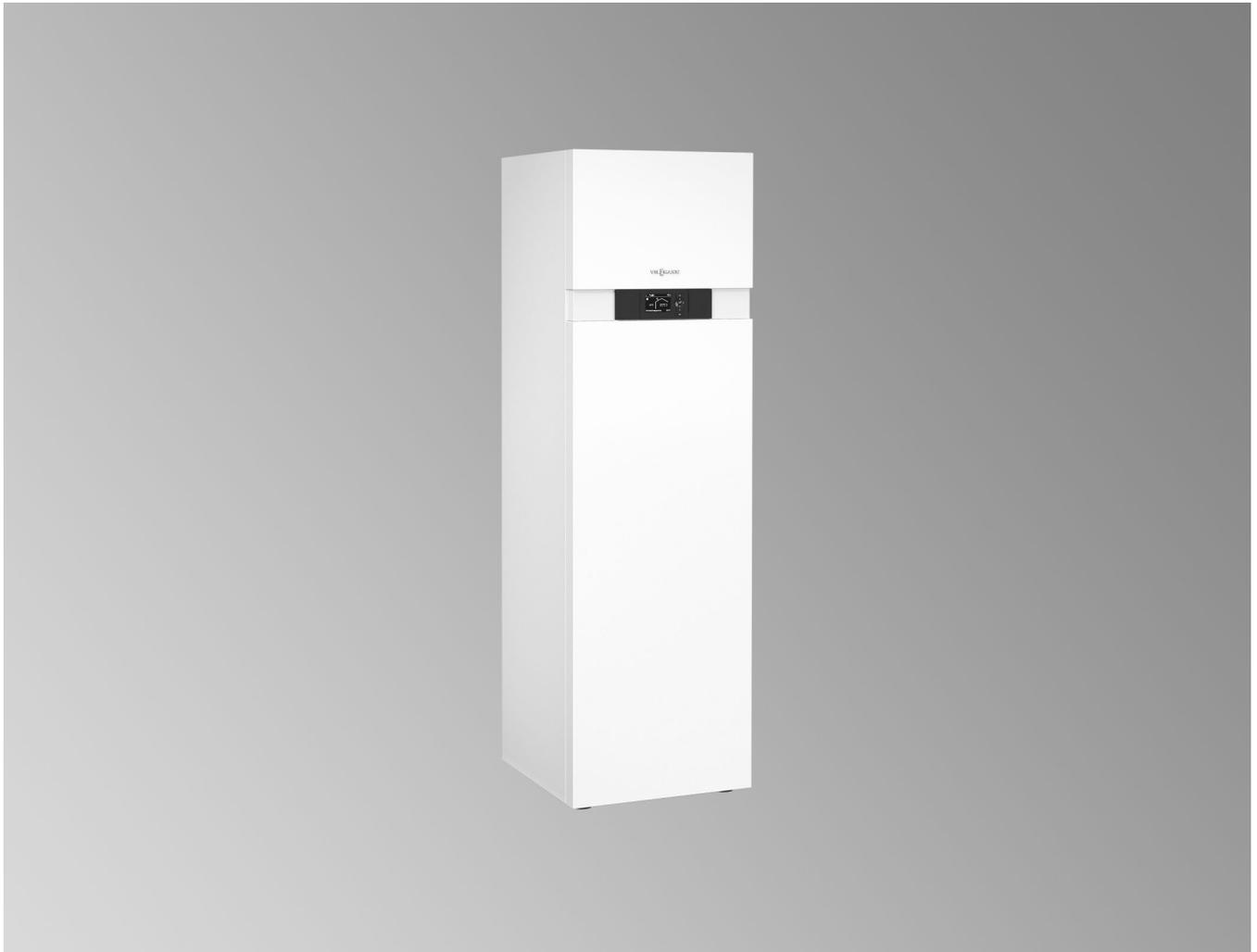


Datasheet

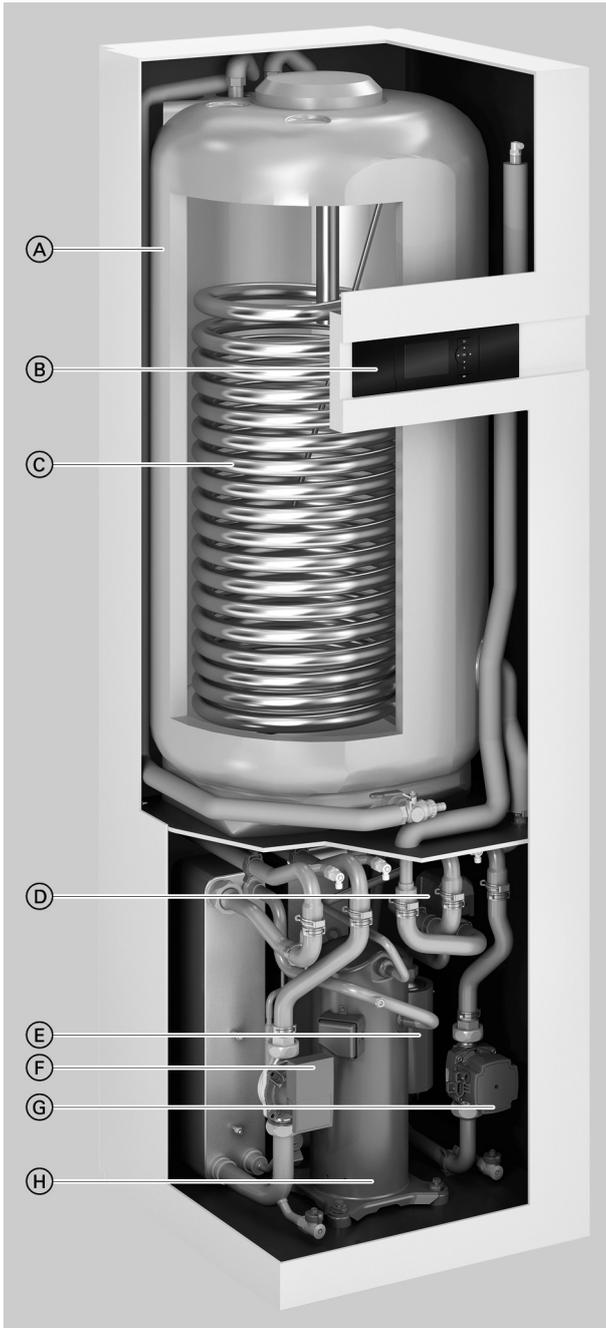
For part no. and prices: see pricelist



VITOCAL 222-G Type BWT-M 221.B06 to B10

Compact heat pump, 230 V~, incorporating a brine/water heat pump, DHW cylinder, circulation pumps, 3-way diverter valve and instantaneous heating water heater

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 a high COP to EN 14511: Up to 4.8 (B0/W35)
- Maximum flow temperatures of up to 65 °C for high DHW convenience
- 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⁺ energy label) and very high draw-off rates (293 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
- Control of compatible Vitovent ventilation units
- Web-enabled through Vitoconnect (accessories) for operation and service via Viessmann apps

Benefits (cont.)

Delivered condition

- 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 (supplied)
- Vitotronic 200 weather-compensated heat pump control unit with outside temperature sensor
- Connection lines for primary circuit (brine) flow and return can be connected on the left or right (supplied)
- Connection lines for secondary circuit (heating water) flow and return for connection at the top (supplied)

Specification

Specification

Type BWT-M		221.B06	221.B08	221.B10
Performance data 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 ϵ (COP)		4.20	4.20	4.60
Brine (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
Heating water (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
Instantaneous heating water heater				
Heating output	kW	9.0		
Rated voltage		1/N/PE 230 V/50 Hz		
Fuse rating		3 x B16A 1-pole		
Heat pump electrical values				
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 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		
Fuse rating, heat pump control unit/PCB (internal)		6.3 A (slow) / 250 V		
Power consumption				
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
Refrigerant circuit				
Refrigerant		R410A	R410A	R410A
– Refrigerant charge	kg	1.4	1.95	2.4
– Global warming potential (GWP)* ¹		1924	1924	1924
– CO ₂ 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
Integral DHW cylinder				
Capacity	l	220	220	220
Max. draw-off volume at DHW temperature 40 °C, storage temperature 53 °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

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

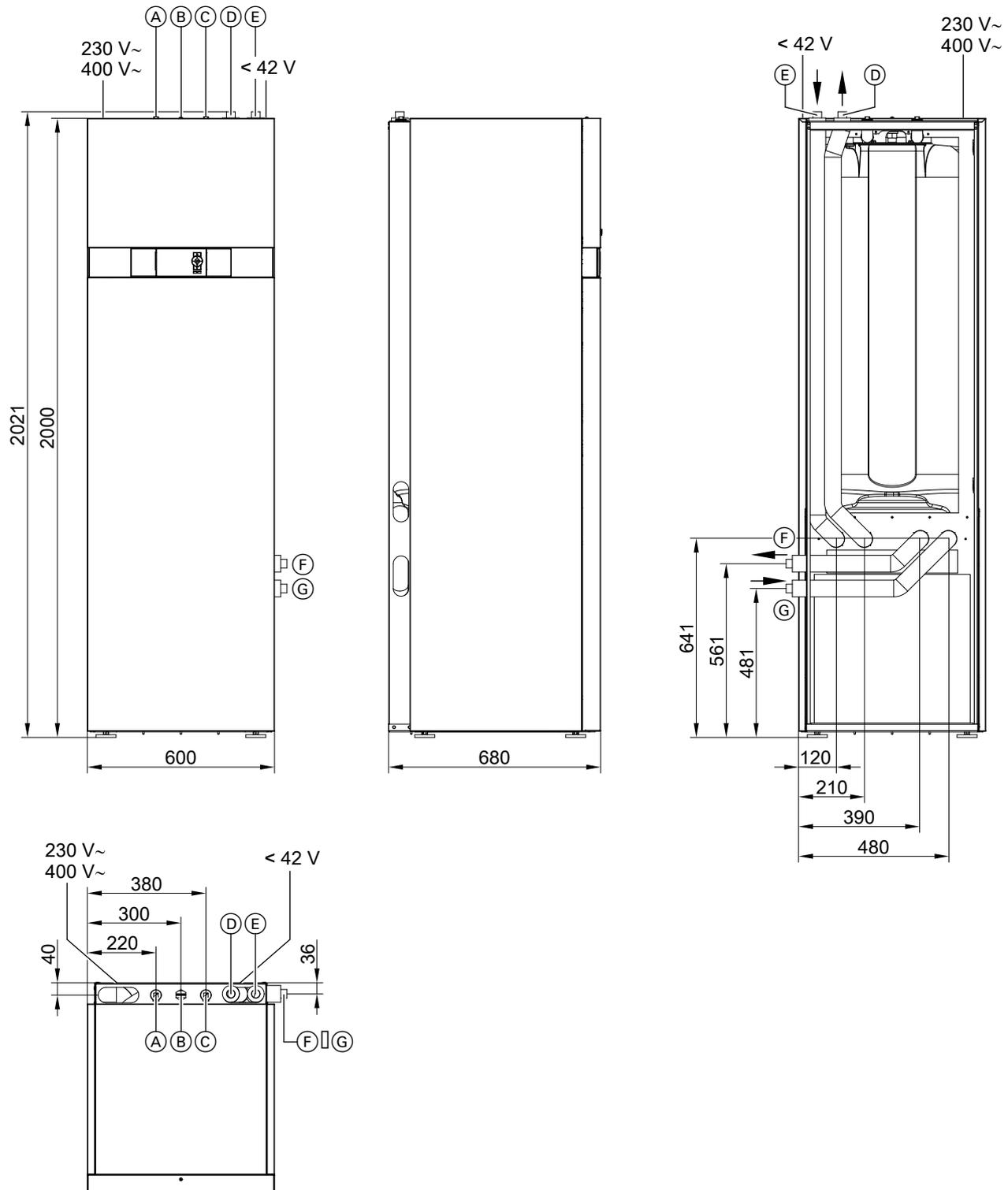
Specification (cont.)

Type BWT-M		221.B06	221.B08	221.B10
Dimensions				
Total length	mm	680	680	680
Total width	mm	600	600	600
Total height	mm	2000	2000	2000
Weight				
Total weight	kg	277	282	288
Heat pump module	kg	74	77	81
Permiss. operating pressure				
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
Connections				
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
Sound power (tested with reference to EN 12102/ EN ISO 9614-2) – weighted total sound power level at B0±3 K/ W35±5 K				
– At rated heating output	dB(A)	40	42	45
Energy efficiency class to Regulation (EU) 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+
Heating performance data in accordance with Regulation (EU) No 813/2013 (average climatic conditions)				
Low temperature applications (W35)				
– Energy efficiency η_s	%	186	201	206
– Rated heating output P_{rated}	kW	7.0	8.0	12.0
– Seasonal coefficient of performance (SCOP)		4.84	5.24	5.34
Medium temperature applications (W55)				
– Energy efficiency η_s	%	134	144	145
– Rated heating output P_{rated}	kW	6.0	7.0	10.0
– Seasonal coefficient of performance (SCOP)		3.56	3.80	3.83
– DHW heating energy efficiency η_{wh}	%	130	130	130
Sound power level to ErP				
	dB(A)	40	44	46

Specification (cont.)

Dimensions

Primary circuit connections to the right

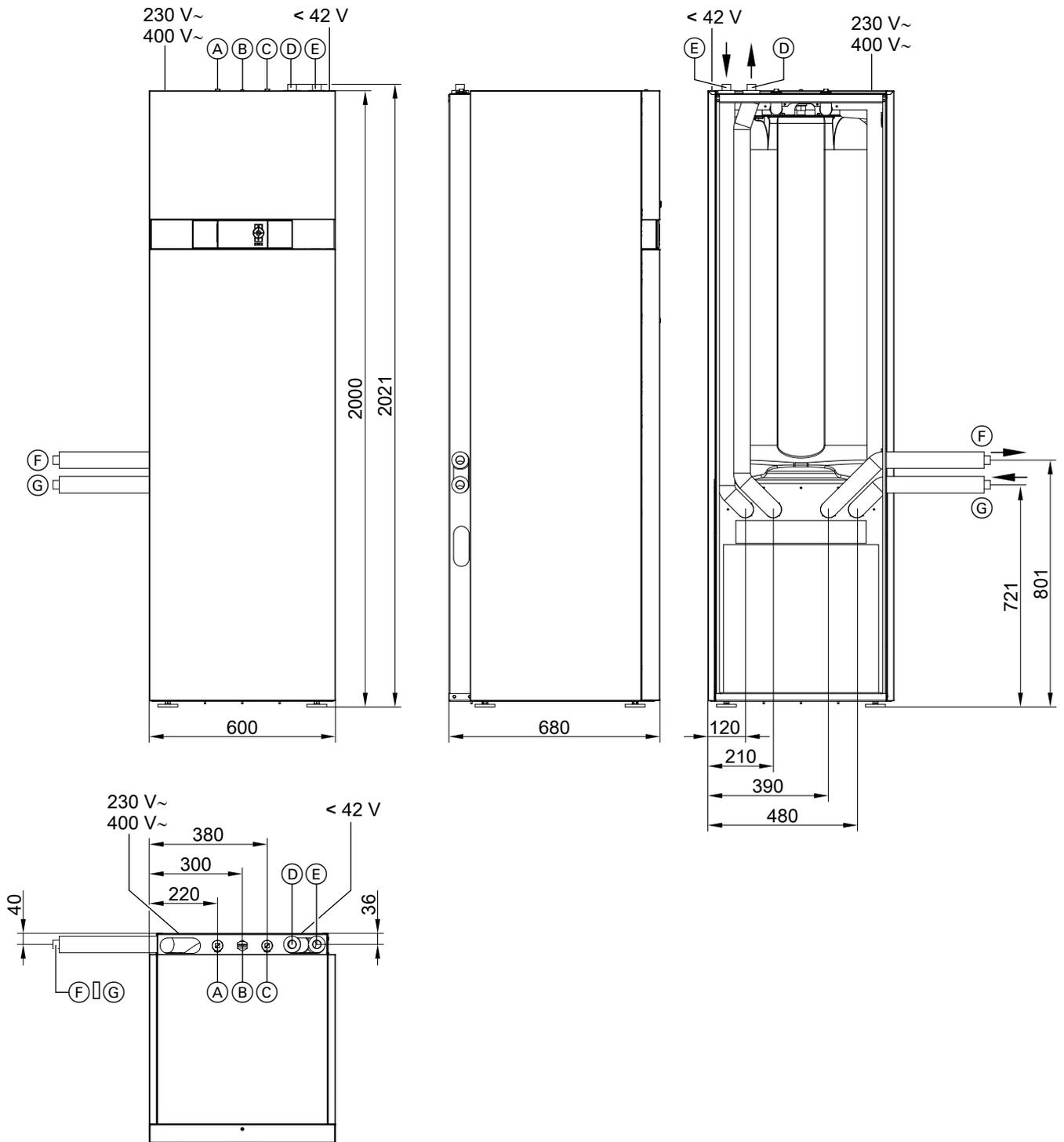


(A)		Cold water
(B)		DHW circulation
(C)		DHW
(D)		Secondary circuit flow (heating water)

(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



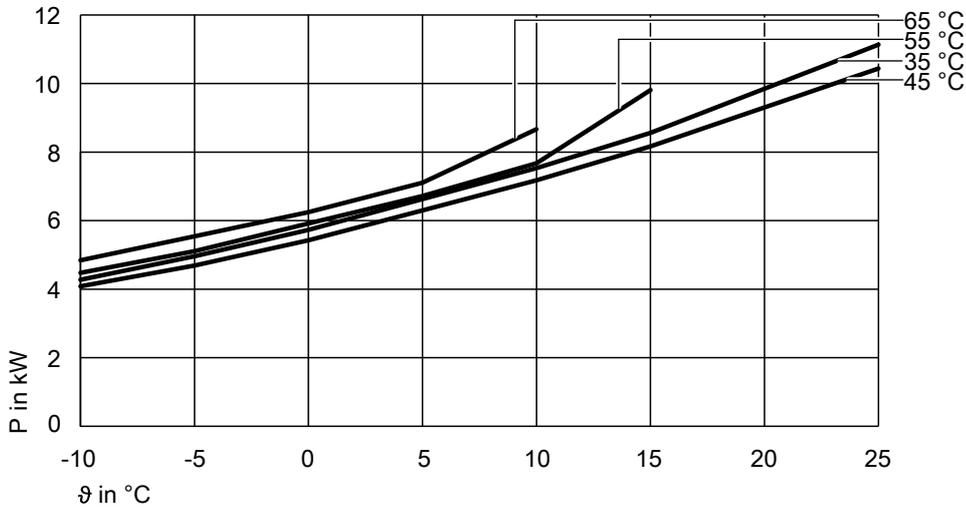
(A)		Cold water
(B)		DHW circulation
(C)		DHW
(D)		Secondary circuit flow (heating water)

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

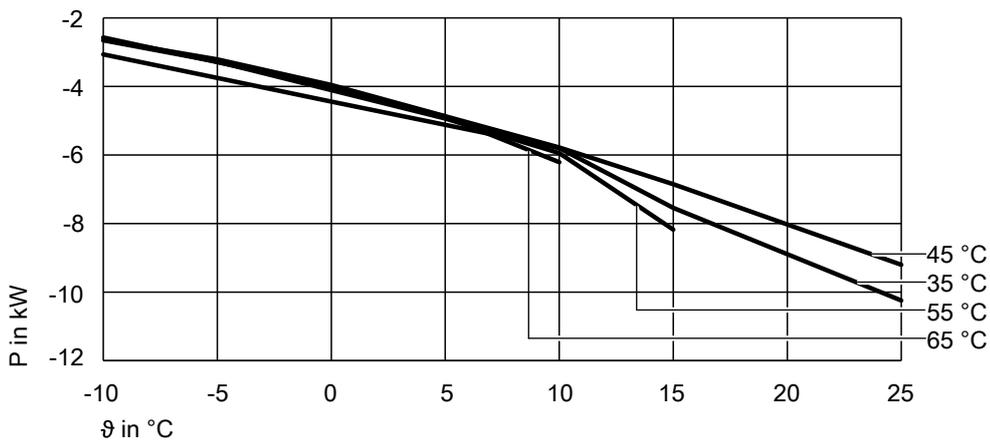
Curves

Output diagrams for type BWT-M 221.B06

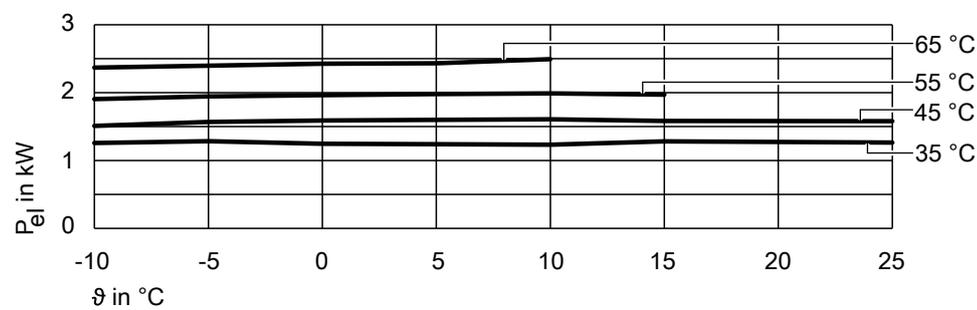
Heating output at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C



Cooling capacity at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C

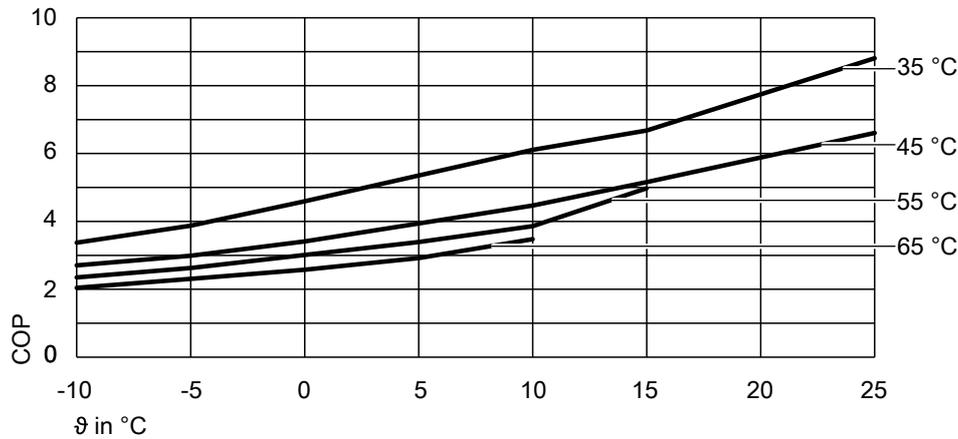


Power consumption at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C



Curves (cont.)

Coefficient of performance (COP) at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C



ϑ Primary circuit flow temperature (heat pump brine inlet)
 P Heating output or cooling capacity
 P_{el} Power consumption
 COP Coefficient of performance

Note

- The COP data in the tables and diagrams was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

Operating point	W B	°C °C	35						
			-10	-5	0	5	10	15	25
Heating output		kW	4.27	4.96	5.73	6.63	7.53	8.56	11.13
Cooling capacity		kW	3.06	3.75	4.44	5.12	5.80	7.54	10.24
Power consumption		kW	1.26	1.28	1.25	1.24	1.23	1.28	1.26
Coefficient of performance ε (COP)			3.37	3.87	4.60	5.35	6.11	6.68	8.81

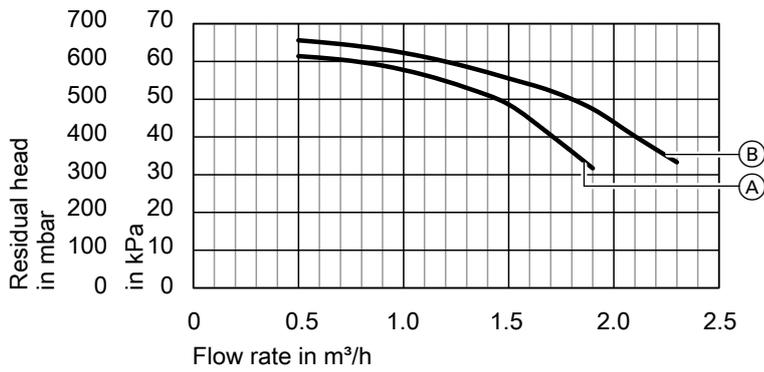
Operating point	W B	°C °C	45						
			-10	-5	0	5	10	15	25
Heating output		kW	4.08	4.69	5.43	6.30	7.18	8.16	10.44
Cooling capacity		kW	2.64	3.21	3.96	4.87	5.78	6.85	9.20
Power consumption		kW	1.51	1.57	1.59	1.60	1.61	1.58	1.58
Coefficient of performance ε (COP)			2.71	2.99	3.41	3.94	4.47	5.16	6.61

Operating point	W B	°C °C	55						
			-10	-5	0	5	10	15	25
Heating output		kW	3.84	4.48	5.11	5.91	6.72	7.68	9.81
Cooling capacity		kW	2.03	2.65	3.28	4.11	4.94	5.94	8.18
Power consumption		kW	1.86	1.90	1.94	1.96	1.98	1.99	1.97
Coefficient of performance ε (COP)			2.07	2.35	2.63	3.01	3.39	3.86	4.98

Operating point	W B	°C °C	65						
			-10	-5	0	5	10	15	25
Heating output		kW			4.84	5.55	6.25	7.11	8.67
Cooling capacity		kW			2.57	3.29	4.01	4.88	6.21
Power consumption		kW			2.37	2.40	2.43	2.43	2.49
Coefficient of performance ε (COP)					2.04	2.31	2.58	2.92	3.48

Curves (cont.)

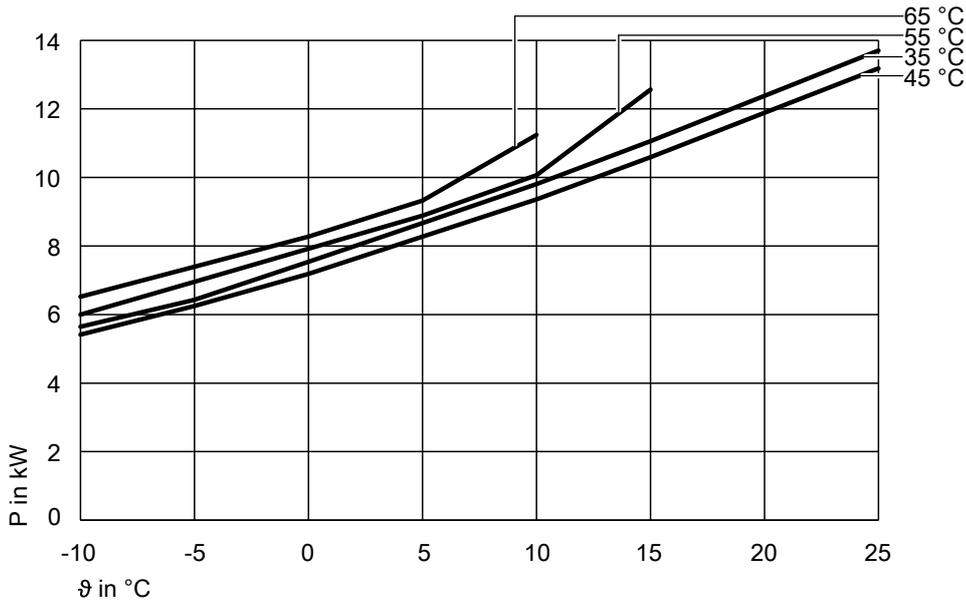
Residual heads of the integral circulation pumps, type BWT-M 221.B06



- (A) Secondary pump (Grundfos UPM3 25-75 130 PWM)
- (B) Primary pump (Wilo Yonos PARA GT 25/7.5 130 PWM)

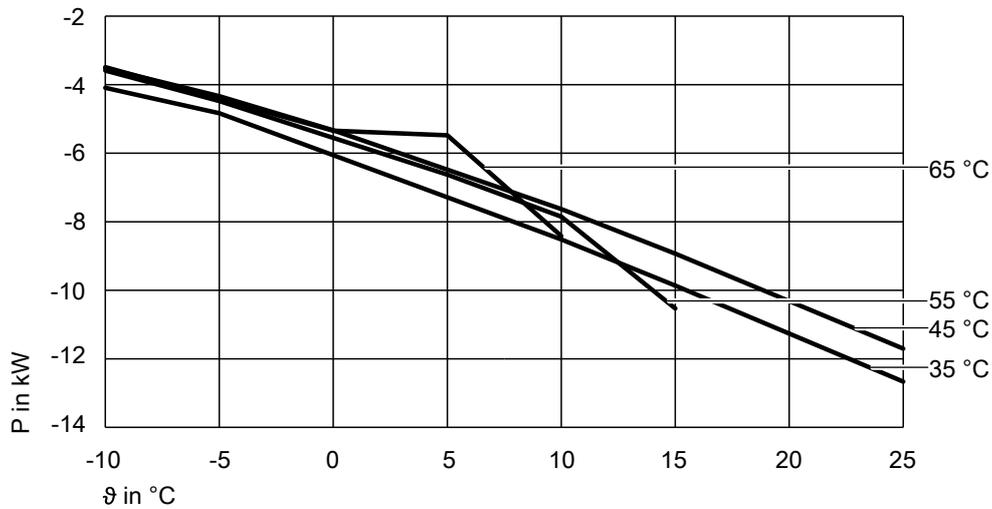
Output diagrams for type BWT-M 221.B08

Heating output at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C

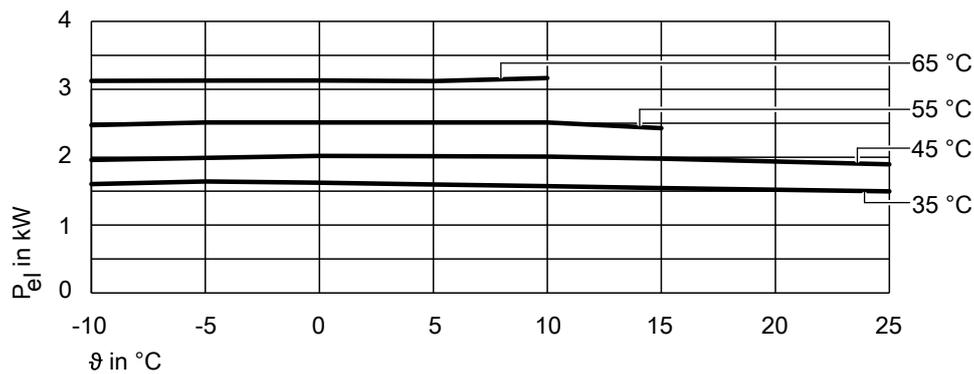


Curves (cont.)

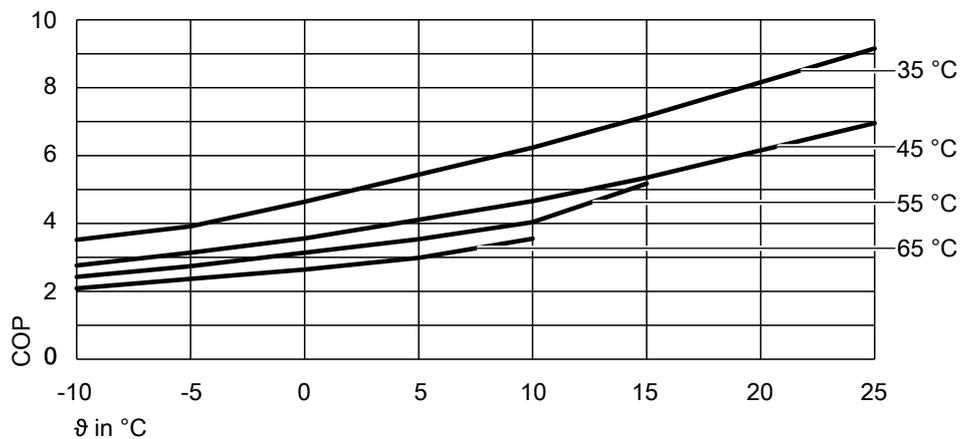
Cooling capacity at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C



Power consumption at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C



Coefficient of performance (COP) at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C



ϑ Primary circuit flow temperature (heat pump brine inlet)
 P Heating output or cooling capacity
 P_{el} Power consumption
 COP Coefficient of performance

Note

- The COP data in the tables and diagrams was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

Curves (cont.)

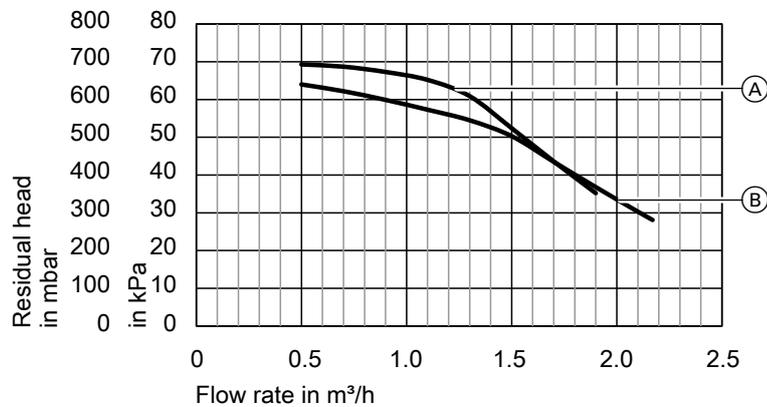
Operating point	W B	°C °C	35						
			-10	-5	0	5	10	15	25
Heating output		kW	5.65	6.43	7.54	8.67	9.80	11.06	13.70
Cooling capacity		kW	4.09	4.83	6.06	7.29	8.52	9.86	12.66
Power consumption		kW	1.60	1.64	1.62	1.60	1.57	1.54	1.50
Coefficient of performance ϵ (COP)			3.52	3.91	4.64	5.44	6.24	7.16	9.16

Operating point	W B	°C °C	45						
			-10	-5	0	5	10	15	25
Heating output		kW	5.42	6.25	7.19	8.27	9.36	10.59	13.18
Cooling capacity		kW	3.52	4.34	5.33	6.48	7.63	8.93	11.70
Power consumption		kW	1.96	1.99	2.02	2.01	2.01	1.98	1.89
Coefficient of performance ϵ (COP)			2.76	3.14	3.56	4.11	4.66	5.35	6.96

Operating point	W B	°C °C	55						
			-10	-5	0	5	10	15	25
Heating output		kW	5.04	6.00	6.95	7.92	8.88	10.06	12.56
Cooling capacity		kW	2.70	3.59	4.48	5.55	6.63	7.85	10.53
Power consumption		kW	2.43	2.47	2.51	2.51	2.51	2.51	2.43
Coefficient of performance ϵ (COP)			2.11	2.43	2.74	3.14	3.54	4.04	5.18

Operating point	W B	°C °C	65						
			-10	-5	0	5	10	15	25
Heating output		kW			6.52	7.40	8.28	9.33	11.24
Cooling capacity		kW			3.49	4.42	5.34	5.48	8.41
Power consumption		kW			3.13	3.13	3.13	3.12	3.17
Coefficient of performance ϵ (COP)					2.09	2.37	2.64	2.99	3.55

Residual heads of the integral circulation pumps, type BWT-M 221.B08

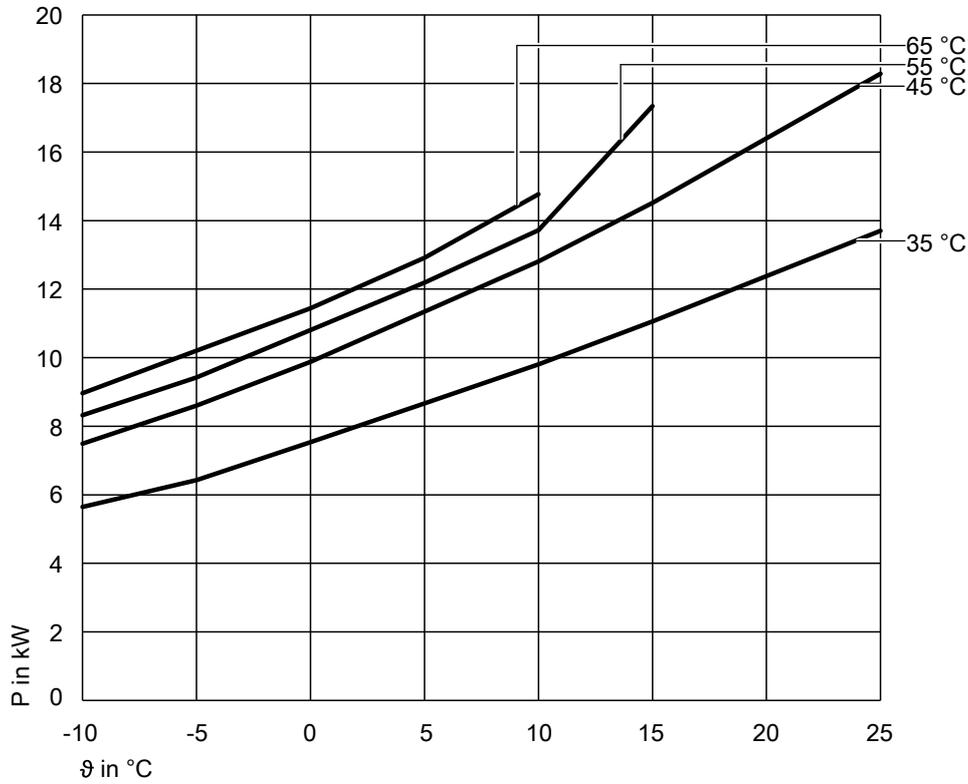


- (A) Secondary pump (Grundfos UPM3 25-75 130 PWM)
- (B) Primary pump (Wilo Yonos PARA GT 25/7.5 130 PWM)

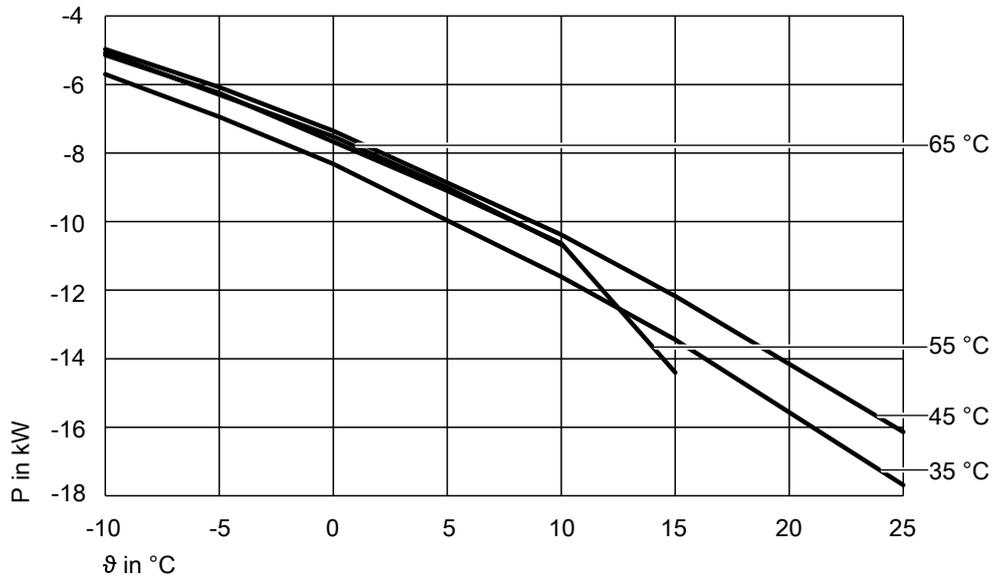
Curves (cont.)

Output diagrams for type BWT-M 221.B10

Heating output at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C

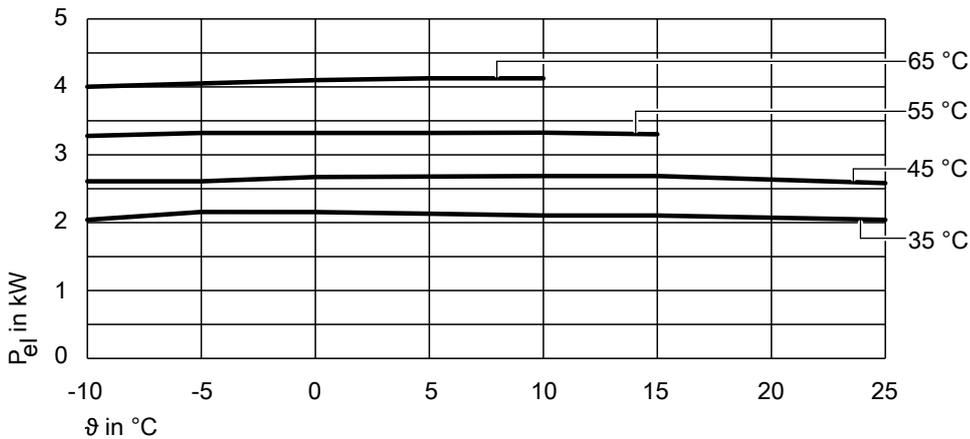


Cooling capacity at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C

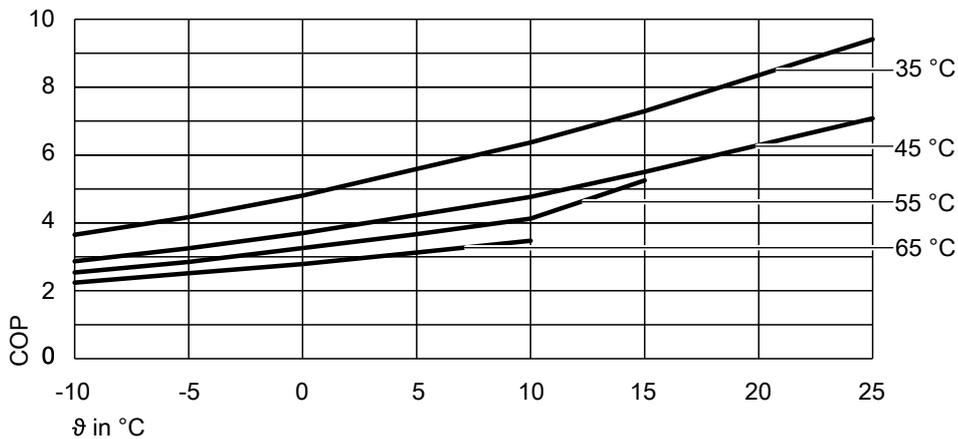


Curves (cont.)

Power consumption at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C



Coefficient of performance (COP) at secondary circuit flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C



ϑ Primary circuit flow temperature (heat pump brine inlet)
 P Heating output or cooling capacity
 P_{el} Power consumption
 COP Coefficient of performance

Note

- The COP data in the tables and diagrams was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

Operating point	W B	°C °C	35						
			-10	-5	0	5	10	15	25
Heating output		kW	7.78	9.00	10.36	11.89	13.41	15.16	19.21
Cooling capacity		kW	5.70	6.94	8.32	9.96	11.61	13.44	17.69
Power consumption		kW	2.04	2.16	2.16	2.13	2.11	2.11	2.04
Coefficient of performance ε (COP)			3.65	4.17	4.81	5.59	6.37	7.29	9.41

Operating point	W B	°C °C	45						
			-10	-5	0	5	10	15	25
Heating output		kW	7.49	8.60	9.88	11.34	12.81	14.52	18.29
Cooling capacity		kW	4.97	6.08	7.36	8.87	10.38	12.17	16.14
Power consumption		kW	2.61	2.61	2.67	2.68	2.69	2.69	2.58
Coefficient of performance ε (COP)			2.87	3.26	3.70	4.23	4.77	5.50	7.08

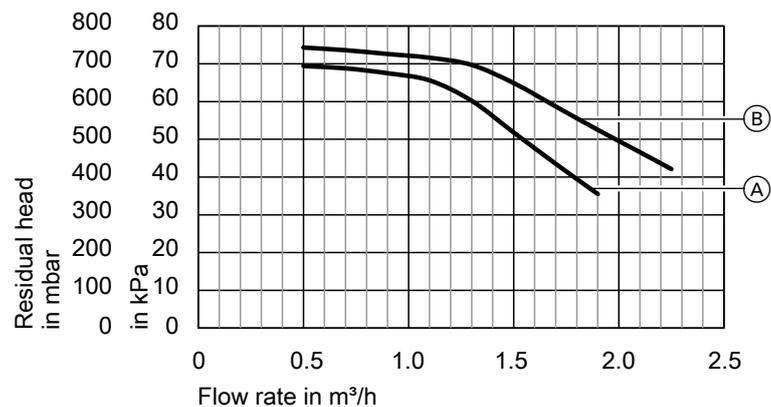
Operating point	W B	°C °C	55						
			-10	-5	0	5	10	15	25
Heating output		kW	7.22	8.32	9.42	10.81	12.19	13.72	17.34
Cooling capacity		kW	4.03	5.14	6.25	7.67	9.10	10.64	14.40
Power consumption		kW	3.23	3.28	3.32	3.32	3.32	3.33	3.30
Coefficient of performance ε (COP)			2.23	2.54	2.85	3.26	3.67	4.13	5.25

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Curves (cont.)

Operating point	W B	°C °C	65						
			-10	-5	0	5	10	15	25
Heating output		kW			8.96	10.20	11.44	12.91	14.77
Cooling capacity		kW			5.07	6.29	7.52	9.01	10.68
Power consumption		kW			4.00	4.05	4.10	4.13	4.13
Coefficient of performance ϵ (COP)					2.24	2.52	2.79	3.13	3.48

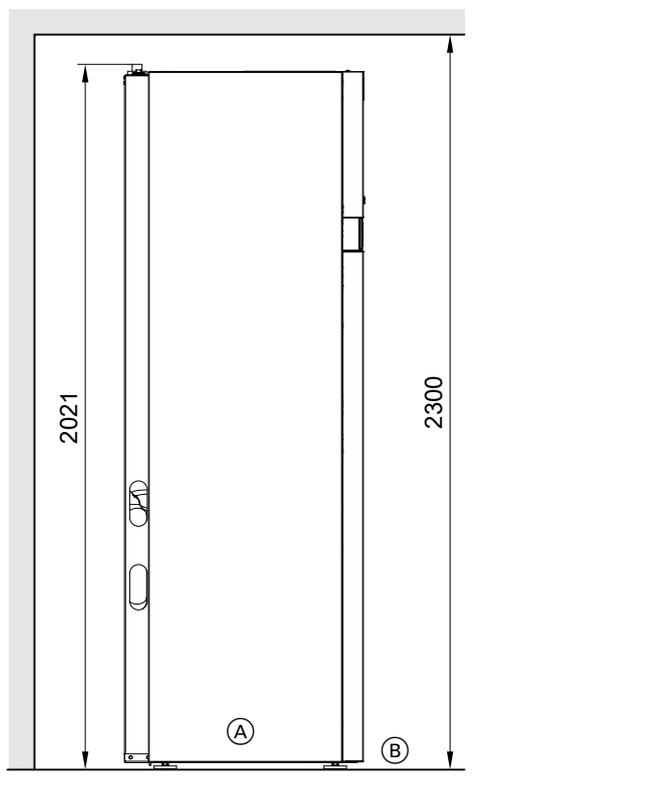
Residual heads of the integral circulation pumps, type BWT-M 221.B10



- Ⓐ Secondary pump (Grundfos UPM3 25-75 130 PWM)
- Ⓑ Primary pump (Wilo Yonos PARA GT 25/7.5 130 PWM)

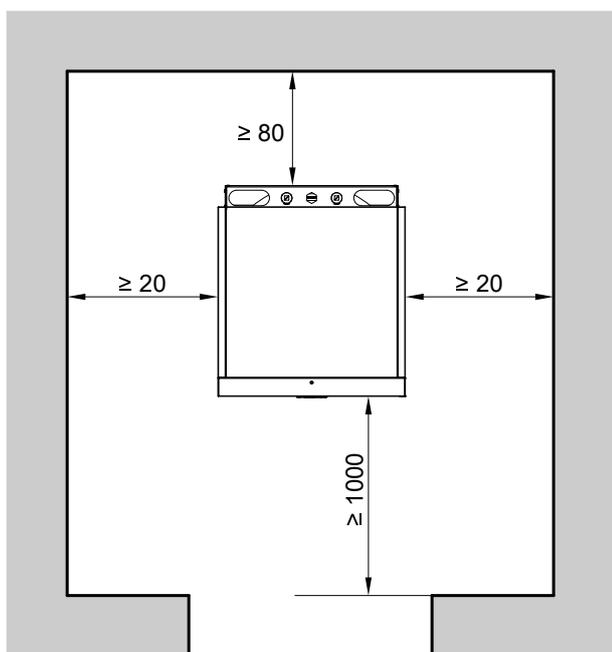
Design information

Minimum room height



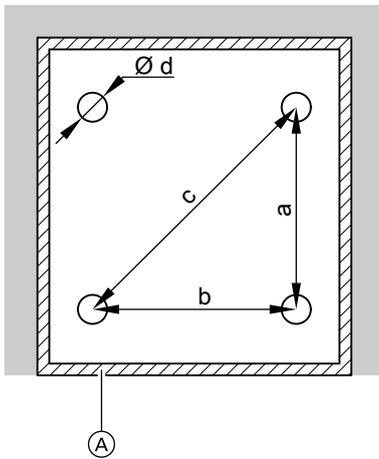
- Ⓐ Compact heat pump
- Ⓑ Finished floor level or top edge of platform for unfinished floors

Minimum clearances



Design information (cont.)

Pressure points



- Ⓐ Partition joint with edge insulation strip as part of the floor construction
- a 484 mm
 - b 480 mm
 - c 657 mm
 - d 64 mm

Total weight with full DHW cylinder

Type	Weight in kg	
BWT-M	221.B06	497
	221.B08	502
	221.B10	508

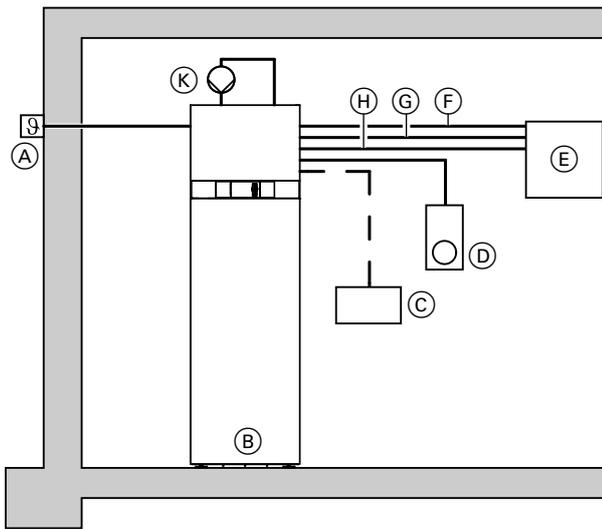
Each pressure point (each with an area of 3217 mm²) is subject to a load of up to 132 kg.

Minimum room volume (to EN 378):

Type	Refrigerant charge in kg	Minimum room volume in m ³
BWT-M	221.B06	3.2
	221.B08	4.5
	221.B10	5.5

Design information (cont.)

Electrical connections



- (A) Outside temperature sensor, sensor lead (2 x 0.75 mm²)
- (B) Compact heat pump
- (C) Natural cooling switching contact, for switching the underfloor heating system with central hook-up, power cable (5 x 1.5 mm²)
- (D) Vitotrol 200 remote control, power cable (2 x 0.75 mm²)
- (E) Electricity meter/domestic mains supply
- (F) Power cable for compressor: See following table.
- (G) Power cable for instantaneous heating water heater: See following table.
- (H) Power cable for heat pump control unit: See following table.
- (K) DHW circulation pump, power cable (3 x 1.5 mm²)

Recommended power cables

Power supply	Cable	Max. cable length	Fuse rating
Heat pump control unit 230 V~	– Without power-OFF	3 x 1.5 mm ²	B16A
	– With power-OFF	5 x 1.5 mm ²	B16A
Instantaneous heating water heater 230 V~	7 x 2.5 mm ²	25 m	B16A

Compressor 230 V~

Type	Cable	Max. cable length	Fuse rating
BWT-M	221.B06	3 x 2.5 mm ²	25 m B16A
	221.B08	3 x 2.5 mm ²	25 m B20A
	221.B10	3 x 2.5 mm ²	25 m B25A

Subject to technical modifications.

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