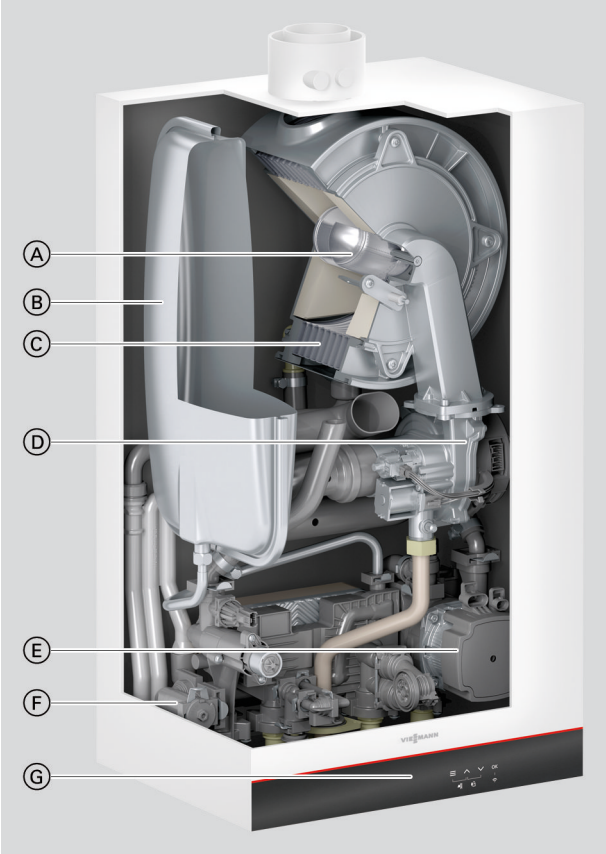
Datasheet

For part no. and prices: see pricelist

VITODENS 050-W Type B0KA, B0HA, BPKA

Wall mounted gas condensing boiler
3.2 to 32.0 kW
Natural gas and LPG version

Product description



Ⓐ Modulating MatriX-Plus burner with intelligent Lambda Pro combustion controller for extremely clean combustion and quiet operation
Ⓑ Integral diaphragm expansion vessel
Ⓒ Inox-Radial heat exchanger made from stainless steel – for high operational reliability, a long service life and high heating output on a very small footprint
Ⓓ Variable speed combustion air fan for quiet and economical operation
Ⓔ Integral, variable speed high efficiency circulation pump
Ⓕ Hydraulics
Ⓖ Digital boiler control unit with 7-segment display

The MatriX-Plus burner and the stainless steel Inox-Radial heat exchanger ensure the high energy efficiency of this combination, as well as its long-term high heating convenience.
All sizes of the Vitodens 050-W are equipped with the automatic Lambda Pro combustion controller. Modulation range 1:8 (up to 25 kW) and 1:10 (32 kW).
The integral, variable speed high efficiency circulation pump reduces power consumption by up to 70 %.

Recommended applications
- New build
- Modernisation

Benefits at a glance
- Seasonal central heating energy efficiency η_S up to 92 % (label A).
- Low cycling frequency, even with low heat demand, due to optimised pauses and a wide modulation range down to 1:8 (up to 25 kW) and 1:10 (32 kW)
- Durable and efficient thanks to Inox-Radial stainless steel heat exchanger
- MatriX-Plus burner with Lambda Pro combustion controller for permanently high efficiency and clean combustion.
- Power saving, high efficiency circulation pump
- Straightforward operation via control unit with LED display and touch buttons
- Web-enabled through integral WiFi interface for operation and service via Viessmann apps, depending on the version

Delivered condition
Wall mounted gas condensing boiler with Inox-Radial heat exchanger, modulating MatriX-Plus burner for natural gas and LPG to DVGW Code of Practice G260, hydraulics and variable speed high efficiency circulation pump.
Weather-compensated or constant temperature control unit with integral WiFi interface subject to version (not available with WiFi module in all countries).

Fully plumbed and wired. Colour of the epoxy-coated casing: Vitopearlwhite.
Integral diaphragm expansion vessel (8 litre capacity).
Preset for operation with natural gas. Conversion within gas groups E/LL is not required. The conversion to LPG is made at the control unit (a conversion kit is not required). The gas condensing system boiler is suitable for operation with a hydrogen blend of up to 20 % by vol.

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

Accessories required (order separately)

Vitodens installation directly on a wall

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

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Product description (cont.)

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

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

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

Vitodens installation in front of a wall

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

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

Tested quality

CE designation according to current EU Directives

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

Specification

Gas condensing system boiler

Gas boiler, type B and C, category I_{2N3P}			
Type		**B0HA**	
Rated heating output range (details to EN 15502)			
T_F/T_R = 50/30 °C			
Natural gas	**kW**	**3.2 to 19.0**	**3.2 to 25.0**
LPG	**kW**	**3.2 to 19.0**	**3.2 to 25.0**
T_F/T_R = 80/60 °C			
Natural gas	**kW**	**2.9 to 17.0**	**2.9 to 22.5**
LPG	**kW**	**2.9 to 17.0**	**2.9 to 22.5**
Rated heating output for DHW heating			
Natural gas	kW	2.9 to 17.3	2.9 to 22.8
LPG	kW	2.9 to 17.3	2.9 to 22.8
Rated heat input (Qn)			
Natural gas	kW	3.0 to 18.0	3.0 to 23.6
LPG	kW	3.0 to 18.0	3.0 to 23.6
Rated heat input for DHW heating (Qnw)			
Natural gas	kW	3.0 to 18.2	3.0 to 24.0
LPG	kW	3.0 to 18.2	3.0 to 24.0
Product ID		CE-0063DL3422	
IP rating to EN 60529		IP X4 to EN 60529	
NO_x		6	6
Gas supply pressure			
Natural gas	mbar	20	20
	kPa	2	2
LPG	mbar	50	50
	kPa	5	5
Max. permiss. gas supply pressure *1			
Natural gas	mbar	13 to 25.0	13 to 25.0
	kPa	1.3 to 2.5	1.3 to 2.5
LPG	mbar	25 to 57.5	25 to 57.5
	kPa	2.5 to 5.75	2.5 to 5.75
Sound power level			
(to EN ISO 15036-1)			
– At partial load	dB(A)	33	33
– At rated heating output (DHW heating)	dB(A)	47	49
Power consumption	W	48	67
(in the delivered condition)			
Rated voltage	V	230	
Rated frequency	Hz	50	
Appliance fuse protection	A	4.0	
Backup fuse (power supply)	A	16	
Communication module (integral)			
WiFi frequency band	MHz	2400 to 2483.5	
Max. transmission power	dBm	20	
Low power radio frequency band	MHz	2400 to 2483.5	
Max. transmission power	dBm	10	
Supply voltage	V ⎓	24	
Power consumption	W	4	
Electronic temperature limiter setting (TN)	°C	91	
Electronic temperature limiter setting	°C	110	
Electronic flue gas temperature limiter setting	°C	110	
Permissible ambient temperature			
– During operation	°C	+5 to +40	
– During storage and transport	°C	-5 to +60	
Weight			
– Excl. heating water and packaging	kg	35	35
– Incl. heating water	kg	41	41
Water capacity (excl. diaphragm expansion vessel)	l	3.0	3.0
Max. flow temperature	°C	82	82
Max. flow rate	l/h	See residual head graph	
(Limit for the use of hydraulic separation)			
Nominal circulating water volume	l/h	752	988
At T_F/T_R = 80/60 °C			

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

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Specification (cont.)

Gas boiler, type B and C, category I_{2N3P}			
Type		**B0HA**	
Rated heating output range (details to EN 15502)			
T_F/T_R = 50/30 °C			
Natural gas	**kW**	**3.2 to 19.0**	**3.2 to 25.0**
LPG	**kW**	**3.2 to 19.0**	**3.2 to 25.0**
T_F/T_R = 80/60 °C			
Natural gas	**kW**	**2.9 to 17.0**	**2.9 to 22.5**
LPG	**kW**	**2.9 to 17.0**	**2.9 to 22.5**
Diaphragm expansion vessel			
– Capacity	l	8	8
– Pre-charge pressure	bar	0.75	0.75
	kPa	75	75
Permiss. operating pressure	bar	3	3
	MPa	0.3	0.3
Connections (with connection accessories)			
– Boiler flow and return	G	¾	¾
– Cold water and DHW	G	¾	¾
Dimensions			
– Length	mm	300	300
– Width	mm	400	400
– Height	mm	700	700
Gas connection	R	¾	¾
Supply values			
Relative to the max. load and 1013 mbar/15 °C			
With gas			
Natural gas E	m^3/h	1.88	2.48
Natural gas LL	m^3/h	2.19	2.88
LPG	kg/h	1.4	1.83
Flue gas parameters			
Temperature (at a return temperature of 30 °C)			
– At rated heating output	°C	41	46
– At partial load (individual connection)	°C	38	38
Temperature (at a return temperature of 60 °C, for DHW heating)	°C	65	67
Overheating temperature	°C	120	
Available draught	Pa	250	250
	mbar	2.5	2.5
Available draught for B23P	Pa	261	473
	mbar	2.61	4.73
Mass flow rate (for DHW heating)			
Natural gas			
– At the max. rated heating output	kg/h	31.7	41.6
– At partial load	kg/h	5.6 (9.8)	5.6 (9.8)
Max. amount of condensate	l/h	2.5	3.3
To DWA-A 251			
Condensate connection (hose nozzle)	Ø mm	20 to 24	20 to 24
Flue gas connection	Ø mm	60	60
Ventilation air connection	Ø mm	100	100
Standard seasonal efficiency [to DIN] at			
T_F/T_R = 40/30 °C	%	Up to 98 (H_s) [gross cv]	
Energy efficiency class		A	A

Note

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

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Specification (cont.)

Gas condensing combi boiler

Gas boiler, type B and C, category I_{2N}/I_{2H}				
Type		**B0KA, BPKA**		**B0KA**
Rated heating output range (details to EN 15502)				
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**3.2 (7.0[*2]) to 19.0**	**3.2 (7.0[*2]) to 25.0**	**3.2 to 32.0**
LPG	**kW**	**3.2 to 19**	**3.2 to 25**	**3.2 to 32.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**2.9 (6.3[*2]) to 17.0**	**2.9 (6.3[*2]) to 22.5**	**2.9 to 29.3**
LPG	**kW**	**2.9 to 17**	**2.9 to 22.5**	**2.9 to 29.3**
Rated heating output for DHW heating				
Natural gas	kW	2.9 (6.3[*2]) to 25.4	2.9 (6.3[*2]) to 30.0	2.9 to 34.2
LPG	kW	2.9 to 25.4	2.9 to 30	2.9 to 34.2
Rated heat input (Qn)				
Natural gas	kW	3.0 (6.5[*2]) to 18.0	3.0 (6.5[*2]) to 23.6	3.0 to 29.9
LPG	kW	3.0 to 18.0	3.0 to 23.6	3.0 to 29.9
Rated heat input for DHW heating (Qnw)				
Natural gas	kW	3.0 (6.5[*2]) to 26.7	3.0 (6.5[*2]) to 31.5	3.0 to 34.9
LPG	kW	3.0 to 26.7	3.0 to 31.5	3.0 to 34.9
Product ID		CE-0063DL3422		
IP rating		IP X4 to EN 60529		
NO_x		6	6	6
Gas supply pressure				
Natural gas	mbar	20	20	20
	kPa	2	2	2
LPG	mbar	50	50	50
	kPa	5	5	5
Max. permiss. gas supply pressure[*3]				
Natural gas	mbar	25	25	25
	kPa	2.5	2.5	2.5
LPG	mbar	25 to 57.5	25 to 57.5	25 to 57.5
	kPa	2.5 to 5.75	2.5 to 5.75	2.5 to 5.75
Sound power level (to EN ISO 15036-1)				
– At partial load	dB(A)	33	33	31.9
– At rated heating output (DHW heating)	dB(A)	52	53	53
Power consumption (in the delivered condition)	W	48	67	113
Rated voltage	V	230		
Rated frequency	Hz	50		
Appliance fuse protection	A	4		
Backup fuse (power supply)	A	16		
Communication module (integral)				
WiFi frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	20		
Low power radio frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	10		
Supply voltage	V ⎓	24		
Power consumption	W	4		
Electronic temperature limiter setting (TN)	°C	91		
Electronic temperature limiter setting	°C	110		
Electronic flue gas temperature limiter setting	°C	110		
Permissible ambient temperature				
– During operation	°C	+5 to +40		
– During storage and transport	°C	-5 to +60		
Weight				
– Excl. heating water and packaging	kg	35	35	37
– Incl. heating water	kg	41	41	43
Water capacity (excl. diaphragm expansion vessel)	l	3.0	3.0	3.0
Max. flow temperature	°C	82	82	82
Max. flow rate (Limit for the use of hydraulic separation)	l/h	See residual head graphs		
Nominal circulating water volume At T_F/T_R = 80/60 °C	l/h	752	988	1259

*[*2] Appliances for multiple connection of type B0KA-[kW]-M*

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

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Specification (cont.)

Gas boiler, type B and C, category I_{2N}/I_{2H}				
Type		**B0KA, BPKA**		**B0KA**
Rated heating output range (details to EN 15502)				
T_F/T_R = 50/30 °C				
Natural gas	**kW**	**3.2 (7.0[*2]) to 19.0**	**3.2 (7.0[*2]) to 25.0**	**3.2 to 32.0**
LPG	**kW**	**3.2 to 19**	**3.2 to 25**	**3.2 to 32.0**
T_F/T_R = 80/60 °C				
Natural gas	**kW**	**2.9 (6.3[*2]) to 17.0**	**2.9 (6.3[*2]) to 22.5**	**2.9 to 29.3**
LPG	**kW**	**2.9 to 17**	**2.9 to 22.5**	**2.9 to 29.3**
Diaphragm expansion vessel				
– Capacity	l	8	8	8
– Pre-charge pressure	bar	0.75	0.75	0.75
	kPa	75	75	75
Permiss. operating pressure	bar	3	3	3
	MPa	0.3	0.3	0.3
Connections (with connection accessories)				
– Boiler flow and return	G	¾	¾	¾
– Cold water and DHW	G	½	½	½
Dimensions				
– Length	mm	300	300	300
– Width	mm	400	400	400
– Height	mm	700	700	700
Gas connection	R	¾	¾	¾
Supply values				
Relative to the max. load and 1013 mbar/15 °C				
Natural gas E	m^3/h	1.88	2.48	3.69
Natural gas LL	m^3/h	2.19	2.88	4.29
LPG	kg/h	1.4	1.83	2.71
Flue gas parameters				
Temperature (at a return temperature of 30 °C)				
– At rated heating output	°C	41	46	59
– At partial load	°C	38	38	38
Temperature (at a return temperature of 60 °C, for DHW heating)	°C	65	67	72
Overheating temperature	°C	120		
Mass flow rate (for DHW heating)				
Natural gas				
– At the max. rated heating output	kg/h	31.7	41.6	62.1
– At partial load	kg/h	5.6 (9.8)	5.6 (9.8)	5.6 (9.8)
Available draught (with individual connection)	Pa	250	250	474
	mbar	2.5	2.5	4.74
Max. amount of condensate	l/h	3.8	4.4	4.9
To DWA-A 251				
Condensate connection (hose nozzle)	Ø mm	20 to 24	20 to 24	20 to 24
Flue gas connection	Ø mm	60	60	60
Ventilation air connection	Ø mm	100	100	100
Standard seasonal efficiency [to DIN] at				
T_F/T_R = 40/30 °C	%	Up to 98 (H_s) [gross cv]		
Energy efficiency class		A	A	A

Note

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

*2 *Appliances for multiple connection of type B0KA-[kW]-M*

Specification (cont.)

19 and 25 kW, type B0KA, B0HA, BPKA

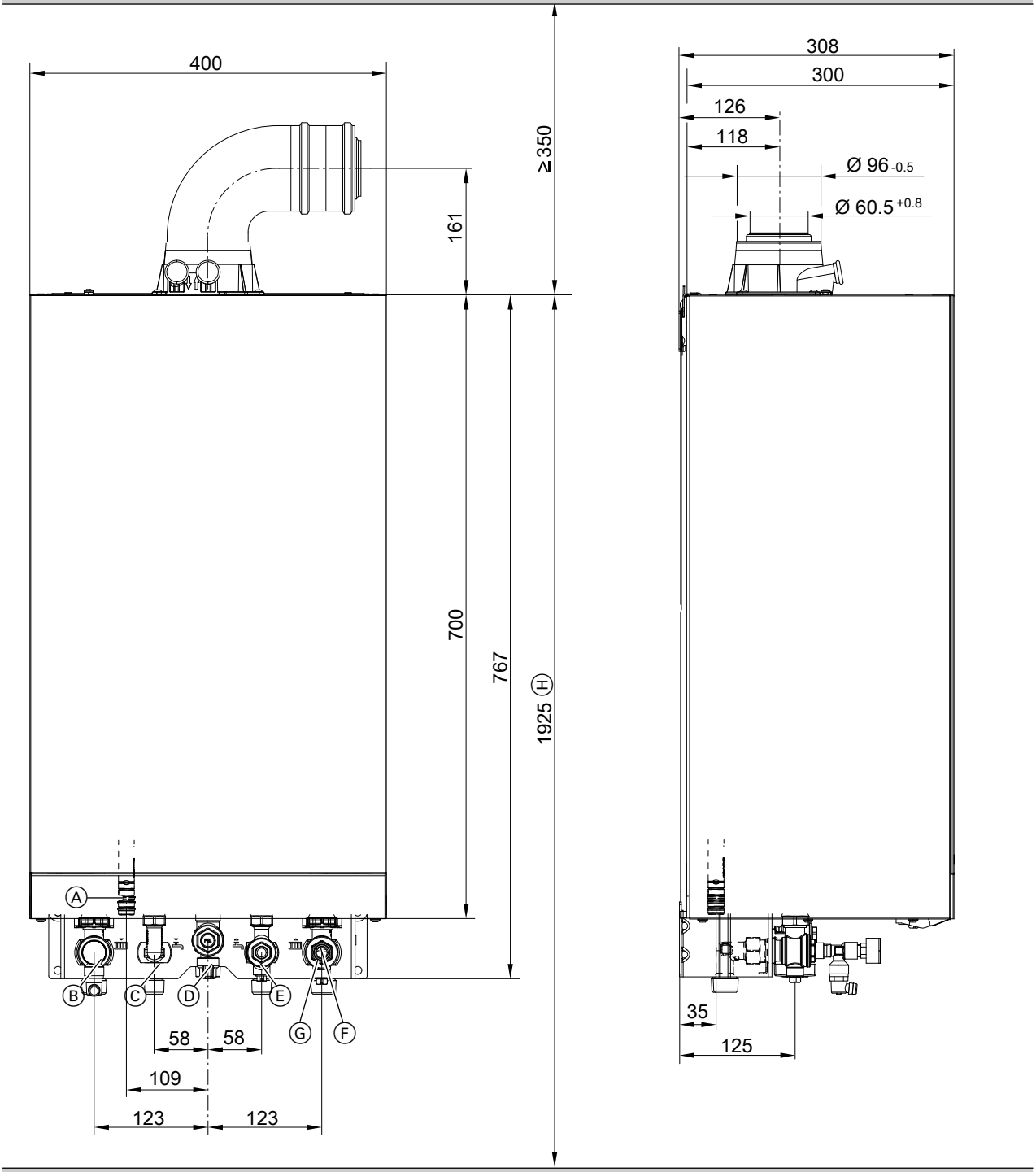

Illustration shows a gas condensing combi boiler

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

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Specification (cont.)

32 kW, type B0KA

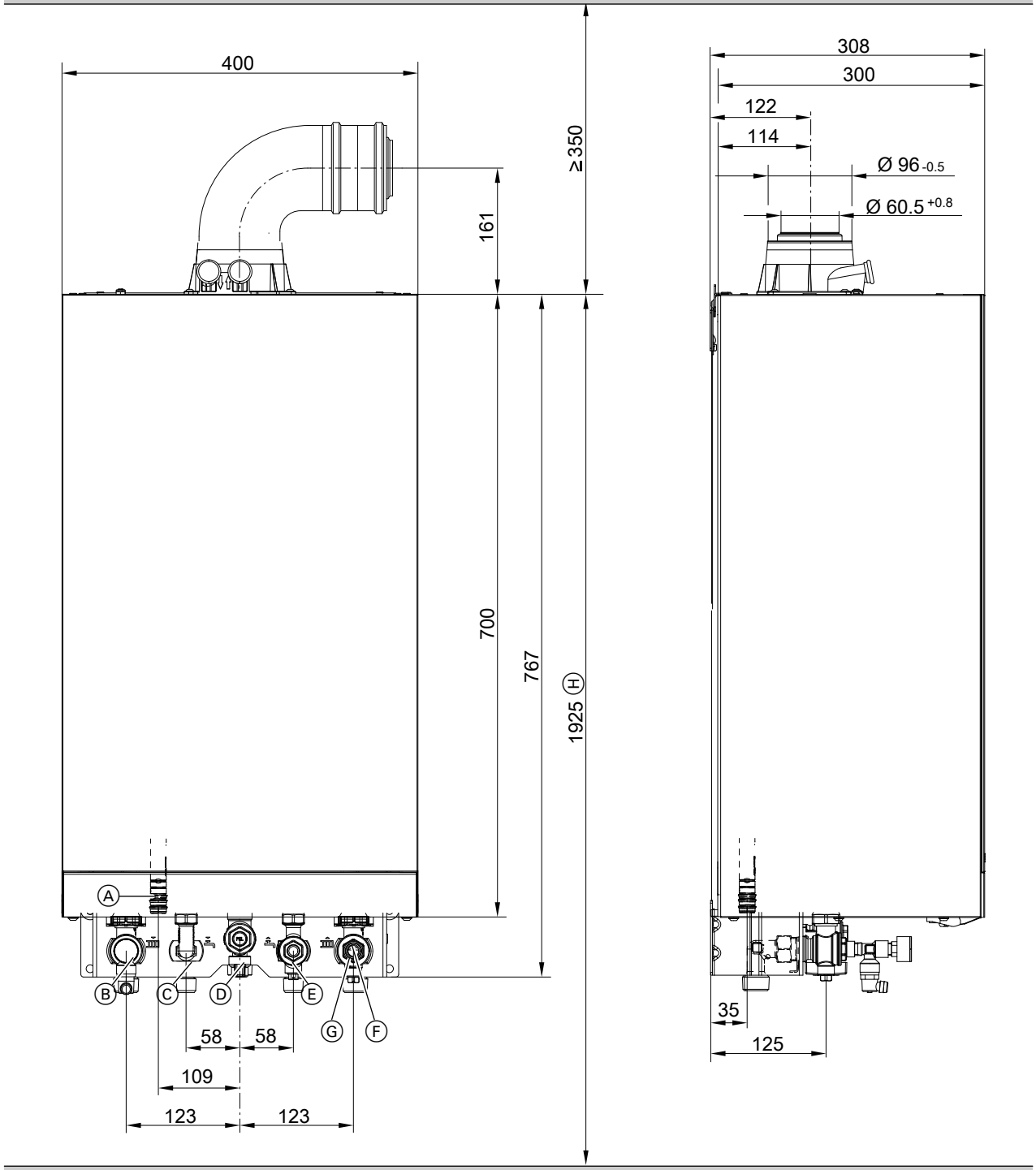

Illustration shows a gas condensing combi boiler

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

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Note
This boiler (IP rating: IP X4) is approved for installation in wet rooms inside safety zone 1, to DIN VDE 0100. Exposure to jets of water must be prevented.
For open flue operation, the boiler may only be operated with a splash cover.
Observe the requirements of DIN VDE 0100.

Variable speed heating circuit pump

The integral circulation pump is a highly efficient pump with substantially lower power consumption than conventional pumps.
The pump speed and consequently the pump rate are controlled subject to the outside temperature and the switching times for heating mode or reduced mode. The control unit transmits the currently specified speeds to the circulation pump via a PWM signal.
The min. and max. speeds and the speed for reduced mode can be matched to the existing heating system via parameters at the control unit.

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

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

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

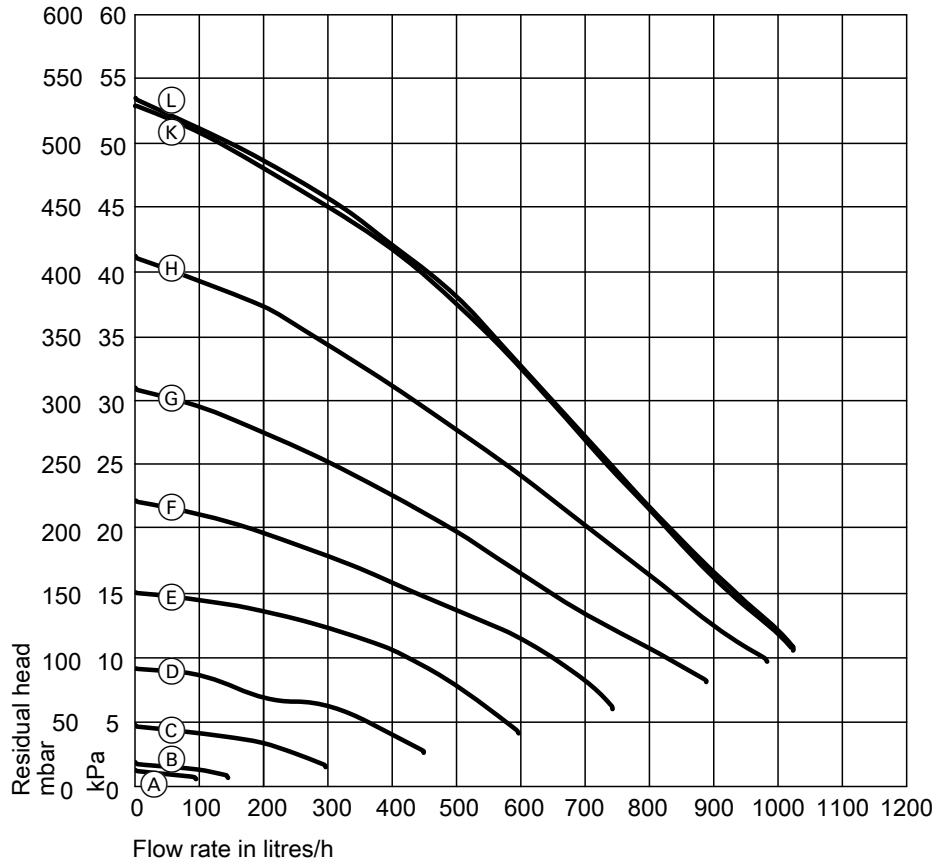
- In conjunction with a low loss header, heating water buffer cylinder and heating circuits with mixer, the internal circulation pump runs at a constant speed.

Specification (cont.)

Specification – circulation pump

Rated heating output	**kW**	**19**	**25**	**32**
Type		**B0KA** **BPKA** **B0HA**	**B0KA** **BPKA** **B0HA**	**B0KA**
Circulation pump	**Type**	**UPM4 15-60**	**UPM4 15-60**	**UMP4 15-75**
Rated voltage	V~	230	230	230
Power consumption				
– max.	W	23	46	63
– min.	W	2	2	2
– Delivered condition	W	21.9	34.3	60
Energy efficiency class		A	A	A
Energy efficiency index (EEI)		≤ 0.20	≤ 0.20	≤ 0.20

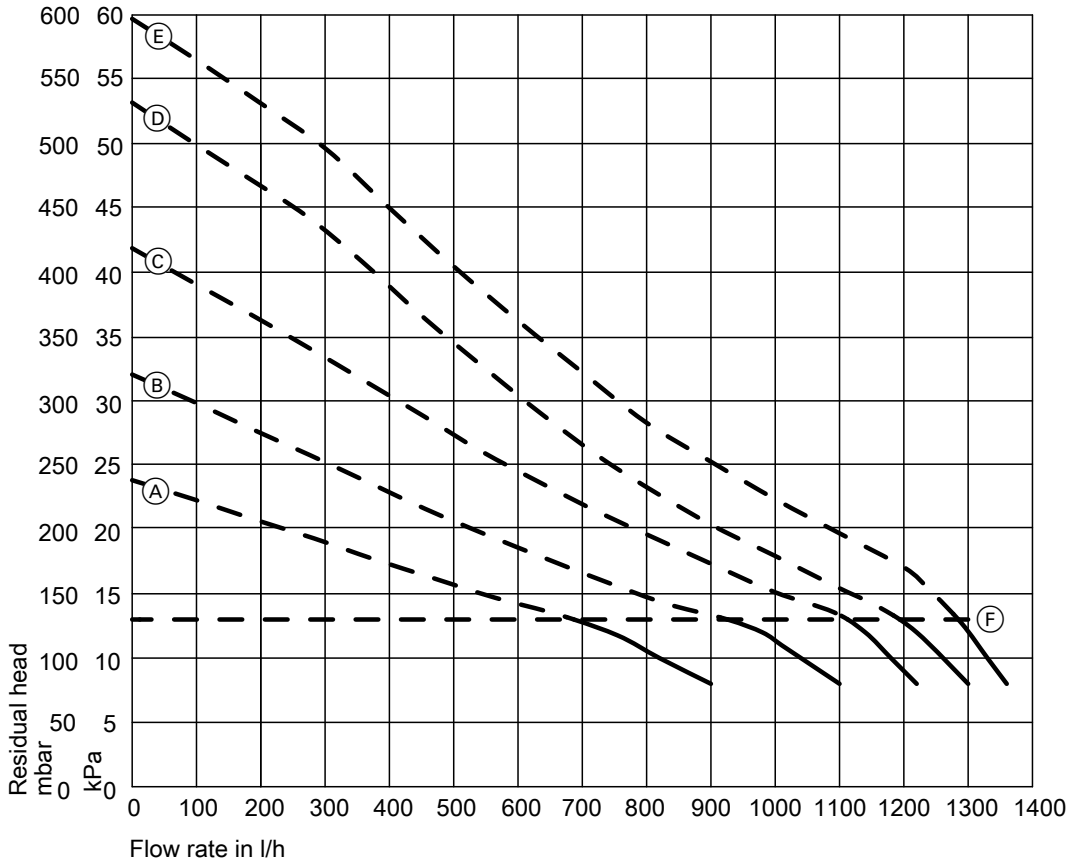
Residual heads of the integral circulation pump 19 and 25 kW



Curve	**Pump rate of circulation pump**
Ⓐ	0 %
Ⓑ	10 %
Ⓒ	20 %
Ⓓ	30 %
Ⓔ	40 %
Ⓕ	50 %
Ⓖ	60 %
Ⓗ	70 %
Ⓚ	80 %
Ⓛ	90 %

Specification (cont.)

Residual heads of the integral circulation pump 32 kW



Ⓕ Upper operational limit

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

Standby instantaneous water heater (gas condensing combi boiler)

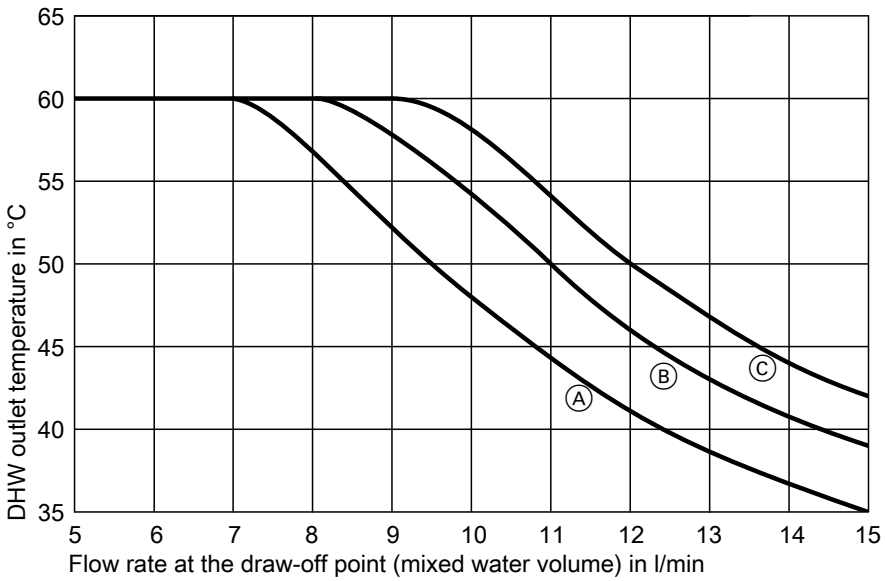
A standby instantaneous water heater is integrated into the Vitodens 050-W, type B0KA BPKA.

Output levels

Rated heating output, gas condensing combi boiler	kW	19.0	25.0	32.0
Continuous DHW output	kW	25.4	30.0	34.9
for DHW heating from 10 to 45 °C	l/h	666	764	880
Draw-off rate	l/min	3 to 12	3 to 14	3 to 16
Outlet temperature, adjustable	°C	10 to 60	10 to 60	10 to 60

Specification (cont.)

DHW temperature subject to flow rate



Ⓐ 19 kW
Ⓑ 25 kW
Ⓒ 32 kW

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

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

Minimum clearances

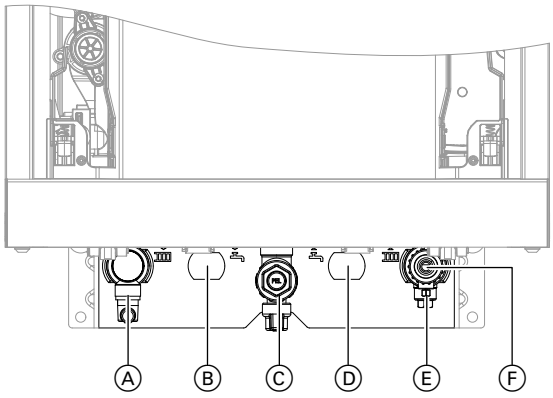
Maintain a clearance of 700 mm in front of the Vitodens for maintenance purposes.

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

Heating water and DHW connections

If the connections have not been fitted previously, make the connections on the heating water and DHW sides.

Gas condensing system boiler



Specifications for threads in conjunction with connection accessories

Ⓐ Heating flow R ¾ (male thread)
Ⓑ Cylinder flow G ¾ (male thread)
Ⓒ Gas connection R ¾ (male thread)
Ⓓ Cylinder return G ¾ (male thread)
Ⓔ Heating return R ¾ (male thread)
Ⓕ Filling/draining

Connection on the heating water side of the DHW cylinder:
The required intermediate pieces (Rp ¾, female thread) on the cylinder flow and return are part of the connection set for the DHW cylinder.
If no DHW cylinder is being connected, seal off the connections with caps.

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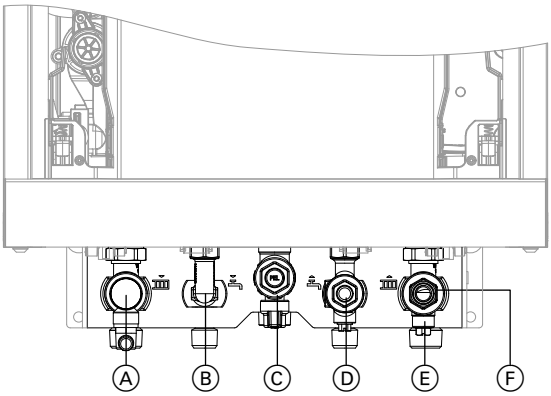
Specification (cont.)

Gas condensing combi boiler



Specifications for threads in conjunction with connection accessories

Ⓐ Heating flow R ¾ (male thread)
Ⓑ DHW R ½ (male thread)
Ⓒ Gas connection R ¾ (male thread)
Ⓓ Cold water R ½ (male thread)
Ⓔ Heating return R ¾ (male thread)
Ⓕ Filling/draining

Scald protection
DHW temperatures of over 60 °C can occur with gas condensing combi boilers. As a result, scald protection should be installed on site in the DHW pipe.

Subject to technical modifications.

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