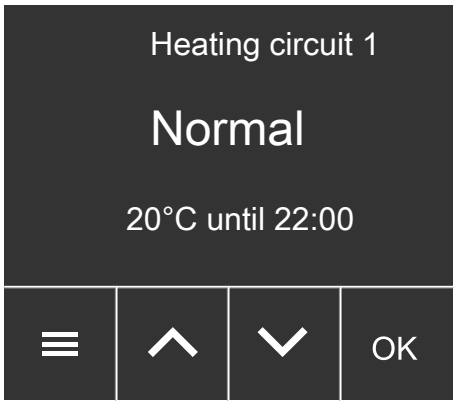
Incorrect usage or operation of the appliance (e.g. the appliance being opened by the system user) is prohibited and will result in an exclusion of liability. Incorrect usage also occurs if the components in the heating system are modified from their intended use (e.g. if the flue gas and ventilation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

8.1 Layout and functions

Control unit with 3.5 inch screen

Modular design
The control unit is integrated into the Vitodens.

The control unit comprises electronics modules and a programming unit:
- HMI programming unit with 3.5 inch black/white screen and integral communication module
- HMU heat management unit:
  - For connecting actuators and sensors
  - For connecting accessories via PlusBus
- BCU (burner control unit) electronics module for electronic combustion control
- Status indicator (Lightguide) for operating and fault display



The control unit can be set to the following operating modes:
- Weather-compensated operation
  An outside temperature sensor (accessories) must be connected.
- Constant operation
  Operation with constant flow temperature
- Room temperature-dependent operation
  A room temperature controller/room thermostat (accessories) must be connected to plug 96. Only one heating circuit without mixer in the system.

Programming unit
- Easy operation through:
  - Black/white screen with plain text display
  - Context-sensitive help texts
- Connectivity via:
  - Integral WiFi interface
  - Access point mode
  - Low power radio
- With digital time switch
- Touchscreen for:
  - Navigation
  - Settings
  - Confirmation
  - Help and additional information
  - Menu
- Adjustment of:
  - Set room temperature
    - Reduced
    - Normal
    - Comfort
  - Set DHW temperature
  - One-off cylinder heat-up
  - Operating programs for central heating and DHW heating
  - Time programs for central heating, DHW heating and DHW circulation
  - Extended heating
  - Holiday program
  - Days at home
  - Heating curves
  - Hygiene function (increased DHW hygiene)
  - Parameter
  - Actuator tests
  - Test mode
- Display of:
  - Outside temperature
  - Heat generator flow temperature
  - Flow temperature in heating circuits with mixer
  - DHW temperature
  - Operating data
  - Diagnostic data
  - Fault messages
- Available languages:
  - German
  - Czech
  - Danish
  - English
  - French
  - Italian
  - Dutch
  - Polish
  - Slovak
  - Swedish
  - Estonian
  - Croatian
  - Latvian
  - Lithuanian
  - Bulgarian
  - Romanian
  - Russian
  - Slovenian
  - Spanish
  - Hungarian

Control unit with 7 inch screen

Modular design
The control unit is integrated into the Vitodens.

Control unit (cont.)

The control unit comprises electronics modules and a programming unit:
- HMI programming unit with 7 inch greyscale touchscreen and integral communication module
- HMU heat management unit:
  - For connecting actuators and sensors
  - For connecting accessories via PlusBus
- BCU (burner control unit) electronics module for electronic combustion control
- Status indicator (Lightguide) for operating and fault display

The control unit can be set to the following operating modes:
- Weather-compensated operation
  An outside temperature sensor (accessories) must be connected.
- Constant operation
  Operation with constant flow temperature
- Room temperature-dependent operation
  A room temperature controller/room thermostat (accessories) must be connected to plug 96. Only one heating circuit without mixer in the system.

Programming unit
- Easy operation through:
  - Greyscale touchscreen with plain text and graphic display
  - Large font and high contrast depiction
  - Context-sensitive help texts
- Connectivity via:
  - Integral WiFi interface
  - Access point mode
  - Low power radio
- With digital time switch
- Touchscreen for:
  - Navigation
  - Settings
  - Confirmation
  - Help and additional information
  - Menu
- Adjustment of:
  - Set room temperature
    - Reduced
    - Normal
    - Comfort
  - Set DHW temperature
  - One-off cylinder heat-up
  - Operating programs for central heating and DHW heating
  - Time programs for central heating, DHW heating and DHW circulation
  - Extended heating
  - Holiday program
  - Holiday at home
  - Heating curves
  - Hygiene function (increased DHW hygiene)
  - Parameter
  - Actuator tests
  - Test mode
- Display of:
  - Outside temperature
  - Heat generator flow temperature
  - Flow temperature in heating circuits with mixer
  - DHW temperature
  - Operating data
  - Energy consumption values (in the energy cockpit)
  - Diagnostic data
  - Fault messages
- Available languages:
  - German
  - Czech
  - Danish
  - English
  - French
  - Italian
  - Dutch
  - Polish
  - Slovak
  - Swedish
  - Estonian
  - Croatian
  - Latvian
  - Lithuanian
  - Norwegian
  - Bulgarian
  - Portuguese
  - Romanian
  - Russian
  - Serbian
  - Slovenian
  - Spanish
  - Finnish
  - Ukrainian
  - Hungarian

Functions

Control unit with 3.5 inch screen
- Control of the flow temperature (selectable):
  - Weather-compensated
  - Constant
  - Room temperature-dependent
- Control of 1 heating circuit without mixer
- Control of max. 3 heating circuits with mixer (accessories)
- Electronic maximum and minimum temperature limit
- Demand-dependent heating circuit pump and burner shutdown control
- Variable heating limit setting
- Automatic winter/summertime changeover
- Individually programmable switching times for central heating and DHW heating.
  Max. 4 time phases for each per day
- Heating system frost protection monitoring
- Integral diagnostic system
- Service indicator
- Commissioning via commissioning assistant
- Cylinder temperature controller with priority control
- Hygiene function for DHW heating (short term heating to a higher temperature)

Control unit (cont.)

- Simultaneous screed drying program for all heating circuits (choice of 6 stored programs)
- Connection option for extension modules
- External heating circuit hook-up (weather-compensated control of flow temperature for up to 3 heating circuits in conjunction with room thermostat)
- In conjunction with the EM-S1 extension module (only for Vitodens 200-W):
  – Control of solar DHW heating
    Or
  – Central heating backup with combi cylinder (only with Vitodens 200-W)
    See **www.viessmann-schemes.com**

Control unit with 7 inch screen

- Control of the flow temperature (selectable):
  – Weather-compensated
  – Constant
  – Room temperature-dependent
- Control of 1 heating circuit without mixer
- Control of max. 2 heating circuits with mixer (accessories)
- Electronic maximum and minimum temperature limit
- Demand-dependent heating circuit pump and burner shutdown control
- Variable heating limit setting
- Automatic winter/summertime changeover
- Individually programmable switching times for central heating and DHW heating.
  Max. 4 time phases for each per day
- Heating system frost protection monitoring
- Integral diagnostic system
- Service indicator
- Commissioning via commissioning assistant
- Cylinder temperature controller with priority control
- Hygiene function for DHW heating (short term heating to a higher temperature)
- In conjunction with the EM-S1 extension module (only for Vitodens 200-W):
  – Control of solar DHW heating
    Or
  – Central heating backup with combi cylinder
    See **www.viessmann-schemes.com**
- Simultaneous screed drying program for all heating circuits (choice of 6 stored programs)
- Connection option for extension modules

To reduce the heat-up output, the reduced room temperature can be 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.

Notes on PlusBus subscribers

As a maximum, the following PlusBus subscribers can be connected to the control unit:

- 2 EM-M1 or EM-MX extensions (ADIO electronics module)
- 2 Vitotrol 200-E
- 3 EM-EA1 extensions (DIO electronics module)
- 1 EM-S1 extension (ADIO electronics module)
- 1 EM-P1 extension (ADIO electronics module)

The max. total length of the PlusBus lead is 50 m.
With an unscreened lead, 2-core, 0.34 mm^2.

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

Frost protection function

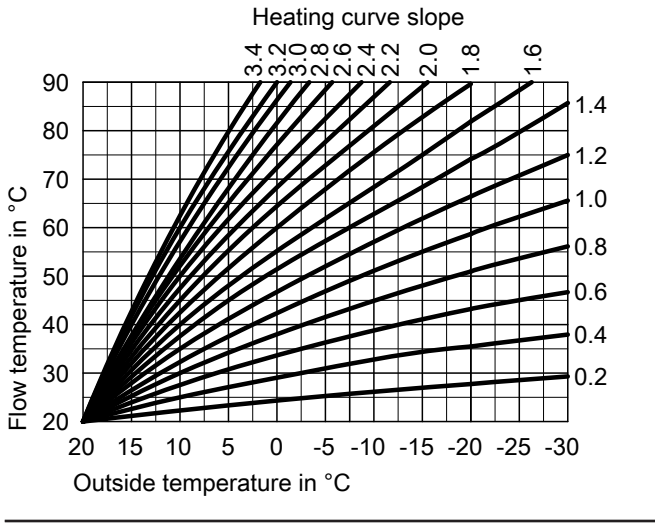
- The frost protection function will start when the outside temperature falls below approx. +1 °C.
  With active frost protection, the heating circuit pump is switched on and set to reduced flow temperature.
- If the actual temperature in the DHW cylinder is < 5 °C, the DHW cylinder is heated to 20 °C. If weather-compensated operation is configured with external heating circuit hook-up, then the heating circuit frost protection function is not active (if the contact is not assigned). Frost protection for the heating circuit must be provided on site.
- The frost protection function will stop when the outside temperature exceeds approx. +3 °C.

Heating curve setting (slope and level)

The 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) are controlled in weather-compensated mode. The flow temperature of the heat generator is therefore automatically regulated to between 0 and 40 K above 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 conditions.
Heating curves:

The flow temperature is restricted at the upper end of the scale by the temperature limiter and the maximum temperature set at the electronic maximum temperature limiter.
The flow temperature of the heating circuits cannot exceed the flow temperature of the heat generator.

Control unit (cont.)



Heating systems with a low loss header or heating water buffer cylinder

When using hydraulic separation (low loss header) or a heating water buffer cylinder, a temperature sensor must be installed in the low loss header or heating water buffer cylinder.
On heating circuits with mixers, the temperature sensor is connected to mixer extension kit EM-M1 or EM-MX.

If only one heating circuit without mixer is available downstream of the low loss header or heating water buffer cylinder, the temperature sensor and the heating circuit pump of the heating circuit without mixer is connected to the EM-P1 extension.

Flow temperature sensor

The flow temperature sensor is connected to the burner control unit (BCU electronics module) and installed in the appliance.

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

Standard delivery for:

Vitodens 200-W:
- Part of the standard delivery of the connection set for DHW cylinders below the boiler (120 or 150 l) (order separately)
- Part of the standard delivery of the connection set for DHW cylinders adjacent to the boiler (160 to 400 l) or alternative DHW cylinders (order separately)
- Cylinder temperature sensor (part no. ZK04671)
  Required with on-site DHW cylinder

Vitodens 222-W and 222-F:
- The cylinder temperature sensor is connected in the control unit and installed in the DHW cylinder
- The outlet temperature sensor is connected in the burner control unit (BCU electronics module) and installed in the boiler

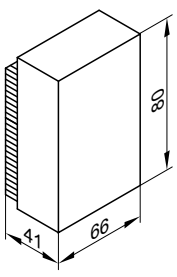
Specification

Lead length	3.75 m, fully wired
IP rating	IP 32
Sensor type	Viessmann NTC 10 kΩ at 25 °C
Permissible ambient temperature	
– Operation	0 to +90 °C
– Storage and transport	–20 to +70 °C

Outside temperature sensor

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

Connection
- 2-core lead, length up to 35 m with a cross-section of 1.5 mm^2 (copper)
- Never route this cable immediately next to 230/400 V cables.



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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

8.2 Specification – control unit

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	6 A
Protection class	I
Permissible ambient temperature	
– Operation	5 to +40 °C Installation in living spaces or boiler rooms (standard ambient conditions)
– Storage and transport	–20 to +65 °C
Electronic temperature limiter setting (heating mode)	91 °C (cannot be changed)
Setting range for DHW temperature	10 to 60 °C (up to 70 °C with the Vitodens 200-W and 300-W)
Setting range for heating curve	
Slope	0.2 to 3.5
Level	–13 to 40 K
TCU communication module (integral)	
WiFi frequency band	2400 - 2483.5 MHz
Max. transmission power	+ 17 dBm
Zigbee frequency band	2400 - 2483.5 MHz
Max. transmission power	+ 6 dBm
Supply voltage	24 V ⎓
Power consumption	4 W

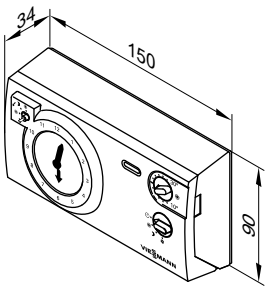
8.3 Accessories for control unit

Vitotrol 100, type UTA

Part no. 7170149

Room thermostat
- With switching output (2-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 mm^2 (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
Protection class	II
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

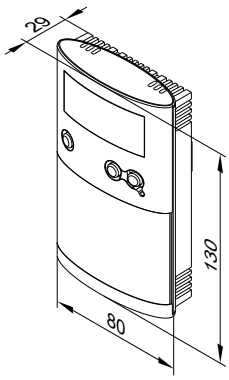
Vitotrol 100, type UTDB

Part no. Z007691

Room temperature controller
- With switching output (2-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 (2 x 1.5 V Mignon alkaline batteries, type LR6/AA, battery life approx. 1.5 years).

Control unit connection:
- 2-core cable with a cross-section of 0.75 mm^2 for extra low voltage (ELV)
- 2-core cable with a cross-section of 1.5 mm^2 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–
IP rating	IP 20 to EN 60529 Ensure through design/installation
Protection class	II
Function type	RS type 1B to EN 60730-1
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–25 to +65 °C
Setting range	
– Comfort temperature	10 to 40 °C
– Setback temperature	10 to 40 °C
– Frost protection temperature	5 °C
Power reserve during battery change	3 min

Vitotrol 100, type UTDB-RF

Part no. Z007692

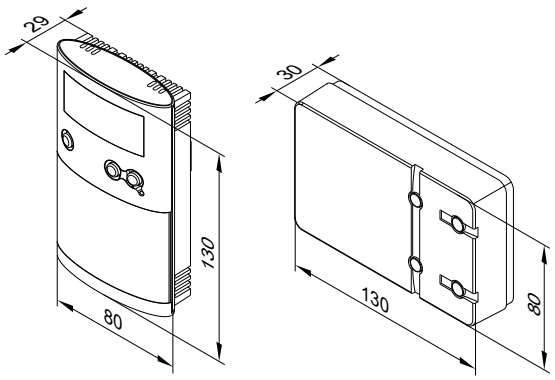
Room temperature controller with integral wireless transmitter and receiver
- With digital time switch
- With individual day and seven-day program
- Operation with user prompts:
  – 3 preselected time programs, individually adjustable
  – Constant manual mode with adjustable set room temperature
  – 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 (2 x 1.5 V Mignon alkaline batteries, 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 mm^2 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 mm^2 for LV for the connection to the control unit, plus an additional 2-core cable for the 230 V~ power supply

Control unit (cont.)



Specification, room temperature controller

Rated voltage	3 V–
Transmission frequency	868 MHz
Transmission	< 10 mW
Range	approx. 10 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

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

Vitotrol 200-E

Part no. Z017415

- PlusBus subscriber
- Max. 2 Vitotrol 200-E can be connected to the control unit of a heat generator as PlusBus subscribers.
- Up to 4 heating circuits can be controlled with a Vitotrol 200-E. Alternatively, a Vitotrol 200-E can be assigned to a heating circuit. A heating circuit cannot be controlled by more than one remote control.
- With integral room temperature sensor for room temperature hook-up (only for one heating circuit with mixer)

Displays

- Room temperature
- Outside temperature
- Operating condition

Settings

- Set room temperature for standard room temperature, comfort room temperature and reduced room temperature.
- Set DHW temperature
- Switching times for heating circuits and DHW heating, plus further settings via plain text menu on the display
- Integral room temperature sensor for room temperature hook-up (only for one heating circuit with mixer)

Quick select function for:

- Extended heating (comfort room temperature)
- One-off cylinder heat-up
- Holiday program
- "Holiday at home"

Installation location

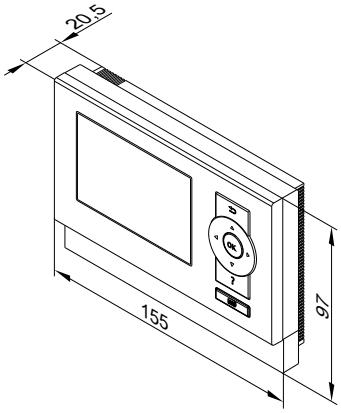
- Weather-compensated operation:
  Installation anywhere in the building
- Room temperature hook-up:
  The integral room temperature sensor captures the room temperature and effects any necessary correction of the flow temperature.

  The captured room temperature depends on the installation site:
  – Installation only in enclosed buildings
  – Not next to windows or doors
  – Not between shelves, in recesses, etc.
  – Not near heat sources (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.
- Extra low voltage (ELV) plug included in standard delivery

Specification



Vitotrol 200-E

Power supply		Via PlusBus
Voltage	V	28
Current	mA	25
Protection class		III
Permissible ambient temperature		
– Operation	°C	0 to +40
– Storage and transport	°C	–20 to +65 °C

Control unit (cont.)

Vitotrol 300-E

Part no. 7959522

- Wireless remote control with integrated low power wireless transmitter
- For max. 4 heating/cooling circuits and 1 ventilation unit
- Not in conjunction with hardwired remote control units

Note
Cannot be used if the heat generator is configured as for an "apartment building".

Displays

- Room temperature
- Outside temperature
- Room air humidity

Settings

- Set room temperature for reduced mode (reduced room temperature), standard mode (standard room temperature) and comfort mode (comfort room temperature) per heating/cooling circuit
- Operating programs "Holiday at home" and holiday program
- Room temperature hook-up via integrated room temperature sensor
- Operating programs heating/cooling circuits and DHW heating
- Energy cockpit
- With ViCare single room control: Temperatures and time program for each room

Note
Additional ViCare components are required for individual room control.

Additional settings for the ventilation unit:

- Ventilation operating program
- Ventilation stages
- Low-noise mode and intensive ventilation
- Bypass function
- Ventilation cockpit

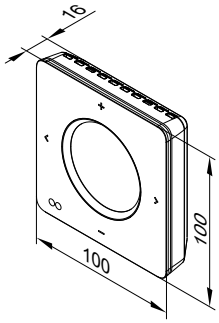
Installation location

- Weather-compensated operation:
  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:
  – Installation only in enclosed buildings
  – Distance to floor min. 1.5 m
  – Not next to windows or doors
  – Not above radiators
  – Not between shelves, in recesses, etc.
  – Not near heat sources (direct sunlight, fireplace, TV set, etc.)

Standard delivery

- Wireless remote control
- Plug-in power supply unit
- Fixing materials

Specification



Vitotrol 300-E	
Rated voltage	– Plug-in power supply unit: 5 V⎓ – Power supply unit for flush mounting: 12 V⎓
Rated current	– Plug-in power supply unit: 0.8 A – Power supply unit for flush mounting: 0.33 A
Internet protocol	IPv4
IP assignment	DHCP
Power consumption	4 W
Protection class	III
IP rating	IP 20D to EN 60529; ensure through design/installation.
WiFi	
WiFi frequency	2.4 GHz
WiFi encryption	Unencrypted or WPA2
Frequency band	2400.0 to 2483.5 MHz
Max. transmission power	0.1 W (e.i.r.p.)
Low power radio	
Radio frequency	2.4 GHz
Encryption	Encrypted
Wireless range through walls	Up to 14 m (depending on wall thickness and wall type)
Permissible ambient temperature	
– Operation	+5 to +40 °C Installation in living spaces or boiler rooms (standard ambient conditions)
– Storage and transport	–20 to +60 °C

Plug-in power supply unit	
Rated voltage	100 to 240 V~
Rated frequency	50/60 Hz
Output voltage	5 V⎓
Output current	2 A
Protection class	II
Permissible ambient temperature	
– Operation	+5 to +40 °C Installation in living spaces or boiler rooms (standard ambient conditions)
– Storage and transport	–20 to +60 °C

Outside temperature sensor

Part no. ZK04306

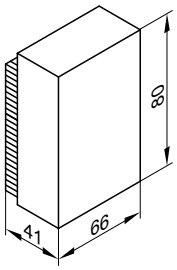
Installation location:

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

Connection:

- 2-core lead, length up to 35 m with a cross-section of 1.5 mm^2 (copper)
- Never route this cable immediately next to 230/400 V cables.

Control unit (cont.)



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

Room temperature sensor

Part no. 7438537

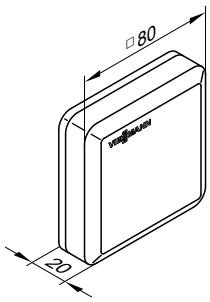
Separate room temperature sensor as supplement to the Vitotrol 200-E; to be used if the Vitotrol 200-E cannot be installed inside the main living room or in a suitable position for temperature capture and adjustment.

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 sunlight, fireplace or TV set.

Connect the room temperature sensor to the Vitotrol 200-E.

Connection:

- 2-core lead with a cross-section of 1.5 mm^2 (copper)
- Max. lead length from the remote control: 30 m
- Never route this lead 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 kΩ at 25 °C
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–20 to +65 °C

Immersion temperature sensor

Part no. ZK04032

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 kΩ at 25 °C
Permissible ambient temperature	
– Operation	0 to +90 °C
– Storage and transport	–20 to +70 °C

Cylinder temperature sensor

Part no. ZK04671

For capturing the DHW temperature in the on-site DHW cylinder

Specification

Lead length	3.75 m, fully wired
IP rating	IP 32
Sensor type	Viessmann NTC 10 kΩ at 25 °C
Permissible ambient temperature	
– Operation	0 to +90 °C
– Storage and transport	–20 to +70 °C

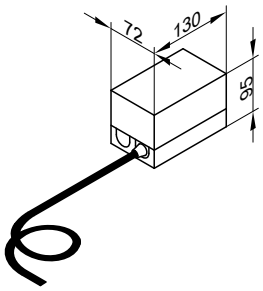
Contact temperature limiter

Part no. ZK04647

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

The temperature limiter is fitted to the heating flow. If the flow temperature is too high, the temperature limiter switches off the heat generator.

Control unit (cont.)



Specification

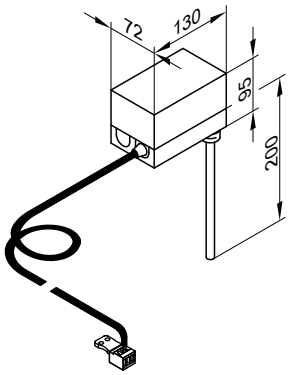
Lead length	1.5 m
Setting range	30 to 80 °C
Switching differential	6.5 K ±2.5 K
Breaking capacity	6(1.5) A, 250 V~
Setting scale	Inside the enclosure
Protection rating to EN 60529	IP 41

Immersion temperature limiter

Part no. 7151728

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

- With stainless steel sensor well R ½ x 200 mm
- In conjunction with heating circuits with separate heating circuit pump and mixer extension kit.



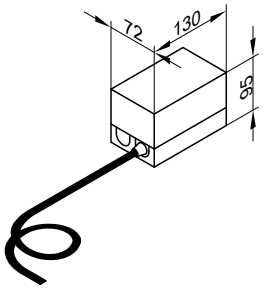
Specification

Lead length	4.2 m
Setting range	30 to 80 °C
Switching differential	6.5 K ±2.5 K
Breaking capacity	6(1.5) A, 250 V~
Setting scale	Inside the enclosure
Protection rating to EN 60529	IP 41

Contact temperature limiter

Part no. 7151729

Can be used as a maximum temperature limiter for underfloor heating systems (only in conjunction with metal pipes).
In conjunction with heating circuits with separate heating circuit pump and mixer extension kit.



Specification

Lead length	4.2 m
Setting range	30 to 80 °C
Switching differential	6.5 K ±2.5 K
Breaking capacity	6(1.5) A, 250 V~
Setting scale	Inside the enclosure
Protection rating to EN 60529	IP 41

Notes on PlusBus subscribers

As a maximum, the following PlusBus subscribers can be connected to the control unit:

- 3 EM-M1 or EM-MX extensions (ADIO electronics module)
- 2 Vitotrol 200-E
- 3 EM-EA1 extensions (DIO electronics module)
- 1 EM-S1 extension (ADIO electronics module)
- 1 EM-P1 extension (ADIO electronics module)

The max. total length of the PlusBus lead is 50 m.
With an unscreened lead, 2-core, 0.34 mm^2.
If the total system current exceeds 6 A, connect one or more extensions directly to the mains supply via an ON/OFF switch.

Control unit (cont.)

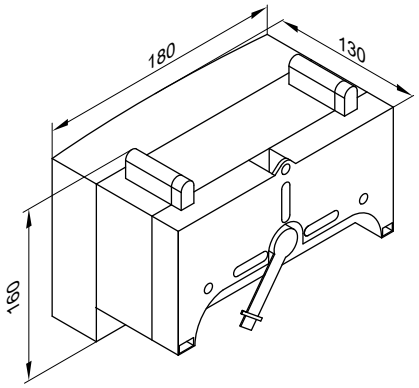
EM-MX mixer extension kit with integral mixer motor

Part no. Z017409
PlusBus subscriber

Components:
- Mixer PCB (ADIO electronics module) with mixer motor for Viessmann mixer DN 20 to DN 50 and R ½ to R 1¼
- Flow temperature sensor (contact temperature sensor) with connecting lead and plug
- Plug for connecting the heating circuit pump
- Power cable (3.0 m long) with plug
- PlusBus connecting lead (3.0 m long) with plug
- Option to connect immersion temperature sensor low loss header (separate accessory)

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

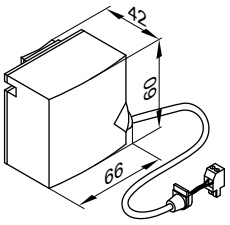
Mixer PCB with mixer motor



Specification - Mixer PCB with mixer motor

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	6 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]	1 A, 230 V~
– Mixer motor [52]	0.1 A, 230 V~
Torque	3 Nm
Required runtime of the mixer motor for 90° ◁	Approx. 120 s

Flow temperature sensor (contact temperature sensor)



Secured with a tie.

Flow temperature sensor specification

Lead 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

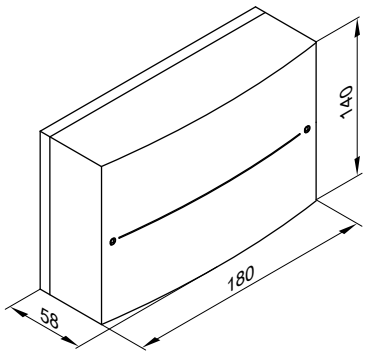
EM-M1 mixer extension kit for separate mixer motor

Part no. Z017410
PlusBus subscriber
For connecting a separate mixer motor

Components:
- Mixer PCB (ADIO electronics module) for connecting a separate mixer motor
- Flow temperature sensor (contact temperature sensor) with connecting lead and plug
- Plug for connecting the heating circuit pump and the mixer motor
- Power cable (3.0 m long) with plug
- PlusBus connecting lead (3.0 m long) with plug
- Option to connect immersion temperature sensor low loss header (separate accessory)

Control unit (cont.)

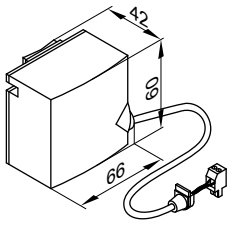
Mixer PCB



Mixer PCB specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	2 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]	1 A, 230 V~
– Mixer motor [52]	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.

Flow temperature sensor specification

Lead 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

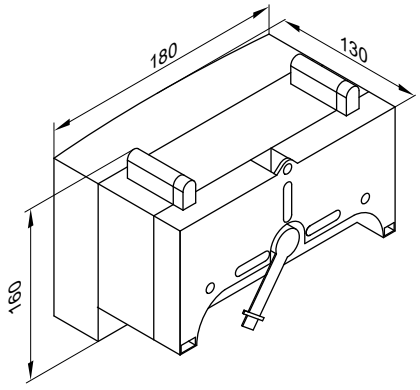
EM-MX mixer extension kit for Divicon heating circuit distribution

Part no. Z017414
PlusBus subscriber

Components:
- Mixer PCB (ADIO electronics module) with mixer motor for Divicon heating circuit distribution
- Flow temperature sensor (contact temperature sensor) with connecting lead and plug
- Plug for connecting the heating circuit pump
- Power cable (3.0 m long) with plug
- PlusBus connecting lead (3.0 m long) with plug
- Option to connect immersion temperature sensor low loss header (separate accessory)

The mixer motor is mounted directly onto the Viessmann mixer of the Divicon heating circuit distributor.

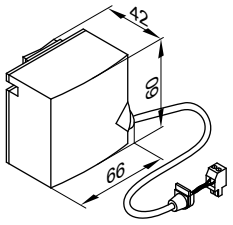
Mixer PCB with mixer motor



Specification - Mixer PCB with mixer motor

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	6 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]	1 A, 230 V~
– Mixer motor [52]	0.1 A, 230 V~
Torque	3 Nm
Required runtime of the mixer motor for 90° ◁	Approx. 120 s

Flow temperature sensor (contact temperature sensor)



Secured with a tie.

Control unit (cont.)

Flow temperature sensor specification

Lead 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

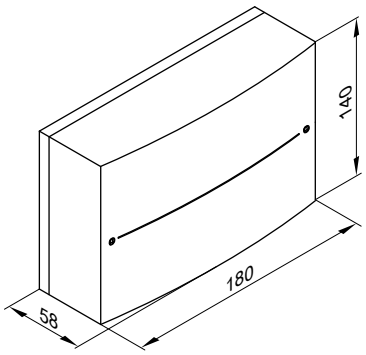
EM-P1 extension

Part no. Z017411

Function extension to control a heating circuit pump and/or DHW circulation pump depending on the hydraulics of the heating system
- Controlling a heating circuit pump for a heating circuit without mixer (heating circuit 1)
- Controlling a DHW circulation pump

In an enclosure for wall mounting
PlusBus subscriber

Components:
- ADIO electronics module
- Plug for connecting the heating circuit pump
- Power cable (3.0 m long) with plug
- PlusBus connecting lead (3.0 m long) with plug
- Option to connect immersion temperature sensor low loss header (separate accessory)



Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	2 W
Rated relay output breaking capacity	1 A, 230 V~
Protection class	I
IP rating	IP 20D 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

Solar control units

EM-S1 extension to control DHW heating and provide simple central heating backup

Part no. Z019336
- PlusBus subscriber
- Function extension inside enclosure for wall mounting
- Electronic temperature differential control for control of dual mode DHW heating and simple central heating backup using solar collectors
  See: **www.viessmann-schemes.com**

Functions
- Control and display via the heat generator control unit
- Switching the solar circuit pump
- Solar circuit pump speed control via PWM signal
- Suppression of DHW cylinder reheating by the heat generator subject to solar yield
- Safety shutdown of the solar circuit pump
- Electronic temperature limitation in the DHW cylinder
- Switching of a transfer pump for the DHW cylinder
- Frost protection function
- Interval function

Design

The EM-S1 extension comprises:
- ADIO electronics module
- Terminals for:
  – 3 sensors
  – Solar circuit pump
  – PlusBus
  – Power supply
  – Transfer pump
- PWM output for switching the solar circuit pump

Collector temperature sensor
For connection to the EM-S1 extension

On-site extension of the connecting lead:
- 2-core lead, length up to 60 m with a cross-section of 1.5 mm^2 (copper)
- Do not route this lead immediately next to 230 V/400 V cables.

Control unit (cont.)

Specification – collector temperature sensor

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	
– Operation	–20 to +200 °C
– Storage and transport	–20 to +70 °C

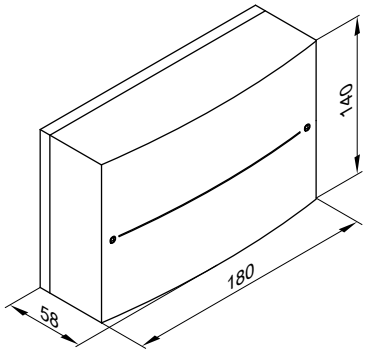
Cylinder temperature sensor
For connection to the EM-S1 extension

On-site extension of the connecting lead:
- 2-core lead, length up to 60 m with a cross-section of 1.5 mm^2 (copper)
- Never route this lead immediately next to 230/400 V cables.

Specification – cylinder temperature sensor

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

For systems with Viessmann DHW cylinders, the cylinder temperature sensor is installed in the threaded elbow in the heating water return (standard delivery or accessory for the respective DHW cylinder).



Specification – EM-S1 extension

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

Functions

Cylinder temperature limit
The solar circuit pump will be switched OFF if the set cylinder temperature is exceeded.

Collector emergency stop
In order to protect the system components, the solar circuit pump is switched off if the adjustable collector limit temperature is exceeded. In the Vitosol-FM and 300-TM switching collectors, the collector temperature limit can be set to 145 °C. To do so, please comply with the manufacturer system pressure specification. This enables solar circuit pump operation even when the system is shut down.

Ensure the following:
- The components in the solar circuit flow line must be designed for a temperature of 145 °C.
- The return line temperature must not exceed 120 °C.

Minimum collector temperature limit
If the actual temperature falls below the minimum collector temperature, the solar circuit pump is shut down.

Frost protection function
Viessmann collectors are filled with Viessmann heat transfer medium. This function does not have to be activated.
Activate only when using water as the heat transfer medium.
With a collector temperature below +5 °C, the solar circuit pump will be started to avoid damage to the collectors. The pump is stopped when a temperature of +7 °C is reached.

Heat statement
When determining thermal yields, the differential between the collector and cylinder temperature, the set throughput, the type of heat transfer medium and the operating time of the solar circuit pump are taken into account.

Reheating suppression
DHW cylinder reheating by the boiler is suppressed in 2 stages. During solar heating of the DHW cylinder, the set cylinder temperature is reduced. Suppression remains active for a certain time after the solar circuit pump is switched off.
If solar heating is uninterrupted (> 2 h), reheating by the boiler only occurs if the temperature falls below the 3rd set DHW temperature, as set at the boiler control unit (in parameter "1394.0") (setting range 10 to 95 °C). This value must be **below** the 1st set DHW temperature.
If the solar thermal system is unable to maintain this set value, the DHW cylinder is heated by the boiler (solar circuit pump running).

Auxiliary function for DHW heating
In solar thermal systems with DHW storage, we recommend heating the preheating cylinder and the preheating stage in dual mode DHW cylinders to ≥ 60 °C once a day (regardless of the cylinder volume). Enabling of the auxiliary function for DHW heating must be programmed at the boiler control unit. The solar preheating stage can be heated up at selectable times.

Relay kick
If the pumps and valves have been switched off for 24 hours, they are started for approx. 10 s to prevent them seizing up.

Reduction of stagnation time
If there is an excess of solar energy, the speed of the solar circuit pump is reduced before the maximum cylinder temperature is reached. This causes an increase in the differential between collector temperature and cylinder temperature. The heat transfer to the DHW cylinder is reduced, which delays stagnation.

8

EM-EA1 extension

Part no. Z017412
- PlusBus subscriber
- Enclosure for wall mounting

Functions

Note
Only one function can be connected to each EM-EA1 extension (DIO electronics module).

- **230 V fault message input and fault message output (potential-free) without system blocking**
  Fault message input: If a voltage of 230 V is present at digital input contact 43-1, fault message is active. Fault message output 66 active.
- **External LPG valve**
  Output 43-L is active if the burner control unit opens the external LPG valve.
- **Extractor hood: External extractor interlock**
  An extractor can be switched off. Output 66 switches from NC to NO and thereby switches the extractor hood off when the burner control unit starts the burner.
- **Operating mode changeover**
  Demand to all available heating circuits simultaneously, as long as contact remains closed. With the set room temperature of each individual heating circuit:
  DI1 Reduced room temperature
  DI2 Standard room temperature
  DI3 Comfort room temperature
- **Fault message input 24 V and system blocking**, e.g. condensate removal pump
  If contact DI1 is closed, the heat generator is blocked. Output 66 is switched over. Fault message F.104 appears. E.g. block burner if fault is present at condensate removal pump.

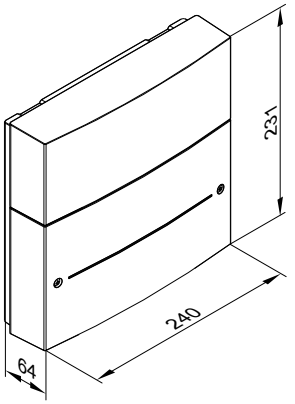
  Note
  If only the fault message output is to be used, set e.g. the "fault message input... and fault message output" functions.

- **Fault message input 230 V and system blocking**
  If a voltage of 230 V is present at digital input contact 43-1, the heat generator is blocked. Output 66 is switched over. Fault message F.104 appears.
- **External demand (digital)**
  If a voltage of 230 V is present at digital input contact 43-1, a demand is sent to the heat generator with an adjustable set flow temperature (parameter 528.0) and a set speed for the primary circuit pump (parameter 1100.2).
- **External blocking**
  If a voltage of 230 V is present at digital input contact 43-1, the heat generator is blocked. Message info I.57 is displayed.
- **0-10 V analogue input**
  Connection of the external set flow temperature (observe polarity of the applied 0-10 V DC control voltage).

  Note
  No galvanic separation is required between the earth conductor and the negative pole of the on-site power source.
  If a voltage of 230 V is present at digital input 43-1, the external 0-10 V default is enabled.

- External heating circuit hook-up with 2 or 3 heating circuits

Components:
- DIO electronics module
- Plug for connecting the functions
- Power cable (3.0 m long) with plug
- PlusBus connecting lead (3.0 m long) with plug



Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	2.8 W
Rated breaking capacity output 66 (potential-free)	1 A 230 V~
Output 43 rated breaking capacity	1 A 230 V~
Protection class	I
IP rating	IP 20D 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 +60 °C

Demand to digital inputs DI to DI3
External contacts must be potential-free. When connecting, observe the requirements of safety category II, i.e. 5.0 mm air and creep path and 2.0 mm insulation thickness to live parts.

6195326

WAGO MB/TCP gateway

Part no. Z019286

For data exchange with an external system on the basis of the Modbus/TCP communication standard
- WAGO MB/TCP gateway for mounting on a top-hat rail

  Connections:
  - Modbus/TCP terminals for connection to on-site Modbus system
  - CAN bus terminals for connecting the cable to the heat generator
  - Power supply 230 V~ via plug-in power supply unit
- Power supply unit for mounting on a top-hat rail

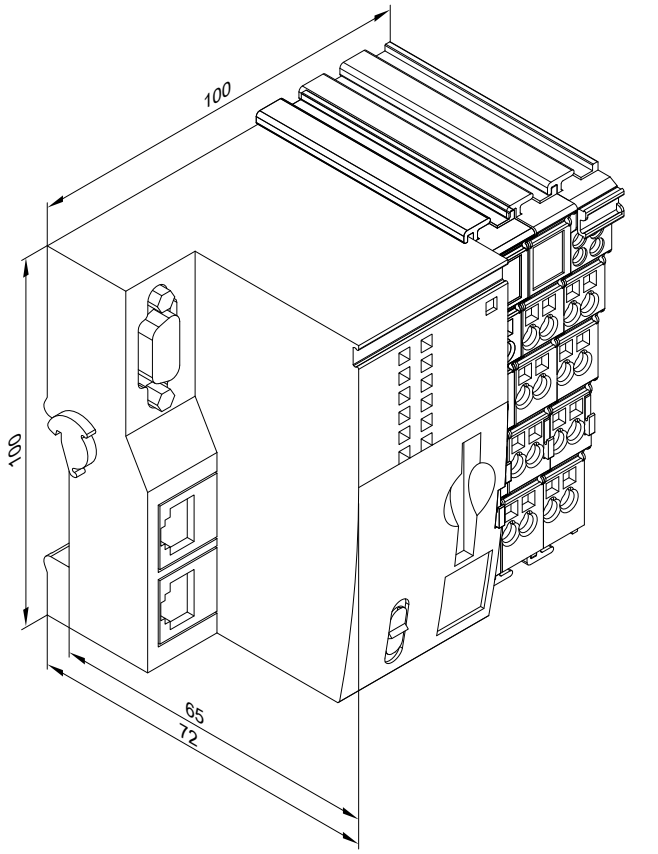
Accessories
- Wall mounted enclosure: **Part no. ZK04917**
- CAN bus cable, length 7 m: **Part no. ZK04974**

Functions
- Transfer of appliance data and operating data:
  - Data transmission from the Viessmann control unit to the WAGO MB/TCP gateway via CAN bus
  - Data transmission from the WAGO MB/TCP gateway to the Modbus system via the Modbus (on-site connecting cable)
- Remote control of heat generators, e.g. switching, changing set values, via suitable visualisation
- Remote monitoring of the heat generator, e.g. actual values, operating states, via the on-site Modbus system
- Relaying fault and maintenance messages

Specification

WAGO MB/TCP gateway

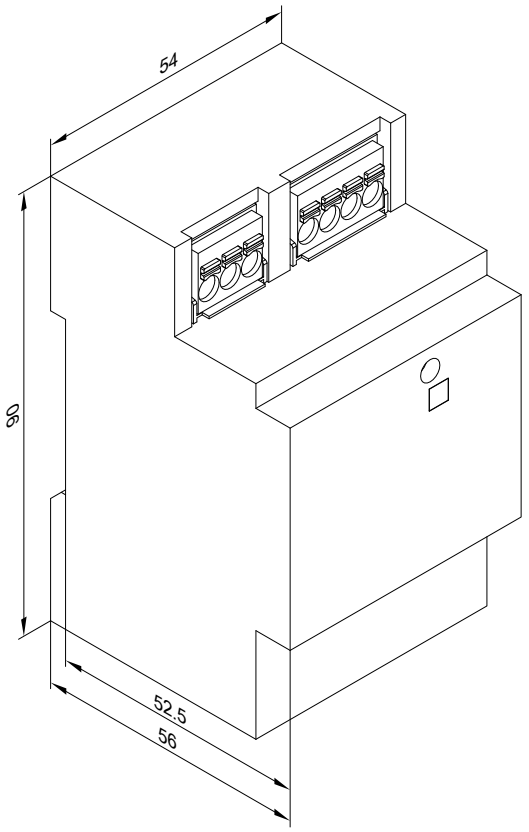
Power supply	24 V⎓
Max. power consumption	116 mA
Rated output	2.8 W
IP rating	IP 20
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage	−20 to +60 °C
– Transport	−20 to +60 °C for max. 3 months or average 35 °C
Installation	Top-hat rail TS 35 to EN 50022



Power supply unit

Rated voltage	100 to 240 V~
Rated frequency	50 to 60 Hz
Rated current	1.34 A⎓
Output voltage	24 V⎓
Protection class	II
IP rating	IP 20
Primary/secondary galvanic isolation	SELV to EN 60335
Electrical safety	EN 60335
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–40 to +85 °C

Control unit (cont.)



Note
For further information, see ***www.automation-gateway.info.***
The connection to the on-site external control system and the configuration of the WAGO gateway must be carried out by a qualified contractor.

WAGO MB/RTU gateway

Part no. Z019287

For data exchange with an external system on the basis of the Modbus RTU communication standard
- WAGO MB/RTU gateway for mounting on a top-hat rail

  Connections:
  - Modbus/RTU terminals for connection to on-site Modbus system
  - CAN bus terminals for connecting the cable to the heat generator
  - Power supply 230 V~ via plug-in power supply unit
- Power supply unit for mounting on a top-hat rail

Accessories
- Wall mounted enclosure: **Part no. ZK04917**
- CAN bus cable, length 7 m: **Part no. ZK04974**

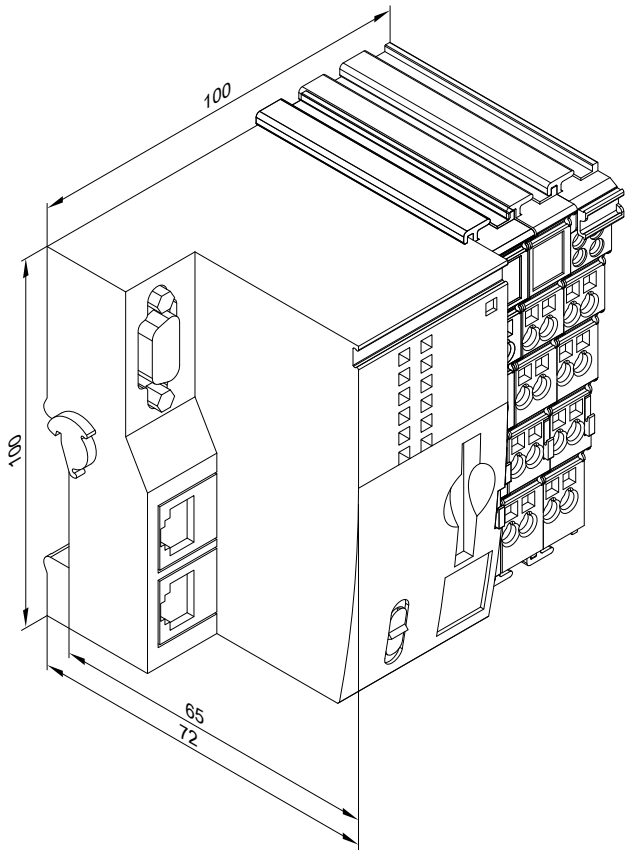
Functions
- Transfer of appliance data and operating data:
  - Data transmission from the Viessmann control unit to the WAGO MB/RTU gateway via CAN bus
  - Data transmission from the WAGO MB/RTU gateway to the Modbus system via the Modbus (on-site connecting cable)
- Remote control of heat generators, e.g. switching, changing set values, via suitable visualisation
- Remote monitoring of the heat generator, e.g. actual values, operating states, via the on-site Modbus system
- Relaying fault and maintenance messages

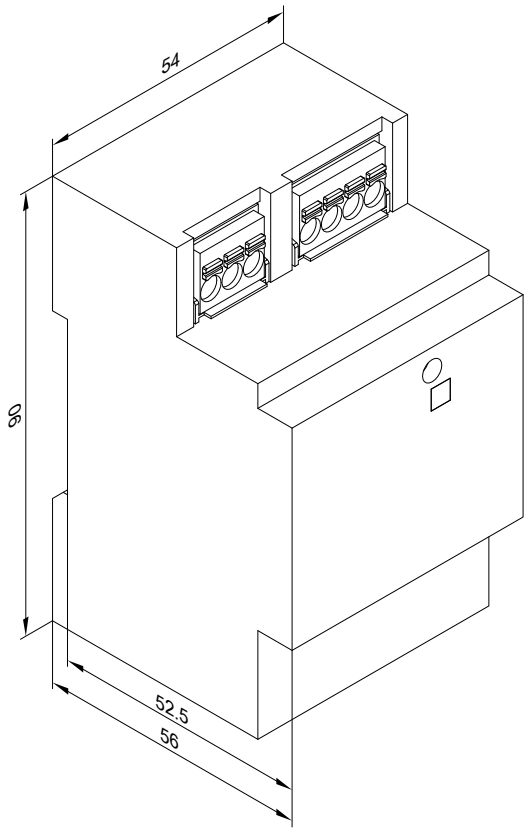
Specification

WAGO MB/RTU gateway

Power supply	24 V⎓
Max. power consumption	141 mA
Rated output	3.4 W
IP rating	IP 20
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage	−20 to +60 °C
– Transport	−20 to +60 °C for max. 3 months or average 35 °C
Installation	Top-hat rail TS 35 to EN 50022

Control unit (cont.)





Power supply unit

Rated voltage	100 to 240 V~
Rated frequency	50 to 60 Hz
Rated current	1.34 A⎓
Output voltage	24 V⎓
Protection class	II
IP rating	IP 20
Primary/secondary galvanic isolation	SELV to EN 60335
Electrical safety	EN 60335
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage and transport	–40 to +85 °C

Note

For further information, see ***www.automation-gateway.info.***
The connection to the on-site external control system and the configuration of the WAGO gateway must be carried out by a qualified contractor.

WAGO KNX/TP gateway

Part no. Z024994

- WAGO KNX/TP gateway for mounting on a top-hat rail
- Power supply unit for top-hat rail mounting

Accessories

- Wall mounted enclosure **part no. ZK04917**
- CAN bus cable (length 7 m) **part no. ZK04974**

Functions

- Relaying fault messages
- Remote control of heat generators via suitable visualisation (e.g. switching, changing set values)
- Transfer of device and operating data
- Data transmission from the Viessmann control unit to the WAGO KNX/TP gateway via CAN bus
- Data transfer from the WAGO KNX/TP gateway to the on-site KNX building automation system (on-site connecting cable)
- Remote monitoring of the heat generator via the on-site KNX building automation system (e.g. actual values, operating states)

Specification

WAGO KNX/TP gateway

Power supply	24 V⎓
Power consumption	Max. 124 mA
Rated output	3 W
IP rating	IP 20
Permissible ambient temperature	
– Operation	0 to +40 °C
– Storage	–20 to +60 °C
– Transport	−20 to +60 °C for max. 3 months or average 35 °C
Permissible relative humidity	
– Operation	– At 0 to +39 °C: Up to 95 % – At +40 °C: Up to 50 %
– Storage and transport	Up to 95 %, non-condensing
Installation	Top-hat rail TS 35 to EN 50022

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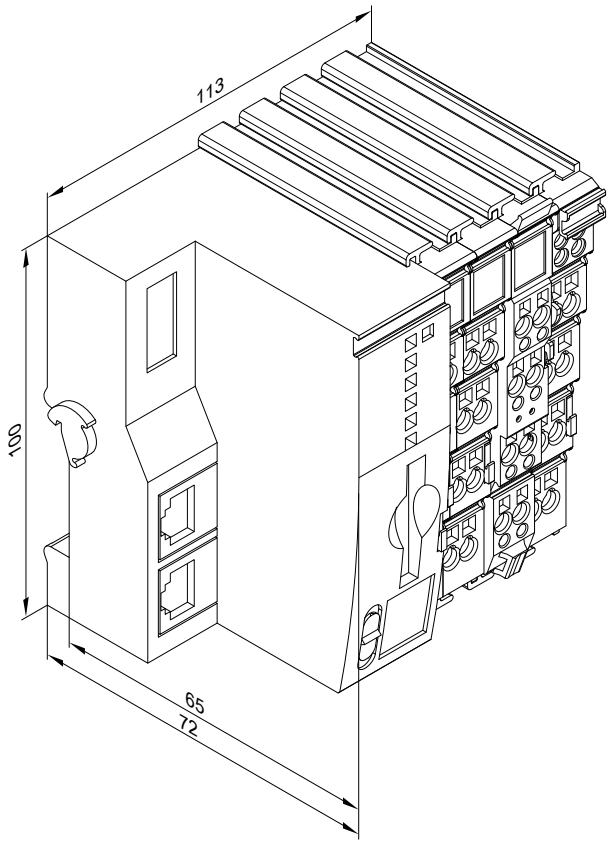
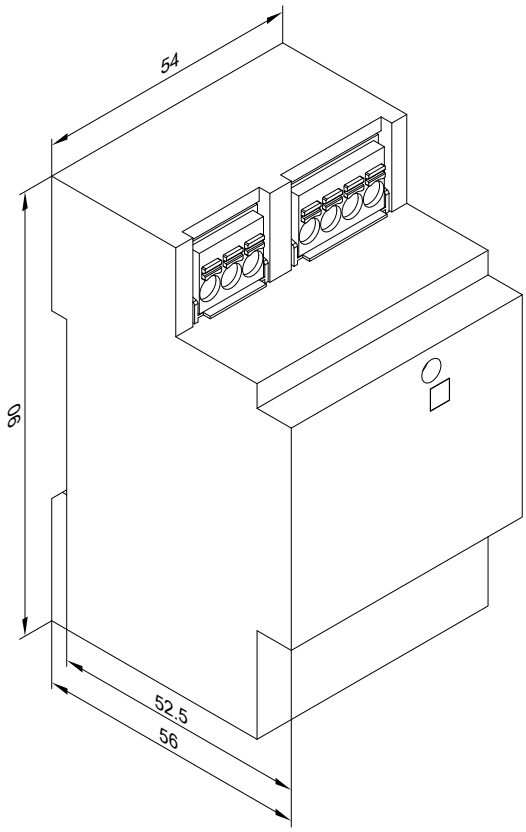
Control unit (cont.)





Power supply unit	
Rated voltage	100 to 240 V~
Rated frequency	50 to 60 Hz
Rated current	1.34 A⎓
Output voltage	24 V⎓
Protection class	II
IP rating	IP 20
Primary/secondary galvanic isolation	SELV to EN 60335
Electrical safety	EN 60335
Permissible ambient temperature – Operation – Storage and transport	 0 to +40 °C –40 to +85 °C

Note
For further information, see ***www.automation-gateway.info***
The connection to the on-site external control system and the configuration of the WAGO gateway must be carried out by a qualified contractor.

Wall mounted enclosure (accessories) for WAGO gateway

Part no. ZK04917
Enclosure for Wago gateway for wall mounting

Control unit (cont.)

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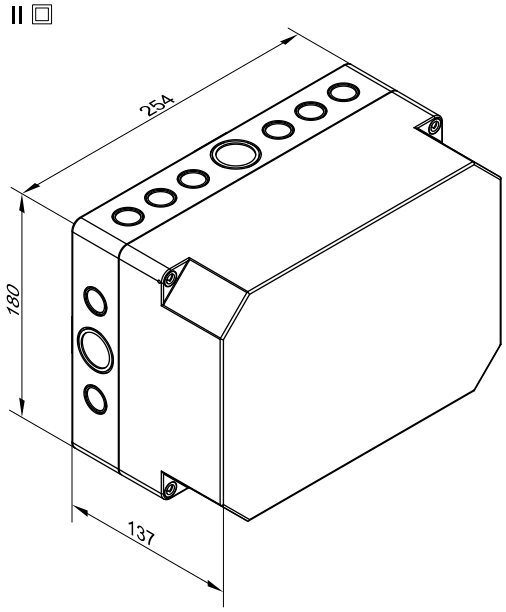
II ⧈



Appendix

9.1 Regulations / Directives

Regulations and directives

We, Viessmann Climate Solutions SE, declare that the Vitodens gas condensing boilers have been tested and approved in accordance with the currently applicable directives/regulations, standards and technical rules.
Observe all engineering standards of the building authorities and statutory requirements applicable to the installation and operation of this system.
Installation, gas and flue gas connections, commissioning, electrical connections and general service/maintenance may only be carried out by a registered contractor.
The installation of a condensing boiler must be reported to and approved by the relevant gas supply utility.
In some regions, permits may be required for the flue system and condensate drain into the public sewage system.
The local flue gas inspector and water authorities must be informed prior to commencing 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. Any faults that occur must be rectified.
Condensing boilers must only be operated with specially designed, tested and approved flues.
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 approval in accordance with the statutes of the relevant country.

Keyword index

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Keyword index

Subject to technical modifications.

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