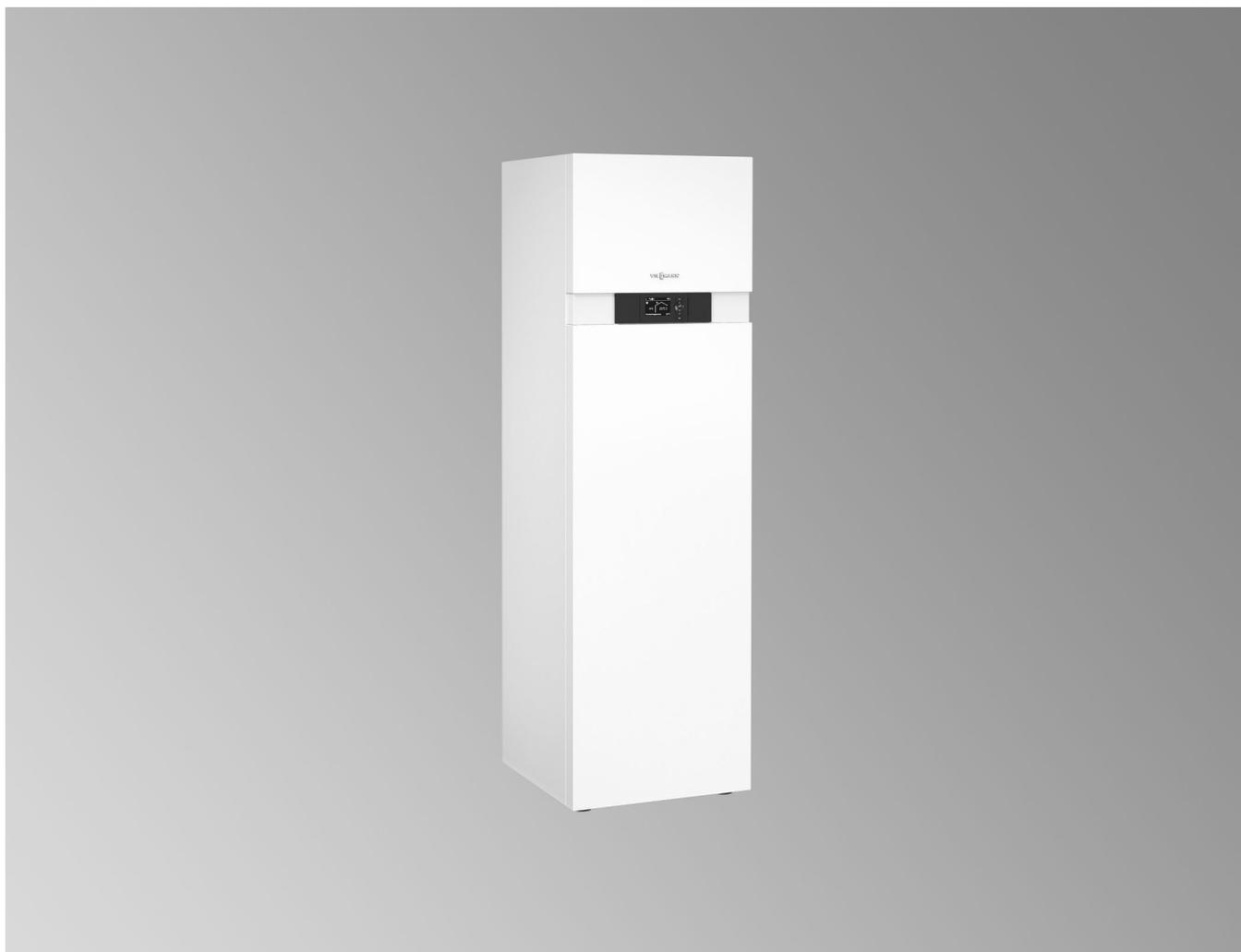


## Datasheet

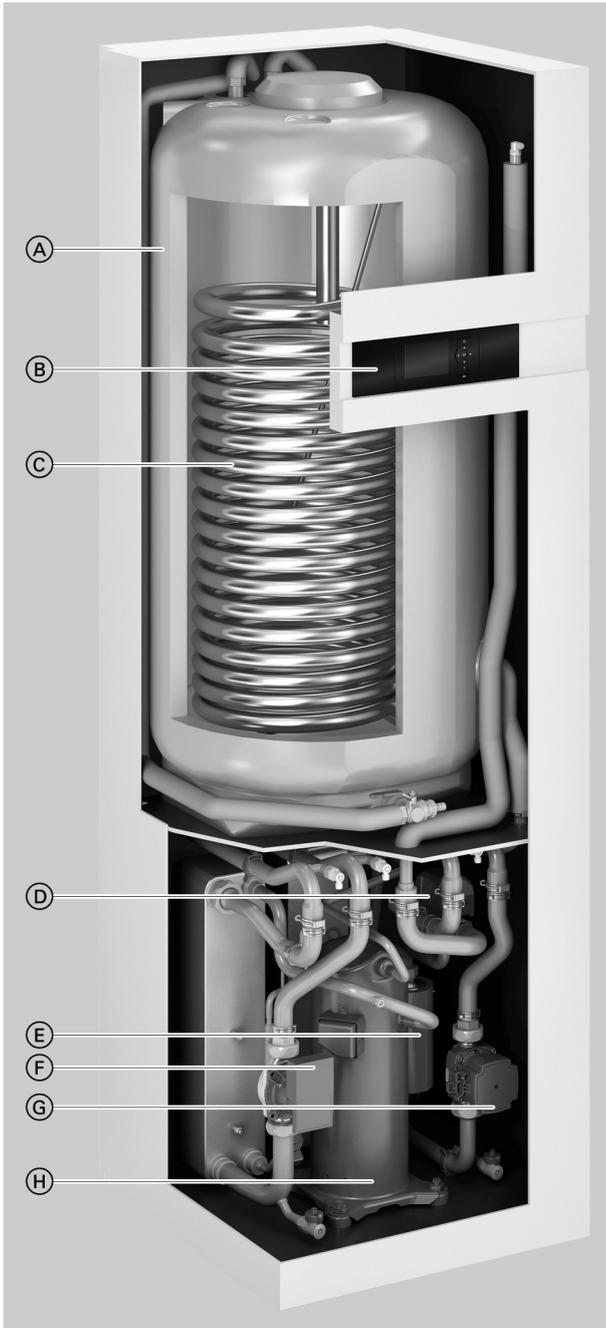
For part no. and prices: see pricelist



### **VITOCAL 222-G** Type BWT(-M) 221.B

Compact heat pump with integral DHW cylinder,  
230 V~/400 V~

## Benefits



- Ⓐ DHW cylinder with 220 l capacity
- Ⓑ Vitotronic 200 weather-compensated, digital heat pump control unit
- Ⓒ Indirect coil for cylinder heating
- Ⓓ 3-way diverter valve "central heating/DHW heating"
- Ⓔ Instantaneous heating water heater
- Ⓕ Primary pump (brine), high efficiency circulation pump
- Ⓖ Secondary pump (heating water), high efficiency circulation pump
- Ⓗ Hermetically sealed Compliant scroll compressor

- Low running costs thanks to high SCOP (seasonal coefficient of performance) to EN 14825: Up to 5.3 for average climatic conditions and low temperature application (W35)
- Especially quiet thanks to new sound insulation concept: 46 dB(A) (B0/W55)
- Low running costs with high level of efficiency at any operating point through the innovative RCD (refrigerant cycle diagnostic) system with electronic expansion valve (EEV)
- High DHW convenience (A<sup>+</sup> energy label) and very high draw-off rates (up to 306 l)

- Easy to operate Vitotronic control unit with plain text and graphic display
- Easy handling as the heat pump module can be quickly removed thanks to push-fit connections
- Optimised utilisation of power generated on-site by a photovoltaic system
- Web-enabled through Vitoconnect (accessories) for operation and service via Viessmann apps

### Delivered condition

#### Type BWT 221.B

- Brine/water heat pump for central heating and DHW heating
- Integral steel DHW cylinder with Ceraprotect enamel coating, protected from corrosion by a protective magnesium anode, with thermal insulation
- Integral diverter valve "central heating/DHW heating"
- Integral high efficiency circulation pump for primary circuit (brine)
- Integral high efficiency circulation pump for secondary circuit (heating water)
- Integral instantaneous heating water heater
- Safety assembly for the heating circuit
- Vitotronic 200 weather-compensated heat pump control unit with outside temperature sensor
- Electronic starting current limiter and integral phase monitor
- Connection pipes for primary circuit (brine) flow and return can be connected on the left or right (supplied)
- Connection pipes for secondary circuit (heating water) flow and return for connection at the top (supplied)

#### Type BWT-M 221.B

- Brine/water heat pump for central heating and DHW heating
- Integral steel DHW cylinder with Ceraprotect enamel coating, protected from corrosion by a protective magnesium anode, with thermal insulation
- Integral diverter valve "central heating/DHW heating"
- Integral high efficiency circulation pump for primary circuit (brine)
- Integral high efficiency circulation pump for secondary circuit (heating water)
- Integral instantaneous heating water heater
- Safety assembly for the heating circuit
- Vitotronic 200 weather-compensated heat pump control unit with outside temperature sensor
- Electronic starting current limiter
- Connection pipes for primary circuit (brine) flow and return can be connected on the left or right (supplied)
- Connection pipes for secondary circuit (heating water) flow and return for connection at the top (supplied)

## Specification

### Specification

#### 400 V appliances

Type BWT		221.B06	221.B08	221.B10
<b>Performance data to EN 14511 (B0/W35, 5 K spread)</b>				
Rated heating output	kW	5.76	7.54	10.36
Cooling capacity	kW	4.44	6.06	8.32
Power consumption	kW	1.25	1.62	2.16
Coefficient of performance $\epsilon$ (COP)		4.60	4.64	4.81
<b>Brine (primary circuit)</b>				
Capacity	l	3.3	3.3	3.9
Minimum flow rate	l/h	860	1160	1470
Residual head at minimum flow rate	mbar	610	620	580
	kPa	61.0	62.0	58.0
Residual head at nominal flow rate	mbar	586	620	580
	kPa	58.6	62.0	58.0
Max. flow temperature (brine inlet)	°C	25	25	25
Min. flow temperature (brine inlet)	°C	-10	-10	-10
<b>Heating water (secondary circuit)</b>				
Capacity, heat pump	l	3.3	3.5	3.8
Capacity, total	l	226	227	228
Minimum flow rate	l/h	600	710	920
Residual head at minimum flow rate	mbar	600	620	610
	kPa	60.0	62.0	61.0
Residual head at nominal flow rate	mbar	576	620	610
	kPa	57.6	62.0	61.0
Max. flow temperature	°C	65	65	65
<b>Instantaneous heating water heater</b>				
Heating output	kW	9.0		
Rated voltage		3/N/PE 400 V/50 Hz		
Fuse protection		3 x B16A 1-pole		
<b>Heat pump electrical values</b>				
Rated voltage, compressor		3/N/PE 400 V/50 Hz		
Rated current, compressor	A	4.8	6.2	7.4
Cos $\phi$		0.9	0.9	0.9
Starting current, compressor with starting current limiter	A	11	14	20
Starting current, compressor with stalled armature	A	28	43	51.5
Compressor fuse rating	A	1 x C16A 3-pole	1 x B16A 3-pole	1 x B16A 3-pole
Rated voltage, heat pump control unit/PCB		1/N/PE 230 V/50 Hz		
Fuse rating, heat pump control unit/PCB (internal)		6.3 A (slow) / 250 V		
<b>Power consumption</b>				
Primary pump (high efficiency circulation pump)	W	5 to 70		
– Energy efficiency index EEI		$\leq 0.21$		
Secondary pump (high efficiency circulation pump)	W	5.7 to 87		
– Energy efficiency index EEI		$\leq 0.21$		
Max. power consumption, control unit	W	1000	1000	1000
Rated output, control unit/PCB	W	12	12	12
<b>Refrigerant circuit</b>				
Refrigerant		R410A	R410A	R410A
– Safety group		A1	A1	A1
– Refrigerant charge	kg	1.4	1.95	2.4
– Global warming potential (GWP) <sup>*1</sup>		1924	1924	1924
– CO <sub>2</sub> equivalent	t	2.7	3.8	4.6
Permiss. operating pressure				
– High pressure side	bar	45	45	45
	MPa	4.5	4.5	4.5
– Low pressure side	bar	28	28	28
	MPa	2.8	2.8	2.8
Compressor	Type	Hermetically sealed scroll compressor		
Oil in compressor	Type	Emkarate RL32 3MAF		
Oil volume in compressor	l	0.74	1.24	1.24

\*1 Based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

## Specification (cont.)

Type BWT		221.B06	221.B08	221.B10
<b>Integral DHW cylinder</b>				
Capacity	l	220	220	220
Max. draw-off volume at DHW temperature 40 °C, storage temperature 54 °C and draw-off rate 10 l/min	l	293	293	293
Max. DHW temperature				
– Only with heat pump	°C	58	58	58
– With instantaneous heating water heater	°C	63	63	63
Max. permiss. DHW temperature	°C	95	95	95
<b>Dimensions</b>				
Total length	mm	680	680	680
Total width	mm	600	600	600
Total height	mm	2000	2000	2000
<b>Weight</b>				
Total weight	kg	277	282	288
Heat pump module	kg	74	77	81
<b>Permiss. operating pressure</b>				
Primary circuit (brine)	bar	3.0	3.0	3.0
	MPa	0.3	0.3	0.3
Secondary circuit, heating water	bar	3.0	3.0	3.0
	MPa	0.3	0.3	0.3
Secondary circuit, DHW	bar	10.0	10.0	10.0
	MPa	1.0	1.0	1.0
<b>Connections</b>				
Primary circuit flow/return	mm	Cu 28 x 1.5	Cu 28 x 1.5	Cu 28 x 1.5
Secondary circuit flow/return	mm	Cu 28 x 1.5	Cu 28 x 1.5	Cu 28 x 1.5
Cold water, DHW (female thread)	Rp	¾	¾	¾
DHW circulation (female thread)	Rp	¾	¾	¾
<b>Sound power</b> (tested with reference to EN 12102/ EN ISO 9614-2) – weighted total sound power level at B0 <sup>±3</sup> K/ W35 <sup>±5</sup> K				
– At rated heating output	dB(A)	40	42	45
<b>Energy efficiency class</b> to Commission Regulation (EU) No 813/2013				
Heating, average climatic conditions				
– Low temperature application (W35)		A <sup>+++</sup>	A <sup>+++</sup>	A <sup>+++</sup>
– Medium temperature application (W55)		A <sup>++</sup>	A <sup>++</sup>	A <sup>++</sup>
DHW heating				
– Draw-off profile XL		A <sup>+</sup>	A <sup>+</sup>	A <sup>+</sup>
<b>Heating performance data</b> to Commission Regulation (EU) No 813/2013 (average climatic conditions)				
Low temperature application (W35)				
– Energy efficiency $\eta_s$	%	186	201	204
– Rated heating output $P_{rated}$	kW	7.0	9.0	12.0
– Seasonal coefficient of performance (SCOP)		4.86	5.23	5.32
Medium temperature application (W55)				
– Energy efficiency $\eta_s$	%	134	143	150
– Rated heating output $P_{rated}$	kW	6.0	8.0	11.0
– Seasonal coefficient of performance (SCOP)		3.56	3.79	3.97
– DHW heating energy efficiency $\eta_{wh}$	%	130	130	130
<b>Sound power level to ErP</b>	dB(A)	40	44	46
<b>230 V appliances</b>				
Type BWT-M		221.B06	221.B08	221.B10
<b>Performance data</b> to EN 14511 (B0/W35, 5 K spread)				
Rated heating output	kW	5.71	7.47	10.29
Cooling capacity	kW	4.32	5.94	8.20
Power consumption	kW	1.36	1.78	2.32
Coefficient of performance $\epsilon$ (COP)		4.20	4.20	4.60
<b>Brine</b> (primary circuit)				
Capacity	l	3.3	3.3	3.9
Minimum flow rate	l/h	860	1160	1470
Residual head at minimum flow rate	mbar	610	620	580
	kPa	61.0	62.0	58.0
Residual head at nominal flow rate	mbar	586	620	580
	kPa	58.6	62.0	58.0
Max. flow temperature (brine inlet)	°C	25	25	25
Min. flow temperature (brine inlet)	°C	-10	-10	-10

## Specification (cont.)

Type BWT-M		221.B06	221.B08	221.B10
<b>Heating water</b> (secondary circuit)				
Capacity, heat pump	l	3.3	3.5	3.8
Capacity, total	l	226	227	228
Minimum flow rate	l/h	600	710	920
Residual head at minimum flow rate	mbar	600	620	610
	kPa	60.0	62.0	61.0
Residual head at nominal flow rate	mbar	576	620	610
	kPa	57.6	62.0	61.0
Max. flow temperature	°C	65	65	65
<b>Instantaneous heating water heater</b>				
Heating output	kW	9.0		
Rated voltage		1/N/PE 230 V/50 Hz		
Fuse rating		3 x B16A 1-pole		
<b>Heat pump electrical values</b>				
Rated voltage, compressor		1/N/PE 230 V/50 Hz		
Rated current, compressor	A	12.8	17.1	22.8
Cos φ		0.9	0.9	0.9
Starting current, compressor with starting current limiter	A	23.9	25.6	38.7
Starting current, compressor with stalled armature	A	60	83	108
Compressor fuse rating	A	B16A	B20A	B25A
Rated voltage, heat pump control unit/PCB		1/N/PE 230 V/50 Hz		
MCB/fuse, heat pump control unit/PCB (internal)		6.3 A (slow) / 250 V		
<b>Power consumption</b>				
Primary pump (high efficiency circulation pump)	W	5 to 70		
– Energy efficiency index EEI		≤ 0.21		
Secondary pump (high efficiency circulation pump)	W	5.7 to 87		
– Energy efficiency index EEI		≤ 0.21		
Max. power consumption, control unit	W	1000	1000	1000
Rated output, control unit/PCB	W	12	12	12
<b>Refrigerant circuit</b>				
Refrigerant		R410A	R410A	R410A
– Safety group		A1	A1	A1
– Refrigerant charge	kg	1.4	1.95	2.4
– Global warming potential (GWP)*2		1924	1924	1924
– CO <sub>2</sub> equivalent	t	2.7	3.8	4.6
Permiss. operating pressure				
– High pressure side	bar	45	45	45
	MPa	4.5	4.5	4.5
– Low pressure side	bar	28	28	28
	MPa	2.8	2.8	2.8
Compressor	Type	Hermetically sealed scroll compressor		
Oil in compressor	Type	Emkarate RL32 3MAF		
Quantity of oil in compressor	l	0.74	1.24	1.24
<b>Integral DHW cylinder</b>				
Capacity	l	220	220	220
Max. draw-off volume at DHW temperature 40 °C, storage temperature 54 °C and draw-off rate 10 l/min	l	293	293	293
Max. DHW temperature				
– Only with heat pump	°C	58	58	58
– With instantaneous heating water heater	°C	63	63	63
Max. permiss. DHW temperature	°C	95	95	95
<b>Dimensions</b>				
Total length	mm	680	680	680
Total width	mm	600	600	600
Total height	mm	2000	2000	2000
<b>Weight</b>				
Total weight	kg	277	282	288
Heat pump module	kg	74	77	81
<b>Permiss. operating pressure</b>				
Primary circuit (brine)	bar	3.0	3.0	3.0
	MPa	0.3	0.3	0.3
Secondary circuit, heating water	bar	3.0	3.0	3.0
	MPa	0.3	0.3	0.3
Secondary circuit, DHW	bar	10.0	10.0	10.0
	MPa	1.0	1.0	1.0

\*2 Based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

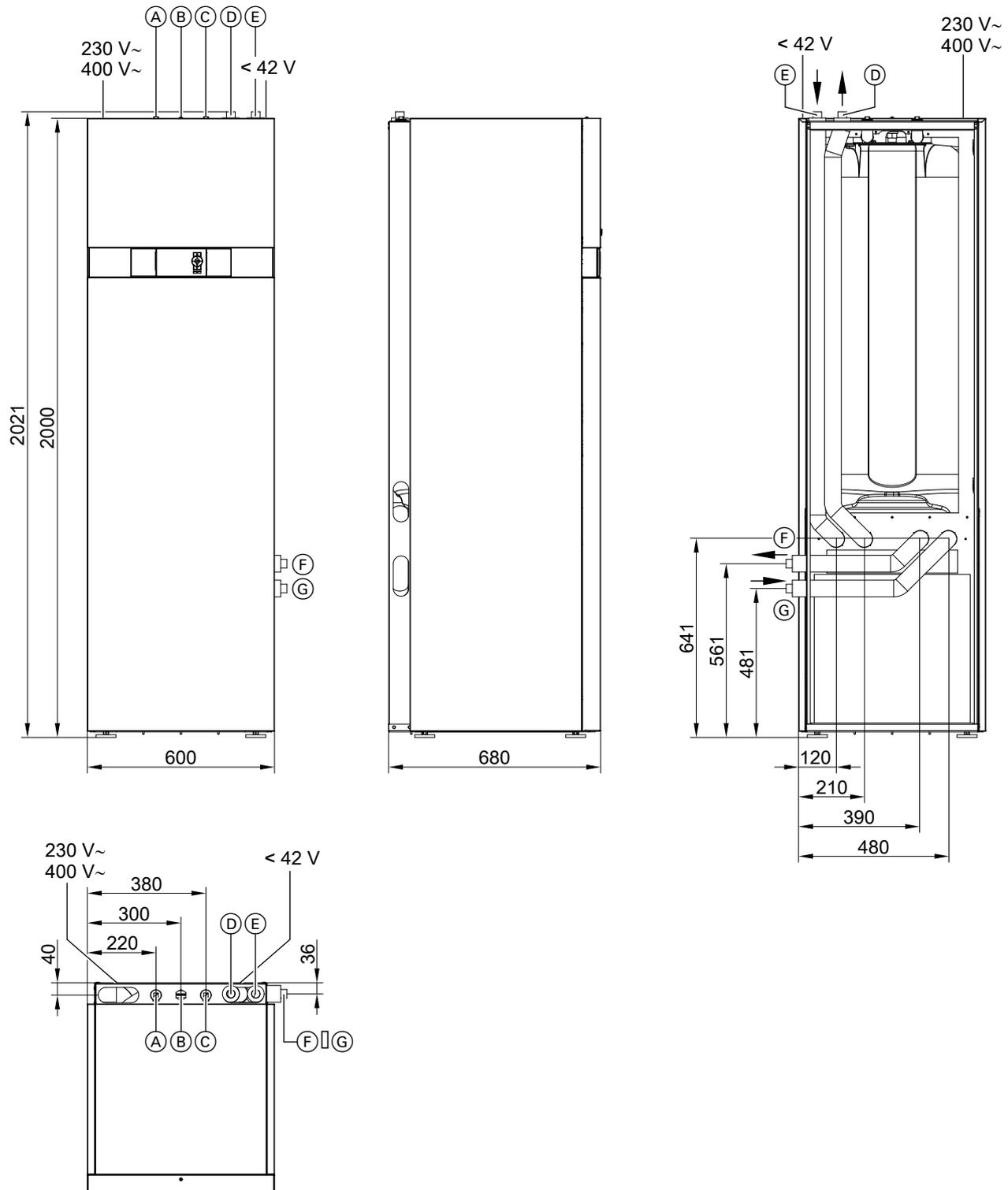
## Specification (cont.)

Type BWT-M		221.B06	221.B08	221.B10
<b>Connections</b>				
Primary circuit flow/return	mm	Cu 28 x 1.5	Cu 28 x 1.5	Cu 28 x 1.5
Secondary circuit flow/return	mm	Cu 28 x 1.5	Cu 28 x 1.5	Cu 28 x 1.5
Cold water, DHW (female thread)	Rp	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
DHW circulation (female thread)	Rp	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
<b>Sound power level</b> (tested with reference to EN 12102/ EN ISO 9614-2) Weighted total sound power level at $B0^{\pm 3 K}$ / $W35^{\pm 5 K}$				
– At rated heating output	dB(A)	40	42	45
<b>Energy efficiency class</b> to EU Regulation no. 813/2013				
Heating, average climatic conditions				
– Low temperature applications (W35)		A+++	A+++	A+++
– Medium temperature applications (W55)		A++	A++	A++
DHW heating				
– Draw-off profile XL		A+	A+	A+
<b>Heating performance data</b> in accordance with EU Regulation No. 813/2013 (average climatic conditions)				
Low temperature applications (W35)				
– Energy efficiency $\eta_s$	%	201	214	194
– Rated heating output $P_{rated}$	kW	6.0	9.0	12.0
– Seasonal coefficient of performance (SCOP)		5.23	5.54	5.06
Medium temperature applications (W55)				
– Energy efficiency $\eta_s$	%	133	151	143
– Rated heating output $P_{rated}$	kW	6.0	8.0	11.0
– Seasonal coefficient of performance (SCOP)		3.52	3.98	3.76
– DHW heating energy efficiency $\eta_{wh}$	%	130	130	130
<b>Sound power level to ErP</b>	dB(A)	40	44	46

## Specification (cont.)

### Dimensions

Primary circuit connections to the right

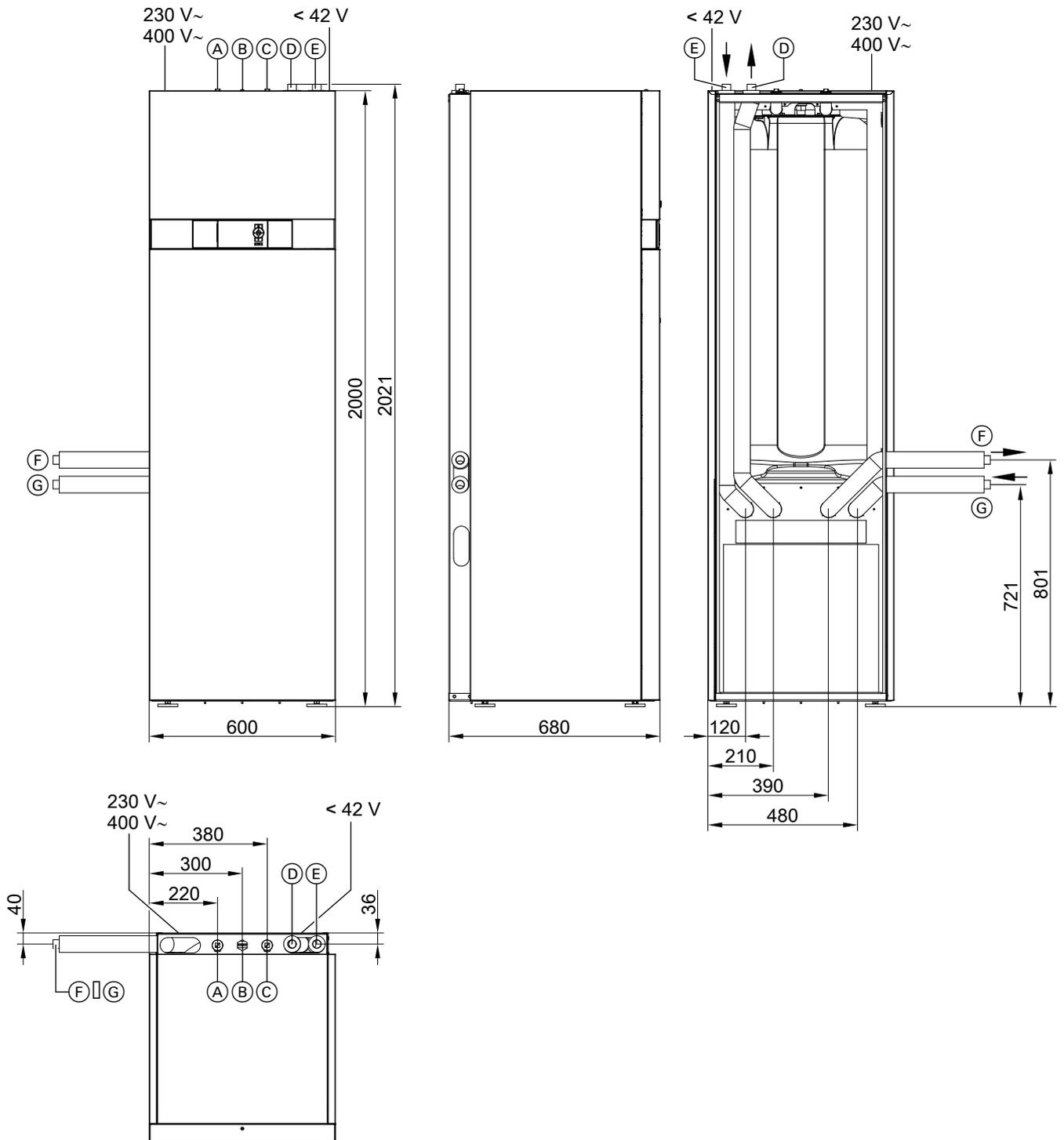


- (A) Cold water
- (B) DHW circulation
- (C) DHW

- (D) Secondary circuit flow (heating water)
- (E) Secondary circuit return (heating water)
- (F) Primary circuit return (heat pump brine outlet)
- (G) Primary circuit flow (heat pump brine inlet)

## Specification (cont.)

### Primary circuit connections to the left



- (A) Cold water
- (B) DHW circulation
- (C) DHW

- (D) Secondary circuit flow (heating water)
- (E) Secondary circuit return (heating water)
- (F) Primary circuit return (heat pump brine outlet)
- (G) Primary circuit flow (heat pump brine inlet)

Subject to technical modifications.

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