

### Technical guide



File in:  
Vitotec technical guide folder, register 4



Vitodens 300  
to 35 kW



Vitodens 333

#### Vitodens 200

**Gas fired wall mounted condensing boiler,**  
8.8 to 26.0 kW,  
for natural gas and LPG

#### Vitodens 300

**Gas fired wall mounted condensing boiler,**  
4.5 to 66.0 kW,  
for natural gas and LPG

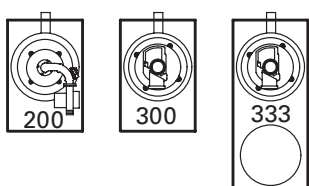
#### Vitodens 333

**Compact gas fired condensing boiler,**  
4.5 to 26.0 kW,  
for natural gas and LPG

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For further details contact our central customer service desk on telephone number (+496452) 70-3630.

**Note**



*In the following, these symbols are used to assist you in locating details regarding Vitodens 200, 300 and 333.*

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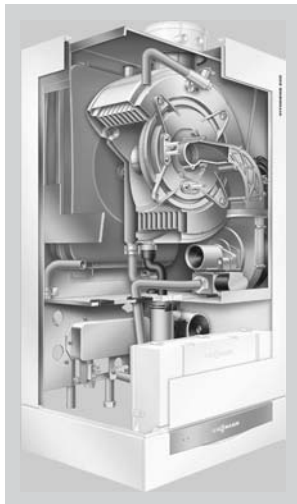
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## 1.1 Product description

### 1.1 Product description

#### Vitodens 200



The Vitodens 200 gas fired wall mounted boiler offers high quality condensing technology at a persuasive cost:benefit ratio. With 8.8 to 26 kW, it achieves a standard efficiency of up to 107%. It is also extremely versatile: for heating and DHW loading, for open and balanced flue operation. Furthermore, its compact dimensions and timeless design make it a perfect match for any modern living space.

The stainless steel Inox-Radial heating surface operates with extreme efficiency on account of its liminar heat transfer principle. The radial design creates large heat exchanger surfaces on the smallest of footprints. The rectangular heating spiral design with defined gaps results in a longer laminar flow and therefore excellent heat transfer. In addition, its smooth stainless steel surface and vertical flow path result in effective self-cleaning.

#### Benefits at a glance

- Gas fired condensing boiler as central heating or combination boiler, 8.8 to 26.0 kW.
- Standard efficiency: up to 107%.
- The stainless steel Inox-Radial heating surface ensures high operational reliability and a long service life.
- Stainless steel cylinder burner, modulation range 1:3.
- Expansion vessel with 10 litres capacity inside the boiler cover.

New for all Vitodens wall mounted boilers: the rear venting function. For this, Viessmann has designed the wall mounted boilers so that a large water chamber is available for releasing air. Result: reduced installation times, simpler commissioning, permanent operational reliability and reduced flow noise during operation.

The stainless steel premix cylinder burner with a modulation range of 1:3 handles fuel with particularly frugality. It also reduces emissions. These lie below the strict flue gas limits set for the "Blue Angel" certificate of environmental excellence.

- The emissions meet the limits set for the "Blue Angel" certificate of environmental excellence.
- Low power consumption through variable speed DC fan.
- Vitotronic control units for room temperature-dependent or weather-compensated mode, with integral diagnostic system and Optolink laptop interface; capable of communicating with Vitodata.

#### Application recommendations

Favourable pricing and robust construction make these systems suitable for:

- Object business in modernisation and new build (replacement of water heaters in apartment blocks or pre-fabricated houses)
- Use in rented accommodation and in leased properties.



### Vitodens 300 to 35 kW

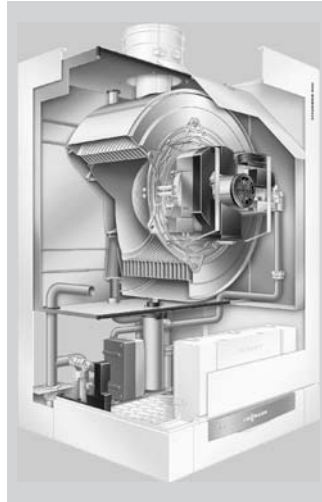


The combination of top technology: The modulating MatriX-compact gas burner and the proven stainless steel Inox-Radial heating surface guarantee a standard efficiency up to 109%. This reduces heating costs and protects the environment.

Along with all wall mounted condensing boilers from Viessmann, Vitodens 300 is equipped with a stainless steel Inox-Radial heating surface. It also incorporates all the advantages of the heat transfer principle, its design and its high self-cleaning effect.

With its modulation range of 1:4, the MatriX-compact gas burner saves in terms of energy consumption and emissions. Its extremely clean combustion lets it perform substantially better than the limits set for the "Blue Angel".

### Vitodens 300 from 49 kW



Vitodens 300 is equipped with automatic flue gas adaptation. This constantly adapts to changing conditions, for example weather changes. And that ensures permanently good combustion. The MatriX-compact gas burner with its quiet combustion and the modulating, electronic BUS-controlled pump with reduced flow noise, ensure a pleasantly quiet operation. The combi version of Vitodens 300 is equipped with a comfort plate heat exchanger. This delivers DHW at a constant outlet temperature – without delay.

### Application recommendations

#### ■ Vitodens 300, 4.5 to 35 kW

The automatic volume flow and flue gas adaptation, compact design even for higher output ratings and the integral DHW heating (combination boiler) make this system suitable for

- modernising heating systems on single floors or in detached houses (water heater replacement – matching to third party boilers as accessory), and in apartment blocks and terraced houses
- systems with little space available for the boiler or tight (flexible) installation locations (e.g. attic or inside furniture)
- new buildings with low heat demand (e.g. low energy houses)
- smaller commercial or public buildings with little available space for the boiler installation (e.g. supermarkets, petrol stations, kindergartens, sports halls).

#### ■ Vitodens 300, 12.2 to 66.0 kW

High output from a compact, user-friendly wall mounted boiler, suitable for

- systems with few, large-demand consumers, e.g. fan space heaters in supermarkets/markets, workshops and industrial premises, nurseries, garages and DHW heating systems
- systems with several heating circuits for underfloor and/or static heating surfaces in apartment blocks, central heating plants for terraced houses, office and administration buildings – particularly suitable for attic installation
- heating of public buildings, such as sports and multi-purpose halls, schools, kindergartens
- suitable for installation in basement boiler rooms, in the living accommodation and in the attic.

### Benefits at a glance

- Gas fired condensing boiler as wall mounted device, 4.5 to 66 kW.
- Standard efficiency: up to 109%.
- The stainless steel Inox-Radial heating surface ensures high operational reliability and a long service life.
- MatriX-compact gas burner, modulation range 1:4.
- The emissions fall substantially below the limits set for the "Blue Angel" certificate of environmental excellence.
- Low power consumption through governed AC fan and heating circuit pump.
- As a condensing combination boiler: High DHW convenience as a result of its integral DHW Quick-System and comfort control – i.e. instant hot water at a constant temperature.
- Vitotronic control units for room temperature-dependent or weather-compensated mode, with integral diagnostic system and Optolink laptop interface; capable of communicating with Vitodata. The Vitotronic 333 cascade control unit enables a rated output up to 264 kW to be achieved.
- Particularly easy to install, maintain and service, due to modular design generous wiring chamber.

- Automatic flue gas adaptation ensures permanently high efficiency.
- Particularly quiet operation.
- Space saving, because clearances at the boiler sides are no longer required.
- Vitodens 300 with 4.5 to 12.0 kW automatically regulates to achieve optimum combustion values. The gas family or type require no selection.
- Flexible connections to adapt installations from third party boilers enable the easy replacement of alternative boiler makes.



## 1.1 Product description

### Vitodens 333



The Vitodens 333 compact boiler combines the benefits of the Vitodens 300 condensing boiler with those of a powerful DHW loading cylinder offering a capacity of 86 litres.

Innovative heating technology with an Inox-Radial heat exchanger and a MatriX-compact burner plus compact modular design guarantee the high DHW convenience generally only available with DHW cylinders twice as large.

The dimensions of Vitodens 333 have been matched to common patterns of kitchen and furniture makers, thereby enabling easy integration in living areas. A height of just under 140 cm means that it also fits under the eaves and in niches. All electrical connections are easily accessible, whilst all hydraulic components are pre-assembled into a single unit. This allows the rapid installation of Vitodens 333. The new Vitotronic control unit has been located at the top of the boiler. This not only makes operating easier but also brings advantages for service and maintenance.

#### Benefits at a glance

- Compact gas fired condensing boiler, 4.5 to 26.0 kW.
- Standard efficiency: up to 109%.
- The stainless steel Inox-Radial heating surface ensures high operational reliability and a long service life.
- MatriX-compact gas burner, modulation range 1:4.
- Utilisation of condensing technology even for DHW heating over the entire DHW loading through electronic loading control.
- Compact dimensions and low height ensure flexibility in selecting the installation location.
- The emissions fall substantially below the limits set for the "Blue Angel" certificate of environmental excellence.
- Vitotronic control units for room temperature-dependent or weather-compensated mode, with integral diagnostic system and Optolink laptop interface; capable of communicating with Vitodata.
- Particularly easy to install, maintain and service, due to modular design generous wiring chamber.
- Low power consumption through governed AC fan and heating circuit pump.
- Automatic flue gas adaptation ensures permanently high efficiency.
- DHW performance factor ( $N_L$ ) to 2.0 (boiler with 26 kW) for high DHW convenience.
- Space saving, because clearances at the boiler sides are no longer required.

#### Application recommendations

The automatic volume flow and flue gas adaptation, compact design and the integral DHW heating (DHW calorifier) makes this system suitable for:

- Installations in detached and terraced houses
- New builds (e.g. pre-fabricated houses and housing association projects): Installation in utility rooms and attics (long pane of the roof)
- Modernising: replacement of instantaneous water heaters, free-standing atmospheric gas fired boilers and oil/gas fired boilers with DHW cylinder installed below the boiler.



## 1.2 Specification

Gas fired boiler, series C <sub>3</sub> , Category II <sub>2</sub> ELL 3P		Gas fired boiler	Gas fired combination boiler
<b>Rated output range</b> *1			
T <sub>V</sub> /T <sub>R</sub> = 50/30 °C	kW	8.8-26.0	8.8-26.0
T <sub>V</sub> /T <sub>R</sub> = 80/60 °C	kW	8-24.7	8-24.7
<b>Rated thermal load</b>	kW	8.4-25.7	8.4-25.7
<b>Product ID</b>		CE-0085 BO 0342	
<b>Gas supply pressure</b>			
Natural gas	mbar	20	20
LPG	mbar	50	50
<b>Max. permissible gas supply pressure</b> *2			
Natural gas	mbar	25.0	25.0
LPG	mbar	57.5	57.5
<b>Max. power consumption</b> (incl. circulation pump)	W	120	120
<b>Weight</b>	kg	52	54
<b>Capacity</b> Heat exchanger	litres	5.0	5.0
<b>Heating water volume flow</b> at 200 mbar residual head	l/h	1060	1060
<b>Max. volume flow</b> (limits for the use of a low loss header)	l/h	1400	1400
<b>Rated circulation water volume</b> at ΔT = 20 K	l/h	1118	1118
<b>Permiss. operating pressure</b>	bar	3	3
<b>Connections</b>			
Boiler flow and return	G (male thread)	3/4"	3/4"
Safety valve	R (female thread)	3/4"	3/4"
<b>Dimensions</b>			
Length	mm	380	380
Width	mm	480	480
Height	mm	850	850
Height with DHW cylinder installed below the boiler	mm	1925	1925
<b>Gas connection</b>	R (male thread)	1/2"	1/2"
<b>Instantaneous water heater</b> *3			
Capacity DHW	litres	—	0.2
heating water	litres	—	0.2
Hot and cold water connections	G (male thread)	—	1/2"
Permissible operating pressure (secondary side)	bar	—	10
Outlet temperature (adjustable)	°C	—	38-57
Continuous DHW output	kW	—	24
for DHW temperature rise from 10 to 45 °C	l/h	—	590
Drawing rate	l/min	—	3-8
<b>Connection values</b> relative to max. output			
with gas	with H <sub>up</sub>		
Natural gas E	9.45 kWh/m <sup>3</sup>	2.65	2.65
	34.01 MJ/m <sup>3</sup>		
Natural gas LL	8.13 kWh/m <sup>3</sup>	3.08	3.08
	29.25 MJ/m <sup>3</sup>		
LPG	12.79 kWh/m <sup>3</sup>	1.94	1.94
	46.04 MJ/m <sup>3</sup>		
<b>Flue gas values</b> *4			
Flue gas value group to G 635/G 636		G <sub>52</sub> /G <sub>51</sub>	G <sub>52</sub> /G <sub>51</sub>
Temperature (at a return temperature of 30 °C)			
– at rated output	°C	55	55
– at partial load	°C	32	32
Temperature (at a return temperature of 60 °C)	°C	78	78
Mass flow rate			
– for natural gas			
– at rated output	kg/h	42.0	42.0
– at partial load	kg/h	14.0	14.0
– for LPG			
– at rated output	kg/h	46.4	46.4
– at partial load	kg/h	15.4	15.4
Available draught	Pa	100	100
	mbar	1.0	1.0

\*1Details to EN 677.

\*2If the gas supply pressure is higher than the maximum permissible value, install a separate gas governor upstream of the system.

\*3Minimum pressure of the cold water connection 1 bar.

\*4Calculation values for sizing the flue gas system to EN 13384.

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

The details for partial load refer to an output of 30% of rated output. Calculate the flue gas mass flow rate accordingly when the partial load differs from that stated above (subject to the burner mode).

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

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

1

### Installation on finished walls



### Key to symbols

ATR	Drain funnel connection
E	Drain
GA	Gas connection
HR	Heating return
HV	Heating flow
KAS	Boiler adaptor
OKFF	Top edge finished floor

Gas fired combination boilers only:

KW Cold water G 1/2"

Gas fired boilers only:  
SRL Cylinder return G 3/4"  
SVL Cylinder flow G 3/4"





Gas fired boiler, series B and C, Category I <sub>2</sub> ELL (natural gas version) Category II <sub>2</sub> ELL 3P (LPG version)		Gas fired boiler					Gas fired combination boiler
<b>Rated output range</b> <sup>*1</sup>							
T <sub>V</sub> /T <sub>R</sub> = 50/30 °C	kW	4.5-12.0/16.0 <sup>*2, *3</sup>	6.6-26.0	8.7-35.0	12.2-49.0	16.6-66.0	6.6-26.0
T <sub>V</sub> /T <sub>R</sub> = 80/60 °C	kW	4-11	6-23.7	8-32	11-44.6	15-60.1	6-23.7
<b>Rated thermal load</b>	kW	4.2-16.7	6.3-24.7	8.3-33.3	11.5-46.3	15.6-62.2	6.3-24.7
<b>Product ID</b>		CE-0085 BO 0338					
<b>Gas supply pressure</b>							
Natural gas	mbar		20	20	20	20	20
LPG	mbar		50	50	50	50	50
<b>Max. permiss. gas supply pressure</b> <sup>*4</sup>							
Natural gas	mbar		25.0	25.0	25.0	25.0	25.0
LPG	mbar		57.5	57.5	57.5	57.5	57.5
<b>Max. power consumption</b> (incl. circulation pump for 4 to 35 kW)	W		120	120	85	85	120
<b>Weight</b>	kg		50	52	90	90	55
<b>Capacity</b> Heat exchanger	litres		5.0	5.6	9.5	9.5	5.0
<b>Heating water volume flow</b> at 200 mbar residual head	l/h		1050	1380	— <sup>*5</sup>	— <sup>*5</sup>	1050
<b>Max. volume flow</b> (limits for the use of a low loss header)	l/h		1400	1600	3500	3500	1400
<b>Rated circulation water volume</b> at ΔT = 20 K	l/h		1032	1376	1892	2580	1032
<b>Permiss. operating pressure</b>	bar		3	3	3	3	3
<b>Connections</b>							
Boiler flow and return	G (male thread)		¾"	¾"	1½"	1½"	¾"
Safety valve	R (female thread)		¾"	¾"	—	—	¾"
	G (male thread)		—	—	1"	1"	—
<b>Dimensions</b>							
Length	mm		380	380	550	550	380
Width	mm		480	480	600	600	480
Height	mm		850	850	900	900	850
Height incl. flue pipe bend (accessory)	mm		1066	1066	1200	1200	1066
Height with DHW cylinder installed below the boiler	mm		1925	1925	—	—	—
<b>Gas connection</b>	R (male thread)		½"	½"	¾"	¾"	½"
<b>Standby instantaneous water heater</b> <sup>*6</sup>							
Capacity DHW	litres	—	—	—	—	—	1.00
heating water	litres	—	—	—	—	—	0.70
Hot and cold water connections	G (male thread)	—	—	—	—	—	½"
Permissible operating pressure (DHW side)	bar	—	—	—	—	—	10
Outlet temperature (adjustable)	°C	—	—	—	—	—	38-57
Continuous DHW output	kW	—	—	—	—	—	24
for DHW temperature rise from 10 to 45 °C	l/h	—	—	—	—	—	590
Drawing rate	l/min	—	—	—	—	—	3-8

<sup>\*1</sup>Details to EN 677.

<sup>\*2</sup>Rated output for DHW heating.

<sup>\*3</sup>Available from October 2004. Specification on request.

<sup>\*4</sup>If the gas supply pressure is higher than the maximum permitted value, a separate gas governor must be installed upstream of the system.

<sup>\*5</sup>Heating circuit pump available as accessory.

<sup>\*6</sup>Minimum pressure of the cold water connection 1 bar.



## 1.2 Specification

### Vitodens 300

1

Gas fired boiler			Gas fired boiler					Gas fired combination boiler
<b>Rated output range</b>								
T <sub>V</sub> /T <sub>R</sub> = 50/30 °C	kW		4.5-12.0/16.0*1	6.6-26.0	8.7-35.0	12.2-49.0	16.6-66.0	6.6-26.0
T <sub>V</sub> /T <sub>R</sub> = 80/60 °C	kW		4-11	6-23.7	8-32	11-44.6	15-60.1	6-23.7
<b>Connection values</b>								
relative to max. output								
with gas								
with H <sub>uB</sub>								
Natural gas E	9.45 kWh/m <sup>3</sup>	m <sup>3</sup> /h	2.65	3.52	4.90	6.69	2.65	
	34.01 MJ/m <sup>3</sup>							
Natural gas LL	8.13 kWh/m <sup>3</sup>	m <sup>3</sup> /h	3.08	4.10	5.64	7.77	3.08	
	29.25 MJ/m <sup>3</sup>							
LPG	12.79 kWh/m <sup>3</sup>	kg/h	1.94	2.59	3.62	4.94	1.94	
	46.04 MJ/m <sup>3</sup>							
<b>Flue gas values*2</b>								
Flue gas value group to G 635/G 636			G <sub>52</sub> /G <sub>51</sub>	G <sub>52</sub> /G <sub>51</sub>	G <sub>52</sub> /G <sub>51</sub>	G <sub>52</sub> /G <sub>51</sub>	G <sub>52</sub> /G <sub>51</sub>	
Temperature (at a return								
temperature of 30 °C)								
– at rated output	°C		45	45	35	40	45	
– at partial load	°C		35	35	33	35	35	
Temperature (at a return								
temperature of 60 °C)			70	70	65	70	70	
Mass flow rate								
– for natural gas								
– at rated output	kg/h		47.3	63.2	81.2	110.6	47.3	
– at partial load	kg/h		11.8	15.7	21.1	27.7	11.8	
– for LPG								
– at rated output	kg/h		46.4	61.0	78.2	106.7	48.4	
– at partial load	kg/h		11.5	15.4	18.0	26.6	11.5	
Available draught								
	Pa		100	100	100	100	100	
	mbar		1.0	1.0	1.0	1.0	1.0	
<b>Standard efficiency</b>								
at								
– T <sub>V</sub> /T <sub>R</sub> = 40/30 °C	%		109	109	109	109	109	
– T <sub>V</sub> /T <sub>R</sub> = 75/60 °C	%		104	104	104	104	104	
<b>Average condensate volume</b>								
for natural gas and								
– T <sub>V</sub> /T <sub>R</sub> = 50/30 °C	litres/day		11-13	15-17	14-19	23-28	11-13	
– T <sub>V</sub> /T <sub>R</sub> = 80/60 °C	litres/day		8-10	10-12	11-15	18-22	8-10	
<b>Internal diameter of pipe to expansion vessel</b>								
DN			20	20	20	20	20	
<b>safety valve</b>	DN		15	15	20	20	15	
<b>Condensate connection</b>								
Hose coupling								
Ø mm			20-24	20-24	20-24	20-24	20-24	
<b>Flue outlet</b>	Internal Ø mm		80	80	100	100	80	
<b>Ventilation pipe</b>	External Ø mm		125	125	150	150	125	

\*1Rated output for DHW heating.

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

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

The details for partial load refer to an output of 30% of rated output. Calculate the flue gas mass flow rate accordingly when the partial load differs from that stated above (subject to the burner mode).

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

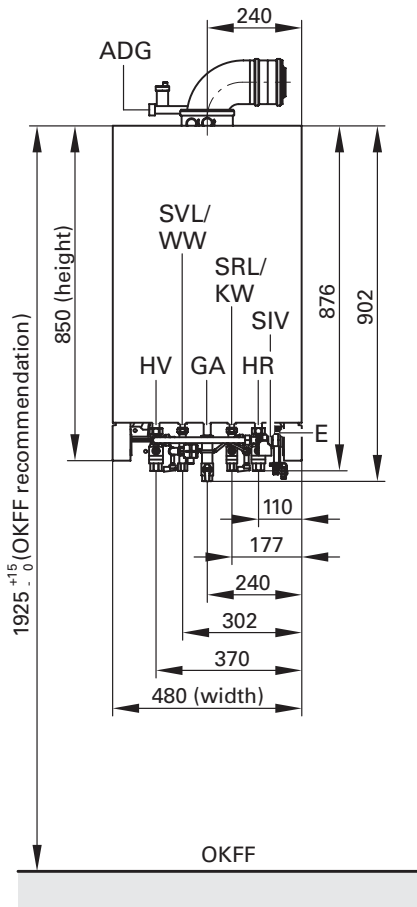
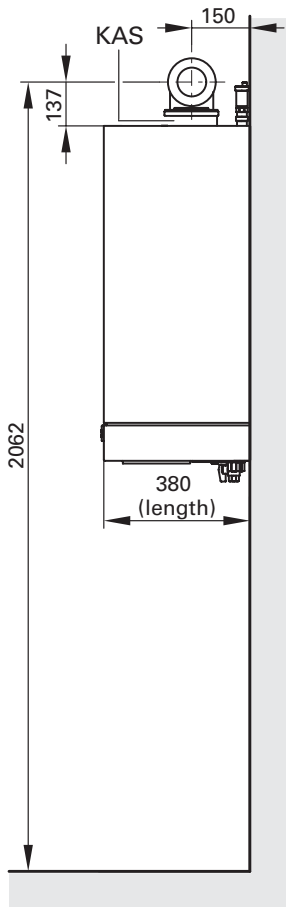
The flue gas temperature at a return temperature of 60 °C is used to determine the application range of flue pipes with maximum permissible operating temperatures.

► For the specification of Viessmann modular components, see the folder Vitotec 1.

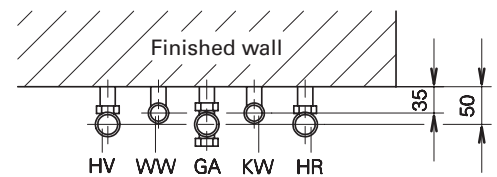
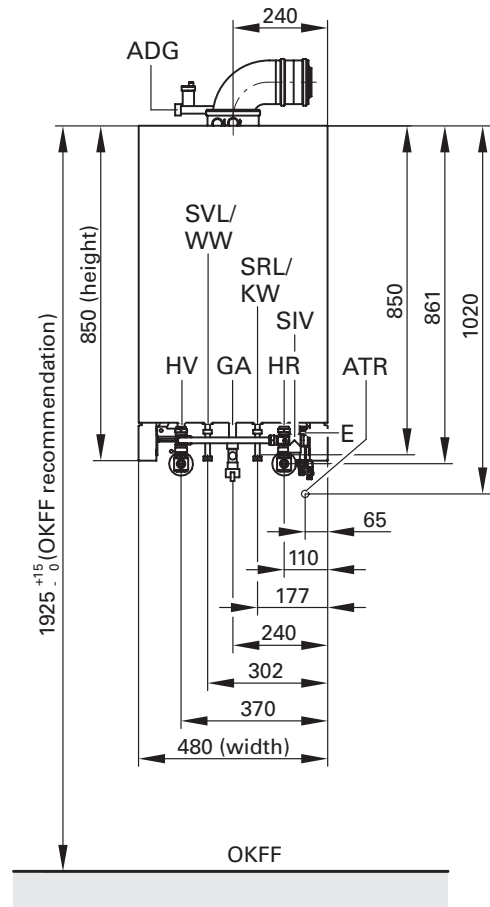


## Vitodens 300, 26.0 to 35.0 kW

### Installation on finished walls



### Installation on unfinished walls



\*1Obligatory in conjunction with DHW cylinders installed below the boiler. Otherwise, recommendation only.

### Key to symbols

ADG Expansion vessel G 3/4"  
ATR Drain funnel connection  
E Drain  
GA Gas connection  
HR Heating return  
HV Heating flow  
KAS Boiler adaptor  
OKFF Top edge finished floor  
SIV Safety valve

### Gas fired combination boilers only:

KW Cold water G 1/2"  
WW Hot water G 1/2"

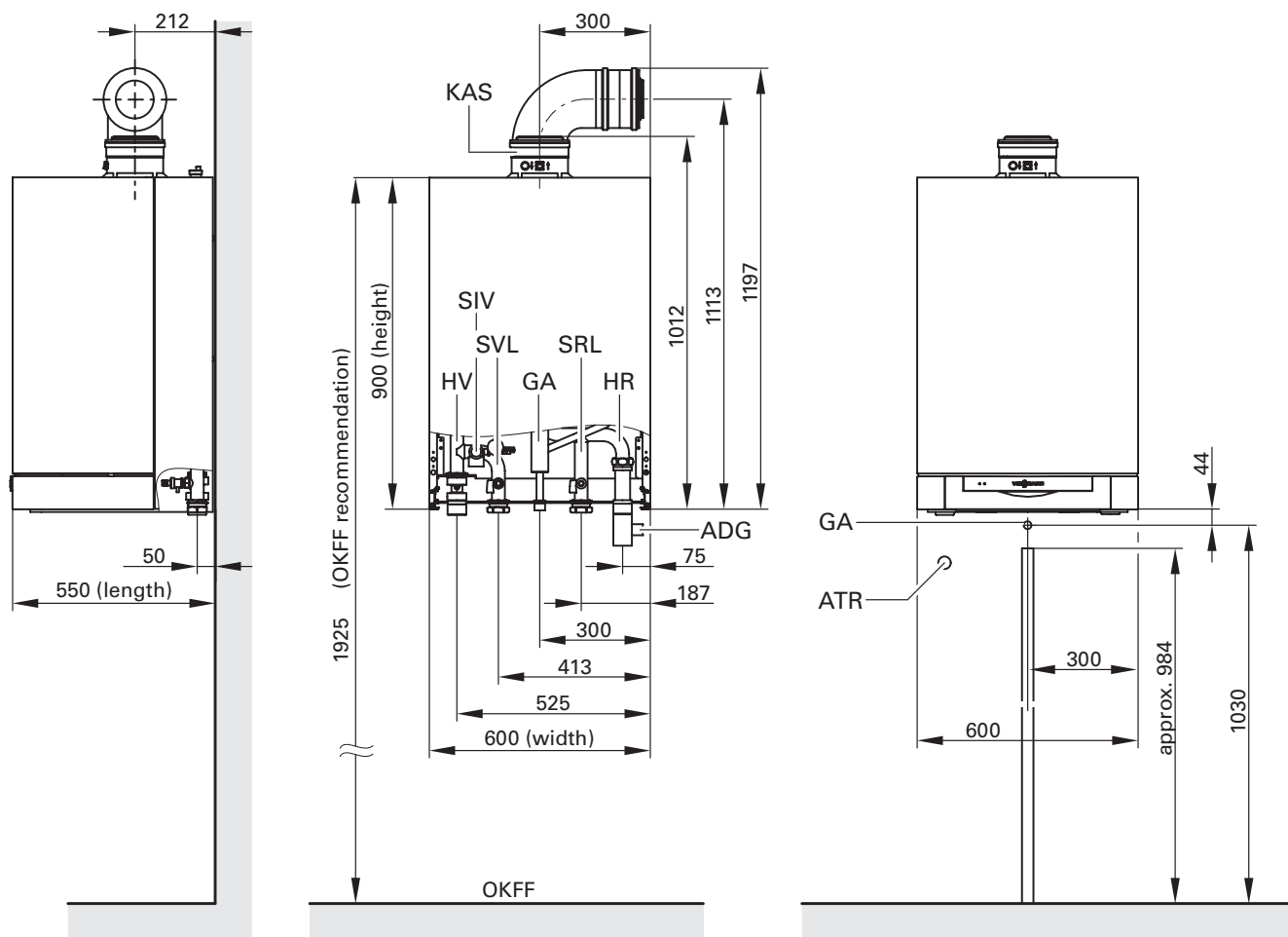
### Gas fired boilers only:

SRL Cylinder return G 3/4"  
SVL Cylinder flow G 3/4"



## 1.2 Specification Vitodens 300

Vitodens 300 from 49.0 kW



### Key to symbols

- ADG Expansion vessel (G 1")
- ATR Drain funnel connection
- GA Gas connection
- HR Heating return
- HV Heating flow
- KAS Boiler adaptor
- OKFF Top edge finished floor
- SIV Safety valve
- SRL Cylinder return G 1½"
- SVL Cylinder flow G 1½"



## Specification

Gas fired boiler, series B and C,  
Category I<sub>2</sub>ELL (natural gas version)  
Category II<sub>2</sub>ELL 3P (LPG version)

<b>Rated output range</b> *1			
- T <sub>V</sub> /T <sub>R</sub> = 50/30 °C	kW	4.5-12.0/16.0*2, *3	6.6-26.0
- T <sub>V</sub> /T <sub>R</sub> = 80/60 °C	kW	4.0-11.0	6.0-23.7
<b>Rated thermal load</b>	kW	4.2-16.7	6.3-25
<b>Product ID</b>		CE-0085 BO 0338	
<b>Gas supply pressure</b>			
Natural gas	mbar		20
LPG	mbar		50
<b>Max. permiss. gas supply pressure</b> *4	mbar		57.5
<b>Max. power consumption</b> (incl. circulation pump)	W		120
<b>Weight</b>	kg		130
<b>Capacity</b> Heat exchanger	litres		3.7
<b>Heating water volume flow</b> at 200 mbar residual head	l/h		1050
<b>Max. volume flow</b> (limits for the use of a low loss header)	l/h		1400
<b>Rated circulation water volume</b> at ΔT = 20 K	l/h		1032
<b>Permiss. operating pressure</b>	bar		3
<b>Diaphragm expansion vessel</b>			
Capacity	litres		12
Inlet pressure	bar		0.75
<b>Connections</b>			
Boiler flow and return	G (female thread)		¾"
Hot and cold water	G (female thread)		¾"
DHW circulation	G (male thread)		1"
<b>Dimensions</b>			
Length	mm		588
Width	mm		600
Height	mm		1387
<b>Gas connection</b>	G (female thread)		¾"
<b>DHW loading cylinder</b>			
Capacity	litres		86
Permissible operating pressure (DHW side)	bar		10
Continuous DHW output	kW		24
for DHW temperature rise from 10 to 45 °C	l/h		590
Performance factor N <sub>L</sub> *5			2.0
Max. draw-off rate at the stated DHW performance factor N <sub>L</sub> when raising DHW from 10 to 45 °C	l/min		19
<b>Connection values</b> relative to the max. load			
with gas	with H <sub>uB</sub>		
Natural gas E	9.45 kWh/m <sup>3</sup>	m <sup>3</sup> /h	2.65
	34.01 MJ/m <sup>3</sup>		
Natural gas LL	8.13 kWh/m <sup>3</sup>	m <sup>3</sup> /h	3.08
	29.25 MJ/m <sup>3</sup>		
LPG	12.79 kWh/m <sup>3</sup>	kg/h	1.94
	46.04 MJ/m <sup>3</sup>		

\*1Details to EN 677.

\*2Rated output for DHW heating.

\*3Available from October 2004. Specification on request.

\*4If the gas supply pressure is higher than the maximum permitted value, a separate gas governor must be installed upstream of the system.

\*5At 70 °C average boiler water temperature and cylinder storage temperature T<sub>cyl</sub> = 60 °C.

The DHW performance factor N<sub>L</sub> varies according to the cylinder storage temperature T<sub>cyl</sub>.

Guide values: T<sub>cyl</sub> = 60 °C → 1.0 × N<sub>L</sub>    T<sub>cyl</sub> = 55 °C → 0.75 × N<sub>L</sub>    T<sub>cyl</sub> = 50 °C → 0.55 × N<sub>L</sub>    T<sub>cyl</sub> = 45 °C → 0.3 × N<sub>L</sub>.



## 1.2 Specification

### Vitodens 333

<b>Rated output range</b>			
– $T_V/T_R = 50/30\text{ °C}$	kW	4.5-12.0/16.0	6.6-26.0
– $T_V/T_R = 80/60\text{ °C}$	kW	4.0-11.0	6.0-23.7
<b>Flue gas values</b> <sup>*1</sup>			
Flue gas value group to G 635/G 636			G <sub>52</sub> /G <sub>51</sub>
Temperature (at a return temperature of 30 °C)			
– at rated output	°C		45
– at partial load	°C		35
Temperature (at a return temperature of 60 °C)			70
Mass flow rate			
– for natural gas			
– at rated output	kg/h		47.3
– at partial load	kg/h		11.8
– for LPG			
– at rated output	kg/h		48.4
– at partial load	kg/h		11.5
CO <sub>2</sub> content	%		
Available draught	Pa mbar		100 1.0
<b>Standard efficiency at</b>			
– $T_V/T_R = 50/30\text{ °C}$	%		109
– $T_V/T_R = 80/60\text{ °C}$	%		104
<b>Average condensate volume</b>			
for natural gas and			
– $T_V/T_R = 50/30\text{ °C}$	litres/day		11-13
– $T_V/T_R = 80/60\text{ °C}$	litres/day		8-10
<b>Condensate connection</b>	Hose coupling Ø mm		20-24
<b>Flue outlet</b>	Internal Ø mm		80
<b>Ventilation pipe</b>	External Ø mm		125

<sup>\*1</sup>Calculation values for sizing the flue gas system to EN 13384.

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

The details for partial load refer to an output of 30% of rated output. Calculate the flue gas mass flow rate accordingly when the partial load differs from that stated above (subject to the burner mode).

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

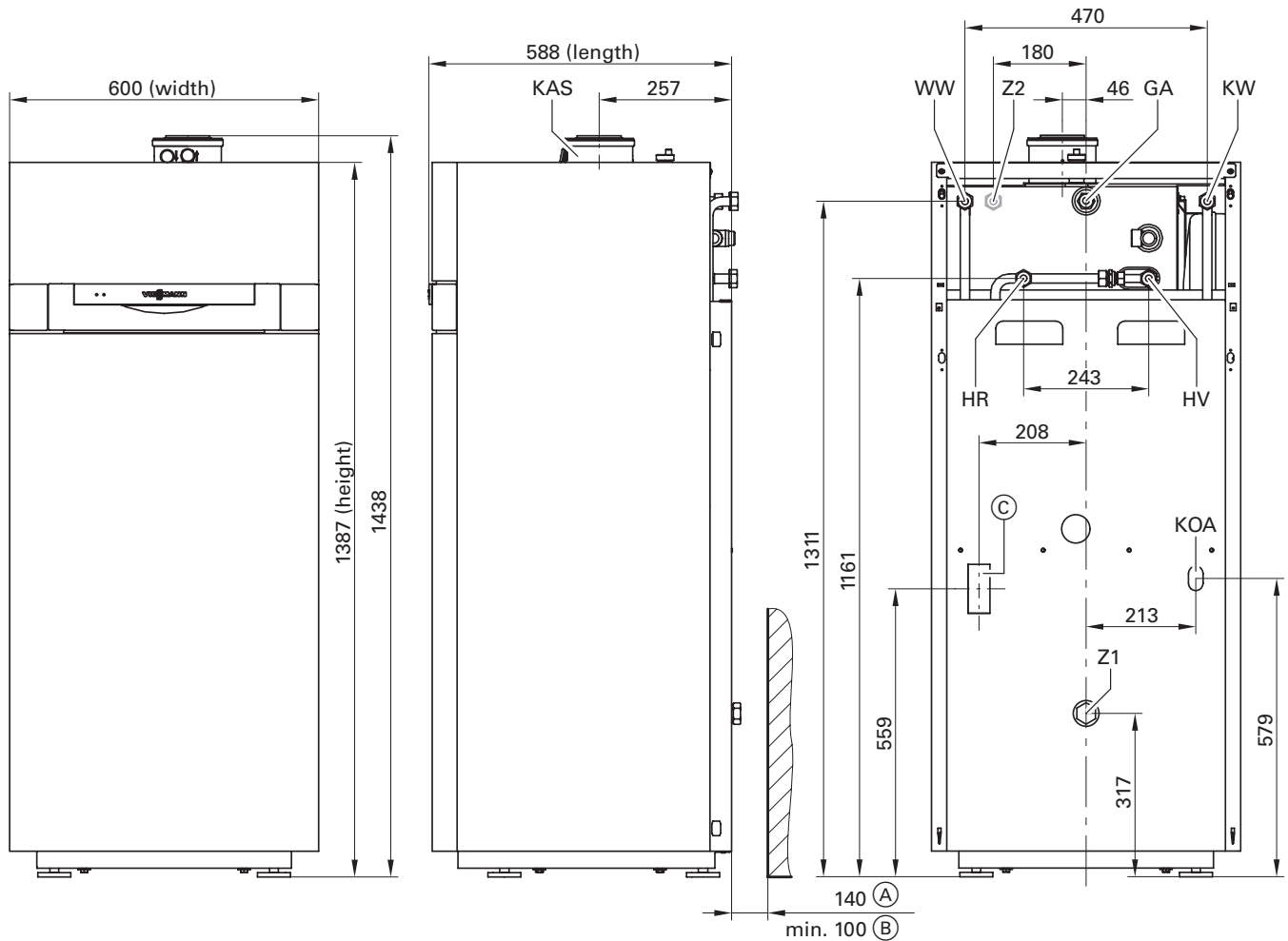
The flue gas temperature at a return temperature of 60 °C is used to determine the application range of flue pipes with maximum permissible operating temperatures.

► For the specification of Viessmann modular components, see the folder Vitotec 1.

## 1.2 Specification Vitodens 333



1



### Key to symbols

GA	Gas connection
HR	Heating return
HV	Heating flow
KAS	Boiler adaptor
KOA	Condensate drain
KW	Cold water
WW	Hot water
Z1	DHW circulation (on site)
Z2	DHW circulation with DHW circulation pump connection set (accessory)

- Ⓐ Wall clearance with connection set (accessory)
- Ⓑ Wall clearance with on-site connection
- Ⓒ Aperture for electrical supply cables

## 1.2 Specification

### Vitotronic 100 for constant temperature mode

#### Vitotronic 100, type HC1, for constant temperature operation

Integrated in Vitodens

- Electronic boiler control unit for operating Vitodens at a constant boiler water temperature

- A Vitotrol 100, type UTA or UTD is required for room temperature-dependent operation (according to EnEV [Germany])

- Integrated diagnostic system
- Integral cylinder thermostat

1

#### Structure and functions

##### Construction

The control unit comprises a basic unit, electronic modules and a programming unit.

The control unit contains the following: System ON/OFF switch, digital display, control thermostat, temperature limiter, keys for

- Operating mode
- Boiler water and DHW temperature
- Emissions test function, burner fault indication, burner fault reset, integral diagnostic system and fuses.


##### Control characteristics

PI characteristics with modulating output.

##### Specification

- Rated voltage: 230 V~  
Rated frequency: 50 Hz  
Rated current: 6 A  
Safety class: I  
Protection: IP X4D to EN 60529, safeguard through design/installation  
Function: Type 1B to EN 60730-1  
Permissible ambient temperature  
■ during operation: 0 to +40 °C  
Use in living space and boiler rooms (standard ambient conditions)  
■ during storage and transport: -20 to +65 °C  
Electronic control thermostat setting: 74 °C (change not possible)  
Electronic temp. limiter setting (heating mode): 81 °C (change not possible)  
Temperature limiter setting: 100 °C (change not possible)  
DHW temperature setting range  
■ Gas fired combi boiler: 10 to 57 °C  
■ Gas fired boiler and Vitodens 333: 10 to 60 °C

##### Summer mode

Heating program 

The burner starts only when the cylinder needs reloading or when DHW is drawn from a gas combination boiler.

##### Boiler temperature sensor

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

- Permiss. ambient temperature
- in operation: 0 to +130 °C
  - during storage and transport: -20 to + 70 °C

##### Frost protection

The frost protection function is active in all heating programs.

The burner is switched ON when the boiler water temperature reaches 5 °C and will be switched OFF again, when the boiler water temperature reaches 15 °C. The circulation pump will be switched ON simultaneously with the burner and switched OFF after a delay.

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

##### Cylinder temperature sensor

Standard delivery for

- Connection set for wall mounted DHW cylinders (80 litres) (order separately)
- Connection set for DHW cylinders installed below the boiler (120 or 150 litres) (order separately)
- Connection set for DHW cylinders installed adjacent to the boiler (160, 200 or 300 litres) or alternative DHW cylinders (order separately)
- Order the cylinder temperature sensor for Vitodens 300 from 49 kW separately (see page 17).

Cable length approx. 3.75 m, wired ready to plug in

Protection: IP 32

Permiss. ambient temperature

- in operation: 0 to +90 °C
- during storage and transport: -20 to +70 °C

##### Cylinder temperature sensor and loading temperature sensor (only for Vitodens 333)

The sensors are connected to the control unit and built into the boiler.

Protection: IP 32

Permissible ambient temperature

- in operation: 0 to +90 °C
- during storage and transport: -20 to +70 °C

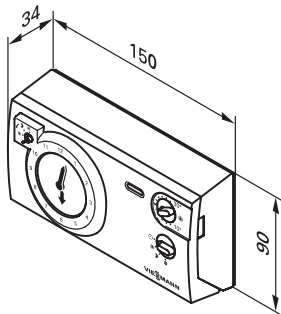
##### Programming unit

- Display
- Display of temperatures and faults
- Coding display



#### Vitotronic 100 accessories

**Vitotrol 100** (type UTA),  
part no. 7170 149



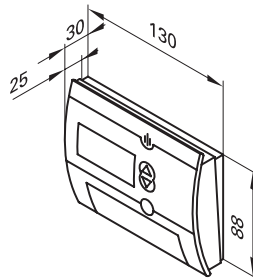
- Room thermostat
- With switching output (two-point output)
- With adjustable day program
- Standard switching times are factory-set (individually programmable).
- Shortest switching gap 15 minutes

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

Control unit connection:  
3-core lead with a cross-section of 1.5 mm<sup>2</sup> (without green-yellow conductor)

Rated voltage: 230 V~/50 Hz  
Rated breaking capacity of the contact: 6(1) A 250 V~  
Protection: IP 20  
Permissible ambient temperature  
■ during operation: 0 to +40 °C  
■ during storage and transport: -20 to +65 °C  
Setting range for set values for standard and reduced mode: 10 to 30 °C  
Set room temperature in standby mode: 6 °C

**Vitotrol 100** (type UTD),  
part no. 7179 059



- Room thermostat
- With switching output (two-point output)
- With digital time switch
- With rotary selector for adjusting the
  - Permanent comfort
  - Permanent setback
  - Frost
  - 2 permanently set programs
  - One individually adjustable program and
  - Holiday program
- With keys for party and economy mode

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

Operation without mains power supply (two 1.5 V round alkaline cells, type LR6 (AA), which run for approx. 1.5 years).  
Control unit connection:  
2-core with a cross-section of 0.75 mm<sup>2</sup>.

Rated voltage: 3 V-  
Rated breaking capacity of the zero volt contact  
■ max.: 6(1) A 230 V~  
■ min.: 1 mA 5 V-  
Protection: IP 20 to EN 60529, safeguard through design/installation  
Effect: RS type 1B to EN 60730-1

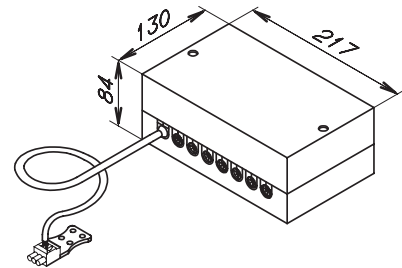
Permissible ambient temperature  
■ in use: 0 to +50 °C  
■ during storage and transport: -10 to +60 °C  
Setting range for  
■ Comfort temperature: 10 to 30 °C  
■ Setback temperature: 10 to 30 °C  
■ Frost protection temperature: 6 to 10 °C  
Power backup during battery replacement: 10 minutes

**Cylinder temperature sensor**  
for Vitodens 300 from 49 kW,  
part no. 7179 114

Cable length approx. 3.75 m, wired ready to plug in

Protection: IP 32  
Permiss. ambient temperature  
■ in operation: 0 to +90 °C  
■ during storage and transport: -20 to +70 °C

**KM BUS distributor**,  
part no. 7415 028



Including a 3.0 m long cable and LV plug-in connector.  
For the connection of 2 to 9 devices to the Vitotronic KM BUS (e.g. Vitotrol, control module V, etc.).  
We recommend the use of the KM BUS distributor if two or more devices are used which are identified as KM BUS users.

## 1.2 Specification

### Vitotronic 100 accessories

#### Internal extension H1,

part no. 7179 057

PCB for integration into the control unit (Vitodens 333, standard delivery).

Using the extension enables the following functions to be achieved:

Function	Rated breaking capacity of the relay output
■ Connection of an external safety solenoid valve (LPG)	1 (0.5) A 250 V~
as well as, alternatively, <b>one</b> of the following functions:	
■ Connection of a heating circuit pump (stepped) for a directly connected heating circuit	2 (1) A 250 V~
■ Connection of a central fault messaging facility	
■ Connection of a cylinder loading pump	

Rated voltage: 230 V~

Rated frequency: 50 Hz

#### Internal extension H2,

part no. 7179 144

Electronic PCB for installation into the control unit.

Using the extension enables the following functions to be achieved:

Function	Rated breaking capacity of the relay output
■ Interlocking of internal extractors (an external safety valve can no longer be connected if this function is realised with Vitodens 333)	6 (3) A 250 V~
as well as, alternatively, <b>one</b> of the following functions:	
■ Connection of a heating circuit pump (stepped) for a directly connected heating circuit	2 (1) A 250 V~
■ Connection of a central fault messaging facility	
■ Connection of a cylinder loading pump	

Rated voltage: 230 V~

Rated frequency: 50 Hz

#### External extension H1,

part no. 7179 058

Function extension inside the equipment for wall mounting.

Using the extension enables the following functions (up to 8) to be achieved:

Function	Rated breaking capacity of the relay output
■ Connection of a central fault messaging facility	0.4 (0.2) A 250 V~
■ Connection of a heating circuit pump (stepped) for a directly connected heating circuit	2 (1) A 250 V~
■ Connection of a cylinder loading pump	in total max. 4 A~
■ Minimum boiler water temperature demand	
■ External operating mode changeover	
■ External blocking	
■ Set boiler water temperature default via a 0 – 10 V input	

Rated voltage: 230 V~

Rated frequency: 50 Hz

Rated current: 4 A

Power

consumption: 4 W

Safety class: I

Protection: IP 32

Permissible ambient temperature

■ during

operation: 0 to +40 °C

Use in living space and boiler rooms (standard ambient conditions)

■ during storage

and transport: –20 to +65 °C

#### External extension H2,

part no. 7179 265

Function extension inside the equipment for wall mounting.

Using the extension enables the following functions to be achieved:

- Minimum boiler water temperature demand
- External operating mode changeover
- External blocking

Rated voltage: 230 V~

Rated frequency: 50 Hz

Rated current: 2 A

Power

consumption: 3 W

Safety class: I

Protection: IP 32

Permissible ambient temperature

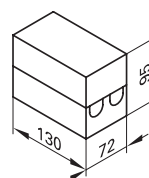
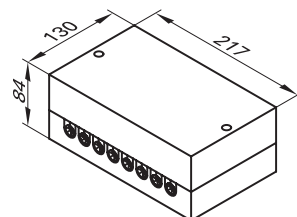
■ during

operation: 0 to +40 °C

Use in living space and boiler rooms (standard ambient conditions)

■ during storage

and transport: –20 to +65 °C



#### Vitotronic 200, type HO1, for weather-compensated mode

Integrated in Vitodens

- Weather-compensated, digital boiler circuit control for Vitodens in modulating operating mode
- With programming unit
- Digital time switch for day and week programming with four programmable intervals each per day for reduced mode and enabling DHW loading
- Heating system frost protection
- Integrated diagnostic system
- Integral cylinder thermostat
- Screed drying program
- External starting and blocking (option with accessories)

#### Structure and functions

##### Modular construction

The control unit comprises a basic unit, electronic modules and a programming unit.

The control unit contains the following: System ON/OFF switch, electronic max. temperature limiter, temperature controller, Optolink laptop interface, Keys for

- Program selection
  - Holiday program
  - Party and economy mode
  - Temperature at reduced mode
  - Domestic hot water temperature
  - Emissions test function
- and a rotary selector for temperature selection in standard mode. Demand-dependent heating circuit pump and burner shutdown, adjustment of a variable heating limit, anti-seizing pump protection, integral diagnostic system, maintenance display and screed function.

##### Functions

Vitotronic regulates the boiler water temperature in modulating mode. The control unit regulates the boiler water temperature (= flow temperature of the directly connected heating circuit) and the flow temperature of one heating circuit with mixer (in conjunction with the extension kit for one heating circuit with mixer) subject to outside temperature. It offers cylinder temperature regulation with priority control (heating circuit pumps OFF, mixer closed). An additional DHW heating function (short-term heating to a higher temperature) is an option.

##### Specification

- Rated voltage: 230 V~  
Rated frequency: 50 Hz  
Rated current: 6 A  
Safety class: I  
Protection level: IP X 4 D to EN 60529  
Permissible ambient temperature
- during operation: 0 to +40 °C  
use in living areas and boiler rooms (standard ambient conditions)
  - during storage and transport: -20 to +65 °C
- Electronic control thermostat setting: 74 °C (change not possible)  
Electronic temperature limiter setting (heating mode): 81 °C (change not possible)  
Temperature limiter setting: 100 °C (change not possible)  
DHW temperature setting range
- Gas fired combi boiler: 10 to 57 °C
  - Gas fired boiler and Vitodens 333: 10 to 60 °C
- Heating curve setting range
- Slope: 0.2 to 3.5
  - Level: -13 to 40 K

##### Programming unit

- With digital time switch
- Illuminated display with plain text support
- Display of temperatures and faults
- Coding display
- All settings and the most important codes in plain text


##### Frost protection

The frost protection function is active in all heating programs.

Frost protection will be

- started if the outside temperature falls below approx. +1 °C.  
During frost protection, the boiler circuit pump will be switched ON, and the boiler water is maintained at a lower temperature of approx. 15 °C.
- stopped if the outside temperature exceeds approx. +3 °C.

##### Summer mode

Heating program 

The burner starts only when the cylinder needs reloading or when DHW is drawn from a gas fired combination boiler.

##### Control characteristics

PI characteristics with modulating output.

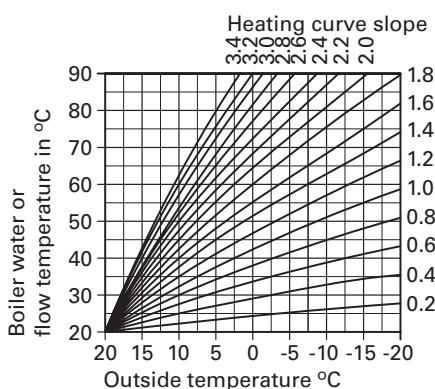
## 1.2 Specification

### Vitotronic 200 for weather-compensated mode

#### Heating curve setting (slope and level)

The control unit controls the boiler water temperature (= flow temperature of the heating circuit without mixer) **and** the flow temperature of the heating circuit with mixer (in conjunction with the extension kit for one heating circuit with mixer) subject to outside temperature. The flow temperature required to reach a certain room temperature depends on the heating system and the thermal insulation of the building to be heated. Adjusting both heating curves matches the boiler water temperature and the flow temperature to these operating conditions.

Heating curves:



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

#### Boiler temperature sensor

The boiler temperature sensor is connected to the control unit for weather-compensated mode, and is an integral part of the boiler.

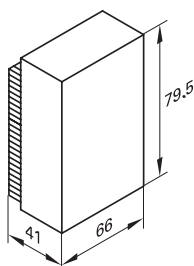
Permiss. ambient temperature

- in operation: 0 to +130 °C
- during storage and transport: -20 to +70 °C

Note

When using a hydraulic de-coupler (low loss header), connect a temperature sensor for use in the low loss header (see installation examples).

#### Outside temperature sensor



Installation location:

- North or north-westerly wall of the building
- 2 to 2.5 m above the ground; for multi-storey buildings at approx. the upper half of the second floor.

Connection:

- 2-core lead, length max. 35 m when using a cross-section of 1.5 mm<sup>2</sup> (copper).
- Do not run the cable immediately next to 230/400 V cables.

Protection: IP 43 to EN 60 529

Permissible ambient temperature for operation, storage

and transport: -40 to +70 °C

#### Cylinder temperature sensor

Standard delivery for

- Connection set for wall mounted DHW cylinders (80 litres) (order separately)
- Connection set for DHW cylinders installed below the boiler (120 or 150 litres) (order separately)
- Connection set for DHW cylinders installed adjacent to the boiler (160, 200 or 300 litres) or other DHW cylinders (order separately)
- Order the cylinder temperature sensor for Vitodens 300 from 49 kW separately (see page 28).

Cable length approx. 3.75 m, wired ready to plug in

Protection: IP 32

Permissible ambient temperature

- during operation: 0 to +90 °C
- during storage and transport: -20 to +70 °C

#### Cylinder temperature sensor and loading temperature sensor (only for Vitodens 333)

The sensors are connected to the control unit and built into the boiler.

Protection: IP 32

Permissible ambient temperature

- in operation: 0 to +90 °C
- during storage and transport: -20 to +70 °C

## 1.2 Specification

### Vitotronic 333 cascade control unit for multi-boiler systems

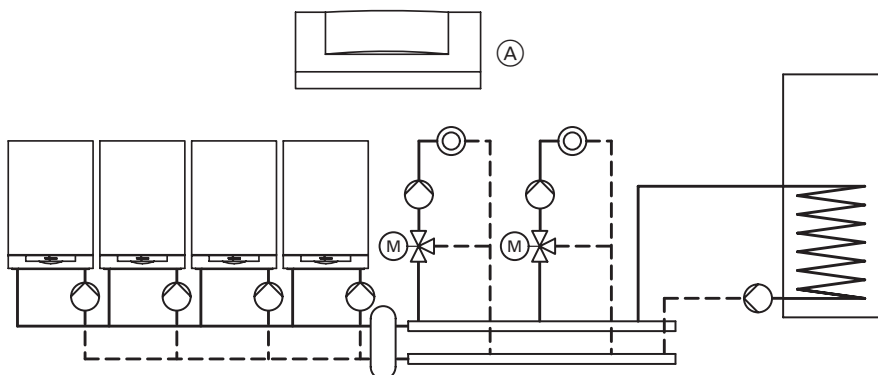
#### Cascade control unit Vitotronic 333, type MW2, for Vitodens 300 with Vitotronic 100

Economical and safe heating system operation through Vitotronic digital control system with communication capability. Tailored to every need, covering all known control strategies and applications.

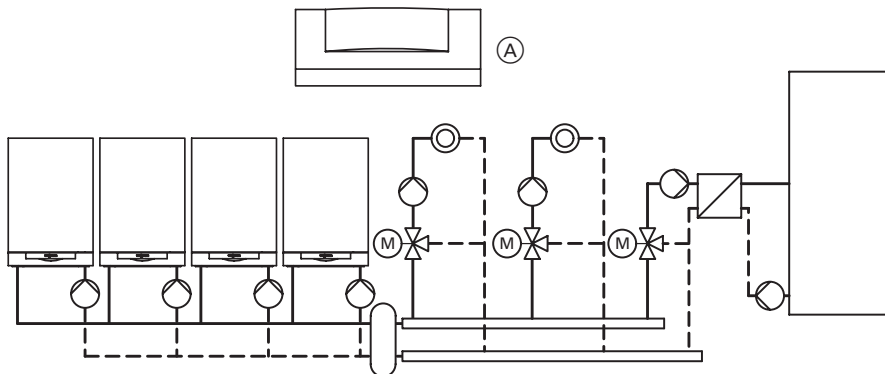
##### Benefits at a glance

- Uniform, simple operation:
  - Various operating levels for system users and heating contractors
  - Easy to read through display with plain text and illumination
  - Illuminated heating program selection and heating circuit keys
  - Simple adjustment of switching times
  - Digital time switch for day and week programs. Through changing a heating program, the set times for DHW heating and DHW circulation pump operation can be matched to individual requirements
  - Plug & Work function for automatic recognition and adaptation of sensors and system accessories
  - Automatic summer/winter changeover.
- Program selection for screed drying support.
- Quick installation time, commissioning and maintenance, due to the Rast-5 plug-in system, plug-in function modules, good accessibility and integral diagnostic system.
- Optolink laptop interface for interrogation and parameter setting with a laptop.
- Standardised LON BUS for complete integration into building management systems.
- Remote monitoring in conjunction with Vitocom 300.
- For all common water connections and systems.
- Special control strategy for Vitodens 300 gas fired condensing boilers.

Multi-boiler system with DHW cylinder



Multi-boiler system with cylinder loading system



(A) Vitotronic 333

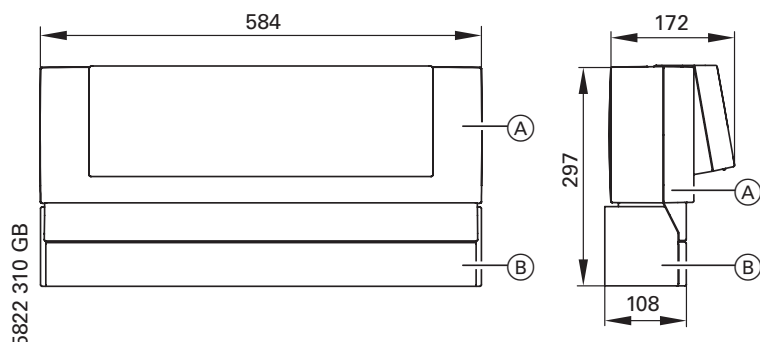
Weather-compensated, digital cascade and heating circuit control

- for multi-boiler systems with up to four Vitodens 300
- with sequential boiler strategy
- for one system circuit and a max. of two heating circuits with mixer. Up to a further 32 Vitotronic 050 heating circuit controllers can be connected via the LON BUS (LON module required [accessory])
- for modulating operation in conjunction with Vitotronic 100, type HC1
- with cylinder temperature control or control unit for a cylinder loading system with mixer assembly
- with capability to communicate via LON BUS (LON communication module and terminators are available as accessory)
- with integral diagnostic system.

##### Note

For higher antiference, connect all boilers with Vitotronic 100 and the Vitotronic 333 cascade control unit to the same phase.

##### Dimensions



- (A) Vitotronic 333
- (B) Mounting bracket

## 1.2 Specification

### Vitotronic 333 cascade control unit for multi-boiler systems

#### As delivered condition

Vitotronic 333, type MW2  
(part no. 7179 063)

with

- Programming unit with plain text support and illuminated display
- Outside temperature sensor
- Flow temperature sensor
- Cylinder temperature sensor
- Cascade communication module
- Mounting bracket

Fit the control unit with a wall mounting bracket to the wall.

An extension kit is required for each heating circuit with mixer (accessory). Only install three-way mixers into heating circuits for condensing boiler because of their low return temperatures.

The LON communication module and BUS terminators are available as accessories to enable communication.

For systems with DHW cylinder

- circulation pump with check valve for cylinder temperature control or
- cylinder loading system Vitotrans 222 with mixer assembly must be ordered separately.

#### Heating system with underfloor heating

In an underfloor heating circuit, an extension kit is required for one heating circuit with mixer.

Install a temperature limiter into the underfloor heating circuit to limit the maximum temperature.

Observe DIN 18560-2.

A remote control with room temperature hook-up must not affect the underfloor heating circuit.

#### Plastic pipe systems for radiators

We recommend the installation of a high limit thermostat to limit the maximum temperature for plastic pipework for heating circuits with radiators.

## Construction and function

### Modular construction

The control unit comprises a basic unit, electronic modules and a programming unit with plain text support.

The control unit contains the following: System ON/OFF switch, electronic maximum temperature limiter, minimum temperature regulator, emissions test switch, Optolink laptop interface, Keys for

- Program selection
- Holiday program
- Party and economy mode
- Temperature at reduced mode
- Domestic hot water temperature
- Date/time

Setting the heating curves for system/flow temperature  
■ Heating circuit selection and a rotary selector for temperature selection in standard mode.  
Demand-dependent heating circuit pump shutdown, adjustment of the variable heating limit, anti-seizing pump protection, central fault message and integral diagnostic system.

### Functions

Vitotronic 333 regulates the system/flow temperature of a multi-boiler system with up to four Vitodens 300 with Vitotronic 100, type HC1, in modulating mode.

It regulates the system/boiler water temperature and the flow temperature of the heating circuits with mixer subject to weather conditions.

It controls the Vitotronic 100, type HC1, of the boilers, in accordance with boiler sequence strategy.

It provides adaptive cylinder temperature control with priority.

An additional DHW heating function (heating to a higher temperature) is an available option.

A cylinder loading system with a regulated three-way valve can be controlled.

Optional screed drying function for underfloor heating systems.

According to the Energy Savings Order [Germany], the temperature in each room must be individually controlled, e.g. through thermostatic radiator valves.

### Control characteristics

- PI characteristics with three-point output
- Heating curve setting range
  - Slope: 0.2 to 3.5
  - Level: -13 to 40 K
  - Max. limit: 20 to 130 °C
  - Min. limit: 1 to 127 °C
- Differential temperature for heating circuits with mixer: 0 to 40 K
- DHW temperature setting range: 10 to 60 °C; adjustable from 10 to 95 °C (potential temperature limited by the max. boiler flow temperature)

### Specification

- Rated voltage: 230 V~
- Rated frequency: 50 Hz
- Rated current: 6 A
- Power consumption: 10 W
- Safety class: I
- Protection: IP 20 D to EN 60 529, safeguard through design/installation Type 1B to EN 60 730-1
- Function:
- Permissible ambient temperature
  - during operation: 0 to +40 °C  
Installation in living accommodation (standard ambient conditions)
  - during storage and transport: -20 to +65 °C
- Rated breaking capacity of the relay outputs for
  - Heating circuit pumps or heat exchanger set [20]: 4(2) A 230 V~\*1
  - Cylinder loading pump [21]: 4(2) A 230 V~\*1
  - DHW circulation pump [28]: 4(2) A 230 V~\*1
  - Central fault message [50]: 4(2) A 230 V~\*1
  - Three-way valve – cylinder loading system or mixer motor [52]: 0.2(0.1) A 230 V~\*1

\*1 Total max. 6 A 230 V~.



## 1.2 Specification

### Vitotronic 333 cascade control unit for multi-boiler systems

1

#### Connection box

External devices are connected via system plug.  
The plug-in connectors are plugged directly into the front of the open control unit.  
Connect three-phase consumers via additional contactors.

#### Programming unit

- Identical user interface as for Vitotronic boiler control units
- With digital time switch
- Illuminated display with plain text support
- Display of temperatures and faults
- Encoding via the programming unit display
- All settings and the most important codes in plain text

#### Programming unit time switch

Digital time switch with day and week program, annual calendar, automatic summer/winter changeover and automatic function for DHW heating and DHW circulation pump.  
Time, day and standard switching times for central heating, DHW heating and DHW circulation pump are factory-set (individually programmable); max. four switching periods per day may be selected.  
Shortest switching interval: 10 minutes  
Power reserve: 5 years

#### Setting heating programs

The heating system frost protection\*<sup>1</sup> applies to all heating programs.  
You can set the following heating programs with the program selection keys:

- Heating and DHW
- DHW only
- Standby mode


As option, external heating program changeover common for all heating circuits or for selected heating circuits.

\*<sup>1</sup>see frost protection.

#### Frost protection function of the mixer heating circuits

- Frost protection will be
  - started if the outside temperature falls below approx. +1 °C, i.e. the heating circuit pumps are started and the flow is maintained at a lower temperature of approx. 10 °C.
  - stopped if the outside temperature exceeds approx. +3 °C, i.e. the heating circuit pumps are switched OFF.

#### Summer mode

(DHW only, heating program selection key )

One or several burner(s) start(s) only when the DHW cylinder needs reloading (controlled by the cylinder thermostat).  
The lower boiler water temperature required for the respective boiler is maintained.

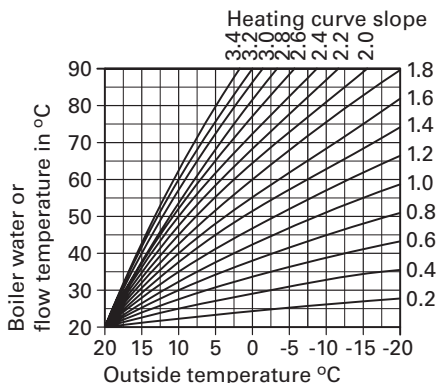
#### Heating curve adjustment (slope and level)


Subject to heating system, Vitotronic regulates

- the flow temperature of a maximum of two heating circuits with mixer subject to weather conditions, and
- the system/flow temperature automatically, i.e. from 0 to 40 K (as delivered condition 8 K) higher than the respectively highest current set flow temperature.

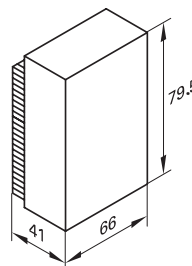
The flow temperature required to reach a certain room temperature depends on the heating system and the thermal insulation of the building to be heated.  
Adjusting the heating curves matches the system or flow temperatures to these conditions.

Heating curves:



The upper flow temperature is limited by control thermostat  and the electronically set maximum temperature of the boiler control unit Vitotronic 100, type HC1.

#### Outside temperature sensor



Installation location:

- North or north-westerly wall of the building
- 2 to 2.5 m above the ground; for multi-storey buildings at approx. the upper half of the second floor.

Connection:

- 2-core lead, length max. 35 m when using a cross-section of 1.5 mm<sup>2</sup> (copper).
- Do not run this lead immediately next to 230/400 V cables.

Protection:

IP 43 to  
EN 60 529,  
safeguard  
through design  
and installation

Permissible ambient temperature for operation, storage and transport: -40 to +70 °C

#### Immersion temperature sensor

To measure the common flow temperature of the multi-boiler system  
Secured with a tie.

Cable length 3.75 m, ready to plug in.

Protection:

IP 32 to  
EN 60 529.  
Safeguard  
through design/  
installation.

Permissible ambient temperature

- in operation: 0 to +90 °C
- during storage and transport: -20 to +70 °C

## 1.2 Specification

### Vitotronic 200 and Vitotronic 333 accessories

#### Vitotronic 200 and Vitotronic 333 accessories

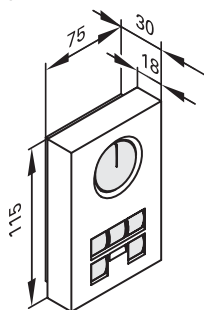
##### Note on room temperature hook-up (RS function) using remote control units

Because of the inertia of underfloor heating systems, the RS function must not affect an underfloor heating circuit. For boilers with a lower temperature limit, the RS function must not affect the heating circuit without mixer.

##### Note on Vitotrol 200 and 300

If required, Vitotrol 200 and Vitotrol 300 can also be used together in one heating system (one for each heating circuit).

##### Vitotrol 200 (KM BUS user), part no. 7450 017



The Vitotrol 200 remote control adjusts the heating program and the required set room temperature for one heating circuit in standard mode, from any room in the house.

Vitotrol 200 is equipped with illuminated heating program selection keys and a party or economy key.

The fault display shows faults on the control unit.

A remote control unit can be connected for each heating circuit.

**WS function:** Installation at any point in the building.

**RS function:** Install the remote control unit in the main living room on an internal wall opposite radiators, but not inside shelf units, niches, immediately by a door or a heat source (e.g. direct sunlight, fireplace, TV set, etc.).

The integral room temperature sensor records the actual room temperature and effects any necessary correction of the flow temperature as well as a rapid heat-up at the start of the heating operation (if suitably encoded).

**Connection:**

- 2-core lead, maximum cable length 50 m (even if connecting several remote control units).
- Never route this lead immediately next to 230/400 V cables.
- A LV connector is part of the standard delivery

**Power supply via KM BUS.**

Rated current: 10 mA  
Power consumption: 0.2 W  
Safety class: III  
Protection: IP 30 to EN 60 529. Safeguard through design/installation.

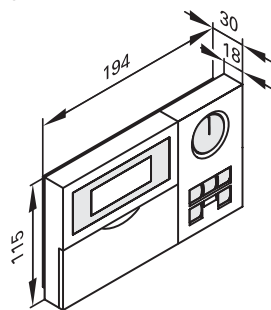
**Permissible ambient temperature**

- in operation: 0 to +40 °C
- during storage and transport: -20 to +65 °C

**Room temperature setting range:** 10 to 30 °C, adjustable from 3 to 23 °C or 17 to 37 °C

The set room temperature for reduced mode is adjusted on the control unit.

##### Vitotrol 300 (KM BUS user), part no. 7179 060



The Vitotrol 300 remote control adjusts the required set room temperature for one heating circuit in standard and reduced mode, the heating program and the switching times for central heating, DHW heating and the DHW circulation pump.

Vitotrol 300 provides an illuminated display as well as illuminated heating program selection keys, a party or economy key, automatic summer/winter changeover, keys for holiday program, weekday and time.

A remote control unit can be connected for each heating circuit.

**WS function:** Installation at any point in the building.

**RS function:** Install the remote control unit in the main living room on an internal wall opposite radiators, but not inside shelf units, niches, immediately by a door or a heat source (e.g. direct sunlight, fireplace, TV set, etc.).

The integral room temperature sensor records the actual room temperature and effects any necessary correction of the flow temperature as well as a rapid heat-up at the start of the heating operation (if suitably encoded).

**Connection:**

- 2-core lead, maximum cable length 50 m (even if connecting several remote control units).
- Never route this lead immediately next to 230/400 V cables.
- A LV connector is part of the standard delivery

**Power supply via KM BUS.**

Rated current: 10 mA  
Power consumption: 0.5 W  
Safety class: III  
Protection: IP 30 to EN 60 529. Safeguard through design/installation.

**Permissible ambient temperature**

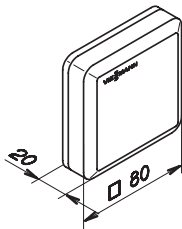
- in operation: 0 to +40 °C
- during storage and transport: -20 to +65 °C

**Set room temperature setting range**

- in standard mode: 10 to 30 °C, adjustable from 3 to 23 °C or 17 to 37 °C
- in reduced mode: 3 to 37 °C



**Room temperature sensor,**  
part no. 7408 012



Separate room temperature sensor as supplement to Vitotrol 200 or 300; to be used if Vitotrol 200 or 300 cannot be installed inside the main living room or in a suitable position where the unit can be installed to record or adjust the temperature.

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

Connect the room temperature sensor to Vitotrol 200 or 300.

Connection:

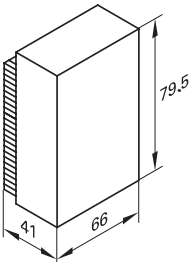
- 2-core lead with a cross-section of 1.5 mm<sup>2</sup>.
- Cable length from the remote control 30 m.
- Never route this lead immediately next to 230/400 V cables.

Safety class: III  
Protection: IP 30 to  
EN 60529,  
safeguard  
through design/  
installation

Permissible ambient temperature

- in operation: 0 to +40 °C
- during storage and transport: -20 to +65 °C

**Radio clock receiver,**  
part no. 7450 563



For receiving the DCF 77 time signal (location: Mainflingen near Frankfurt/Main [Germany]).

Radio controlled setting of time and date.

Install the radio clock receiver on an outside wall in the direction of the transmitter. The reception may be reduced by metallic elements in the building structure, e.g. steel reinforced concrete, neighbouring buildings and sources of electro-magnetic interference, e.g. HV and public transport lines.

Connection:

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

## 1.2 Specification

### Vitotronic 200 accessories

#### Internal extension H1,

part no. 7179 057

PCB for integration into the control unit (Vitodens 333, standard delivery).

Using the extension enables the following functions to be achieved:

Function	Rated breaking capacity of the relay output
■ Connection of an external safety solenoid valve (LPG)	1(0.5) A 250 V~
as well as, alternatively, <b>one</b> of the following functions: ■ Connection of a DHW circulation pump ■ Connection of a heating circuit pump (stepped) for a directly connected heating circuit ■ Connection of a central fault messaging facility ■ Connection of a cylinder loading pump	2(1) A 250 V~

Rated voltage: 230 V~

Rated frequency: 50 Hz

#### Internal extension H2,

part no. 7179 144

Electronic PCB for installation into the control unit.

Using the extension enables the following functions to be achieved:

Function	Rated breaking capacity of the relay output
■ Interlocking of internal extractors (an external safety valve can no longer be connected if this function is realised with Vitodens 333)	6(3) A 250 V~
as well as, alternatively, <b>one</b> of the following functions: ■ Connection of a DHW circulation pump ■ Connection of a heating circuit pump (stepped) for a directly connected heating circuit ■ Connection of a central fault messaging facility ■ Connection of a cylinder loading pump	2(1) A 250 V~

Rated voltage: 230 V~

Rated frequency: 50 Hz

#### External extension H1,

part no. 7179 058

Function extension inside the equipment for wall mounting.

Using the extension enables the following functions (up to 8) to be achieved:

Function	Rated breaking capacity of the relay output
■ Connection of a central fault messaging facility	0.4(0.2) A 250 V~
■ Connection of a DHW circulation pump ■ Connection of a heating circuit pump (stepped) for a directly connected heating circuit ■ Connection of a cylinder loading pump	2(1) A 250 V~ in total max. 4 A~
■ Minimum boiler water temperature demand ■ External operating mode changeover ■ External blocking ■ Set boiler water temperature default via a 0 – 10 V input	

Rated voltage: 230 V~

Rated frequency: 50 Hz

Rated current: 4 A

Power

consumption: 4 W

Safety class: I

Protection: IP 32

Permissible ambient temperature

■ during

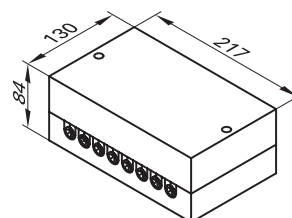
operation:

0 to +40 °C

Use in living space and boiler rooms (standard ambient conditions)

■ during storage

and transport: –20 to +65 °C



#### External extension H2,

part no. 7179 265

Function extension inside the equipment for wall mounting.

Using the extension enables the following functions to be achieved:

Function	Rated breaking capacity of the relay output
■ Connection of a DHW circulation pump	2(1) A 250 V~ in total max. 4 A~
■ Minimum boiler water temperature demand ■ External operating mode changeover ■ External blocking	

Rated voltage: 230 V~

Rated frequency: 50 Hz

Rated current: 2 A

Power

consumption: 3 W

Safety class: I

Protection: IP 32

Permissible ambient temperature

■ during

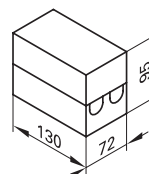
operation:

0 to +40 °C

Use in living space and boiler rooms (standard ambient conditions)

■ during storage

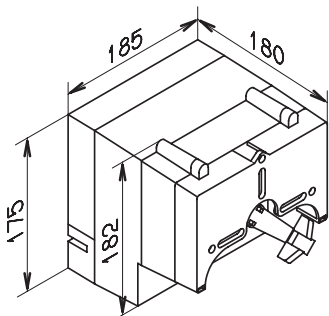
and transport: –20 to +65 °C



#### Vitotronic 200 and Vitotronic 333 accessories

**Vitotronic 200 extension kit for one heating circuit with mixer**  
(KM BUS user),  
part no. 7178 995

Mixer control



The mixer regulator is mounted directly on the Viessmann mixer DN 20 to 50 and R 1/2" to 1 1/4".

The mixer regulator is a motorised control unit. Rotational direction may be reversed. With connection plug for heating circuit pump, flow temperature sensor (contact sensor), mains and BUS connection.

Rated voltage: 230 V~  
Rated frequency: 50 Hz  
Rated current: 4(2) A  
Power consumption: 6.5 W  
Safety class: II  
Test class: II  
Protection: IP 32 D to EN 60529

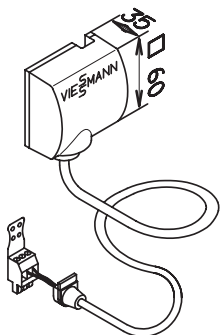
Permissible ambient temperature

■ in operation: 0 to +40 °C  
■ during storage and transport: -20 to +65 °C

Relay output breaking capacity for heating circuit pump [20]: 4(2) A 230 V~

Motor:  
Torque: 3 Nm  
Run time for 90° ±: 2 minutes  
Dead zone of PI controller at a slope of 1.4: ±1.2 K

**Flow temperature sensor (contact sensor)**



Secured with a tie.  
Cable length approx. 2 m, wired ready to plug in

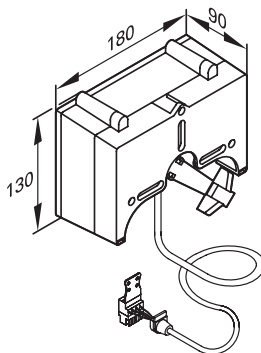
Protection: IP 32

Permissible ambient temperature

■ in operation: 0 to +100 °C  
■ during storage and transport: -20 to + 70 °C

**Vitotronic 333 extension kit for one heating circuit with mixer**,  
part no. 7450 650  
comprising a mixer motor with connecting cable (4 m long), plug-in connector and flow temperature sensor (contact temperature sensor).

Mixer motor



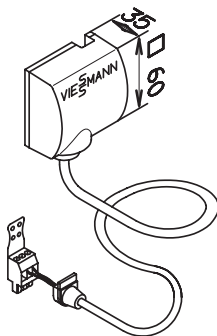
The mixer motor is mounted directly on the Viessmann mixer DN 20 to 50 and R 1/2" to 1 1/4".

Rated voltage: 230 V~  
Rated frequency: 50 Hz  
Power consumption: 4 W  
Protection: IP 42 to EN 60 529. Safeguard through design/ installation.

Permissible ambient temperature

■ in operation: 0 to +40 °C  
■ during storage and transport: -20 to +65 °C  
Torque: 3 Nm  
Run time for 90° ±: 2 minutes

**Contact temperature sensor**



For recording the flow temperature.  
Secured with a tie.

Cable length 5.8 m, ready to plug in.  
Protection: IP 32 to EN 60 529. Safeguard through design/ installation.

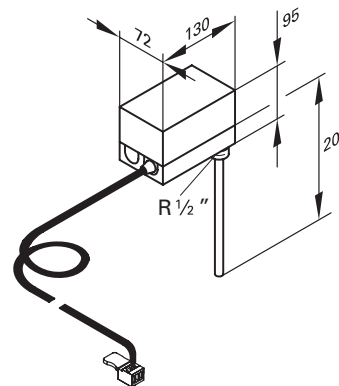
Permissible ambient temperature

■ in operation: 0 to +130 °C  
■ during storage and transport: -20 to + 70 °C

Mixer motor for flanged mixer see the control unit accessories, register Vitotec 1.

**Immersion thermostat**

As temperature limiter for limiting the max. temperature of underfloor heating systems,  
part no. 7151 728



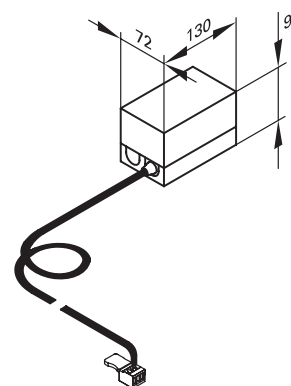
The temperature limiter is installed into the heating flow and switches the heating circuit pump OFF if the flow temp. is too high. With connecting cable (approx. 4 m long) and system plug.

Setting range: 30 to 80 °C  
Switching differential: max. 11 K  
Breaking capacity: 6(1.5) A 250 V~ inside casing  
Setting scale: inside casing  
Stainless steel sensor well: R 1/2" x 200 mm  
DIN reg. no: DIN TR 77703 or DIN TR 96803 or DIN TR 110302

or

**Contact thermostat**

As temperature limiter for limiting the max. temp. of underfloor heating systems,  
part no. 7151 729  
(only in conjunction with metallic pipes)



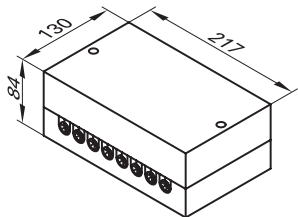
The temperature limiter is installed into the heating flow and switches the heating circuit pump OFF if the flow temp. is too high. With connecting cable (approx. 4 m long) and system plug.

Setting range: 30 to 80 °C  
Switching differential: max. 14 K  
Breaking capacity: 6(1.5) A 250 V~ inside casing  
Setting scale: inside casing  
DIN reg. no: DIN TR 77703 or DIN TR 96803 or DIN TR 110302

## 1.2 Specification

### Vitotronic 200 and Vitotronic 333 accessories

**Function extension 0 – 10 V  
for Vitotronic 333**  
(KM BUS user),  
part no. 7174 718



With leads/cables and plug-in connectors [40] and [145] supplied.

- to default a set flow temperature via a 0 – 10 V input for one temperature range from 10 to 100 °C
- to control a feed pump when connecting Vitotronic 050, e.g. in a sub-station or
- for signalling reduced mode and switching the heating circuit pump to a lower speed

Rated voltage: 230 V~  
Rated frequency: 50 Hz  
Power consumption: 3 W  
Nominal breaking capacity of the relay output: 8(4) A 250 V  
Protection: IP 30 to EN 60 529. Safeguard through design/ installation.

Permissible ambient temperature

- in operation: 0 to +40 °C
- during storage and transport: –20 to +65 °C

#### LON communication module

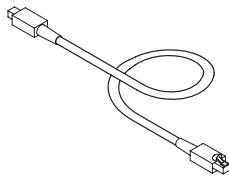
PCB for data exchange with Vitotronic 050, Vitocom 300 and for connecting to a higher level building management systems.

- for installation into Vitotronic 200 part no. 7179 113
- for installation into Vitotronic 333 part no. 7172 174

**Cascade communication module for Vitotronic 100,**  
Part no. 7179 062

For data exchange between the cascade control unit Vitotronic 333 and Vitotronic 100  
PCB for installation into the Vitotronic 100 of the gas fired wall mounted boiler.

**LON, connecting cable for data transfer between the control units (Vitotronic 333 to Vitotronic 050),**  
part no. 7143 495



Cable length 7 m, ready to plug in.

#### Connecting cable extension

- Installation distances between 7 and 14 m:
  - 2 connecting cables, part no. 7143 495
  - 1 LON connector RJ 45, part no. 7143 496
- Installation distances between 14 and 900 m:
  - 2 connecting cables, part no. 7143 495
  - 2-core cable, CAT 5 cable, screened, or JY(St) Y 2 x 2 x 0.8 (on-site)
  - LON socket RJ 45, CAT 6, part no. 7171 784 (2 pieces)

**Terminator (2 pieces),**  
part no. 7143 497

To terminate the LON BUS at the first and last control unit.

**Immersion temperature sensor,**  
part no. 7179 488  
To record the low loss header temperature.

Cable length approx. 3.75 m, wired ready to plug in

Protection: IP 32  
Permiss. ambient temperature

- during operation: 0 to +90 °C
- during storage and transport: –20 to +70 °C

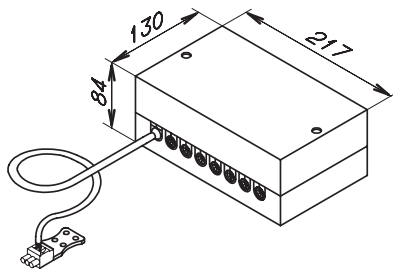
**Cylinder temperature sensor**  
for Vitodens 300 from 49 kW,  
part no. 7179 114

Cable length approx. 3.75 m, wired ready to plug in

Protection: IP 32  
Permiss. ambient temperature

- during operation: 0 to +90 °C
- during storage and transport: –20 to +70 °C

**KM BUS distributor,**  
part no. 7415 028



Including a 3.0 m long cable and LV plug-in connector.  
For the connection of 2 to 9 devices to the Vitotronic KM BUS (e.g. Vitotrol, control module V, etc.).  
We recommend the use of the KM BUS distributor if two or more devices are used which are identified as KM BUS users.

1.3 Selection guide for DHW cylinders

In order to provide the right solution for every case, Vitodens may be supplied with integral, direct DHW heating (**gas fired combination boiler**) or in combination with separate DHW cylinders (**gas fired boiler**) or with an integral DHW loading cylinder (**Vitodens 333**).

The following versions are available:

**Vitodens 200** (8.8 to 26.0 kW)

- as gas-fired combination boiler and
- as gas-fired boiler.

**Vitodens 300** (6.6 to 26.0 kW)

- as gas-fired combination boiler

**Vitodens 300** (4.5 to 66.0 kW)

- as gas-fired boiler

**Vitodens 333** (6.6 to 26.0 kW)

- with integral DHW loading cylinder.

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

- DHW demand, convenience
- Utilisation of the various draw-off points
- Distance between draw-off points and boiler
- System modernisation
- Space requirement
- Water quality.

**Information about water quality:**  
From a water hardness of 20° dH and higher, we recommend the use of DHW cylinders or a water treatment system in the cold water supply when considering DHW heating.

Selection table

		Gas fired combination boiler with instantaneous water heater	Gas fired boiler with separate DHW cylinder	Vitodens 333 with integral DHW loading cylinder
DHW demand, convenience	DHW demand for an appartement/flat	+	+	+
	DHW demand for a detached house	0	+	+
	DHW demand for a centralised system for multi-occupancy buildings	–	+	–
	DHW demand for a de-centralised system for multi-occupancy buildings	+	+	–
Utilisation of the various connected draw-off points	One draw-off point	+	0	0
	Several draw-off points, no simultaneous utilisation	+	+	+
	Several draw-off points, simultaneous utilisation	–	+	0
Distance between draw-off point and boiler	Up to 7 m (excl. DHW circulation pipe)	+	–	–
	Incl. DHW circulation pipe	–	+	+
Modernisation	DHW cylinder installed	–	+	–
	Replacement of an existing combi boiler	+	–	–
Space requirement	Low space requirement (installation in a niche)	+	0	+
	Sufficient available space (boiler room)	+	+	+

+ = recommended  
0 = qualified recommendation  
– = not recommended



### 1.3 Selection guide for DHW cylinders

#### Instantaneous water heater

#### Instantaneous water heater (Vitodens 200, gas fired combination boiler)

An electronically regulated plate heat exchanger is integrated into the Vitodens 200.

This makes DHW at drawing temperature instantly available from Vitodens for approx. 45 s.

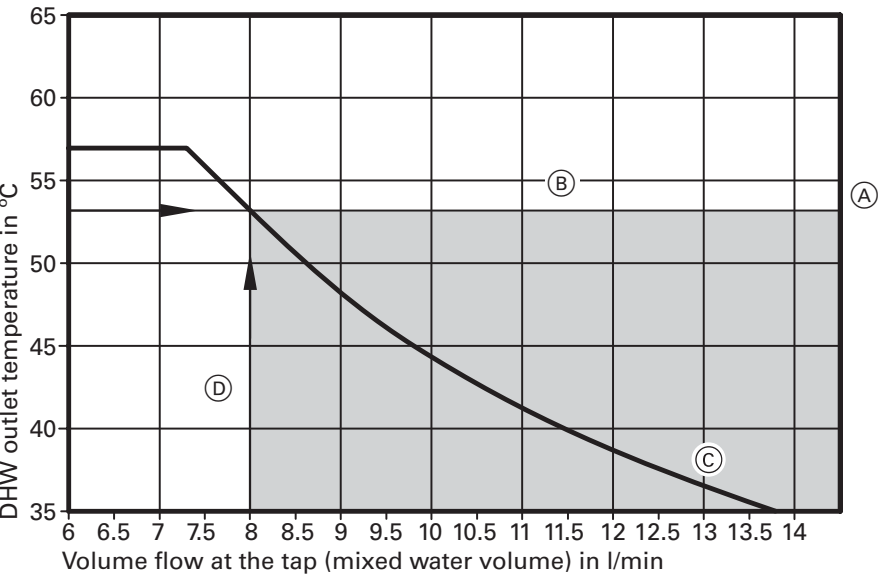
#### Plate heat exchanger specification

Capacity	litres	0.2
Connections	G (male thread)	1/2"
Hot and cold water		
Max. operating pressure	bar	10

#### Output

Rated output range of the gas fired combination boiler	kW	8.8-26.0
Continuous DHW output for DHW temperature rise from 10 to 45 °C and an average heating water temperature of 70 °C	kW l/h	24 590
Drawing rate	litres/minute	3-8
Outlet temperature, adjustable	°C	10-57

#### DHW temperature subject to volume flow



The adjacent diagram illustrates the changes in outlet temperature, subject to the volume flow at the tap. The DHW volume drawn is **limited** by a **flow rate limiter to 8 litres/minute** (D).

If a greater volume of water is required, cold water needs to be admixed, which reduces the outlet temperature. The illustration of the outlet temperature characteristics is based on a cold water inlet temperature of 10 °C.

- (A) DHW outlet temperature at Vitodens
- (B) Mixing range
- (C) DHW outlet temperature at the mixer
- (D) Throughput limitation

1.3 Selection guide for DHW cylinders  
Standby instantaneous water heater



Standby instantaneous water heater (Vitodens 300, gas fired combination boiler)

An electronically regulated standby instantaneous water heater is integrated into the Vitodens 300.

The instantaneous water heater is held at temperature, as long as the comfort function is switched ON.

This enables Vitodens to make DHW instantly available at drawing temperature.

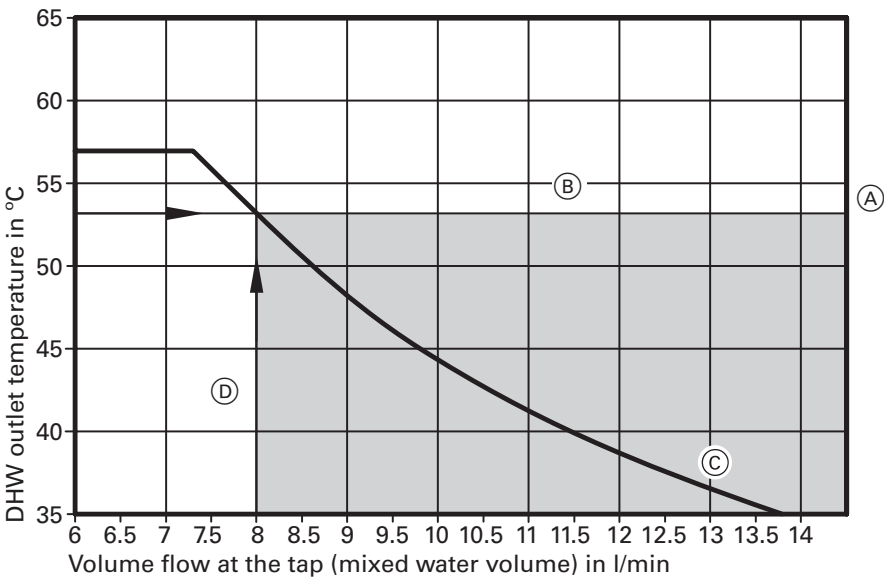
Specification – standby instantaneous water heater

<b>Capacity</b>		
– secondary side	litres	1.0
– primary side	litres	0.7
<b>Connections</b>		
Hot and cold water		G (male thread) 1/2"
<b>Max. operating pressure</b>		bar 10

Output

<b>Rated output range of the gas fired combination boiler</b>		kW	6.6-26.0
<b>Continuous DHW output</b> for DHW temperature rise from 10 to 45 °C and an average heating water temperature of 70 °C		kW l/h	24 590
<b>Drawing rate</b>		litres/minute	3-8
<b>Outlet temperature, adjustable</b>		°C	10-57

DHW temperature subject to volume flow



The adjacent diagram illustrates the changes in outlet temperature, subject to the volume flow at the tap. The DHW volume drawn is **limited** by a **flow rate limiter to 8 litres/minute (D)**.

If a greater volume of water is required, cold water needs to be admixed, which reduces the outlet temperature. The illustration of the outlet temperature characteristics is based on a cold water inlet temperature of 10 °C.

- (A) DHW outlet temperature at Vitodens
- (B) Mixing range
- (C) DHW outlet temperature at the mixer
- (D) Throughput limitation



## 1.3 Selection guide for DHW cylinders

### DHW cylinder



### Separate DHW cylinders

For increased DHW convenience separate DHW cylinders are available in white finish for the following versions

- wall mounted (80 litres)
- below the boiler (120 or 150 litres)
- installed adjacent to the boiler (160, 200 or 300 litres).

available in white.

DHW cylinder with 350 to 1000 litres capacity are available in Vitosilver, and may also be used in accordance with the aforementioned rated output.

Vitodens 200 and 300 (up to 35 kW) as boilers are intended (as ex works version) for DHW heating with a separate DHW cylinder. For this purpose, Vitodens 200 and 300 (up to 35 kW) provide an integral diverter valve.

To connect a separate DHW cylinder, always order the connection set for the DHW cylinder.

For Vitodens 300 from 49 kW, DHW cylinder connections with separate circulation pump for cylinder loading (accessory) are provided.

Determine the DHW cylinder size in accordance with the specific DHW demand.

For further details relating to the DHW cylinders, see specification, separate datasheet for DHW cylinders for wall mounted boilers and the Technical Guide on Vitocell DHW cylinders.

1

### Sizing DHW cylinders (up to 35 kW)

This summary enables the **approximate** sizing of the DHW cylinder for

- small households (1 to 2 persons)
- average households (3 to 4 persons).

Various consumer combinations may apply.

#### Note

If identical consumers are combined with each other, only the individual consumer will be considered and not the combination.

No.		1	2	3	4	5	6	7	8
		<b>Bath 1600 to DIN 4471</b>	<b>Bath 1700 to DIN 4471</b>	<b>Small &amp; stepped bath tub</b>	<b>Large bath tub (1800 x 750 mm)</b>	<b>Shower cubicle with mixer tap &amp; standard shower head</b>	<b>Shower cubicle with 1 top &amp; 2 side spray heads</b>	<b>Washbasin</b>	<b>Bidet</b>
	<b>Drawing rate in Wh</b>	5820	6510	4890	8720	1630	4070	700	810
	<b>Volume of drawn hot water per use or useful capacity in litres</b>	140	160	120	200	40	100	17	20
1	<b>Bath 1600 to DIN 4471</b>	80 litres	*1	*1	*1	80 litres	80 litres	80 litres	80 litres
		80 litres	*1	*1	*1	120 litres	150/160 litres	120 litres	120 litres
2	<b>Bath 1700 to DIN 4471</b>	*1	80 litres	*1	*1	80 litres	80 litres	80 litres	80 litres
		*1	120 litres	*1	*1	120 litres	120 litres	120 litres	120 litres
3	<b>Small &amp; stepped bath tub</b>	*1	*1	80 litres	*1	80 litres	80 litres	80 litres	80 litres
		*1	*1	120 litres	*1	120 litres	120 litres	120 litres	120 litres
4	<b>Large bath tub (1800 x 750 mm)</b>	*1	*1	*1	120 litres	120 litres	120 litres	80 litres	80 litres
		*1	*1	*1	200 litres	150/160 litres	200 litres	150/160 litres	150/160 litres
5	<b>Shower cubicle with mixer tap &amp; standard shower head</b>	80 litres	80 litres	80 litres	120 litres	80 litres	80 litres	80 litres	80 litres
		120 litres	120 litres	120 litres	150/160 litres	80 litres	80 litres	80 litres	80 litres
6	<b>Shower cubicle with 1 top &amp; 2 side spray heads</b>	80 litres	80 litres	80 litres	*1	80 litres	80 litres	80 litres	80 litres
		150/160 litres	*1	150/160 litres	200 litres	80 litres	80 litres	80 litres	80 litres
7	<b>Washbasin</b>	80 litres	80 litres	80 litres	80 litres	80 litres	80 litres	80 litres	80 litres
		80 litres	120 litres	80 litres	150/160 litres	80 litres	80 litres	80 litres	80 litres
8	<b>Bidet</b>	80 litres	80 litres	80 litres	80 litres	80 litres	80 litres	80 litres	80 litres
		80 litres	120 litres	80 litres	150/160 litres	80 litres	80 litres	80 litres	80 litres

\*1Unsuitable combination.

- ☐ Small households (1 to 2 persons)
- ☐ Average households (3 to 4 persons)

#### Example:

For new buildings, select the appropriate DHW cylinder in accordance with DIN 4708. The accommodation is an average household with 3 occupants.

A DHW cylinder of 120 litres capacity should be selected, if a bath 1600 with a drawing rate of 140 litres and a shower cubicle (incl. mixer tap and standard shower head) with 40 litres drawing rate are used simultaneously.



## 1.3 Selection guide for DHW cylinders

### DHW cylinder



1

### Selection tables for DHW cylinders

DHW cylinders with a "-W" in the product designation are supplied in white, and those marked with a "-B" or "-V" are supplied in Vitosilver.

#### Vitodens 200 gas-fired boiler, DHW cylinder allocation

Rated output range [kW]	Practical DHW cylinder allocation (cylinder capacity in litres)										
	Vitocell-W 100 (type CWG) wall mounted	Vitocell-W 100 (type CUG) installed below boiler	Vitocell-W 100 (type CVA) installed adjacent to boiler	Vitocell-V 100 (type CVA) installed adjacent to boiler	Vitocell-W 300 (type EVA) installed adjacent to boiler	Vitocell-V 300 (type EVI) installed adjacent to boiler	Vitocell-W 100 (type CVB) installed adjacent to boiler, dual operation	Vitocell-B 100 (type CVB) installed adjacent to boiler, dual operation	Vitocell-B 300 (type EVB) installed adjacent to boiler, dual operation	Vitocell 333 (type SVK) Heating water calorifier with DHW heating	Vitocell 353 (type SVS) Heating water calorifier with DHW heating
8.8 to 26.0	80	120 150	160 200 300	—	160 200	300 500	300	500	300 500	698/ 42	702/ 42

These devices are supplied in Vitosilver.

#### Vitodens 300 gas-fired boiler, DHW cylinder allocation

Rated output range [kW]	Practical DHW cylinder allocation (cylinder capacity in litres)										
	Vitocell-I-W 100 (type CWG) wall mounted	Vitocell-W 100 (type CUG) installed below boiler	Vitocell-I-W 100 (type CVA) installed adjacent to boiler	Vitocell-V 100 (type CVA) installed adjacent to boiler	Vitocell-I-W 300 (type EVA) installed adjacent to boiler	Vitocell-V 300 (type EVI) installed adjacent to boiler	Vitocell-W 100 (type CVB) installed adjacent to boiler, dual operation	Vitocell-B 100 (type CVB) installed adjacent to boiler, dual operation	Vitocell-B 300 (type EVB) installed adjacent to boiler, dual operation	Vitocell 333 (type SVK) Heating water calorifier with DHW heating	Vitocell 353 (type SVS) Heating water calorifier with DHW heating
4.5 to 12.0 (16.0)	80	120 150	160 200 300	—	160 200	—	300	—	300	698/ 42	702/ 42
6.6 to 26.0	80	120 150	160 200 300	—	160 200	300 500	300 500	500	300 500	698/ 42	702/ 42
8.7 to 35.0	80*1	120 150	160 200 300	500	160 200	300 500	300 500	500	300 500	698/ 42	702/ 42
12.2 to 49.0	—	—	160 200 300	500 750	160 200	300 500	300 500	500	300 500	698/ 42	702/ 42
16.6 to 66.0	—	—	160 200 300	500 750 1000	160 200	300 500	300 500	500	300 500	698/ 42	702/ 42

<sup>\*1</sup>Check each application. (Is the DHW rate sufficient given the necessary heating output?)

These devices are supplied in Vitosilver.

1.4 DHW circulation

1.4 DHW circulation

DHW circulation pipes increase DHW convenience and reduce water consumption. These advantages result from the immediate DHW availability at the consumer.

However, poor insulation of the DHW circulation pipe can lead to substantial heat losses.

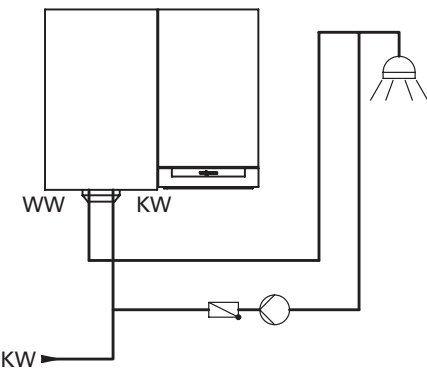
From a **pipe length of 7 m** upwards, we recommend the installation of a DHW circulation with appropriate thermal insulation in accordance with the Energy Savings Order [Germany].

In accordance with the Energy Savings Act, the DHW circulation pipe should include a circulation pump, a check valve and a time switch for shutting down the circulation during the night.

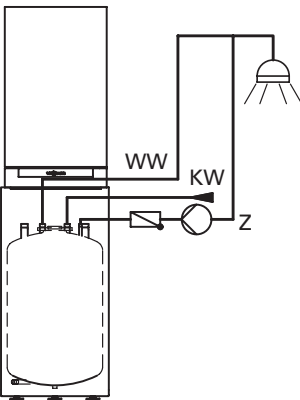
Key to symbols

- KW Cold water
- WW Hot water
- Z DHW circulation

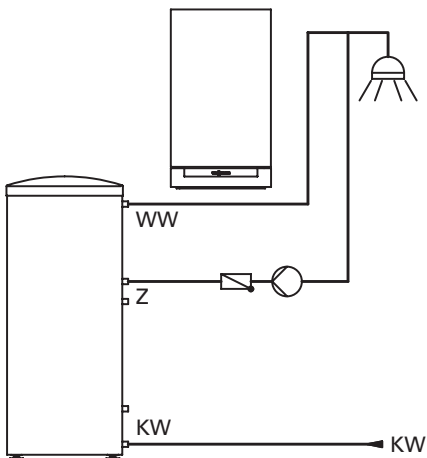
Vitodens 200 and 300



Wall mounted DHW cylinder

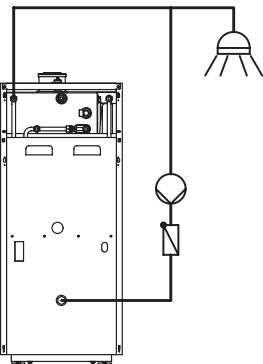


DHW cylinder installed below boiler

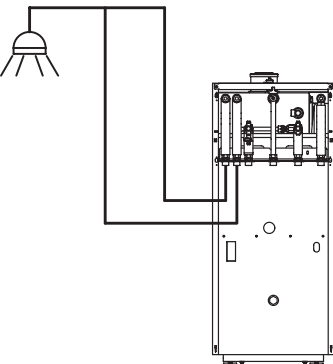


DHW cylinders installed adjacent to boiler

Vitodens 333



DHW circulation without DHW circulation pump connection set



DHW circulation with DHW circulation pump connection set (integrated into boiler)

DHW circulation for gas fired combination boilers

Because of the low water content of plate heat exchangers, the connection of DHW circulation pipes **is not recommended** for

gas fired combination boilers. Even the low heat losses of thermally insulated DHW circulation pipes

(to ENEC) lead to a higher cycling frequency for gas fired combination boilers (reheating).

## 1.5 DHW cylinder specification

### Wall mounted Vitocell-W 100 (type CWG – 80 litres)



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#### Wall mounted Vitocell-W 100 (type CWG – 80 litres) made from steel with Ceraprotect enamel coating

(Optional installation on the l.h. or r.h. side of Vitodens)

<b>Capacity</b>	litres	80
<b>Connections*1</b>		
Heating water flow and return	R (male thread)	1"
Hot and cold water	R (male thread)	3/4"
<b>Permiss. operating pressure</b> primary and secondary circuit	bar	10
<b>Permiss. temperatures</b> – primary side	°C	110
– secondary side	°C	95
<b>Standby loss*2</b> q <sub>BS</sub> at 45 K temp. differential	kWh/24 h	1.4
<b>Dimensions</b>		
Length	mm	473
Width	mm	500
Overall width		
– 4.5 to 12.6 (16.0) kW	mm	950
– 6.6 to 35 kW	mm	980
Height	mm	850
<b>Weight</b>	kg	68
<b>DIN reg. no.</b>		0244/01-13 MC

#### Continuous DHW output at rated boiler output

<b>Rated output for DHW heating</b>	kW	16	24	32
<b>Continuous DHW output*3</b> for DHW temperature rise from 10 to 45 °C and an average boiler water temperature of 78 °C	kW l/h	16 390	24 590	24 590
<b>Max. drawable mixed water volume 45 °C</b> for heating the DHW cylinder to 60 °C				
– without reheating	litres	89	89	89
– with reheating	litres	119	119	119

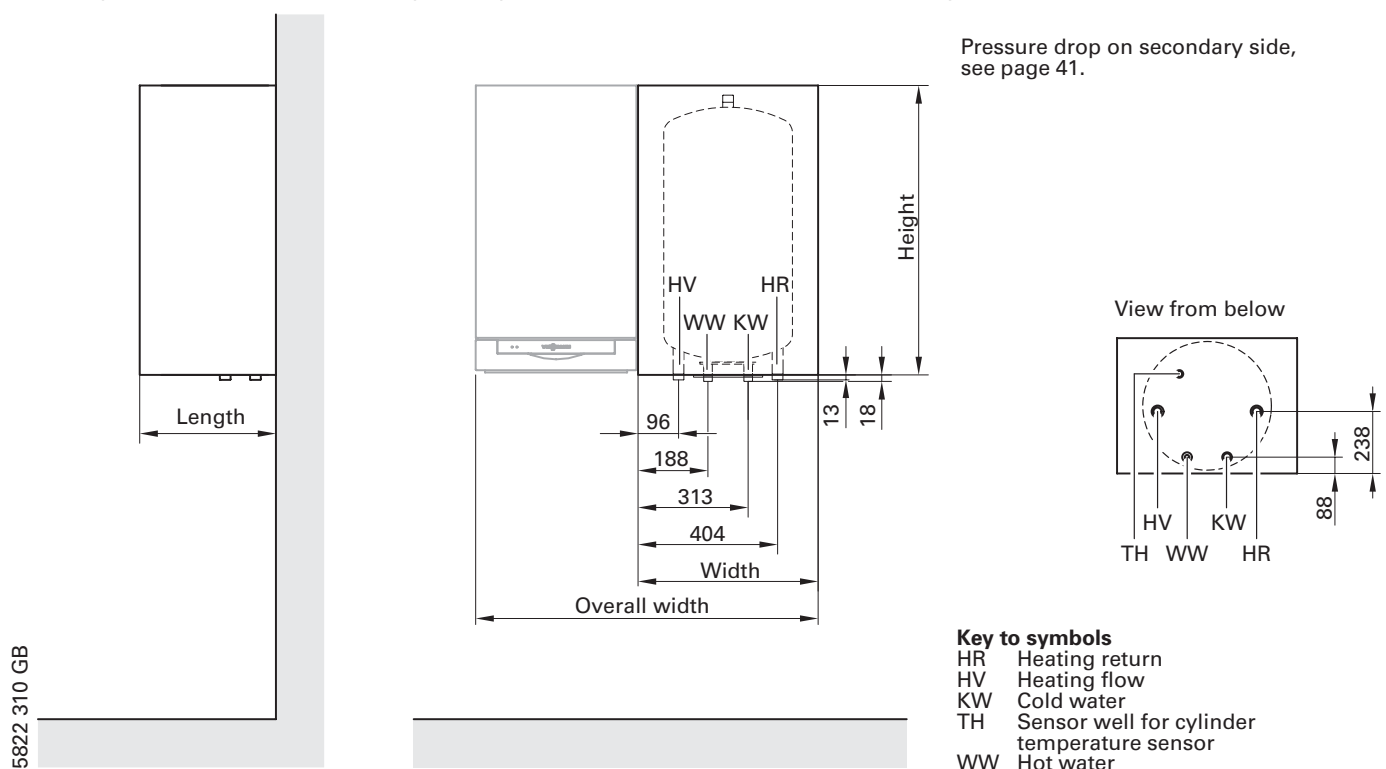
\*1An existing DHW circulation pipe may be connected to the cold water connection (KW) of the DHW cylinder.

Install non-return valves into the cold water supply pipe and into the DHW circulation pipe.

\*2Product-specific factor for calculating the system demand value to EnEV or DIN 4701-10.

Actual values to DIN 4753-8. These values are based on a room temperature of +20 °C and a DHW temperature of 65 °C and may vary by 5%.

\*3The performance factor  $N_L$  and the peak output are irrelevant here due to the low DHW cylinder volume.





## 1.5 DHW cylinder specification

Vitocell-W 100 (type CUG – 120 and 150 litres) installed below the boiler



Vitocell-W 100 (type CUG – 120 and 150 litres capacity) installed below the boiler  
made from steel with Ceraprotect enamel coating

Capacity		120		150	
litres			with casing to cover interconnecting pipes		with casing to cover interconnecting pipes
<b>Connections</b>					
Heating water flow and return	R (male thread)	1"	1"	1"	1"
Hot and cold water	R (male thread)	3/4"	3/4"	3/4"	3/4"
DHW circulation	R (male thread)	3/4"	3/4"	3/4"	3/4"
<b>Permiss. operating pressure</b>					
primary and secondary circuit	bar	10	10	10	10
<b>Permiss. temperatures</b>					
– primary side	°C	110	110	110	110
– secondary side	°C	95	95	95	95
<b>Standby loss*1</b>					
q <sub>BS</sub> at 45 K temp. differential	kWh/24 h	1.70	1.70	1.80	1.80
<b>Dimensions</b>					
Length	mm	618*2	623	661*2	667
Width	mm	Ø 553	564	Ø 596	607
Height	mm	904	1055	932	1055
Overall height	mm	1925 <sup>+15</sup> <sub>0</sub>	1925 <sup>+15</sup> <sub>0</sub>	1925 <sup>+15</sup> <sub>0</sub>	1925 <sup>+15</sup> <sub>0</sub>
<b>Weight</b>		kg	72	75	85
<b>DIN reg. no.</b>		0245/01-13 MC			

## DHW output details at rated boiler output

<b>Rated output for DHW heating</b>	kW	16	24	32
<b>Continuous DHW output</b>	kW	16	24	24
when heating DHW from 10 to 45 °C and an average boiler water temperature of 78 °C	l/h	390	590	590
<b>Performance factor N<sub>L</sub> to DIN 4708</b>				
Cylinder capacity 120 litres		1.2	1.2	1.2
150 litres		1.6	1.6	1.6
<b>Peak output over a 10 minute period</b>				
Cylinder capacity 120 litres	litres/10 min	153	153	153
150 litres	litres/10 min	173	173	173

\*1Product-specific factor for calculating the system demand value to EnEV or DIN 4701-10.

Actual values to DIN 4753-8. Actual values are based on a room temperature of +20 °C and a DHW temperature of 65 °C and may vary by 5%.

\*2Including distance from the wall. Compulsory in conjunction with safety assemblies used with pressure reducers. Otherwise, recommendation only.

## 1.5 DHW cylinder specification

### Vitocell-W 100 (type CUG – 120 and 150 litres) installed below the boiler



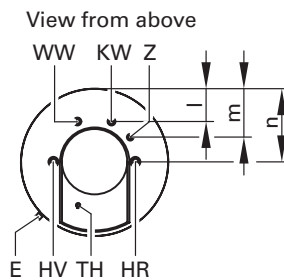
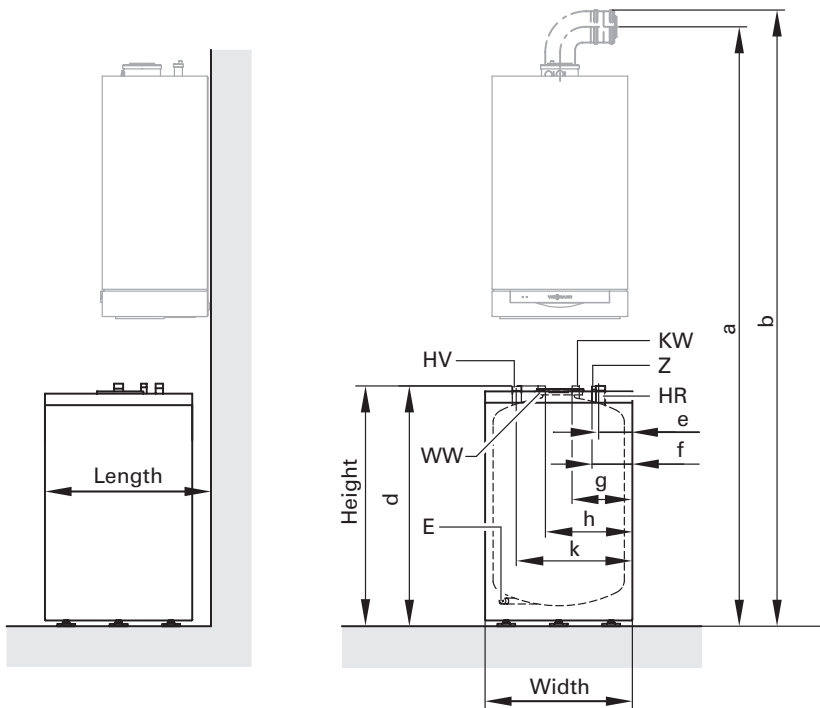
Pressure drop on secondary side,  
see page 41.

Dim.	
a mm	2079
b mm	2149

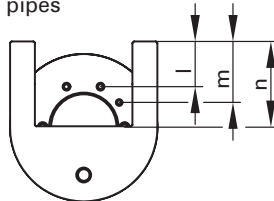
1

#### Dimensions

Capacity	120 litres	150 litres
	with casing to cover inter-connecting pipes	with casing to cover inter-connecting pipes
d mm	875	902
e mm	122	144
f mm	143	165
g mm	214	235
h mm	339	360
k mm	430	452
l mm	126	148
m mm	183	205
n mm	276	298



Top view with casing to cover interconnecting pipes



#### Key to symbols

E	Drain
HR	Heating return
HV	Heating flow
KW	Cold water
TH	Sensor well for cylinder temperature sensor
WW	Hot water
Z	DHW circulation



## 1.5 DHW cylinder specification

Vitocell-W 100 (type CVA – 160, and 200 and 300 litres) installed adjacent to the boiler



### Vitocell-W 100 (type CVA – 160, 200 and 300 litres, in white) installed adjacent to the boiler made from steel with Ceraprotect enamel coating

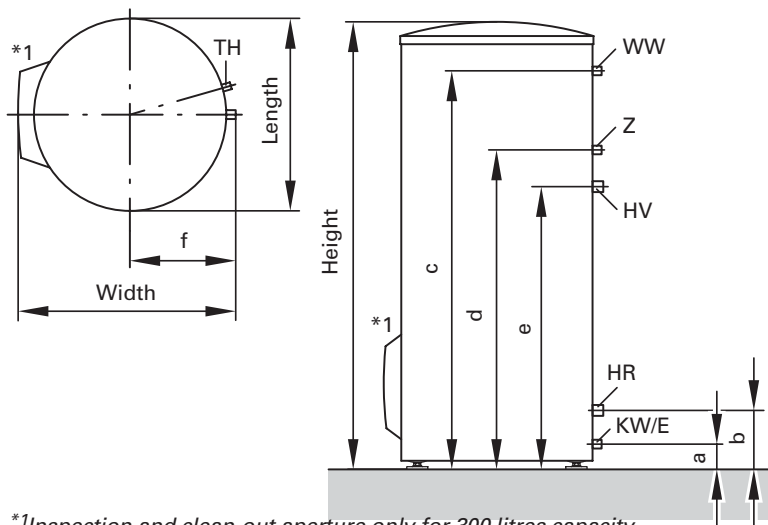
Capacity	litres	160	200	300
<b>Connections</b>				
Heating water flow and return	R (male thread)	1"	1"	1"
Hot and cold water	R (male thread)	3/4"	3/4"	1"
DHW circulation	R (male thread)	3/4"	3/4"	1"
<b>Permiss. operating pressure</b>				
– primary side	bar	25	25	25
– secondary side	bar	10	10	10
<b>Permiss. temperatures</b>				
– primary side	°C	160	160	160
– secondary side	°C	95	95	95
<b>Standby loss</b> *1	kWh/24 h	1.5	1.7	2.2
<b>Dimensions</b>				
Length (∅)	mm	581	581	633
Width	mm	605	605	705
Height	mm	1189	1409	1746
<b>Weight</b>	kg	86	97	151
<b>DIN reg. no.</b>		0241/01-13 MC/E		

### DHW output details at rated boiler output

<b>Rated output for DHW heating</b>	kW	16	24	32	44	60
<b>Continuous DHW output</b> for DHW temperature rise from 10 to 45 °C and an average boiler water temperature of 78 °C						
Cylinder capacity 160 and 200 litres	kW	16	24	26	26	26
	l/h	390	590	638	638	638
300 litres	kW	16	24	32	44	44
	l/h	390	590	786	1081	1081
<b>Performance factor N<sub>L</sub></b> to DIN 4708						
Cylinder capacity 160 litres		1.6	2.2	2.2	2.4	2.4
200 litres		2.6	3.2	3.2	3.7	3.7
300 litres		7.5	8.0	8.0	9.3	9.3
<b>Peak output</b> over a 10 minute period						
Cylinder capacity 160 litres	litres/10 min	173	199	199	207	207
200 litres	litres/10 min	214	236	236	252	252
300 litres	litres/10 min	357	368	368	399	399

\*1Product-specific factor for calculating the system demand value to EnEV or DIN 4701-10.

Actual values to DIN 4753-8. Actual values are based on a room temperature of +20 °C and a DHW temperature of 65 °C and may vary by 5%.



\*1Inspection and clean-out aperture only for 300 litres capacity.

Pressure drop on secondary side, see page 41.

#### Dimensions

Capacity	litres	160	200	300
a	mm	72	72	76
b	mm	249	249	260
c	mm	1050	1270	1600
d	mm	884	884	1115
e	mm	634	634	875
f	mm	317	317	343

#### Key to symbols

E	Drain
HR	Heating return
HV	Heating flow
KW	Cold water
WW	Hot water
TH	Sensor well for cylinder temperature sensor
Z	DHW circulation

## 1.5 DHW cylinder specification

### Vitocell-W 300 (type EVA – 160 and 200 litres) installed adjacent to the boiler



### Vitocell-W 300 (type EVA – 160 and 200 litres, in white) installed adjacent to the boiler with peripheral indirect coil(s), in stainless steel



1

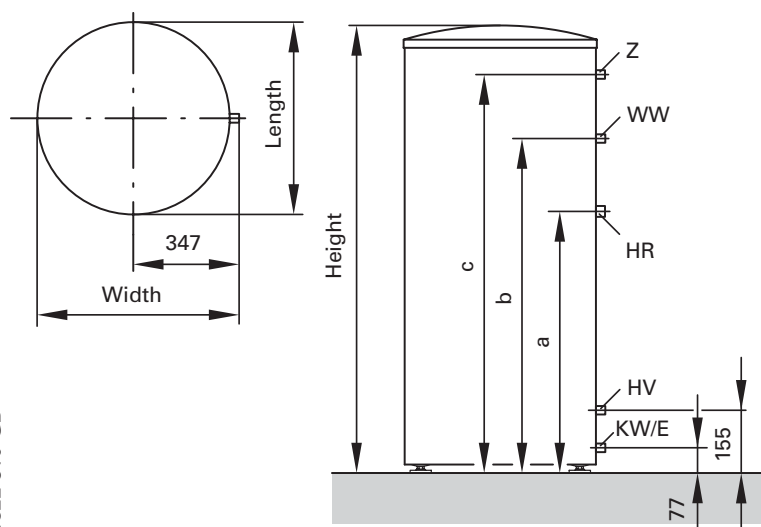
<b>Capacity</b>	litres	160	200
<b>Connections</b>			
Heating water flow and return	R (male thread)	1"	1"
Hot and cold water	R (male thread)	3/4"	3/4"
DHW circulation	R (male thread)	1/2"	1/2"
<b>Permiss. operating pressure</b>			
– primary side	bar	3	3
– secondary side	bar	10	10
<b>Permiss. temperatures</b>			
– primary side	°C	110	110
– secondary side	°C	95	95
<b>Standby loss</b> *1	kWh/24 h	1.4	1.6
q <sub>BS</sub> at 45 K temp. difference			
<b>Dimensions</b>			
Length (∅)	mm	633	633
Width	mm	667	667
Height	mm	1203	1423
<b>Weight</b>	kg	84	98
<b>DIN reg. no.</b>		0166/99 10 MC	0166/99 10 MC

### DHW output details at rated boiler output

<b>Rated output for DHW heating</b>	kW	16	24	32	44	60
<b>Continuous DHW output for DHW temperature rise from 10 to 45 °C and an average boiler water temperature of 70 °C</b>						
Cylinder capacity 160 litres	kW	16	24	24	24	24
	l/h	390	590	590	590	590
200 litres	kW	16	24	32	38	38
	l/h	390	590	786	933	933
<b>Performance factor N<sub>L</sub> to DIN 4708</b>						
Cylinder capacity 160 litres		1.6	1.7	1.7	2.0	2.0
200 litres		2.8	2.9	2.9	3.2	3.2
<b>Peak output over a 10 minute period</b>						
Cylinder capacity 160 litres	litres/10 min	173	177	177	190	190
200 litres	litres/10 min	222	226	226	236	236

\*1Product-specific factor for calculating the system demand value to EnEV or DIN 4701-10.

Actual values to DIN 4753-8. Actual values are based on a room temperature of +20 °C and a DHW temperature of 65 °C and may vary by 5%.



Pressure drop on secondary side, see page 41.

### Dimensions

<b>Capacity</b>	litres	160	200
a	mm	877	1097
b	mm	984	1204
c	mm	1067	1287

### Key to symbols

E	Drain
HR	Heating return
HV	Heating flow
KW	Cold water
WW	Hot water
Z	DHW circulation



## 1.5 DHW cylinder specification

Vitocell-W 100 (type CVB – 300 litres) installed adjacent to the boiler



**Vitocell-W 100 (type CVB – 300 litres, in white) installed adjacent to the boiler made from steel with Ceraprotect enamel coating for dual-mode DHW heating**

<b>Capacity</b>	litres	300
<b>Connections</b>		
Heating water flow and return	R (male thread)	1"
Hot and cold water	R (male thread)	1"
DHW circulation	R (male thread)	3/4"
<b>Permiss. operating pressure</b>		
primary, brine and secondary side	bar	10
<b>Permiss. temperatures</b>		
– primary side	°C	160
– brine side	°C	160
– secondary side	°C	95
<b>Standby loss</b> *1	kWh/24 h	2.3
q <sub>BS</sub> at 45 K temp. difference		
<b>Dimensions</b>		
Length (Ø)	mm	633
Width	mm	705
Height	mm	1746
<b>Weight</b>	kg	160
<b>DIN reg. no.</b>		0242/01-13 MC/E

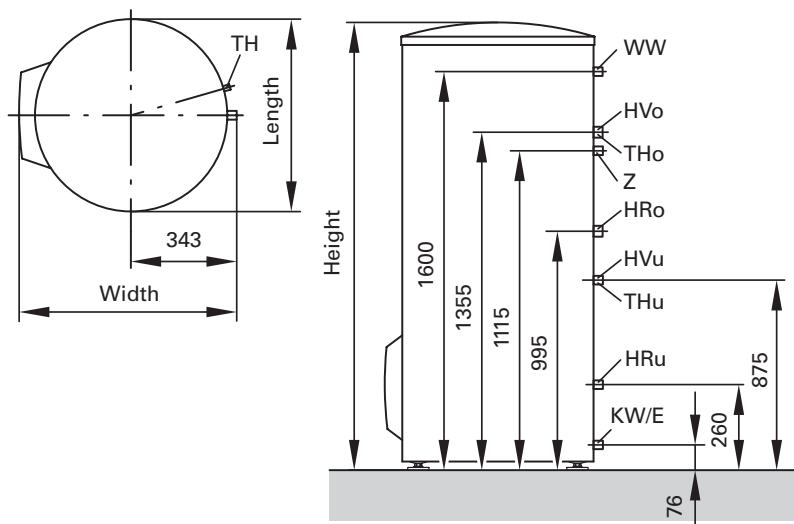
### DHW output details at rated boiler output

<b>Rated output for DHW heating</b>	kW	16	24	32	44	60
<b>Continuous DHW output</b>	kW	16	24	26	26	26
for DHW temperature rise from 10 to 45 °C and an average boiler water temperature of 78 °C	l/h	390	590	638	638	638
<b>Performance factor N<sub>L</sub></b> *2		1.3	1.4	1.4	1.5	1.5
to DIN 4708						
<b>Peak output</b>	litres/10 min	159	164	164	168	168
over a 10 minute period						

\*1Product-specific factor for calculating the system demand value to EnEV or DIN 4701-10.

Actual values to DIN 4753-8. Actual values are based on a room temperature of +20 °C and a DHW temperature of 65 °C and may vary by 5%.

\*2Values for the upper indirect coil.



Pressure drop on secondary side, see page 41.

#### Key to symbols

E	Drain
HR <sub>o</sub>	Heating return – boiler
HR <sub>u</sub>	Heating return – solar circuit
HV <sub>o</sub>	Heating flow – boiler
HV <sub>u</sub>	Heating flow – solar circuit
KW	Cold water
TH <sub>o</sub>	Sensor well for cylinder temperature sensor at height of HV <sub>o</sub>
TH <sub>u</sub>	Sensor well for lower thermometer sensor (thermometers are accessories) at height of HV <sub>u</sub>
WW	Hot water
Z	DHW circulation

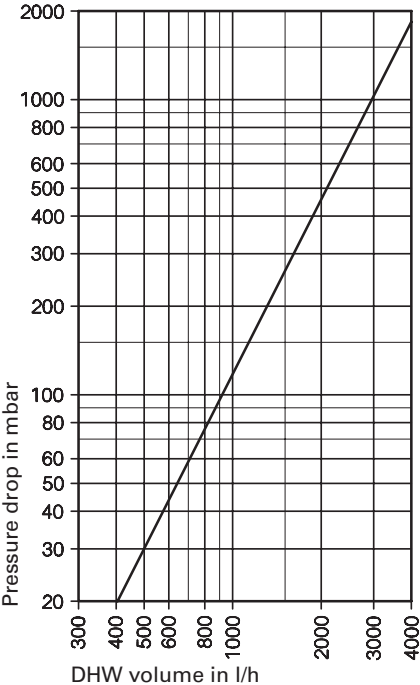




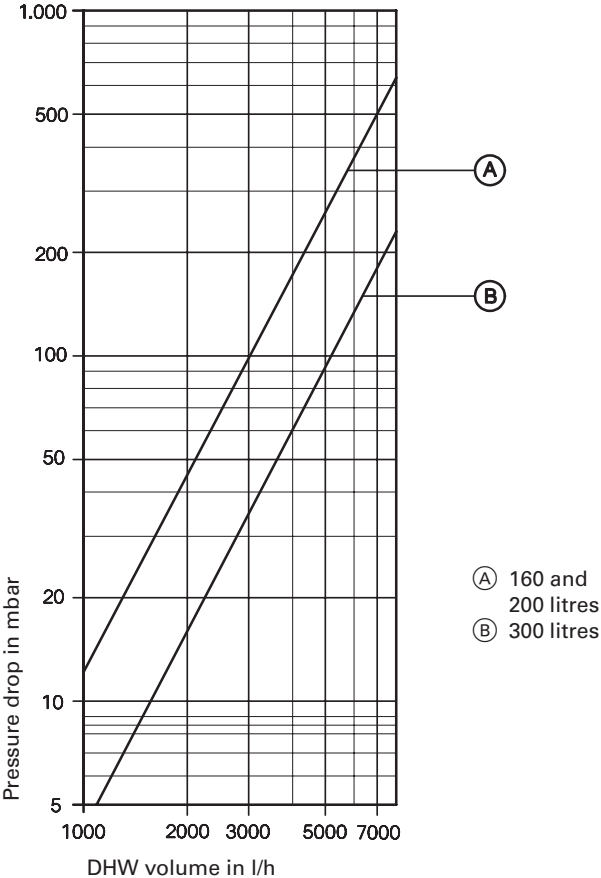
1

Secondary pressure drop

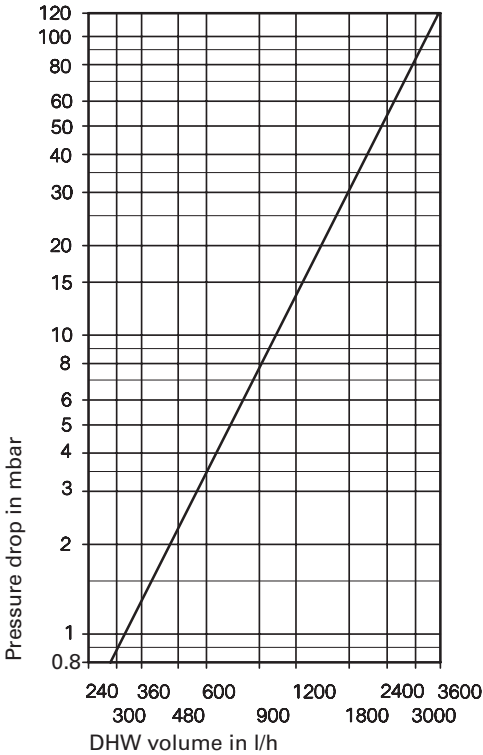
Vitocell-W 100 (type CWG and CUG)



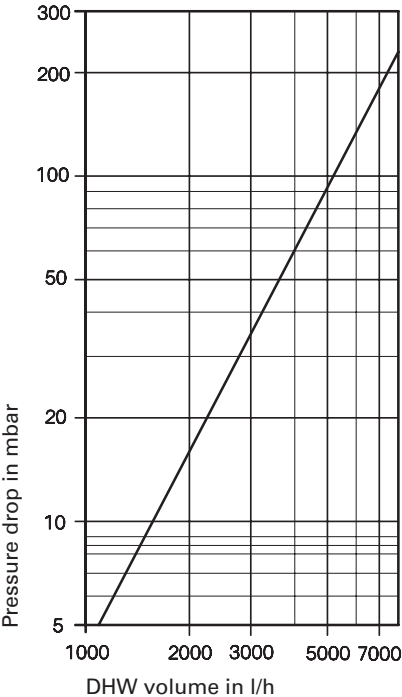
Vitocell-W 100 (type CVA)



Vitocell-W 300 (type EVA)



Vitocell-W 100 (type CVB)



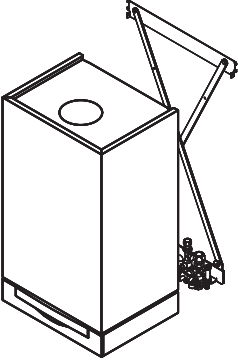
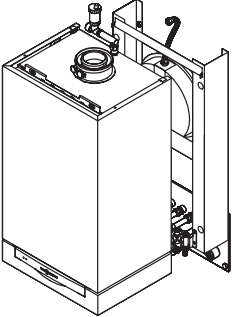
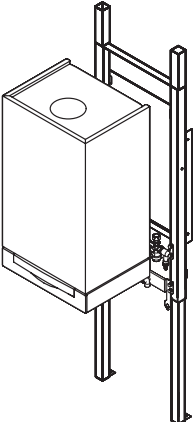


## 1.6 Specification Installation accessories



## 1.6 Installation accessories Vitodens 200 and 300 (up to 35 kW)

### Gas fired boiler

Type of wall mounting	Routing pipes	Type of installation	Required accessories without DHW cylinder
<b>Installation directly on wall</b> 	Installation on finished walls		Installation template part no. Z002 337
	or Installation on unfinished walls		Installation template part no. Z002 348
<b>Vitodens 300 installation in front of wall with mounting frame</b> 	Installation on finished walls	Compression fittings	Mounting frame part no. Z002 343
		or Solder fittings	Mounting frame part no. Z002 342
	or Installation on unfinished walls		Mounting frame part no. Z002 344
<b>Installation in front of wall with self-supporting mounting frame</b> 	Inside the self-supporting mounting frame (as per installation on unfinished walls)	Compression fittings	Self-supporting mounting frame part no. Z002 354
		or Solder fittings	Self-supporting mounting frame part no. Z002 353

## 1.6 Specification Installation accessories



Required accessories with wall mounted Vitocell-W 100 (80 litres capacity)	Vitocell-W 100 installed below boiler (120 and 150 litres capacity)	Vitocell-W 100/300 installed adjacent to boiler (also alternative DHW cylinders)
Installation template part no. Z002 337 and		
<ul style="list-style-type: none"> <li>– Vitodens 300, 4.5-12 kW part no. 7178 345</li> <li>– Vitodens 200 and Vitodens 300, 6.6-35 kW part no. 7178 344</li> </ul>	Connection set for DHW cylinders part no. 7178 347	<ul style="list-style-type: none"> <li>– with compression fittings part no. 7178 349</li> <li>– with solder fittings part no. 7178 348</li> </ul>
—	Installation template part no. Z002 348 and	Installation template part no. Z002 348 and
—	Connection set for DHW cylinders part no. 7178 347	Connection set for DHW cylinders – with compression fittings part no. 7178 349 – with solder fittings part no. 7178 348
Mounting frame part no. Z002 343 and		
part no. 7178 344	Connection set for DHW cylinders part no. 7178 347	part no. 7178 349
Mounting frame part no. Z002 342 and		
part no. 7178 344	Connection set for DHW cylinders part no. 7178 347	part no. 7178 348
Mounting frame part no. Z002 344 and		—
—	Connection set for DHW cylinders part no. 7178 347	—
Self-supporting mounting frame part no. Z002 354 and		
Self-supporting mounting frame for DHW cylinders part no. 7219 839	—	—
and		
<ul style="list-style-type: none"> <li>– Vitodens 300, 4.5-12 kW part no. 7178 345</li> <li>– Vitodens 200 and Vitodens 300, 6.6-35 kW part no. 7178 344</li> </ul>	Connection set for DHW cylinders part no. 7178 347	part no. 7178 349
Self-supporting mounting frame part no. Z002 353 and		
Self-supporting mounting frame for DHW cylinders part no. 7219 839	—	—
and		
<ul style="list-style-type: none"> <li>– Vitodens 300, 4.5-12 kW part no. 7178 345</li> <li>– Vitodens 200 and Vitodens 300, 6.6-35 kW part no. 7178 344</li> </ul>	Connection set for DHW cylinders part no. 7178 347	part no. 7178 348

5822 310 GB

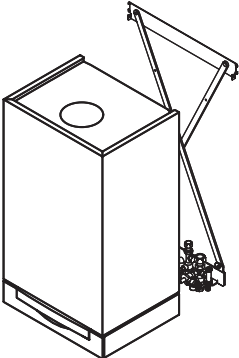


## 1.6 Specification

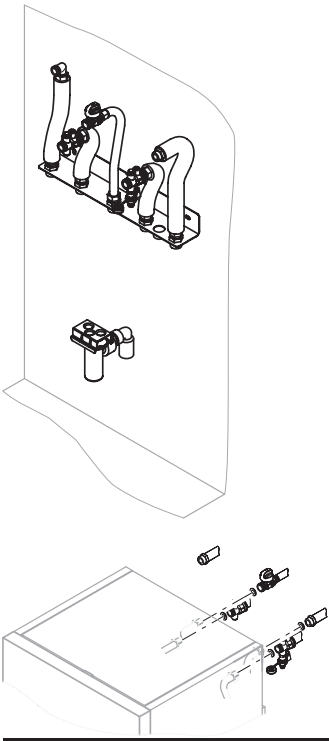
### Installation accessories



### Gas fired combination boiler

Type of wall mounting	Routing pipes	Type of installation	Required accessories
Installation directly on wall	Installation on finished walls		Installation template part no. Z002 350
	or Installation on unfinished walls		Installation template part no. Z002 349
	Installation on finished walls	Compression fittings	Mounting frame part no. Z002 346
		or Solder fittings	or Mounting frame part no. Z002 345
	or Installation on unfinished walls		Mounting frame part no. Z002 347
Installation in front of wall with self-supporting mounting frame	Inside the self-supporting mounting frame (as per installation on unfinished walls)	Compression fittings	Self-supporting mounting frame part no. Z002 352
		or Solder fittings	or Self-supporting mounting frame part no. Z002 351

Vitodens 333 compact gas fired boiler

Type of wall mounting	Routing pipes	Type of installation	Required accessories
Installation in front of wall 	Installation on finished walls below	Compression fittings	Connection set part no. 7179 419
	Installation on finished or unfinished walls below, above or to the side	Compression fittings	Connection set part no. 7179 420

1

## 2.1 General installation recommendations

### System design

Viessmann condensing boilers can generally be installed in any pumped hot water heating system (sealed system). There are no applicable special standards. The circulation pump is an integral part of Vitodens up to 35 kW.

For Vitodens 300 from 49 kW, the circulation pump (BUS pump) is available as accessory and may be installed either inside the boiler casing or externally. Minimum system pressure 0.8 bar.

The boiler water temperature is limited to 74 °C.

To minimise distribution losses, we recommend that you size the heat distribution system and the DHW heating system for a max. flow temperature of 70 °C.

For apartments with less than 80 m<sup>2</sup> or for low energy houses with low heating demand we recommend, because of the immediate effect of the room-influencing factors, to utilise Vitodens with a constant temperature control unit in conjunction with Vitotrol 100, type UTA or UTD.

To reduce the burner start-up frequency in low energy houses with a heat demand < 8 kW, we recommend the installation of a low loss header or the use of a three-way mixer.

### Low water indicator

According to EN 12828, special low water level protection can be omitted for boilers up to 300 kW, as long as heating can be reliably prevented when the water level is too low.

Viessmann Vitodens 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, before the boiler or flue gas systems reach unacceptably high temperatures.

### System renovation

For Vitodens 200 and 300 to 35 kW, adaptors for third party boilers are available as accessories.

These enable the adaptation of existing connections for central heating boilers Thermobloc-VC/-VCW and Cerastar-ZR/-ZWR to Vitodens (see chapter 2.4).

### Installation conditions for open flue operation (boiler type B)

In rooms where **air contamination through halogenated hydrocarbons** may occur, such as through hairdressing salons, printing shops, chemical cleaners, laboratories, etc., Vitodens for open flue operation (types B<sub>23</sub> and B<sub>33</sub>) may only be installed if adequate measures can be taken to provide a supply of uncontaminated combustion air. If in doubt, please contact us. Boilers should not be installed in areas subject to very dusty conditions. The boiler location must be kept free from frost and must be adequately ventilated. Provide a condensate drain and a blow-off line for the safety valve in the boiler room. The maximum ambient temperature of the system should not exceed 35 °C.

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

#### Vitodens 300 with 66 kW

Install Vitodens 300 with 66 kW in accordance with local regulations in a separate boiler room. Fit the mains electrical isolator outside the installation room.

#### Combustion air apertures

Gas fired boilers with a total rated output greater than 50 kW may only be provided with combustion air apertures leading to the outside. The cross-section should be at least 150 cm<sup>2</sup>, and should be 2 cm<sup>2</sup> larger for each additional kW output above 50 kW rated output. This cross-section may not be split over more than 2 apertures (observe FeuVo and TRGI '86/96 point 5.5.4 or local regulations).

Example: Vitodens 300, 4 × 66 kW

Total rated output 264 kW

150 cm<sup>2</sup> + 190 × 2 cm<sup>2</sup> = 530 cm<sup>2</sup> or 2 × 265 cm<sup>2</sup>.

The combustion air apertures should be at least 530 cm<sup>2</sup> or 2 × 265 cm<sup>2</sup>.

#### Multi-boiler systems with pressurised flue gas systems

Vitodens 300, 49 to 66 kW

The Vitodens 300 multi-boiler systems with common pressurised flue gas systems are provided for **open** flue operation (type B).

Further details on page 128.

#### Boiler room (up to 50 kW)

##### Permissible:

- Boiler positioning on the same floor
- Living area with connected air supply (up to 35 kW)
- Adjacent rooms with connected airways (larders, basement, utility rooms, etc.)
- Adjacent rooms with apertures to the outside (ventilation air/flue gas 150 cm<sup>2</sup> or each with 2 × 75 cm<sup>2</sup> 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 – draught operation.

##### Not permissible:

- Stair wells and common hallways.  
Exception: Detached and two family homes of low height (top edge of the floor in the top floor < 7 m above ground level)
- Bathrooms and toilets without outside windows with duct ventilation
- Rooms in which explosive or flammable materials are stored
- Rooms which are ventilated mechanically or via individual duct systems to DIN 18117-1.

Observe all local regulations.

#### Operation of Vitodens in wet areas

Vitodens is approved for installation in wet areas (e.g. bath or shower rooms) (protection IP X4 D, splash-proof). When installing Vitodens in wet areas, observe the safety areas and minimum wall clearances according to VDE 0100 or local regulations (see also electrical protection range on page 49). Vitodens may be installed in **protection area 1**.

#### Flue gas connection

(for further details, see page 99)

The connection pipe to the chimney should be as short as possible. Therefore, position Vitodens as closely to the chimney as possible. No special requirements regarding protective measures and clearances towards combustible objects, e.g. furniture, cartons or similar, need to be applied. Vitodens and the flue pipe system do not exceed a surface temperature of 85 °C at any part.

#### Extraction devices

When installing devices with exhaust to the outside (cooker hoods, extraction devices etc.) please note that extraction of air should not be able to create a vacuum in the boiler room.

A return flow of flue gases could result if the ventilation system and Vitodens were operating simultaneously. In such cases an **interlock circuit** must be installed.

For this, the internal extension H2 (accessory) can be used. This switches the extract fans OFF via the adaptor when the burner is started.

## 2.2 Positioning, installation

### Installation conditions for balanced flue operation (boiler type C)

As device type C<sub>13x</sub>, C<sub>33x</sub>, C<sub>43x</sub>, C<sub>53x</sub> or C<sub>63x</sub> to TRGI '86/96, Vitodens can be installed for **balanced** flue operation, **independent** of the size or ventilation of the boiler room.

It may, for example, be installed in rooms with personnel traffic or in living areas, in ancillary rooms without ventilation, in cupboards (open top) and niches without maintaining minimum clearances to combustible components as well as in attic rooms (pitched attics and long pane rooms of a roof) where the balanced flue air supply/exhaust pipe can be directly routed through the roof.

Since the flue pipe union for balanced flue operation is surrounded by combustion air (coaxial pipe), no clearances towards combustible components need to be maintained (further details on page 100).

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

Provide a condensate drain and a blow-off line for the safety valve in the boiler room.

Electrical interlocks with extraction devices (cooker hoods etc.) are not required with balanced flue operation.

#### Vitodens 300 with 66 kW

Install Vitodens 300 with 66 kW in accordance with the Combustion Order (FeuVo) [or local regulations] in a separate boiler room. Fit the mains electrical isolator outside the installation room.

Ventilation air and exhaust air apertures are required in accordance with TRGI (see page 99).

#### Installation in a garage

Tests by the Gaswärme-Institutes e.V., Essen, have confirmed that Vitodens is suitable for installations in garages (certification on request).

When installing this boiler in garages, maintain a distance between the floor and the burner of at least 500 mm. Secure the boiler on site with a bracket or deflector against mechanical damage.

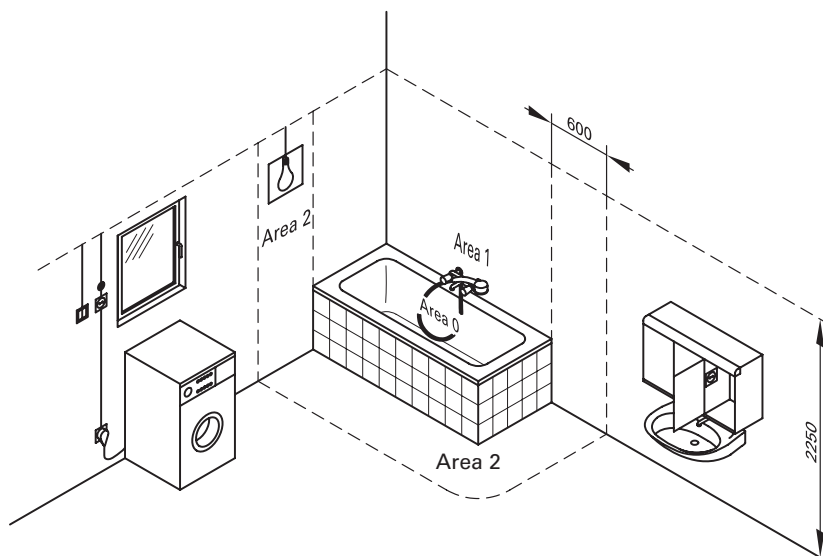
#### Operation of Vitodens in wet areas

Vitodens is approved for installation in wet areas (e.g. bath or shower rooms) (protection IP X4 D, splash-proof)

When installing Vitodens in wet areas, observe the safety areas and minimum wall clearances according to VDE 0100 or local regulations (see also electrical protection range on page 49). Vitodens may be installed in **protection area 1**.



### Electrical protection range

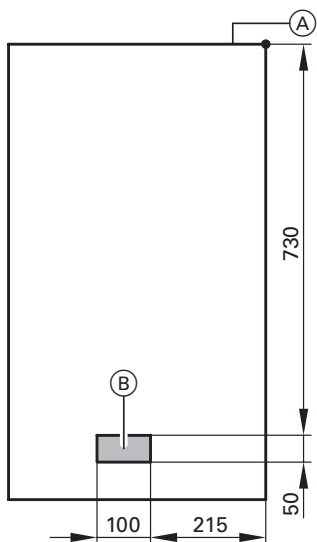


In rooms containing a bath or a shower, electrical equipment must be installed so that persons cannot be exposed to dangerous body currents. Vitodens offers electrical protection to IP X4 D. Vitodens may be installed in area 1, if hosed water (e.g. through massage showers) is excluded. VDE 0100 specifies that cables to supply permanently installed consumers in areas 1 and 2 may only be routed vertically and must be fed into the appropriate device from the rear.

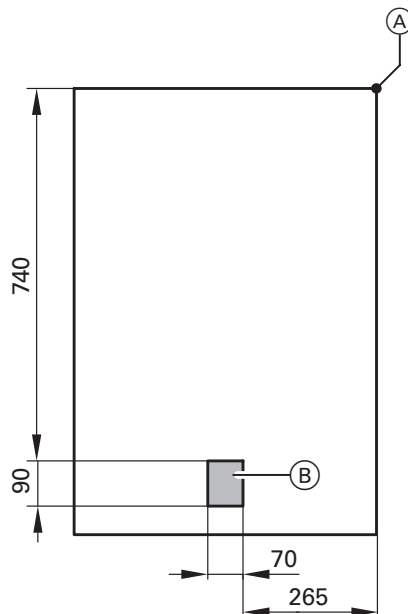
## 2.2 Positioning, installation

### Electrical connection

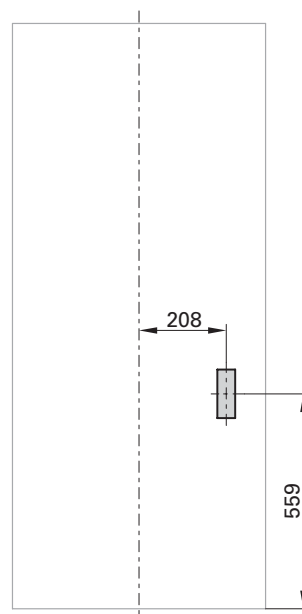
Vitodens 200 and 300 (up to 35 kW)



Vitodens 300 (from 49 kW)



Vitodens 333



(A) Reference point Vitodens top edge

Observe the requirements of your local electricity supply company and VDE [or local] regulations when making the mains power connection. Protect the mains power cable with a fuse with a maximum rating of 16 A. Connect the mains (230 V~, 50 Hz) via a permanent connection. Connect the supply cables and accessories at the terminals inside the boiler.

Cables inside the marked area (see fig.) should protrude  
 ■ for Vitodens 200 and 300 min. 1200 mm  
 ■ for Vitodens 333 min. 2000 mm from the wall.

Use the following cables:  
 NYM-J 3 x 1.5 mm<sup>2</sup> for mains power cables.

NYM with the required number of conductors for the external connections.

2-core cables for  
 ■ Outside temperature sensor  
 ■ Vitotronic 050 (LON)  
 ■ Extension kit for heating circuit with mixer (KM BUS)  
 ■ Central fault message (in conjunction with internal extension)  
 ■ Vitotrol 100, type UTD  
 ■ Vitotrol 200  
 ■ Vitotrol 300.

3-core cable for  
 ■ Vitotrol 100, type UTA  
 ■ DHW circulation pump  
 ■ Mains connection – accessories.

### Interlock switch

Install an interlock for open flue operation if an extraction device (e.g. cooker hood) is fitted in the room providing the boiler ventilation.

For this, the internal extension H2 (accessory) can be used. This switches the extract fans OFF via the adaptor when the burner is started.

### Mains electrical connection of accessories

The accessory mains supply can be connected directly to the control unit. This connection is controlled with the system ON/OFF switch (max. 4 A). Where the boiler is installed in a wet area, the mains connection of accessories must not be carried out at the control unit.

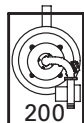
### Additional requirements when boilers with liquid gas operation are installed in underground rooms.

According to TRF 1996 volume 2, valid since 1 September 1997, an external safety solenoid valve is no longer required when installing Vitodens boilers 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 continue to recommend the installation of an external safety solenoid valve plus internal extension H1, when installing Vitodens in rooms below ground level.

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## 2.3 Installation in unfinished buildings (on finished walls)



### Pre-installation in unfinished buildings for subsequent installation of Vitodens 200 and 300 (up to 35 kW) directly on the wall – installation on finished walls

#### Required accessories for installations without DHW cylinder

##### Installation template

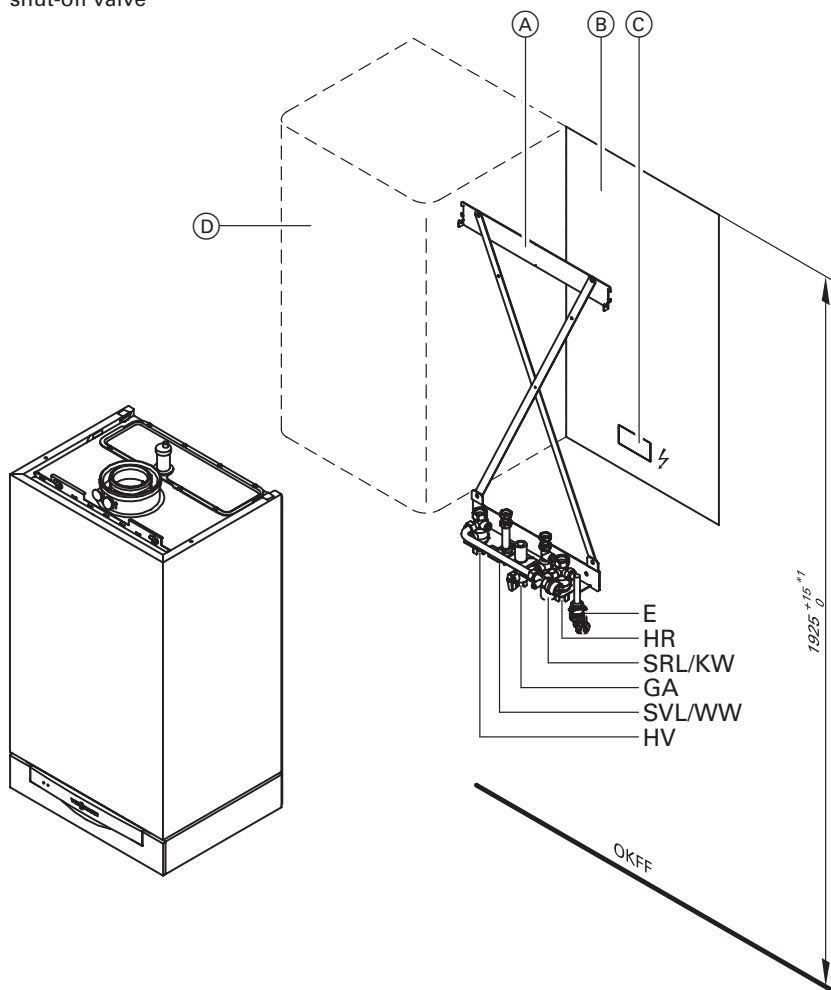
incl. fixing parts, valves and gas stop cock  
Rp 1/2" with integral thermal safety shut-off valve

#### Additional requirements when connecting a DHW cylinder

##### Connection set for DHW cylinders

#### Note

Ensure a clearance of 700 mm in front of Vitodens or the DHW cylinder for maintenance purposes.  
Maintenance spaces to the l.h. or r.h. side of Vitodens are **not** required.



2

Illustration: Gas fired combination boiler connection

#### Key to symbols

E Drain  
GA Gas connection Rp 1/2"  
HR Heating return Rp 3/4"  
HV Heating flow Rp 3/4"  
OKFF Top edge finished floor

Only for gas fired combination boilers

KW Cold water G 1/2"  
WW Hot water G 1/2"

Only for gas fired boilers

SRL Cylinder return G 3/4"  
SVL Cylinder flow G 3/4"

- Ⓐ Installation template
- Ⓑ Vitodens
- Ⓒ Area for electrical supply cables.  
Allow all cables to protrude approx. 1200 mm from the wall.
- Ⓓ Wall mounted DHW cylinder (if installed)

*\*1Obligatory in conjunction with DHW cylinders installed below the boiler. Otherwise, recommendation only.*



## 2.3 Installation in unfinished buildings on unfinished walls



### Pre-installation in unfinished buildings for subsequent installation of Vitodens 200 and 300 (up to 35 kW) directly on the wall – installation on unfinished walls

**Required accessories for installations without DHW cylinder**

**Installation template**

incl. fixing parts, valves and gas stop cock  
R 1/2" with integral thermal safety shut-off valve

**Additional requirements when connecting a DHW cylinder**

**Connection set for DHW cylinders**

**Note**

Ensure a clearance of 700 mm in front of Vitodens or the DHW cylinder for maintenance purposes.  
Maintenance spaces to the l.h. or r.h. side of Vitodens are **not** required.

2

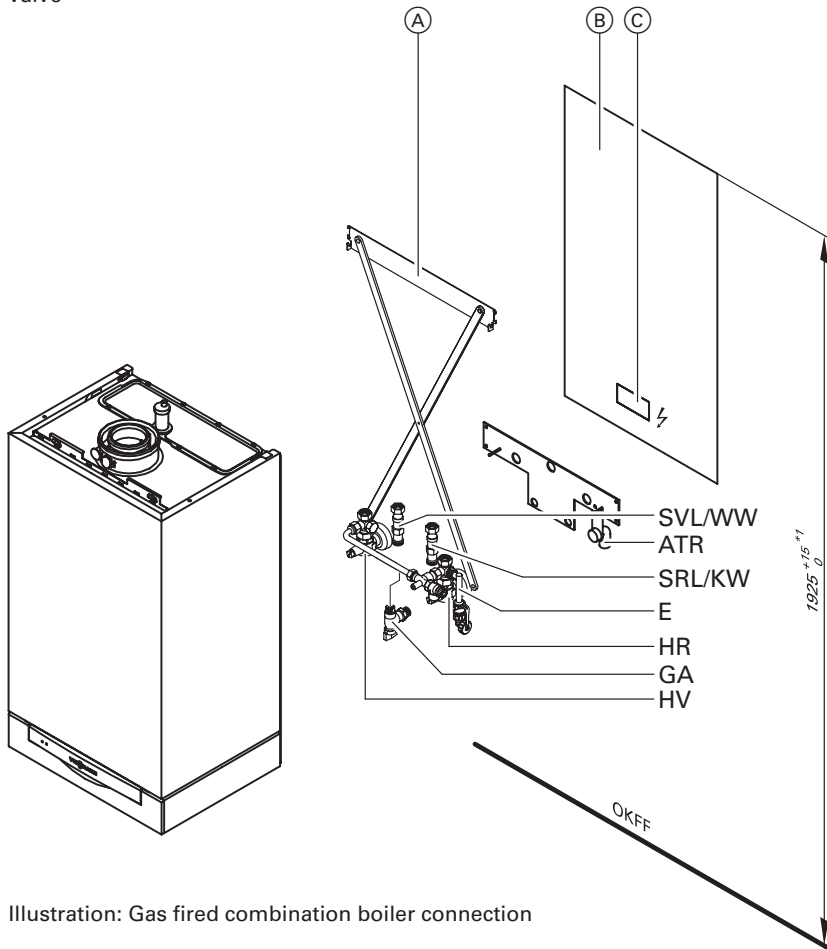


Illustration: Gas fired combination boiler connection

*\*1 Cold and hot water connections for gas fired boilers with DHW cylinder.*

**Key to symbols**

ATR Drain funnel connection R 1"  
E Drain  
GA Gas connection R 1/2"  
HR Heating return G 3/4"  
HV Heating flow G 3/4"  
OKFF Top edge finished floor

Only for gas fired combination boilers

KW Cold water G 1/2"  
WW Hot water G 1/2"

Only for gas fired boilers

SRL Cylinder return G 3/4"  
SVL Cylinder flow G 3/4"

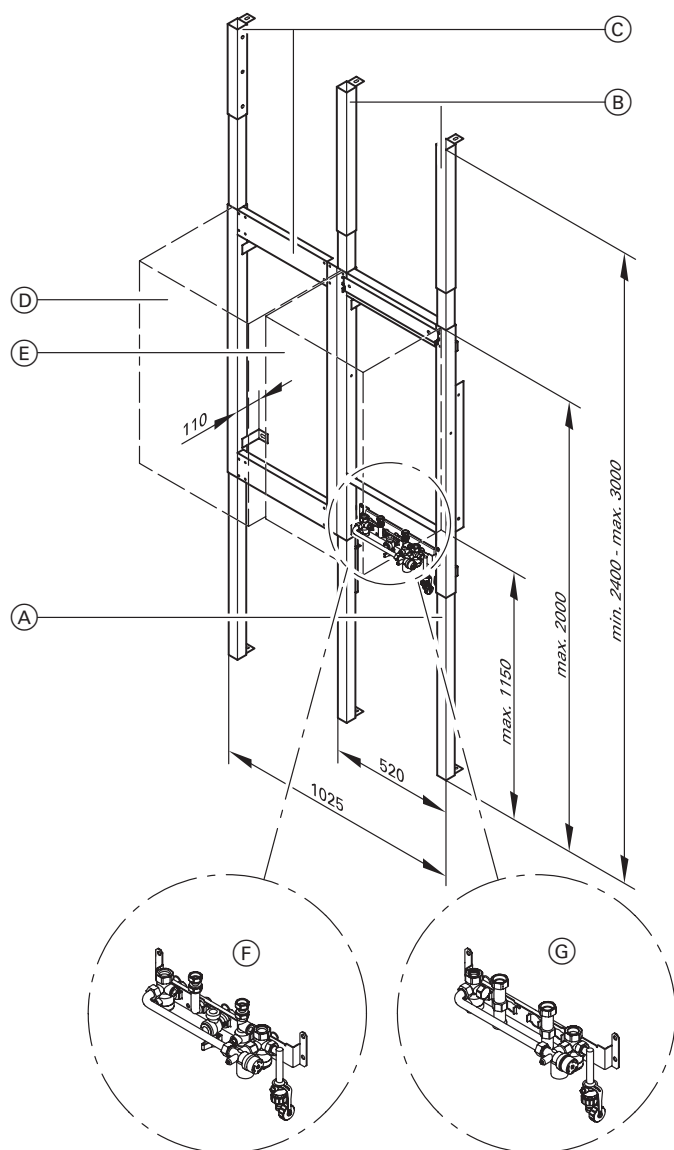
- (A) Installation template
- (B) Vitodens
- (C) Area for electrical supply cables.  
Allow all cables to protrude approx. 1200 mm from the wall.

*\*1 Obligatory in conjunction with DHW cylinders installed below the boiler. Otherwise, recommendation only.*



## 2.3 Installation on unfinished walls

### Installation in front of wall Vitodens 200 and 300



#### Self-supporting mounting frame

for Vitodens and wall mounted DHW cylinders (80 litres capacity).

Suitable for wall mounting, for self-supporting freestanding installation or covering with various materials. Incl. valves and gas angle valve G  $\frac{3}{4}$ " with thermal safety shut-off valve.

#### ■ for gas fired combination boiler

- with solder fittings
- with compression fittings

#### ■ for gas fired boiler

- with solder fittings
- with compression fittings

#### Note regarding Vitodens 300 from 49 kW:

Vitodens 300 with 49 and 66 kW can also be fitted to the self-supporting mounting frame.

The boiler stands 20 mm proud on both sides of the self-supporting mounting frame.

The mounting bracket cannot be used and the DHW cylinders to be hung alongside the boiler are unsuitable for Vitodens 300 with 49 and 66 kW.

- (A) Self-supporting mounting frame for Vitodens incl. mounting bracket
- (B) Ceiling mounting extension (Vitodens)
- (C) Self-supporting mounting frame for wall mounted DHW cylinders incl. ceiling fixing extension

- (D) Wall mounted DHW cylinder (80 litres capacity)
- (E) Vitodens
- (F) Mounting bracket for gas fired combination boiler
- (G) Mounting bracket for gas fired boiler



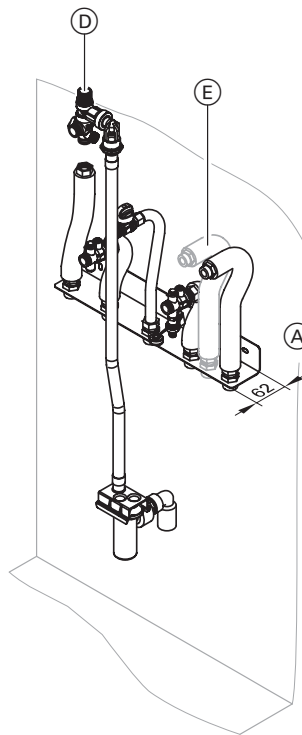
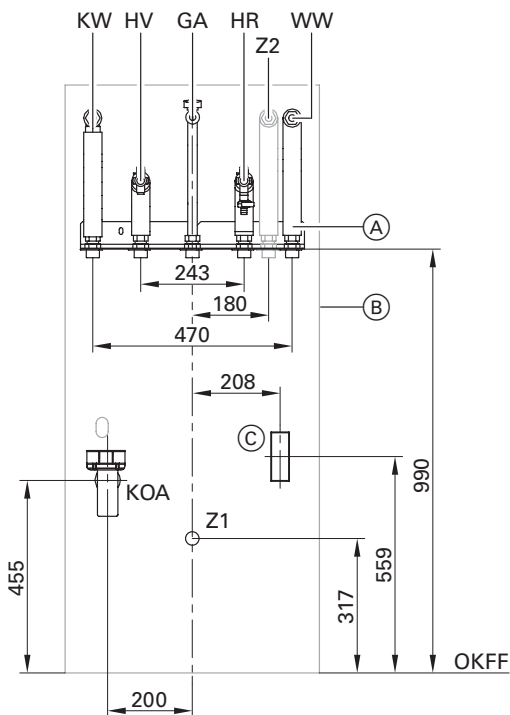
## Pre-installation on unfinished walls Vitodens 333

**With connection set** (part no. 7179 419) for gas, primary and secondary connection of on-site pipes/lines from below comprising:

- 2 ball shut-off valves (G 3/4") with air vent valve, heating water
- Gas tap R 1/2" with integral thermal safety shut-off valve
- Filling tap
- Wall mounting bracket
- Flexible connection pipes, heating water and DHW plus gas
- Drain outlet kit with drain pipes from the safety valves

### Note

Ensure a clearance of 700 mm in front of Vitodens is maintained for service work. Maintenance clearance to the l.h. or r.h. side of Vitodens are **not** required.



### Key to symbols

- GA Gas connection G 3/4"
- HR Heating return G 3/4"
- HV Heating flow G 3/4"
- KOA Condensate drain (funnel siphon)
- OKFF Top edge finished floor
- KW Cold water G 3/4"
- WW Hot water G 3/4"
- Z1 DHW circulation G 1" (without DHW circulation pump connection set)
- Z2 DHW circulation G 3/4" (with DHW circulation pump connection set)

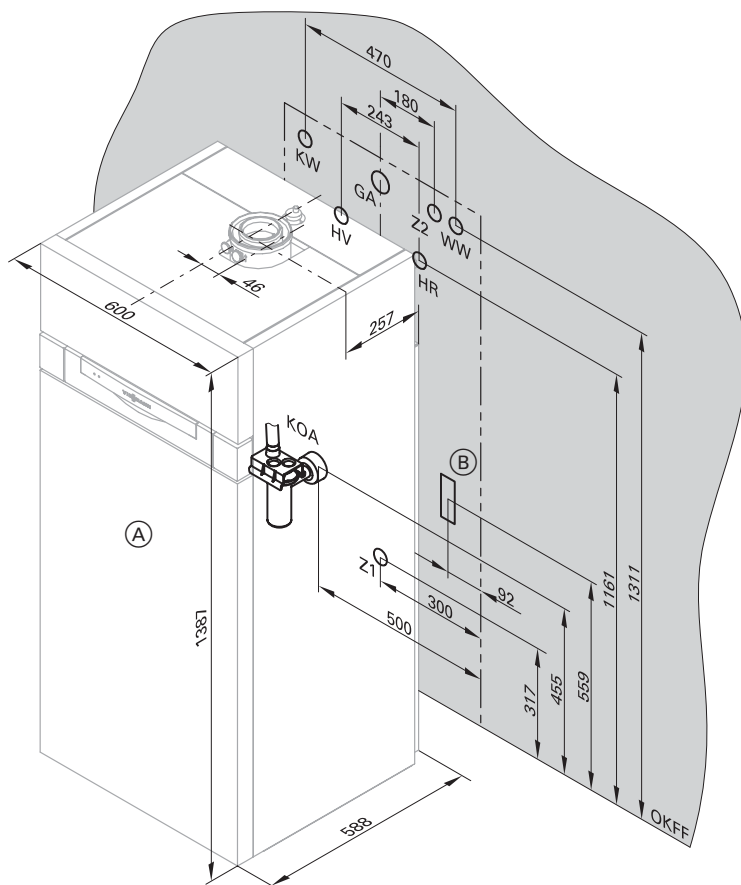
- (A) Connection set
- (B) Vitodens 333 (external dimensions)
- (C) Area for electrical supply cables. Allow all cables to protrude approx. 2000 mm from the wall.
- (D) Safety assembly to DIN 1988, DN 15, as separate accessory
- (E) DHW circulation connection with DHW circulation pump (separate accessory)



## 2.3 Installation on unfinished walls

### Pre-installation on unfinished walls Vitodens 333

Without connection set or with connection set for on-site connection (part no. 7179 420)



#### Key to symbols

- GA Gas connection G  $\frac{3}{4}$ "
- HR Heating return G  $\frac{3}{4}$ "
- HV Heating flow G  $\frac{3}{4}$ "
- KOA Condensate drain (funnel siphon)
- KW Cold water G  $\frac{3}{4}$ "
- OKFF Top edge finished floor
- WW Hot water G  $\frac{3}{4}$ "
- Z1 DHW circulation G 1" (without DHW circulation pump connection set)
- Z2 DHW circulation G  $\frac{3}{4}$ " (with DHW circulation pump connection set)

- (A) Vitodens 333 (external dimensions)
- (B) Area for electrical supply cables. Allow all cables to protrude approx. 2000 mm from the wall.



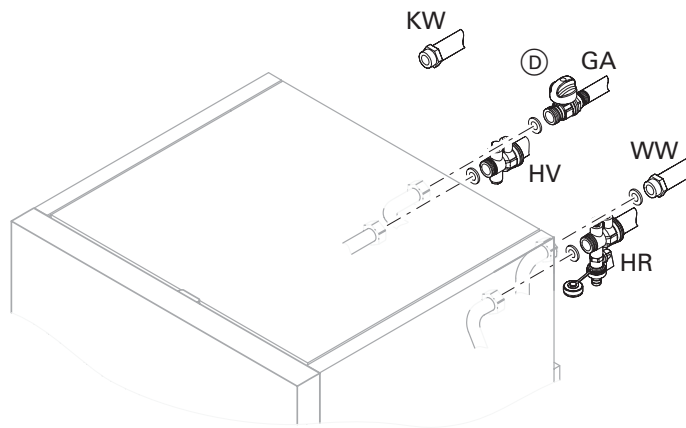
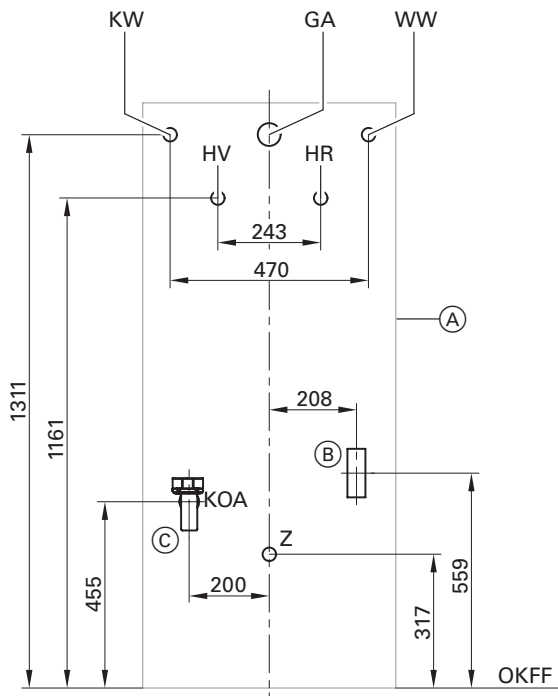


## Pre-installation on unfinished walls Vitodens 333

**With connection set** (part no. 7179 420)  
for on-site connection from above or below  
comprising:

- 2 ball shut-off valves (G 3/4")  
with air vent valve, heating water
- Gas tap R 1/2" with integral  
thermal safety shut-off valve
- Filling tap

**Note**  
Ensure a clearance of 700 mm in front of  
Vitodens is maintained for service work.  
Maintenance clearance to the l.h. or r.h.  
side of Vitodens are **not** required.



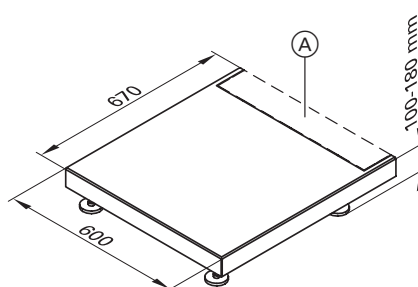
### Key to symbols

GA Gas connection R 1/2"  
HR Heating return G 3/4"  
HV Heating flow G 3/4"  
KOA Condensate drain  
OKFF Top edge finished floor  
KW Cold water G 3/4"  
WW Hot water G 3/4"  
Z DHW circulation G1"

- Ⓐ Vitodens 333 (external dimensions)
- Ⓑ Area for electrical supply cables.  
Allow all cables to protrude approx.  
2000 mm from the wall.
- Ⓒ Drain outlet kit (accessory)
- Ⓓ Connection set

### Boiler plinth

- height adjustable, for screed floors  
10 to 18 cm
- for installation of Vitodens 333 on the  
unfinished floor
- with knockout apertures for on-site  
pipes



- Ⓐ Knockout apertures



## 2.4 Replacing equipment by alternative manufacturers



### Vitodens 200 and 300 (6.6 to 35 kW) as replacement for third party boilers

Using an adaptor, Vitodens may be connected to the water connections of Cerastar-ZR/-ZWR and Thermoblock-VC/-VCW.

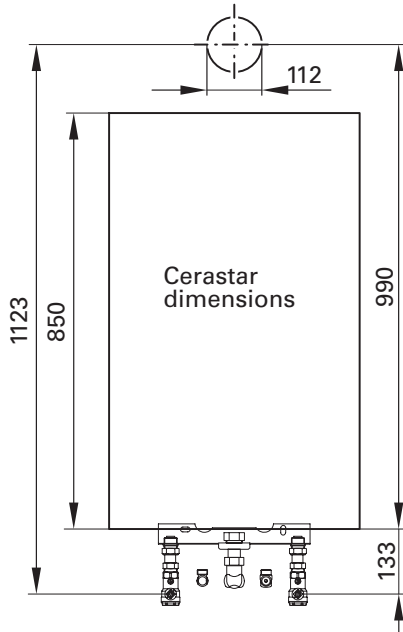
For modernisation, adaptors with primary and secondary water connections and

fixing parts are offered as accessories for replacing the following third party boilers with Vitodens (see price list). Replacing these devices with Vitodens will not lead to a higher installation effort than for the original equipment.

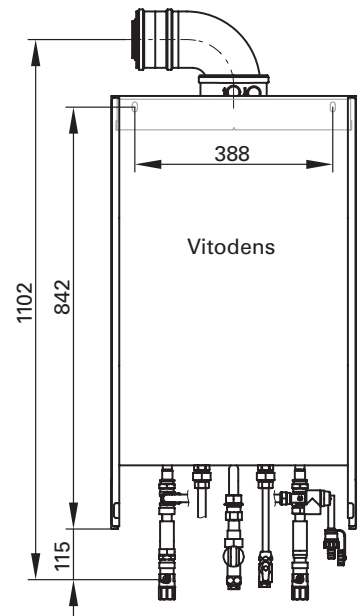
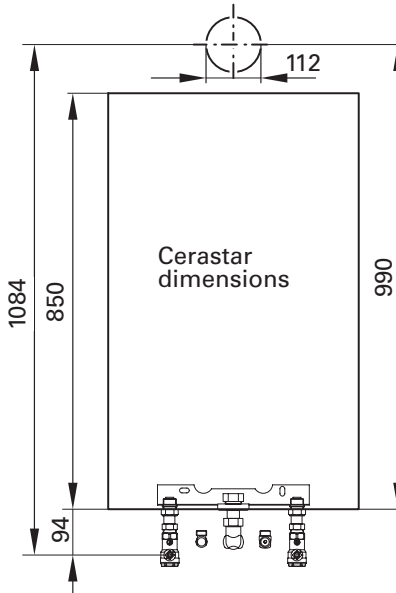
Generally, where a gas fired water heater is replaced by a Vitodens 200 or 300 gas fired condensing boiler, the flue pipe must also be replaced with a system which is suitable for condensing operation (see price list for flue gas systems for Vitodens). Match up the flue gas connections on site.

### Replacing Cerastar-ZR/-ZWR

Open flue operation

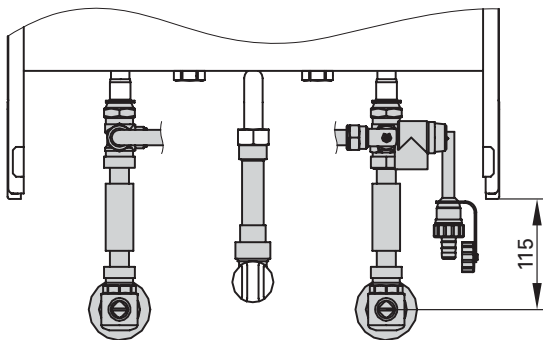


Balanced flue operation

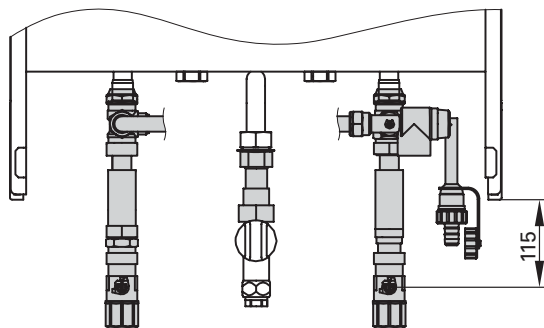


Existing water connections have identical dimensions.

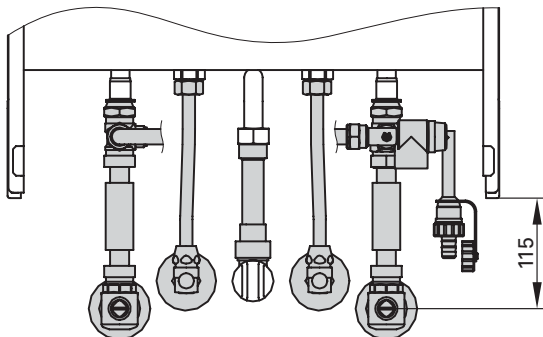
### Installation on unfinished walls Gas fired boiler



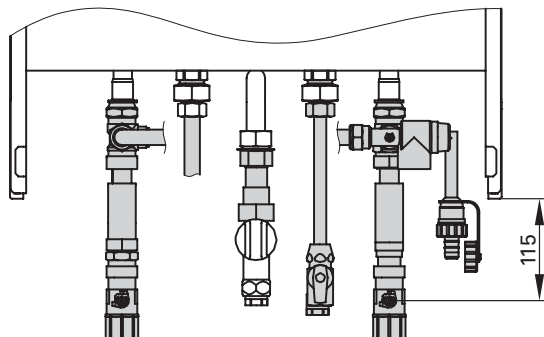
### Installation on finished walls Gas fired boiler



### Gas fired combination boiler



### Gas fired combination boiler



Standard delivery (incl. mounting rail)

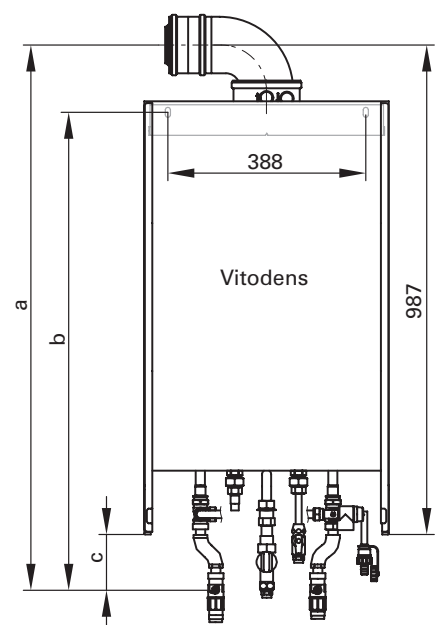
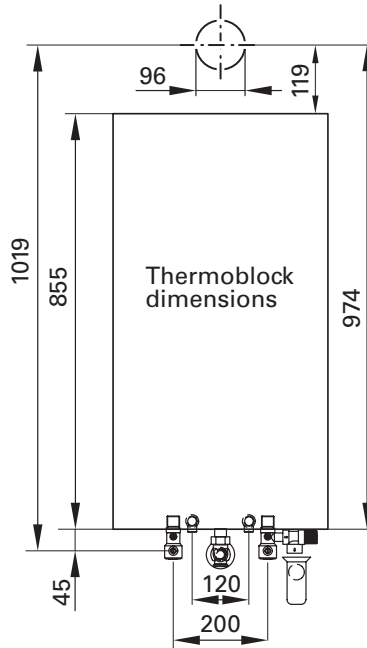
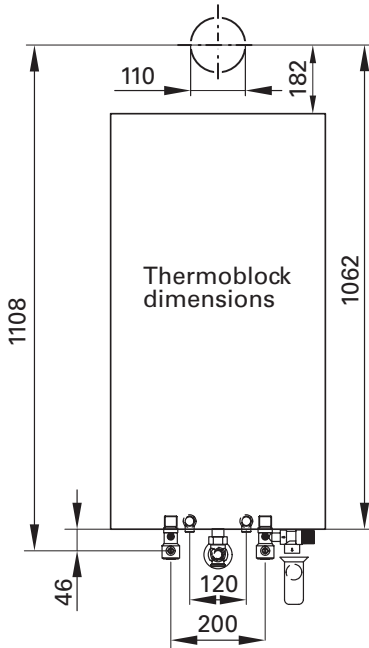


2

### Replacing Thermoblock-VC/-VCW

Open flue operation

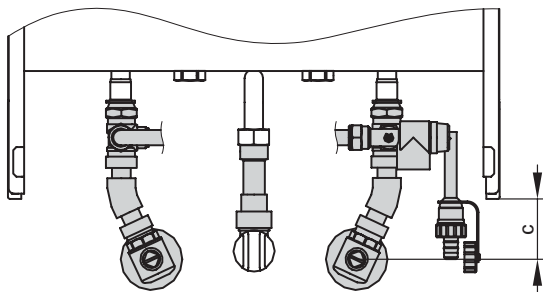
Balanced flue operation



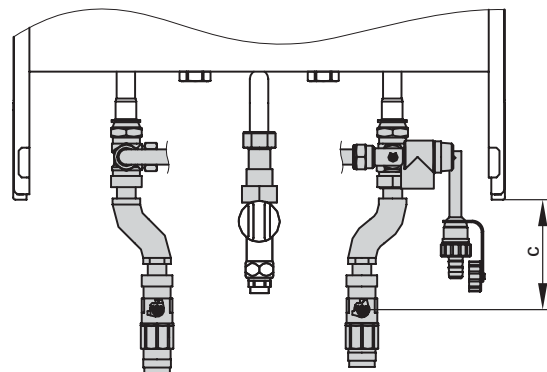
Existing water connections have identical dimensions.

Dim.	Installation on unfinished walls	Installation on finished walls
a mm	1053	1092
b mm	908	947
c mm	66	105

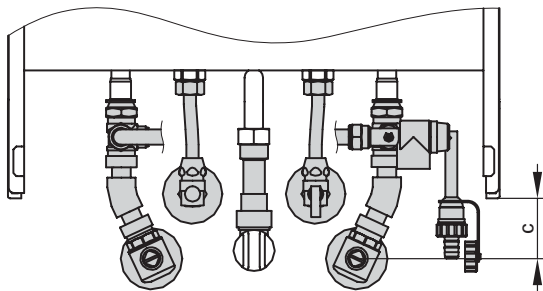
Installation on unfinished walls  
Gas fired boiler



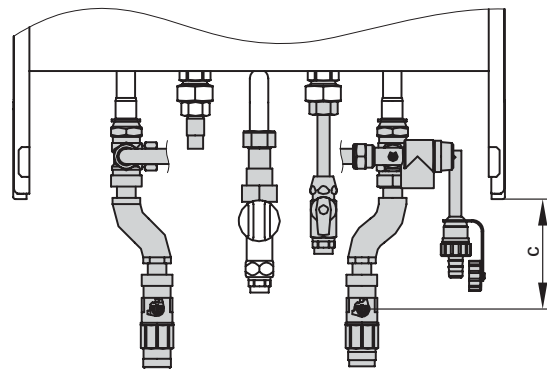
Installation on finished walls  
Gas fired boiler



Gas fired combination boiler



Gas fired combination boiler



5822 310 GB

Standard delivery (incl. mounting rail)

## 2.5 Connections on the gas and the water side

### Gas connection

Gas installations must only be carried out by an approved installer who has been authorised by the relevant gas supplier. Connect the mains gas according to TRGI '86/96 or TRF 1996.

Max. test pressure 150 mbar.  
We recommend the installation of a gas filter to DIN 3386 into the gas supply line.

#### Thermal safety shut-off valve

According to paragraph 4, sect. 5 of the [German] FeuVo '96, thermal shut-off equipment must be installed in combustion equipment or in gas supply lines immediately upstream of the combustion equipment, which will shut off the gas supply when the external temperature exceeds 100 °C. These valves must isolate the gas supply for at least 30 minutes up to a temperature of 650 °C. This should prevent the formation of explosive gas mixtures in the event of fires.  
The gas shut-off valves supplied with Vitodens are equipped with integral thermal safety shut-off valves.

#### Gas supply pipe

The following table is designed to assist in the **approximate** sizing of the gas supply pipe for Vitodens.

We recommend a final calculation in accordance with TRGI or TRF.  
For the sake of the approximate sizing, 90° bends are calculated as equivalent to a straight pipe length of 1 m.

Output kW	12.0 (16.0)			26.0			35.0			49.0			66.0		
Gas type	Natural gas E	Natural gas LL	LPG	Natural gas E	Natural gas LL	LPG	Natural gas E	Natural gas LL	LPG	Natural gas E	Natural gas LL	LPG	Natural gas E	Natural gas LL	LPG
Gas supply value m <sup>3</sup> /h or kg/h relative to the max. load	1.77	2.05	1.30	2.65	3.08	1.94	3.52	4.10	2.59	4.85	5.64	—	6.61	7.69	—
Internal diameter of gas supply pipe	max. possible pipe length in m														
DN 15	13	8	82	6	4	36	4	—	23	—	—	—	—	—	—
DN 20	60	40	—	28	21	156	21	16	100	13	9	—	6	—	—
DN 25	—	127	—	91	68	—	68	53	—	43	30	—	19	14	—
DN 32	—	—	—	—	—	—	—	—	—	176	121	—	78	60	—

#### Example:

Vitodens 300, 35 kW, natural gas E  
Straight pipe length of the gas supply pipe: 28 m  
6 bends 90°  
Calculated: Straight length = 34 m

Required pipe diameter  
(according to table): DN 25



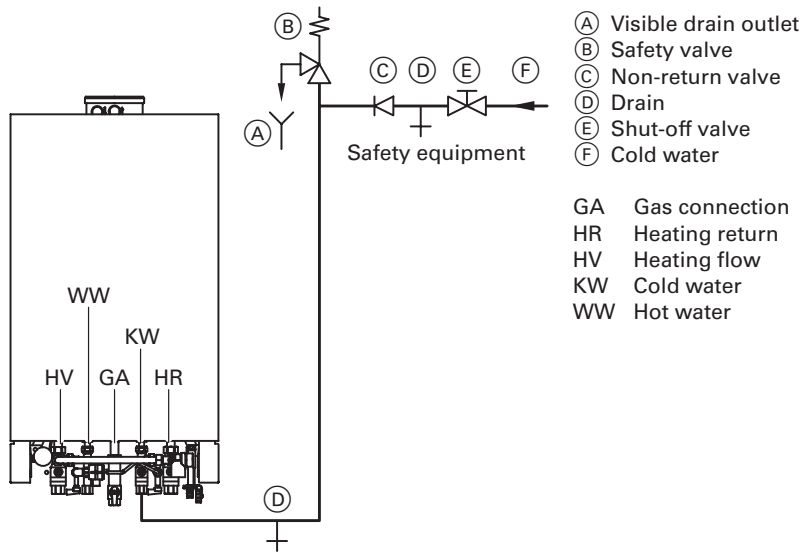
### DHW connection on Vitodens 200 and 300 gas fired combination boiler

For the DHW connection, connection sets for installation on finished walls or for installation on unfinished walls are available as accessories. The integral standby instantaneous water heater provides direct DHW heating.

Note when using this feature in conjunction with galvanised pipes, that the standby instantaneous water heater is designed as stainless steel plate heat exchanger with copper solder joints. In existing installations (modernisation projects), the danger of electrolytic corrosion is low, since a protective layer will have been formed on the inside of pipes.

If DHW should be drawn simultaneously from several points, we would recommend the installation of a separate DHW cylinder in conjunction with the gas fired boiler. From a water hardness of 20° dH and higher, we recommend the use of a water treatment system in the cold water supply when considering DHW heating.

#### Cold water installation

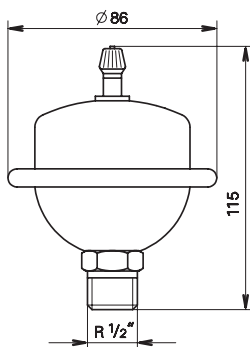


A safety valve to DIN 1988 must only be installed if the mains drinking water supply pressure is higher than 10 bar and no pressure reducer is used (to DIN 4753).

A safety valve must be installed if the cold water supply is equipped with a non-return valve. In addition, the toggle must be fitted to the cold water shut-off valve.

Non-return valves may also be found in pressure reducers and combined free-flow valves with non-return valves.

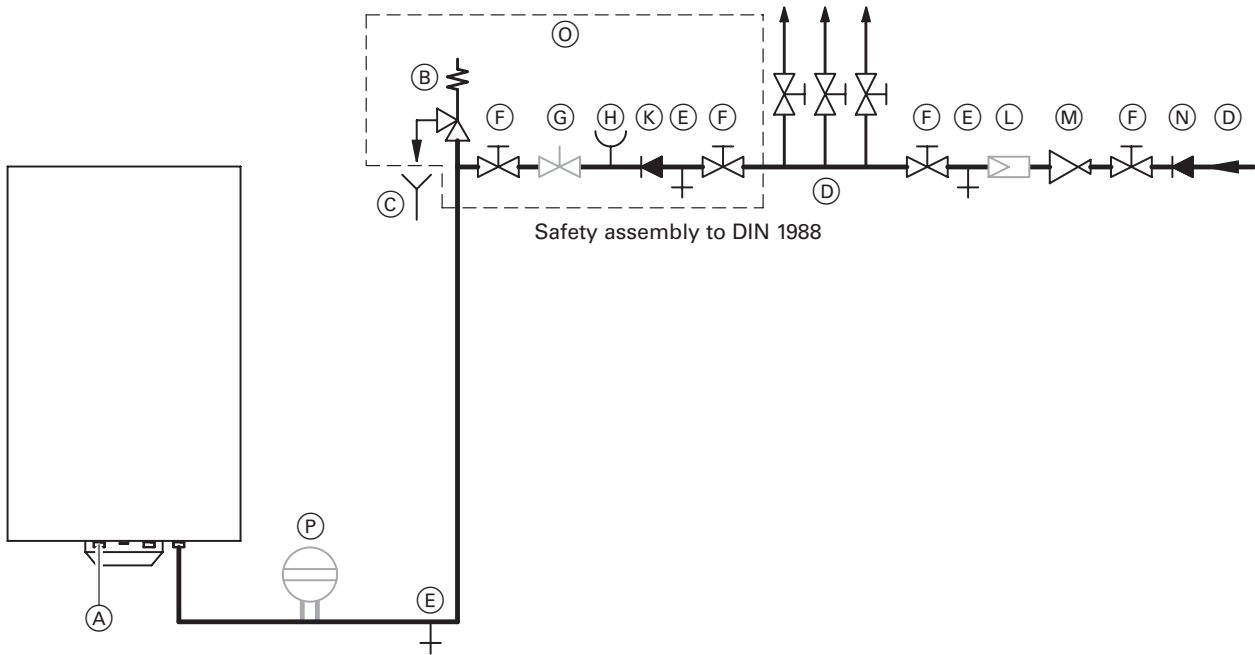
#### Anti-water hammer device



We recommend the installation of an anti-water hammer device near pressure shock generators, if the pipework to which Vitodens is connected comprises taps where water hammers may be created (e.g. pressure washers, washing or dishwashing machines). Flexofit S made by Flamco-Flexcon or reflex made by Winkelmann + Pannhoff GmbH (available from your local dealer).

### Cold water installation separate DHW cylinder and loading cylinder for Vitodens 333

Example: Wall mounted DHW cylinder (80 litres) with safety equipment assembly to DIN 1988



- |                                  |                                 |  |
|----------------------------------|---------------------------------|--|
| (A) Hot water                    | (F) Shut-off valve              | (M) Pressure reducer                   |
| (B) Safety valve                 | (G) Flow regulating valve       | DIN 1988-2 Issue Dec. 1988             |
| (C) Visible blow off pipe outlet | (installation recommended)      | (N) Non-return valve/pipe separator    |
| (D) Cold water                   | (H) Pressure gauge installation | (O) Standard delivery of the safety    |
| (E) Drain                        | (K) Non-return valve            | equipment offered as accessory         |
|                                  | (L) Drinking water filter*1     | (P) Diaphragm expansion vessel for DHW |

**The safety valve must be installed.**

**Recommendation:** Install the safety valve higher than the top edge of the DHW cylinder. This protects the valve against contamination, scaling and high temperatures. In addition, the DHW cylinder does not then need to be drained when working on the safety valve.

<sup>\*1</sup>According to DIN 1988-2, a drinking water filter should be installed in systems with metal pipework. DIN 1988 and Viessmann also recommend the installation of a drinking water filter when using plastic pipes, to prevent contamination entering the DHW system.

### Condensate connection

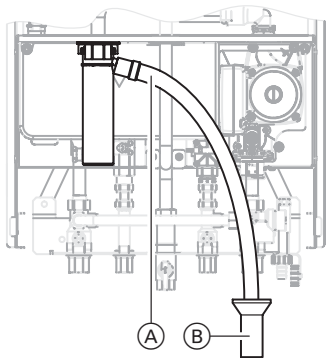
Route the condensate drain with a constant slope.  
Route the condensate from the flue gas system (if equipped with a drain), together with the boiler condensate directly or (if installed) via neutralising system to the public sewer.

#### Please note

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

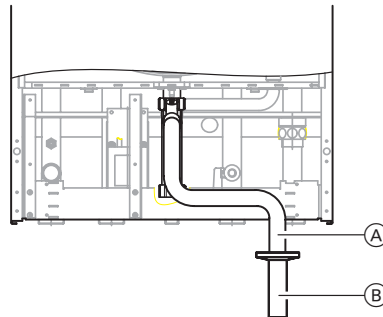
#### Vitodens 200 and 300

■ up to 35 kW

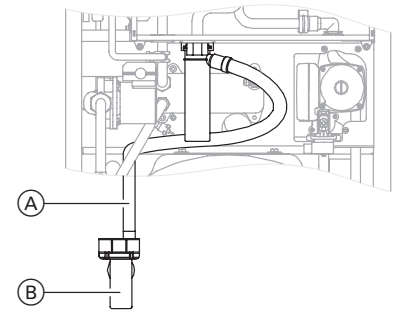


- (A) Drain hose (standard Vitodens delivery)
- (B) Drain outlet kit (accessory)

■ from 49 kW



#### Vitodens 333



2

### Condensate drain and neutralisation

Drain the condensate created during the heating operation in the condensing boiler and in the flue pipe in accordance with appropriate regulations. During combustion, it will have pH values between 4 and 5.

Code of Practice ATV-DVWK-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 consistency of condensate drained from Vitodens condensing boilers meets the requirements specified in the Code of Practice ATV-DVWK-A 251.

The condensate drain to the sewer connection must be able to be inspected. It must be installed with a slope incl. a stench trap, and must provide suitable facilities for extracting samples. The bottom drain should be located below the anti-flooding level of the flue gas collector box.

Condensate drains must only be made from corrosion resistant materials (e.g. reinforced hoses). **Never use any galvanised materials or those containing copper for pipes, connectors, etc.** Install a retaining loop in the condensate drain to prevent flue gases from escaping.

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

It would be appropriate to make contact with your local authority with responsibility for waste water management prior to the installation, to inform yourself about local regulations.

### Condensate from a gas fired combustion device up to 200 kW combustion output

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

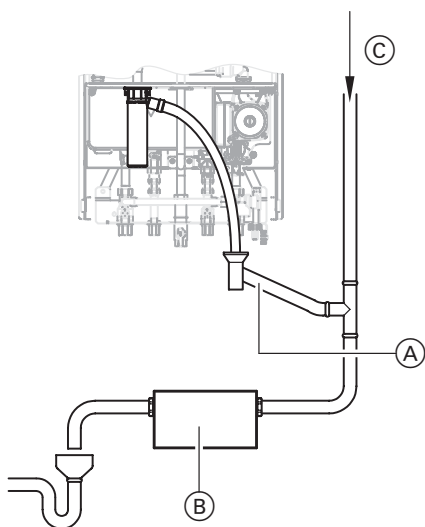
Please also ensure that your domestic drainage system is made from materials which are resistant to acidic condensate.

According to Code of Practice ATV-DVWK-A 251, these are:

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

## 2.5 Connections on the gas and the water side

### Neutralising system



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

Vitodens can (if necessary) be supplied with a separate neutralising system (accessory).

Any condensate is piped to and processed in the neutralising system.

The condensate drain to the sewer connection must be able to be inspected. It must be installed with a slope incl. a stench trap on the sewer side, and must provide a suitable facility for extracting samples.

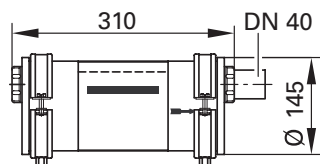
If Vitodens has been installed below the waste water antiflooding level, install a condensate lift pump.

Condensate lift pumps are available as accessories (see Vitoset price list).

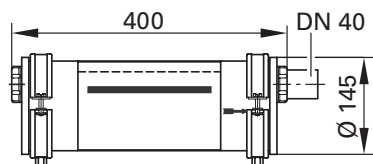
Since the consumption of neutralisation granulate depends on the operating mode of the system, determine the required top-up quantity during the first year of operation by regular checks. It is feasible that one fill may last longer than one year.

### Neutralising system for single boiler systems

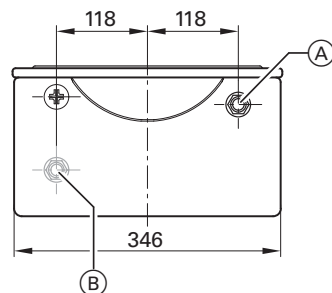
- for Vitodens 200, 300 (to 35 kW) and 333 part no. 7252 666



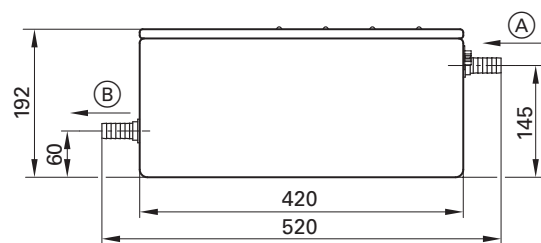
- for Vitodens 300 with 49 and 66 kW part no. 9535 742



### Neutralising system for multi-boiler systems part no. 7226 141



- (A) Inlet (DN 20)
- (B) Outlet (DN 20)





## 3.1 Water connection

### General

Viessmann Vitodens can generally be installed in any pumped hot water heating system.  
Minimum system pressure 0.8 bar.

### Chemical anti-corrosion agent

Corrosion is generally avoided in properly installed and operated sealed heating systems.  
Do not use chemical anti-corrosion additives.  
Some manufacturers of plastic pipes recommend the use of chemical additives. In such cases, only use anti-corrosion additives offered by the heating trade and approved for boilers with DHW heating via single-walled heat exchangers (instantaneous water heaters or DHW cylinders).

### Underfloor heating

For underfloor heating, we recommend the use of impermeable pipes to prevent the infusion of oxygen through the pipe walls. Provide system separation in underfloor heating systems for non-impermeable plastic pipes (DIN 4726). We supply separate heat exchangers for this purpose.

Underfloor heating systems and heating circuits with very large water content should be connected via a three-way mixer – even for condensing boilers; see technical guide on control of underfloor heating systems or the application examples.

Install a temperature limiter into the underfloor heating circuit to limit the maximum temperature.  
Observe DIN 18560-2.

### Plastic pipe systems for radiators

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

### Attic boiler room

The installation of a low water indicator prescribed by DVGW is not required when installing Vitodens in an attic. Vitodens condensing boilers are protected against low water levels in accordance with EN 12828.

### Safety valve

A safety valve in accordance with TRD 721 is integrated in Vitodens (opening pressure 3 bar).  
Route the blow-off line in accordance with EN 12828 into a drain outlet (drain outlet set available as accessory). The drain outlet incorporates a siphon as stench trap.

### Water quality/frost protection

According to VDI guideline 2035, measures to safeguard water quality are not required for systems up to 100 kW. If the specific system volume is larger than 20 l/kW output (e.g. through the installation of a heating water calorifier), observe the recommendations in the Technical Guide on water quality guidelines.

You may add suitable anti-freeze to the heating water in systems which are not constantly heated and where consequently there is a risk of freezing. For further details, see the VdTÜV Code of Practice 1466.

Only use fill water of potable quality. Soften fill water harder than 20° dH. For suitable means of water softening, see the Vitoset price list.

### Installation examples

For installation examples for various Vitodens boilers, see from page 70. Installation examples in conjunction with solar heating systems and solid fuel boilers, see Technical Guides on Vitosol or Vitolig.

Do not install Vitodens 333 in dual mode systems with solid fuel boilers.



### 3.1 Water connection

#### Specification – circulation pumps and heads

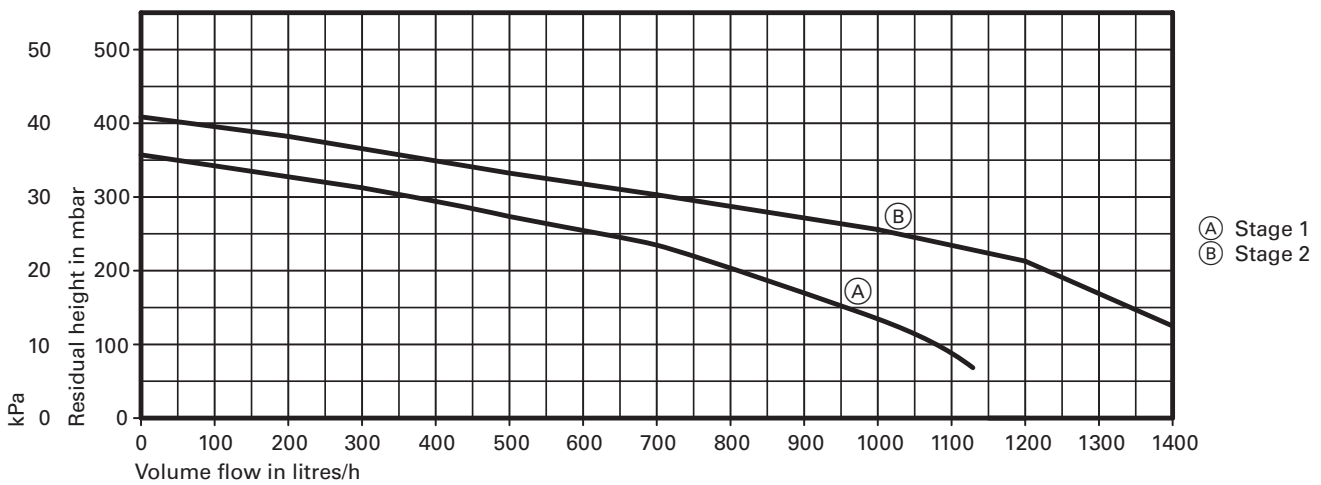
##### Vitodens 200

##### Circulation pump VIUP-40/60

2-stage control

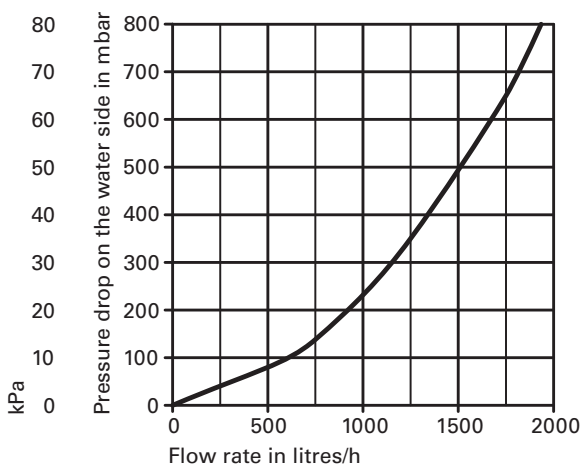
Rated voltage	V ~	230
Rated current	A	0.65
Condenser	μF	2.5
Power	W Stage 2	110
consumption	Stage 1	75

#### Residual head of the integral circulation pump



#### Pressure drop (primary circuit) Vitodens 200

For sizing an on-site heating circuit pump if the integral circulation pump is not operated as heating circuit pump.





Vitodens 300, 4.5 to 12.0 kW on request

Variable speed heating circuit pump

The pump speed and therefore the flow rate is relayed to the pump, and is set by the control unit subject to outside temperature and switching times for the central heating or reduced mode via an internal data BUS.

Individually match the minimum and maximum speed plus the speed during reduced mode to the existing heating system using the control unit codes. In the delivered condition, the minimum pump capacity (code address E7) is set to 30%, and the maximum pump capacity (code address E6) to 50% for 26 kW or to 70% for 35 kW.

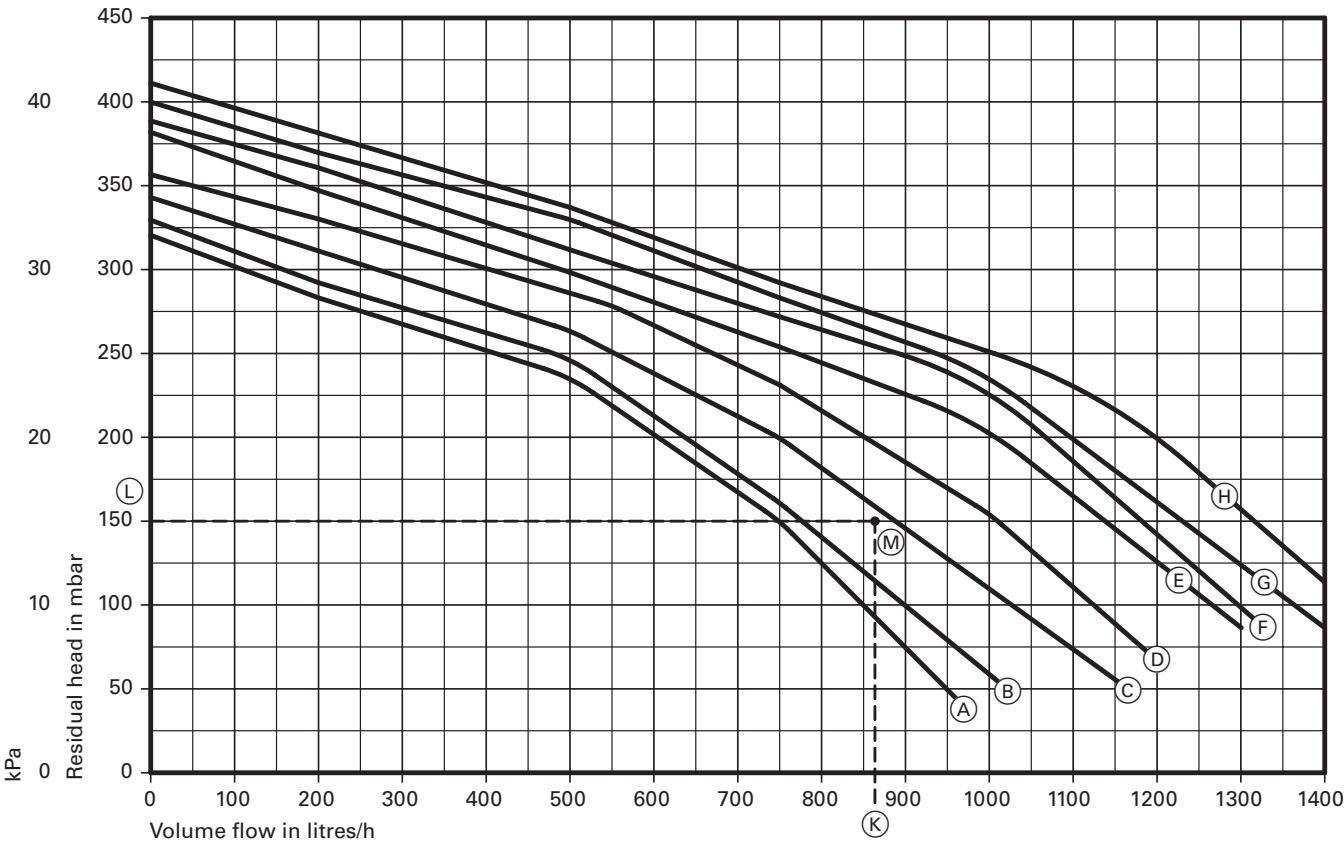
Using the diagram, the flow rate can be adjusted to the respective system conditions. Matching the flow rate of the circulation pump to the individual system conditions reduces the power consumption of the heating system.

Vitodens 300, 6.6 to 35.0 kW  
Vitodens 333

Circulation pump VICUPE 60 BUS

Rated voltage	V ~	230
Rated current	A max.	0.45
	min.	0.21
Power consumption	W max.	100
	min.	50
	as delivered condition	
	- 26 kW	65
	- 35 kW	80

Residual head of the integral circulation pump



Curve	Circulation pump capacity	Code address setting E6
(A)	30%	E6:030
(B)	40%	E6:040
(C)	50%	E6:050
(D)	60%	E6:060
(E)	70%	E6:070
(F)	80%	E6:080
(G)	90%	E6:090
(H)	100%	E6:100

Example

- Vitodens 300, 6.6 to 26.0 kW
- Design temperatures 75/55 °C
- Radiator heating system, heat demand 20 kW
- △ Volume flow 860 litres/h (K)
- Pressure drop 15 kPa (△ 1.5 mWS) (L)
- Design point (M)

Optimum pump curve acc. to diagram:  
(C) = Coding address E6:050.

5822 310 GB

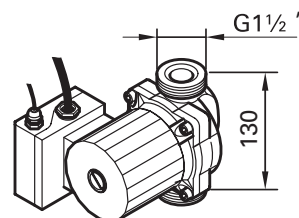
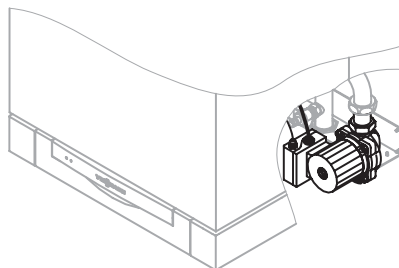


## 3.1 Water connection

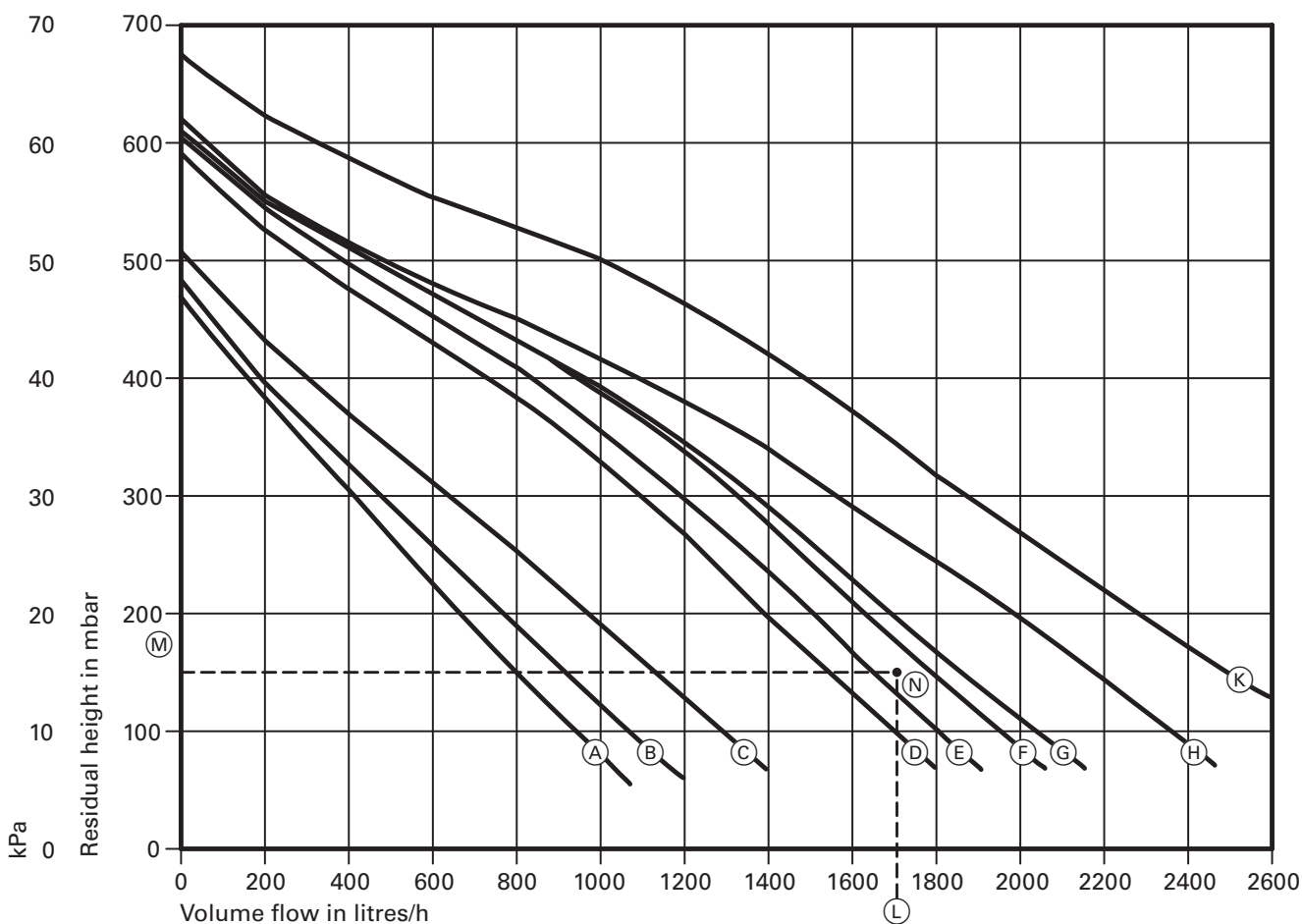
### Vitodens 300 from 49 kW

**Circulation pump VIRS 7 BUS** variable speed, ready to plug in for installation into the boiler or as external pump for pipe installation.

Rated voltage	V ~	230
Rated current	A max.	0.55
	min.	0.37
Condenser	µF	3.5
Power consumption	W max.	126
	min.	42
	as delivered condition	93



### Residual head of the circulation pump



Curve	Circulation pump capacity	Code address setting E6
(A)	30%	E6:030
(B)	40%	E6:040
(C)	50%	E6:050
(D)	60%	E6:060
(E)	65%	E6:065
(F)	70%	E6:070
(G)	80%	E6:080
(H)	90%	E6:090
(K)	100%	E6:100

#### Example

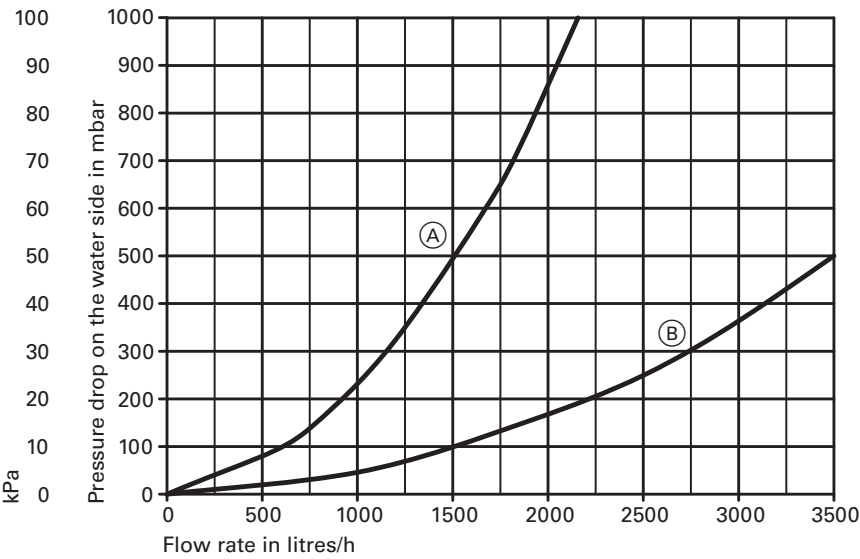
- Vitodens 300, 12.2 to 49 kW
- Design temperatures 75/55 °C
- Radiator heating system, heat demand 40 kW
- △ Volume flow 1720 litres/h (L)
- Pressure drop 15 kPa (△ 1.5 mWS) (M)
- Design point (N)

Optimum pump curve acc. to diagram:  
(F) = Coding address E6:070.



Pressure drop (primary circuit) Vitodens 300 and 333

For the design of an on-site heating circuit pump.



- Ⓐ

Vitodens 300 up to 35 kW and  
Vitodens 333
- Ⓑ

Vitodens 300 from 49 kW



### 3.2 Installation examples

#### System design 1

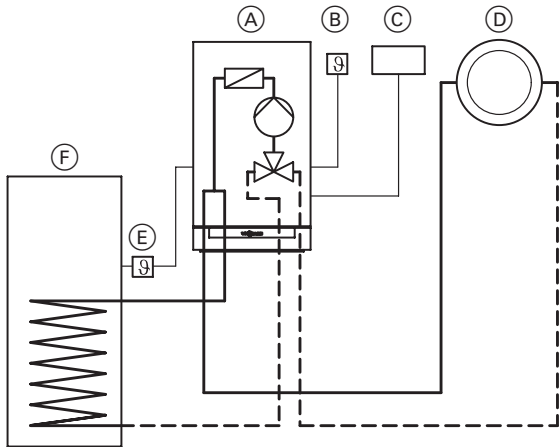


#### Installation examples Vitodens 200 and 300 (to 35 kW)

**Please note**  
In the following system designs, DHW heating is illustrated with a separate DHW cylinder. The designs also apply to systems where DHW is heated by an integral instantaneous water heater. In that case, the cylinder temperature sensor is factory-fitted to the boiler.

#### System design 1

Vitodens 200 or 300 with/without DHW heating with one heating circuit without mixer



- Ⓐ Vitodens
- Ⓑ Outside temperature sensor (only for weather-compensated control units)
- Ⓒ Vitotrol 100 for constant temperature mode or Vitotrol 200 or 300 for weather-compensated mode
- Ⓓ Heating circuit
- Ⓔ Cylinder temperature sensor
- Ⓕ DHW cylinder

#### Required equipment

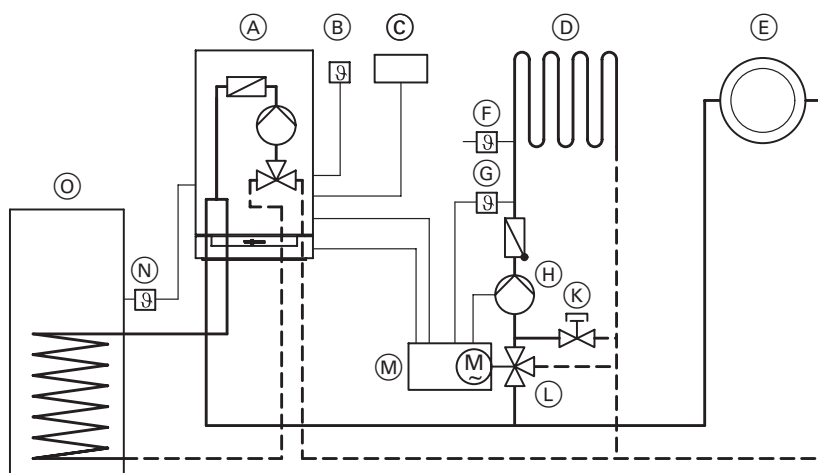
Item	Description	Number	Part no.
Ⓐ	Vitodens 200 or 300	1	as per price list
Ⓒ	– for constant temperature mode: Vitotrol 100, type UTA or Vitotrol 100, type UTD – for weather-compensated mode: Vitotrol 200 or Vitotrol 300	1 1 1 1	7170 149 7179 059 7450 017 7450 060
Ⓔ	Cylinder temperature sensor	1	Standard delivery connection set for DHW cylinder as per price list
Ⓕ	DHW cylinder	1	as per price list

## 3.2 Installation examples System design 2



### System design 2

Vitodens 200 or 300 with/without DHW heating with one heating circuit without mixer and one heating circuit with mixer



- (A) Vitodens with weather-compensated control unit
- (B) Outside temperature sensor
- (C) Vitotrol
- (D) Underfloor heating circuit

- (E) Radiator heating circuit
- (F) Maximum temperature limiter
- (G) Flow temperature sensor
- (H) Heating circuit pump (on site)
- (K) Regulating valve

- (L) Three-way mixer
- (M) Extension kit for one heating circuit with mixer
- (N) Cylinder temperature sensor
- (O) DHW cylinder

### System with various heating systems

- unregulated radiator heating circuit
- regulated underfloor heating circuit with three-way mixer.

### Standard defaults

1. The volume flow (output) of the radiator circuit is at least 30% greater than the volume flow of the underfloor heating circuit.
2. The total volume flow of both heating circuits less bypass volume of the underfloor heating circuit is smaller than the max. possible volume flow of Vitodens.

Boiler	Max. volume flow l/h
Vitodens 200	1400
Vitodens 300, 4.5-26.0 kW	1400
Vitodens 300, 8.7-35.0 kW	1600

Install a low loss header, if the max. volume flow of an individual design is greater than the values shown in the above table.

Installation diagram, see page 74.

The three-way mixer provided to achieve the low temperature level of the underfloor heating circuit is controlled by the extension kit for one heating circuit with mixer.

The circulation pump integrated into Vitodens supplies the radiator heating circuit. The underfloor heating circuit is supplied by an on-site circulation pump, which is controlled by the extension kit. The volume flow of the underfloor heating circuit, which is subject to individual design criteria, is balanced by an adjustable bypass.

3

### Required equipment

Item	Description	Number	Part no.
(A)	Vitodens 200 or 300 with weather-compensated control unit	1	as per price list
(C)	Vitotrol 200 or Vitotrol 300	1	7450 017
(F)	Temperature limiter for limiting the max. temperature of underfloor heating systems – Immersion thermostat or – contact thermostat	1	7179 060
(H)	Heating circuit pump	1	7151 728
(L)	Three-way mixer	1	7151 729
(M)	Extension kit for one heating circuit with mixer plus flow temperature sensor	1	on-site
(N)	Cylinder temperature sensor	1	as per price list
(O)	DHW cylinder	1	7178 995
			Standard delivery connection set for DHW cylinder as per price list

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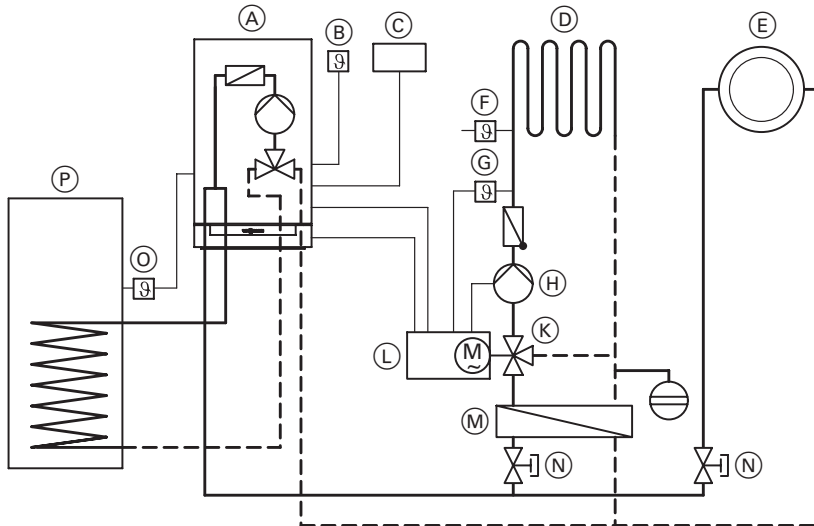


## 3.2 Installation examples

### System design 3

#### System design 3

Vitodens 200 or 300 with/without DHW heating with one heating circuit without mixer and one heating circuit with mixer plus system separation



- (A) Vitodens with weather-compensated control unit
- (B) Outside temperature sensor
- (C) Vitotrol
- (D) Underfloor heating circuit
- (E) Radiator heating circuit

- (F) Maximum temperature limiter
- (G) Flow temperature sensor
- (H) Heating circuit pump (on site)
- (K) Three-way mixer
- (L) Extension kit for one heating circuit with mixer

- (M) Plate heat exchanger for system separation<sup>\*1</sup>
- (N) Regulating valve
- (O) Cylinder temperature sensor
- (P) DHW cylinder

#### System with various heating systems

- unregulated radiator heating circuit
- regulated underfloor heating circuit with three-way mixer and system separation for non-impermeable plastic pipes (DIN 4726).

#### Standard defaults

The total volume flow of both heating circuits is less than the max. possible volume flow of Vitodens.  
The pressure differential ( $\Delta p$ ) between radiator heating circuit (E) and plate heat exchanger (M) is balanced via regulating valves (N).

Boiler	Max. volume flow l/h
Vitodens 200	1400
Vitodens 300, 4.5-26.0 kW	1400
Vitodens 300, 8.7-35.0 kW	1600

The three-way mixer provided to achieve the low temperature level of the underfloor heating circuit is controlled by the extension kit for one heating circuit with mixer.

The circulation pump integrated into Vitodens supplies the radiator heating circuit and the plate heat exchanger for system separation. The underfloor heating circuit is supplied by an on-site circulation pump, which is controlled by the extension kit.

#### <sup>\*1</sup>Note

The secondary pressure drop of plate heat exchanger (M) must be less/equal ( $\leq$ ) than/to the pressure drop of the three-way mixer.  
Please observe this when sizing the plate heat exchanger (mixer has control priority).

#### Required equipment

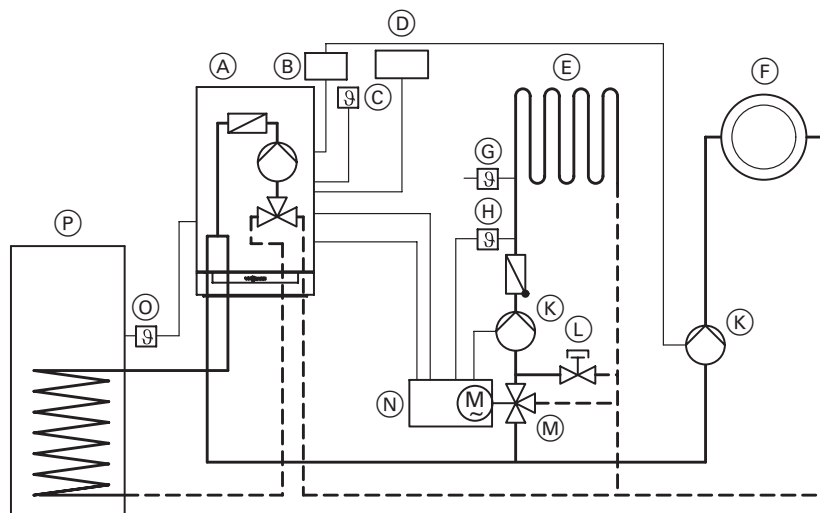
Item	Description	Number	Part no.
(A)	Vitodens 200 or 300 with weather-compensated control unit	1	as per price list
(C)	Vitotrol 200 or Vitotrol 300	1	7450 017
(F)	Temperature limiter for limiting the max. temperature of underfloor heating systems – Immersion thermostat or – contact thermostat	1	7179 060
(H)	Heating circuit pump	1	7151 728
(L)	Extension kit for one heating circuit with mixer plus flow temperature sensor	1	7151 729
(M)	Plate heat exchanger Vitotrans 100	1	on-site
(O)	Cylinder temperature sensor	1	7178 995
(P)	DHW cylinder	1	as per price list
		1	Standard delivery connection set for DHW cylinder as per price list





#### System design 4

Vitodens 300 with/without DHW heating with one heating circuit without mixer with separate heating circuit pump and one heating circuit with mixer



- (A) Vitodens with weather-compensated control unit
- (B) Internal extension H1 or H2 or external extension H1
- (C) Outside temperature sensor

- (D) Vitotrol
- (E) Underfloor heating circuit
- (F) Radiator heating circuit
- (G) Maximum temperature limiter
- (H) Flow temperature sensor
- (K) Heating circuit pump (on site)

- (L) Regulating valve
- (M) Three-way mixer
- (N) Extension kit for one heating circuit with mixer
- (O) Cylinder temperature sensor
- (P) DHW cylinder

System with various heating systems

- unregulated radiator heating circuit
- regulated underfloor heating circuit with three-way mixer.

#### Please note

Not for gas-fired combination boilers.

#### Standard defaults

The total volume flow of both heating circuits less bypass volume of the underfloor heating circuit is smaller than the max. possible volume flow of Vitodens.

Boiler	Max. volume flow l/h
Vitodens 300, 4.5-26.0 kW	1400
Vitodens 300, 8.7-35.0 kW	1600

The three-way mixer provided to achieve the low temperature level of the underfloor heating circuit is controlled by the extension kit for one heating circuit with mixer.

The radiator heating circuit is supplied by an on-site circulation pump (an extension is required for control purposes).

The underfloor heating circuit is supplied by an on-site circulation pump, which is controlled by the extension kit.

The DHW circulation pump is connected to the extension.

The circulation pump integrated into Vitodens is operated at its lowest capacity setting. To achieve this, set the coding addresses E6 and E9 respectively to 020.

#### Required equipment

Item	Description	Number	Part no.
(A)	Vitodens 300 with control unit for weather-compensated mode	1	as per price list
(B)	Internal extension H1 (system without DHW circulation; optional connection of an external safety valve for LPG)	1	7159 057
	or		
	internal extension H2 (system without DHW circulation; optional connection of an interlock for extraction equipment)	1	7179 144
	or		
	external extension H1 (system with DHW circulation)	1	7179 058
(D)	Vitotrol 200	1	7450 017
	or		
	Vitotrol 300	1	7179 060
(G)	Temperature limiter for limiting the max. temperature of underfloor heating systems		
	– Immersion thermostat	1	7151 728
	or		
	– contact thermostat	1	7151 729
(K)	Heating circuit pump	2	on-site
(N)	Extension kit for one heating circuit with mixer plus flow temperature sensor	1	7178 995
(O)	Cylinder temperature sensor	1	Standard delivery connection set for DHW cylinder
(P)	DHW cylinder	1	as per price list

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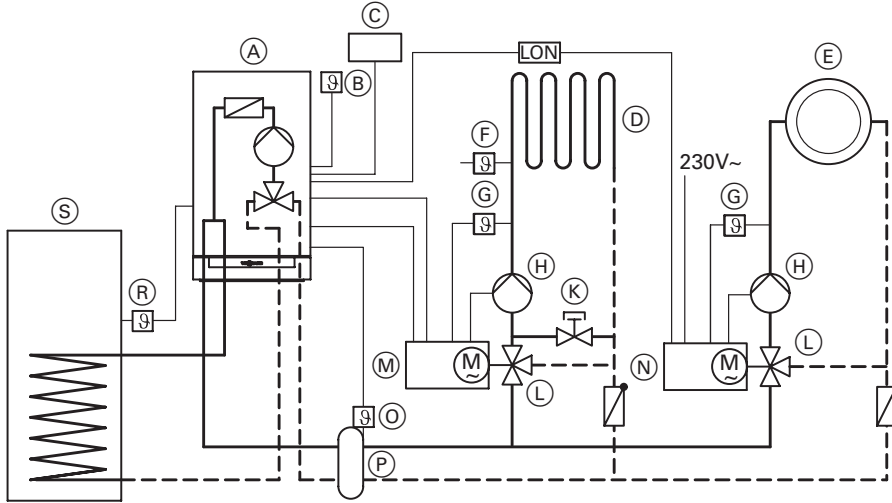
## 3.2 Installation examples

### System design 5



#### System design 5

Vitodens 200 or 300 with/without DHW heating with one heating circuit with mixer (with extension kit), one heating circuit with mixer (with Vitotronic 050) and low loss header



3

- (A) Vitodens with weather-compensated control unit and LON communication module
- (B) Outside temperature sensor
- (C) Vitotrol
- (D) Underfloor heating circuit
- (E) Radiator heating circuit

- (F) Maximum temperature limiter
- (G) Flow temperature sensor
- (H) Heating circuit pump (on site)
- (K) Regulating valve
- (L) Three-way mixer
- (M) Extension kit for one heating circuit with mixer

- (N) Vitotronic 050 (type HK1M)
- (O) Flow temperature sensor for low loss header
- (P) Low loss header
- (R) Cylinder temperature sensor
- (S) DHW cylinder

System with various heating systems

- regulated radiator heating circuit
- regulated underfloor heating circuit with three-way mixer.

#### Please note

Not for gas-fired combination boilers.

#### Standard defaults

The total volume flow of both heating circuits less bypass volume of the underfloor heating circuit is greater than the max. possible volume flow of Vitodens.

Boiler	Max. volume flow l/h
Vitodens 200	1400
Vitodens 300, 4.5-26.0 kW	1400
Vitodens 300, 8.7-35.0 kW	1600

Therefore the low loss header needs to be installed.

The three-way mixer provided to achieve the low temperature level of the underfloor heating circuit is controlled by the extension kit for one heating circuit with mixer.

The circulation pump integrated into Vitodens supplies the heating circuit up to the low loss header.

The underfloor and the radiator heating circuits are supplied by on-site circulation pumps, which are controlled by the extension kit or Vitotronic 050 (type HK1M).

If more than two heating circuits with mixers are to be connected, these may be regulated by Vitotronic 050 (type HK3W). The volume flow of the underfloor heating circuit, which is subject to individual design criteria, is balanced by an adjustable bypass.

Low loss headers are available in conjunction with Modular-Divicon or individually as accessory. See price list Vitotec or Vitoset. For further details regarding low loss headers, see page 92.

## 3.2 Installation examples System design 5



### Equipment required

Item	Description	Number	Part no.
Ⓐ	Vitodens 200 or 300 with weather-compensated control unit and LON communication module and LON cable and LON terminator (2 pieces)	1 1 1 1	as per price list 7179 113 7143 495 7143 497
Ⓒ	Vitotrol 200 or Vitotrol 300	1 1	7450 017 7179 060
Ⓕ	Temperature limiter for limiting the max. temperature of underfloor heating systems – Immersion thermostat or – contact thermostat	1 1	7151 728 7151 729
Ⓗ	Heating circuit pump	2	on-site
Ⓜ	Extension kit for one heating circuit with mixer plus flow temperature sensor	1	7178 995
Ⓝ	Vitotronic 050 (type HK1M) and LON communication module	1 1	7178 998 7172 173
⓪	Flow temperature sensor for low loss header	1	7179 488
Ⓟ	Low loss header in conjunction with Modular-Divicon	1	as per price list
Ⓡ	Cylinder temperature sensor	1	Standard delivery connection set for DHW cylinder
Ⓢ	DHW cylinder	1	as per price list



3



- |  |   |   |
|--|---|---|
| <p>(A) Vitodens<br/>gas fired boiler</p> <p>(B) Outside temperature sensor (only for<br/>weather-compensated control units)</p> <p>(C) Heating circuit</p> <p>(D) Cylinder temperature sensor</p> <p>(E) Vitocell-W 100 (type CVB)</p> <p>(F) High limit safety cut-out*<sup>1</sup></p> | <p>(G) Cylinder temperature sensor for solar<br/>mode</p> <p>(H) Solar-Divicon</p> <p>(K) Solar panels</p> <p>(L) Vitosolic 100 or 200</p> <p>(M) Collector temperature sensor</p> <p>(N) Connection extension (only for<br/>Vitosolic 100)</p> | <p>(O) Vitotrol 100 for constant temperature<br/>mode<br/>or<br/>Vitotrol 200 or 300 for<br/>weather-compensated mode</p> |
|--|---|---|

*\*1High limit safety cut-out (STB) required only for:  
DHW volume < 30 litres/m<sup>2</sup> aperture area when using Vitosol 100  
DHW volume <100 l/m<sup>2</sup> aperture area when using Vitosol 200, 250 and 300*

## 3.2 Installation examples System design 6



### Equipment required

Item	Description	Number	Part no.
(A)	Vitodens 200 or 300	1	as per price list
(D)	Cylinder temperature sensor	1	Standard delivery connection set for DHW cylinder
(E)	DHW cylinder Vitocell-W 100 (type CVB)	1	as per price list
(F)	High limit safety cut-out	1	Z001 889
(G)	Cylinder temperature sensor for solar mode	1	Vitosolic standard delivery
(H)	Solar-Divicon	1	as per price list
(K)	Solar panel(s)	according to requirements	as per price list
(L)	Vitosolic 100 or Vitosolic 200	1	7170 925
(M)	Collector temperature sensor	1	7170 926
(N)	Connection extension in conjunction with Vitosolic 100 for the connection of – solar circuit pump – high limit safety cut-out – circulation pump for heating up the preheat stage	1	Vitosolic standard delivery 7170 927
(O)	– for constant temperature mode: Vitotrol 100, type UTA or Vitotrol 100, type UTD	1	7170 149
	– for weather-compensated mode: Vitotrol 200 or Vitotrol 300	1	7179 059
		1	7450 017
		1	7179 060



3

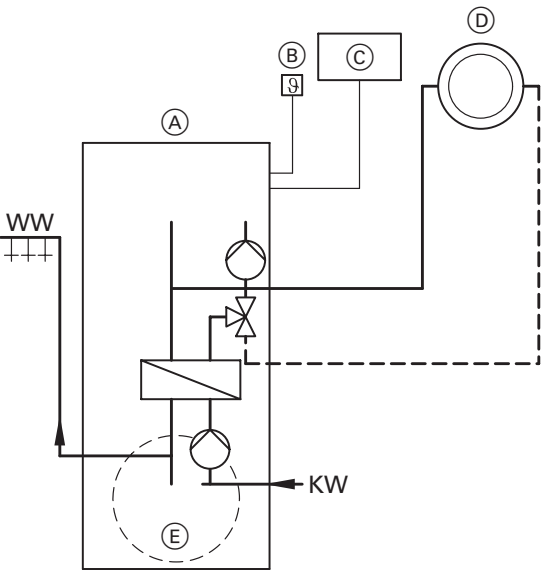


### 3.2 Installation examples

#### System design 7

#### Installation examples Vitodens 333

System design 7  
Vitodens 333 with one heating circuit without mixer



- Ⓐ Vitodens 333
- Ⓑ Outside temperature sensor (only for weather-compensated control units)
- Ⓒ Vitotrol 100 for constant temperature mode  
or  
Vitotrol 200 or 300 for weather-compensated mode

- Ⓓ Heating circuit
- Ⓔ DHW loading cylinder

KW Cold water  
WW Hot water

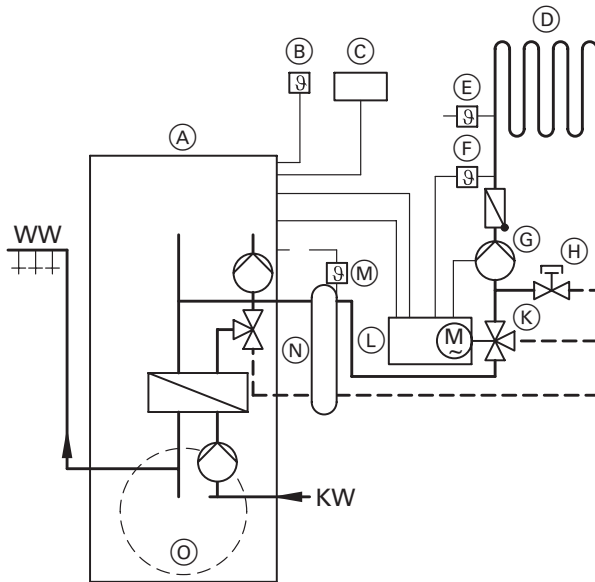
#### Required equipment

Item	Description	Number	Part no.
Ⓐ	Vitodens 333	1	as per price list
Ⓒ	– for constant temperature mode: Vitotrol 100, type UTA or Vitotrol 100, type UTD	1	7170 149
	– for weather-compensated mode: Vitotrol 200 or Vitotrol 300	1	7179 059
		1	7450 017
		1	7179 060



#### System design 8

#### Vitodens 333 with one heating circuit with mixer and low loss header



- (A) Vitodens 333 with weather-compensated control unit
- (B) Outside temperature sensor
- (C) Vitotrol
- (D) Underfloor heating circuit
- (E) Max. temperature limiter
- (F) Flow temperature sensor
- (G) Heating circuit pump (on site)

- (H) Regulating valve
- (K) Three-way mixer
- (L) Extension kit for one heating circuit with mixer
- (M) Flow temperature sensor – low loss header
- (N) Low loss header
- (O) DHW calorifier

KW Cold water  
WW Hot water

System with regulated underfloor heating circuit with three-way mixer.

#### Standard defaults

The volume flow (output) of the underfloor heating system is greater than the max. possible Vitodens volume flow of 1400 litres/h. Therefore the low loss header needs to be installed.

The three-way mixer provided to achieve the low temperature level of the underfloor heating circuit is controlled by the extension kit for one heating circuit with mixer.

The circulation pump integrated into Vitodens supplies the heating circuit up to the low loss header.

The underfloor heating circuit is supplied by an on-site circulation pump, which is controlled by the extension kit.

Low loss headers are available in conjunction with Modular-Divicon or individually as accessory.

See price list Vitotec or Vitoset.

For further details regarding low loss headers, see page 92.

#### Equipment required

Item	Description	Number	Part no.
(A)	Vitodens 333 with control unit for weather-compensated mode	1	as per price list
(C)	Vitotrol 200 or Vitotrol 300	1	7450 017
(E)	Temperature limiter for limiting the max. temperature of underfloor heating systems – Immersion thermostat or – contact thermostat	1	7179 060
(G)	Heating circuit pump	1	7151 728
(L)	Extension kit for one heating circuit with mixer plus flow temperature sensor	1	7151 729
(M)	Flow temperature sensor for low loss header	1	on-site
(N)	Low loss header	1	7178 995
		1	7179 488
		1	as per price list

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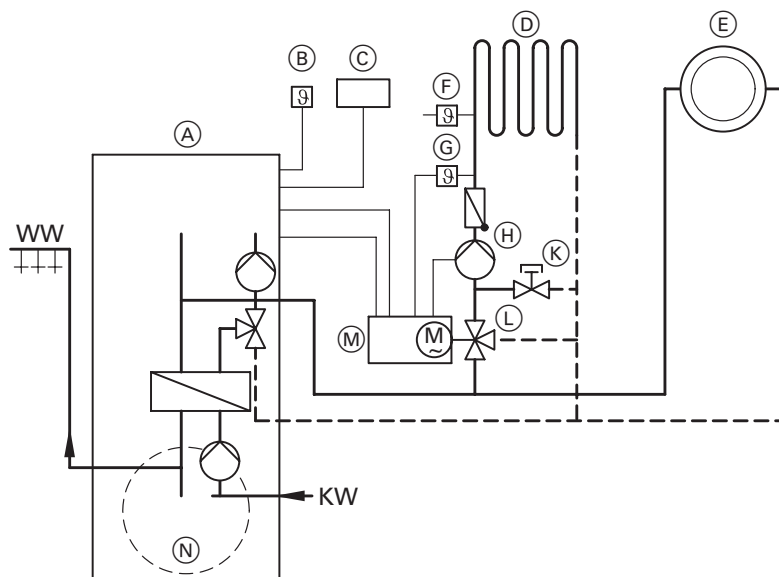


## 3.2 Installation examples

### System design 9

#### System design 9

Vitodens 333 with one heating circuit without mixer and one heating circuit with mixer



3

- (A) Vitodens 333 with weather-compensated control unit
- (B) Outside temperature sensor
- (C) Vitotrol
- (D) Underfloor heating circuit
- (E) Radiator heating circuit
- (F) Maximum temperature limiter

- (G) Flow temperature sensor
- (H) Heating circuit pump (on site)
- (K) Regulating valve
- (L) Three-way mixer
- (M) Extension kit for one heating circuit with mixer
- (N) DHW calorifier

KW Cold water  
WW Hot water

System with various heating systems

- unregulated radiator heating circuit
- regulated underfloor heating circuit with three-way mixer.

#### Standard defaults

1. The volume flow (output) of the radiator circuit is at least 30% greater than the volume flow of the underfloor heating circuit.
2. The volume flow of both heating circuits less the bypass volume of the underfloor heating system is smaller than the max. possible Vitodens volume flow of 1400 litres/h.

Install a low loss header if the max. volume flow of an individual design is greater than 1400 litres/h.

Installation diagram, see page 79.

The three-way mixer provided to achieve the low temperature level of the underfloor heating circuit is controlled by the extension kit for one heating circuit with mixer.

The circulation pump integrated into Vitodens supplies the radiator heating circuit. The underfloor heating circuit is supplied by an on-site circulation pump, which is controlled by the extension kit. The volume flow of the underfloor heating circuit, which is subject to individual design criteria, is balanced by an adjustable bypass.

#### Required equipment

Item	Description	Number	Part no.
(A)	Vitodens 333 with control unit for weather-compensated mode	1	as per price list
(C)	Vitotrol 200	1	7450 017
	or		
	Vitotrol 300	1	7179 060
(F)	Temperature limiter for limiting the max. temperature of underfloor heating systems		
	– Immersion thermostat	1	7151 728
	or		
	– contact thermostat	1	7151 729
(H)	Heating circuit pump	1	on-site
(M)	Extension kit for one heating circuit with mixer plus flow temperature sensor	1	7178 995

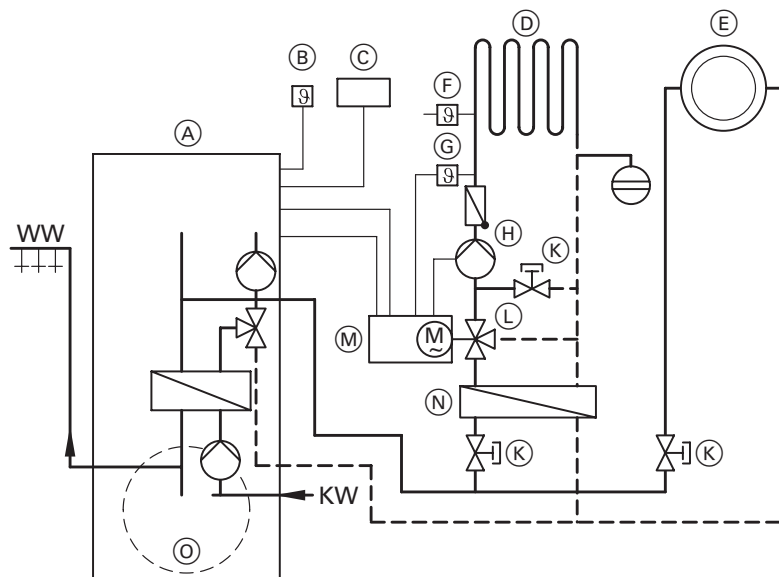
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### System design 10

Vitodens 333 with one heating circuit without mixer and one heating circuit with mixer plus system separation



- (A) Vitodens 333 with weather-compensated control unit
- (B) Outside temperature sensor
- (C) Vitotrol
- (D) Underfloor heating circuit
- (E) Radiator heating circuit
- (F) Maximum temperature limiter
- (G) Flow temperature sensor

- (H) Heating circuit pump (on site)
- (K) Regulating valve
- (L) Three-way mixer
- (M) Extension kit for one heating circuit with mixer
- (N) Plate heat exchanger for system separation<sup>\*1</sup>
- (O) DHW calorifier

KW Cold water  
WW Hot water

System with various heating systems

- unregulated radiator heating circuit
- regulated underfloor heating circuit with three-way mixer and system separation for non-impermeable plastic pipes (DIN 4726).

### Standard defaults

The total volume flow of both heating circuits is less than the max. possible volume flow of Vitodens. Balance the pressure differential ( $\Delta p$ ) between radiator heating circuit (E) and plate heat exchanger (N) via regulating valves (K).

The three-way mixer provided to achieve the low temperature level of the underfloor heating circuit is controlled by the extension flow of Vitodens. The circulation pump integrated into Vitodens supplies the radiator heating circuit and the plate heat exchanger for system separation. The underfloor heating circuit is supplied by an on-site circulation pump, which is controlled by the extension kit.

### <sup>\*1</sup>Note

The secondary pressure drop of plate heat exchanger (N) must be less/equal ( $\leq$ ) than/to the pressure drop of the three-way mixer. Please observe this when sizing the plate heat exchanger (mixer has control priority).

### Required equipment

Item	Description	Number	Part no.
(A)	Vitodens 333 with control unit for weather-compensated mode	1	as per price list
(C)	Vitotrol 200	1	7450 017
	or		
	Vitotrol 300	1	7179 060
(F)	Temperature limiter for limiting the max. temperature of underfloor heating systems		
	– Immersion thermostat	1	7151 728
	or		
	– contact thermostat	1	7151 729
(H)	Heating circuit pump	1	on-site
(M)	Extension kit for one heating circuit with mixer plus flow temperature sensor	1	7178 995
(N)	Plate heat exchanger Vitotrans 100	1	as per price list

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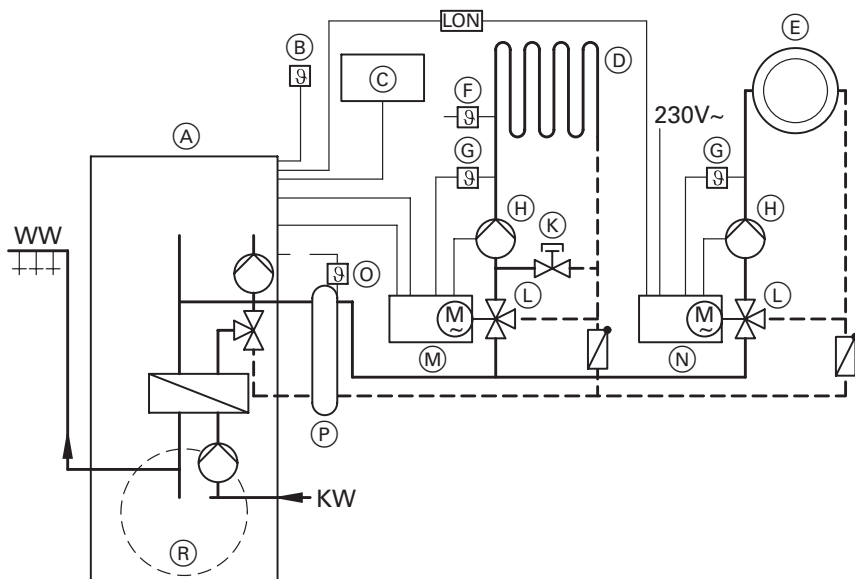


## 3.2 Installation examples

### System design 11

#### System design 11

Vitodens 333 with one heating circuit with mixer (with extension kit), one heating circuit with mixer (with Vitotronic 050) and low loss header



3

- (A) Vitodens 333 with weather-compensated control unit and LON communication module
- (B) Outside temperature sensor
- (C) Vitotrol
- (D) Underfloor heating circuit
- (E) Radiator heating circuit
- (F) Maximum temperature limiter
- (G) Flow temperature sensor
- (H) Heating circuit pump (on site)

- (K) Regulating valve
- (L) Three-way mixer
- (M) Extension kit for one heating circuit with mixer
- (N) Vitotronic 050 (type HK1M)
- (O) Flow temperature sensor for low loss header
- (P) Low loss header
- (R) DHW loading cylinder

KW Cold water  
WW Hot water

#### System with various heating systems

- regulated radiator heating circuit
- regulated underfloor heating circuit with three-way mixer.

#### Standard defaults

The total volume flow of both heating circuits less the bypass volume of the underfloor heating system is greater than the max. possible Vitodens volume flow of 1400 litres/h. Therefore the low loss header needs to be installed.

The three-way mixer provided to achieve the low temperature level of the underfloor heating circuit is controlled by the extension kit for one heating circuit with mixer.

The circulation pump integrated into Vitodens supplies the heating circuit up to the low loss header.

The underfloor and the radiator heating circuits are supplied by on-site circulation pumps, which are controlled by the extension kit or Vitotronic 050 (type HK1M).

If more than two heating circuits with mixers are to be connected, these may be regulated by Vitotronic 050 (type HK3W). The volume flow of the underfloor heating circuit, which is subject to individual design criteria, is balanced by an adjustable bypass.

Low loss headers are available in conjunction with Modular-Divicon or individually as accessory. See price list Vitotec or Vitoset. For further details regarding low loss headers, see page 92.



## Equipment required

Item	Description	Number	Part no.
Ⓐ	Vitodens 333 with control unit for weather-compensated mode	1	as per price list
	and LON communication module	1	7179 113
	and LON cable	1	7143 495
	and LON terminator (2 pieces)	1	7143 497
Ⓒ	Vitotrol 200	1	7450 017
	or		
	Vitotrol 300	1	7179 060
Ⓕ	Temperature limiter for limiting the max. temperature of underfloor heating systems		
	– Immersion thermostat	1	7151 728
	or		
	– contact thermostat	1	7151 729
Ⓗ	Heating circuit pump	2	on-site
Ⓜ	Extension kit for one heating circuit with mixer plus flow temperature sensor	1	7178 995
Ⓝ	Vitotronic 050 (type HK1M)	1	7178 998
	and LON communication module	1	7172 173
Ⓞ	Flow temperature sensor for low loss header	1	7179 488
Ⓟ	Low loss header in conjunction with Modular-Divicon	1	as per price list



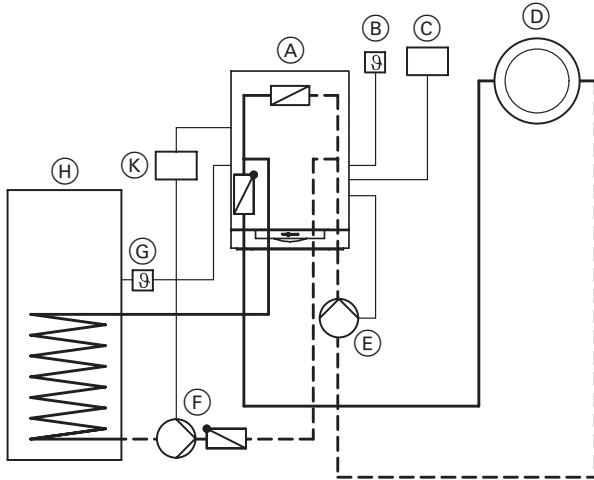
## 3.2 Installation examples

### System design 12

#### Installation example Vitodens 300 (from 49 kW)

##### System design 12

Vitodens 300 (from 49 kW) with/without DHW heating with one heating circuit without mixer



3

- (A) Vitodens 300 (from 49 kW)
- (B) Outside temperature sensor (only for weather-compensated control units)
- (C) Vitotrol 100 for constant temperature mode  
or  
Vitotrol 200 or 300 for weather-compensated mode

- (D) Heating circuit
- (E) Heating circuit pump (accessory)
- (F) Cylinder loading pump (accessory)
- (G) Cylinder temperature sensor (accessory)
- (H) DHW cylinder
- (K) Internal extension H1 or H2  
or  
external extension H1

##### Note

For a volume flow of  $< 0.3 \text{ m}^3/\text{h}$  or  $> 3.5 \text{ m}^3/\text{h}$ , install a low loss header (see specification).

#### Required equipment

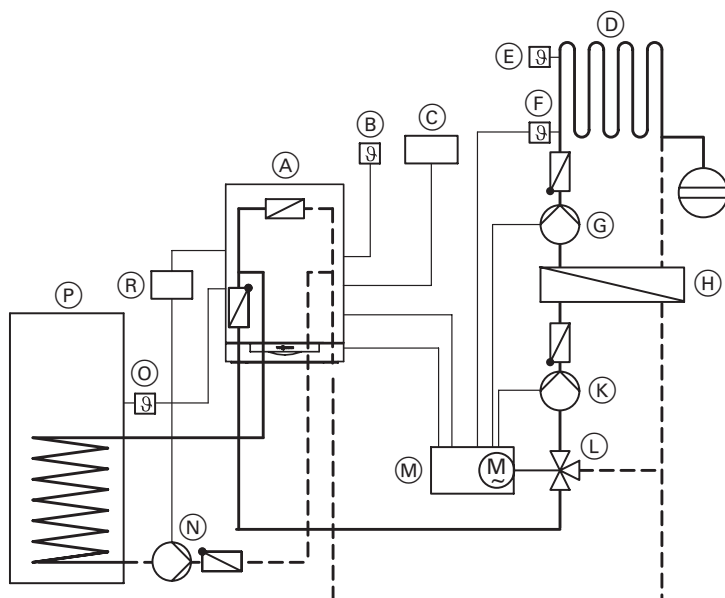
Item	Description	Number	Part no.
(A)	Vitodens 300 (from 49 kW)	1	as per price list
(C)	– for constant temperature mode: Vitotrol 100, type UTA or Vitotrol 100, type UTD – for weather-compensated mode: Vitotrol 200 or Vitotrol 300	1 1 1 1	7170 149 7179 059 7450 017 7179 060
(E)	Heating circuit pump (observe the pump diagram on page 68), variable speed	1	7178 820
(F)	Cylinder loading pump	1	7339 468
(G)	Cylinder temperature sensor	1	7173 114
(H)	DHW cylinder	1	as per price list
(K)	Internal extension H1 (system without DHW circulation; optional connection of an external safety valve for LPG) or internal extension H2 (system without DHW circulation; optional connection of an interlock for extraction equipment) or external extension H1 (system with DHW circulation)	1 1 1	7159 057 7179 144 7179 058

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### System design 13

Vitodens 300 (from 49 kW) with/without DHW heating with one heating circuit without mixer plus system separation



- (A) Vitodens 300 (from 49 kW) with control unit for weather-compensated mode
- (B) Outside temperature sensor
- (C) Vitotrol
- (D) Underfloor heating circuit
- (E) Max. temperature limiter
- (F) Flow temperature sensor
- (G) Heating circuit pump (on site) downstream of the heat exchanger

- (H) Plate heat exchanger for system separation
- (K) Heating circuit pump (on site) upstream of the heat exchanger
- (L) Three-way mixer
- (M) Extension kit for one heating circuit with mixer
- (N) Cylinder loading pump (accessory)

- (O) Cylinder temperature sensor
- (P) DHW cylinder
- (R) Internal extension H1 or H2 or external extension H1

#### Note

For a volume flow of  $< 0.3 \text{ m}^3/\text{h}$  or  $> 3.5 \text{ m}^3/\text{h}$ , install a low loss header (see specification).

3

### Required equipment

Item	Description	Number	Part no.
(A)	Vitodens 300 (from 49 kW) with control unit for weather-compensated mode	1	as per price list
(C)	Vitotrol 200 or Vitotrol 300	1	7450 017
(E)	Temperature limiter for limiting the max. temperature of underfloor heating systems – Immersion thermostat or – contact thermostat	1	7179 060
(G)	Heating circuit pump	1	7151 728
(H)	Plate heat exchanger Vitotrans 100	1	7151 729
(K)	Heating circuit pump	1	on-site
(M)	Extension kit for one heating circuit with mixer plus flow temperature sensor	1	on-site
(N)	Cylinder loading pump	1	7178 995
(O)	Cylinder temperature sensor	1	7339 468
(P)	DHW cylinder	1	7179 114
(R)	Internal extension H1 (system without DHW circulation; optional connection of an external safety valve for LPG) or internal extension H2 (system without DHW circulation; optional connection of an interlock for extraction equipment) or external extension H1 (system with DHW circulation)	1	as per price list
		1	7159 057
		1	7179 144
		1	7179 058

5822 310 GB

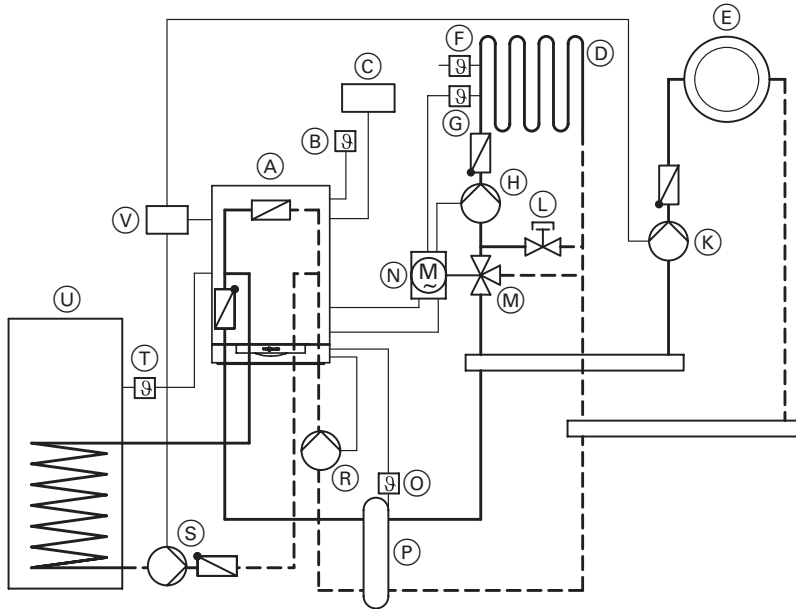


## 3.2 Installation examples

### System design 14

#### System design 14

Vitodens 300 (from 49 kW) with/without DHW heating with low loss header, one heating circuit without mixer and one heating circuit with mixer



3

- (A) Vitodens 300 (from 49 kW) with control unit for weather-compensated mode
- (B) Outside temperature sensor
- (C) Vitotrol
- (D) Underfloor heating circuit
- (E) Radiator heating circuit
- (F) Maximum temperature limiter
- (G) Flow temperature sensor

- (H) Heating circuit pump (heating circuit with mixer)
- (K) Heating circuit pump (heating circuit without mixer)
- (L) Regulating valve
- (M) Three-way mixer
- (N) Extension kit for one heating circuit with mixer

- (O) Flow temperature sensor for low loss header
- (P) Low loss header
- (R) Boiler circuit pump
- (S) Cylinder loading pump
- (T) Cylinder temperature sensor
- (U) DHW cylinder
- (V) External extension H1

#### Note

For a volume flow of  $< 0.3 \text{ m}^3/\text{h}$  or  $> 3.5 \text{ m}^3/\text{h}$ , install a low loss header (see specification). Please observe the residual head of the primary pump (see page 68).

The radiator heating circuit is supplied by the on-site circulation pump. The underfloor heating circuit is supplied by an on-site circulation pump, which is controlled by the extension kit.

The DHW circulation pump is connected on site.

Low loss headers are available in conjunction with Modular-Divicon or individually as accessory. See price list Vitotec or Vitoset. For further details regarding low loss headers, see page 92.

#### Required equipment

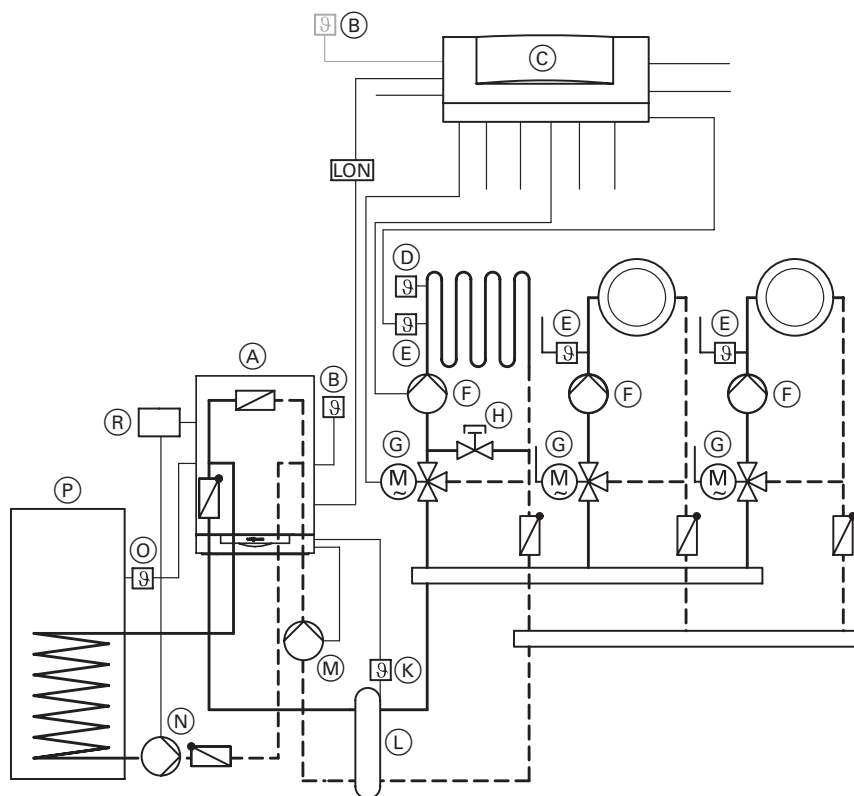
Item	Description	Number	Part no.
(A)	Vitodens 300 (from 49 kW) with control unit for weather-compensated mode	1	as per price list
(C)	Vitotrol 200 or Vitotrol 300	1	7450 017
(F)	Temperature limiter for limiting the max. temperature of underfloor heating systems – Immersion thermostat or – contact thermostat	1	7179 060
(H)	Heating circuit pump (e.g. in Modular-Divicon)	1	7151 728
(K)	Heating circuit pump (e.g. in Modular-Divicon)	1	7151 729
(N)	Extension kit for one heating circuit with mixer plus flow temperature sensor	1	as per price list
(O)	Flow temperature sensor for low loss header	1	as per price list
(P)	Low loss header	1	7178 995
(R)	Primary pump (boiler circuit), variable speed	1	7179 488
(S)	Cylinder loading pump	1	as per price list
(T)	Cylinder temperature sensor	1	7178 820
(U)	DHW cylinder	1	7339 468
(V)	External extension H1	1	7179 114
		1	as per price list
		1	7179 058

5822 310 GB



#### System design 15

Vitodens 300 (from 49 kW) with/without DHW heating with three or more heating circuits with mixer and low loss header



- Ⓐ Vitodens 300 (from 49 kW) with weather-compensated control unit and LON communication
- Ⓑ Outside temperature sensor
- Ⓒ Vitotronic 050 (type HK3W)
- Ⓓ Maximum temperature limiter
- Ⓔ Flow temperature sensor

- Ⓕ Heating circuit pump
- Ⓖ Extension kit for one heating circuit with mixer
- Ⓗ Regulating valve
- Ⓚ Flow temperature sensor for low loss header
- Ⓛ Low loss header

- Ⓜ Primary pump (boiler circuit)
- Ⓝ Cylinder loading pump
- Ⓞ Cylinder temperature sensor
- Ⓟ DHW cylinder
- Ⓡ Internal extension H1 or H2 or external extension H1



## 3.2 Installation examples

### System design 15

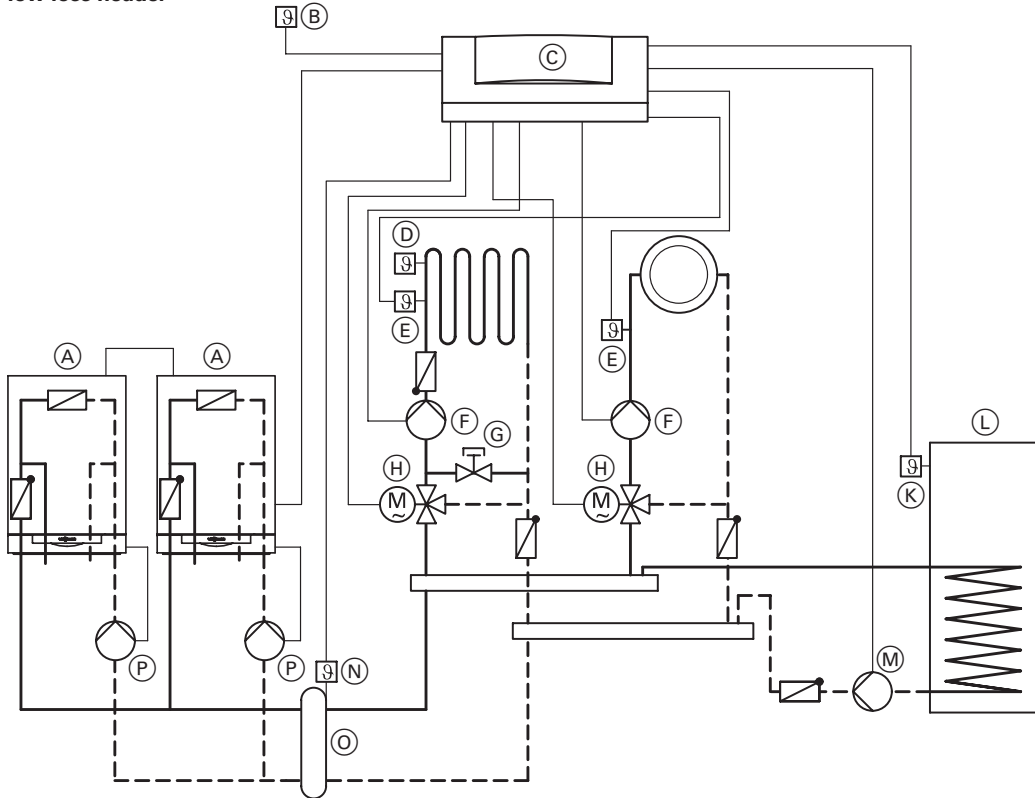
#### Equipment required

Item	Description	Number	Part no.
Ⓐ	Vitodens 300 (from 49 kW) with control unit for weather-compensated mode	1	as per price list
	and LON communication module	1	7179 113
	and LON cable	1	7143 495
	and LON terminator (2 pieces)	1	7143 497
Ⓒ	Vitotronic 050 (type HK3W)	1	Z001 844
	with LON communication module	1	7172 173
Ⓓ	Temperature limiter for limiting the max. temperature of underfloor heating systems		
	– Immersion thermostat	1	7151 728
	or		
	– contact thermostat	1	7151 729
Ⓔ	Flow temperature sensor	1 per heating circuit	Standard delivery of the extension kit
Ⓕ	Heating circuit pump (e.g. in Modular-Divicon)	1 per heating circuit	as per price list
Ⓖ	Extension kit for one heating circuit with mixer plus flow temperature sensor	1 per heating circuit	7450 650
Ⓚ	Flow temperature sensor for low loss header	1	7179 488
Ⓛ	Low loss header in conjunction with Modular-Divicon	1	as per price list
Ⓜ	Primary pump (boiler circuit), variable speed	1	7178 820
Ⓝ	Cylinder loading pump	1	7339 468
Ⓞ	Cylinder temperature sensor	1	7179 114
Ⓟ	DHW cylinder	1	as per price list
Ⓡ	Internal extension H1 (system without DHW circulation; optional connection of an external safety valve for LPG)	1	7159 057
	or		
	internal extension H2 (system without DHW circulation; optional connection of an interlock for extraction equipment)	1	7179 144
	or		
	external extension H1 (system with DHW circulation)	1	7179 058



## System design 16

Multi-boiler system with Vitodens 300 (from 49 kW) with/without DHW heating with several heating circuits with mixer and low loss header



- |   |  |   |
|---|--|---|
| Ⓐ Vitodens 300 (from 49 kW) with control unit for constant temperature mode | Ⓕ Heating circuit pump                             | Ⓜ Cylinder loading pump                       |
| Ⓑ Outside temperature sensor  | Ⓖ Regulating valve                                 | Ⓝ Flow temperature sensor for low loss header |
| Ⓒ Vitotronic 333  | Ⓗ Extension kit for one heating circuit with mixer | Ⓞ Low loss header                             |
| Ⓓ Maximum temperature limiter   | Ⓚ Cylinder temperature sensor                      | Ⓟ Primary pump (boiler circuit)               |
| Ⓔ Flow temperature sensor   | Ⓛ DHW cylinder                                     |   |

## Required equipment

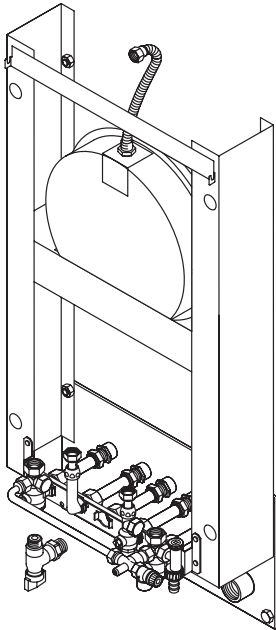
Item	Description	Number	Part no.
Ⓐ	Vitodens 300 (from 49 kW) with control unit for constant temperature mode with cascade communication module	2 to 4	as per price list
Ⓑ	Outside temperature sensor	1 or 2	Standard delivery for Vitotronic 333
Ⓒ	Vitotronic 333	1	Standard delivery for multi-boiler system
Ⓓ	Temperature limiter for limiting the max. temperature of underfloor heating systems – Immersion thermostat or – contact thermostat	1	7151 728
Ⓕ	Heating circuit pump (e.g. in Modular-Divicon)	1	7151 729
Ⓗ	Extension kit for one heating circuit with mixer plus flow temperature sensor	1 per heating circuit	as per price list
Ⓚ	Cylinder temperature sensor	1 per heating circuit	7450 650
Ⓛ	DHW cylinder	1	Standard delivery for Vitotronic 333
Ⓜ	Cylinder loading pump	1	as per price list
Ⓝ	Flow temperature sensor for low loss header	1	7339 468
Ⓞ	Low loss header in conjunction with Modular-Divicon	1	Standard delivery for Vitotronic 333
Ⓟ	Primary pump (boiler circuit)	2 to 4	as per price list
			7178 820

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## 3.3 Expansion vessels

### 3.3 Expansion vessels

#### Mounting frame with expansion vessel for Vitodens 300



In accordance with EN 12828, water heating systems must be equipped with a diaphragm expansion vessel (MAG).

- An expansion vessel (10 litres capacity) is integrated into Vitodens 200.
- A mounting frame with expansion vessel (11 litres capacity) and valves is available as accessory for Vitodens 300.
- An expansion vessel (12 litres capacity) is integrated into Vitodens 333.

The size of the expansion vessel is subject to the heating system specification, and should be checked in each case (see page 91).

If the integral expansion vessel or that supplied as accessory is insufficient, install a suitably sized expansion vessel on site.

#### Testing the integral expansion vessel or the expansion vessel fitted to the mounting frame

Integral expansion vessel in Vitodens 200  
Inlet pressure ..... 0.75 bar  
Blow-off pressure ..... 2.5 bar  
Capacity ..... 10 litres

Integral expansion vessel in Vitodens 333  
Inlet pressure ..... 0.75 bar  
Blow-off pressure ..... 2.5 bar  
Capacity ..... 12 litres

When making the water connections, check that the size of the expansion vessel matches the system conditions.

The following steps will enable you to make a rough check.

Mounting frame with expansion vessel  
(accessory for Vitodens 300)  
Inlet pressure ..... 0.75 bar  
Blow-off pressure ..... 2.5 bar  
Capacity ..... 11 litres

$$V_{MAG} = f \cdot ((V_A + V_K) \cdot A_f + 2.4)$$

$V_{MAG}$  = Expansion vessel volume  
 $f$  = Expansion factor (= 2 for expansion vessel)  
 $V_A$  = System volume  
 $V_K$  = Boiler water volume  
 $A_f$  = Heating water expansion factor

#### Example:

System:– Vitodens 200  
– Boiler water volume 5 litres  
– Output 20 kW  
– Plate radiator  
– System volume approx. 130 litres  
Heating system 70/65 °C

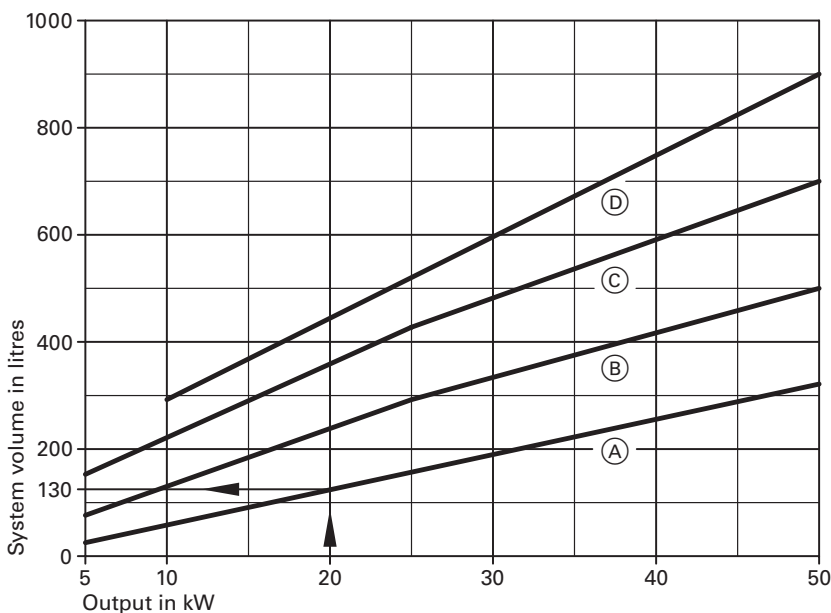
Calculation:  
Heating system 70/65 °C: average water temperature approx. 60 °C  
 $A_f = 0.0171$   
 $V_{MAG} = 2 \cdot ((130 + 5) \cdot 0.0171 + 2.4)$   
 $V_{MAG} = 9.42$  litres

Result:  
The integral expansion vessel (10 litres capacity) is sufficiently large for this system.

#### Note

If the integral expansion vessel or the expansion vessel in the mounting frame is insufficient, connect an adequately sized expansion vessel to the expansion vessel connector on Vitodens.

#### Calculating the heating system volume (approx. values)



#### Calculating expansion factor $A_f$

Average water temp. [°C]	Expansion factor $A_f$
50	0.0121
60	0.0171
70	0.0228

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- (A) Convectors
  - (B) Plate-type radiators
  - (C) Radiators
  - (D) Underfloor heating

3.4 Low loss header

3.4 Low loss header

Application

- Design rules for system hydraulics:
- Generally install a low loss header when cascading several Vitodens boilers.
  - When adjusting the low loss header – set the volume flow on the boiler side approx. 10 to 30% lower than the volume flow on the system side (lowering the return temperature).
  - Size the low loss header to the max. volume flow which occurs in the total system.

The low loss header de-couples the heat generator circuit (boiler circuit) and the downstream heating circuits.

Install a low loss header if the max. volume flow of an individual design is greater than the values shown in the following table.

For installation diagrams, see the corresponding application example.

Boiler	Max. volume flow l/h
Vitodens 200	1400
Vitodens 300, 4.5-26.0 kW	1400
Vitodens 300, 8.7-35.0 kW	1600
Vitodens 300, 12.2-49.0 kW	3500
Vitodens 300, 16.6-66.0 kW	3500
Vitodens 333	1400

The boiler circuit and the heating circuit are sized independent of each other, and are subject to the individual system type.

Heat generator circuit

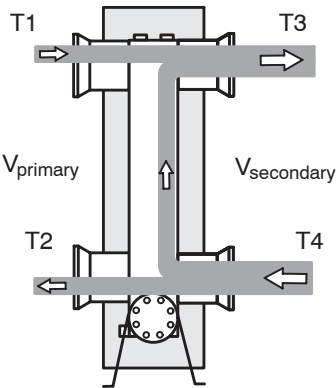
The circulation pump in Vitodens must be able to supply the required water volume against the – mostly low – pressure drop of the boiler circuit; the pressure drop of the low loss header is negligible. Subject to the water volume circulating in the generator circuit, the respective residual head may be determined for the sizing of the internal pipes using the pump diagrams, alternatively the variable speed pump for Vitodens 300 and 333 can be adjusted accordingly.

Heating circuit

The central heating pumps to be installed on-site must be able to transfer the water volume in the heating circuits against their pressure drop; size the pumps accordingly.

3

Principle of operation



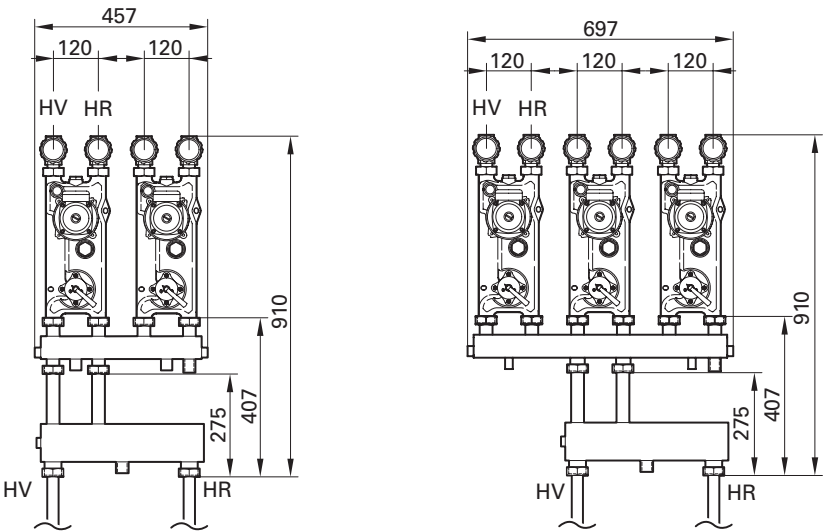
- $V_{primary}$  Heating water volume heat generator circuit (approx. 10-30% smaller than  $V_{secondary}$ )
- $V_{secondary}$  Heating water volume heating circuit
- $T_1$  Flow water temperature – heat generator circuit
- $T_2$  Return water temperature heat generator circuit
- $T_3$  Flow temperature heating circuit
- $T_4$  Return temperature heating circuit
- $Q_{primary}$  Heat volume supplied by the heat generator
- $Q_{secondary}$  Heat dissipated by the heating circuit

$$\begin{aligned} V_{primary} &< V_{secondary} \\ T_1 &> T_3 \\ T_2 &\approx T_4 \\ Q_{primary} &= Q_{secondary} \end{aligned}$$

Note

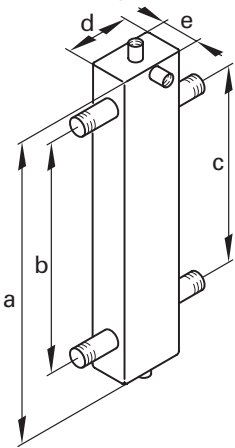
Suitable thermometers in the flow and return of the low loss header make adjustments easier.

Low loss header in conjunction with Modular-Divicon (max. volume flow 4.5 m³/h)  
see Modular-Divicon datasheet (accessory)



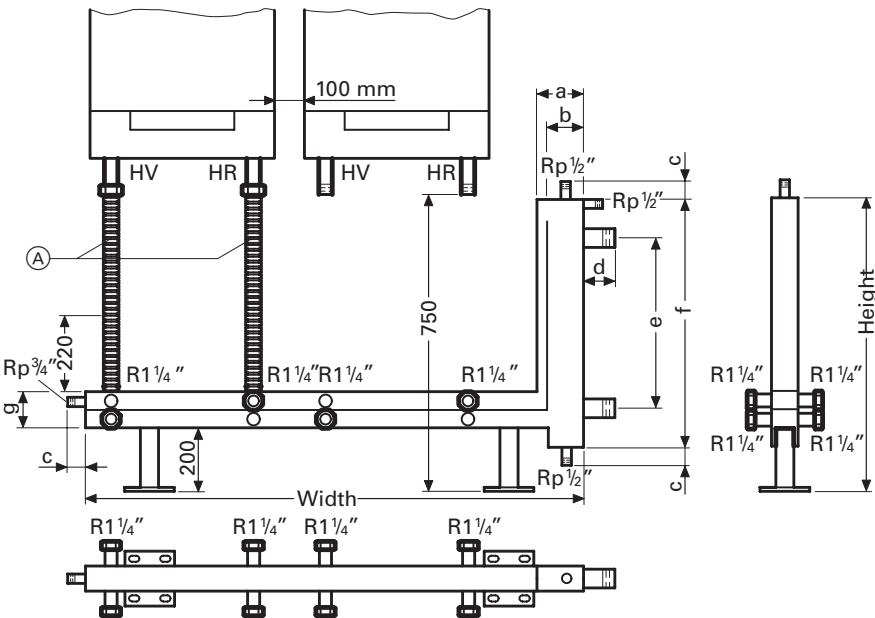
Key to symbols  
HR Heating return  
HV Heating flow

Low loss header from the Vitoset range  
see Vitoset price list



Volume flow (max.)	m³/h	4	4	8	10	18
Connections						
- Female thread	R	1 1/4"				
- Male thread	R		1"	2"		
- Flange	DN				65	80
Dim. a	mm	500	500	800	1400	1450
b	mm	360	360	650	1000	1000
c	mm	270	270	550	1000	1000
d	mm	80	80	120	160	200
e	mm	50	50	80	80	120

Low loss header with distributor/manifold for multi-boiler systems with 2 to 4 Vitodens 300, 49/66 kW  
Cascade Unit



Boiler	Number	2	3	4
Width	mm	1600	2390	3090
Height	mm	940	1310	1310
Heating circuit connection	R (male thread) DN	2" —	2" —	— 65
Max. volume flow	m³/h	7.0	8.6	14.3
Dim. a	mm	160	200	200
b	mm	120	160	160
c	mm	57	55	55
d	mm	100	150	150
e	mm	550	1000	1000
f	mm	800	1170	1170
g	mm	120	160	160

Key to symbols  
HR Heating return  
HV Heating flow  
Ⓐ Corrugated stainless steel pipes



## 3.5 Installation accessories Heating circuit



### Accessories for the installation of Vitodens 200 and 300 to 35 kW

For further details of accessories, see datasheet and price sheet

#### Installation directly on a wall

##### Gas fired condensing combination boiler

###### Installation on finished walls

###### Installation template

comprising:

- Fixing components
- Fittings
- Straight through gas valve R 1/2" with thermal safety shut-off valve



##### Gas fired condensing boiler

###### Installation on finished walls

###### Installation template

comprising:

- Fixing components
- Fittings
- Straight through gas valve R 1/2" with thermal safety shut-off valve

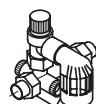


##### Other accessories

###### Safety equipment to DIN 1988

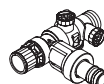
comprising:

- Shut-off valve
- Non-return valve and test nipple
- Pressure gauge connector
- Diaphragm safety valve
  - 10 bar
  - DN 15, to 200 litres capacity
  - DN 20, for 300 litres capacity



or for Vitocell-W 100 installed below the boiler

- 10 bar, DN 15, right angle version



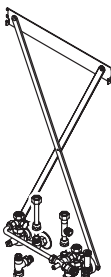
3

###### Installation on unfinished walls

###### Installation template

comprising:

- Fixing components
- Fittings
- Angle gas valve R 1/2" with thermal safety shut-off valve

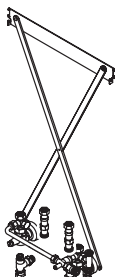


###### Installation on unfinished walls

###### Installation template

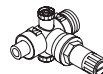
comprising:

- Fixing components
- Fittings
- Angle gas valve R 1/2" with thermal safety shut-off valve



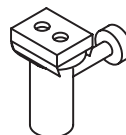
###### Pressure reducer (DN 15)

to match the safety assembly as corner version



###### Drain outlet kit

Drain outlet with siphon, bezel, hose clips and drain manifold (tee) only in conjunction with DHW cylinders installed below the boiler (for installation on unfinished walls).



###### Drain outlet kit

Drain outlet with siphon, bezel and drain pipe safety valve, **without** hose clip in conjunction with

- DHW cylinder installed adjacent to a wall mounted boiler
- Freestanding DHW cylinder installed adjacent to the boiler
- DHW cylinder installed below the boiler (when fitted on finished walls)



## 3.5 Installation accessories Heating circuit



### Installation with mounting frame

Mounting frame with

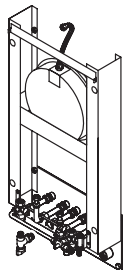
- Diaphragm expansion vessel, nominal capacity 11 litres
- Fittings for the primary and secondary water sides
- Boiler fill and drain cock
- Angle gas valve R 1/2" with integral thermal safety shut-off valve
- Flexible connection pipe for diaphragm expansion vessel

All fittings are located under the boiler covers.

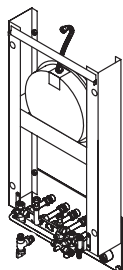
### Mounting frame

(order separately)

- for gas fired combination boiler
  - for installation on finished walls
  - with compression fittings
  - with solder fittings
- for installation on unfinished walls



- for gas fired boiler
  - for installation on finished walls
  - with compression fittings
  - with solder fittings
- for installation on unfinished walls



### Installation with self-supporting mounting frame

#### Self-supporting mounting frame

With fittings and angle gas valve G 3/4" with thermal safety shut-off valve

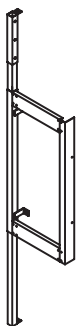
- for gas fired combination boiler
  - with compression fittings
  - with solder fittings

- for gas fired boiler
  - with compression fittings
  - with solder fittings



#### Self-supporting mounting frame for DHW cylinders

for DHW cylinder wall mounted adjacent to the boiler



#### Ceiling extension – self-supporting mounting frame (for self-supporting installation)

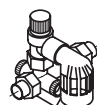


### Other accessories

#### Safety equipment to DIN 1988

comprising:

- Shut-off valve
- Non-return valve and test nipple
- Pressure gauge connector
- Diaphragm safety valve
  - 10 bar
  - DN 15, to 200 litres capacity
  - DN 20, for 300 litres capacity



or for Vitocell-W 100 installed below the boiler

- 10 bar, DN 15, right angle version



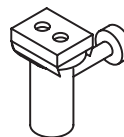
#### Pressure reducer (DN 15)

to match the safety assembly as corner version



#### Drain outlet kit

Drain outlet with siphon, bezel, hose clips and drain manifold (tee) only in conjunction with DHW cylinders installed below the boiler (for installation on unfinished walls).

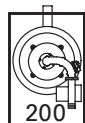


#### Drain outlet kit

Drain outlet with siphon, bezel and drain pipe safety valve, **without** hose clip in conjunction with

- DHW cylinder installed adjacent to a wall mounted boiler
- Freestanding DHW cylinder installed adjacent to the boiler
- DHW cylinder installed below the boiler (when fitted on finished walls)





### 3.5 Installation accessories DHW cylinder



#### Accessories for the installation of Vitodens 200 and 300 (up to 35 kW)

##### Connection between Vitodens and the DHW cylinder

##### Connection set for wall mounted DHW cylinder

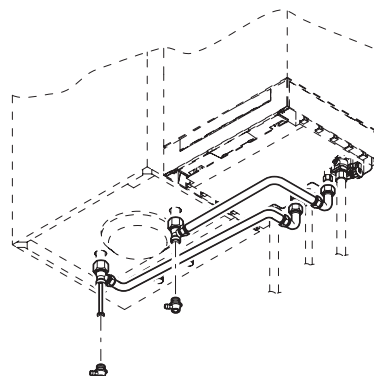
##### Vitocell-W 100

comprising:

- Cylinder temperature sensor (not shown)
- Heating water connection pipes
- Primary air vent valve

Installation on finished walls

DHW cylinder installed either on the l.h. or the r.h. side of Vitodens



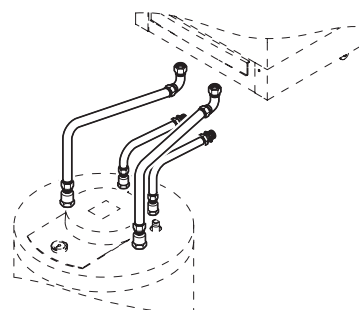
##### Connection set for DHW cylinder installed below the boiler

##### Vitocell-W 100 with connection pipes

comprising:

- Cylinder temperature sensor
- Heating water connection pipes
- Secondary side connections

Installation on finished and unfinished walls



##### Connection set for DHW cylinder installed adjacent to the boiler

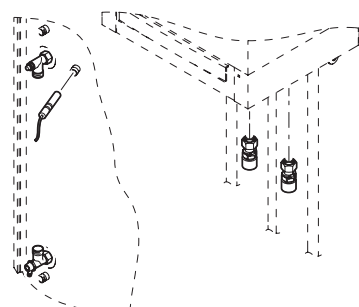
##### Vitocell-W 100 and 300

comprising:

- Cylinder temperature sensor
- Compression fittings

DHW cylinder installed either on the l.h. or the r.h. side of Vitodens

- Compression version
- Soldered version

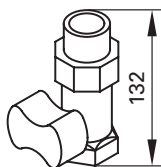




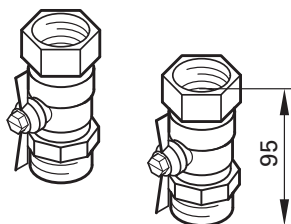


## Accessories for the installation of Vitodens 300 with 49 and 66 kW

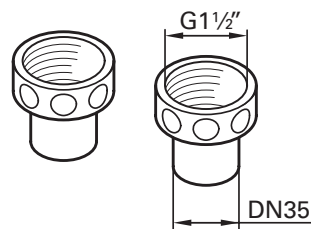
**Straight-through gas valve** R 3/4"  
with integral thermal safety shut-off valve



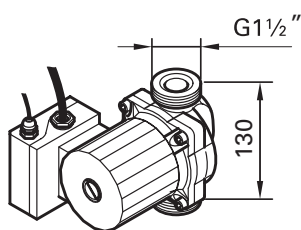
**Shut off valves**  
Set of ball shut-off valves (2 pieces)  
G 1 1/2"



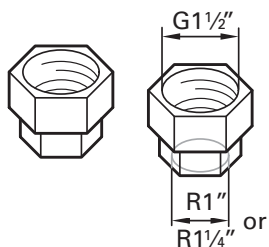
**Solder fittings** (1 set) G 1 1/2" - DN 35  
incl. gasket



**Heating circuit pump** (variable speed)



**Compression fittings** (1 set)  
incl. gasket  
■ G 1 1/2" - R 1"  
■ G 1 1/2" - R 1 1/4"





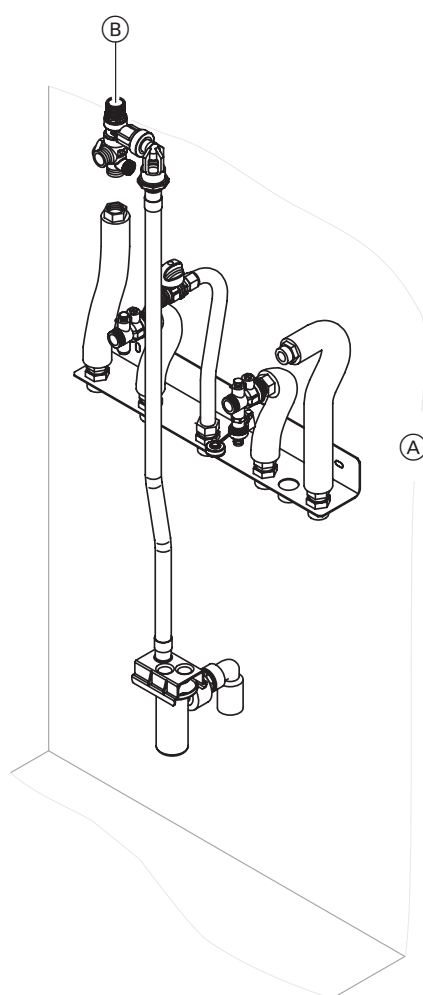
## 3.5 Installation accessories Heating circuit

### Installation accessories for Vitodens 333

#### Connection set complete

for gas, primary and secondary connection of on-site lines from below comprising:

- 2 ball shut-off valves (G ¾") with air vent valve, heating water
- Gas tap R ½" with integral thermal safety shut-off valve
- Filling tap
- Wall mounting bracket
- flexible connection pipes, heating water and DHW plus gas
- Drain outlet kit with drain pipes from the safety valves



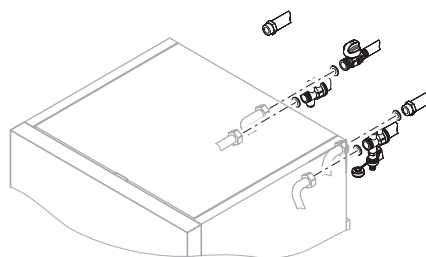
- Ⓐ Connection set  
Ⓑ Safety assembly to DIN 1988, DN 15, as separate accessory

#### Connection set

for on-site connection from below, top or side

comprising:

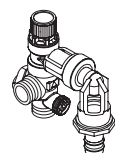
- 2 shut-off ball valves (G ¾") with air vent valve, heating water
- Gas tap R ½" with integral thermal safety shut-off valve
- Filling tap



#### Safety equipment to DIN 1988

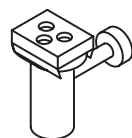
DN 15, right angle version comprising:

- Shut-off valve
- Non-return valve and test nipple
- Pressure gauge connector
- Diaphragm safety valve – 10 bar



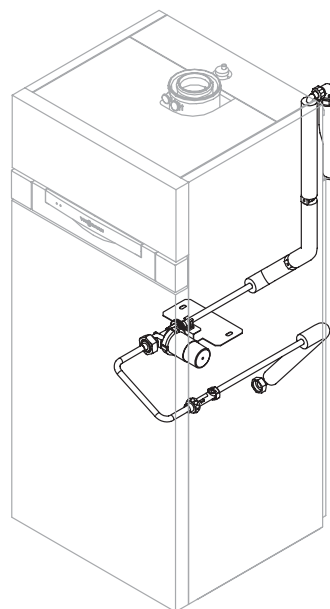
#### Drain outlet kit

Drain outlet kit with siphon and bezel for the connection of the safety valve and condensate drain lines.



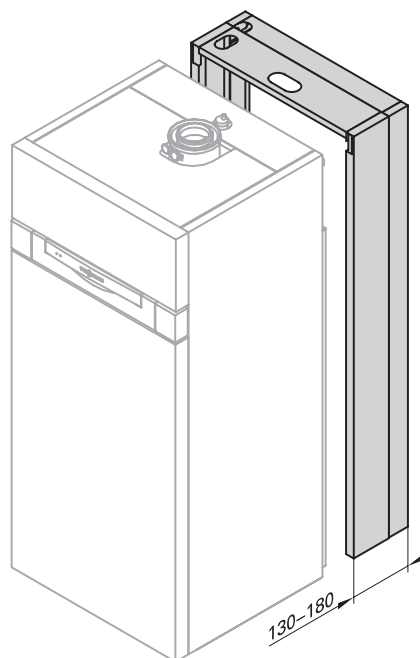
**DHW circulation pump connection set**  
for integration into Vitodens 333, comprising:

- Circulation pump
- Flow regulating valve
- Pipe assembly including thermal insulation
- External extension H2 for connection to Vitotronic.



#### Wall terminal bezels

Decorative bezels for water connections.



## 4.1 Flue gas systems

The following requirements regarding design and installation apply to flue gas systems for gas fired condensing combustion equipment:

**Prior to work on the flue gas system, your heating contractor should confer with the responsible flue gas inspector [where applicable].**

It is recommended that the participation of the flue gas inspector is recorded on the appropriate form, available from the local planning office (where applicable). Gas fired combustion equipment must be connected to the chimney stack on the same floor as where they are installed (no transition through separating ceilings). Here, a differentiation is required as to whether the condensing boiler should be installed in the **living area** (where people congregate) or in **non-living area** (boiler room).

An installation of Vitodens in the **living area** is feasible, subject to the flue pipe inside the living area being routed inside a protective pipe and being surrounded by ventilation air (balanced flue system, **balanced** flue operation).

As a special case, an installation inside the living area is also feasible with **open** flue operation, so long as a union with secondary ventilation (operation with room air connection) is provided up to the duct (see page 126).

### Structural unit

The aforementioned conditions are generally met when the flue gas system (accessory), which is jointly CE-certified, is used.

Viessmann balanced flue systems for **balanced** flue operation,

- vertical roof terminal,
  - external wall terminal,
  - horizontal roof terminal,
  - separate ventilation and flue gas pipes,
  - outside panel outlet as dual pipe design
- are tested together with Vitodens as **one structural unit** in accordance with DVGW and CE-designated.

Advantages of one structural unit:

- No calculated verification of flue pipe function to EN 13384 is required for individual cases
- According to the Landesbauordnung, some Federal States (e.g. Northrhine-Westphalia) do not require a leak test to be carried out during commissioning by the flue gas inspector
- For the future, a simplified visual inspection by the flue gas inspector on a bi-annual basis is envisaged
- No additional approval certificate by the flue pipe manufacturer required

In the **non-living area**, the flue pipe may also be routed inside the boiler room without secondary ventilation. However, the boiler room must provide an adequately sized ventilation aperture to the atmosphere (according to TRGI '86/96).

Rated output up to 50 kW:

150 cm<sup>2</sup> or 2 × 75 cm<sup>2</sup>

Rated output above 50 kW (e.g.

Vitodens 300, 66 kW, or multi-boiler system):

150 cm<sup>2</sup> and 2 cm<sup>2</sup> for each kW above 50 kW

The plain flue pipe must be type approved by the Deutschen Institut für Bautechnik (DIBt) [Germany] (**open** flue operation).

The flue pipe available as an accessory has been approved with certificate Z-7.2-1104 and Z-7.2-3028.

### System certification

System certification to DVGW-VP 113 and EC Gas Equipment Directive 90/396/EEC in conjunction with PP's flue pipes offered by Skoberne

Vitodens 200	CE-0085 BO 0338
Vitodens 300	CE-0085 BO 0342
Vitodens 300 (multi-boiler system)	ÖVGW G 2.737
Vitodens 333	CE-0085 BO 0338

## 4.1 Flue gas systems

### Balanced flue operation

Because of their sealed combustion chamber, Vitodens gas fired condensing boilers may be used for **balanced** flue operation. They belong to the device type C<sub>13x</sub>, C<sub>33x</sub>, C<sub>43x</sub>, C<sub>53x</sub> or C<sub>63x</sub> according to TRGI '86/96.

A **common approval** for Vitodens and balanced flue systems applies to this type of device.

In some Federal States, the leak test (overpressure test) by the flue gas inspector during commissioning as well as the verification of the DIBt General Building Approval, may be omitted for these types of construction. Every approved flue gas system can be used for type C<sub>63x</sub>. The fuel gas system has not been tested with boilers.

The dimensions stated on pages 106 to 117 must be maintained.

The combustion air supply and the flue gas are routed through one concentric coaxial pipe (balanced flue system). The combustion air is supplied through the annular gap between the external aluminium ventilation pipe and the flue pipe.

Flue gases are exhausted through the internal plastic pipe (PPs).

For flue gas and ventilation air systems tested together with the gas fired wall mounted boilers, some Federal States (e.g. Nordrhein-Westphalia) waive the requirement for a leak test (overpressure test) during commissioning by the flue gas inspector.

We recommend that your heating engineer carries out a simple leak test during the initial start-up of your system. For this it would be sufficient to check the CO<sub>2</sub> concentration in the combustion air at the annular gap in the balanced flue pipe. The flue pipe is deemed to be sound if the CO<sub>2</sub> concentration of the combustion air is a maximum of 0.2% or the O<sub>2</sub> concentration is a minimum of 20.6%.

If higher CO<sub>2</sub> or lower O<sub>2</sub> values are measured, check the flue gas system for leaks.

In conjunction with the concentric dual pipe (balanced flue system), the surface temperature of Vitodens or the balanced flue system will never exceed 85 °C. Therefore, clearances to other components according to TRGI do **not** need to be maintained.

For device types C<sub>63</sub> and C<sub>43x</sub> the DIBt-approved flue pipes from Viessmann or alternative DIBt-approved flue pipes of other makes may also be used.

When using aluminium flue pipes, we recommend the use of a condensate trap.

The balanced flue system is DIBt-approved [Germany] with certificates Z-7.2-1104 and Z-7.2-3028 (see page 101). The boiler casing creates a system that is sealed against its surroundings. Any leaks caused by escaping flue gas are returned via the combustion air, therefore preventing flue gas from entering the installation location.

When installing Vitodens in a basement or on a lower floor, an existing chimney or duct of sufficient size may be used for routing the balanced flue pipe (type C<sub>43x</sub>). According to TRGI '86/96, flue pipes which pass through several floors, must be routed inside a duct with a fire resistance rating of at least 90 minutes and, for buildings of low height with at least 30 minutes.

The flue gas/combustion air is routed in a balanced flue pipe up to the chimney or duct. The flue pipe is routed inside the chimney or duct to above roof level.

Where no suitable duct is available, the flue pipe may be routed to the roof through a retro-fitted duct. This duct must have Building Regulations approval and provide fire resistance according to class F30 or F90.

## 4

### Open flue operation (type B<sub>23</sub> and B<sub>33</sub>)

Flue gas is routed through single wall plastic pipes (PPs).

The flue gas system is approved with certificates Z-7.2-1104 and Z-7.2-3028 (see page 101).

The combustion air supply is safeguarded via the annular gap between the flue pipe and the ventilation air connection of the flue outlet on Vitodens.

### Flue gas high limit safety cut-out

According to approval certificates Z-7.2-1104 and Z-7.2-3028, the plastic flue pipe (PPs) can be utilised up to flue gas temperatures of 120 °C (type B).

Measures inside the device ensure that the flue gas temperature of > 90 °C will not be exceeded. Therefore, a high limit safety cut-out is not required.

### Lightning protection

If a lightning protection system is installed, a metallic flue gas system should be included in the lightning protection scheme.

Approval certificates for the PPs flue gas systems for Vitodens

For flexible flue pipes

DEUTSCHES INSTITUT FÜR BAUTECHNIK

Anstalt des öffentlichen Rechts

10829 Berlin, 28. Januar 2003  
Kolonnenstraße 30 L  
Telefon: 030 78730-335  
Telefax: 030 78730-320  
GeschZ.: IV 52-1.7.2-238/02

Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer:

Z-7.2-3028

Antragsteller:

Willi Skoberne  
Albert-Einstein-Ring 20  
64342 Seeheim-Jugenheim

Zulassungsgegenstand: Rohre und Formstücke aus Polypropylen einschließlich Dichtungen für Abgasleitungen

Geltungsdauer bis:

14. März 2006

Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen. Diese allgemeine bauaufsichtliche Zulassung umfasst acht Seiten und 30 Anlagen.



Diese allgemeine bauaufsichtliche Zulassung ersetzt die allgemeine bauaufsichtliche Zulassung vom 15. März 1995, geändert durch Bescheld vom 26. August 1996, ergänzt durch Bescheide vom 18. März 1998 und 5. März 1999.

28954.01

Diese allgemeine bauaufsichtliche Zulassung ersetzt die allgemeine bauaufsichtliche Zulassung Nr. Z-7.2-1454 vom 6. Februar 1998.



Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen. Diese allgemeine bauaufsichtliche Zulassung umfasst sieben Seiten und 17 Anlagen.

Zulassungsgegenstand: System-Abgasleitung  
T120 P1 O W 2 TR00 L00 C50

Geltungsdauer bis:

5. Februar 2008

5822 310 GB

For rigid flue pipes

Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer:

Z-7.2-1104

Antragsteller:

ALPHACAN Omniplast GmbH  
35627 Ehringshausen

Willi Skoberne  
Albert-Einstein-Ring 20  
64342 Seeheim-Jugenheim

Cox Geelen b.v.  
Emmastraat 92  
6245 HZ Eijsden  
NIEDERLANDE

Zulassungsgegenstand: Rohre und Formstücke aus Polypropylen einschließlich Dichtungen für Abgasleitungen

Geltungsdauer bis:

14. März 2006

Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen. Diese allgemeine bauaufsichtliche Zulassung umfasst acht Seiten und 30 Anlagen.



Diese allgemeine bauaufsichtliche Zulassung ersetzt die allgemeine bauaufsichtliche Zulassung vom 15. März 1995, geändert durch Bescheld vom 26. August 1996, ergänzt durch Bescheide vom 18. März 1998 und 5. März 1999.

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Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen. Diese allgemeine bauaufsichtliche Zulassung umfasst sieben Seiten und 17 Anlagen.

Zulassungsgegenstand: System-Abgasleitung  
T120 P1 O W 2 TR00 L00 C50

Geltungsdauer bis:

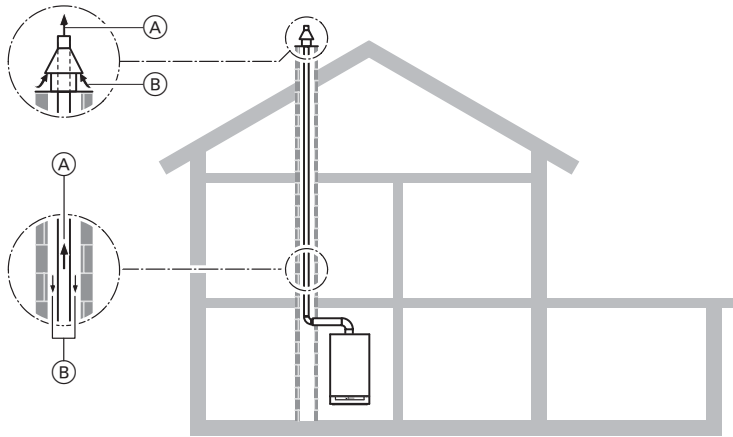
5. Februar 2008

## 4.1 Flue gas systems

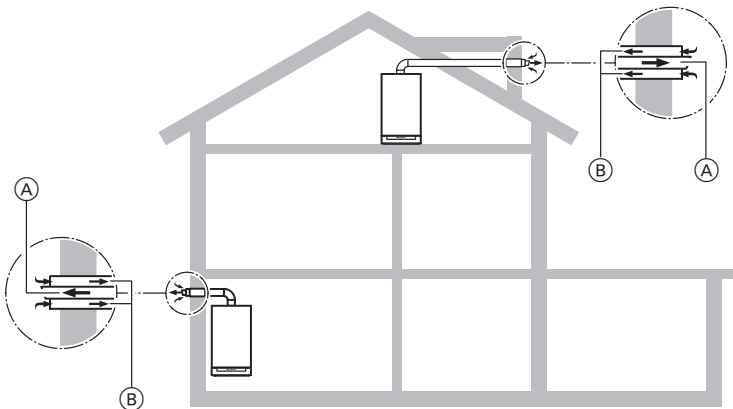
### Flue gas system installation options for balanced flue operation

(no separate ventilation and exhaust air apertures required)

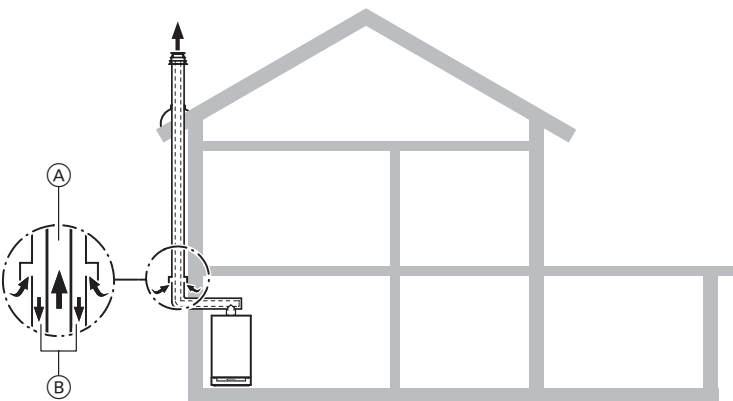
Inside the living area with one or several full floors above



- (A) Flue gas
- (B) Ventilation air



- (A) Flue gas
- (B) Ventilation air



- (A) Flue gas
- (B) Ventilation air

#### Routing through a duct (type C<sub>63x</sub>, according to TRGI '86/96)

The heat generator obtains combustion air from the atmosphere through the annular gap inside the duct (chimney) and exhausts the flue gas via the flue pipe above roof level. For condensing boilers > 50 kW, the installation location **must** be ventilated even for **balanced** flue operation. The duct is not part of the standard delivery. For a detailed description, see pages 107 to 111.

#### Retrofitted ducts

Installation in a subsequently constructed duct with Building Regulation approval comprising individual elements (e.g. as supplied by SIMO or Skoberne) or mineral profiles (e.g. as supplied by Promatect).

For a detailed description of ducts, see page 119.

#### Outside panel connection

##### Only with existing system protection (type C<sub>13x</sub>, according to TRGI '86/96)

(permissible up to a rated output of 11 kW central heating or 28 kW DHW heating) According to the LandesFeuVo, issue 1999 [Germany], connection via an outside wall is only permissible in individual cases where another flue gas outlet is not appropriate for technical or economical reasons.

The heat generator obtains combustion air from the atmosphere via a concentric dual pipe mounted to the wall and exhausts flue gas via the outside panel to atmosphere. For a detailed description, see page 114.

#### Horizontal roof terminal

##### (type C<sub>13x</sub>, according to TRGI '86/96)

(no limitation of the rated output)

The heat generator obtains combustion air from the atmosphere at the roof dormer via a concentric dual pipe and exhausts flue gas at the dormer to atmosphere.

#### External wall ducting

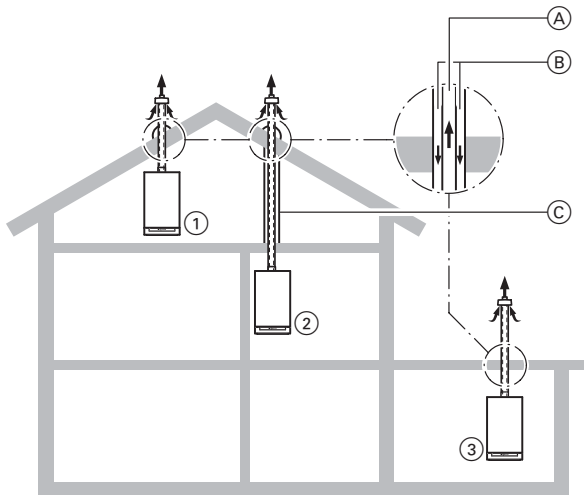
##### (type C<sub>53x</sub>, according to TRGI '86/96)

The heat generator obtains combustion air from the atmosphere at the outside terminal via a horizontal, concentric coaxial pipe and exhausts flue gas via the roof to the atmosphere.

In its vertical part, the outside pipe of the concentric coaxial pipe acts as thermal insulation because of its static layer of air. The combustion air is drawn in via the balanced flue air inlet terminal.

For a detailed description, see page 117.

Inside the living area immediately underneath the roof or only in attics above (rated output  $\leq 50$  kW)



- (A) Flue gas  
(B) Ventilation air

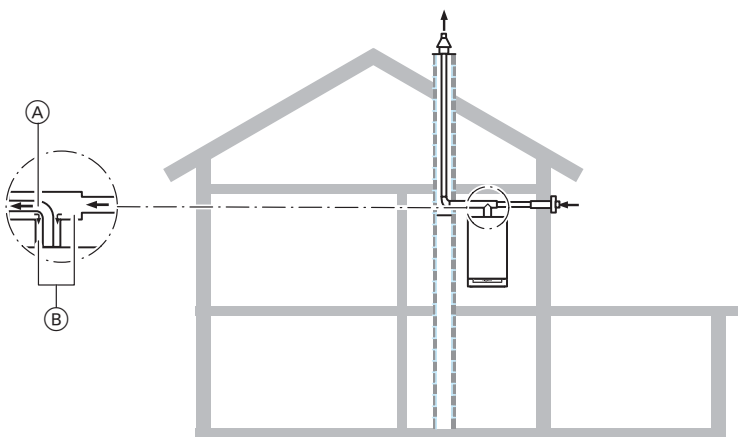
- (C) Pipe to protect against mechanical damage

**Vertical outlet, if no duct is available (type C<sub>33x</sub>, according to TRGI '86/96)**  
(various options)

- ① Direct, vertical roof terminal through a pitched roof
- ② Indirect, vertical roof terminal through a pitched roof with protective pipe inside the attic space (not built as a room) or fire protection brickwork (attic constructed as a room)
- ③ Direct, vertical roof terminal through a flat roof

The heat generator obtains combustion air from the atmosphere and exhausts flue gas to atmosphere via a concentric dual pipe through the roof.  
For a detailed description, see page 113.

Inside the living area with fresh air ventilation, through the outside wall (rated output  $\leq 50$  kW)



- (A) Flue gas  
(B) Ventilation air

**Separate ventilation and flue gas pipes (type C<sub>53x</sub>, according to TRGI '86/96)**

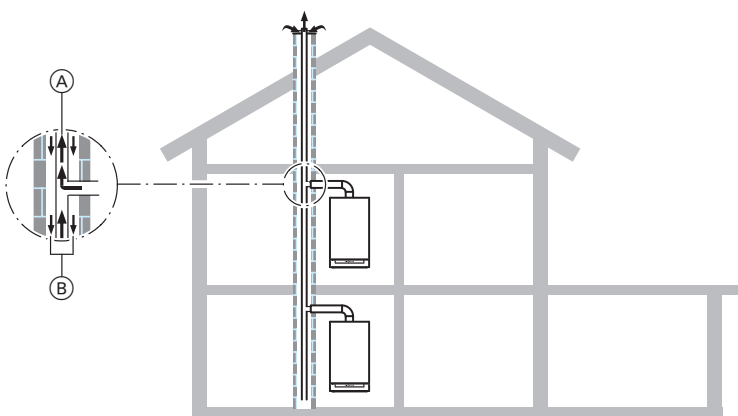
The heat generator obtains combustion air from the atmosphere via a separate ventilation pipe, and exhausts flue gas to atmosphere via a duct leading through the roof.

The union to the chimney is designed as coaxial pipe (living area).

This balanced flue system is used if the existing chimney is unsuitable for routing combustion air because of its dimensions or characteristics (deposits).

For a detailed description, see page 115.

Several Vitodens in the living area or in occupied rooms (living area – rated output  $\leq 50$  kW)



- (A) Flue gas  
(B) Ventilation air

**Installation on different floors (type C<sub>43x</sub>, according to TRGI '86/96)**

LAS chimney required (negative pressure)

Several boilers draw combustion air from the atmosphere via the annular gap of the LAS chimney and route flue gas to atmosphere through a moisture-resistant internal pipe via the roof.

For a detailed description, see page 121.

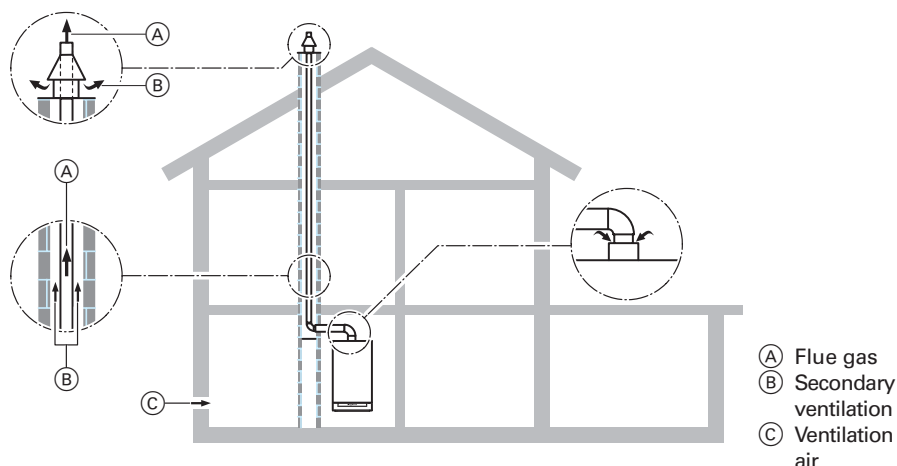


## 4.1 Flue gas systems

### Flue gas system installation options for open flue operation

(separate ventilation aperture with a cross-section of 150 cm<sup>2</sup> or 2 × 75 cm<sup>2</sup> required)

Inside the installation location (non-living area) with one or several full floors above (compulsory for Vitodens 300 with 66 kW)



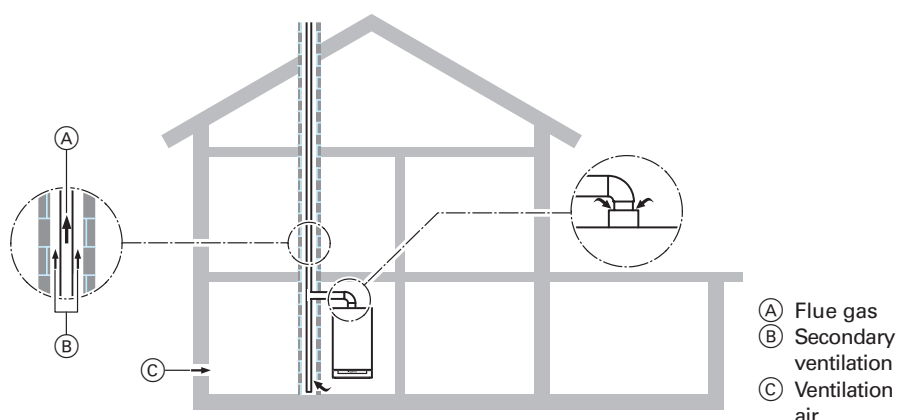
#### Routing through a duct

(type B<sub>23</sub>, according to TRGI '86/96)

The boiler draws combustion air from the installation room, and expels flue gas through the flue pipe via the roof (balanced flow).

For a detailed description, see page 122.

For condensing boilers > 50 kW the installation location **must** be ventilated even for **balanced** flue operation.



#### Connection to a moisture resistant chimney (MR chimney)

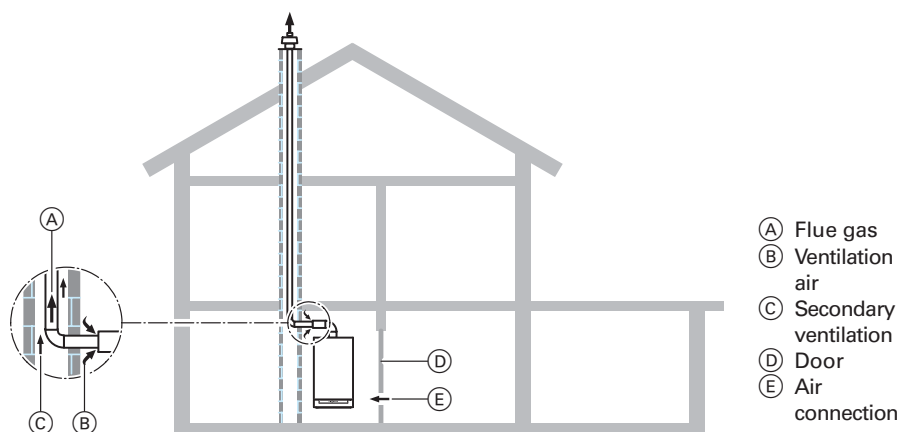
(type B<sub>23</sub>, according to TRGI '86/96)

The boiler draws combustion air from the installation room and routes flue gas through the moisture resistant chimney via the roof.

For a detailed description, see page 127.

4

Special designs: open flue operation and installation in the living area with combustion air supply via interconnected rooms (rated output ≤ 35 kW)



#### Routing through a duct

or

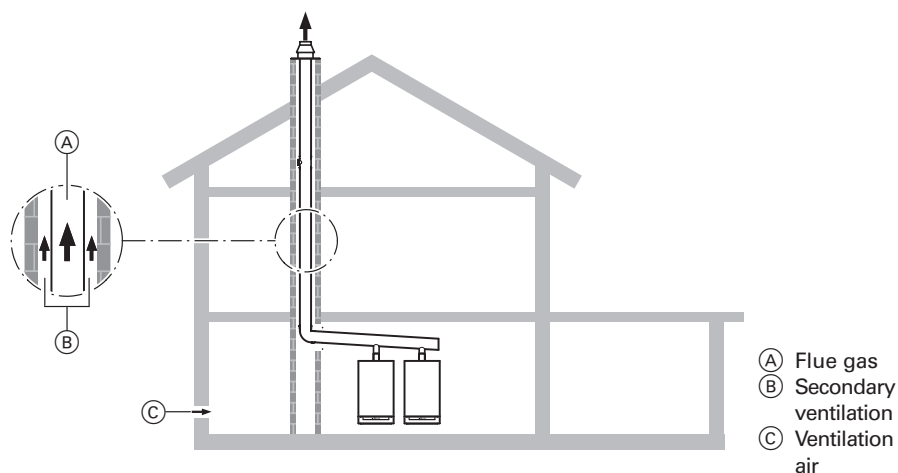
connection to a moisture resistant chimney (type B<sub>33</sub>, according to TRGI '86/96)

The heat generator draws combustion air from the installation location via a coaxial pipe with ventilation apertures upstream of the duct inlet, and routes the flue gas either via a flue pipe or via a moisture resistant chimney through the roof (combustion air in connection with ambient air according to TRGI).

For a detailed description, see page 126.



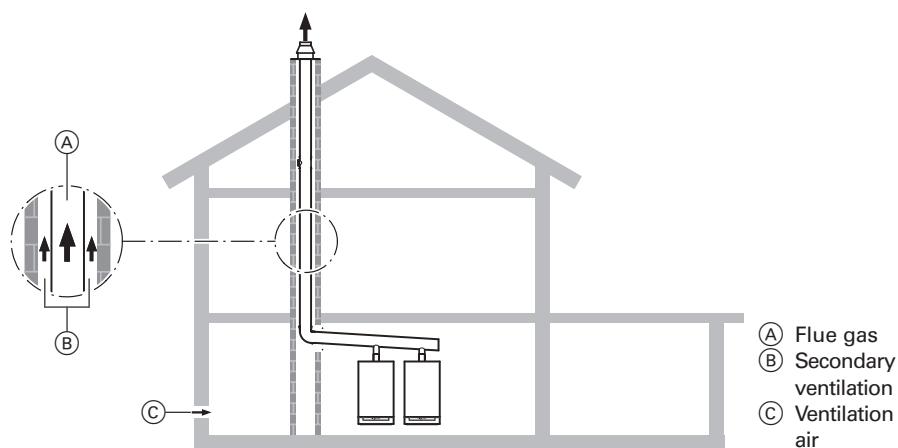
### Flue gas routing for several Vitodens 300 (from 49 kW) – overpressure



#### Type B<sub>23</sub>, according to TRGI '86/96

Several heat generators inside the same room draw combustion air from the atmosphere via ventilation apertures, and route the flue gas through a common flue pipe to the atmosphere via the roof. For a detailed description, see page 128.

### Flue gas routing for several Vitodens 300 (from 49 kW) – underpressure



#### Type B<sub>23</sub>, according to TRGI '86/96

Several heat generators inside the same room draw combustion air from the atmosphere via ventilation apertures, and route the flue gas through a common flue pipe to the atmosphere via the roof. For a detailed description, see page 132.

## 4.2 Design and sizing information for flue pipe connections

### 4.2 Design and sizing information for flue pipe connections

#### Balanced flue system (BF) made from plastic (PPs) for routing through a duct – balanced flue operation

(type C<sub>63x</sub>, according to TRGI '86/96)

For **balanced flue** operation, a coaxial flue pipe (internal pipe for flue gas, external pipe for combustion air) is required as a union between Vitodens and duct.

- Vitodens 12 kW:  
Int. dia. flue pipe             $\varnothing$  60 mm  
Int. dia. ventilation pipe    $\varnothing$  100 mm
- Vitodens 26 to 35 kW:  
Int. dia. flue pipe             $\varnothing$  80 mm  
Int. dia. ventilation pipe    $\varnothing$  125 mm
- Vitodens 300 from 49 kW:  
Int. dia. flue pipe             $\varnothing$  100 mm  
Int. dia. ventilation pipe    $\varnothing$  150 mm

The union is fitted to the flue outlet and must provide an inspection port.

#### Note

Gas fired boilers with a total rated output greater than 50 kW may only be provided with combustion air apertures leading to atmosphere, see page 122.

For routing through longitudinally ventilated ducts or channels which meet the requirements for domestic chimneys to DIN 18160-1 or provide a fire resistance of 90 minutes (F90/L90) or a fire resistance of 30 minutes (F30/L30) for low buildings (max. 2 floors).

Prior to installation, the flue gas inspector should check whether the duct to be used is suitable and approved for this purpose. Ducts which were previously connected to an oil fired or solid fuel boiler must be thoroughly cleaned by the chimney sweep. Loose deposits (in particular sulphur and soot deposits) must not remain on the inside of the chimney. If this is not possible, a separate ventilation supply (see page 115) may be used. Close off and seal any other connection apertures with appropriate materials. This does not apply to any cleaning or test ports, which must be provided with chimney cleaning covers with the appropriate test mark.

Check prior to the installation whether the duct runs straight from top to bottom or whether it may be offset (check with mirrors). If the chimney is offset, we recommend the installation of a flexible flue pipe (see page 110).

Inside the installation location, at least one inspection aperture for checking and cleaning as well as for checking the pressure (if required) must be provided in the flue gas system. If the flue pipe is inaccessible from the roof, a second inspection aperture must be provided in the attic behind the chimney cleaning hatch.

Provide an inspection aperture at the base of the duct to inspect the secondary ventilation. The condensate drainage from the flue pipe **to the boiler** must be ensured through an appropriate **gradient of at least 3°**.

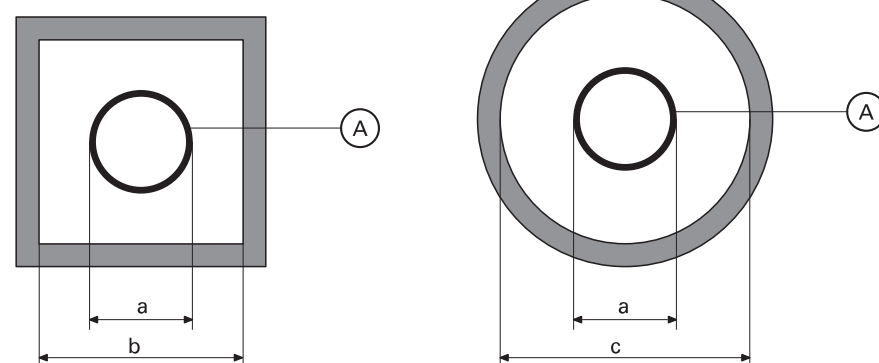
The flue gas system must be routed through the roof (roof protrusion according to the Landes-FeuVo) [Germany – check local regulations].

Alternative flue pipes which have Building Regulation approval according to DIBt [Germany] may be used, for example, if a larger pipe diameter is required because of greater flue pipe lengths. The function verification to EN 13384 should then be provided by the respective flue pipe manufacturer.

If flue pipes other than those offered as accessories (which are approved with Vitodens as one technical unit) are used, the flue gas system must be checked for leaks by the flue gas inspector prior to commissioning.

This may be carried out, in accordance with the approval certificate, by measuring the CO<sub>2</sub> or O<sub>2</sub> value inside the annular gap. If this test results in a CO<sub>2</sub> content above 0.2% or a O<sub>2</sub> content lower than 20.6%, check the flue gas system for leaks.

#### Minimum internal duct dimensions



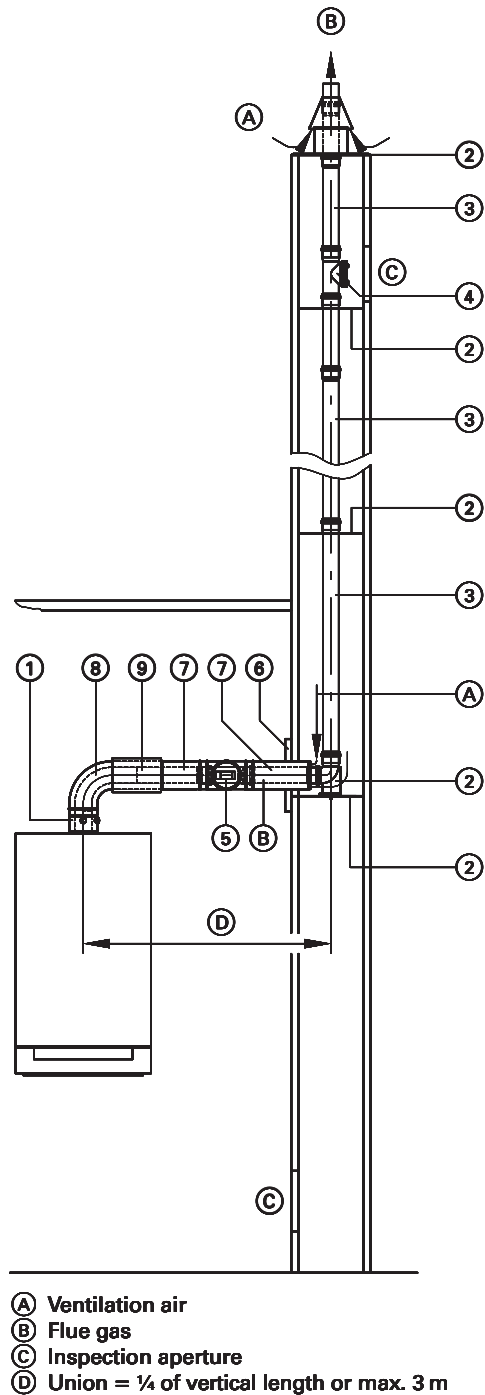
System size (A)	Outside diameter Coupling a $\varnothing$ mm	Min. internal duct dimension*1		
		b square mm	c rectangular (short side) mm	c round $\varnothing$ mm
60	73	113	113	133
80	94	135	135	155
80 (flexible, without unions)	84	125	125	145
80 (flexible, with unions)	100	140	140	160
100	128	170	170	190

#### \*1Note

According to the approval certificate, reduced clearances may also be selected, if this is enabled by the function verification to EN 13384 (not applicable to flexible flue pipes).

## 4.2 Design and sizing information for flue pipe connections

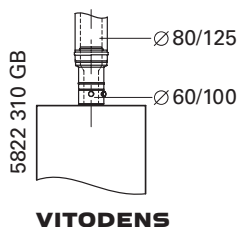
**Flue pipe, system size 60, 80 and 100 (components)**  
(type C<sub>63x</sub>, according to TRGI '86/96)



Rated output	kW	12	26-35	49-66
System size Ø mm				
① <b>Boiler adaptor</b> (part of the standard boiler delivery)	60	80	100	
② <b>Basic duct set</b> comprising: ■ Support bend ■ Support rail ■ Duct cover ■ Spacers (3 pieces, max. clearance 5 m)	60	80	100	
<b>Spacers</b> (3 pieces, max. clearance 5 m)	60	80	100	
③ <b>Flue pipe</b> 1.95 m long (2 pieces @ 1.95 m = 3.9 m) 2 m long (2 pieces @ 2 m = 4 m) 1.95 m long (1 piece) 2 m long (1 piece) 1 m long (1 piece) 0.5 m long (1 piece)	60 — 60 — 60 60	80 — 80 — 80 80	— 100 — 100 100 100	
<b>Flue pipe bend</b> (for corbelled chimneys) 30° (2 pieces) 15° (2 pieces)	60	80	100	
④ <b>Inspection piece, straight</b> (1 piece)	60	80	100	
⑤ <b>Balanced flue inspection piece, straight</b> (1 piece)	60	80	100	
⑥ <b>Balanced flue wall bezel</b>	60	80	100	
⑦ <b>Balanced flue pipe</b> 1 m long 0.5 m long	60	80	100	
⑧ <b>Balanced flue bend</b> 87° (1 piece) 45° (2 pieces)  or  <b>Balanced flue inspection tee piece</b> 87° (1 piece)	60	80	100	
⑨ <b>Balanced flue sliding coupling</b>	60	80	100	
<b>Fixing clamp, white</b> (1 piece)	60	80	100	
<b>Balanced flue adaptor</b> ■ Ø 80/125 mm to Ø 60/100 mm ■ Ø 60/100 mm to Ø 80/125 mm ■ Ø 80/125 mm to Ø 70/110 mm ■ Ø 70/110 mm to Ø 80/125 mm	60 60 — —	80 80 80 80	— — — —	

4

Balanced flue adaptor for system 80/125 to system 60/100 and 70/110



4.2 Design and sizing information for flue pipe connections

Max. total length of the flue pipe to the flue outlet

Vitodens 200

Rated output range	kW	8.8-26.0
Max. length – system size 80	m	20

Vitodens 300 and Vitodens 333

Rated output range	kW	4.5-12.0	6.6-26.0	8.7-35.0	12.2-49.0	16.6-66.0
Max. length – system size 60	m	15	—	—	—	—
– system size 80	m	—	20	15	—	—
– system size 100	m	—	—	—	20	15

Allowed for: 2 bends of 87°  
(incl. support bends)  
or 3 bends of 45°  
0.5 m length of union Ⓢ and an internal  
duct dimension of

- 120 × 120 mm at system size 60
- 150 × 150 mm at system size 80
- 170 × 170 mm at system size 100.

For a different number of bends, deduct  
from/add to the given max. length 1 m for  
87° bends, 0.5 m for 45° bends or 2 m for  
inspection tees.  
For a different length of union Ⓢ, deduct  
or add twice the difference.

Example:  
Vitodens 300, 6.6-26.0 kW, with 3 bends  
87° and 2 m length of union Ⓢ:  
Deduct 1 m for the bend and 3 m for the  
union from the max. flue pipe length of  
20 m.  
Consequently, the max. length would be  
16 m.

## 4.2 Design and sizing information for flue pipe connections

### Vitodens in conjunction with solid fuel boilers

#### Routing the flue pipe in a twin duct

According to the recommendation of the Federal Association of chimney sweeps (ZIV bulletin no. 1.3.02 T) [Germany], it is possible to route the plastic flue pipe with the flue pipe of a solid fuel boiler in a twin duct chimney, if

- the annular gap required for secondary ventilation/combustion air supply is maintained (see page 106), and the solid fuel boiler flue provides a down-draught pipe with a super-elevation of  $2 \times D$ , but in any case a minimum of 400 mm.

or

- the flue pipe terminal is made of non-combustible material (e.g. aluminium), and the length inside the duct is approx. 300 mm and above the duct end approx.  $2 \times D$ -flue pipe.

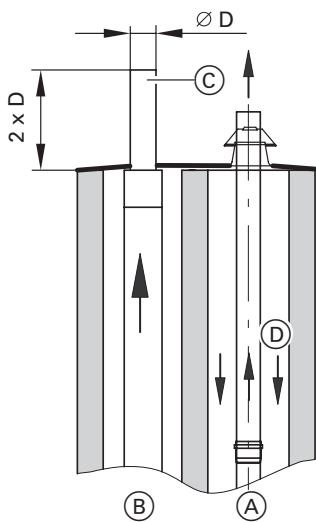
A corresponding terminal piece is available as accessory:

- System size 60  
part no. 7176 730
- System size 80  
part no. 7147 097

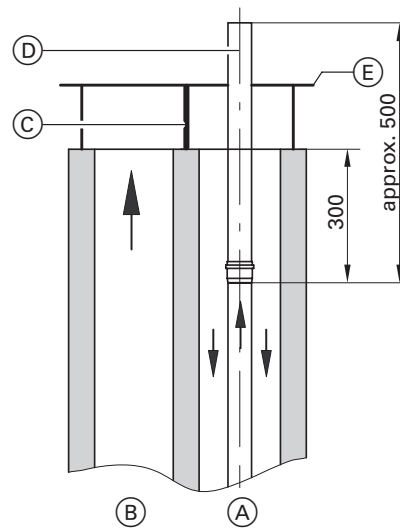
We recommend this version with segregation for open and balanced flue operations. Never reduce the terminal piece.

or

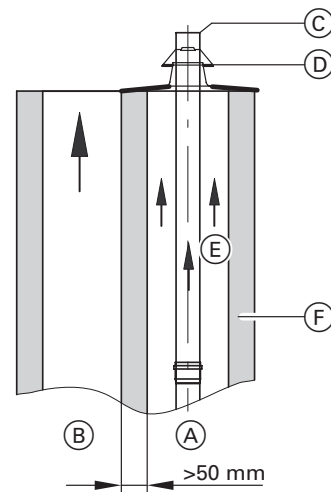
- the thickness of the tabs of the full-wall breeze blocks is at least 50 mm (see diagram). Since flue gas from the solid fuel boiler can be drawn in, we can only recommend open flue operation for this version.



- (A) Vitodens flue pipe
- (B) Flue pipe for solid fuel boilers
- (C) Down-draught pipe
- (D) Ventilation/secondary air



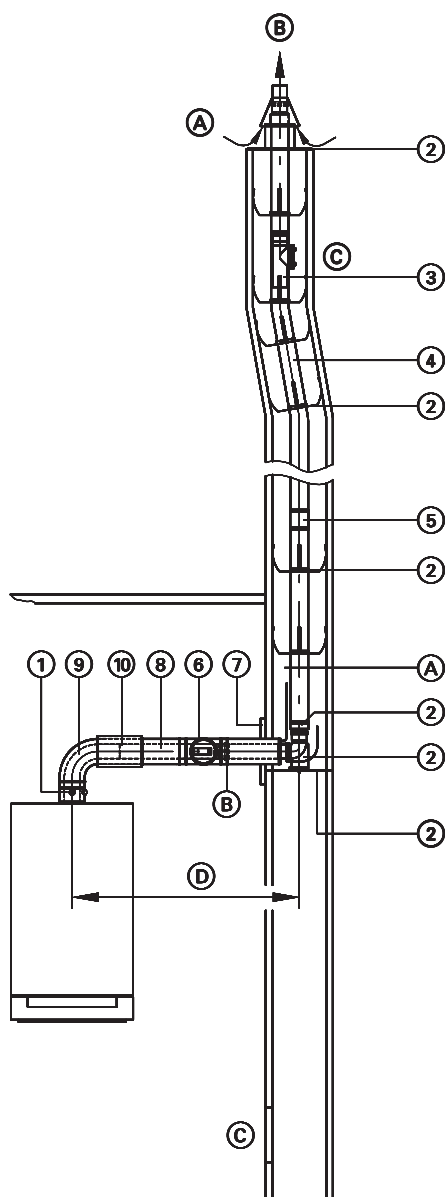
- (A) Vitodens flue pipe
- (B) Chimney for solid fuel boilers
- (C) Separation made from non-combustible material
- (D) Terminal piece made from non-combustible material
- (E) Duct cover (on site)



- (A) Vitodens flue pipe
- (B) Chimney for solid fuel boilers
- (C) End piece of the plastic flue pipe
- (D) Duct cover
- (E) Ventilation/secondary air
- (F) Full-wall breeze block chimney with a tab thickness of  $> 50$  mm

## 4.2 Design and sizing information for flue pipe connections

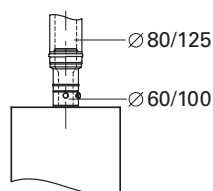
**Flue pipe, flexible, system size 60 and 80 (components) for Vitodens up to 35 kW**  
(type C<sub>63x</sub>, according to TRGI '86/96)



- (A)** Ventilation air  
**(B)** Flue gas  
**(C)** Inspection aperture  
**(D)** Union

Rated output	kW	System size	
		Ø mm	
① <b>Boiler adaptor</b> (part of the standard boiler delivery)		60	80
② <b>Basic duct set</b> comprising: ■ Support bend ■ Support rail ■ Duct cover ■ Spacers (5 pieces, max. clearance 2 m)		—	80
<b>Spacers</b> (5 pieces, max. clearance 2 m)		—	80
③ <b>Inspection piece, straight</b> for installation into the flexible flue pipe		—	80
④ <b>Flue pipe, flexible, on a roll</b> 8, 12.5 or 25 m		—	80
⑤ <b>Union</b> for connecting residual lengths of the flexible flue pipe		—	80
<b>Pipe lowering attachment</b> with 20 m rope		—	80
⑥ <b>Balanced flue inspection piece, straight</b> (1 piece)		60	80
⑦ <b>Balanced flue wall bezel</b>		60	80
⑦ <b>Balanced flue pipe</b> 1 m long 0.5 m long		60	80
⑧ <b>Balanced flue bend</b> 87° (1 piece) 45° (2 pieces)		60	80
or			
<b>Balanced flue inspection tee piece</b> 87° (1 piece)		60	80
⑨ <b>Balanced flue sliding coupling</b>		60	80
<b>Fixing clamp, white</b> (1 piece)		60	80
<b>Balanced flue adaptor</b> ■ Ø 80/125 mm to Ø 60/100 mm ■ Ø 60/100 mm to Ø 80/125 mm ■ Ø 80/125 mm to Ø 70/110 mm ■ Ø 70/110 mm to Ø 80/125 mm		60 60 — —	80 80 80 80

Balanced flue adaptor for system 80/125 to system 60/100 and 70/110



## 4.2 Design and sizing information for flue pipe connections

Max. total length of the flue pipe up to the flue outlet with flexible flue pipe

### Vitodens 200

Rated output range	kW	8.8-26.0
Max. length	m	15

### Vitodens 300 up to 35 kW and Vitodens 333

Rated output range	kW	4.5-12.0	6.6-26.0	8.7-35.0
Max. length – system size 60	m	10	—	—
– system size 80	m	—	15	10

Allowed for: 2 bends of 87°  
(incl. support bends)  
or 3 bends of 45°,  
0.5 m length of union (D) and an internal  
duct dimension of 150 × 150 mm.

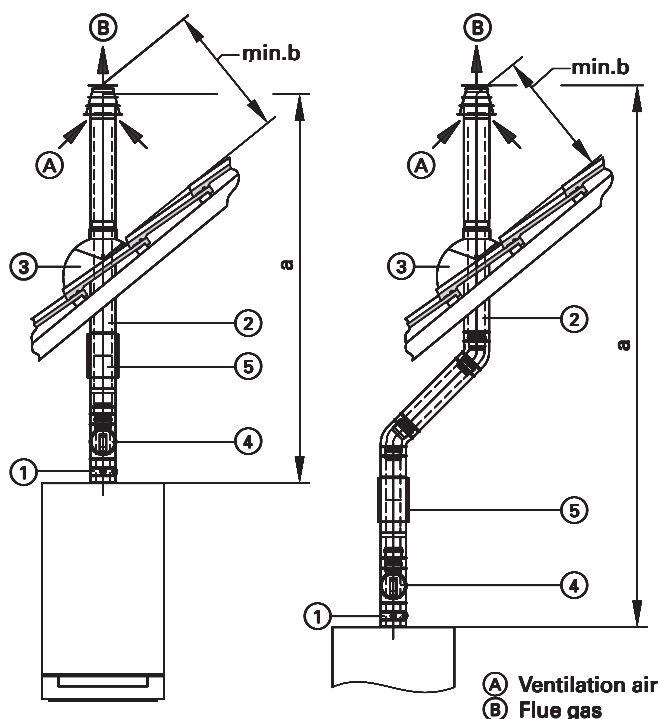
For a different number of bends, deduct  
from/add to the given max. length 1 m for  
87° bends or 0.5 m for 45° bends  
or 2 m for inspection tees.  
For a different length of union (D), deduct  
or add twice the difference.

Example:  
Vitodens 300, 6.6-26.0 kW, with 3 bends 87°  
and 2 m length of union (D):  
Deduct 1 m for the bend and 3 m for  
the union from the max. flue pipe  
length of 15 m.  
Consequently, the max. length would  
be 11 m.





## 4.2 Design and sizing information for flue pipe connections

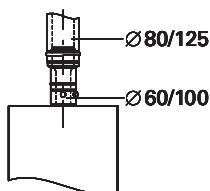


### Note

Observe the applicable local Combustion Order. Particularly Bavaria lays down detailed requirements for vertical roof terminals.

If the length of 400 mm above the roof line and vertical to the roof surface is insufficient because of specific requirements, separate extensions are available (see table to left). Approval with the flue gas system is guaranteed.

Balanced flue adaptor for system 80/125 to system 60/100 and 70/110



Rated output	kW	12	26-35	49-66
System size Ø mm				
① <b>Boiler adaptor</b> (part of the standard boiler delivery)	60	80	100	
② <b>Balanced flue roof terminal</b> with fixing clamps and reducer Ø 125/110 (only for system size Ø 80 mm) Colour black or roof tile red	60	80	100	
③ <b>Universal roof tile</b> Colour black or roof tile red	60	80	100	
or <b>Flat roof collar</b>	60	80	100	
or <b>Pipe outlet for Klöber roof tiles</b> Colour black or roof tile red (provide the appropriate Klöber roof tile on site when selecting a roof terminal to match the roof cover)	60	80	—	
④ <b>Balanced flue inspection piece, straight (1 piece)</b>	60	80	100	
⑤ <b>Balanced flue sliding coupling</b>	60	80	100	
<b>Balanced flue bend</b> 87° (1 piece) 45° (2 pieces)	60	80	100	
<b>Balanced flue pipe</b> 1 m long 0.5 m long	60	80	100	
<b>Fixing clamp, white (1 piece)</b>	60	80	100	
<b>External extension with clamp (on-site ties)</b> Colour black 0.5 m long 1 m long Colour roof tile red 0.5 m long 1 m long	Part no.			
	7176 741	7176 742	7147 626	—
	7176 743	7176 744	7147 627	—
<b>Balanced flue adaptor</b> ■ Ø 80/125 mm to Ø 60/100 mm ■ Ø 60/100 mm to Ø 80/125 mm ■ Ø 80/125 mm to Ø 70/110 mm ■ Ø 70/110 mm to Ø 80/125 mm	60 60 — —	80 80 80 80	— — — —	

4

### Max. total length of the flue pipe

#### Vitodens 200

Rated output range	kW	8.8-26.0
a (max. length)	m	10
b (min.)	mm	400

#### Vitodens 300 and Vitodens 333

Rated output range	kW	4.5-12.0	6.6-26.0	8.7-35.0	12.2-49.0	16.6-66.0
a (max. length) – system size 60	m	10	—	—	—	—
– system size 80	m	—	10	8	—	—
– system size 100	m	—	—	—	10	6
b (min.)	mm	400	400	400	400	1000

5822 310 GB

## 4.2 Design and sizing information for flue pipe connections

### Plastic (PPs) balanced flue system for external wall terminal (type C<sub>13x</sub>, according to TRGI '86/96)

#### Note

The external wall terminal is only permissible with existing system protection, if another flue gas route is inappropriate on technical or economical grounds.

According to TRGI '86/96, item 5.6.1.1, the external wall terminal is only permissible for boilers with rated output up to **11 kW** (central heating) or 28 kW (DHW heating). The conversion to 11 kW central heating should be documented by the heating engineer carrying out the conversion on an additional type plate.

It was verified as part of the CE approval test that nowhere on Vitodens or the balanced flue system surface will temperatures higher than 85 °C occur.

#### Observe the structural notes according to TRGI '86/96, item 5.6.4.6, in particular the arrangement/position of the wall outlet.

- Vitodens 12 kW:
  - Int. dia. flue pipe                    Ø 60 mm
  - Int. dia. ventilation pipe        Ø 100 mm
- Vitodens 26 to 35 kW:
  - Int. dia. flue pipe                    Ø 80 mm
  - Int. dia. ventilation pipe        Ø 125 mm

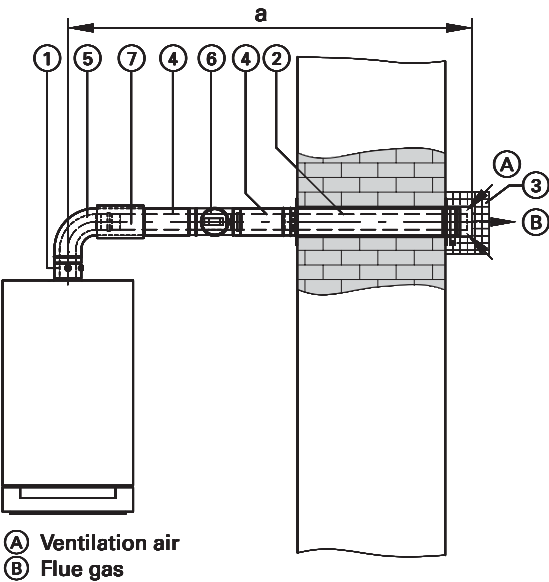
- Max. number of bends
- 87°:    2 pieces
  - or
  - 45°:    3 pieces

For a different number of bends, deduct from/add to the given max. extended length 1 m for 87° bends or 0.5 m for 45° bends.

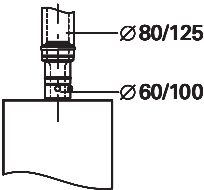
Install an inspection aperture for checking and cleaning the flue pipe.

The outside wall terminal has been tested and CE-designated as a concentric balanced flue system and as one technical unit with the Vitodens condensing boiler.  
A function verification according to EN 13384 is **not** required.

4



Balanced flue adaptor for system 80/125 to system 60/100 and 70/110



	Dim. a (m)
Vitodens 200	10
Vitodens 300	10

Rated output	kW	
	12	26-35
	System size Ø mm	
① Boiler adaptor (part of the standard boiler delivery)	60	80
② Balanced flue wall terminal (incl. wall bezel)	60	80
③ Guard grille required (available upon request), if the combustion air and flue pipe aperture lie at a height of up to 2 m above ground level in areas of public or private traffic.	60	80
④ Balanced flue pipe 1 m long 0.5 m long	60	80
⑤ Balanced flue bend 87° (1 piece) 45° (2 pieces)  or  Balanced flue inspection tee piece 87° (1 piece)	60	80
⑥ Balanced flue inspection piece, straight (1 piece)	60	80
⑦ Balanced flue sliding coupling	60	80
Fixing clamp, white (1 piece)	60	80
Balanced flue adaptor		
■ Ø 80/125 mm to Ø 60/100 mm	60	80
■ Ø 60/100 mm to Ø 80/125 mm	60	80
■ Ø 80/125 mm to Ø 70/110 mm	—	80
■ Ø 70/110 mm to Ø 80/125 mm	—	80

## 4.2 Design and sizing information for flue pipe connections

### Plastic (PPs) balanced flue system for separate ventilation and flue gas routing for Vitodens up to 35 kW (type C<sub>53x</sub>, according to TRGI '86/96)

Vitodens may be operated with separate flue gas/ventilation air routing as **balanced** flue system subject to the following flue gas system conditions:

- Connection to a chimney or duct whose cross-section is too small to provide the combustion air supply
- Connection to a chimney which is unsuitable for providing the combustion air supply because of deposits
- Connection to a moisture resistant chimney.

The combustion air is then supplied through a separate ventilation air pipe, which is routed separate from the flue pipe.

#### Observe the structural notes according to TRGI '86/96, item 5.6.

- Vitodens 12 kW:
  - Int. dia. flue pipe                    Ø 60 mm
  - Int. dia. external pipe            Ø 100 mm
  - Int. dia. ventilation pipe        Ø 100 mm
- Vitodens 26 to 35 kW:
  - Int. dia. flue pipe                    Ø 80 mm
  - Int. dia. external pipe            Ø 125 mm
  - Int. dia. ventilation pipe        Ø 100 mm

Max. pipe length:

- union    3 m
- Ventilation pipe                            4 m

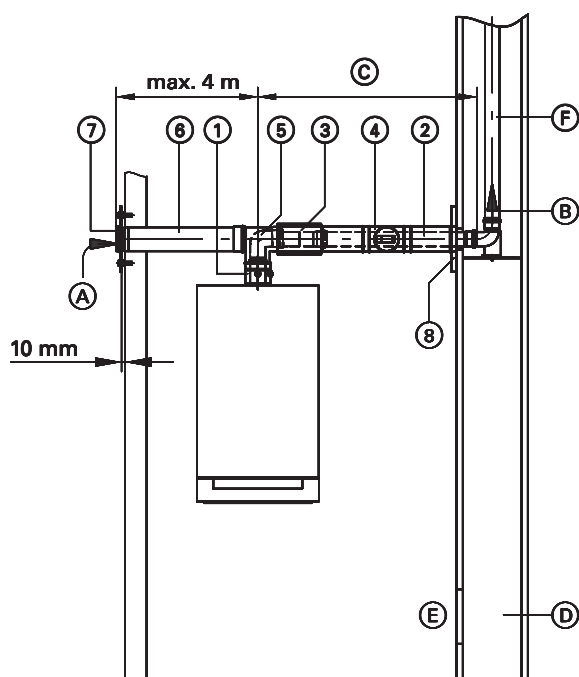
Max. number of bends  
(flue pipe and ventilation air pipe)

- 87°:    2 pieces each
- or
- 45°:    3 pieces each

Install an inspection aperture for checking and cleaning the flue pipe.

It was verified as part of the CE approval test that nowhere on Vitodens or the balanced flue system surface will temperatures higher than 85 °C occur.

The flue gas system for separate ventilation air/flue gas routing has been tested and CE-designated as a concentric balanced flue system as one technical unit with the Vitodens condensing boiler. A function verification according to EN 13384 for the ventilation air side and the unions is **not** required.



- (A) Ventilation air
- (B) Flue gas
- (C) Union
- (D) Duct F90 or F30
- (E) Ventilation aperture
- (F) Flue pipe

Rated output	kW	
	12	28-35
	System size Ø mm	
① Boiler adaptor (part of the standard boiler delivery)	60	80
② Balanced flue pipe 1 m long 0.5 m long	60	80
Balanced flue bend 87° (1 piece) 45° (2 pieces)	60	80
③ Balanced flue sliding coupling	60	80
④ Balanced flue inspection piece, straight (1 piece)	60	80
⑤ Balanced flue tee C8 with wall bezels	60	80
⑥ Ventilation pipe Ø 125 mm 87° (1 piece) 45° (2 pieces)	60	80
⑦ Ventilation air damper	60	80
⑧ Wall bezel	60	80

If the flue pipe is routed through an existing chimney or duct (not moisture resistant), use flue pipe components as on page 107.

4.2 Design and sizing information for flue pipe connections

Max. total length of the flue pipe up to the boiler adaptor for routing through the duct

Vitodens 200

Rated output range	kW	8.8-26.0
Max. length	m	20

Vitodens 300 up to 35 kW and Vitodens 333

Rated output range	kW	4.5-12.0	6.6-26.0	8.7-35.0
Max. length – system size 60	m	15	—	—
– system size 80	m	—	20	15

Allowed for: 2 bends of 87°  
(incl. support bends)  
or 3 bends of 45°  
and 0.5 m length of union ©.

For a different number of bends, deduct from/add to the given max. length 1 m for 87° bends or 0.5 m for 45° bends.  
For a different length of union ©, deduct or add the difference.

Example:  
Vitodens 300, 6.6-26.0 kW, with 3 bends 87° and 2 m length of union ©:  
Deduct 1 m for the bend and 1.5 m for the union from the max. flue pipe length of 20 m.  
Consequently, the max. length would be 17.5 m.

## 4.2 Design and sizing information for flue pipe connections

### Plastic (PPs) balanced flue system (BF) for routing over external walls (type C<sub>53x</sub> according to TRGI '86/96)

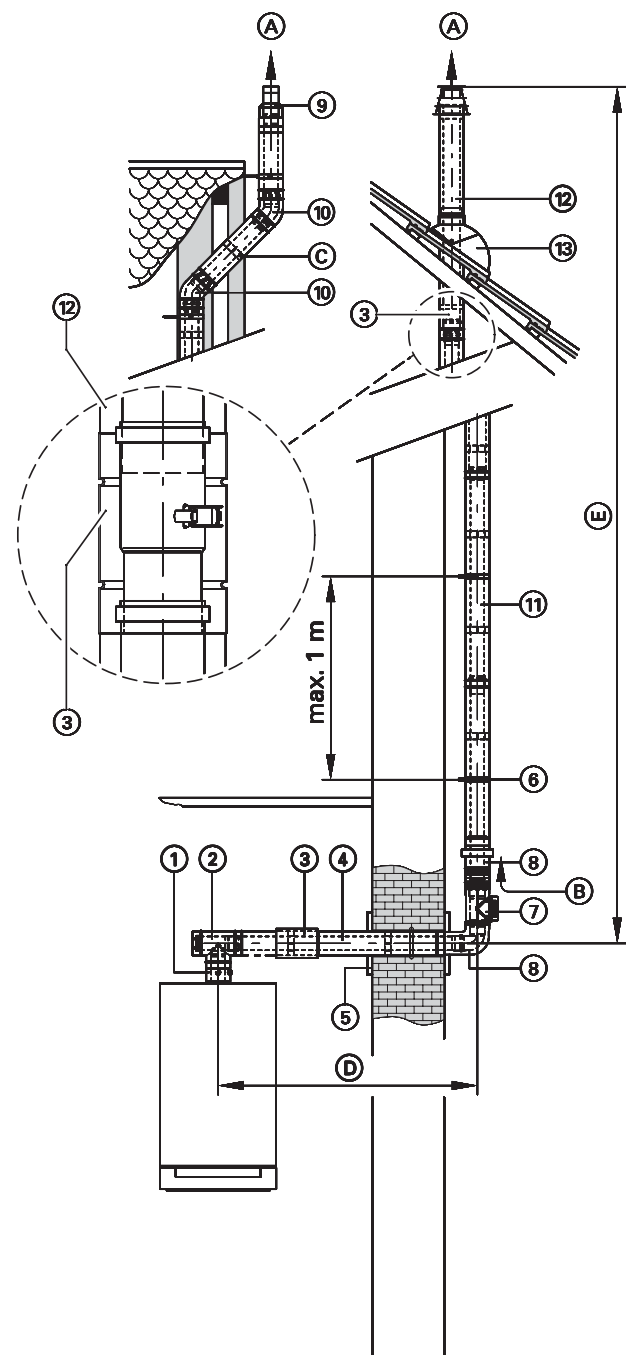
Vitodens may also be connected, without duct, to a flue pipe on an external wall. The combustion air is drawn in via the air inlet piece. The vertical external pipe acts as protective pipe and as thermal insulation due to its static air layer.

■ Vitodens 12 kW:	
Int. dia. flue pipe	Ø 60 mm
Int. dia. external pipe	Ø 100 mm
■ Vitodens 26 to 35 kW:	
Int. dia. flue pipe	Ø 80 mm
Int. dia. external pipe	Ø 125 mm
■ Vitodens 300 from 49 kW:	
Int. dia. flue pipe	Ø 100 mm
Int. dia. external pipe	Ø 150 mm

Depending on the length of pipe protruding above the roof, various routing options are available.

The outside wall pipe has been tested and CE-designated as a concentric balanced flue system and as one technical unit with the Vitodens condensing boiler.

A function verification according to EN 13384 is **not** required.



- (A) Flue gas  
 (B) Ventilation air  
 (C) Joint in the external wall pipe run, see page 142  
 (D) Union  
 (E) External flue pipe (max. length, see page 118)

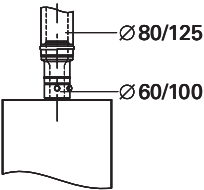
Rated output	kW	12	26-35	49-66
System size Ø mm				
① Boiler adaptor (part of the standard boiler delivery)	60	80	100	
② Balanced flue inspection tee piece 87° (1 piece)	60	80	100	
③ Balanced flue sliding coupling* <sup>2</sup>	60	80	100	
④ Balanced flue pipe 2 m long (1 piece) 1 m long (1 piece) 0.5 m long (1 piece)	60	80	100	
⑤ Wall bezel	60	80	100	
⑤ Fixing clamp, white (1 piece)	60	80	100	
⑦ Balanced flue inspection piece, straight (1 piece) or Balanced flue inspection piece, straight (1 piece)	60	80	—	100
⑧ External wall set incl. – Balanced flue bend – Balanced flue air inlet – Wall bezel	60	80	100	
⑨ Balanced flue terminal (for short roof overhang)	60	80	100	
⑩ Balanced flue bend 87° (1 piece) 45° (2 pieces) or External bend 87° (1 piece) 45° (2 pieces)	60 60 — —	80 80 — —	— — 100 100	
⑪ Balanced flue pipe 1.95 m long (1 piece) 1 m long (1 piece) 0.5 m long (1 piece) or External pipe 1.95 m long (1 piece) 1 m long (1 piece) 0.5 m long (1 piece)	60 60 60 — — —	80 80 80 — — —	— — — 100 100 100	
⑬ Balanced flue roof terminal (for a large roof overhang) Colour black or roof tile red	60	80	100	
⑬ Universal roof tile Colour black or roof tile red or Flat roof collar or Pipe outlet for Klöber roof tiles Colour black or roof tile red (provide the appropriate Klöber roof tile on site when selecting a roof terminal to match the roof cover)	60 60 60	80 80 80	100 100 —	
Part no.				
External extension with clamp (on-site ties)				
Colour black				
0.5 m long				
1 m long				
Colour roof tile red				
0.5 m long				
1 m long				

\*<sup>1</sup>For each additional 87° bend, deduct 0.5 m and for each additional 45° bend 0.3 m from the stated max. length (see page 108).

\*<sup>2</sup>When using a balanced flue roof terminal system size 100, fit a balanced flue sliding coupling to reverse the joining direction of the external pipe.

4.2 Design and sizing information for flue pipe connections

Adapter for system 80/125 to system 60/100 and 70/110



Rated output	kW	12	26-35	49-66
		System size Ø mm		
<b>Balanced flue adaptor</b>				
■ Ø 80/125 mm to Ø 60/100 mm		60	80	—
■ Ø 60/100 mm to Ø 80/125 mm		60	80	—
■ Ø 80/125 mm to Ø 70/110 mm		—	80	—
■ Ø 70/110 mm to Ø 80/125 mm		—	80	—

Max. total length of the flue pipe

Vitodens 200

Rated output range	kW	8.8-26.0
Max. length	m	15

Vitodens 300 and Vitodens 333

Rated output range	kW	4.5-12.0	6.6-26.0	8.7-35.0	12.2-49	16.6-66
Max. length – system size 60	m	12	—	—	—	—
– system size 80	m	—	15	12	—	—
– system size 100	m	—	—	—	12	12

Allowed for:  
2 bends of 87°  
(incl. support bends)  
or  
3 bends of 45°  
and 2.5 m length of union (D).

For any different number of bends,  
deduct from/add to the given max. length  
1 m for 87° bends or 0.5 m for 45° bends.  
For a different length of union (D), deduct  
or add the difference respectively.

Example:  
Vitodens 300, 6.6-26.0 kW, with 3 bends 87°  
and 3 m length of union (D):  
Deduct 1 m for the bend and 0.5 m for the  
union from the max. flue pipe length of  
15 m.  
Consequently, the max. length would be  
13.5 m.

## 4.2 Design and sizing information for flue pipe connections

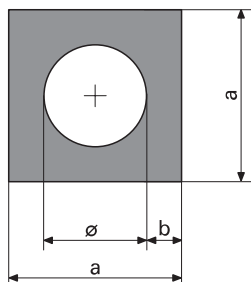
### Plastic (PPs) balanced flue system for routing through a lightweight duct

If no duct is available at an installation location with one or several **full storeys** above where Vitodens is installed, a space-

saving duct for reduced temperature requirements may also be retrofitted. The installed duct must meet the

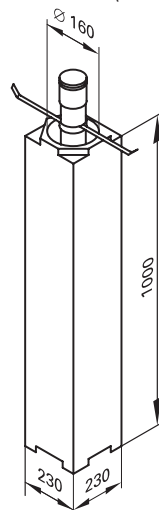
requirements for domestic chimneys to DIN 18160-1 or must have Building Regulation approval.

### Duct profiles made by Skoberne (made from breeze blocks)



Ø mm	a mm	b mm	Fire resistance
150	240	45	90 min.
210	300	45	90 min.

### Skobifix 90 duct elements made by Skoberne (foamed ceramics)

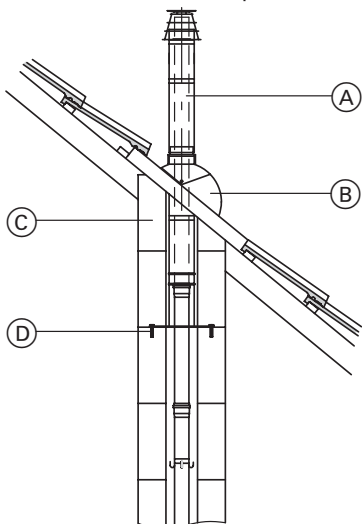


Messrs. Skoberne offer a duct system made from breeze blocks or foamed ceramics with general Building Regulations approval.

Address of Messrs. Skoberne:  
Skoberne GmbH – Technik und Vertrieb  
Ostendstraße 1  
D-64319 Pfungstadt

4

### Anchoring for roof terminals made from breeze block duct profiles (where the duct is run up to the underneath the roof skin)



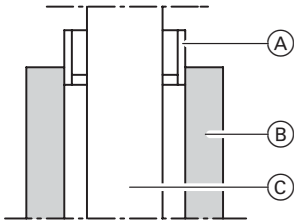
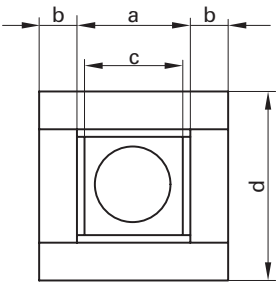
Obtainable from Messrs. Skoberne:

- (A) Roof terminal
- (B) Universal roof tile
- (C) Last duct profile
- (D) Anchoring of the roof terminal

During installation, match the final duct profile piece (C) to the roof slope.

## 4.2 Design and sizing information for flue pipe connections

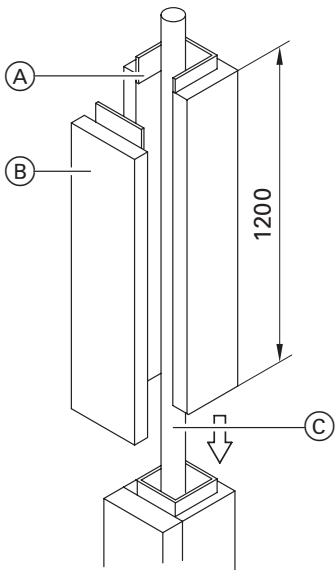
### Duct profiles by Messrs. Promat



Amongst others, Promat offer a duct system made from fire resistant calcium silicate plates with general Building Regulations approval [Germany].

Address of Messrs. Promat:  
Promat GmbH  
Postfach 109564  
D-40835 Ratingen

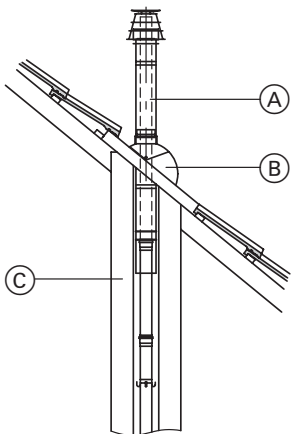
System size Ø mm	a mm	b mm	c mm	d mm	Fire resistance
80	140	25	128	190	30 min.
	140	40	128	220	90 min.
100	180	25	168	230	30 min.
	180	40	168	260	90 min.



- Ⓐ PROMATECT® coupling
- Ⓑ PROMATECT® profile
- Ⓒ Flue pipe

4

### Roof terminal for ducts with Promat profiles



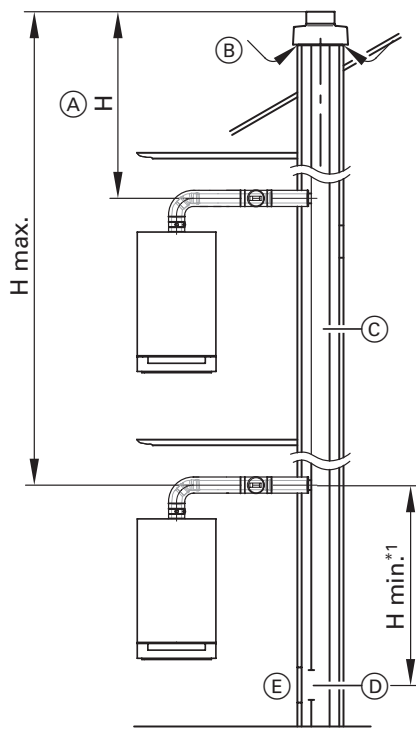
- Vitodens flue gas system components
- Ⓐ Vertical coaxial roof terminal
  - Ⓑ Universal roof tile
  - Ⓒ Lightweight duct made with PROMATECT® mineral fibre profiles

During installation, match the final duct profile to the roof inclination.



## 4.2 Design and sizing information for flue pipe connections

**Plastic (PPs) balanced flue system for routing multiple pipes through an air/flue gas chimney**  
(LAS – chimney negative pressure)  
(type C<sub>43x</sub>, according to TRGI '86/96)



- Ⓐ Effective chimney height relative to the highest Vitodens
- Ⓑ Ventilation air
- Ⓒ Flue gas
- Ⓓ Pressure equalizing aperture
- Ⓔ Inspection aperture

The Vitodens condensing boiler meets the safety requirements in accordance with DIN 3368-6.

Therefore, general Building Regulations approval for connection to a LAS system is not required.

When connecting two condensing boilers to one chimney on the same floor, the union inlets should be separated from each other by at least 300 mm. Design and calculations for LAS chimney systems with multiple ducts are carried out either by the respective supplier or by the Viessmann customer service.

LAS systems may, for example, be obtained from the following manufacturers:

eka Edelstahlkamin GmbH  
D-95369 Untersteinach

Jeremias  
Schornstein Systeme  
Opfenrieder Str. 12  
D-91717 Wassertrüdingen

Plewa-Werke GmbH  
D-54662 Speicher/Eifel

Schiedel GmbH & Co, Hauptverwaltung  
Lerchenstraße 9  
D-80995 München

*\*1Check with the flue gas system manufacturers regarding minimum clearances.*

## 4.2 Design and sizing information for flue pipe connections

### Plastic (PPs) balanced flue system (BF) for routing through a duct – balanced flue operation (type B according to TRGI '86/96)

**Open** flue operation requires a flue pipe as a union between Vitodens and the duct as well as for routing through the duct.

**The installation room must provide a ventilation aperture with an unobstructed cross-section of at least 150 cm<sup>2</sup> or 2 × 75 cm<sup>2</sup> (according to TRGI '86/96).**

#### Please note

Install Vitodens 300, 66 kW and multi-boiler systems in accordance with FeuVo in a separate boiler room with a suitable ventilation air aperture. The cross-section should be at least 150 cm<sup>2</sup> and should be 2 cm<sup>2</sup> larger for each additional kW output above 50 kW total rated output. This cross-section may not be split over more than 2 apertures (observe FeuVo and TRGI '86/96 sect. 5.5.4).

#### Example:

Vitodens 300, 66 kW  
150 cm<sup>2</sup> + 10 × 2 cm<sup>2</sup> = 170 cm<sup>2</sup> or  
2 × 85 cm<sup>2</sup>

- Vitodens 12 kW:  
Int. dia. flue pipe Ø 60 mm
  - Vitodens 26 to 35 kW:  
Int. dia. flue pipe Ø 80 mm
  - Vitodens 300 from 49 kW:  
Int. dia. flue pipe Ø 100 mm
- The flue gas system is connected to the flue outlet.  
Combustion air is drawn from the boiler room via the annular gap in the boiler adaptor.

For routing through longitudinally ventilated ducts or channels which meet the requirements for domestic chimneys to DIN 18160-1 or provide a fire resistance of 90 minutes (F90/L90) or a fire resistance of 30 minutes (F30/L30) for buildings with a low height.

Prior to installation, the flue gas inspector should check whether the duct to be used is suitable and approved for this purpose. Ducts which were previously connected to an oil fired or solid fuel boiler must be thoroughly cleaned by the chimney sweep. Loose deposits (in particular sulphur and soot deposits) must not remain on the inside of the chimney.

Close off and seal any other connection apertures with appropriate materials.

This does not apply to any cleaning or test ports, which must be provided with chimney cleaning covers with the appropriate test mark.

Check prior to the installation whether the duct runs straight from top to bottom or whether it may be offset (check with mirrors).  
If the chimney is offset, we recommend the installation of a flexible flue pipe (see page 125).

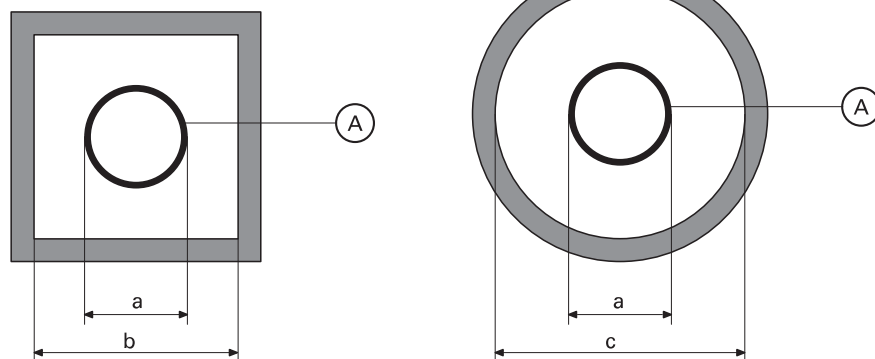
The local flue gas inspector should check the system for leaks prior to commissioning (where applicable).

In the case of **open** flue operation, this can **only** be done by means of a pressure test.

Inside the installation location, at least one inspection aperture for checking and cleaning as well as for checking the pressure must be provided in the flue gas system.  
If the flue pipe is inaccessible from the roof, a second inspection aperture must be provided in the attic behind the chimney cleaning hatch.  
Draining the condensate from the flue pipe **to the boiler** must be safeguarded through a suitable **slope of at least 3°**.  
The flue gas system must protrude clear of the roof (observe the roof protrusion parallel to the roof inclination according to the Landes-FeuVo) (where appropriate).

Alternative flue pipes which have Building Regulation approval according to DIBt [Germany] may be used, for example, if a larger pipe diameter is required because of greater flue pipe lengths. In that case, the function verification to EN 13384 should be provided by the relevant flue pipe manufacturer.

#### Minimum internal duct dimensions



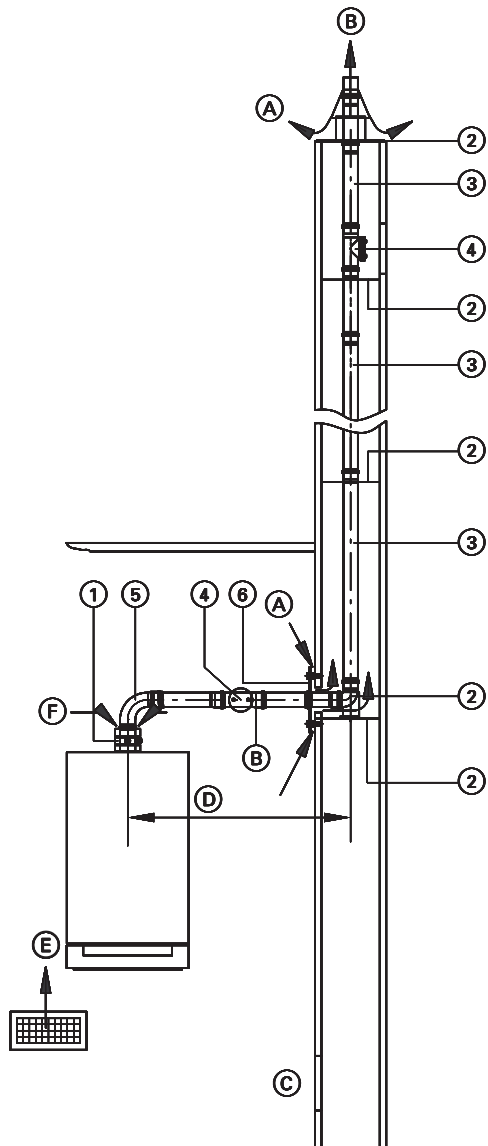
System size (A)	Outside diameter Coupling a Ø mm	Min. internal duct dimension		
		b square mm	c rectangular (short side) mm	c round Ø mm
60	73	113	113	133
80	94	135	135	155
80 (flexible, without unions)	84	125	125	145
80 (flexible, with unions)	100	140	140	160
100	128	170	170	190
125	145	185	185	205
150	184	224	224	244
200	227	267	267	287

- Max. number of bends
- 87°: 3 pieces
  - or 45°: 3 pieces
  - or 30°: 4 pieces
  - or 15°: 4 pieces

The annular gap must be at least 3 cm wide at the duct inlet.

## 4.2 Design and sizing information for flue pipe connections

**Flue pipe, system size 80 and 100 (components)**  
(type B<sub>23</sub>/B<sub>33</sub> according to TRGI '86/96)



- Ⓐ Secondary ventilation
- Ⓑ Flue gas
- Ⓒ Inspection aperture
- Ⓓ Union
- Ⓔ Ventilation aperture, min. 150 cm<sup>2</sup> or 2 × 75 cm<sup>2</sup> up to 49 kW or min. 170 cm<sup>2</sup> at 66 kW
- Ⓕ Ventilation air

Rated output	kW	12	26-35	49-66
System size Ø mm				
① <b>Boiler adaptor</b> (part of the standard boiler delivery)		60	80	100
② <b>Basic duct set</b> comprising: ■ Support bend ■ Support rail ■ Duct cover ■ Spacers (3 pieces, max. clearance 5 m)		60	80	100
<b>Spacers</b> (3 pieces, max. clearance 5 m)		60	80	100
③ <b>Flue pipe</b> 1.95 m long (2 pieces @ 1.95 m = 3.9 m) 2 m long (2 pieces @ 2 m = 4 m) 1.95 m long (1 piece) 2 m long (1 piece) 1 m long (1 piece) 0.5 m long (1 piece)		60 — 60 — 60 60	80 — 80 — 80 80	— 100 — 100 100 100
④ <b>Inspection piece, straight</b> (1 piece)		60	80	100
⑤ <b>Flue pipe bend</b> 87° (1 piece) 45° (2 pieces)		60	80	100
⑥ <b>Ventilation flashing</b> (1 piece)		60	80	100
<b>Flue pipe bend</b> (for use in corbelled ducts) 30° (2 pieces) 15° (2 pieces)		60	80	100
<b>Balanced flue inspection tee piece</b> 87° (1 piece)		60	80	100

4.2 Design and sizing information for flue pipe connections

Max. total length of the flue pipe

Vitodens 200

Rated output range	kW	8.8-26.0
Max. length – system size 80	m	20

Vitodens 300 and Vitodens 333

Rated output range	kW	4.5-12.0	6.6-26.0	8.7-35.0	12.2-49.0	16.6-66.0
Max. length – system size 60	m	15	—	—	—	—
– system size 80	m	—	20	15	—	—
– system size 100	m	—	—	—	25	15

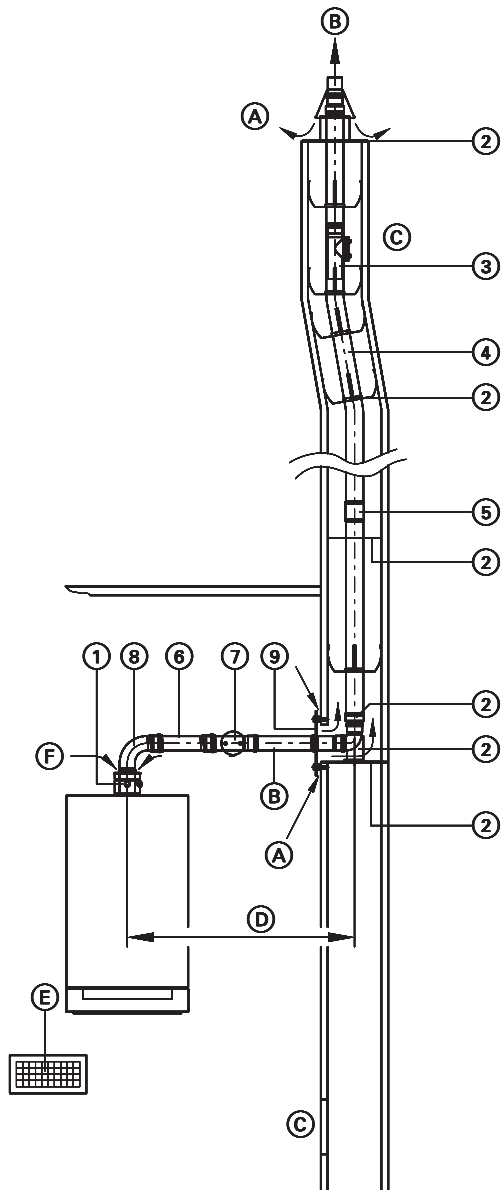
Allowed for: 2 bends of 87°  
(incl. support bends)  
or 3 bends of 45°  
and 0.5 m length of union Ⓢ.

For any different number of bends,  
deduct from/add to the given max. length  
1 m for 87° bends or 0.5 m for 45° bends.  
For a different length of union Ⓢ, deduct  
or add the difference.

Example:  
Vitodens 300, 6.6-26.0 kW, with 3 bends 87°  
and 1 m length of union Ⓢ:  
Deduct 1 m for the bend and 0.5 m for the  
union from the max. flue pipe length of  
20 m.  
Consequently, the max. length would be  
18.5 m.

## 4.2 Design and sizing information for flue pipe connections

**Flue pipe, flexible, system size 80 (components)** for Vitodens up to 35 kW  
(type B<sub>23x</sub>, according to TRGI '86/96)



Rated output	kW	12	26-35
		System size Ø mm	
① <b>Boiler adaptor</b> (part of the standard boiler delivery)		60	80
② <b>Basic duct set</b> comprising: ■ Support bend ■ Support rail ■ Duct cover ■ Spacers (5 pieces, max. clearance 2 m)		—	80
<b>Spacers</b> (5 pieces, max. clearance 2 m)		—	80
③ <b>Inspection piece, straight</b> for installation into the flexible flue pipe		—	80
④ <b>Flue pipe, flexible</b> , on a roll 8, 12.5 or 25 m		—	80
⑤ <b>Union</b> for connecting residual lengths of the flexible flue pipe		—	80
<b>Pipe lowering attachment</b> with 20 m rope			
⑥ <b>Flue pipe</b> 1 m long (1 piece) 0.5 m long (1 piece)		—	80
⑦ <b>Inspection piece, straight (1 piece)</b>		—	80
⑧ <b>Flue pipe bend</b> 87° (1 piece) 45° (2 pieces)  or <b>Inspection tee piece</b> 87° (1 piece)		—	80
⑨ <b>Ventilation flashing (1 piece)</b>		—	80

- (A) Secondary ventilation  
 (B) Flue gas  
 (C) Inspection aperture  
 (D) Union  
 (E) Ventilation opening, min. 150 cm<sup>2</sup> or 2 × 75 cm<sup>2</sup>  
 (F) Ventilation air

**Max. total length of the flue pipe (system size 80)**

### Vitodens 200

Rated output range	kW	8.8-26.0
Max. length	m	15

### Vitodens 300 up to 35 kW and Vitodens 333

Rated output range	kW	4.5-12.0	6.6-26.0	8.7-35.0
Max. length	m	10	15	10

Allowed for:  
 2 bends of 87°  
 (incl. support bends)  
 or  
 3 bends of 45°  
 and 0.5 m length of union (D).

For any different number of bends,  
 deduct from/add to the given max. length  
 1 m for 87° bends or 0.5 m for 45° bends.  
 For a different length of union (D), deduct  
 or add the difference.

Example:  
 Vitodens 300, 6.6-26.0 kW, with 3 bends 87°  
 and 1 m length of union (D):  
 Deduct 1 m for the bend and 0.5 m for the  
 union from max. flue pipe length of 15 m.  
 Consequently, the max. length would be  
 13.5 m.

## 4.2 Design and sizing information for flue pipe connections

**Special designs: open flue operation with combustion air supply via connection to the ambient air** for Vitodens up to 35 kW  
(type B<sub>33</sub> according to TRGI '86/96)

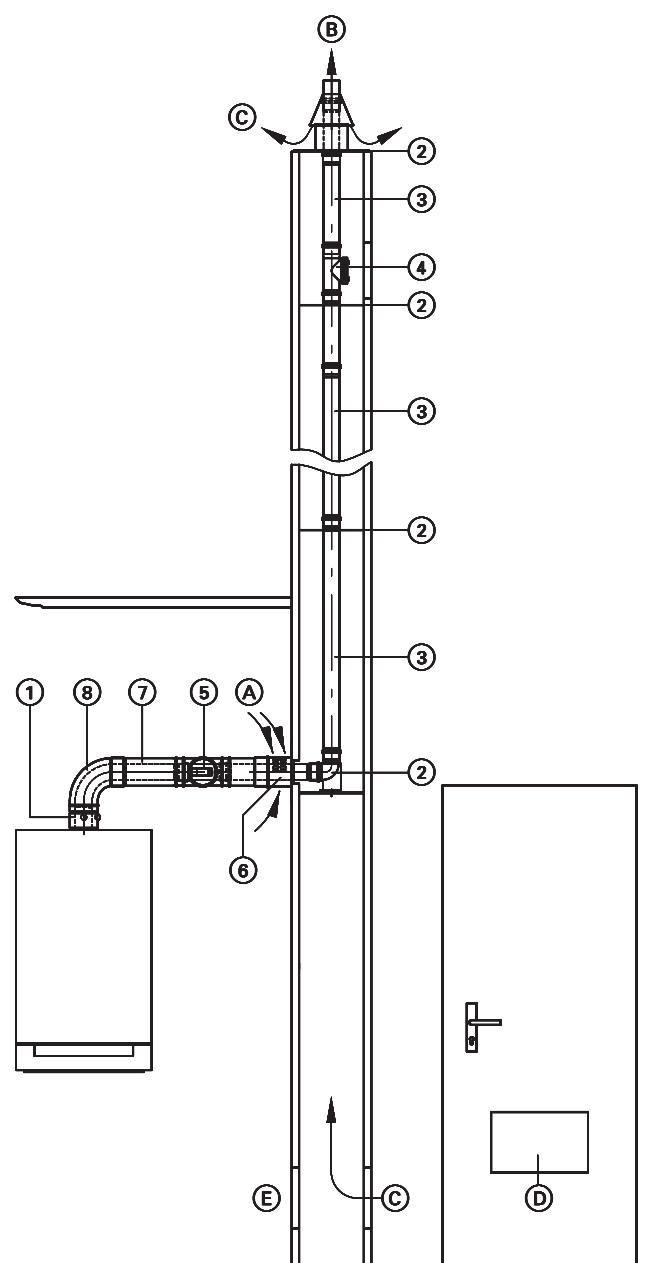
Vitodens may also be installed in occupied rooms and be operated in open flue operation, subject to

- the duct union being constructed as part of the balanced flue system, and the combustion air being drawn directly from the room via an aperture at the chimney inlet (ambient air connection bezel, see page 142)

- sufficient combustion air delivery being ensured inside the room through an interconnected combustion air supply in accordance with the stipulations of TRGI '86/96, item 5.5:
  - Minimum volume of interconnected rooms, 4 m<sup>3</sup> per kW rated output
  - Apertures in connecting doors min. 150 cm<sup>2</sup>

When routings through ducts, the same conditions apply as for the routing of flue gas systems through a duct, see page 122.

Calculation of the max. total flue pipe length, see page 124.



Rated output	kW	
	12	26-35
	System size Ø mm	
① <b>Boiler adaptor</b> (part of the standard boiler delivery)	60	80
② <b>Basic duct set (rigid)</b> comprising: ■ Support bend ■ Support rail ■ Duct cover ■ Spacers (3 pieces, max. clearance 5 m)	60	80
<b>Spacers</b> (3 pieces, max. clearance 5 m)	60	80
③ <b>Flue pipe</b> 1.95 m long (2 pieces @ 1.95 m = 3.9 m) 2 m long (2 pieces @ 2 m = 4 m) 1.95 m long (1 piece) 2 m long (1 piece) 1 m long (1 piece) 0.5 m long (1 piece)	60 — 60 — 60 60	80 — 80 — 80 80
<b>Flue pipe bend</b> (for use in corbelled ducts) 30° (2 pieces) 15° (2 pieces)	60	80
④ <b>Inspection piece, straight</b> (1 piece)	60	80
⑤ <b>Balanced flue inspection piece, straight</b> (1 piece)	60	80
⑥ <b>Balanced flue wall bezel for interconnected air supply</b> Ø 80/125 mm (type B <sub>33</sub> according to TRGI '86/96)	60	80
⑦ <b>Balanced flue pipe</b> 1 m long 0.5 m long	60	80
⑧ <b>Balanced flue bend</b> 87° (1 piece) 45° (2 pieces)  or  <b>Balanced flue inspection tee piece</b> 87° (1 piece)	60    60	80    80

- (A) Ventilation air
- (B) Flue gas
- (C) Secondary ventilation
- (D) Apertures for connected rooms (min. 150 cm<sup>2</sup>)
- (E) Inspection aperture

## 4.2 Design and sizing information for flue pipe connections

### Connection with plastic flue pipe (PPs) to a moisture-resistant chimney (MR chimney negative pressure) (type B<sub>23x</sub> according to TRGI '86/96)

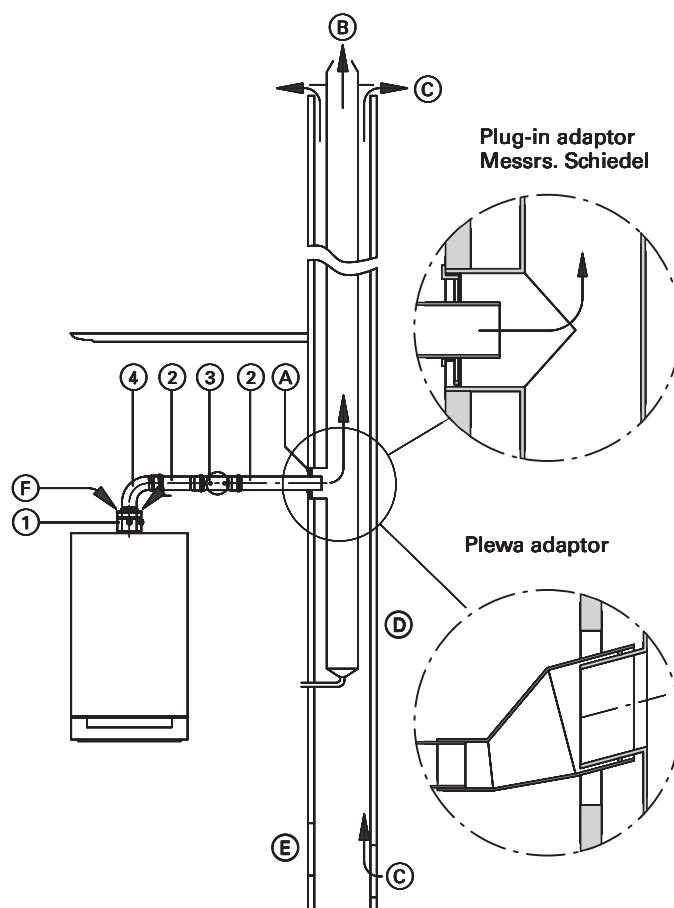
Vitodens condensing boilers may be connected to **moisture-resistant chimneys** to EN 13384 if the chimney manufacturer can verify its suitability based on the stated flue gas values considering local conditions (e.g. heating water return temperature, design of the pipe union, etc.).

A flue pipe which is pressure sealed and moisture resistant in accordance with Building Regulations must be installed as a union. For this purpose, you may use the plastic flue gas system (PPs) offered as accessory to Vitodens. The reducer from the flue pipe to the MR chimney can, for example, be supplied upon individual request by Plewa or Schiedel, quoting reference "Schiedel Steck-Adapter".

Addresses:

Plewa-Werke GmbH  
D-54662 Speicher/Eifel

Schiedel GmbH & Co.  
Hauptverwaltung  
Lerchenstraße 9  
D-80995 München



- (A) Plug-in adaptor
- (B) Flue gas
- (C) Secondary air

- (D) MR chimney
- (E) Inspection aperture
- (F) Ventilation air

Rated output	kW	12	26-35	49-66
System size Ø mm				
① <b>Boiler adaptor</b> (part of the standard boiler delivery)		60	80	100
③ <b>Flue pipe</b>				
1.95 m long (2 pieces @ 1.95 m = 3.9 m)		60	80	—
2 m long (2 pieces @ 2 m = 4 m)		—	—	100
1.95 m long (1 piece)		60	80	—
2 m long (1 piece)		—	—	100
1 m long (1 piece)		60	80	100
0.5 m long (1 piece)		60	80	100
④ <b>Inspection piece, straight (1 piece)</b>		60	80	100
<b>Balanced flue inspection tee piece 87° (1 piece)</b>		60	80	100



## 4.2 Design and sizing information for flue pipe connections

### Multi-boiler systems with pressurised flue gas systems (open flue operation)

Vitodens 300, 49 to 66 kW

Up to 4 gas fired condensing boilers, 49 or 66 kW, may be connected to a common pressurised flue pipe. The max. output is 264 kW.

The Vitodens 300 multi-boiler systems with common pressurised flue gas systems are provided for **open** flue operation (type B).

#### Installation requirements

##### Combustion air apertures

Gas fired equipment with a total rated output greater than 50 kW must be provided with combustion air apertures leading to the outside. The cross-section should be at least 150 cm<sup>2</sup>, and should be 2 cm<sup>2</sup> larger for each additional kW above 50 kW total rated output. This cross-section may not be split over more than 2 apertures (observe FeuVo and TRGI '86/96 point 5.5.4 or local regulations).

Example: Vitodens 200, 4 × 66 kW

Total rated output 264 kW

150 cm<sup>2</sup> + 190 × 2 cm<sup>2</sup> = 530 cm<sup>2</sup> or  
2 × 265 cm<sup>2</sup>.

The combustion air apertures should be at least 530 cm<sup>2</sup> or 2 × 265 cm<sup>2</sup>.

##### Installation clearances

For a simple installation we recommend a clearance of approx. 100 to 150 mm between the gas fired condensing boilers. The flue gas collector pipes can be suitably matched.

##### Flue gas non-return valve

A flue gas non-return valve is installed above each boiler, i.e. in the area of the collector pipe.

During the boiler operation, the spherical shut-off part of the flue gas non-return valve is lifted by the overpressure of the variable speed fan and thereby releases the flue gas.

The shut-off valve closes the flue path for all those boilers which are not in use.

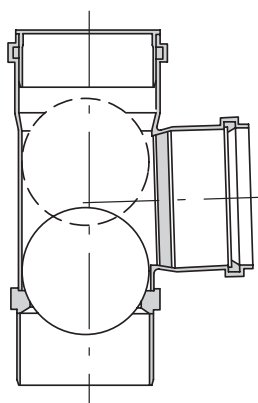
#### Approval

The Vitodens 300 gas fired condensing boilers, 49 and 66 kW, are tested and certified together with their respective flue gas system. The flue pipe has been approved with certificate Z-7.2-1104.

#### Inspection aperture

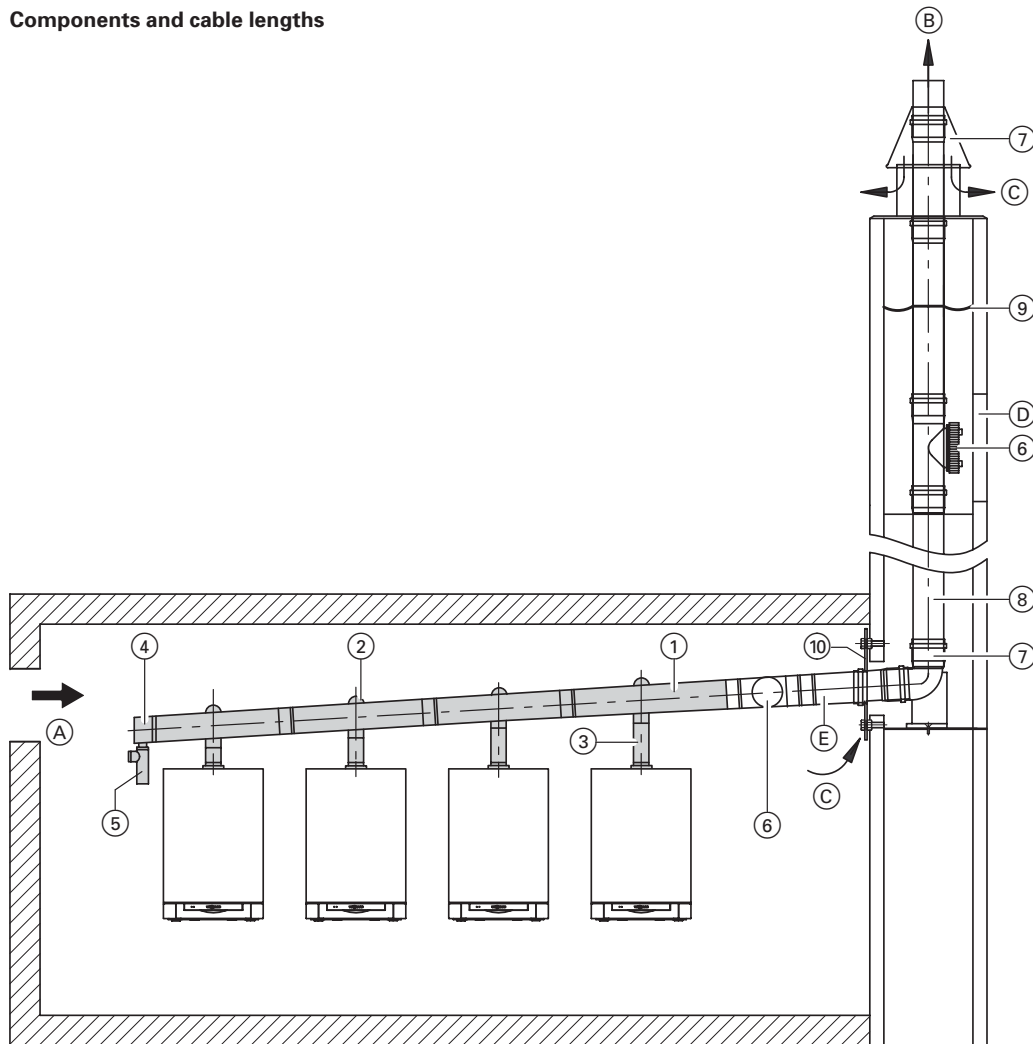
FeuVo makes the installation of an inspection aperture inside the boiler room mandatory.

Use an inspection aperture in accordance with the selected flue pipe diameter (for sizing tables, see page 130).





### Components and cable lengths



Standard delivery flue gas cascade

#### Standard multi-boiler delivery:

- ① Flue gas header  $\varnothing$  125 or 150 mm
- ② Non-return valve
- ③ Flue pipe  $\varnothing$  100 mm, 250 mm long
- ④ End piece with condensate drain
- ⑤ Siphon with hose

#### Accessories (see price list Vitocrossal 300):

- ⑥ Inspection piece  $\varnothing$  125, 150 or 200 mm
- ⑦ Basic duct set  $\varnothing$  125, 150 or 200 mm  
comprising:
  - Support bend
  - Support rail
  - Duct cover
  - Spacers (3 pieces, max. clearance 5 m)
- ⑧ Flue pipe  $\varnothing$  125, 150 or 200 mm  
2 m long (2 pieces = 4 m long)  
2 m long (1 piece)  
1 m long (1 piece)  
0.5 m long (1 piece)
- ⑨ Spacers (3 pieces, max. clearance 5 m)
- ⑩ Air vent cover  $\varnothing$  125, 150 or 200 mm

- Ⓐ Ventilation air
- Ⓑ Flue gas
- Ⓒ Secondary ventilation
- Ⓓ Inspection aperture
- Ⓔ Connecting cable



## 4.2 Design and sizing information for flue pipe connections

### Max. total length of the flue pipe

Vitodens 300	kW	2 x 49	2 x 66	3 x 49	3 x 66	4 x 66
Rated output (total)	kW	98	132	147	198	264
Max. length of the total horizontal connection pipe						
– System size 125 mm	m	3	3	4	—	—
– System size 150 mm	m	—	—	—	4	5
Max. pipe length inside the duct						
– System size 125 mm	m	9	—	—	—	—
– System size 150 mm	m	27	27	18	18	10
– System size 200 mm	m	—	—	—	26	25
Max. total length of the flue pipe						
– System size 125 mm	m	12	—	—	—	—
– System size 150 mm	m	30 <sup>*1</sup>	30 <sup>*1</sup>	22	22	15
– System size 200 mm	m	—	—	—	30	30 <sup>*1</sup>

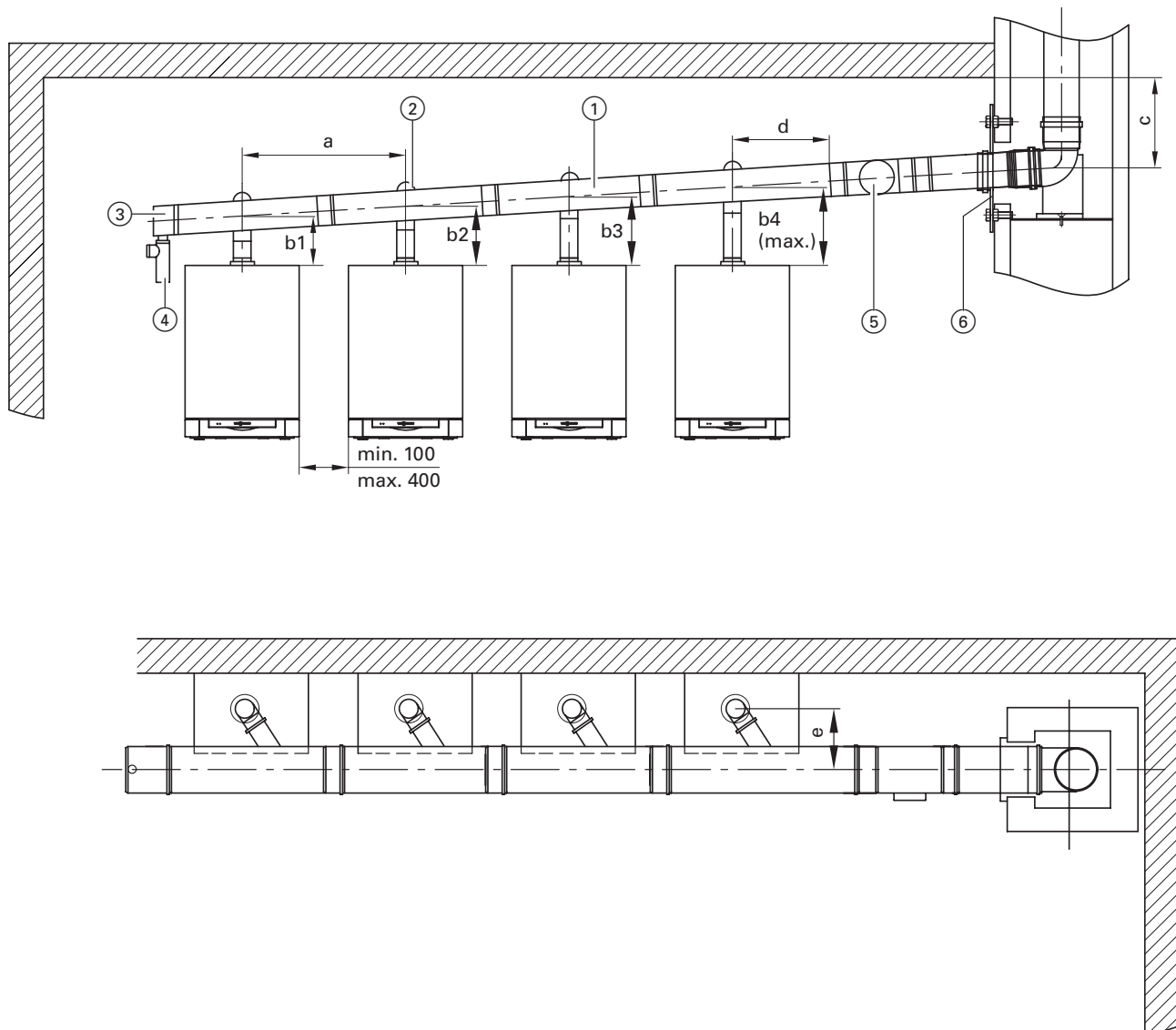
<sup>\*1</sup>An excentric expansion piece Ø 125/150 mm or Ø 150/200 mm is part of the standard delivery of the flue gas cascade.

The flue gas header concludes the standard delivery. The inspection piece and all other flue gas accessories should be ordered for each individual system (see price list flue gas system for Vitocrossal).

#### **Please note**

*Flue gas characteristics for individual boilers can be transferred to the flue gas system calculation (see specification).*

### Installation and dimensions



- ① Flue gas header  $\varnothing$  125 or 150 mm
- ② Non-return valve  $\varnothing$  100
- ③ End piece with condensate drain
- ④ Siphon with hose
- ⑤ Inspection piece  $\varnothing$  125 or 150 mm
- ⑥ Ventilation flashing

Flue pipe $\varnothing$ mm	min. mm	a max. mm	b1 min. mm	b2 min. mm	b3 min. mm	b4 max. mm	c min. mm	d mm	e mm
125	700	1000	239	276	313	350	200	250	220
150	700	1000	239	276	313	350	200	250	240

Install the flue gas header with a slope of at least  $3^\circ$ .

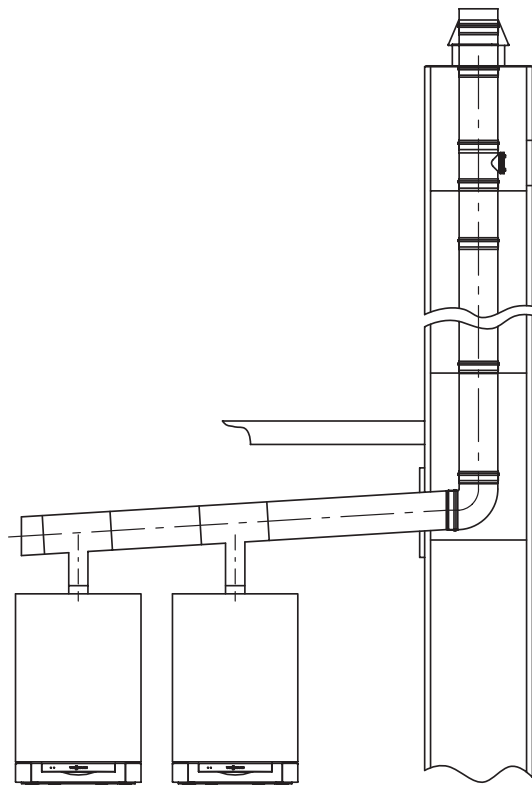
Given a clearance of 100 mm respectively between the boilers, the unions between the boiler and the non-return valve should be trimmed in accordance with the dimensions b1 to b4 shown in the table.

The unions between the boilers can be matched up on site.

## 4.2 Design and sizing information for flue pipe connections

### Multi-boiler systems with flue gas systems – negative pressure

#### Vitodens 200 and 300



Size to EN 13384.

The flue gas header in the negative pressure area should be provided on site. Suitable components may be obtained from the following suppliers:

eka Edelstahlkamin GmbH  
D-95369 Untersteinach

Jeremias  
Schornstein Systeme  
Opfenrieder Str. 12  
D-91717 Wassertrüdingen

Pressurised flue gas systems for multi-boiler systems, see page 128.

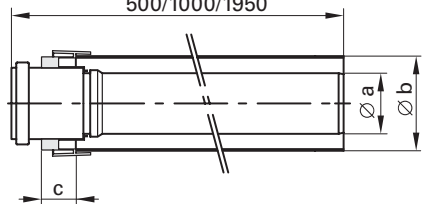
### 4.3 Details of plastic flue gas systems

#### Balanced flue components

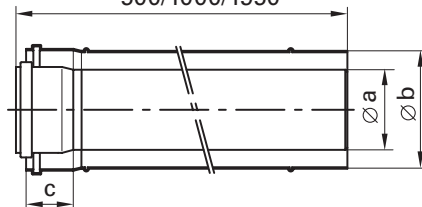
##### Balanced flue pipe

(these pipes may be trimmed as required)

System size  $\varnothing$  60 and 80 mm  
500/1000/1950

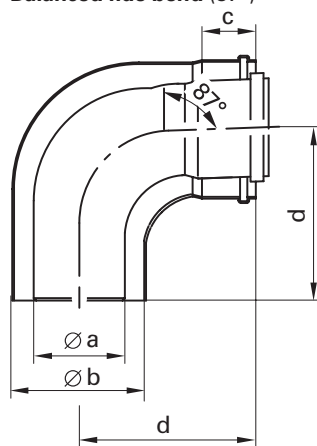


System size  $\varnothing$  100 mm  
500/1000/1950



System size	Dimension [mm]		
$\varnothing$ mm	a	b	c
60	60	100	40
80	80	125	40
100	110	150	40

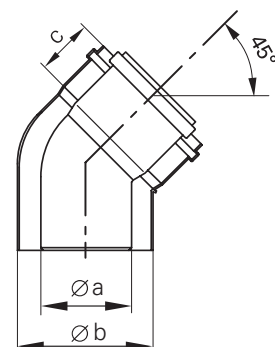
##### Balanced flue bend (87°)



System size	Dimension [mm]			
$\varnothing$ mm	a	b	c	d
60	60	100	40	110
80	80	125	40	120
100	110	150	40	170

##### Balanced flue bend (45°)

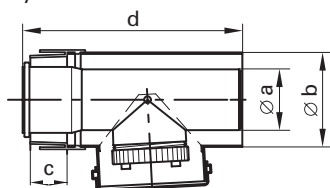
Standard pack 2 pieces



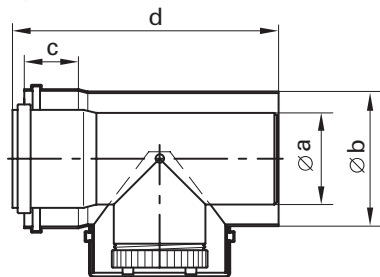
System size	Dimension [mm]		
$\varnothing$ mm	a	b	c
60	60	100	40
80	80	125	40
100	110	150	40

##### Balanced flue inspection piece (straight)

System size  $\varnothing$  60 and 80 mm



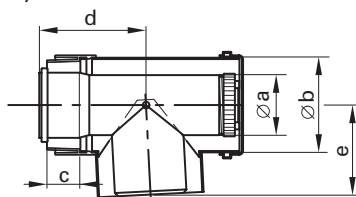
System size  $\varnothing$  100 mm



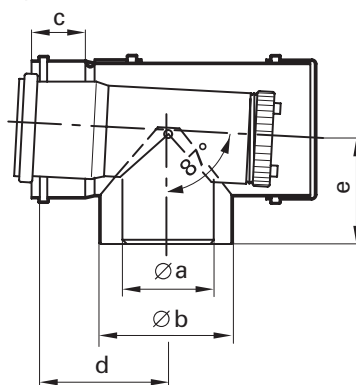
System size	Dimension [mm]			
$\varnothing$ mm	a	b	c	d
60	60	100	40	250
80	80	125	40	270
100	110	150	40	273

##### Balanced flue inspection tee piece (87°)

System size  $\varnothing$  60 and 80 mm

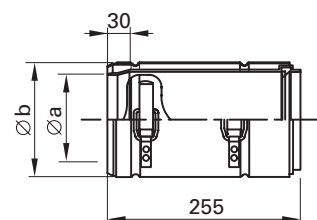


System size  $\varnothing$  100 mm



System size	Dimension [mm]				
$\varnothing$ mm	a	b	c	d	e
60	60	100	40	130	100
80	80	125	40	140	120
100	110	150	40	120	140

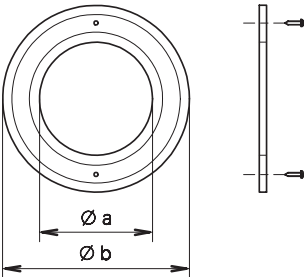
##### Balanced flue sliding coupling



System size	Dim. [mm]	
$\varnothing$ mm	a	b
60	60	100
80	80	125
100	110	150

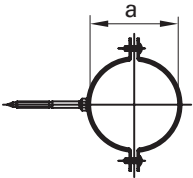
4.3 Flue gas system components

Balanced flue wall bezel



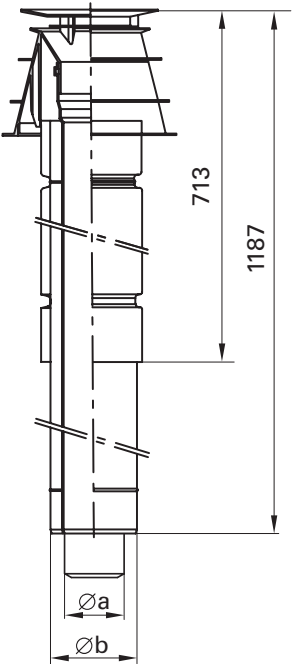
System size Ø mm	Dim. [mm]	
	a	b
60	102	194
80	130	230
100	155	230

Fixing clamp, white  
for installations on internal or external walls



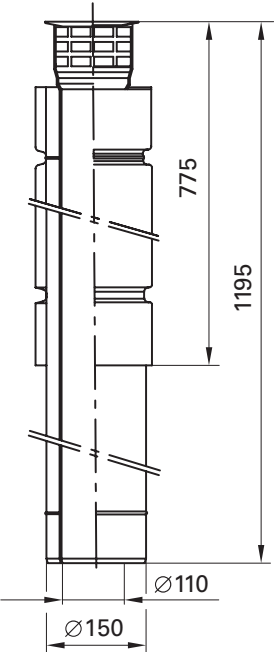
System size Ø mm	Dim. [mm]
	a
60	100
80	125
100	150

Balanced flue roof terminal  
with fixing clamp  
System size Ø 60 and 80 mm

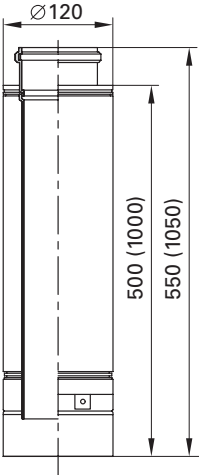


System size Ø mm	Dimension [mm]	
	a	b
60	60	100
80	80	110

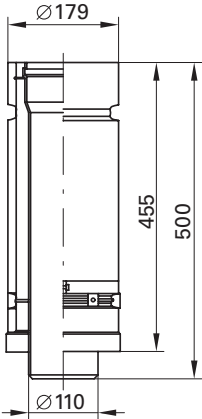
System size Ø 100 mm



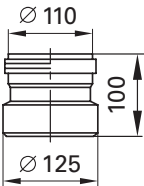
Roof extension  
System size Ø 80 mm



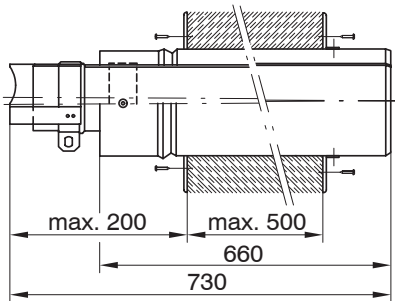
System size Ø 100 mm



Reducer Ø 125/110  
(Standard delivery balanced flue roof terminal system size Ø 80 mm)



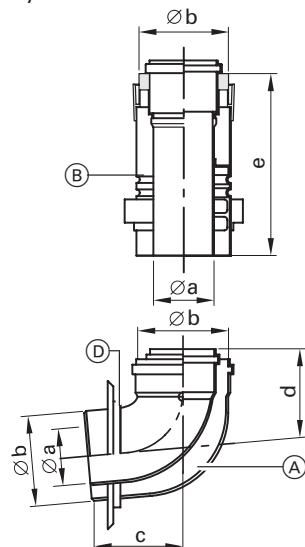
Balanced flue outside wall terminal (incl. wall bezels)  
Only for system size Ø 60 mm and 80 mm



## Components for installations on external walls

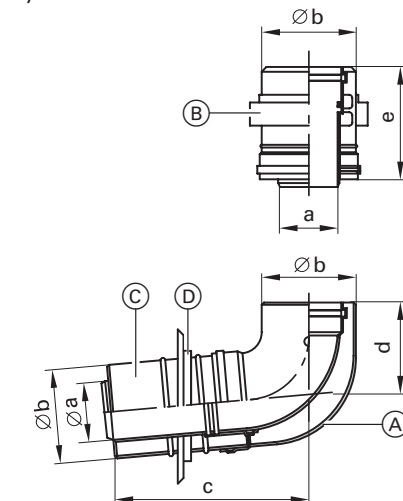
### External wall set

External wall bend (A) with air inlet (B),  
double coupling (C) and wall bezel (D)  
System size  $\varnothing$  60 and 80 mm



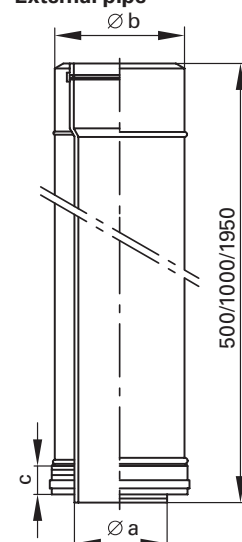
System size	Dimension [mm]				
$\varnothing$ mm	a	b	c	d	e
60	60	100	110	110	250
80	80	125	120	120	250

System size  $\varnothing$  100 mm



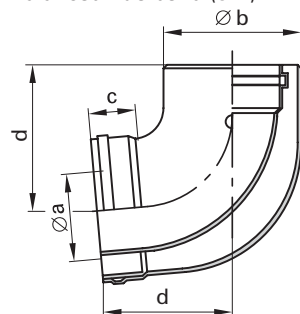
System size	Dimension [mm]				
$\varnothing$ mm	a	b	c	d	e
100	110	150	295	170	165

### External pipe

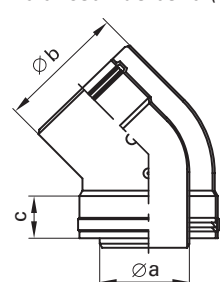


System size	Dimension [mm]		
$\varnothing$ mm	a	b	c
60*1	—	—	—
80*1	—	—	—
100	110	150	40

### Balanced flue bend (87°)

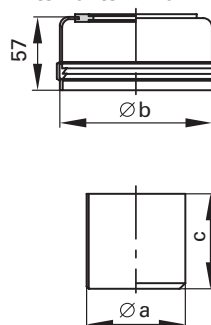


### Balanced flue bend (45°)



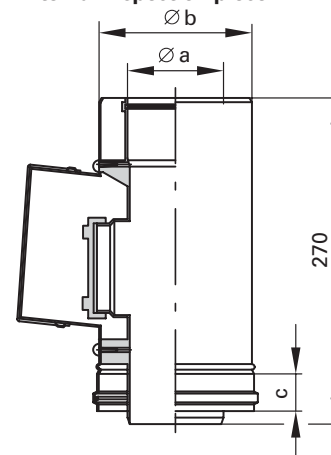
System size	Dimension [mm]			
$\varnothing$ mm	a	b	c	d
60*1	—	—	—	—
80*1	—	—	—	—
100	110	150	40	170

### External terminal



System size	Dimension [mm]		
$\varnothing$ mm	a	b	c
60	60	100	110
80	80	125	110
100	110	152	85

### External inspection piece



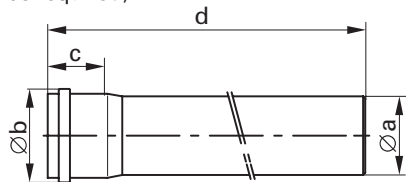
System size	Dimension [mm]		
$\varnothing$ mm	a	b	c
60*1	—	—	—
80*1	—	—	—
100	110	150	40

## 4.3 Flue gas system components

### Single pipe system components

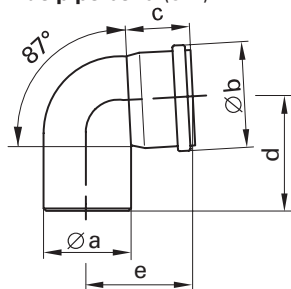
#### Flue pipe

(these pipes may be trimmed as required)



System size Ø mm	Dimension [mm]			
	a	b	c	d
60	60	73	58	500/1000/1950
80	80	94	57	500/1000/1950
100	110	128	72	500/1000/2000
125	125	145	75	500/1000/2000
150	160	184	83	500/1000/2000
200	184	227	122	500/1000/2000

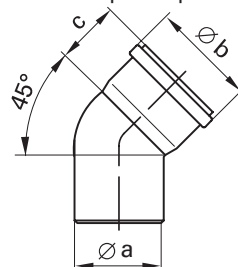
#### Flue pipe bend (87°)



System size Ø mm	Dimension [mm]				
	a	b	c	d	e
60	60	73	55	110	120
80	80	94	60	120	130
100	110	128	72	130	130
125	125	145	75	150	150
150	160	184	83	170	170
200	200	227	122	350	310

#### Flue pipe bend (45°)

Standard pack 2 pieces

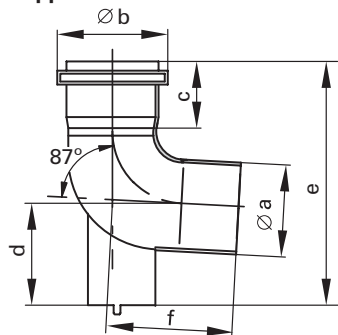


System size Ø mm	Dimension [mm]		
	a	b	c
60	60	73	55
80	80	94	60
100	110	128	72
125	125	145	75
150	160	184	83
200	200	227	122

#### Basic duct set

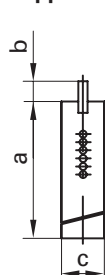
(comprising support bends, support rail, duct cover and spacer)

#### Support bend



System size Ø mm	Dimension [mm]					
	a	b	c	d	e	f
60	60	73	55	60	180	110
80	80	94	60	80	210	120
100	110	128	72	112	245	120
125	125	145	75	120	264	147
150	160	184	83	137	296	163
200	200	227	122	153	490	310

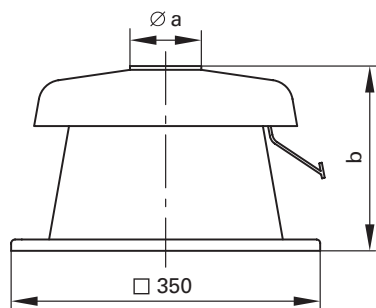
#### Support rail



System size Ø mm	Dimension [mm]		
	a	b	c
60	350	50	50
80	350	50	50
100	350	50	50
125	400	50	50
150	400	50	50
200	400	50	50

#### Duct cover

(fixing material for the duct cover is part of the standard delivery)

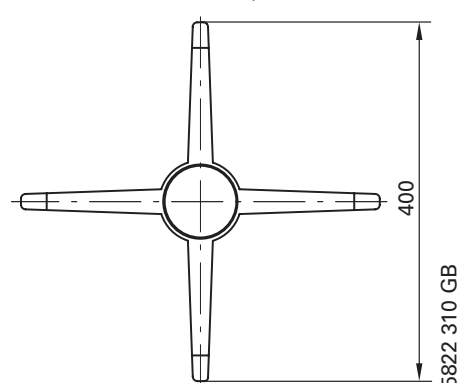


System size Ø mm	Dimension [mm]	
	a	b
60	60	198
80	80	229
100	111	201

#### Spacer

Standard pack 3 pieces

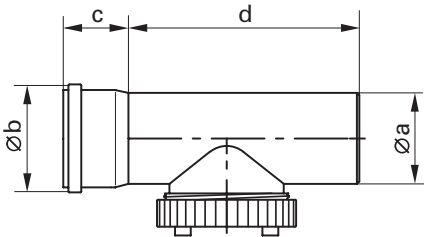
(used for internal duct dimensions of 130 × 130 mm to 250 × 250 mm or Ø 150 mm to Ø 300 mm)





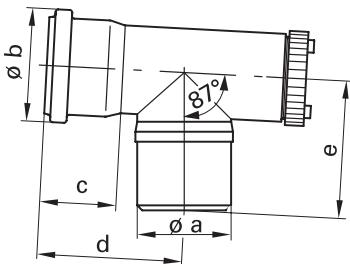
4.3 Flue gas system components

Inspection piece (straight)



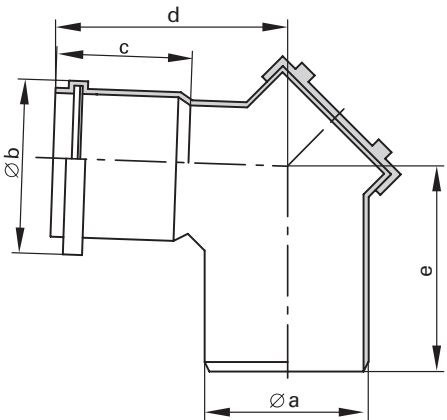
System size Ø mm	Dimension [mm]			
	a	b	c	d
80	80	94	60	210
100	110	128	72	201
125	125	145	75	205
150	160	184	83	225
200	200	227	122	300

Inspection tee piece  
System size Ø 80 mm



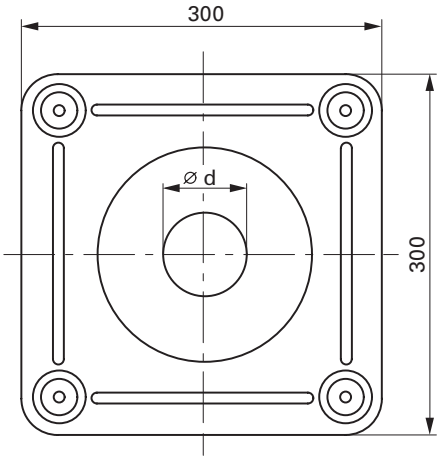
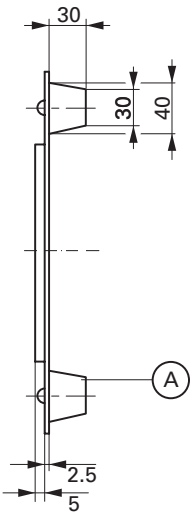
System size Ø mm	Dimension [mm]				
	a	b	c	d	e
80	80	94	60	142	130

Inspection bend  
System size Ø 100 mm



System size Ø mm	Dimension [mm]				
	a	b	c	d	e
100	110	128	72	143	142
125	125	145	75	148	148
150	160	184	83	159	163
200	200	227	122	350	310

Ventilation flashing



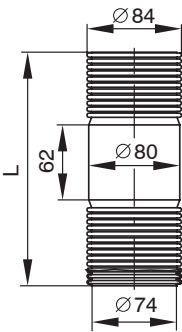
System size Ø mm	Dimension [mm]	
	a	
80	80	
100	110	

Ⓐ Spacer

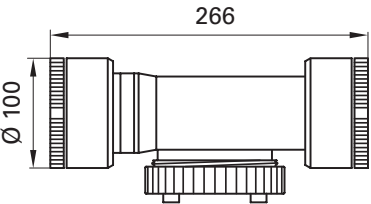
4.3 Flue gas system components

Components of the flexible single pipe system incl. flexible flue pipe

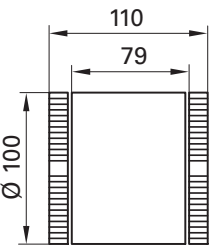
**Flue pipe, flexible**  
Standard pack (L) 8, 12.5 or 25 m on a roll



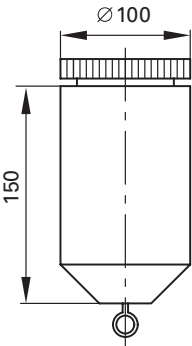
**Inspection piece (straight)**



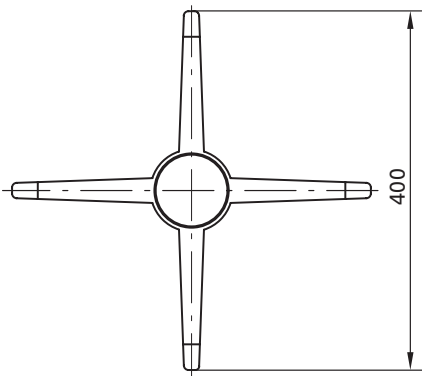
**Union**



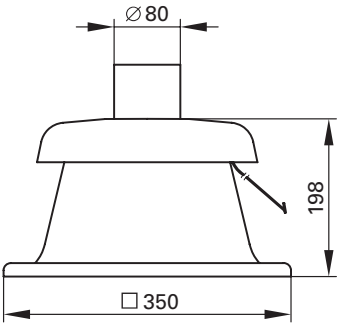
**Pipe lowering attachment**  
with 20 m rope



**Spacers**  
Standard pack 5 pieces  
(applicable for internal shaft dimensions  
130 x 130 mm to 250 x 250 mm or  
Ø 150 mm to Ø 300 mm)



**Duct cover**  
with terminal piece

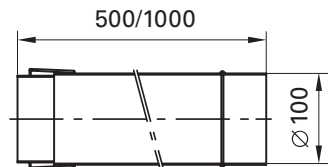


### Components for separate ventilation and flue gas pipes

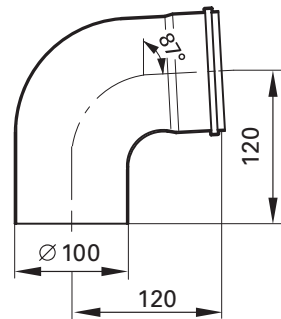
For system size  $\varnothing 60$  mm and  $\varnothing 80$  mm

#### Ventilation pipe

(these pipes may be trimmed as required)

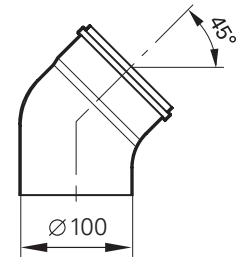


#### Ventilation air bend (87°)



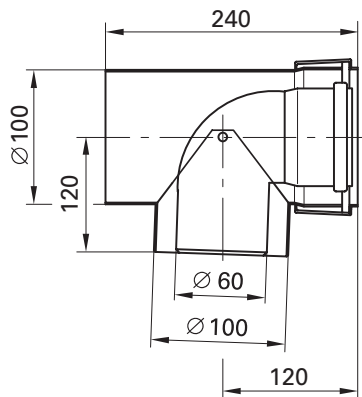
#### Ventilation air bend (45°)

Standard pack 2 pieces

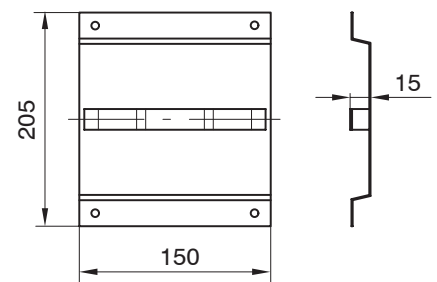


#### Balanced flue tee C 8

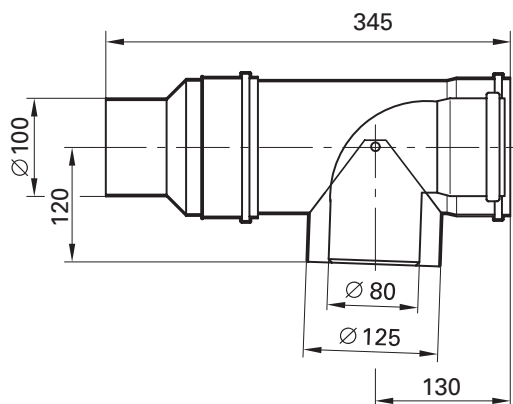
System size  $\varnothing 60$  mm



#### Ventilation air damper



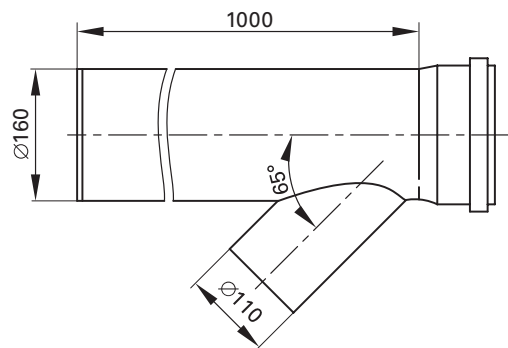
System size  $\varnothing 80$  mm



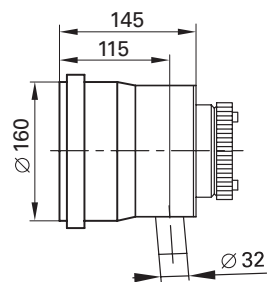
4.3 Flue gas system components

Multi-boiler system components

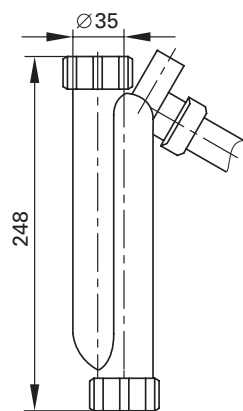
Flue gas collector pipe



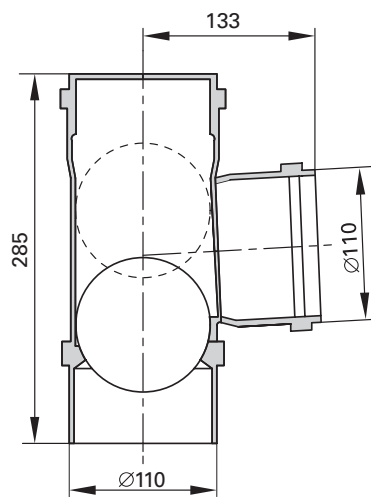
End piece with condensate drain



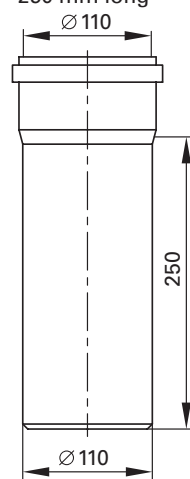
Siphon



Non-return valve

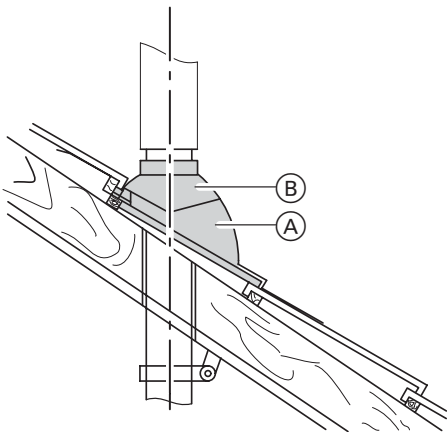


Flue pipe  
250 mm long



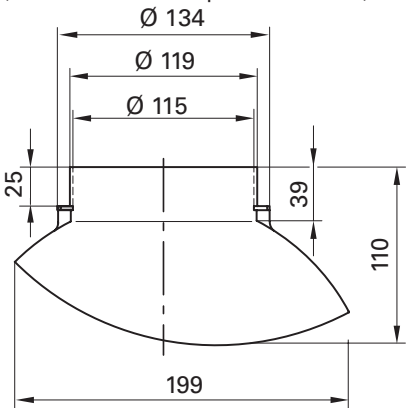
Roof elements

**Universal roof tile**  
(suitable for roof slopes of 25 to 50°)

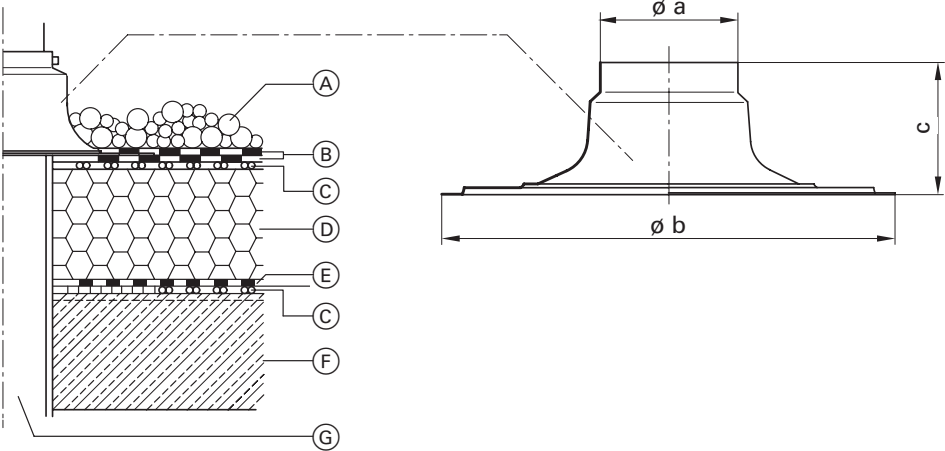


- (A) Universal roof tile
- (B) Pipe outlet for universal roof tile

**Pipe outlet for Klöber roof tiles**  
(only for system size  $\varnothing 80$  mm)  
(suitable for roof slopes of 20 to 50°)



Flat roof collar

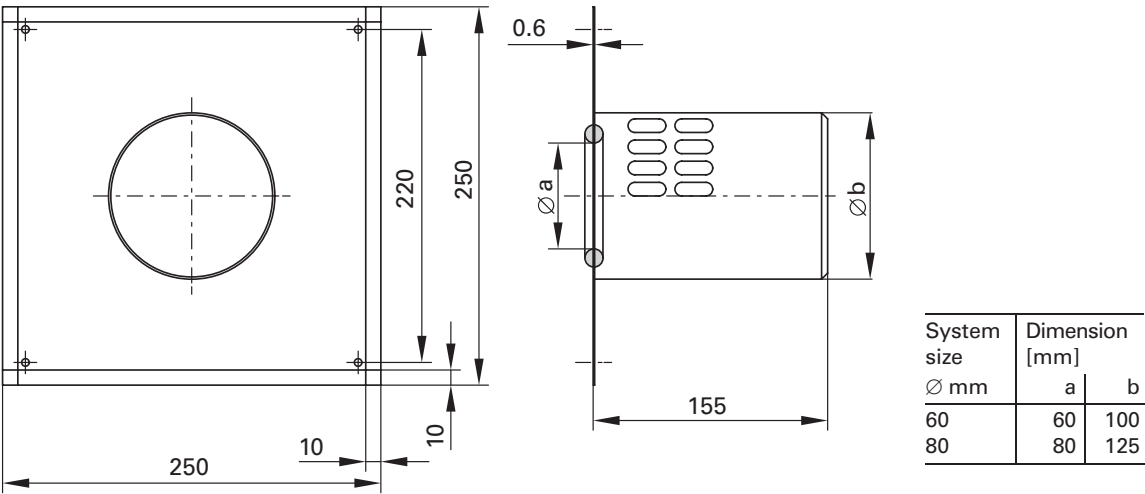


System size $\varnothing$ mm	Dimension [mm]		
	a	b	c
80	110	390	150
100	170	470	150

- (A) Gravel ballast layer
- (B) Insulation layer
- (C) Ventilation layer
- (D) Thermal insulation
- (E) Insulation
- (F) Ceiling
- (G) Vertical coaxial roof terminal

4.3 Flue gas system components

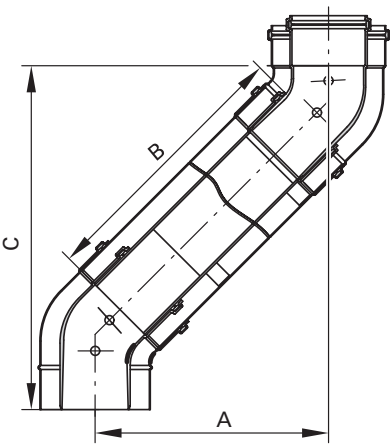
Balanced flue wall bezel for interconnected air supply  
(only for system size Ø 80 mm)



Step in the balanced flue pipe  
(e.g. in corbelled ducts)  
(2 × 45° balanced flue bends)

Smallest offset (A)  
– 100 mm for system size Ø 80 mm (C = 222 mm)  
– 120 mm for system size Ø 100 mm (C = 308 mm):  
Push two 45° balanced flue bends into each other  
then into the balanced flue pipe

Offset  
– above 100 mm for system size Ø 80 mm  
– above 120 mm for system size Ø 100 mm:  
Depending on the offset (dimension A), insert one balanced flue extension  
(dimension B) between both 45° bends.



System size Ø 60 mm							
Offset	A (mm)	150	200	250	300	350	390
Extension	B (mm)	161	232	303	373	444	501
Height	C (mm)	249	299	349	399	449	489

System size Ø 80 mm							
Offset	A (mm)	150	200	250	300	350	390
Extension	B (mm)	122	193	264	384	405	500
Height	C (mm)	270	330	380	430	480	547

System size Ø 100 mm						
Offset	A (mm)	200	250	300	350	390
Extension	B (mm)	170	240	310	380	440
Height	C (mm)	320	360	410	400	505

5.1 Regulations and guidelines

The design and operational characteristics of Vitodens gas fired condensing boilers from Viessmann comply with the requirements of EN 297.	Only qualified personnel must carry out the installation, the mains gas and flue gas connections, the commissioning, the electrical wiring as well as maintenance and repair work.	We recommend that you carry out maintenance and cleaning procedures annually. As part of this maintenance procedure, check the correct function of the entire system. Remedy all faults.
They are CE-designated.		
These may be installed in sealed heating systems with permissible flow temperatures (= safety temperatures) up to 100 °C to EN 12828. The maximum flow temperature is approx. 15 K below the safety temperature.	The installation of a condensing boiler may need to be notified to and approved by your local gas supplier.	Condensing boilers must only be operated with specially designed, tested and approved flue pipes.
Observe all standards and guidelines applicable to the installation and operation of this system in your country.	Some regional permits may be required for the flue gas system and the condensate drain into the public sewer. Some countries require the notification of the flue gas inspector and the water authorities before installation commences.	Only approved contractors may modify this equipment for countries other than those designated on the type plate. That contractor will then arrange for the relevant approval in that country.

EnEV	Energy Savings Order
1st BImSchV	First order for the implementation of the Federal Immission Protection Act (Order for small and medium combustion systems)
FeuVo	Federal Combustion Order
DIN 1986	Drainage system materials
DIN 1988	Drinking water pipe systems on property
DIN 4701	Rules for calculating the heat demand of buildings
DIN 4753	Boilers and boiler systems for DHW and operating water
DIN 18160	Domestic chimneys
DIN 18380	Central heating systems and central DHW heating systems (VOB)
DIN 57116	Electrical equipment for combustion systems
EN 677	Gas fired condensing boilers
EN 12828	Heating system in buildings – Designing hot water heating systems
EN 13384	Flue gas systems – Thermal and flow calculations
ATV-DVWK-A 251	Introducing condensate from gas and oil fired combustion systems into public sewers
DVGW G 260	Gas quality
DVGW G 600	Technical rules for gas installations (TRGI)
DVGW G 688	Gas-consuming equipment, condensing technology
DVGW/DVFG	Technical rules for Liquid Petroleum Gas (TRF)
DVGW VP 113	Systems comprising gas fired combustion equipment and flue pipes
VDI 2035	Guidelines for the prevention of damage through corrosion and scaling in hot water heating systems
VdTÜV 1466	Water Quality Code of Practice
VDE-Regulations and special regulations of public utilities.	

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## 5.2 Keyword index

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