



Heat pumps • Heat pumps for central heating • Hot water heat pumps

Productinformation

Efficiency is a matter of the right Planning.



Vaillant Comfort for my home



Introduction

This document contains information relating to the product which is important for planning.

It starts with a presentation of the products together with their special attributes and a summary of features.

Then it moves onto the technical data and dimensioned drawings relevant to the design and planning process.

Any further information relating to the product group and relevant to planning is then included after the product presentations.

Hydraulic plans and connection diagrams can be found after the product information.



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1. Product information for the recoCOMPACT exclusive air-to-water heat pumps

Update 10
New product overview

1.1 Product combinations



Fig. 1: Product combinations

Product combination overview for the recoCOMPACT VWL ..9/5 230 V

	Air-to-water heat pump	Decoupler module		Control	Ventilation	Photovoltaics
	recoCOMPACT VWL x9/5 230 V (1)	Buffer cylinder	Domestic hot water cylinder	VRC 700 or VRC 720 (2)	Ventilation accessories (3)	PV modules and inverters (4)
Heating and compact domestic hot water generation with central ventilation (optional cooling)	•	Integrated		•	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

1.2 Product description for recoCOMPACT exclusive VWL x9/5 230 V



Fig. 2: recoCOMPACT exclusive VWL x9/5 230 V

1.2.1 Special features

- All-in-one solution with a compact design
- Air-to-water heat pump set up inside with domestic hot water cylinder and central ventilation unit
- 2-stage heat recovery
- Low space requirement - front maintenance
- Extremely quiet operation
- Sophisticated appearance
- High level of prefabrication allows for simpler installation
- Bears the GreenIQ label
- Modulating compressor with inverter technology always adapts the output to the current building heating load
- Intelligent use of self-generated energy (Smart Grid ready and PV Ready)
- Left- or right-hand installation possible
- Corner and wall installation possible
- Modular design - the versoTHERM is a core component
- Activation by the Vaillant Customer Service included
- Prerequisite: Internet access must be provided on-site

1.2.2 Product equipment

- Domestic hot water cylinder with 225 l gross volume
- recoVAIR ventilation unit
- Exhaust air box
- Sensor-controlled modulating compressor
- High-efficiency pump
- 24 l diaphragm expansion vessel
- 18 l series buffer cylinder
- 5.4 kW E-immersion heater (230/400 V)
- Diverter valve
- Sound Safe System
- Integrated cooling function

1.2.3 Potential applications

The **recoCOMPACT exclusive** system was specially designed for houses whose owners value a complete solution.

The air-to-water heat pump that is installed indoors is used to heat the residential building, generate domestic hot water, and aerate and ventilate living rooms.

The heat pump uses the outdoor air as well as the extract air from the living area as a heat source.

The integrated domestic hot water cylinder ensures that there is a sufficient supply of domestic hot water.

In cooling mode, heat energy is extracted from the building and released into the environment.

The ventilation unit aerates and ventilates living rooms, and ensures a constant exchange of air with heat recovery.

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Domestic hot water generation energy efficiency class	Order no.
VWL 39/5 230 V	A+++ / A++ (A+++ - D)	A (A+ - F)	0010023015
VWL 59/5 230 V	A+++ / A++ (A+++ - D)	A (A+ - F)	0010023016
VWL 79/5 230 V	A++ / A+ (A+++ - D)	A (A+ - F)	0010023017

1.3 Technical data

The following data is only applicable to new products with clean heat exchangers.

Technical data - General

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Heat pump height	1,880 mm	1,880 mm	1,880 mm
Height with exhaust air adapter	2,170 mm	2,170 mm	2,170 mm
Cylinder tower height	1,880 mm	1,880 mm	1,880 mm
Heat pump width	800 mm	800 mm	800 mm
Cylinder tower width	800 mm	800 mm	800 mm
Heat pump depth	750 mm	750 mm	750 mm
Cylinder tower depth	800 mm	800 mm	800 mm
Heat pump weight, with packaging	204 kg	204 kg	223 kg
Cylinder tower weight, with packaging	197 kg	197 kg	197 kg
Heat pump weight, ready for operation	230 kg	230 kg	249 kg
Cylinder tower weight, ready for operation	412 kg	412 kg	412 kg
Installation site	Utility room/cellar	Utility room/cellar	Utility room/cellar
Permissible environmental temperature	10 to 40 °C	10 to 40 °C	10 to 40 °C
Permissible relative air humidity	40 to 75 %	40 to 75 %	40 to 75 %
Heating circuit connections	G 1"	G 1"	G 1"
Cold water and domestic hot water connections	G 3/4"	G 3/4"	G 3/4"

Technical data - Electrics

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Rated voltage of the compressor	230 V (-15%/+10%), 50 Hz, 1~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE
Back-up heater rated voltage	230 V (-15%/+10%), 50 Hz, 1~/N/PE; 400 V (-15%/+10%), 50 Hz, 3~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE; 400 V (-15%/+10%), 50 Hz, 3~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE; 400 V (-15%/+10%), 50 Hz, 3~/N/PE
Control circuit rated voltage	230 V (-15%/+10%), 50 Hz, 1~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE
Max. compressor rated current	5.4 A	10.1 A	15.0 A
Max. rated current for the control circuit	2.3 A	2.3 A	2.3 A
Max. back-up heater rated current	22.7 A (230 V), 14.2 A (400 V)	22.7 A (230 V), 14.2 A (400 V)	22.7 A (230 V), 14.2 A (400 V)
Rated power	1.78 kW	2.86 kW	3.97 kW
Rated power - back-up heating	5.21 kW	5.21 kW	5.21 kW
Maximum in-rush current	16 A	16 A	16 A
IP rating	IP 10B	IP 10B	IP 10B
Back-up heater (1-phase) min. line cross-section	2.5 mm ²	2.5 mm ²	2.5 mm ²
Back-up heater (3-phase) min. line cross-section	1.5 mm ²	1.5 mm ²	1.5 mm ²
Compressor (1-phase) min. line cross-section	2.5 mm ²	2.5 mm ²	2.5 mm ²
Fuse type characteristic	Characteristic C, slow-blow, three-pole switching (disconnection of the three power supply cables in one switching operation)	Characteristic C, slow-blow, three-pole switching (disconnection of the three power supply cables in one switching operation)	Characteristic C, slow-blow, three-pole switching (disconnection of the three power supply cables in one switching operation)

Technical data - Heating circuit

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Material in the heating circuit	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron
Permissible water composition	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.
Minimum operating pressure	0.05 MPa	0.05 MPa	0.05 MPa
Maximum operating pressure	0.3 MPa	0.3 MPa	0.3 MPa
Min. heating mode flow temperature	20 °C	20 °C	20 °C
Max. heating mode flow temperature with compressor	55 °C	55 °C	55 °C
Max. heating mode flow temperature with back-up heater	75 °C	75 °C	75 °C
Min. cooling mode flow temperature	7 °C	7 °C	7 °C
Max. flow temperature in cooling mode	25 °C	25 °C	25 °C
Pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump
Min. electrical power consumption of the heating pump	2 W	2 W	2 W
Max. electrical power consumption of the heating pump	60 W	60 W	60 W
Heating circuit water content in the product	36 l	36 l	36 l
Min. heating circuit volume flow	250 l/h	250 l/h	250 l/h
Max. heating circuit volume flow at 350 mbar remaining feed head	1,270 l/h	1,270 l/h	1,270 l/h

Technical data - Domestic hot water

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Water content of the domestic hot water cylinder	211 l	211 l	211 l
Domestic hot water cylinder material	Steel, enamelled	Steel, enamelled	Steel, enamelled
Corrosion protection	Magnesium protection anode	Magnesium protection anode	Magnesium protection anode
Maximum operating pressure	1.0 MPa	1.0 MPa	1.0 MPa
Expansion vessel volume	24 l	24 l	24 l
Heat-up time to 53 °C, target cylinder temperature, A14	2:42 h	2:42 h	2:15 h
Draw-off profile in accordance with DIN EN 16147	XL	XL	XL
Mixed water volume 40 °C (V40) at a target cylinder temperature of 53 °C	274.6 l	274.6 l	274.6 l
Max. usable domestic hot water volume	274.6 l	274.6 l	274.6 l

Technical data - Refrigerant circuit

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Refrigerant, type	R410A	R410A	R410A
Refrigerant, Global Warming Potential (GWP)	2088	2088	2088
CO ₂ equivalent	2.92 t	2.92 t	3.76 t
Refrigerant, fill quantity	1.4 kg	1.4 kg	1.8 kg
Max. permissible operating pressure	4.15 MPa	4.15 MPa	4.15 MPa
Compressor, type	Rotary piston	Rotary piston	Rotary piston
Compressor, oil type	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)
Expansion valve design	Electronic	Electronic	Electronic

Technical data - Ventilation

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Rated voltage/measuring voltage of the control circuit	230 V	230 V	230 V
Power frequency	50 Hz	50 Hz	50 Hz
Fuse, slow-blow	4 A	4 A	4 A
Power consumption	15 to 170 W	15 to 170 W	23 to 342 W
Max. power consumption (with frost protection element, if available)	1,170 W	1,170 W	1,842 W
Power consumption	0.74 A	0.74 A	1.5 A
Air connection area diameter (internal)	180 mm	180 mm	180 mm
Air connection area diameter (external)	210 mm	210 mm	210 mm
Heat exchanger material	Polystyrene/aluminium grid	Polystyrene/aluminium grid	Polystyrene/aluminium grid
Max. air volume flow	260 m ³ /h	260 m ³ /h	360 m ³ /h
Nominal volume flow	115 to 200 m ³ /h	115 to 200 m ³ /h	175 to 277 m ³ /h
Remaining feed pressure at max. air volume flow	180 Pa	180 Pa	200 Pa
Specific power consumption at max. nominal volume flow and external compression	0.3 W/(m ³ /h) at 200 m ³ /h, 100 Pa	0.3 W/(m ³ /h) at 200 m ³ /h, 100 Pa	0.38 W/(m ³ /h) for 277 m ³ /h, 100 Pa
Specific power consumption in accordance with the Passivhaus Institut (Passive House Institute)	0.33 W/(m ³ /h) at 200 m ³ /h, 100 Pa	0.33 W/(m ³ /h) at 200 m ³ /h, 100 Pa	0.34 W/(m ³ /h) at 277 m ³ /h, 100 Pa
Outdoor air filter class (in accordance with EN 779)	F7/F9	F7/F9	F7/F9
Outdoor air filter class (in accordance with ISO 16890)	ISO ePM2,5 65%/ISO ePM1,0 85%	ISO ePM2,5 65%/ISO ePM1,0 85%	ISO ePM2,5 65%/ISO ePM1,0 85%
Extract air filter class (in accordance with EN 779)	G4	G4	G4
Extract air filter class (in accordance with ISO 16890)	ISO Coarse	ISO Coarse	ISO Coarse
Filter surface	0.9 m ²	0.9 m ²	0.9 m ²
Thermal efficiency in accordance with EN 13141-7	85 %	85 %	85 %
Thermal efficiency in accordance with the Passivhaus Institut (Passive House Institute)	87 %	87 %	83 %
Thermal efficiency in accordance with DIBt (Deutsches Institut für Bautechnik - German Institute for Civil Engineering)	82 %	82 %	82 %
Frost protection mode active (prevents freezing and thaws condensate)	≤ -3 °C	≤ -3 °C	≤ -3 °C
Sound power level, level 1 (at 16 Pa)	45 dB(A) at 80 m ³ /h	45 dB(A) at 80 m ³ /h	48 dB(A) at 110 m ³ /h
Sound power level, level 2 (at 50 Pa)	48 dB(A) at 140 m ³ /h	48 dB(A) at 140 m ³ /h	53 dB(A) at 194 m ³ /h
Sound power level, level 3 (at 100 Pa)	53 dB(A) at 200 m ³ /h	53 dB(A) at 200 m ³ /h	59 dB(A) at 277 m ³ /h
Max. sound power level (at 169 Pa)	59 dB(A) at 260 m ³ /h	59 dB(A) at 260 m ³ /h	66 dB(A) at 360 m ³ /h

Technical data - Air connection

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Air connection diameter, inner	180 mm	180 mm	180 mm
Air connection diameter, external	210 mm	210 mm	210 mm
Filter class in accordance with DIN EN 779:2012-10	F7/G4	F7/G4	F7/G4
Filter class in accordance with ISO 16890	ISO ePM2,5 65% / ISO Coarse	ISO ePM2,5 65% / ISO Coarse	ISO ePM2,5 65% / ISO Coarse

Technical data - Heating performance data in accordance with EN 14511

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
A2/W35 heat output	3.26 kW	3.26 kW	4.14 kW
A2/W35 power consumption	0.89 kW	0.89 kW	1.03 kW
Coefficient of performance, COP A2/W35	4.04	4.04	4.02
Heat output A7/W35 ΔT 5 K	4.92 kW	4.92 kW	5.77 kW
Power consumption A7/W35 ΔT 5 K	1.11 kW	1.11 kW	1.55 kW
Coefficient of performance, COP A7/W35 ΔT 5 K	4.46	4.46	3.72
Heat output A7/W45 ΔT 5 K	4.95 kW	4.95 kW	7.23 kW
Power consumption A7/W45 ΔT 5 K	1.52 kW	1.52 kW	2.31 kW
Coefficient of performance, COP A7/W45 ΔT 5 K	3.35	3.35	3.13
Heat output A7/W55 ΔT 8 K	4.73 kW	4.73 kW	6.84 kW
A7/W55 ΔT8 K power consumption	1.79 kW	1.79 kW	2.60 kW
Coefficient of performance, COP A7/W55 ΔT 8K	2.69	2.69	2.63

Technical data - Cooling performance data in accordance with EN 14511

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Cooling output A35/W18 ΔT 5 K	4.85 kW	4.85 kW	6.15 kW
Power consumption A35/W18 ΔT 5 K	1.26 kW	1.26 kW	1.43 kW
Coefficient of performance, EER A35/W18 ΔT 5 K	4.13	4.13	4.30
Cooling output A35/W7 ΔT 5 K	2.85 kW	2.85 kW	3.55 kW
Power consumption A35/W7 ΔT 5 K	1.20 kW	1.20 kW	1.30 kW
Coefficient of performance, EER A35/W7 ΔT 5 K	2.53	2.53	2.73

Technical data - Sound power

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W35	48 dB(A)	48 dB(A)	48.1 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W35 with the recoVAIR	52.8 dB(A)	52.8 dB(A)	60 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W45	49.5 dB(A)	49.5 dB(A)	47.7 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W45 with the recoVAIR	53.3 dB(A)	53.3 dB(A)	59.9 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W55	49 dB(A)	49 dB(A)	50 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W55 with the recoVAIR	53.7 dB(A)	53.7 dB(A)	59.9 dB(A)
External sound power level (LWa), straight wall installation, in accordance with EN 14511; heating mode at A7/W35	50.4 dB(A)	50.4 dB(A)	48.8 dB(A)
External sound power level (LWa), straight wall installation, in accordance with EN 14511; heating mode at A7/W35 with recoVAIR	51.3 dB(A)	51.3 dB(A)	53.4 dB(A)
External sound power level (LWa), straight wall installation, in accordance with EN 14511; heating mode at A7/W45	50.5 dB(A)	50.5 dB(A)	48.3 dB(A)
External sound power level (LWa), straight wall installation, in accordance with EN 14511; heating mode at A7/W45 with recoVAIR	53 dB(A)	53 dB(A)	53.9 dB(A)
External sound power level (LWa), straight wall installation, in accordance with EN 14511; heating mode at A7/W55	51.1 dB(A)	51.1 dB(A)	48.1 dB(A)
External sound power level (LWa), straight wall installation, in accordance with EN 14511; heating mode at A7/W55 with recoVAIR	52.6 dB(A)	52.6 dB(A)	53.9 dB(A)

Update 10
New technical data (EN14511:2018)

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Max. inner sound power level (LWi) in accordance with EN 12102	53.6 dB(A)	53.6 dB(A)	54.6 dB(A)
Max. inner sound power level (LWi) in accordance with EN 12102 with recoVAIR	56.3 dB(A)	56.3 dB(A)	61.2 dB(A)
Max. external sound power level (LWa) in accordance with EN 12102, straight installation	58.1 dB(A)	58.1 dB(A)	58.3 dB(A)
Max. external sound power level (LWa) in accordance with EN 12102, corner installation	56.3 dB(A)	56.3 dB(A)	56.1 dB(A)

Technical data - Heat source

	VWL 39/5 230V	VWL 59/5 230V	VWL 79/5 230V
Heat source	Air	Air	Air
Min. air temperature (heating)	-20 °C	-20 °C	-20 °C
Maximum air temperature (heating)	43 °C	43 °C	43 °C
Min. air temperature (cylinder charging)	-20 °C	-20 °C	-20 °C
Max. air temperature (cylinder charging)	43 °C	43 °C	43 °C
Minimum air temperature (cooling)	15 °C	15 °C	15 °C
Maximum air temperature (cooling)	46 °C	46 °C	46 °C
Min. air volume flow	750 m³/h	750 m³/h	750 m³/h
Max. air volume flow	1,900 m³/h	1,900 m³/h	2,200 m³/h
Nominal volume flow at A7/W35	1,300 m³/h	1,300 m³/h	1,300 m³/h
Fan speed range	1,170 rpm	1,170 rpm	1,170 rpm
Fan speed range, heating	703 rpm	703 rpm	820 rpm
Fan speed range, domestic hot water generation	703 rpm	703 rpm	820 rpm
Fan speed range, cooling	703 rpm	703 rpm	820 rpm
Fan speed range, noise reduction mode	562 rpm	562 rpm	562 rpm
Max. fan electrical power consumption	250 W	250 W	250 W

1.4 Sound power evaluation level

For the recoCOMPACT heat pump, planning should take account of the following sound power levels (heating mode).

VWL 39/5 and VWL 59/5 evaluation level for corner installation

VWL 39/5 230 V and VWL 59/5 230 V corner installation				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	56	0	3	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	0
			6	51	45	41.5	39	37	35.4	32.9	31	29.4	27.5	
			9	54	48	44.5	42	40	38.4	35.9	34	32.4	30.5	
Set-back (50% reduced compressor output)	50	0	3	42	36	32.5	30	28	26.4	23.9	22	20.4	18.5	-
			6	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	
			9	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	
Set-back (60% reduced compressor output)	48	0	3	40	34	30.5	28	26	24.4	21.9	20	18.4	16.5	-
			6	43	37	33.5	31	29	27.4	24.9	23	21.4	19.5	
			9	46	40	36.5	34	32	30.4	27.9	26	24.4	22.5	

VWL 79/5 evaluation level for corner installation

VWL 79/5 230 V corner installation				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	56	0	3	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	0
			6	51	45	41.5	39	37	35.4	32.9	31	29.4	27.5	
			9	54	48	44.5	42	40	38.4	35.9	34	32.4	30.5	
Set-back (50% reduced compressor output)	47	0	3	39	33	29.5	27	25	23.4	20.9	19	17.4	15.5	-
			6	42	36	32.5	30	28	26.4	23.9	22	20.4	18.5	
			9	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	
Set-back (60% reduced compressor output)	47	0	3	39	33	29.5	27	25	23.4	20.9	19	17.4	15.5	-
			6	42	36	32.5	30	28	26.4	23.9	22	20.4	18.5	
			9	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	

VWL 39/5 and VWL 59/5 evaluation level for single-wall installation

VWL 39/5 230 V and VWL 59/5 230 V single-wall installation				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	58	0	3	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	0
			6	53	47	43.5	41	39	37.4	34.9	33	31.4	29.5	
			9	56	50	46.5	44	42	40.4	37.9	36	34.4	32.5	
Set-back (50% reduced compressor output)	52	0	3	44	38	34.5	32	30	28.4	25.9	24	22.4	20.5	-
			6	47	41	37.5	35	33	31.4	28.9	27	25.4	23.5	
			9	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	
Set-back (60% reduced compressor output)	50	0	3	42	36	32.5	30	28	26.4	23.9	22	20.4	18.5	-
			6	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	
			9	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	

VWL 79/5 evaluation level for single-wall installation

VWL 79/5 230 V single-wall installation				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	58	0	3	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	0
			6	53	47	43.5	41	39	37.4	34.9	33	31.4	29.5	
			9	56	50	46.5	44	42	40.4	37.9	36	34.4	32.5	
Set-back (50% reduced compressor output)	49	0	3	41	35	31.5	29	27	25.4	22.9	21	19.4	17.5	-
			6	44	38	34.5	32	30	28.4	25.9	24	22.4	20.5	
			9	47	41	37.5	35	33	31.4	28.9	27	25.4	23.5	
Set-back (60% reduced compressor output)	49	0	3	41	35	31.5	29	27	25.4	22.9	21	19.4	17.5	-
			6	44	38	34.5	32	30	28.4	25.9	24	22.4	20.5	
			9	47	41	37.5	35	33	31.4	28.9	27	25.4	23.5	

1.5 Application limits

The product works between a minimum and maximum outdoor temperature. These outdoor temperatures define the operating limits for the heating mode, domestic hot water mode and cooling mode. Operating outside of the operating limits leads to the product switching off.

1.5.1 Heating mode

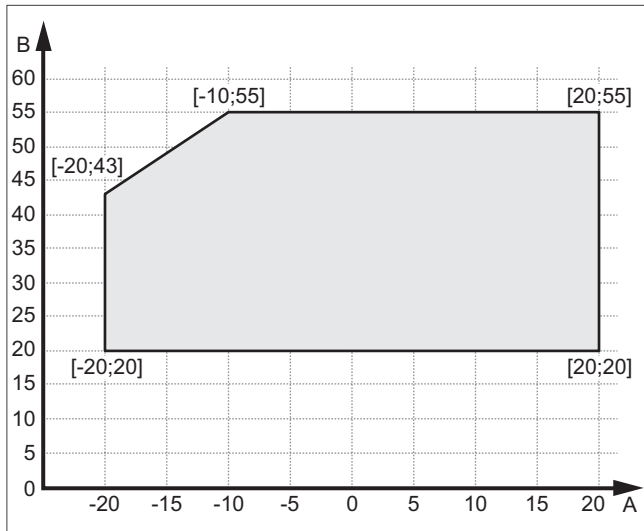


Fig. 3: Application limits in heating mode

- A Outdoor temperature
- B Heating water temperature

1.5.2 DHW mode

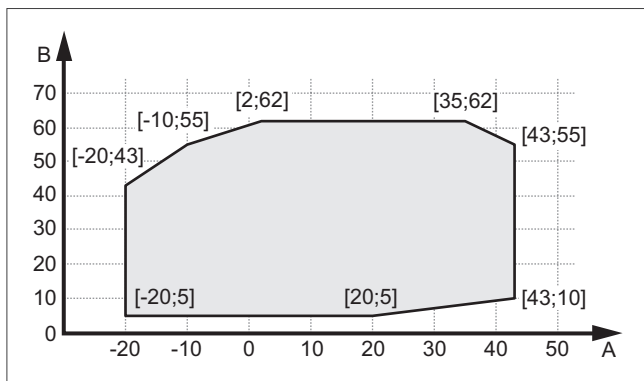


Fig. 4: Operating limits in domestic hot water mode

- A Outdoor temperature
- B Domestic hot water temperature

1.5.3 Cooling mode

Validity: Product with cooling mode

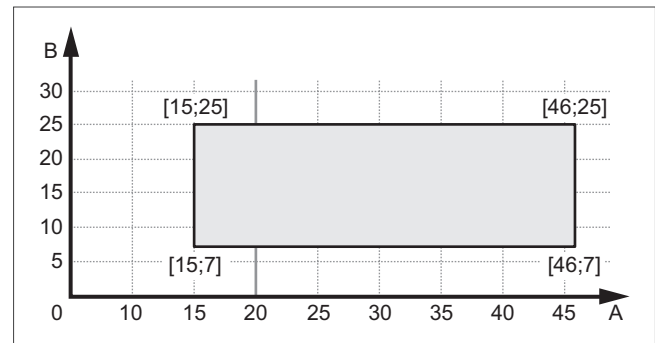


Fig. 5: Operating limits, cooling mode

- A Outdoor temperature
- B Heating water temperature

1.6 Remaining feed head of the product

1.6.1 VWL 39/5 remaining feed head at nominal volume flow

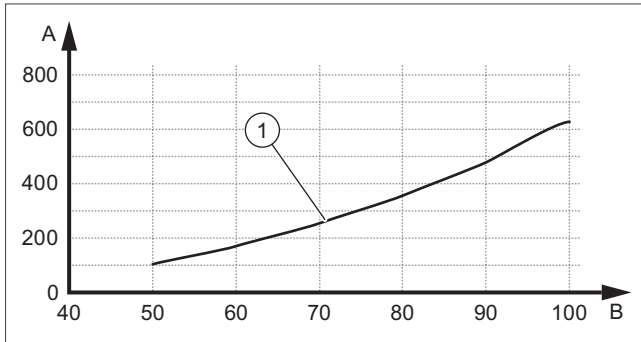


Fig. 6: VWL 39/5 remaining feed head

- 1 VWL 39/5 with 3 kW / 858 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

1.6.3 VWL 79/5 remaining feed head at nominal volume flow

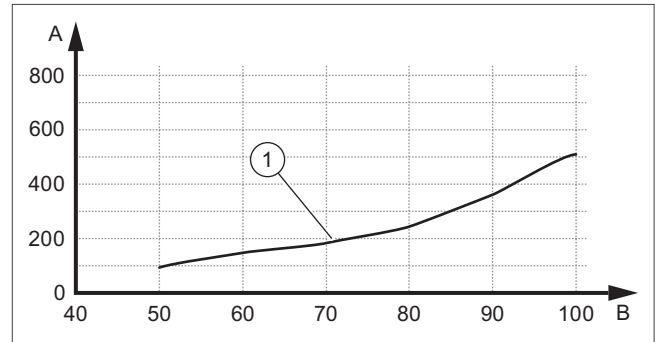


Fig. 8: VWL 79/5 remaining feed head

- 1 VWL 79/5 with 7 kW / 1200 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

1.6.2 VWL 59/5 remaining feed head at nominal volume flow

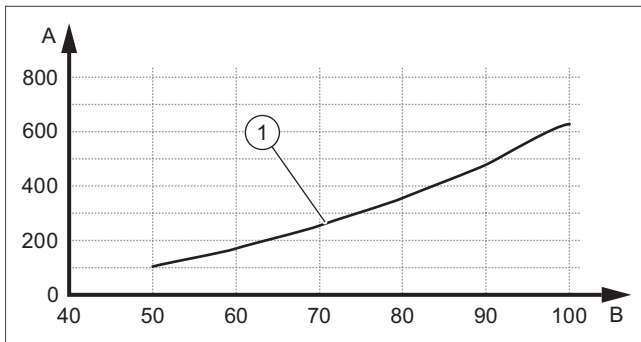


Fig. 7: VWL 59/5 remaining feed head

- 1 VWL 59/5 with 5 kW / 858 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

1.7 Performance data - heating mode

1.7.1 Heating mode performance data for 3 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C		40% red			50% red			60% red			45 rps	40 rps	30 rps
		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	55 rps	52 rps	50 rps			
-20		2,01	2,01	2,02	1,99	1,97	1,96						
-15		2,38	2,38	2,38	2,35	2,32	2,31						
-12		2,62	2,62	2,61	2,57	2,55	2,53						
-7		3,12	3,13	3,12	3,08	3,05	3,03						
-2		3,61	3,63	3,64	3,60	3,58	3,55	3,49	3,40	3,14			
0		3,83	3,85	3,87	3,83	3,80	3,78	3,72	3,64	3,38			
2		4,06	4,08	4,13	4,10	4,07	4,05	3,99	3,90	3,63			
7		4,29	4,33	4,45	4,45	4,44	4,44	4,40	4,35	4,14			
10		4,84	4,91	5,08	5,08	5,07	5,06	5,03	4,97	4,76			
12		5,26	5,34	5,53	5,54	5,54	5,54	5,53	5,48	5,26			
15		5,96	6,08	6,37	6,40	6,41	6,41	6,40	6,35	6,11			
20		7,51	7,66	8,06	8,10	8,12	8,12	8,11	8,06	7,78			

°C		40% red			50% red			60% red			45 rps	40 rps	30 rps
		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	55 rps	52 rps	50 rps			
-20		2,38	2,22	1,82	1,67	1,58	1,53						
-15		2,84	2,64	2,18	2,00	1,89	1,82						
-12		3,12	2,91	2,40	2,20	2,09	2,01						
-7		3,68	3,44	2,85	2,62	2,48	2,39						
-2		4,26	3,99	3,32	3,06	2,90	2,79	2,52	2,24	1,67			
0		4,51	4,22	3,52	3,24	3,07	2,96	2,67	2,38	1,78			
2		4,76	4,47	3,73	3,44	3,26	3,14	2,84	2,53	1,89			
7		5,54	5,20	4,36	4,03	3,82	3,69	3,34	2,98	2,23			
10		5,95	5,60	4,70	4,35	4,13	3,98	3,61	3,22	2,42			
12		6,24	5,88	4,93	4,57	4,34	4,19	3,81	3,40	2,56			
15		6,69	6,31	5,33	4,94	4,70	4,54	4,12	3,68	2,77			
20		7,55	7,12	6,02	5,58	5,31	5,12	4,65	4,15	3,12			

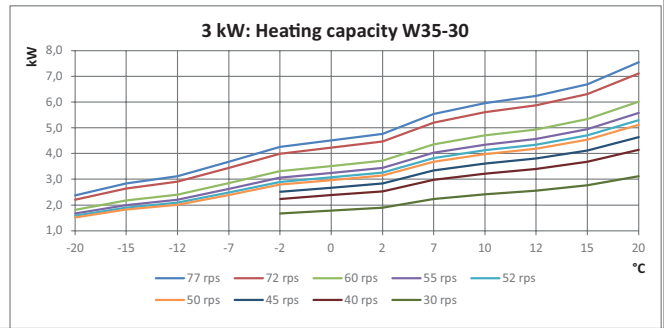
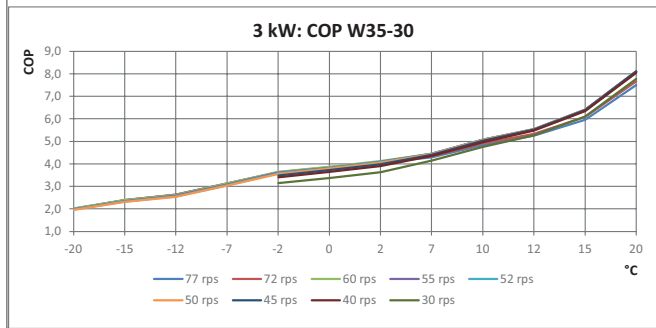


Fig. 9: COP and heat output for A/W35-30

°C		40% red			50% red			60% red			45 rps	40 rps	30 rps
		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	55 rps	52 rps	50 rps			
-20													
-18		1,86	1,84	1,80	1,79	1,78	1,78						
-15		1,99	1,97	1,92	1,91	1,90	1,89						
-12		2,12	2,10	2,05	2,04	2,03	2,02						
-7		2,37	2,36	2,32	2,30	2,29	2,28	2,26	2,22	2,10			
-2		2,57	2,57	2,55	2,53	2,52	2,51	2,48	2,43	2,30			
0		2,67	2,67	2,66	2,65	2,64	2,63	2,60	2,57	2,43			
2		2,76	2,77	2,77	2,76	2,79	2,74	2,71	2,67	2,54			
7		3,34	3,37	3,43	3,44	3,44	3,43	3,42	3,39	3,26			
10		3,69	3,72	3,81	3,82	3,81	3,80	3,78	3,78	3,65			
12		3,93	3,98	4,09	4,11	4,11	4,11	4,10	4,08	3,94			
15		4,37	4,43	4,58	4,60	4,60	4,60	4,60	4,57	4,42			
20		5,24	5,32	5,52	5,54	5,55	5,55	5,54	5,51	5,33			

°C		40% red			50% red			60% red			45 rps	40 rps	30 rps
		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	55 rps	52 rps	50 rps			
-20													
-18		2,45	2,29	1,90	1,75	1,65	1,59						
-15		2,66	2,49	2,06	1,89	1,79	1,72						
-12		2,88	2,69	2,22	2,04	1,93	1,86						
-7		3,29	3,07	2,55	2,34	2,22	2,14	1,93	1,72	1,29			
-2		3,68	3,45	2,87	2,65	2,51	2,42	2,18	1,95	1,46			
0		3,85	3,60	3,01	2,78	2,64	2,54	2,30	2,05	1,54			
2		4,02	3,77	3,15	2,91	2,80	2,66	2,41	2,15	1,62			
7		5,09	4,79	4,02	3,72	3,54	3,41	3,09	2,76	2,08			
10		5,31	5,00	4,21	3,89	3,70	3,57	3,24	2,90	2,19			
12		5,45	5,13	4,33	4,01	3,82	3,69	3,35	3,00	2,26			
15		5,67	5,35	4,52	4,19	3,99	3,85	3,49	3,13	2,36			
20		6,01	5,67	4,79	4,44	4,23	4,08	3,71	3,32	2,50			

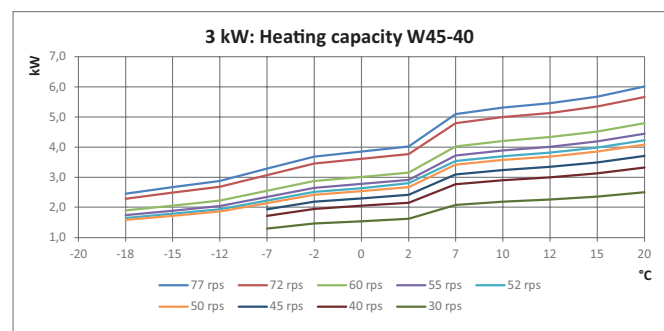
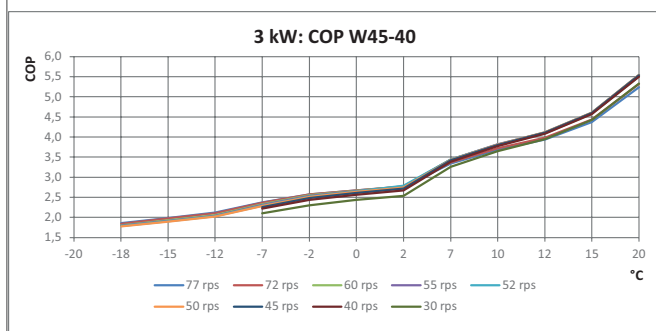


Fig. 10: COP and heat output for A/W45-40

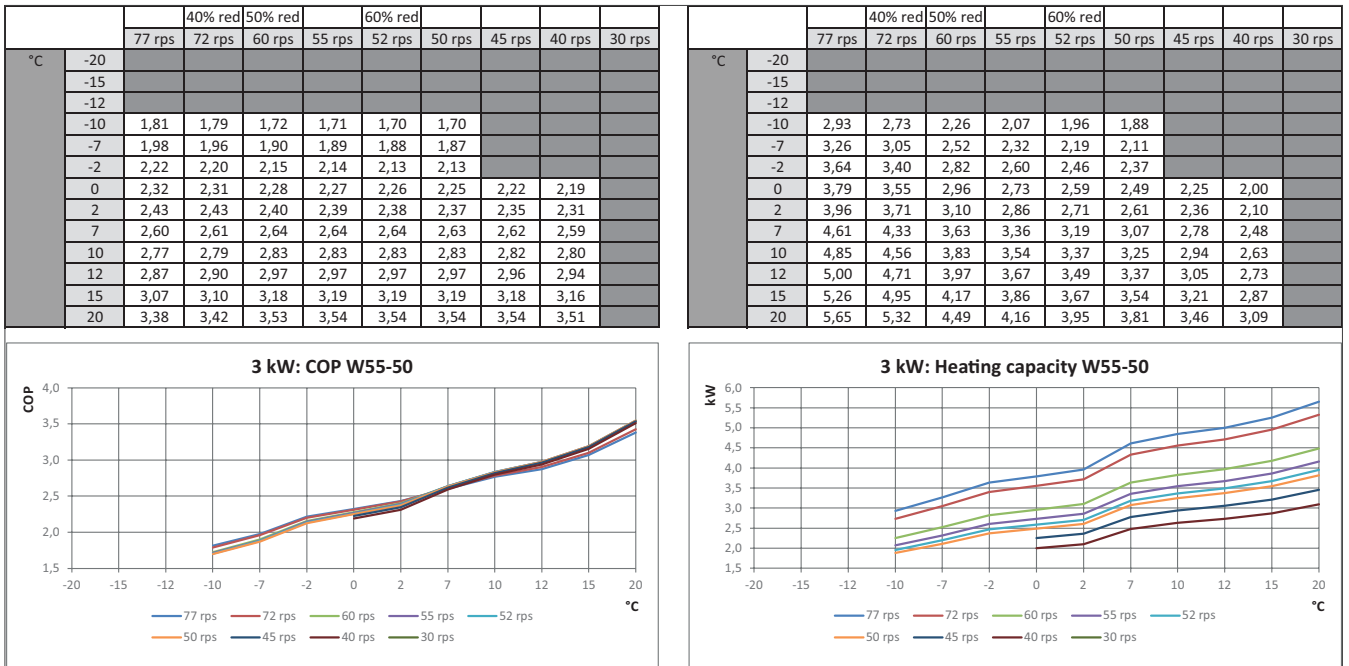


Fig. 11: COP and heat output for A./W55-50

1.7.2 Heating mode performance data for 5 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20		2,26	2,26	2,26	2,26	2,27	2,28	2,22		
	-15	2,49	2,51	2,53	2,55	2,56	2,56	2,55	2,49		
	-12	2,63	2,66	2,69	2,73	2,73	2,73	2,72	2,65		
	-7	2,88	2,93	2,99	3,06	3,08	3,08	3,08	3,01		
	-2	3,26	3,33	3,43	3,55	3,58	3,60	3,62	3,55	3,38	3,12
	0	3,43	3,53	3,64	3,77	3,81	3,83	3,85	3,79	3,62	3,36
	2	3,62	3,73	3,85	4,00	4,04	4,08	4,13	4,07	3,90	3,62
	7	3,64	3,79	3,96	4,17	4,26	4,33	4,45	4,44	4,34	4,13
	10	3,97	4,14	4,33	4,57	4,70	4,81	4,97	4,96	4,86	4,66
	12	4,19	4,37	4,60	4,89	5,04	5,16	5,34	5,36	5,30	5,08
	15	4,55	4,78	5,05	5,40	5,57	5,75	6,03	6,06	6,01	5,78
20	5,25	5,55	5,96	6,49	6,76	6,99	7,36	7,41	7,36	7,10	

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20		3,49	3,14	2,79	2,46	2,20	1,80	1,57		
	-15	4,51	4,12	3,73	3,33	2,95	2,64	2,17	1,89		
	-12	4,94	4,52	4,10	3,68	3,26	2,92	2,41	2,10		
	-7	5,73	5,28	4,82	4,34	3,87	3,48	2,88	2,51		
	-2	6,46	5,98	5,48	4,96	4,44	4,01	3,33	2,91	2,25	1,68
	0	6,78	6,29	5,77	5,23	4,69	4,23	3,52	3,08	2,39	1,78
	2	7,11	6,61	6,07	5,50	4,94	4,47	3,73	3,26	2,53	1,89
	7	8,15	7,60	7,01	6,37	5,74	5,20	4,35	3,82	2,98	2,23
	10	8,52	7,95	7,34	6,69	6,05	5,50	4,62	4,05	3,16	2,38
	12	8,76	8,18	7,58	6,93	6,26	5,69	4,78	4,21	3,30	2,48
	15	9,13	8,57	7,94	7,27	6,58	6,01	5,07	4,47	3,50	2,63
20	9,77	9,19	8,58	7,89	7,18	6,56	5,54	4,89	3,83	2,87	

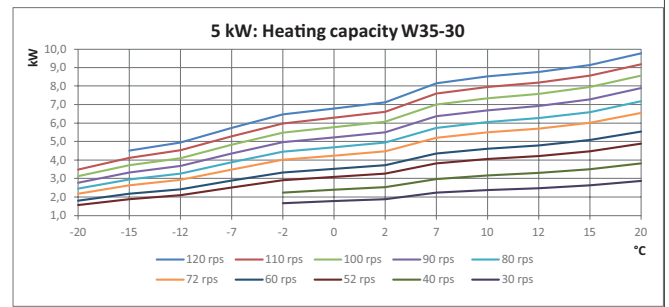
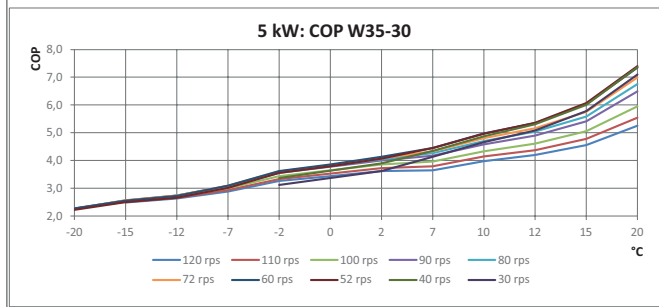


Fig. 12: COP and heat output for A/W35-30

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-18		1,74	1,76	1,79	1,76	1,74	1,69	1,67		
	-15		1,90	1,93	1,97	1,95	1,92	1,87	1,83		
	-12		2,06	2,10	2,17	2,14	2,11	2,05	2,02		
	-7		2,37	2,44	2,53	2,52	2,49	2,44	2,40	2,30	2,15
	-2		2,58	2,68	2,80	2,80	2,79	2,75	2,71	2,59	2,42
	0		2,68	2,79	2,92	2,92	2,91	2,88	2,85	2,74	2,56
	2		2,78	2,89	3,03	3,05	3,05	3,04	3,00	2,89	2,70
	7			3,03	3,21	3,25	3,29	3,34	3,33	3,25	3,09
	10			3,30	3,52	3,58	3,63	3,70	3,69	3,62	3,46
	12			3,51	3,75	3,82	3,88	3,97	3,98	3,91	3,73
15			3,85	4,12	4,23	4,32	4,44	4,44	4,37	4,17	
20			4,55	4,92	5,06	5,17	5,33	5,33	5,24	5,00	

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-18		3,46	3,10	2,75	2,44	2,19	1,81	1,57		
	-15		3,84	3,46	3,09	2,74	2,46	2,03	1,76		
	-12		4,24	3,84	3,45	3,06	2,74	2,26	1,97		
	-7		5,02	4,58	4,12	3,67	3,30	2,73	2,38	1,84	1,37
	-2		5,57	5,11	4,62	4,14	3,73	3,10	2,71	2,09	1,56
	0		5,81	5,33	4,83	4,33	3,91	3,26	2,85	2,21	1,65
	2		6,05	5,56	5,04	4,53	4,10	3,42	2,99	2,32	1,74
	7			6,40	5,82	5,24	4,76	3,99	3,51	2,74	2,05
	10			6,61	6,05	5,47	4,97	4,18	3,67	2,87	2,16
	12			6,78	6,20	5,61	5,10	4,30	3,79	2,97	2,23
15			7,01	6,41	5,83	5,32	4,49	3,96	3,10	2,33	
20			7,39	6,79	6,18	5,64	4,76	4,20	3,29	2,47	

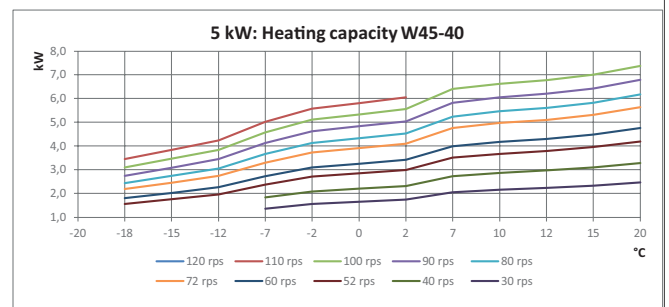
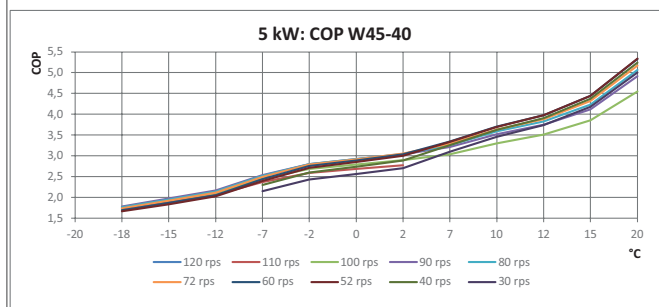


Fig. 13: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

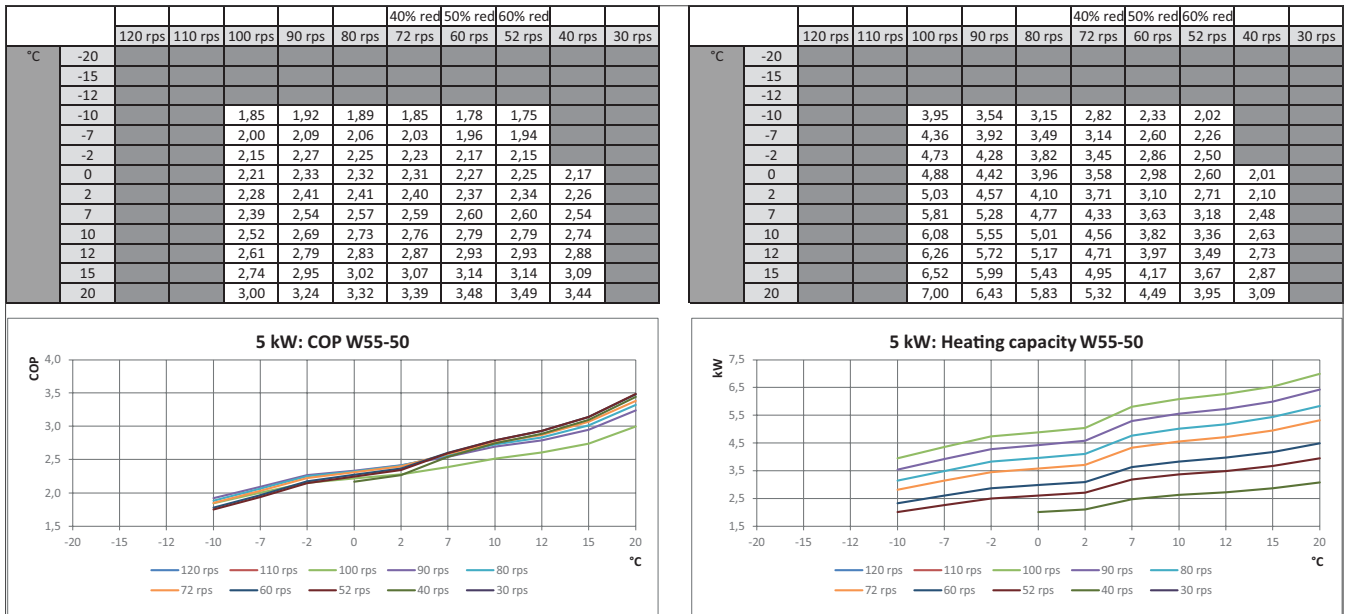


Fig. 14: COP and heat output for A./W55-50

1.7.3 Heating mode performance data for 7 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C							40% red		50% red		60% red					
	120 rps	110 rps	100 rps	90 rps	80 rps	72 rps	60 rps	52 rps	40 rps	30 rps						
-20		1,72	1,75	1,78	1,81	1,84	1,90	1,84								
-15	2,08	2,12	2,17	2,24	2,27	2,31	2,37	2,30								
-12	2,30	2,36	2,42	2,51	2,54	2,58	2,65	2,57								
-7	2,68	2,76	2,86	2,99	3,05	3,10	3,20	3,11								
-2	2,94	3,05	3,19	3,37	3,45	3,52	3,65	3,57	3,37	3,07						
0	3,06	3,19	3,34	3,54	3,63	3,70	3,84	3,76	3,57	3,28						
2	3,19	3,33	3,49	3,71	3,80	3,90	4,07	4,00	3,80	3,50						
7	2,93	3,09	3,29	3,54	3,68	3,80	4,03	4,02	3,92	3,71						
10	3,31	3,50	3,73	4,02	4,21	4,37	4,68	4,67	4,56	4,35						
12	3,56	3,77	4,03	4,39	4,59	4,78	5,13	5,14	5,07	4,85						
15	3,95	4,20	4,52	4,94	5,19	5,44	5,92	5,95	5,89	5,66						
20	4,61	4,94	5,40	6,03	6,39	6,73	7,35	7,42	7,39	7,14						

°C							40% red		50% red		60% red					
	120 rps	110 rps	100 rps	90 rps	80 rps	72 rps	60 rps	52 rps	40 rps	30 rps						
-20		2,98	2,71	2,44	2,17	1,95	1,62	1,40								
-15	4,59	4,24	3,87	3,51	3,13	2,82	2,35	2,03								
-12	5,50	5,08	4,66	4,23	3,78	3,41	2,85	2,47								
-7	7,24	6,73	6,21	5,67	5,09	4,61	3,87	3,36								
-2	7,91	7,38	6,85	6,28	5,67	5,15	4,35	3,78	2,89	2,12						
0	8,20	7,68	7,12	6,54	5,91	5,38	4,54	3,95	3,03	2,23						
2	8,49	7,96	7,40	6,80	6,14	5,60	4,75	4,14	3,18	2,34						
7	8,20	7,72	7,20	6,64	6,03	5,50	4,68	4,10	3,17	2,34						
10	9,70	9,14	8,53	7,88	7,18	6,58	5,61	4,91	3,80	2,82						
12	10,75	10,14	9,50	8,80	8,02	7,35	6,28	5,51	4,28	3,18						
15	12,47	11,81	11,08	10,28	9,37	8,63	7,41	6,51	5,06	3,75						
20	15,70	14,90	14,07	13,13	12,04	11,08	9,52	8,37	6,50	4,82						

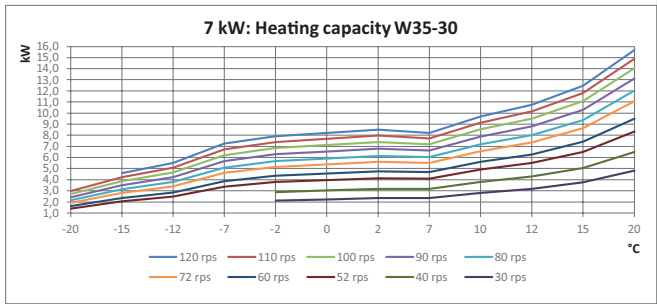
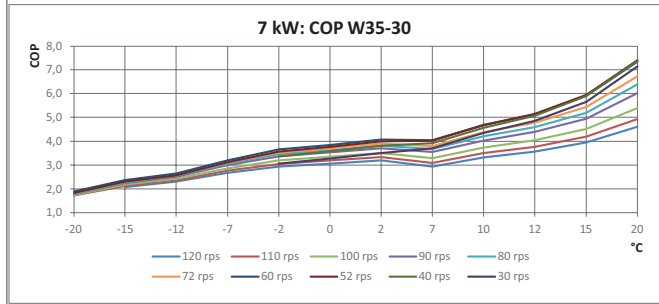


Fig. 15: COP and heat output for A/W35-30

°C							40% red		50% red		60% red					
	120 rps	110 rps	100 rps	90 rps	80 rps	72 rps	60 rps	52 rps	40 rps	30 rps						
-20																
-18		1,90	1,95	2,02	2,03	2,04	2,05	2,01								
-15	2,00	2,07	2,17	2,17	2,18	2,18	2,14									
-12	2,10	2,19	2,30	2,31	2,32	2,33	2,29									
-7	2,30	2,41	2,56	2,58	2,60	2,63	2,59	2,48	2,31							
-2	2,43	2,57	2,75	2,79	2,83	2,89	2,85	2,73	2,54							
0	2,50	2,64	2,83	2,88	2,92	3,00	2,96	2,85	2,66							
2	2,56	2,71	2,91	2,97	3,03	3,12	3,08	2,97	2,77							
7		2,92	3,17	3,27	3,36	3,54	3,54	3,47	3,31							
10		3,06	3,34	3,46	3,58	3,78	3,78	3,72	3,57							
12		3,16	3,46	3,59	3,72	3,95	3,97	3,92	3,76							
15		3,31	3,63	3,81	3,96	4,24	4,25	4,21	4,05							
20		3,60	4,00	4,20	4,37	4,69	4,72	4,68	4,51							

°C							40% red		50% red		60% red					
	120 rps	110 rps	100 rps	90 rps	80 rps	72 rps	60 rps	52 rps	40 rps	30 rps						
-20																
-18		4,57	4,15	3,72	3,32	3,00	2,51	2,17								
-15	5,00	4,56	4,12	3,68	3,32	2,78	2,40									
-12	5,45	4,99	4,54	4,05	3,66	3,06	2,65									
-7	6,32	5,83	5,32	4,77	4,32	3,63	3,14	2,40	1,76							
-2	6,88	6,37	5,85	5,27	4,79	4,04	3,51	2,69	1,98							
0	7,11	6,60	6,06	5,47	4,98	4,21	3,67	2,81	2,07							
2	7,34	6,82	6,27	5,68	5,18	4,39	3,82	2,94	2,17							
7		7,98	7,37	6,68	6,11	5,21	4,56	3,52	2,61							
10		8,31	7,71	7,02	6,44	5,49	4,81	3,73	2,77							
12		8,57	7,95	7,24	6,64	5,69	4,99	3,88	2,88							
15		8,93	8,29	7,58	6,98	5,99	5,26	4,08	3,03							
20		9,55	8,91	8,16	7,51	6,45	5,67	4,40	3,27							

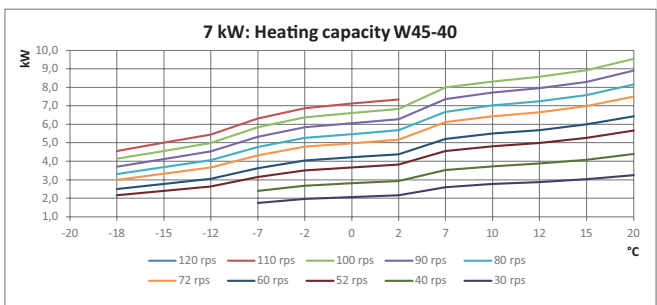
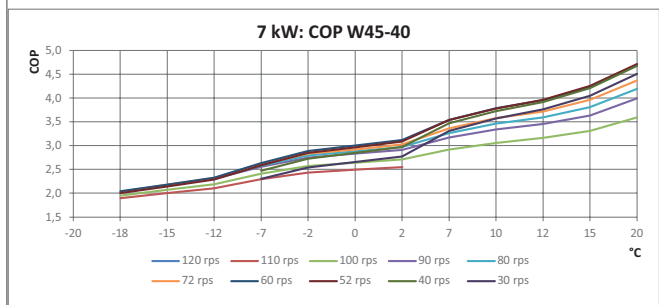


Fig. 16: COP and heat output for A/W45-40

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-15										
	-12										
	-10			1,91	2,03	2,03	2,02	2,01	1,98		
	-7			2,00	2,13	2,14	2,14	2,14	2,11		
	-2			2,12	2,28	2,30	2,32	2,34	2,31		
	0			2,17	2,34	2,37	2,39	2,43	2,41	2,33	
	2			2,22	2,40	2,44	2,47	2,52	2,50	2,41	
	7			2,30	2,50	2,58	2,64	2,76	2,75	2,70	
	10			2,48	2,72	2,81	2,88	3,03	3,03	2,99	
	12			2,62	2,87	2,97	3,06	3,24	3,25	3,20	
15			2,83	3,13	3,25	3,37	3,58	3,59	3,54		
20			3,30	3,65	3,81	3,96	4,23	4,24	4,20		

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-15										
	-12										
	-10				4,95	4,50	4,03	3,64	3,05	2,64	
	-7				5,57	5,08	4,56	4,13	3,47	3,01	
	-2				5,99	5,49	4,95	4,50	3,79	3,30	
	0				6,15	5,65	5,10	4,65	3,93	3,43	2,63
	2				6,32	5,82	5,27	4,80	4,07	3,55	2,73
	7				8,33	7,69	6,99	6,40	5,46	4,77	3,68
	10				8,45	7,83	7,13	6,53	5,57	4,89	3,79
	12				8,52	7,90	7,20	6,60	5,66	4,96	3,85
15				8,57	7,98	7,29	6,71	5,75	5,04	3,91	
20				8,62	8,03	7,34	6,75	5,79	5,09	3,95	

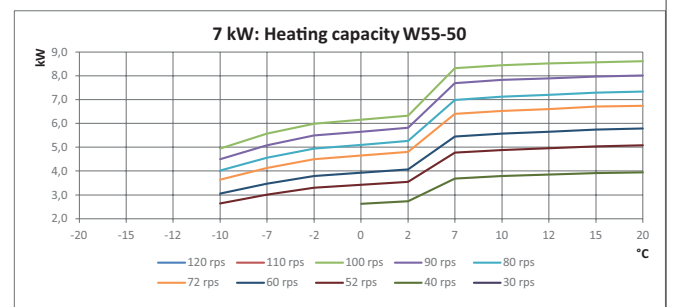
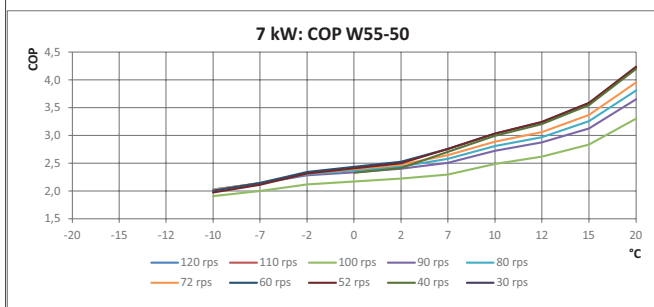


Fig. 17: COP and heat output for A./W55-50

1.8 Product dimensions and connection dimensions

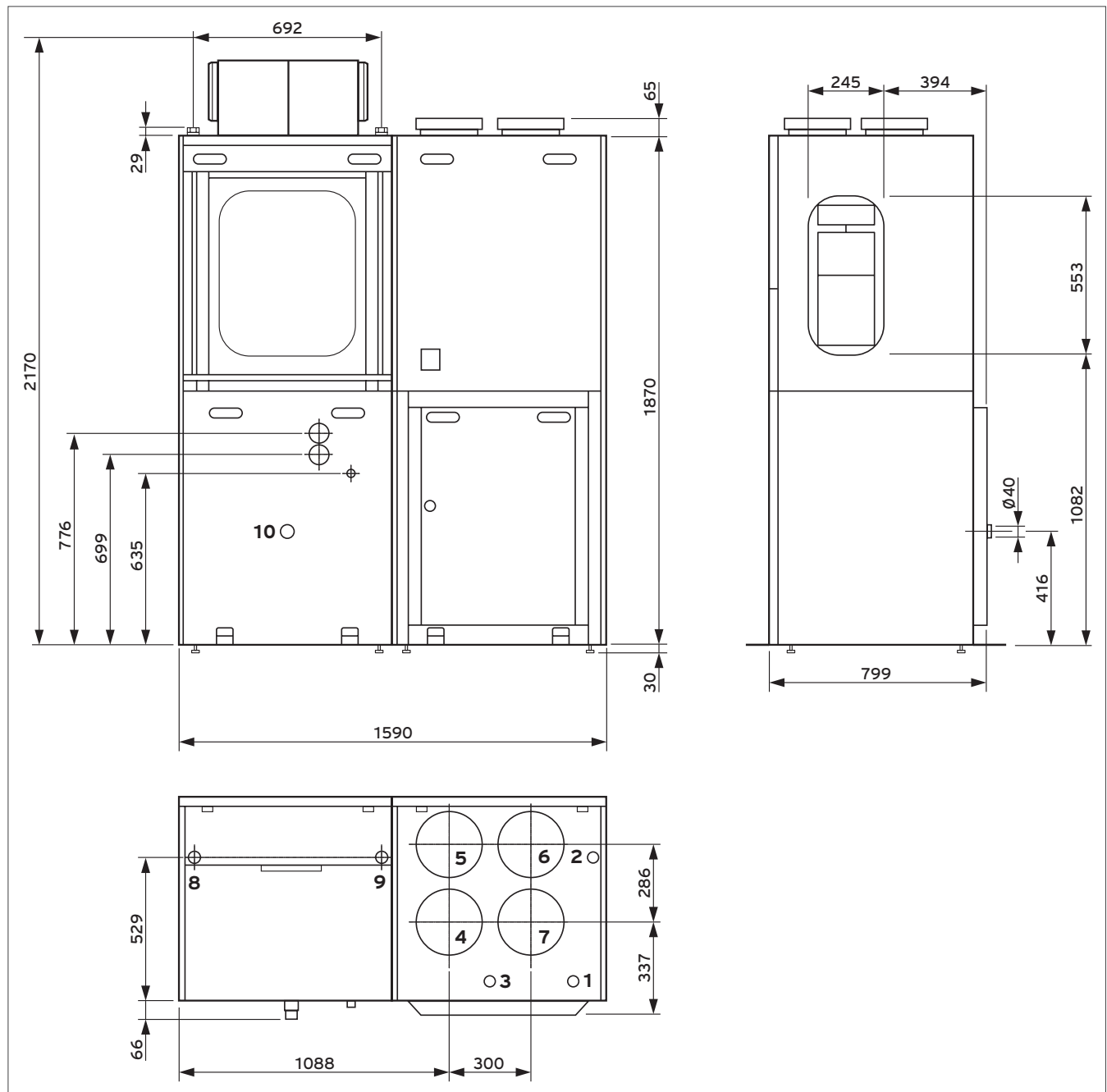


Fig. 18: Dimensions

- 1 Secondary return pipe (optional)
- 2 Cold water connection
- 3 Domestic hot water connection
- 4 Exhaust air
- 5 Supply air
- 6 Extract air
- 7 Outdoor air
- 8 Heating return
- 9 Heating flow
- 10 Condensed water discharge

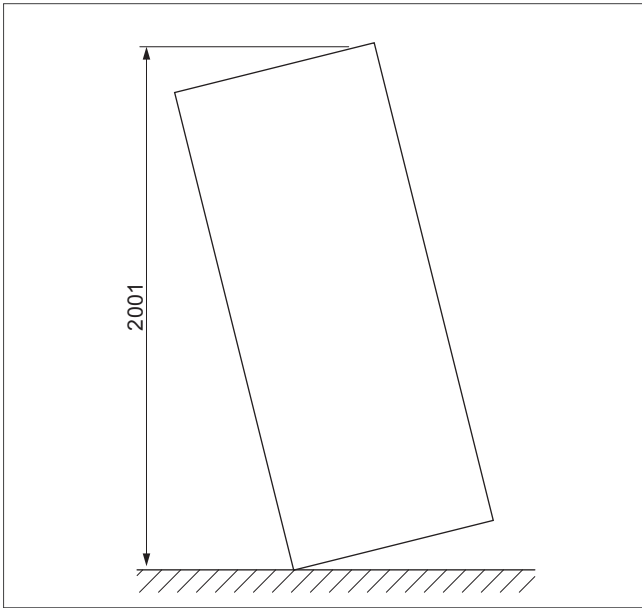


Fig. 19: Dimensions for transport

1.9 Recommended minimum clearances/ installation clearances

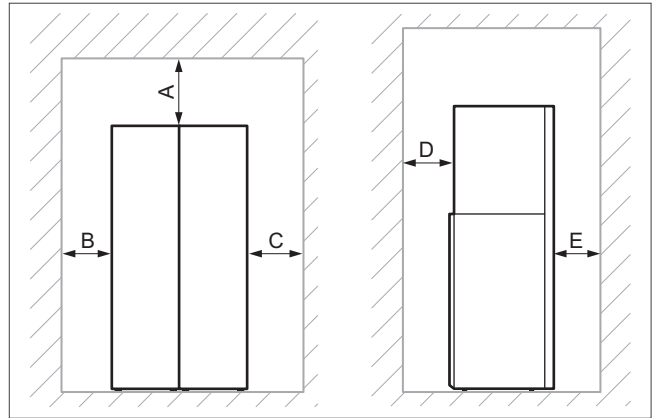


Fig. 20: Recommended minimum clearances/installation clearances

- A 300 mm
- B 100 mm
- C 100 mm
- D 100 mm
- E 750 mm

1.10 Requirements for the installation site

1.10.1 Minimum size of the installation room

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Minimum size for the installation room (m ³)
VWL 39/5	R410a	1.4	3.2
VWL 59/5	R410a	1.4	3.2
VWL 79/5	R410a	1.8	4.1

1.10.2 Installation room for the recoCOMPACT and versoTHERM

This heat pump should preferably be installed at ground level in the building. Rooms such as utility rooms and similar frost-proof rooms are suitable for this purpose. For the cellar solution, light shafts are required for the air-intake and air-outlet side.

The minimum temperature in the room in which the heat pump is installed should be 10 °C; if possible, it should be aerated with outdoor air to keep the relative air humidity low.

Ensure that the door frame through which the heat pump is to be brought is at least 80 cm wide. Also make sure that the stairway (incl. fall protection) is sufficiently wide.

Place the heat pump on a firm, level, horizontal surface. Do not remove the adjustable feet that are supplied with the pump when you do so as these help with vibration decoupling.

The air intake and discharge sides must allow for unobstructed air flow.

Since the air that escapes from the discharge side is approximately 5 K colder than the environmental temperature, ice can be expected to form here relatively quickly. For this reason, the discharge area must not be directed directly towards walls, terraces, walkways or parking spaces. A clearance of at least 3 m must be maintained.

The air intake and discharge sides must not open into a depression in the ground, since cold air sinks, which would prevent any exchange of air.

Information regarding conducting air via the heat pump

Air-to-water heat pumps for indoor installation must only be operated with air ducts. To prevent excessive room cooling and for safety reasons, the air flows must be directed outside. The air must be able to flow freely where the air inlet and outlet ducts are installed.

A compatible air duct system is available as an accessory for the recoCOMPACT and versoTHERM heat pumps; this system is heat- and sound-insulated at the factory. Additional sound-insulation mats can be used to reduce the noise by a further 3 dB.

Air pipe provided on-site

If the air pipe is to be constructed on-site, this must be implemented in accordance with the rules and regulations that apply in the country in question.

Condensate discharge

Unlike brine-to-water and water-to-water heat pumps, with air-to-water heat pumps, condensate forms at the evaporator when the temperature falls below the dew point and hoar frost/ice forms, which turns to liquid when it thaws.

In both cases, the condensate must be conducted to the waste-water system, either by means of a drain or using a condensate pump.

The condensate pump must be connected to the heat pump's fault contact.

External compression and volume flows

Type	External compression [Pa]	Maximum volume flow [m ³ /h]
VWL 37/5 and VWL 39/5	50	1900
VWL 57/5 and VWL 59/5	50	1900
VWL 77/5 and VWL 79/5	70	2200

You can find the external compression values for the Vaillant system accessories in the accessories overview.

1.11 Set-up examples

The following set-up examples show a range of different installation options that can be achieved using the Vaillant system accessories. The examples feature the relevant dimensions and specific information relating to each of the installation situations.

The different accessory and unit variants allow for different installation options for the air supply and extraction systems.

The installation illustrations contain the relevant planned dimensions and an overview of the most important components of each system.

The following figures show examples of the right- and left-hand installation of the **recoCOMPACT**.

Observe the respective price list, which always contains a complete and up-to-date list of available accessories.

During planning, also comply with the following general instructions and information, as well as the applicable standards and directives.

1.11.1 Wall-opening dimensions when using Vaillant air ducts

The recoCOMPACT air-to-water heat pump comprises the following components: Heat pump, domestic hot water cylinder and controlled domestic ventilation with heat recovery system. The exhaust air is routed via the ventilation system's heat recovery system before being conducted via the heat pump. This removes almost all the heat from the exhaust air; this heat is then used to heat the building.

The following wall-breakthrough dimensions apply for the different installation possibilities when using Vaillant system accessories. The way in which the EPP pipes for the ventilation system are connected also influences the required minimum room height, diameter and height measurement for the air pipe.

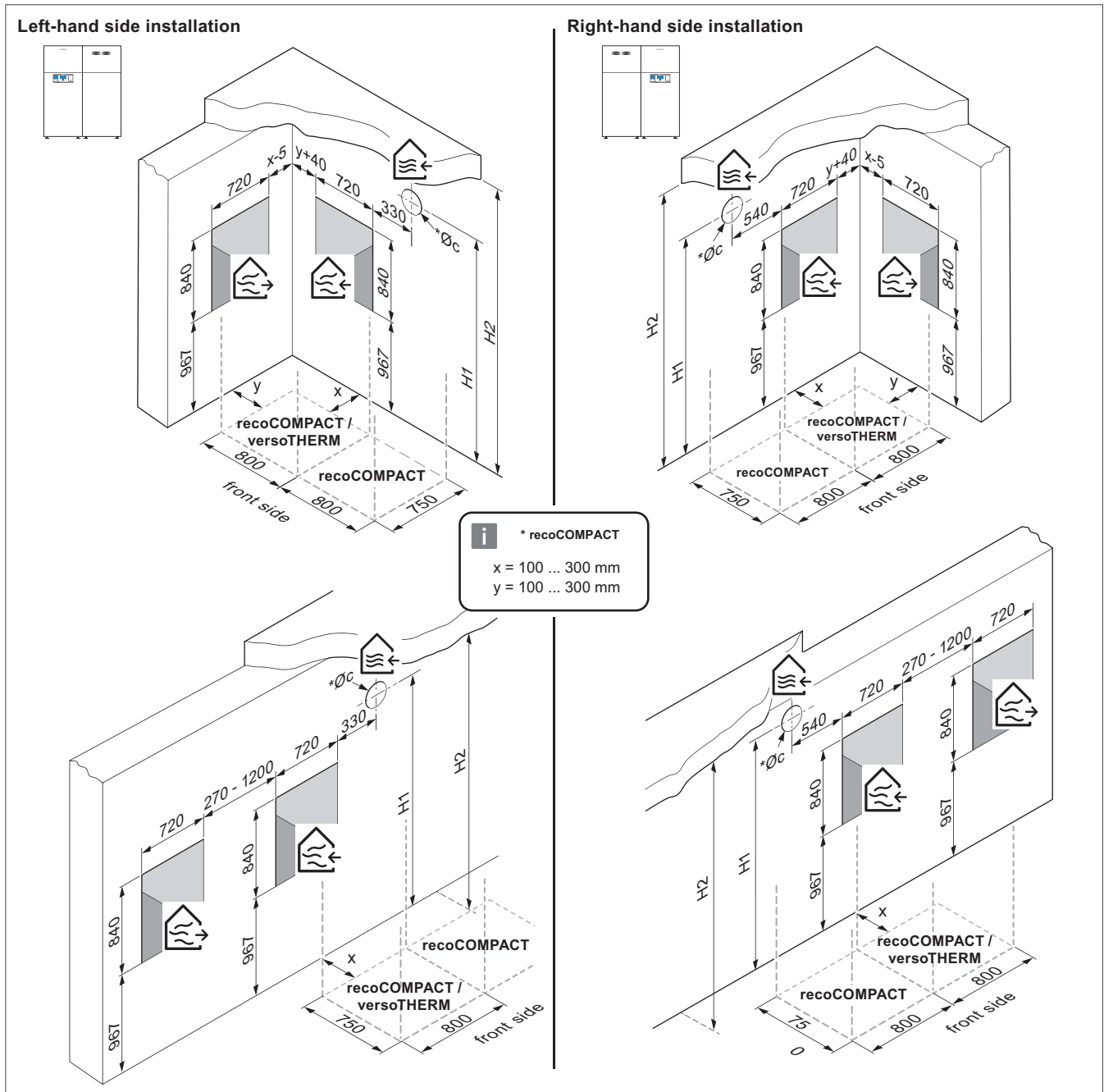


Fig. 21: Wall-opening dimensions when using Vaillant air ducts

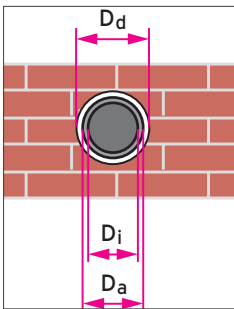
Note

The floor's load-bearing capacity must be guaranteed in the installation area. The screed, a concrete pedestal or other floor structures must be designed for the unit's distributed load and must withstand the point loads at the unit's feet. There must be no installations in the installation area (underfloor heating, etc.).



1.11.2 Diameter and height measurements of the outdoor air supply

When planning the installation site for the recoCOMPACT, adhere to the dimensions below.



Diameter and height measurements of the outdoor air supply

Dimensions	Article designation Article number	Internal diameter	Outer diameter	Recommended opening size for the outdoor air intake	Outdoor air intake pipe axis to finished floor	Minimum room height with outdoor air intake in the installation room via the façade	Minimum room height with outdoor air intake via the room above, e.g. for units installed in the cellar
		$\varnothing D_i$	$\varnothing D_a$	$\varnothing D_e$	H1	H2	H3
	VAZ-U150 0020210950	150	180	220	2110	2220	2350
	0010024178 + 0010025537	160	246	286	2060	2200	2300
	VAZ-UP180 0020210949	180	210	250	2170	2300	2450
	VAZ-UP180 0010023536	180	240	280	2060	2200	2250
<p>For left-hand installation only:</p>	VWZ installation set For recoCOMPACT exhaust air module, left-hand installation 0010035297 Mandatory: 0010024178 (compact elbow) 0010025537 (adapter, reducer)	160	246	286	2060	2350	2350

1.11.3 Ground floor - corner installation

Corner installation on the ground floor with an outdoor air supply to supply fresh air to the living rooms via a separate wall opening.

Left-hand installation

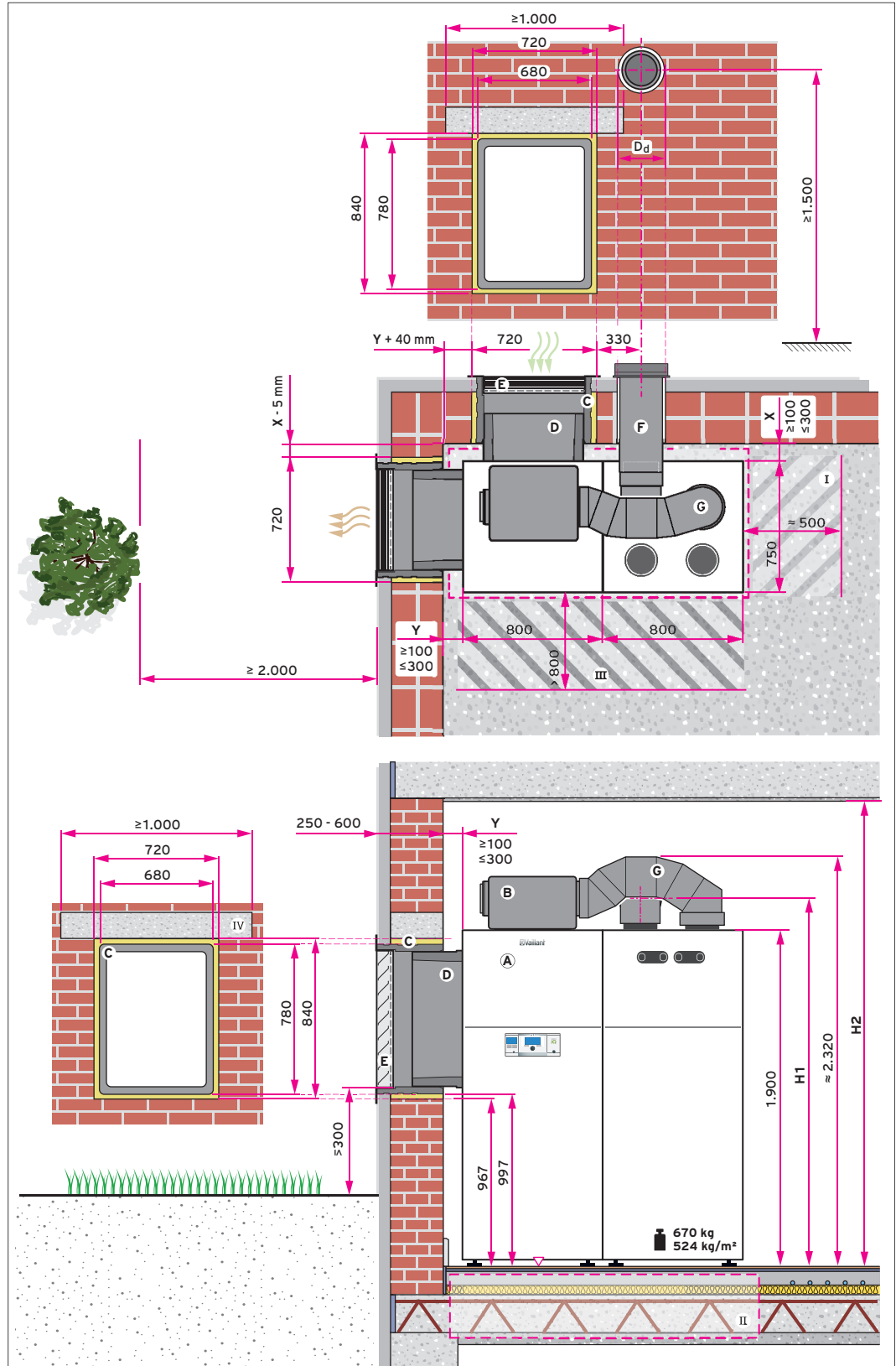


Fig. 22: recoCOMPACT installation situation, ground floor - left-hand installation in the corner of a room

Right-hand installation

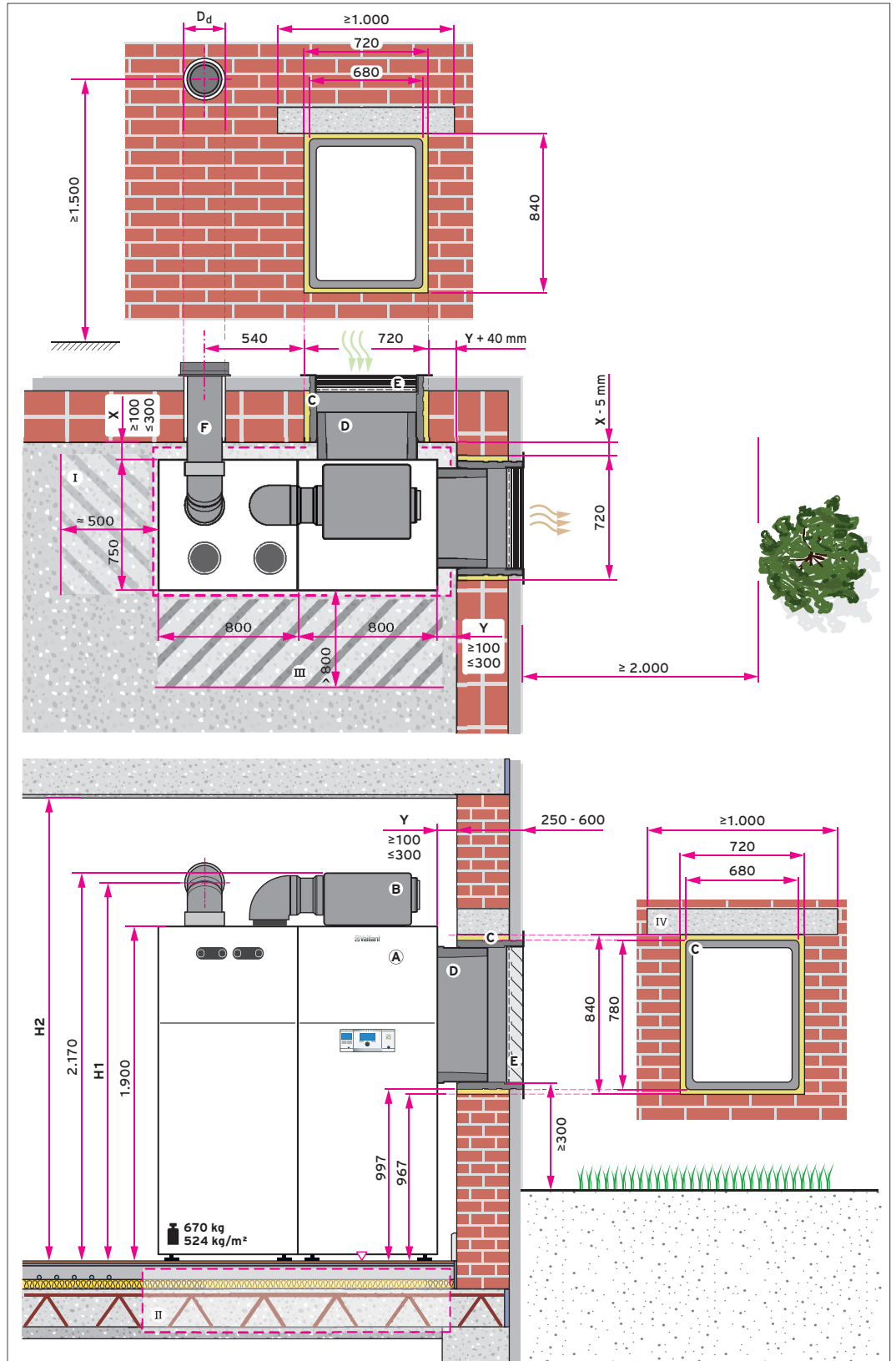


Fig. 23: recoCOMPACT installation situation, ground floor - right-hand installation in the corner of a room

The outdoor air must always be taken in at least 1500 mm above ground level.

The VAZ-U180 210 mm/180 mm diameter EPP pipe was used in this example.

Note

Outer dimensions for clinker façades

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Note

When using EPP pipes (with a diameter of 180/150 and 210/180) as outdoor and exhaust air lines, these should be insulated in accordance with the provisions of DIN 1946-6; otherwise, thick-walled EPP pipes (with a diameter of 246/160) should be used.



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	–	–	EPP pipe system for supplying outdoor air
G		1	VWZ installation set for recoCOMPACT exhaust air module, left-hand installation Mandatory accessories: 0010035297 (left-hand installation only) 0010024178 (compact elbow) 0010025537 (adapter, reducer)

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

1.11.4 Ground floor - corner installation with a VWZ adapter set

Corner installation on the ground floor with an outdoor air supply to supply fresh air to the living rooms via a VWZ adapter set.

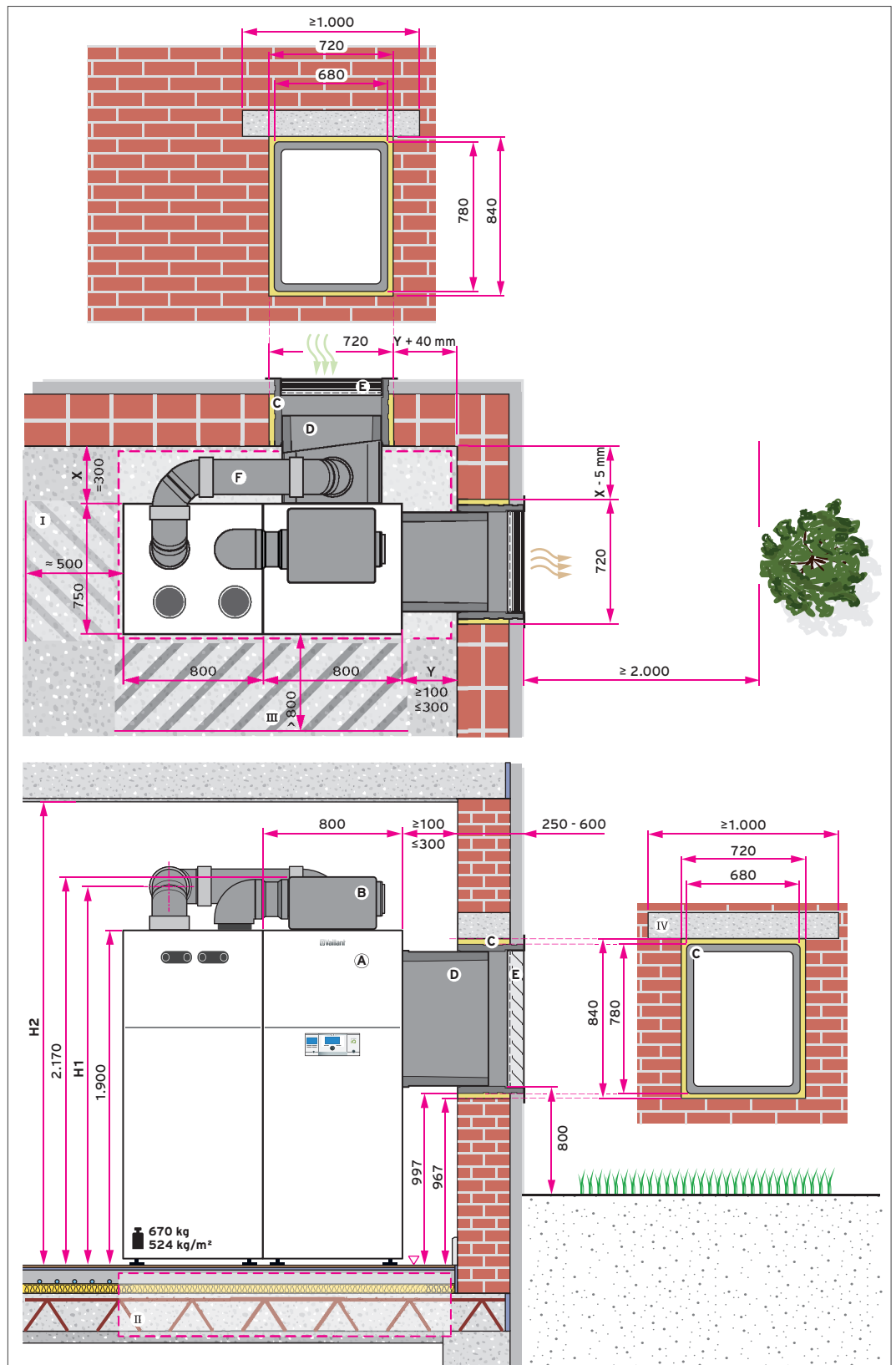


Fig. 24: recoCOMPACT installation situation, ground floor - corner installation with a VWZ adapter set

The outdoor air is extracted together with the supply air for the heat pump via the VWZ adapter set. The VAZ-U180 210 mm/180 mm diameter EPP pipe was used in this example.

Note

Outer dimensions for clinker façades

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Note

When using EPP pipes (with a diameter of 180/150 and 210/180) as outdoor and exhaust air lines, these should be insulated in accordance with the provisions of DIN 1946-6; otherwise, thick-walled EPP pipes (with a diameter of 246/160) should be used.



Using the VWZ adapter set eliminates the need for a separate outdoor air wall opening for the ventilation system.

If installing in the cellar, the supply air for the ventilation system must be fed in separately in accordance with EN 1946-6. It is therefore not permissible to use the VWZ outdoor air adapter set when installing in cellars.

Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	–	1 (alternative)	VWZ outdoor air adapter set - 210/180-diameter EPP pipe system, comprising: 1 x 0020210945 3 x 0020210949 1 x 0020212528
	–	1 (alternative)	VWZ outdoor air adapter set - 246/160 diameter EPP pipe system, comprising: 1 x 0020180861 3 x 0020180863 2 x 0020180865

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

1.11.5 Ground floor - single-wall installation

Single-wall installation on the ground floor with an outdoor air supply to supply fresh air to the living rooms via a separate wall opening.

Left-hand installation

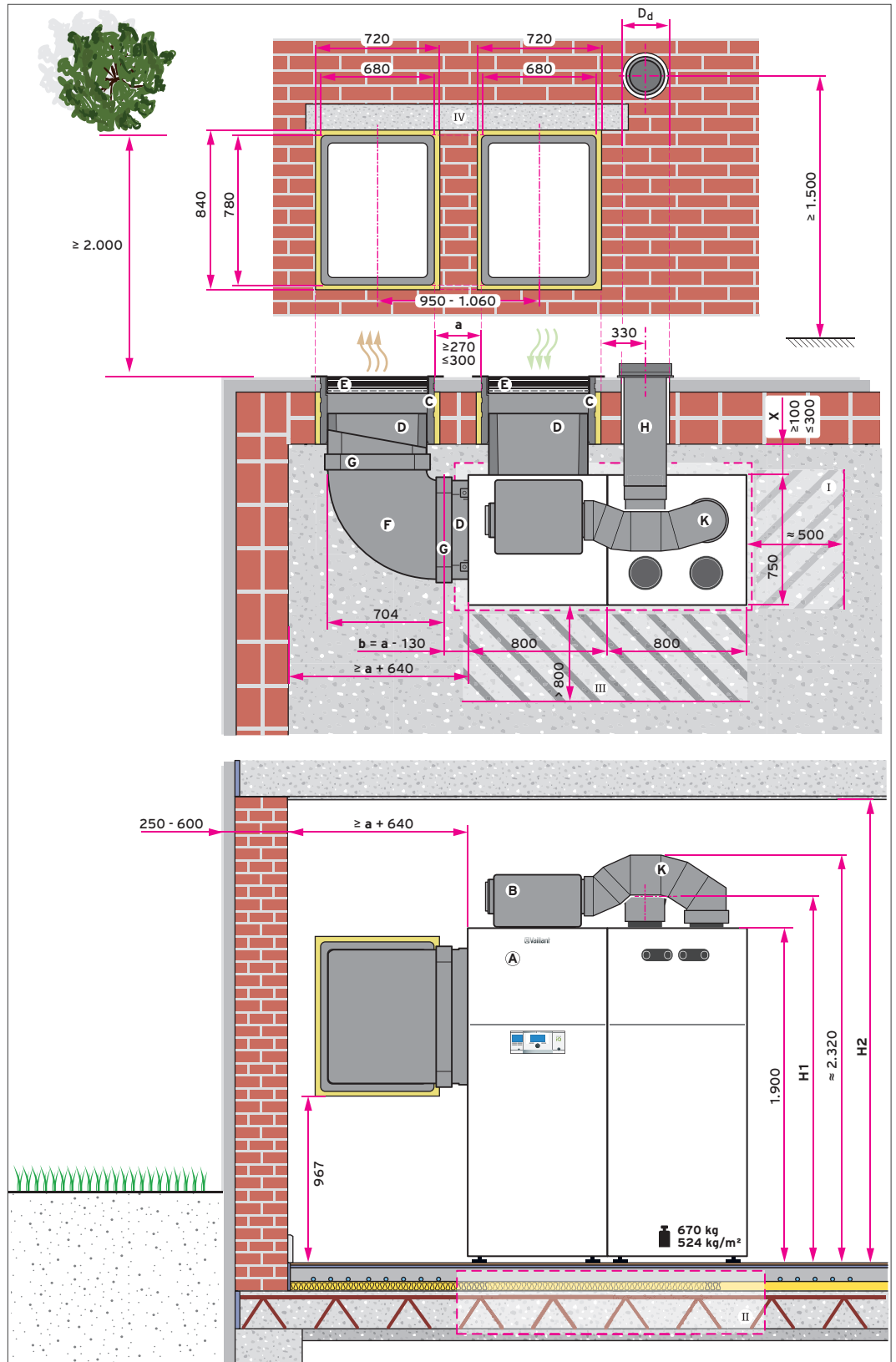


Fig. 25: recoCOMPACT installation situation, ground floor - air intake at the rear, left-hand installation

Right-hand installation

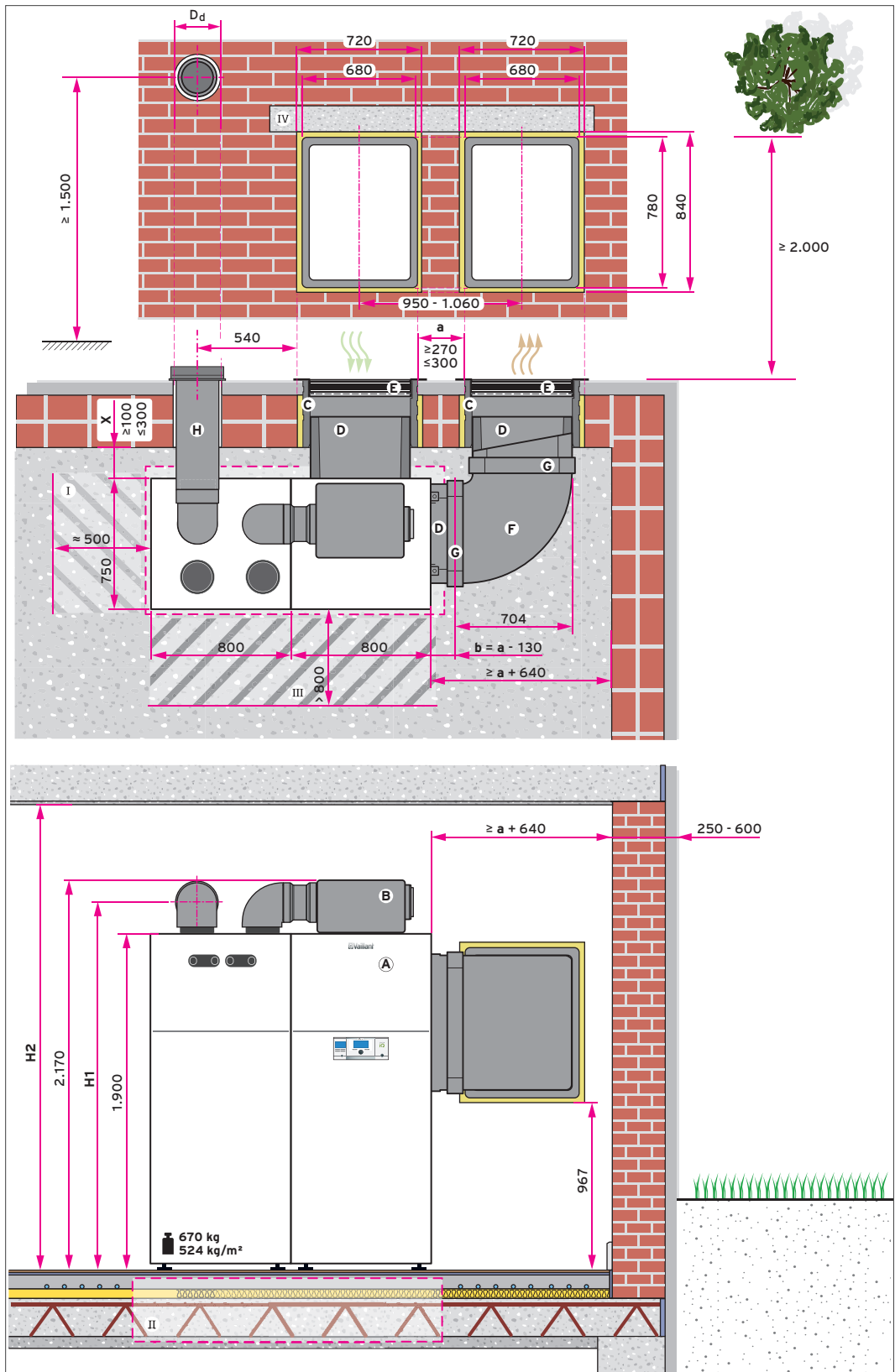


Fig. 26: recoCOMPACT installation situation, ground floor - air intake at the rear, right-hand installation

Note
Outer dimensions for clinker façades



For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).

The outdoor air must always be taken in at least 1500 mm above ground level.

For the right-hand installation, the VAZ-U180 210 mm/180 mm diameter EPP pipe was used in this example. The left-hand installation is shown with the thick-walled EPP- pipes (246/160 diameter).

Wherever possible, the air intake side and the air discharge side should be on different sides of the building (corner installation). The intake and discharge of air on the same side of the building façade is only permitted in exceptional circumstances.

To prevent thermal short circuits, there must be a sufficiently large gap between the air inlet and the air outlet; alternatively, a partition can be installed between the two.

Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2 *	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	0010023533	1	VWZ 500 x 600 air-duct elbow
G	0010023534	2 *	VWZ 500 x 600 air-duct sleeve
H	–	–	EPP pipe system for supplying outdoor air
K	0010035297 (For left-hand installation only)	1	VWZ installation set for recoCOMPACT exhaust air module, left-hand installation Mandatory accessories: 0010024178 (compact elbow) 0010025537 (adapter, reducer)

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

* If $x + a \geq 480$ mm, an additional air duct and an additional sleeve are required. During installation, the air duct to which the elbow is connected must be cut into two sections.

1.11.6 Ground floor with heat production source (fireplace) - air intake at the rear

Single-wall installation on the ground floor where a heat production source (fireplace) is also installed. In this case, the ventilation unit's outdoor and exhaust air must be routed separately via wall openings.

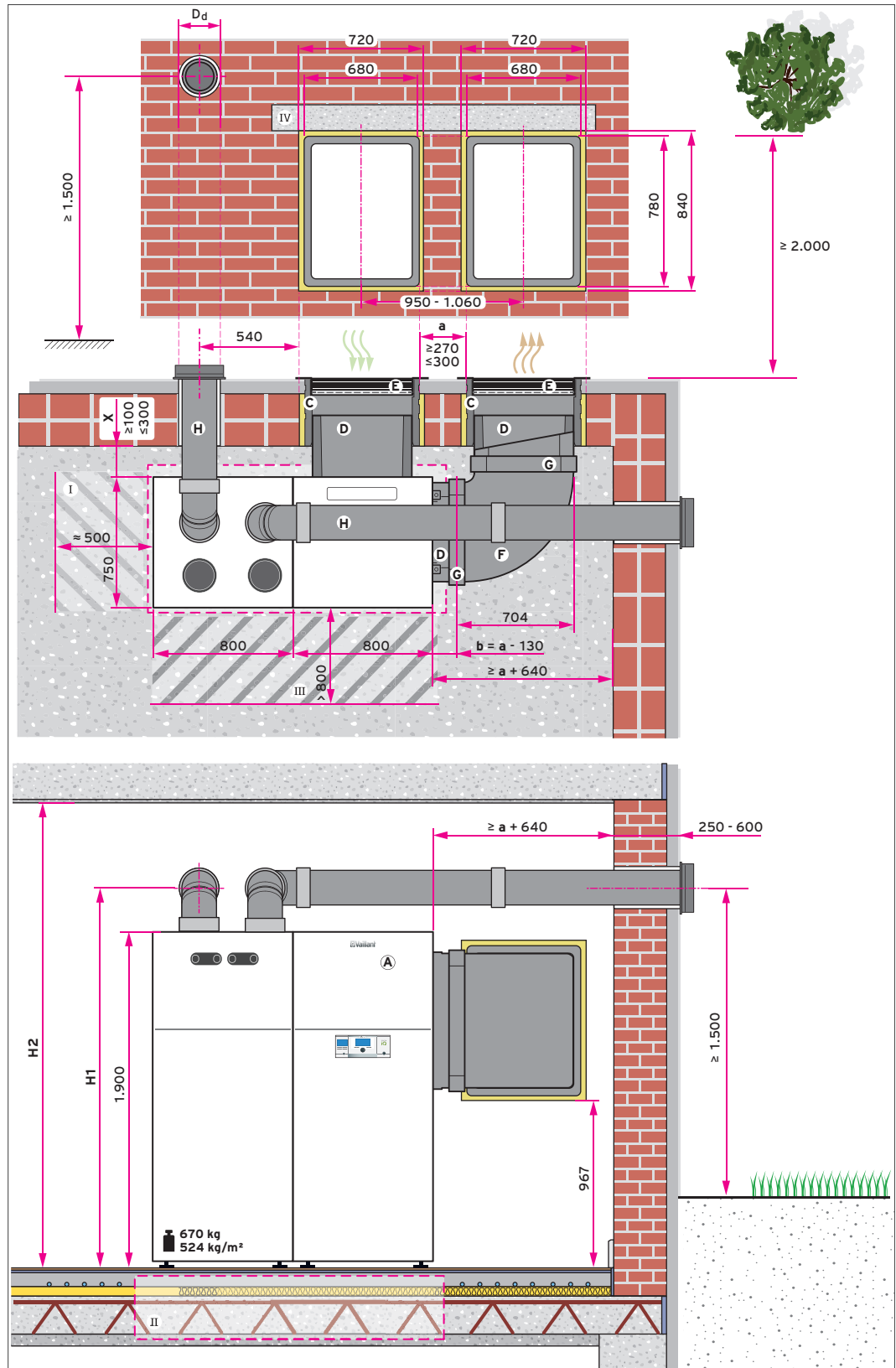


Fig. 27: recoCOMPACT installation situation, ground floor with heat production source (fireplace) - air intake at the rear

The outdoor air must always be taken in at least 1500 mm above ground level.

The VAZ-U180 210 mm/180 mm diameter EPP pipe was used in this example.

Note

Outer dimensions for clinker façades

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Note

When using EPP pipes (with a diameter of 180/150 and 210/180) as outdoor and exhaust air lines, these should be insulated in accordance with the provisions of DIN 1946-6; otherwise, thick-walled EPP pipes (with a diameter of 246/160) should be used.



If there is a heat production source (fireplace) in the building, the exhaust air must be conducted away via the building façade.

Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	recoCOMPACT
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2 *	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	0010023533	1	VWZ 500 x 600 air-duct elbow
G	0010023534	2 *	VWZ 500 x 600 air-duct sleeve
H	–	–	EPP pipe system for supplying and extracting outdoor and exhaust air

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

* If $x + a \geq 480$ mm, an additional air duct and an additional sleeve are required. During installation, the air duct to which the elbow is connected must be cut into two sections.

1.11.7 Cellar - corner installation, air supplied via light wells

Corner installation in the cellar with air supply via light wells. The outdoor air that provides fresh air to the living rooms is supplied via the floor above.

Left-hand installation

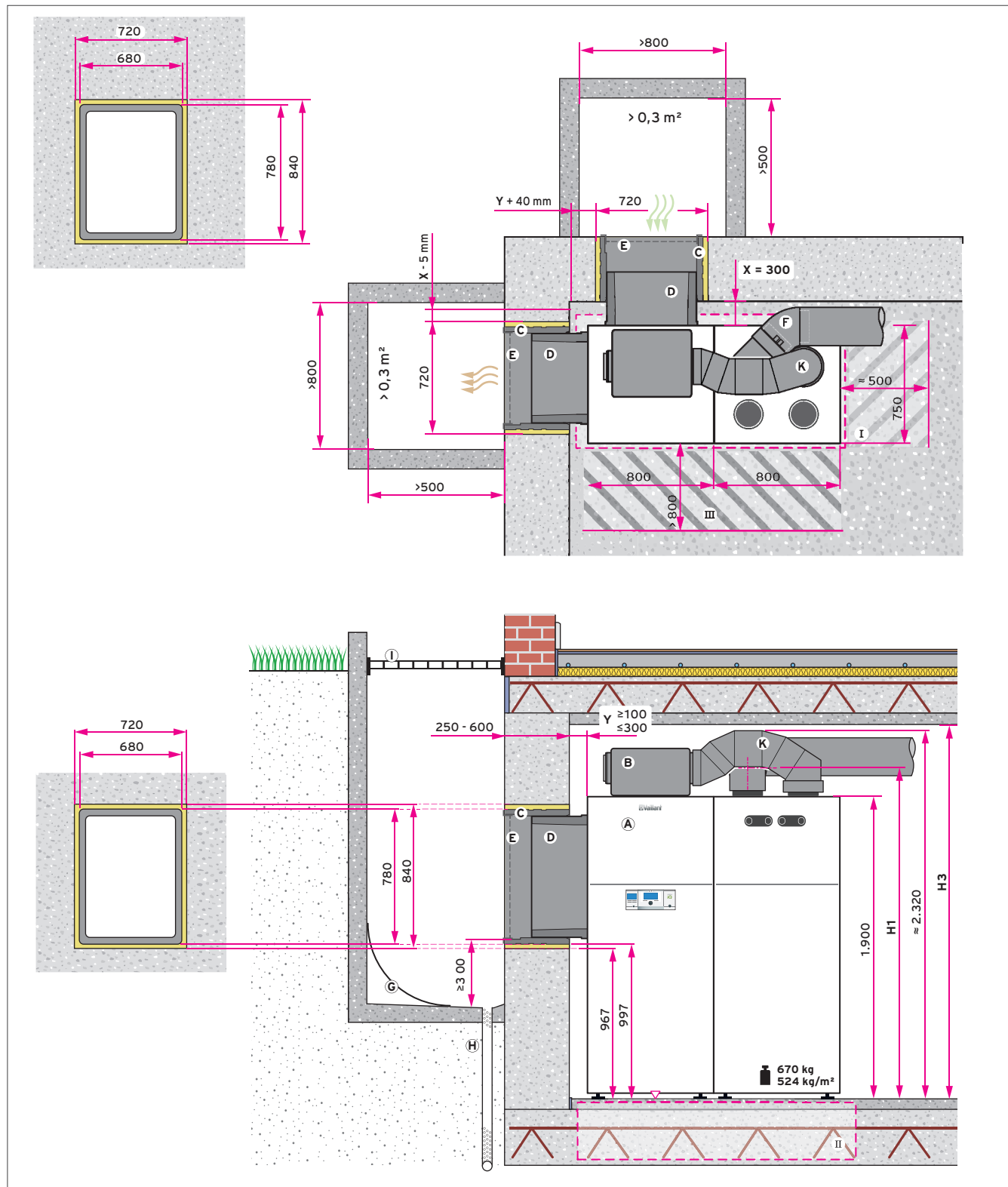


Fig. 28: recoCOMPACT installation situation, cellar - left-hand installation in the corner of a room, air supply via light wells

Right-hand installation

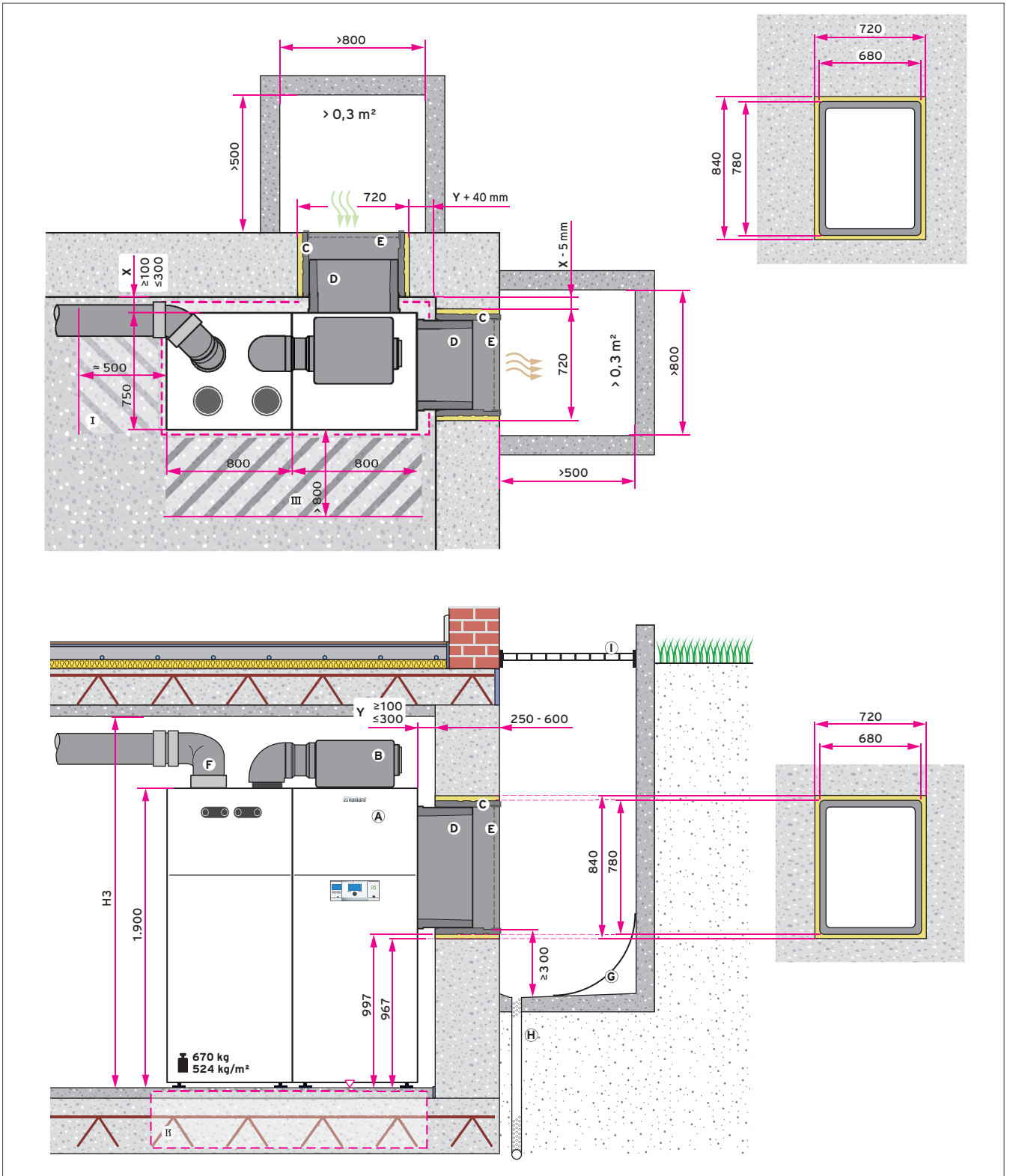


Fig. 29: recoCOMPACT installation situation, cellar - right-hand installation in the corner of a room, air supply via light wells

In accordance with EN 1946-6, the supply air for domestic ventilation must also be taken in at least 1500 mm above ground level when installing in cellars.

For the right-hand installation, the VAZ-U180 210 mm/180 mm diameter EPP pipe was used in this example. The left-hand installation is shown with the thick-walled EPP- pipes (246/160 diameter).

Note

When using EPP pipes (with a diameter of 180/150 and 210/180) as outdoor and exhaust air lines, these should be insulated in accordance with the provisions of DIN 1946-6; otherwise, thick-walled EPP pipes (with a diameter of 246/160) should be used.



	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023530	2	VWZ rodent guard grille External dimensions: 720 x 820 mm
F	–	–	EPP pipe system for supplying outdoor air
G	–	2	For concrete wells, an air guide plate must be used. In general, supplying air through plastic light wells is recommended as these facilitate air flow.
H	–	2	Water drain
I	–	2	Grille with a free opening cross-section of $\geq 0.3 \text{ m}^2$ To protect against small animals and foliage, a wire grille should also be fitted.
K	–	1	VWZ installation set for recoCOMPACT exhaust air module, left-hand installation Mandatory accessories: 0010035297 (left-hand installation only) 0010024178 (compact elbow) 0010025537 (adapter, reducer)

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

1.12 Set-up examples with cellar adapter

In the following set-up examples, the installation options with the Vaillant cellar adapter are displayed. With the cellar adapter, a height offset of 410 mm can be implemented for the air supply and extraction. This means that, in certain installation situations (e.g. for a building on a slope), the air can also be extracted via the surface of the earth without a light shaft.

The installation illustrations contain the relevant planned dimensions and an overview of the most important components of each system.

The following figures show examples of the right- and left-hand installation of the **recoCOMPACT**.

Observe the respective price list, which always contains a complete and up-to-date list of available accessories.

During planning, also comply with the following general instructions and information, as well as the applicable standards and directives.

1.12.1 Wall-opening dimensions when using the Vaillant air ducts with a height offset of 410 mm

The recoCOMPACT air-to-water heat pump comprises the following components: Heat pump, domestic hot water cylinder and controlled domestic ventilation with heat recovery system. The exhaust air is routed via the ventilation system's heat recovery system before being conducted via the heat pump. This removes almost all the heat from the exhaust air; this heat is then used to heat the building.

The following wall-breakthrough dimensions apply for the different installation possibilities when using Vaillant system accessories. The way in which the EPP pipes for the ventilation system are connected also influences the required minimum room height, diameter and height measurement for the air pipe.

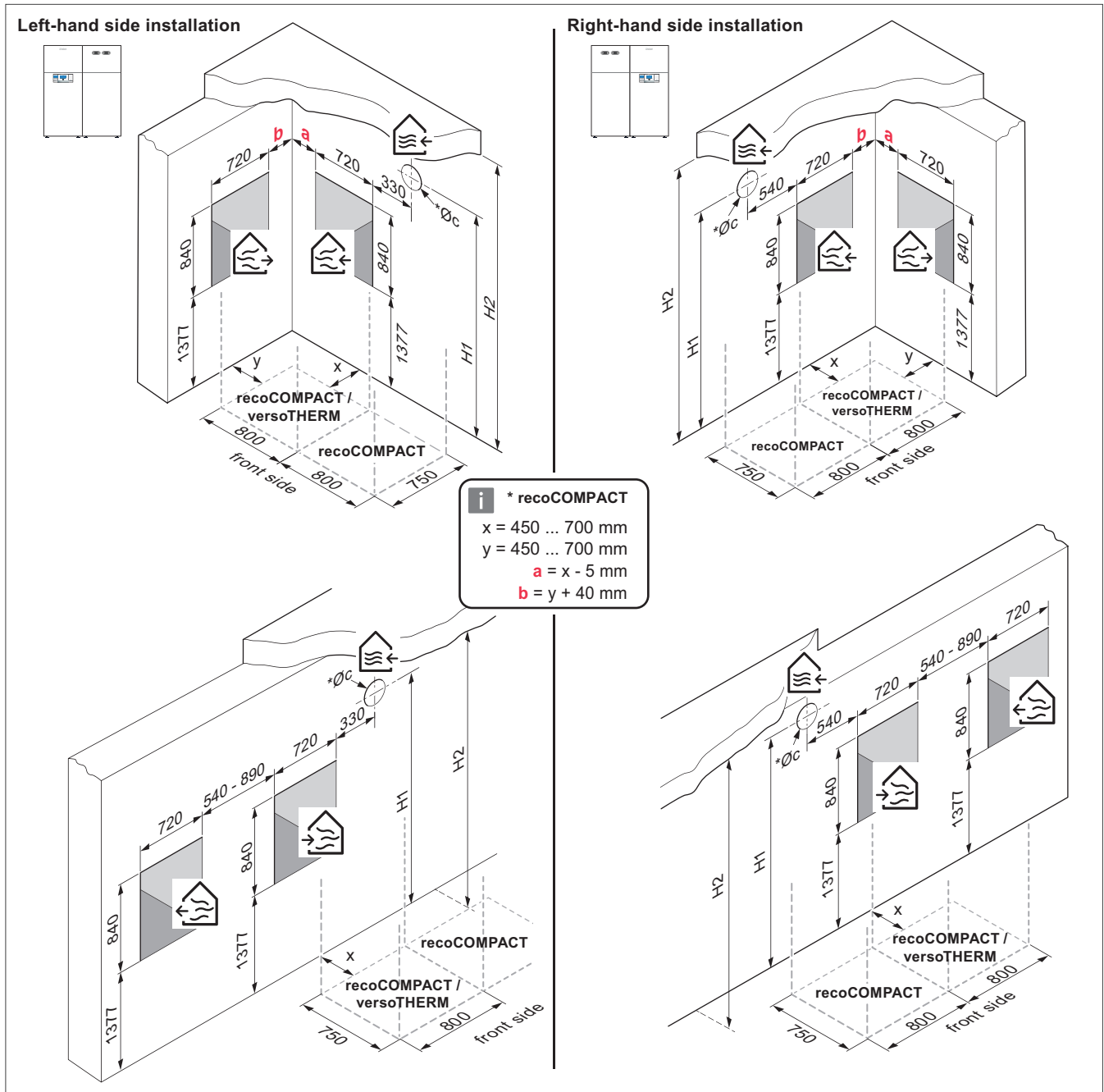


Fig. 30: Wall-opening dimensions when using the Vaillant air ducts with a height offset of 410 mm

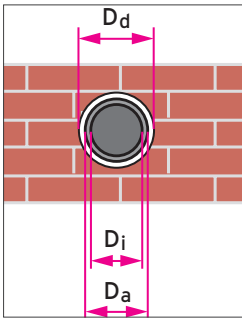
Note

The floor's load-bearing capacity must be guaranteed in the installation area. The screed, a concrete pedestal or other floor structures must be designed for the unit's distributed load and must withstand the point loads at the unit's feet. There must be no installations in the installation area (underfloor heating, etc.).



1.12.2 Diameter and height measurements of the outdoor air supply

When planning the installation site for the recoCOMPACT, adhere to the dimensions below.



Diameter and height measurements of the outdoor air supply

Dimensions	Article designation Article number	Internal diameter	Outer diameter	Recommended opening size for the outdoor air intake	Outdoor air intake pipe axis to finished floor	Minimum room height with outdoor air intake in the installation room via the façade	Minimum room height with outdoor air intake via the room above, e.g. for units installed in the cellar
		$\varnothing D_i$	$\varnothing D_o$	$\varnothing D_d$	H1	H2	H3
	VAZ-U150 0020210950	150	180	220	2110	2220	2350
	0010024178 + 0010025537	160	246	286	2060	2200	2300
	VAZ-U180 0020210949	180	210	250	2170	2300	2450
	VAZ-UP180 0010023536	180	240	280	2060	2200	2250
<p>For left-hand installation only:</p>	VWZ installation set For recoCOMPACT exhaust air module, left-hand installation 0010035297 Mandatory: 0010024178 (compact elbow) 0010025537 (adapter, reducer)	160	246	286	2060	2350	2350

1.12.3 Ground floor - corner installation with cellar adapter

Corner installation on the ground floor (slope) with cellar adapter. The outdoor air that provides fresh air to the living rooms is supplied via the floor above.

Left-hand installation

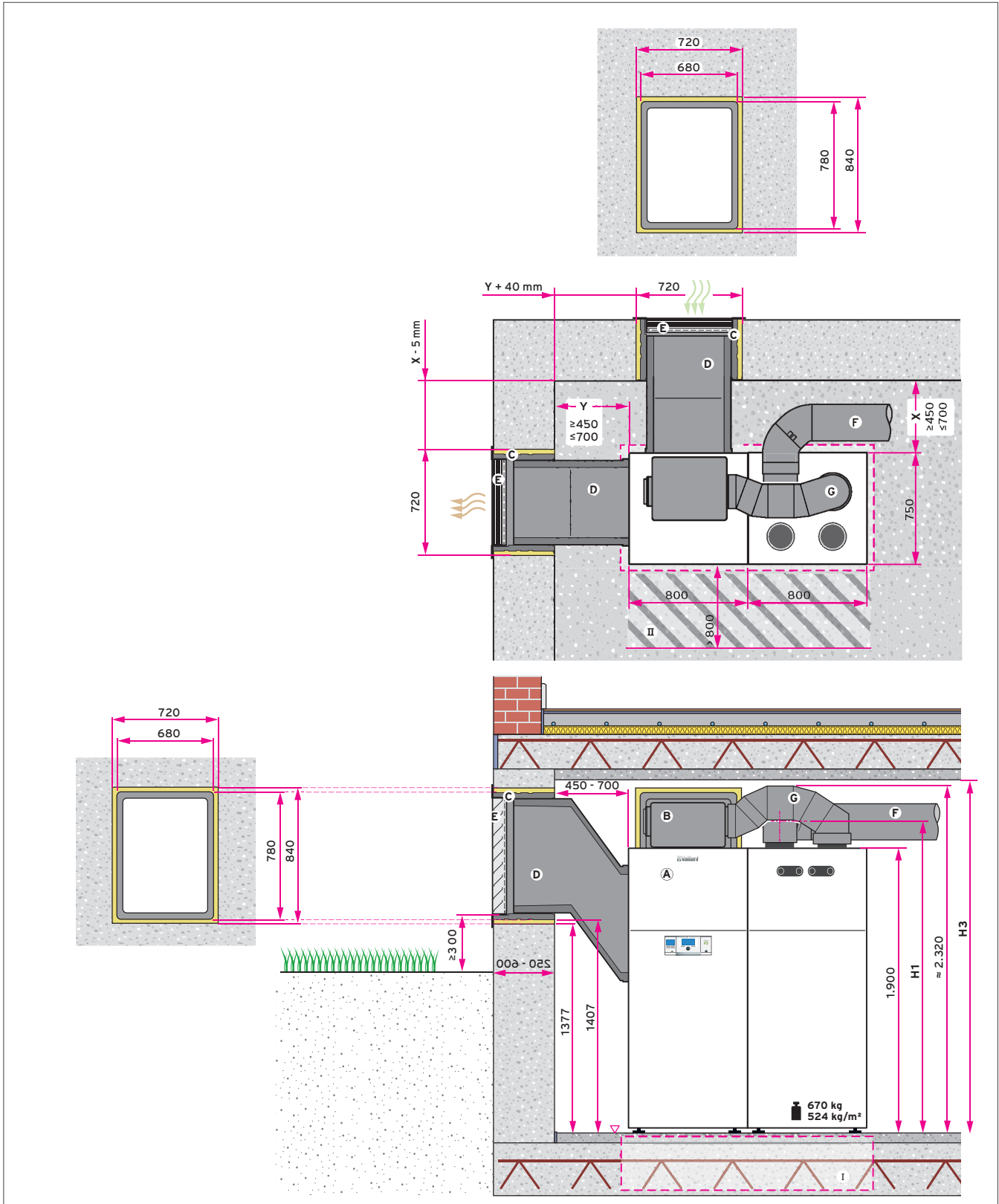


Fig. 31: recoCOMPACT installation situation, ground floor - left-hand installation in the corner of a room, air supply via cellar adapter

Right-hand installation

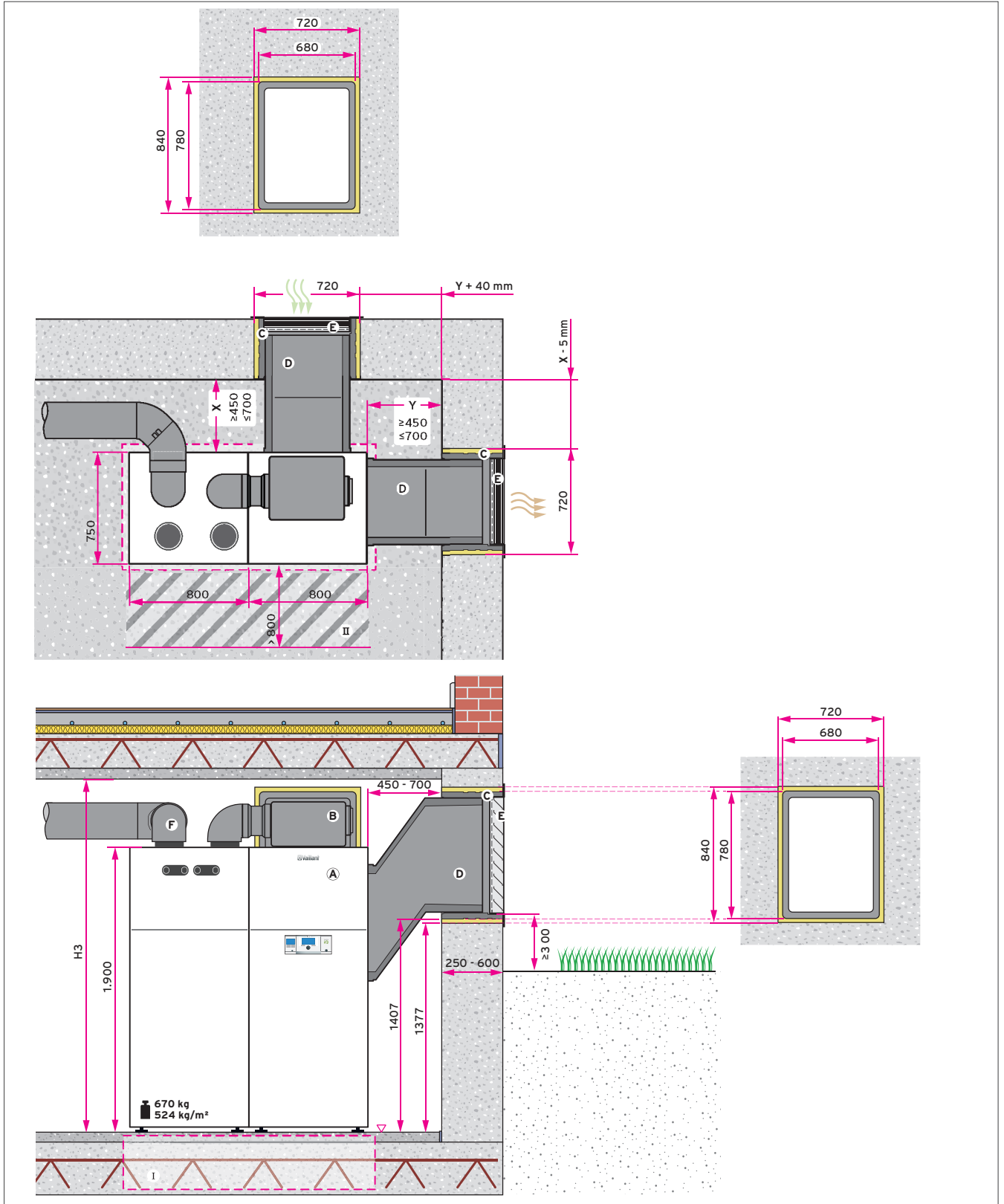


Fig. 32: recoCOMPACT installation situation, ground floor - right-hand installation in the corner of a room, air supply via cellar adapter

The VAZ-UP160 246 mm/160 mm diameter EPP pipe was used in this example.

Note

Outer dimensions for clinker façades

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
II	–	–	Clearance in front of the product to allow for maintenance
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010031010	2	VWZ air duct with a height change of 410 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	–	–	EPP pipe system for supplying outdoor air
G		1	VWZ installation set for recoCOMPACT exhaust air module, left-hand installation Mandatory accessories: 0010035297 (left-hand installation only) 0010024178 (compact elbow) 0010025537 (adapter, reducer)

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

1.12.4 Ground floor with heat production source (fireplace) – air intake at the rear

Single-wall installation with cellar adapter on the ground floor where a heat production source (fireplace) is also installed. In this case, the ventilation unit's outdoor and exhaust air must be routed separately via wall openings.

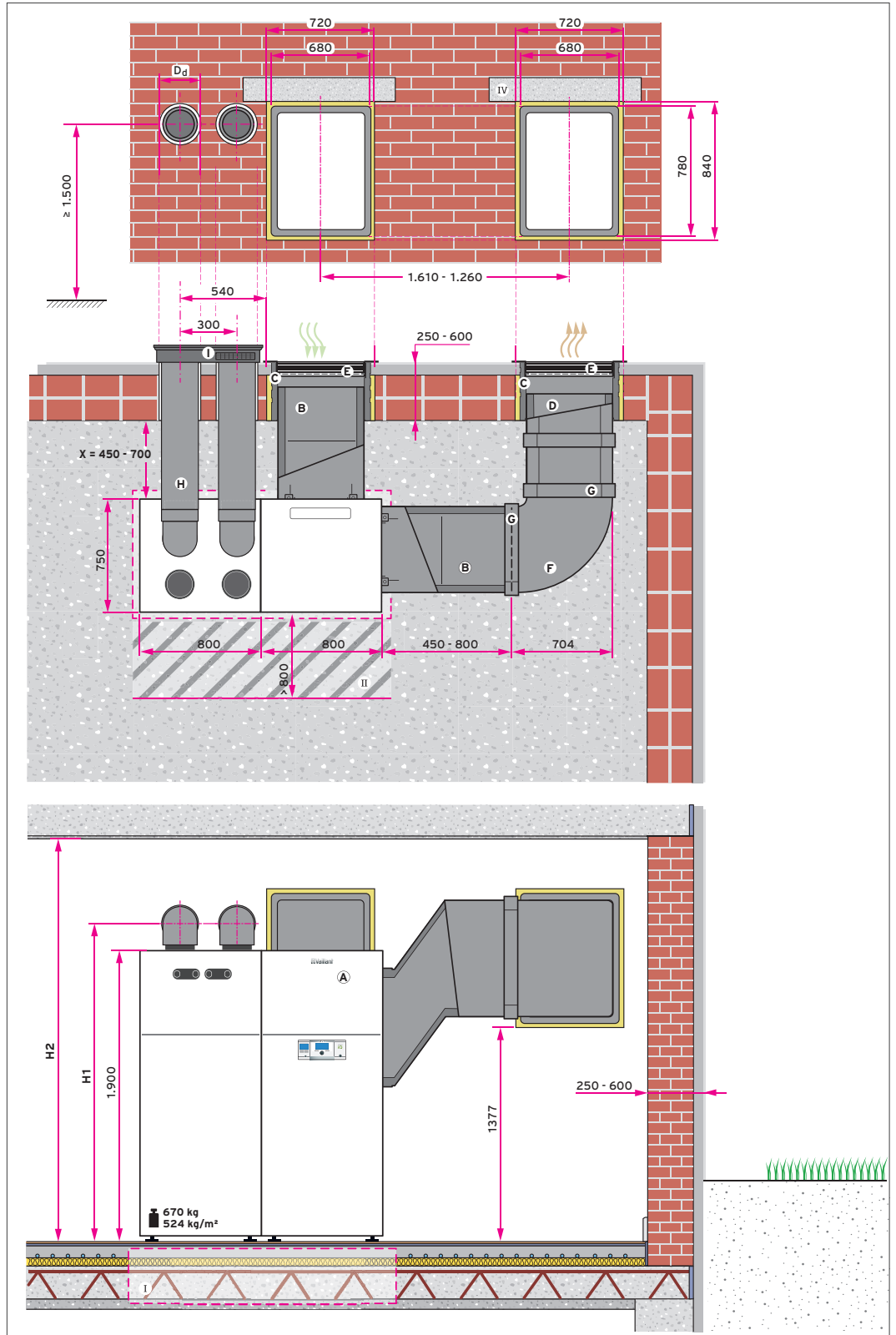


Fig. 33: recoCOMPACT with cellar adapter installation situation, ground floor with heat production source (fireplace) – air intake at the rear

The outdoor air must always be taken in at least 1500 mm above ground level.
 The VAZ-UP160 246 mm/160 mm diameter EPP pipe was used in this example.

Note

Outer dimensions for clinker façades

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Note

When using EPP pipes (with a diameter of 180/150 and 210/180) as outdoor and exhaust air lines, these should be insulated in accordance with the provisions of DIN 1946-6; otherwise, thick-walled EPP pipes (with a diameter of 246/160) should be used.



If there is a heat production source (fireplace) in the building, the exhaust air must be conducted away via the building façade.

Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
II	–	–	Clearance in front of the product to allow for maintenance
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	recoCOMPACT
B	0010031010	2	VWZ air duct with a height change of 410 mm
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	1 *	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	0010023533	1	VWZ 500 x 600 air-duct elbow
G	0010023534	2 *	VWZ 500 x 600 air-duct sleeve
H	–	–	EPP pipe system for supplying and extracting outdoor and exhaust air
I	0010024159	1	Double façade duct

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

* If **x > 450 mm**, an additional air duct and an additional sleeve are required. During installation, the air duct to which the elbow is connected must be cut into two sections.

1.13 Set-up examples with Rehau accessories

The following set-up examples show a range of different installation options that can be planned using installation accessories from Rehau. The examples feature the relevant dimensions and specific information relating to each of the installation situations.

The installation illustrations contain the relevant planned dimensions and an overview of the most important components of each system.

The following examples illustrate how to install the unit on the right-hand side.

During planning, also comply with the following general instructions and information, as well as the applicable standards and directives.

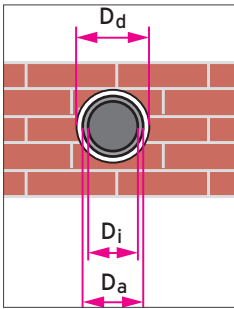
Note

The floor's load-bearing capacity must be guaranteed in the installation area. The screed, a concrete pedestal or other floor structures must be designed for the unit's distributed load and must withstand the point loads at the unit's feet. There must be no installations in the installation area (underfloor heating, etc.).



1.13.1 Diameter and height measurements of the outdoor air supply

When planning the installation site for the recoCOMPACT, adhere to the dimensions below.



Diameter and height measurements of the outdoor air supply

Dimensions	Article designation Article number	Internal diameter	Outer diameter	Recommended opening size for the outdoor air intake	Outdoor air intake pipe axis to finished floor	Minimum room height with outdoor air intake in the installation room via the façade	Minimum room height with outdoor air intake via the room above, e.g. for units installed in the cellar
		$\varnothing D_i$	$\varnothing D_o$	$\varnothing D_d$	H1	H2	H3
	VAZ-U150 0020210950	150	180	220	2110	2220	2350
	VAZ-U180 0020210949	180	210	250	2170	2300	2450
	VAZ-UP180 0010023536	180	240	280	2060	2200	2250
<p>For left-hand installation only:</p>	VWZ installation set For recoCOMPACT exhaust air module, left-hand installation 0010035297 Mandatory: 0010024178 (compact elbow) 0010025537 (adapter, reducer)	160	246	286	2060	2350	2350

1.13.2 Cellar - corner installation, air supplied via an air-duct system manufactured by Rehau

Corner installation in the cellar with wall ducts that are impermeable to pressing water. Air is supplied to the heat pump using the 500 mm diameter air-duct system manufactured by Rehau.

The outdoor air that provides fresh air to the living rooms is supplied via the floor above.

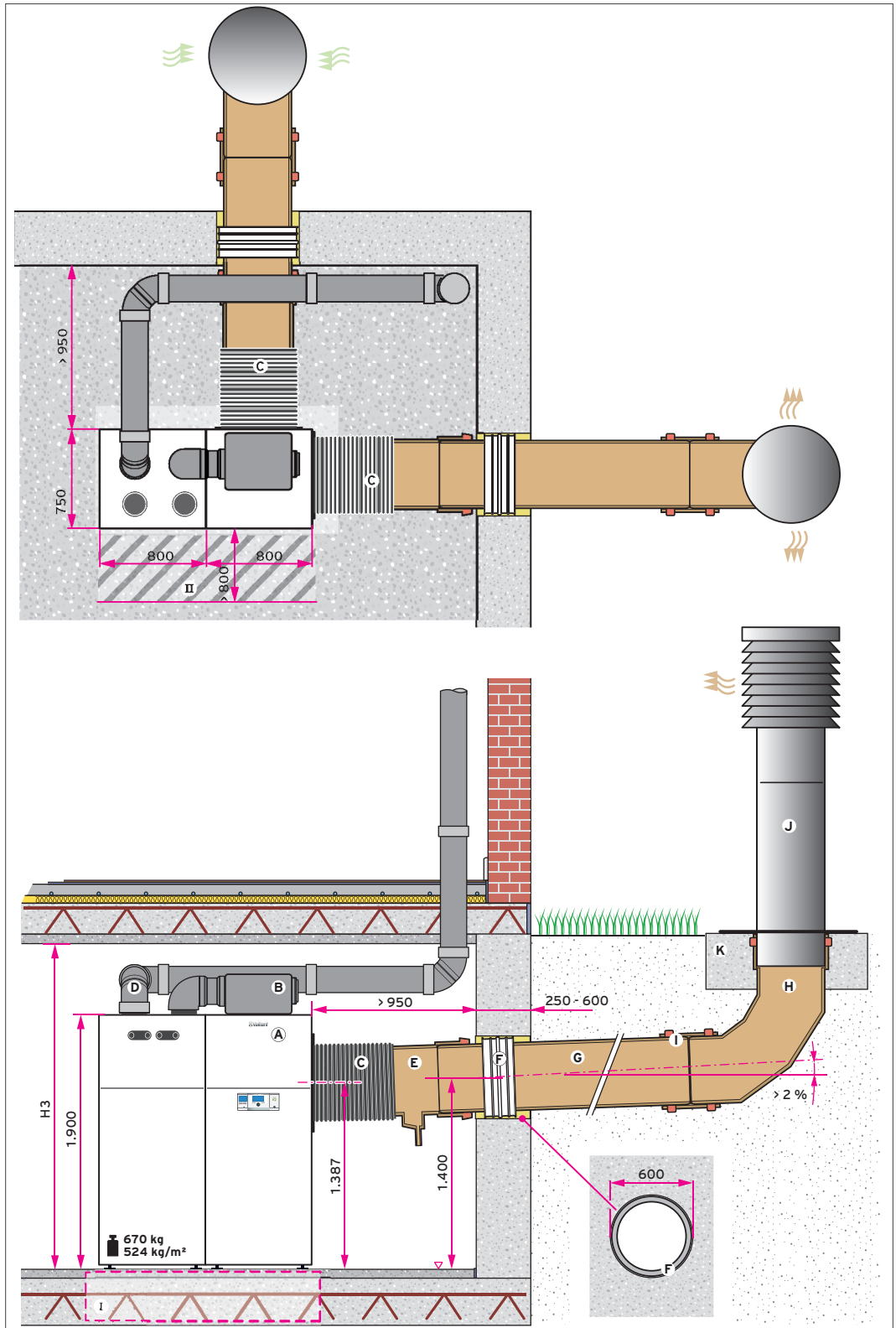


Fig. 34: recoCOMPACT installation situation, cellar - corner installation with air-duct system manufactured by Rehau

In accordance with EN 1946-6, the supply air for domestic ventilation must also be taken in at least 1500 mm above ground level when installing in cellars.

The VAZ-U150 180 mm/150 mm diameter EPP pipe was used in this example.

Note

When using EPP pipes (with a diameter of 180/150 and 210/180) as outdoor and exhaust air lines, these should be insulated in accordance with the provisions of DIN 1946-6; otherwise, thick-walled EPP pipes (with a diameter of 246/160) should be used.



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
II	–	–	Clearance in front of the product to allow for maintenance
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023531	1	VWZ flexible adapter set (for VWL 71/91)
D	–	–	EPP pipe system for supplying outdoor air
E	See pl. from Rehau	2	S-shaped condensate discharge e.g. for residential and other buildings with a cellar, with a connecting sleeve and seal as standard
F	See pl. from Rehau	2	DN 500 annular space seal Used for pressing water, pressure-tight up to 5.0 bar and Wall sleeve Used for pressing water in conjunction with annular space seal
G	See pl. from Rehau	–	AWADUKT thermal pipe Specifically for use as an air pipe for laying underground; DN 500 0.30 Pa/m pressure loss at 1900 m ³ /h and 3.3 m/s 0.35 Pa/m pressure loss at 2200 m ³ /h and 3.6 m/s
H	See pl. from Rehau	–	AWADUKT PP elbow with EPDM sealing ring 88° elbow for implementing direction changes; DN 500 1.5 Pa pressure loss at 1900 m ³ /h and 3.3 m/s 1.8 Pa pressure loss at 2200 m ³ /h and 3.6 m/s
I	See pl. from Rehau	–	AWADUKT PP double connecting sleeve with EPDM sealing rings
J	See pl. from Rehau	–	AWADUKT thermal air-ground heat exchanger system air intake tower; DN 500 Pressure loss at 1900 m ³ /h and 3.3 m/s 18 Pa Use with a G-4 filter + 11 Pa Total: 29 Pa Pressure loss at 2200 m ³ /h and 3.6 m/s 23 Pa Use with a G-4 filter + 13 Pa Total: 36 Pa
K	–	1	Concrete base Dimensions for corner installation (mm): 1200 x 1200 x 500 Dimensions for single-wall installation (mm): 2100 x 1200 x 500

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

Note

Information on the Rehau air-duct system
Maximum 15 m + 1 elbow per module string (total length).
Each additional elbow reduces the total length by 5 m.



1.13.3 Cellar - single-wall installation, air supplied via an air-duct system manufactured by Rehau

Single-wall installation in the cellar with wall ducts that are impermeable to pressing water. Air is supplied to the heat pump using the 500 mm diameter air-duct system manufactured by Rehau.

The outdoor air that provides fresh air to the living rooms is supplied via the floor above.

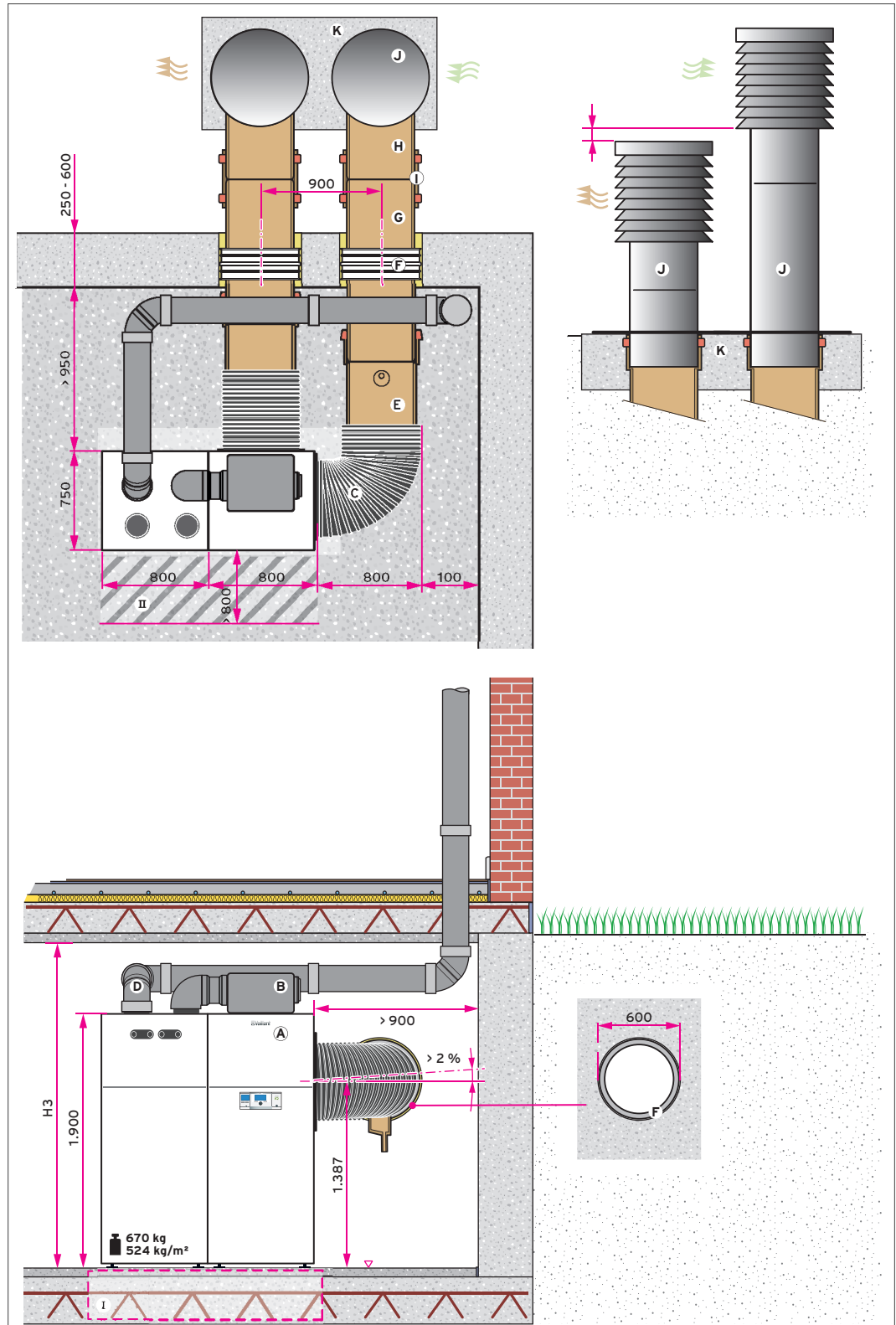


Fig. 35: recoCOMPACT installation situation, cellar - single-wall installation with air-duct system manufactured by Rehau

In accordance with EN 1946-6, the supply air for domestic ventilation must also be taken in at least 1500 mm above ground level when installing in cellars.

The VAZ-U150 180 mm/150 mm diameter EPP pipe was used in this example.

Note

When using EPP pipes (with a diameter of 180/150 and 210/180) as outdoor and exhaust air lines, these should be insulated in accordance with the provisions of DIN 1946-6; otherwise, thick-walled EPP pipes (with a diameter of 246/160) should be used.



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
II	–	–	Clearance in front of the product to allow for maintenance
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023531	1	VWZ flexible adapter set (for VWL 71/91)
D	–	–	EPP pipe system for supplying outdoor air
E	See pl. from Rehau	2	S-shaped condensate discharge e.g. for residential and other buildings with a cellar, with a connecting sleeve and seal as standard
F	See pl. from Rehau	2	DN 500 annular space seal Used for pressing water, pressure-tight up to 5.0 bar and Wall sleeve Used for pressing water in conjunction with annular space seal
G	See pl. from Rehau	–	AWADUKT thermal pipe Specifically for use as an air pipe for laying underground; DN 500 0.30 Pa/m pressure loss at 1900 m ³ /h and 3.3 m/s 0.35 Pa/m pressure loss at 2200 m ³ /h and 3.6 m/s
H	See pl. from Rehau	–	AWADUKT PP elbow with EPDM sealing ring 88° elbow for implementing direction changes; DN 500 1.5 Pa pressure loss at 1900 m ³ /h and 3.3 m/s 1.8 Pa pressure loss at 2200 m ³ /h and 3.6 m/s
I	See pl. from Rehau	–	AWADUKT PP double connecting sleeve with EPDM sealing rings
J	See pl. from Rehau	–	AWADUKT thermal air-ground heat exchanger system air intake tower; DN 500 Pressure loss at 1900 m ³ /h and 3.3 m/s 18 Pa Use with a G-4 filter + 11 Pa Total: 29 Pa Pressure loss at 2200 m ³ /h and 3.6 m/s 23 Pa Use with a G-4 filter + 13 Pa Total: 36 Pa
K	–	1	Concrete base Dimensions for corner installation (mm): 1200 x 1200 x 500 Dimensions for single-wall installation (mm): 2100 x 1200 x 500

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

Note

Information on the Rehau air-duct system
Maximum 15 m + 1 elbow per module string (total length).
Each additional elbow reduces the total length by 5 m.



1.14 Set-up examples for existing buildings without façade renovation

The following set-up examples show a range of different installation options that can be achieved using the Vaillant system accessories. The examples feature the relevant dimensions and specific information relating to each of the installation situations.

The different accessory and unit variants allow for different installation options for the air supply and extraction systems.

The installation illustrations contain the relevant planned dimensions and an overview of the most important components of each system.

For existing buildings that do not have a new façade, particular attention must be paid to complying with the dimensions for the wall duct. If the wall opening is greater than 700 x 800 mm, the annular gap between the wall duct and the wall opening must not be completely covered by the weather or rodent guard grille.

The following figures show examples of the right- and left-hand installation of the **recoCOMPACT**.

Observe the respective price list, which always contains a complete and up-to-date list of available accessories.

During planning, also comply with the following general instructions and information, as well as the applicable standards and directives.

1.14.1 Wall-opening dimensions when using Vaillant air ducts

The recoCOMPACT air-to-water heat pump comprises the following components: Heat pump, domestic hot water cylinder and controlled domestic ventilation with heat recovery system. The exhaust air is routed via the ventilation system's heat recovery system before being conducted via the heat pump. This removes almost all the heat from the exhaust air; this heat is then used to heat the building.

The following wall-breakthrough dimensions apply for the different installation possibilities when using Vaillant system accessories. The way in which the EPP pipes for the ventilation system are connected also influences the required minimum room height, diameter and height measurement for the air pipe.

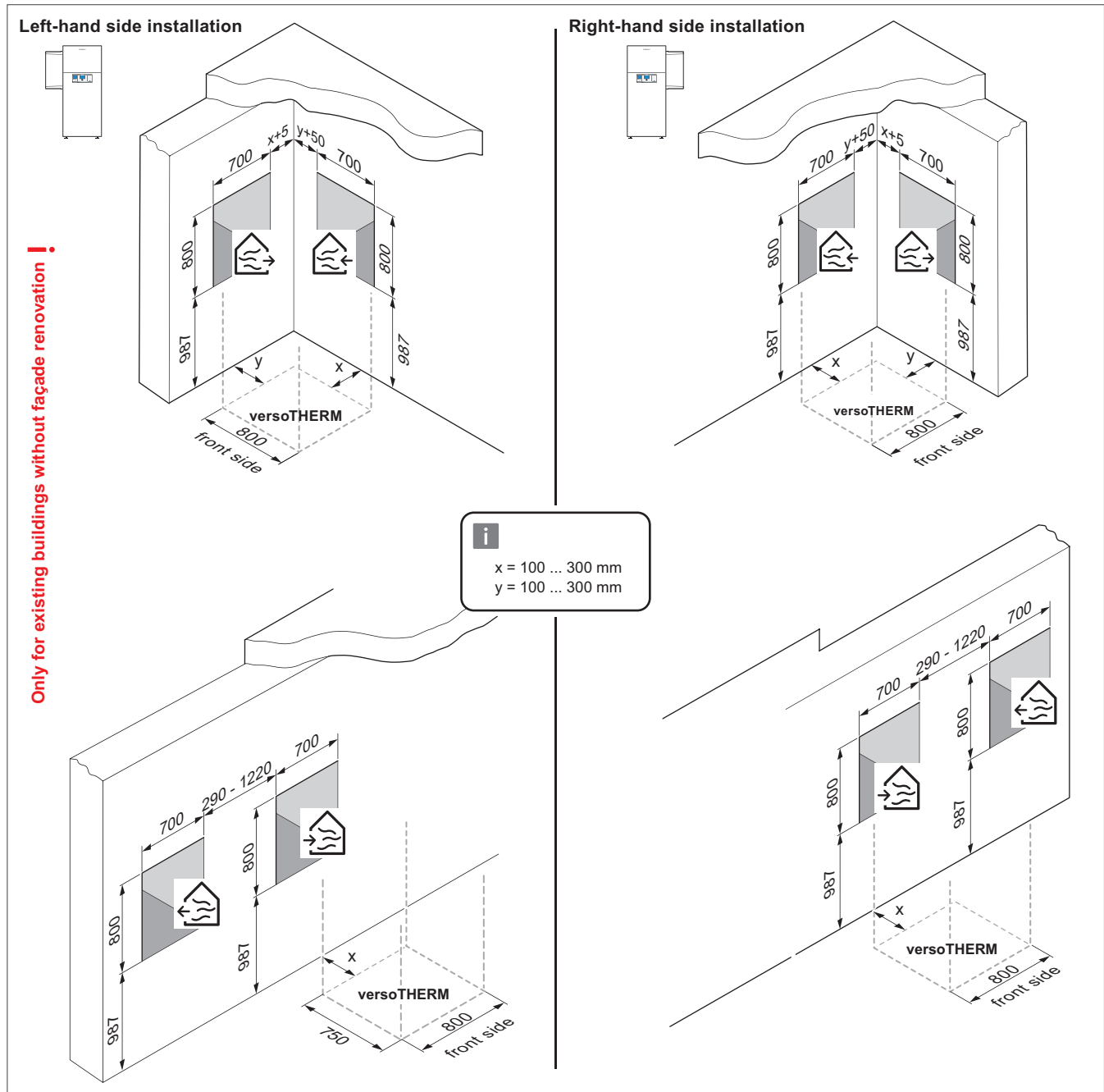


Fig. 36: Wall-opening dimensions when using Vaillant air ducts

Note

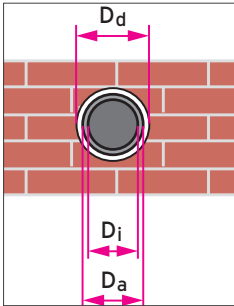
The floor's load-bearing capacity must be guaranteed in the installation area. The screed, a concrete pedestal or other floor structures must be designed for the unit's distributed load and must withstand the point loads at the unit's feet. There must be no installations in the installation area (underfloor heating, etc.).



1.14.2 Diameter and height measurements of the outdoor air supply

When planning the installation site for the recoCOMPACT, adhere to the dimensions below.

Diameter and height measurements of the outdoor air supply



Dimensions	Article designation Article number	Internal diameter	Outer diameter	Recommended opening size for the outdoor air intake	Outdoor air intake pipe axis to finished floor	Minimum room height with outdoor air intake in the installation room via the façade	Minimum room height with outdoor air intake via the room above, e.g. for units installed in the cellar
		$\varnothing D_i$	$\varnothing D_a$	$\varnothing D_d$	H1	H2	H3
	VAZ-U150 0020210950	150	180	220	2110	2220	2350
	0010024178 + 0010025537	160	246	286	2060	2200	2300
	VAZ-UP180 0010023536	180	240	280	2060	2200	2250
	VAZ-U180 0020210949	180	210	250	2170	2300	2450
<p>For left-hand installation only:</p>	VWZ installation set For recoCOMPACT exhaust air module, left-hand installation 0010035297 Mandatory: 0010024178 (compact elbow) 0010025537 (adapter, reducer)	160	246	286	2060	2350	2350

1.14.3 Ground floor - corner installation

Corner installation on the ground floor with an outdoor air supply to supply fresh air to the living rooms via a separate wall opening.

Right-hand installation

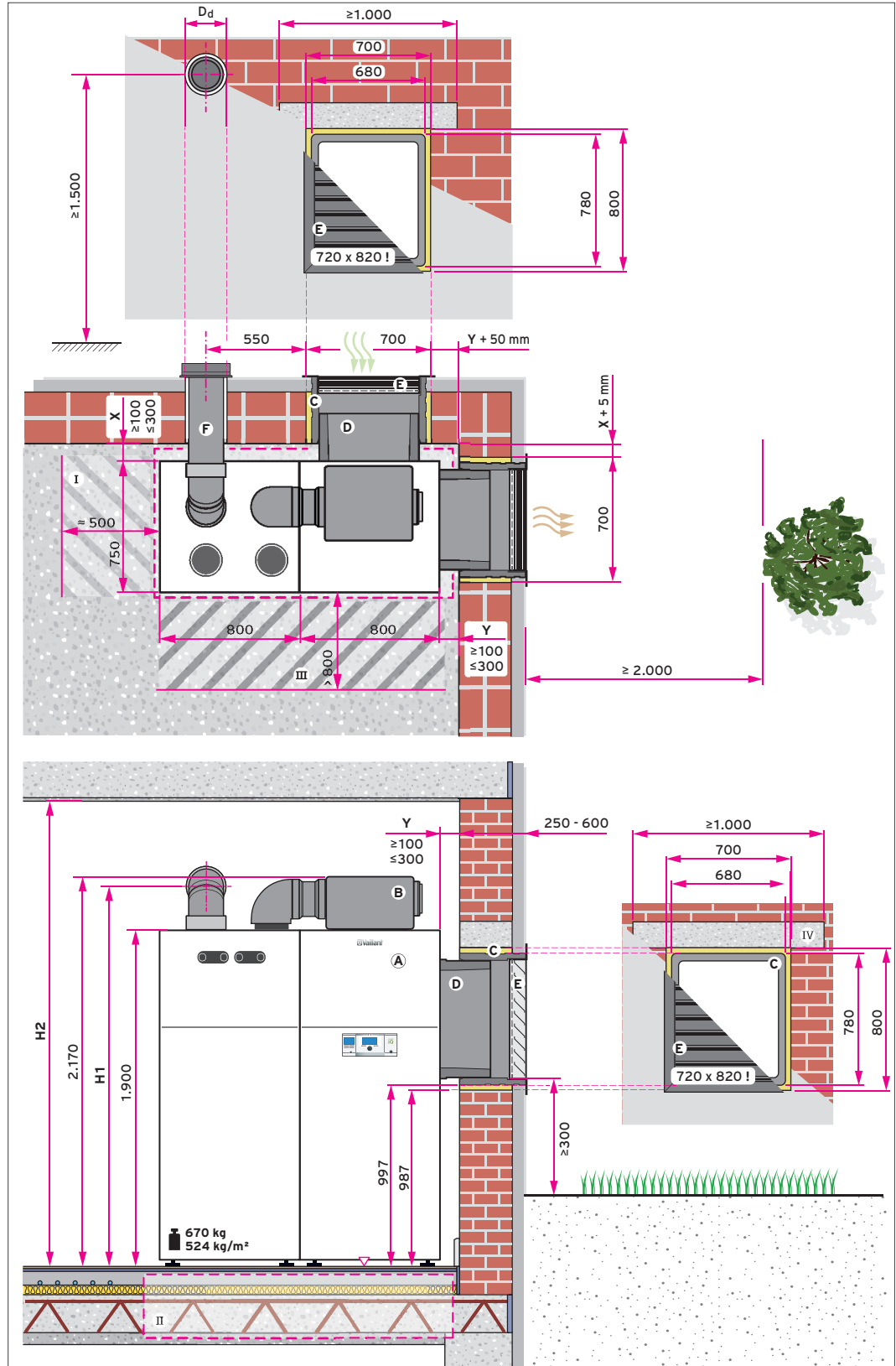


Fig. 37: recoCOMPACT installation situation, ground floor - right-hand installation in the corner of a room

The outdoor air must always be taken in at least 1500 mm above ground level.

The VAZ-U180 210 mm/180 mm diameter EPP pipe was used in this example.

Note

For existing buildings that do not have a new façade, particular attention must be paid to complying with the dimensions for the wall opening of maximum 700 x 800 mm. A larger wall opening is not completely covered by the weather or rodent guard grille.



Note

Outer dimensions for clinker façades

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Note

When using EPP pipes (with a diameter of 180/150 and 210/180) as outdoor and exhaust air lines, these should be insulated in accordance with the provisions of DIN 1946-6; otherwise, thick-walled EPP pipes (with a diameter of 246/160) should be used.



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	–	–	EPP pipe system for supplying outdoor air
G	0010035297 (For left-hand installation only)	1	VWZ installation set for recoCOMPACT exhaust air module, left-hand installation Mandatory accessories: 0010024178 (compact elbow) 0010025537 (adapter, reducer)

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

1.14.4 Cellar - corner installation, air supplied via light wells

Corner installation in the cellar with air supply via light wells. The outdoor air that provides fresh air to the living rooms is supplied via the floor above.

Right-hand installation

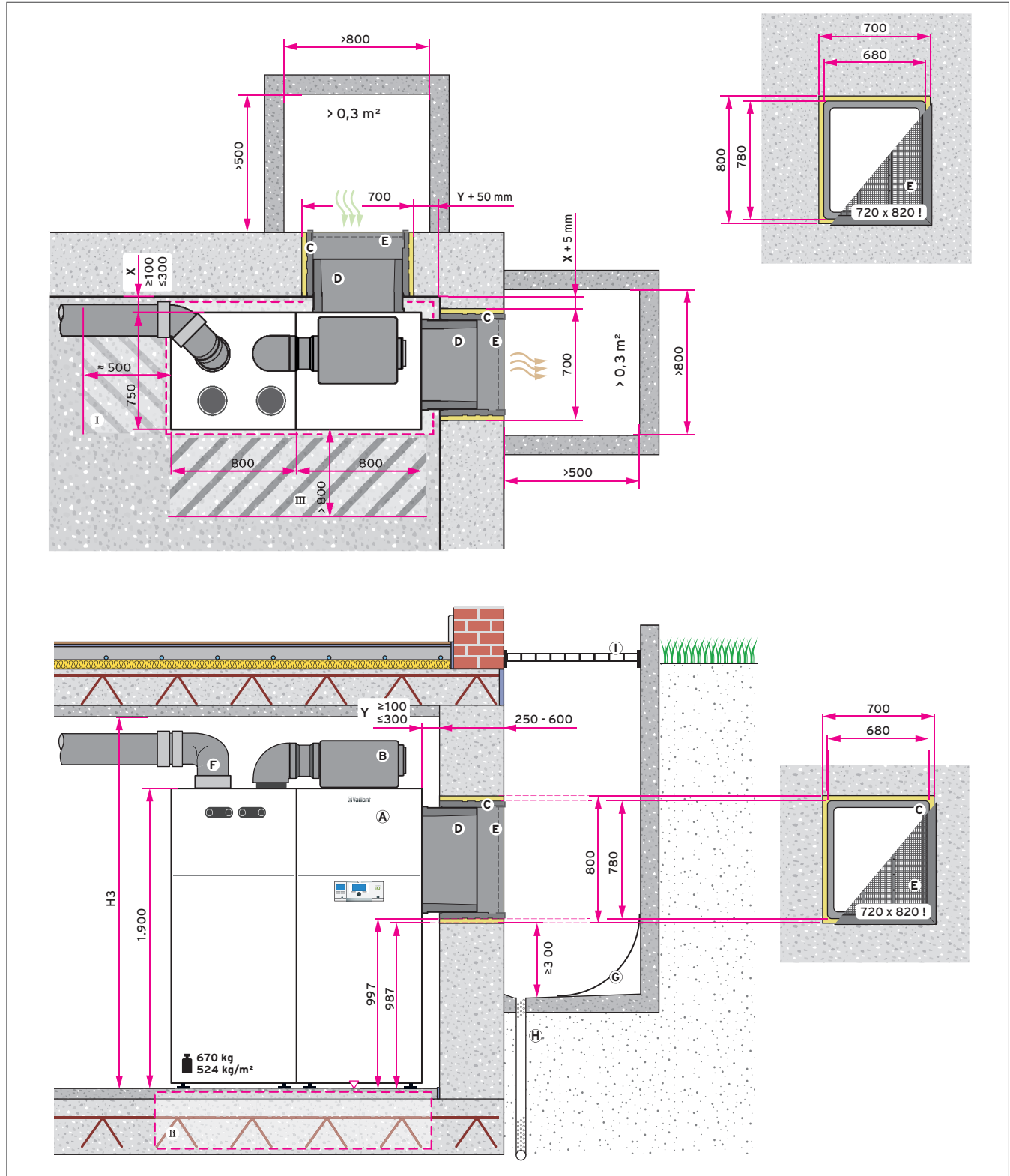


Fig. 38: recoCOMPACT installation situation, cellar - right-hand installation in the corner of a room, air supply via light wells

In accordance with EN 1946-6, the supply air for domestic ventilation must also be taken in at least 1500 mm above ground level when installing in cellars.

For the right-hand installation, the VAZ-U180 210 mm/180 mm diameter EPP pipe was used in this example.

Note

For existing buildings that do not have a new façade, particular attention must be paid to complying with the dimensions for the wall opening of maximum 700 x 800 mm. A larger wall opening is not completely covered by the weather or rodent guard grille.



Note

When using EPP pipes (with a diameter of 180/150 and 210/180) as outdoor and exhaust air lines, these should be insulated in accordance with the provisions of DIN 1946-6; otherwise, thick-walled EPP pipes (with a diameter of 246/160) should be used.



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023530	2	VWZ rodent guard grille External dimensions: 720 x 820 mm
F	–	–	EPP pipe system for supplying outdoor air
G	–	2	For concrete wells, an air guide plate must be used. In general, supplying air through plastic light wells is recommended as these facilitate air flow.
H	–	2	Water drain
I	–	2	Grille with a free opening cross-section of $\geq 0.3 \text{ m}^2$ To protect against small animals and foliage, a wire grille should also be fitted.
K	0010035297 (For left-hand installation only)	1	VWZ installation set for recoCOMPACT exhaust air module, left-hand installation Mandatory accessories: 0010024178 (compact elbow) 0010025537 (adapter, reducer)

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

1.15 Set-up examples with cellar adapter for existing buildings without façade renovation

In the following set-up examples, the installation options with the Vaillant cellar adapter are displayed. With the cellar adapter, a height offset of 410 mm can be implemented for the air supply and extraction. This means that, in certain installation situations (e.g. for a building on a slope), the air can also be extracted via the surface of the earth without a light shaft.

The installation illustrations contain the relevant planned dimensions and an overview of the most important components of each system.

For existing buildings that do not have a new façade, particular attention must be paid to complying with the dimensions for the wall duct. If the wall opening is greater than 700 x 800 mm, the annular gap between the wall duct and the wall opening must not be completely covered by the weather or rodent guard grille.

The following figure shows an example of a right-hand installation of the **recoCOMPACT**.

Observe the respective price list, which always contains a complete and up-to-date list of available accessories.

During planning, also comply with the following general instructions and information, as well as the applicable standards and directives.

1.15.1 Wall-opening dimensions when using the Vaillant air ducts with a height offset of 410 mm

The recoCOMPACT air-to-water heat pump comprises the following components: Heat pump, domestic hot water cylinder and controlled domestic ventilation with heat recovery system. The exhaust air is routed via the ventilation system's heat recovery system before being conducted via the heat pump.

This removes almost all the heat from the exhaust air; this heat is then used to heat the building.

The following wall-breakthrough dimensions apply for the different installation possibilities when using Vaillant system accessories. The way in which the EPP pipes for the ventilation system are connected also influences the required minimum room height, diameter and height measurement for the air pipe.

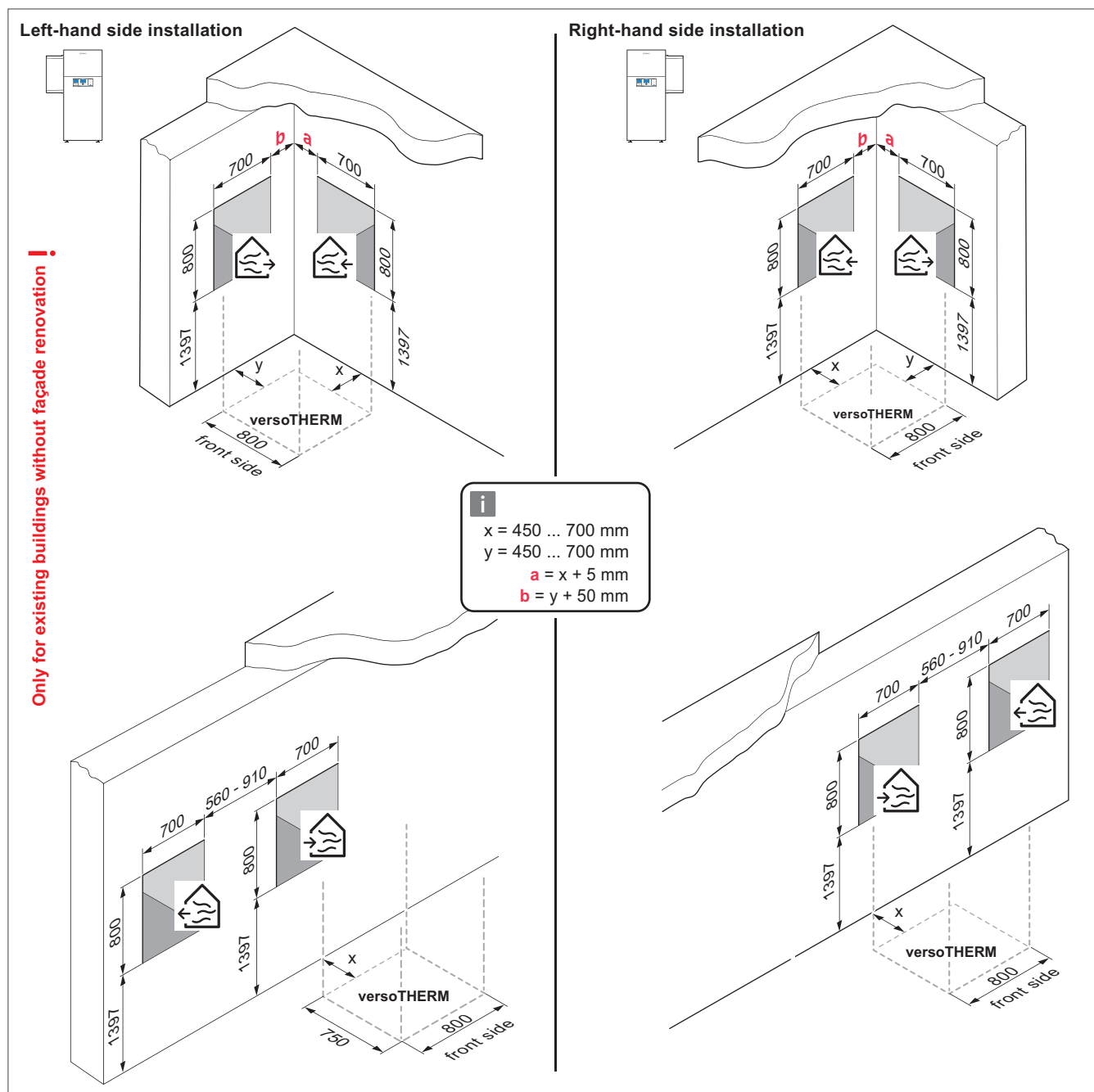


Fig. 39: Wall-opening dimensions when using the Vaillant air ducts with a height offset of 410 mm

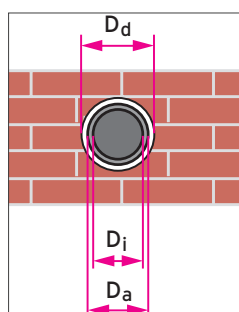
Note

The floor's load-bearing capacity must be guaranteed in the installation area. The screed, a concrete pedestal or other floor structures must be designed for the unit's distributed load and must withstand the point loads at the unit's feet. There must be no installations in the installation area (underfloor heating, etc.).



1.15.2 Diameter and height measurements of the outdoor air supply

When planning the installation site for the recoCOMPACT, adhere to the dimensions below.



Diameter and height measurements of the outdoor air supply

Dimensions	Article designation Article number	Internal diameter	Outer diameter	Recommended opening size for the outdoor air intake	Outdoor air intake pipe axis to finished floor	Minimum room height with outdoor air intake in the installation room via the façade	Minimum room height with outdoor air intake via the room above, e.g. for units installed in the cellar
		$\varnothing D_i$	$\varnothing D_o$	$\varnothing D_d$	H1	H2	H3
	VAZ-U150 0020210950	150	180	220	2110	2220	2350
	VAZ-U180 0020210949	180	210	250	2170	2300	2450
	VAZ-UP180 0010023536	180	240	280	2060	2200	2250
<p>For left-hand installation only:</p>	VWZ installation set For recoCOMPACT exhaust air module, left-hand installation 0010035297 Mandatory: 0010024178 (compact elbow) 0010025537 (adapter, reducer)	160	246	286	2060	2350	2350

1.15.3 Ground floor - corner installation with cellar adapter

Corner installation on the ground floor (slope) with cellar adapter. The outdoor air that provides fresh air to the living rooms is supplied via the floor above.

Right-hand installation

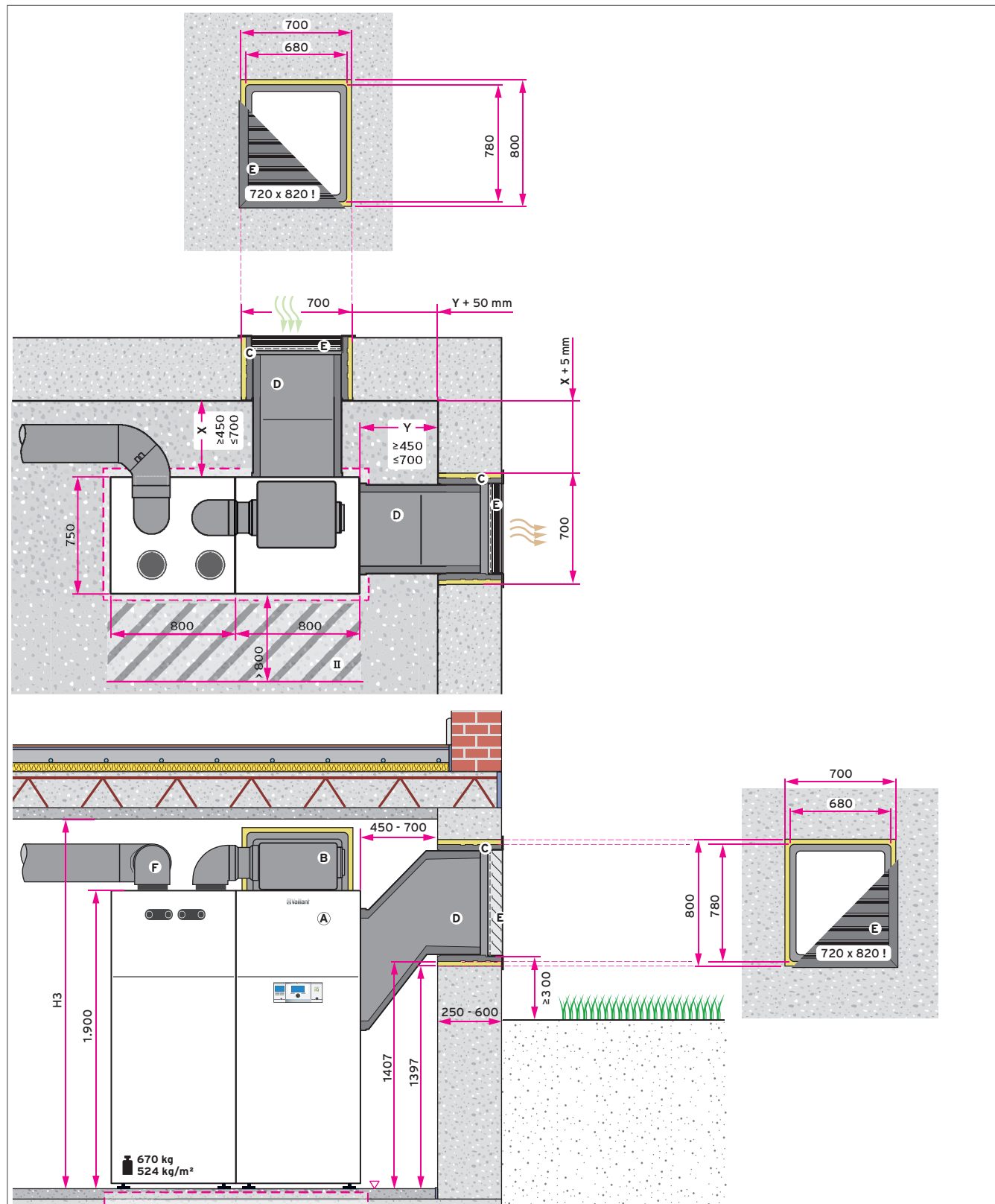


Fig. 40: recoCOMPACT installation situation, ground floor - right-hand installation in the corner of a room, air supply via cellar adapter

The VAZ-UP160 246 mm/160 mm diameter EPP pipe was used in this example.

Note

Outer dimensions for clinker façades

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
II	–	–	Clearance in front of the product to allow for maintenance
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010031010	2	VWZ air duct with a height change of 410 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	–	–	EPP pipe system for supplying outdoor air

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

1.16 Basic hydraulic and wiring diagrams

1.16.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections

Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

1.16.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				regulated	direct		Domestic hot water	Heating	
0020244215	recoCOMPACT	VRC 700, VR 920	-	-	1 UFH	-	-	-	Integrated domestic hot water cylinder
0020249835	recoCOMPACT	VRC 700, VR 91, VR 920	-	-	2 UFH	-	-	-	Integrated domestic hot water cylinder

0020244215 - Basic hydraulic diagram

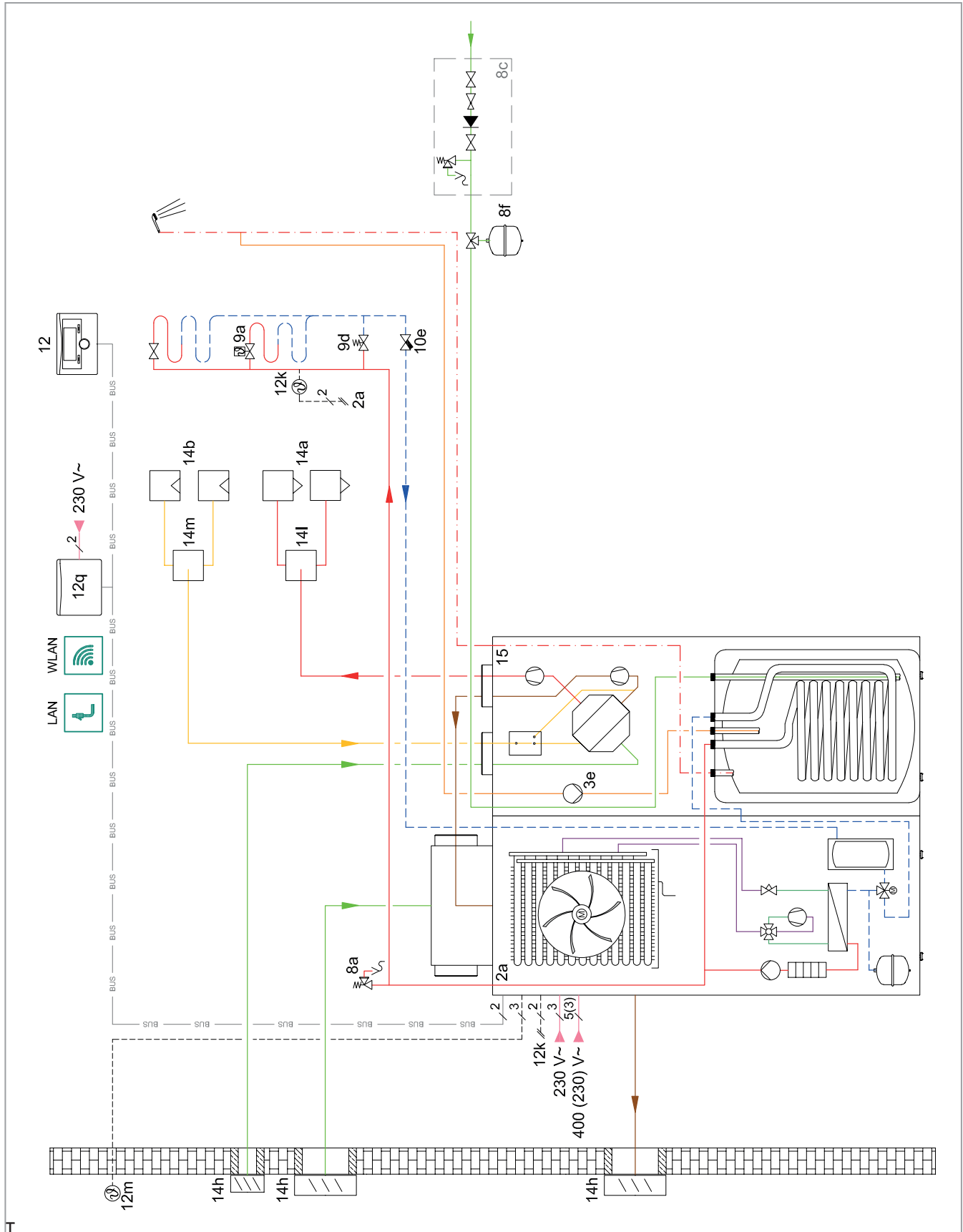


Fig 41: Basic hydraulic diagram

0020244215 - Wiring diagram

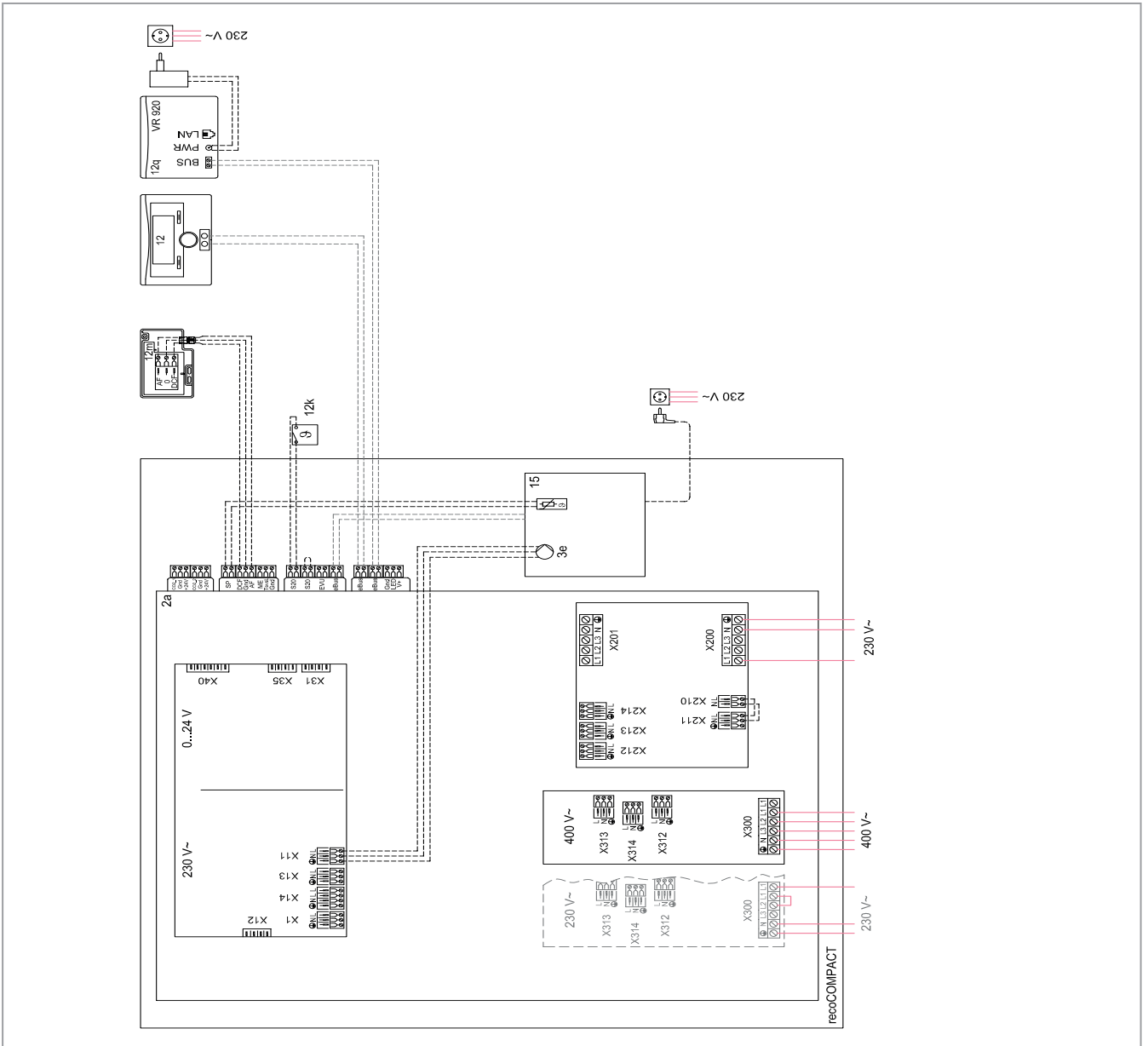


Fig 42: Wiring diagram

Individual components

- recoCOMPACT
- VRC 700
- VR 920

Setting

- VRC 700-Setting: 8

0020249835 - Basic hydraulic diagram

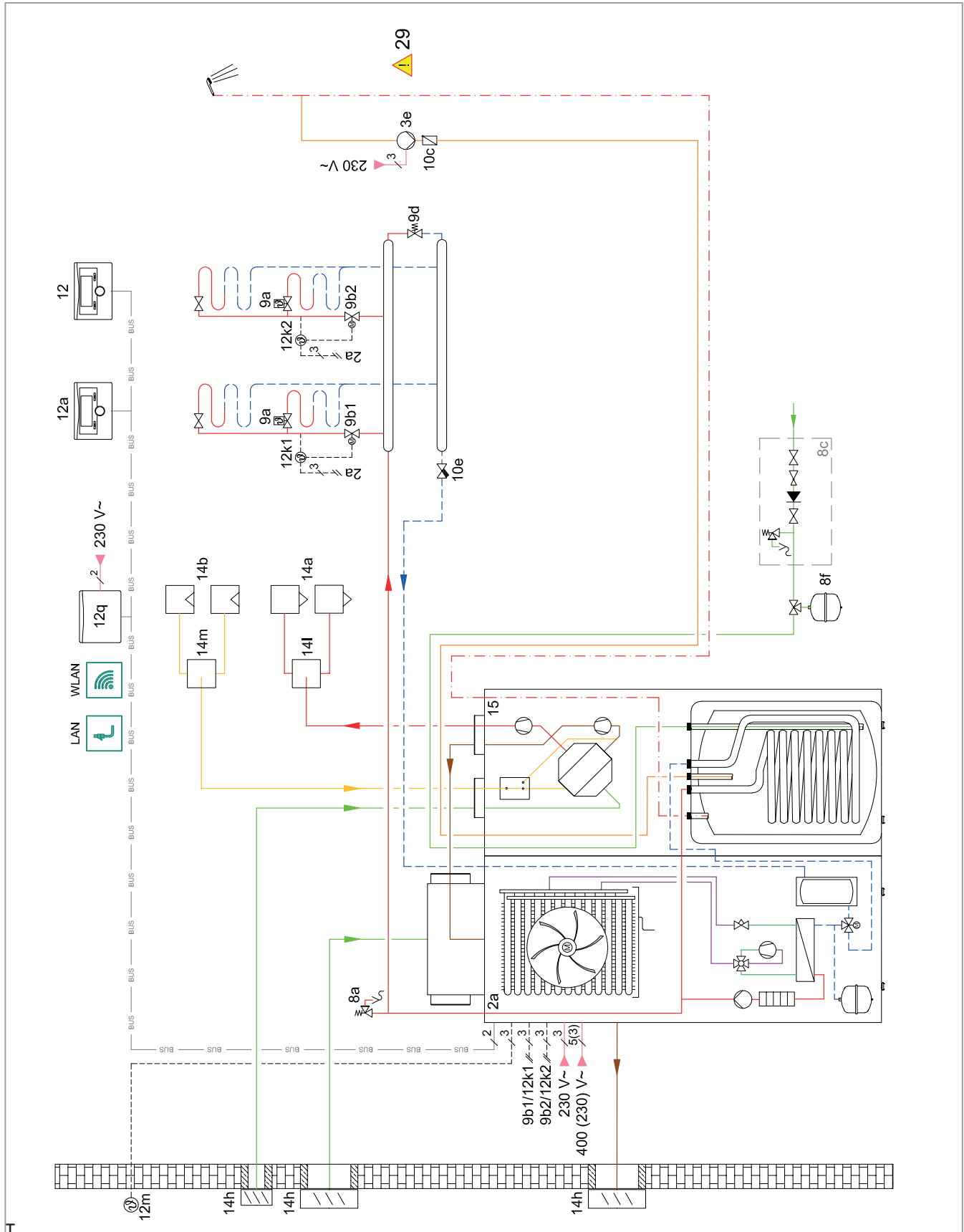


Fig 43: Basic hydraulic diagram

0020249835 - Wiring diagram

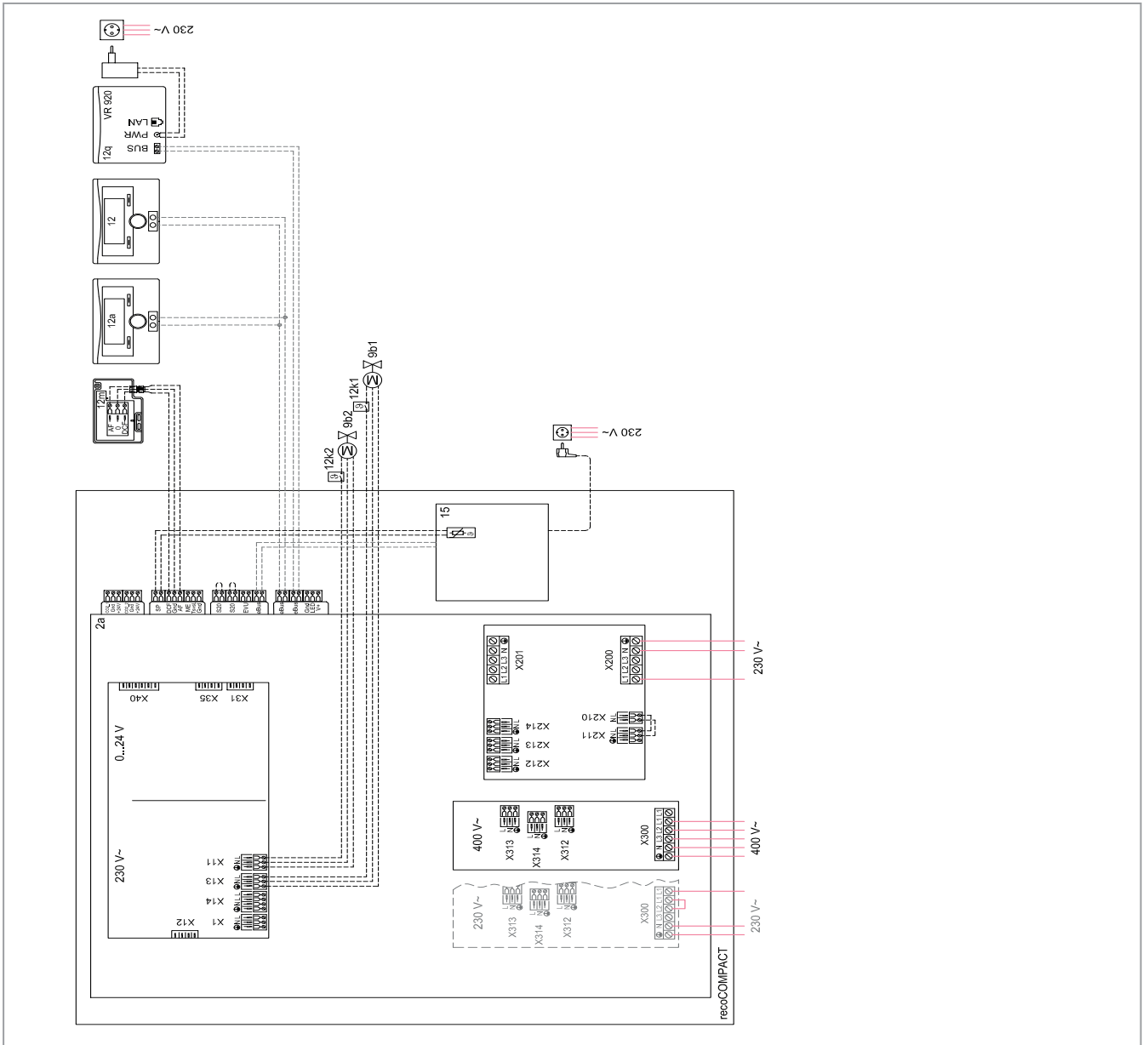


Fig 44: Wiring diagram

Individual components

- recoCOMPACT
- VRC 700
- VR 91
- VR 920

Setting

- VRC 700-Setting: 8



2. Product information for the versoTHERM plus air-to-water heat pumps

Update 10
New product overview

2.1 Product combinations



Fig. 45: Product combinations

Product combination overview for the versoTHERM plus VWL x7/5 230 V

Air-to-water heat pump	Ventilation						Decoupler module/ buffer cylinder	DHW cylinder	Control	Photo-voltaics
	versoTHERM plus VWL x7/5 230 V (1)	versoVAIR (2) extract air box	Exhaust air adapter with central ventilation recoVAIR 260-360/4 (3)	Inflow opening Non-centralised air inlet (4)	Non-centralised ventilation recoVAIR VAR 60/1 (5)	Ventilation accessories (6)		uniSTOR exclusive/plus (7)	VRC 700 or VRC 720 (8)	PV modules and inverters (9)
Heating and domestic hot water generation (optional cooling)	•	-	-	-	-	-	Integrated	•	•	•
Heating, non-centralised ventilation and domestic hot water generation (optional cooling)	•	-	-	-	•	-	Integrated	•	•	•
Heating, central extract air and domestic hot water generation (optional cooling)	•	•	-	•	-	•	Integrated	•	•	•
Heating, central ventilation and domestic hot water generation (optional cooling)	•	-	•	-	-	•	Integrated	•	•	•

• Recommended / ◦ Recommended under certain circumstances / - Not recommended

2.2 Product description for the versoTHERM plus VWL x7/5 230 V



Fig. 46: versoTHERM plus VWL x7/5 230 V

2.2.1 Special features

- Air-to-water heat pump that is set up inside and is extremely highly efficient
- Modulating compressor with inverter technology always adapts the output to the current building heating load
- Low space requirement - front maintenance
- Extremely quiet operation
- Sophisticated appearance
- High level of prefabrication allows for simpler installation
- Intelligent use of self-generated energy (Smart Grid ready and PV Ready)
- Left- or right-hand installation possible
- Corner and wall installation possible
- Can also be integrated into an existing heating system
- Can be operated in the hybrid system as bivalent, alternative, parallel or with the triVAL parameter

2.2.2 Product equipment

- Sensor-controlled modulating compressor
- High-efficiency pump
- 24 l diaphragm expansion vessel
- 18 l series buffer cylinder
- 5.4 kW E-immersion heater (230/400 V)
- Domestic hot water prioritising diverter valve
- Sound Safe System
- Integrated cooling function
- Upgrade option with versoVAIR

2.2.3 Potential applications

The **versoTHERM plus** system is an air-to-water heat pump that is installed indoors and is used to heat the residential building.

In cooling mode, heat energy is extracted from the building and released into the environment.

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Order no.
VWL 37/5 230 V	A+++ / A++ (A+++ - D)	0010022997
VWL 57/5 230 V	A+++ / A++ (A+++ - D)	0010022998
VWL 77/5 230 V	A++ / A+ (A+++ - D)	0010022999

2.3 Technical data

The following data is only applicable to new products with clean heat exchangers.

Technical data - General

	VWL 37/5 230V	VWL 57/5 230V	VWL 77/5 230V
Height	1,880 mm	1,880 mm	1,880 mm
Height with versoVAIR	2,170 mm	2,170 mm	2,170 mm
Width	800 mm	800 mm	800 mm
Depth	750 mm	750 mm	750 mm
Heat pump weight, with packaging	204 kg	204 kg	223 kg
Weight, ready for operation	230 kg	230 kg	249 kg
Installation site	Utility room/cellar	Utility room/cellar	Utility room/cellar
Installation site volume, in accordance with EN 378	3.2 m ³	3.2 m ³	4.1 m ³
Permissible environmental temperature	10 to 40 °C	10 to 40 °C	10 to 40 °C
Permissible relative air humidity	40 to 75 %	40 to 75 %	40 to 75 %
Heating circuit connections	G 1"	G 1"	G 1"
Cold water and domestic hot water connections	G 3/4"	G 3/4"	G 3/4"

Technical data - Electrics

	VWL 37/5 230V	VWL 57/5 230V	VWL 77/5 230V
Rated voltage of the compressor	230 V (-15%/+10%), 50 Hz, 1~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE
Back-up heater rated voltage	230 V (-15%/+10%), 50 Hz, 1~/N/PE; 400 V (-15%/+10%), 50 Hz, 3~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE; 400 V (-15%/+10%), 50 Hz, 3~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE; 400 V (-15%/+10%), 50 Hz, 3~/N/PE
Control circuit rated voltage	230 V (-15%/+10%), 50 Hz, 1~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE	230 V (-15%/+10%), 50 Hz, 1~/N/PE
Max. compressor rated current	5.4 A	10.1 A	15.0 A
Max. rated current for the control circuit	2.3 A	2.3 A	2.3 A
Max. back-up heater rated current	22.7 A (230 V), 14.2 A (400 V)	22.7 A (230 V), 14.2 A (400 V)	22.7 A (230 V), 14.2 A (400 V)
Rated power	1.78 kW	2.86 kW	3.97 kW
Rated power - back-up heating	5.21 kW	5.21 kW	5.21 kW
Maximum in-rush current	16 A	16 A	16 A
IP rating	IP 10B	IP 10B	IP 10B
Back-up heater (1-phase) min. line cross-section	2.5 mm ²	2.5 mm ²	2.5 mm ²
Back-up heater (3-phase) min. line cross-section	1.5 mm ²	1.5 mm ²	1.5 mm ²
Compressor (1-phase) min. line cross-section	2.5 mm ²	2.5 mm ²	2.5 mm ²
Fuse type characteristic	Characteristic C, slow-blow, three-pole switching (disconnection of the three power supply cables in one switching operation)	Characteristic C, slow-blow, three-pole switching (disconnection of the three power supply cables in one switching operation)	Characteristic C, slow-blow, three-pole switching (disconnection of the three power supply cables in one switching operation)

Update 10
New technical data (EN14511:2018)

Technical data - Heating circuit

	VWL 37/5 230V	VWL 57/5 230V	VWL 77/5 230V
Material in the heating circuit	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron
Permissible water composition	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.
Minimum operating pressure	0.05 MPa	0.05 MPa	0.05 MPa
Maximum operating pressure	0.3 MPa	0.3 MPa	0.3 MPa
Min. heating mode flow temperature	20 °C	20 °C	20 °C
Max. heating mode flow temperature with compressor	55 °C	55 °C	55 °C
Max. heating mode flow temperature with back-up heater	75 °C	75 °C	75 °C
Min. cooling mode flow temperature	7 °C	7 °C	7 °C
Max. flow temperature in cooling mode	25 °C	25 °C	25 °C
Pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump
Min. electrical power consumption of the heating pump	2 W	2 W	2 W
Max. electrical power consumption of the heating pump	60 W	60 W	60 W
Heating circuit water content in the product	36 l	36 l	36 l
Min. heating circuit volume flow	250 l/h	250 l/h	250 l/h
Max. heating circuit volume flow at 350 mbar remaining feed head	1,270 l/h	1,270 l/h	1,270 l/h

Technical data - Refrigerant circuit

	VWL 37/5 230V	VWL 57/5 230V	VWL 77/5 230V
Refrigerant, type	R410A	R410A	R410A
Refrigerant, Global Warming Potential (GWP)	2088	2088	2088
CO ₂ equivalent	2.92 t	2.92 t	3.76 t
Refrigerant, fill quantity	1.4 kg	1.4 kg	1.8 kg
Max. permissible operating pressure	4.15 MPa	4.15 MPa	4.15 MPa
Compressor, type	Rotary piston	Rotary piston	Rotary piston
Compressor, oil type	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)
Expansion valve design	Electronic	Electronic	Electronic

Technical data - Air connection for versoVAIR

	VWL 37/5 230V	VWL 57/5 230V	VWL 77/5 230V
Air connection diameter, inner	180 mm	180 mm	180 mm
Air connection diameter, external	210 mm	210 mm	210 mm
Filter class in accordance with DIN EN 779:2012-10	G4	G4	G4
Filter class in accordance with ISO 16890	ISO ePM2,5 65% / ISO Coarse	ISO ePM2,5 65% / ISO Coarse	ISO ePM2,5 65% / ISO Coarse

Update 10
New technical data (EN14511:2018)

Technical data - Heating performance data in accordance with EN 14511

	VWL 37/5 230V	VWL 57/5 230V	VWL 77/5 230V
A2/W35 heat output	3.26 kW	3.26 kW	4.14 kW
A2/W35 power consumption	0.89 kW	0.89 kW	1.03 kW
Coefficient of performance, COP A2/W35	4.04	4.04	4.02
Heat output A7/W35 ΔT 5 K	4.92 kW	4.92 kW	5.77 kW
Power consumption A7/W35 ΔT 5 K	1.11 kW	1.11 kW	1.55 kW
Coefficient of performance, COP A7/W35 ΔT 5 K	4.46	4.46	3.72
Heat output A7/W45 ΔT 5 K	4.95 kW	4.95 kW	7.23 kW
Power consumption A7/W45 ΔT 5 K	1.52 kW	1.52 kW	2.31 kW
Coefficient of performance, COP A7/W45 ΔT 5 K	3.35	3.35	3.13
Heat output A7/W55 ΔT 8 K	4.73 kW	4.73 kW	6.84 kW
A7/W55 ΔT 8 K power consumption	1.79 kW	1.79 kW	2.60 kW
Coefficient of performance, COP A7/W55 ΔT 8K	2.69	2.69	2.63

Technical data - Cooling performance data in accordance with EN 14511

	VWL 37/5 230V	VWL 57/5 230V	VWL 77/5 230V
Cooling output A35/W18 ΔT 5 K	4.85 kW	4.85 kW	6.15 kW
Power consumption A35/W18 ΔT 5 K	1.26 kW	1.26 kW	1.43 kW
Coefficient of performance, EER A35/W18 ΔT 5 K	4.13	4.13	4.30
Cooling output A35/W7 ΔT 5 K	2.85 kW	2.85 kW	3.55 kW
Power consumption A35/W7 ΔT 5 K	1.20 kW	1.20 kW	1.30 kW
Coefficient of performance, EER A35/W7 ΔT 5 K	2.53	2.53	2.73

Technical data - Sound power

	VWL 37/5 230V	VWL 57/5 230V	VWL 77/5 230V
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W35	48.6 dB(A)	48.6 dB(A)	44.1 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W35 with the versoVAIR	50 dB(A)	50 dB(A)	52.9 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W45	48.1 dB(A)	48.1 dB(A)	46.8 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W45 with the versoVAIR	48.6 dB(A)	48.6 dB(A)	53.6 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W55	48.8 dB(A)	48.8 dB(A)	46.6 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at A7/W55 with the versoVAIR	48.8 dB(A)	48.8 dB(A)	53.6 dB(A)
External sound power level (LWa), straight wall installation, in accordance with EN 14511; heating mode at A7/W35	51.6 dB(A)	51.6 dB(A)	48.2 dB(A)
Inner sound power level (LWa) in accordance with EN 14511; heating mode at A7/W35 with the versoVAIR	54.1 dB(A)	54.1 dB(A)	55.6 dB(A)
External sound power level (LWa), straight wall installation, in accordance with EN 14511; heating mode at A7/W45	51.1 dB(A)	51.1 dB(A)	48.3 dB(A)
Inner sound power level (LWa) in accordance with EN 14511; heating mode at A7/W45 with the versoVAIR	53.3 dB(A)	53.3 dB(A)	55.5 dB(A)
External sound power level (LWa), straight wall installation, in accordance with EN 14511; heating mode at A7/W55	51.6 dB(A)	51.6 dB(A)	47.7 dB(A)
Inner sound power level (LWa) in accordance with EN 14511; heating mode at A7/W55 with the versoVAIR	53.4 dB(A)	53.4 dB(A)	55.5 dB(A)
Max. inner sound power level (LWi) in accordance with EN 12102	53.7 dB(A)	53.7 dB(A)	53.6 dB(A)
Max. external sound power level (LWa) in accordance with EN 12102, straight installation	57.1 dB(A)	57.1 dB(A)	59.2 dB(A)
Max. external sound power level (LWa) in accordance with EN 12102, corner installation	55.3 dB(A)	55.3 dB(A)	57.4 dB(A)

Update 10
New technical data (EN14511:2018)

Technical data - Heat source

	VWL 37/5 230V	VWL 57/5 230V	VWL 77/5 230V
Heat source	Air	Air	Air
Min. air temperature (heating)	-20 °C	-20 °C	-20 °C
Maximum air temperature (heating)	43 °C	43 °C	43 °C
Minimum air temperature (cooling)	15 °C	15 °C	15 °C
Maximum air temperature (cooling)	46 °C	46 °C	46 °C
Min. air volume flow	750 m³/h	750 m³/h	750 m³/h
Max. air volume flow	1,900 m³/h	1,900 m³/h	2,200 m³/h
Nominal volume flow at A7/W35	1,300 m³/h	1,300 m³/h	1,300 m³/h
Fan speed range	1,170 rpm	1,170 rpm	1,170 rpm
Fan speed range, heating	703 rpm	703 rpm	820 rpm
Fan speed range, cooling	703 rpm	703 rpm	820 rpm
Fan speed range, noise reduction mode	562 rpm	562 rpm	562 rpm
Max. fan electrical power consumption	250 W	250 W	250 W

2.4 Sound power evaluation level

For the versoTHERM heat pump, planning should take account of the following sound power levels (heating mode).

VWL 37/5 and VWL 57/5 evaluation level for corner installation

VWL 37/5 230 V and VWL 57/5 230 V corner installation				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	55	0	3	47	41	37.5	35	33	31.4	28.9	27	25.4	23.5	0
			6	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	
			9	53	47	43.5	41	39	37.4	34.9	33	31.4	29.5	
Set-back (50% reduced compressor output)	51	0	3	43	37	33.5	31	29	27.4	24.9	23	21.4	19.5	-
			6	46	40	36.5	34	32	30.4	27.9	26	24.4	22.5	
			9	49	43	39.5	37	35	33.4	30.9	29	27.4	25.5	
Set-back (60% reduced compressor output)	50	0	3	42	36	32.5	30	28	26.4	23.9	22	20.4	18.5	-
			6	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	
			9	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	

VWL 77/5 evaluation level for corner installation

VWL 77/5 230 V corner installation				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	57	0	3	49	43	39.5	37	35	33.4	30.9	29	27.4	25.5	0
			6	52	46	42.5	40	38	36.4	33.9	32	30.4	28.5	
			9	55	49	45.5	43	41	39.4	36.9	35	33.4	31.5	
Set-back (50% reduced compressor output)	50	0	3	42	36	32.5	30	28	26.4	23.9	22	20.4	18.5	-
			6	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	
			9	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	
Set-back (60% reduced compressor output)	47	0	3	39	33	29.5	27	25	23.4	20.9	19	17.4	15.5	-
			6	42	36	32.5	30	28	26.4	23.9	22	20.4	18.5	
			9	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	

VWL 37/5 and VWL 57/5 evaluation level for single-wall installation

VWL 37/5 230 V and VWL 57/5 230 V single-wall installation				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	57	0	3	49	43	39.5	37	35	33.4	30.9	29	27.4	25.5	0
			6	52	46	42.5	40	38	36.4	33.9	32	30.4	28.5	
			9	55	49	45.5	43	41	39.4	36.9	35	33.4	31.5	
Set-back (50% reduced compressor output)	53	0	3	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	-
			6	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	
			9	51	45	41.5	39	37	35.4	32.9	31	29.4	27.5	
Set-back (60% reduced compressor output)	52	0	3	44	38	34.5	32	30	28.4	25.9	24	22.4	20.5	-
			6	47	41	37.5	35	33	31.4	28.9	27	25.4	23.5	
			9	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	

VWL 77/5 evaluation level for single-wall installation

VWL 77/5 230 V single-wall installation				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	59	0	3	51	45	41.5	39	37	35.4	32.9	31	29.4	27.5	0
			6	54	48	44.5	42	40	38.4	35.9	34	32.4	30.5	
			9	57	51	47.5	45	43	41.4	38.9	37	35.4	33.5	
Set-back (50% reduced compressor output)	51	0	3	43	37	33.5	31	29	27.4	24.9	23	21.4	19.5	-
			6	46	40	36.5	34	32	30.4	27.9	26	24.4	22.5	
			9	49	43	39.5	37	35	33.4	30.9	29	27.4	25.5	
Set-back (60% reduced compressor output)	48	0	3	40	34	30.5	28	26	24.4	21.9	20	18.4	16.5	-
			6	43	37	33.5	31	29	27.4	24.9	23	21.4	19.5	
			9	46	40	36.5	34	32	30.4	27.9	26	24.4	22.5	

2.5 Application limits

The product works between a minimum and maximum outdoor temperature. These outdoor temperatures define the operating limits for the heating mode, domestic hot water mode and cooling mode. Operating outside of the operating limits leads to the product switching off.

2.5.1 Heating mode

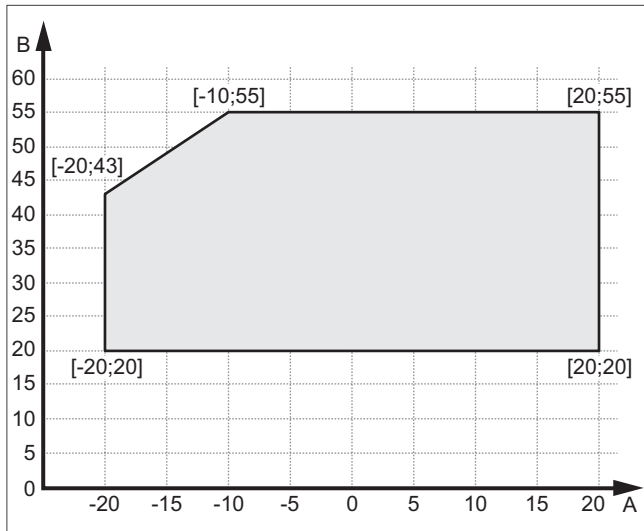


Fig. 47: Application limits in heating mode

- A Outdoor temperature
- B Heating water temperature

2.5.2 DHW mode

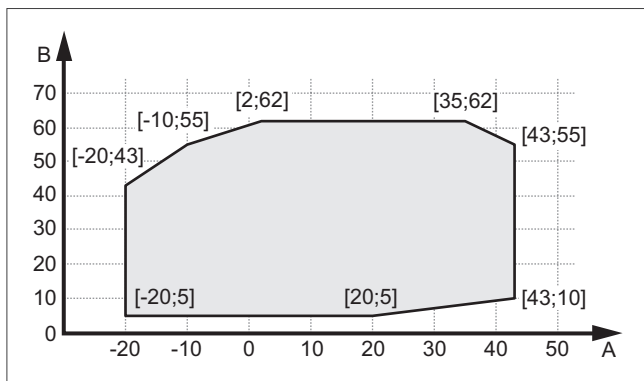


Fig. 48: Operating limits in domestic hot water mode

- A Outdoor temperature
- B Domestic hot water temperature

2.5.3 Cooling mode

Validity: Product with cooling mode

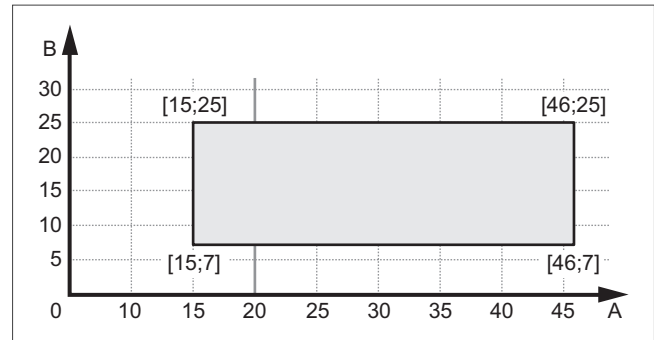


Fig. 49: Operating limits, cooling mode

- A Outdoor temperature
- B Heating water temperature

2.6 Remaining feed head of the product

2.6.1 VWL 37/5 remaining feed head at nominal volume flow

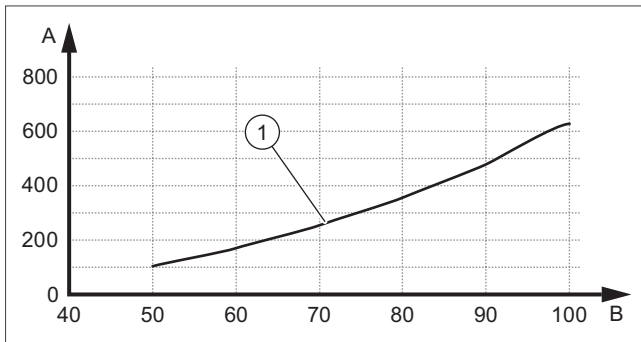


Fig. 50: VWL 37/5 remaining feed head

- 1 VWL 37/5 with 3 kW / 858 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

2.6.3 VWL 77/5 remaining feed head at nominal volume flow

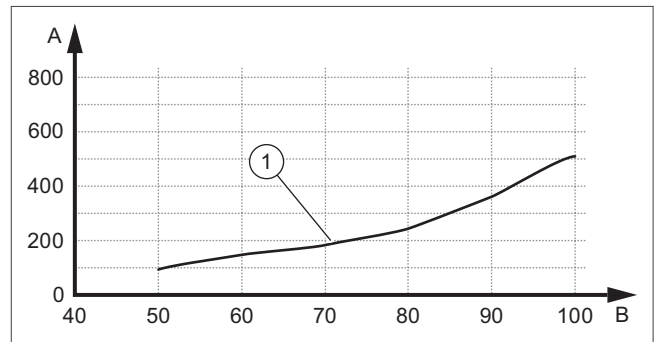


Fig. 52: VWL 77/5 remaining feed head

- 1 VWL 77/5 with 7 kW / 1670 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

2.6.2 VWL 57/5 remaining feed head at nominal volume flow

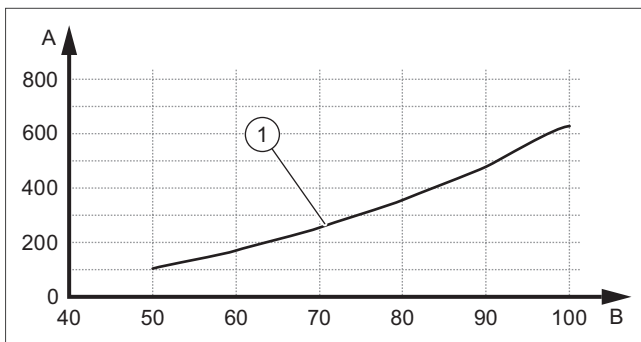


Fig. 51: VWL 57/5 remaining feed head

- 1 VWL 57/5 with 5 kW / 858 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

2.7 Performance data - heating mode

2.7.1 Heating mode performance data for 3 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C		40% red			50% red			60% red			45 rps	40 rps	30 rps
		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	55 rps	52 rps	50 rps			
-20		2,01	2,01	2,02	1,99	1,97	1,96						
-15		2,38	2,38	2,38	2,35	2,32	2,31						
-12		2,62	2,62	2,61	2,57	2,55	2,53						
-7		3,12	3,13	3,12	3,08	3,05	3,03						
-2		3,61	3,63	3,64	3,60	3,58	3,55	3,49	3,40	3,14			
0		3,83	3,85	3,87	3,83	3,80	3,78	3,72	3,64	3,38			
2		4,06	4,08	4,13	4,10	4,07	4,05	3,99	3,90	3,63			
7		4,29	4,33	4,45	4,45	4,44	4,44	4,40	4,35	4,14			
10		4,84	4,91	5,08	5,08	5,07	5,06	5,03	4,97	4,76			
12		5,26	5,34	5,53	5,54	5,54	5,54	5,53	5,48	5,26			
15		5,96	6,08	6,37	6,40	6,41	6,41	6,40	6,35	6,11			
20		7,51	7,66	8,06	8,10	8,12	8,12	8,11	8,06	7,78			

°C		40% red			50% red			60% red			45 rps	40 rps	30 rps
		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	55 rps	52 rps	50 rps			
-20		2,38	2,22	1,82	1,67	1,58	1,53						
-15		2,84	2,64	2,18	2,00	1,89	1,82						
-12		3,12	2,91	2,40	2,20	2,09	2,01						
-7		3,68	3,44	2,85	2,62	2,48	2,39						
-2		4,26	3,99	3,32	3,06	2,90	2,79	2,52	2,24	1,67			
0		4,51	4,22	3,52	3,24	3,07	2,96	2,67	2,38	1,78			
2		4,76	4,47	3,73	3,44	3,26	3,14	2,84	2,53	1,89			
7		5,54	5,20	4,36	4,03	3,82	3,69	3,34	2,98	2,23			
10		5,95	5,60	4,70	4,35	4,13	3,98	3,61	3,22	2,42			
12		6,24	5,88	4,93	4,57	4,34	4,19	3,81	3,40	2,56			
15		6,69	6,31	5,33	4,94	4,70	4,54	4,12	3,68	2,77			
20		7,55	7,12	6,02	5,58	5,31	5,12	4,65	4,15	3,12			

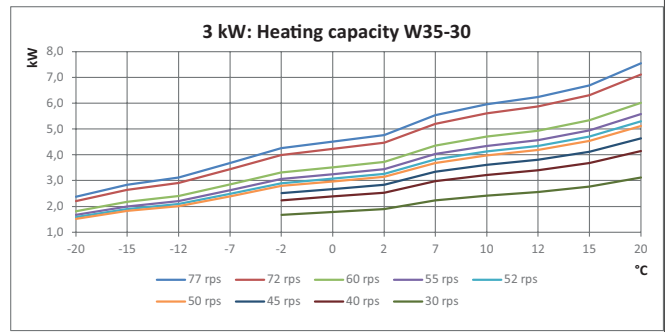
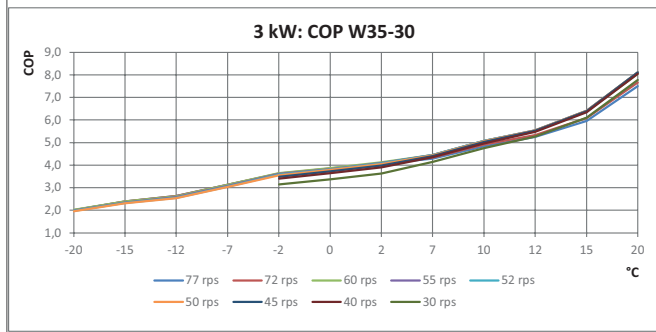


Fig. 53: COP and heat output for A/W35-30

°C		40% red			50% red			60% red			45 rps	40 rps	30 rps
		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	55 rps	52 rps	50 rps			
-20													
-18		1,86	1,84	1,80	1,79	1,78	1,78						
-15		1,99	1,97	1,92	1,91	1,90	1,89						
-12		2,12	2,10	2,05	2,04	2,03	2,02						
-7		2,37	2,36	2,32	2,30	2,29	2,28	2,26	2,22	2,10			
-2		2,57	2,57	2,55	2,53	2,52	2,51	2,48	2,43	2,30			
0		2,67	2,67	2,66	2,65	2,64	2,63	2,60	2,57	2,43			
2		2,76	2,77	2,77	2,76	2,79	2,74	2,71	2,67	2,54			
7		3,34	3,37	3,43	3,44	3,44	3,43	3,42	3,39	3,26			
10		3,69	3,72	3,81	3,82	3,81	3,81	3,80	3,78	3,65			
12		3,93	3,98	4,09	4,11	4,11	4,11	4,10	4,08	3,94			
15		4,37	4,43	4,58	4,60	4,60	4,60	4,60	4,57	4,42			
20		5,24	5,32	5,52	5,54	5,55	5,55	5,54	5,51	5,33			

°C		40% red			50% red			60% red			45 rps	40 rps	30 rps
		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	55 rps	52 rps	50 rps			
-20													
-18		2,45	2,29	1,90	1,75	1,65	1,59						
-15		2,66	2,49	2,06	1,89	1,79	1,72						
-12		2,88	2,69	2,22	2,04	1,93	1,86						
-7		3,29	3,07	2,55	2,34	2,22	2,14	1,93	1,72	1,29			
-2		3,68	3,45	2,87	2,65	2,51	2,42	2,18	1,95	1,46			
0		3,85	3,60	3,01	2,78	2,64	2,54	2,30	2,05	1,54			
2		4,02	3,77	3,15	2,91	2,80	2,66	2,41	2,15	1,62			
7		5,09	4,79	4,02	3,72	3,54	3,41	3,09	2,76	2,08			
10		5,31	5,00	4,21	3,89	3,70	3,57	3,24	2,90	2,19			
12		5,45	5,13	4,33	4,01	3,82	3,69	3,35	3,00	2,26			
15		5,67	5,35	4,52	4,19	3,99	3,85	3,49	3,13	2,36			
20		6,01	5,67	4,79	4,44	4,23	4,08	3,71	3,32	2,50			

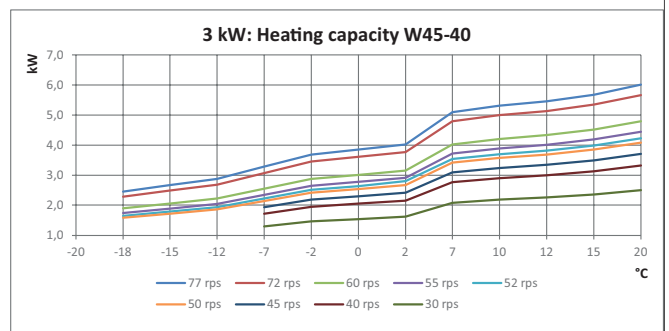
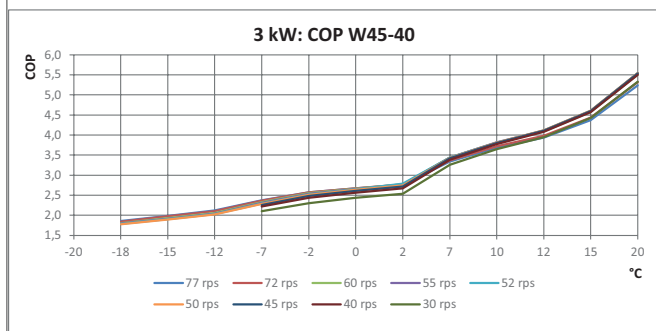


Fig. 54: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

		40% red		50% red		60% red							
		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	45 rps	40 rps	30 rps			
°C	-20												
	-15												
	-12												
	-10	1,81	1,79	1,72	1,71	1,70	1,70						
	-7	1,98	1,96	1,90	1,89	1,88	1,87						
	-2	2,22	2,20	2,15	2,14	2,13	2,13						
	0	2,32	2,31	2,28	2,27	2,26	2,25	2,22	2,19				
	2	2,43	2,43	2,40	2,39	2,38	2,37	2,35	2,31				
	7	2,60	2,61	2,64	2,64	2,64	2,63	2,62	2,59				
	10	2,77	2,79	2,83	2,83	2,83	2,83	2,82	2,80				
	12	2,87	2,90	2,97	2,97	2,97	2,97	2,96	2,94				
15	3,07	3,10	3,18	3,19	3,19	3,19	3,18	3,16					
20	3,38	3,42	3,53	3,54	3,54	3,54	3,54	3,51					

		40% red		50% red		60% red							
		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	45 rps	40 rps	30 rps			
°C	-20												
	-15												
	-12												
	-10	2,93	2,73	2,26	2,07	1,96	1,88						
	-7	3,26	3,05	2,52	2,32	2,19	2,11						
	-2	3,64	3,40	2,82	2,60	2,46	2,37						
	0	3,79	3,55	2,96	2,73	2,59	2,49	2,25	2,00				
	2	3,96	3,71	3,10	2,86	2,71	2,61	2,36	2,10				
	7	4,61	4,33	3,63	3,36	3,19	3,07	2,78	2,48				
	10	4,85	4,56	3,83	3,54	3,37	3,25	2,94	2,63				
	12	5,00	4,71	3,97	3,67	3,49	3,37	3,05	2,73				
15	5,26	4,95	4,17	3,86	3,67	3,54	3,21	2,87					
20	5,65	5,32	4,49	4,16	3,95	3,81	3,46	3,09					

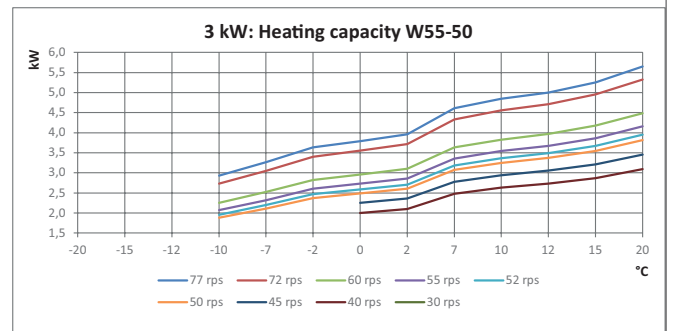
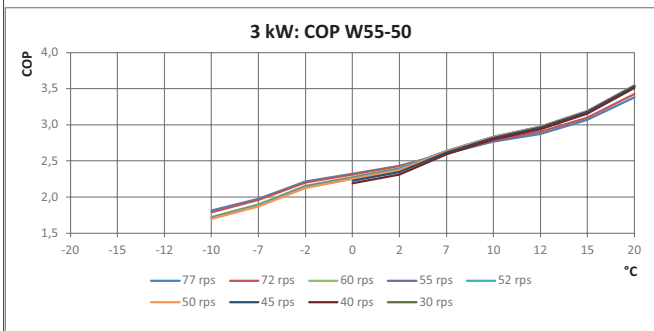


Fig. 55: COP and heat output for A./W55-50

2.7.2 Heating mode performance data for 5 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20		2,26	2,26	2,26	2,26	2,27	2,28	2,22		
	-15	2,49	2,51	2,53	2,55	2,56	2,56	2,55	2,49		
	-12	2,63	2,66	2,69	2,73	2,73	2,73	2,72	2,65		
	-7	2,88	2,93	2,99	3,06	3,08	3,08	3,08	3,01		
	-2	3,26	3,33	3,43	3,55	3,58	3,60	3,62	3,55	3,38	3,12
	0	3,43	3,53	3,64	3,77	3,81	3,83	3,85	3,79	3,62	3,36
	2	3,62	3,73	3,85	4,00	4,04	4,08	4,13	4,07	3,90	3,62
	7	3,64	3,79	3,96	4,17	4,26	4,33	4,45	4,44	4,34	4,13
	10	3,97	4,14	4,33	4,57	4,70	4,81	4,97	4,96	4,86	4,66
	12	4,19	4,37	4,60	4,89	5,04	5,16	5,34	5,36	5,30	5,08
	15	4,55	4,78	5,05	5,40	5,57	5,75	6,03	6,06	6,01	5,78
20	5,25	5,55	5,96	6,49	6,76	6,99	7,36	7,41	7,36	7,10	

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20		3,49	3,14	2,79	2,46	2,20	1,80	1,57		
	-15	4,51	4,12	3,73	3,33	2,95	2,64	2,17	1,89		
	-12	4,94	4,52	4,10	3,68	3,26	2,92	2,41	2,10		
	-7	5,73	5,28	4,82	4,34	3,87	3,48	2,88	2,51		
	-2	6,46	5,98	5,48	4,96	4,44	4,01	3,33	2,91	2,25	1,68
	0	6,78	6,29	5,77	5,23	4,69	4,23	3,52	3,08	2,39	1,78
	2	7,11	6,61	6,07	5,50	4,94	4,47	3,73	3,26	2,53	1,89
	7	8,15	7,60	7,01	6,37	5,74	5,20	4,35	3,82	2,98	2,23
	10	8,52	7,95	7,34	6,69	6,05	5,50	4,62	4,05	3,16	2,38
	12	8,76	8,18	7,58	6,93	6,26	5,69	4,78	4,21	3,30	2,48
	15	9,13	8,57	7,94	7,27	6,58	6,01	5,07	4,47	3,50	2,63
20	9,77	9,19	8,58	7,89	7,18	6,56	5,54	4,89	3,83	2,87	

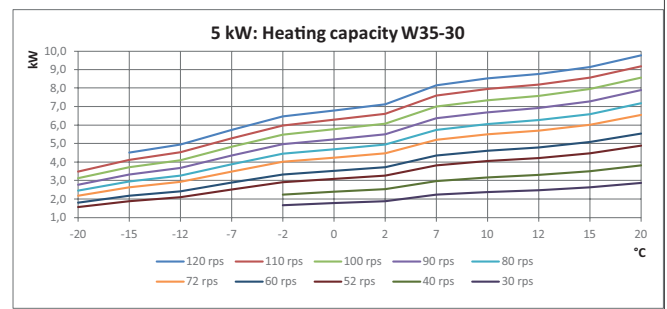
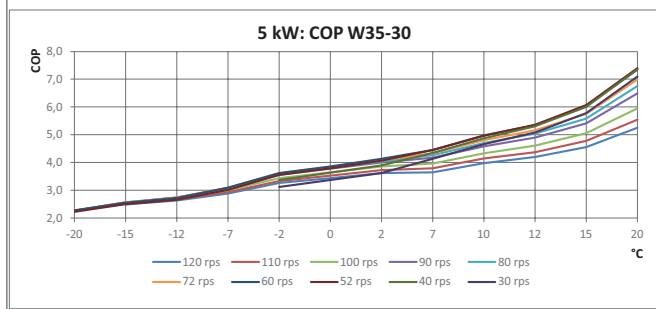


Fig. 56: COP and heat output for A/W35-30

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-18		1,74	1,76	1,79	1,76	1,74	1,69	1,67		
	-15		1,90	1,93	1,97	1,95	1,92	1,87	1,83		
	-12		2,06	2,10	2,17	2,14	2,11	2,05	2,02		
	-7		2,37	2,44	2,53	2,52	2,49	2,44	2,40	2,30	2,15
	-2		2,58	2,68	2,80	2,80	2,79	2,75	2,71	2,59	2,42
	0		2,68	2,79	2,92	2,92	2,91	2,88	2,85	2,74	2,56
	2		2,78	2,89	3,03	3,05	3,05	3,04	3,00	2,89	2,70
	7			3,03	3,21	3,25	3,29	3,34	3,33	3,25	3,09
	10			3,30	3,52	3,58	3,63	3,70	3,69	3,62	3,46
	12			3,51	3,75	3,82	3,88	3,97	3,98	3,91	3,73
15			3,85	4,12	4,23	4,32	4,44	4,44	4,37	4,17	
20			4,55	4,92	5,06	5,17	5,33	5,33	5,24	5,00	

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-18		3,46	3,10	2,75	2,44	2,19	1,81	1,57		
	-15		3,84	3,46	3,09	2,74	2,46	2,03	1,76		
	-12		4,24	3,84	3,45	3,06	2,74	2,26	1,97		
	-7		5,02	4,58	4,12	3,67	3,30	2,73	2,38	1,84	1,37
	-2		5,57	5,11	4,62	4,14	3,73	3,10	2,71	2,09	1,56
	0		5,81	5,33	4,83	4,33	3,91	3,26	2,85	2,21	1,65
	2		6,05	5,56	5,04	4,53	4,10	3,42	2,99	2,32	1,74
	7			6,40	5,82	5,24	4,76	3,99	3,51	2,74	2,05
	10			6,61	6,05	5,47	4,97	4,18	3,67	2,87	2,16
	12			6,78	6,20	5,61	5,10	4,30	3,79	2,97	2,23
15			7,01	6,41	5,83	5,32	4,49	3,96	3,10	2,33	
20			7,39	6,79	6,18	5,64	4,76	4,20	3,29	2,47	

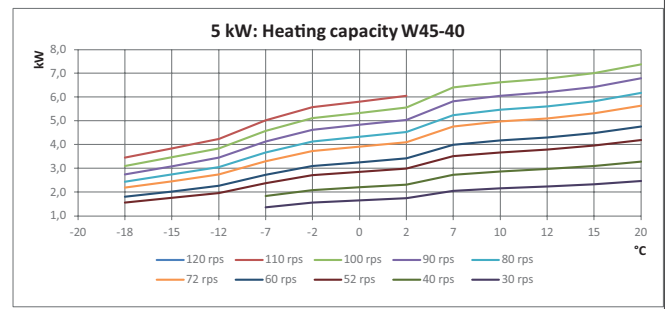
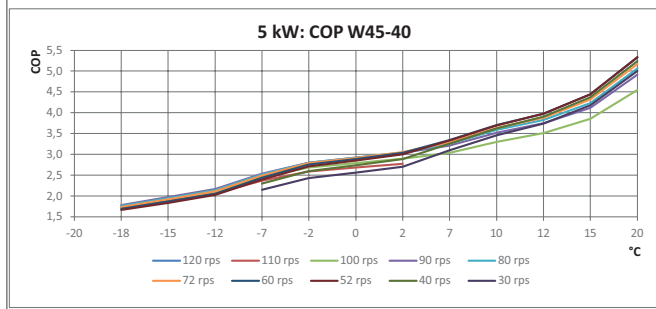


Fig. 57: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

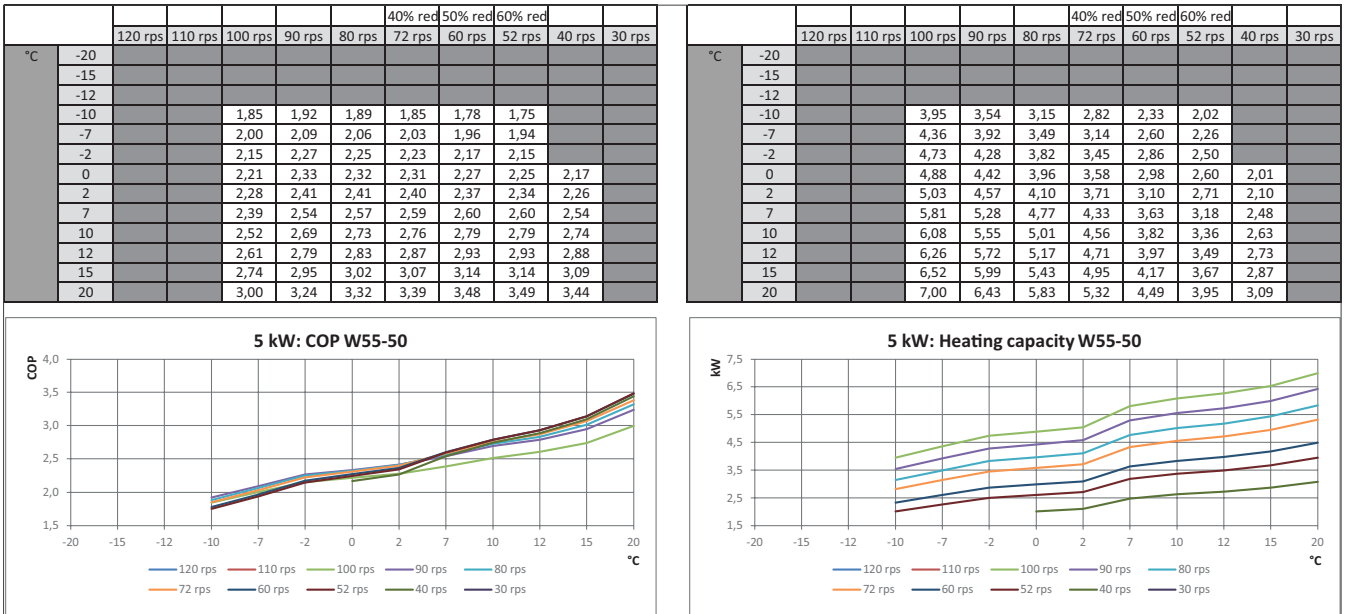


Fig. 58: COP and heat output for A./W55-50

2.7.3 Heating mode performance data for 7 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C										
	120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
-20		1,72	1,75	1,78	1,81	1,84	1,90	1,84		
-15	2,08	2,12	2,17	2,24	2,27	2,31	2,37	2,30		
-12	2,30	2,36	2,42	2,51	2,54	2,58	2,65	2,57		
-7	2,68	2,76	2,86	2,99	3,05	3,10	3,20	3,11		
-2	2,94	3,05	3,19	3,37	3,45	3,52	3,65	3,57	3,37	3,07
0	3,06	3,19	3,34	3,54	3,63	3,70	3,84	3,76	3,57	3,28
2	3,19	3,33	3,49	3,71	3,80	3,90	4,07	4,00	3,80	3,50
7	2,93	3,09	3,29	3,54	3,68	3,80	4,03	4,02	3,92	3,71
10	3,31	3,50	3,73	4,02	4,21	4,37	4,68	4,67	4,56	4,35
12	3,56	3,77	4,03	4,39	4,59	4,78	5,13	5,14	5,07	4,85
15	3,95	4,20	4,52	4,94	5,19	5,44	5,92	5,95	5,89	5,66
20	4,61	4,94	5,40	6,03	6,39	6,73	7,35	7,42	7,39	7,14

°C										
	120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
-20		2,98	2,71	2,44	2,17	1,95	1,62	1,40		
-15	4,59	4,24	3,87	3,51	3,13	2,82	2,35	2,03		
-12	5,50	5,08	4,66	4,23	3,78	3,41	2,85	2,47		
-7	7,24	6,73	6,21	5,67	5,09	4,61	3,87	3,36		
-2	7,91	7,38	6,85	6,28	5,67	5,15	4,35	3,78	2,89	2,12
0	8,20	7,68	7,12	6,54	5,91	5,38	4,54	3,95	3,03	2,23
2	8,49	7,96	7,40	6,80	6,14	5,60	4,75	4,14	3,18	2,34
7	8,20	7,72	7,20	6,64	6,03	5,50	4,68	4,10	3,17	2,34
10	9,70	9,14	8,53	7,88	7,18	6,58	5,61	4,91	3,80	2,82
12	10,75	10,14	9,50	8,80	8,02	7,35	6,28	5,51	4,28	3,18
15	12,47	11,81	11,08	10,28	9,37	8,63	7,41	6,51	5,06	3,75
20	15,70	14,90	14,07	13,13	12,04	11,08	9,52	8,37	6,50	4,82

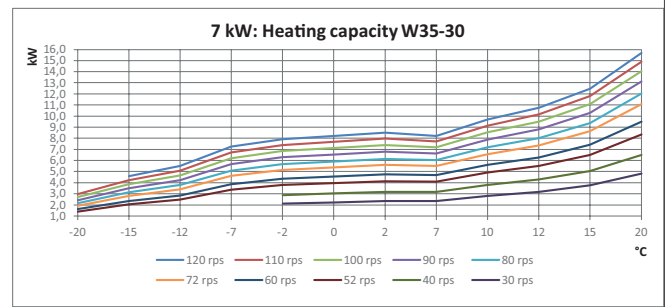
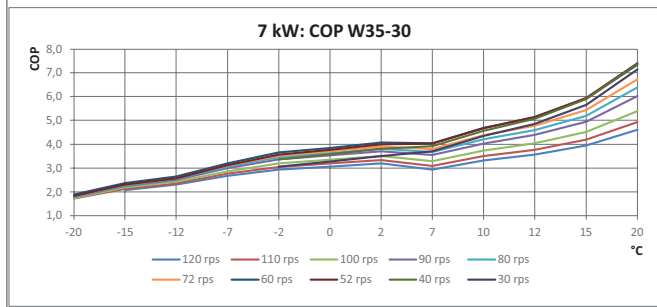


Fig. 59: COP and heat output for A/W35-30

°C										
	120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
-20										
-18		1,90	1,95	2,02	2,03	2,04	2,05	2,01		
-15		2,00	2,07	2,17	2,17	2,18	2,18	2,14		
-12		2,10	2,19	2,30	2,31	2,32	2,33	2,29		
-7		2,30	2,41	2,56	2,58	2,60	2,63	2,59	2,48	2,31
-2		2,43	2,57	2,75	2,79	2,83	2,89	2,85	2,73	2,54
0		2,50	2,64	2,83	2,88	2,92	3,00	2,96	2,85	2,66
2		2,56	2,71	2,91	2,97	3,03	3,12	3,08	2,97	2,77
7			2,92	3,17	3,27	3,36	3,54	3,54	3,47	3,31
10			3,06	3,34	3,46	3,58	3,78	3,78	3,72	3,57
12			3,16	3,46	3,59	3,72	3,95	3,97	3,92	3,76
15			3,31	3,63	3,81	3,96	4,24	4,25	4,21	4,05
20			3,60	4,00	4,20	4,37	4,69	4,72	4,68	4,51

°C										
	120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
-20										
-18		4,57	4,15	3,72	3,32	3,00	2,51	2,17		
-15		5,00	4,56	4,12	3,68	3,32	2,78	2,40		
-12		5,45	4,99	4,54	4,05	3,66	3,06	2,65		
-7		6,32	5,83	5,32	4,77	4,32	3,63	3,14	2,40	1,76
-2		6,88	6,37	5,85	5,27	4,79	4,04	3,51	2,69	1,98
0		7,11	6,60	6,06	5,47	4,98	4,21	3,67	2,81	2,07
2		7,34	6,82	6,27	5,68	5,18	4,39	3,82	2,94	2,17
7			7,98	7,37	6,68	6,11	5,21	4,56	3,52	2,61
10			8,31	7,71	7,02	6,44	5,49	4,81	3,73	2,77
12			8,57	7,95	7,24	6,64	5,69	4,99	3,88	2,88
15			8,93	8,29	7,58	6,98	5,99	5,26	4,08	3,03
20			9,55	8,91	8,16	7,51	6,45	5,67	4,40	3,27

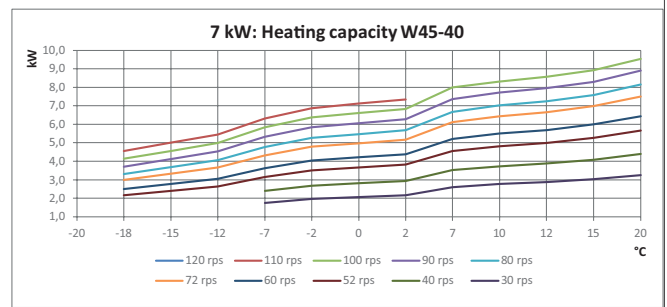
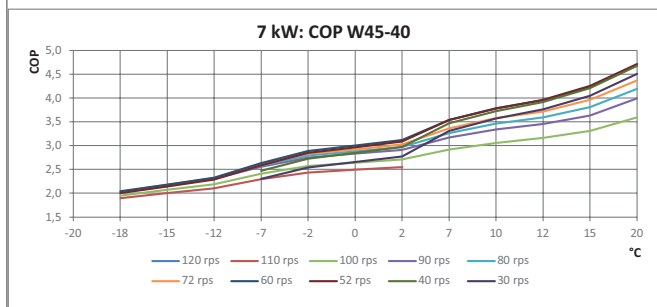


Fig. 60: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

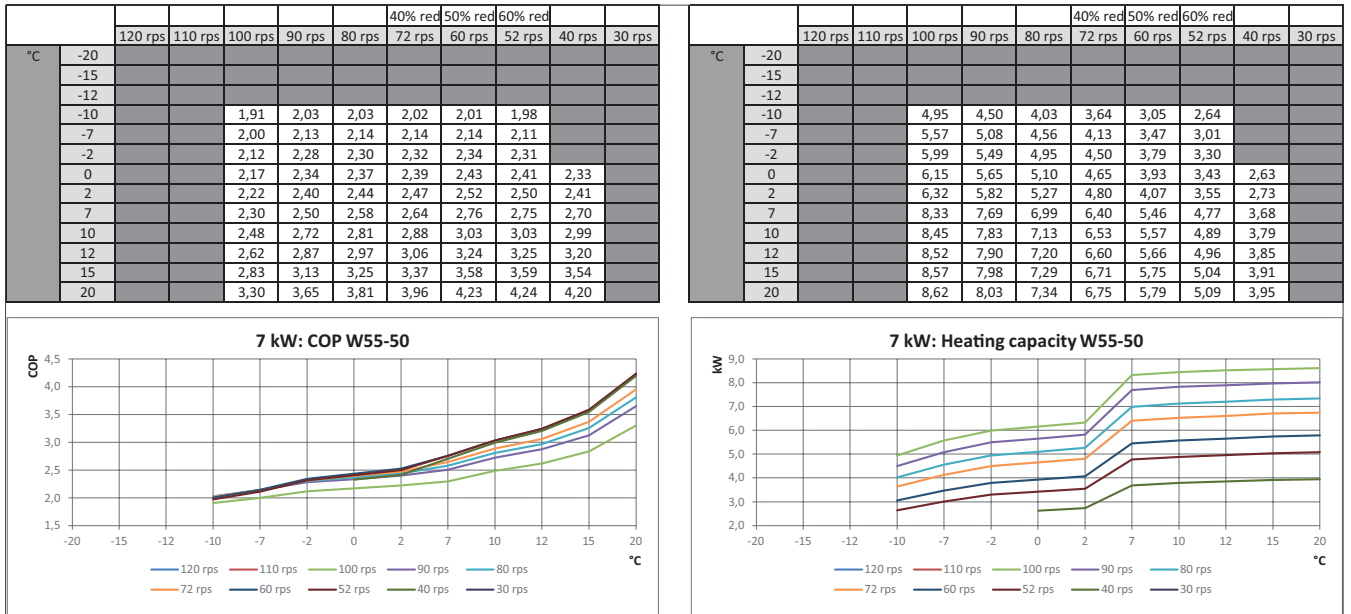


Fig. 61: COP and heat output for A./W55-50

2.8 Product dimensions and connection dimensions

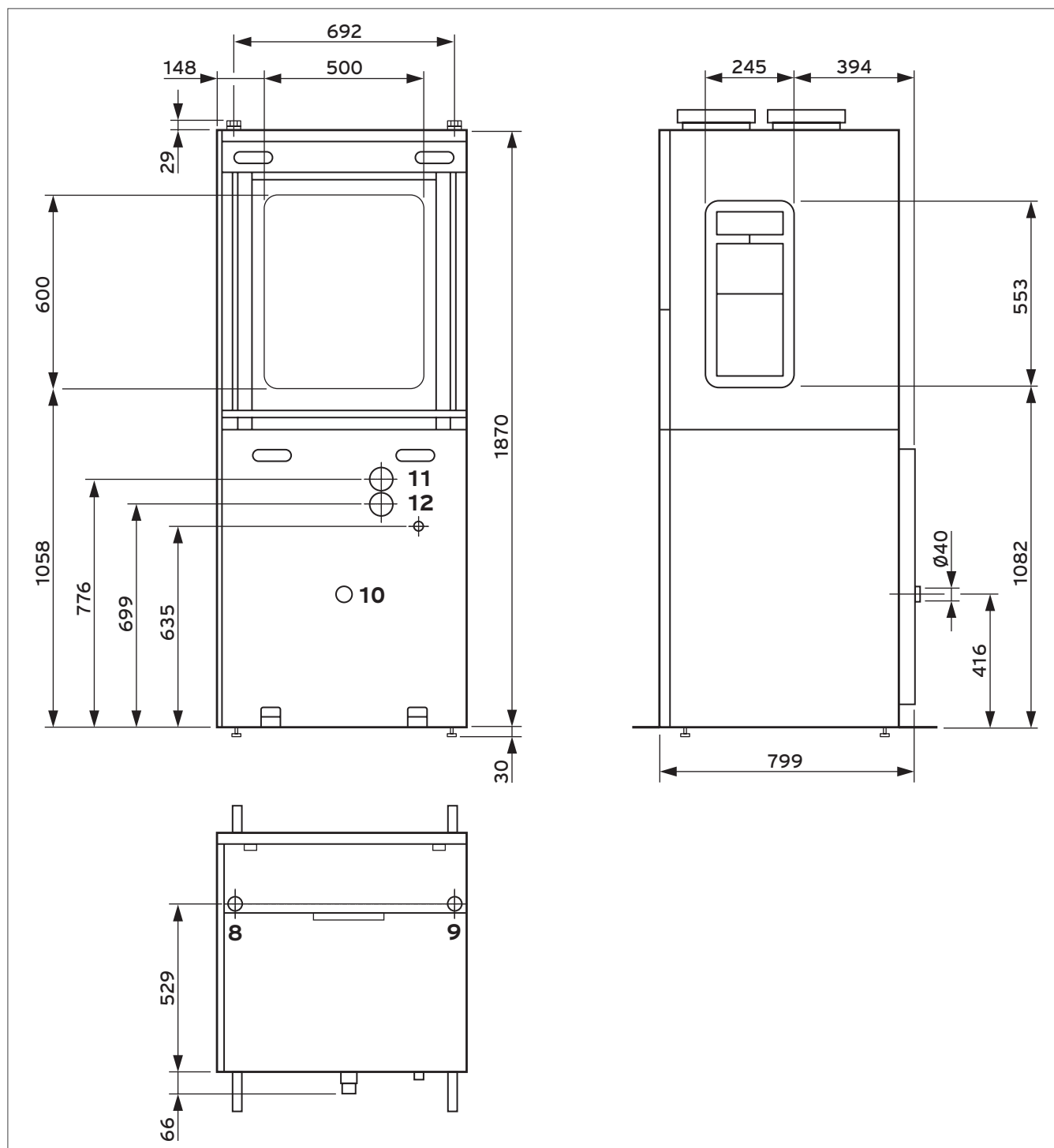


Fig. 62: Dimensions

- 8 Heating return
- 9 Heating flow
- 10 Condensed water discharge
- 11 Domestic hot water cylinder connection
- 12 Domestic hot water cylinder connection

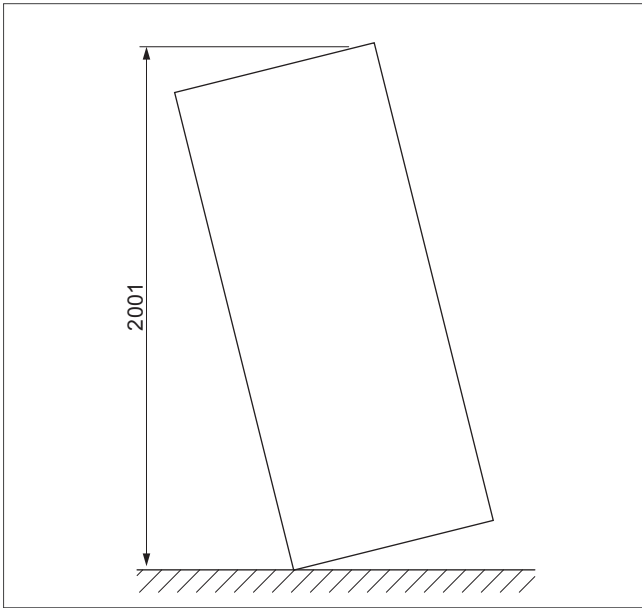


Fig. 63: Dimensions for transport

2.9 Recommended minimum clearances/ installation clearances

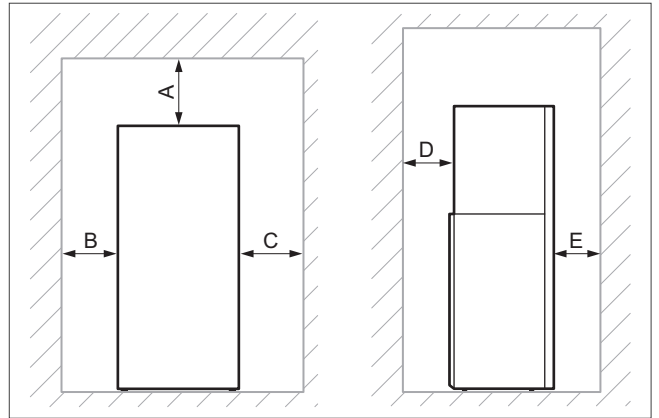


Fig. 64: Recommended minimum clearances/installation clearances

- A 300 mm
- B 100 mm
- C 100 mm
- D 100 mm
- E 750 mm

2.10 Requirements for the installation site

2.10.1 Minimum size of the installation room

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Minimum size for the installation room (m ³)
VWL 37/5	R410a	1.4	3.2
VWL 57/5	R410a	1.4	3.2
VWL 77/5	R410a	1.8	4.1

2.10.2 Installation room for the recoCOMPACT and versoTHERM

This heat pump should preferably be installed at ground level in the building. Rooms such as utility rooms and similar frost-proof rooms are suitable for this purpose. For the cellar solution, light shafts are required for the air-intake and air-outlet side.

The minimum temperature in the room in which the heat pump is installed should be 10 °C; if possible, it should be aerated with outdoor air to keep the relative air humidity low.

Ensure that the door frame through which the heat pump is to be brought is at least 80 cm wide. Also make sure that the stairway (incl. fall protection) is sufficiently wide.

Place the heat pump on a firm, level, horizontal surface. Do not remove the adjustable feet that are supplied with the pump when you do so as these help with vibration decoupling.

The air intake and discharge sides must allow for unobstructed air flow.

Since the air that escapes from the discharge side is approximately 5 K colder than the environmental temperature, ice can be expected to form here relatively quickly. For this reason, the discharge area must not be directed directly towards walls, terraces, walkways or parking spaces. A clearance of at least 3 m must be maintained.

The air intake and discharge sides must not open into a depression in the ground, since cold air sinks, which would prevent any exchange of air.

Information regarding conducting air via the heat pump

Air-to-water heat pumps for indoor installation must only be operated with air ducts. To prevent excessive room cooling and for safety reasons, the air flows must be directed outside. The air must be able to flow freely where the air inlet and outlet ducts are installed.

A compatible air duct system is available as an accessory for the recoCOMPACT and versoTHERM heat pumps; this system is heat- and sound-insulated at the factory. Additional sound-insulation mats can be used to reduce the noise by a further 3 dB.

Air pipe provided on-site

If the air pipe is to be constructed on-site, this must be implemented in accordance with the rules and regulations that apply in the country in question.

Condensate discharge

Unlike brine-to-water and water-to-water heat pumps, with air-to-water heat pumps, condensate forms at the evaporator when the temperature falls below the dew point and hoar frost/ice forms, which turns to liquid when it thaws.

In both cases, the condensate must be conducted to the waste-water system, either by means of a drain or using a condensate pump.

The condensate pump must be connected to the heat pump's fault contact.

External compression and volume flows

Type	External compression [Pa]	Maximum volume flow [m ³ /h]
VWL 37/5 and VWL 39/5	50	1900
VWL 57/5 and VWL 59/5	50	1900
VWL 77/5 and VWL 79/5	70	2200

You can find the external compression values for the Vaillant system accessories in the accessories overview.

2.11 Set-up examples

The following set-up examples show a range of different installation options that can be achieved using the Vaillant system accessories. The examples feature the relevant dimensions and specific information relating to each of the installation situations.

The different accessory and unit variants allow for different installation options for the air supply and extraction systems.

The installation illustrations contain the relevant planned dimensions and an overview of the most important components of each system.

The following figures show examples of the right- and left-hand installation of the versoTHERM.

Observe the respective price list, which always contains a complete and up-to-date list of available accessories.

During planning, also comply with the following general instructions and information, as well as the applicable standards and directives.

2.11.1 Wall-opening dimensions when using Vaillant air ducts

The following wall-breakthrough dimensions apply for the different installation possibilities when using Vaillant system accessories. The way in which the EPP pipes for the ventilation system are connected also influences the required minimum room height, diameter and height measurement for the air pipe.

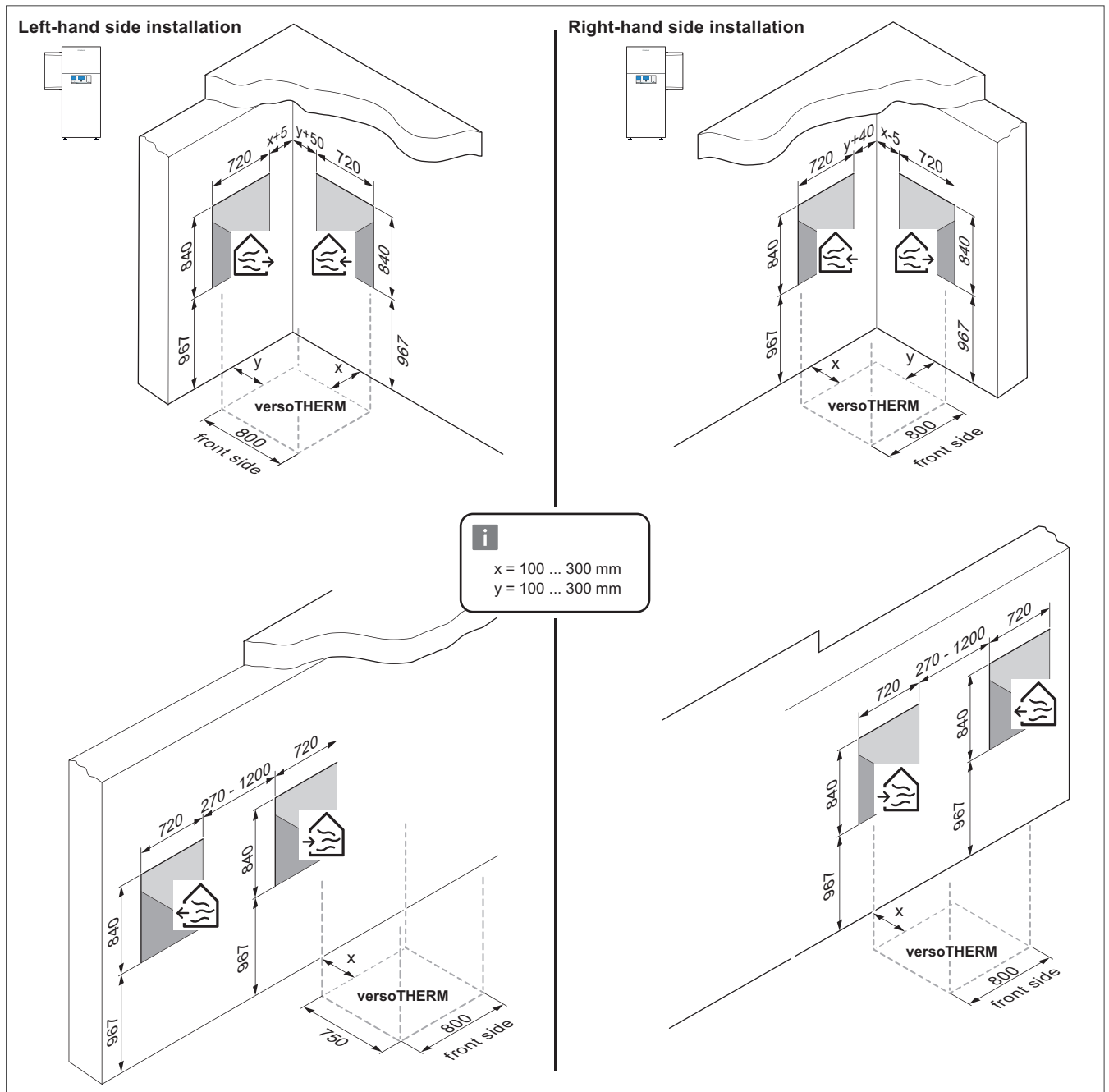


Fig. 65: Wall-opening dimensions when using Vaillant air ducts

Note

The floor's load-bearing capacity must be guaranteed in the installation area. The screed, a concrete pedestal or other floor structures must be designed for the unit's distributed load and must withstand the point loads at the unit's feet. There must be no installations in the installation area (underfloor heating, etc.).



2.11.2 Ground floor - corner installation

Corner installation on the ground floor

Left-hand installation

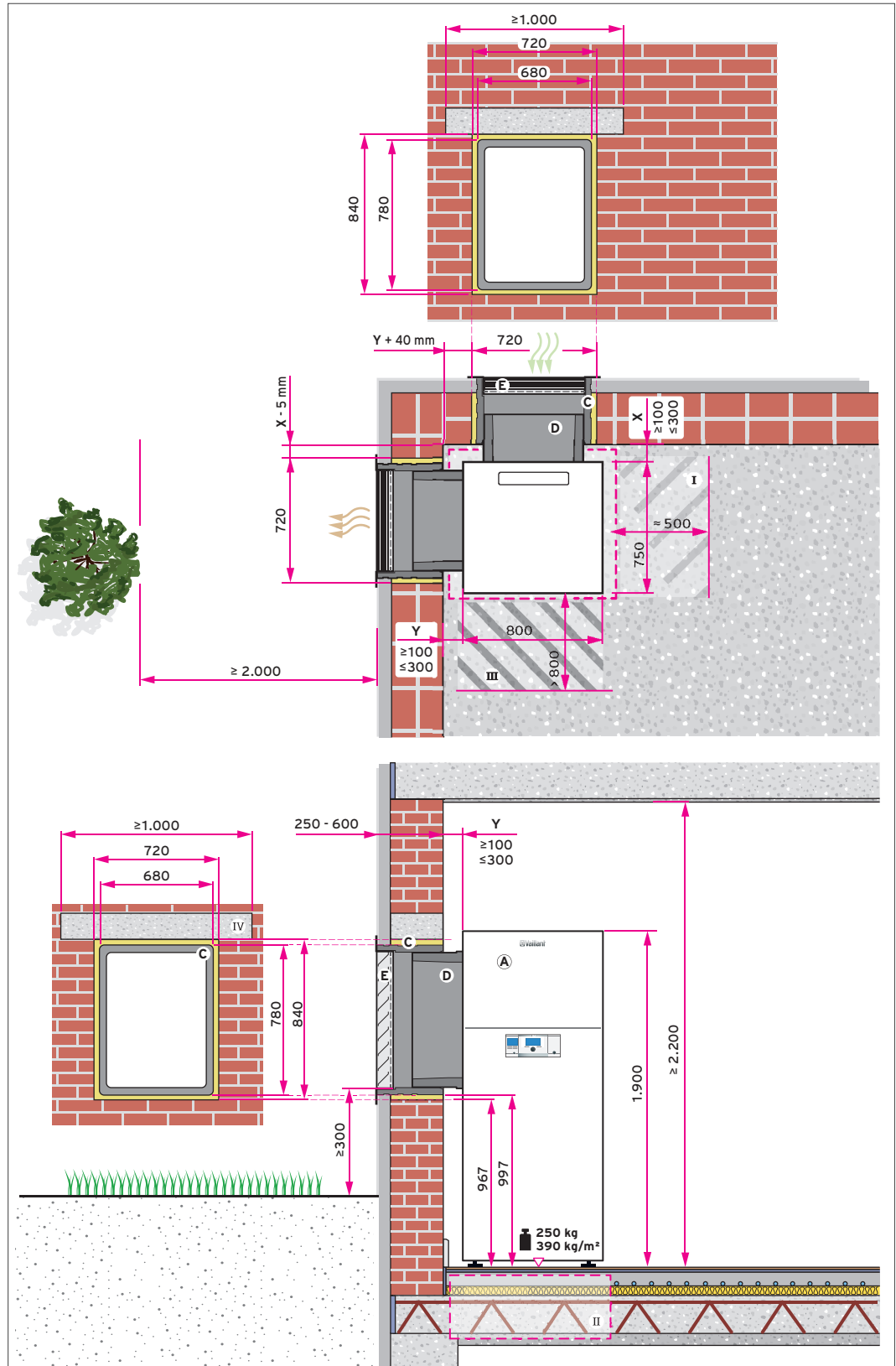


Fig. 66: versOTHERM installation situation, ground floor - left-hand installation in the corner of a room

Right-hand installation

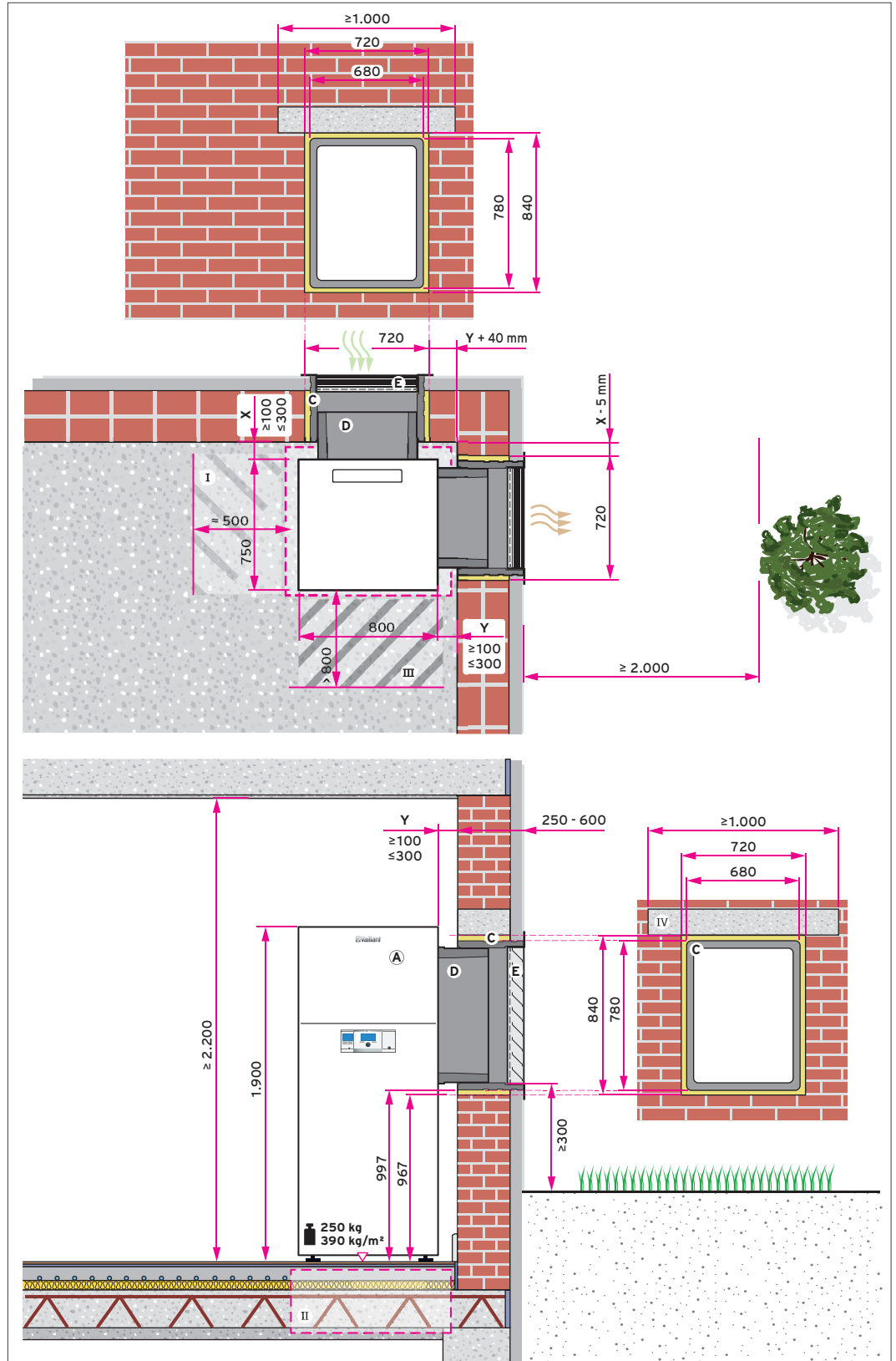


Fig. 67: versoTHERM installation situation, ground floor - right-hand installation in the corner of a room

Note**Outer dimensions for clinker façades**

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	versoTHERM
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

2.11.3 Ground floor - corner installation with central extract air (versoVAIR)

Corner installation with central extract air on the ground floor

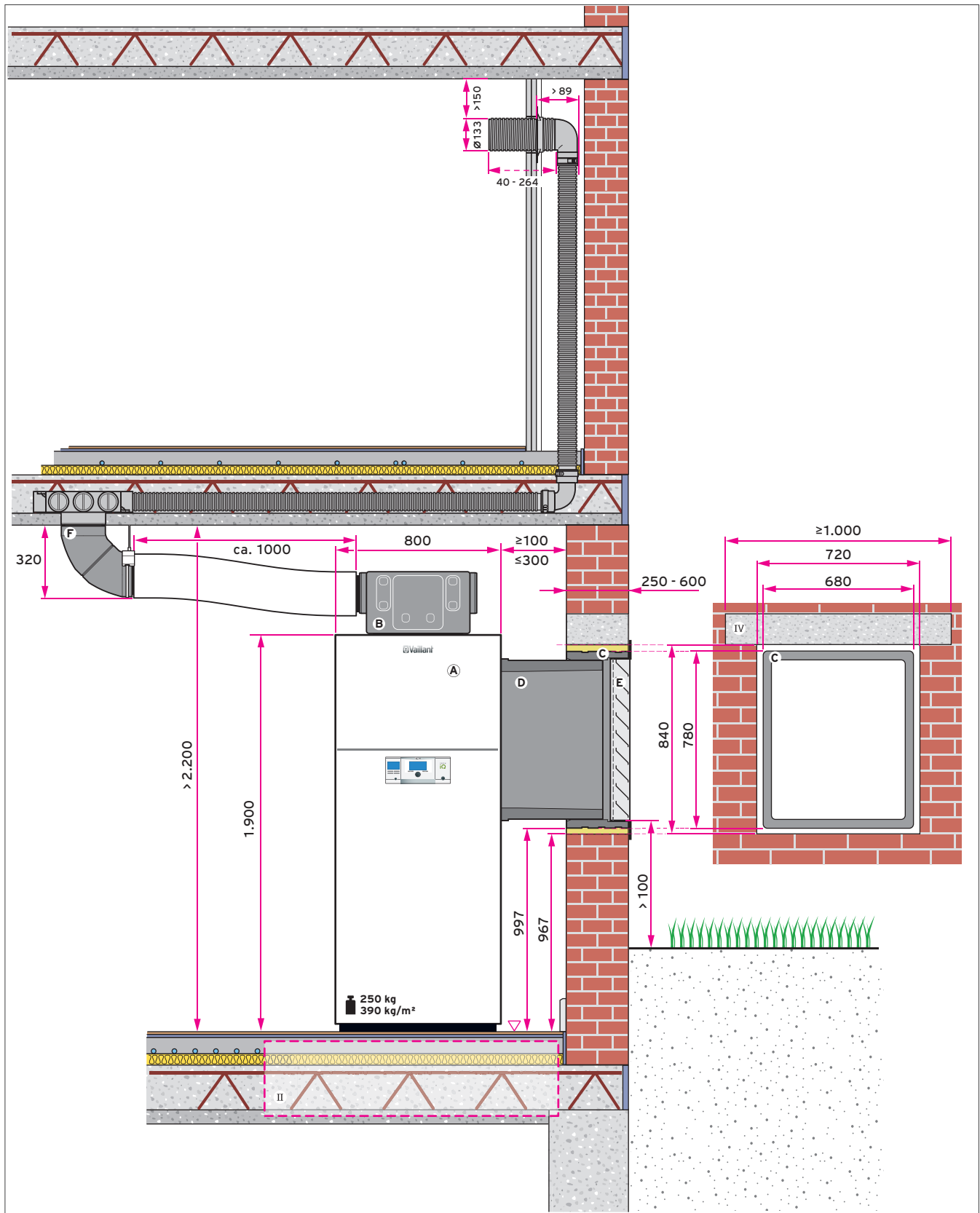


Fig. 68: versoTHERM with versoVAIR installation situation, ground floor - corner installation

Note
Outer dimensions for clinker façades



For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).

Required accessories

	Art. no.	Quantity	Designation
-	-	-	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	-	-	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
-	-	-	Clearance in front of the product to allow for maintenance
IV	-	-	Lintel above the wall opening (provided on-site)
A	-	1	versoTHERM
B	0010024013	1	versoVAIR
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	-	-	EPP pipe system for extracting the extract air

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

2.11.4 Ground floor - single-wall installation

Single-wall installation on the ground floor

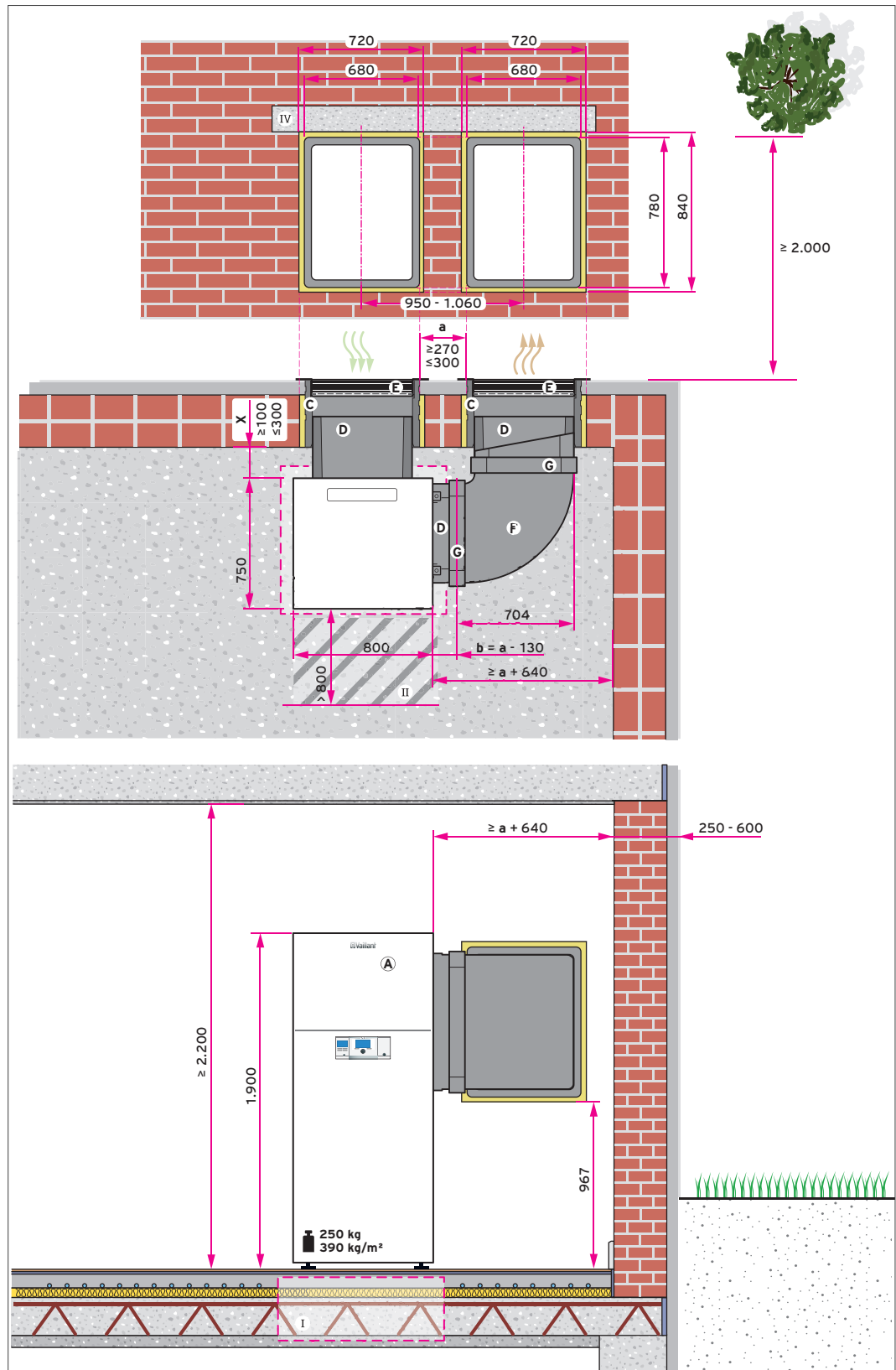


Fig. 69: versoTHERM installation situation, ground floor - air intake at the rear

Note**Outer dimensions for clinker façades**

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Wherever possible, the air intake side and the air discharge side should be on different sides of the building (corner installation). The intake and discharge of air on the same side of the building façade is only permitted in exceptional circumstances.

To prevent thermal short circuits, there must be a sufficiently large gap between the air inlet and the air outlet; alternatively, a partition can be installed between the two.

Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located. Note the load-bearing capacity of the floor.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located. Note the load-bearing capacity of the floor.
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	versoTHERM
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2 *	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	0010023533	1	VWZ 500 x 600 air-duct elbow
G	0010023534	2 *	VWZ 500 x 600 air-duct sleeve

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

* If $x + a \geq 480$ mm, an additional air duct and an additional sleeve are required. During installation, the air duct to which the elbow is connected must be cut into two sections.

2.11.5 Cellar – single-wall installation with light shaft and partition

Single-wall installation in the cellar

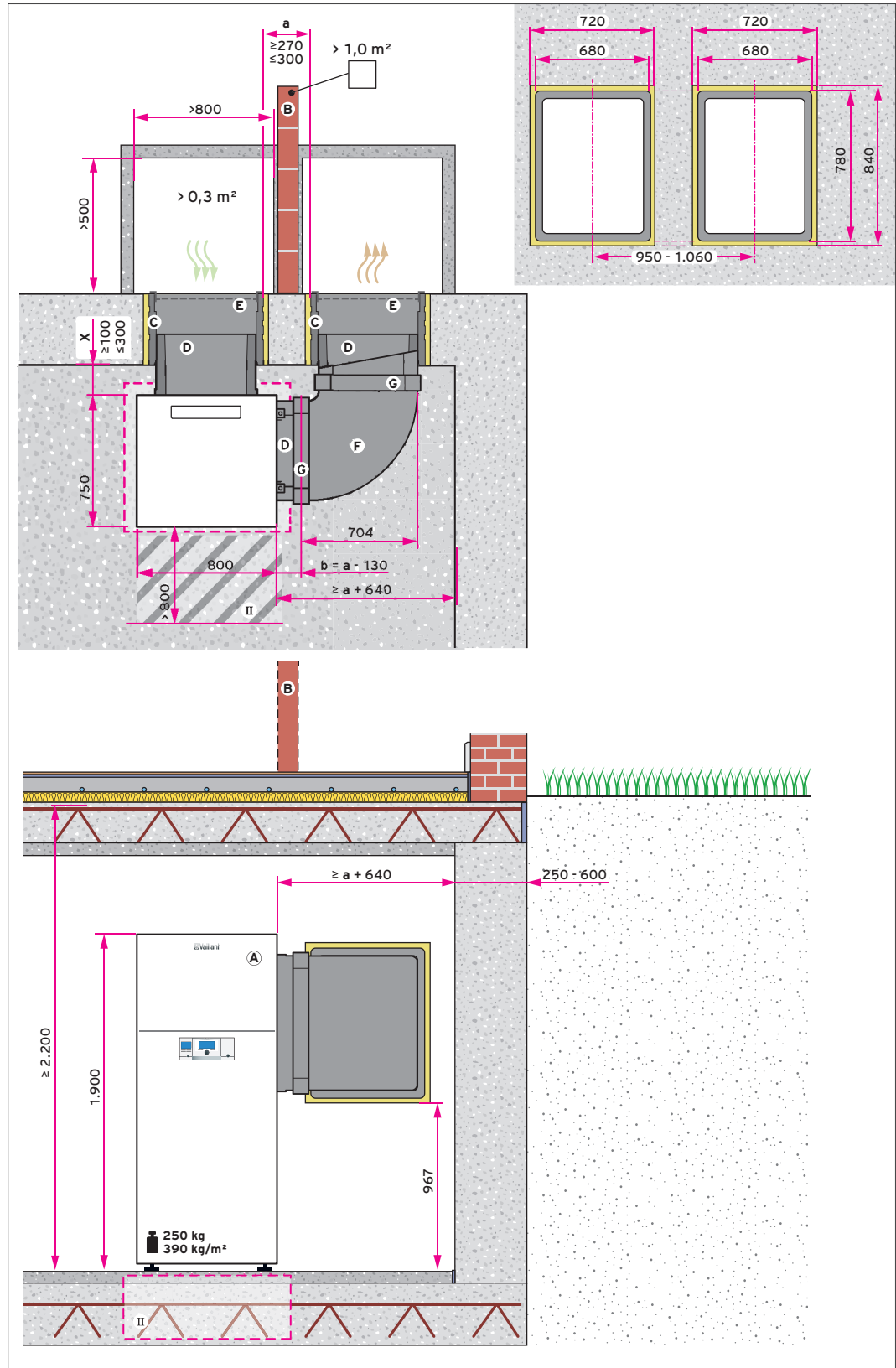


Fig. 70: versoTHERM installation situation, cellar - single-wall installation

Update 10
New infos regarding graphic 2.11.5

Wherever possible, the air intake side and the air discharge side should be on different sides of the building (corner installation). The intake and discharge of air on the same side of the building façade is only permitted in exceptional circumstances.

To prevent thermal short circuits, there must be a sufficiently large gap between the air inlet and the air outlet; alternatively, a partition can be installed between the two.

Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located. Note the load-bearing capacity of the floor.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	versoTHERM
B	–	1	Partition for preventing a thermal short circuit if the clearance between the light wells is < 0.5 m Surface of the partition: > 1 m ²
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2 *	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	0010023533	1	VWZ 500 x 600 air-duct elbow
G	0010023534	2 *	VWZ 500 x 600 air-duct sleeve

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

* If $x + a \geq 480$ mm, an additional air duct and an additional sleeve are required. During installation, the air duct to which the elbow is connected must be cut into two sections.

2.11.6 Cellar - corner installation, air supplied via light wells

Corner installation in the cellar with air supply via light wells.

Left-hand installation

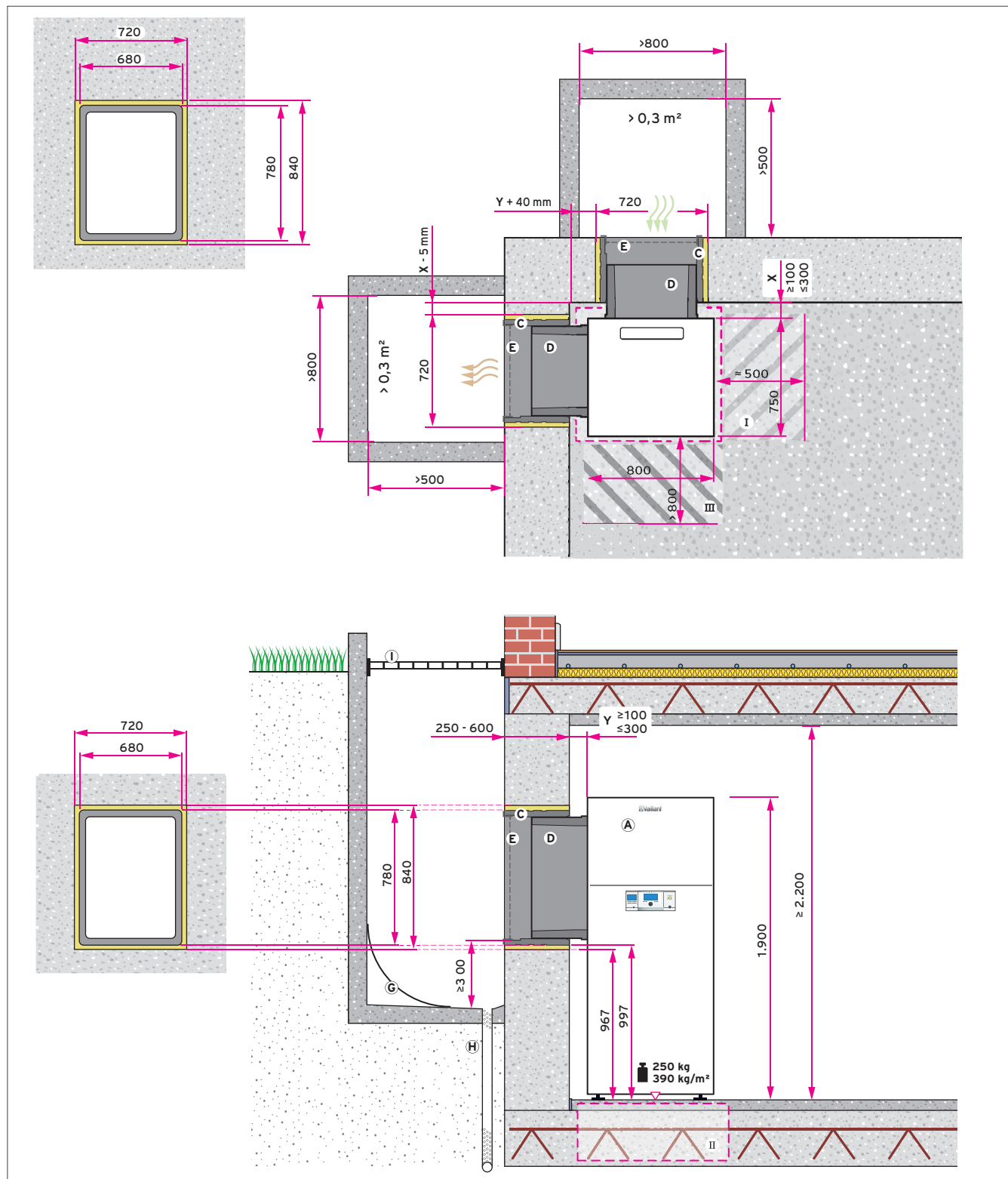


Fig. 71: versoTHERM installation situation, cellar - left-hand installation in the corner of a room, air supply via light wells

Right-hand installation

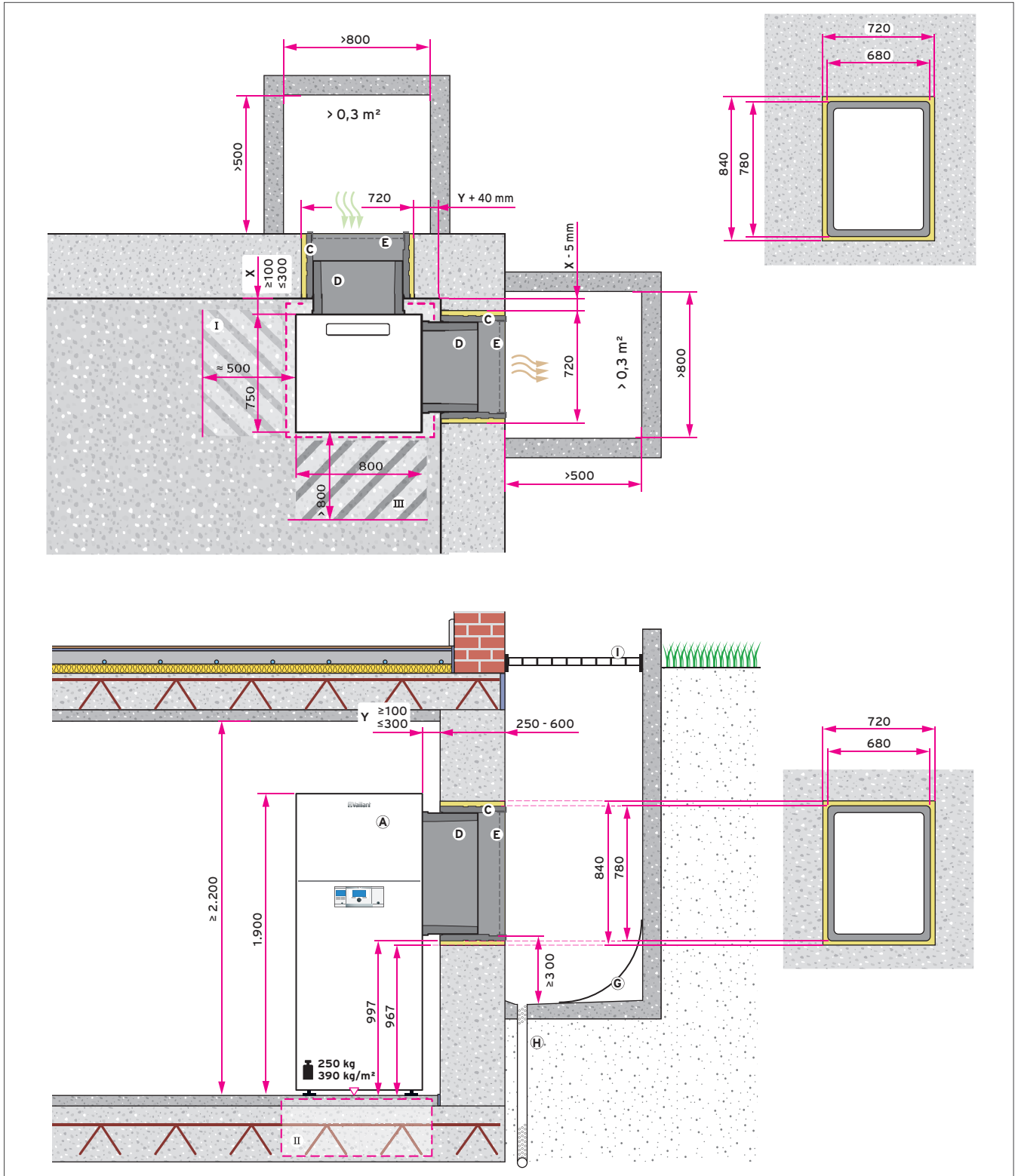


Fig. 72: versoTHERM installation situation, cellar - right-hand installation in the corner of a room, air supply via light wells

Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
A	–	1	versoTHERM
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023530	2	VWZ rodent guard grille External dimensions: 720 x 820 mm
G	–	2	For concrete wells, an air guide plate must be used. In general, supplying air through plastic light wells is recommended as these facilitate air flow.
H	–	2	Water drain
I	–	2	Grille with a free opening cross-section of $\geq 0.3 \text{ m}^2$ To protect against small animals and foliage, a wire grille should also be fitted.

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

2.12 Set-up examples with cellar adapter

In the following set-up examples, the installation options with the Vaillant cellar adapter are displayed. With the cellar adapter, a height offset of 410 mm can be implemented for the air supply and extraction. This means that, in certain installation situations (e.g. for a building on a slope), the air can also be extracted via the surface of the earth without a light well.

The installation illustrations contain the relevant planned dimensions and an overview of the most important components of each system.

The following figures show examples of the right- and left-hand installation of the versoTHERM.

Observe the respective price list, which always contains a complete and up-to-date list of available accessories.

During planning, also comply with the following general instructions and information, as well as the applicable standards and directives.

2.12.1 Wall-opening dimensions when using the Vaillant air ducts with a height offset of 410 mm

The following wall-breakthrough dimensions apply for the different installation possibilities when using Vaillant system accessories. The way in which the EPP pipes for the ventilation system are connected also influences the required minimum room height, diameter and height measurement for the air pipe.

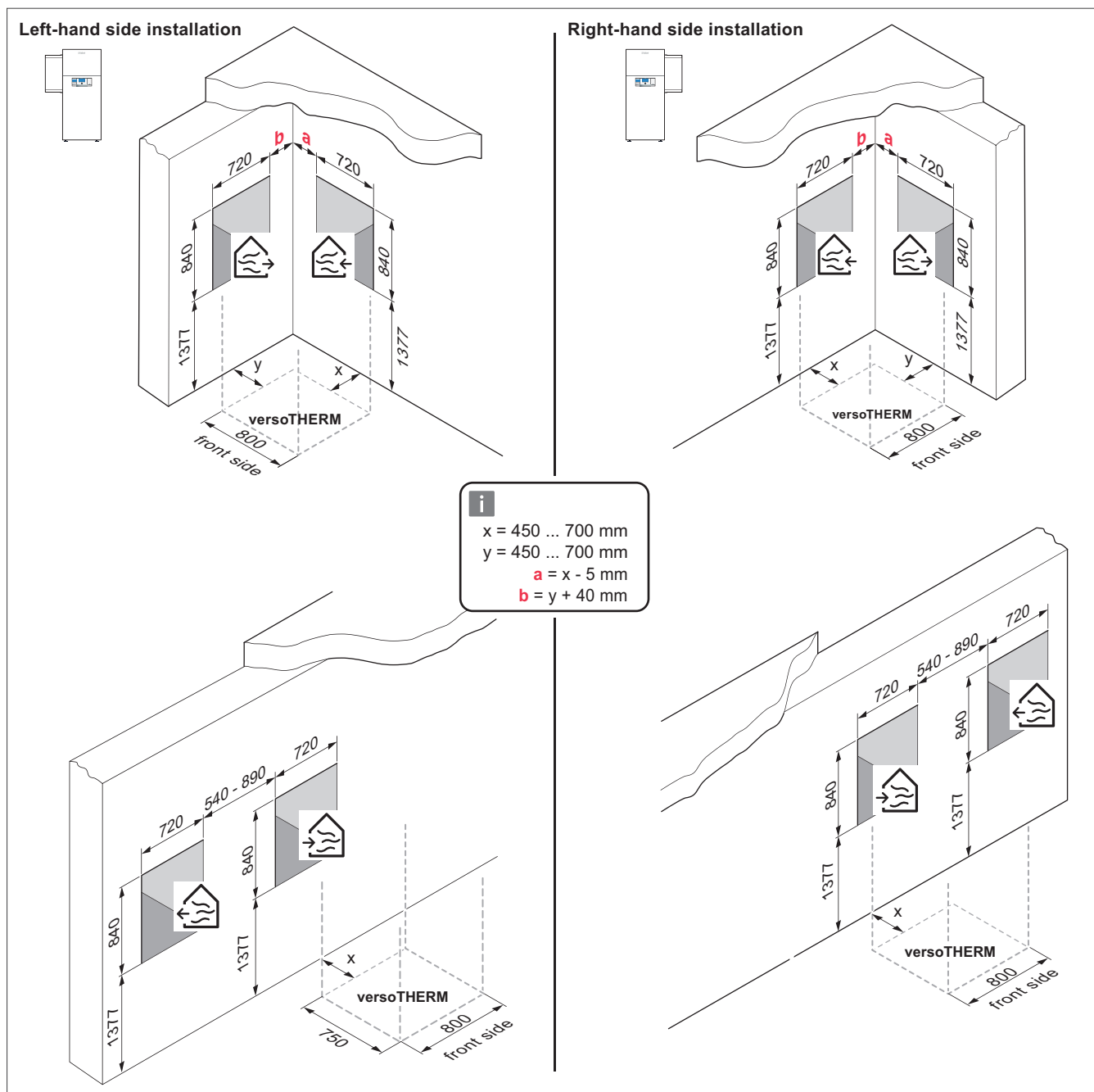


Fig. 73: Wall-opening dimensions when using the Vaillant air ducts with a height offset of 410 mm

Note

The floor's load-bearing capacity must be guaranteed in the installation area. The screed, a concrete pedestal or other floor structures must be designed for the unit's distributed load and must withstand the point loads at the unit's feet. There must be no installations in the installation area (underfloor heating, etc.).



2.12.2 Ground floor - corner installation with cellar adapter

Corner installation on the ground floor (slope) with cellar adapter.

Left-hand installation

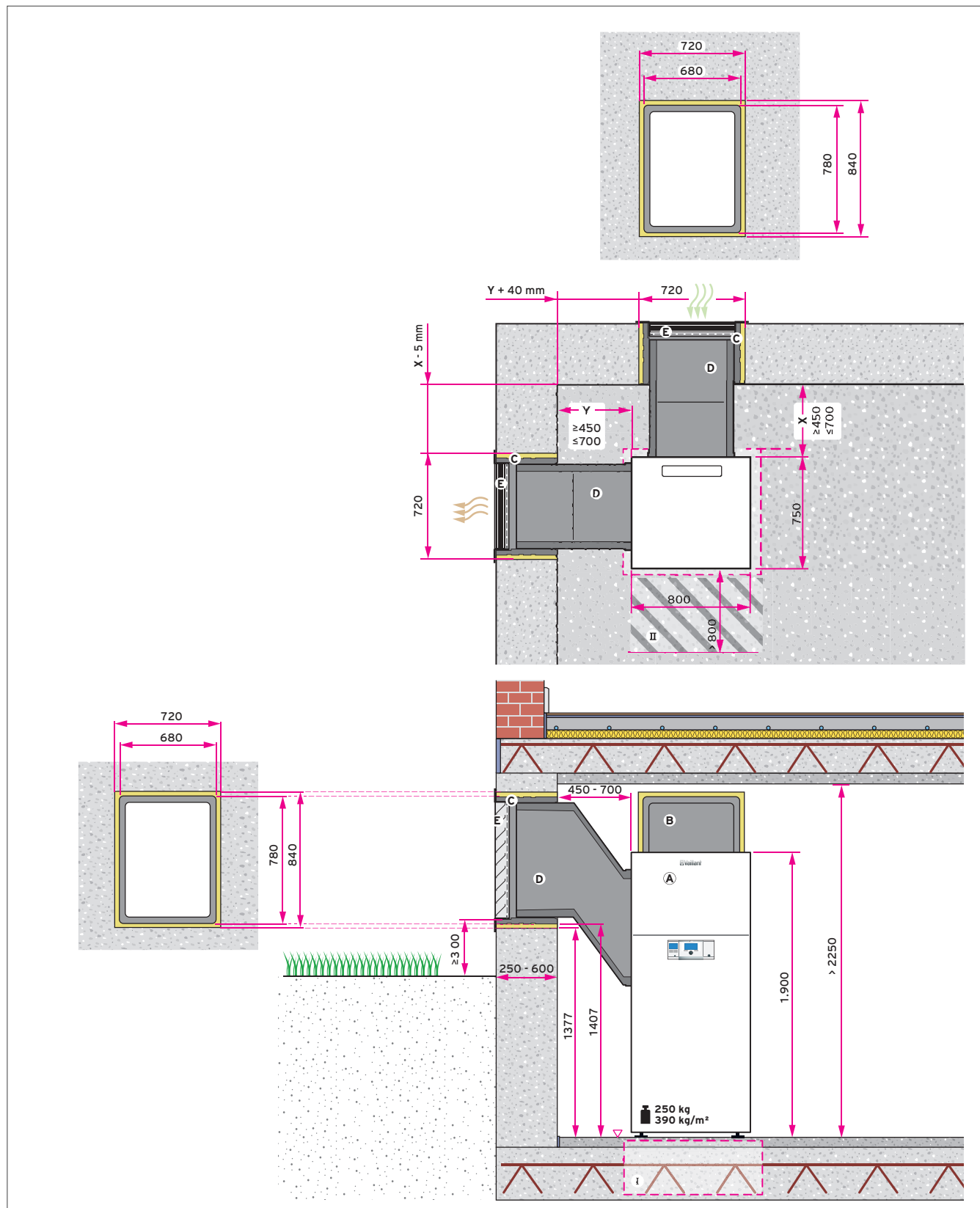


Fig. 74: versoTHERM installation situation, ground floor - left-hand installation in the corner of a room with cellar adapter

Right-hand installation

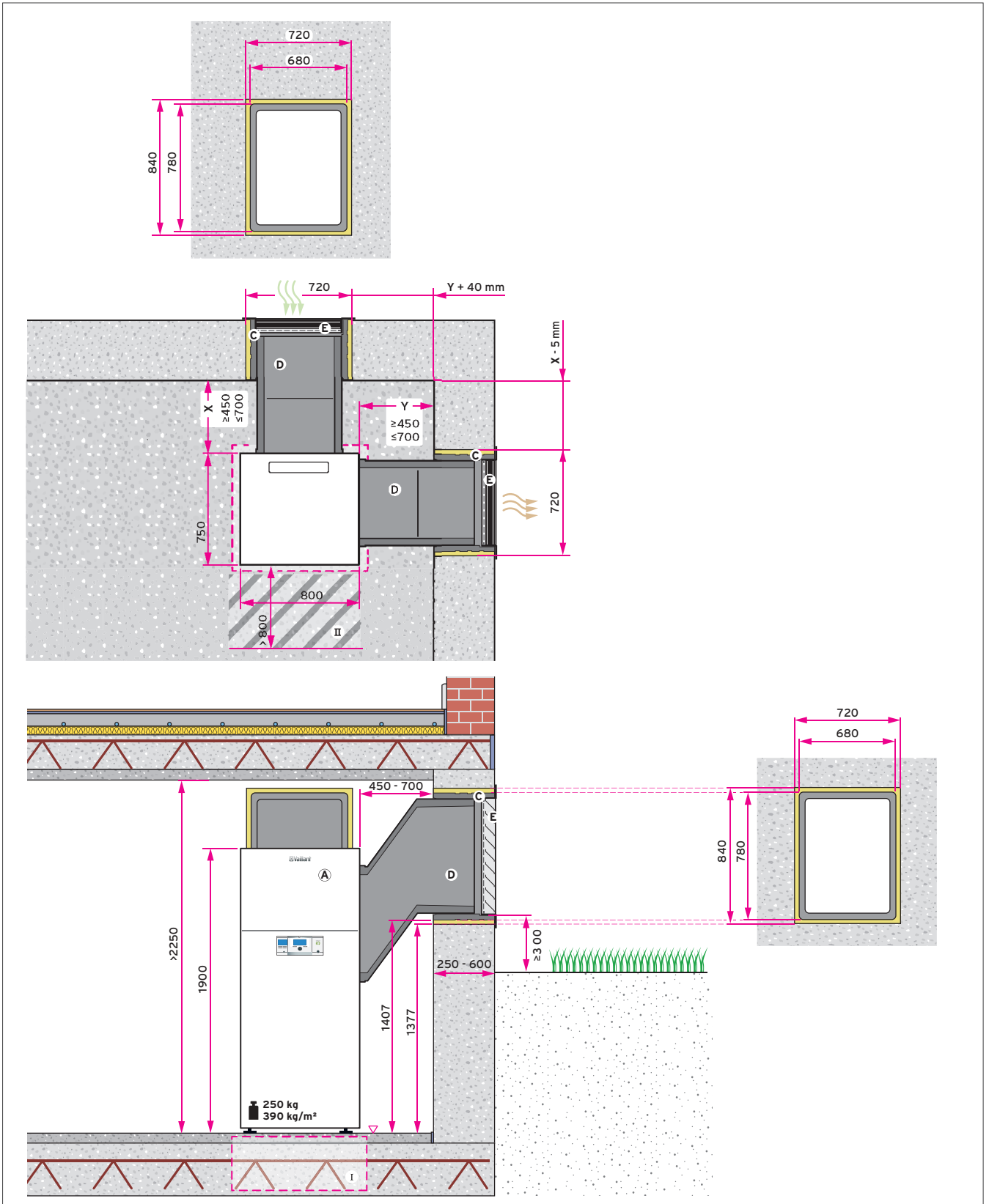


Fig. 75: versoTHERM installation situation, ground floor - right-hand installation in the corner of a room with cellar adapter

Note**Outer dimensions for clinker façades**

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
II	–	–	Clearance in front of the product to allow for maintenance
A	–	1	versoTHERM
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010031010	2	VWZ air duct with a height change of 410 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

2.12.3 Ground floor - single-wall installation

Corner installation with cellar adapter on the ground floor.

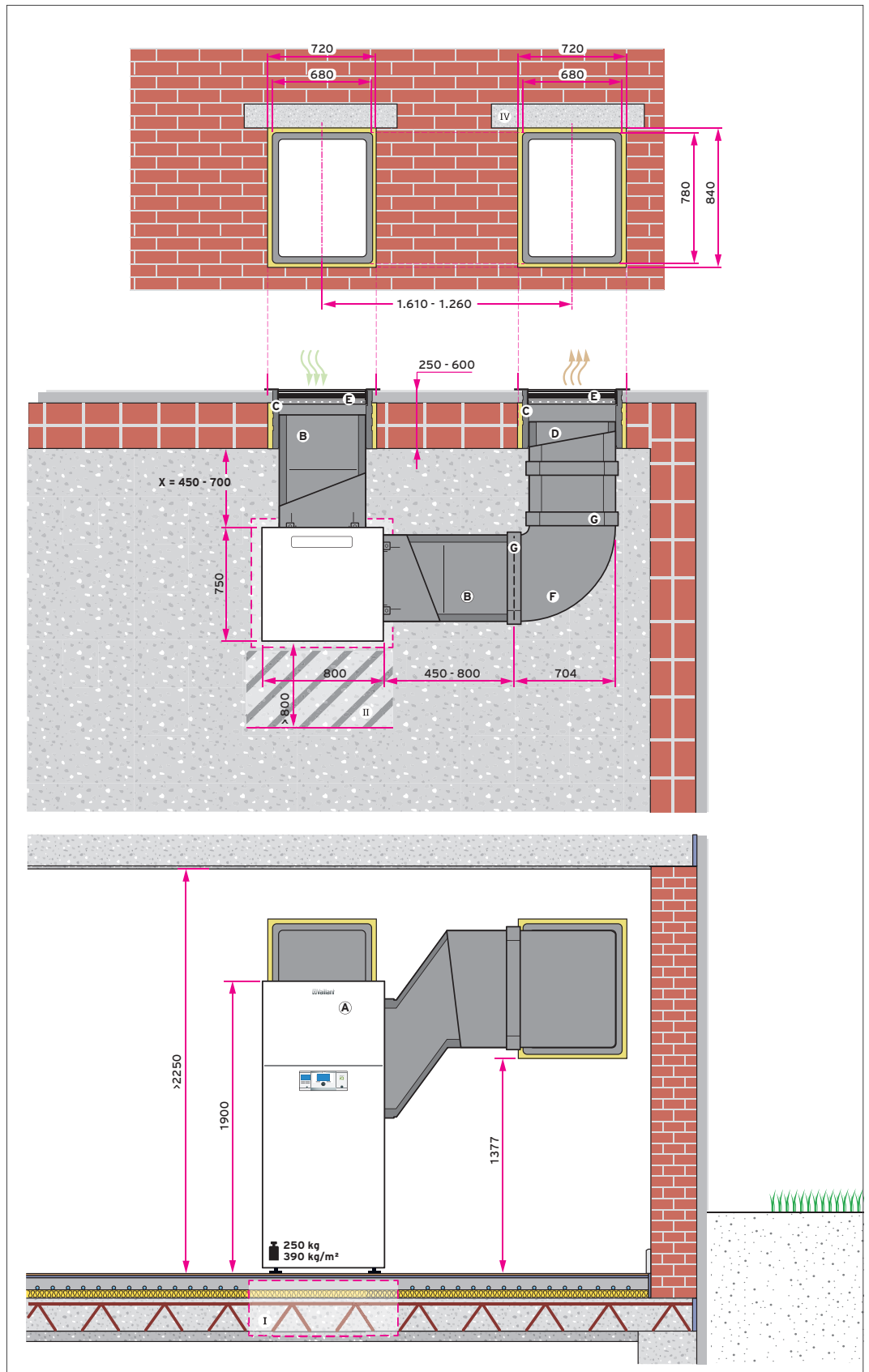


Fig. 76: versoTHERM installation situation with cellar adapter - air intake from the rear

Note**Outer dimensions for clinker façades**

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
II	–	–	Clearance in front of the product to allow for maintenance
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	versoTHERM
B	0010031010	2	VWZ air duct with a height change of 410 mm
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	1 *	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm
F	0010023533	1	VWZ 500 x 600 air-duct elbow
G	0010023534	2 *	VWZ 500 x 600 air-duct sleeve

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

* If **x > 450 mm**, an additional air duct and an additional sleeve are required. During installation, the air duct to which the elbow is connected must be cut into two sections.

2.13 Set-up examples with Rehau accessories

The following set-up examples show a range of different installation options that can be planned using installation accessories from Rehau. The examples feature the relevant dimensions and specific information relating to each of the installation situations.

The installation illustrations contain the relevant planned dimensions and an overview of the most important components of each system.

The following examples illustrate how to install the unit on the right-hand side.

During planning, also comply with the following general instructions and information, as well as the applicable standards and directives.

Note

The floor's load-bearing capacity must be guaranteed in the installation area. The screed, a concrete pedestal or other floor structures must be designed for the unit's distributed load and must withstand the point loads at the unit's feet. There must be no installations in the installation area (underfloor heating, etc.).



2.13.1 Cellar - corner installation, air supplied via an air-duct system manufactured by Rehau

Corner installation in the cellar with wall ducts that are impermeable to pressing water. Air is supplied to the heat pump using the 500 mm diameter air-duct system manufactured by Rehau.

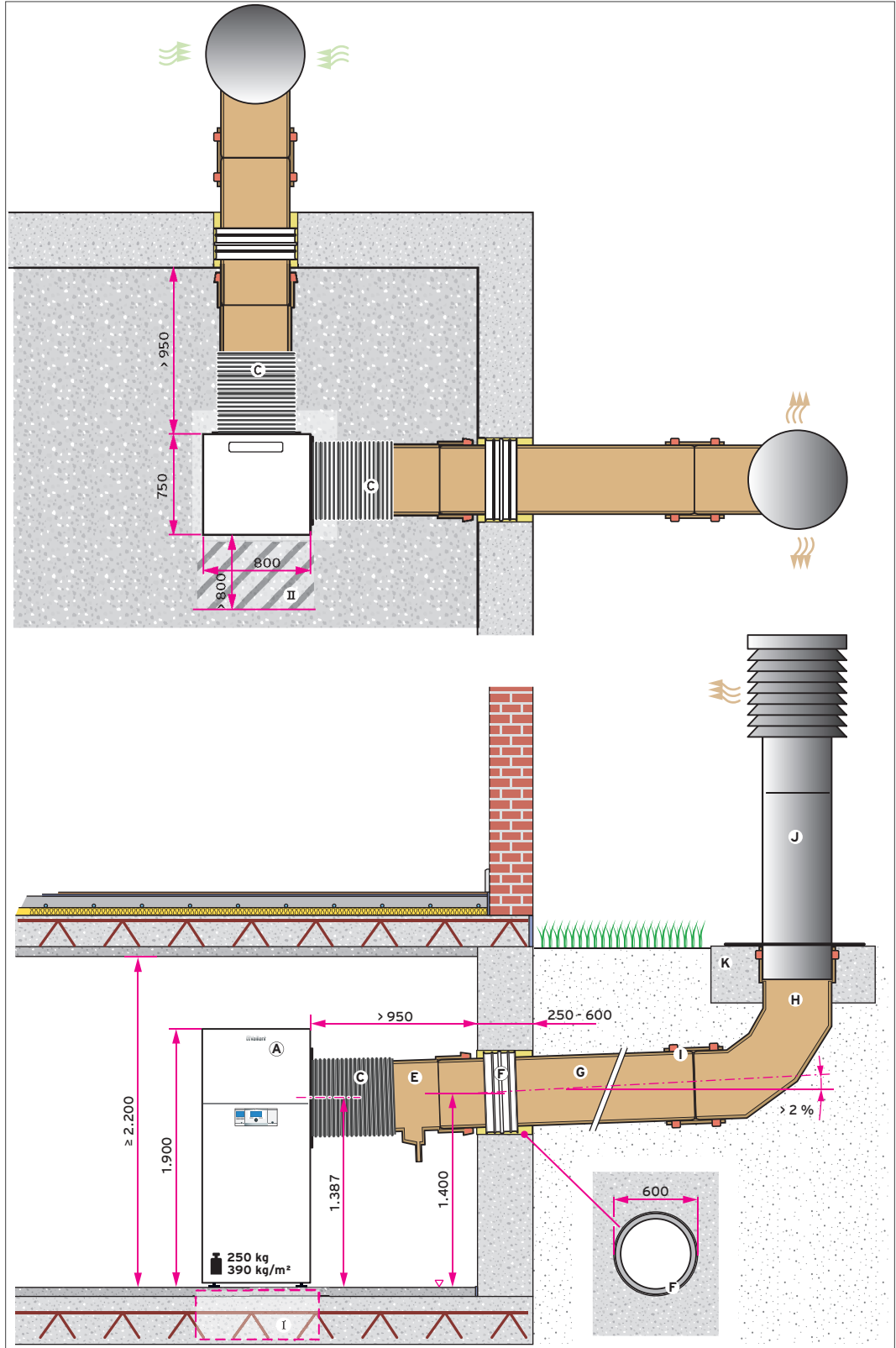


Fig. 77: versoTHERM installation situation, cellar - corner installation with air-duct system manufactured by Rehau

Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
II	–	–	Clearance in front of the product to allow for maintenance
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023531	1	VWZ flexible adapter set (for VWL 71/91)
D	–	–	EPP pipe system for supplying outdoor air
E	See pl. from Rehau	2	S-shaped condensate discharge e.g. for residential and other buildings with a cellar, with a connecting sleeve and seal as standard
F	See pl. from Rehau	2	DN 500 annular space seal Used for pressing water, pressure-tight up to 5.0 bar and Wall sleeve Used for pressing water in conjunction with annular space seal
G	See pl. from Rehau	–	AWADUKT thermal pipe Specifically for use as an air pipe for laying underground; DN 500 0.30 Pa/m pressure loss at 1900 m ³ /h and 3.3 m/s 0.35 Pa/m pressure loss at 2200 m ³ /h and 3.6 m/s
H	See pl. from Rehau	–	AWADUKT PP elbow with EPDM sealing ring 88° elbow for implementing direction changes; DN 500 1.5 Pa pressure loss at 1900 m ³ /h and 3.3 m/s 1.8 Pa pressure loss at 2200 m ³ /h and 3.6 m/s
I	See pl. from Rehau	–	AWADUKT PP double connecting sleeve with EPDM sealing rings
J	See pl. from Rehau	–	AWADUKT thermal air-ground heat exchanger system air intake tower; DN 500 Pressure loss at 1900 m ³ /h and 3.3 m/s 18 Pa Use with a G-4 filter + 11 Pa Total: 29 Pa Pressure loss at 2200 m ³ /h and 3.6 m/s 23 Pa Use with a G-4 filter + 13 Pa Total: 36 Pa
K	–	1	Concrete base Dimensions for corner installation (mm): 1200 x 1200 x 500 Dimensions for single-wall installation (mm): 2100 x 1200 x 500

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

Note

Information on the Rehau air-duct system

Maximum 15 m + 1 elbow per module string (total length).

Each additional elbow reduces the total length by 5 m.



2.13.2 Cellar - single-wall installation, air supplied via an air-duct system manufactured by Rehau

Single-wall installation in the cellar with wall ducts that are impermeable to pressing water. Air is supplied to the heat pump using the 500 mm diameter air-duct system manufactured by Rehau.

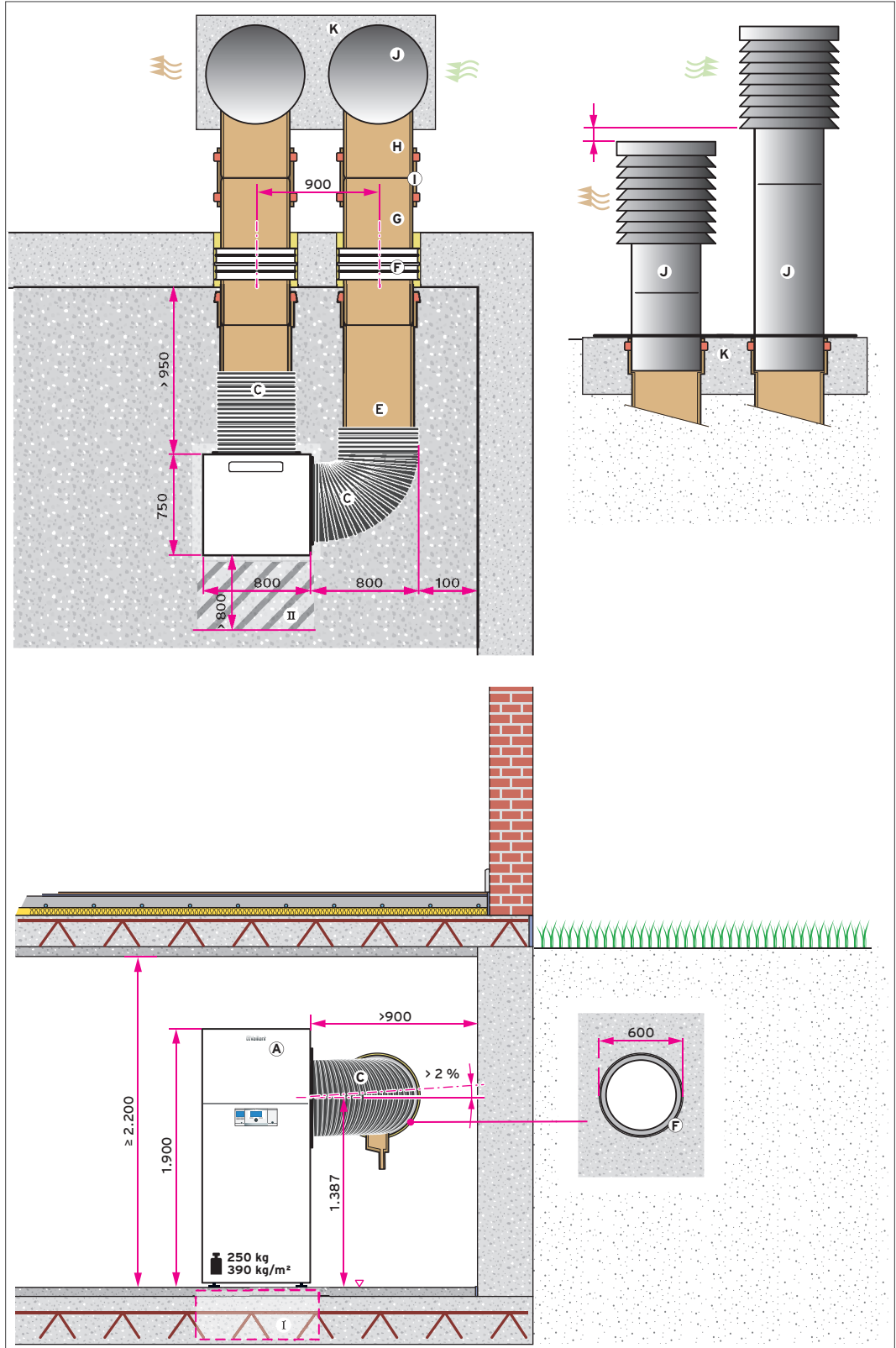


Fig. 78: versoTHERM installation situation, cellar - single-wall installation with air-duct system manufactured by Rehau

Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
II	–	–	Clearance in front of the product to allow for maintenance
A	–	1	recoCOMPACT
B	–	1	Exhaust air adapter (included in the recoCOMPACT's scope of delivery)
C	0010023531	1	VWZ flexible adapter set (for VWL 71/91)
D	–	–	EPP pipe system for supplying outdoor air
E	See pl. from Rehau	2	S-shaped condensate discharge e.g. for residential and other buildings with a cellar, with a connecting sleeve and seal as standard
F	See pl. from Rehau	2	DN 500 annular space seal Used for pressing water, pressure-tight up to 5.0 bar and Wall sleeve Used for pressing water in conjunction with annular space seal
G	See pl. from Rehau	–	AWADUKT thermal pipe Specifically for use as an air pipe for laying underground; DN 500 0.30 Pa/m pressure loss at 1900 m ³ /h and 3.3 m/s 0.35 Pa/m pressure loss at 2200 m ³ /h and 3.6 m/s
H	See pl. from Rehau	–	AWADUKT PP elbow with EPDM sealing ring 88° elbow for implementing direction changes; DN 500 1.5 Pa pressure loss at 1900 m ³ /h and 3.3 m/s 1.8 Pa pressure loss at 2200 m ³ /h and 3.6 m/s
I	See pl. from Rehau	–	AWADUKT PP double connecting sleeve with EPDM sealing rings
J	See pl. from Rehau	–	AWADUKT thermal air-ground heat exchanger system air intake tower; DN 500 Pressure loss at 1900 m ³ /h and 3.3 m/s 18 Pa Use with a G-4 filter + 11 Pa Total: 29 Pa Pressure loss at 2200 m ³ /h and 3.6 m/s 23 Pa Use with a G-4 filter + 13 Pa Total: 36 Pa
K	–	1	Concrete base Dimensions for corner installation (mm): 1200 x 1200 x 500 Dimensions for single-wall installation (mm): 2100 x 1200 x 500

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

Note

Information on the Rehau air-duct system

Maximum 15 m + 1 elbow per module string (total length).

Each additional elbow reduces the total length by 5 m.



2.14 Set-up examples for existing buildings without façade renovation

The following set-up examples show a range of different installation options that can be achieved using the Vaillant system accessories. The examples feature the relevant dimensions and specific information relating to each of the installation situations.

The different accessory and unit variants allow for different installation options for the air supply and extraction systems.

The installation illustrations contain the relevant planned dimensions and an overview of the most important components of each system.

For existing buildings that do not have a new façade, particular attention must be paid to complying with the dimensions for the wall duct. If the wall opening is greater than 700 x 800 mm, the annular gap between the wall duct and the wall opening must not be completely covered by the weather or rodent guard grille.

Observe the respective price list, which always contains a complete and up-to-date list of available accessories.

During planning, also comply with the following general instructions and information, as well as the applicable standards and directives.

2.14.1 Wall-opening dimensions when using Vaillant air ducts

The following wall-breakthrough dimensions apply for the different installation possibilities when using Vaillant system accessories.

The way in which the EPP pipes for the ventilation system are connected also influences the required minimum room height, diameter and height measurement for the air pipe.

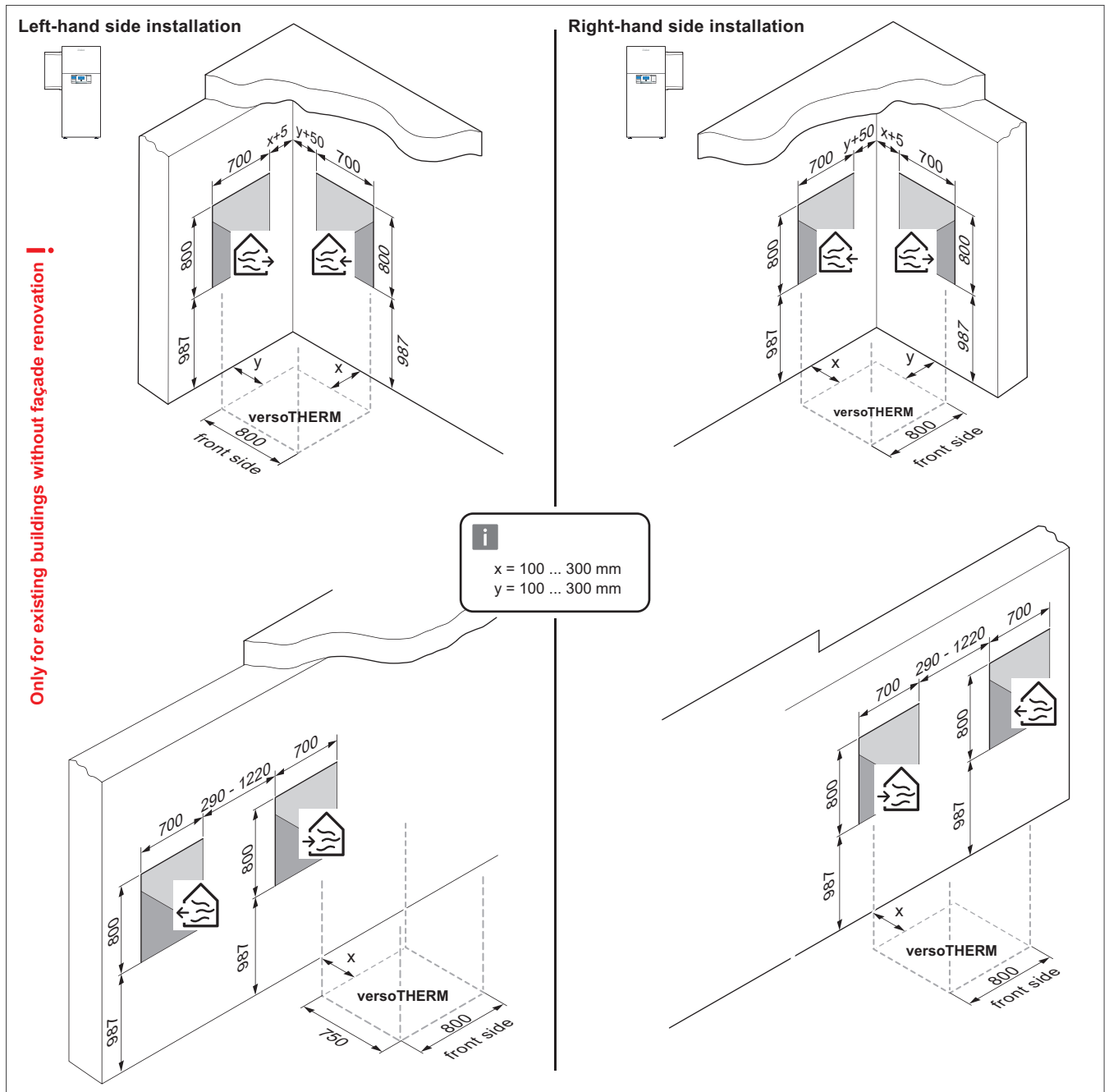


Fig. 79: Wall-opening dimensions when using Vaillant air ducts

Note

The floor's load-bearing capacity must be guaranteed in the installation area. The screed, a concrete pedestal or other floor structures must be designed for the unit's distributed load and must withstand the point loads at the unit's feet. There must be no installations in the installation area (underfloor heating, etc.).



2.14.2 Ground floor - corner installation

Corner installation on the ground floor

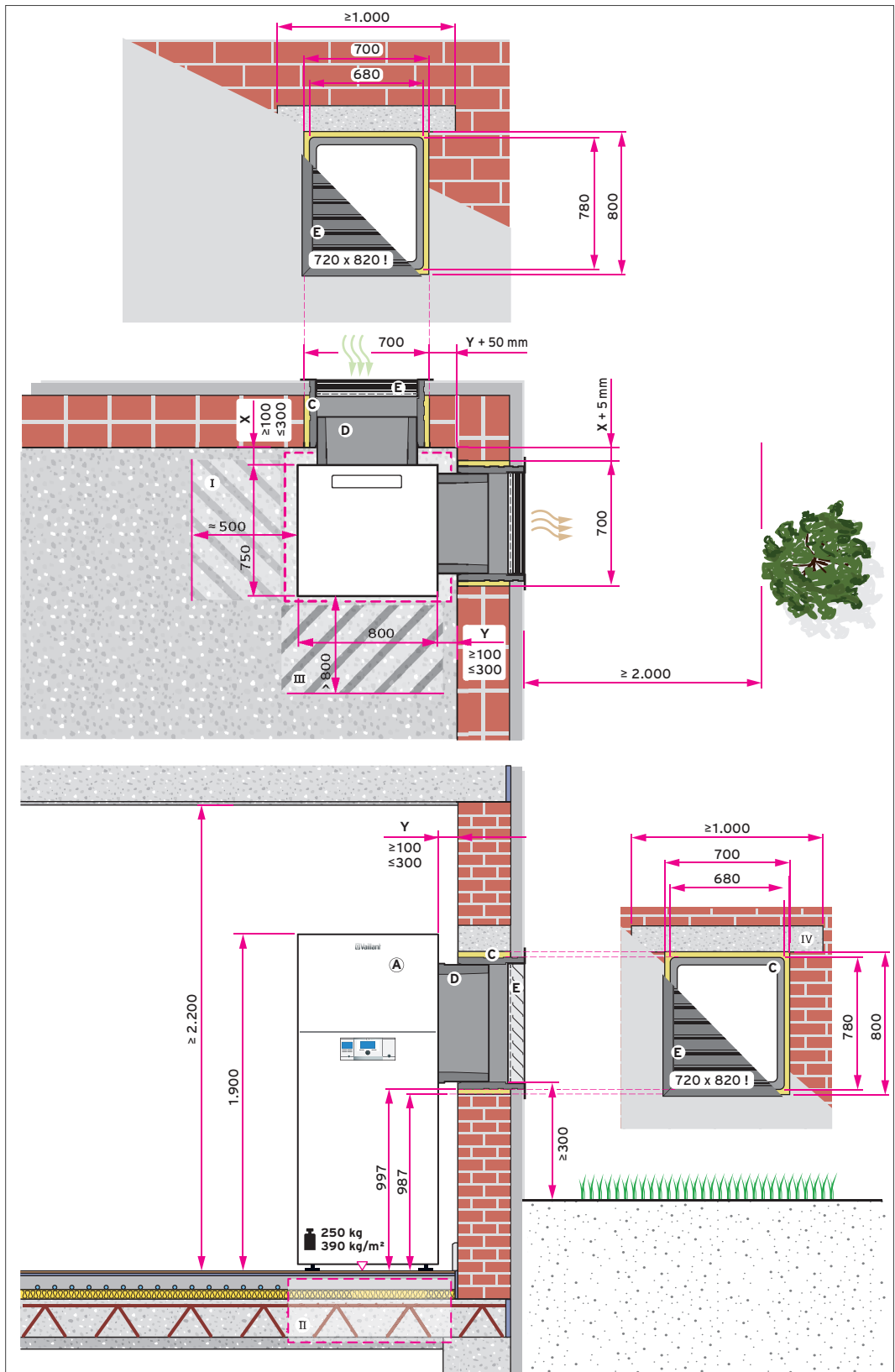


Fig. 80: versoTHERM installation situation, ground floor - installation in the corner of a room

Note

For existing buildings that do not have a new façade, particular attention must be paid to complying with the dimensions for the wall opening of maximum 700 x 800 mm. A larger wall opening is not completely covered by the weather or rodent guard grille.

**Note****Outer dimensions for clinker façades**

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
IV	–	–	Lintel above the wall opening (provided on-site)
A	–	1	versoTHERM
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

2.14.3 Cellar - corner installation, air supplied via light wells

Corner installation in the cellar with air supply via light wells.

Right-hand installation

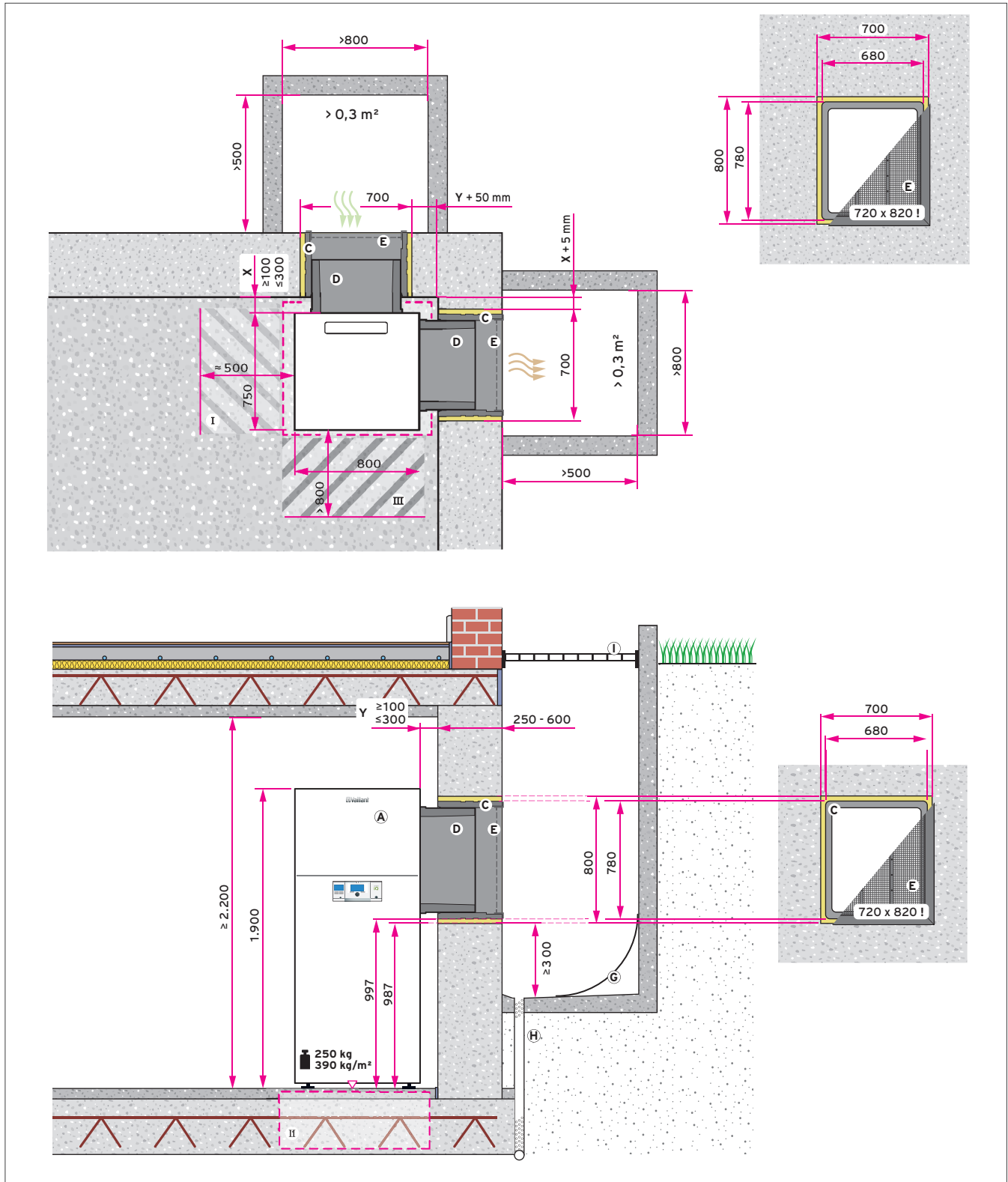


Fig. 81: versoTHERM installation situation, cellar - right-hand installation in the corner of a room, air supply via light wells

Note

For existing buildings that do not have a new façade, particular attention must be paid to complying with the dimensions for the wall opening of maximum 700 x 800 mm. A larger wall opening is not completely covered by the weather or rodent guard grille.



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation clearance to the left or right of the heat pump that must only be required for the installation. After successful set-up, the space can be used for other purposes.
II	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
III	–	–	Clearance in front of the product to allow for maintenance
A	–	1	versoTHERM
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010023378	2	VWZ air duct Internal dimensions: 500 x 600 mm
E	0010023530	2	VWZ rodent guard grille External dimensions: 720 x 820 mm
G	–	2	For concrete wells, an air guide plate must be used. In general, supplying air through plastic light wells is recommended as these facilitate air flow.
H	–	2	Water drain
I	–	2	Grille with a free opening cross-section of $\geq 0.3 \text{ m}^2$ To protect against small animals and foliage, a wire grille should also be fitted.

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

2.15 Set-up examples with cellar adapter for existing buildings without façade renovation

In the following set-up examples, the installation options with the Vaillant cellar adapter are displayed. With the cellar adapter, a height offset of 410 mm can be implemented for the air supply and extraction. This means that, in certain installation situations (e.g. for a building on a slope), the air can also be extracted via the surface of the earth without a light well.

The installation illustrations contain the relevant planned dimensions and an overview of the most important components of each system.

For existing buildings that do not have a new façade, particular attention must be paid to complying with the dimensions for the wall duct. If the wall opening is greater than 700 x 800 mm, the annular gap between the wall duct and the wall opening must not be completely covered by the weather or rodent guard grille.

Observe the respective price list, which always contains a complete and up-to-date list of available accessories.

During planning, also comply with the following general instructions and information, as well as the applicable standards and directives.

2.15.1 Wall-opening dimensions when using the Vaillant air ducts with a height offset of 410 mm

The following wall-breakthrough dimensions apply for the different installation possibilities when using Vaillant system accessories. The way in which the EPP pipes for the ventilation system are connected also influences the required minimum room height, diameter and height measurement for the air pipe.

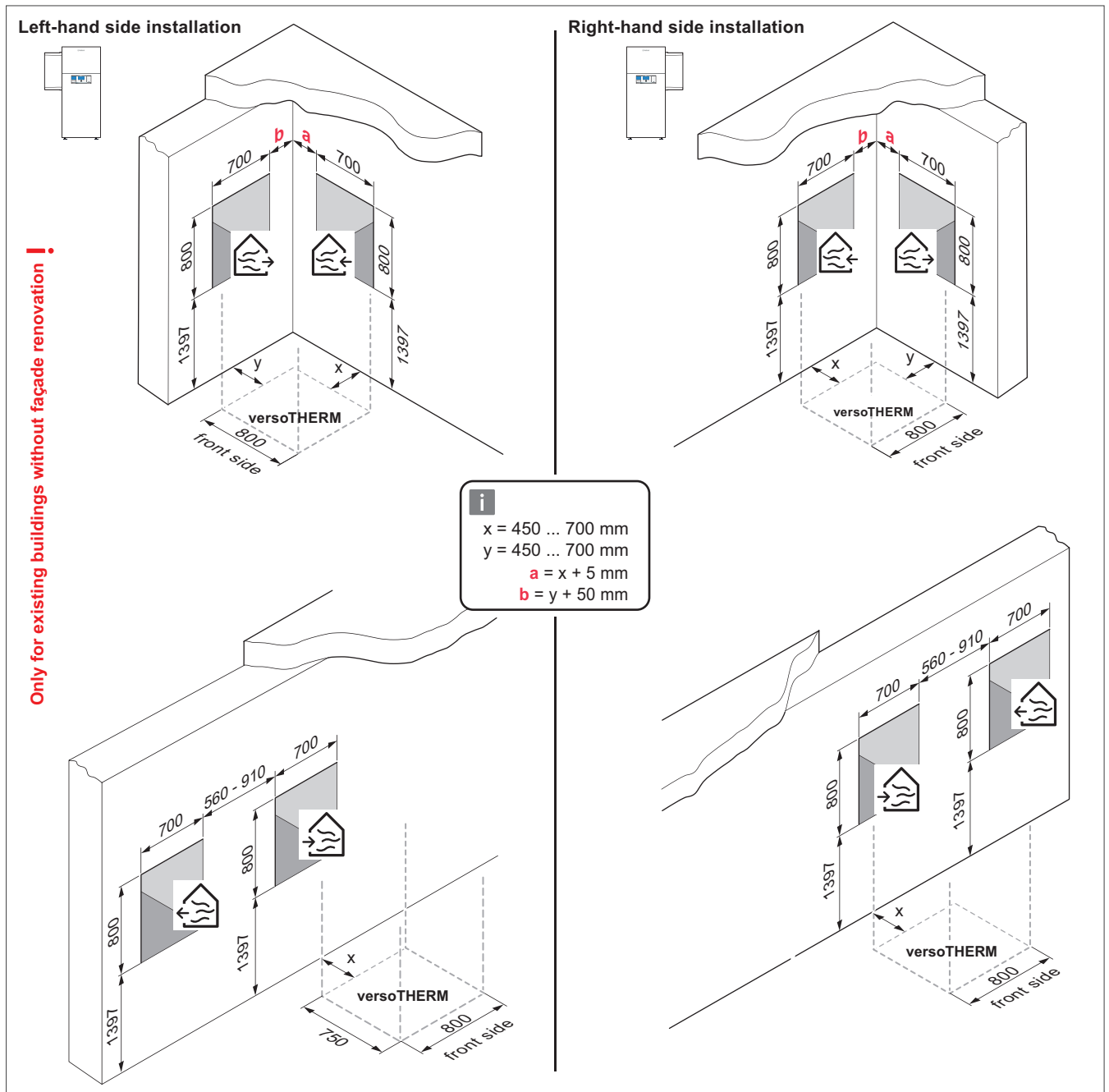


Fig. 82: Wall-opening dimensions when using the Vaillant air ducts with a height offset of 410 mm

Note

The floor's load-bearing capacity must be guaranteed in the installation area. The screed, a concrete pedestal or other floor structures must be designed for the unit's distributed load and must withstand the point loads at the unit's feet. There must be no installations in the installation area (underfloor heating, etc.).



2.15.2 Ground floor - corner installation with cellar adapter

Corner installation on the ground floor (slope) with cellar adapter.

Right-hand installation

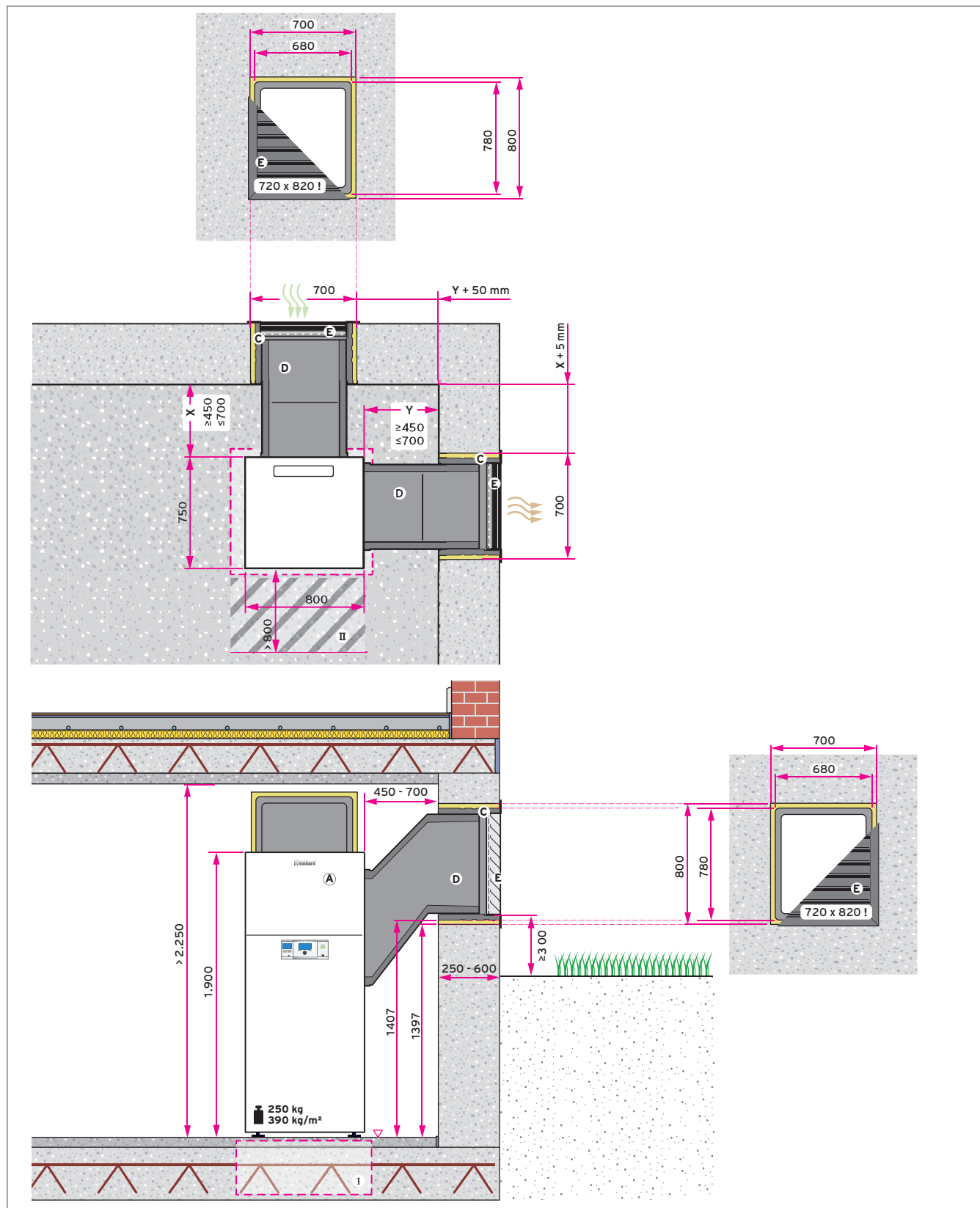


Fig. 83: versoTHERM installation situation, ground floor - right-hand installation in the corner of a room, air supply via cellar adapter

Note

For existing buildings that do not have a new façade, particular attention must be paid to complying with the dimensions for the wall opening of maximum 700 x 800 mm. A larger wall opening is not completely covered by the weather or rodent guard grille.

**Note****Outer dimensions for clinker façades**

For brick facing on a building, the brick breakthrough must correspond to the outer dimensions of the wall duct (680 mm x 780 mm).



Required accessories

	Art. no.	Quantity	Designation
I	–	–	Installation area under which installations (underfloor heating, etc.) must not be located Note the load-bearing capacity of the floor.
II	–	–	Clearance in front of the product to allow for maintenance
A	–	1	versoTHERM
C	0010023377	2	VWZ wall duct External dimensions: 680 x 780 mm
D	0010031010	2	VWZ air duct with a height change of 410 mm
E	0010023529	2	VWZ weather guard grille External dimensions: 720 x 820 mm

You can find instructions and information on how to design and choose the right pipe system for the building's air distribution system in the separate planning document for the Vaillant ventilation system.

2.16 Product description for the versoVAIR VAE 360/5 RH



Fig. 84: versoVAIR VAE 360/5 RH

Type overview

Unit designation	Order no.
VAE 360/5 RH	0010024013

Technical data

Technical data	Unit	VAE 360/5 RH
Heat exchanger type		Heat pump
Volume flow (min.-max.)	m ³ /h	60 - 360
Remaining feed head	At 360 m ³ /h	200
Extract air filter class (DIN EN 779 / ISO 16890)		G4/ISO coarse 65%
Power supply	V / Hz	230/50
Max. electr. power consumption	W	100
Environmental temperature (min.-max.)	°C	-20 / 50
Connection, can be selected (extract air, exhaust air)	mm	180/150 diameter / 210/180 diameter
Product dimensions (Height/width/depth)	mm	349 / 610 / 463

2.16.1 Special features

- Extract air ventilation system in conjunction with the versoTHERM plus
- Simple installation (Plug & Play)
- Integrated air humidity sensor
- Demand-dependent control system for the air volume flow
- Highly efficient EC fan motor
- Connection option for CO₂ sensors
- Can be combined with 160 mm diameter non-centralised outdoor air passages and Vaillant air duct systems
- Compatible with VRC 700 and VR 920 Internet communication module

2.16.2 Product equipment

- Housing made from noise- and heat-insulating EPP
- Volume flow control for the extract air fan can be constant or variable (automatic mode)
- Replaceable G4/ISO coarse 65% extract air filter
- Variable connectors for air ducts with 180/150 mm diameter (can be inserted into unit connections) and 210/180 mm diameter (connect with sleeve)
- Control via the versoTHERM plus control panel
- Optional via the VRC 700 system control or remote control with 3-stage switch plus automatic mode
- Hygiene covers for air duct connections

Note

Can only be used in conjunction with the versoTHERM plus. Non-centralised outdoor air passages and air duct accessories must be ordered separately.



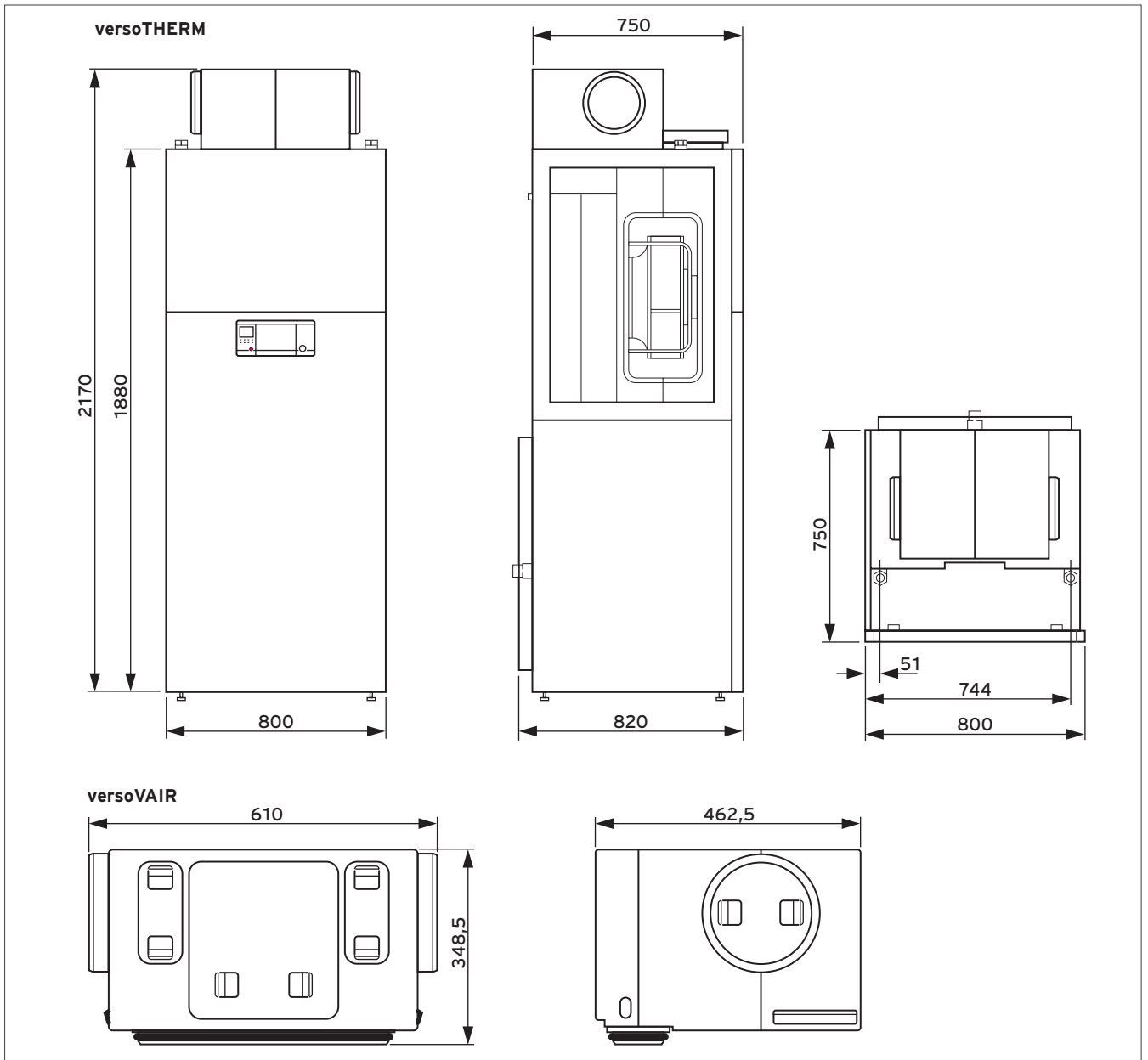


Fig. 85: Product dimensions and connection dimensions for the versoVAIR with versoTHERM plus

2.17 Basic hydraulic and wiring diagrams

2.17.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections










Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

2.17.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				 regulated	 direct		 Domestic hot water	 Heating	
0020249832	versoTHERM versoVAIR	VRC 700, VR 920	-	-	1 UFH	-	-	-	uniSTOR VIH RW
0020249836	versoTHERM versoVAIR	VRC 700, VR 70, VR 920	-	-	1 UFH	-	•	-	uniSTOR VIH SW
0020244223	versoTHERM ecoTEC	VRC 700, VR 70, VR 91, VR 32, VR 920	-	1 UFH	1 HC	VWZ MPS 40	-	-	auroSTOR VIH S
0020244224	versoTHERM ecoTEC	VRC 700, VR 71, VR 91, VR 32, VR 920	-	1 HC 1 UFH	Fancoil	VPS R	-	-	allSTOR excusiv, VPM W
0020244227	versoTHERM external boiler	VRC 700, VR 71, VR 91, VR 32, VR 920	-	1 HC 2 UFH	-	VWZ MPS 40	-	-	uniSTOR VIH R

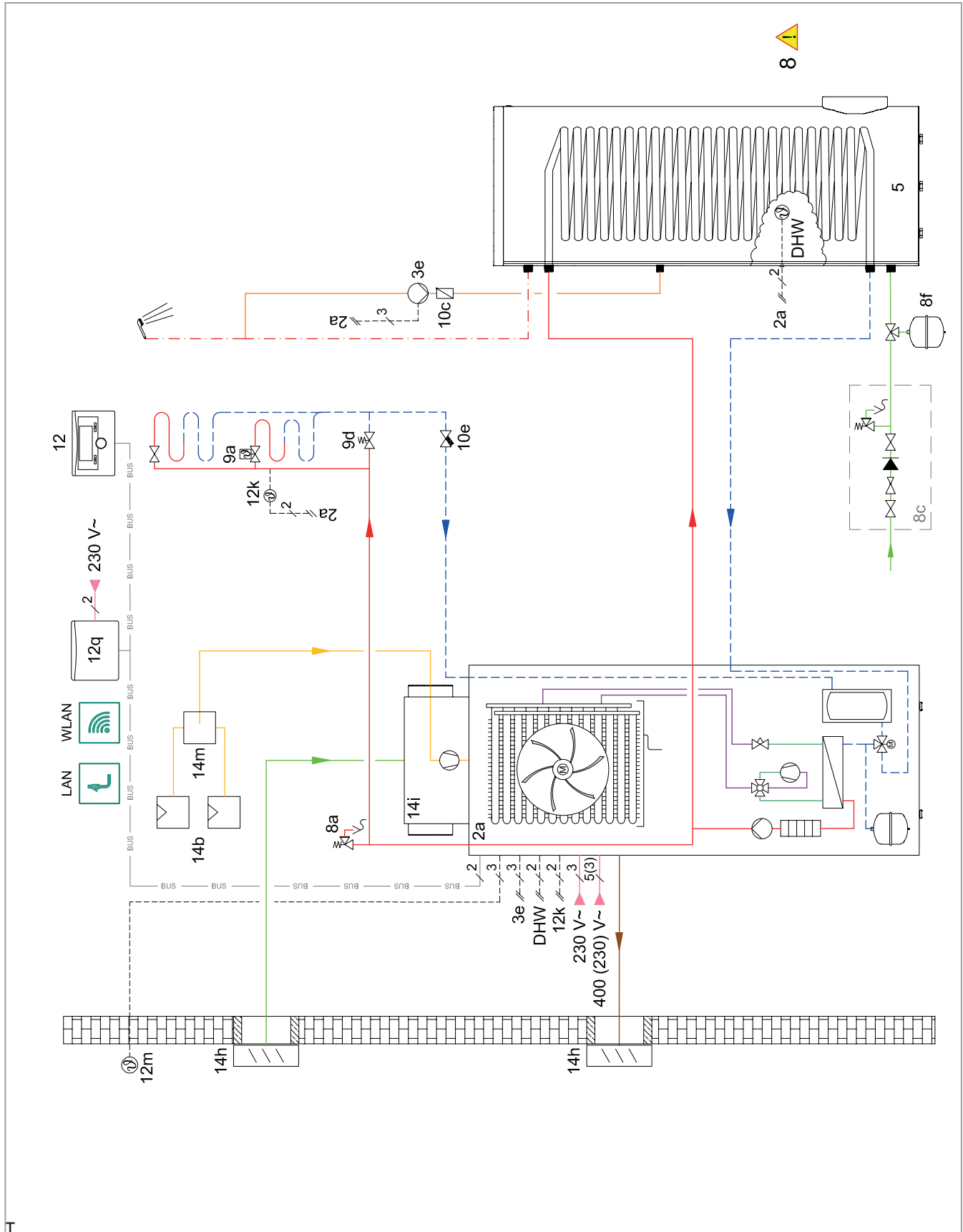


Fig 86: Basic hydraulic diagram

0020249832 - Wiring diagram

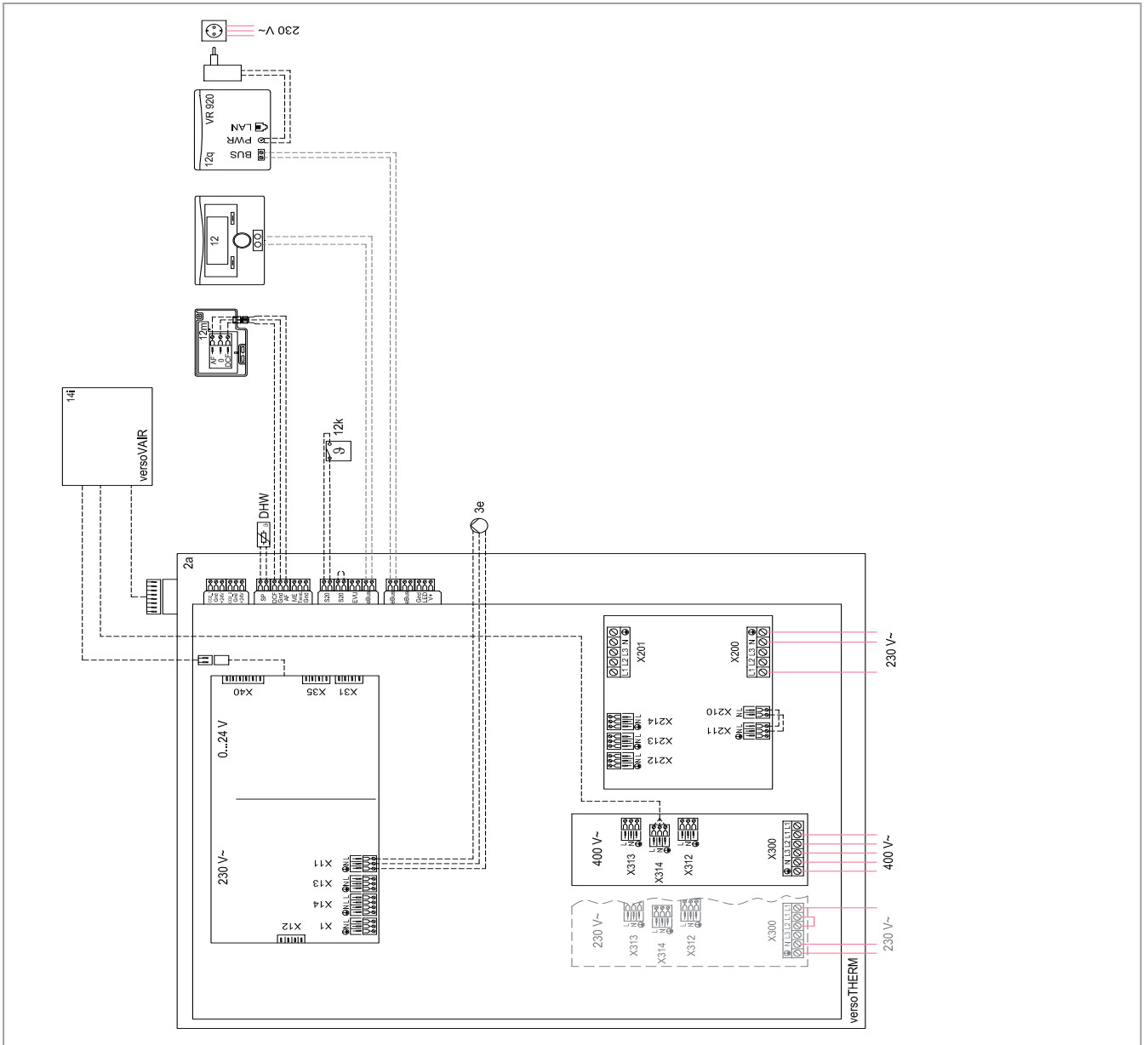


Fig 87: Wiring diagram

Individual components

- versoTHERM
- versovAIR
- uniSTOR VIH RW
- VRC 700
- VR 920

Setting

- VRC 700-Setting: 8

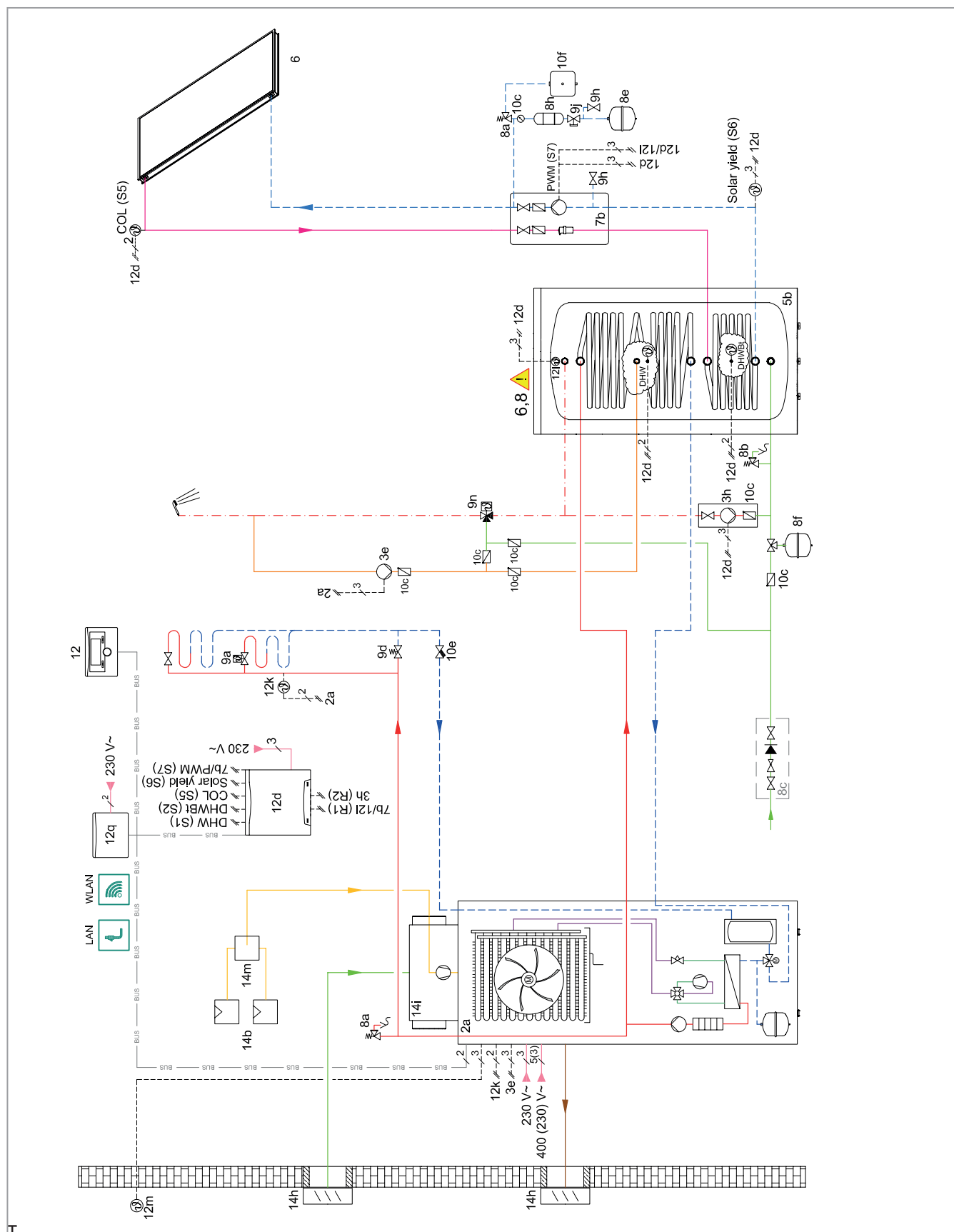


Fig 88: Basic hydraulic diagram

0020249836 - Wiring diagram

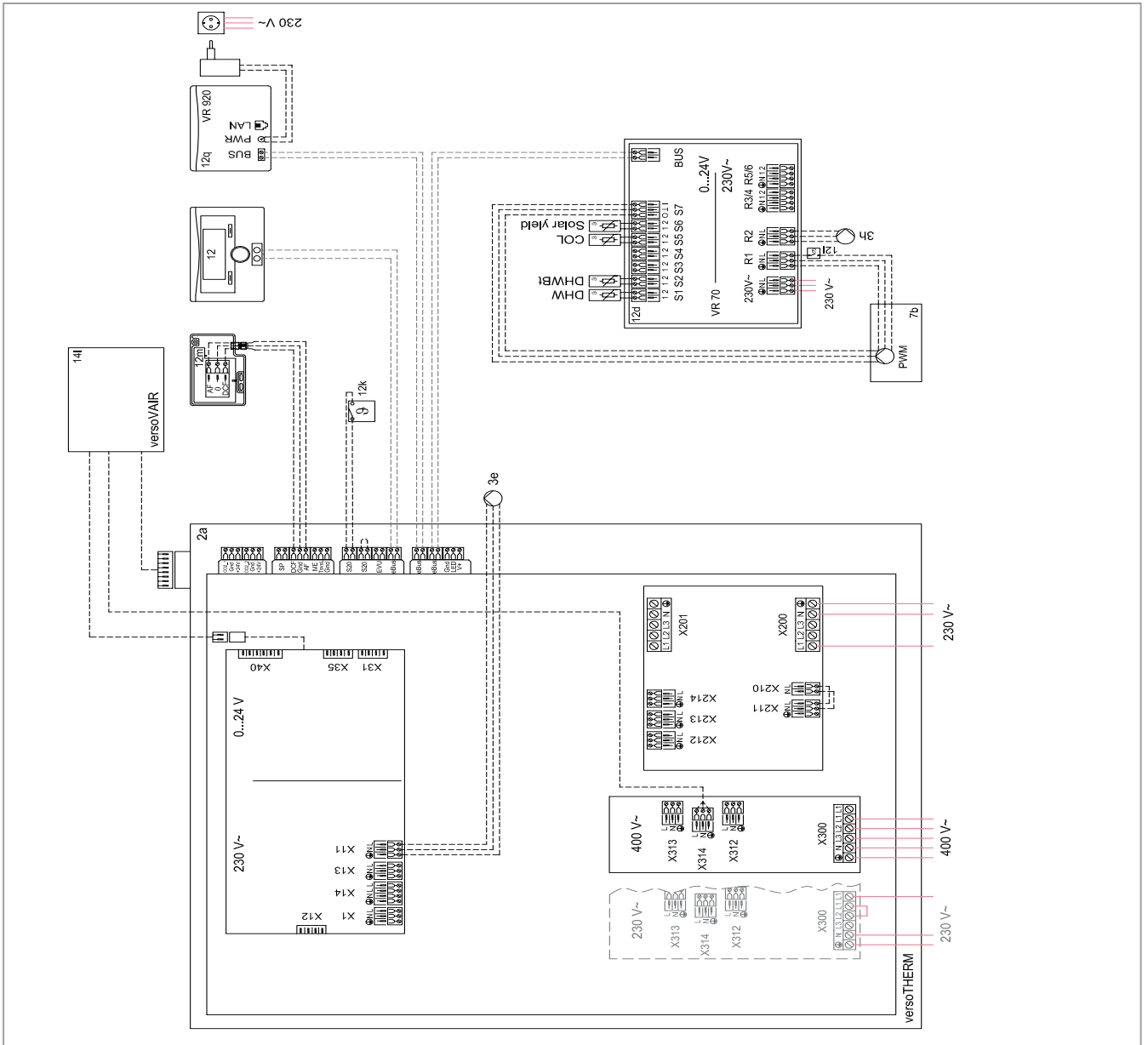


Fig 89: Wiring diagram

Individual components

- versoTHERM
- versovAIR
- uniSTOR VIH S
- auroTHERM VFK
- VRC 700
- VR 70
- VR 920

Setting

- VRC 700-Setting: 8
- VR 70-Setting: 6

0020244223 - Basic hydraulic diagram

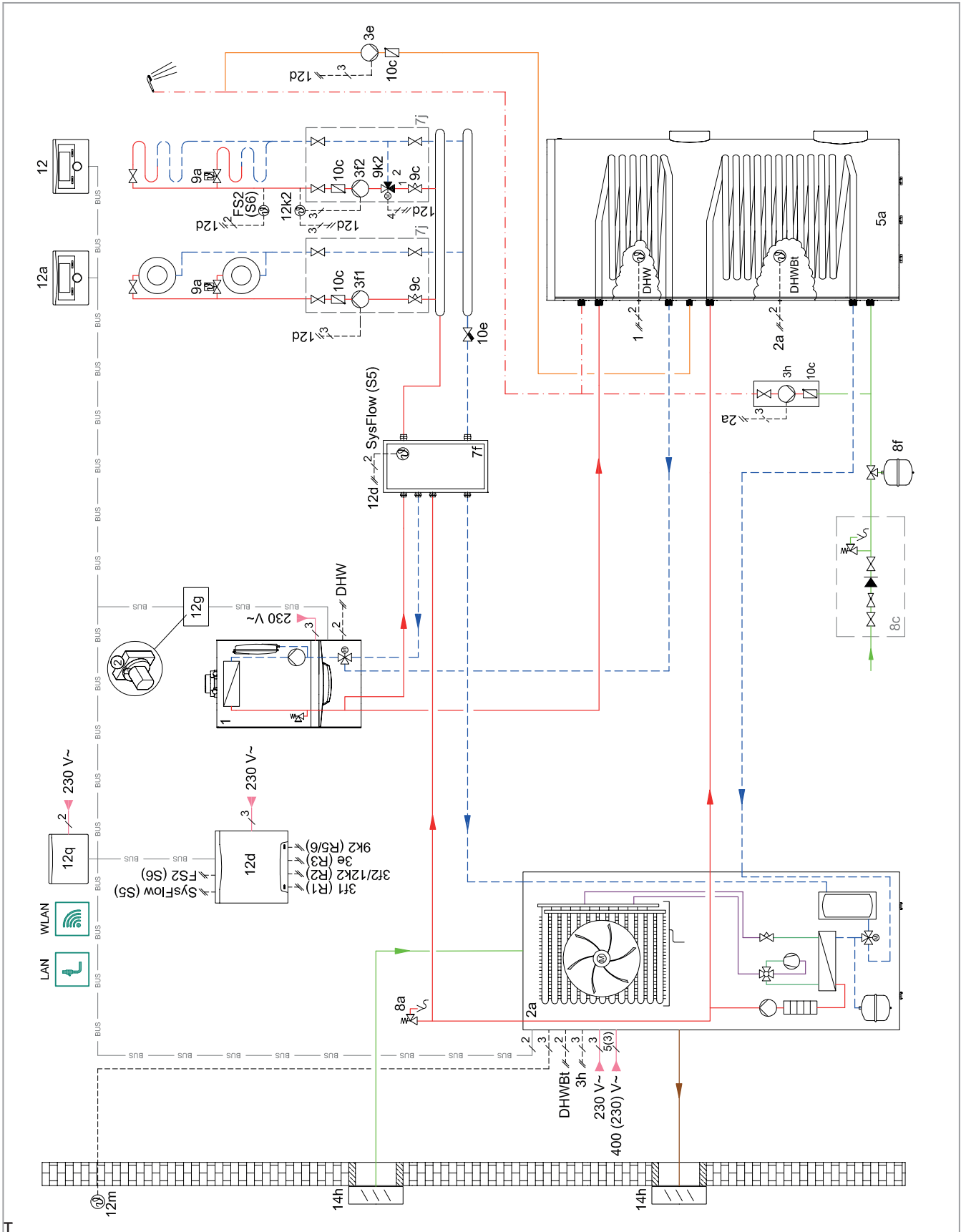


Fig 90: Basic hydraulic diagram

0020244223 - Wiring diagram

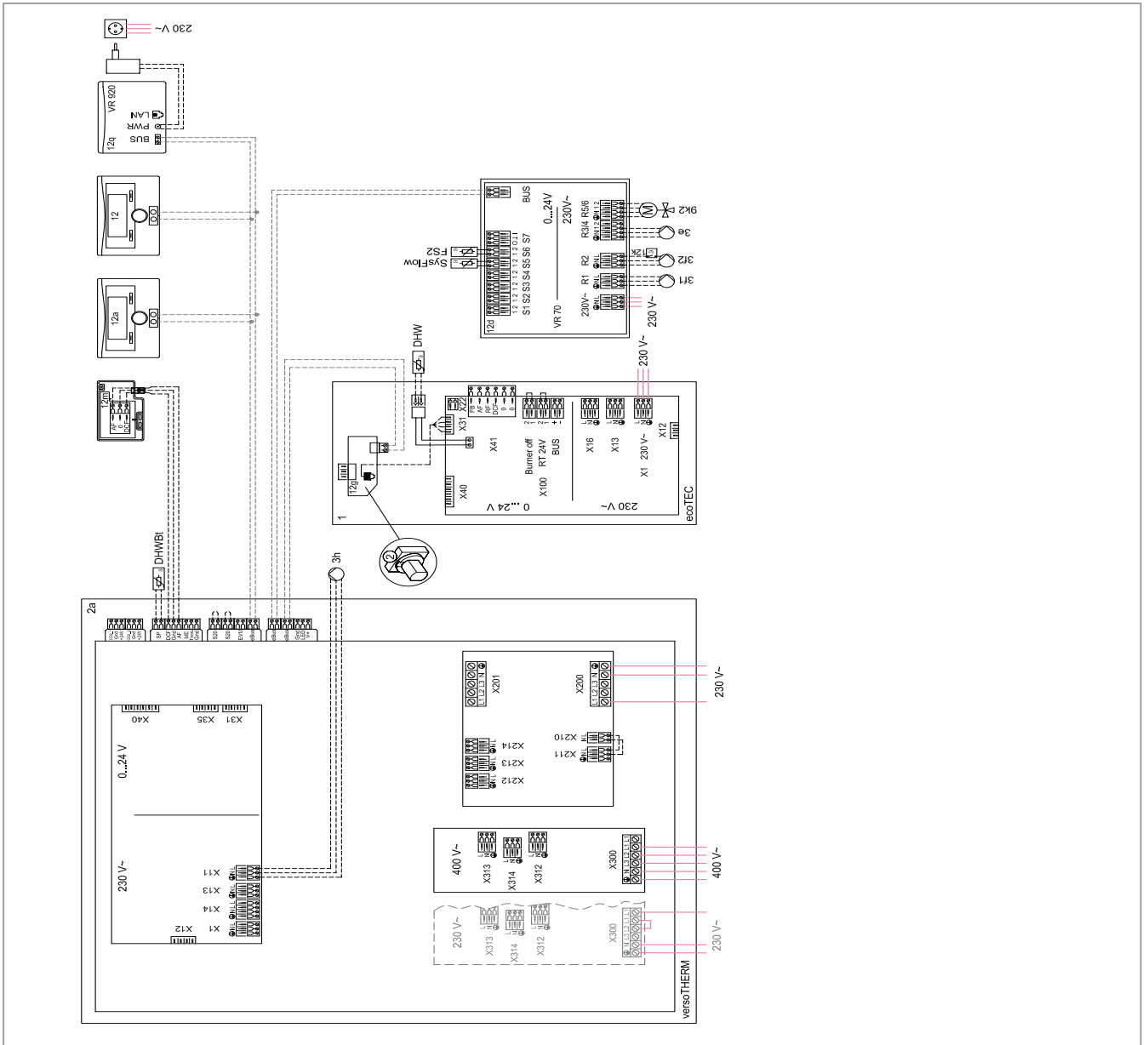


Fig 91: Wiring diagram

Individual components

- versoTHERM
- ecoTEC
- auroSTOR VIH S
- VRC 700
- VR 70
- VR 91
- VR 32
- VR 920

Setting

- VRC 700-Setting: 12
- VR 70-Setting: 1

0020244224 - Basic hydraulic diagram

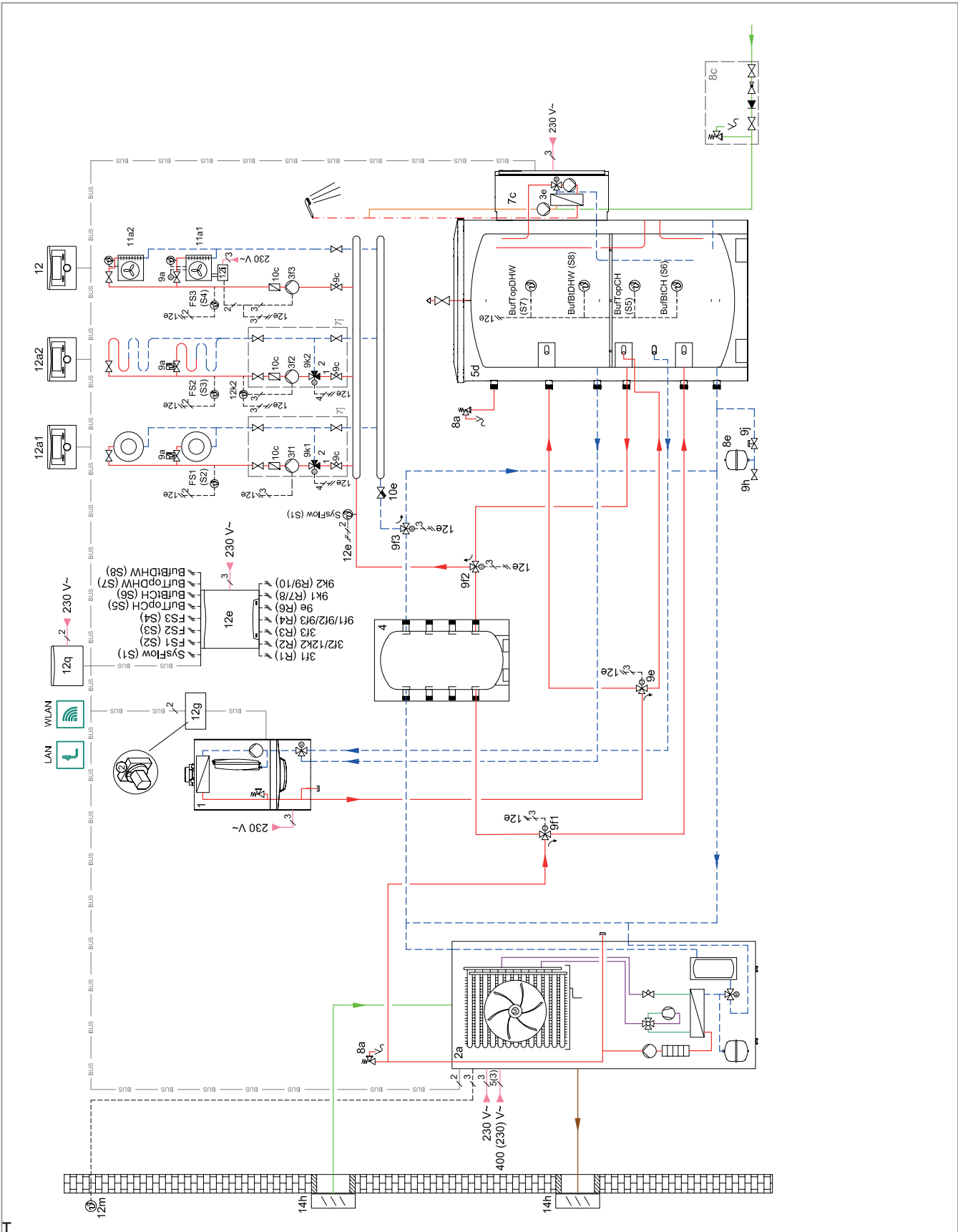


Fig 92: Basic hydraulic diagram

0020244224 - Wiring diagram

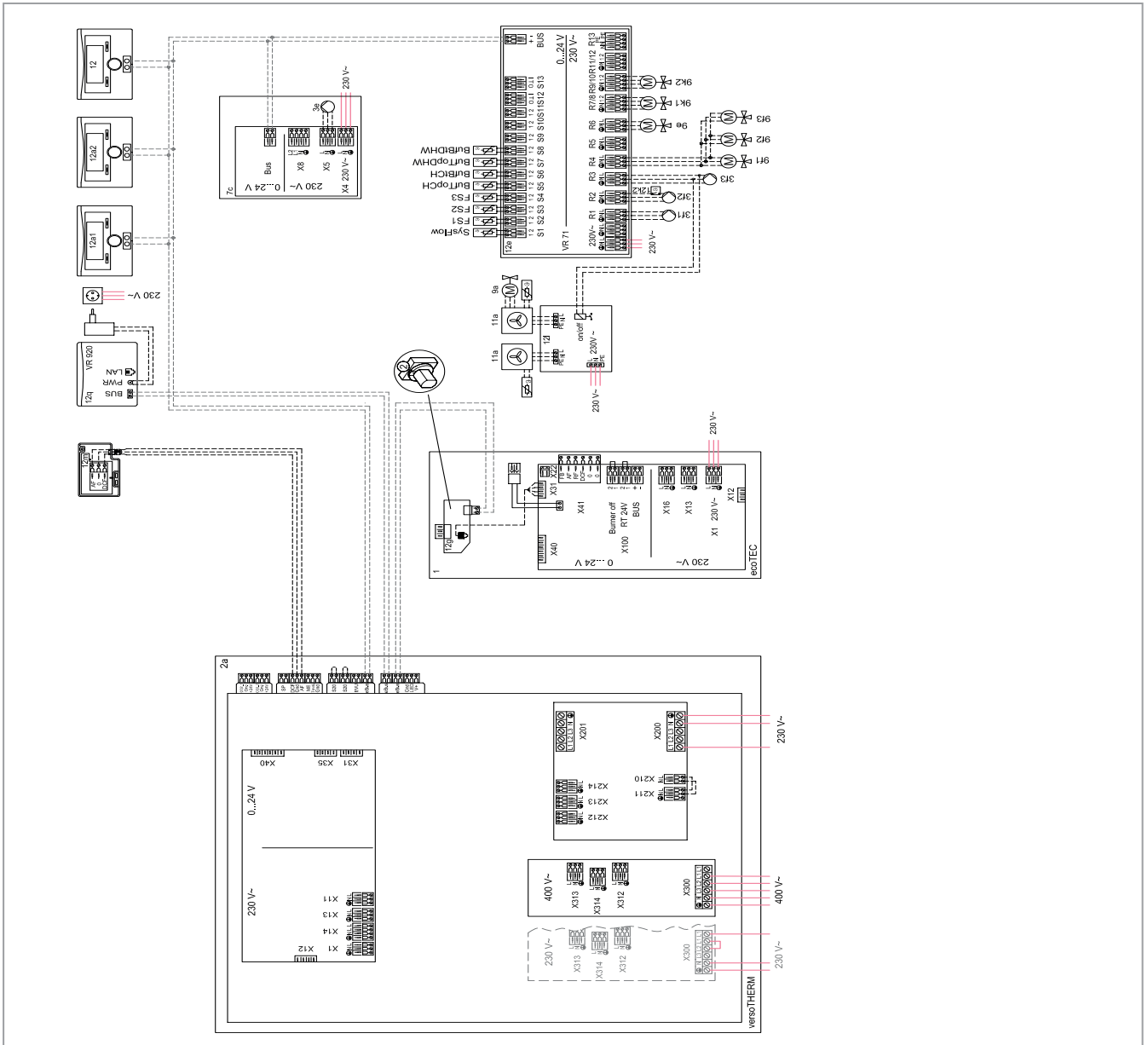


Fig 93: Wiring diagram

Individual components

- fversoTHERM
- ecoTEC
- allISTOR exclusiv
- VPM W
- VPS R
- VRC 700
- VR 71
- VR 91
- VR 32
- VR 920

Setting

- VRC 700-Setting: 16
- VR 71-Setting: 6

0020244227 - Basic hydraulic diagram

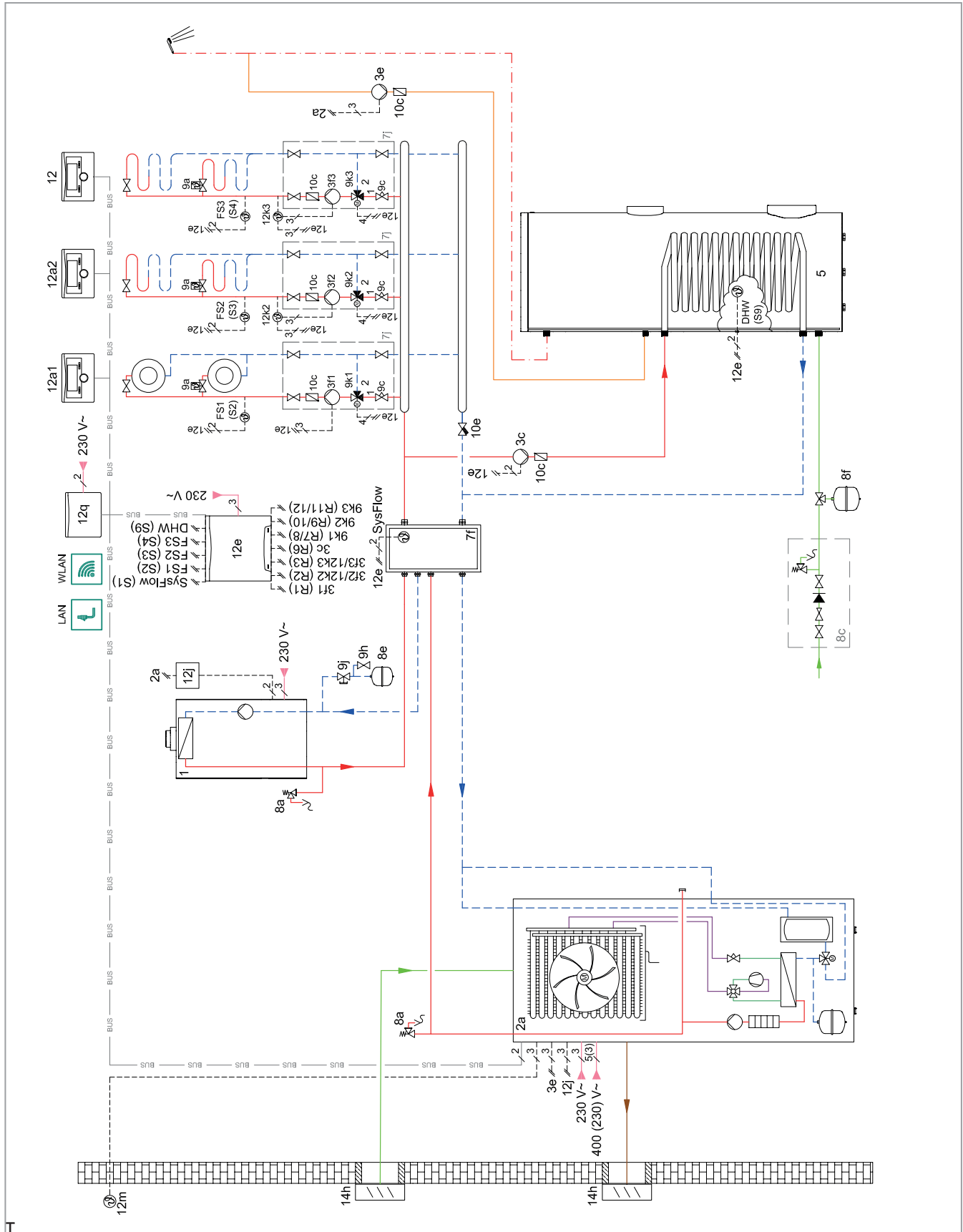


Fig 94: Basic hydraulic diagram

0020244227 - Wiring diagram

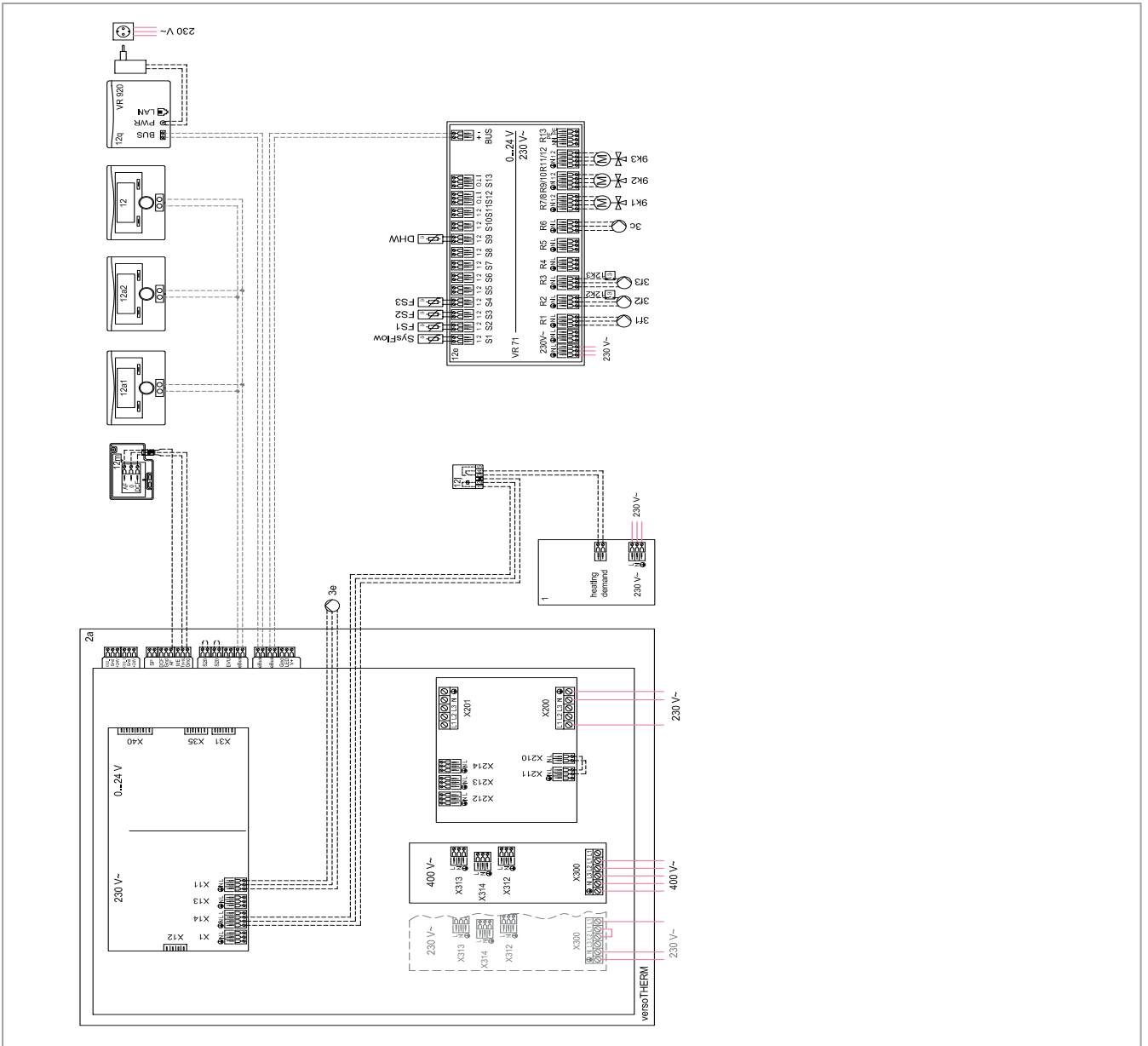


Fig 95: Wiring diagram

Individual components

- versoTHERM
- bestehender Wärmeproduzierer
- uniSTOR VIH R
- VWZ MPS 40
- VRC 700
- VR 71
- VR 91
- VR 32
- VR 920

Setting

- VRC 700-Setting: 8
- VR 71-Setting: 3



3. Product information for the flexoTHERM exclusive

Update 10
New product overview

3.1 Product combinations



Fig. 96: Product combinations

Product combination overview for the flexoTHERM VWF ..7/4

	Heat pump			Decoupler modules		Domestic hot water cylinder	Control	Photovoltaics
	Brine/water flexoTHERM VWF ..7/4 (1)	Air/water flexoTHERM VWF ..7/4 (1) + aroCOLLECT VWL 11/4 (2)	Water/water flexoTHERM VWF ..7/4 (1) + fluoCOLLECT VWW/4 (3)	Buffer cylinder Heating and cooling VP RW 45/2 B (4) VPS R 100/1 M (5) VPS R 200/1 B (6)	Buffer cylinder Heating allISTOR plus/exclusive (7)	uniSTOR (8)	VRC 700 or VRC 720 (9)	PV modules and inverters (10)
Heating only	•	•	•	◦	◦	–	•	•
Heating and domestic hot water generation	•	•	•	◦	◦	•	•	•
Heating, domestic hot water generation and cooling	•	•	•	•	–	•	•	•
Heat pump cascade (heating)	•	•	•	–	•	–	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

3.2 Product description of the flexoTHERM exclusive VWF 57/4 - VWF 197/4



Fig. 97: flexoTHERM exclusive

3.2.1 Special features

- Bears the Green iQ label
- The Sound Safe System ensures that the heat pump is particularly quiet when running
- Flow temperatures of up to 65 °C for modernisation with EVI, even at low outside temperatures
- High level of efficiency thanks to the advanced, durable heat pump scroll compressor
- 10-year material guarantee for the compressor

3.2.2 Potential applications

- Heating and hot water generation

In order to use the active cooling function, the heating system must be prepared on-site.

3.2.3 Equipment

- Free iPhone and Android app for end customers
- High-efficiency pumps in the heating/brine circuit
- Domestic hot water prioritising diverter valve
- 9 kW electric back-up heater, multistage
- In-rush current limiter
- Sensor-controlled refrigerant circuit with EVI technology
- Integrated active cooling mode
- Heat meter and electricity meter integrated as standard
- aroCOLLECT: Particularly quiet, modulating EC fan
- fluoCOLLECT: Nickel-soldered stainless steel heat exchanger, option to connect an expansion relief valve, integrated manometer for the brine circuit, filling device for the brine circuit
- Optional: Particularly quick installation and start-up with accessory: Pre-installation jig 0020229713 can be used for flexoTHERM and 0020205412 for flexoCOMPACT
- Optional: Passive cooling via the ground collector with accessory: VWZ NC 11 or 19

Note

The screwed connection must be ordered separately.



VR 10 sensors must be ordered separately in accordance with the basic hydraulic diagram.

Update 10 New efficiency class (EN14511:2018)

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Order no.
VWF 57/4	A+++ / A++ (A+++ to D) A++ / A++ (A+++ to D) A+++ / A++ (A+++ to D)	0010030744 0010030871 with aroCOLLECT 0010030879 with fluoCOLLECT
VWF 87/4	A+++ / A++ (A+++ to D) A++ / A++ (A+++ to D) A+++ / A++ (A+++ to D)	0010030745 0010030872 with aroCOLLECT 0010030880 with fluoCOLLECT
VWF 117/4	A+++ / A++ (A+++ to D) A++ / A+ (A+++ to D) A+++ / A+++ (A+++ to D)	0010030746 0010030873 with aroCOLLECT 0010030881 with fluoCOLLECT
VWF 157/4	A+++ / A++ (A+++ to D) A++ / A++ (A+++ to D) A+++ / A+++ (A+++ to D)	0010030747 0010030874 with aroCOLLECT 0010030882 with fluoCOLLECT
VWF 197/4	A+++ / A++ (A+++ to D) A++ / A++ (A+++ to D) A+++ / A+++ (A+++ to D)	0010030748 0010030875 with aroCOLLECT 0010030883 with fluoCOLLECT

3.3 Technical data

3.3.1 General

Dimensions

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Product dimensions, height, without adjustable feet	1,183 mm	1,183 mm	1,183 mm	1,183 mm	1,183 mm
Product dimensions, width	595 mm	595 mm	595 mm	595 mm	595 mm
Product dimensions, depth	600 mm	600 mm	600 mm	600 mm	600 mm
Weight, with packaging	155 kg	170 kg	178 kg	185 kg	197 kg
Weight, without packaging	145 kg	160 kg	168 kg	176 kg	187 kg
Weight, ready for operation	151 kg	167 kg	175 kg	187 kg	200 kg

Electrics

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Compressor/heating circuit rated voltage	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz
Control circuit rated voltage	1~/N/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz
Auxiliary heater rated voltage	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz
Power factor	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$
Required network impedance Z_{max} with in-rush current limiter	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)
In-rush current with in-rush current limiter	$\leq 15 A$	$\leq 19 A$	$\leq 22 A$	$\leq 26 A$	$\leq 30 A$
Measuring current, max.	19.8 A	21.2 A	23.4 A	25.2 A	30.4 A
Min. electrical power consumption	1.40 kW	2.00 kW	2.50 kW	3.30 kW	4.70 kW
Max. electrical power consumption	11.5 kW	12.8 kW	14.1 kW	15.6 kW	17.8 kW
Max. electrical power consumption of auxiliary heater	9 kW	9 kW	9 kW	9 kW	9 kW
IP rating EN 60529	IP 10B	IP 10B	IP 10B	IP 10B	IP 10B

Hydraulics

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heating flow/return connection	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "
Heat source flow/return connection	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "
Heating expansion vessel connection	G 3/4 "	G 3/4 "	G 3/4 "	G 3/4 "	G 3/4 "

Heat source circuit/brine circuit

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Brine content of the brine circuit in the heat pump	2.5 l	3.1 l	3.6 l	4.5 l	5.3 l
Brine circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe
Min. brine fluid operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. brine fluid operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Max. electrical power consumption, brine circuit pump	76 W	76 W	130 W	310 W	310 W
Brine pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump	High-efficiency pump	High-efficiency pump

Building circuit/heating circuit

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heating circuit water contents in the heat pump	3.2 l	3.9 l	4.4 l	5.8 l	6.5 l
Heating circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe
Permissible heating water condition	Do not add antifreeze or corrosion inhibitors to heating water. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.				
Min. heating circuit operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. heating circuit operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Min. heating mode flow temperature	25 °C	25 °C	25 °C	25 °C	25 °C
Max. heating mode target flow temperature with external auxiliary heater	75 °C	75 °C	75 °C	75 °C	75 °C
Max. heating mode target flow temperature without auxiliary heater	65 °C	65 °C	65 °C	65 °C	65 °C
Min. cooling mode flow temperature	5 °C	5 °C	5 °C	5 °C	5 °C
Max. electrical power consumption, heating pump	63 W	63 W	63 W	140 W	140 W
Heating pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump	High-efficiency pump	High-efficiency pump

Refrigerant circuit

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Refrigerant type	R410A	R410A	R410A	R410A	R410A
Refrigerant content of the refrigerant circuit in the heat pump	1.50 kg	2.40 kg	2.50 kg	3.05 kg	3.95 kg
Global warming potential (GWP) in accordance with regulation (EU) no. 517/2014	2088	2088	2088	2088	2088
CO ₂ equivalent	3.132 t	5.011 t	5.220 t	6.368 t	8.248 t
Global warming potential 100 (GWP ₁₀₀) in accordance with regulation (EC) no. 842/2006	1975	1975	1975	1975	1975
Expansion valve design	Electronic	Electronic	Electronic	Electronic	Electronic
Permissible operating pressure (relative)	≤ 4.6 MPa	≤ 4.6 MPa	≤ 4.6 MPa	≤ 4.6 MPa	≤ 4.6 MPa
Compressor type	Scroll	Scroll	Scroll	Scroll	Scroll
Oil type	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)
Oil filling quantity	0.75 l	1.25 l	1.25 l	1.24 l	1.89 l

Update 10
New technical data (EN14511:2018)

Installation site

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Installation site	Interior/dry	Interior/dry	Interior/dry	Interior/dry	Interior/dry
Installation room volume complying with EN 378	3.41 m ³	5.45 m ³	5.68 m ³	6.93 m ³	8.98 m ³
Permissible environmental temperature at the installation site	7 to 25 °C	7 to 25 °C	7 to 25 °C	7 to 25 °C	7 to 25 °C
Permissible relative air humidity	40 to 75 %	40 to 75 %	40 to 75 %	40 to 75 %	40 to 75 %

3.3.2 Brine heat source

Heat source circuit/brine circuit

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Min. source inlet temperature (hot brine) in heating mode	-10 °C	-10 °C	-10 °C	-10 °C	-10 °C
Max. source inlet temperature (hot brine) in heating mode	25 °C	25 °C	25 °C	25 °C	25 °C
Min. source inlet temperature (hot brine) in cooling mode	0 °C	0 °C	0 °C	0 °C	0 °C
Max. source inlet temperature (hot brine) in cooling mode	30 °C	30 °C	30 °C	30 °C	30 °C
Nominal flow ΔT 3 K for BO/W35	1,290 l/h	2,320 l/h	3,000 l/h	3,590 l/h	4,780 l/h
Min. volume flow during continuous operation at the application limits	1,110 l/h	2,140 l/h	2,460 l/h	3,380 l/h	3,840 l/h
Max. volume flow during continuous operation at the application limits	1,290 l/h	2,320 l/h	3,000 l/h	3,590 l/h	4,780 l/h
Max. remaining feed head with ΔT 3 K for BO/W35	0.062 MPa	0.039 MPa	0.051 MPa	0.098 MPa	0.082 MPa
Brine circuit pump electrical power consumption for BO/W35 ΔT 3 K with an external pressure loss of 250 mbar in the brine circuit	44 W	62 W	64 W	83 W	121 W
Brine fluid type	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.

Building circuit/heating circuit

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Nominal flow at ΔT 5 K	920 l/h	1,530 l/h	1,920 l/h	2,450 l/h	3,320 l/h
Max. remaining feed head with ΔT 5 K	0.065 MPa	0.045 MPa	0.035 MPa	0.073 MPa	0.045 MPa
Nominal flow with ΔT 8 K	570 l/h	980 l/h	1,240 l/h	1,600 l/h	2,180 l/h
Max. remaining feed head with ΔT 8 K	0.068 MPa	0.065 MPa	0.057 MPa	0.086 MPa	0.080 MPa
Min. volume flow during continuous operation at the application limits	570 l/h	980 l/h	1,240 l/h	1,600 l/h	2,180 l/h
Max. volume flow during continuous operation at the application limits	920 l/h	1,530 l/h	1,920 l/h	2,450 l/h	3,320 l/h
Heating pump electrical power consumption for BO/W35 ΔT 3 K with an external pressure loss of 250 mbar in the heating circuit	25 W	30 W	45 W	60 W	74 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heat output B0/W35 ΔT 5 K	5.28 kW	8.82 kW	11.18 kW	14.39 kW	19.62 kW
Effective power consumption for B0/W35 ΔT 5 K	1.20 kW	1.82 kW	2.34 kW	3.07 kW	4.32 kW
Coefficient of performance B0/W35 ΔT 5 K / EN 14511	4.41	4.84	4.77	4.69	4.54
Heat output B0/W45 ΔT 5 K	5.26 kW	8.76 kW	11.14 kW	13.97 kW	19.56 kW
Effective power consumption B0/W45 ΔT 5 K	1.56 kW	2.39 kW	3.03 kW	3.83 kW	5.38 kW
Coefficient of performance B0/W45 ΔT 5 K / EN 14511	3.37	3.67	3.68	3.65	3.64
Heat output B0/W55 ΔT 8 K	5.34 kW	8.94 kW	11.33 kW	14.65 kW	19.94 kW
Effective power consumption for B0/W55 ΔT 8 K	1.85 kW	2.78 kW	3.66 kW	4.67 kW	6.26 kW
Coefficient of performance B0/W55 ΔT 8 K / EN 14511	2.89	3.22	3.10	3.14	3.18
Heat output B10/W35 ΔT 5 K	6.57 kW	10.50 kW	13.68 kW	17.57 kW	24.10 kW
Effective power consumption for B10/W35 ΔT 5 K	1.21 kW	1.85 kW	2.30 kW	2.94 kW	4.29 kW
Coefficient of performance B10/W35 ΔT 5 K / coefficient of performance EN 14511	5.42	5.68	5.96	6.00	5.62
Heat output B10/W45 ΔT 5 K	6.46 kW	10.63 kW	13.84 kW	17.54 kW	24.25 kW
Effective power consumption B10/W45 ΔT 5 K	1.56 kW	2.38 kW	2.99 kW	3.77 kW	5.32 kW
Coefficient of performance B10/W45 ΔT 5 K / coefficient of performance EN 14511	4.15	4.48	4.64	4.65	4.56
Heat output B10/W55 ΔT 8 K	6.51 kW	10.79 kW	14.14 kW	17.87 kW	24.72 kW
Effective power consumption for B10/W55 ΔT 8 K	1.87 kW	2.84 kW	3.63 kW	4.64 kW	6.28 kW
Coefficient of performance B10/W55 ΔT 8 K / coefficient of performance EN 14511	3.49	3.80	3.90	3.85	3.93
Sound power level B0/W35 EN 12102/EN 14511 $L_{w,i}$ in heating mode	39.8 dB(A)	42.4 dB(A)	45.2 dB(A)	49.9 dB(A)	48.4 dB(A)
Sound power level B0/W45 EN 12102/EN 14511 $L_{w,i}$ in heating mode	40.7 dB(A)	45.1 dB(A)	46.7 dB(A)	49.3 dB(A)	46.1 dB(A)
Sound power level B0/W55 EN 12102/EN 14511 $L_{w,i}$ in heating mode	40.6 dB(A)	49.9 dB(A)	47.2 dB(A)	48.0 dB(A)	48.4 dB(A)

Application limits for the heat pump: Heating (heat source = brine)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the brine circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

Application limits for the heat pump: Heating (Brine heat source):

- B15/W65
- B25/W59
- B25/W25
- B-10/W25
- B-10/W60
- B-5/W65

3.3.3 Air heat source

Heat source circuit/brine circuit

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA	2 x VWL 11/4 SA	2 x VWL 11/4 SA
Brine fluid type	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.

Building circuit/heating circuit

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA	2 x VWL 11/4 SA	2 x VWL 11/4 SA
Nominal flow at ΔT 5 K	1,070 l/h	1,510 l/h	1,990 l/h	2,650 l/h	3,440 l/h
Max. remaining feed head with ΔT 5 K	0.061 MPa	0.042 MPa	0.031 MPa	0.064 MPa	0.038 MPa
Nominal flow with ΔT 8 K	660 l/h	1,020 l/h	1,350 l/h	1,720 l/h	2,300 l/h
Max. remaining feed head with ΔT 8 K	0.069 MPa	0.056 MPa	0.053 MPa	0.084 MPa	0.075 MPa
Min. volume flow during continuous operation at the application limits	660 l/h	1,020 l/h	1,350 l/h	1,720 l/h	2,300 l/h
Max. volume flow during continuous operation at the application limits	1,070 l/h	1,510 l/h	1,990 l/h	2,650 l/h	3,440 l/h
Heating pump electrical power consumption for A7/W35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	28 W	36 W	50 W	70 W	78 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA	2 x VWL 11/4 SA	2 x VWL 11/4 SA
A2/W35 heat output	5.63 kW	7.79 kW	10.27 kW	13.81 kW	17.35 kW
Effective power consumption A2/W35	1.36 kW	1.99 kW	2.68 kW	3.38 kW	4.69 kW
Coefficient of performance A2/W35/EN 14511	4.14	3.91	3.83	4.09	3.70
Heat output A7/W35 ΔT 5 K	6.16 kW	8.74 kW	11.45 kW	15.19 kW	19.78 kW
Effective power consumption A7/W35 ΔT 5 K	1.31 kW	1.91 kW	2.50 kW	3.21 kW	4.50 kW
Coefficient of performance A7/W35 ΔT 5 K/EN 14511	4.69	4.58	4.58	4.73	4.39
Heat output A7/W45 ΔT 5 K	6.04 kW	9.00 kW	11.98 kW	15.48 kW	20.55 kW
Effective power consumption A7/W45 ΔT 5 K	1.66 kW	2.44 kW	3.17 kW	4.06 kW	5.61 kW
Coefficient of performance A7/W45 ΔT 5 K/EN 14511	3.64	3.69	3.77	3.82	3.67
Heat output A7/W55 ΔT 8 K	6.09 kW	9.45 kW	12.20 kW	15.88 kW	20.83 kW
Effective power consumption A7/W55 ΔT 8 K	1.97 kW	2.95 kW	3.84 kW	4.88 kW	6.62 kW
Coefficient of performance A7/W55 ΔT 8 K/EN 14511	3.09	3.21	3.17	3.25	3.15
Cooling output A35/W18 ΔT 5 K, active	6.53 kW	8.52 kW	12.02 kW	15.76 kW	20.22 kW
Effective power consumption A35/W18 ΔT 5 K, active	1.59 kW	2.73 kW	3.67 kW	4.23 kW	6.13 kW
Energy efficiency ratio A35/W18 EN 14511	4.12	3.12	3.28	3.73	3.30
Sound power level A7/W35 EN 12102/EN 14511 L_{w} in heating mode	40.3 dB(A)	45.8 dB(A)	44.4 dB(A)	48.7 dB(A)	48.1 dB(A)
Sound power level A7/W45 EN 12102/EN 14511 L_{w} in heating mode	41.0 dB(A)	50.1 dB(A)	46.4 dB(A)	49.4 dB(A)	46.1 dB(A)
Sound power level A7/W55 EN 12102/EN 14511 L_{w} in heating mode	40.9 dB(A)	52.7 dB(A)	46.1 dB(A)	48.0 dB(A)	46.4 dB(A)
Sound power level A35/W18 EN 12102/EN 14511 L_{w} in cooling mode	48.3 dB(A)	54.7 dB(A)	49.7 dB(A)	46.8 dB(A)	47.2 dB(A)

Application limits for the heat pump: Heating and cooling (heat source = air)

At the same volume flow rates in the heating circuit (ΔT 5K or ΔT 8 K) as for the nominal heat output test under standard nominal conditions.

Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Application limits for the heat pump: Heating (Air heat source)	A40/W65, A40/W25, A-22/W25, A-22/W25, A-2/W65, A15/W65	A40/W65, A40/W25, A-22/W25, A-22/W25, A-2/W65, A15/W65	A40/W65, A40/W25, A-22/W25, A-22/W25, A-2/W65, A15/W65	A40/W65, A40/W25, A-22/W25, A-22/W25, A-2/W65, A15/W65	A40/W65, A40/W25, A-22/W25, A-22/W25, A-2/W65, A15/W65
Application limits for the heat pump: Cooling (Air heat source)	A20/W20, A40/W20, A40/W5, A20/W5	A20/W20, A40/W20, A40/W5, A20/W5	A20/W20, A40/W20, A40/W5, A20/W5	A20/W20, A40/W20, A40/W5, A20/W5	A20/W20, A40/W20, A40/W5, A20/W5

3.3.4 Ground water heat source

Heat source circuit/brine circuit and groundwater circuit

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI	VWW 19/4 SI	VWW 19/4 SI
Nominal flow of groundwater at ΔT 3 K with W10W35	1,450 l/h	2,240 l/h	3,520 l/h	4,540 l/h	5,480 l/h
Brine fluid type	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.

Building circuit/heating circuit

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI	VWW 19/4 SI	VWW 19/4 SI
Nominal flow at ΔT 5 K	1,100 l/h	1,720 l/h	2,170 l/h	2,920 l/h	3,990 l/h
Max. remaining feed head with ΔT 5 K	0.065 MPa	0.042 MPa	0.023 MPa	0.056 MPa	0.021 MPa
Nominal flow with ΔT 8 K	680 l/h	1,130 l/h	1,420 l/h	1,870 l/h	2,610 l/h
Max. remaining feed head with ΔT 8 K	0.068 MPa	0.056 MPa	0.047 MPa	0.082 MPa	0.069 MPa
Min. volume flow during continuous operation at the application limits	680 l/h	1,130 l/h	1,420 l/h	1,870 l/h	2,610 l/h
Max. volume flow during continuous operation at the application limits	1,100 l/h	1,720 l/h	2,170 l/h	2,920 l/h	3,990 l/h
Heating pump electrical power consumption for W10/W35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	35 W	45 W	55 W	100 W	110 W

Update 10
New technical data (EN14511:2018)

Performance data

The following performance data is applicable to new products with clean heat exchangers.

Check conditions for determining the performance data in accordance with EN 14511

Installation: Connection pipes on the heat source side between VWF xx/4 and VWW xx/4 SI = 2 x 2 m (pipe internal diameter = 32 mm), environment circuit pump setting: Heating mode: Factory setting (auto), Cooling mode: Factory setting (auto)

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI	VWW 19/4 SI	VWW 19/4 SI
Heat output W10/W35 ΔT 5 K	6.32 kW	9.94 kW	12.88 kW	16.68 kW	23.00 kW
Effective power consumption for W10/W35 ΔT 5 K	1.35 kW	1.92 kW	2.47 kW	3.10 kW	4.42 kW
Coefficient of performance W10/W35 ΔT 5 K/ EN 14511	4.70	5.17	5.22	5.37	5.20
Heat output W10/W45 ΔT 5 K	6.21 kW	10.03 kW	12.84 kW	16.48 kW	23.53 kW
Effective power consumption for W10/W45 ΔT 5 K	1.70 kW	2.46 kW	3.20 kW	3.94 kW	5.68 kW
Coefficient of performance W10/W45 ΔT 5 K/ EN 14511	3.65	4.08	4.02	4.18	4.14
Heat output W10/W55 ΔT 8 K	6.23 kW	10.28 kW	13.22 kW	17.03 kW	23.70 kW
Effective power consumption for W10/W55 ΔT 8 K	2.12 kW	2.96 kW	3.93 kW	4.79 kW	6.74 kW
Coefficient of performance W10/W55 ΔT 8 K/EN 14511	2.94	3.47	3.36	3.55	3.52
Sound power level W10/W35 EN 12102/EN 14511 L_{wH} in heating mode	41.2 dB(A)	47.9 dB(A)	45.0 dB(A)	49.9 dB(A)	50.6 dB(A)
Sound power level W10/W45 EN 12102/EN 14511 L_{wH} in heating mode	40.9 dB(A)	50.3 dB(A)	47.8 dB(A)	48.0 dB(A)	47.8 dB(A)
Sound power level W10/W55 EN 12102/EN 14511 L_{wH} in heating mode	41.8 dB(A)	53.8 dB(A)	47.6 dB(A)	49.1 dB(A)	46.4 dB(A)

Application limits for the heat pump: Heating (heat source = ground water)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the groundwater circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

Application limits for the heat pump: Heating (Ground water heat source):

- W15/W65
- W25/W59
- W25/W25
- W10/W25
- W10/W65

3.4 Cooling output data

Brine/water cooling output

Brine/water cooling output (active only) based on EN 14511					
Cooling output B35 /W18 ΔT 5 K, active	7.00 kW	9.20 kW	15.70 kW	17.30 kW	24.10 kW
Power consumption B35 /W18 ΔT 5 K, active	1.30 kW	2.00 kW	2.50 kW	3.40 kW	4.90 kW
Coefficient of performance B35 /W18 ΔT 5 K, active	6.40	5.30	7.00	6.00	5.50

Air cooling output

Air heat source cooling output (active only) based on EN 14511					
Cooling output A35 /W18 ΔT 5 K, active	6.60 kW	8.60 kW	12.10 kW	15.80 kW	22.30 kW
Power consumption A35 /W18 ΔT 5 K, active	1.60 kW	2.80 kW	3.70 kW	4.40 kW	6.20 kW
Energy efficiency ratio A35/W18 EN 14511	4.30	3.20	3.40	3.90	3.40

Water/water cooling output

Water/water cooling output (active only) based on EN 14511					
Cooling output W35 /W18 ΔT 5 K, active	7.00 kW	8.40 kW	15.50 kW	18.13 kW	23.80 kW
Power consumption W35 /W18 ΔT 5 K, active	1.40 kW	2.10 kW	2.70 kW	3.50 kW	5.10 kW
Coefficient of performance W35 /W18 ΔT 5 K, active	5.30	4.70	5.60	5.00	4.70

3.5 Remaining feed head of building circuit pump

3.5.1 Remaining feed head for VWF 5x/4 building circuit pump at nominal volume flow

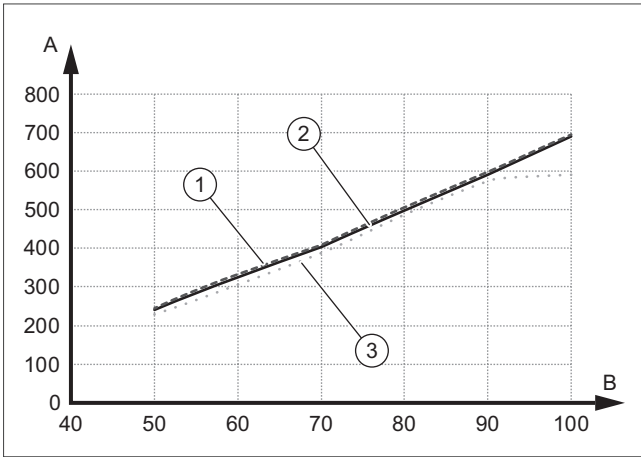


Fig. 98: Remaining feed head for VWF 5x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

3.5.3 Remaining feed head for VWF 11x/4 building circuit pump at nominal volume flow

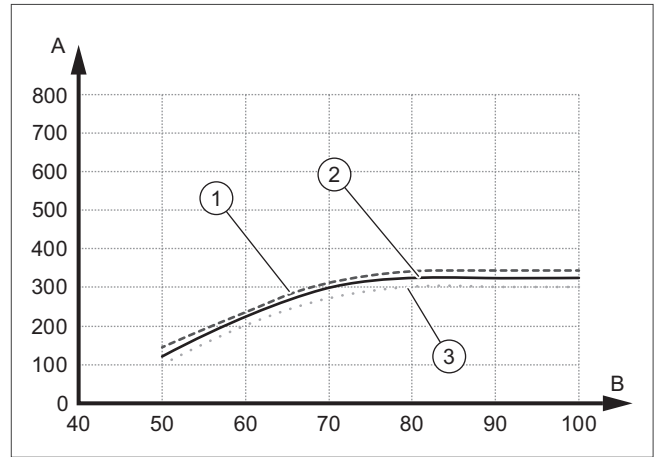


Fig. 100: Remaining feed head for VWF 11x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

3.5.2 Remaining feed head for VWF 8x/4 building circuit pump at nominal volume flow

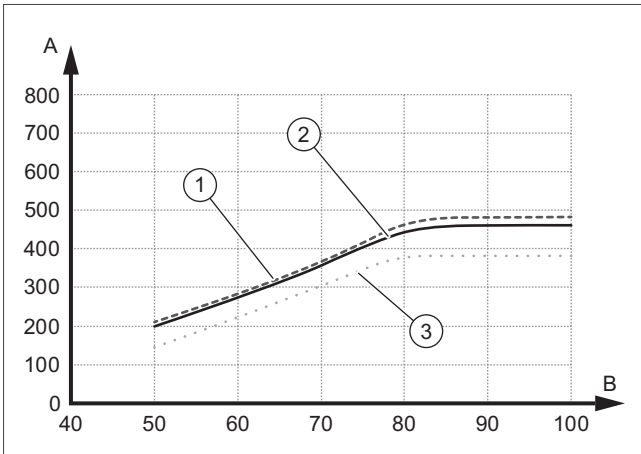


Fig. 99: Remaining feed head for VWF 8x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

3.5.4 Remaining feed head for VWF 15x/4 building circuit pump at nominal volume flow

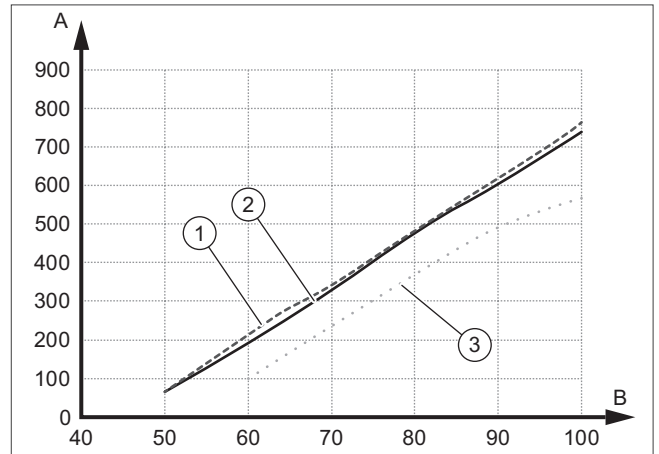


Fig. 101: Remaining feed head for VWF 15x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

3.5.5 Remaining feed head for VWF 19x/4 building circuit pump at nominal volume flow

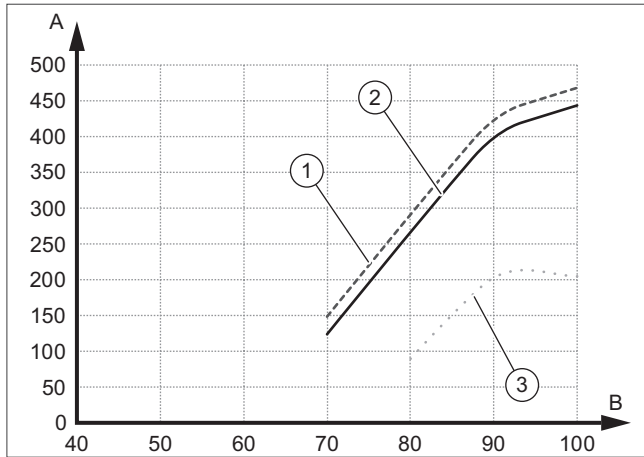


Fig. 102: Remaining feed head for VWF 19x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

3.6 Remaining feed head of environment circuit pump

3.6.1 Remaining feed head for VWF 5x/4 environment circuit pump at nominal volume flow

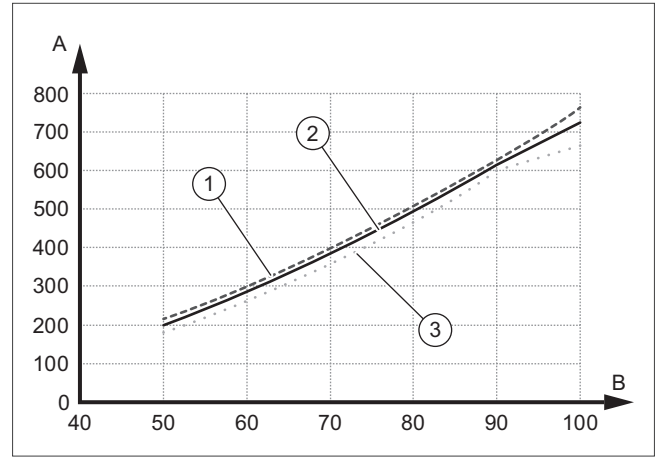


Fig. 103: Remaining feed head for VWF 5x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

3.6.2 Remaining feed head for VWF 8x/4 environment circuit pump at nominal volume flow

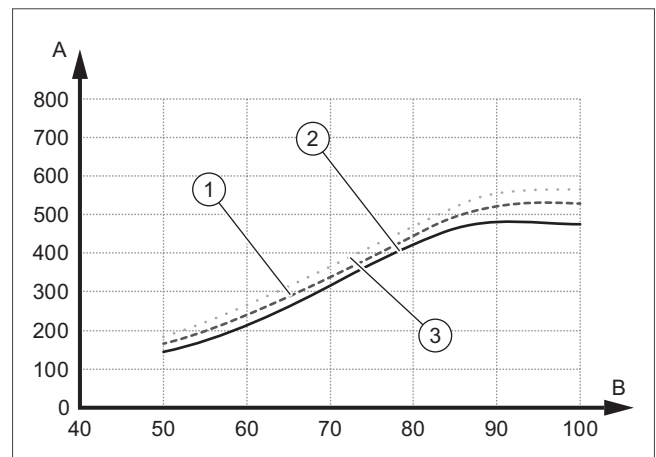


Fig. 104: Remaining feed head for VWF 8x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

3.6.3 Remaining feed head for VWF 11x/4 environment circuit pump at nominal volume flow

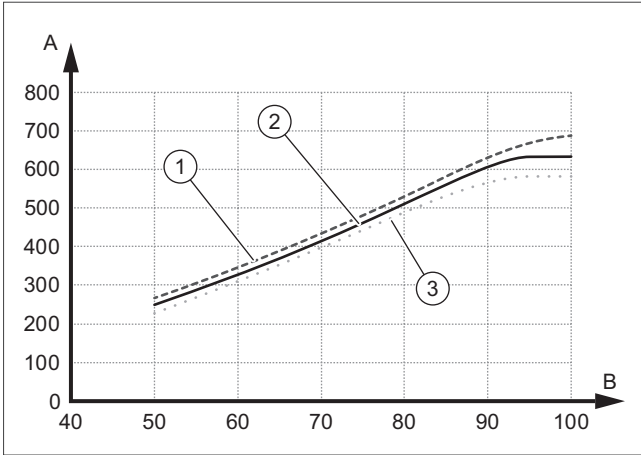


Fig. 105: Remaining feed head for VWF 11x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

3.6.5 Remaining feed head for VWF 19x/4 environment circuit pump at nominal volume flow

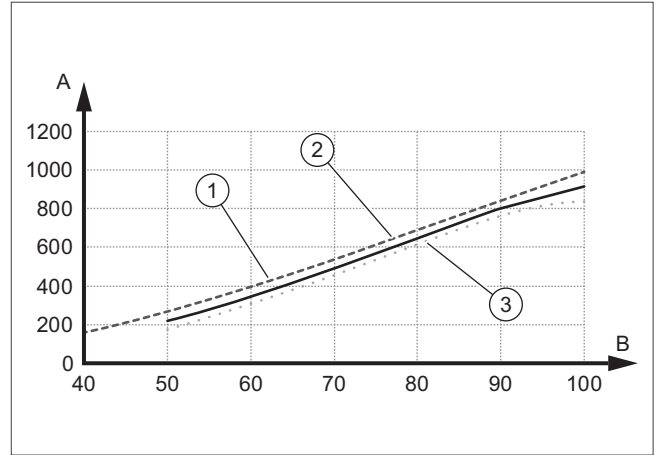


Fig. 107: Remaining feed head for VWF 19x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

3.6.4 Remaining feed head for VWF 15x/4 environment circuit pump at nominal volume flow

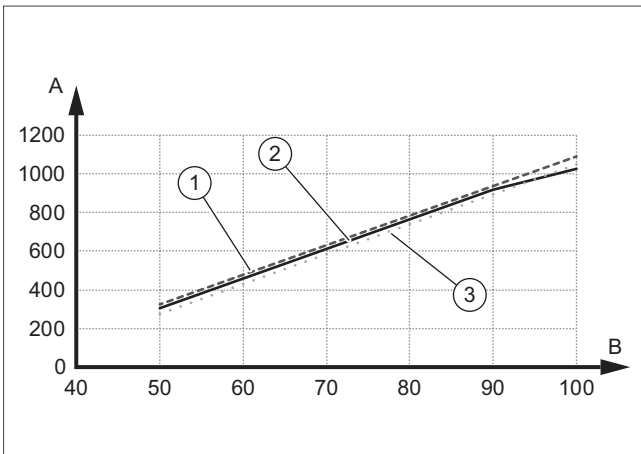


Fig. 106: Remaining feed head for VWF 15x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

3.7 Power output graphs

3.7.1 Brine heat source

Power output graph for the VWF 57/4 - brine-to-water

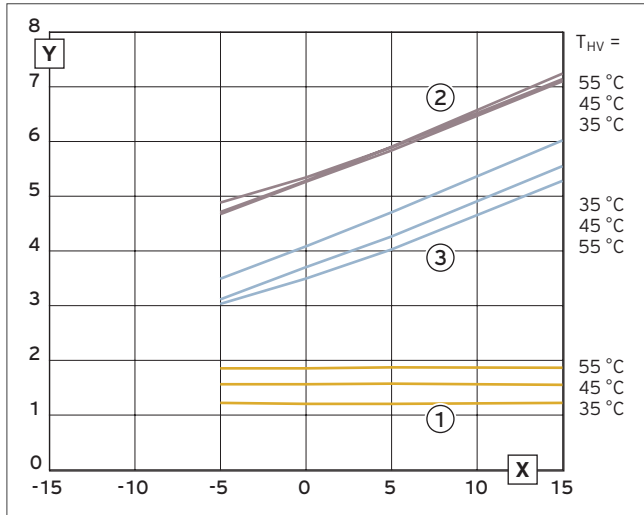


Fig. 108: Power output graph for the VWF 57/4 - brine-to-water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 117/4 - brine-to-water

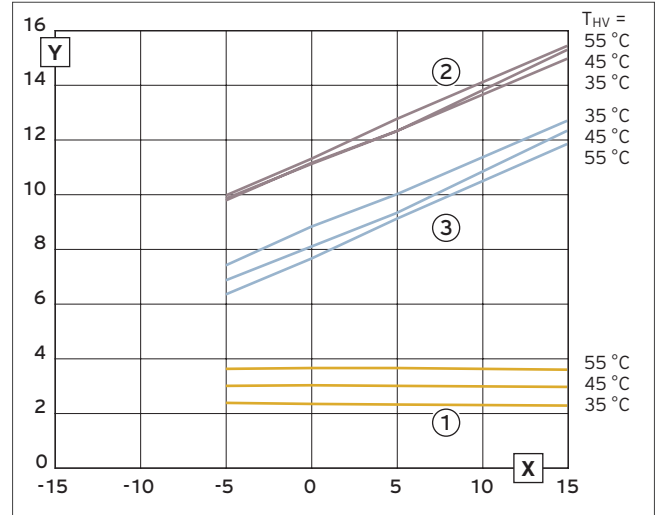


Fig. 110: Power output graph for the VWF 117/4 - brine-to-water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 87/4 - brine-to-water

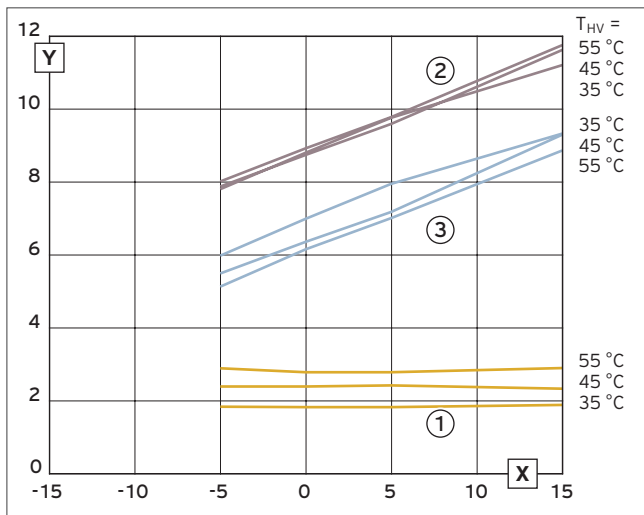


Fig. 109: Power output graph for the VWF 87/4 - brine-to-water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 157/4 - brine-to-water

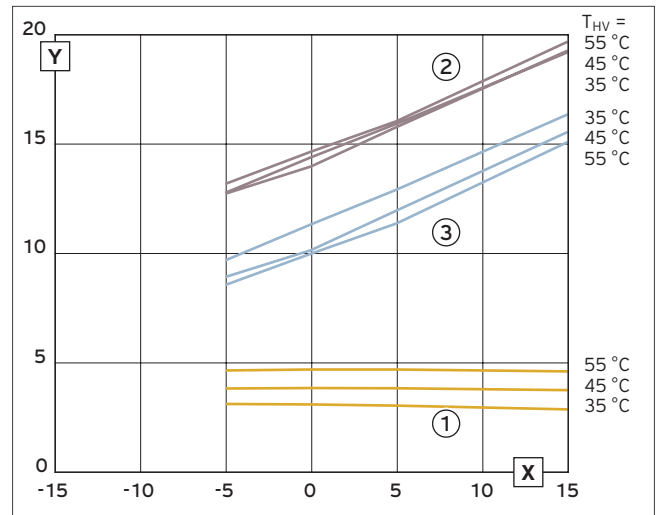


Fig. 111: Power output graph for the VWF 157/4 - brine-to-water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 197/4 - brine-to-water

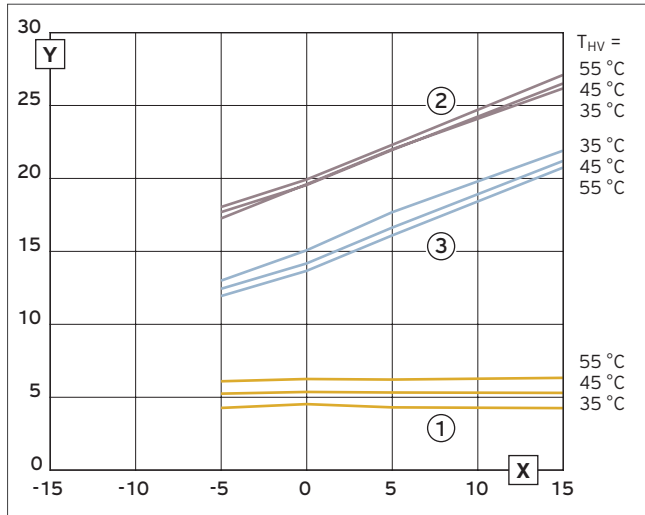


Fig. 112: Power output graph for the VWF 197/4 - brine-to-water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

3.7.2 Air heat source

Power output graph for the VWF 57/4 - air-to-water

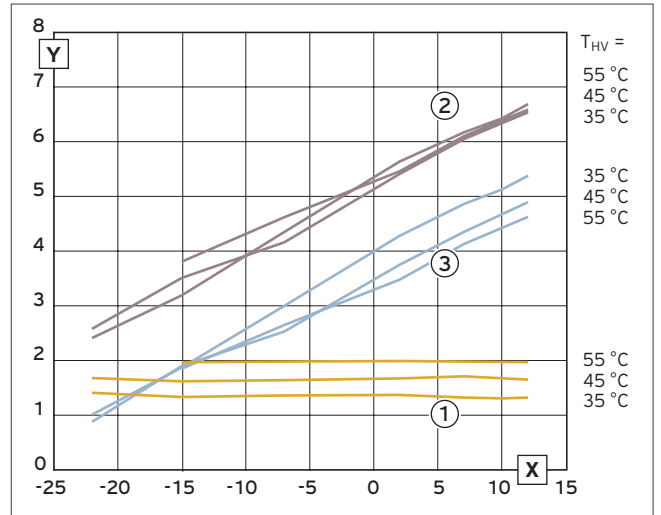


Fig. 113: Power output graph for the VWF 57/4 - air-to-water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 87/4 - air-to-water

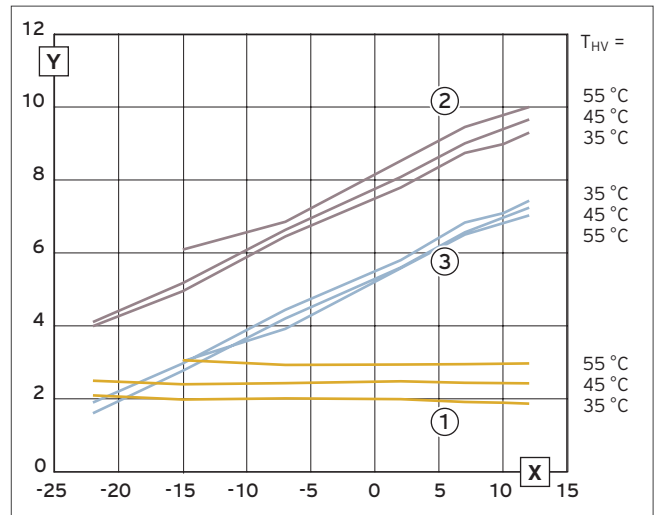


Fig. 114: Power output graph for the VWF 87/4 - air-to-water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 117/4 - air-to-water

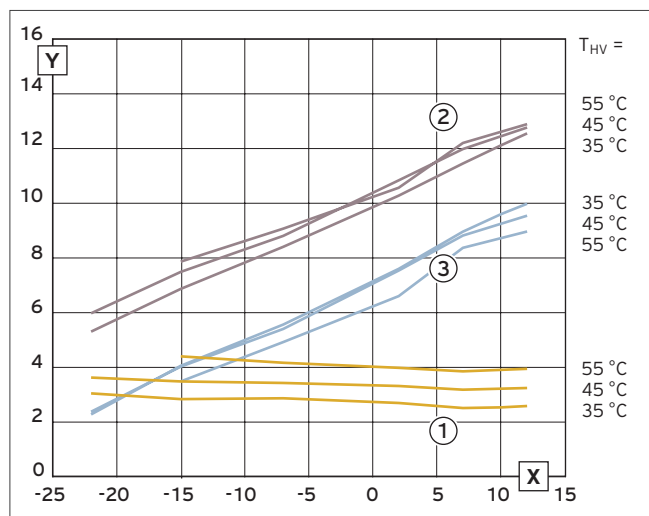


Fig. 115: Power output graph for the VWF 117/4 - air-to-water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 197/4 - air-to-water

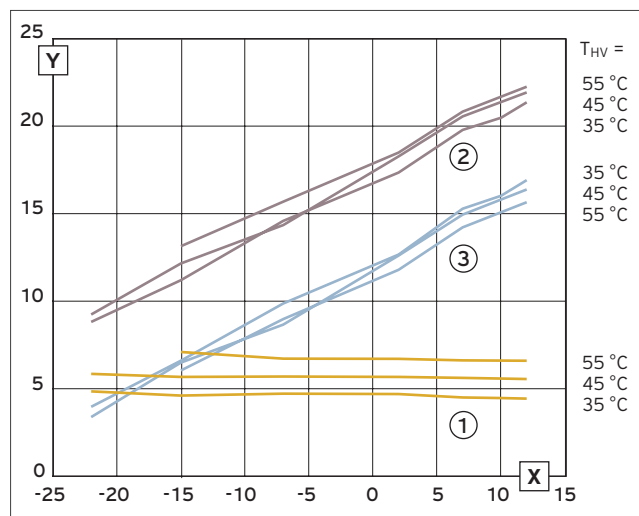


Fig. 117: Power output graph for the VWF 197/4 - air-to-water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 157/4 - air-to-water

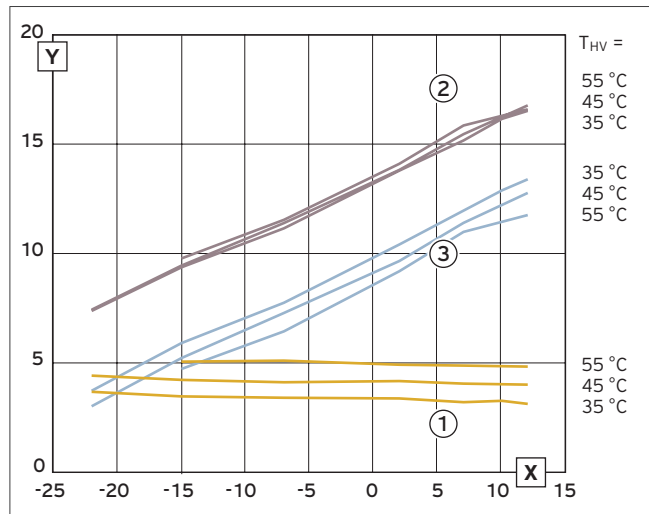


Fig. 116: Power output graph for the VWF 157/4 - air-to-water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

3.7.3 Groundwater heat source

Power output graph for the VWF 57/4 - water-to-water

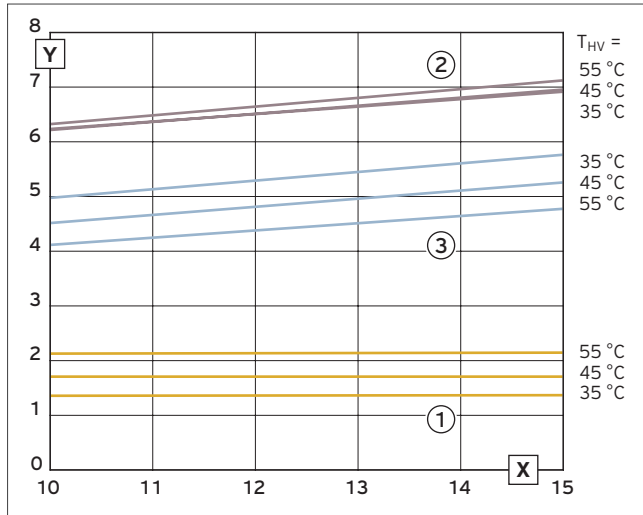


Fig. 118: Power output graph for the VWF 57/4 - water-to-water

- Y Power output [kW]
- X Ground-water temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 117/4 - water-to-water

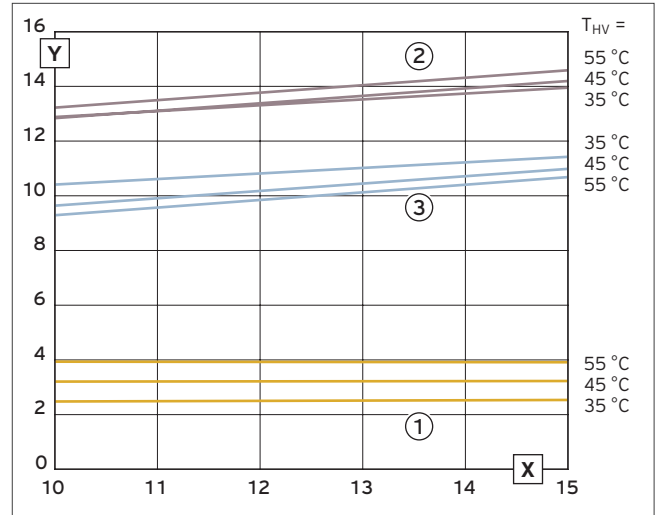


Fig. 120: Power output graph for the VWF 117/4 - water-to-water

- Y Power output [kW]
- X Ground-water temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 87/4 - water-to-water

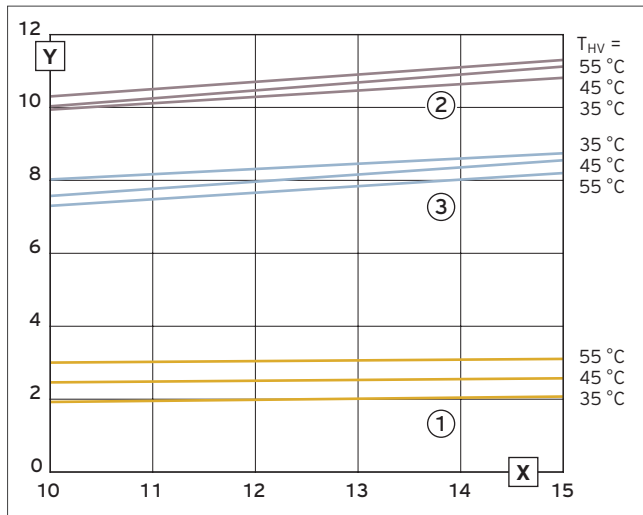


Fig. 119: Power output graph for the VWF 87/4 - water-to-water

- Y Power output [kW]
- X Ground-water temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 157/4 - water-to-water

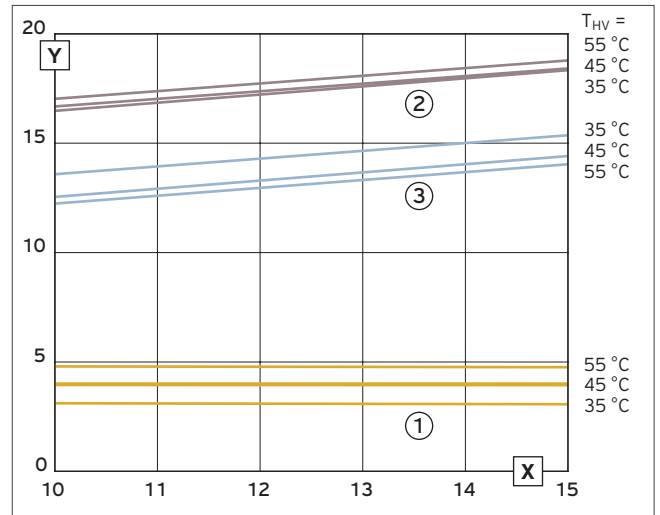


Fig. 121: Power output graph for the VWF 157/4 - water-to-water

- Y Power output [kW]
- X Ground-water temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Update 10
 New performance data (EN14511:2018)

Power output graph for the VWF 197/4 - water-to-water

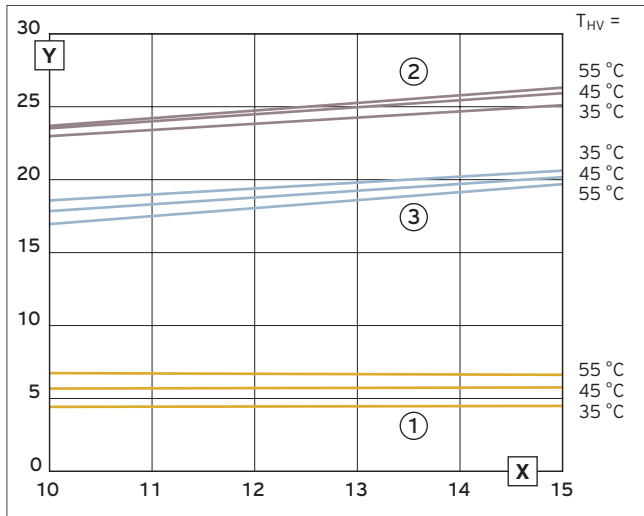


Fig. 122: Power output graph for the VWF 197/4 - water-to-water

- Y Power output [kW]
- X Ground-water temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

3.8 Product dimensions and connection dimensions

3.8.1 Dimensions

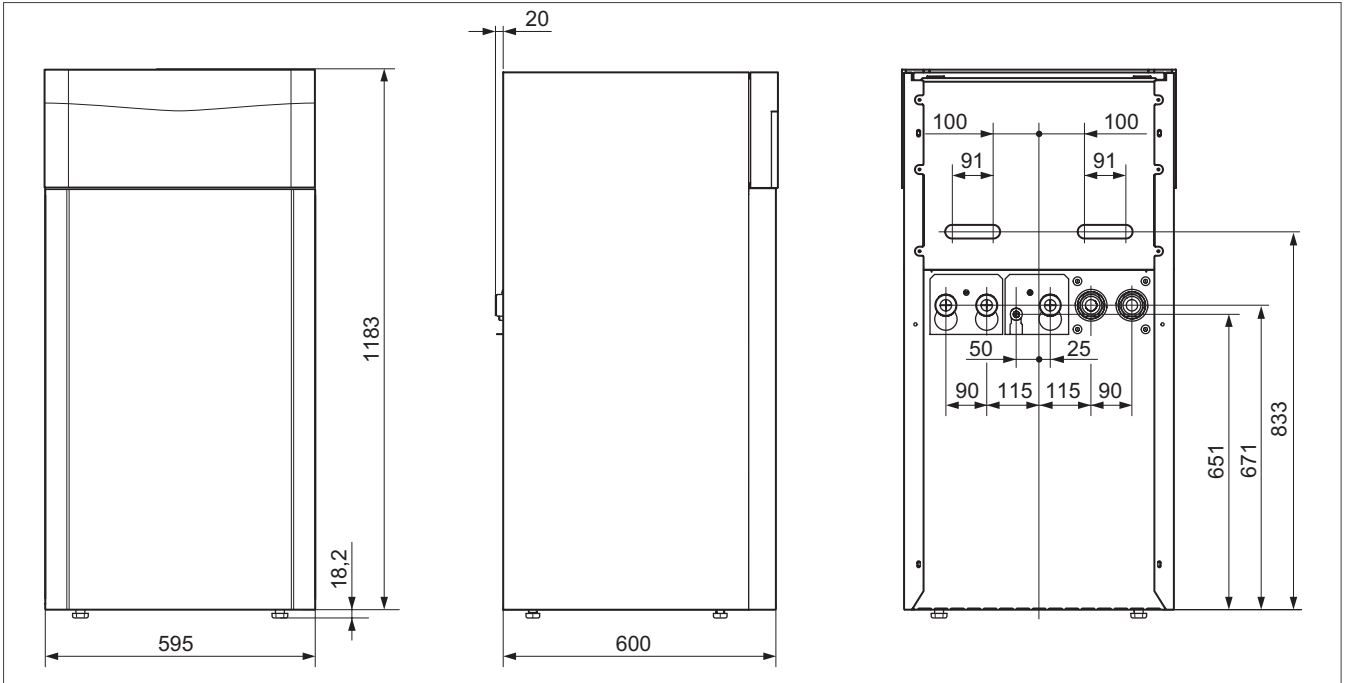


Fig. 123: Dimensions

3.9 Minimum clearances

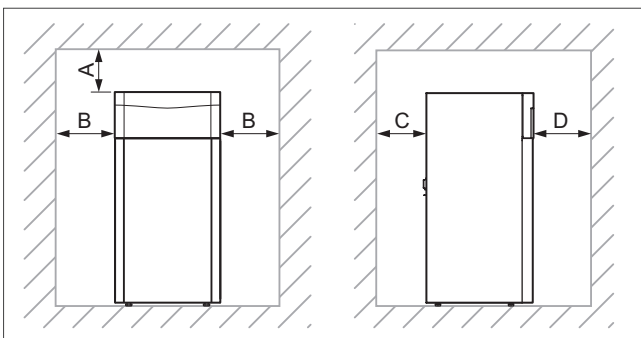


Fig. 124: Minimum clearances

	Minimum clearance
A	50 mm
B	300 mm
C	250 mm
D	300 mm

3.10 Requirements for the installation site

3.10.1 Minimum sizes for the installation rooms

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Minimum size for the installation room (m ³)
VWF 57/4	R 410a	1.50	3.4
VWF 87/4	R 410a	2.40	5.5
VWF 117/4	R 410a	2.50	5.7
VWF 157/4	R 410a	3.05	6.9
VWF 197/4	R 410a	3.95	9.0

3.10.2 flexoTHERM/flexoCOMPACT installation room

The general requirements for the indoor installation of the heat pump apply for the indoor unit's installation room (see section „Planning the heat generator installation“).

If the heating heat pump is operated as an air-to-water heat pump, particular requirements apply when installing the **aroCOLLECT** outdoor unit outside (see aroCOLLECT product description).

Select a dry room that is frost-proof throughout and in which the maximum installation height is not exceeded and the environmental temperature is neither above nor below the permitted range.

- Permissible environmental temperature: 7 to 25 °C
- Permissible relative air humidity: 40 to 75%

Ensure that the installation room has the required minimum volume.

3.11 aroCOLLECT VWL 11/4 SA air/brine collector

Order no. 0010016715



Fig. 125: aroCOLLECT air/brine collector

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

The air/brine collector is used to exchange heat between the brine circuit and the outdoor air.

Note

The entire purging/filling process should last at least 30 minutes. During this time, the purging valves for the air/brine collectors must be opened and closed every five minutes.



We recommend the brine purging support set for the air/brine collector as this makes the purging process significantly easier if it is to be carried out by one person. Observe the aroCOLLECT installation instructions (0020196699).

3.11.1 Technical data

Dimensions

	VWL 11/4 SA
Product dimensions, height with base	1,260 mm
Product dimensions, width	1,200 mm
Product dimensions, depth	785 mm
Weight with packaging	160 kg
Weight without packaging and base	95 kg
Weight without packaging	140 kg
Weight when ready for operation	185 kg

Electrics

	VWL 11/4 SA
Rated voltage	3~/N/PE 400 V / 50 Hz
Fuse type, characteristic B, three-pole switching (disconnection of the three mains connection lines by a switching operation)	10 A
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)
Electrical power consumption, max. total	6.5 kW
Electrical power consumption, de-icer	6.0 kW
Electrical power consumption, fan	0 to 0.25 kW
Electrical power consumption, control process	0.01 kW
Electrical power consumption, optional accessory	0.2 kW
IP rating EN 60529	IP 25

Hydraulics

	VWL 11/4 SA
Flow/return heat source connections	Rp 1 1/4"
Diameter of the condensate discharge	70 mm

Installation site

	VWL 11/4 SA
Installation site	Outside
Permissible environmental temperature at the installation site	-30 to 70 °C
Permissible environmental temperature during operation	-22 to 40 °C

Brine circuit

	VWL 11/4 SA
Brine fluid	Ethylene glycol 44% vol. /56% water
Max. operating pressure	0.3 MPa
Min. inlet temperature, cold brine	-28 °C
Max. inlet temperature, hot brine	60 °C
Brine content of the brine circuit in the air/brine collector	19.8 l
Materials	Cu, CuZn alloy, stainless steel, EPDM
Total length of the connection pipe, cold brine and hot brine	2 x 30 m
Diameter of the connection pipe's cross-section up to a total length of ≤ 10 m	DN 40 (40 x 3.8 mm)
Diameter of the connection pipe's cross-section up to a total length of > 10 and ≤ 30 m	DN 50 (50 x 4.6 mm)
Connection pipe installation depth	0.2 to 1.5 m
Connection pipe material	PE pipe, PE 100 or PE 80

Sound power level

		VWL 11/4 SA
Sound power level A7/W35, A7/W45, A7/W55 in accordance with EN 12102/EN 14511 L_{WA} in heating mode	VWF 57/4	≤ 42.7 dB(A)
	VWF 58/4	≤ 42.7 dB(A)
	VWF 87/4	≤ 50.6 dB(A)
	VWF 88/4	≤ 50.6 dB(A)
	VWF 117/4	≤ 56.0 dB(A)
	VWF 118/4	≤ 56.0 dB(A)
	VWF 157/4	≤ 49.5 dB(A) NoteWhen two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.Note When two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
	VWF 197/4	≤ 53.0 dB(A) NoteWhen two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.Note When two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
Sound power A7/W35, A7/W45, A7/W55 in accordance with EN 12102 / EN 14511 L_{WA} maximum sound power level in silent mode for heating mode	VWF 57/4	≤ 39.9 dB(A)
	VWF 58/4	≤ 39.9 dB(A)
	VWF 87/4	≤ 46.0 dB(A)
	VWF 88/4	≤ 46.0 dB(A)
	VWF 117/4	≤ 52.4 dB(A)
	VWF 118/4	≤ 52.4 dB(A)
	VWF 157/4	≤ 44.9 dB(A) NoteWhen two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.Note When two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
	VWF 197/4	≤ 49.5 dB(A) NoteWhen two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.Note When two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
Increase for tonal noise level in accordance with the third-octave band method with A7/W35, A7/W45, A7/W55 in heating mode and in silent mode for heating mode	VWF 57/4	≤ 0 dB
	VWF 58/4	≤ 0 dB
	VWF 87/4	≤ 0 dB
	VWF 88/4	≤ 0 dB
	VWF 117/4	≤ 0 dB
	VWF 118/4	≤ 0 dB
	VWF 157/4	≤ 0 dB
	VWF 197/4	≤ 0 dB

		VWL 11/4 SA
Sound power level A35/W18 in accordance with EN 12102/EN 14511 L_{WA} in cooling mode	VWF 57/4	≤ 53.5 dB(A)
	VWF 58/4	≤ 53.5 dB(A)
	VWF 87/4	≤ 60.5 dB(A)
	VWF 88/4	≤ 60.5 dB(A)
	VWF 117/4	≤ 66.3 dB(A)
	VWF 118/4	≤ 66.3 dB(A)
	VWF 157/4	≤ 59.2 dB(A) Note When two air/brine collectors (on VWF 157/4, VWF 157/4 S1 and VWF 197/4) are running at the same sound power level at the same time, the total sound power level result is 3 dB(A) higher. Note When two air/brine collectors (on VWF 157/4, VWF 157/4 S1 and VWF 197/4) are running at the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
	VWF 197/4	≤ 63.7 dB(A) Note When two air/brine collectors (on VWF 157/4, VWF 157/4 S1 and VWF 197/4) are running at the same sound power level at the same time, the total sound power level result is 3 dB(A) higher. Note When two air/brine collectors (on VWF 157/4, VWF 157/4 S1 and VWF 197/4) are running at the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.

Sound power levels of the flexoTHERM/flexoCOMPACT with aroCOLLECT

Note

If required, flexoTHERM and flexoCOMPACT with aroCOLLECT can also be operated permanently in noise reduction mode. The reduction in output is max. 5%.



For the flexoTHERM/flexoCOMPACT with aroCOLLECT heat pump, planning should take account of the following sound power levels (heating mode).

Note

K_T (supplement for the tone incorporation) is taken into account in line with the third-octave band process. K_R is country-specific and was assumed to be 0 in this calculation. This value is only required for day mode.



VWF 5x/4 and VWL 11/4 SA evaluation level

VWF 5x/4 and VWL 11/4 SA				Distance from heat source in m										K_R
	Sound power level in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	54	0	3	46.0	40.0	36.5	34.0	32.0	30.4	27.9	26.0	24.4	22.5	0
			6	49.0	43.0	39.5	37.0	35.0	33.4	30.9	29.0	27.4	25.5	
			9	52.0	46.0	42.5	40.0	38.0	36.4	33.9	32.0	30.4	28.5	
Set-back	40	0	3	32.0	26.0	22.5	20.0	18.0	16.4	13.9	12.0	10.4	8.5	-
			6	35.0	29.0	25.5	23.0	21.0	19.4	16.9	15.0	13.4	11.5	
			9	38.0	32.0	28.5	26.0	24.0	22.4	19.9	18.0	16.4	14.5	

VWF 8x/4 and VWL 11/4 SA evaluation level

VWF 8x/4 and VWL 11/4 SA				Distance from heat source in m										K _R
	Sound power level in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	61	0	3	53.0	47.0	43.5	41.0	39.0	37.4	34.9	33.0	31.4	29.5	0
			6	56.0	50.0	46.5	44.0	42.0	40.4	37.9	36.0	34.4	32.5	
			9	59.0	53.0	49.5	47.0	45.0	43.4	40.9	39.0	37.4	35.5	
Set-back	46	0	3	38.0	32.0	28.5	26.0	24.0	22.4	19.9	18.0	16.4	14.5	-
			6	41.0	35.0	31.5	29.0	27.0	25.4	22.9	21.0	19.4	17.5	
			9	44.0	38.0	34.5	32.0	30.0	28.4	25.9	24.0	22.4	20.5	

VWF 11x/4 and VWL 11/4 SA evaluation level

VWF 11x/4 and VWL 11/4 SA				Distance from heat source in m										K _R
Output in %	Sound power level in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	67	0	3	59.0	53.0	49.5	47.0	45.0	43.4	40.9	39.0	37.4	35.5	0
			6	62.0	56.0	52.5	50.0	48.0	46.4	43.9	42.0	40.4	38.5	
			9	65.0	59.0	55.5	53.0	51.0	49.4	46.9	45.0	43.4	41.5	
Set-back	53	0	3	45.0	39.0	35.5	33.0	31.0	29.4	26.9	25.0	23.4	21.5	-
			6	48.0	42.0	38.5	36.0	34.0	32.4	29.9	28.0	26.4	24.5	
			9	51.0	45.0	41.5	39.0	37.0	35.4	32.9	31.0	29.4	27.5	

VWF 15x/4 and 2 x VWL 11/4 SA evaluation level

VWF 15x/4 and 2 x VWL 11/4 SA				Distance from heat source in m										K _R
	Sound power level in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	62	0	3	54.0	48.0	44.5	42.0	40.0	38.4	35.9	34.0	32.4	30.5	0
			6	57.0	51.0	47.5	45.0	43.0	41.4	38.9	37.0	35.4	33.5	
			9	60.0	54.0	50.5	48.0	46.0	44.4	41.9	40.0	38.4	36.5	
Set-back	48	0	3	40.0	34.0	30.5	28.0	26.0	24.4	21.9	20.0	18.4	16.5	-
			6	43.0	37.0	33.5	31.0	29.0	27.4	24.9	23.0	21.4	19.5	
			9	46.0	40.0	36.5	34.0	32.0	30.4	27.9	26.0	24.4	22.5	

VWF 19x/4 and 2 x VWL 11/4 SA evaluation level

VWF 19x/4 and 2 x VWL 11/4 SA				Distance from heat source in m										K _R
	Sound power level in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	67	0	3	59.0	53.0	49.5	47.0	45.0	43.4	40.9	39.0	37.4	35.5	0
			6	62.0	56.0	52.5	50.0	48.0	46.4	43.9	42.0	40.4	38.5	
			9	65.0	59.0	55.5	53.0	51.0	49.4	46.9	45.0	43.4	41.5	
Set-back	53	0	3	45.0	39.0	35.5	33.0	31.0	29.4	26.9	25.0	23.4	21.5	-
			6	48.0	42.0	38.5	36.0	34.0	32.4	29.9	28.0	26.4	24.5	
			9	51.0	45.0	41.5	39.0	37.0	35.4	32.9	31.0	29.4	27.5	

aroCOLLECT volume flow

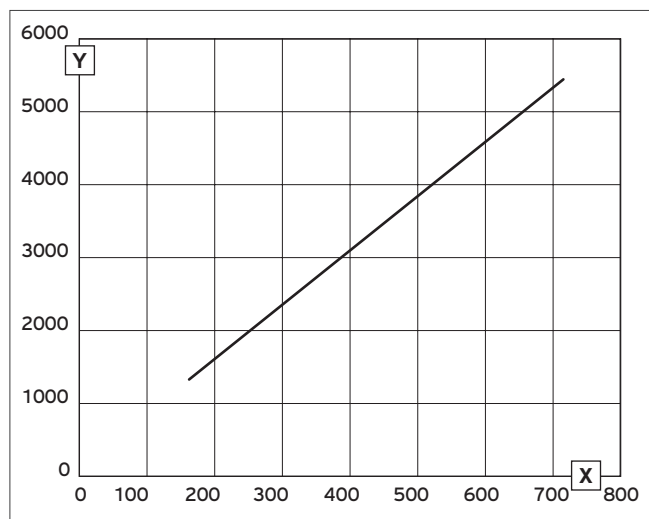


Fig. 126: aroCOLLECT volume flow diagram

Y Volume flow [m³/h]
X Rotational speed [rpm]

Fan speed

Fan speed	VWF 57/4 + VWL 11/4 SA	VWF 87/4 + VWL 11/4 SA	VWF 117/4 + VWL 11/4 SA	VWF 157/4 + 2 x VWL 11/4 SA	VWF 197/4 + 2 x VWL 11/4 SA
Maximum	450 rpm	580 rpm	710 rpm	440 rpm	650 rpm
For A7/W35, A7/W45, A7/W55 heating mode	300 rpm	400 rpm	490 rpm	390 rpm	440 rpm
In silent mode for A7/W35, A7/W45, A7/W55 heating mode	270 rpm	350 rpm	430 rpm	330 rpm	390 rpm
For A35/W18 cooling mode	450 rpm	580 rpm	710 rpm	440 rpm	650 rpm

3.11.2 Dimensions

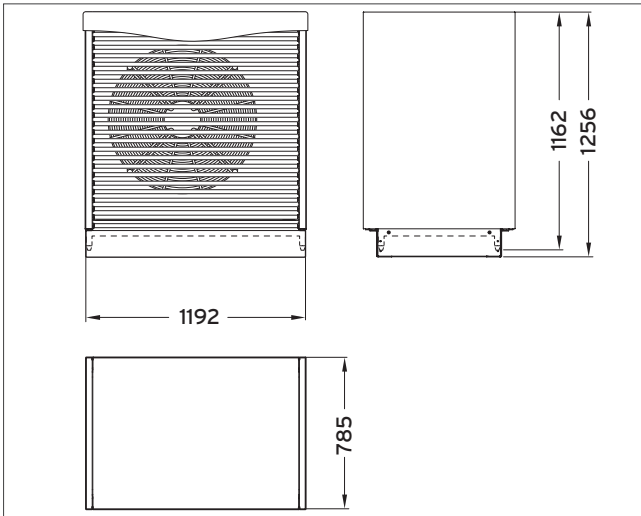


Fig. 127: Dimensions

3.11.3 Minimum clearances

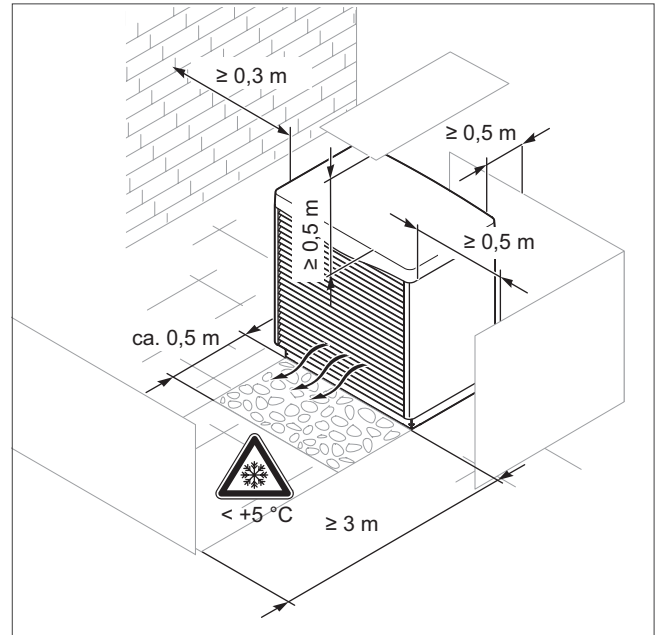


Fig. 128: Minimum clearances for one air/brine collector

Clearances that must be complied with for an air/brine collector

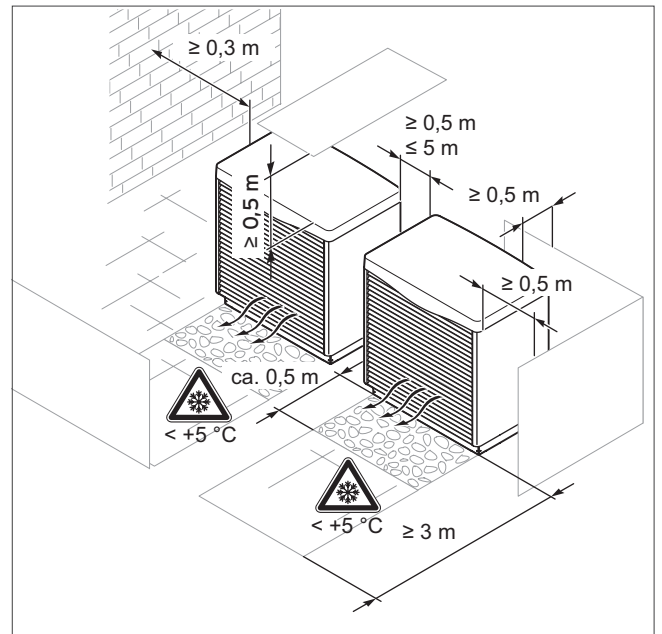


Fig. 129: Minimum clearances for two air/brine collectors

Clearances that must be complied with for two air/brine collectors

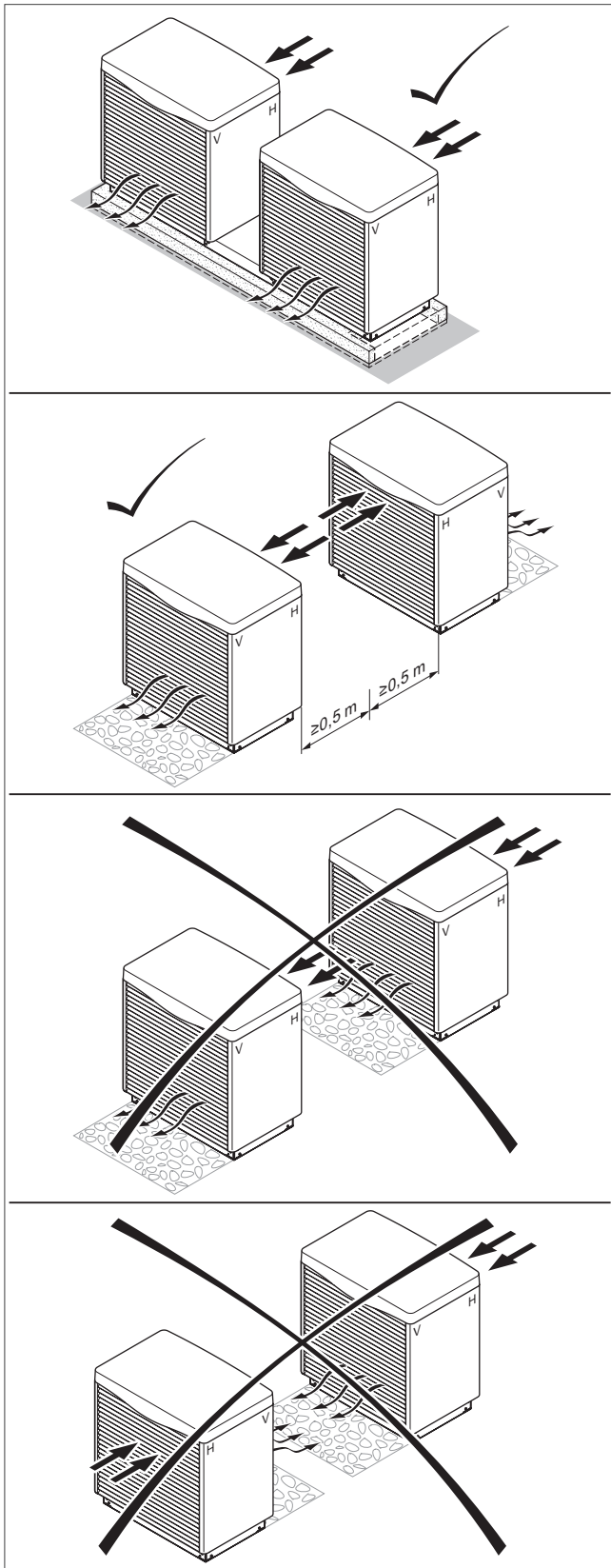


Fig. 130: Positioning

Positioning of the collectors

- » Use the mounting base, which is available as an accessory, for the installation.
- » To guarantee sufficient air flow and to facilitate maintenance work, observe the minimum clearances that are specified above.
- » Ensure that there is sufficient room to install the hydraulic lines.
- » If the product is to be installed in areas where heavy snow falls, ensure that the snow does not accumulate around the product and that the minimum clearances specified above are observed. If you cannot ensure this, install an additional heat generator in the heating circuit. A raised base and condensate tray heater are available as accessories.
- » If you install two air/brine collectors, you must create a concrete foundation and use the connection pipe set that is available as an accessory.

3.11.4 Installing the aroCOLLECT or aroTHERM outdoor unit outdoors

A number of requirements arise from the outside installation of the outdoor unit which need to be taken into account in the planning of the installation site.

Note

The minimum required clearances must be complied with under all circumstances (see installation instructions/section on planning the heat source).

The outdoor unit requires a sufficiently stable, frost-proof and horizontal foundation that meets local requirements and complies with the rules of structural engineering. We recommend providing an empty pipe for condensate discharge. Appropriate cut-outs must be provided in the foundation for the hot brine and cold brine supply lines, the electrical lines and for the condensate discharge. The unit's blow-off side must not be positioned facing the building.

Do not install the outdoor unit:

- Near a heat source,
- Near flammable materials,
- Near ventilation openings for adjacent buildings,
- Under deciduous trees,
- In dusty or corrosive air (e.g. near unsecured streets),
- Or near exhaust air shafts.

Also note the following points:

- Prevailing winds,
- Noise emissions from the fan and compressor
- The visual impression on the environment.

Avoid places where strong winds blow on the outdoor unit's air outlet.

Do not point the fan in the direction of nearby windows. Install noise protection if necessary.

Note

Install the outdoor unit on steel girders or concrete blocks.

Ensure that water does not accumulate beneath the outdoor unit and that the ground in front of the outdoor unit can absorb water well in order to avoid ice formation.

Note

The condensate volume for each outdoor unit is max. 20 l/h in summer when the air humidity is high.

3.11.5 Creating the foundation

Note

To create the foundation when arranging two units side by side, see the appendix.

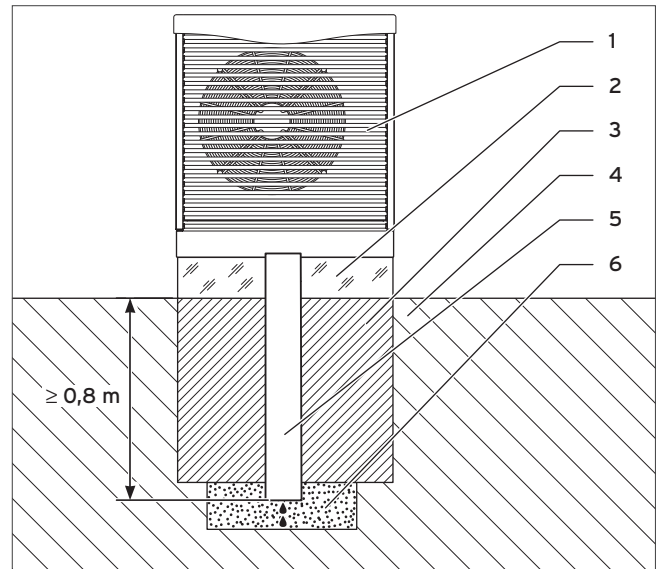


Fig. 131: Foundation: Cross-section

- 1 Air/brine collector
- 2 Foundation
- 3 Compacted gravel
- 4 Ground
- 5 Condensate discharge pipe
- 6 Gravel bed in a frost-free area

1. Prepare the ground for the foundation in accordance with the figure.

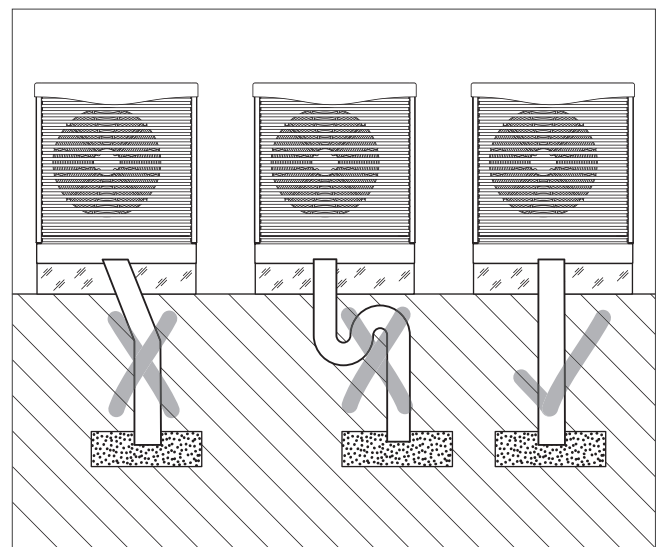


Fig. 132: Routing the condensate discharge pipe

2. As a condensate discharge pipe, route a pipe that drops vertically and that is \geq DN 110. Route this pipe as far as the frost-free ground. To lay the pipe at ground level and so that it comes out of the mounting base at the side, use the accessory that is available for this.

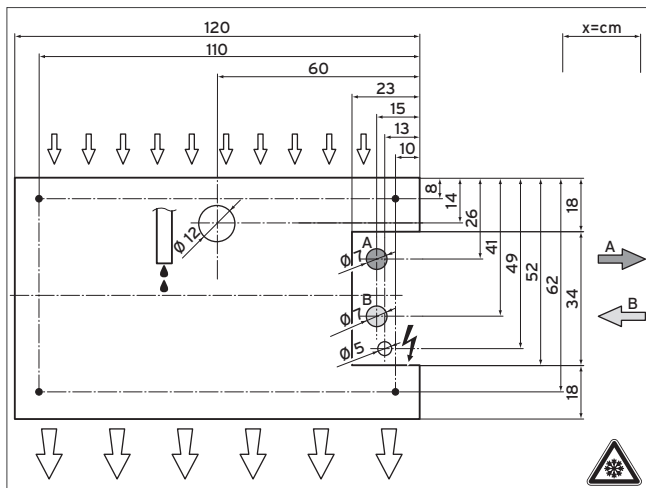


Fig. 133: Foundation: Connection dimensions

- A Connecting the air/brine collector to the heat pump (hot brine)
- B Connecting the heat pump to the air/brine collector (cold brine)

3. Create a frost-free and stable foundation or set the product on paving slabs. When doing so, observe the rules of structural engineering and the instructions that are enclosed with the recommended VWL S installation set for PE pipes.

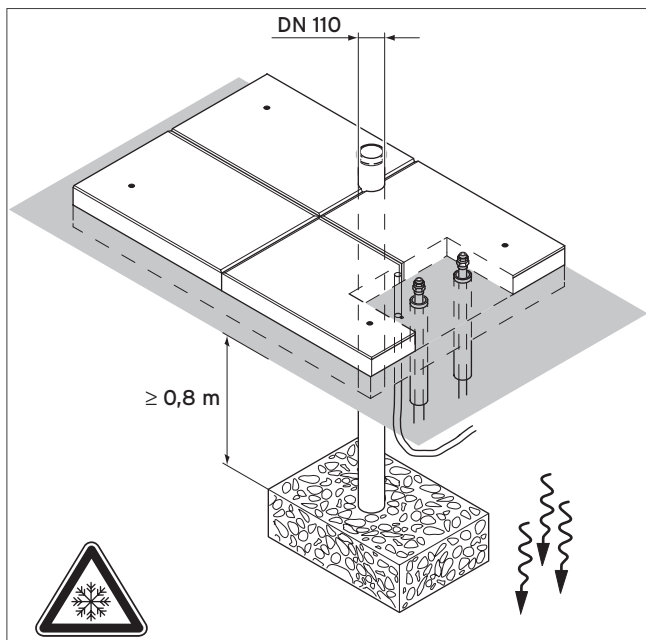


Fig. 134: Connections: Foundation using paving slabs

4. Establish the connections for a foundation made of paving slabs in accordance with the illustration.

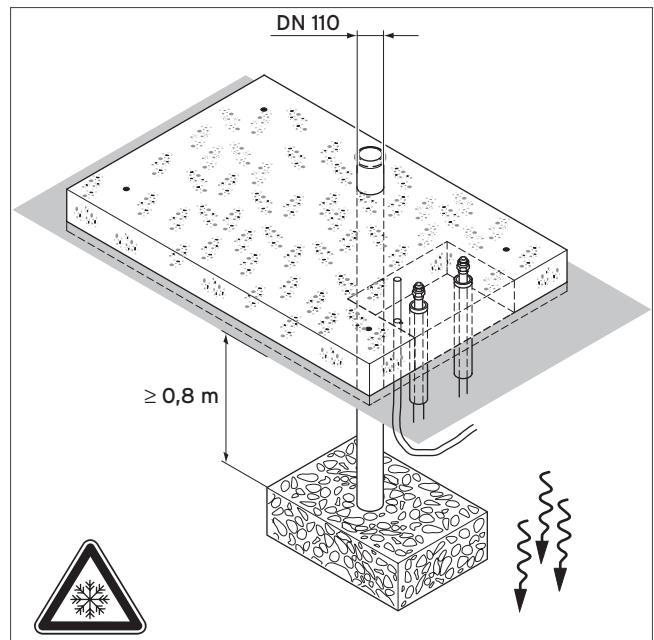


Fig. 135: Connections: Foundation using concrete

5. Establish the connections for a concrete foundation in accordance with the illustration.

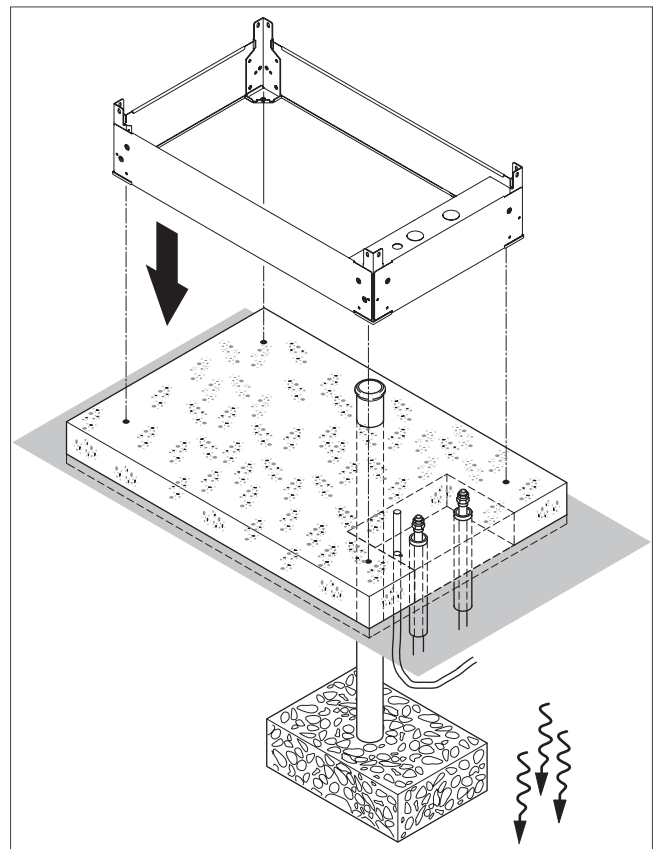


Fig. 136: Installing a base

6. Install the base that is available as an accessory.

3.11.6 Outdoor installation of two aroCOLLECT outdoor units with Tichelmann installation set

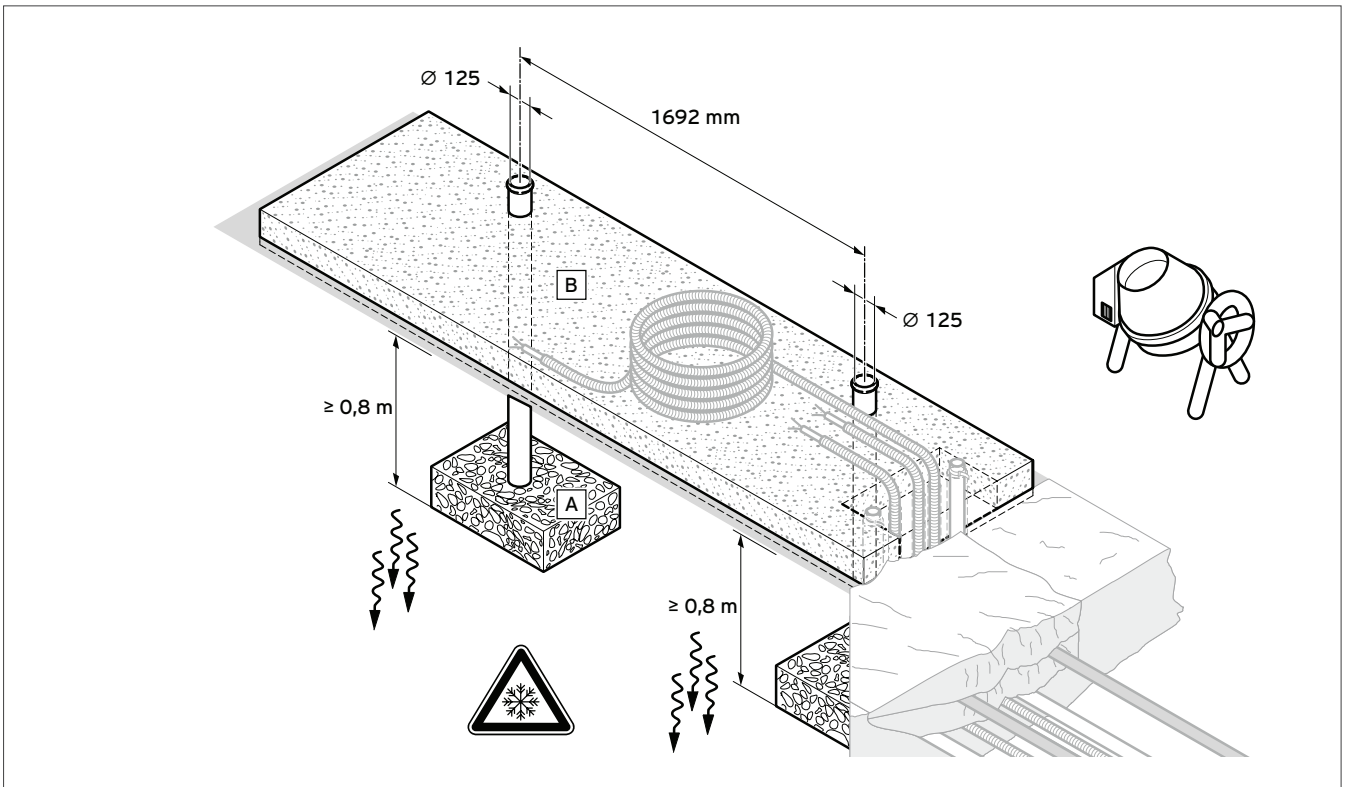


Fig. 137: Foundation plan for two aroCOLLECT outdoor units

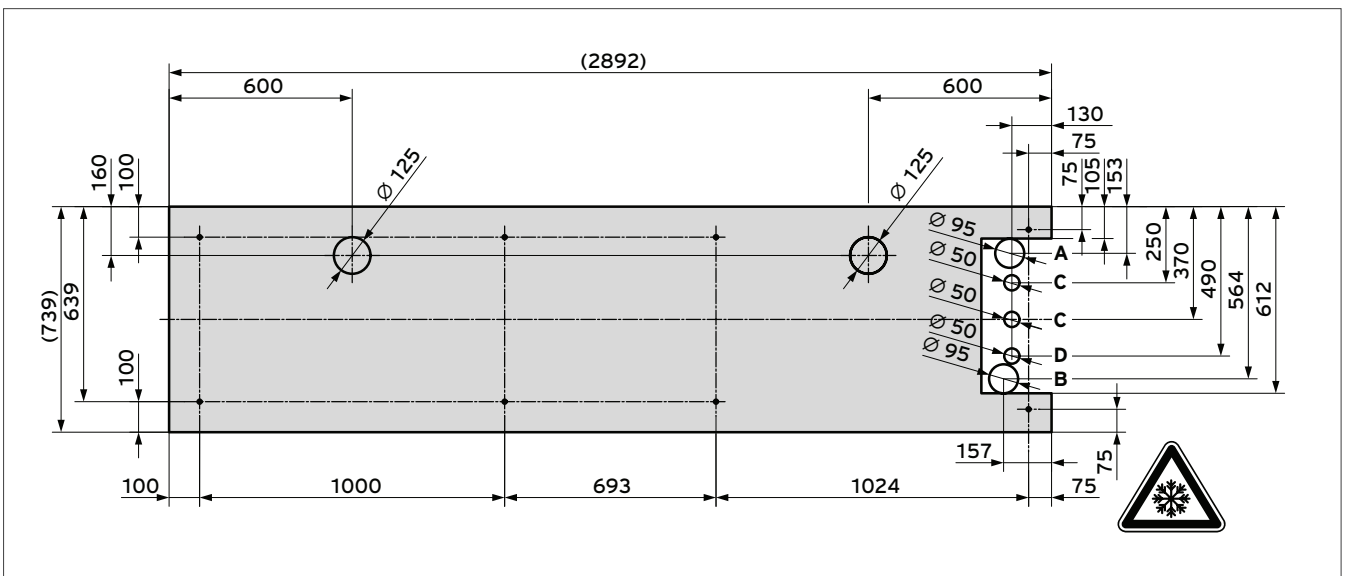


Fig. 138: Foundation of the connection dimensions for two aroCOLLECT outdoor units for the installation set (0020205408) with the Tichelmann system

- A Connecting the air/brine collector to the heat pump (hot brine)
- B Connecting the heat pump to the air/brine collector (cold brine)
- C 400 V electrical connection
- D eBUS

Note
For easier installation, use the Tichelmann installation set (0020205408).



3.11.7 Installing the connection pipes using installation sets

Two installation sets are available for installing the connection pipes.

Depending on the total pipe length that is required, you can choose between DN 40 or DN 50 outer diameters.

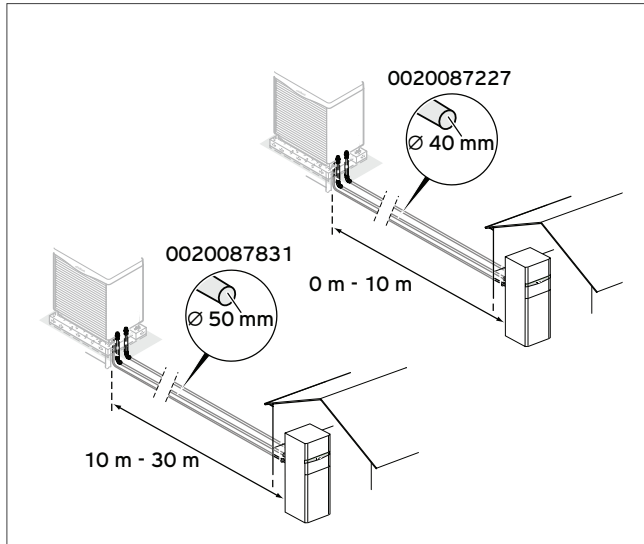


Fig. 139: Selecting the aroCOLLECT installation set

Installation with the DN 40 and DN 50 installation set

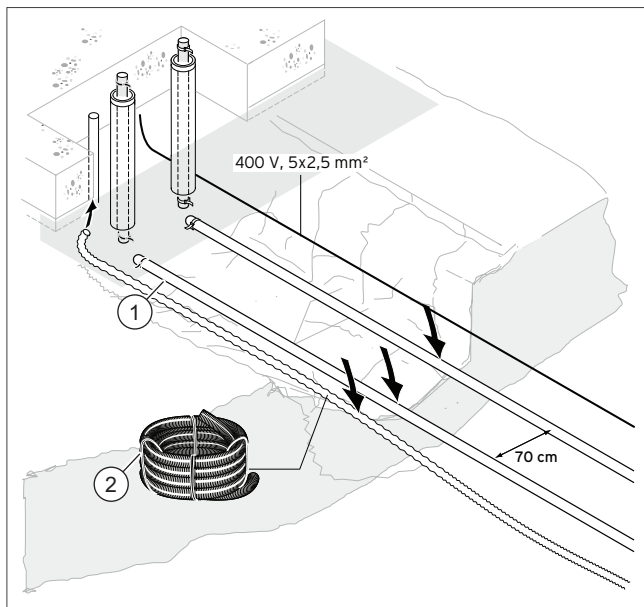


Fig. 140: Installation with the DN 40 and DN 50 installation set

- 1 Brine pipes
- 2 Protective hose for eBUS

3.11.8 Routing the connection pipes



Caution.

Risk of material damage caused by ground lifting up as a result of frozen ground.

At operating temperatures close to freezing level, the ground in the area of the PE pipes may freeze and therefore damage the structure as a result of the ground lifting up.

- > Insulate all of the PE lines that are to be routed under buildings, terraces, pathways, etc. so that they are vapour diffusion-tight.
- > If possible, route polyethylene pipes in the ground with a clearance of 70 cm from each other and from adjacent supply pipes (except for electrical wires).

The total length (connection pipes from the heat pump to the product and from the product to the heat pump) must be no greater than 60 m.

- » Keep the clearance between the product and the heat pump as short as possible and minimise the use of elbows and angles. This is because each additional pressure loss that is caused by the use of these reduces efficiency.
- » Route the PE pipes in accordance with the applicable technical directives.
- » For a total line length of between ≥ 20 m and 60 m, use a PE pipe with DN 50 (e.g. PE 80/100, outer diameter 50 mm, wall thickness 4.6 mm). Up to a total line length of ≤ 20 m, you can also use a PE pipe with DN 40 (e.g. PE 80/100, outer diameter 40 mm, wall thickness 3.7 mm).
- » When using more than eight elbows, the maximum possible total length is reduced by 2 m per each additional elbow.
- » When using copper pipes, use only copper pipes that have a cross-section of ≥ 35 mm. If you use a smaller cross-section (e.g. copper 28 mm), this will result in pressure losses (2 m copper 28 = 8 m copper 35).
- » Keep the height difference between the product and the heat pump as low as possible. The height difference must be no more than 5 m; beyond this, a detailed check of the general parameters is required.

Note

If the prescribed cable cross-sections are not complied with, this results in efficiency losses and reduced annual operating figures.



- » If required, when routing the polyethylene pipes above-ground, ensure that they are protected against UV radiation.

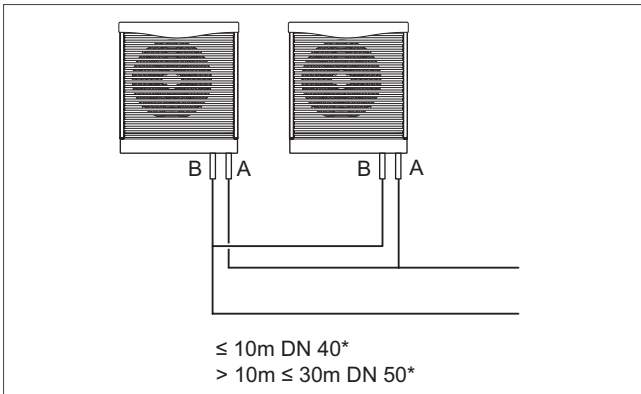


Fig. 141: Installing two air/brine collectors

* = one way

- » Connect the air/brine collector in accordance with the Tichelmann principle. This means that the air/brine collector with the shorter flow has the longest return.

Caution.
 Risk of material damage caused by a leak.
 When tightening screwed connections, ensure that O-rings are inserted correctly as, otherwise, they may pop out or become jammed, become damaged, or cause leaks.
 > Insert the O-rings properly and untwisted into the union nuts for the air/brine collector's brine connections.

- » Screw the union nuts to the connection adaptors on the „hot brine“ and „cold brine“ brine lines in the brine circuit (cross-reference) on the mounting base.
- » To purge each individual air/brine collector, install two isolator units.

3.11.9 aroCOLLECT flat roof installation

Note

Before installing on a flat roof, garage or car park building, check with the local authority whether this is an approved installation site.



For flat-roof installation of the outdoor unit, frost-free draining of the condensate is required up to approx. 1 m below the soil level using electrical trace heating. To prevent condensate or (in winter) ice formation on the brine pipes, the outdoor brine pipes in this installation must be provided with diffusion-tight, weather-resistant heat insulation with an insulation thickness of approx. 10 mm. Copper (or similar) should be used as the piping material, since PE pipes are not UV-resistant.

Installing elevated bases is not recommend due to increased wind loads.

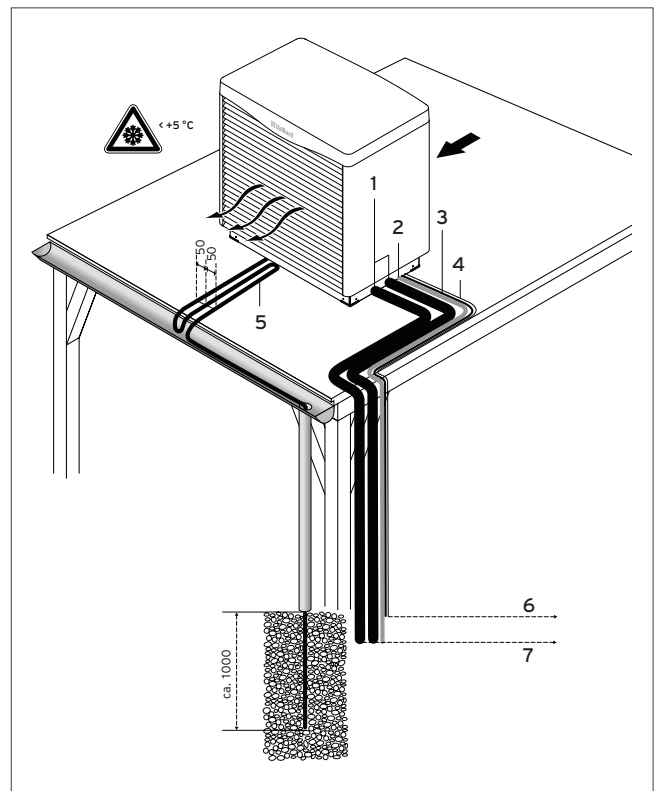


Fig. 142: aroCOLLECT flat roof installation

- 1 Brine pipes with heat insulation from the outdoor unit to the indoor unit
- 2 eBUS
- 3 400 V/50 Hz, 3/N/PE~ outdoor unit power supply
- 4 230 V/50 Hz, 1/N/PE~ heating strip power supply
- 5 Electrical heating strip for condensate discharge
- 6 For power supply
- 7 For the indoor unit

For a ground-level PE pipe connection for the aroCOLLECT outdoor unit, the installation set with order number 0020112803 is required. This comprises:

- 2 x S 28 connection pipe x 1.5 mm G 5/4
- 1 x base panel with cut-outs
- 2 x R 5/4 brass threaded joint

Ensure that everything is sufficiently secured in place and storm-protected.

For flat roofs with gravel filling, an installation set is available for flat-roof installation (order number 0020087826). This consists of:

- 2 x gravel tray
- 2 x S 28 mm flat-roof connection pipe x 1.5 mm, G 5/4
- 1 x base panel for flat-roof installation
- 1 x heat insulation for connection pipes
- 4 x fitting for securing the gravel tray to the outdoor unit
- 2 x brass threaded joint, R 5/4

The electrical gutter trace heating is controlled via a relay (provided on-site) that is connected to the red terminals of the outdoor unit (max. 200 W). The trace heating is then switched on only below an air intake temperature of +5 °C and only during the thawing procedure. The trace heating can be connected directly to the PCB at an output of up to 200 W. We recommend using a relay.

3.11.10 Frost protection for the condensate tray

Vaillant recommends the VWZ EH heating element.

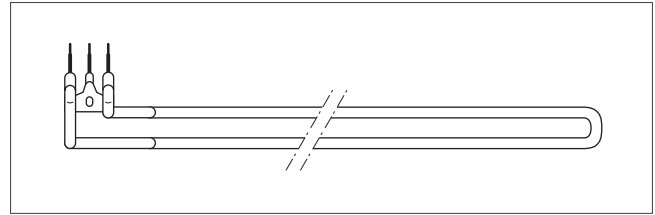


Fig. 144: VWZ EH heating element

Installing elevated bases is not recommend due to increased wind loads.

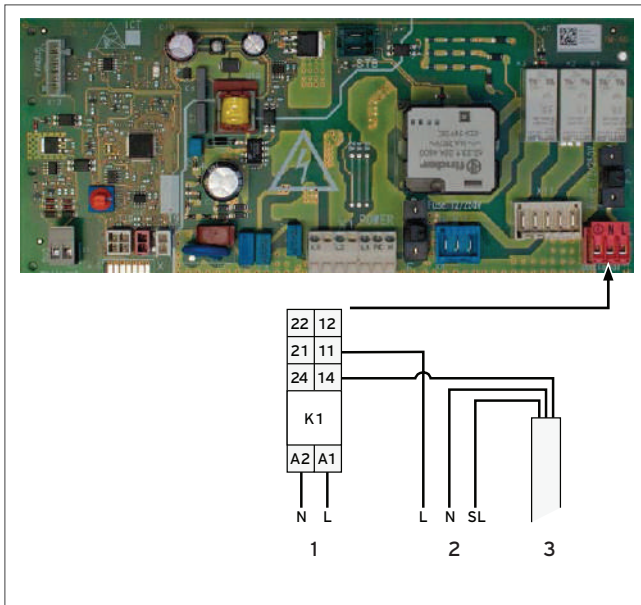


Fig. 143: PCB for the aroCOLLECT outdoor unit

- 1 Electronics box connection in the outdoor unit
- 2 Trace heating mains voltage from the E manifold
- 3 Gutter trace heating strip to protect the building against frost

3.11.11 Installing brine lines in the building

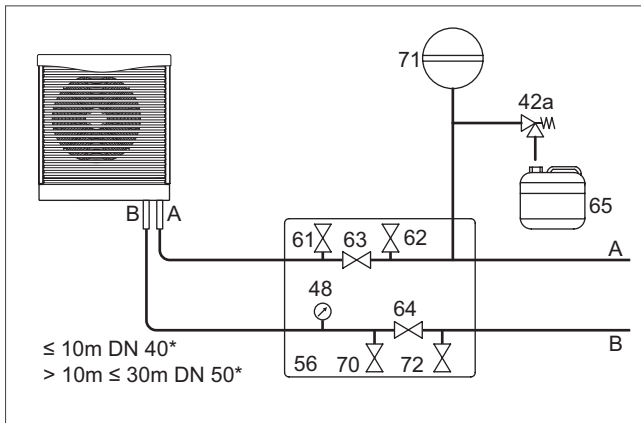


Fig. 145: Fittings in the brine circuit

- 42a Expansion relief valve
- 48 Manometer
- 56 Heat pump brine filling unit (accessory)
- 61 Isolation valve
- 62 Isolation valve
- 63 Isolation valve
- 64 Isolation valve
- 65 Brine collecting vessel
- 70 Isolation valve
- 71 Brine diaphragm expansion vessel
- 72 Isolation valve
- A From the heat source to the heat pump (hot brine)
- B From the heat pump to the heat source (cold brine)
- * One way

1. Install the brine lines between the product and the heat pump within the building and using all of the associated components in accordance with the applicable technical directives.

Note

Do not install dirt filters in the brine circuit for a prolonged period of time. The brine fluid is cleaned during the filling process.



2. Reduce the pre-charge pressure of the brine diaphragm expansion vessel (which is available as an accessory) from 0.25 MPa (2.5 bar) to 0.10 MPa (1.0 bar).
3. Insulate all of the brine lines and the connections for the heat pump and product so that they are vapour diffusion-tight.

Note

Vaillant recommends that you install the Vaillant heat pump brine filling unit. By doing this, it is then possible to carry out a preparatory partial bleed of the brine circuit, e. g. the flow and return of the brine circuit to the product.



3.11.12 Electric connection

A 3/N/PE power supply line is required for the aroCOLLECT outdoor unit and a line with a cross section of at least $2 \times 0.75 \text{ mm}^2$ is required for the eBUS connection.

If two outdoor units are installed, two 3/N/PE lines and two eBUS connections are required.

3.12 fluoCOLLECT VWW 11/4 SI and VWW 19/4 SI groundwater module

Order no. 0010016719, 0010016720



Fig. 146: fluoCOLLECT groundwater module

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

The groundwater module is used to transfer heat between the brine circuit and the groundwater.

VWW 11/4 SI for 5-11 kW heat pumps.

VWW 19/4 SI 15-19 kW heat pumps.

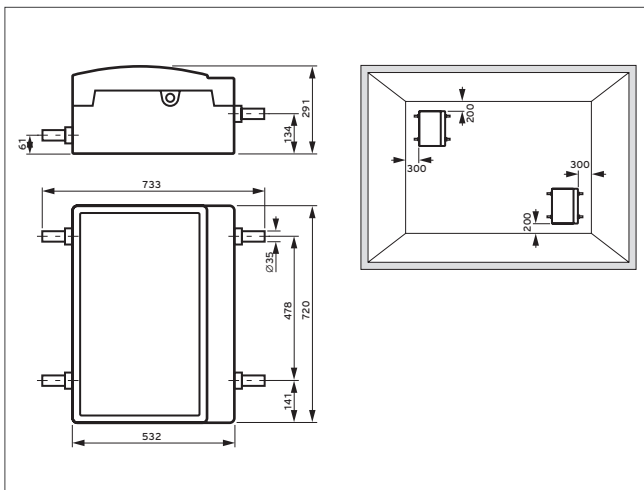


Fig. 147: fluoCOLLECT dimension drawing

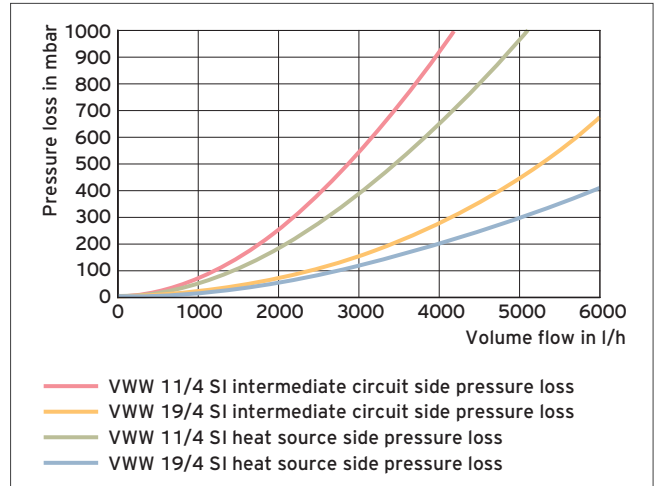


Fig. 148: VWW 11/4 SI and 19/4 SI pressure loss diagram

3.13 Basic hydraulic and wiring diagrams

3.13.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	unitOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections

Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

3.13.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				regulated	direct		Domestic hot water	Heating	
0020177919	flexoTHERM VWF auroTHERM VFK	VRC 700, VR 70	off	-	1 UFH	VWZ MPS 40	•	-	geoSTOR VIH RW 400 B
0020177928	flexoTHERM VWF ecoTEC VC	VRC 700, VR 32, VR 70, VR 91	optional	1 UFH	1 HC	VWZ MPS 40	-	-	geoSTOR VIH RW 400 B
0020194200	flexoTHERM VWF	VRC 700, VR 70, VR 91	passive	1 UFH	1 HC	VWZ MPS 40	-	-	geoSTOR VIH RW
0020199460	flexoTHERM VWF	VRC 700, VR 70, VR 91	passive	-	1 UFH	VWZ MPS 40	•	-	geoSTOR VIH RW
0020223737	flexoTHERM VWF ecoTEC VC	VRC 700/4, VR 71, VR 91	optional	2 UFH; 1 HC	-	allSTOR VPS	-	-	allSTOR VPS
0020223745	flexoTHERM VWF ecoTEC VC	VRC 700/4, VR 71, VR 91	optional	2 UFH; 1 HC	-	allSTOR VPS	-	-	allSTOR VPS
0020177918	flexoTHERM VWF	VRC 700, VR 70	optional	1 UFH	-	VPS R 100/1 M	-	-	geoSTOR VIH RW
0020177930	flexoTHERM VWF ecoTEC VC	VRC 700	off	-	1 HC	VPS R 200/1 B	-	-	uniSTOR VIH R
0020194206	flexoTHERM VWF ecoTEC VC	VRC 700, VR 70, VR 91	passive	1 UFH	1 HC	VWZ MPS 40	-	-	geoSTOR VIH RW 400 B

0020177919 - Basic hydraulic diagram

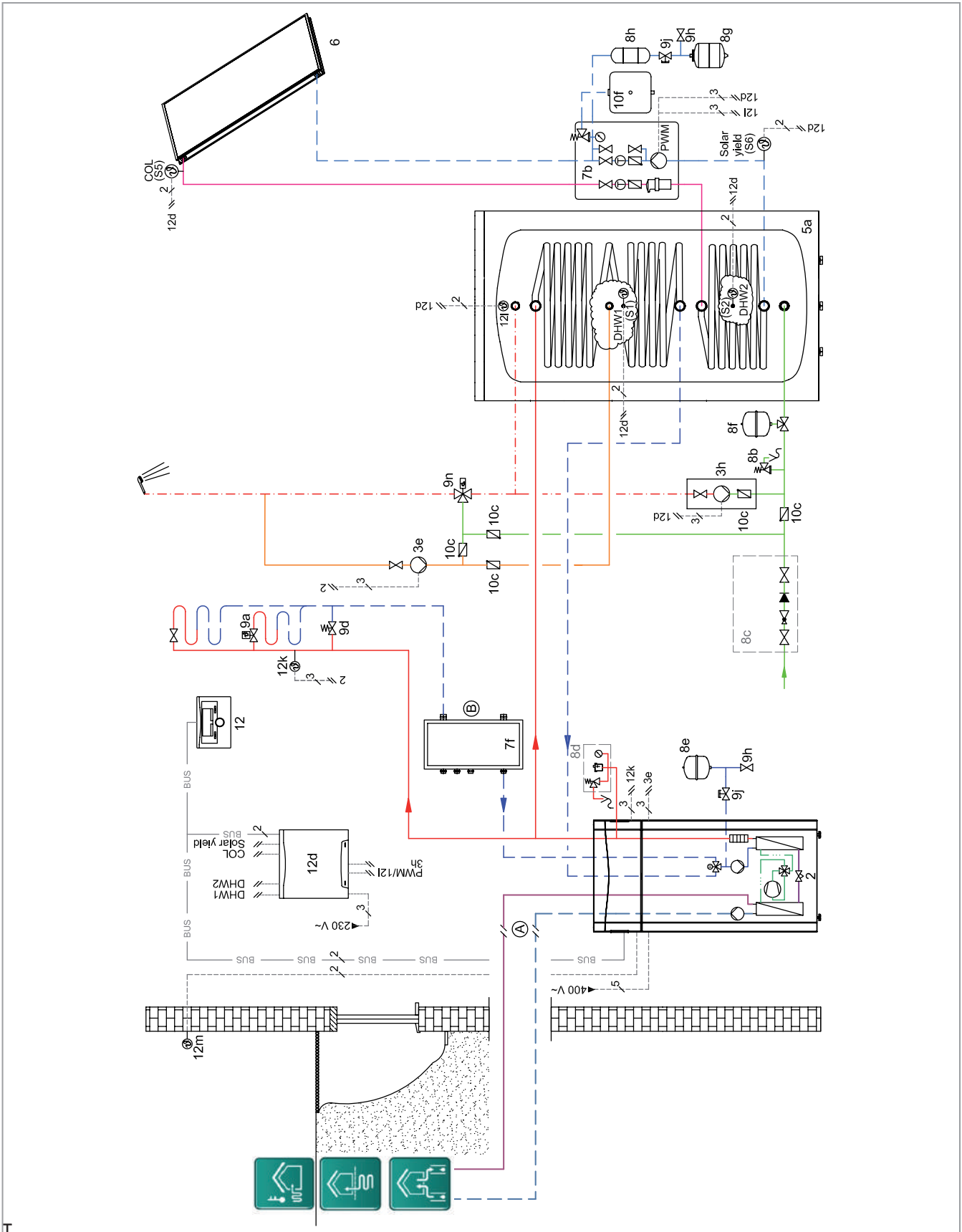


Fig 149: Basic hydraulic diagram

0020177919 - Wiring diagram

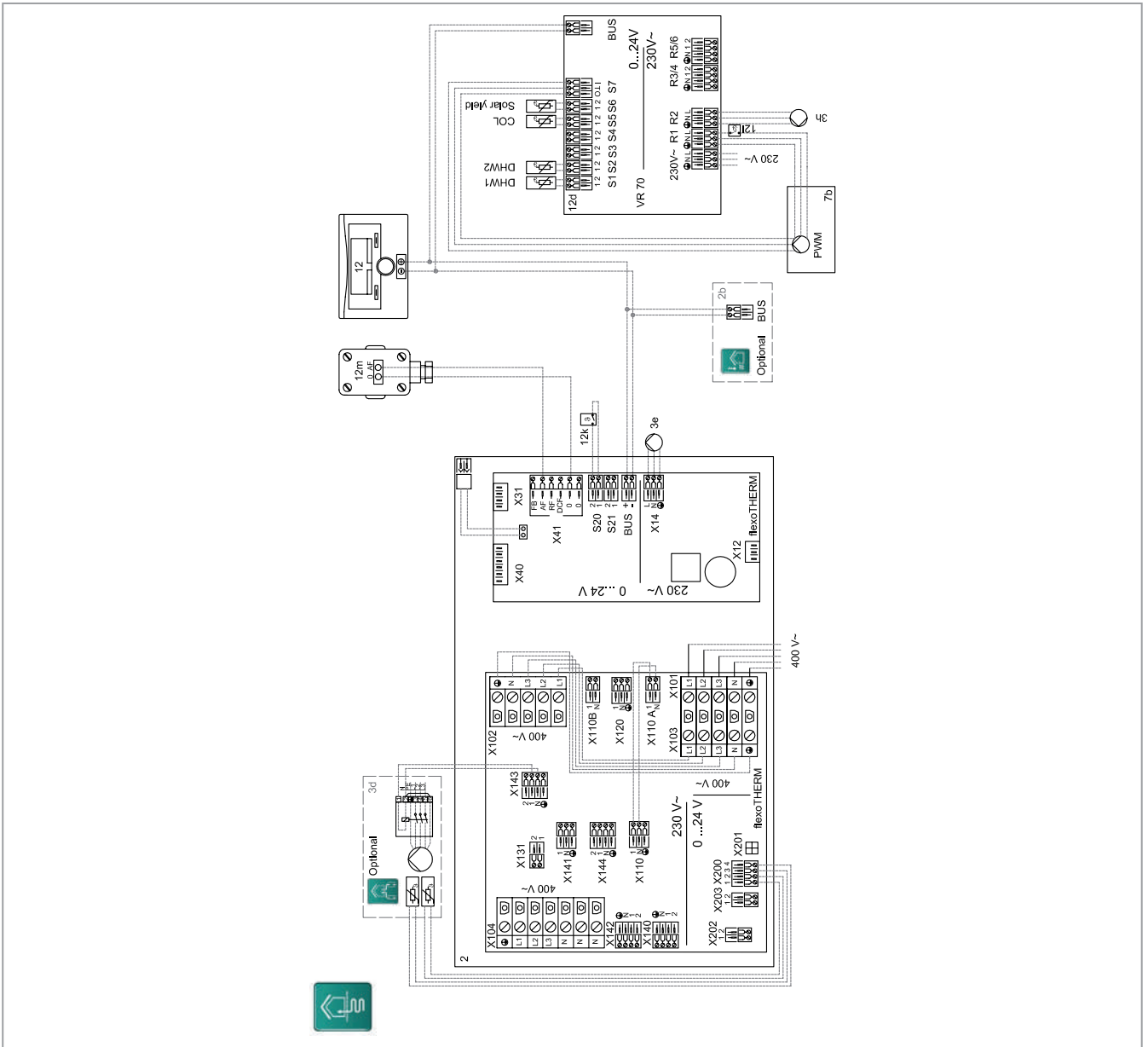


Fig 150: Wiring diagram

Description

Houses with one pump heating circuit. The heat pump supports the heating and hot water system. The solar system supports the domestic hot water system. The domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Heat source options 0020178458 no. 1, 2, 3, 4.

Caution: At least 30% of the flow must flow through the reference room without an individual room control valve. To avoid cylinder temperatures above 100 °C, install the sensor for the overheating protection thermostat in an appropriate position. The heat pump's heating output must be adjusted such that it is appropriate for the size of the domestic hot water cylinder. Use the VWZ MPS 40 compact buffer cylinder if the flow rate is less than or equal to 2600 l/h. Cooling technology setting for heat pump: No cooling.

Individual components

- flexoTHERM VWF 5 - 11 kW
- geoSTOR VIH RW 400 B
- VMS 70
- auroTHERM VFK
- VRC 700
- VR 70
- VWZ MPS 40

Setting

- VR 700 system diagram setting: 8
- VR 70 module setting: 6

0020177928 - Basic hydraulic diagram

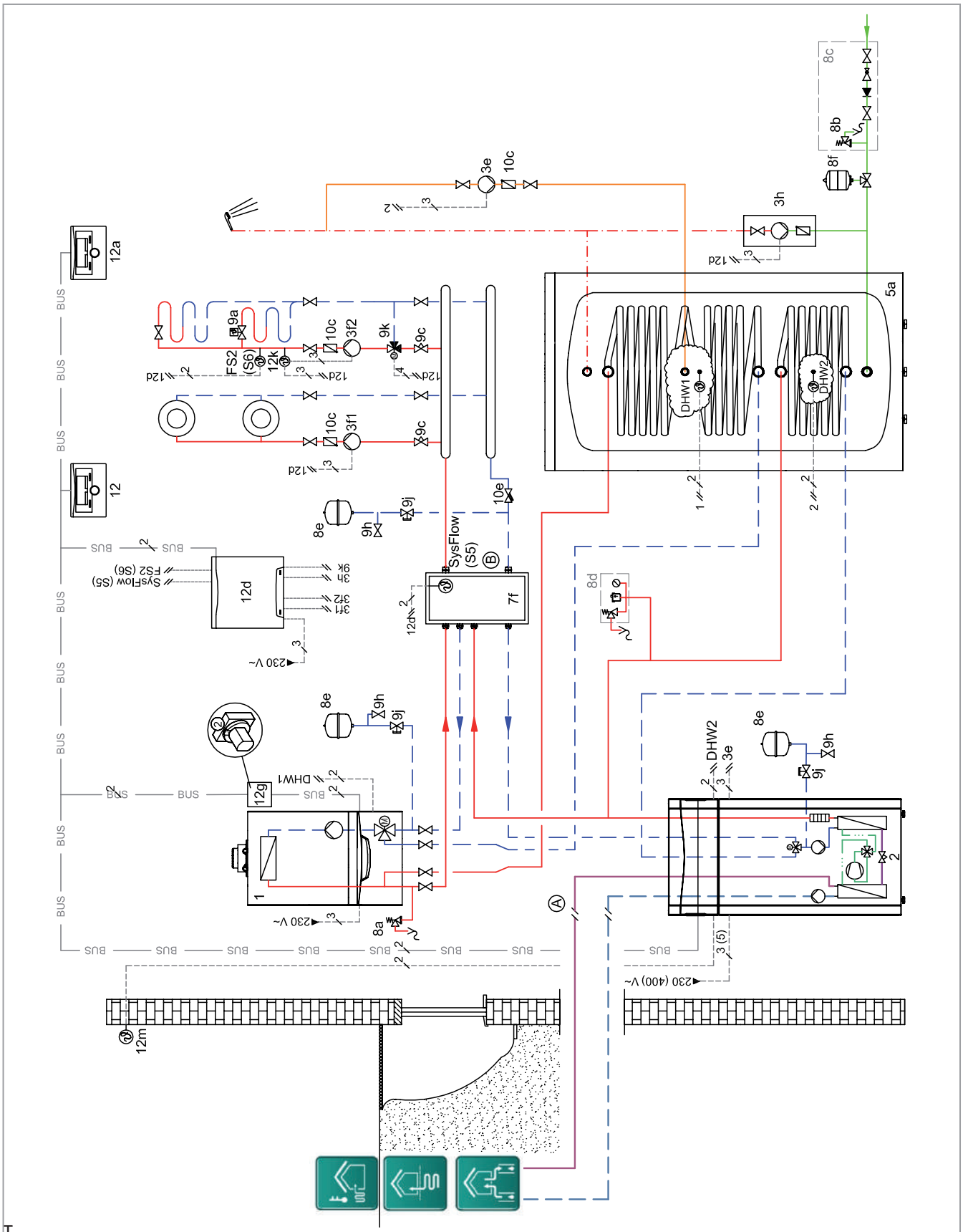


Fig 151: Basic hydraulic diagram

0020177928 - Wiring diagram

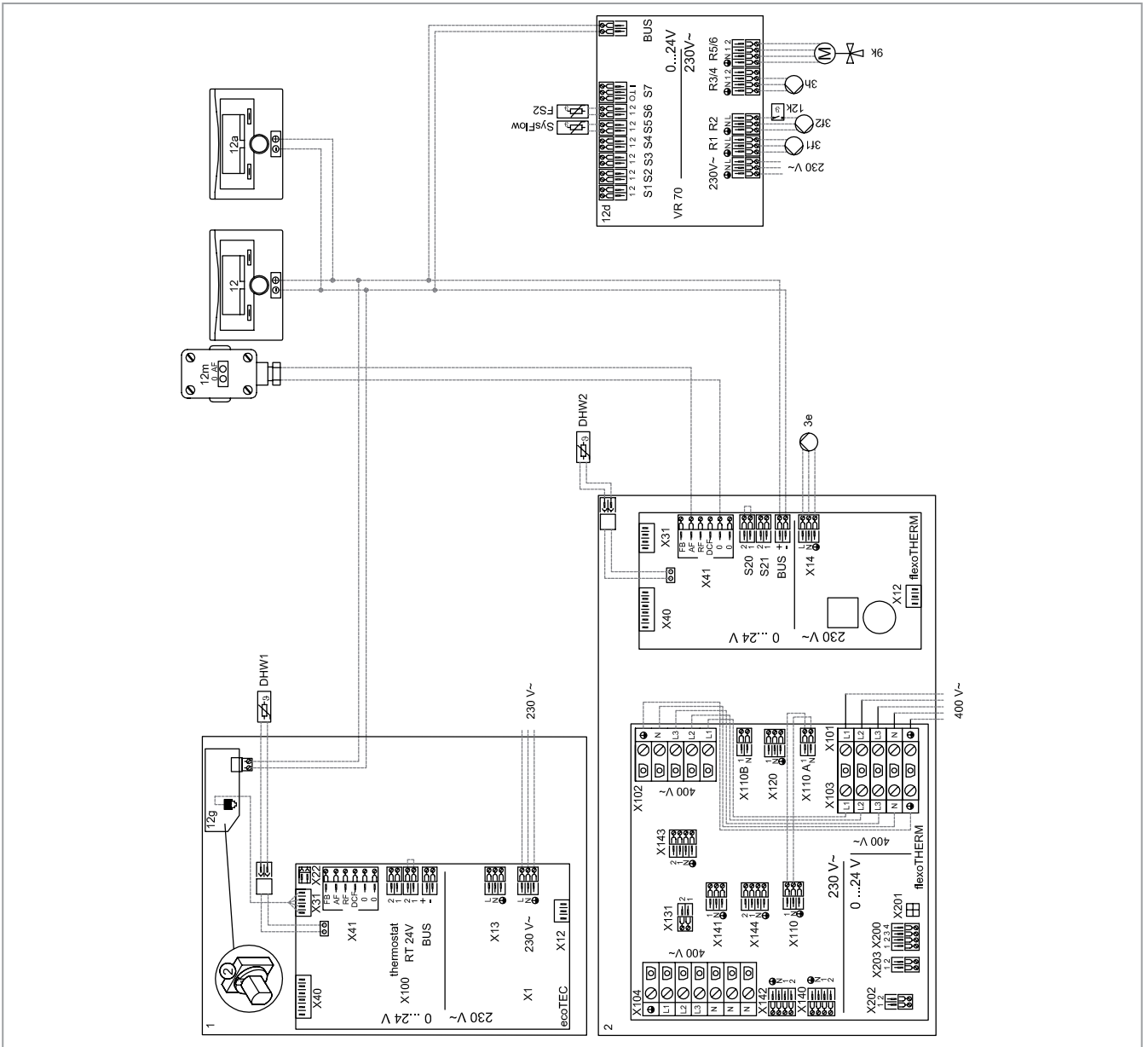


Fig 152: Wiring diagram

Description

Houses or apartment buildings with two mixed heating circuits. The heat pump supports the heating and hot water system. The heat generator also supports the heating and domestic hot water systems. The solar and domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Heat source options 0020178458 no. 1, 2, 3, 4.

Caution: Use the VWZ MPS 40 compact buffer cylinder if the flow rate is less than or equal to 2600 l/h. If an expansion vessel is not integrated in the heat generator, plans must be made for an additional expansion vessel in the hot-water charging circuit for the floor-standing boiler. Use the VIH RW 400 B domestic hot water cylinder if the heating output of the heat pump is 7 kW. Cooling technology setting for the heat pump: No cooling or active cooling/eBUS interface (13h): Address setting 2.

Individual components

- flexoTHERM VWF 5 kW
- ecoTEC VC < 37 kW
- VWZ MPS 40
- VRC 700
- geoSTOR VIH RW 400 B
- VR 70
- VR 91
- VR 32

Setting

- VRC 700 system diagram setting: 12
- VR 70 module setting: 1
- eBUS interface (12g): Address setting 2

0020194200 - Basic hydraulic diagram

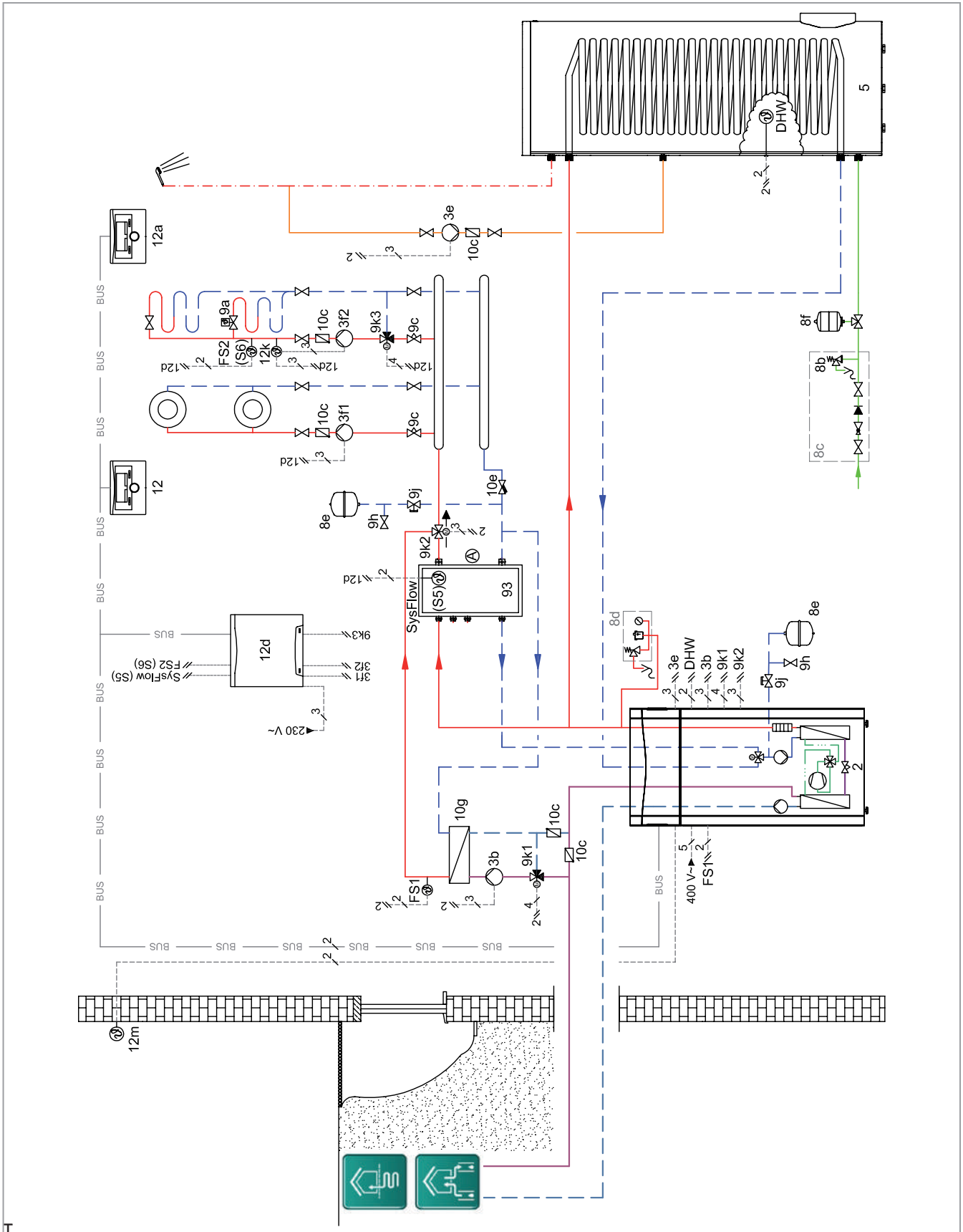


Fig 153: Basic hydraulic diagram

0020194200 - Wiring diagram

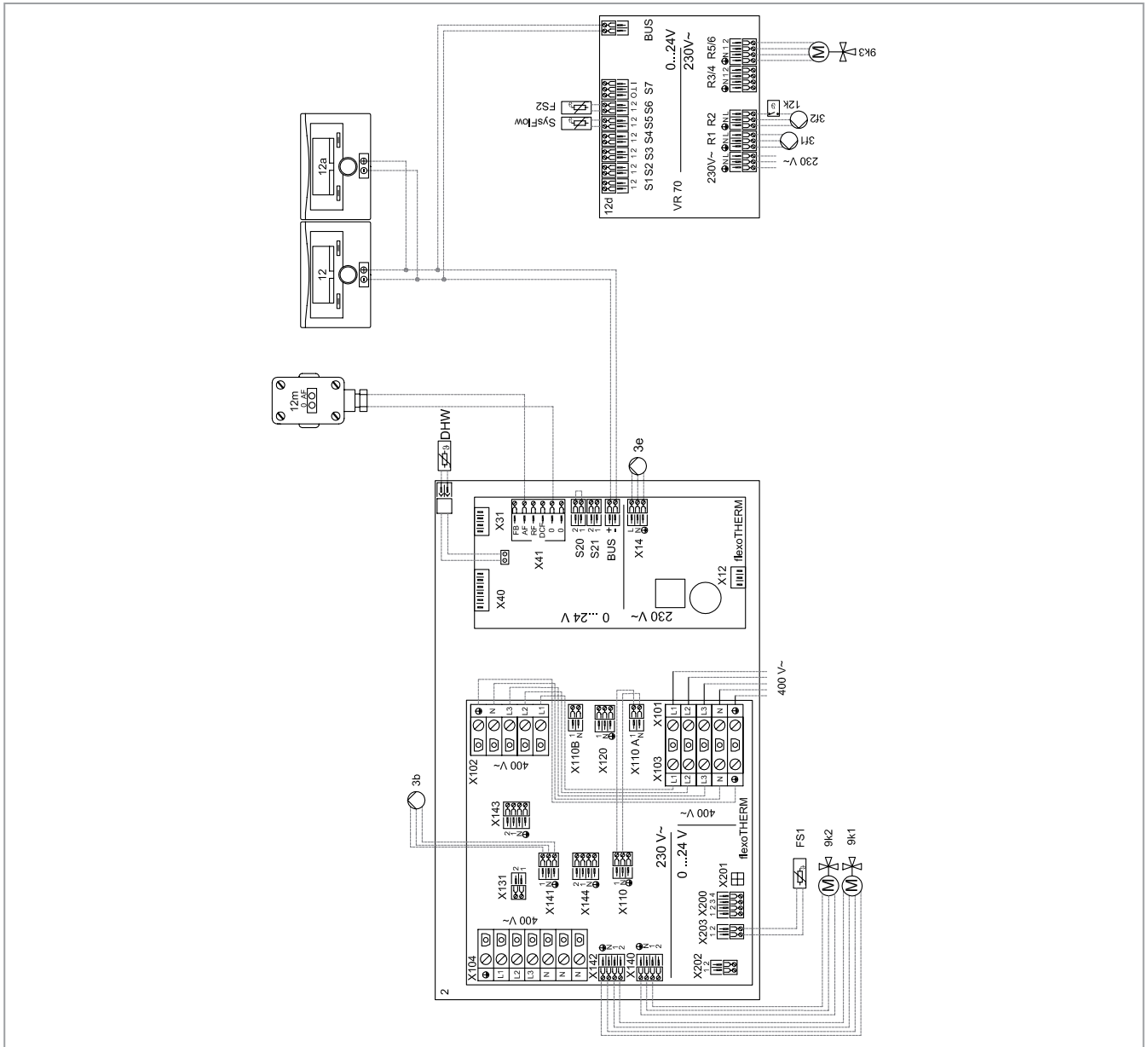


Fig 154: Wiring diagram

Description

Houses or apartment buildings with one pump heating circuit and one mixed heating circuit. The heat pump supports the heating, cooling and domestic hot water systems. The domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Heat source options 0020178458 no. 3, 4.

Caution: Use the VWZ MPS 40 compact buffer cylinder if the flow rate is less than or equal to 2600 l/h. Use the VIH RW 300 domestic hot water cylinder if the heating output of the heat pump is 11 kW. Cooling technology setting for the heat pump: Logical passive cooling.

Individual components

- flexoTHERM VWF 5 -11 kW
- VWZ MPS 40
- geoSTOR VIH RW
- VR 70
- VRC 700
- VR 91

Setting

- VRC 700 system diagram setting: 8
- VR 70 module setting: 1

0020199460 - Basic hydraulic diagram

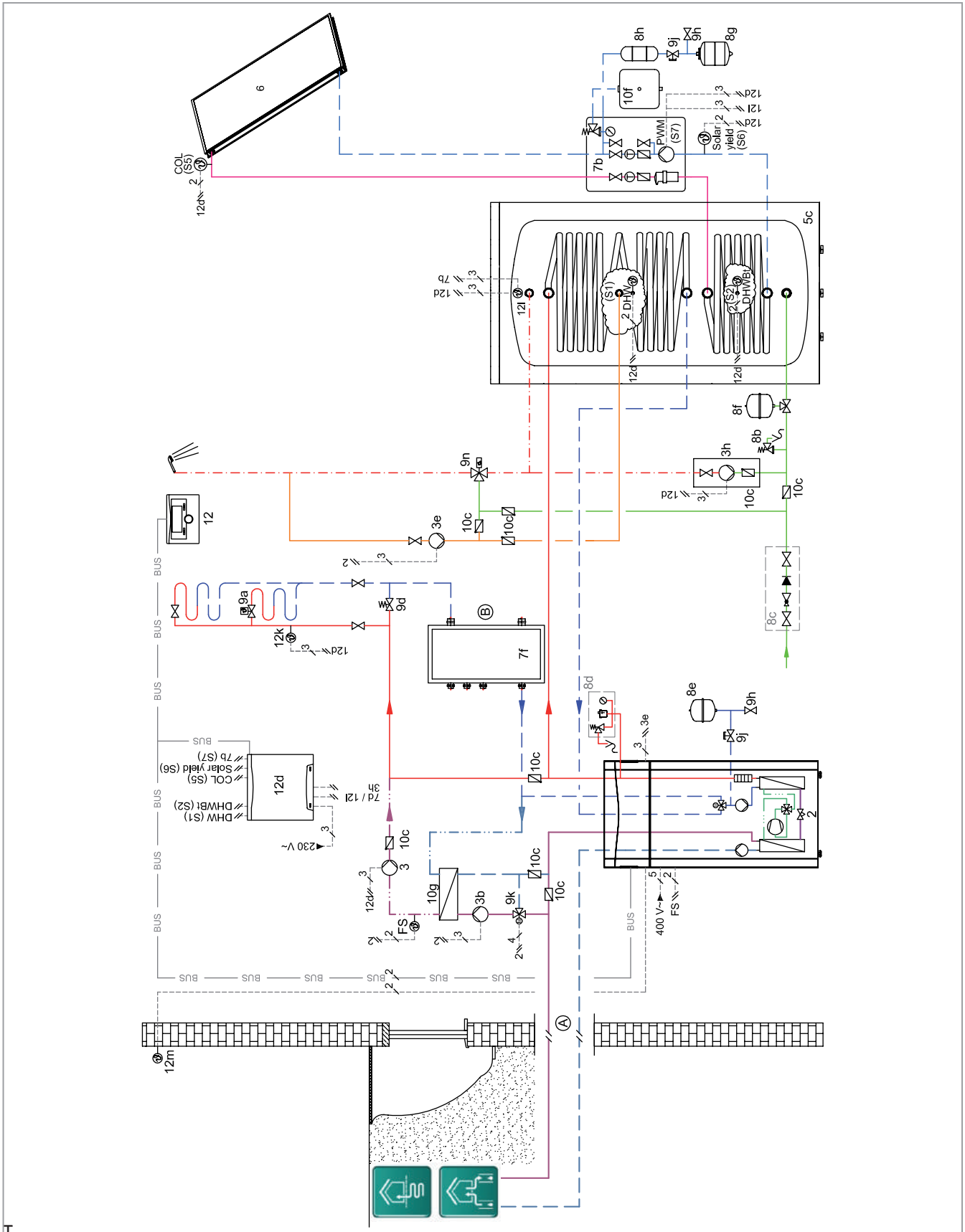


Fig 155: Basic hydraulic diagram

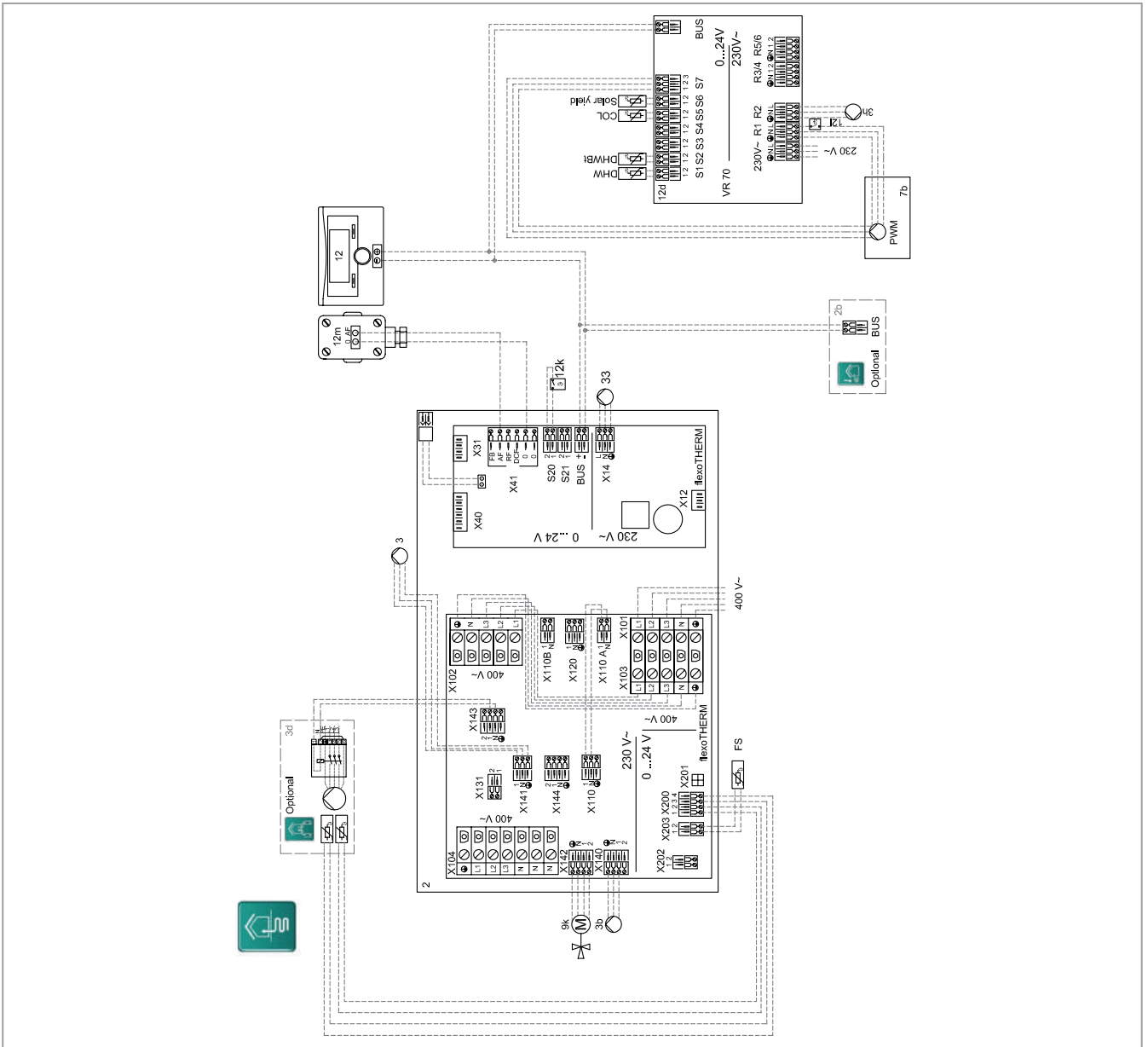


Fig 156: Wiring diagram

Description

Houses with one pump heating circuit (underfloor heating). The heat pump supports the heating, cooling and domestic hot water systems. The solar system also supports the domestic hot water system. The bivalent domestic hot water cylinder must be designed in accordance with the applicable standards and regulations. A: Heat source options 0020178458 no. 3, 4. B: Instead of a decoupler module, a buffer cylinder can be dimensioned.

Caution: At least 30% of the flow must flow through the reference room without an individual room control valve. Use the VIH RW 400 B domestic hot water cylinder if the heating output of the heat pump is 11 kW. If an expansion vessel is not integrated in the heat generator, plans must be made for an additional expansion vessel in the hot-water charging circuit for the floor-standing boiler. Cooling technology setting for the heat pump: Local passive cooling.

Individual components

- flexoTHERM VWF 5 - 11 kW
- geoSTOR VIH RW 400 B
- VMS 70
- auroTHERM VFK
- VRC 700
- VR 70

Setting

- VR 700 system diagram setting: 8
- VR 70 module setting: 6

0020223737 - Basic hydraulic diagram

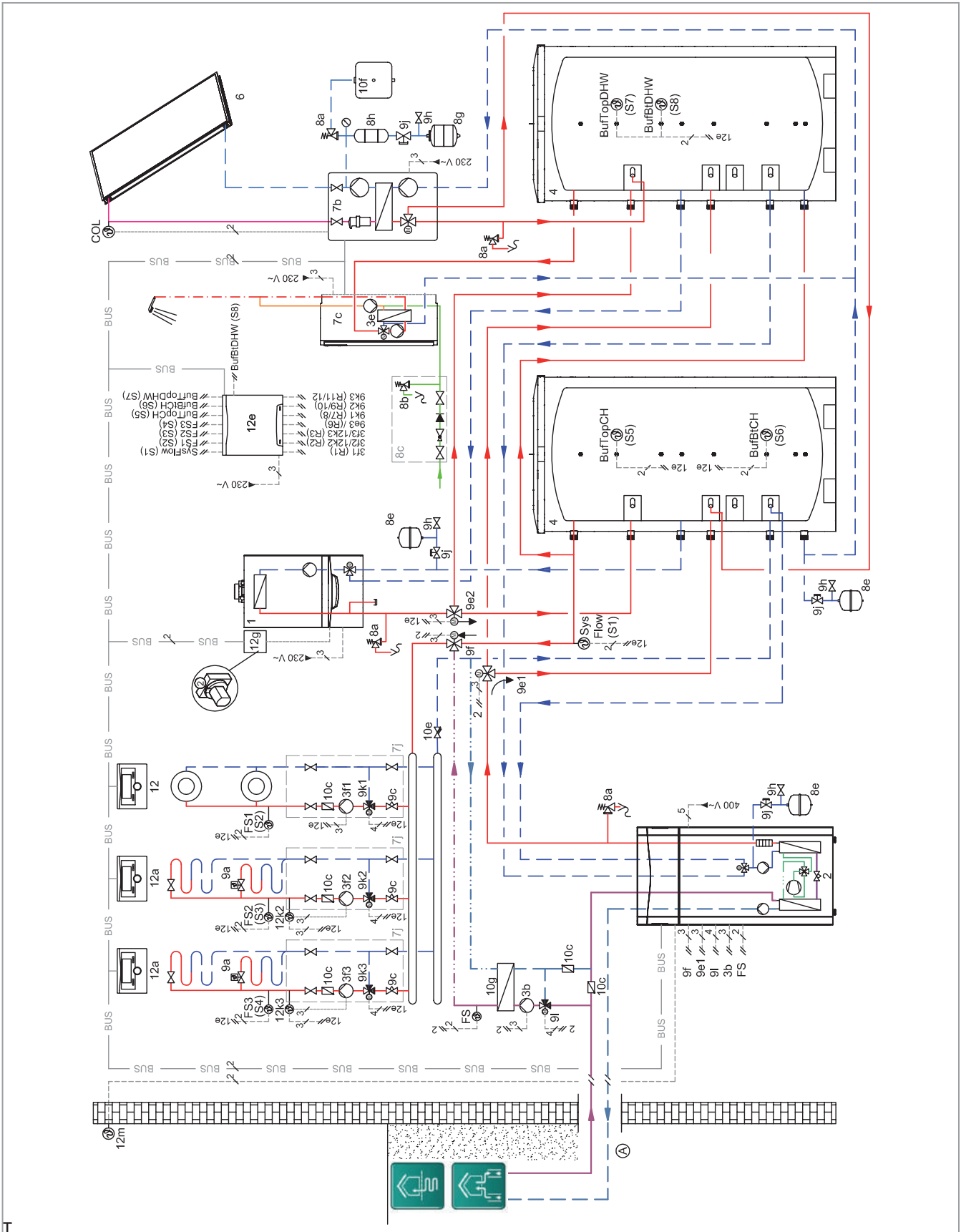


Fig 157: Basic hydraulic diagram

0020223737 - Wiring diagram

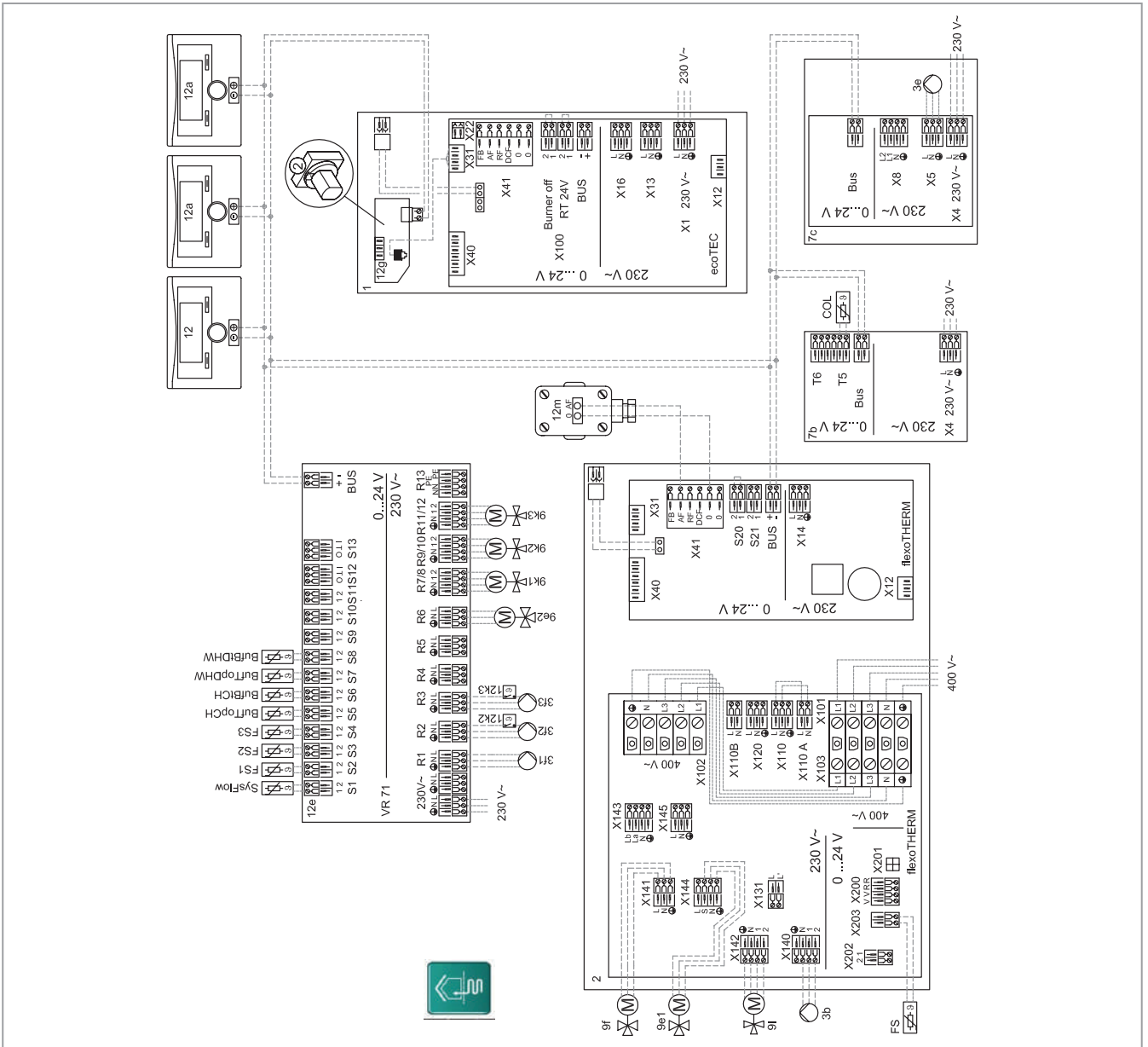


Fig 158: Wiring diagram

Description

Houses with three mixed heating circuits for heating and cooling systems. The heat pump supports the heating and hot water system. The solar system also supports the domestic hot water and heating systems. The multi-functional cylinder must be designed in accordance with the applicable standards and regulations. A: Heat source options 0020178458 no. 3, 4.

Individual components

- flexoTHERM VWF
- ecoTEC
- allISTOR VPS
- aquaFLOW VPM W
- auroFLOW VPM S
- auroTHERM VFK
- VRC 700/4
- VR 71
- VR 91

Setting

- VRC 700 system diagram setting: 16
- VR 71 module setting: 6

0020223745 - Basic hydraulic diagram

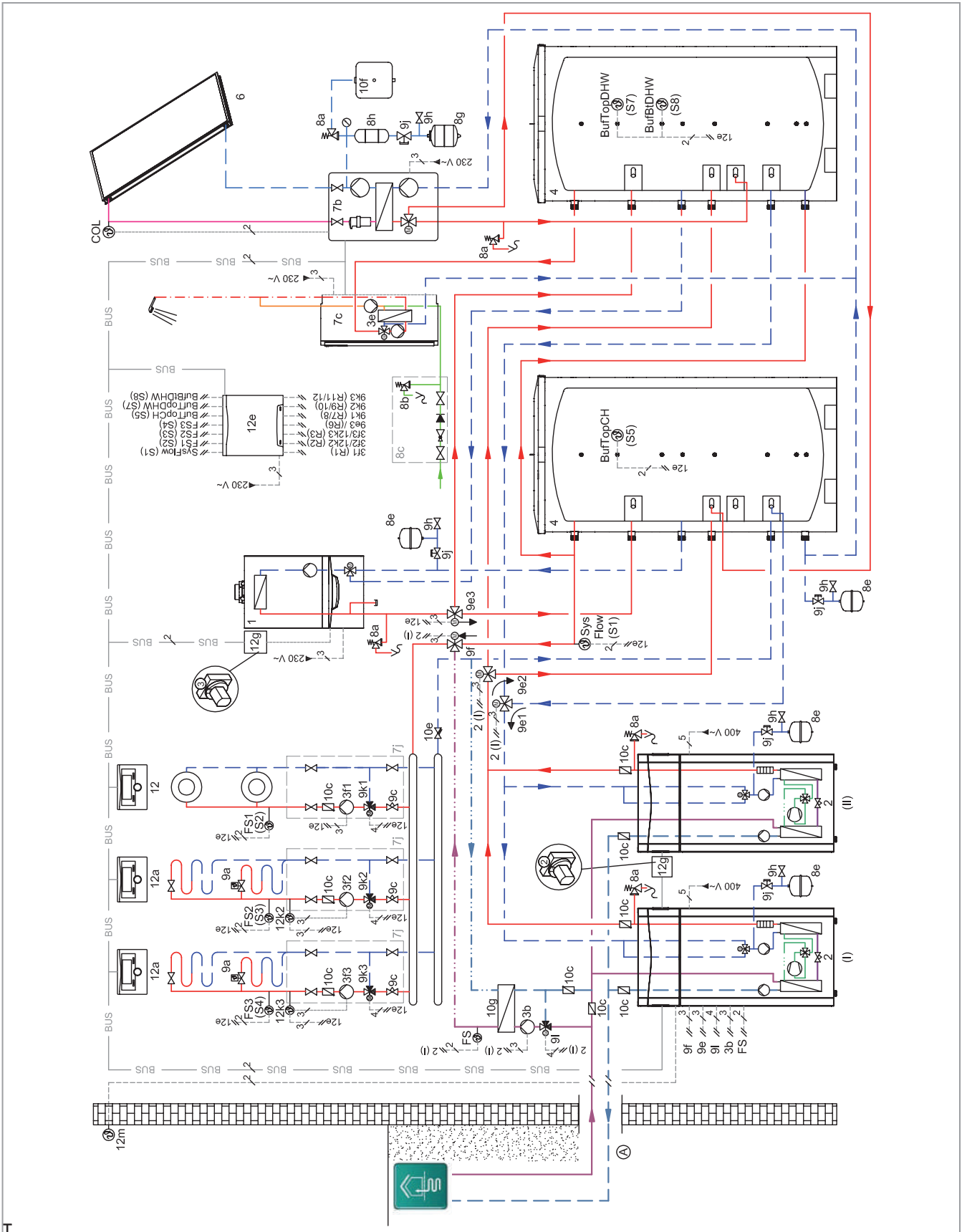


Fig 159: Basic hydraulic diagram

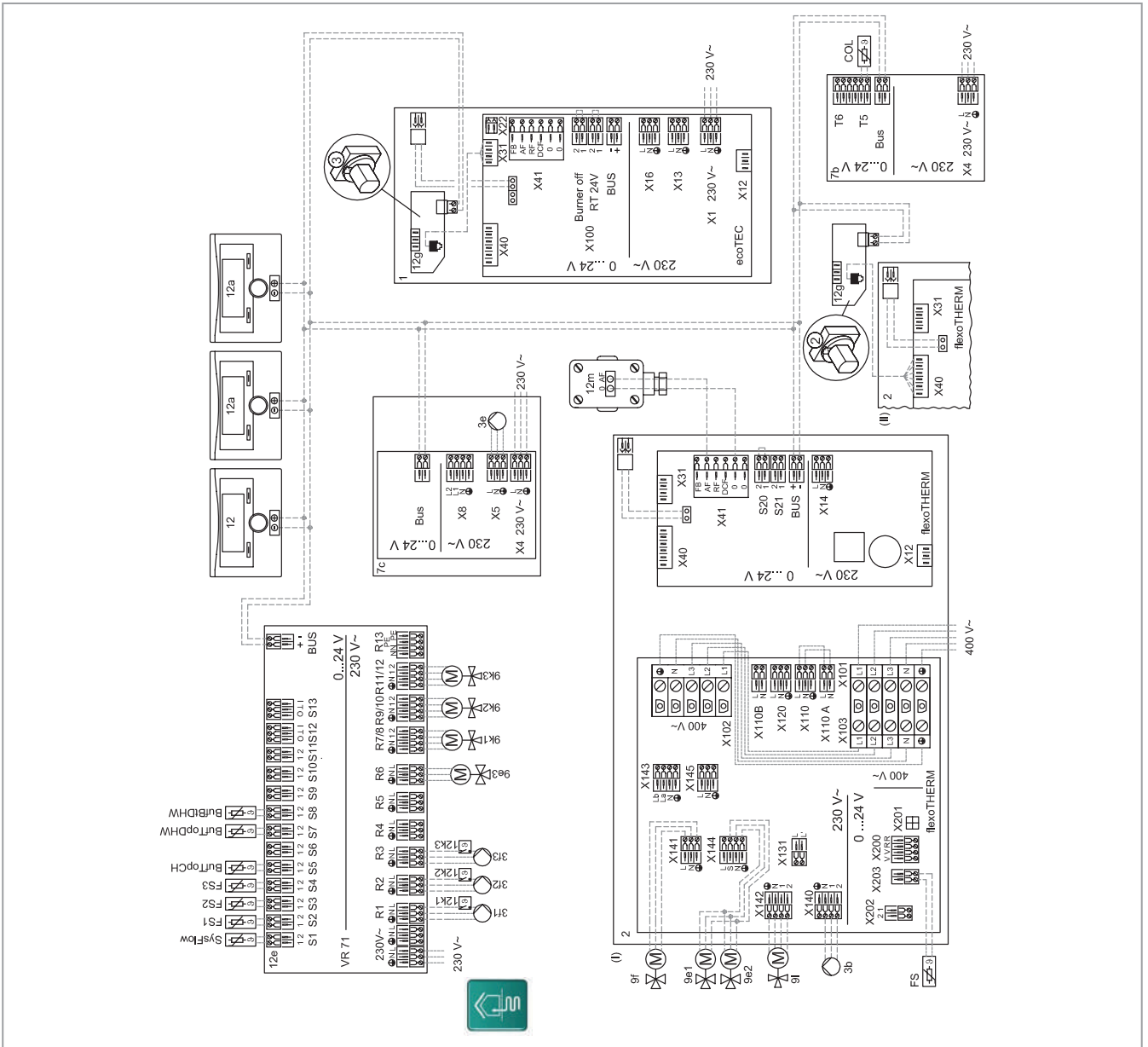


Fig 160: Wiring diagram

Description
 Commercial buildings with three mixed heating circuits for heating and cooling systems. The heat pump supports the heating and hot water system. The solar system also supports the domestic hot water and heating systems. The multi-functional cylinder must be designed in accordance with the applicable standards and regulations.
 A: Heat source options 0020178458 no. 3.

Individual components

- 2x flexoTHERM VWF
- ecoTEC
- allISTOR VPS
- aquaFLOW VPM W
- auroFLOW VPM S
- auroTHERM VFK
- VRC 700/4
- VR 71
- VR 91

Setting

- VRC 700 system diagram setting: 16
- VR 71 module setting: 6

0020177918 - Basic hydraulic diagram

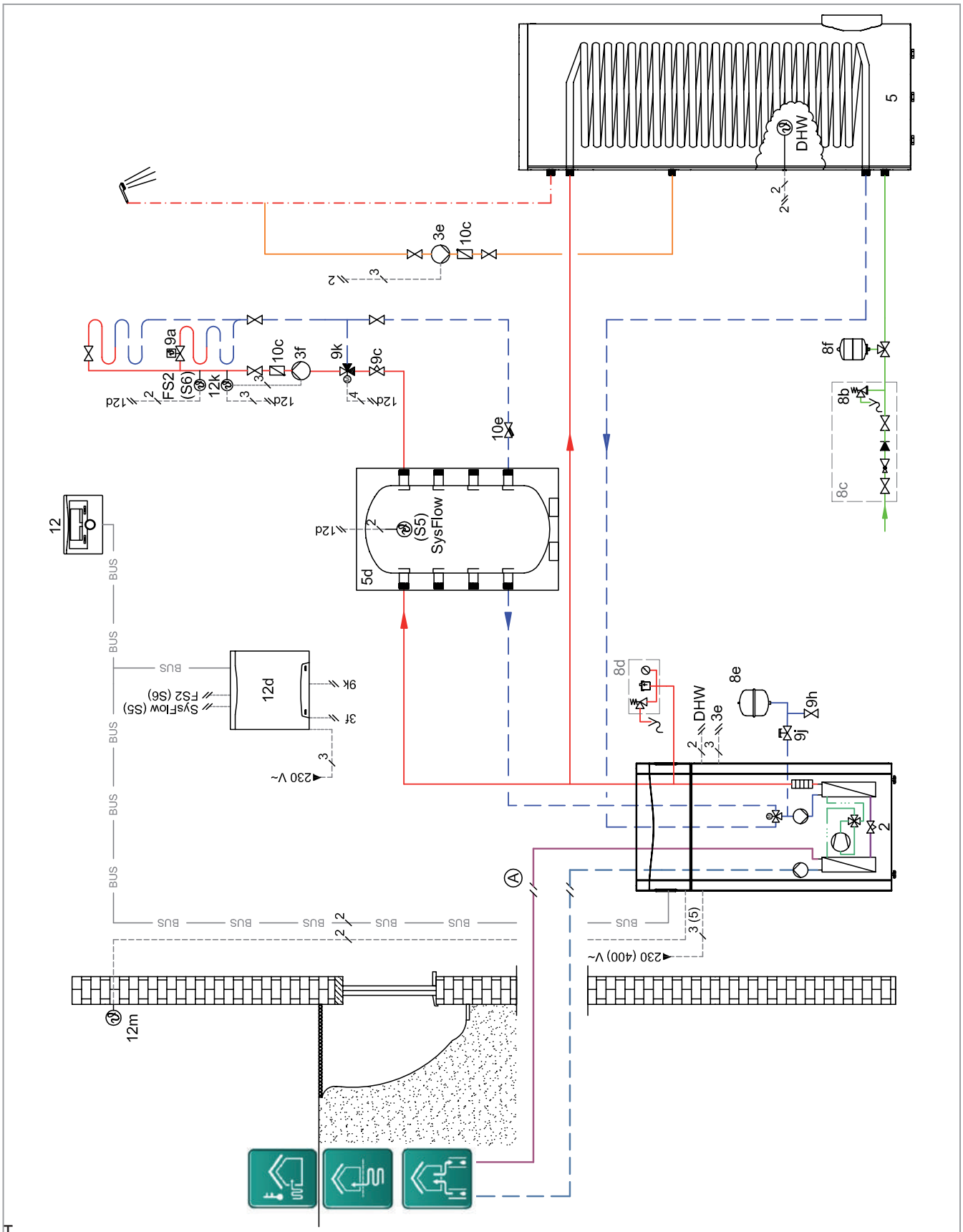


Fig 161: Basic hydraulic diagram

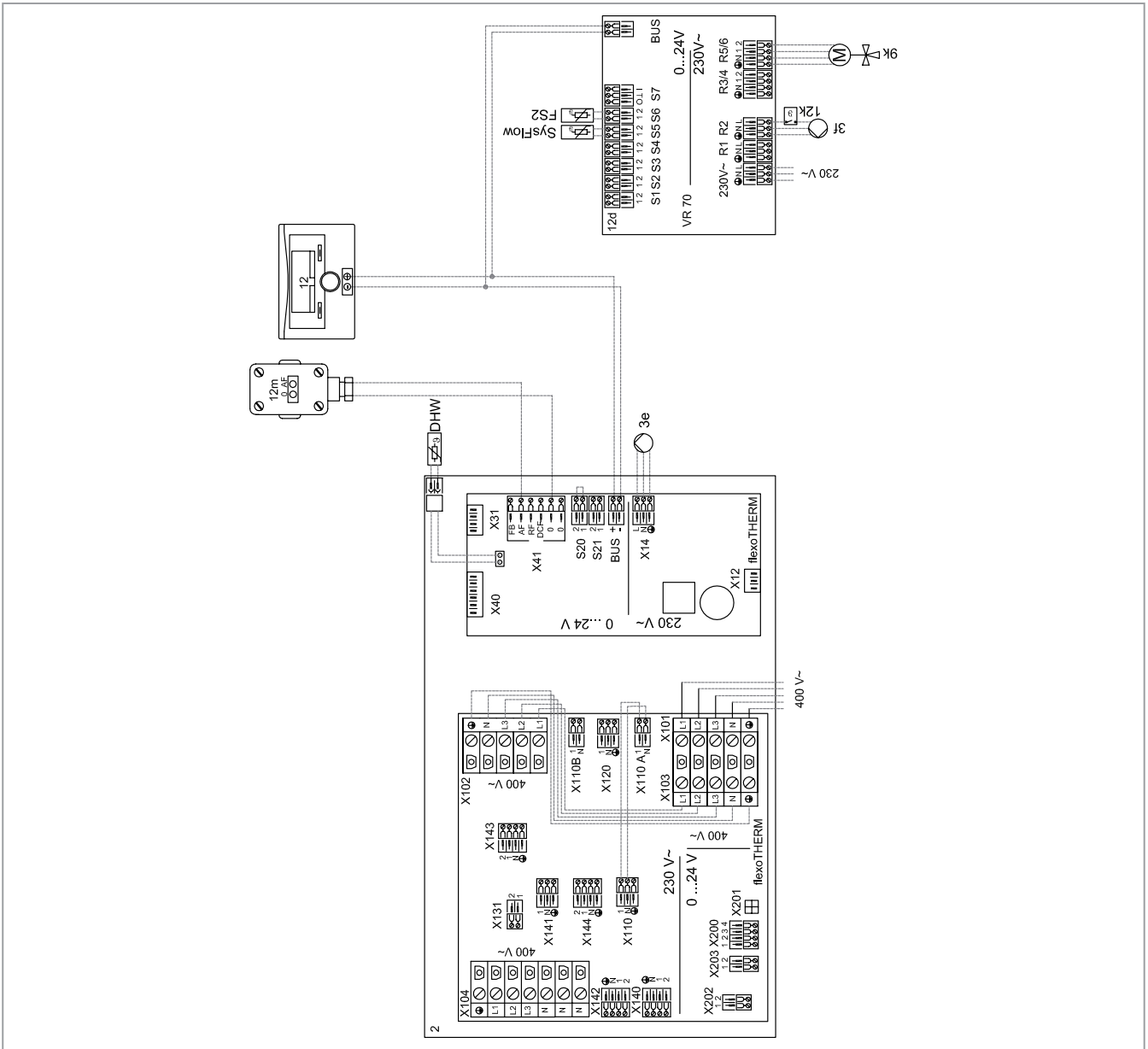


Fig 162: Wiring diagram

Description

Houses with one mixed heating circuit. The domestic hot water cylinder must be designed in accordance with the applicable standards and regulations. A: Heat source options 0020178458 no. 1, 2, 3, 4.

Caution: Use the VIH RW 300 domestic hot water cylinder if the heating output of the heat pump is 11 kW. Cooling technology setting for the heat pump: Cooling or active cooling.

Individual components

- flexoTHERM VWF 5 - 11 kW
- VPS R 100/1 M
- geoSTOR VIH RW
- VR 70
- VRC 700

Setting

- VRC 700 system diagram setting: 8
- VR 70 module setting: 1

0020177930 - Basic hydraulic diagram

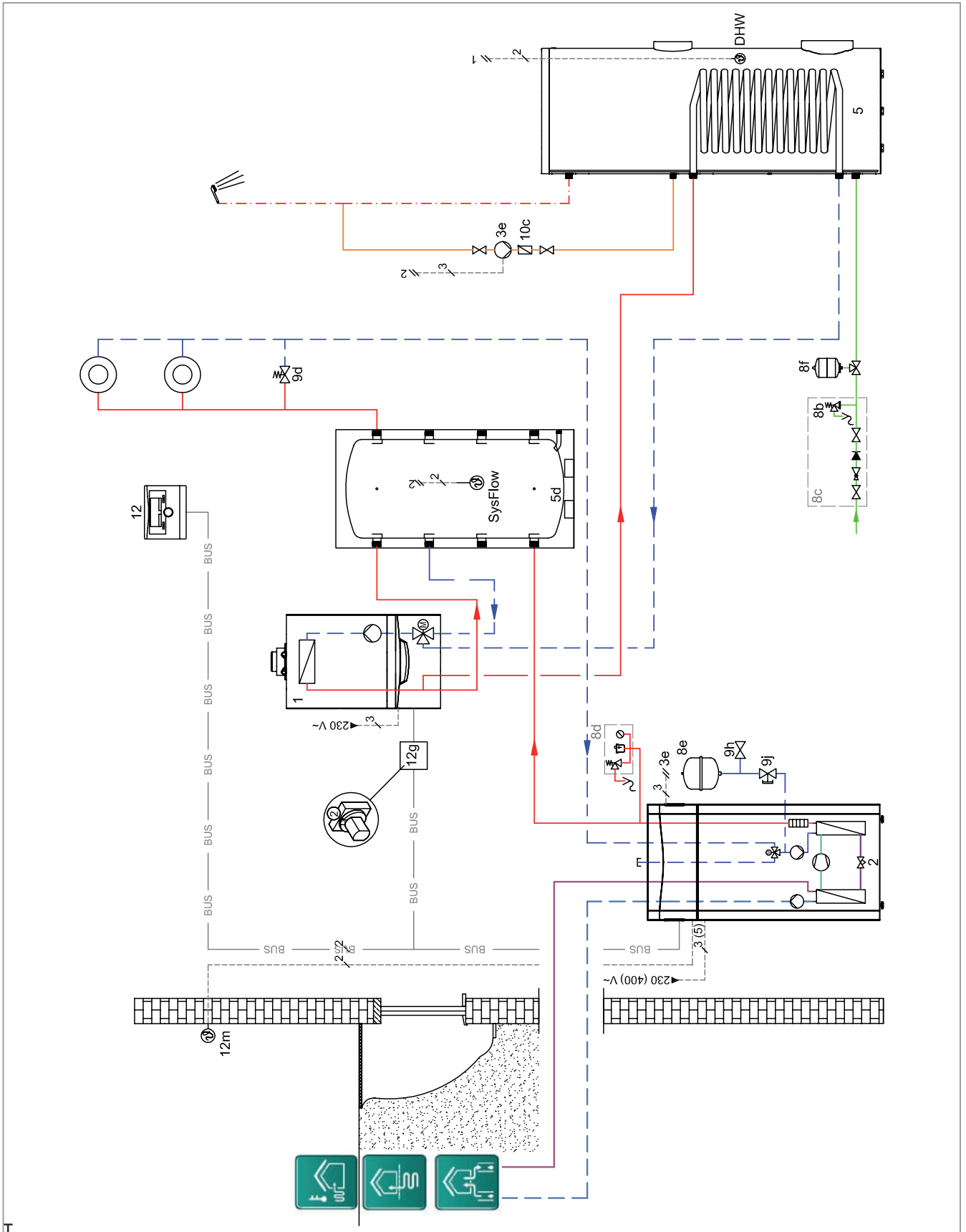


Fig 163: Basic hydraulic diagram

0020177930 - Wiring diagram

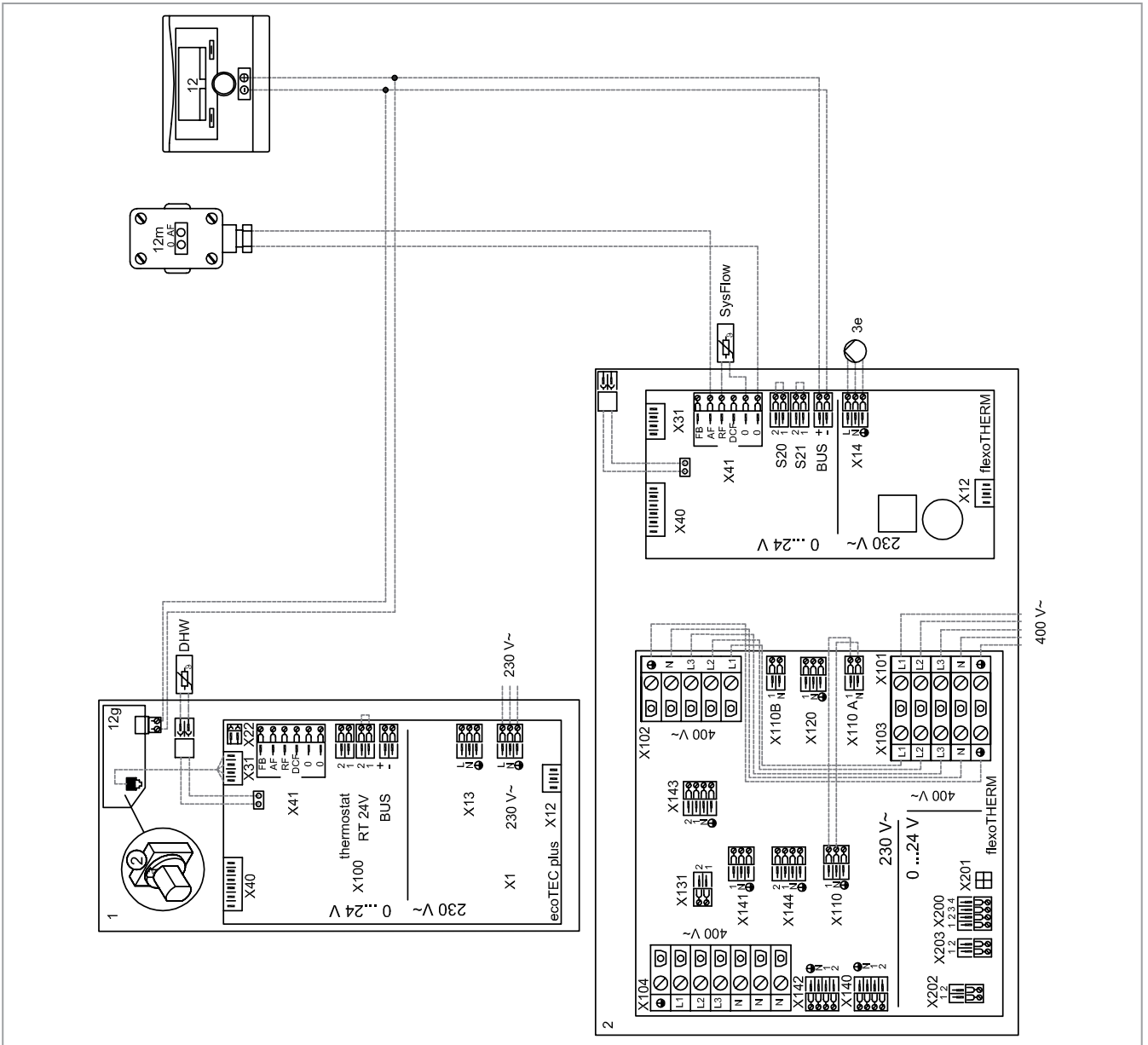


Fig 164: Wiring diagram

Description

Houses or apartment buildings with one non-mixed heating circuit. Hot water is generated by the heat pump. The heat generator supports the heating and domestic hot water systems. The domestic hot water cylinder must be designed in accordance with the applicable standards and regulations. Heat source options 0020178458 no. 1, 2, 3, 4.

Individual components

- flexoTHERM VWF 5 - 19 kW
- ecoTEC VC < 30 kW
- VPS R 200/1 B
- uniSTOR VIH R
- VRC 700

Setting

VRC 700 system diagram setting: 8

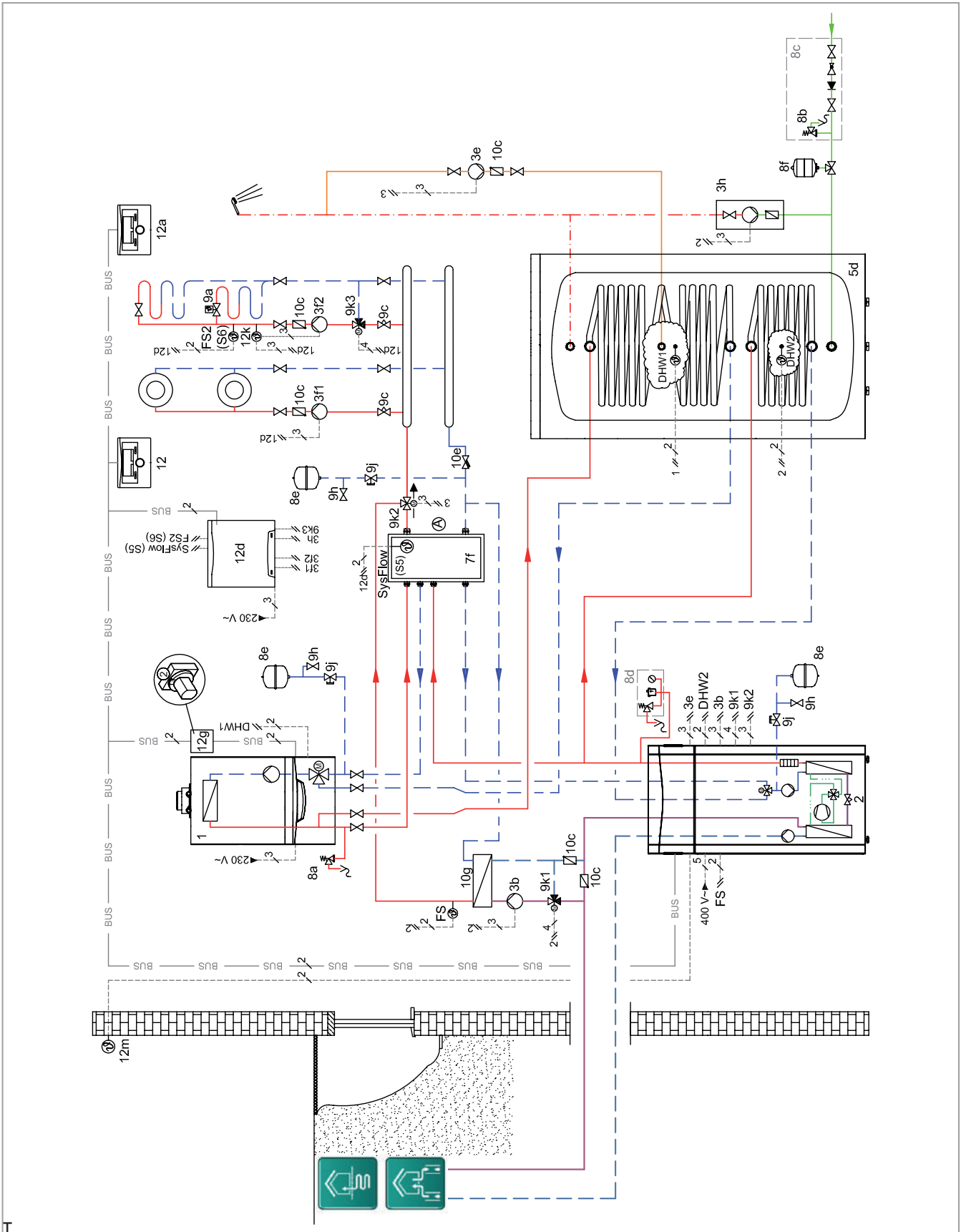


Fig 165: Basic hydraulic diagram

0020194206 - Wiring diagram

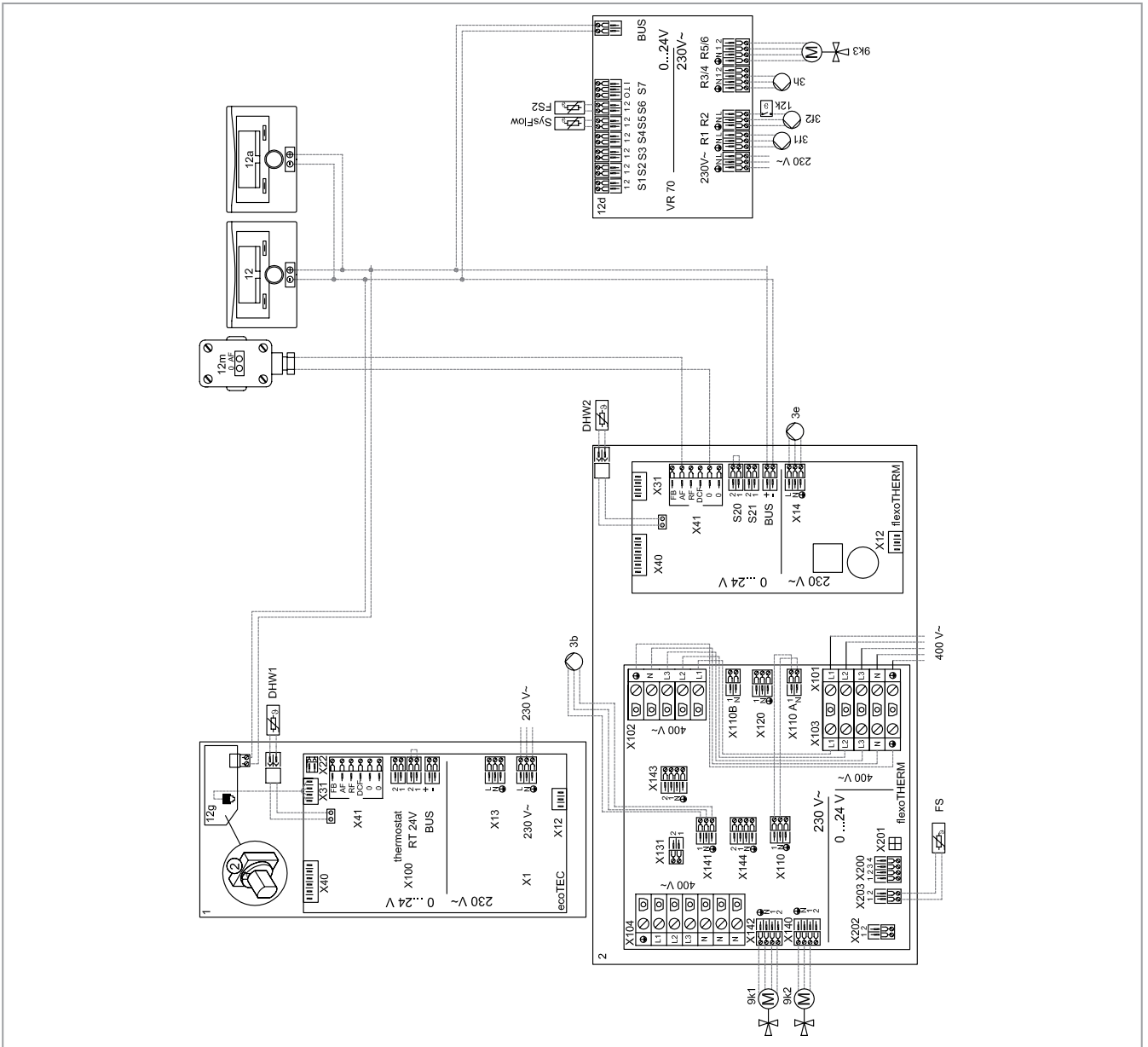


Fig 166: Wiring diagram

Description

Houses or apartment buildings with one pump heating circuit and one mixed heating circuit for heating or passive cooling. The heat pump supports the heating and hot water system. The heat generator also supports the heating and domestic hot water systems. The bivalent domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Heat source options 0020178458 no. 1, 2, 3, 4.

Caution: Use the VWZ MPS 40 compact buffer cylinder if the flow rate is less than or equal to 2600 l/h. If an expansion vessel is not integrated in the heat generator, plans must be made for an additional expansion vessel in the hot-water charging circuit for the floor-standing boiler. Use the VIH RW 400 B domestic hot water cylinder if the heating output of the heat pump is 7 kW. Cooling technology setting for the heat pump: Local passive cooling/eBUS interface (13h): Address setting 2

Individual components

- flexoTHERM VWF 5 - 7 kW
- ecoTEC VC < 37 kW
- VWZ MPS 40
- geoSTOR VIH RW 400 B
- VRC 700
- VR 70
- VR 91
- legionella protection

Setting

VRC 700 system diagram setting: 12

VR 70 module setting: 1



4. Product information for the flexoCOMPACT exclusive

Update 10
New product overview

4.1 Product combinations



Fig. 167: Product combinations

Product combination overview for the flexoCOMPACT nordic VWF ..2/4

	Heat pump			Decoupler modules		Control	Photovoltaics
	Brine/water flexoCOMPACT VWF ..8/4 (1)	Air/water flexoCOMPACT VWF ..8/4 (1) + aroCOLLECT VWL 11/4 (2)	Water/water flexoCOMPACT VWF ..8/4 (1) + fluoCOLLECT VWW ../4 (3)	Buffer cylinder Heating and cooling VP RW 45/2 B (4) VPS R 100/1 M (5) VPS R 200/1 B (6)	Buffer cylinder Heating allSTOR plus/exclusive (7)	VRC 700 or VRC 720 (8)	PV modules and inverters (9)
Heating and compact domestic hot water generation	•	•	•	o	o	•	•
Heating, compact domestic hot water generation and cooling	•	•	•	•	–	•	•

• Recommended / o Recommended under certain circumstances / – Not recommended

4.2 Product description of the flexoCOMPACT exclusive VWF 58/4 - VWF 118/4



Fig. 168: flexoCOMPACT exclusive

4.2.1 Special features

- Bears the Green iQ label
- The Sound Safe System ensures that the heat pump is particularly quiet when running
- Flow temperatures of up to 65 °C for modernisation with EVI, even at low outside temperatures
- High level of efficiency thanks to the advanced, durable heat pump scroll compressor
- 10-year material guarantee for the compressor
- SplitMountingConcept for easy positioning in two parts
- Highly efficient hot water generation

4.2.2 Potential applications

- Heating and hot water generation

4.2.3 Equipment

- 185 l stainless steel domestic hot water cylinder, cylinder temperatures of up to 60 °C possible in heat pump mode
- Free iPhone and Android app for end customers
- High-efficiency pumps in the heating/brine circuit
- Domestic hot water prioritising diverter valve
- 9 kW electric back-up heater, multistage
- In-rush current limiter
- Sensor-controlled refrigerant circuit with EVI technology
- Integrated active cooling mode
- Heat meter and electricity meter integrated as standard
- aroCOLLECT: Particularly quiet, modulating EC fan
- fluoCOLLECT: Nickel-soldered stainless steel heat exchanger, option to connect an expansion relief valve, integrated manometer for the brine circuit, filling device for the brine circuit
- Optional: Particularly quick installation and start-up with accessory: Pre-installation jig 0020229713 can be used for flexoTHERM and 0020205412 for flexoCOMPACT
- Optional: Passive cooling via the ground collector with accessory: VWZ NC 11 or 19

Note

The screwed connection must be ordered separately.



VR 10 sensors must be ordered separately in accordance with the basic hydraulic diagram.

Update 10 New efficiency class (EN14511:2018)

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Domestic hot water generation energy efficiency class	Order no.
VWF 58/4	A+++ / A++ (A+++ to D) A++ / A+ (A+++ to D) A+++ / A++ (A+++ to D)	A (A+ to F) A (A+ to F) A (A+ to F)	0010030749 0010030876 with aroCOLLECT 0010030884 with fluoCOLLECT
VWF 88/4	A+++ / A++ (A+++ to D) A++ / A+ (A+++ to D) A+++ / A++ (A+++ to D)	A (A+ to F) A (A+ to F) A (A+ to F)	0010030750 0010030877 with aroCOLLECT 0010030885 with fluoCOLLECT
VWF 118/4	A+++ / A++ (A+++ to D) A++ / A+ (A+++ to D) A+++ / A++ (A+++ to D)	A (A+ to F) A (A+ to F) A (A+ to F)	0010030751 0010030878 with aroCOLLECT 0010030886 with fluoCOLLECT

4.3 Technical data

4.3.1 General

Dimensions

	VWF 58/4	VWF 88/4	VWF 118/4
Product dimensions, height, without adjustable feet	1,868 mm	1,868 mm	1,868 mm
Product dimensions, width	595 mm	595 mm	595 mm
Product dimensions, depth	720 mm	720 mm	720 mm
Weight, with packaging	225 kg	239 kg	247 kg
Weight, without packaging	212 kg	227 kg	234 kg
Weight, ready for operation	401 kg	417 kg	425 kg

Electrics

	VWF 58/4	VWF 88/4	VWF 118/4
Compressor/heating circuit rated voltage	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz
Control circuit rated voltage	1~/N/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz
Auxiliary heater rated voltage	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz
Power factor	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$
Required network impedance Z_{\max} with in-rush current limiter	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)
In-rush current with in-rush current limiter	$\leq 15 \text{ A}$	$\leq 19 \text{ A}$	$\leq 22 \text{ A}$
Measuring current, max.	19.8 A	21.2 A	23.4 A
Min. electrical power consumption	1.40 kW	2.00 kW	2.50 kW
Max. electrical power consumption	11.50 kW	12.80 kW	14.10 kW
Max. electrical power consumption of auxiliary heater	9 kW	9 kW	9 kW
EN 60529 level of protection	IP 10B	IP 10B	IP 10B

Hydraulics

	VWF 58/4	VWF 88/4	VWF 118/4
Heating flow/return connection	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "
Heat source flow/return connection	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "
Cold/hot water connection	G 3/4 "	G 3/4 "	G 3/4 "
Heating expansion vessel connection	G 3/4 "	G 3/4 "	G 3/4 "

Update 10
New technical data (EN14511:2018)

Integrated domestic hot water cylinder

	VWF 58/4	VWF 88/4	VWF 118/4
Contents, net	171 l	171 l	171 l
Max. operating pressure	1 MPa	1 MPa	1 MPa
Max. hot water outlet temperature with heat pump	≤ 63 °C	≤ 63 °C	≤ 63 °C
Max. hot water outlet temperature with heat pump and auxiliary heater	≤ 75 °C	≤ 75 °C	≤ 75 °C
Domestic hot water cylinder heat-up time up to target cylinder temperature of 50 °C	75 min	68 min	52 min
Power consumption during standby in accordance with DIN EN 16147	24 W	26 W	27 W

Heat source circuit/brine circuit

	VWF 58/4	VWF 88/4	VWF 118/4
Brine content of the brine circuit in the heat pump	2.5 l	3.1 l	3.6 l
Brine circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe
Min. brine fluid operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. brine fluid operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Max. electrical power consumption, brine circuit pump	76 W	76 W	130 W
Brine pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump

Building circuit/heating circuit

	VWF 58/4	VWF 88/4	VWF 118/4
Heating circuit water contents in the heat pump	15.4 l	16.1 l	16.5 l
Heating circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe
Permissible heating water condition	Do not add antifreeze or corrosion inhibitors to heating water. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.		
Min. heating circuit operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. heating circuit operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Min. heating mode flow temperature	25 °C	25 °C	25 °C
Max. heating mode target flow temperature	75 °C	75 °C	75 °C
Min. cooling mode flow temperature	5 °C	5 °C	5 °C
Max. electrical power consumption, heating pump	63 W	63 W	63 W
Heating pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump

Update 10
New technical data (EN14511:2018)

Refrigerant circuit

	VWF 58/4	VWF 88/4	VWF 118/4
Refrigerant type	R410A	R410A	R410A
Refrigerant content of the refrigerant circuit in the heat pump	1.50 kg	2.40 kg	2.50 kg
Global warming potential (GWP) in accordance with regulation (EU) no. 517/2014	2088	2088	2088
CO ₂ equivalent	3.132 t	5.011 t	5.220 t
Global warming potential 100 (GWP ₁₀₀) in accordance with regulation (EC) no. 842/2006	1975	1975	1975
Expansion valve design	Electronic	Electronic	Electronic
Permissible operating pressure (relative)	≤ 4.6 MPa	≤ 4.6 MPa	≤ 4.6 MPa
Compressor type	Scroll	Scroll	Scroll
Oil type	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)
Oil filling quantity	0.75 l	1.25 l	1.25 l

Installation site

	VWF 58/4	VWF 88/4	VWF 118/4
Installation site	Interior/dry	Interior/dry	Interior/dry
Installation room volume complying with EN 378	3.41 m ³	5.45 m ³	5.68 m ³
Permissible environmental temperature at the installation site	7 to 25 °C	7 to 25 °C	7 to 25 °C
Permissible relative air humidity	40 to 75 %	40 to 75 %	40 to 75 %

4.3.2 Brine heat source

Heat source circuit/brine circuit

	VWF 58/4	VWF 88/4	VWF 118/4
Min. source inlet temperature (hot brine) in heating mode	-10 °C	-10 °C	-10 °C
Max. source inlet temperature (hot brine) in heating mode	25 °C	25 °C	25 °C
Min. source inlet temperature (hot brine) in cooling mode	0 °C	0 °C	0 °C
Max. source inlet temperature (hot brine) in cooling mode	30 °C	30 °C	30 °C
Nominal flow ΔT 3 K for B0/W35	1,290 l/h	2,320 l/h	3,000 l/h
Min. volume flow during continuous operation at the application limits	1,110 l/h	2,140 l/h	2,460 l/h
Max. volume flow during continuous operation at the application limits	1,290 l/h	2,320 l/h	3,000 l/h
Max. remaining feed head with ΔT 3 K for B0/W35	0.062 MPa	0.039 MPa	0.051 MPa
Brine circuit pump electrical power consumption for B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the brine circuit	44 W	62 W	64 W
Brine fluid type	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.

Update 10
New technical data (EN14511:2018)

Building circuit/heating circuit

	VWF 58/4	VWF 88/4	VWF 118/4
Nominal flow at ΔT 5 K for B0/W35	920 l/h	1,530 l/h	1,920 l/h
Max. remaining feed head at ΔT 5 K B0/W35	0.065 MPa	0.045 MPa	0.035 MPa
Nominal flow at ΔT 8 K for B0/W55	570 l/h	980 l/h	1,240 l/h
Max. remaining feed head at ΔT 8 K B0/W55	0.068 MPa	0.065 MPa	0.057 MPa
Min. volume flow during continuous operation at the application limits	570 l/h	980 l/h	1,240 l/h
Max. volume flow during continuous operation at the application limits	920 l/h	1,530 l/h	1,920 l/h
Heating pump electrical power consumption for B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the heating circuit	25 W	30 W	45 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 58/4	VWF 88/4	VWF 118/4
Heat output B0/W35 ΔT 5 K	5.28 kW	8.82 kW	11.18 kW
Effective power consumption B0/W35 ΔT 5K	1.20 kW	1.82 kW	2.34 kW
Coefficient of performance B0/W35 ΔT 5 K/EN 14511	4.41	4.84	4.77
Heat output B0/W45 ΔT 5 K	5.26 kW	8.76 kW	11.14 kW
Effective power consumption B0/W45 ΔT 5 K	1.56 kW	2.39 kW	3.03 kW
Coefficient of performance B0/W45 ΔT 5 K/EN 14511	3.37	3.67	3.68
Heat output B0/W55 ΔT 8 K	5.34 kW	8.94 kW	11.33 kW
Effective power consumption B0/W55 ΔT 8K	1.85 kW	2.78 kW	3.66 kW
Coefficient of performance B0/W55 ΔT 8 K/EN 14511	2.89	3.22	3.10
Heat output B10/W35 ΔT 5 K	6.57 kW	10.50 kW	13.68 kW
Effective power consumption B10/W35 ΔT 5K	1.21 kW	1.85 kW	2.30 kW
Coefficient of performance B10/W35 ΔT 5 K / coefficient of performance EN 14511	5.42	5.68	5.96
Heat output B10/W45 ΔT 5 K	6.46 kW	10.63 kW	13.84 kW
Effective power consumption B10/W45 ΔT 5 K	1.56 kW	2.38 kW	2.99 kW
Coefficient of performance B10/W45 ΔT 5 K / coefficient of performance EN 14511	4.15	4.48	4.64
Heat output B10/W55 ΔT 8K	6.51 kW	10.79 kW	14.14 kW
Effective power consumption B10/W55 ΔT 8K	1.87 kW	2.84 kW	3.63 kW
Coefficient of performance B10/W55 ΔT 8 K / coefficient of performance EN 14511	3.49	3.80	3.90
Domestic hot water coefficient of performance / coefficient of performance B0/Wxx EN 16147 at a target cylinder temperature of 50 °C and 6 K hysteresis	2.90	2.70	2.80
Domestic hot water draw-off profile B0/Wxx EN 16147	XL	XL	XL
Hot water mixed water volume 40 °C (V40) B0/Wxx at target cylinder temperature of 50 °C	230 l	226 l	225 l
Sound power level B0/W35 EN 12102/EN 14511 L_{wI} in heating mode	41.8 dB(A)	42.7 dB(A)	42.6 dB(A)
Sound power level B0/W45 EN 12102/EN 14511 L_{wI} in heating mode	42.6 dB(A)	44.6 dB(A)	45.5 dB(A)
Sound power level B0/W55 EN 12102/EN 14511 L_{wI} in heating mode	43.4 dB(A)	46.6 dB(A)	46.0 dB(A)

Update 10
New technical data (EN14511:2018)

Application limits for the heat pump: Heating (heat source = brine)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the brine circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operating the heat pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

Application limits for the heat pump: Heating (Brine heat source):

- B15/W65
- B25/W59
- B25/W25
- B-10/W25
- B-10/W60
- B-5/W65

4.3.3 Air heat source

Sound power level

		VWL 11/4 SA
Sound power level A7/W35, A7/W45, A7/W55 in accordance with EN 12102/EN 14511 L_{WA} in heating mode	VWF 58/4	≤ 42.7 dB(A)
	VWF 88/4	≤ 50.6 dB(A)
	VWF 118/4	≤ 56.0 dB(A)
Sound power A7/W35, A7/W45, A7/W55 in accordance with EN 12102 / EN 14511 L_{WA} maximum sound power level in silent mode for heating mode	VWF 58/4	≤ 39.9 dB(A)
	VWF 88/4	≤ 46.0 dB(A)
	VWF 118/4	≤ 52.4 dB(A)
Increase for tonal noise level in accordance with the third-octave band method with A7/W35, A7/W45, A7/W55 in heating mode and in silent mode for heating mode	VWF 58/4	≤ 0 dB
	VWF 88/4	≤ 0 dB
	VWF 118/4	≤ 0 dB
Sound power level A35/W18 in accordance with EN 12102/EN 14511 L_{WA} in cooling mode	VWF 58/4	≤ 53.5 dB(A)
	VWF 88/4	≤ 60.5 dB(A)
	VWF 118/4	≤ 66.3 dB(A)

Heat source circuit/brine circuit

	VWF 58/4	VWF 88/4	VWF 118/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA
Brine fluid type	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.

Building circuit/heating circuit

	VWF 58/4	VWF 88/4	VWF 118/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA
Nominal flow at ΔT 5 K	1,070 l/h	1,510 l/h	1,990 l/h
Max. remaining feed head with ΔT 5 K	0.061 MPa	0.042 MPa	0.031 MPa
Nominal flow with ΔT 8 K	660 l/h	1,020 l/h	1,350 l/h
Max. remaining feed head with ΔT 8 K	0.069 MPa	0.056 MPa	0.053 MPa
Min. volume flow during continuous operation at the application limits	660 l/h	1,020 l/h	1,350 l/h
Max. volume flow during continuous operation at the application limits	1,070 l/h	1,510 l/h	1,990 l/h
Heating pump electrical power consumption for A7/W35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	28 W	36 W	50 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 58/4	VWF 88/4	VWF 118/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA
A2/W35 heat output	5.63 kW	7.79 kW	10.27 kW
Effective power consumption A2/W35	1.36 kW	1.99 kW	2.68 kW
Coefficient of performance A2/W35/EN 14511	4.14	3.91	3.83
Heat output A7/W35 ΔT 5 K	6.16 kW	8.74 kW	11.45 kW
Effective power consumption A7/W35 ΔT 5 K	1.31 kW	1.91 kW	2.50 kW
Coefficient of performance A7/W35 ΔT 5 K/EN 14511	4.69	4.58	4.58
Heat output A7/W45 ΔT 5 K	6.04 kW	9.00 kW	11.98 kW
Effective power consumption A7/W45 ΔT 5 K	1.66 kW	2.44 kW	3.17 kW
Coefficient of performance A7/W45 ΔT 5 K/EN 14511	3.64	3.69	3.77
Heat output A7/W55 ΔT 8 K	6.09 kW	9.45 kW	12.20 kW
Effective power consumption A7/W55 ΔT 8 K	1.97 kW	2.95 kW	3.84 kW
Coefficient of performance A7/W55 ΔT 8 K/EN 14511	3.09	3.21	3.17
Cooling output A35/W18 ΔT 5 K, active	6.53 kW	8.52 kW	12.02 kW
Effective power consumption A35/W18 ΔT 5 K, active	1.59 kW	2.73 kW	3.67 kW
Energy efficiency ratio A35/W18 EN 14511	4.12	3.12	3.28
Domestic hot water coefficient of performance / coefficient of performance A7/Wxx EN 16147 at a target cylinder temperature of 50 °C and 6 K hysteresis	2.80	2.60	2.50
Domestic hot water draw-off profile A7/Wxx EN 16147	XL	XL	XL
Hot water mixed water volume 40 °C (V40) A7/Wxx at target cylinder temperature of 50 °C	229 l	233 l	231 l
Sound power level A7/W35 EN 12102/EN 14511 L_{wi} in heating mode	41.3 dB(A)	43.2 dB(A)	42.5 dB(A)
Sound power level A7/W45 EN 12102/EN 14511 L_{wi} in heating mode	41.6 dB(A)	45.7 dB(A)	44.2 dB(A)
Sound power level A7/W55 EN 12102/EN 14511 L_{wi} in heating mode	44.1 dB(A)	47.4 dB(A)	46.6 dB(A)
Sound power level A35/W18 EN 12102/EN 14511 L_{wi} in cooling mode	51.8 dB(A)	52.6 dB(A)	50.0 dB(A)

Application limits for the heat pump: Heating and cooling (heat source = air)

At the same volume flow rates in the heating circuit (ΔT 5K or ΔT 8 K) as for the nominal heat output test under standard nominal conditions.

Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

	VWF 58/4	VWF 88/4	VWF 118/4
Application limits for the heat pump: Heating (Air heat source)	A40/W65, A40/W25, A-22/W25, A-22/W25, A-2/W65, A15/W65	A40/W65, A40/W25, A-22/W25, A-22/W25, A-2/W65, A15/W65	A40/W65, A40/W25, A-22/W25, A-22/W25, A-2/W65, A15/W65
Application limits for the heat pump: Cooling (Air heat source)	A20/W20, A40/W20, A40/W5, A20/W5	A20/W20, A40/W20, A40/W5, A20/W5	A20/W20, A40/W20, A40/W5, A20/W5

4.3.4 Ground water heat source

Heat source circuit/brine circuit and groundwater circuit

	VWF 58/4	VWF 88/4	VWF 118/4
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI
Nominal flow of groundwater at ΔT 3 K with W10W35	1,450 l/h	2,240 l/h	3,520 l/h
Brine fluid type	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.

Building circuit/heating circuit

	VWF 58/4	VWF 88/4	VWF 118/4
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI
Nominal flow at ΔT 5 K	1,100 l/h	1,720 l/h	2,170 l/h
Max. remaining feed head with ΔT 5 K	0.065 MPa	0.042 MPa	0.023 MPa
Nominal flow with ΔT 8 K	680 l/h	1,130 l/h	1,420 l/h
Max. remaining feed head with ΔT 8 K	0.068 MPa	0.056 MPa	0.047 MPa
Min. volume flow during continuous operation at the application limits	680 l/h	1,130 l/h	1,420 l/h
Max. volume flow during continuous operation at the application limits	1,100 l/h	1,720 l/h	2,170 l/h
Heating pump electrical power consumption for W10/W35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	35 W	45 W	55 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

Check conditions for determining the performance data in accordance with EN 14511.

Installation: Connection pipes on the heat source side between VWF xx/4 and VWW xx/4 SI = 2 x 2 m (pipe internal diameter = 32 mm), environment circuit pump setting: Heating mode: Factory setting (auto), Cooling mode: Factory setting (auto)

	VWF 58/4	VWF 88/4	VWF 118/4
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI
Heat output W10/W35 ΔT 5 K	6.32 kW	9.94 kW	12.88 kW
Effective power consumption for W10/W35 ΔT 5 K	1.35 kW	1.92 kW	2.47 kW
Coefficient of performance W10/W35 ΔT 5 K/EN 14511	4.70	5.17	5.22
Heat output W10/W45 ΔT 5 K	6.21 kW	10.03 kW	12.84 kW
Effective power consumption for W10/W45 ΔT 5 K	1.70 kW	2.46 kW	3.20 kW
Coefficient of performance W10/W45 ΔT 5 K/EN 14511	3.65	4.08	4.02
Heat output W10/W55 ΔT 8 K	6.23 kW	10.28 kW	13.22 kW
Effective power consumption for W10/W55 ΔT 8 K	2.12 kW	2.96 kW	3.93 kW
Coefficient of performance W10/W55 ΔT 8 K/EN 14511	2.94	3.47	3.36
Domestic hot water coefficient of performance / coefficient of performance W10/Wxx EN 16147 at a target cylinder temperature of 50 °C and 6 K hysteresis	3.30	2.80	2.80
Domestic hot water draw-off profile W10/Wxx EN 16147	XL	XL	XL
Hot water mixed water volume 40 °C (V40) W1050 /Wxx at target cylinder temperature of 50 °C	227 l	230 l	227 l
Sound power level W10/W35 EN 12102/EN 14511 $L_{w,i}$ in heating mode	42.2 dB(A)	41.6 dB(A)	46.0 dB(A)
Sound power level W10/W45 EN 12102/EN 14511 $L_{w,i}$ in heating mode	41.8 dB(A)	45.8 dB(A)	45.7 dB(A)
Sound power level W10/W55 EN 12102/EN 14511 $L_{w,i}$ in heating mode	45.0 dB(A)	49.2 dB(A)	46.2 dB(A)

Update 10
New technical data (EN14511:2018)

Application limits for the heat pump: Heating (heat source = ground water)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the ground water circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operating the heat pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

Application limits for the heat pump: Heating (Ground water heat source):

- W15/W65
- W25/W59
- W25/W25
- W10/W25
- W10/W65

4.4 Cooling output data

Brine/water cooling output

Brine/water cooling output (active only) based on EN 14511			
Cooling output B35 /W18 ΔT 5 K, active	7.00 kW	9.20 kW	15.70 kW
Power consumption B35 /W18 ΔT 5 K, active	1.30 kW	2.00 kW	2.50 kW
Coefficient of performance B35 /W18 ΔT 5 K, active	6.40	5.30	7.00

Air heat source cooling output

Air heat source cooling output (active only) based on EN 14511			
Cooling output A35 /W18 ΔT 5 K, active	6.60 kW	8.60 kW	12.10 kW
Power consumption A35 /W18 ΔT 5 K, active	1.60 kW	2.80 kW	3.70 kW
Energy efficiency ratio A35/W18 EN 14511	4.30	3.20	3.40

Water/water cooling output

Water/water cooling output (active only) based on EN 14511			
Cooling output W35 /W18 ΔT 5 K, active	7.00 kW	9.40 kW	15.50 kW
Power consumption W35 /W18 ΔT 5 K, active	1.40 kW	2.10 kW	2.70 kW
Coefficient of performance W35 /W18 ΔT 5 K, active	5.30	4.70	5.60

4.5 Remaining feed head of building circuit pump

4.5.1 Remaining feed head for VWF 5x/4 building circuit pump at nominal volume flow

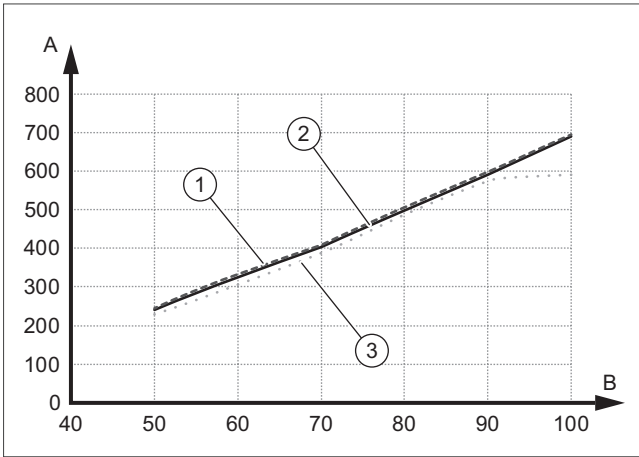


Fig. 169: Remaining feed head for VWF 5x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

4.5.3 Remaining feed head for VWF 11x/4 building circuit pump at nominal volume flow

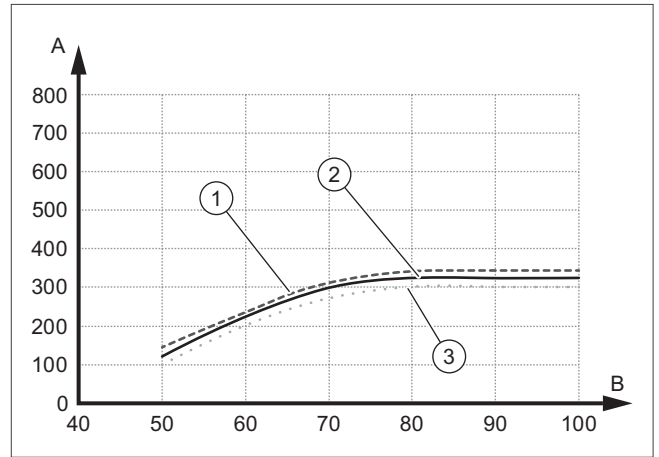


Fig. 171: Remaining feed head for VWF 11x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

4.5.2 Remaining feed head for VWF 8x/4 building circuit pump at nominal volume flow

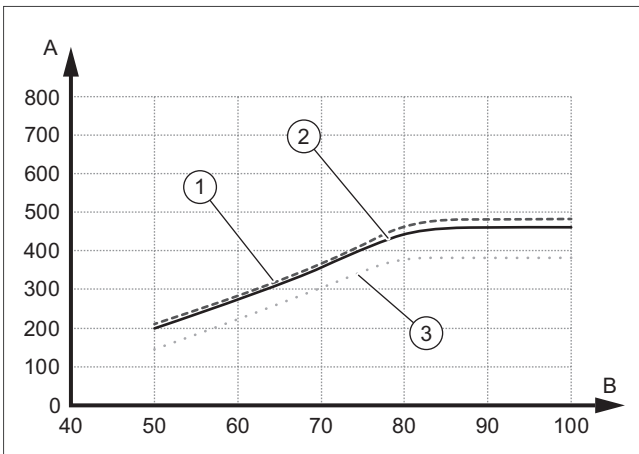


Fig. 170: Remaining feed head for VWF 8x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

4.6 Remaining feed head of environment circuit pump

4.6.1 Remaining feed head for VWF 5x/4 environment circuit pump at nominal volume flow

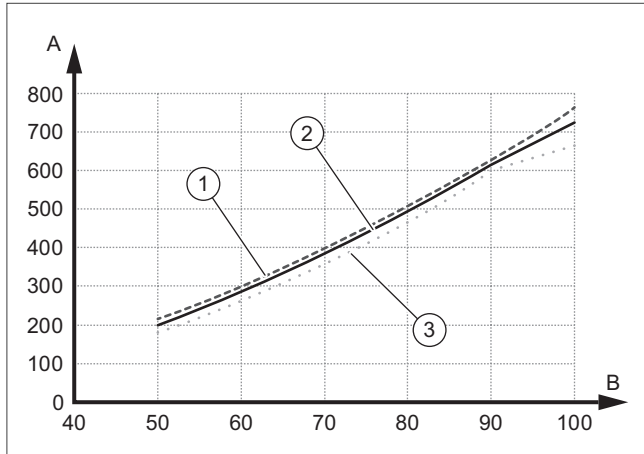


Fig. 172: Remaining feed head for VWF 5x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

4.6.3 Remaining feed head for VWF 11x/4 environment circuit pump at nominal volume flow

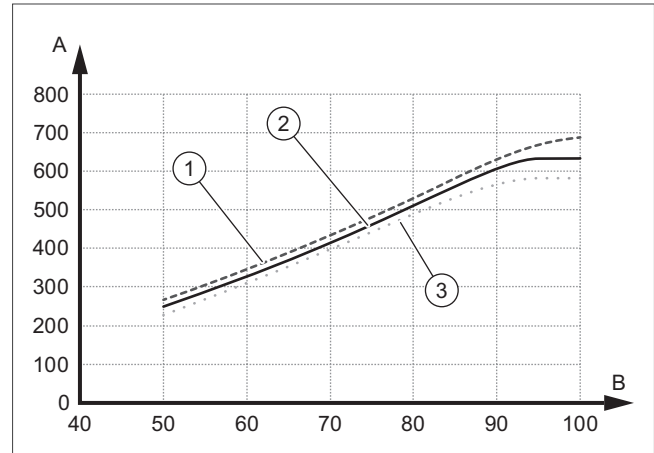


Fig. 174: Remaining feed head for VWF 11x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

4.6.2 Remaining feed head for VWF 8x/4 environment circuit pump at nominal volume flow

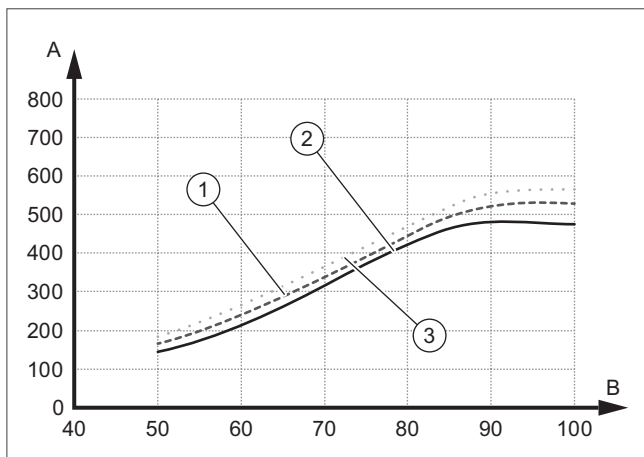


Fig. 173: Remaining feed head for VWF 8x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

4.7 Power output graphs

4.7.1 Brine heat source

Power output graph for the VWF 58/4 - brine-to-water

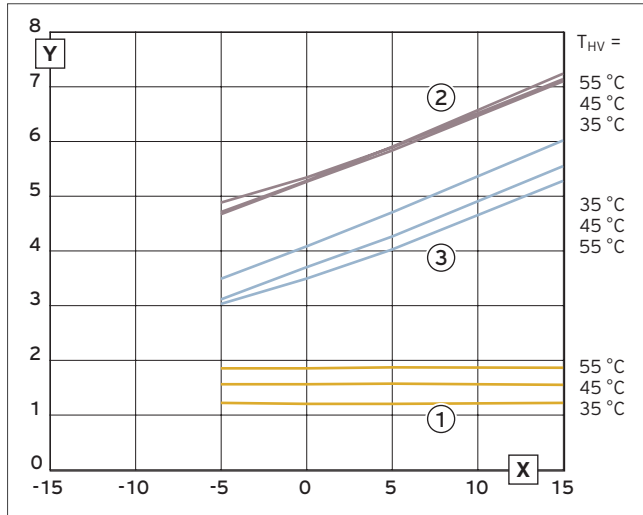


Fig. 175: Power output graph for the VWF 58/4 - brine-to-water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 118/4 - brine-to-water

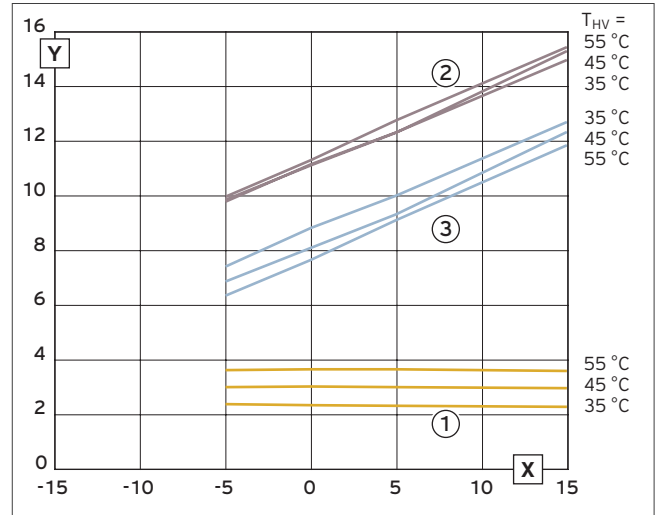


Fig. 177: Power output graph for the VWF 118/4 - brine-to-water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 88/4 - brine-to-water

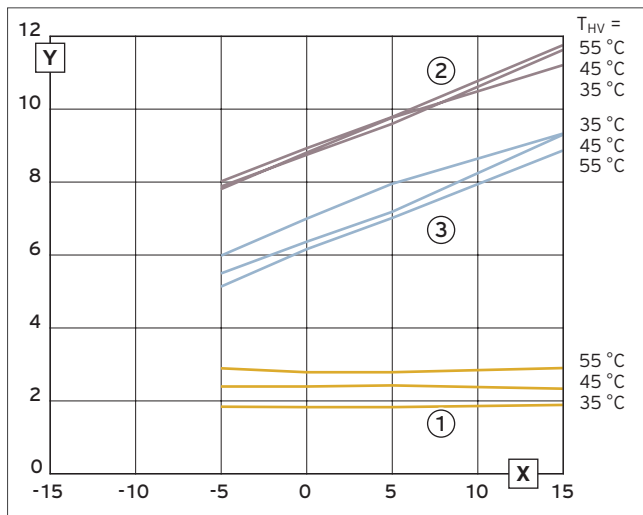


Fig. 176: Power output graph for the VWF 88/4 - brine-to-water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

4.7.2 Air heat source

Power output graph for the VWF 58/4 - air-to-water

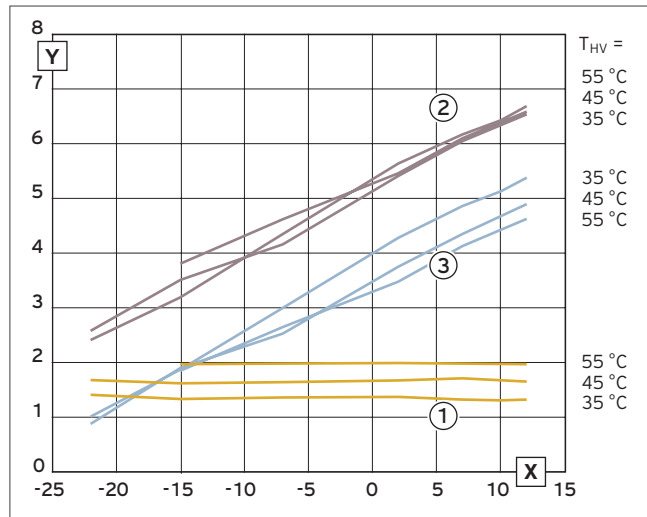


Fig. 178: Power output graph for the VWF 58/4 - air-to-water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 118/4 - air-to-water

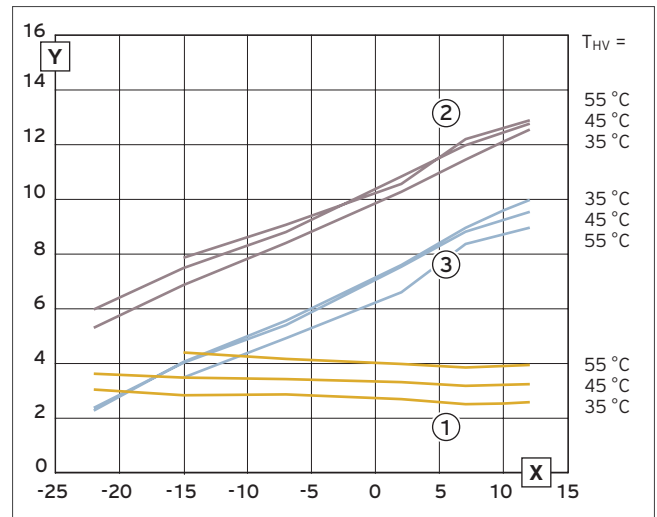


Fig. 180: Power output graph for the VWF 118/4 - air-to-water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 88/4 - air-to-water

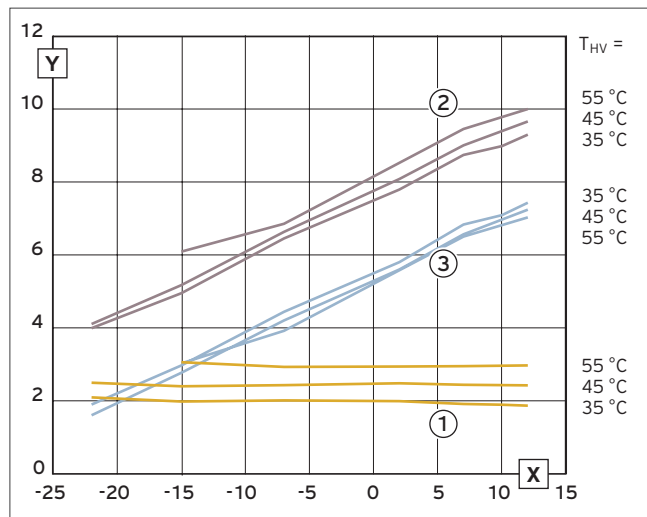


Fig. 179: Power output graph for the VWF 88/4 - air-to-water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

4.7.3 Groundwater heat source

Power output graph for the VWF 58/4 - water-to-water

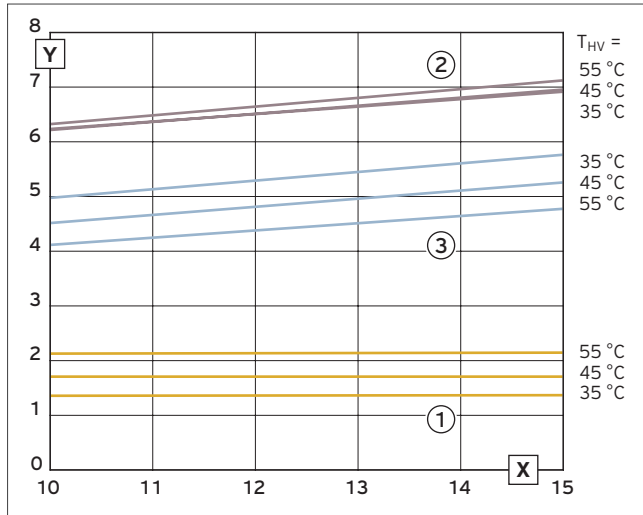


Fig. 181: Power output graph for the VWF 58/4 - water-to-water

- Y Power output [kW]
- X Ground-water temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 118/4 - water-to-water

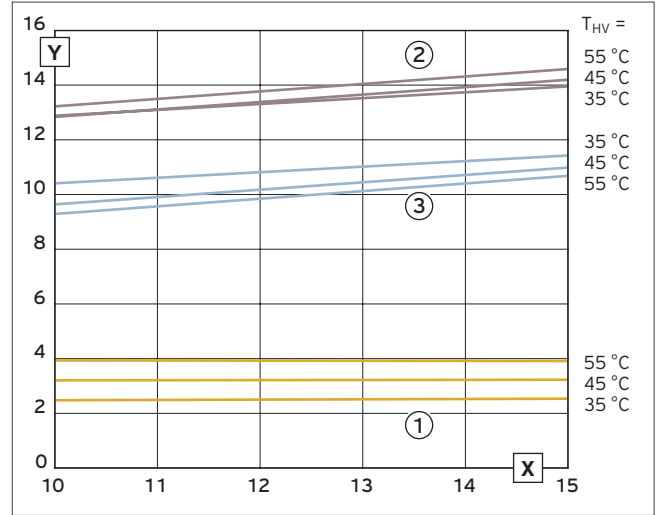


Fig. 183: Power output graph for the VWF 118/4 - water-to-water

- Y Power output [kW]
- X Ground-water temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

Power output graph for the VWF 88/4 - water-to-water

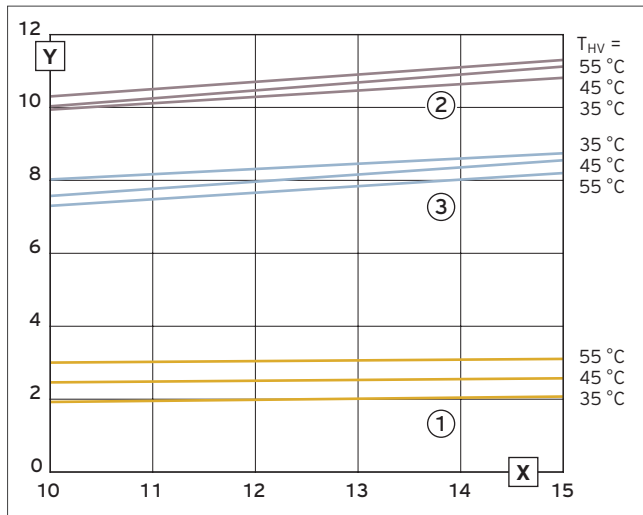


Fig. 182: Power output graph for the VWF 88/4 - water-to-water

- Y Power output [kW]
- X Ground-water temperature [°C]
- 1 Electrical power consumption
- 2 Heating output
- 3 Extraction performance

4.8 Product dimensions and connection dimensions

4.8.1 Dimensions

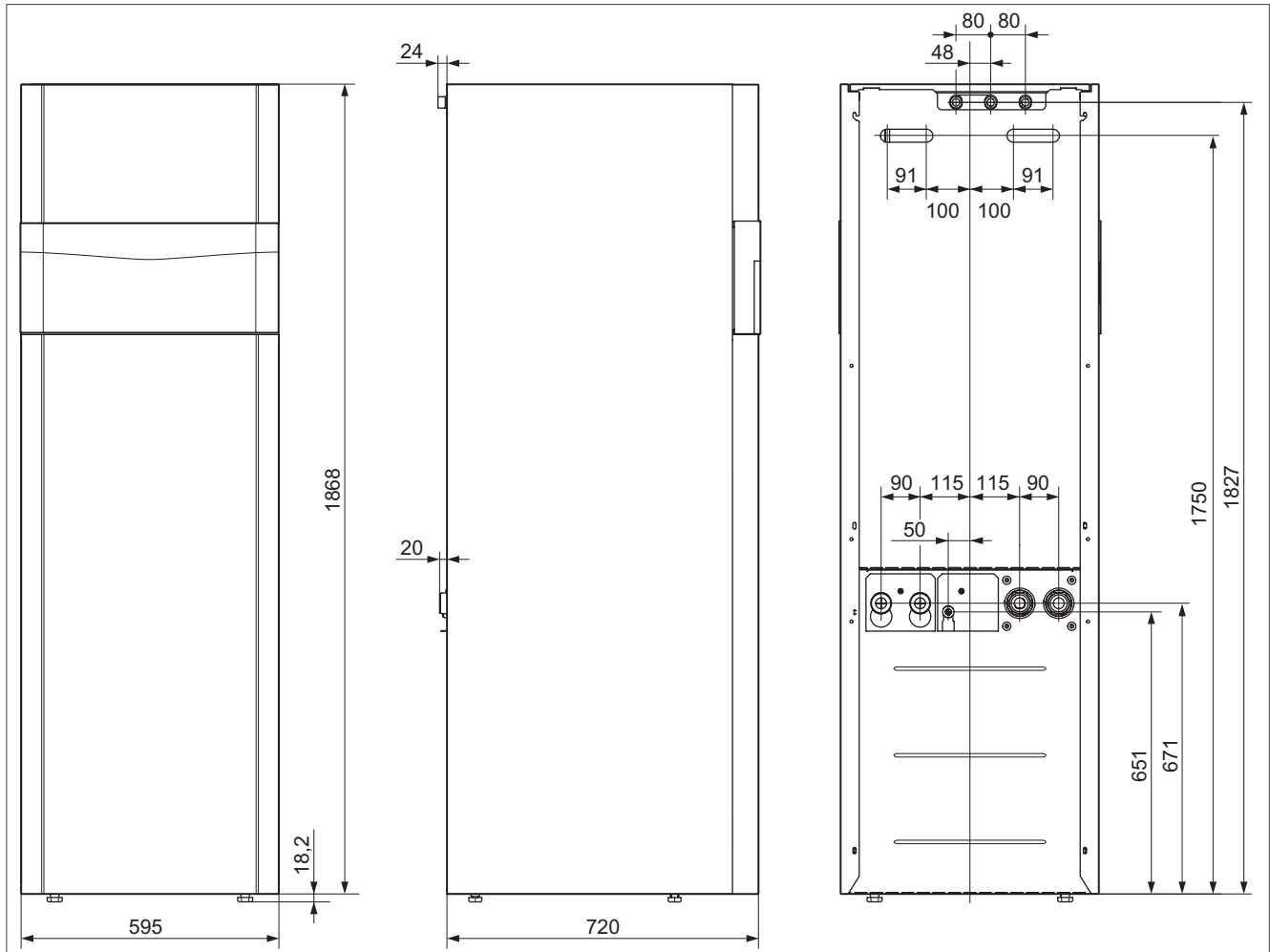


Fig. 184: Dimensions

4.9 Minimum clearances

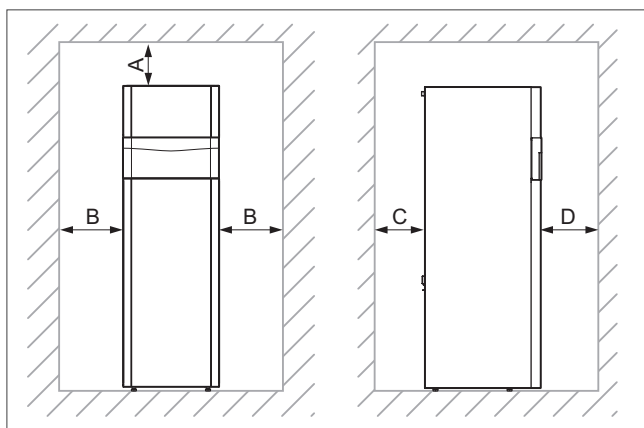


Fig. 185: Minimum clearances

	Minimum clearance
A	50 mm
B	300 mm
C	250 mm
D	300 mm

4.10 Requirements for the installation site

4.10.1 Minimum sizes for the installation rooms

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Minimum size for the installation room (m ³)
VWF 58/4	R 410a	1.50	3.4
VWF 88/4	R 410a	2.40	5.5
VWF 118/4	R 410a	2.50	5.7

4.10.2 flexoTHERM/flexoCOMPACT installation room

The general requirements for the indoor installation of the heat pump apply for the indoor unit's installation room (see section „Planning the heat generator installation“).

If the heating heat pump is operated as an air-to-water heat pump, particular requirements apply when installing the aroCOLLECT outdoor unit outside (see aroCOLLECT product description).

Select a dry room that is frost-proof throughout and in which the maximum installation height is not exceeded and the environmental temperature is neither above nor below the permitted range.

- Permissible environmental temperature: 7 to 25 °C
- Permissible relative air humidity: 40 to 75%

Ensure that the installation room has the required minimum volume.

4.11 aroCOLLECT VWL 11/4 SA air/brine collector

Order no. 0010016715



Fig. 186: aroCOLLECT air/brine collector

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

The air/brine collector is used to exchange heat between the brine circuit and the outdoor air.

Note

The entire purging/filling process should last at least 30 minutes. During this time, the purging valves for the air/brine collectors must be opened and closed every five minutes.



We recommend the brine purging support set for the air/brine collector as this makes the purging process significantly easier if it is to be carried out by one person. Observe the aroCOLLECT installation instructions (0020196699).

4.11.1 Technical data

Dimensions

	VWL 11/4 SA
Product dimensions, height with base	1,260 mm
Product dimensions, width	1,200 mm
Product dimensions, depth	785 mm
Weight with packaging	160 kg
Weight without packaging and base	95 kg
Weight without packaging	140 kg
Weight when ready for operation	185 kg

Electrics

	VWL 11/4 SA
Rated voltage	3~/N/PE 400 V / 50 Hz
Fuse type, characteristic B, three-pole switching (disconnection of the three mains connection lines by a switching operation)	10 A
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)
Electrical power consumption, max. total	6.5 kW
Electrical power consumption, de-icer	6.0 kW
Electrical power consumption, fan	0 to 0.25 kW
Electrical power consumption, control process	0.01 kW
Electrical power consumption, optional accessory	0.2 kW
IP rating EN 60529	IP 25

Hydraulics

	VWL 11/4 SA
Flow/return heat source connections	Rp 1 1/4"
Diameter of the condensate discharge	70 mm

Installation site

	VWL 11/4 SA
Installation site	Outside
Permissible environmental temperature at the installation site	-30 to 70 °C
Permissible environmental temperature during operation	-22 to 40 °C

Brine circuit

	VWL 11/4 SA
Brine fluid	Ethylene glycol 44% vol. /56% water
Max. operating pressure	0.3 MPa
Min. inlet temperature, cold brine	-28 °C
Max. inlet temperature, hot brine	60 °C
Brine content of the brine circuit in the air/brine collector	19.8 l
Materials	Cu, CuZn alloy, stainless steel, EPDM
Total length of the connection pipe, cold brine and hot brine	2 x 30 m
Diameter of the connection pipe's cross-section up to a total length of ≤ 10 m	DN 40 (40 x 3.8 mm)
Diameter of the connection pipe's cross-section up to a total length of > 10 and ≤ 30 m	DN 50 (50 x 4.6 mm)
Connection pipe installation depth	0.2 to 1.5 m
Connection pipe material	PE pipe, PE 100 or PE 80

Sound power level

		VWL 11/4 SA
Sound power level A7/W35, A7/W45, A7/W55 in accordance with EN 12102/EN 14511 L_{WA} in heating mode	VWF 58/4	≤ 42.7 dB(A)
	VWF 88/4	≤ 50.6 dB(A)
	VWF 118/4	≤ 56.0 dB(A)
Sound power A7/W35, A7/W45, A7/W55 in accordance with EN 12102 / EN 14511 L_{WA} maximum sound power level in silent mode for heating mode	VWF 58/4	≤ 39.9 dB(A)
	VWF 88/4	≤ 46.0 dB(A)
	VWF 118/4	≤ 52.4 dB(A)
Increase for tonal noise level in accordance with the third-octave band method with A7/W35, A7/W45, A7/W55 in heating mode and in silent mode for heating mode	VWF 58/4	≤ 0 dB
	VWF 88/4	≤ 0 dB
	VWF 118/4	≤ 0 dB
Sound power level A35/W18 in accordance with EN 12102/EN 14511 L_{WA} in cooling mode	VWF 58/4	≤ 53.5 dB(A)
	VWF 88/4	≤ 60.5 dB(A)
	VWF 118/4	≤ 66.3 dB(A)

Sound power levels of the flexoCOMPACT with aroCOLLECT

Note

K_T (supplement for the tone incorporation) is taken into account in line with the third-octave band process. K_R is country-specific and was assumed to be 0 in this calculation. This value is only required for day mode.



For the flexoCOMPACT with aroCOLLECT heat pump, planning should take account of the following sound power levels (heating mode).

VWF 5x/4 and VWL 11/4 SA evaluation level

VWF 5x/4 and VWL 11/4 SA				Distance from heat source in m										K_R
	Sound power level in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	54	0	3	46.0	40.0	36.5	34.0	32.0	30.4	27.9	26.0	24.4	22.5	0
			6	49.0	43.0	39.5	37.0	35.0	33.4	30.9	29.0	27.4	25.5	
			9	52.0	46.0	42.5	40.0	38.0	36.4	33.9	32.0	30.4	28.5	
Set-back	40	0	3	32.0	26.0	22.5	20.0	18.0	16.4	13.9	12.0	10.4	8.5	-
			6	35.0	29.0	25.5	23.0	21.0	19.4	16.9	15.0	13.4	11.5	
			9	38.0	32.0	28.5	26.0	24.0	22.4	19.9	18.0	16.4	14.5	

VWF 8x/4 and VWL 11/4 SA evaluation level

VWF 8x/4 and VWL 11/4 SA				Distance from heat source in m										K_R
	Sound power level in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	61	0	3	53.0	47.0	43.5	41.0	39.0	37.4	34.9	33.0	31.4	29.5	0
			6	56.0	50.0	46.5	44.0	42.0	40.4	37.9	36.0	34.4	32.5	
			9	59.0	53.0	49.5	47.0	45.0	43.4	40.9	39.0	37.4	35.5	
Set-back	46	0	3	38.0	32.0	28.5	26.0	24.0	22.4	19.9	18.0	16.4	14.5	-
			6	41.0	35.0	31.5	29.0	27.0	25.4	22.9	21.0	19.4	17.5	
			9	44.0	38.0	34.5	32.0	30.0	28.4	25.9	24.0	22.4	20.5	

VWF 11x/4 and VWL 11/4 SA evaluation level

VWF 11x/4 and VWL 11/4 SA				Distance from heat source in m										K _R
Output in %	Sound power level in dB(A)	K _T	K _o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	67	0	3	59.0	53.0	49.5	47.0	45.0	43.4	40.9	39.0	37.4	35.5	0
			6	62.0	56.0	52.5	50.0	48.0	46.4	43.9	42.0	40.4	38.5	
			9	65.0	59.0	55.5	53.0	51.0	49.4	46.9	45.0	43.4	41.5	
Set-back	53	0	3	45.0	39.0	35.5	33.0	31.0	29.4	26.9	25.0	23.4	21.5	-
			6	48.0	42.0	38.5	36.0	34.0	32.4	29.9	28.0	26.4	24.5	
			9	51.0	45.0	41.5	39.0	37.0	35.4	32.9	31.0	29.4	27.5	

aroCOLLECT volume flow

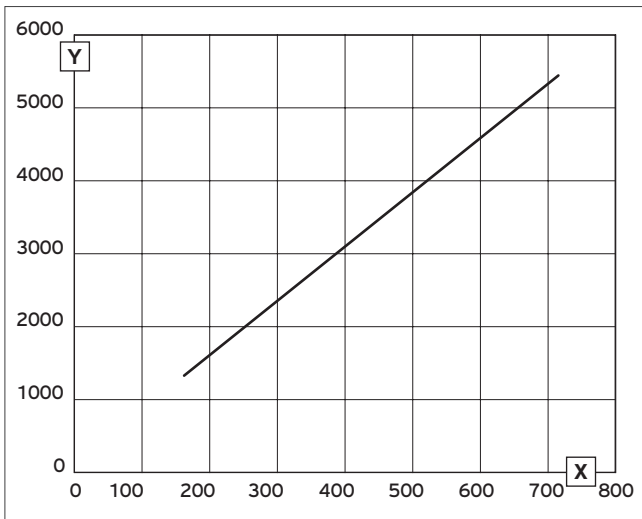


Fig. 187: aroCOLLECT volume flow diagram

- Y Volume flow [m³/h]
- X Rotational speed [rpm]

Fan speed

Fan speed	VWF 58/4 + VWL 11/4 SA	VWF 88/4 + VWL 11/4 SA	VWF 118/4 + VWL 11/4 SA
Maximum	450 rpm	580 rpm	710 rpm
For A7/W35, A7/W45, A7/W55 heating mode	300 rpm	400 rpm	490 rpm
In silent mode for A7/W35, A7/W45, A7/W55 heating mode	270 rpm	350 rpm	430 rpm
For A35/W18 cooling mode	450 rpm	580 rpm	710 rpm

4.11.2 Dimensions

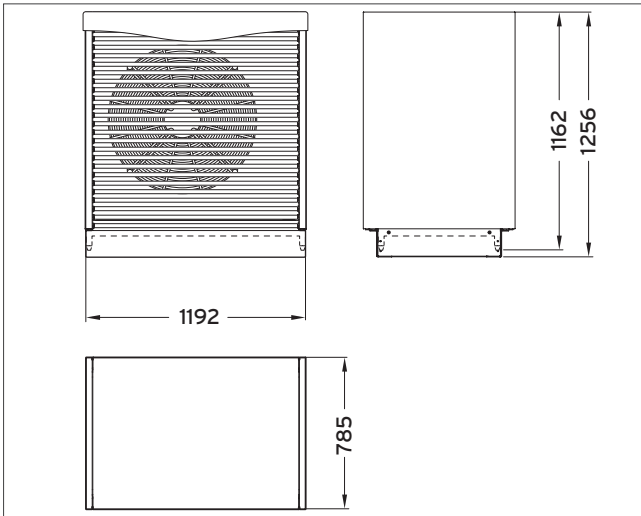


Fig. 188: Dimensions

4.11.3 Minimum clearances

Clearances that must be complied with for an air/brine collector

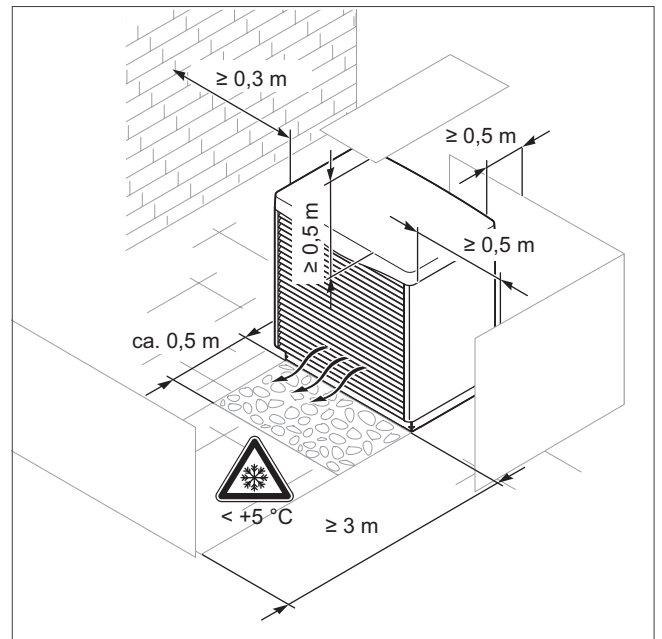


Fig. 189: Minimum clearances for one air/brine collector

Clearances that must be complied with for two air/brine collectors

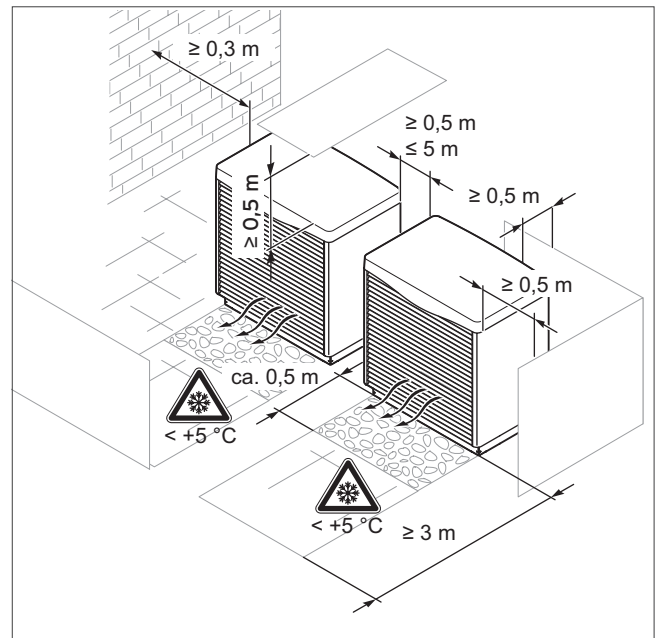


Fig. 190: Minimum clearances for two air/brine collectors

Positioning of the collectors

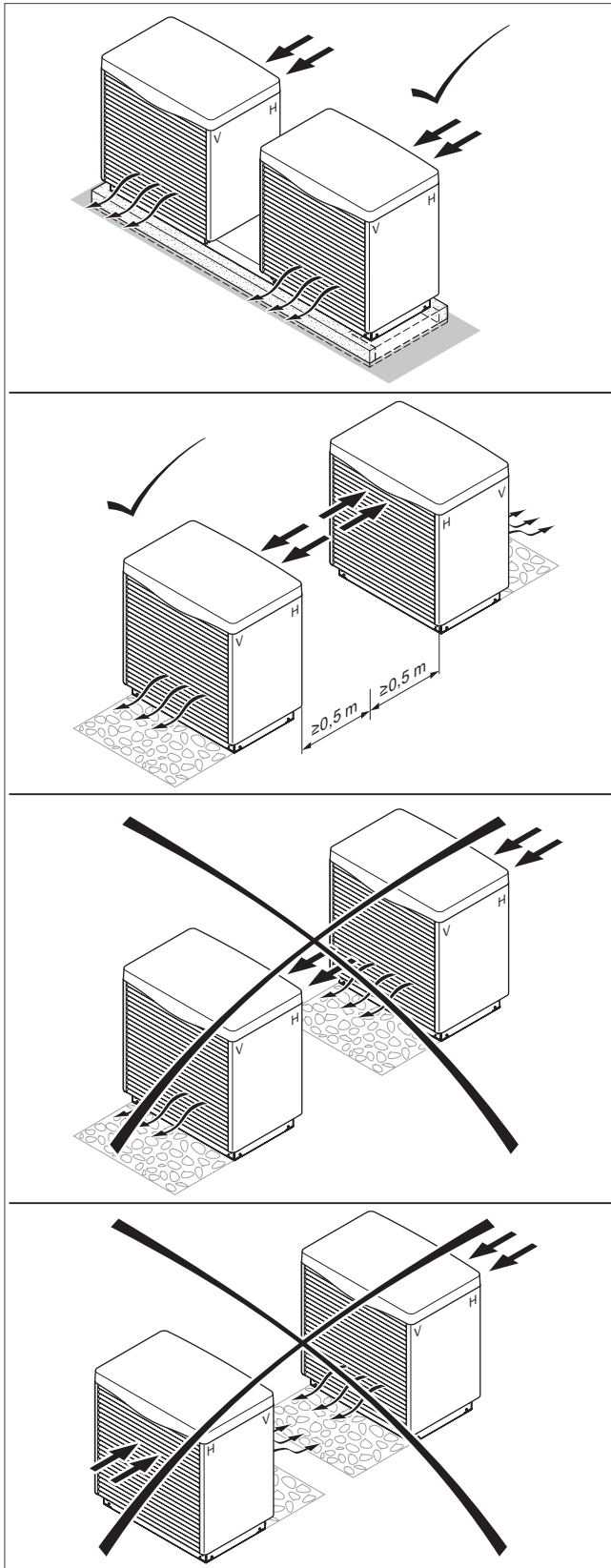


Fig. 191: Positioning

- » Use the mounting base, which is available as an accessory, for the installation.
- » To guarantee sufficient air flow and to facilitate maintenance work, observe the minimum clearances that are specified above.
- » Ensure that there is sufficient room to install the hydraulic lines.
- » If the product is to be installed in areas where heavy snow falls, ensure that the snow does not accumulate around the product and that the minimum clearances specified above are observed. If you cannot ensure this, install an additional heat generator in the heating circuit. A raised base and condensate tray heater are available as accessories.
- » If you install two air/brine collectors, you must create a concrete foundation and use the connection pipe set that is available as an accessory.

4.11.4 Installing the aroCOLLECT or aroTHERM outdoor unit outdoors

A number of requirements arise from the outside installation of the outdoor unit which need to be taken into account in the planning of the installation site.

Note

The minimum required clearances must be complied with under all circumstances (see installation instructions/section on planning the heat source).

The outdoor unit requires a sufficiently stable, frost-proof and horizontal foundation that meets local requirements and complies with the rules of structural engineering. We recommend providing an empty pipe for condensate discharge. Appropriate cut-outs must be provided in the foundation for the hot brine and cold brine supply lines, the electrical lines and for the condensate discharge. The unit's blow-off side must not be positioned facing the building.

Do not install the outdoor unit:

- Near a heat source,
- Near flammable materials,
- Near ventilation openings for adjacent buildings,
- Under deciduous trees,
- In dusty or corrosive air (e.g. near unsecured streets),
- Or near exhaust air shafts.

Also note the following points:

- Prevailing winds,
- Noise emissions from the fan and compressor
- The visual impression on the environment.

Avoid places where strong winds blow on the outdoor unit's air outlet.

Do not point the fan in the direction of nearby windows. Install noise protection if necessary.

Note

Install the outdoor unit on steel girders or concrete blocks.

Ensure that water does not accumulate beneath the outdoor unit and that the ground in front of the outdoor unit can absorb water well in order to avoid ice formation.

Note

The condensate volume for each outdoor unit is max. 20 l/h in summer when the air humidity is high.

4.11.5 Creating the foundation

Note

To create the foundation when arranging two units side by side, see the appendix.

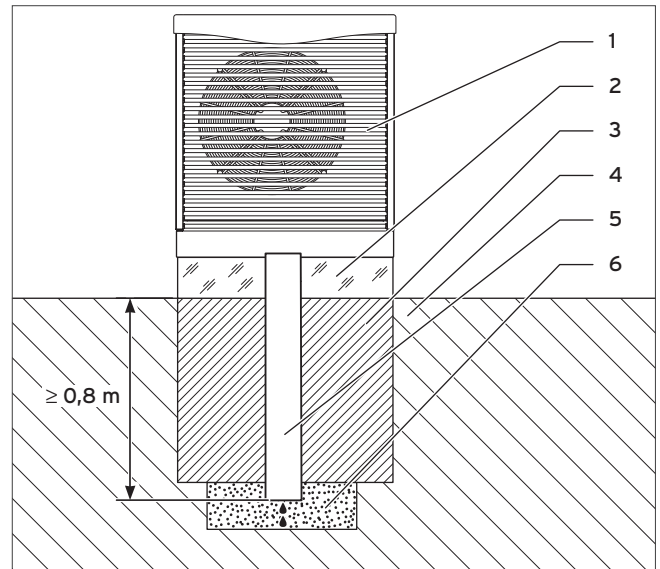


Fig. 192: Foundation: Cross-section

- 1 Air/brine collector
- 2 Foundation
- 3 Compacted gravel
- 4 Ground
- 5 Condensate discharge pipe
- 6 Gravel bed in a frost-free area

1. Prepare the ground for the foundation in accordance with the figure.

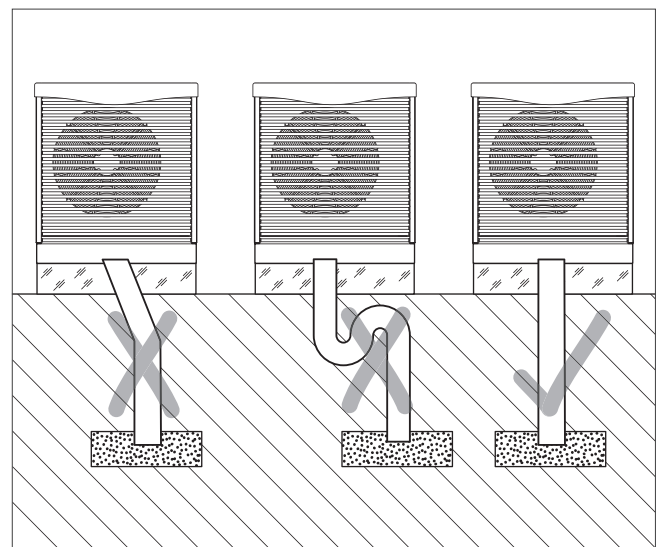


Fig. 193: Routing the condensate discharge pipe

2. As a condensate discharge pipe, route a pipe that drops vertically and that is \geq DN 110. Route this pipe as far as the frost-free ground. To lay the pipe at ground level and so that it comes out of the mounting base at the side, use the accessory that is available for this.

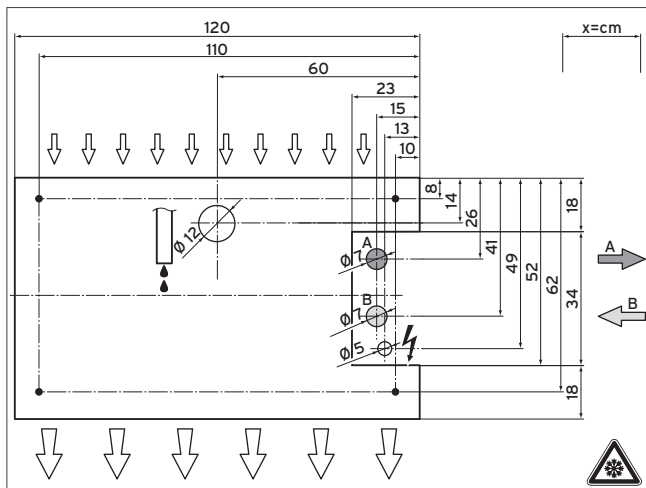


Fig. 194: Foundation: Connection dimensions

- A Connecting the air/brine collector to the heat pump (hot brine)
- B Connecting the heat pump to the air/brine collector (cold brine)

3. Create a frost-free and stable foundation or set the product on paving slabs. When doing so, observe the rules of structural engineering and the instructions that are enclosed with the recommended VWL S installation set for PE pipes.

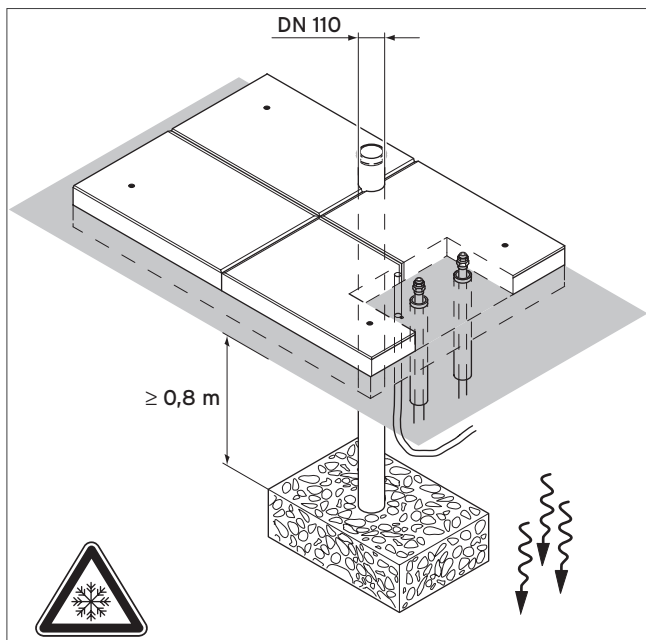


Fig. 195: Connections: Foundation using paving slabs

4. Establish the connections for a foundation made of paving slabs in accordance with the illustration.

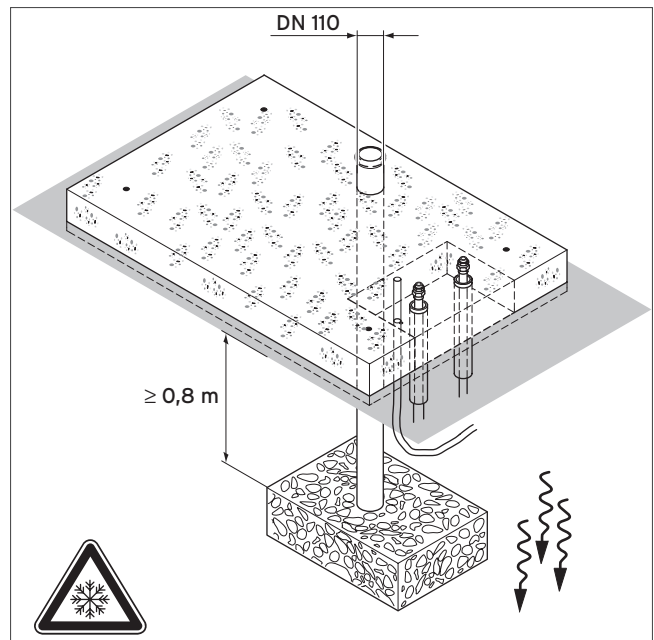


Fig. 196: Connections: Foundation using concrete

5. Establish the connections for a concrete foundation in accordance with the illustration.

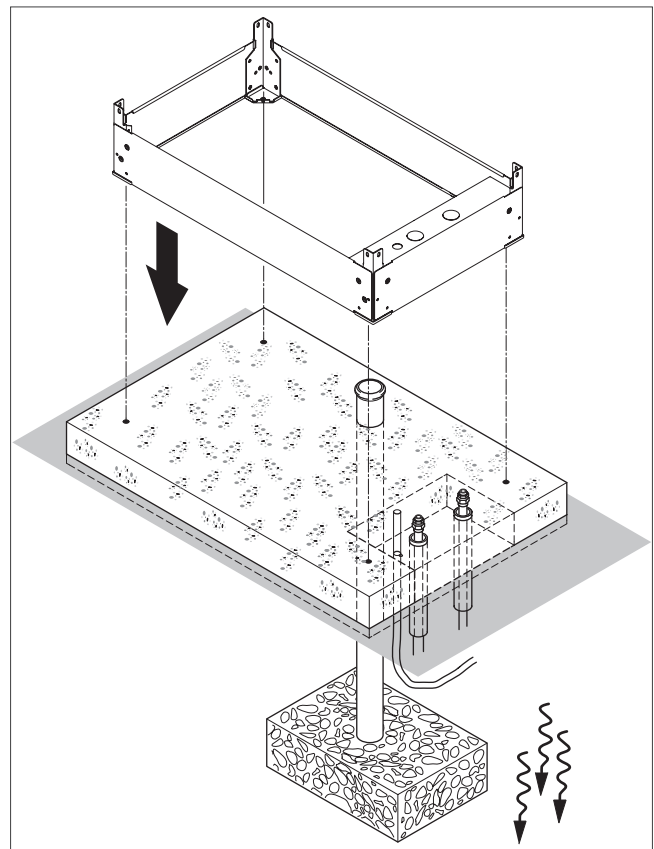


Fig. 197: Installing a base

6. Install the base that is available as an accessory.

4.11.6 Outdoor installation of two aroCOLLECT outdoor units with Tichelmann installation set

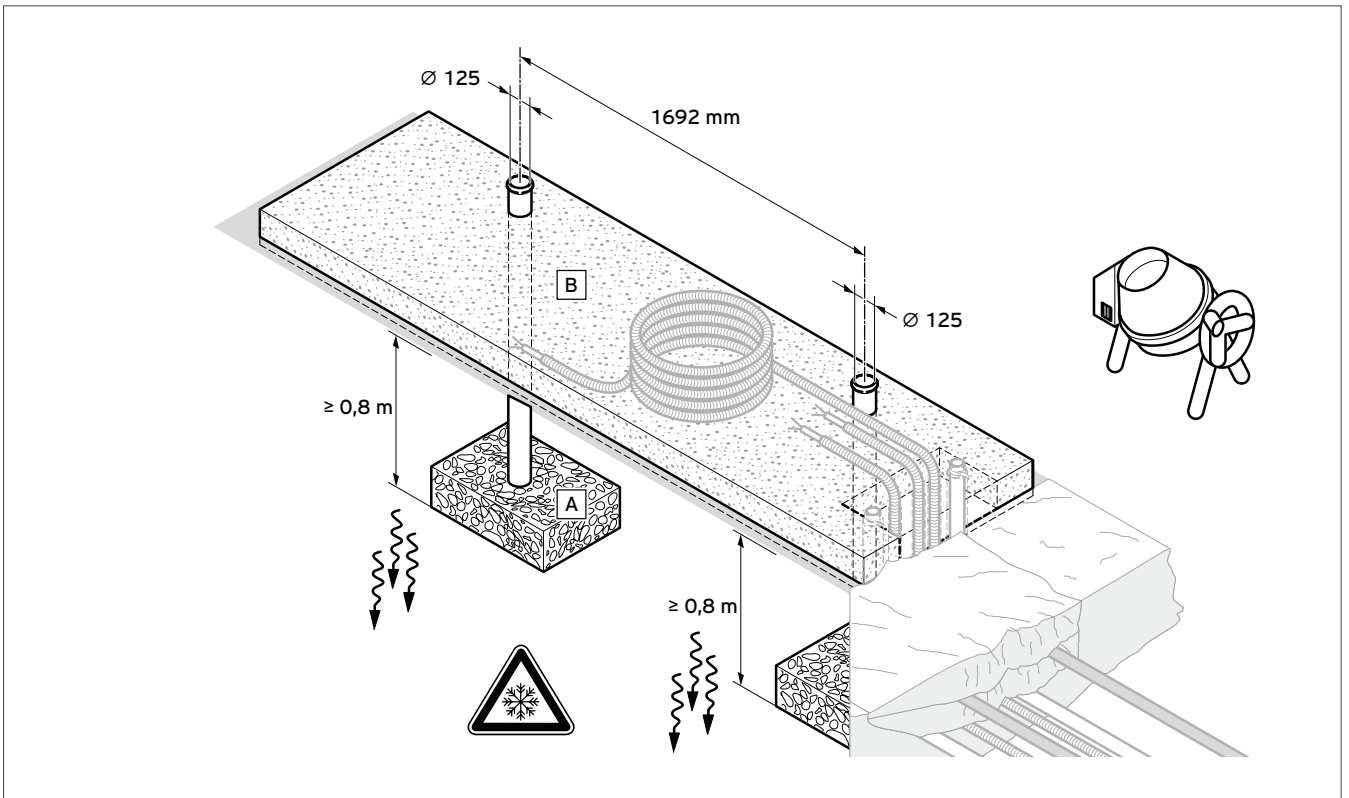


Fig. 198: Foundation plan for two aroCOLLECT outdoor units

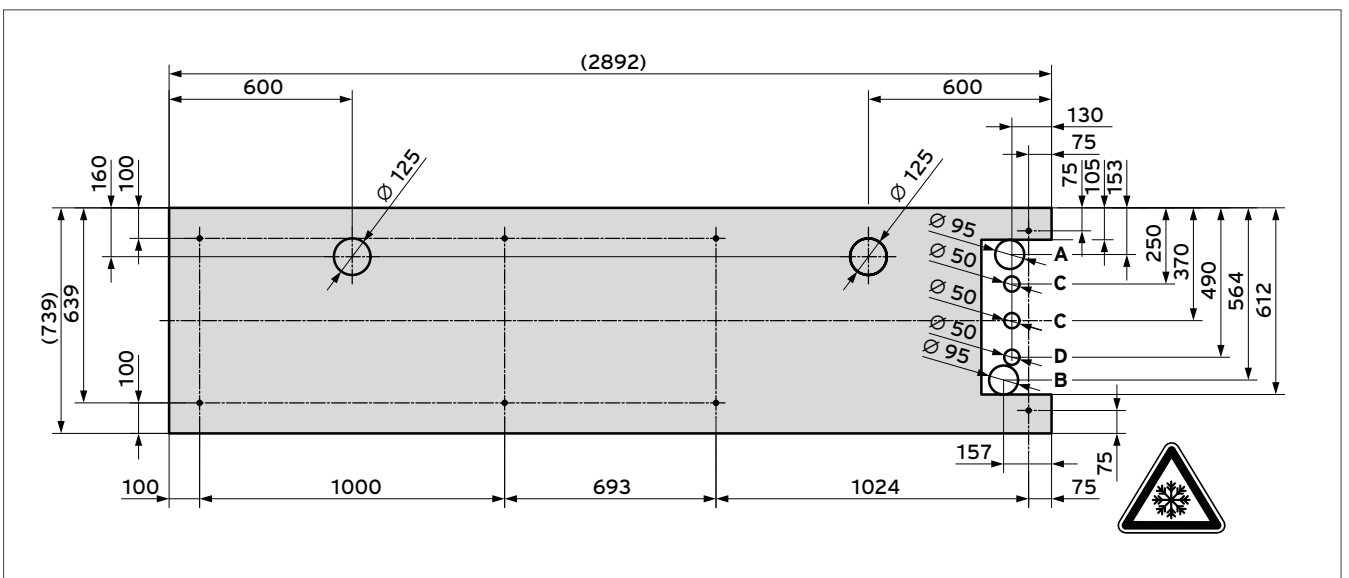


Fig. 199: Foundation of the connection dimensions for two aroCOLLECT outdoor units for the installation set (0020205408) with the Tichelmann system

- A Connecting the air/brine collector to the heat pump (hot brine)
- B Connecting the heat pump to the air/brine collector (cold brine)
- C 400 V electrical connection
- D eBUS

Note
For easier installation, use the Tichelmann installation set (0020205408).



4.11.7 Installing the connection pipes using installation sets

Two installation sets are available for installing the connection pipes.

Depending on the total pipe length that is required, you can choose between DN 40 or DN 50 outer diameters.

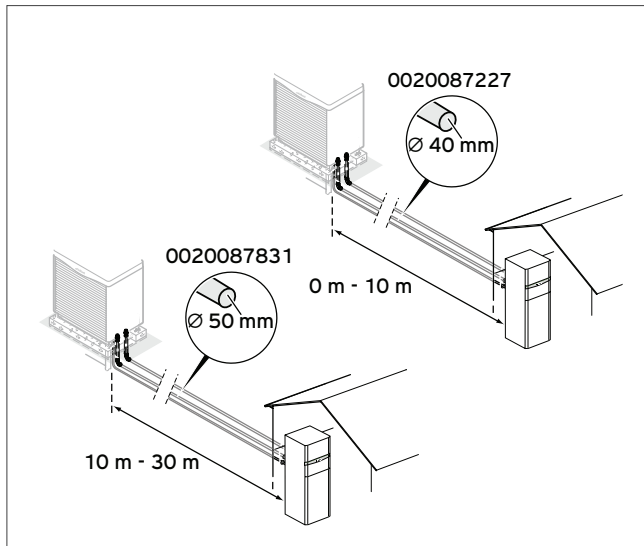


Fig. 200: Selecting the aroCOLLECT installation set

Installation with the DN 40 and DN 50 installation set

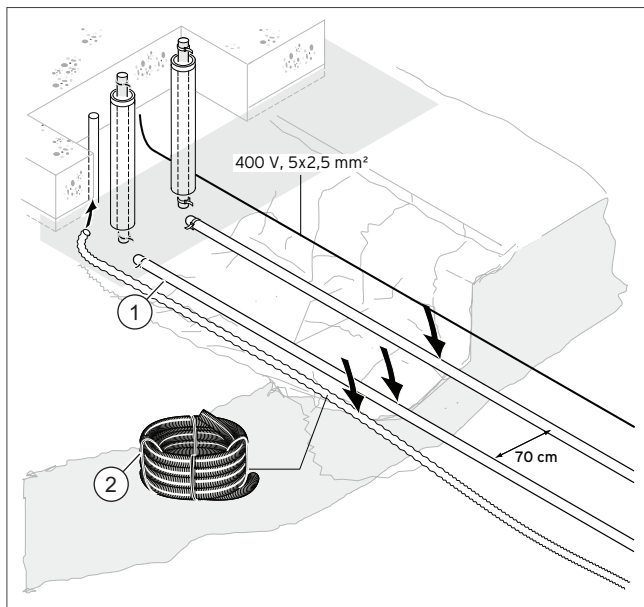


Fig. 201: Installation with the DN 40 and DN 50 installation set

- 1 Brine pipes
- 2 Protective hose for eBUS

4.11.8 Routing the connection pipes



Caution.

Risk of material damage caused by ground lifting up as a result of frozen ground.

At operating temperatures close to freezing level, the ground in the area of the PE pipes may freeze and therefore damage the structure as a result of the ground lifting up.

- > Insulate all of the PE lines that are to be routed under buildings, terraces, pathways, etc. so that they are vapour diffusion-tight.
- > If possible, route polyethylene pipes in the ground with a clearance of 70 cm from each other and from adjacent supply pipes (except for electrical wires).

The total length (connection pipes from the heat pump to the product and from the product to the heat pump) must be no greater than 60 m.

- >> Keep the clearance between the product and the heat pump as short as possible and minimise the use of elbows and angles. This is because each additional pressure loss that is caused by the use of these reduces efficiency.
- >> Route the PE pipes in accordance with the applicable technical directives.
- >> For a total line length of between ≥ 20 m and 60 m, use a PE pipe with DN 50 (e.g. PE 80/100, outer diameter 50 mm, wall thickness 4.6 mm). Up to a total line length of ≤ 20 m, you can also use a PE pipe with DN 40 (e.g. PE 80/100, outer diameter 40 mm, wall thickness 3.7 mm).
- >> When using more than eight elbows, the maximum possible total length is reduced by 2 m per each additional elbow.
- >> When using copper pipes, use only copper pipes that have a cross-section of ≥ 35 mm. If you use a smaller cross-section (e.g. copper 28 mm), this will result in pressure losses (2 m copper 28 = 8 m copper 35).
- >> Keep the height difference between the product and the heat pump as low as possible. The height difference must be no more than 5 m; beyond this, a detailed check of the general parameters is required.

Note

If the prescribed cable cross-sections are not complied with, this results in efficiency losses and reduced annual operating figures.



- >> If required, when routing the polyethylene pipes above-ground, ensure that they are protected against UV radiation.

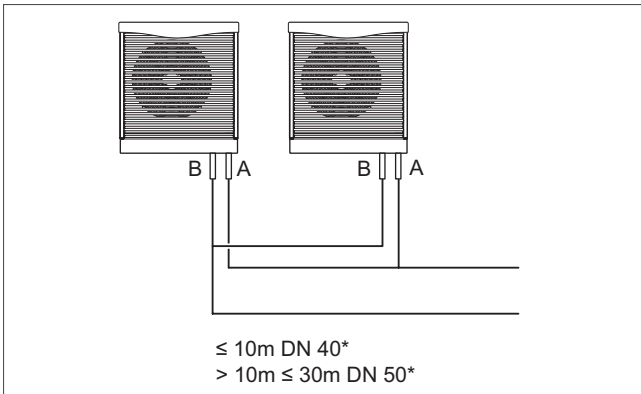


Fig. 202: Installing two air/brine collectors

* = one way

- » Connect the air/brine collector in accordance with the Tichelmann principle. This means that the air/brine collector with the shorter flow has the longest return.



Caution.

Risk of material damage caused by a leak.

When tightening screwed connections, ensure that O-rings are inserted correctly as, otherwise, they may pop out or become jammed, become damaged, or cause leaks.

- > Insert the O-rings properly and untwisted into the union nuts for the air/brine collector's brine connections.

- » Screw the union nuts to the connection adaptors on the „hot brine“ and „cold brine“ brine lines in the brine circuit (cross-reference) on the mounting base.
- » To purge each individual air/brine collector, install two isolator units.

4.11.9 aroCOLLECT flat roof installation

Note

Before installing on a flat roof, garage or car park building, check with the local authority whether this is an approved installation site.



For flat-roof installation of the outdoor unit, frost-free draining of the condensate is required up to approx. 1 m below the soil level using electrical trace heating. To prevent condensate or (in winter) ice formation on the brine pipes, the outdoor brine pipes in this installation must be provided with diffusion-tight, weather-resistant heat insulation with an insulation thickness of approx. 10 mm. Copper (or similar) should be used as the piping material, since PE pipes are not UV-resistant.

Installing elevated bases is not recommend due to increased wind loads.

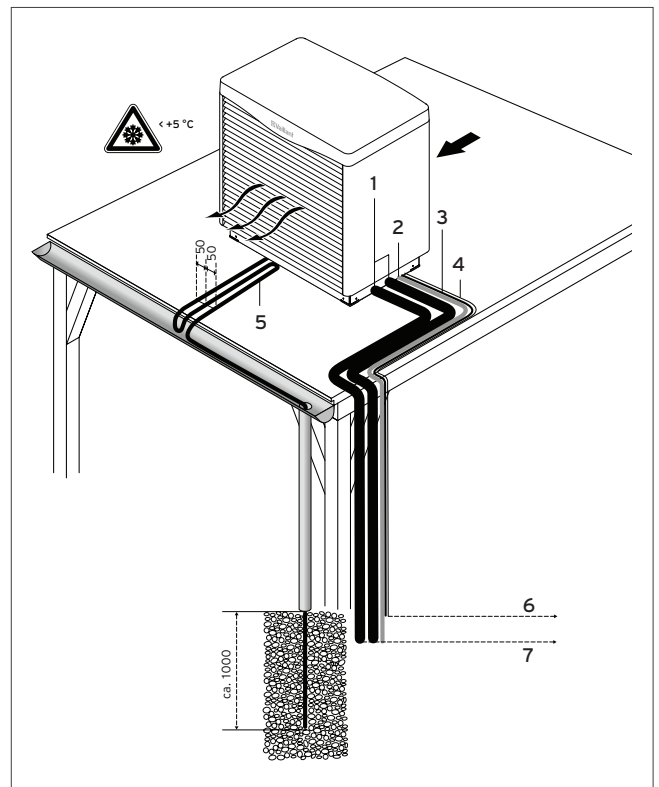


Fig. 203: aroCOLLECT flat roof installation

- 1 Brine pipes with heat insulation from the outdoor unit to the indoor unit
- 2 eBUS
- 3 400 V/50 Hz, 3/N/PE~ outdoor unit power supply
- 4 230 V/50 Hz, 1/N/PE~ heating strip power supply
- 5 Electrical heating strip for condensate discharge
- 6 For power supply
- 7 For the indoor unit

For a ground-level PE pipe connection for the aroCOLLECT outdoor unit, the installation set with order number 0020112803 is required. This comprises:

- 2 x S 28 connection pipe x 1.5 mm G 5/4
- 1 x base panel with cut-outs
- 2 x R 5/4 brass threaded joint

Ensure that everything is sufficiently secured in place and storm-protected.

For flat roofs with gravel filling, an installation set is available for flat-roof installation (order number 0020087826). This consists of:

- 2 x gravel tray
- 2 x S 28 mm flat-roof connection pipe x 1.5 mm, G 5/4
- 1 x base panel for flat-roof installation
- 1 x heat insulation for connection pipes
- 4 x fitting for securing the gravel tray to the outdoor unit
- 2 x brass threaded joint, R 5/4

The electrical gutter trace heating is controlled via a relay (provided on-site) that is connected to the red terminals of the outdoor unit (max. 200 W). The trace heating is then switched on only below an air intake temperature of +5 °C and only during the thawing procedure. The trace heating can be connected directly to the PCB at an output of up to 200 W. We recommend using a relay.

4.11.10 Frost protection for the condensate tray

Vaillant recommends the VWZ EH heating element.

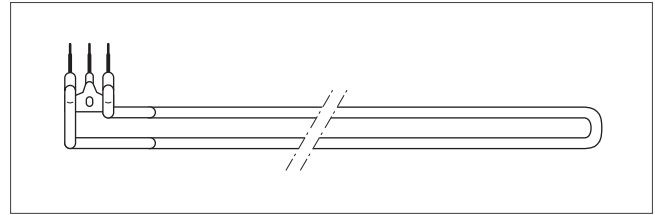


Fig. 205: VWZ EH heating element

Installing elevated bases is not recommend due to increased wind loads.

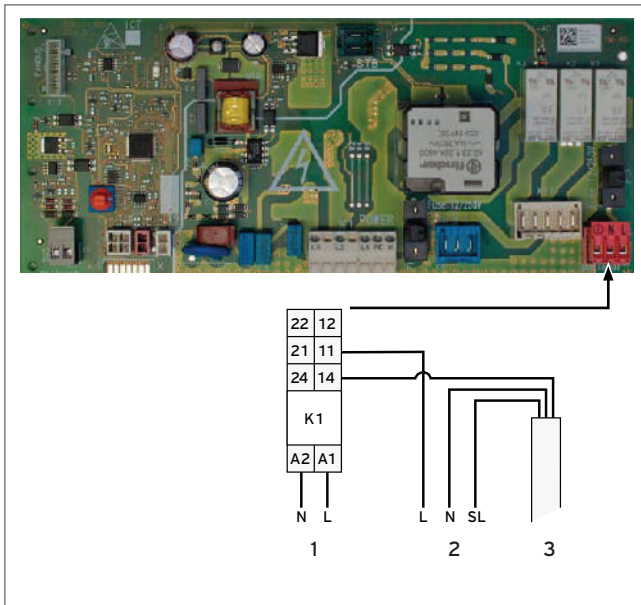


Fig. 204: PCB for the aroCOLLECT outdoor unit

- 1 Electronics box connection in the outdoor unit
- 2 Trace heating mains voltage from the E manifold
- 3 Gutter trace heating strip to protect the building against frost

4.11.11 Installing brine lines in the building

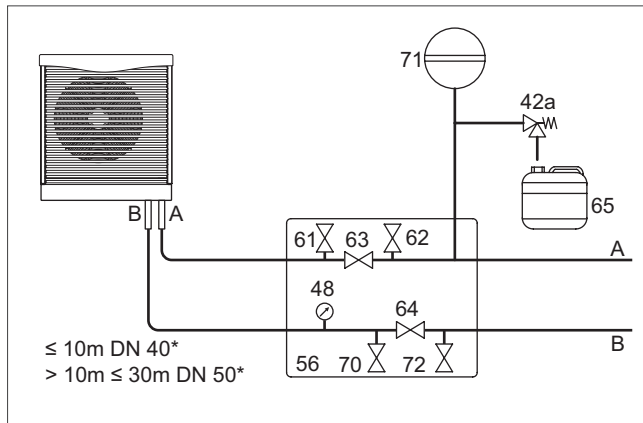


Fig. 206: Fittings in the brine circuit

- 42a Expansion relief valve
- 48 Manometer
- 56 Heat pump brine filling unit (accessory)
- 61 Isolation valve
- 62 Isolation valve
- 63 Isolation valve
- 64 Isolation valve
- 65 Brine collecting vessel
- 70 Isolation valve
- 71 Brine diaphragm expansion vessel
- 72 Isolation valve
- A From the heat source to the heat pump (hot brine)
- B From the heat pump to the heat source (cold brine)
- * One way

1. Install the brine lines between the product and the heat pump within the building and using all of the associated components in accordance with the applicable technical directives.

Note

Do not install dirt filters in the brine circuit for a prolonged period of time. The brine fluid is cleaned during the filling process.



2. Reduce the pre-charge pressure of the brine diaphragm expansion vessel (which is available as an accessory) from 0.25 MPa (2.5 bar) to 0.10 MPa (1.0 bar).
3. Insulate all of the brine lines and the connections for the heat pump and product so that they are vapour diffusion-tight.

Note

Vaillant recommends that you install the Vaillant heat pump brine filling unit. By doing this, it is then possible to carry out a preparatory partial bleed of the brine circuit, e. g. the flow and return of the brine circuit to the product.



4.11.12 Electric connection

A 3/N/PE power supply line is required for the aroCOLLECT outdoor unit and a line with a cross section of at least 2 x 0.75 mm² is required for the eBUS connection.

If two outdoor units are installed, two 3/N/PE lines and two eBUS connections are required.

4.12 fluoCOLLECT VWW 11/4 SI and VWW 19/4 SI groundwater module

Order no. 0010016719, 0010016720



Fig. 207: fluoCOLLECT groundwater module

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

The groundwater module is used to transfer heat between the brine circuit and the groundwater.

VWW 11/4 SI for 5-11 kW heat pumps.

VWW 19/4 SI 15-19 kW heat pumps.

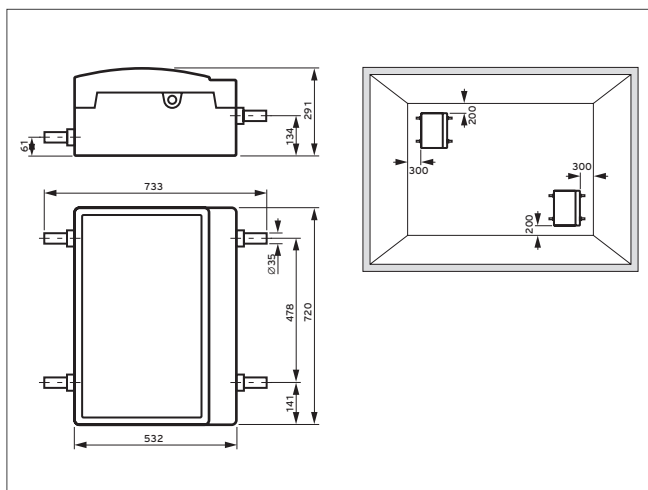


Fig. 208: fluoCOLLECT dimension drawing

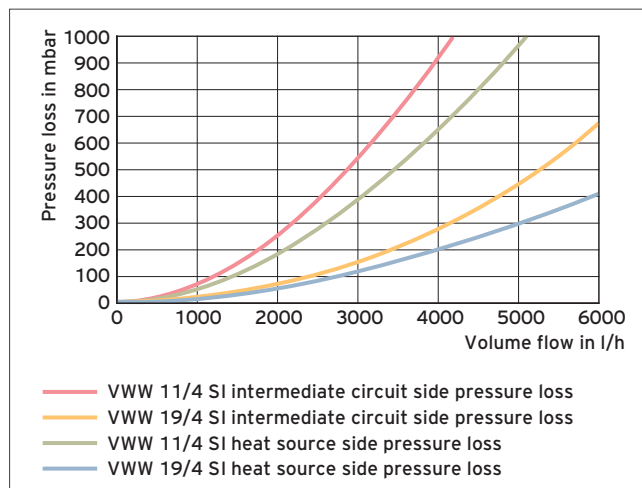


Fig. 209: VWW 11/4 SI and 19/4 SI pressure loss diagram

4.13 Basic hydraulic and wiring diagrams

4.13.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	unitOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections

Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

4.13.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				regulated	direct		Domestic hot water	Heating	
0020205392	flexoCOMPACT VWF	VRC 700, VR 70	off	1 UFH	-	VPS R 200/1 B	-	-	Integrated domestic hot water cylinder
0020177912	flexoCOMPACT VWF	VRC 700	off	-	1 UFH	VWZ MPS 40	-	-	Integrated domestic hot water cylinder

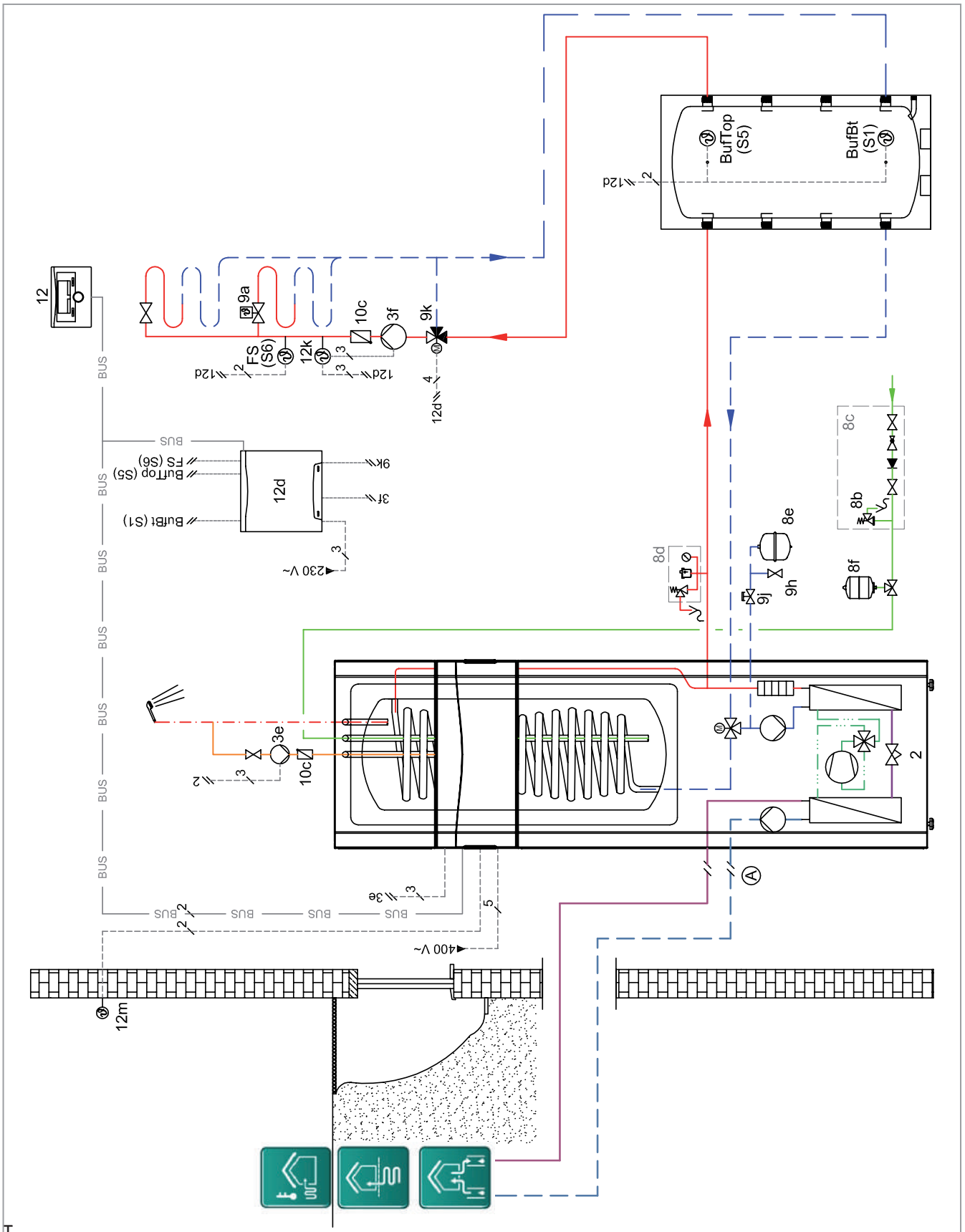


Fig 210: Basic hydraulic diagram

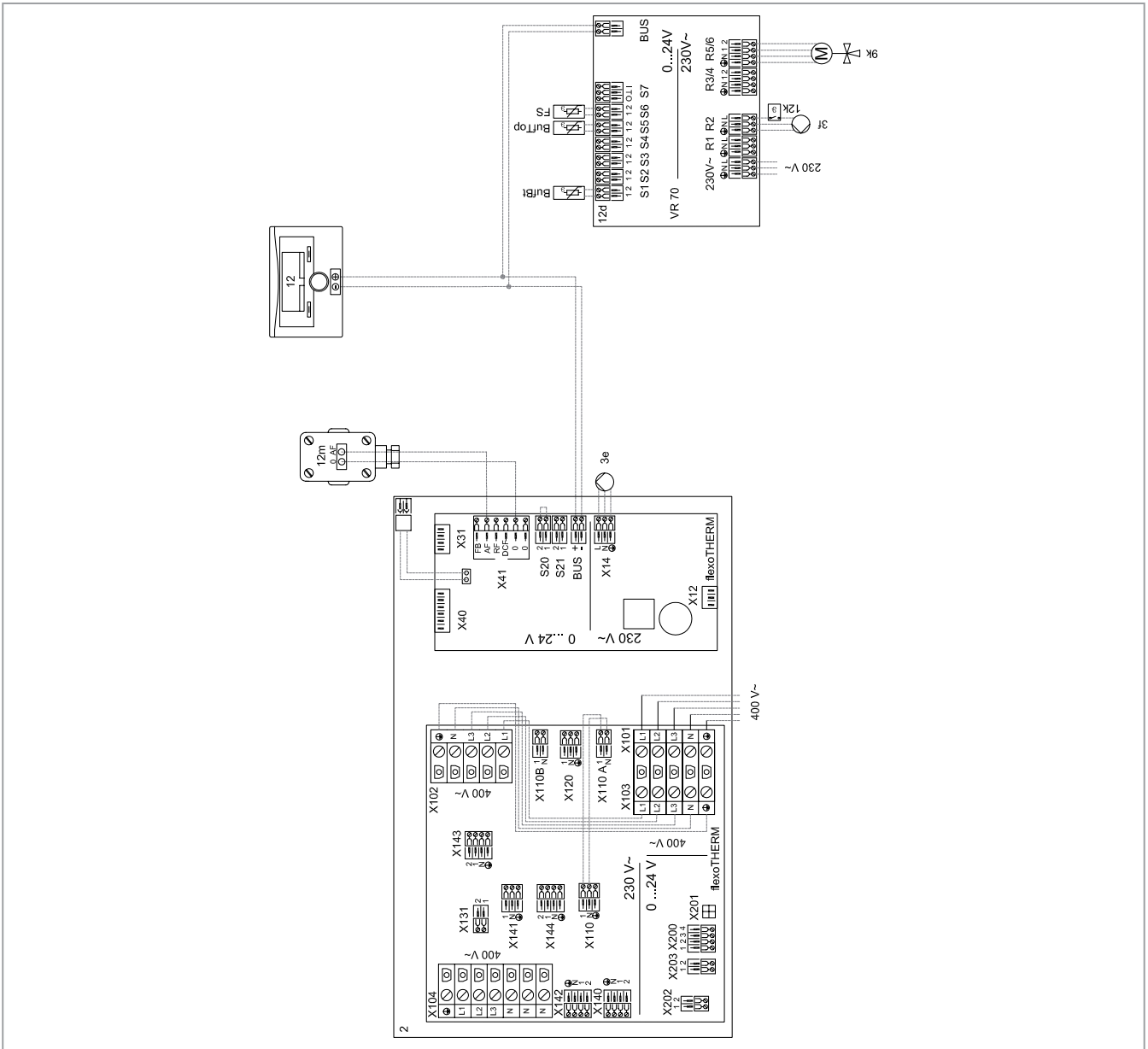


Fig 211: Wiring diagram

Description

Houses with one mixed heating circuit (underfloor heating). The heat pump supports the heating and hot water system. The buffer cylinder (VPS R 200/1 B) must be designed in accordance with the applicable standards and regulations. A: Heat source options 0020178458 no. 1, 2, 3, 4.

Individual components

- flexoCOMPACT VWF
- VPS R 200/1 B
- VR 70
- VRC 700

Setting

- VRC 700 system diagram setting: 8
- VR 70 module setting: 1

0020177912 - Basic hydraulic diagram

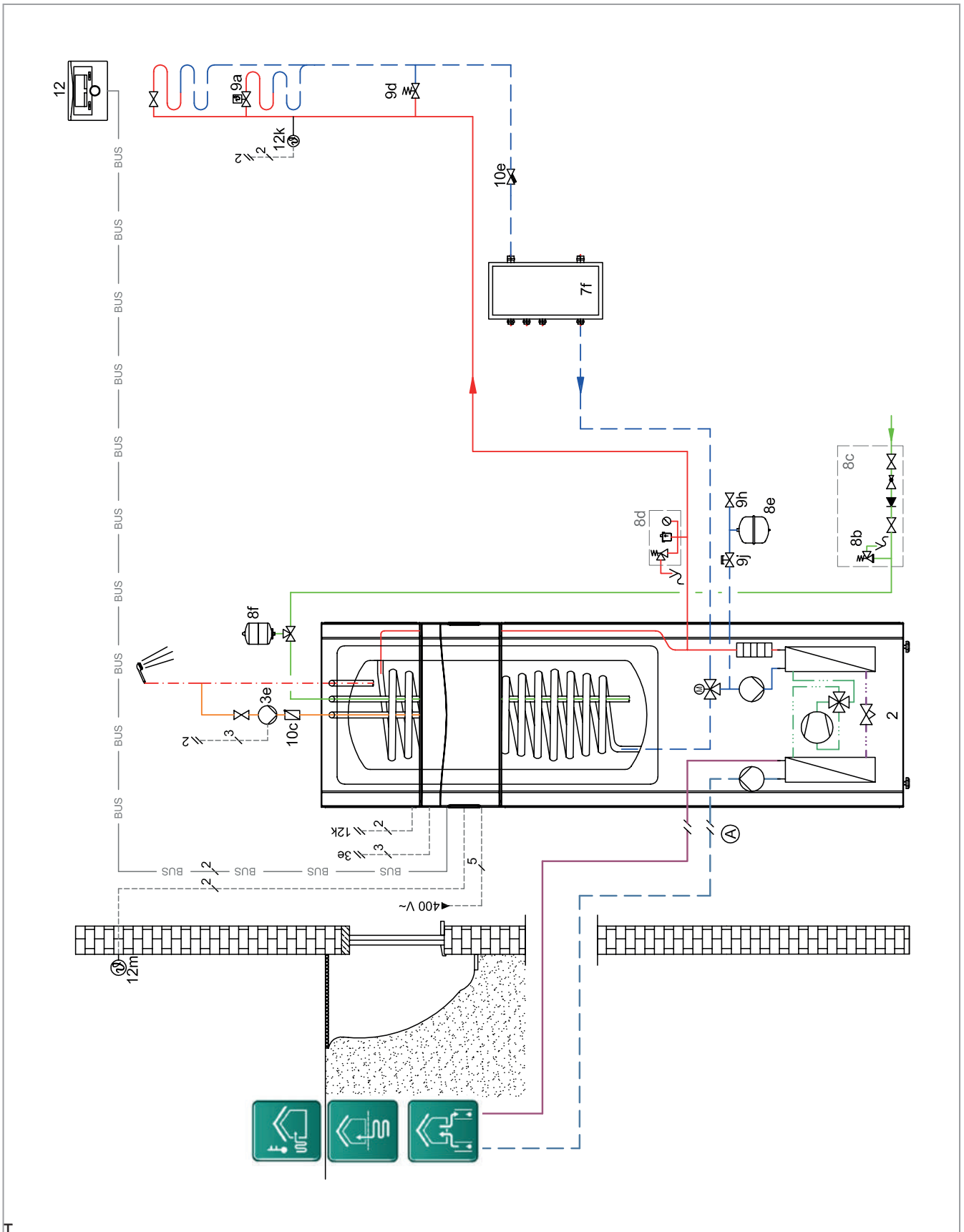


Fig 212: Basic hydraulic diagram

0020177912 - Wiring diagram

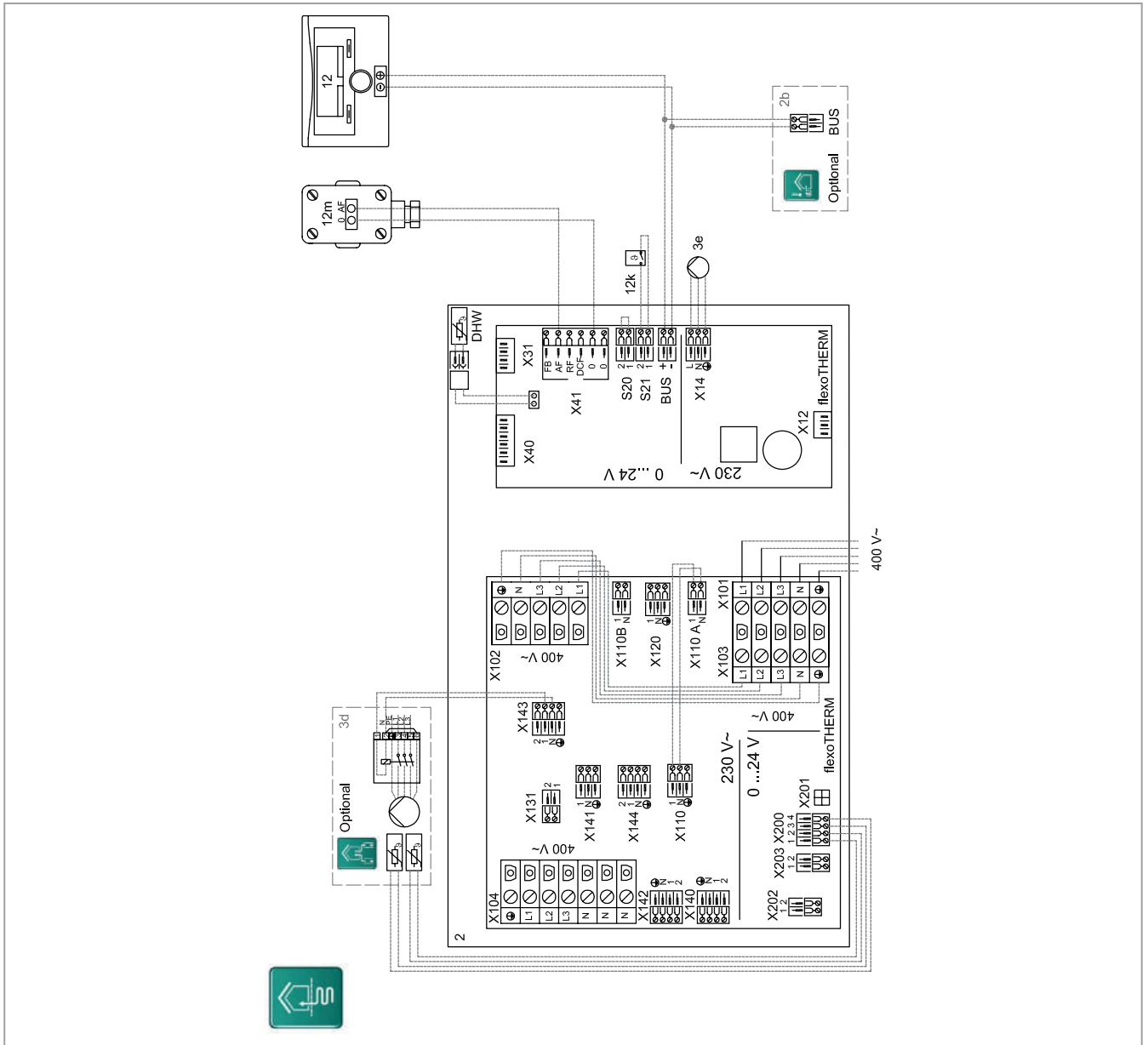


Fig 213: Wiring diagram

Description

Houses with one heating circuit (under-floor heating). The domestic hot water cylinder is integrated into the unit.

Heat source options 0020178458 no. 1, 2, 3, 4.

Caution: At least 35% of the flow must flow through the reference room without an individual room control valve. Use the VWZ MPS 40 compact buffer cylinder if the flow rate is less than or equal to 2600 l/h. Cooling technology setting for heat pump: No cooling.

Individual components

- flexoCOMPACT VWF 5 - 11 kW
- VWZ MPS 40
- VRC 700

Setting

VRC 700 system diagram setting: 8



5. Product information for the flexoTHERM exclusive 230 V

Update 10
New product overview

5.1 Product combinations



Fig. 214: Product combinations

Product combination overview for the flexoTHERM 230 V VWF ..7/4

	Heat pump		Decoupler modules		Domestic hot water cylinder	Control	Photovoltaics
	Brine/water flexoTHERM VWF ..7/4 (1)	Water/water flexoTHERM VWF ..7/4 (1) + fluoCOLLECT VWW/4 (2)	Buffer cylinder Heating and cooling VP RW 45/2 B (3) VPS R 100/1 M (4) VPS R 200/1 B (5)	Buffer cylinder Heating allSTOR plus/exclusive (6)	uniSTOR (7)	VRC 700 or VRC 720 (8)	PV modules and inverters (9)
Heating only	•	•	◦	◦	–	•	•
Heating and domestic hot water generation	•	•	◦	◦	•	•	•
Heating, domestic hot water generation and cooling	•	•	•	–	•	•	•
Heat pump cascade (heating)	•	•	–	•	–	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

5.2 Product description for the flexoTHERM exclusive VWF 57/4 - VWF 117/4 230 V



Fig. 215: flexoTHERM exclusive 230 V

5.2.1 Special features

- Bears the Green iQ label
- The Sound Safe System ensures that the heat pump is particularly quiet when running
- Ground-water and brine heat sources can be used; no air
- Flow temperatures of up to 65 °C for modernisation with EVI, even at low outside temperatures
- High level of efficiency thanks to the advanced, durable heat pump scroll compressor
- 10-year material guarantee for the compressor

5.2.2 Potential applications

- Heating and domestic hot water generation

5.2.3 Equipment

- Free iPhone and Android app for end customers
- High-efficiency pumps in the heating/brine circuit
- Hot water diverter valve
- 230 V electric back-up heater in single-phase system with 5.5 kW or three-phase system with 9 kW, multistage
- In-rush current limiter
- Sensor-controlled refrigerant circuit with EVI technology
- Integrated active cooling mode
- Heat meter and electricity meter integrated as standard
- **aroCOLLECT**: Air heat source is not an option
- **fluoCOLLECT**: Nickel-soldered stainless steel heat exchanger, option to connect an expansion relief valve, integrated pressure gauge for the brine circuit, filling device for the brine circuit
- Optional: Particularly quick installation and start-up with accessory: Pre-installation jig 0020229713 can be used for the flexoTHERM
- Optional: Passive cooling via the ground collector with accessory VWZ NC 11 or 14

Update 10
New efficiency class (EN14511:2018)

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Order no.
VWF 57/4 230 V	A+++ / A++ (A+++ to D) A+++ / A++ (A+++ to D)	0020199748 xxxxxxxx with fluoCOLLECT
VWF 87/4 230 V	A++ / A+ (A+++ to D) A+++ / A+++ (A+++ to D)	0020199749 xxxxxxxx with fluoCOLLECT
VWF 117/4 230 V	A+++ / A++ (A+++ to D) A+++ / A+++ (A+++ to D)	0020199750 xxxxxxxx with fluoCOLLECT

5.3 Technical data

5.3.1 General

Dimensions

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Product dimensions, height, without adjustable feet	1,183 mm	1,183 mm	1,183 mm
Product dimensions, width	595 mm	595 mm	595 mm
Product dimensions, depth	600 mm	600 mm	600 mm
Weight, with packaging	161 kg	176 kg	188 kg
Weight, without packaging	151 kg	166 kg	178 kg
Weight, ready for operation	157 kg	173 kg	185 kg

Electrics

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Compressor/heating circuit/control circuit rated voltage	1~/N/PE 230 V 50 Hz 2~/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz 2~/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz 2~/PE 230 V 50 Hz
Auxiliary heater rated voltage	1~/N/PE 230 V 50 Hz 3~/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz 3~/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz 3~/PE 230 V 50 Hz
Power factor	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$
Power factor for the auxiliary heater	$\cos \Phi = 1$	$\cos \Phi = 1$	$\cos \Phi = 1$
Required network impedance Z_{max} with in-rush current limiter	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$
Required network impedance Z_{max} for auxiliary heater	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Designing in accordance with the selected connection diagrams	Designing in accordance with the selected connection diagrams	Designing in accordance with the selected connection diagrams
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)		
In-rush current with in-rush current limiter	$\leq 25 \text{ A}$	$\leq 50 \text{ A}$	$\leq 50 \text{ A}$
Measuring current L1 for compressor and electronics (connection diagram 1)	11.9 A	19.1 A	24.9 A
Measuring current L1 for the compressor and electronics plus maximum 1.3 A at X12 VR 40, maximum 0.9 A at X14 circulation pump and maximum 2.5 A at TB X141, X143, X144 and X145 (connection diagram 1)	16.6 A	23.8 A	29.6 A
Measuring current L1 & L2 for compressor and electronics (L1 = L2) (connection diagram 2)	11.9 A	19.1 A	24.9 A
Measuring current L1 & L2 for the compressor and electronics plus maximum 1.3 A at X12 VR 40, maximum 0.9 A at X14 circulation pump and maximum 2.5 A at TB X141, X143, X144 and X145 (L1 = L2) (connection diagram 2)	16.6 A	23.8 A	29.6 A
Min. electrical power consumption of compressor	1.40 kW	2.10 kW	2.60 kW
Max. electrical power consumption of compressor	2.10 kW	3.10 kW	4.10 kW
Output levels for the auxiliary electric heater (connection diagram 1; connection diagram 2)	2.0 / 3.5 / 5.5 kW 2.0 / 3.5 / 5.5 / 7.0 / 9.0 kW	2.0 / 3.5 / 5.5 kW 2.0 / 3.5 / 5.5 / 7.0 / 9.0 kW	2.0 / 3.5 / 5.5 kW 2.0 / 3.5 / 5.5 / 7.0 / 9.0 kW
EN 60529 level of protection	IP 10B	IP 10B	IP 10B

Update 10
New technical data (EN14511:2018)

Hydraulics

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Heating flow/return connection	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "
Heat source flow/return connection	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "
Heating expansion vessel connection	G 3/4 "	G 3/4 "	G 3/4 "

Heat source circuit/brine circuit

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Brine content of the brine circuit in the heat pump	2.5 l	3.1 l	3.6 l
Brine circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe
Min. brine fluid operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. brine fluid operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Max. electrical power consumption, brine circuit pump	76 W	76 W	130 W
Brine pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump

Building circuit/heating circuit

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Heating circuit water contents in the heat pump	3.2 l	3.9 l	4.4 l
Heating circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe
Permissible heating water condition	Do not add frost or corrosion protection agents to heating water. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) in accordance with Directive VDI 2035 Sheet 1.		
Min. heating circuit operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. heating circuit operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Min. heating mode flow temperature	25 °C	25 °C	25 °C
Max. heating mode target flow temperature with compressor	65 °C	65 °C	65 °C
Max. heating mode target flow temperature with auxiliary electric heater	75 °C	75 °C	75 °C
Min. cooling mode flow temperature	5 °C	5 °C	5 °C
Max. electrical power consumption, heating pump	63 W	63 W	63 W
Heating pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump

Refrigeration circuit

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Refrigerant type	R410A	R410A	R410A
Refrigerant content of the refrigerant circuit in the heat pump	1.50 kg	2.40 kg	2.50 kg
Global warming potential (GWP) in accordance with regulation (EU) no. 517/2014	2088	2088	2088
CO ₂ equivalent	3.132 t	5.011 t	5.220 t
Global warming potential 100 (GWP ₁₀₀) in accordance with regulation (EC) no. 842/2006	1975	1975	1975
Expansion valve design	Electronic	Electronic	Electronic
Permissible operating pressure (relative)	≤ 4.6 MPa	≤ 4.6 MPa	≤ 4.6 MPa
Compressor type	Scroll	Scroll	Scroll
Oil type	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)
Oil filling quantity	0.74 l	1.25 l	1.25 l

Update 10
New technical data (EN14511:2018)

Installation site

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Installation site	Interior/dry	Interior/dry	Interior/dry
Installation room volume complying with EN 378	3.41 m ³	5.45 m ³	5.68 m ³
Permissible ambient temperature at the installation site	7 to 25 °C	7 to 25 °C	7 to 25 °C
Permissible relative air humidity	40 to 75 %	40 to 75 %	40 to 75 %

5.3.2 Brine heat source

Heat source circuit/brine circuit

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Min. source inlet temperature (hot brine) in heating mode	-10 °C	-10 °C	-10 °C
Max. source inlet temperature (hot brine) in heating mode	25 °C	25 °C	25 °C
Min. source inlet temperature (hot brine) in cooling mode	0 °C	0 °C	0 °C
Max. source inlet temperature (hot brine) in cooling mode	30 °C	30 °C	30 °C
Nominal flow ΔT 3 K for B0/W35	1,300 l/h	2,110 l/h	2,870 l/h
Min. volume flow during continuous operation at the application limits	1,190 l/h	1,990 l/h	2,570 l/h
Max. volume flow during continuous operation at the application limits	1,300 l/h	2,110 l/h	2,870 l/h
Max. remaining feed head with ΔT 3 K for B0/W35	0.063 MPa	0.041 MPa	0.055 MPa
Brine circuit pump electrical power consumption for B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the brine circuit	49 W	78 W	80 W
Brine fluid type	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.

Building circuit/heating circuit

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Nominal flow at ΔT 5 K	930 l/h	1,450 l/h	1,930 l/h
Max. remaining feed head with ΔT 5 K	0.065 MPa	0.044 MPa	0.03 MPa
Nominal flow with ΔT 8 K	600 l/h	930 l/h	1,290 l/h
Max. remaining feed head with ΔT 8 K	0.068 MPa	0.065 MPa	0.054 MPa
Max. volume flow during continuous operation at the application limits	930 l/h	1,450 l/h	1,930 l/h
Heating pump electrical power consumption for B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the heating circuit	24 W	37 W	49 W

Update 10
New technical data (EN14511:2018)

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Heat output B0/W35 ΔT 5 K	5.35 kW	8.19 kW	11.45 kW
Effective power consumption for B0/W35 ΔT 5 K	1.27 kW	2.01 kW	2.60 kW
Coefficient of performance B0/W35 ΔT 5 K/EN 14511	4.23	4.07	4.40
Heat output B0/W45 ΔT 5 K	5.31 kW	8.20 kW	11.32 kW
Effective power consumption B0/W45 ΔT 5 K	1.58 kW	2.51 kW	3.28 kW
Coefficient of performance B0/W45 ΔT 5 K/EN 14511	3.35	3.27	3.45
Heat output B0/W55 ΔT 8 K	5.37 kW	8.64 kW	11.67 kW
Effective power consumption for B0/W55 ΔT 8 K	1.90 kW	2.95 kW	3.87 kW
Coefficient of performance B0/W55 ΔT 8 K/EN 14511	2.83	2.93	3.01
Heat output B10/W35 ΔT 5 K	6.13 kW	9.89 kW	13.98 kW
Effective power consumption for B10/W35 ΔT 5 K	1.25 kW	2.04 kW	2.50 kW
Coefficient of performance B10/W35 ΔT 5 K / coefficient of performance EN 14511	4.90	4.85	5.62
Heat output B10/W45 ΔT 5 K	6.30 kW	10.16 kW	14.12 kW
Effective power consumption B10/W45 ΔT 5 K	1.60 kW	2.51 kW	3.22 kW
Coefficient of performance B10/W45 ΔT 5 K / coefficient of performance EN 14511	3.94	4.04	4.40
Heat output B10/W55 ΔT 8 K	6.39 kW	10.61 kW	14.40 kW
Effective power consumption for B10/W55 ΔT 8 K	1.93 kW	2.95 kW	3.86 kW
Coefficient of performance B10/W55 ΔT 8 K / coefficient of performance EN 14511	3.31	3.59	3.73
Sound power level B0/W35 EN 12102/EN 14511 L_{wi} in heating mode	43.8 dB(A)	45.6 dB(A)	48.5 dB(A)
Sound power level B0/W45 EN 12102/EN 14511 L_{wi} in heating mode	43.1 dB(A)	48.6 dB(A)	52.7 dB(A)
Sound power level B0/W55 EN 12102/EN 14511 L_{wi} in heating mode	44.9 dB(A)	53.5 dB(A)	51.3 dB(A)

Application limits for the heat pump: Heating (heat source = brine)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the brine circuit (ΔT 3 K). Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

Application limits for the heat pump: Heating (Brine heat source):

- B15/W65
- B25/W59
- B25/W25
- B-10/W25
- B-10/W60
- B-5/W65

5.3.3 Groundwater heat source

Heat source circuit/brine circuit and ground water circuit

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI
Min. source inlet temperature (hot water) in heating mode	10 °C	10 °C	10 °C
Max. source inlet temperature (hot water) in heating mode	25 °C	25 °C	25 °C
Nominal flow of groundwater at ΔT 3 K with W10W35	1,300 l/h	2,160 l/h	3,100 l/h
Brine fluid type	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.

Building circuit/heating circuit

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI
Nominal flow at ΔT 5 K	1,025 l/h	1,730 l/h	2,270 l/h
Max. remaining feed head with ΔT 5 K	0.08 MPa	0.2193 MPa	0.4224 MPa
Nominal flow with ΔT 8 K	710 l/h	1,120 l/h	1,510 l/h
Max. remaining feed head with ΔT 8 K	0.062 MPa	0.2103 MPa	0.4045 MPa
Min. volume flow during continuous operation at the application limits	710 l/h	1,120 l/h	1,510 l/h
Max. volume flow during continuous operation at the application limits	1,025 l/h	1,730 l/h	2,270 l/h
Heating pump electrical power consumption for W10/W35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	24 W	37 W	49 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

Check conditions for determining the performance data in accordance with EN 14511

Installation: Connection pipes on the heat source side between VWF xx/4 and VWW xx/4 SI = 2 x 2 m (pipe internal diameter = 32 mm), environment circuit pump setting: Heating mode: Factory setting (auto), Cooling mode: Factory setting (auto)

	VWF 57/4 230 V	VWF 87/4 230 V	VWF 117/4 230 V
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI
Heat output W10/W35 ΔT 5 K	5.72 kW	9.81 kW	13.04 kW
Effective power consumption for W10/W35 ΔT 5 K	1.26 kW	2.03 kW	2.73 kW
Coefficient of performance W10/W35 ΔT 5 K/EN 14511	4.54	4.83	4.78
Heat output W10/W45 ΔT 5 K	6.43 kW	9.81 kW	13.36 kW
Effective power consumption for W10/W45 ΔT 5 K	1.62 kW	2.57 kW	3.41 kW
Coefficient of performance W10/W45 ΔT 5 K/EN 14511	3.97	3.82	3.92
Heat output W10/W55 ΔT 8 K	6.48 kW	10.24 kW	13.77 kW
Effective power consumption for W10/W55 ΔT 8 K	1.97 kW	3.07 kW	4.07 kW
Coefficient of performance W10/W55 ΔT 8 K/EN 14511	3.29	3.33	3.38
Sound power level W10/W35 EN 12102/EN 14511 $L_{w,i}$ in heating mode	43.3 dB(A)	46.9 dB(A)	50.0 dB(A)
Sound power level W10/W45 EN 12102/EN 14511 $L_{w,i}$ in heating mode	45.4 dB(A)	49.4 dB(A)	50.7 dB(A)
Sound power level W10/W55 EN 12102/EN 14511 $L_{w,i}$ in heating mode	45.7 dB(A)	52.6 dB(A)	52.6 dB(A)

Application limits for the heat pump: Heating (heat source = groundwater)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the brine circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

Application limits for the heat pump: Heating (Groundwater heat source):

- W15/W65
- W25/W59
- W25/W25
- W10/W25
- W10/W65

5.4 Remaining feed head of building circuit pump

5.4.1 Remaining feed head for VWF 5x/4 building circuit pump at nominal volume flow

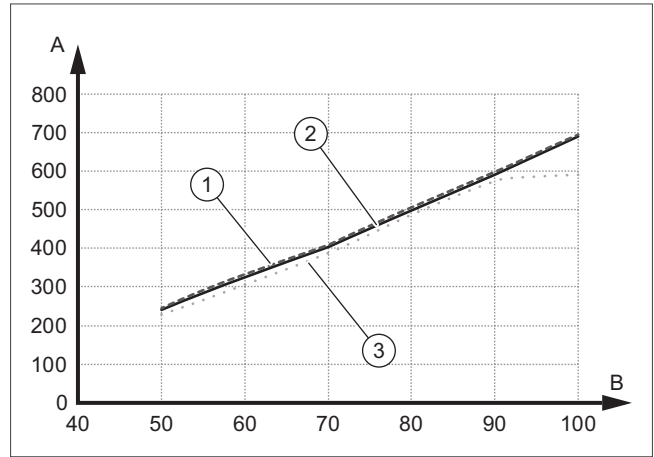


Fig. 216: Remaining feed head for VWF 5x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

5.4.2 Remaining feed head for VWF 8x/4 building circuit pump at nominal volume flow

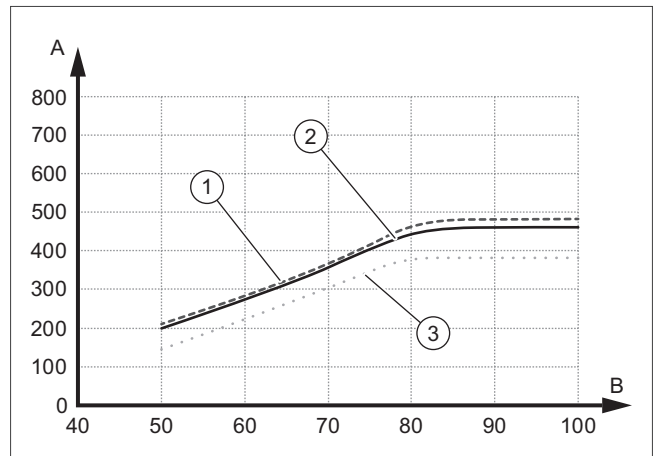


Fig. 217: Remaining feed head for VWF 8x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

5.4.3 Remaining feed head for VWF 11x/4 building circuit pump at nominal volume flow

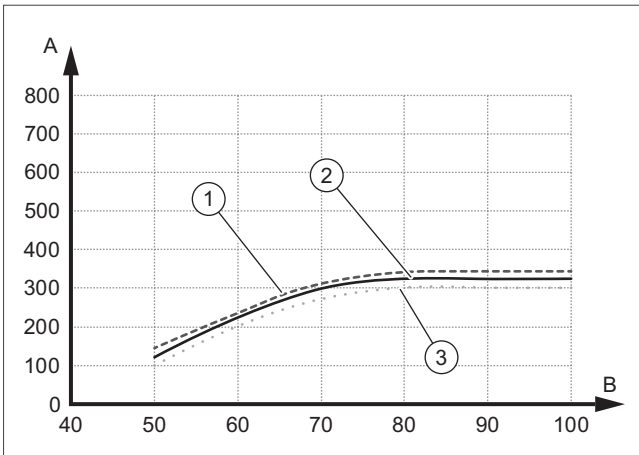


Fig. 218: Remaining feed head for VWF 11x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

5.5.2 Remaining feed head for VWF 8x/4 environment circuit pump at nominal volume flow

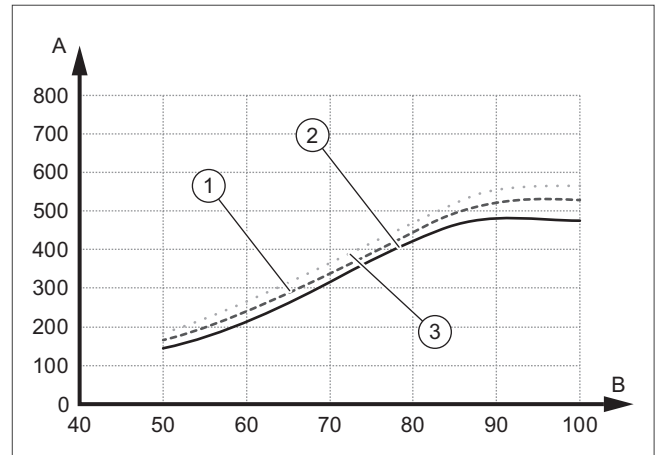


Fig. 220: Remaining feed head for VWF 8x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

5.5 Remaining feed head of environment circuit pump

5.5.1 Remaining feed head for VWF 5x/4 environment circuit pump at nominal volume flow

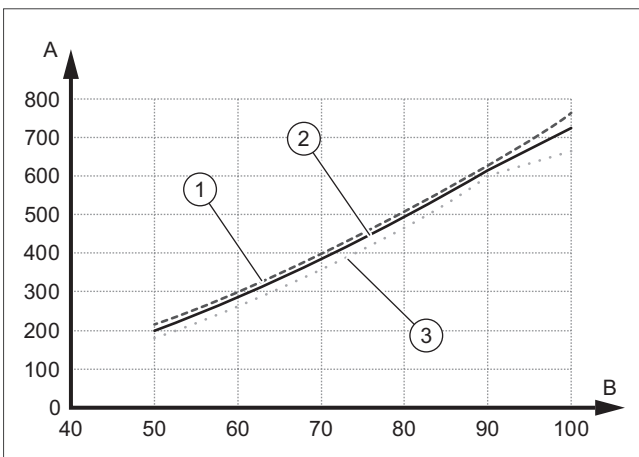


Fig. 219: Remaining feed head for VWF 5x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

5.5.3 Remaining feed head for VWF 11x/4 environment circuit pump at nominal volume flow

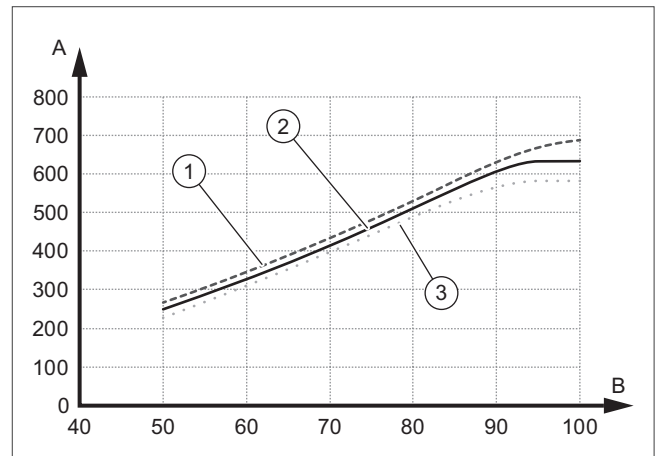


Fig. 221: Remaining feed head for VWF 11x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

5.6 Product dimensions and connection dimensions

5.6.1 Dimensions

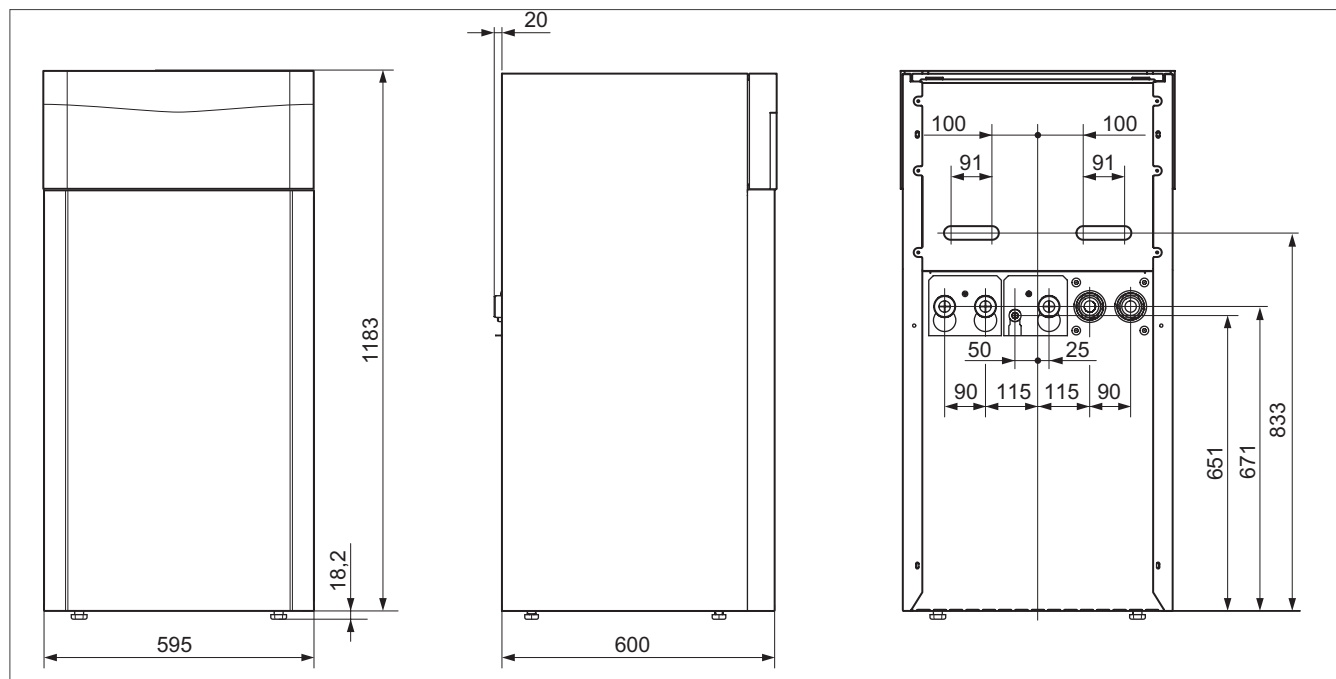


Fig. 222: Dimensions

Update 10

New minimum sizes for the installation room added

5.6.2 Minimum sizes for the installation rooms

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Minimum size for the installation room (m ³)
VWF 57/4 230 V	R 410a	1.50	3.4
VWF 87/4 230 V	R 410a	2.40	5.5
VWF 117/4 230 V	R 410a	2.50	5.7

Update 10
New fluoCOLLECT added

5.7 fluoCOLLECT VWW 11/4 SI and VWW 19/4 SI groundwater module

Order no. 0010016719, 0010016720



Fig. 223: fluoCOLLECT groundwater module

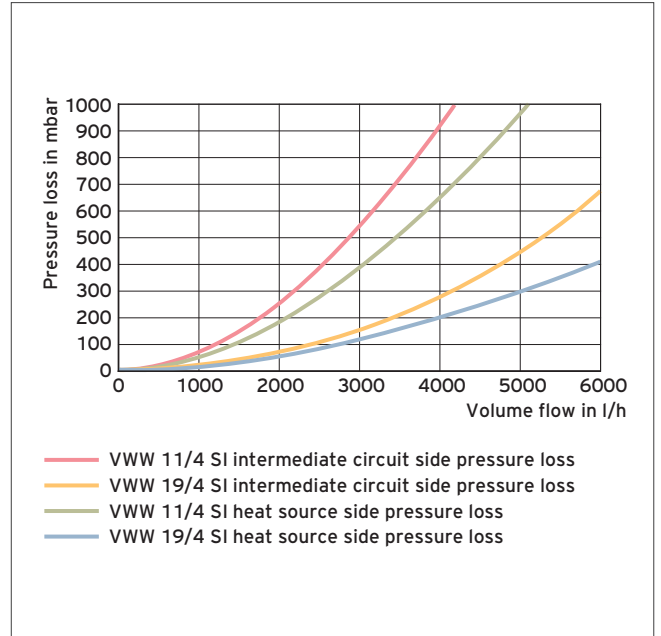


Fig. 225: VWW 11/4 SI and 19/4 SI pressure loss diagram

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

The groundwater module is used to transfer heat between the brine circuit and the groundwater.

VWW 11/4 SI for 5-11 kW heat pumps.

VWW 19/4 SI 15-19 kW heat pumps.

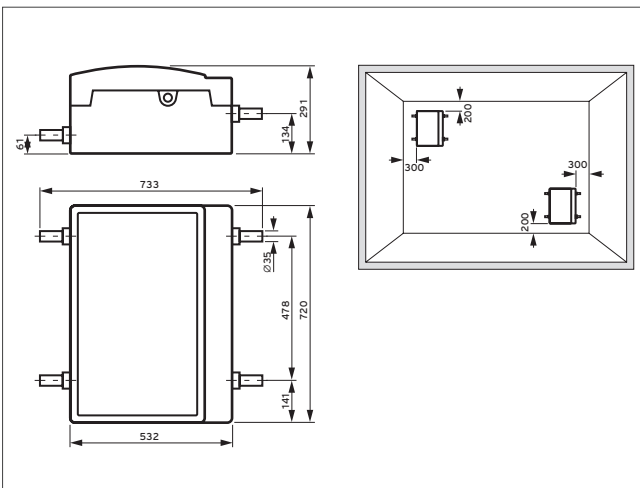


Fig. 224: fluoCOLLECT dimension drawing



6. Product information for the flexoCOMPACT exclusive 230 V

Update 10
New product overview

6.1 Product combinations



Fig. 226: Product combinations

Product combination overview for the flexoCOMPACT 230 V VWF ..8/4

	Heat pump		Decoupler modules		Control	Photovoltaics
	Brine/water flexoCOMPACT VWF ..8/4 (1)	Water/water flexoCOMPACT VWF ..8/4 (1) + fluoCOLLECT VWW ../4 (2)	Buffer cylinder Heating and cooling VP RW 45/2 B (3) VPS R 100/1 M (4) VPS R 200/1 B (5)	Buffer cylinder Heating allISTOR plus/exclusive (6)	VRC 700 or VRC 720 (7)	PV modules and inverters (8)
Heating and compact domestic hot water generation	•	•	◦	◦	•	•
Heating, compact domestic hot water generation and cooling	•	•	•	–	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

6.2 Product description for the flexoCOMPACT exclusive VWF 58/4 - VWF 118/4 230 V



Fig. 227: flexoCOMPACT exclusive 230 V

6.2.1 Special features

- Bears the Green iQ label
- The Sound Safe System ensures that the heat pump is particularly quiet when running
- Ground water and brine heat sources can be used; no air
- Flow temperatures of up to 65 °C for modernisation with EVI, even at low outside temperatures
- High level of efficiency thanks to the advanced, durable heat pump scroll compressor
- 10-year material guarantee for the compressor
- SplitMountingConcept for easy positioning in two parts
- Highly efficient hot water generation

6.2.2 Potential applications

- Heating and hot water generation

In order to use the active cooling function, the heating system must be prepared on-site.

6.2.3 Equipment

- 185 l stainless steel domestic hot water cylinder, cylinder temperature of up to 60 °C possible in heat pump mode
- Free iPhone and Android app for end customers
- High-efficiency pumps in the heating/brine circuit
- Hot water diverter valve
- 230 V electric back-up heater in single-phase system with 5.5 kW or three-phase system with 9 kW, multi-level
- In-rush current limiter
- Sensor-controlled refrigerant circuit with EVI technology
- Integrated active cooling mode
- Heat meter and electricity meter integrated as standard
- **aroCOLLECT**: Air heat source is not an option
- **fluoCOLLECT**: Nickel-soldered stainless steel heat exchanger, option to connect an expansion relief valve, integrated pressure gauge for the brine circuit, filling device for the brine circuit
- Optional: Particularly quick installation and start-up with accessory: Pre-installation jig 0020205412 can be used for the flexoCOMPACT
- Optional: Passive cooling via the ground collector with accessory VWZ NC 11 or 14

Update 10
New efficiency class (EN14511:2018)

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Domestic hot water generation energy efficiency class	Order no.
58/4 230 V	A+++ / A++ (A+++ to D) A+++ / A++ (A+++ to D)	A+ (A+ to F) A+ (A+ to F)	0020199751 xxxxxxxx with fluoCOLLECT
88/4 230 V	A++ / A++ (A+++ to D) A+++ / A+++ (A+++ to D)	A (A+ to F) A+ (A+ to F)	0020199752 xxxxxxxx with fluoCOLLECT
118/4 230 V	A+++ / A++ (A+++ to D) A+++ / A+++ (A+++ to D)	A+ (A+ to F) A (A+ to F)	0020199753 xxxxxxxx with fluoCOLLECT

6.3 Technical data

6.3.1 General

Dimensions

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Product dimensions, height, without adjustable feet	1,868 mm	1,868 mm	1,868 mm
Product dimensions, width	595 mm	595 mm	595 mm
Product dimensions, depth	720 mm	720 mm	720 mm
Weight, with packaging	231 kg	245 kg	257 kg
Weight, without packaging	218 kg	233 kg	244 kg
Weight, ready for operation	407 kg	423 kg	435 kg

Electrics

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Compressor/heating circuit/control circuit rated voltage	1~/N/PE 230 V 50 Hz 2~/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz 2~/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz 2~/PE 230 V 50 Hz
Auxiliary heater rated voltage	1~/N/PE 230 V 50 Hz 3~/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz 3~/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz 3~/PE 230 V 50 Hz
Power factor	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$
Power factor for the auxiliary heater	$\cos \Phi = 1$	$\cos \Phi = 1$	$\cos \Phi = 1$
Required network impedance Z_{max} with in-rush current limiter	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$
Required network impedance Z_{max} for auxiliary heater	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)		
In-rush current with in-rush current limiter	< 25 A	< 50 A	< 50 A
Measuring current L1 for compressor and electronics (connection diagram 1)	11.9 A	19.1 A	24.9 A
Measuring current L1 for the compressor and electronics plus maximum 1.3 A at X12 VR 40, maximum 0.9 A at X14 circulation pump and maximum 2.5 A at TB X141, X143, X144 and X145 (connection diagram 1)	16.6 A	23.8 A	29.6 A
Measuring current L1 & L2 for compressor and electronics (L1 = L2) (connection diagram 2)	11.9 A	19.1 A	24.9 A
Measuring current L1 & L2 for the compressor and electronics plus maximum 1.3 A at X12 VR 40, maximum 0.9 A at X14 circulation pump and maximum 2.5 A at TB X141, X143, X144 and X145 (L1 = L2) (connection diagram 2)	16.6 A	23.8 A	29.6 A
Min. electrical power consumption of compressor	1.40 kW	2.10 kW	2.60 kW
Max. electrical power consumption of compressor	2.10 kW	3.10 kW	4.10 kW
Output levels for the auxiliary electric heating (connection diagram 1; connection diagram 2)	2.0 / 3.5 / 5.5 kW 2.0 / 3.5 / 5.5 / 7.0 / 9.0 kW	2.0 / 3.5 / 5.5 kW 2.0 / 3.5 / 5.5 / 7.0 / 9.0 kW	2.0 / 3.5 / 5.5 kW 2.0 / 3.5 / 5.5 / 7.0 / 9.0 kW
EN 60529 level of protection	IP 10B	IP 10B	IP 10B

Update 10
New technical data (EN14511:2018)

Hydraulics

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Heating flow/return connection	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "
Heat source flow/return connection	G 1 1/2 "	G 1 1/2 "	G 1 1/2 "
Cold/hot water connection	G 3/4 "	G 3/4 "	G 3/4 "
Heating expansion vessel connection	G 3/4 "	G 3/4 "	G 3/4 "

Integrated domestic hot water cylinder

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Contents, net	171 l	171 l	171 l
Max. operating pressure	1 MPa	1 MPa	1 MPa
Max. hot water outlet temperature with heat pump	≤ 63 °C	≤ 63 °C	≤ 63 °C
Max. hot water outlet temperature with heat pump and auxiliary heater	≤ 75 °C	≤ 75 °C	≤ 75 °C
Domestic hot water cylinder heat-up time up to target cylinder temperature of 50 °C	75 min	68 min	52 min
Power consumption for BO during standby in accordance with DIN EN 16147 (solar use)	23 W	25 W	28 W
Power consumption for W10 during standby in accordance with DIN EN 16147 (water use)	21 W	22 W	24 W

Heat source circuit/brine circuit

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Brine content of the brine circuit in the heat pump	2.5 l	3.1 l	3.6 l
Brine circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe
Min. brine fluid operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. brine fluid operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Max. electrical power consumption, brine circuit pump	76 W	76 W	130 W
Brine pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump

Building circuit/heating circuit

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Heating circuit water contents in the heat pump	15.4 l	16.1 l	16.5 l
Heating circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe
Permissible heating water condition	Do not add frost or corrosion protection agents to heating water. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) in accordance with Directive VDI 2035 Sheet 1.		
Min. heating circuit operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. heating circuit operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Min. heating mode flow temperature	25 °C	25 °C	25 °C
Max. heating mode target flow temperature with compressor	65 °C	65 °C	65 °C
Max. target flow temperature in heating mode with auxiliary electric heating	75 °C	75 °C	75 °C
Min. cooling mode flow temperature	5 °C	5 °C	5 °C
Max. electrical power consumption, heating pump	63 W	63 W	63 W
Heating pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump

Update 10
New technical data (EN14511:2018)

Refrigerant circuit

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Refrigerant type	R410A	R410A	R410A
Refrigerant content of the refrigerant circuit in the heat pump	1.50 kg	2.40 kg	2.50 kg
Global warming potential (GWP) in accordance with regulation (EU) no. 517/2014	2088	2088	2088
CO ₂ equivalent	3.132 t	5.011 t	5.220 t
Global warming potential 100 (GWP ₁₀₀) in accordance with regulation (EC) no. 842/2006	1975	1975	1975
Expansion valve design	Electronic	Electronic	Electronic
Permissible operating pressure (relative)	≤ 4.6 MPa	≤ 4.6 MPa	≤ 4.6 MPa
Compressor type	Scroll	Scroll	Scroll
Oil type	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)
Oil filling quantity	0.74 l	1.25 l	1.25 l

Installation site

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Installation site	Interior/dry	Interior/dry	Interior/dry
Installation room volume complying with EN 378	3.41 m ³	5.45 m ³	5.68 m ³
Permissible ambient temperature at the installation site	7 to 25 °C	7 to 25 °C	7 to 25 °C
Permissible relative air humidity	40 to 75 %	40 to 75 %	40 to 75 %

6.3.2 Brine heat source

Heat source circuit/brine circuit

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Min. source inlet temperature (hot brine) in heating mode	-10 °C	-10 °C	-10 °C
Max. source inlet temperature (hot brine) in heating mode	25 °C	25 °C	25 °C
Min. source inlet temperature (hot brine) in cooling mode	0 °C	0 °C	0 °C
Max. source inlet temperature (hot brine) in cooling mode	30 °C	30 °C	30 °C
Nominal flow ΔT 3 K for B0/W35	1,300 l/h	2,110 l/h	2,870 l/h
Min. volume flow during continuous operation at the application limits	1,190 l/h	1,990 l/h	2,570 l/h
Max. volume flow during continuous operation at the application limits	1,300 l/h	2,110 l/h	2,870 l/h
Max. remaining feed head with ΔT 3 K for B0/W35	0.063 MPa	0.041 MPa	0.055 MPa
Brine circuit pump electrical power consumption for B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the brine circuit	49 W	78 W	80 W
Brine fluid type	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.

Update 10
New technical data (EN14511:2018)

Building circuit/heating circuit

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Nominal flow at ΔT 5 K for B0/W35	930 l/h	1,450 l/h	1,930 l/h
Max. remaining feed head at ΔT 5 K B0/W35	0.065 MPa	0.044 MPa	0.03 MPa
Nominal flow at ΔT 8 K for B0/W55	600 l/h	930 l/h	1,290 l/h
Max. remaining feed head at ΔT 8 K B0/W55	0.068 MPa	0.065 MPa	0.054 MPa
Min. volume flow during continuous operation at the application limits	600 l/h	930 l/h	1,290 l/h
Max. volume flow during continuous operation at the application limits	930 l/h	1,450 l/h	1,930 l/h
Heating pump electrical power consumption for B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the heating circuit	24 W	37 W	49 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Heat output B0/W35 ΔT 5 K	5.35 kW	8.19 kW	11.45 kW
Effective power consumption B0/W35 ΔT 5K	1.27 kW	2.01 kW	2.60 kW
Coefficient of performance B0/W35 ΔT 5 K/EN 14511	4.23	4.07	4.40
Heat output B0/W45 ΔT 5 K	5.31 kW	8.20 kW	11.32 kW
Effective power consumption B0/W45 ΔT 5 K	1.58 kW	2.51 kW	3.28 kW
Coefficient of performance B0/W45 ΔT 5 K/EN 14511	3.35	3.27	3.45
Heat output B0/W55 ΔT 8 K	5.37 kW	8.64 kW	11.67 kW
Effective power consumption B0/W55 ΔT 8K	1.90 kW	2.95 kW	3.87 kW
Coefficient of performance B0/W55 ΔT 8 K/EN 14511	2.83	2.93	3.01
Heat output B10/W35 ΔT 5 K	6.13 kW	9.89 kW	13.98 kW
Effective power consumption B10/W35 ΔT 5K	1.25 kW	2.04 kW	2.50 kW
Coefficient of performance B10/W35 ΔT 5 K / coefficient of performance EN 14511	4.90	4.85	5.62
Heat output B10/W45 ΔT 5 K	6.30 kW	10.16 kW	14.12 kW
Effective power consumption B10/W45 ΔT 5 K	1.60 kW	2.51 kW	3.22 kW
Coefficient of performance B10/W45 ΔT 5 K / coefficient of performance EN 14511	3.94	4.04	4.40
Heat output B10/W55 ΔT 8K	6.39 kW	10.61 kW	14.40 kW
Effective power consumption B10/W55 ΔT 8K	1.93 kW	2.95 kW	3.86 kW
Coefficient of performance B10/W55 ΔT 8 K / coefficient of performance EN 14511	3.31	3.59	3.73
Domestic hot water coefficient of performance / coefficient of performance B0/Wxx EN 16147 at a target cylinder temperature of 50 °C and 6 K hysteresis	2.97	2.68	2.98
Domestic hot water draw-off profile B0/Wxx EN 16147	XL	XL	XL
Hot water mixed water volume 40 °C (V40) B0/Wxx at target cylinder temperature of 50 °C	224 l	227 l	241 l
Sound power level B0/W35 EN 12102/EN 14511 L_{wii} in heating mode	44.8 dB(A)	51.6 dB(A)	45.5 dB(A)
Sound power level B0/W45 EN 12102/EN 14511 L_{wii} in heating mode	43.3 dB(A)	55.6 dB(A)	45.1 dB(A)
Sound power level B0/W55 EN 12102/EN 14511 L_{wii} in heating mode	48.1 dB(A)	58.8 dB(A)	45.2 dB(A)

**Application limits for the heat pump: Heating
(heat source = brine)**

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the brine circuit (ΔT 3 K). Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

**Application limits for the heat pump: Heating
(Brine heat source):**

- B15/W65
- B25/W59
- B25/W25
- B-10/W25
- B-10/W60
- B-5/W65

6.3.3 Groundwater heat source

Heat source circuit/brine circuit and ground water circuit

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI
Min. source inlet temperature (hot water) in heating mode	10 °C	10 °C	10 °C
Max. source inlet temperature (hot water) in heating mode	25 °C	25 °C	25 °C
Nominal flow of groundwater at ΔT 3 K with W10W35	1,300 l/h	2,160 l/h	3,100 l/h
Brine fluid type	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.	Ethylene glycol 30% vol.

Building circuit/heating circuit

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI
Nominal flow at ΔT 5 K	1,025 l/h	1,730 l/h	2,270 l/h
Max. remaining feed head with ΔT 5 K	0.08 MPa	0.2193 MPa	0.4224 MPa
Nominal flow with ΔT 8 K	710 l/h	1,120 l/h	1,510 l/h
Max. remaining feed head with ΔT 8 K	0.062 MPa	0.2103 MPa	0.4045 MPa
Min. volume flow during continuous operation at the application limits	710 l/h	1,120 l/h	1,510 l/h
Max. volume flow during continuous operation at the application limits	1,025 l/h	1,730 l/h	2,270 l/h
Heating pump electrical power consumption for W10/W35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	24 W	37 W	49 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

Check conditions for determining the performance data in accordance with EN 14511.

Installation: Connection pipes on the heat source side between VWF xx/4 and VWW xx/4 SI = 2 x 2 m (pipe internal diameter = 32 mm), environment circuit pump setting: Heating mode: Factory setting (auto), Cooling mode: Factory setting (auto)

	VWF 58/4 230 V	VWF 88/4 230 V	VWF 118/4 230 V
Heat source module	VWW 11/4 SI	VWW 11/4 SI	VWW 11/4 SI
Heat output W10/W35 ΔT 5 K	5.72 kW	9.81 kW	13.04 kW
Effective power consumption for W10/W35 ΔT 5 K	1.26 kW	2.03 kW	2.73 kW
Coefficient of performance W10/W35 ΔT 5 K/EN 14511	4.54	4.83	4.78
Heat output W10/W45 ΔT 5 K	6.43 kW	9.81 kW	13.36 kW
Effective power consumption for W10/W45 ΔT 5 K	1.62 kW	2.57 kW	3.41 kW
Coefficient of performance W10/W45 ΔT 5 K/EN 14511	3.97	3.82	3.92
Heat output W10/W55 ΔT 8 K	6.48 kW	10.24 kW	13.77 kW
Effective power consumption for W10/W55 ΔT 8 K	1.97 kW	3.07 kW	4.07 kW
Coefficient of performance W10/W55 ΔT 8 K/EN 14511	3.29	3.33	3.38
Domestic hot water coefficient of performance / coefficient of performance W10/Wxx EN 16147 at a target cylinder temperature of 50 °C and 6 K hysteresis	3.08	2.51	2.80
Domestic hot water draw-off profile W10/Wxx EN 16147	XL	XL	XL
Hot water mixed water volume 40 °C (V40) W1050 / Wxx at target cylinder temperature of 50 °C	219 l	227 l	254 l
Sound power level W10/W35 EN 12102/EN 14511 L_{w} in heating mode	46.1 dB(A)	54.3 dB(A)	46.1 dB(A)
Sound power level W10/W45 EN 12102/EN 14511 L_{w} in heating mode	44.4 dB(A)	55.6 dB(A)	44.9 dB(A)
Sound power level W10/W55 EN 12102/EN 14511 L_{w} in heating mode	48.9 dB(A)	58.3 dB(A)	45.8 dB(A)

Application limits for the heat pump: Heating (heat source = groundwater)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the groundwater circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

Application limits for the heat pump: Heating (Groundwater heat source):

- W15/W65
- W25/W59
- W25/W25
- W10/W25
- W10/W65

6.3.4 Remaining feed head of building circuit pump

Remaining feed head for VWF 5x/4 building circuit pump at nominal volume flow

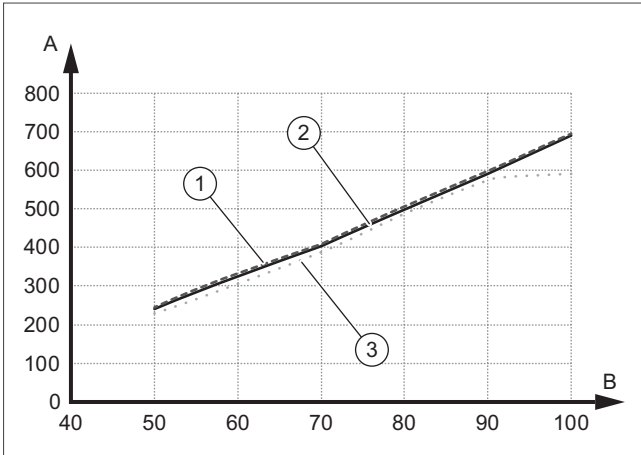


Fig. 228: Remaining feed head for VWF 5x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 11x/4 building circuit pump at nominal volume flow

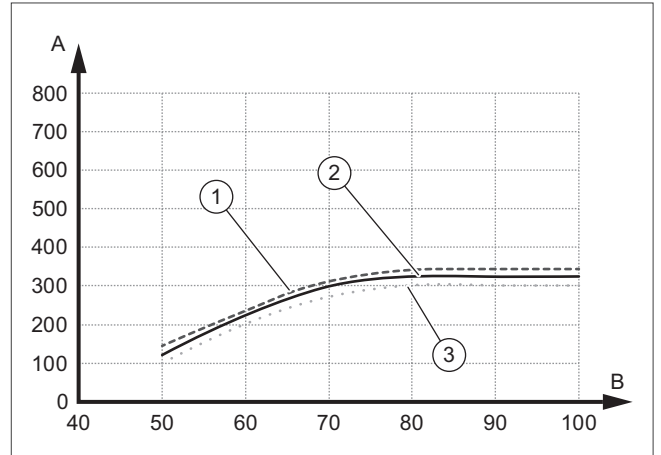


Fig. 230: Remaining feed head for VWF 11x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 8x/4 building circuit pump at nominal volume flow

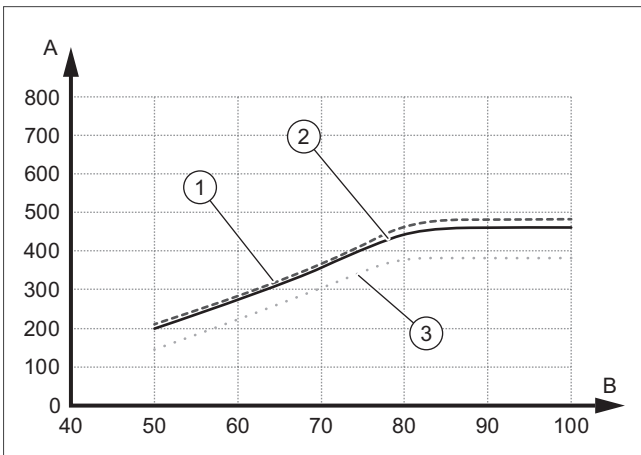


Fig. 229: Remaining feed head for VWF 8x/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

6.3.5 Remaining feed head of environment circuit pump

Remaining feed head for VWF 5x/4 environment circuit pump at nominal volume flow

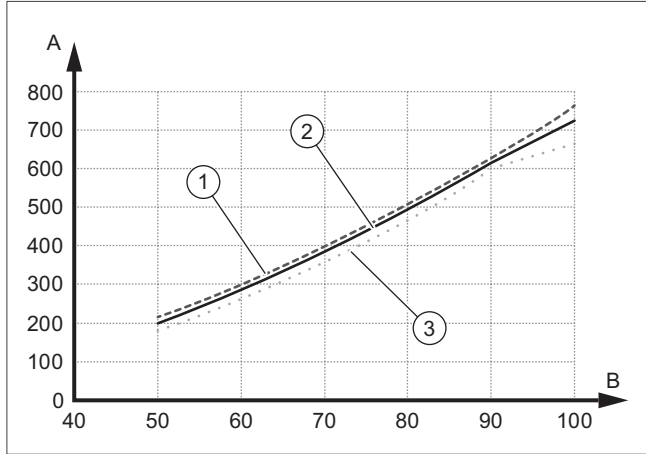


Fig. 231: Remaining feed head for VWF 5x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 11x/4 environment circuit pump at nominal volume flow

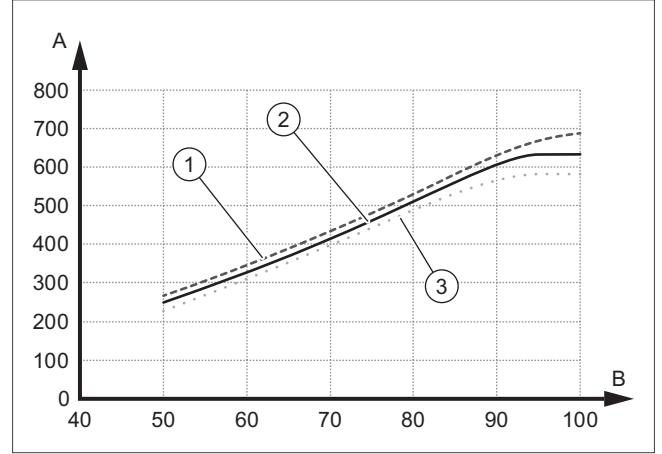


Fig. 233: Remaining feed head for VWF 11x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 8x/4 environment circuit pump at nominal volume flow

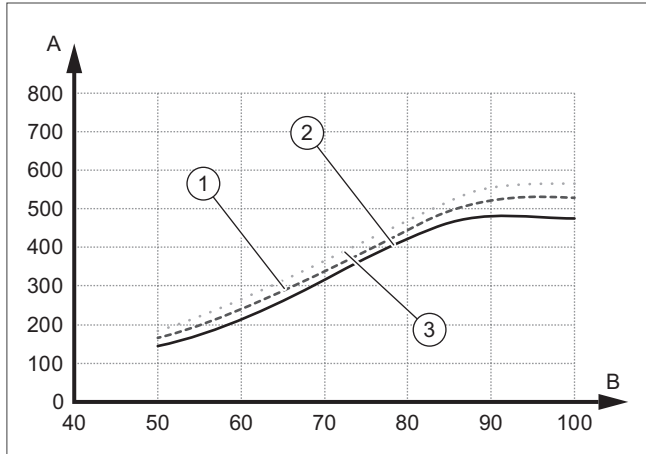


Fig. 232: Remaining feed head for VWF 8x/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- 3 Ground water heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

6.4 Product dimensions and connection dimensions

6.4.1 Dimensions

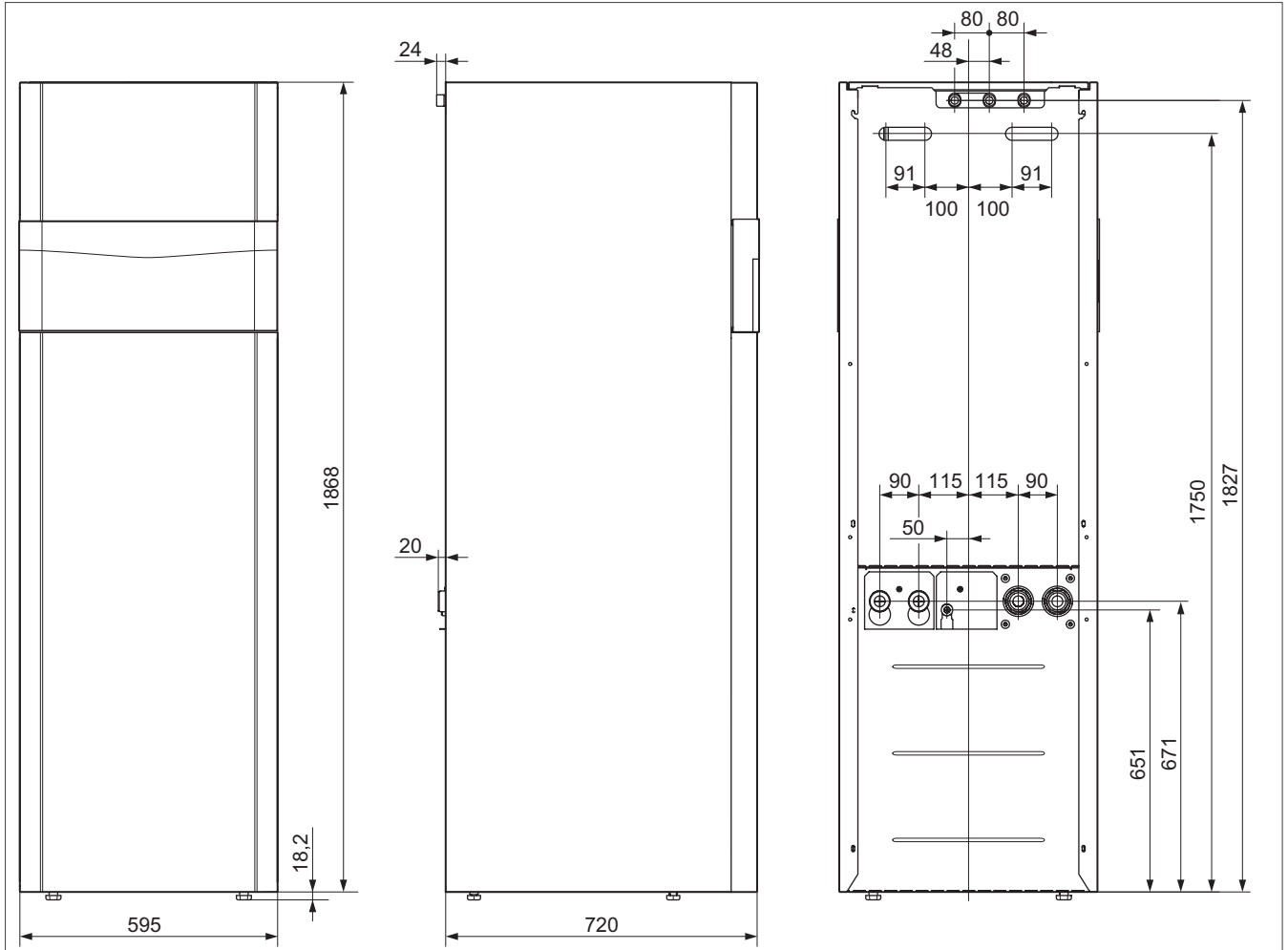


Fig. 234: Dimensions

Update 10
 New minimum sizes for the installation room added

6.4.2 Minimum sizes for the installation rooms

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Minimum size for the installation room (m ²)
VWF 58/4	R 410a	1.50	3.4
VWF 88/4	R 410a	2.40	5.5
VWF 118/4	R 410a	2.50	5.7

6.5 fluoCOLLECT VWW 11/4 SI and VWW 19/4 SI groundwater module

Order no. 0010016719, 0010016720



Fig. 235: fluoCOLLECT groundwater module

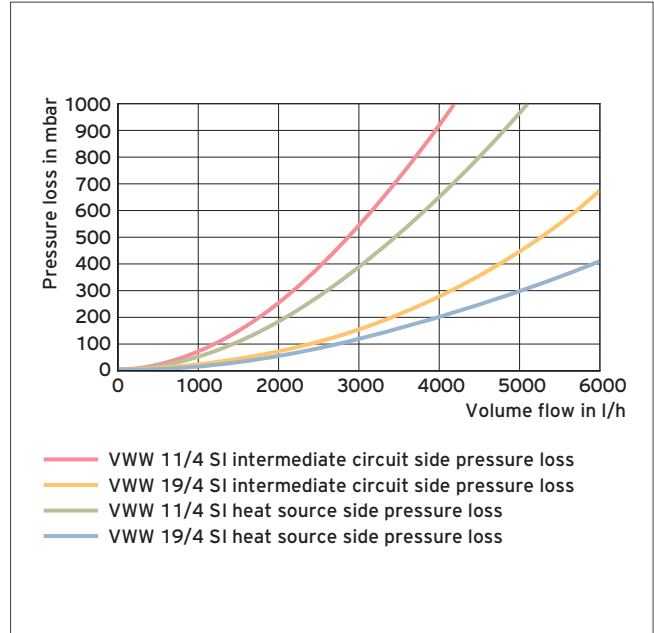


Fig. 237: VWW 11/4 SI and 19/4 SI pressure loss diagram

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

The groundwater module is used to transfer heat between the brine circuit and the groundwater.

VWW 11/4 SI for 5-11 kW heat pumps.

VWW 19/4 SI 15-19 kW heat pumps.

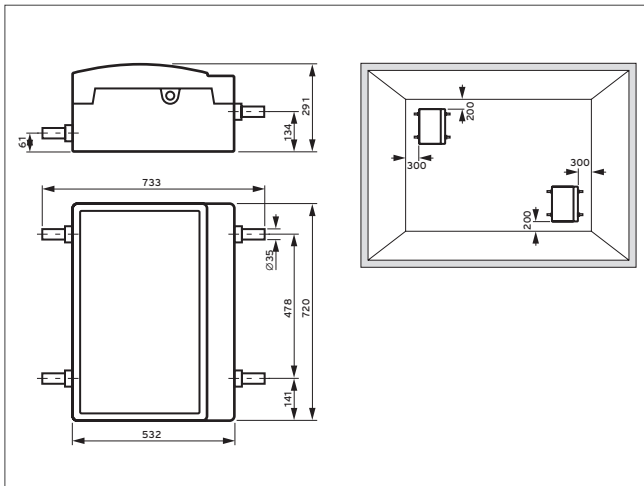


Fig. 236: fluoCOLLECT dimension drawing

6.6 Basic hydraulic and wiring diagrams

6.6.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections










Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

6.6.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				 regulated	 direct		 Domestic hot water	 Heating	
0020234151	flexoCOMPACT VWF 230 V	VRC 700, VR 900	off	2 UFH	-	VWZ MPS 40	-	-	Integrated domestic hot water cylinder
0020234152	Wiring diagram for the 230 V power supply								

0020234151 - Basic hydraulic diagram

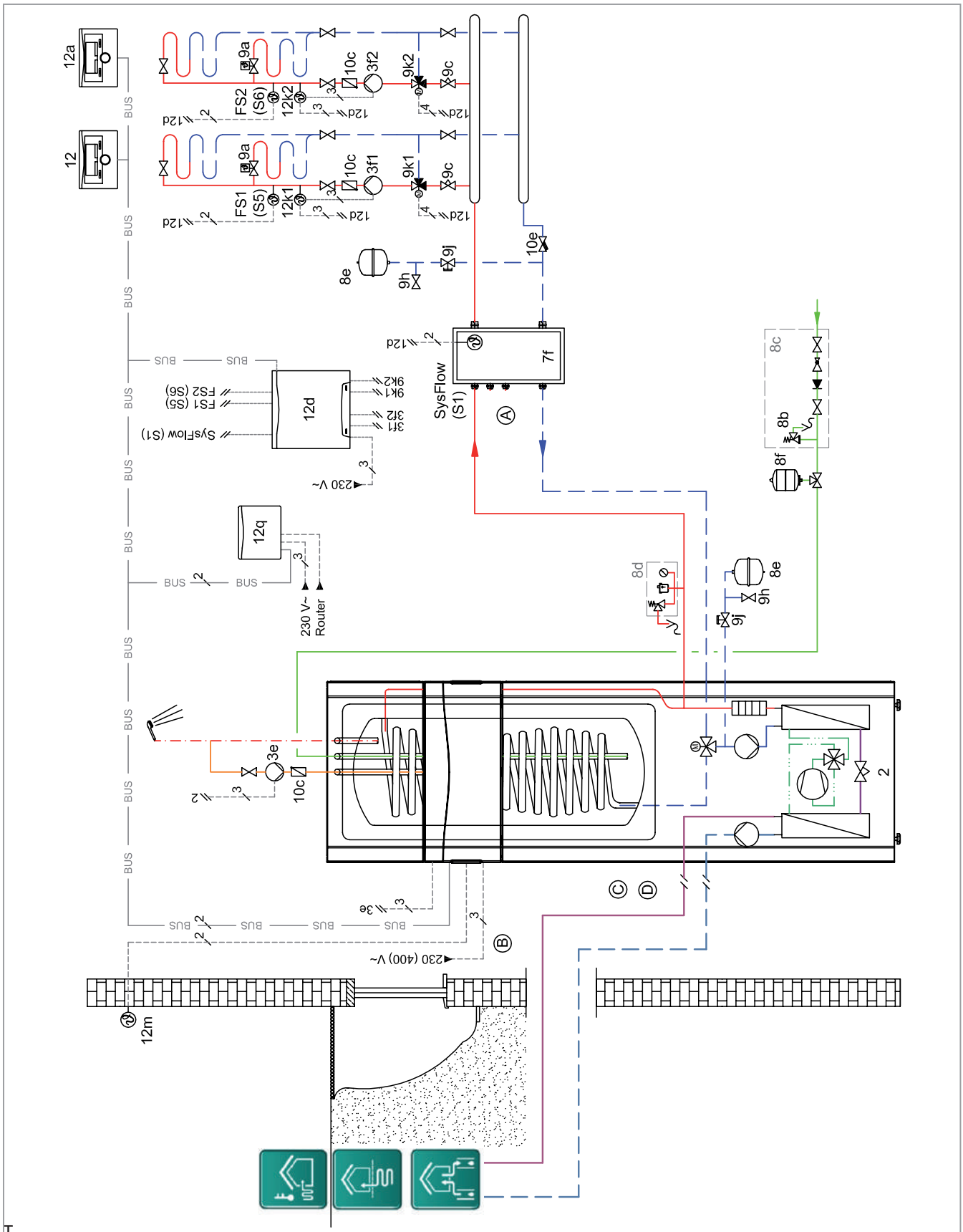


Fig 238: Basic hydraulic diagram

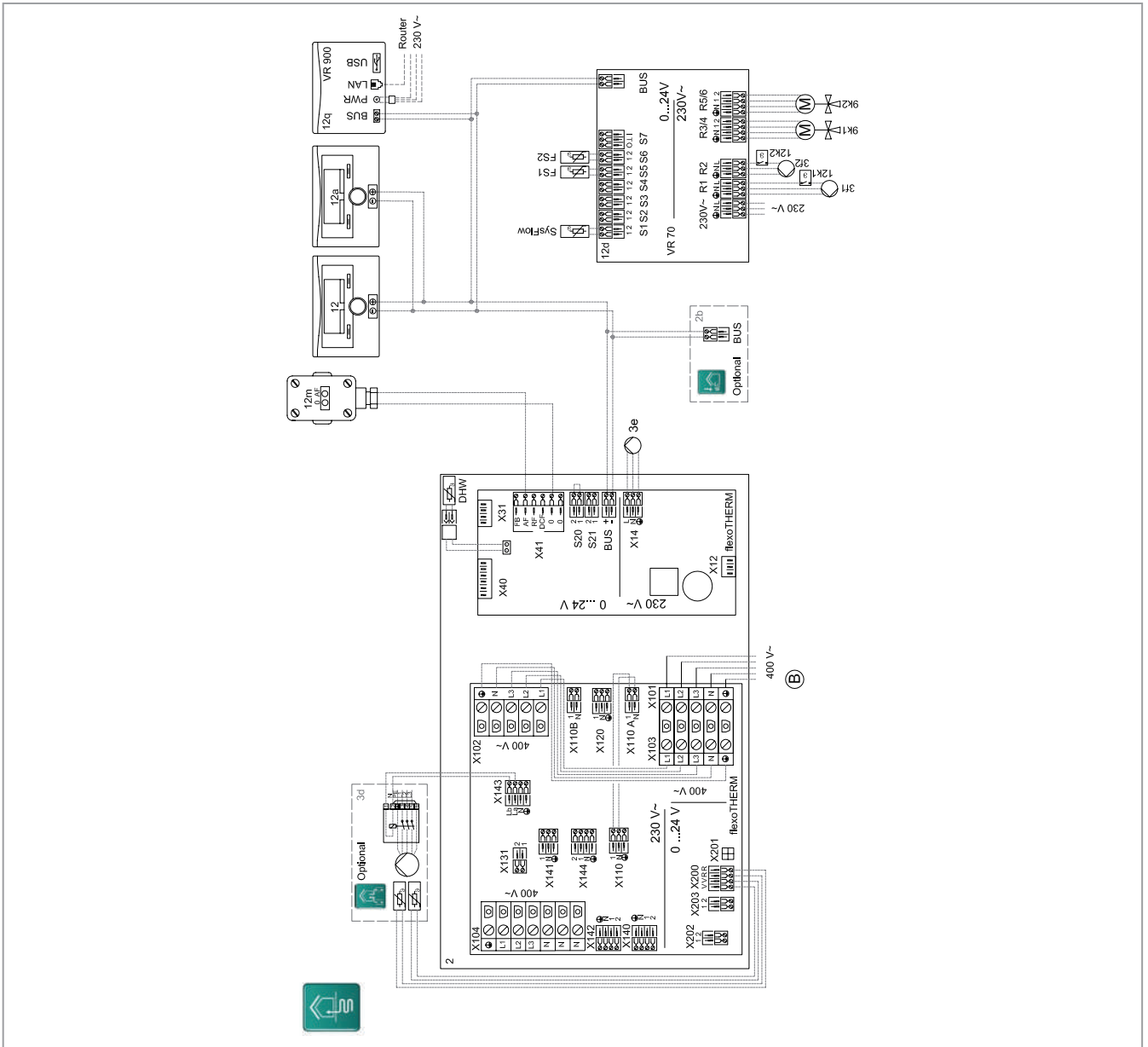


Fig 239: Wiring diagram

Description

Houses with two mixed heating circuit (underfloor heating). The domestic hot water cylinder is integrated into the unit.

Caution: A: Use the VWZ MPS 40 compact buffer cylinder if the flow rate is less than or equal to 2600 l/h.

B: Heat pump wiring options 0020234152 no. 1, 2, 3.

C: Heat pump with power supply 3ph/N/PE 400 V 50 Hz potential heat source 0020178458 no. 1, 2, 3, 4. D: Heat pump with power supply 3ph/N/PE 230 V 50 Hz or 1ph/N/PE 230 V 50 Hz potential heat source 0020178458 no. 3, 4.

Individual components

- flexoCOMPACT VWF 5 - 11 kW
- VWZ MPS 40
- VR 70
- VRC 700
- VR 91
- VR 900

Setting

- VRC 700 system diagram setting: 8
- VR 70 module setting: 5

Description

Alternative connection diagram
0020234152 (A/B 230 V) for 0020234151
(A 400 V).

Houses with two mixed heating circuit
(underfloor heating). The domestic hot
water cylinder is integrated into the unit.

0020234152 - Wiring diagram for the 230 V power supply

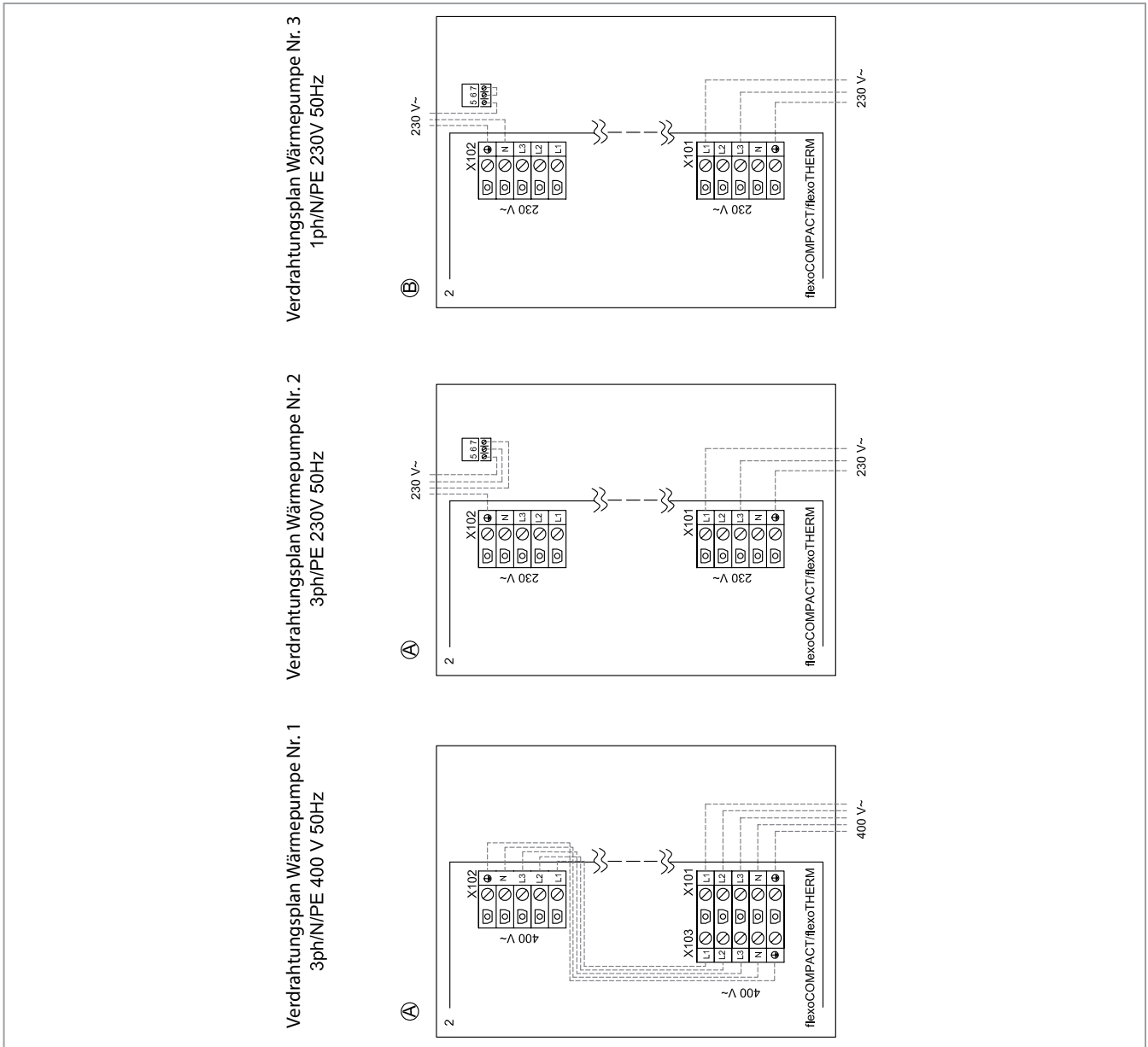


Fig 240: Wiring diagram



7. Product information for the flexoTHERM exclusive nordic

Update 10
New product overview

7.1 Product combinations for the flexoTHERM nordic VWF ..1/4



Abb 241: Product combinations

Product combination overview for the flexoTHERM nordic VWF ..1/4

	Heat pump		Buffer cylinder	Domestic hot water cylinder	Control	Photovoltaics
	Brine/water flexoTHERM VWF ..1/4 (1)	Air/water flexoTHERM VWF ..1/4 (1) + aroCOLLECT VWL 11/4 (2)	Heating VP RW 45/2 B (3) VPS R 100/1 M (4) VPS R 200/1 B (5) allSTOR plus/exclusive (6)	uniSTOR (7)	VRC 700 or VRC 720 (7)	PV modules and inverters (8)
Heating only	•	•	◦	–	•	•
Heating and domestic hot water generation	•	•	◦	•	•	•
Heat pump cascade (heating)	•	•	•	–	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

7.2 Product description for the flexoTHERM exclusive VWF 51/4 - VWF 191/4 nordic



Abb 242: flexoTHERM exclusive nordic

7.2.1 Special features

- Bears the Green iQ label
- The Sound Safe System ensures that the heat pump is particularly quiet when running
- Air and brine heat sources can be used; no ground water
- Flow temperatures of up to 65 °C for modernisation with EVI, even at low outside temperatures
- High level of efficiency thanks to the advanced, durable heat pump scroll compressor
- 10-year material guarantee for the compressor

7.2.2 Potential applications

- Heating and hot water generation

7.2.3 Equipment

- Free iPhone and Android app for end customers
- High-efficiency pumps in the heating/brine circuit
- Hot water diverter valve
- 9 kW electric back-up heater, multistage
- In-rush current limiter
- Sensor-controlled refrigerant circuit with EVI technology
- No active cooling
- Heat meter and electricity meter integrated as standard
- aroCOLLECT: Particularly quiet, modulating EC fan
- fluoCOLLECT: Ground-water heat source is not an option
- Optional: Passive cooling via the ground collector with accessory VWZ NC 11 or 14
- No connection for heating expansion vessel
- Connections upwards

Update 10
New efficiency class (EN14511:2018)

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Order no.
VWF 51/4	A+++ / A++ (A+++ to D) A++ / A++ (A+++ to D)	xxxxxxxxxx xxxxxxxxxx with aroCOLLECT
VWF 81/4	A+++ / A++ (A+++ to D) A++ / A++ (A+++ to D)	xxxxxxxxxx xxxxxxxxxx with aroCOLLECT
VWF 111/4	A+++ / A++ (A+++ to D) A++ / A+ (A+++ to D)	xxxxxxxxxx xxxxxxxxxx with aroCOLLECT
VWF 151/4	A+++ / A++ (A+++ to D) A++ / A++ (A+++ to D)	xxxxxxxxxx xxxxxxxxxx with aroCOLLECT
VWF 191/4	A+++ / A++ (A+++ to D) A++ / A++ (A+++ to D)	xxxxxxxxxx xxxxxxxxxx with aroCOLLECT

7.3 Technical data

7.3.1 General

Dimensions

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Product dimensions, height, without adjustable feet	1,190 mm	1,190 mm	1,190 mm	1,190 mm	1,190 mm
Product dimensions, width	595 mm	595 mm	595 mm	595 mm	595 mm
Product dimensions, depth	600 mm	600 mm	600 mm	600 mm	600 mm
Weight, with packaging	155 kg	170 kg	178 kg	185 kg	197 kg
Weight, without packaging	145 kg	160 kg	168 kg	176 kg	187 kg
Weight, ready for operation	151 kg	167 kg	175 kg	187 kg	200 kg

Electrics

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Compressor/heating circuit rated voltage	3~/N/PE 400 V 50 Hz				
Control circuit rated voltage	1~/N/PE 230 V 50 Hz				
Auxiliary heater rated voltage	3~/N/PE 400 V 50 Hz				
Power factor	cos Φ = 0.75 - 0.9	cos Φ = 0.75 - 0.9	cos Φ = 0.75 - 0.9	cos Φ = 0.75 - 0.9	cos Φ = 0.75 - 0.9
Required network impedance Z_{max} with in-rush current limiter	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Design in accordance with the selected connection diagrams				
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)				
In-rush current with in-rush current limiter	≤ 15 A	≤ 19 A	≤ 22 A	≤ 26 A	≤ 30 A
Measuring current, max.	19.8 A	21.2 A	23.4 A	25.2 A	30.4 A
Min. electrical power consumption	1.40 kW	2.00 kW	2.50 kW	3.30 kW	4.70 kW
Max. electrical power consumption	11.5 kW	12.8 kW	14.1 kW	15.6 kW	17.8 kW
Max. electrical power consumption of auxiliary heater	9 kW	9 kW	9 kW	9 kW	9 kW
IP rating EN 60529	IP 10B	IP 10B	IP 10B	IP 10B	IP 10B

Hydraulics

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Heating flow/return connection	Copper pipe, 28 mm	Copper pipe, 28 mm	Copper pipe, 28 mm	Copper pipe, 28 mm	Copper pipe, 28 mm
Heat source flow/return connection	Copper pipe, 28 mm	Copper pipe, 28 mm	Copper pipe, 28 mm	Copper pipe, 28 mm	Copper pipe, 28 mm

Heat source circuit/brine circuit

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Brine content of the brine circuit in the heat pump	2.5 l	3.1 l	3.6 l	4.5 l	5.3 l
Brine circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe				
Min. brine fluid operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. brine fluid operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Max. electrical power consumption, brine circuit pump	76 W	76 W	130 W	310 W	310 W
Brine pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump	High-efficiency pump	High-efficiency pump

Update 10
New technical data (EN14511:2018)

Building circuit/heating circuit

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Heating circuit water contents in the heat pump	3.2 l	3.9 l	4.4 l	5.8 l	6.5 l
Heating circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe				
Permissible heating water condition	Do not add antifreeze or corrosion inhibitors to heating water. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.				
Min. heating circuit operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. heating circuit operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Min. heating mode flow temperature	25 °C	25 °C	25 °C	25 °C	25 °C
Max. heating mode target flow temperature	75 °C	75 °C	75 °C	75 °C	75 °C
Max. electrical power consumption, heating pump	63 W	63 W	63 W	140 W	140 W
Heating pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump	High-efficiency pump	High-efficiency pump

Refrigerant circuit

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Refrigerant type	R410A	R410A	R410A	R410A	R410A
Refrigerant content of the refrigerant circuit in the heat pump	1.50 kg	2.40 kg	2.50 kg	3.05 kg	3.95 kg
Global warming potential (GWP) in accordance with regulation (EU) no. 517/2014	2088	2088	2088	2088	2088
CO ₂ equivalent	3.132 t	5.011 t	5.220 t	6.368 t	8.248 t
Global warming potential 100 (GWP ₁₀₀) in accordance with regulation (EC) no. 842/2006	1975	1975	1975	1975	1975
Expansion valve design	Electronic	Electronic	Electronic	Electronic	Electronic
Permissible operating pressure (relative)	≤ 4.6 MPa	≤ 4.6 MPa	≤ 4.6 MPa	≤ 4.6 MPa	≤ 4.6 MPa
Compressor type	Scroll	Scroll	Scroll	Scroll	Scroll
Oil type	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)
Oil filling quantity	0.75 l	1.25 l	1.25 l	1.24 l	1.89 l

Installation site

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Installation site	Interior/dry	Interior/dry	Interior/dry	Interior/dry	Interior/dry
Installation room volume complying with EN 378	3.41 m ³	5.45 m ³	5.68 m ³	6.93 m ³	8.98 m ³
Permissible environmental temperature at the installation site	7 to 25 °C	7 to 25 °C	7 to 25 °C	7 to 25 °C	7 to 25 °C
Permissible environmental temperature at the installation site	7 to 25 °C	7 to 25 °C	7 to 25 °C	7 to 25 °C	7 to 25 °C
Permissible relative air humidity	40 to 75 %	40 to 75 %	40 to 75 %	40 to 75 %	40 to 75 %

7.3.2 Brine heat source

Heat source circuit/brine circuit

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Min. source inlet temperature (hot brine) in heating mode	-10 °C	-10 °C	-10 °C	-10 °C	-10 °C
Max. source inlet temperature (hot brine) in heating mode	25 °C	25 °C	25 °C	25 °C	25 °C
Nominal flow ΔT 3 K for B0/W35	1,290 l/h	2,320 l/h	3,000 l/h	3,590 l/h	4,780 l/h

Update 10
New technical data (EN14511:2018)

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Min. volume flow during continuous operation at the application limits	1,110 l/h	2,140 l/h	2,460 l/h	3,380 l/h	4,300 l/h
Max. volume flow during continuous operation at the application limits	1,290 l/h	2,320 l/h	3,000 l/h	3,590 l/h	4,780 l/h
Max. remaining feed head with ΔT 3 K for B0/W35	0.063 MPa	0.038 MPa	0.050 MPa	0.096 MPa	0.077 MPa
Brine circuit pump electrical power consumption for B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the brine circuit	44 W	62 W	64 W	83 W	121 W
Brine fluid type	Ethylene glycol 30% vol. Ethanol 29% vol. Propylene glycol 33% vol.				

Building circuit/heating circuit

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Nominal flow at ΔT 5 K	920 l/h	1,530 l/h	1,920 l/h	2,450 l/h	3,320 l/h
Max. remaining feed head with ΔT 5 K	0.065 MPa	0.045 MPa	0.034 MPa	0.070 MPa	0.039 MPa
Nominal flow with ΔT 8 K	570 l/h	980 l/h	1,240 l/h	1,600 l/h	2,180 l/h
Max. remaining feed head with ΔT 8 K	0.068 MPa	0.066 MPa	0.058 MPa	0.085 MPa	0.079 MPa
Min. volume flow during continuous operation at the application limits	570 l/h	980 l/h	1,240 l/h	1,600 l/h	2,180 l/h
Max. volume flow during continuous operation at the application limits	920 l/h	1,530 l/h	1,920 l/h	2,450 l/h	3,320 l/h
Heating pump electrical power consumption for B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the heating circuit	25 W	30 W	45 W	60 W	74 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Heat output B0/W35 ΔT 5 K	5.28 kW	8.82 kW	11.18 kW	14.39 kW	19.62 kW
Effective power consumption for B0/W35 ΔT 5 K	1.20 kW	1.82 kW	2.34 kW	3.07 kW	4.32 kW
Coefficient of performance B0/W35 ΔT 5 K/EN 14511	4.41	4.84	4.77	4.69	4.54
Heat output B0/W45 ΔT 5 K	5.26 kW	8.76 kW	11.14 kW	13.97 kW	19.56 kW
Effective power consumption B0/W45 ΔT 5 K	1.56 kW	2.39 kW	3.03 kW	3.83 kW	5.38 kW
Coefficient of performance B0/W45 ΔT 5 K/EN 14511	3.37	3.67	3.68	3.65	3.64
Heat output B0/W55 ΔT 8 K	5.34 kW	8.94 kW	11.33 kW	14.65 kW	19.94 kW
Effective power consumption for B0/W55 ΔT 8 K	1.85 kW	2.78 kW	3.66 kW	4.67 kW	6.26 kW
Coefficient of performance B0/W55 ΔT 8 K/EN 14511	2.89	3.22	3.10	3.14	3.18
Sound power level B0/W35 EN 12102/EN 14511 L_{wi} in heating mode	37.6 dB(A)	43.3 dB(A)	41.6 dB(A)	42.4 dB(A)	42.4 dB(A)
Sound power level B0/W45 EN 12102/EN 14511 L_{wi} in heating mode	37.4 dB(A)	42.4 dB(A)	40.9 dB(A)	43.5 dB(A)	42.7 dB(A)
Sound power level B0/W55 EN 12102/EN 14511 L_{wi} in heating mode	39.3 dB(A)	43.0 dB(A)	43.1 dB(A)	41.1 dB(A)	43.6 dB(A)

Application limits for the heat pump: Heating (heat source = brine)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the brine circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.
- Application limits for the heat pump - Heating (Brine heat source): B15/W65, B25/W59, B25/W25, B-10/W25, B-10/W60, B-5/W65

7.3.3 Air heat source

Heat source circuit/brine circuit

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA	2 x VWL 11/4 SA	2 x VWL 11/4 SA
Brine fluid type	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.

Building circuit/heating circuit

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA	2 x VWL 11/4 SA	2 x VWL 11/4 SA
Nominal flow at ΔT 5 K	1,070 l/h	1,510 l/h	1,990 l/h	2,650 l/h	3,440 l/h
Max. remaining feed head with ΔT 5 K	0.061 MPa	0.042 MPa	0.031 MPa	0.064 MPa	0.038 MPa
Nominal flow with ΔT 8 K	660 l/h	1,020 l/h	1,350 l/h	1,720 l/h	2,300 l/h
Max. remaining feed head with ΔT 8 K	0.069 MPa	0.056 MPa	0.053 MPa	0.084 MPa	0.075 MPa
Min. volume flow during continuous operation at the application limits	660 l/h	1,020 l/h	1,350 l/h	1,720 l/h	2,300 l/h
Max. volume flow during continuous operation at the application limits	1,070 l/h	1,510 l/h	1,990 l/h	2,650 l/h	3,440 l/h
Heating pump electrical power consumption for A7/W35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	28 W	36 W	50 W	70 W	78 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 51/4	VWF 81/4	VWF 111/4	VWF 151/4	VWF 191/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA	2 x VWL 11/4 SA	2 x VWL 11/4 SA
A2/W35 heat output	5.63 kW	7.79 kW	10.27 kW	13.81 kW	17.35 kW
Effective power consumption A2/W35	1.36 kW	1.99 kW	2.68 kW	3.38 kW	4.69 kW
Coefficient of performance A2/W35/EN 14511	4.14	3.91	3.83	4.09	3.70
Heat output A7/W35 ΔT 5 K	6.16 kW	8.74 kW	11.45 kW	15.19 kW	19.78 kW
Effective power consumption A7/W35 ΔT 5 K	1.31 kW	1.91 kW	2.50 kW	3.21 kW	4.50 kW
Coefficient of performance A7/W35 ΔT 5 K/EN 14511	4.69	4.58	4.58	4.73	4.39
Heat output A7/W45 ΔT 5 K	6.04 kW	9.00 kW	11.98 kW	15.48 kW	20.55 kW
Effective power consumption A7/W45 ΔT 5 K	1.66 kW	2.44 kW	3.17 kW	4.06 kW	5.61 kW
Coefficient of performance A7/W45 ΔT 5 K/EN 14511	3.64	3.69	3.77	3.82	3.67
Heat output A7/W55 ΔT 8 K	6.09 kW	9.45 kW	12.20 kW	15.88 kW	20.83 kW
Effective power consumption A7/W55 ΔT 8 K	1.97 kW	2.95 kW	3.84 kW	4.88 kW	6.62 kW
Coefficient of performance A7/W55 ΔT 8 K/EN 14511	3.09	3.21	3.17	3.25	3.15
Sound power level A7/W35 EN 12102/EN 14511 L_{wi} in heating mode	38.4 dB(A)	44.1 dB(A)	42.7 dB(A)	43.8 dB(A)	44.7 dB(A)
Sound power level A7/W45 EN 12102/EN 14511 L_{wi} in heating mode	38.9 dB(A)	41.1 dB(A)	41.4 dB(A)	42.5 dB(A)	43.9 dB(A)
Sound power level A7/W55 EN 12102/EN 14511 L_{wi} in heating mode	39.2 dB(A)	42.9 dB(A)	42.6 dB(A)	43.7 dB(A)	44.0 dB(A)

Application limits for the heat pump: Heating (heat source = air)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the brine circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.
- Application limits for the heat pump: Heating (Air heat source): A40/W65, A40/W25, A-22/W25, A-22/W50, A-2/W65, A15/W65

7.3.4 Remaining feed head of building circuit pump

Remaining feed head for VWF 51/4 building circuit pump at nominal flow

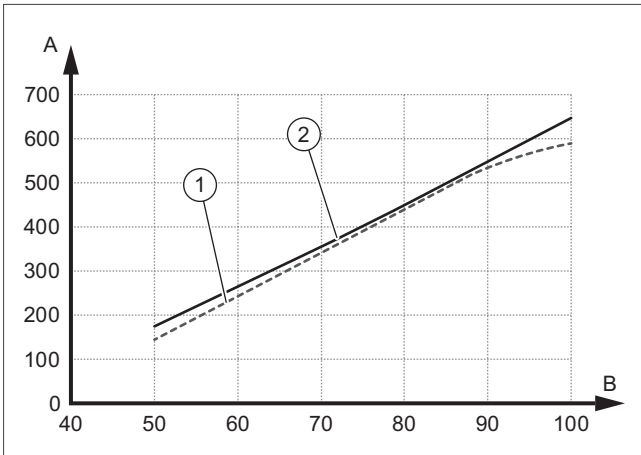


Abb 243: Remaining feed head for VWF 51/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 111/4 building circuit pump at nominal flow

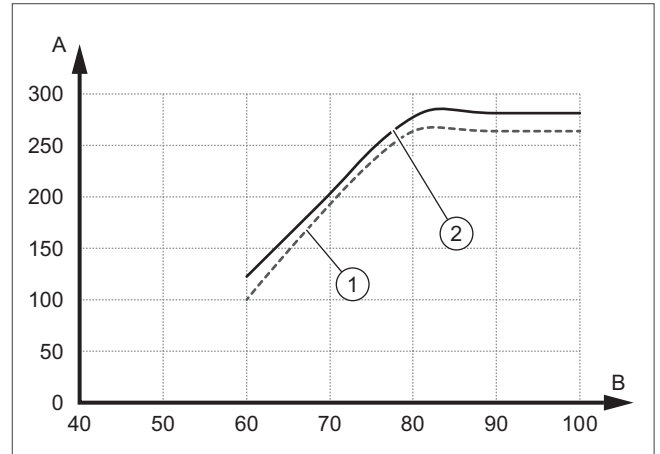


Abb 245: Remaining feed head for VWF 111/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 81/4 building circuit pump at nominal flow

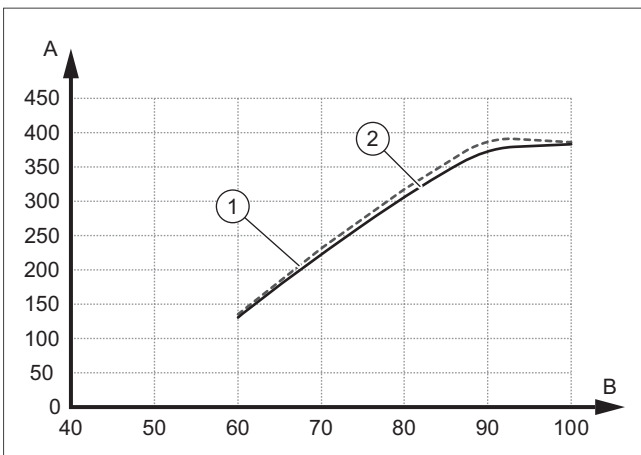


Abb 244: Remaining feed head for VWF 81/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 151/4 building circuit pump at nominal flow

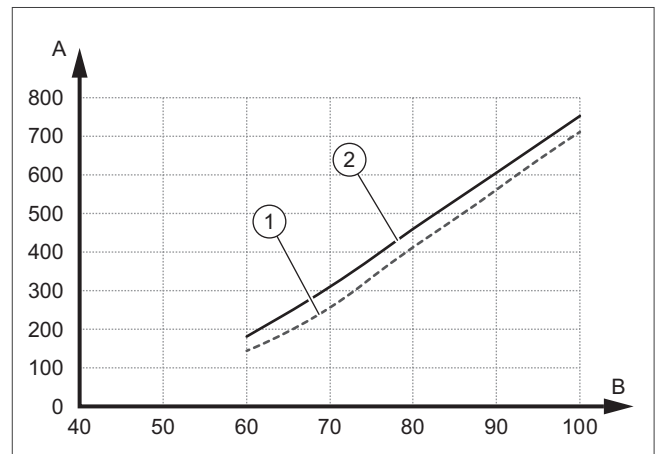


Abb 246: Remaining feed head for VWF 151/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 191/4 building circuit pump at nominal flow

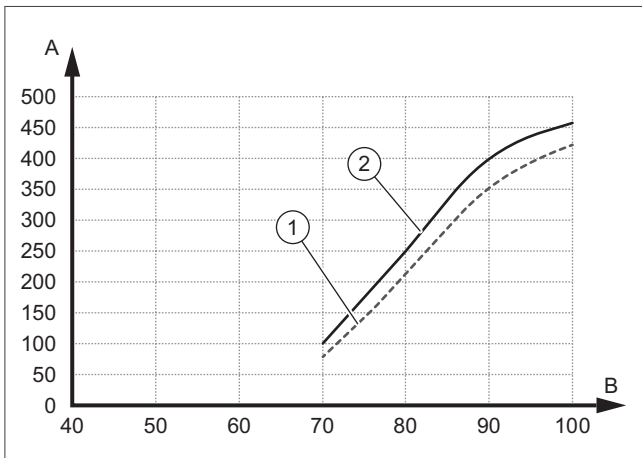


Abb 247: Remaining feed head for VWF 191/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 81/4 environment circuit pump at nominal flow

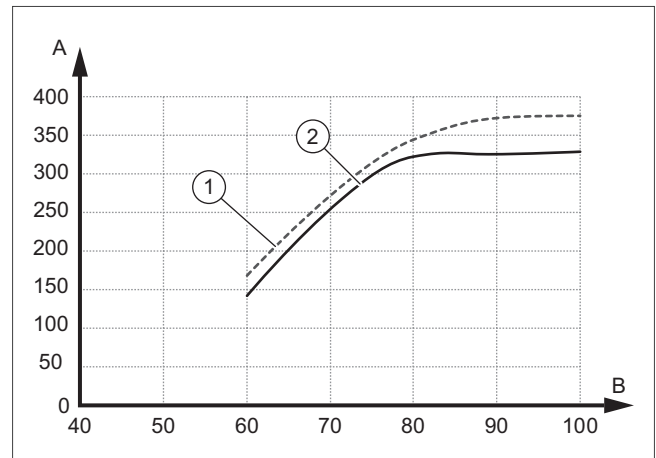


Abb 249: Remaining feed head for VWF 81/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

7.3.5 Remaining feed head of environment circuit pump

Remaining feed head for VWF 51/4 environment circuit pump at nominal flow

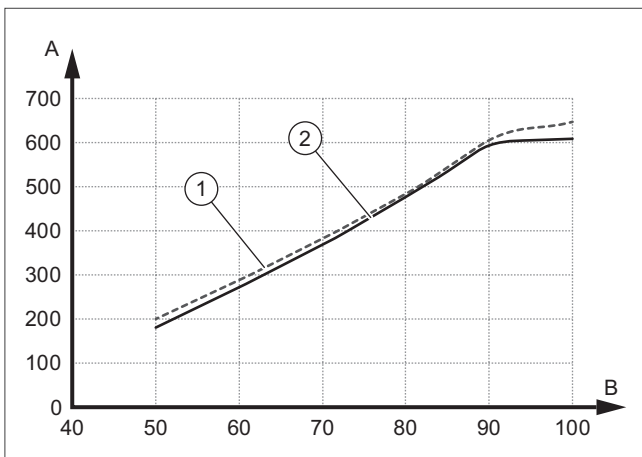


Abb 248: Remaining feed head for VWF 51/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 111/4 environment circuit pump at nominal flow

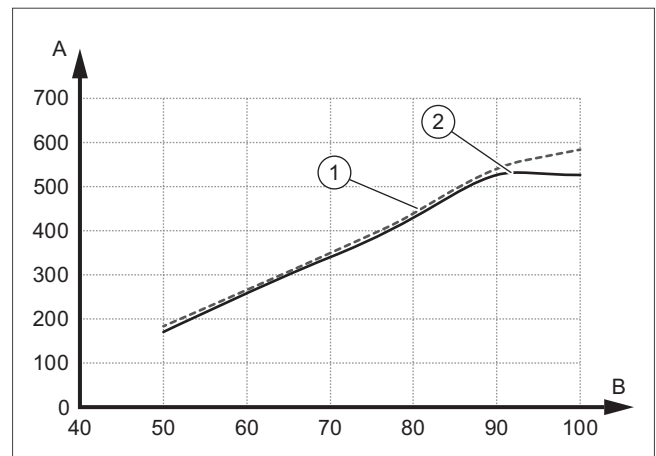


Abb 250: Remaining feed head for VWF 111/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Update 10
New pump diagram

Remaining feed head for VWF 151/4 environment circuit pump at nominal flow

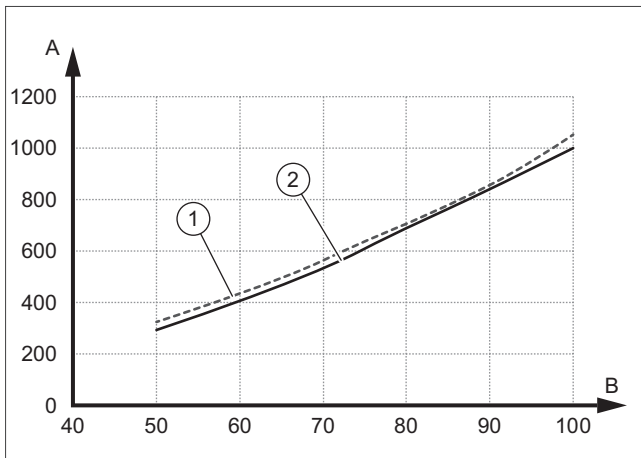


Abb 251: Remaining feed head for VWF 151/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 191/4 environment circuit pump at nominal flow

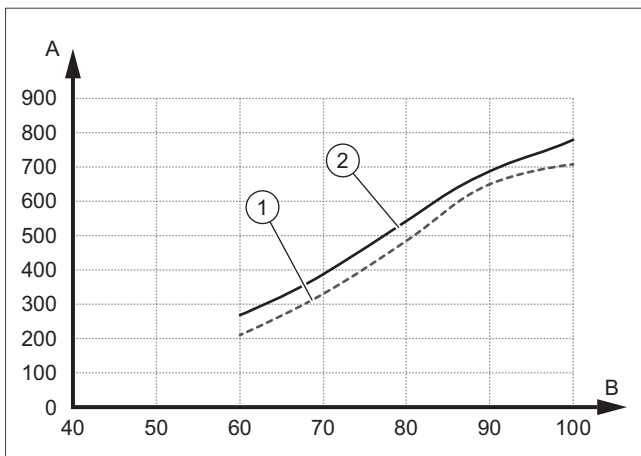


Abb 252: Remaining feed head for VWF 191/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

7.4 Power output graphs

7.4.1 Brine heat source

Power output graph for the VWF 51/4 nordic - brine/water

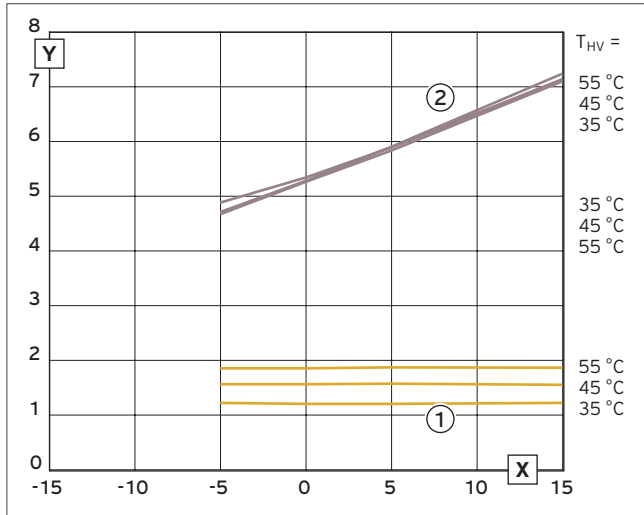


Abb 253: Power output graph for the VWF 51/4 nordic - brine/water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 111/4 nordic - brine/water

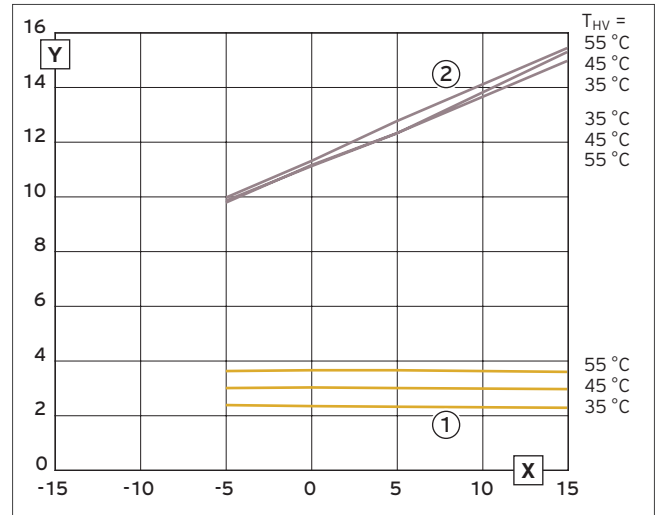


Abb 255: Power output graph for the VWF 111/4 nordic - brine/water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 81/4 nordic - brine/water

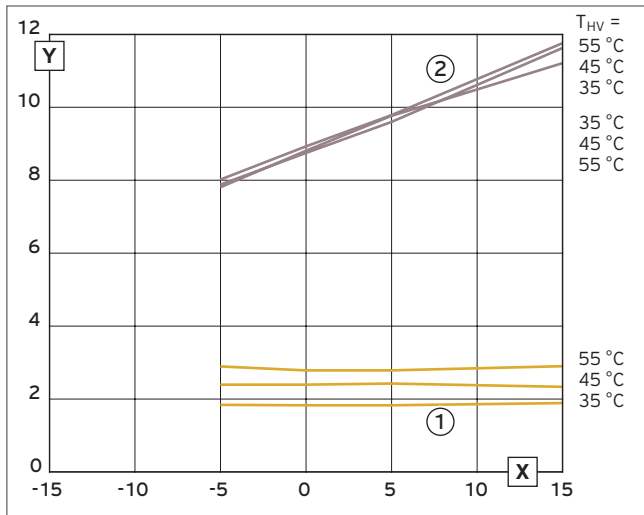


Abb 254: Power output graph for the VWF 81/4 nordic - brine/water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 151/4 nordic - brine/water

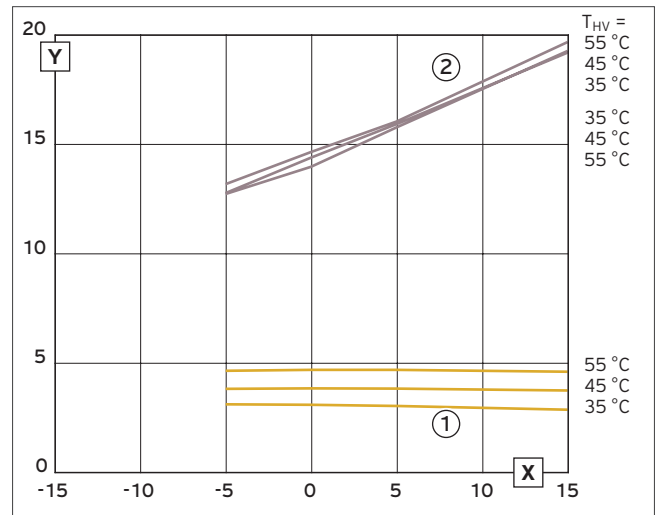


Abb 256: Power output graph for the VWF 151/4 nordic - brine/water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

7.4.2 Air heat source

Power output graph for the VWF 191/4 nordic - brine/water

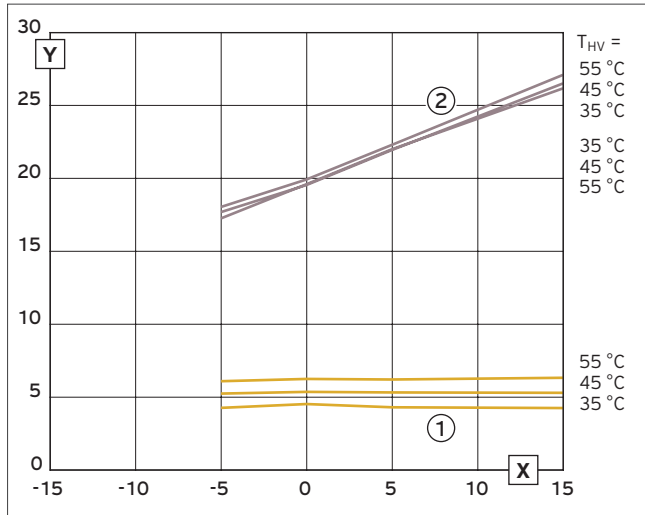


Abb 257: Power output graph for the VWF 191/4 nordic - brine/water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 51/4 nordic - air/water

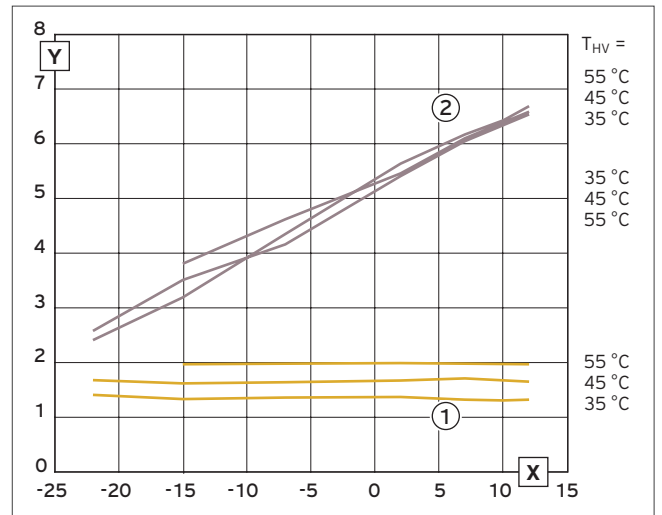


Abb 258: Power output graph for the VWF 51/4 nordic - air/water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 81/4 nordic - air/water

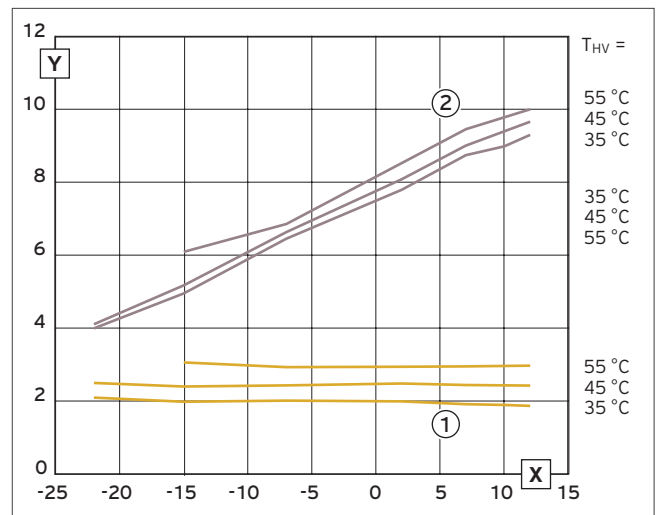


Abb 259: Power output graph for the VWF 81/4 nordic - air/water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 111/4 nordic - air/water

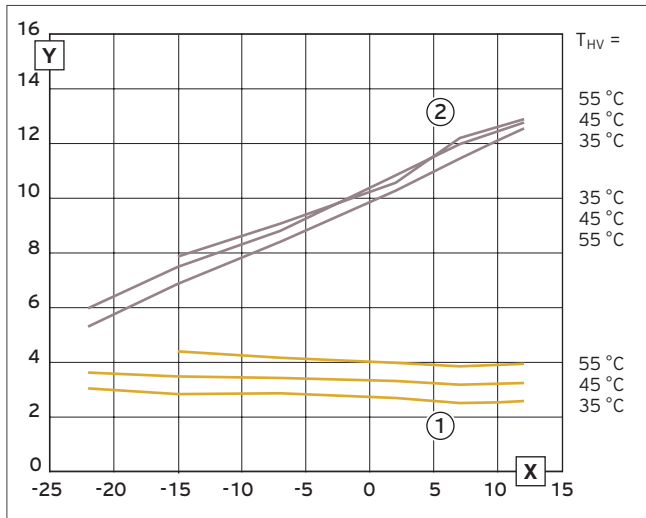


Abb 260: Power output graph for the VWF 111/4 nordic - air/water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 191/4 nordic - air/water

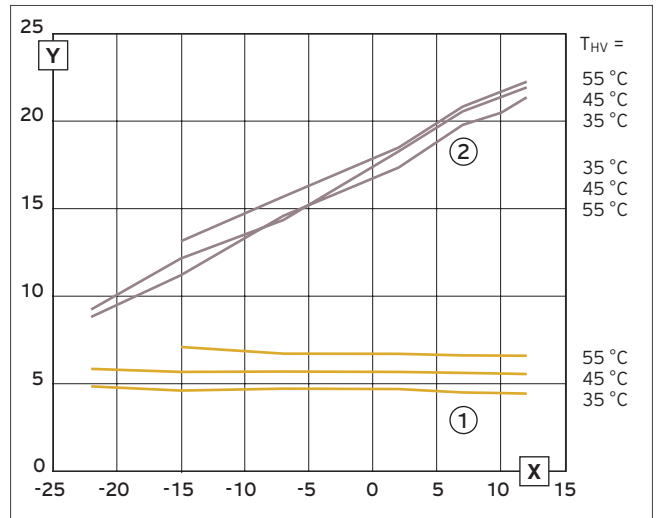


Abb 262: Power output graph for the VWF 191/4 nordic - air/water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 151/4 nordic - air/water

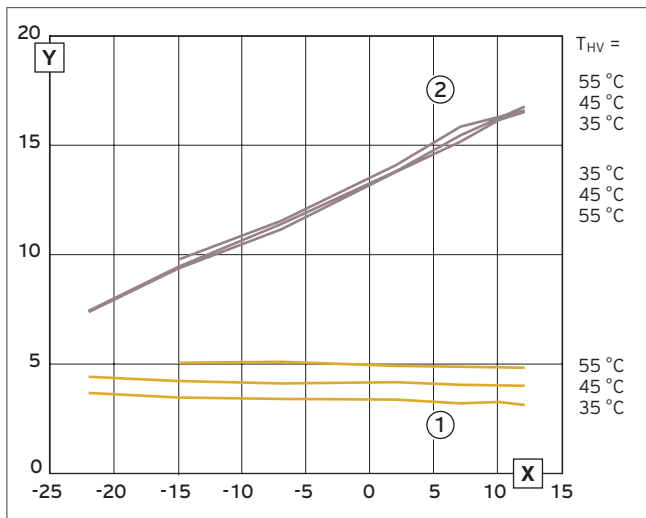


Abb 261: Power output graph for the VWF 151/4 nordic - air/water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

7.5 Product dimensions and connection dimensions

7.5.1 Dimensions

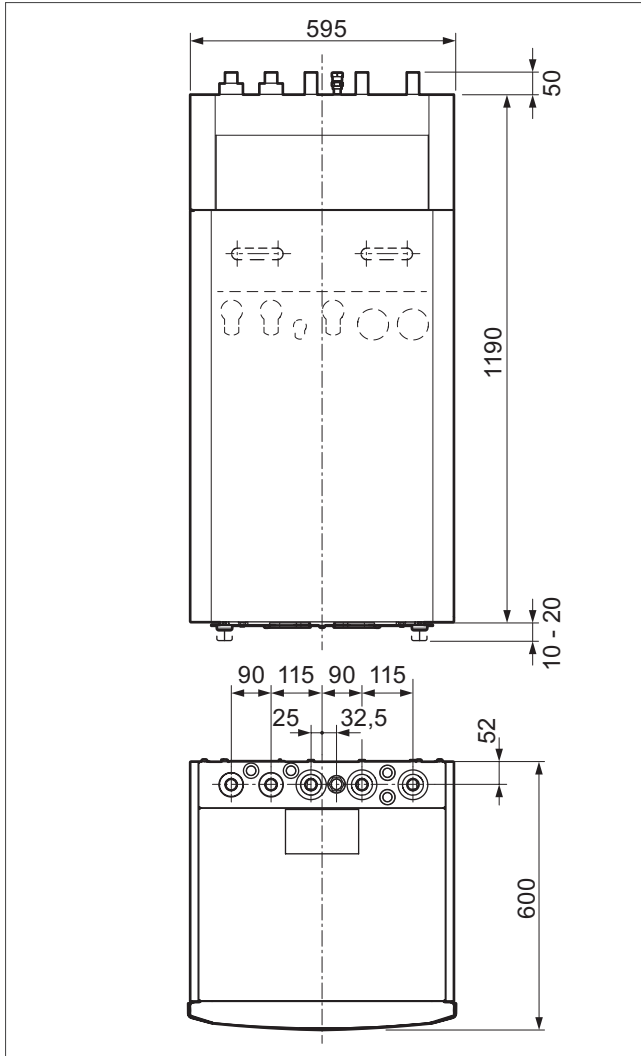


Abb 263: Dimensions

Update 10
New minimum sizes for the installation room added

7.6 Requirements for the installation room

7.6.1 Minimum sizes for the installation rooms

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Minimum size for the installation room (m ³)
VWF 51/4	R 410a	1.50	3.4
VWF 81/4	R 410a	2.40	5.5
VWF 111/4	R 410a	2.50	5.7
VWF 151/4	R 410a	3.05	6.9
VWF 191/4	R 410a	3.95	9.0

7.7 aroCOLLECT VWL 11/4 SA air/brine collector

Order no. 0010016715



Abb 264: aroCOLLECT air/brine collector

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

The air/brine collector is used to exchange heat between the brine circuit and the outdoor air.

Note

The entire purging/filling process should last at least 30 minutes. During this time, the purging valves for the air/brine collectors must be opened and closed every five minutes.



We recommend the brine purging support set for the air/brine collector as this makes the purging process significantly easier if it is to be carried out by one person. Observe the aroCOLLECT installation instructions (0020196699).

7.7.1 Technical data

Dimensions

	VWL 11/4 SA
Product dimensions, height with base	1,260 mm
Product dimensions, width	1,200 mm
Product dimensions, depth	785 mm
Weight with packaging	160 kg
Weight without packaging and base	95 kg
Weight without packaging	140 kg
Weight when ready for operation	185 kg

Electrics

	VWL 11/4 SA
Rated voltage	3~/N/PE 400 V / 50 Hz
Fuse type, characteristic B, three-pole switching (disconnection of the three mains connection lines by a switching operation)	10 A
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)
Electrical power consumption, max. total	6.5 kW
Electrical power consumption, de-icer	6.0 kW
Electrical power consumption, fan	0 to 0.25 kW
Electrical power consumption, control process	0.01 kW
Electrical power consumption, optional accessory	0.2 kW
IP rating EN 60529	IP 25

Hydraulics

	VWL 11/4 SA
Flow/return heat source connections	Rp 1 1/4"
Diameter of the condensate discharge	70 mm

Installation site

	VWL 11/4 SA
Installation site	Outside
Permissible environmental temperature at the installation site	-30 to 70 °C
Permissible environmental temperature during operation	-22 to 40 °C

Brine circuit

	VWL 11/4 SA
Brine fluid	Ethylene glycol 44% vol. /56% water
Max. operating pressure	0.3 MPa
Min. inlet temperature, cold brine	-28 °C
Max. inlet temperature, hot brine	60 °C
Brine content of the brine circuit in the air/brine collector	19.8 l
Materials	Cu, CuZn alloy, stainless steel, EPDM
Total length of the connection pipe, cold brine and hot brine	2 x 30 m
Diameter of the connection pipe's cross-section up to a total length of ≤ 10 m	DN 40 (40 x 3.8 mm)
Diameter of the connection pipe's cross-section up to a total length of > 10 and ≤ 30 m	DN 50 (50 x 4.6 mm)
Connection pipe installation depth	0.2 to 1.5 m
Connection pipe material	PE pipe, PE 100 or PE 80

7.8 Sound power level

		VWL 11/4 SA
Sound power level A7/W35, A7/W45, A7/W55 in accordance with EN 12102/EN 14511 L_{WA} in heating mode	VWF 51/4	≤ 42.7 dB(A)
	VWF 81/4	≤ 50.6 dB(A)
	VWF 111/4	≤ 56.0 dB(A)
	VWF 151/4	≤ 49.5 dB(A)
	VWF 191/4	≤ 53.0 dB(A)
		Note: When two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
Sound power A7/W35, A7/W45, A7/W55 in accordance with EN 12102 / EN 14511 L_{WA} maximum sound power level in silent mode for heating mode	VWF 51/4	≤ 39.9 dB(A)
	VWF 81/4	≤ 46.0 dB(A)
	VWF 111/4	≤ 52.4 dB(A)
	VWF 151/4	≤ 44.9 dB(A)
	VWF 191/4	≤ 49.5 dB(A)
		Note: When two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
Increase for tonal noise level in accordance with the third-octave band method with A7/W35, A7/W45, A7/W55 in heating mode and in silent mode for heating mode	VWF 51/4	≤ 0 dB
	VWF 81/4	≤ 0 dB
	VWF 111/4	≤ 0 dB
	VWF 151/4	≤ 0 dB
	VWF 191/4	≤ 0 dB
Sound power level A35/W18 in accordance with EN 12102/EN 14511 L_{WA} in cooling mode	VWF 51/4	≤ 53.5 dB(A)
	VWF 81/4	≤ 60.5 dB(A)
	VWF 111/4	≤ 66.3 dB(A)
	VWF 151/4	≤ 59.2 dB(A)
	VWF 191/4	≤ 63.7 dB(A)
		Note: When two air/brine collectors (on VWF 157/4, VWF 157/4 S1 and VWF 197/4) are running at the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
		Note: When two air/brine collectors (on VWF 157/4, VWF 157/4 S1 and VWF 197/4) are running at the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.

7.9 Sound power levels of the flexoTHERM/ flexoCOMPACT with aroCOLLECT

Note

If required, flexoTHERM and flexoCOMPACT with aroCOLLECT can also be operated permanently in noise reduction mode. The reduction in output is max. 5%.



For the flexoTHERM/flexoCOMPACT with aroCOLLECT heat pump, planning should take account of the following sound power levels (heating mode).

Note

K_T (supplement for the tone incorporation) is taken into account in line with the third-octave band process. K_R is country-specific and was assumed to be 0 in this calculation. This value is only required for day mode.



VWF 5x/4 und VWL 11/4 SA evaluation level

VWF 5x/4 and VWL 11/4 SA				Distance from heat source in m										K_R
	Sound power level in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	43	0	3	35.0	29.0	25.5	23.0	21.0	19.4	16.9	15.0	13.4	11.5	0
			6	38.0	32.0	28.5	26.0	24.0	22.4	19.9	18.0	16.4	14.5	
			9	41.0	35.0	31.5	29.0	27.0	25.4	22.9	21.0	19.4	17.5	
Set-back	40	0	3	32.0	26.0	22.5	20.0	18.0	16.4	13.9	12.0	10.4	8.5	-
			6	35.0	29.0	25.5	23.0	21.0	19.4	16.9	15.0	13.4	11.5	
			9	38.0	32.0	28.5	26.0	24.0	22.4	19.9	18.0	16.4	14.5	

VWF 8x/4 und VWL 11/4 SA evaluation level

VWF 8x/4 and VWL 11/4 SA				Distance from heat source in m										K_R
	Sound power in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	51	0	3	43.0	37.0	33.5	31.0	29.0	27.4	24.9	23.0	21.4	19.5	0
			6	46.0	40.0	36.5	34.0	32.0	30.4	27.9	26.0	24.4	22.5	
			9	49.0	43.0	39.5	37.0	35.0	33.4	30.9	29.0	27.4	25.5	
Set-back	46	0	3	38.0	32.0	28.5	26.0	24.0	22.4	19.9	18.0	16.4	14.5	-
			6	41.0	35.0	31.5	29.0	27.0	25.4	22.9	21.0	19.4	17.5	
			9	44.0	38.0	34.5	32.0	30.0	28.4	25.9	24.0	22.4	20.5	

11x/4 und VWL 11/4 SA evaluation level

VWF 11x/4 and VWL 11/4 SA				Distance from heat source in m										K_R
Output in %	Sound power level in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	56	0	3	48.0	42.0	38.5	36.0	34.0	32.4	29.9	28.0	26.4	24.5	0
			6	51.0	45.0	41.5	39.0	37.0	35.4	32.9	31.0	29.4	27.5	
			9	54.0	48.0	44.5	42.0	40.0	38.4	35.9	34.0	32.4	30.5	
Set-back	53	0	3	45.0	39.0	35.5	33.0	31.0	29.4	26.9	25.0	23.4	21.5	-
			6	48.0	42.0	38.5	36.0	34.0	32.4	29.9	28.0	26.4	24.5	
			9	51.0	45.0	41.5	39.0	37.0	35.4	32.9	31.0	29.4	27.5	

VWF 15x/4 und 2x VWL 11/4 SA evaluation level

VWF 15x/4 and 2x VWL 11/4 SA				Distance from heat source in m										K _R
	Sound power level in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	53	0	3	45.0	39.0	35.5	33.0	31.0	29.4	26.9	25.0	23.4	21.5	0
			6	48.0	42.0	38.5	36.0	34.0	32.4	29.9	28.0	26.4	24.5	
			9	51.0	45.0	41.5	39.0	37.0	35.4	32.9	31.0	29.4	27.5	
Set-back	48	0	3	40.0	34.0	30.5	28.0	26.0	24.4	21.9	20.0	18.4	16.5	-
			6	43.0	37.0	33.5	31.0	29.0	27.4	24.9	23.0	21.4	19.5	
			9	46.0	40.0	36.5	34.0	32.0	30.4	27.9	26.0	24.4	22.5	

VWF 19x/4 und 2x VWL 11/4 SA evaluation level

VWF 19x/4 and 2 x VWL 11/4 SA				Distance from heat source in m										K _R
	Sound power level in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	56	0	3	48.0	42.0	38.5	36.0	34.0	32.4	29.9	28.0	26.4	24.5	0
			6	51.0	45.0	41.5	39.0	37.0	35.4	32.9	31.0	29.4	27.5	
			9	54.0	48.0	44.5	42.0	40.0	38.4	35.9	34.0	32.4	30.5	
Set-back	53	0	3	45.0	39.0	35.5	33.0	31.0	29.4	26.9	25.0	23.4	21.5	-
			6	48.0	42.0	38.5	36.0	34.0	32.4	29.9	28.0	26.4	24.5	
			9	51.0	45.0	41.5	39.0	37.0	35.4	32.9	31.0	29.4	27.5	

7.10 aroCOLLECT volume flow diagram

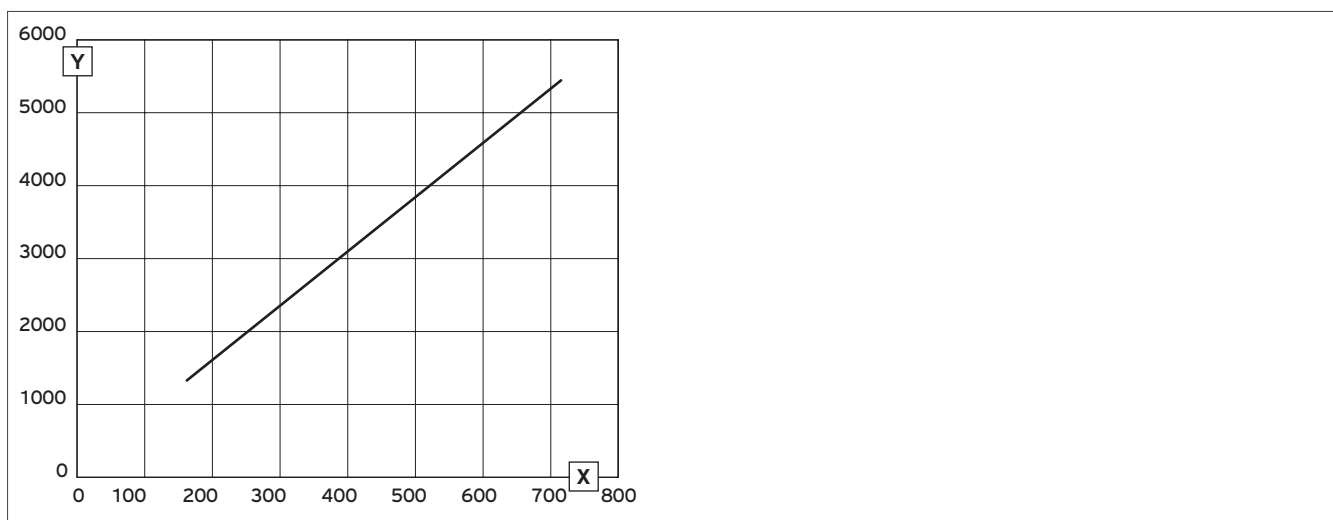


Abb 265: aroCOLLECT volume flow diagram

Y Volume flow [m³/h]
X Rotational speed [rpm]

Fan speed

Fan speed	VWF 51/4 + VWL 11/4 SA	VWF 81/4 + VWL 11/4 SA	VWF 111/4 + VWL 11/4 SA	VWF 151/4 + 2 x VWL 11/4 SA	VWF 191/4 + 2 x VWL 11/4 SA
Maximum	450 rpm	580 rpm	710 rpm	440 rpm	650 rpm
For A7/W35, A7/W45, A7/W55 heating mode	300 rpm	400 rpm	490 rpm	390 rpm	440 rpm
In silent mode for A7/W35, A7/W45, A7/W55 heating mode	270 rpm	350 rpm	430 rpm	330 rpm	390 rpm

7.10.1 Dimensions

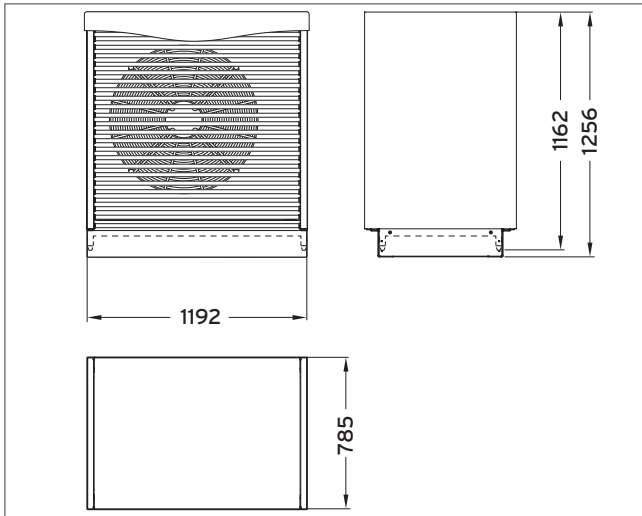


Abb 266: Dimensions

7.10.2 Minimum clearances

Clearances that must be complied with for an air/brine collector

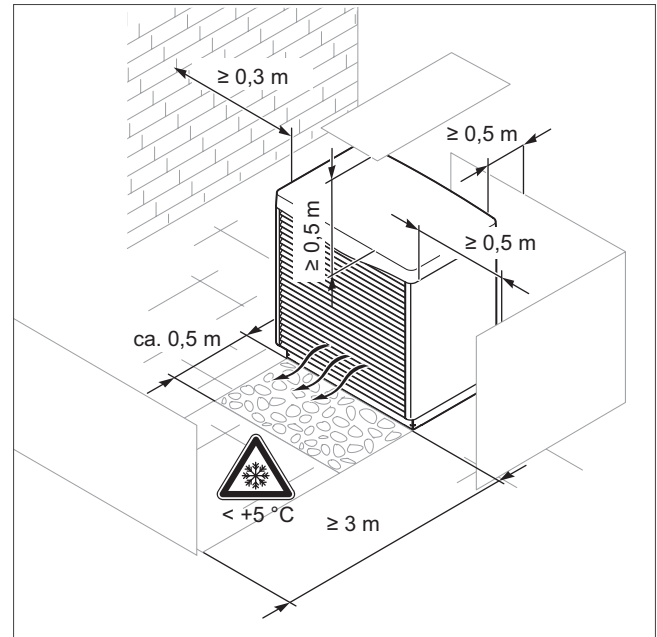


Abb 267: Minimum clearances for one air/brine collector

Clearances that must be complied with for two air/brine collectors

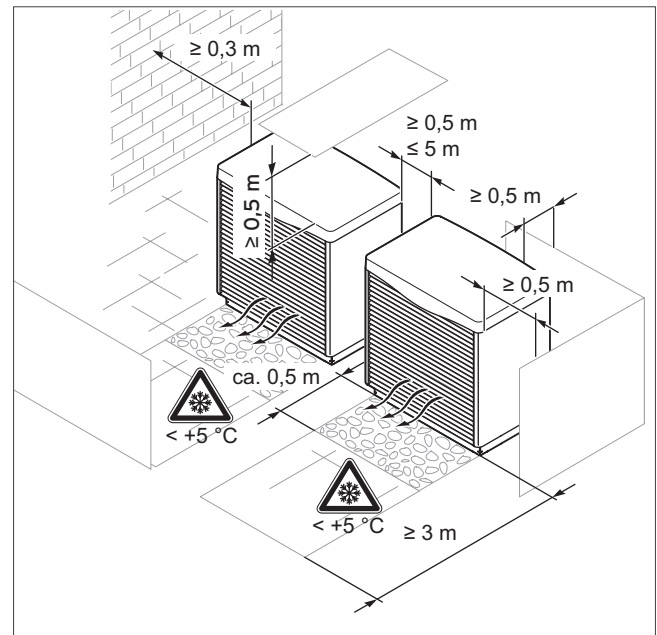


Abb 268: Minimum clearances for two air/brine collectors

Positioning of the collectors

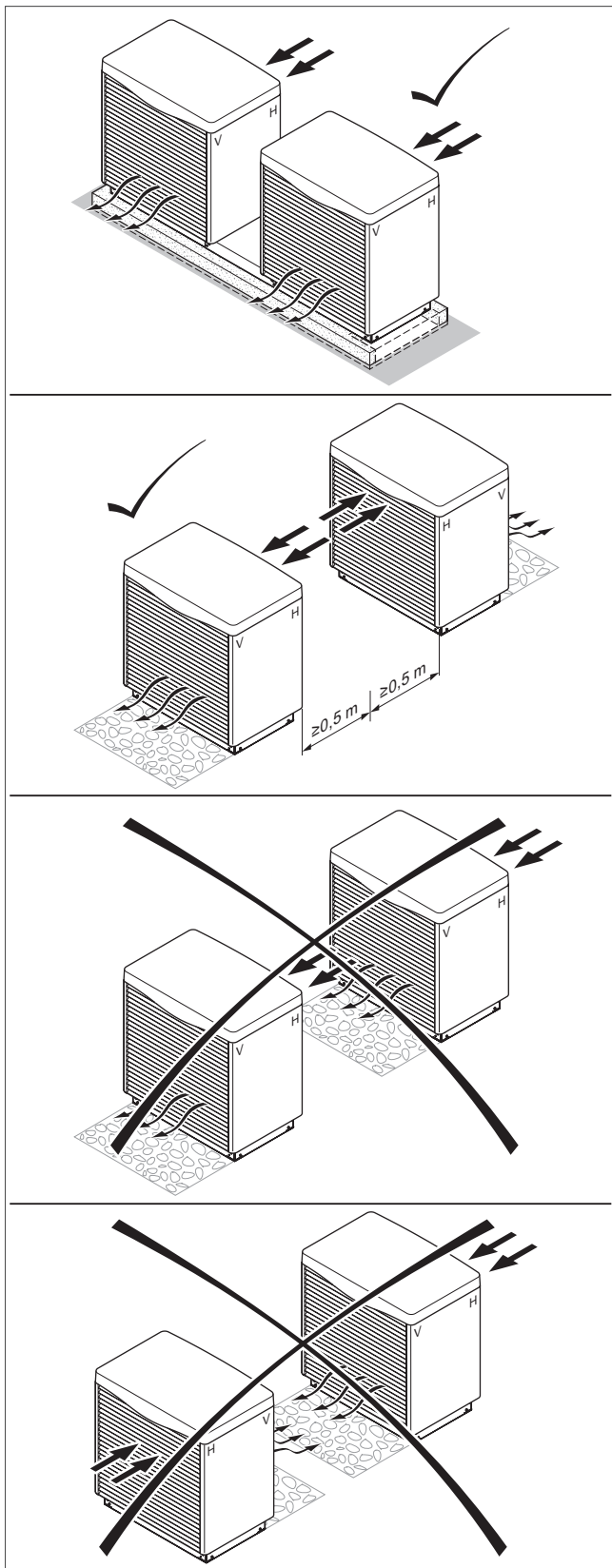


Abb 269: Positioning

- » Use the mounting base, which is available as an accessory, for the installation.
- » To guarantee sufficient air flow and to facilitate maintenance work, observe the minimum clearances that are specified above.
- » Ensure that there is sufficient room to install the hydraulic lines.
- » If the product is to be installed in areas where heavy snow falls, ensure that the snow does not accumulate around the product and that the minimum clearances specified above are observed. If you cannot ensure this, install an additional heat generator in the heating circuit. A raised base and condensate tray heater are available as accessories.
- » If you install two air/brine collectors, you must create a concrete foundation and use the connection pipe set that is available as an accessory.

7.10.3 Installing the aroCOLLECT or aroTHERM outdoor unit outdoors

A number of requirements arise from the outside installation of the outdoor unit which need to be taken into account in the planning of the installation site.

Note

The minimum required clearances must be complied with under all circumstances (see installation instructions/section on planning the heat source).

The outdoor unit requires a sufficiently stable, frost-proof and horizontal foundation that meets local requirements and complies with the rules of structural engineering. We recommend providing an empty pipe for condensate discharge. Appropriate cut-outs must be provided in the foundation for the hot brine and cold brine supply lines, the electrical lines and for the condensate discharge. The unit's blow-off side must not be positioned facing the building.

Do not install the outdoor unit:

- Near a heat source,
- Near flammable materials,
- Near ventilation openings for adjacent buildings,
- Under deciduous trees,
- In dusty or corrosive air (e.g. near unsecured streets),
- Or near exhaust air shafts.

Also note the following points:

- Prevailing winds,
- Noise emissions from the fan and compressor
- The visual impression on the environment.

Avoid places where strong winds blow on the outdoor unit's air outlet.

Do not point the fan in the direction of nearby windows. Install noise protection if necessary.

Note

Install the outdoor unit on steel girders or concrete blocks.

Ensure that water does not accumulate beneath the outdoor unit and that the ground in front of the outdoor unit can absorb water well in order to avoid ice formation.

Note

The condensate volume for each outdoor unit is max. 20 l/h in summer when the air humidity is high.

7.10.4 Creating the foundation

Note

To create the foundation when arranging two units side by side, see the appendix.

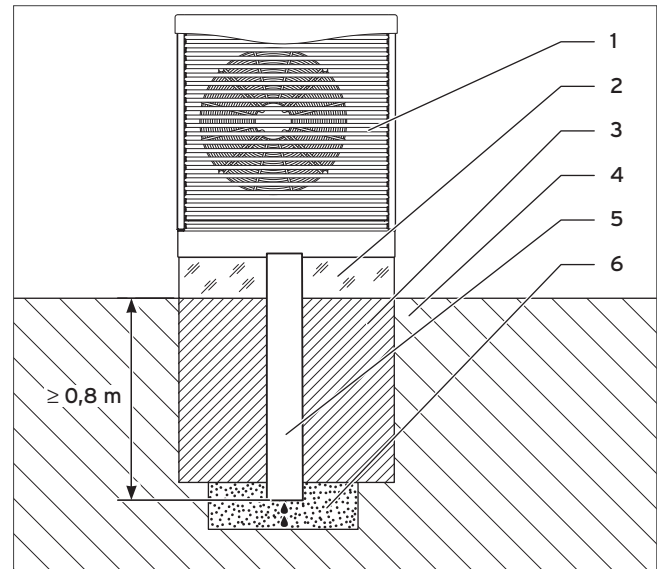


Abb 270: Foundation: Cross-section

- 1 Air/brine collector
- 2 Foundation
- 3 Compacted gravel
- 4 Ground
- 5 Condensate discharge pipe
- 6 Gravel bed in a frost-free area

1. Prepare the ground for the foundation in accordance with the figure.

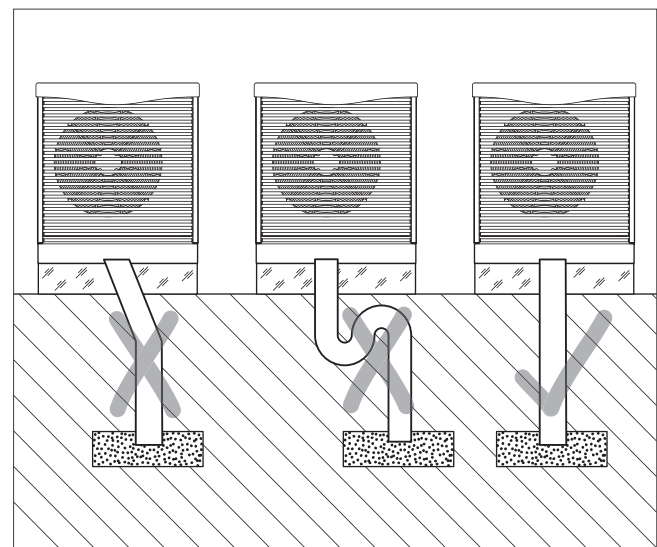


Abb 271: Routing the condensate discharge pipe

2. As a condensate discharge pipe, route a pipe that drops vertically and that is \geq DN 110. Route this pipe as far as the frost-free ground. To lay the pipe at ground level and so that it comes out of the mounting base at the side, use the accessory that is available for this.

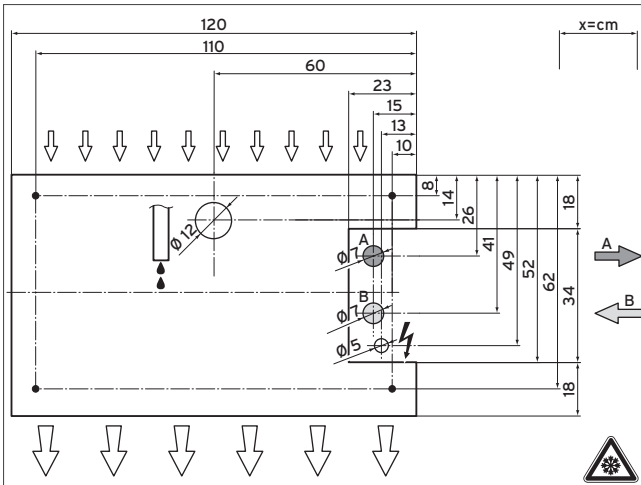


Abb 272: Foundation: Connection dimensions

- A Connecting the air/brine collector to the heat pump (hot brine)
- B Connecting the heat pump to the air/brine collector (cold brine)

3. Create a frost-free and stable foundation or set the product on paving slabs. When doing so, observe the rules of structural engineering and the instructions that are enclosed with the recommended VWL S installation set for PE pipes.

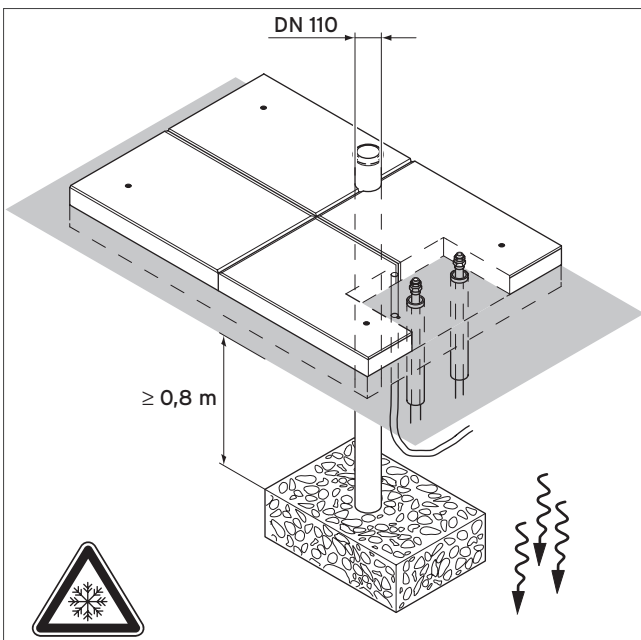


Abb 273: Connections: Foundation using paving slabs

4. Establish the connections for a foundation made of paving slabs in accordance with the illustration.

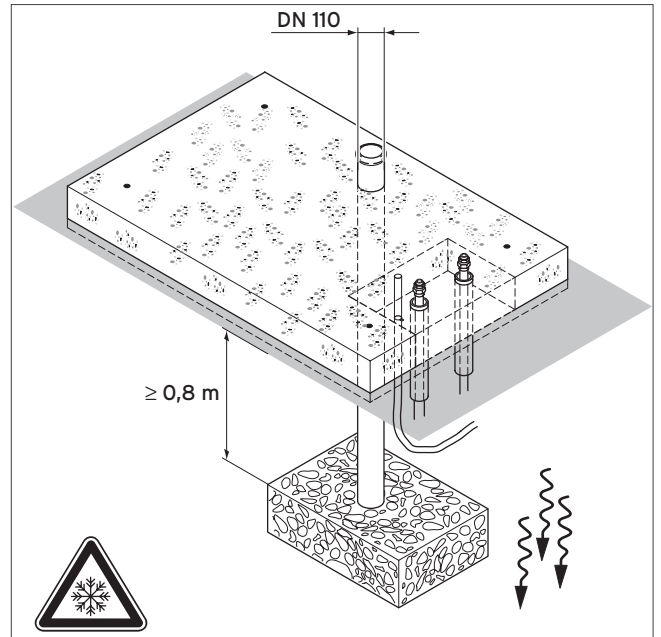


Abb 274: Connections: Foundation using concrete

5. Establish the connections for a concrete foundation in accordance with the illustration.

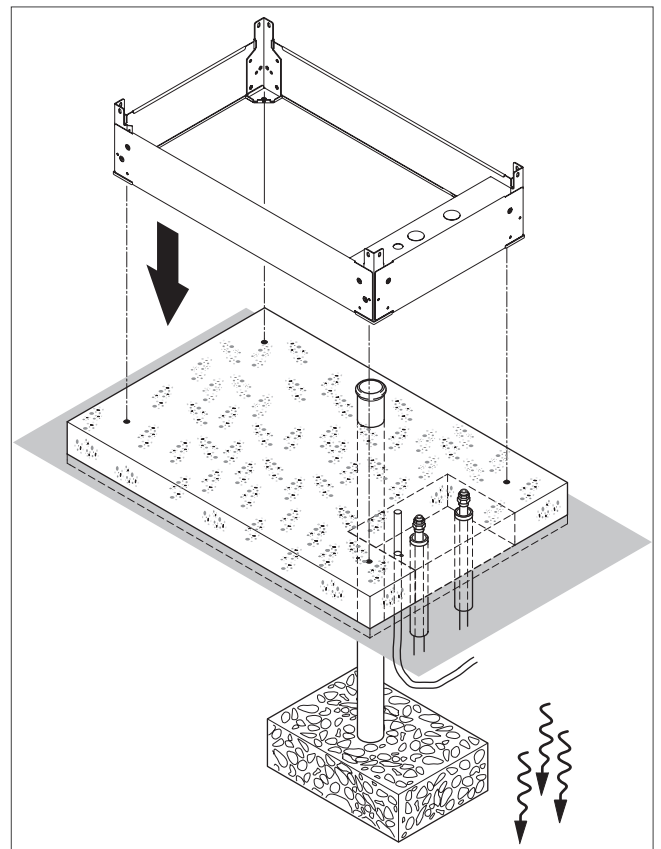


Abb 275: Installing a base

6. Install the base that is available as an accessory.

7.10.5 Outdoor installation of two aroCOLLECT outdoor units with Tichelmann installation set

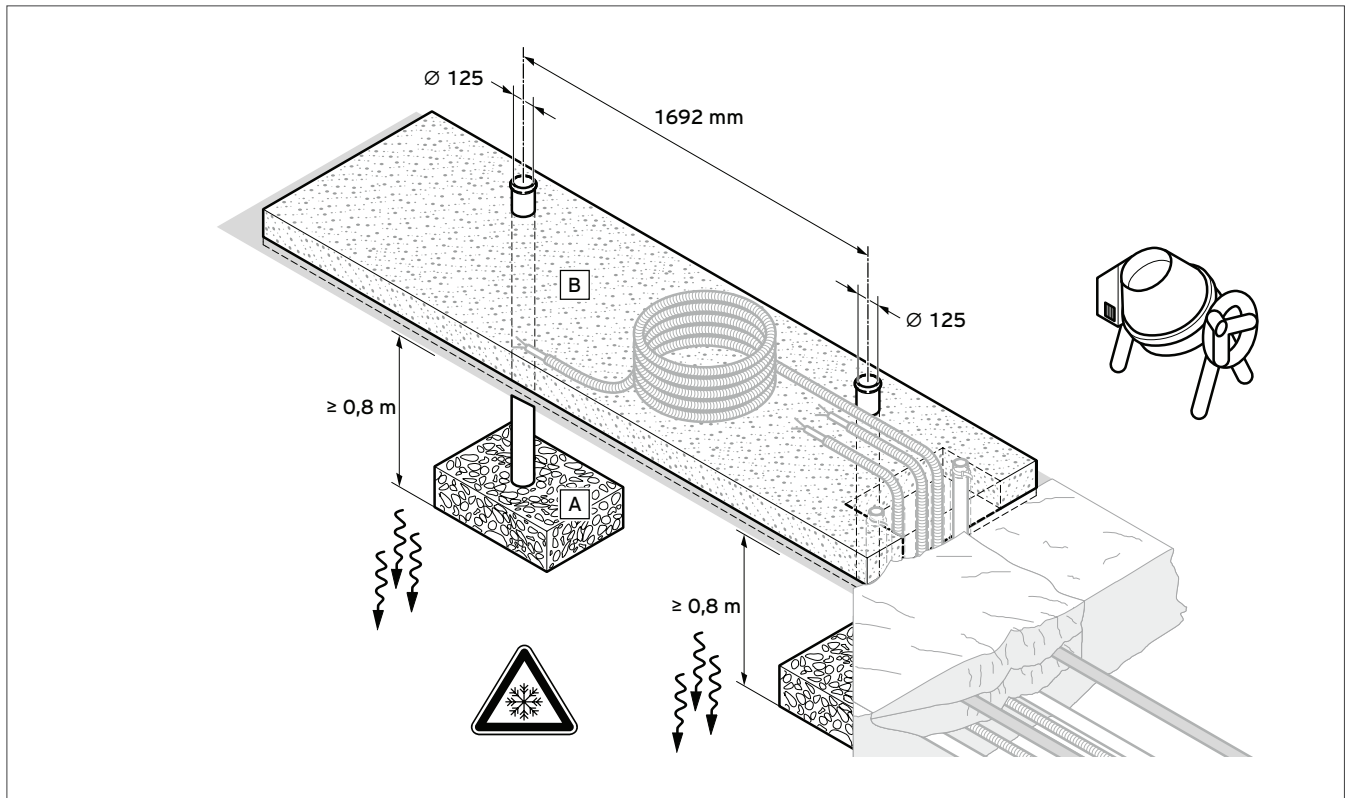


Abb 276: Foundation plan for two aroCOLLECT outdoor units

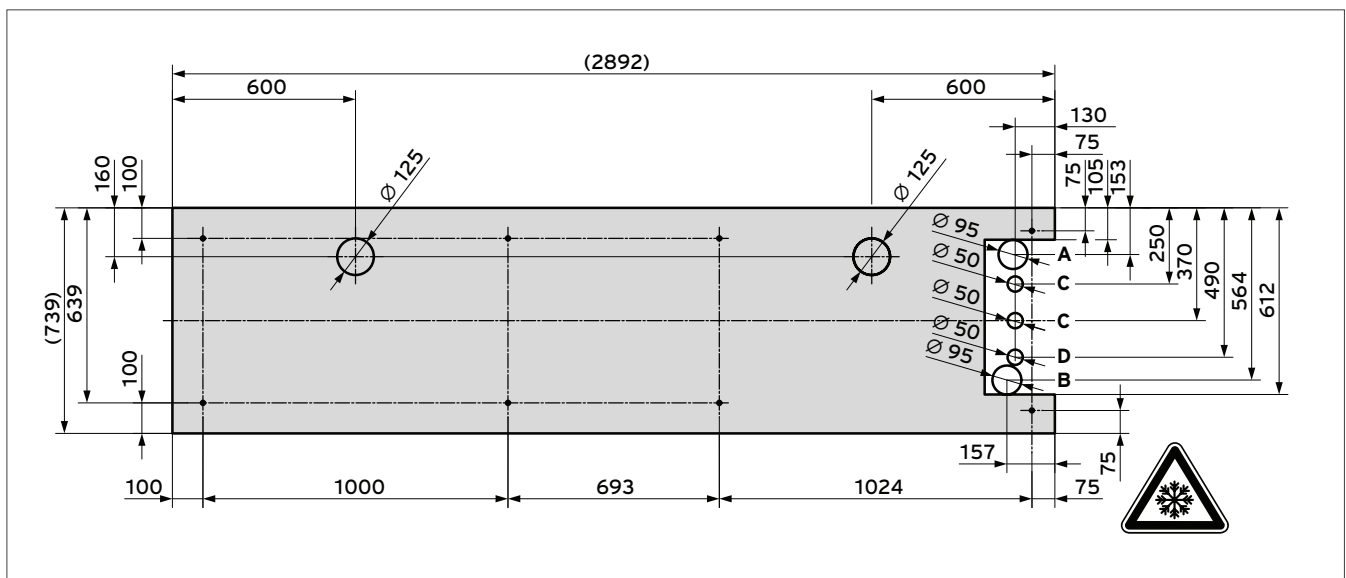


Abb 277: Foundation of the connection dimensions for two aroCOLLECT outdoor units for the installation set (0020205408) with the Tichelmann system

- A Connecting the air/brine collector to the heat pump (hot brine)
- B Connecting the heat pump to the air/brine collector (cold brine)
- C 400 V electrical connection
- D eBUS

Note
For easier installation, use the Tichelmann installation set (0020205408).

7.10.6 Installing the connection pipes using installation sets

Two installation sets are available for installing the connection pipes.

Depending on the total pipe length that is required, you can choose between DN 40 or DN 50 outer diameters.

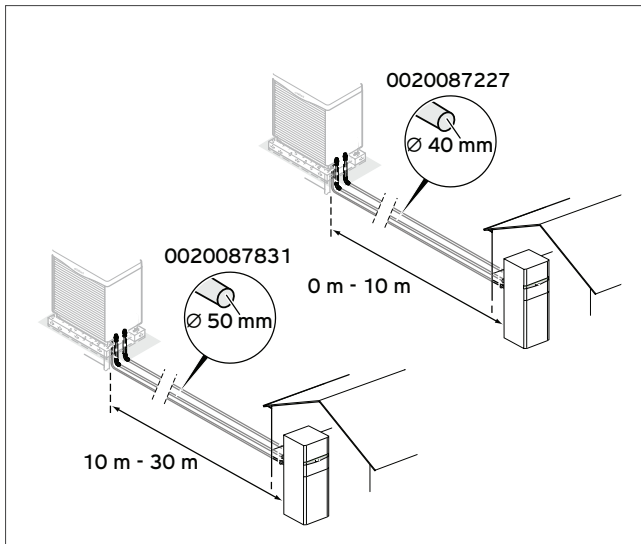


Abb 278: Selecting the aroCOLLECT installation set

Installation with the DN 40 and DN 50 installation set

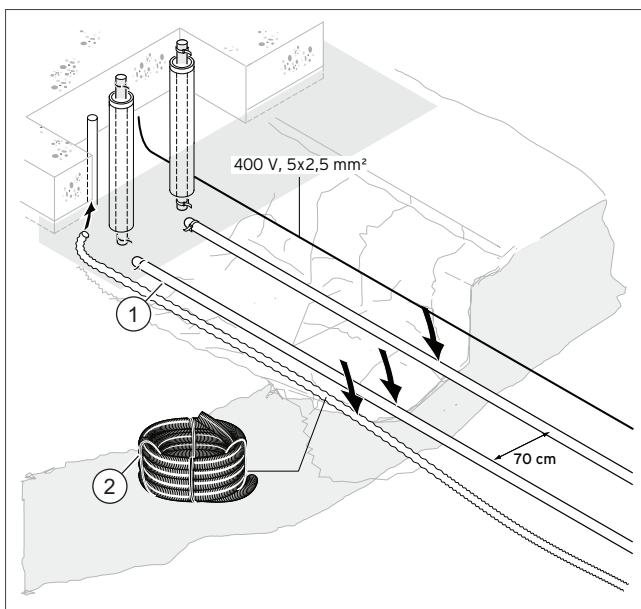


Abb 279: Installation with the DN 40 and DN 50 installation set

- 1 Brine pipes
- 2 Protective hose for eBUS

7.10.7 Routing the connection pipes



Caution.

Risk of material damage caused by ground lifting up as a result of frozen ground.

At operating temperatures close to freezing level, the ground in the area of the PE pipes may freeze and therefore damage the structure as a result of the ground lifting up.

- > Insulate all of the PE lines that are to be routed under buildings, terraces, pathways, etc. so that they are vapour diffusion-tight.
- > If possible, route polyethylene pipes in the ground with a clearance of 70 cm from each other and from adjacent supply pipes (except for electrical wires).

The total length (connection pipes from the heat pump to the product and from the product to the heat pump) must be no greater than 60 m.

- » Keep the clearance between the product and the heat pump as short as possible and minimise the use of elbows and angles. This is because each additional pressure loss that is caused by the use of these reduces efficiency.
- » Route the PE pipes in accordance with the applicable technical directives.
- » For a total line length of between ≥ 20 m and 60 m, use a PE pipe with DN 50 (e.g. PE 80/100, outer diameter 50 mm, wall thickness 4.6 mm). Up to a total line length of ≤ 20 m, you can also use a PE pipe with DN 40 (e.g. PE 80/100, outer diameter 40 mm, wall thickness 3.7 mm).
- » When using more than eight elbows, the maximum possible total length is reduced by 2 m per each additional elbow.
- » When using copper pipes, use only copper pipes that have a cross-section of ≥ 35 mm. If you use a smaller cross-section (e.g. copper 28 mm), this will result in pressure losses (2 m copper 28 = 8 m copper 35).
- » Keep the height difference between the product and the heat pump as low as possible. The height difference must be no more than 5 m; beyond this, a detailed check of the general parameters is required.

Note

If the prescribed cable cross-sections are not complied with, this results in efficiency losses and reduced annual operating figures.



- » If required, when routing the polyethylene pipes above-ground, ensure that they are protected against UV radiation.

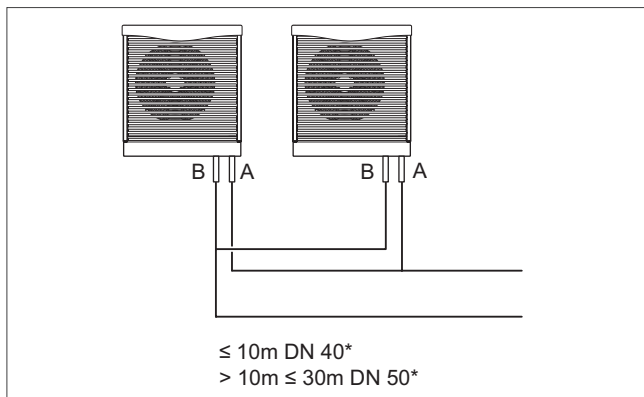


Abb 280: Installing two air/brine collectors

* = one way

- » Connect the air/brine collector in accordance with the Tichelmann principle. This means that the air/brine collector with the shorter flow has the longest return.



Caution.

Risk of material damage caused by a leak.

When tightening screwed connections, ensure that O-rings are inserted correctly as, otherwise, they may pop out or become jammed, become damaged, or cause leaks.

- > Insert the O-rings properly and untwisted into the union nuts for the air/brine collector's brine connections.

- » Screw the union nuts to the connection adaptors on the „hot brine“ and „cold brine“ brine lines in the brine circuit (cross-reference) on the mounting base.
- » To purge each individual air/brine collector, install two isolator units.

7.10.8 aroCOLLECT flat roof installation

Note

Before installing on a flat roof, garage or car park building, check with the local authority whether this is an approved installation site.



For flat-roof installation of the outdoor unit, frost-free draining of the condensate is required up to approx. 1 m below the soil level using electrical trace heating. To prevent condensate or (in winter) ice formation on the brine pipes, the outdoor brine pipes in this installation must be provided with diffusion-tight, weather-resistant heat insulation with an insulation thickness of approx. 10 mm. Copper (or similar) should be used as the piping material, since PE pipes are not UV-resistant.

Installing elevated bases is not recommend due to increased wind loads.

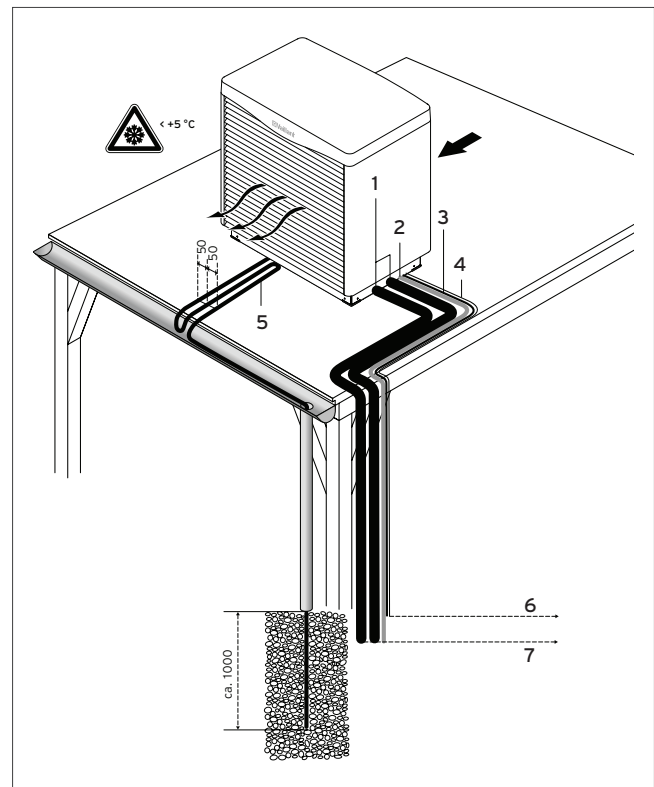


Abb 281: aroCOLLECT flat roof installation

- 1 Brine pipes with heat insulation from the outdoor unit to the indoor unit
- 2 eBUS
- 3 400 V/50 Hz, 3/N/PE~ outdoor unit power supply
- 4 230 V/50 Hz, 1/N/PE~ heating strip power supply
- 5 Electrical heating strip for condensate discharge
- 6 For power supply
- 7 For the indoor unit

For a ground-level PE pipe connection for the aroCOLLECT outdoor unit, the installation set with order number 0020112803 is required. This comprises:

- 2 x S 28 connection pipe x 1.5 mm G 5/4
- 1 x base panel with cut-outs
- 2 x R 5/4 brass threaded joint

Ensure that everything is sufficiently secured in place and

storm-protected.

For flat roofs with gravel filling, an installation set is available for flat-roof installation (order number 0020087826). This consists of:

- 2 x gravel tray
- 2 x S 28 mm flat-roof connection pipe x 1.5 mm, G 5/4
- 1 x base panel for flat-roof installation
- 1 x heat insulation for connection pipes
- 4 x fitting for securing the gravel tray to the outdoor unit
- 2 x brass threaded joint, R 5/4

The electrical gutter trace heating is controlled via a relay (provided on-site) that is connected to the red terminals of the outdoor unit (max. 200 W). The trace heating is then switched on only below an air intake temperature of +5 °C and only during the thawing procedure. The trace heating can be connected directly to the PCB at an output of up to 200 W. We recommend using a relay.

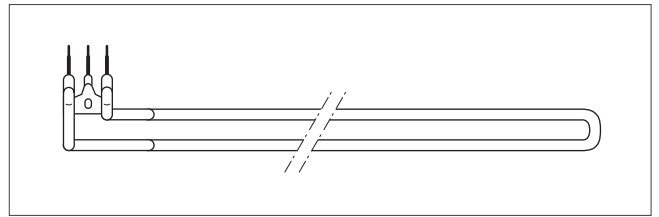


Abb 283: VWZ EH heating element

Installing elevated bases is not recommend due to increased wind loads.

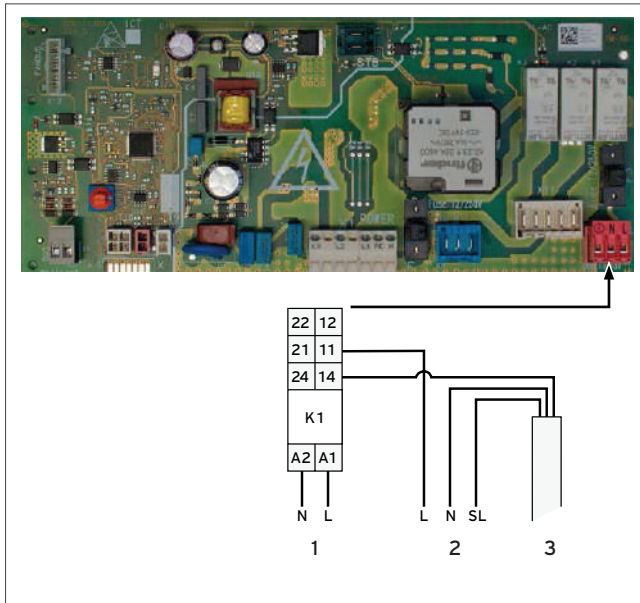


Abb 282: PCB for the aroCOLLECT outdoor unit

- 1 Electronics box connection in the outdoor unit
- 2 Trace heating mains voltage from the E manifold
- 3 Gutter trace heating strip to protect the building against frost

7.10.9 Frost protection for the condensate tray

Vaillant recommends the VWZ EH heating element.

7.10.10 Installing brine lines in the building

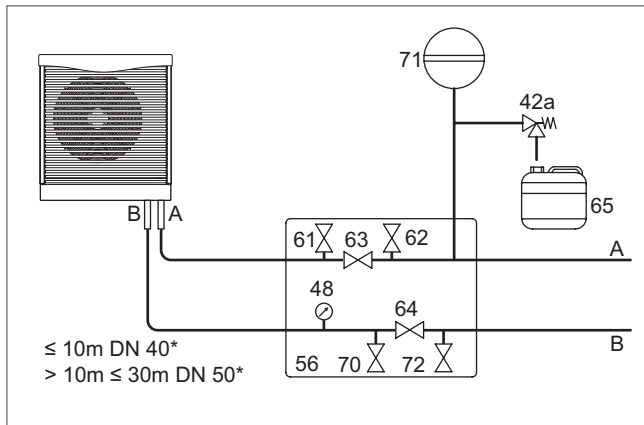


Abb 284: Fittings in the brine circuit

- 42a Expansion relief valve
- 48 Manometer
- 56 Heat pump brine filling unit (accessory)
- 61 Isolation valve
- 62 Isolation valve
- 63 Isolation valve
- 64 Isolation valve
- 65 Brine collecting vessel
- 70 Isolation valve
- 71 Brine diaphragm expansion vessel
- 72 Isolation valve
- A From the heat source to the heat pump (hot brine)
- B From the heat pump to the heat source (cold brine)
- * One way

1. Install the brine lines between the product and the heat pump within the building and using all of the associated components in accordance with the applicable technical directives.

Note

Do not install dirt filters in the brine circuit for a prolonged period of time. The brine fluid is cleaned during the filling process.



2. Reduce the pre-charge pressure of the brine diaphragm expansion vessel (which is available as an accessory) from 0.25 MPa (2.5 bar) to 0.10 MPa (1.0 bar).
3. Insulate all of the brine lines and the connections for the heat pump and product so that they are vapour diffusion-tight.

Note

Vaillant recommends that you install the Vaillant heat pump brine filling unit. By doing this, it is then possible to carry out a preparatory partial bleed of the brine circuit, e.g. the flow and return of the brine circuit to the product.



7.10.11 Electric connection

A 3/N/PE power supply line is required for the aroCOLLECT outdoor unit and a line with a cross section of at least 2 x 0.75 mm² is required for the eBUS connection.

If two outdoor units are installed, two 3/N/PE lines and two eBUS connections are required.



8. Product information for the flexoCOMPACT exclusive nordic

Update 10
New product overview

8.1 Product combinations



Fig. 285: Product combinations

Product combination overview for the flexoCOMPACT nordic VWF ..2/4

	Heat pump		Buffer cylinder	Control	Photovoltaics
	Brine/water flexoCOMPACT VWF ..2/4 (1)	Air/water flexoCOMPACT VWF ..2/4 (1) + aroCOLLECT VWL 11/4 (2)	Heating VP RW 45/2 B (3) VPS R 100/1 M (4) VPS R 200/1 B (5) allSTOR plus (6)	VRC 700 or VRC 720 (7)	PV modules and inverters (8)
Heating and compact domestic hot water generation	•	•	o	•	•

• Recommended / o Recommended under certain circumstances / - Not recommended

8.2 Product description for the flexoCOMPACT exclusive VWF 52/4 - VWF 112/4 nordic



Fig. 286: flexoCOMPACT exclusive nordic

8.2.1 Special features

- Bears the Green iQ label
- The Sound Safe System ensures that the heat pump is particularly quiet when running
- Air and brine heat sources can be used; no ground water
- Flow temperatures of up to 65 °C for modernisation with EVI, even at low outside temperatures
- High level of efficiency thanks to the advanced, durable heat pump scroll compressor
- 10-year material guarantee for the compressor
- SplitMountingConcept for easy positioning in two parts
- Highly efficient hot water generation

8.2.2 Potential applications

- Heating and hot water generation

8.2.3 Equipment

- 185 l stainless steel domestic hot water cylinder, cylinder temperatures of up to 60 °C possible in heat pump mode
- Free iPhone and Android app for end customers
- High-efficiency pumps in the heating/brine circuit
- Hot water diverter valve
- 9 kW electric back-up heater, multistage
- In-rush current limiter
- Sensor-controlled refrigerant circuit with EVI technology
- No active cooling
- Heat meter and electricity meter integrated as standard
- aroCOLLECT: Particularly quiet, modulating EC fan
- fluoCOLLECT: Ground-water heat source is not an option
- Optional: Passive cooling via the ground collector with accessory VWZ NC 11 or 14
- No connection for heating expansion vessel
- Brine connection on the bottom right-/left-hand side is flexible

Update 10
New efficiency class (EN14511:2018)

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Domestic hot water generation energy efficiency class	Order no.
VWF 52/4	A+++ / A++ (A+++ to D) A++ / A+ (A+++ to D)	A+ (A+ to F) A (A+ to F)	xxxxxxxxx xxxxxxxxx with aroCOLLECT
VWF 82/4	A+++ / A++ (A+++ to D) A++ / A+ (A+++ to D)	A+ (A+ to F) A (A+ to F)	xxxxxxxxx xxxxxxxxx with aroCOLLECT
VWF 112/4	A+++ / A++ (A+++ to D) A++ / A+ (A+++ to D)	A (A+ to F) A (A+ to F)	xxxxxxxxx xxxxxxxxx with aroCOLLECT

8.3 Technical data

8.3.1 General

Dimensions

	VWF 52/4	VWF 82/4	VWF 112/4
Product dimensions, height, without adjustable feet	1,780 mm	1,780 mm	1,780 mm
Product dimensions, width	595 mm	595 mm	595 mm
Product dimensions, depth	650 mm	650 mm	650 mm
Weight, with packaging	225 kg	239 kg	247 kg
Weight, without packaging	212 kg	227 kg	234 kg
Weight, ready for operation	401 kg	417 kg	425 kg

Electrics

	VWF 52/4	VWF 82/4	VWF 112/4
Compressor/heating circuit rated voltage	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz
Control circuit rated voltage	1~/N/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz	1~/N/PE 230 V 50 Hz
Auxiliary heater rated voltage	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz	3~/N/PE 400 V 50 Hz
Power factor	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$	$\cos \Phi = 0.75 - 0.9$
Required network impedance Z_{max} with in-rush current limiter	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$	$\leq 0.472 \Omega$
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)		
In-rush current with in-rush current limiter	$\leq 15 \text{ A}$	$\leq 19 \text{ A}$	$\leq 22 \text{ A}$
Measuring current, max.	19.8 A	21.2 A	23.4 A
Min. electrical power consumption	1.40 kW	2.00 kW	2.50 kW
Max. electrical power consumption	11.50 kW	12.80 kW	14.10 kW
Max. electrical power consumption of auxiliary heater	9 kW	9 kW	9 kW
EN 60529 level of protection	IP 10B	IP 10B	IP 10B

Hydraulics

	VWF 52/4	VWF 82/4	VWF 112/4
Heating flow/return connection	Copper pipe, 28 mm	Copper pipe, 28 mm	Copper pipe, 28 mm
Heat source flow/return connection	Copper pipe, 28 mm	Copper pipe, 28 mm	Copper pipe, 28 mm
Cold/hot water connection	G 3/4 "	G 3/4 "	G 3/4 "

Update 10
New technical data (EN14511:2018)

Integrated domestic hot water cylinder

	VWF 52/4	VWF 82/4	VWF 112/4
Contents, net	171 l	171 l	171 l
Max. operating pressure	1 MPa	1 MPa	1 MPa
Max. hot water outlet temperature with heat pump	≤ 63 °C	≤ 63 °C	≤ 63 °C
Max. hot water outlet temperature with heat pump and auxiliary heater	≤ 75 °C	≤ 75 °C	≤ 75 °C
Domestic hot water cylinder heat-up time up to target cylinder temperature of 50 °C	75 min	68 min	52 min
Power consumption during standby in accordance with DIN EN 16147	24 W	26 W	27 W

Heat source circuit/brine circuit

	VWF 52/4	VWF 82/4	VWF 112/4
Brine content of the brine circuit in the heat pump	2.5 l	3.1 l	3.6 l
Brine circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe
Min. brine fluid operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. brine fluid operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Max. electrical power consumption, brine circuit pump	76 W	76 W	130 W
Brine pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump

Building circuit/heating circuit

	VWF 52/4	VWF 82/4	VWF 112/4
Heating circuit water contents in the heat pump	15.4 l	16.1 l	16.5 l
Heating circuit materials	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe	Cu, CuZn-Alloy, Stainless Steel, EPDM, Brass, Fe
Permissible heating water condition	Do not add antifreeze or corrosion inhibitors to heating water. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.		
Min. heating circuit operating pressure	≥ 0.07 MPa	≥ 0.07 MPa	≥ 0.07 MPa
Max. heating circuit operating pressure	≤ 0.3 MPa	≤ 0.3 MPa	≤ 0.3 MPa
Min. heating mode flow temperature	25 °C	25 °C	25 °C
Max. heating mode target flow temperature	75 °C	75 °C	75 °C
Max. electrical power consumption, heating pump	63 W	63 W	63 W
Heating pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump

Refrigerant circuit

	VWF 52/4	VWF 82/4	VWF 112/4
Refrigerant type	R410A	R410A	R410A
Refrigerant content of the refrigerant circuit in the heat pump	1.50 kg	2.40 kg	2.50 kg
Global warming potential (GWP) in accordance with regulation (EU) no. 517/2014	2088	2088	2088
CO ₂ equivalent	3.132 t	5.011 t	5.220 t
Global warming potential 100 (GWP ₁₀₀) in accordance with regulation (EC) no. 842/2006	1975	1975	1975
Expansion valve design	Electronic	Electronic	Electronic
Permissible operating pressure (relative)	≤ 4.6 MPa	≤ 4.6 MPa	≤ 4.6 MPa
Compressor type	Scroll	Scroll	Scroll
Oil type	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)	Ester (EMKARATE RL32-3MAF)
Oil filling quantity	0.75 l	1.25 l	1.25 l

Update 10
New technical data (EN14511:2018)

Installation site

	VWF 52/4	VWF 82/4	VWF 112/4
Installation site	Interior/dry	Interior/dry	Interior/dry
Installation room volume complying with EN 378	3.41 m ³	5.45 m ³	5.68 m ³
Permissible environmental temperature at the installation site	7 to 25 °C	7 to 25 °C	7 to 25 °C

8.3.2 Brine heat source

Heat source circuit/brine circuit

	VWF 52/4	VWF 82/4	VWF 112/4
Min. source inlet temperature (hot brine) in heating mode	-10 °C	-10 °C	-10 °C
Max. source inlet temperature (hot brine) in heating mode	25 °C	25 °C	25 °C
Nominal flow ΔT 3 K for B0/W35	1,290 l/h	2,320 l/h	3,000 l/h
Min. volume flow during continuous operation at the application limits	1,110 l/h	2,140 l/h	2,460 l/h
Max. volume flow during continuous operation at the application limits	1,290 l/h	2,320 l/h	3,000 l/h
Max. remaining feed head with ΔT 3 K for B0/W35	0.062 MPa	0.038 MPa	0.050 MPa
Brine circuit pump electrical power consumption for B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the brine circuit	44 W	62 W	64 W
Brine fluid type	Ethylene glycol 30% vol. Ethanol 29% vol. Propylene glycol 33% vol.	Ethylene glycol 30% vol. Ethanol 29% vol. Propylene glycol 33% vol.	Ethylene glycol 30% vol. Ethanol 29% vol. Propylene glycol 33% vol.

Building circuit/heating circuit

	VWF 52/4	VWF 82/4	VWF 112/4
Nominal flow at ΔT 5 K for B0/W35	920 l/h	1,530 l/h	1,920 l/h
Max. remaining feed head at ΔT 5 K B0/W35	0.065 MPa	0.044 MPa	0.033 MPa
Nominal flow at ΔT 8 K for B0/W55	570 l/h	980 l/h	1,240 l/h
Max. remaining feed head at ΔT 8 K B0/W55	0.068 MPa	0.065 MPa	0.057 MPa
Min. volume flow during continuous operation at the application limits	570 l/h	980 l/h	1,240 l/h
Max. volume flow during continuous operation at the application limits	920 l/h	1,530 l/h	1,920 l/h
Heating pump electrical power consumption for B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the heating circuit	25 W	30 W	45 W

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 52/4	VWF 82/4	VWF 112/4
Heat output B0/W35 ΔT 5 K	5.28 kW	8.82 kW	11.18 kW
Effective power consumption B0/W35 ΔT 5K	1.20 kW	1.82 kW	2.34 kW
Coefficient of performance B0/W35 ΔT 5 K/EN 14511	4.41	4.84	4.77
Heat output B0/W45 ΔT 5 K	5.26 kW	8.76 kW	11.14 kW
Effective power consumption B0/W45 ΔT 5 K	1.56 kW	2.39 kW	3.03 kW

Update 10
New technical data (EN14511:2018)

	VWF 52/4	VWF 82/4	VWF 112/4
Coefficient of performance BO/W45 ΔT 5 K/EN 14511	3.37	3.67	3.68
Heat output BO/W55 ΔT 8 K	5.34 kW	8.94 kW	11.33 kW
Effective power consumption BO/W55 ΔT 8K	1.85 kW	2.78 kW	3.66 kW
Coefficient of performance BO/W55 ΔT 8 K/EN 14511	2.89	3.22	3.10
Hot water output figure/coefficient of performance BO/Wxx DIN EN 16147 at target cylinder temperature of 53 °C and 6 K hysteresis	3.00	2.90	2.80
Hot water draw-off profile BO/Wxx DIN EN 16147	XL	XL	XL
Hot water mixed water volume 40 °C (V40) BO/Wxx at target cylinder temperature of 53 °C	248 l	250 l	252 l
Sound power level BO/W35 EN 12102/EN 14511 L_{wH} in heating mode	38.6 dB(A)	44.4 dB(A)	43.9 dB(A)
Sound power level BO/W45 EN 12102/EN 14511 L_{wH} in heating mode	38.4 dB(A)	43.5 dB(A)	43.2 dB(A)
Sound power level BO/W55 EN 12102/EN 14511 L_{wH} in heating mode	39.7 dB(A)	44.7 dB(A)	42.8 dB(A)

Application limits for the heat pump: Heating (heat source = brine)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the brine circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.
- Application limits for the heat pump: Heating (Brine heat source): B15/W65, B25/W59, B25/W25, B-10/W25, B-10/W60, B-5/W65

8.3.3 Air heat source

Heat source circuit/brine circuit

	VWF 52/4	VWF 82/4	VWF 112/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA
Brine fluid type	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.

Building circuit/heating circuit

	VWF 52/4	VWF 82/4	VWF 112/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA
Nominal flow at ΔT 5 K	1,070 l/h	1,510 l/h	1,990 l/h
Max. remaining feed head with ΔT 5 K	0.060 MPa	0.041 MPa	0.029 MPa
Nominal flow with ΔT 8 K	660 l/h	1,020 l/h	1,350 l/h
Max. remaining feed head with ΔT 8 K	0.069 MPa	0.056 MPa	0.053 MPa
Min. volume flow during continuous operation at the application limits	660 l/h	1,020 l/h	1,350 l/h
Max. volume flow during continuous operation at the application limits	1,070 l/h	1,510 l/h	1,990 l/h
Heating pump electrical power consumption for A7/W35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	28 W	36 W	50 W

Update 10
New technical data (EN14511:2018)

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 52/4	VWF 82/4	VWF 112/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA
A2/W35 heat output	5.63 kW	7.79 kW	10.27 kW
Effective power consumption A2/W35	1.36 kW	1.99 kW	2.68 kW
Coefficient of performance A2/W35/EN 14511	4.14	3.91	3.83
Heat output A7/W35 ΔT 5 K	6.16 kW	8.74 kW	11.45 kW
Effective power consumption A7/W35 ΔT 5 K	1.31 kW	1.91 kW	2.50 kW
Coefficient of performance A7/W35 ΔT 5 K/EN 14511	4.69	4.58	4.58
Heat output A7/W45 ΔT 5 K	6.04 kW	9.00 kW	11.98 kW
Effective power consumption A7/W45 ΔT 5 K	1.66 kW	2.44 kW	3.17 kW
Coefficient of performance A7/W45 ΔT 5 K/EN 14511	3.64	3.69	3.77
Heat output A7/W55 ΔT 8 K	6.09 kW	9.45 kW	12.20 kW
Effective power consumption A7/W55 ΔT 8 K	1.97 kW	2.95 kW	3.84 kW
Coefficient of performance A7/W55 ΔT 8 K/EN 14511	3.09	3.21	3.17
Domestic hot water coefficient of performance / coefficient of performance A7/Wxx EN 16147 at a target cylinder temperature of 53 °C and 6 K hysteresis	2.90	2.70	2.60
Domestic hot water draw-off profile A7/Wxx EN 16147	XL	XL	XL
Hot water mixed water volume 40 °C (V40) A7/Wxx at target cylinder temperature of 53 °C	248 l	250 l	252 l
Sound power level A7/W35 EN 12102/EN 14511 L_{w} in heating mode	40.3 dB(A)	43.9 dB(A)	44.9 dB(A)
Sound power level A7/W45 EN 12102/EN 14511 L_{w} in heating mode	39.9 dB(A)	43.3 dB(A)	44.5 dB(A)
Sound power level A7/W55 EN 12102/EN 14511 L_{w} in heating mode	39.9 dB(A)	44.6 dB(A)	42.9 dB(A)

Application limits for the heat pump: Heating (heat source = air)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the brine circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.
- Application limits for the heat pump: Heating (Air heat source): A40/W65, A40/W25, A-22/W25, A-22/W50, A-2/W65, A15/W65

8.3.4 Remaining feed head of building circuit pump

Remaining feed head for VWF 52/4 building circuit pump at nominal flow

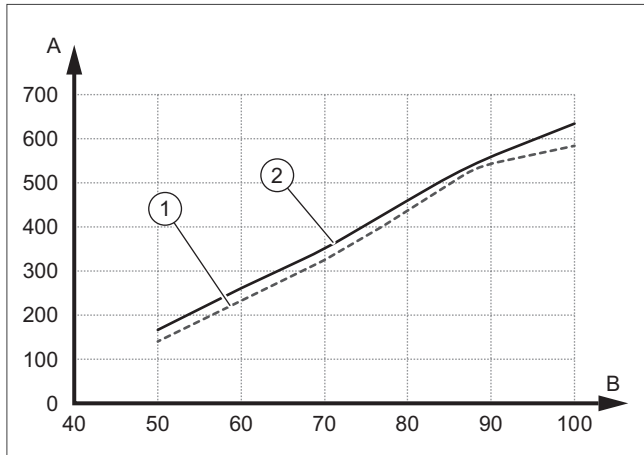


Fig. 287: Remaining feed head for VWF 52/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 112/4 building circuit pump at nominal flow

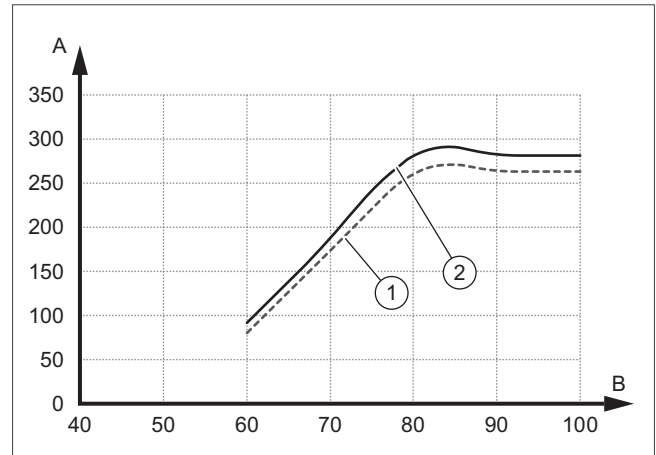


Fig. 289: Remaining feed head for VWF 112/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 82/4 building circuit pump at nominal flow

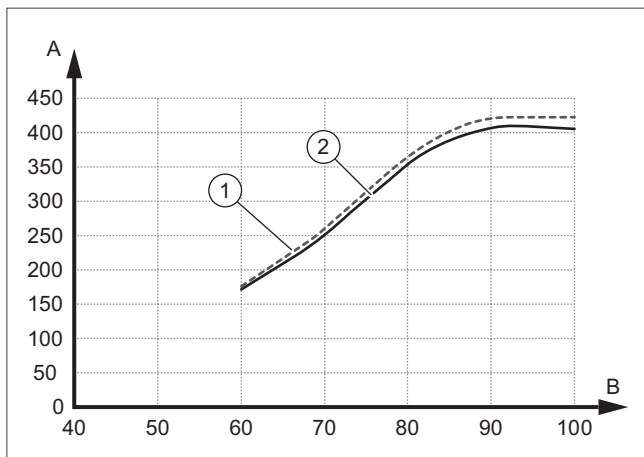


Fig. 288: Remaining feed head for VWF 82/4 building circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

8.3.5 Remaining feed head of environment circuit pump

Remaining feed head for VWF 52/4 environment circuit pump at nominal flow

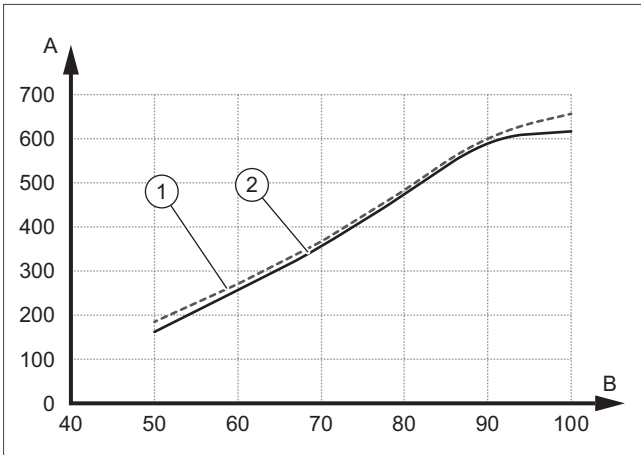


Fig. 290: Remaining feed head for VWF 52/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 112/4 environment circuit pump at nominal flow

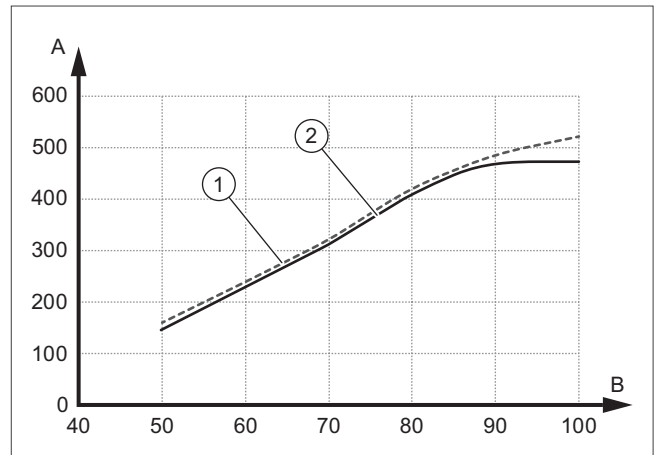


Fig. 292: Remaining feed head for VWF 112/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

Remaining feed head for VWF 82/4 environment circuit pump at nominal flow

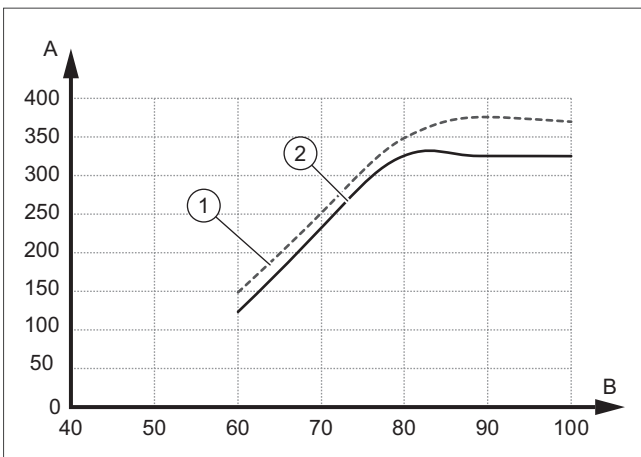


Fig. 291: Remaining feed head for VWF 82/4 environment circuit pump

- 1 Air heat source
- 2 Ground heat source
- A Remaining feed head in hPa (mbar)
- B Pump output in %

8.4 Power output graphs

8.4.1 Brine heat source

Power output graph for the VWF 52/4 nordic - brine/water

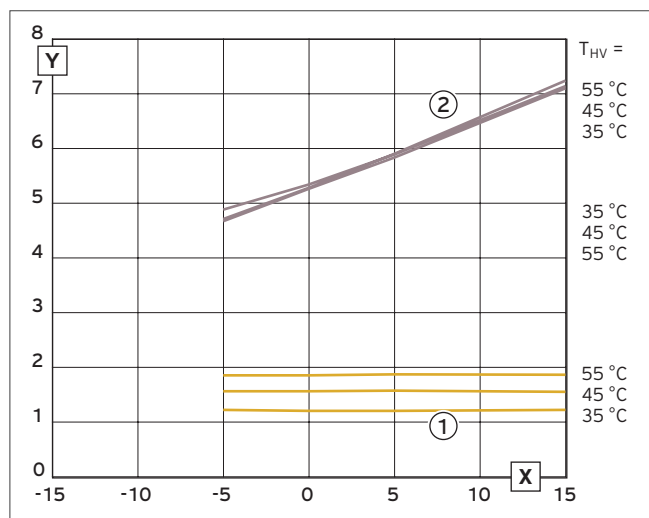


Fig. 293: Power output graph for the VWF 52/4 nordic - brine/water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 112/4 nordic - brine/water

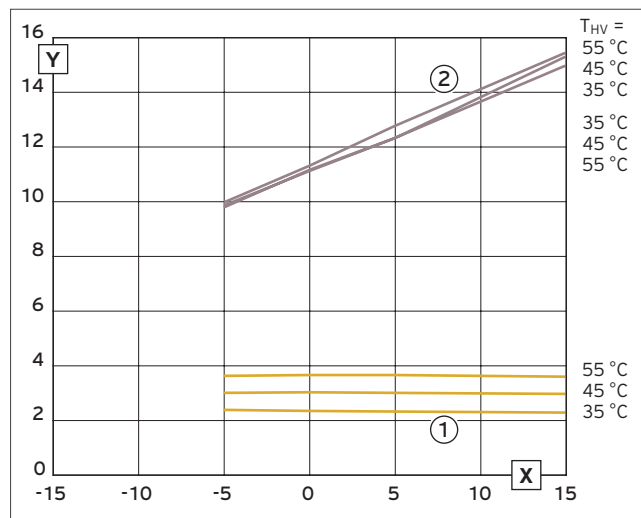


Fig. 295: Power output graph for the VWF 112/4 nordic - brine/water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 82/4 nordic - brine/water

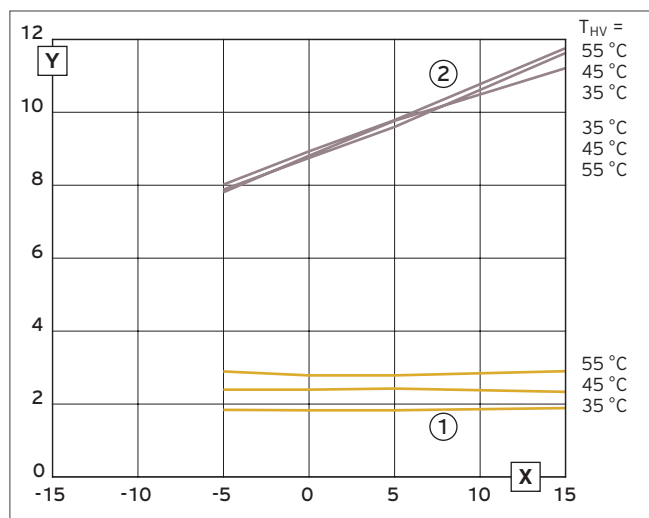


Fig. 294: Power output graph for the VWF 82/4 nordic - brine/water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

8.4.2 Air heat source

Power output graph for the VWF 52/4 nordic – air/water

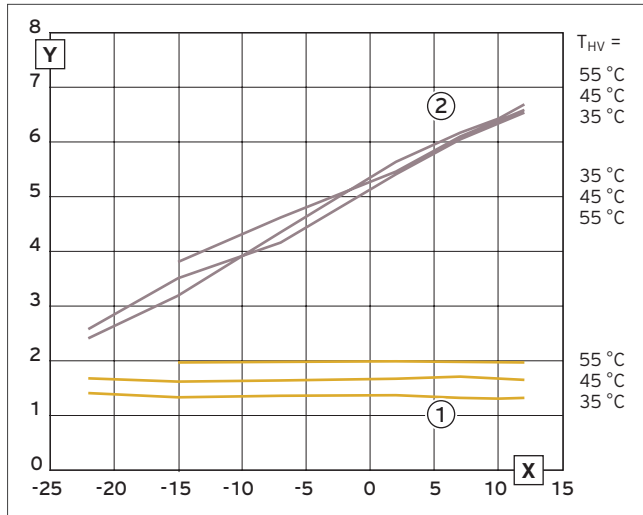


Fig. 296: Power output graph for the VWF 52/4 nordic – air/water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 112/4 nordic - air/water

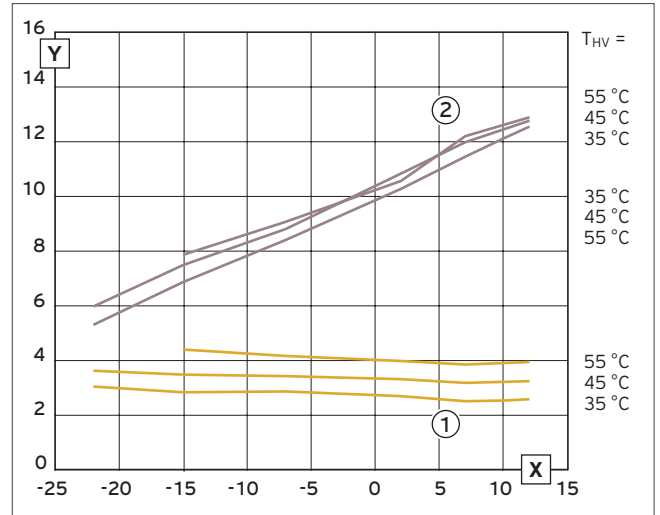


Fig. 298: Power output graph for the VWF 112/4 nordic - air/water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

Power output graph for the VWF 82/4 nordic – air/water

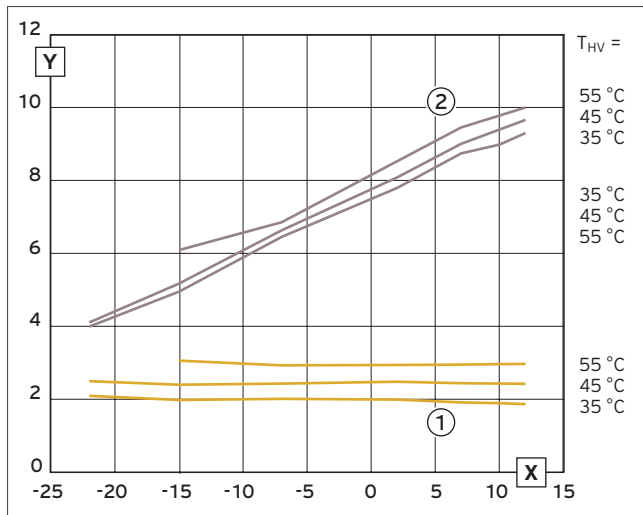


Fig. 297: Power output graph for the VWF 82/4 nordic – air/water

- Y Power output [kW]
- X Outdoor air temperature [°C]
- 1 Electrical power consumption
- 2 Heating output

8.5 Product dimensions and connection dimensions

8.5.1 Dimensions

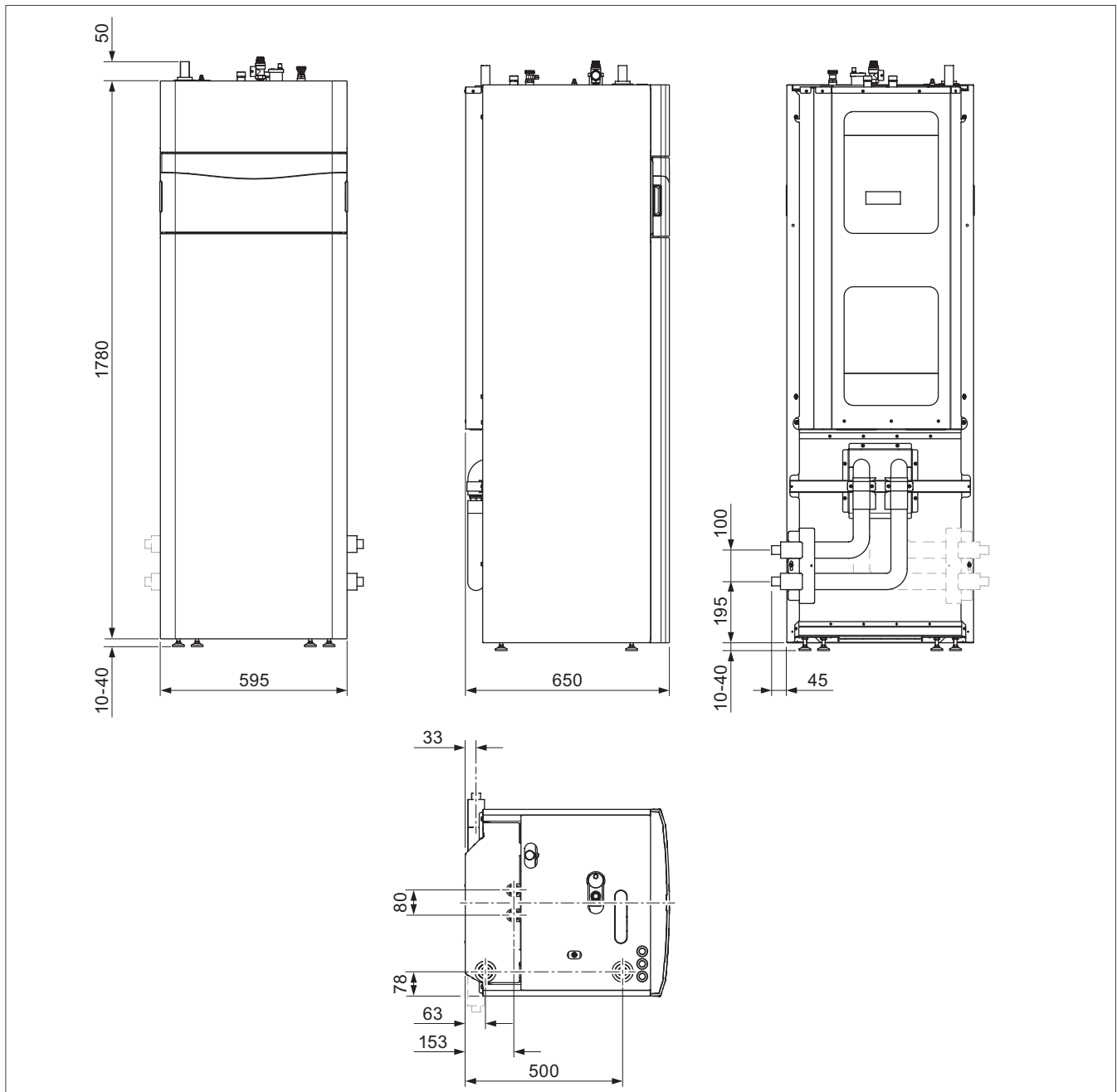


Fig. 299: Dimensions

Update 10
New minimum sizes for the installation room added

8.6 Requirements for the installation site

8.6.1 Minimum sizes for the installation rooms

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Minimum size for the installation room (m ³)
VWF 52/4	R 410a	1.50	3.4
VWF 82/4	R 410a	2.40	5.5
VWF 112/4	R 410a	2.50	5.7

8.7 aroCOLLECT VWL 11/4 SA air/brine collector

Order no. 0010016715

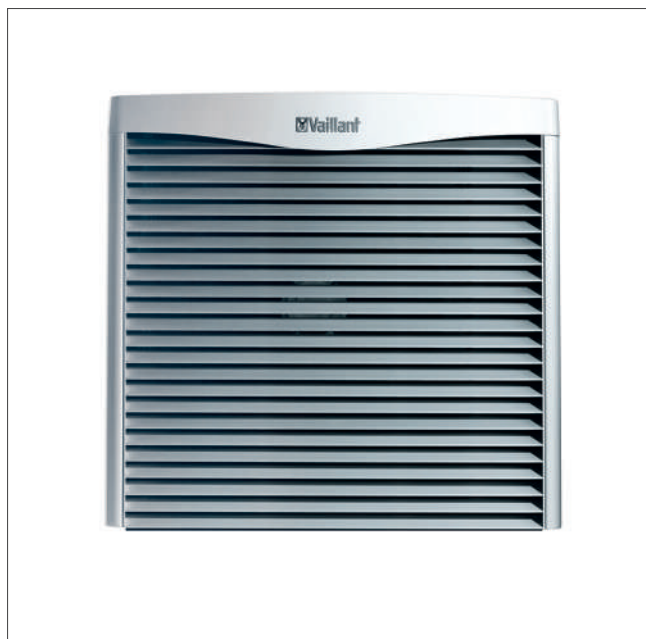


Fig. 300: aroCOLLECT air/brine collector

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

The air/brine collector is used to exchange heat between the brine circuit and the outdoor air.

Note

The entire purging/filling process should last at least 30 minutes. During this time, the purging valves for the air/brine collectors must be opened and closed every five minutes.



We recommend the brine purging support set for the air/brine collector as this makes the purging process significantly easier if it is to be carried out by one person. Observe the aroCOLLECT installation instructions (0020196699).

8.7.1 Technical data

Dimensions

	VWL 11/4 SA
Product dimensions, height with base	1,260 mm
Product dimensions, width	1,200 mm
Product dimensions, depth	785 mm
Weight with packaging	160 kg
Weight without packaging and base	95 kg
Weight without packaging	140 kg
Weight when ready for operation	185 kg

Electrics

	VWL 11/4 SA
Rated voltage	3~/N/PE 400 V / 50 Hz
Fuse type, characteristic B, three-pole switching (disconnection of the three mains connection lines by a switching operation)	10 A
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)
Electrical power consumption, max. total	6.5 kW
Electrical power consumption, de-icer	6.0 kW
Electrical power consumption, fan	0 to 0.25 kW
Electrical power consumption, control process	0.01 kW
Electrical power consumption, optional accessory	0.2 kW
IP rating EN 60529	IP 25

Hydraulics

	VWL 11/4 SA
Flow/return heat source connections	Rp 1 1/4"
Diameter of the condensate discharge	70 mm

Installation site

	VWL 11/4 SA
Installation site	Outside
Permissible environmental temperature at the installation site	-30 to 70 °C
Permissible environmental temperature during operation	-22 to 40 °C

Brine circuit

	VWL 11/4 SA
Brine fluid	Ethylene glycol 44% vol. /56% water
Max. operating pressure	0.3 MPa
Min. inlet temperature, cold brine	-28 °C
Max. inlet temperature, hot brine	60 °C
Brine content of the brine circuit in the air/brine collector	19.8 l
Materials	Cu, CuZn alloy, stainless steel, EPDM
Total length of the connection pipe, cold brine and hot brine	2 x 30 m
Diameter of the connection pipe's cross-section up to a total length of ≤ 10 m	DN 40 (40 x 3.8 mm)
Diameter of the connection pipe's cross-section up to a total length of > 10 and ≤ 30 m	DN 50 (50 x 4.6 mm)
Connection pipe installation depth	0.2 to 1.5 m
Connection pipe material	PE pipe, PE 100 or PE 80

Sound power level

		VWL 11/4 SA
Sound power level A7/W35, A7/W45, A7/W55 in accordance with EN 12102/ EN 14511 L_{WA} in heating mode	VWF 52/4	≤ 42.7 dB(A)
	VWF 82/4	≤ 50.6 dB(A)
	VWF 112/4	≤ 56.0 dB(A)
Sound power A7/W35, A7/W45, A7/W55 in accordance with EN 12102 / EN 14511 L_{WA} maximum sound power level in silent mode for heating mode	VWF 52/4	≤ 39.9 dB(A)
	VWF 82/4	≤ 46.0 dB(A)
	VWF 112/4	≤ 52.4 dB(A)
Increase for tonal noise level in accordance with the third-octave band method with A7/W35, A7/W45, A7/W55 in heating mode and in silent mode for heating mode	VWF 52/4	≤ 0 dB
	VWF 82/4	≤ 0 dB
	VWF 112/4	≤ 0 dB
Sound power level A35/W18 in accordance with EN 12102/EN 14511 L_{WA} in cooling mode	VWF 52/4	≤ 53.5 dB(A)
	VWF 82/4	≤ 60.5 dB(A)
	VWF 112/4	≤ 66.3 dB(A)

8.8 Sound power levels of the flexoCOMPACT with aroCOLLECT

Note

K_T (supplement for the tone incorporation) is taken into account in line with the third-octave band process. K_R is country-specific and was assumed to be 0 in this calculation. This value is only required for day mode.



For the flexoCOMPACT with aroCOLLECT heat pump, planning should take account of the following sound power levels (heating mode).

VWF 5x/4 and VWL 11/4 SA evaluation level

VWF 5x/4 and VWL 11/4 SA				Distance from heat source in m										K_R
	Sound power level in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	43	0	3	35.0	29.0	25.5	23.0	21.0	19.4	16.9	15.0	13.4	11.5	0
			6	38.0	32.0	28.5	26.0	24.0	22.4	19.9	18.0	16.4	14.5	
			9	41.0	35.0	31.5	29.0	27.0	25.4	22.9	21.0	19.4	17.5	
Set-back	40	0	3	32.0	26.0	22.5	20.0	18.0	16.4	13.9	12.0	10.4	8.5	-
			6	35.0	29.0	25.5	23.0	21.0	19.4	16.9	15.0	13.4	11.5	
			9	38.0	32.0	28.5	26.0	24.0	22.4	19.9	18.0	16.4	14.5	

VWF 8x/4 and VWL 11/4 SA evaluation level

VWF 8x/4 and VWL 11/4 SA				Distance from heat source in m										K_R
	Sound power in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	51	0	3	43.0	37.0	33.5	31.0	29.0	27.4	24.9	23.0	21.4	19.5	0
			6	46.0	40.0	36.5	34.0	32.0	30.4	27.9	26.0	24.4	22.5	
			9	49.0	43.0	39.5	37.0	35.0	33.4	30.9	29.0	27.4	25.5	
Set-back	46	0	3	38.0	32.0	28.5	26.0	24.0	22.4	19.9	18.0	16.4	14.5	-
			6	41.0	35.0	31.5	29.0	27.0	25.4	22.9	21.0	19.4	17.5	
			9	44.0	38.0	34.5	32.0	30.0	28.4	25.9	24.0	22.4	20.5	

VWF 11x/4 and VWL 11/4 SA evaluation level

VWF 11x/4 and VWL 11/4 SA				Distance from heat source in m										K _R
Output in %	Sound power level in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	56	0	3	48.0	42.0	38.5	36.0	34.0	32.4	29.9	28.0	26.4	24.5	0
			6	51.0	45.0	41.5	39.0	37.0	35.4	32.9	31.0	29.4	27.5	
			9	54.0	48.0	44.5	42.0	40.0	38.4	35.9	34.0	32.4	30.5	
Set-back	53	0	3	45.0	39.0	35.5	33.0	31.0	29.4	26.9	25.0	23.4	21.5	-
			6	48.0	42.0	38.5	36.0	34.0	32.4	29.9	28.0	26.4	24.5	
			9	51.0	45.0	41.5	39.0	37.0	35.4	32.9	31.0	29.4	27.5	

8.8.1 aroCOLLECT volume flow diagram

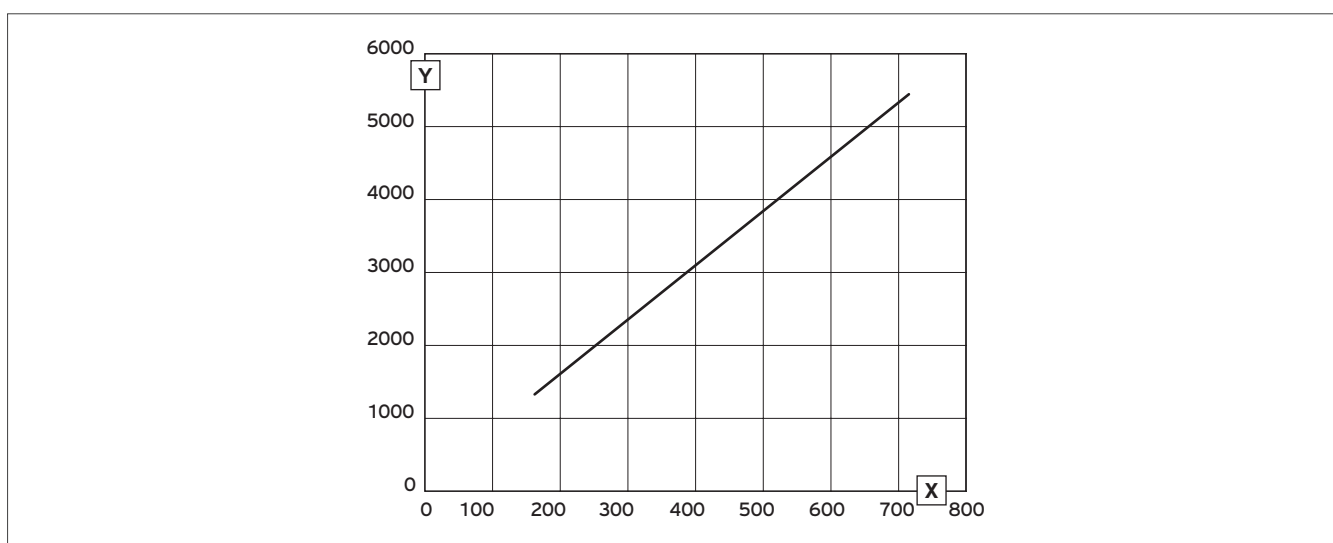


Fig. 301: aroCOLLECT volume flow diagram

- Y Volume flow [m³/h]
- X Rotational speed [rpm]

Fan speed

Fan speed	VWF 52/4 + VWL 11/4 SA	VWF 82/4 + VWL 11/4 SA	VWF 112/4 + VWL 11/4 SA
Maximum	450 rpm	580 rpm	710 rpm
For A7/W35, A7/W45, A7/W55 heating mode	300 rpm	400 rpm	490 rpm
In silent mode for A7/W35, A7/W45, A7/W55 heating mode	270 rpm	350 rpm	430 rpm

8.8.2 Dimensions

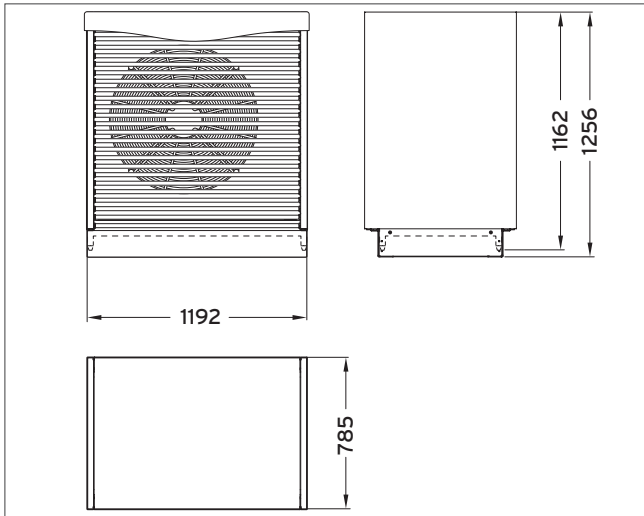


Fig. 302: Dimensions

8.8.3 Minimum clearances

Clearances that must be complied with for an air/brine collector

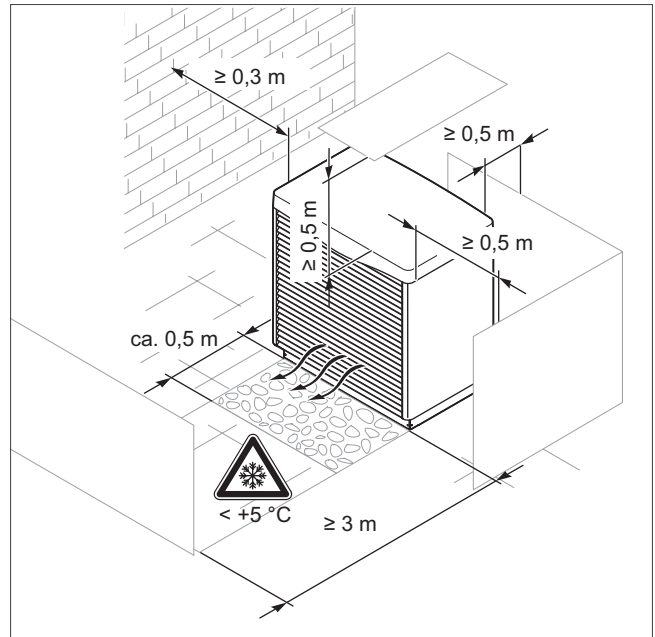


Fig. 303: Minimum clearances for one air/brine collector

Clearances that must be complied with for two air/brine collectors

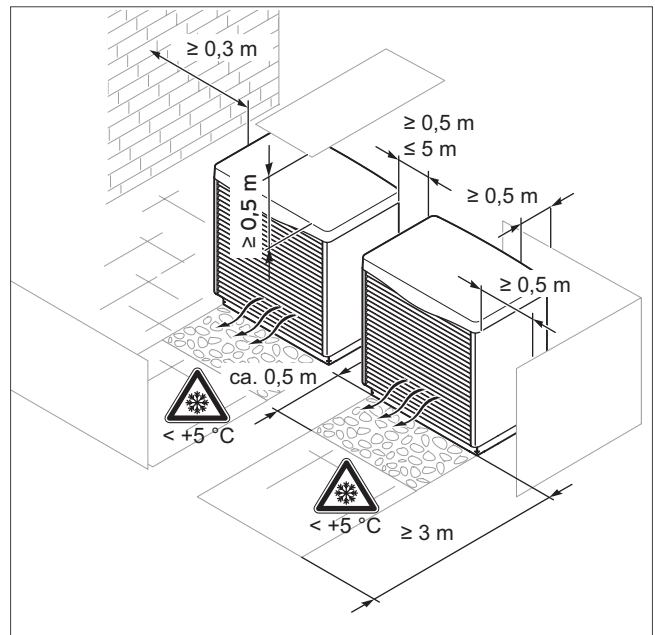


Fig. 304: Minimum clearances for two air/brine collectors

Positioning of the collectors

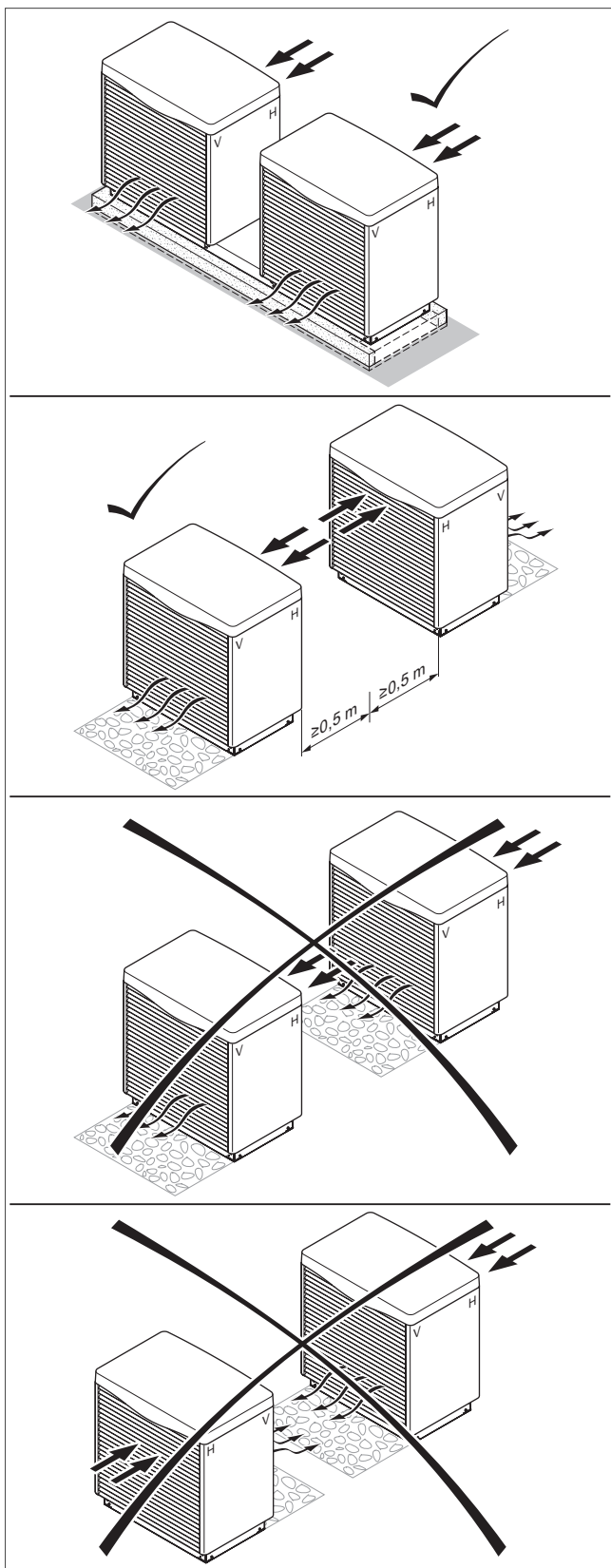


Fig. 305: Positioning

- » Use the mounting base, which is available as an accessory, for the installation.
- » To guarantee sufficient air flow and to facilitate maintenance work, observe the minimum clearances that are specified above.
- » Ensure that there is sufficient room to install the hydraulic lines.
- » If the product is to be installed in areas where heavy snow falls, ensure that the snow does not accumulate around the product and that the minimum clearances specified above are observed. If you cannot ensure this, install an additional heat generator in the heating circuit. A raised base and condensate tray heater are available as accessories.
- » If you install two air/brine collectors, you must create a concrete foundation and use the connection pipe set that is available as an accessory.

8.8.4 Installing the aroCOLLECT or aroTHERM outdoor unit outdoors

A number of requirements arise from the outside installation of the outdoor unit which need to be taken into account in the planning of the installation site.

Note

The minimum required clearances must be complied with under all circumstances (see installation instructions/section on planning the heat source).



The outdoor unit requires a sufficiently stable, frost-proof and horizontal foundation that meets local requirements and complies with the rules of structural engineering. We recommend providing an empty pipe for condensate discharge. Appropriate cut-outs must be provided in the foundation for the hot brine and cold brine supply lines, the electrical lines and for the condensate discharge. The unit's blow-off side must not be positioned facing the building.

Do not install the outdoor unit:

- Near a heat source,
- Near flammable materials,
- Near ventilation openings for adjacent buildings,
- Under deciduous trees,
- In dusty or corrosive air (e.g. near unsecured streets),
- Or near exhaust air shafts.

Also note the following points:

- Prevailing winds,
- Noise emissions from the fan and compressor
- The visual impression on the environment.

Avoid places where strong winds blow on the outdoor unit's air outlet.

Do not point the fan in the direction of nearby windows. Install noise protection if necessary.

Note

Install the outdoor unit on steel girders or concrete blocks.

Ensure that water does not accumulate beneath the outdoor unit and that the ground in front of the outdoor unit can absorb water well in order to avoid ice formation.



Note

The condensate volume for each outdoor unit is max. 20 l/h in summer when the air humidity is high.



8.8.5 Creating the foundation

Note

To create the foundation when arranging two units side by side, see the appendix.

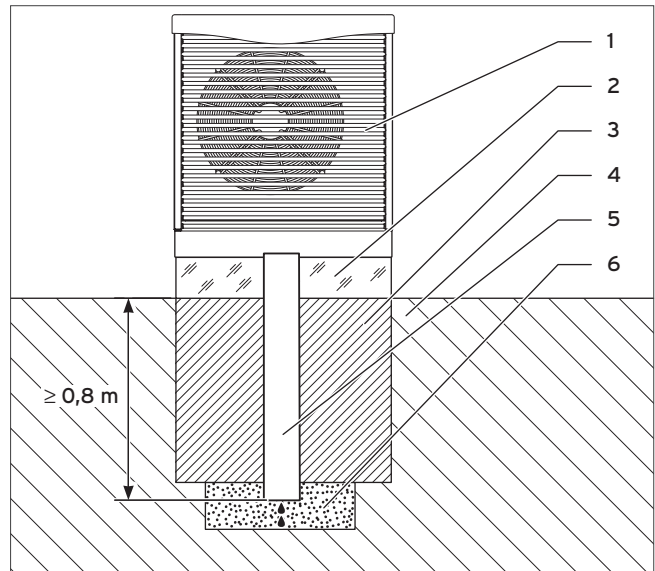


Fig. 306: Foundation: Cross-section

- 1 Air/brine collector
- 2 Foundation
- 3 Compacted gravel
- 4 Ground
- 5 Condensate discharge pipe
- 6 Gravel bed in a frost-free area

1. Prepare the ground for the foundation in accordance with the figure.

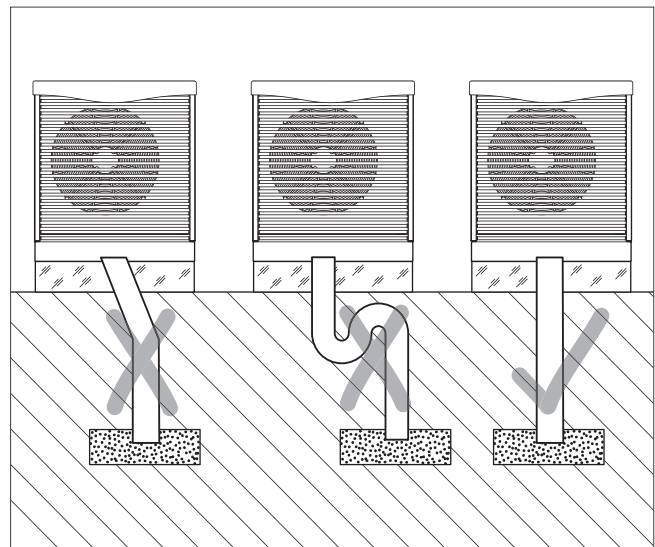


Fig. 307: Routing the condensate discharge pipe

2. As a condensate discharge pipe, route a pipe that drops vertically and that is \geq DN 110. Route this pipe as far as the frost-free ground. To lay the pipe at ground level and so that it comes out of the mounting base at the side, use the accessory that is available for this.

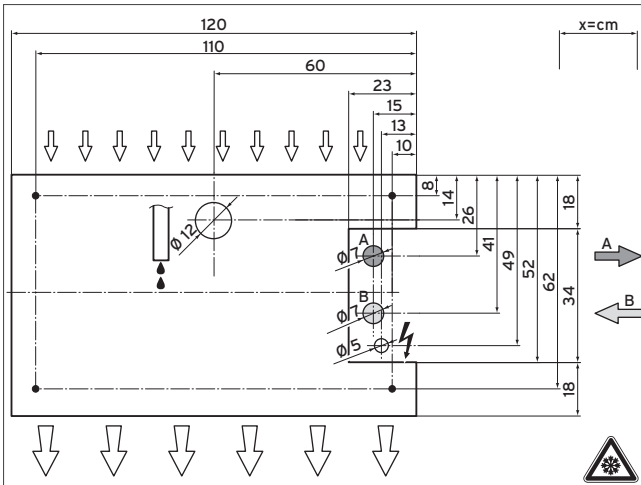


Fig. 308: Foundation: Connection dimensions

- A Connecting the air/brine collector to the heat pump (hot brine)
- B Connecting the heat pump to the air/brine collector (cold brine)

3. Create a frost-free and stable foundation or set the product on paving slabs. When doing so, observe the rules of structural engineering and the instructions that are enclosed with the recommended VWL S installation set for PE pipes.

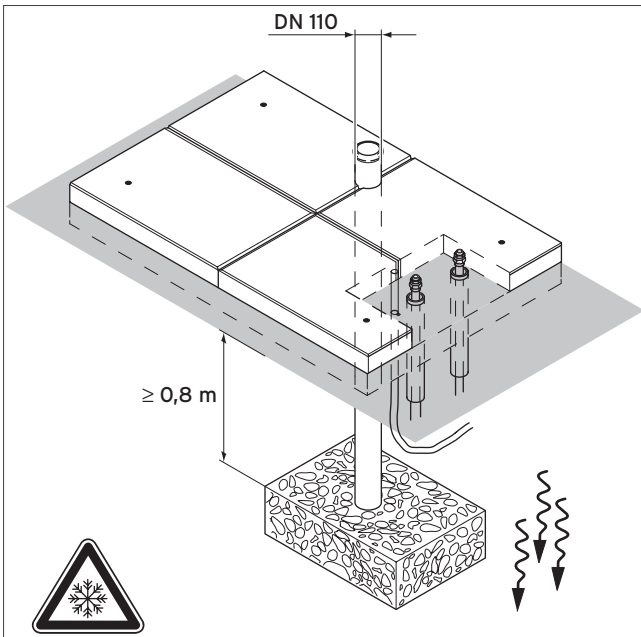


Fig. 309: Connections: Foundation using paving slabs

4. Establish the connections for a foundation made of paving slabs in accordance with the illustration.

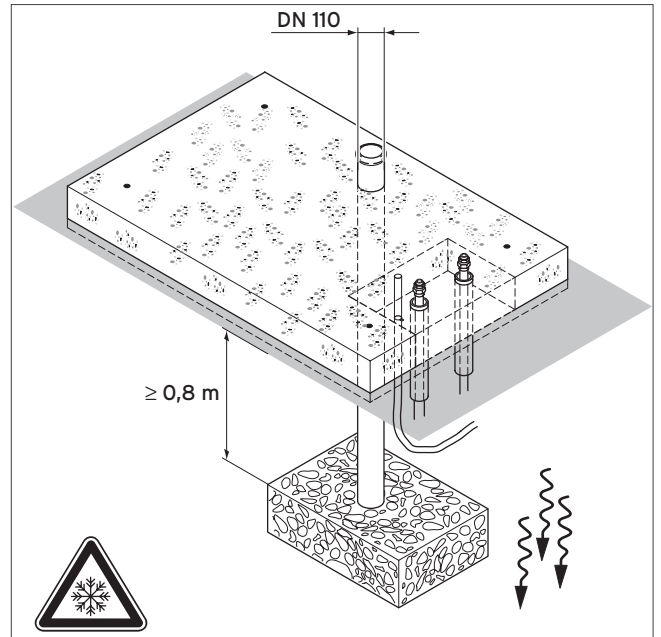


Fig. 310: Connections: Foundation using concrete

5. Establish the connections for a concrete foundation in accordance with the illustration.

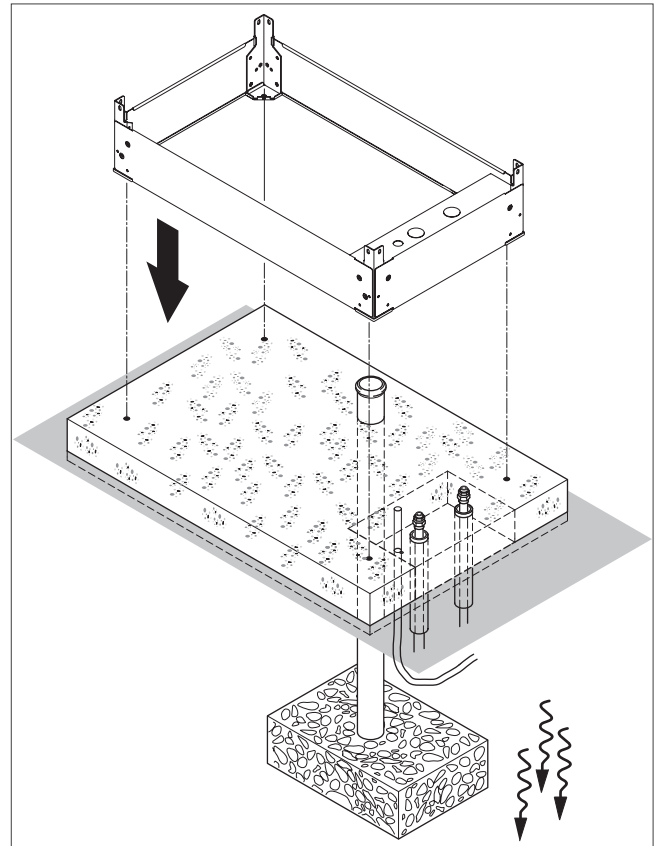


Fig. 311: Installing a base

6. Install the base that is available as an accessory.

8.8.6 Outdoor installation of two aroCOLLECT outdoor units with Tichelmann installation set

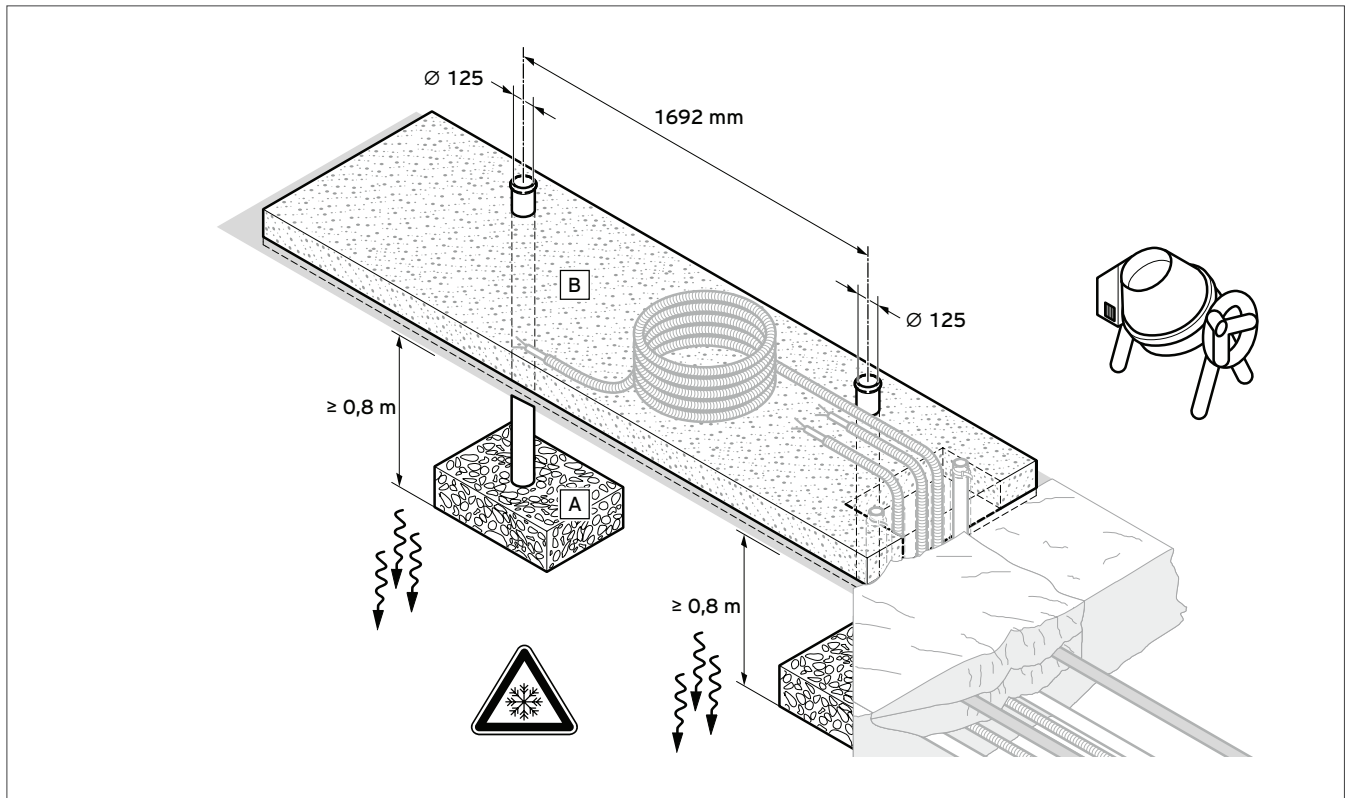


Fig. 312: Foundation plan for two aroCOLLECT outdoor units

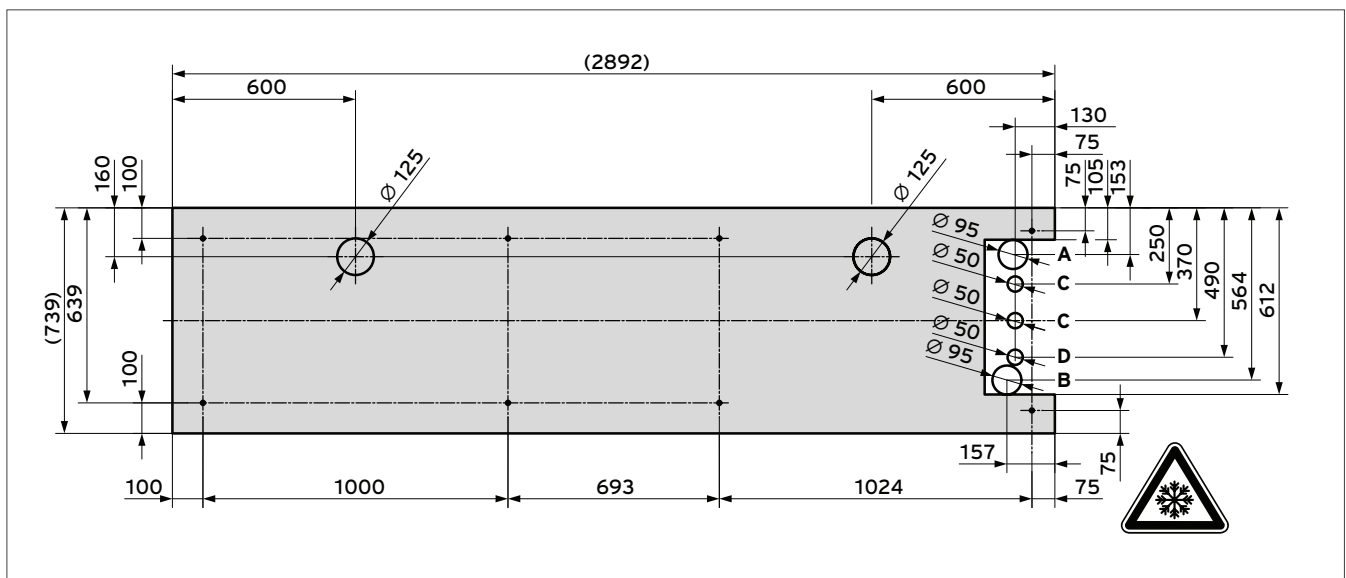


Fig. 313: Foundation of the connection dimensions for two aroCOLLECT outdoor units for the installation set (0020205408) with the Tichelmann system

- A Connecting the air/brine collector to the heat pump (hot brine)
- B Connecting the heat pump to the air/brine collector (cold brine)
- C 400 V electrical connection
- D eBUS

Note
For easier installation, use the Tichelmann installation set (0020205408).



8.8.7 Installing the connection pipes using installation sets

Two installation sets are available for installing the connection pipes.

Depending on the total pipe length that is required, you can choose between DN 40 or DN 50 outer diameters.

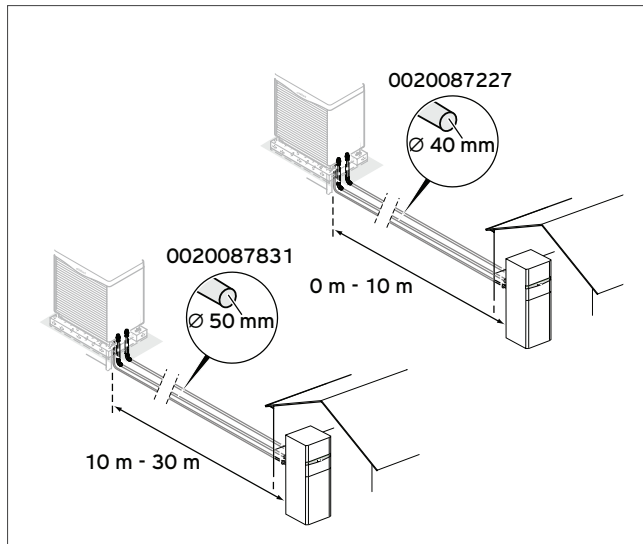


Fig. 314: Selecting the aroCOLLECT installation set

Installation with the DN 40 and DN 50 installation set

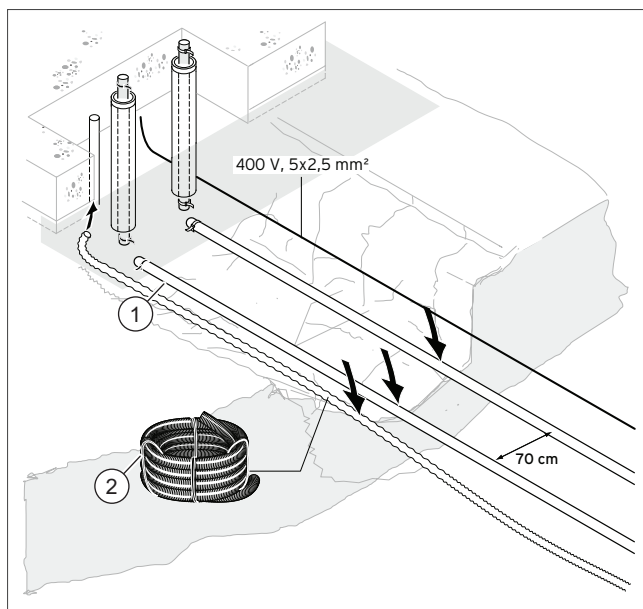


Fig. 315: Installation with the DN 40 and DN 50 installation set

- 1 Brine pipes
- 2 Protective hose for eBUS

8.8.8 Routing the connection pipes



Caution.

Risk of material damage caused by ground lifting up as a result of frozen ground.

At operating temperatures close to freezing level, the ground in the area of the PE pipes may freeze and therefore damage the structure as a result of the ground lifting up.

- > Insulate all of the PE lines that are to be routed under buildings, terraces, pathways, etc. so that they are vapour diffusion-tight.
- > If possible, route polyethylene pipes in the ground with a clearance of 70 cm from each other and from adjacent supply pipes (except for electrical wires).

The total length (connection pipes from the heat pump to the product and from the product to the heat pump) must be no greater than 60 m.

- » Keep the clearance between the product and the heat pump as short as possible and minimise the use of elbows and angles. This is because each additional pressure loss that is caused by the use of these reduces efficiency.
- » Route the PE pipes in accordance with the applicable technical directives.
- » For a total line length of between ≥ 20 m and 60 m, use a PE pipe with DN 50 (e.g. PE 80/100, outer diameter 50 mm, wall thickness 4.6 mm). Up to a total line length of ≤ 20 m, you can also use a PE pipe with DN 40 (e.g. PE 80/100, outer diameter 40 mm, wall thickness 3.7 mm).
- » When using more than eight elbows, the maximum possible total length is reduced by 2 m per each additional elbow.
- » When using copper pipes, use only copper pipes that have a cross-section of ≥ 35 mm. If you use a smaller cross-section (e.g. copper 28 mm), this will result in pressure losses (2 m copper 28 = 8 m copper 35).
- » Keep the height difference between the product and the heat pump as low as possible. The height difference must be no more than 5 m; beyond this, a detailed check of the general parameters is required.

Note

If the prescribed cable cross-sections are not complied with, this results in efficiency losses and reduced annual operating figures.



- » If required, when routing the polyethylene pipes above-ground, ensure that they are protected against UV radiation.

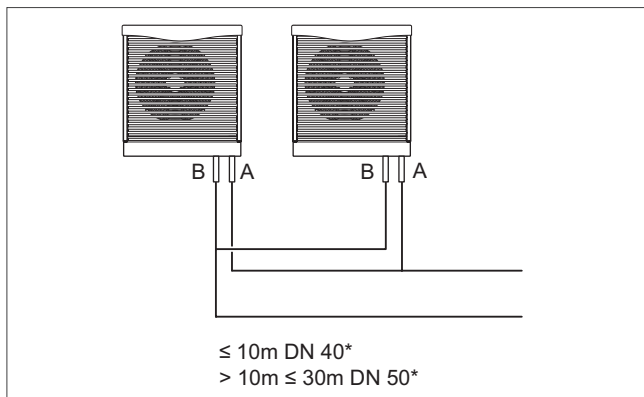


Fig. 316: Installing two air/brine collectors

* = one way

- » Connect the air/brine collector in accordance with the Tichelmann principle. This means that the air/brine collector with the shorter flow has the longest return.



Caution.

Risk of material damage caused by a leak.

When tightening screwed connections, ensure that O-rings are inserted correctly as, otherwise, they may pop out or become jammed, become damaged, or cause leaks.

- > Insert the O-rings properly and untwisted into the union nuts for the air/brine collector's brine connections.

- » Screw the union nuts to the connection adaptors on the „hot brine“ and „cold brine“ brine lines in the brine circuit (cross-reference) on the mounting base.
- » To purge each individual air/brine collector, install two isolator units.

8.8.9 aroCOLLECT flat roof installation

Note

Before installing on a flat roof, garage or car park building, check with the local authority whether this is an approved installation site.



For flat-roof installation of the outdoor unit, frost-free draining of the condensate is required up to approx. 1 m below the soil level using electrical trace heating. To prevent condensate or (in winter) ice formation on the brine pipes, the outdoor brine pipes in this installation must be provided with diffusion-tight, weather-resistant heat insulation with an insulation thickness of approx. 10 mm. Copper (or similar) should be used as the piping material, since PE pipes are not UV-resistant.

Installing elevated bases is not recommend due to increased wind loads.

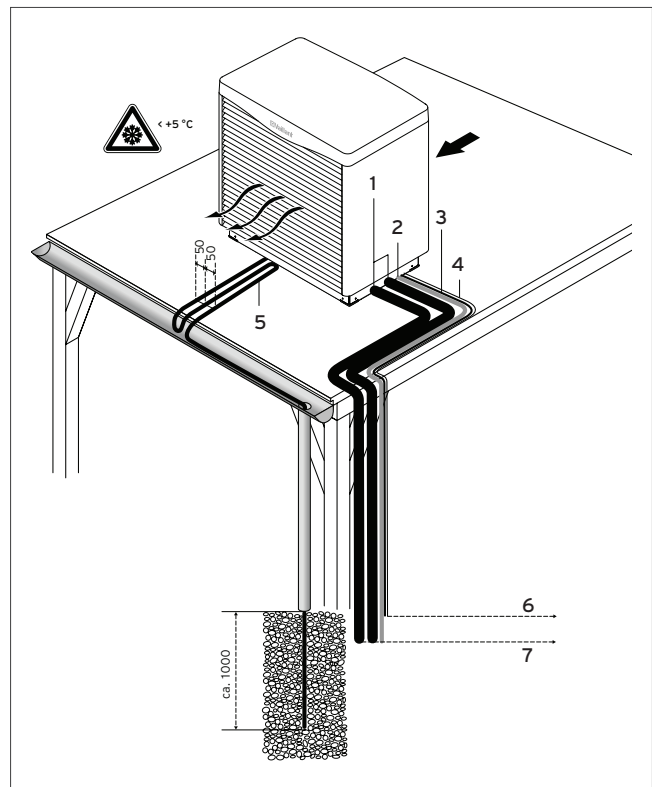


Fig. 317: aroCOLLECT flat roof installation

- 1 Brine pipes with heat insulation from the outdoor unit to the indoor unit
- 2 eBUS
- 3 400 V/50 Hz, 3/N/PE~ outdoor unit power supply
- 4 230 V/50 Hz, 1/N/PE~ heating strip power supply
- 5 Electrical heating strip for condensate discharge
- 6 For power supply
- 7 For the indoor unit

For a ground-level PE pipe connection for the aroCOLLECT outdoor unit, the installation set with order number 0020112803 is required. This comprises:

- 2 x S 28 connection pipe x 1.5 mm G 5/4
- 1 x base panel with cut-outs
- 2 x R 5/4 brass threaded joint

Ensure that everything is sufficiently secured in place and

storm-protected.

For flat roofs with gravel filling, an installation set is available for flat-roof installation (order number 0020087826). This consists of:

- 2 x gravel tray
- 2 x S 28 mm flat-roof connection pipe x 1.5 mm, G 5/4
- 1 x base panel for flat-roof installation
- 1 x heat insulation for connection pipes
- 4 x fitting for securing the gravel tray to the outdoor unit
- 2 x brass threaded joint, R 5/4

The electrical gutter trace heating is controlled via a relay (provided on-site) that is connected to the red terminals of the outdoor unit (max. 200 W). The trace heating is then switched on only below an air intake temperature of +5 °C and only during the thawing procedure. The trace heating can be connected directly to the PCB at an output of up to 200 W. We recommend using a relay.

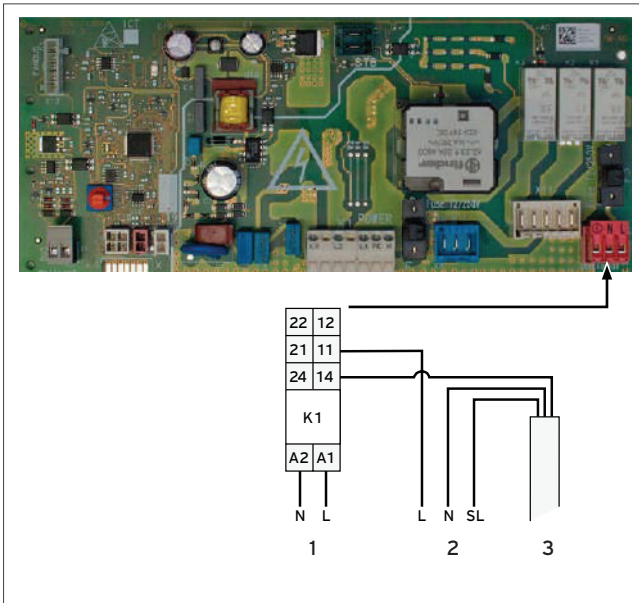


Fig. 318: PCB for the aroCOLLECT outdoor unit

- 1 Electronics box connection in the outdoor unit
- 2 Trace heating mains voltage from the E manifold
- 3 Gutter trace heating strip to protect the building against frost

8.8.10 Frost protection for the condensate tray

Vaillant recommends the VWZ EH heating element.

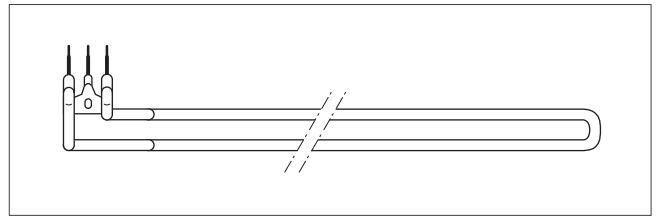


Fig. 319: VWZ EH heating element

Installing elevated bases is not recommend due to increased wind loads.

8.8.11 Installing brine lines in the building

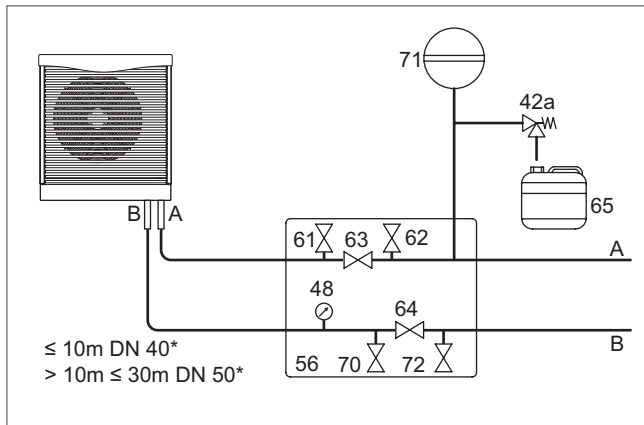


Fig. 320: Fittings in the brine circuit

- 42a Expansion relief valve
- 48 Manometer
- 56 Heat pump brine filling unit (accessory)
- 61 Isolation valve
- 62 Isolation valve
- 63 Isolation valve
- 64 Isolation valve
- 65 Brine collecting vessel
- 70 Isolation valve
- 71 Brine diaphragm expansion vessel
- 72 Isolation valve
- A From the heat source to the heat pump (hot brine)
- B From the heat pump to the heat source (cold brine)
- * One way

1. Install the brine lines between the product and the heat pump within the building and using all of the associated components in accordance with the applicable technical directives.

Note

Do not install dirt filters in the brine circuit for a prolonged period of time. The brine fluid is cleaned during the filling process.



2. Reduce the pre-charge pressure of the brine diaphragm expansion vessel (which is available as an accessory) from 0.25 MPa (2.5 bar) to 0.10 MPa (1.0 bar).
3. Insulate all of the brine lines and the connections for the heat pump and product so that they are vapour diffusion-tight.

Note

Vaillant recommends that you install the Vaillant heat pump brine filling unit. By doing this, it is then possible to carry out a preparatory partial bleed of the brine circuit, e.g. the flow and return of the brine circuit to the product.



8.8.12 Electric connection

A 3/N/PE power supply line is required for the aroCOLLECT outdoor unit and a line with a cross section of at least $2 \times 0.75 \text{ mm}^2$ is required for the eBUS connection.

If two outdoor units are installed, two 3/N/PE lines and two eBUS connections are required.

8.9 Basic hydraulic and wiring diagrams

8.9.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections

Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

8.9.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				regulated	direct		Domestic hot water	Heating	
0020220326	flexoTHERM nordic	VRC 700, VR 70, VR 900	off	-	1 UFH	-	•	-	geoSTOR VIH RW 400 B; auroTHERM
0020220329	flexoTHERM nordic ecoTEC VC	VRC 700, VR 70, VR 91, VR 900	off	1 UFH	1 HC	VWZ MPS 40	-	-	geoSTOR VIH RW 400 B
0020220322	flexoTHERM nordic	VRC 700, VR 70, VR 900	off	1 UFH	1 pool	allSTOR plus	-	-	geoSTOR VIH RW
0020220320	flexoCOMPACT nordic	VRC 700, VR 70	off	-	1 UFH	-	-	-	Integrated domestic hot water cylinder

0020220326 - Basic hydraulic diagram

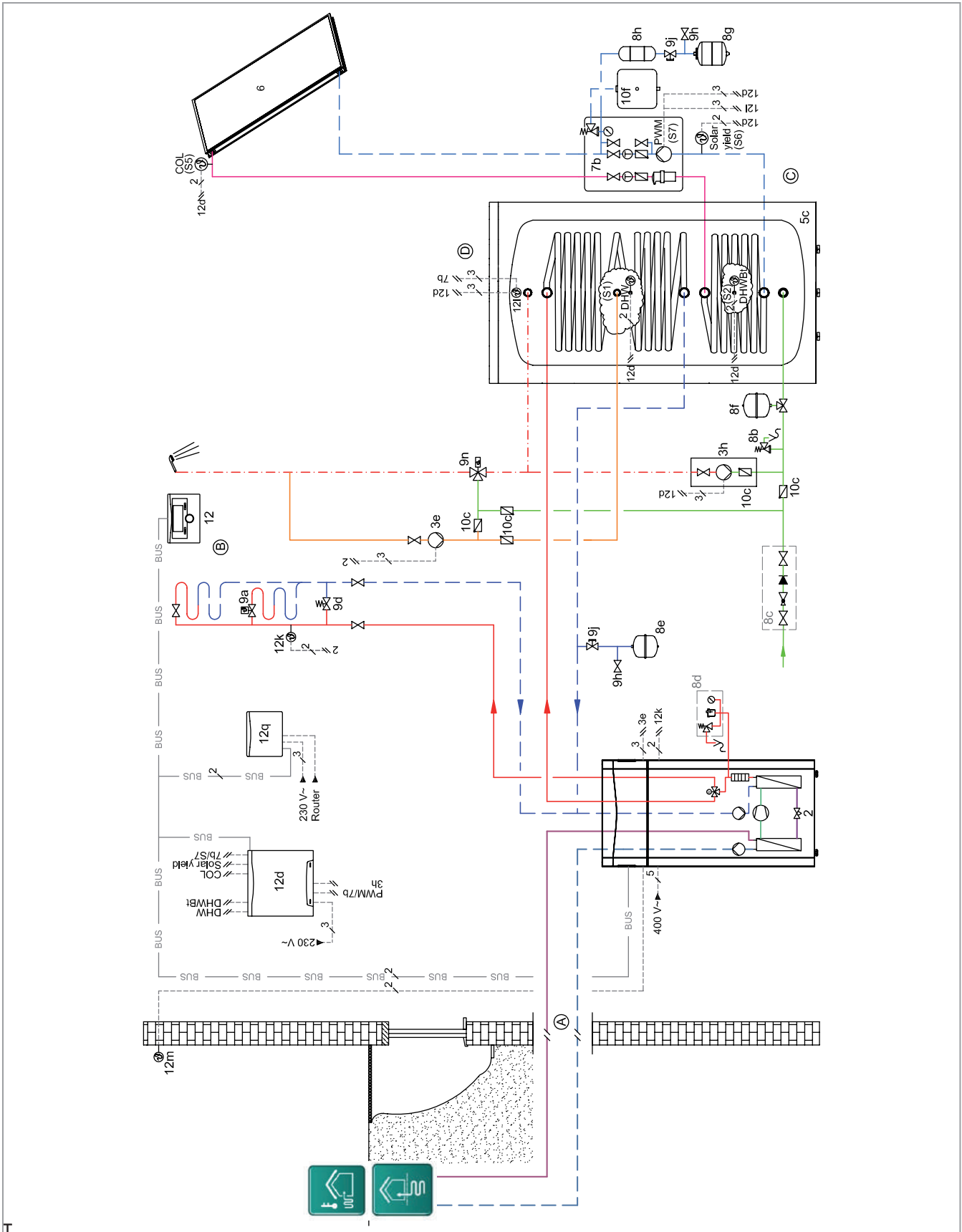


Fig 321: Basic hydraulic diagram

0020220326 - Wiring diagram

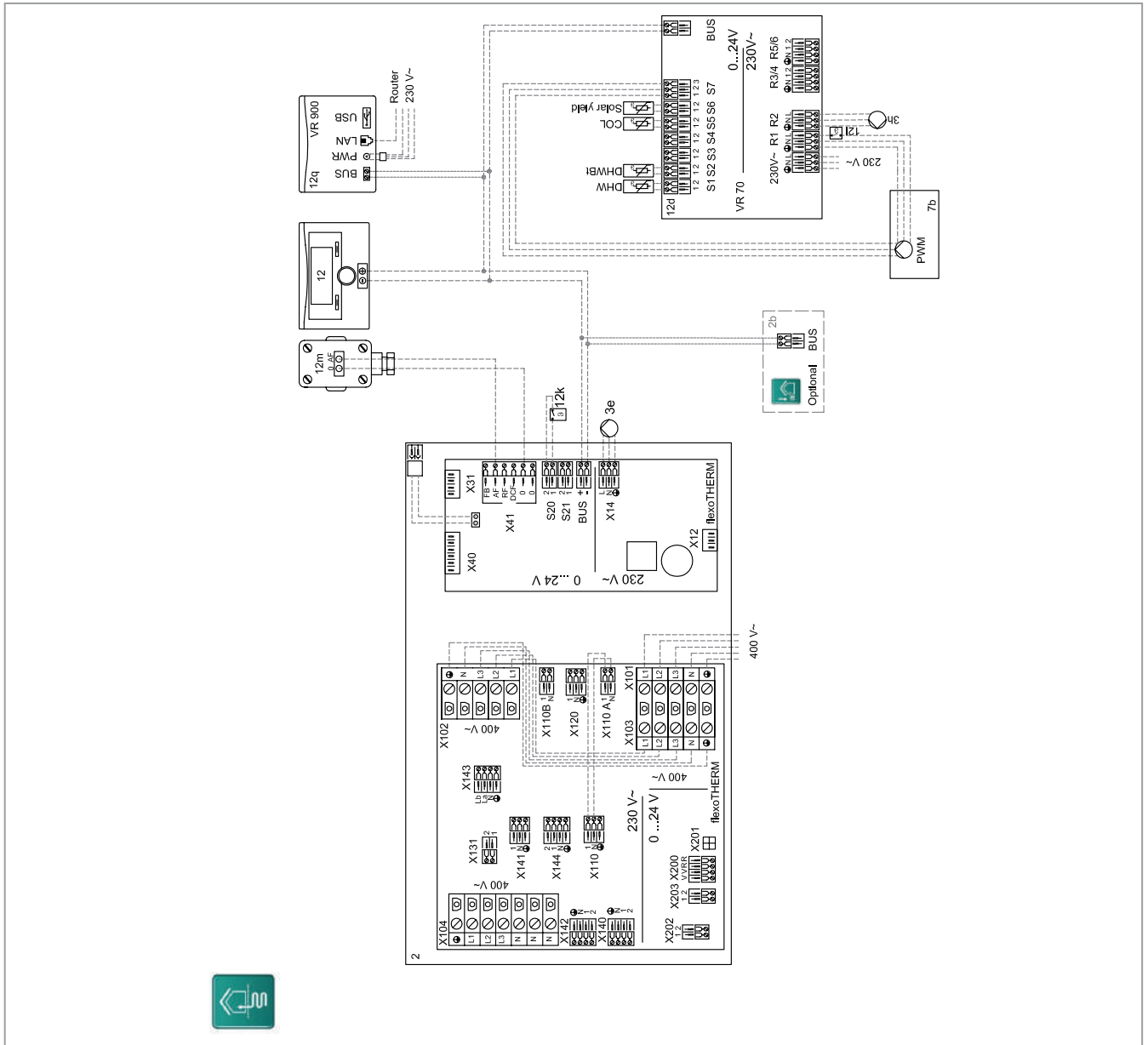


Fig 322: Wiring diagram

Description

Houses with one pump heating circuit (underfloor heating). The heat pump supports the heating and hot water system. The solar system also supports the domestic hot water system. The bivalent domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Caution:

- A: Heat source options 0020178458 no. 1, 2, 3.
- B: At least 35% of the flow through the reference room without an individual room control valve.
- C: The heating output of the heat pump must be designed with the heat exchanger surface in the DHW cylinder. D: To avoid cylinder temperatures above 100 °C, install the sensor for the overheating protection thermostat in an appropriate position.

Individual components

- flexoTHERM VWF 5 - 19 kW
- geoSTOR VIH RW 400 B
- VMS 70
- auroTHERM
- VRC 700
- VR 70
- VR 900

Setting

- VR 700 system diagram setting: 8
- VR 70 module setting: 6

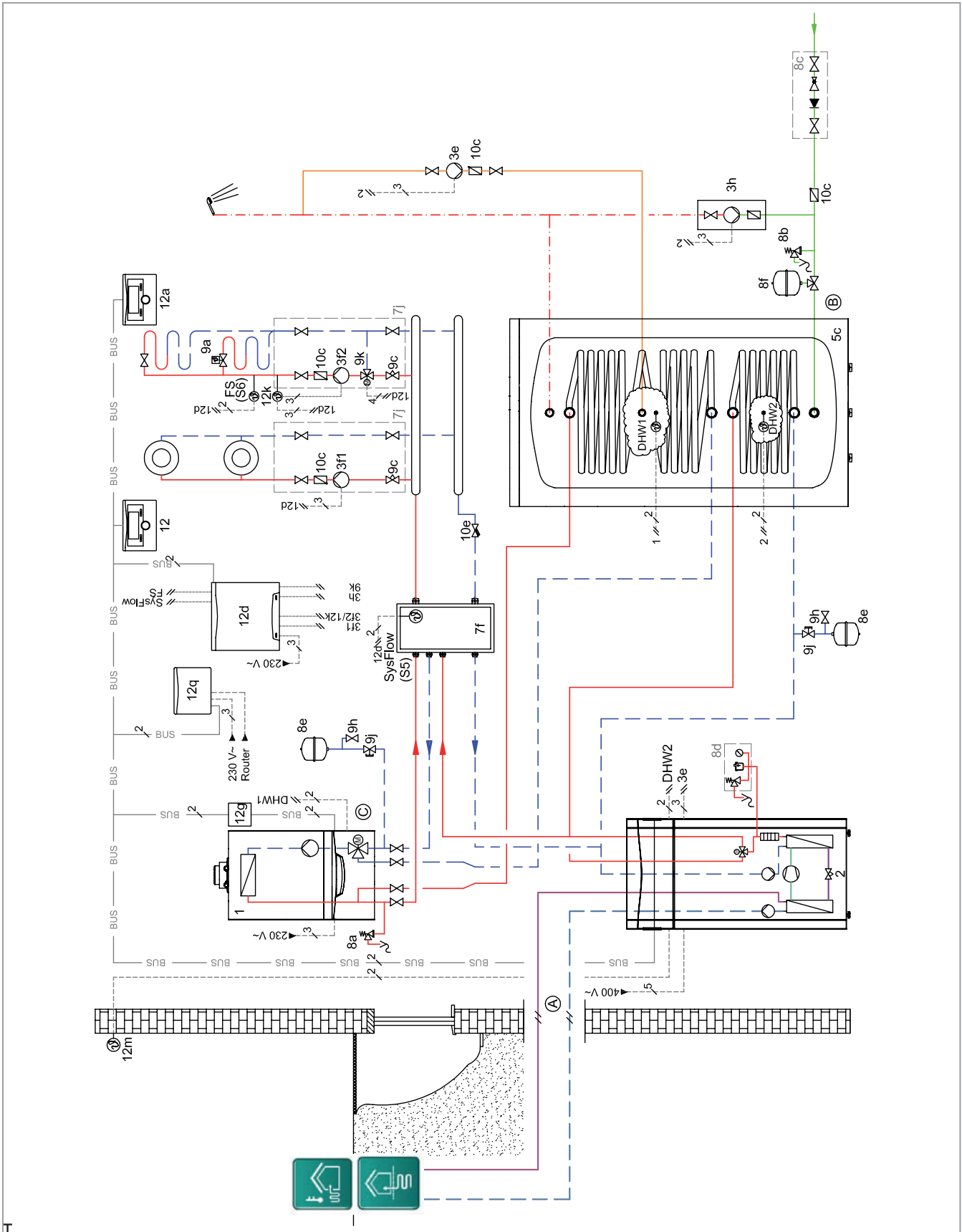


Fig 323: Basic hydraulic diagram

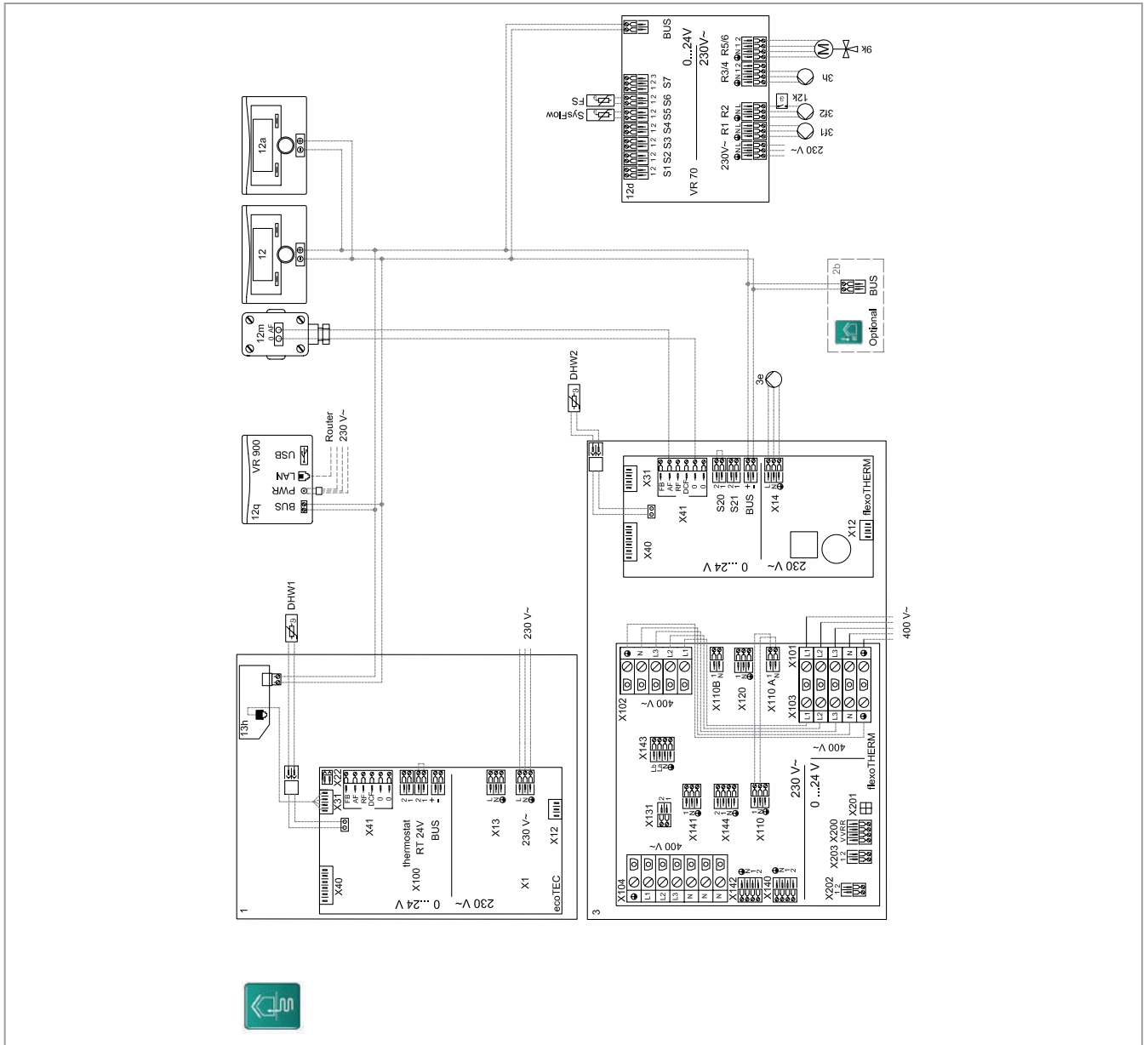


Fig 324: Wiring diagram

Description

Houses or apartment buildings with two heating circuits - one mixed heating circuit and one non-mixed heating circuit. The heat generator supports the heating and domestic hot water systems. The bivalent domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Caution: A: Heat source options 0020178458 no. 1, 2, 3.
 B: The heating output of the heat pump must be designed with the heat exchanger surface in the DHW cylinder.

C: If an expansion vessel is not integrated into the heat generator, plans must be made for an additional expansion vessel in the hot-water charging circuit for the floor-standing boiler.

Individual components

- flexoTHERM VWF 5 - 19 kW
- ecoTEC
- VWZ MPS 40
- g6oSTOR VIH RW 400 B
- VRC 700
- VR 70
- VR 91
- VR 900

Setting

- VR 700 system diagram setting: 12
- VR 70 module setting: 1

0020220322 - Basic hydraulic diagram

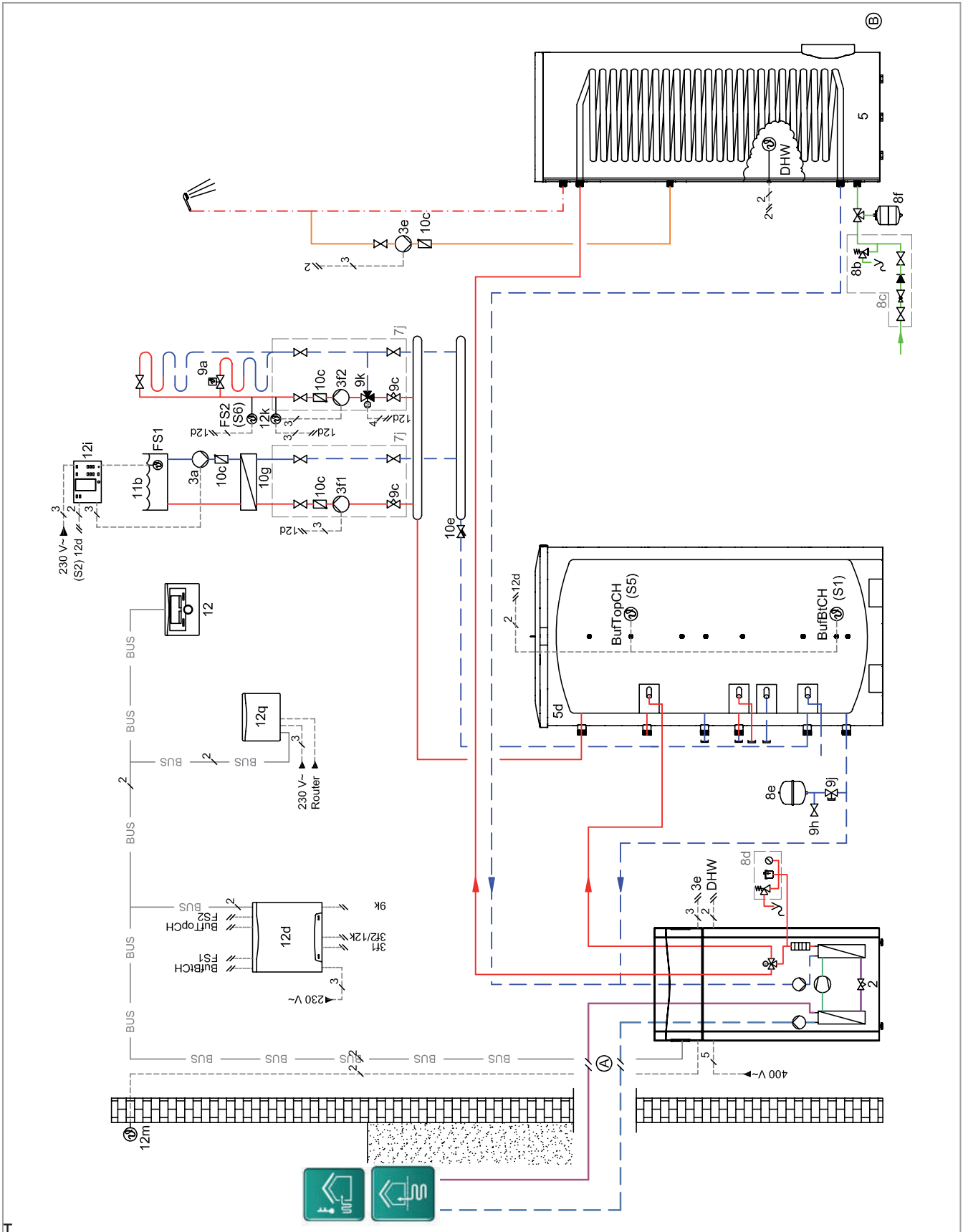


Fig 325: Basic hydraulic diagram

0020220322 - Wiring diagram

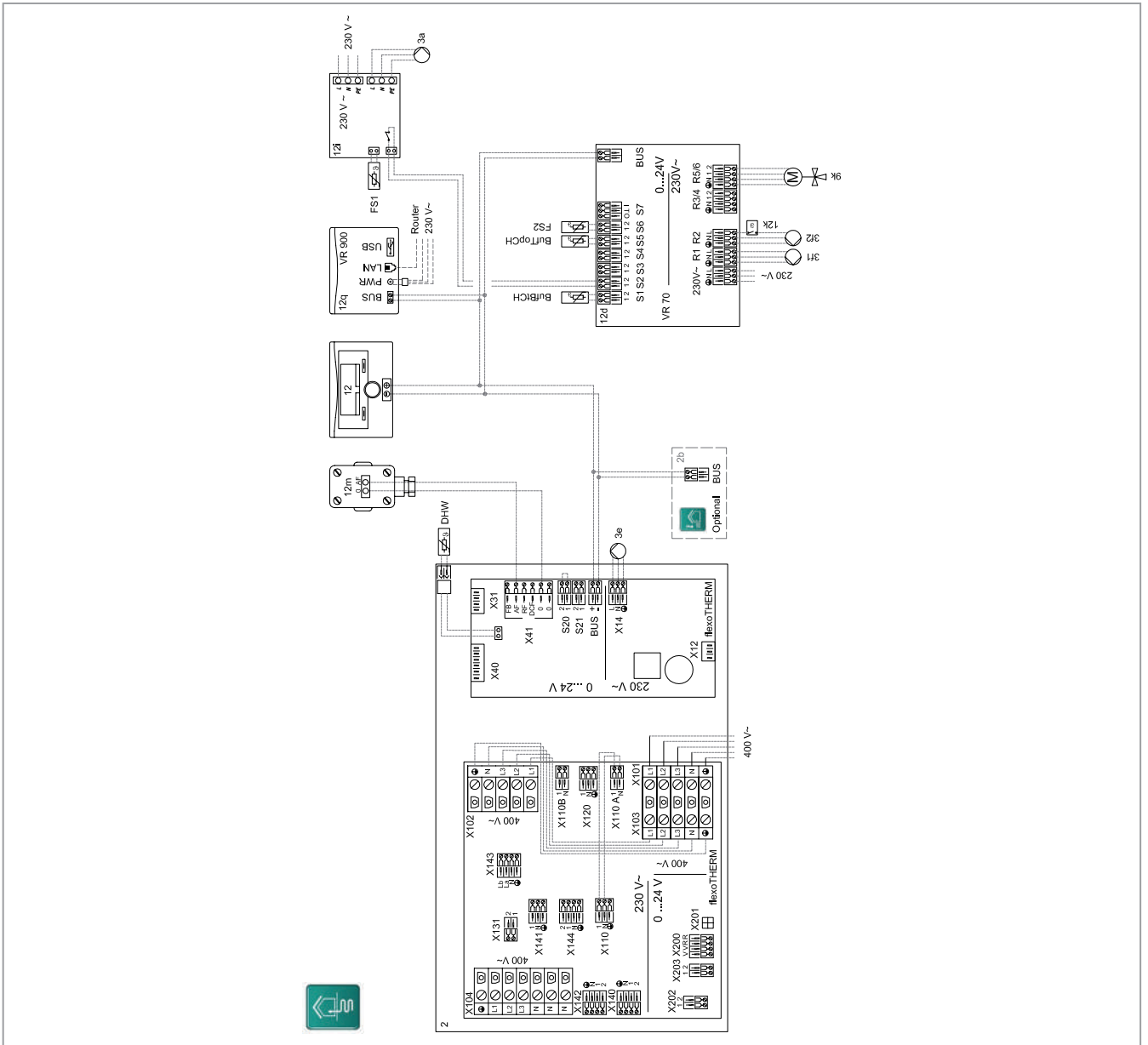


Fig 326: Wiring diagram

Description

Houses or apartment buildings with one mixed heating circuit. The heat generator supports the heating and domestic hot water systems. The domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Heat source options 0020178458 no. 1, 2, 3.

Caution: The heating output of the heat pump must be designed with the heat exchanger surface in the DHW cylinder.

Individual components

- flexoTHERM VWF 5 - 19 kW
- geoSTOR VIH RW
- allISTOR plus
- VRC 700
- VR 70
- VR 900

Setting

VRC 700 system diagram setting: 8

VC 70 module setting: 1

0020220320 - Basic hydraulic diagram

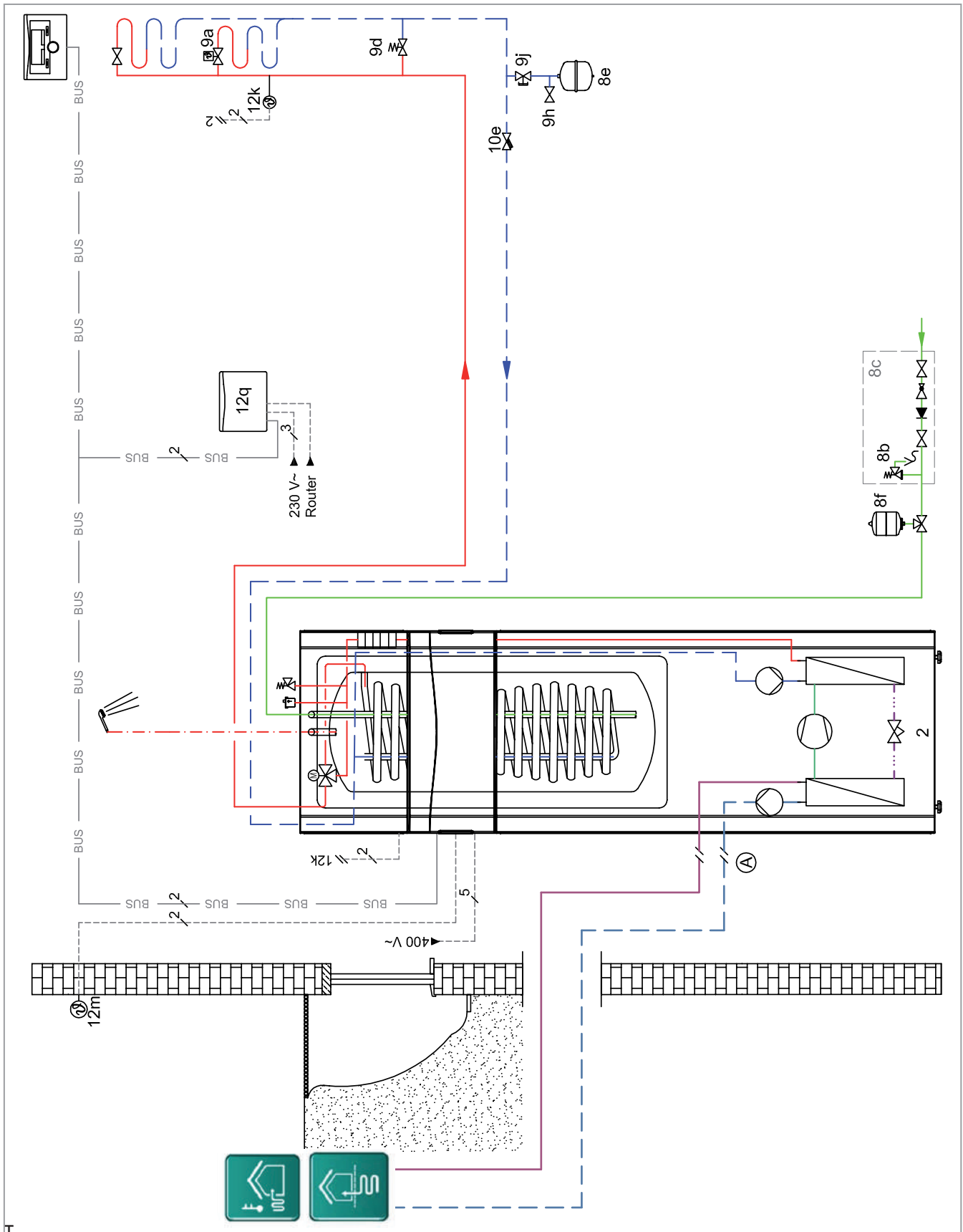


Fig 327: Basic hydraulic diagram

0020220320 - Wiring diagram

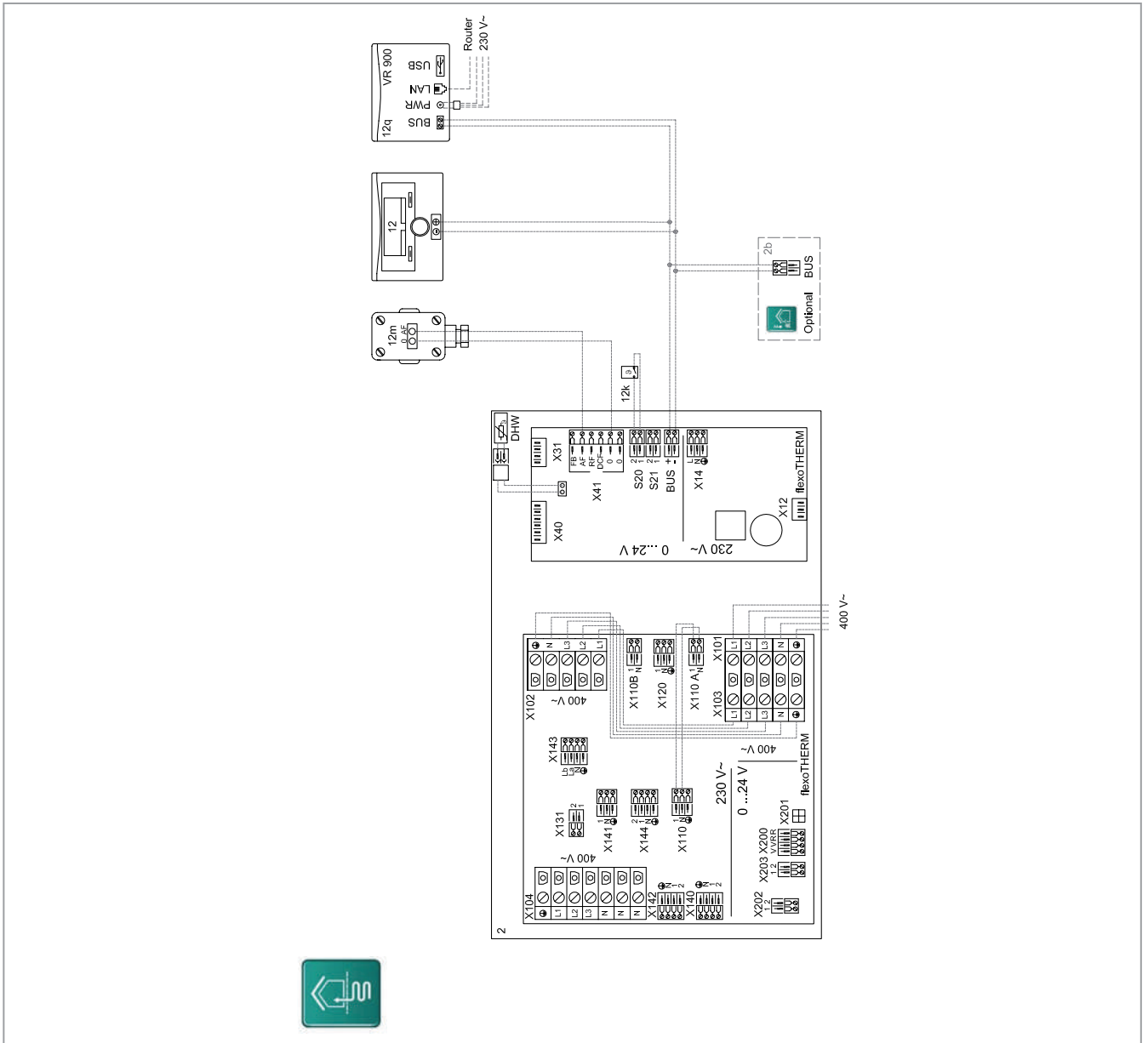


Fig 328: Wiring diagram

Description

Houses with one mixed heating circuit (underfloor heating). The domestic hot water cylinder is integrated into the unit.

Caution: A: Heat source options 0020178458 no. 1, 2, 3.

B: At least 35% of the flow through the reference room without an individual room control valve.

Individual components

- flexoCOMPACT VWF 5 - 11 kW
- VRC 700
- VR 900

Setting

VRC 700 system diagram setting: 8



9. Product information for the aroTHERM plus ..5/6

9.1 Product combinations

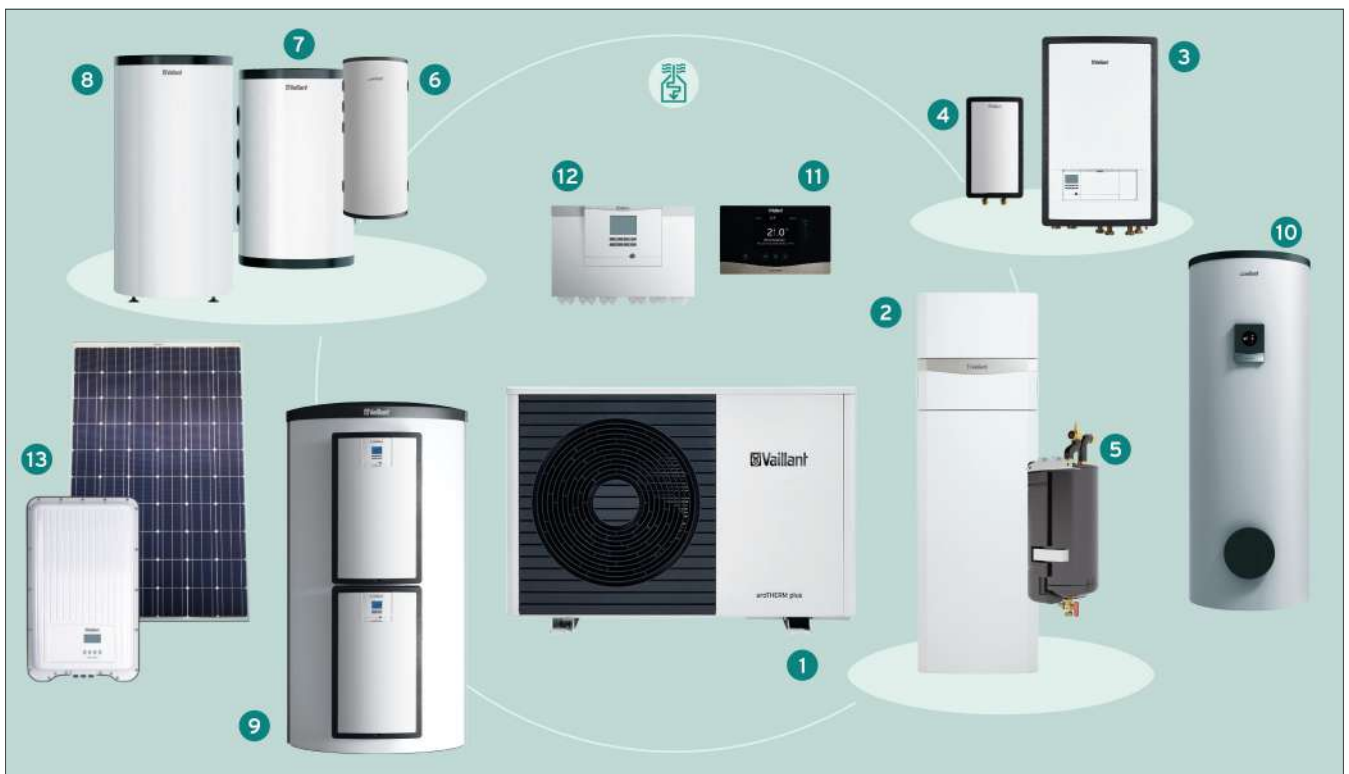


Fig 329: Product combinations

Product combination overview for the aroTHERM plus ..5/6

	Heat pump	Decoupler modules		Buffer cylinder Heating and cooling	Buffer cylinder Heating	Domestic hot water cylinder	Control	Photovoltaics
	aroTHERM plus VWL ..5/6 (1)	uniTOWER plus VIH QW 190/6 E (2)	VWZ MEH 97/6 (3) VWZ MEH 60 (4)	Buffer cylinder 18 l integrated buffer cylinder (5) / VP RW 45/2 B (6) / VPS R 100/1 M (7) / VPS R 200/1 B (8)	allSTOR plus/ allSTOR exclusive (9)	uniSTOR (10)	VRC 720 (11) VWZ AI (12)	PV modules and inverters (13)
Heating only	•	–	•	•	○	–	•	Optional
Heating and compact domestic hot water generation	•	•	–	•	○	–	•	○
Heating and domestic hot water generation	•	–	•	•	○	•	•	○
Heating, domestic hot water generation and cooling	•	–	•	•	–	•	•	○
Heat pump cascade (heating)	•	–	•	–	•	–	•	○

• Recommended / ○ Recommended under certain circumstances / – Not recommended

9.2 System structure aroTHERM plus ..5/6

The aroTHERM plus can be used as an independent heat generator to heat buildings.

The following products are combined to form one system for this:

An aroTHERM plus as an outdoor unit, a decoupler module, a buffer cylinder and a control.

There are two versions of the decoupler module:

- The compact version and
- the version with individual modules.

The **VWZ MEH 97/6** compact version consists of an immersion heater, a diverter valve for the domestic hot water generation and the heat pump control interface module (VWZ AI).

Alternatively, individual modules can be used:

A **VWZ MEH 60** immersion heater, a diverter valve for the domestic hot water generation (not required in the „heating only“ application) and the heat pump control interface module (VWZ AI).

The system can also be protected against frost damage using the **VWZ MWT 150** heat exchanger module.

The aroTHERM plus can be used as a heat generator to heat buildings and for domestic hot water generation.

The following products are combined to form one system for this:

An aroTHERM plus as an outdoor unit, a hydraulic tower, a control and, if required, a buffer cylinder.

The **uniTOWER plus VIH QW 190/6** hydraulic tower consists of the VWZ MEH 97/6 decoupler module and a domestic hot water cylinder. Furthermore, a suitable 18 l integrated buffer cylinder can be integrated, resulting in a **compact system**.

The system can also be protected against frost damage using an intermediate heat exchanger, which is integrated into the uniTOWER plus.

The aroTHERM plus can be used as a heat generator to heat buildings and for domestic hot water generation.

The following products are combined to form one system for this:

An aroTHERM plus as an outdoor unit, a decoupler module, a domestic hot water cylinder, a control and, if required, a buffer cylinder.

There are two versions of the decoupler module:

- The compact version and
- the version with individual modules.

The **VWZ MEH 97/6** compact version consists of an immersion heater, a diverter valve for the domestic hot water generation and the heat pump control interface module (VWZ AI).

Alternatively, individual modules can be used:

A **VWZ MEH 60** immersion heater, a diverter valve for the domestic hot water generation and the heat pump control interface module (VWZ AI).

The system can also be protected against frost damage using the **VWZ MWT 150** heat exchanger module.

All previously described systems can be combined with a suitable buffer cylinder (suitable for heating and cooling). Furthermore, the VRC 720 system control must be used to enable the cooling function for the individual heating/cooling circuits.

As described in the first system, up to seven aroTHERM plus outdoor units can be interconnected.

In doing so, ensure that you select a suitable buffer cylinder with sufficient buffer content.

Instead of the decoupler module, a gas-fired condensing boiler can also be used as a back-up boiler.

With a cascade solution, ensure that all of the hydraulic components fit together and are correctly dimensioned.

9.3 Product description for the aroTHERM plus ..5/6



Fig 330: aroTHERM plus ..5/6

9.3.1 Potential applications

The **aroTHERM plus** heat pump is a compact and space-saving air-to-water monoblock-type heat pump for installation outside the building.

It is especially suited to being used in heating installations with low flow temperatures (ideally 30 °C to 35 °C), e.g. under-floor heating systems. However, flow temperatures up to 75 °C can also be achieved thanks to the natural refrigerant without an immersion heater. This makes operation with radiators possible and improves the domestic hot water comfort.

The heat pump can be used equally well in new-build and renovated properties (as defined by the German energy conservation ordinance - EnEV). A heat pump can be retrofitted in existing heating installations with a Vaillant gas-fired wall-hung boiler with eBUS interface or other heat generators.

The **aroTHERM plus** heat pump only uses the outdoor air as its heat source and can also provide an active cooling function in the summer.

In order to use the active cooling function, the heating system must be prepared on-site.

9.3.2 Special features

- Heat pump with natural R290 refrigerant
- Flow temperatures up to 75 °C possible without an immersion heater
- Improved domestic hot water comfort
- Floor, wall or flat-roof installation possible
- Noise reduction functions possible in three levels
- SG or PV Ready
- Integrated automatic air vent
- Compressor with inverter technology (speed-controlled)
- Bivalent alternative or parallel operation possible
- triVAL control in combination with VRC 720 (cost-optimised operation based on energy prices entered)
- Increased living comfort in the summer thanks to integrated active cooling function
- Noise-optimised air outlet grille
- Evaporator with protective coating for installing in the immediate vicinity of the coastline

9.3.3 Product equipment

- High-efficiency pumps
- Integrated green energy utilisation indicator
- Electronic expansion valve
- Noise reduction function
- 4-port diverter valve

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Domestic hot water generation energy efficiency class	Order no.
VWL 35/6 A 230 V	A++ / A+ (A+++ to D)	–	–
VWL 35/6 A 230 V with uniTOWER	A++ / A+ (A+++ to D)	A (A+ to F)	–
VWL 55/6 A 230 V	A+++ / A++ (A+++ to D)	–	–
VWL 55/6 A 230 V with uniTOWER	A++ / A+ (A+++ to D)	A (A+ to F)	–
VWL 65/6 A 230 V	A+++ / A++ (A+++ to D)	–	–
VWL 65/6 A 230 V with uniTOWER	A+++ / A+ (A+++ to D)	A (A+ to F)	–
VWL 75/6 A 230 V	A+++ / A++ (A+++ to D)	–	–
VWL 75/6 A 230 V with uniTOWER	A+++ / A++ (A+++ to D)	A (A+ to F)	–
VWL 105/6 A 230 V	A+++ / A++ (A+++ to D)	–	–
VWL 105/6 A 230 V with uniTOWER	A+++ / A++ (A+++ to D)	A (A+ to F)	–
VWL 105/6 A 400 V	A+++ / A++ (A+++ to D)	–	–
VWL 105/6 A 400 V with uniTOWER	A+++ / A++ (A+++ to D)	A (A+ to F)	–
VWL 125/6 A 230 V	A+++ / A++ (A+++ to D)	–	–
VWL 125/6 A 230 V with uniTOWER	A+++ / A++ (A+++ to D)	A (A+ to F)	–
VWL 125/6 A 400 V	A+++ / A++ (A+++ to D)	–	–
VWL 125/6 A 400 V with uniTOWER	A+++ / A++ (A+++ to D)	A (A+ to F)	–

9.4 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.

The performance data also covers noise reduction mode.

The data in accordance with EN 14825 is determined using a special test method. You can find information about this from the manufacturer of the product by stating „EN 14825 test method“.



Technical data - General

	VWL 35/6 A 230V S2	VWL 55/6 A 230V S2	VWL 65/6 A 230V S2	VWL 75/6 A 230V S2
Width	1,100 mm	1,100 mm	1,100 mm	1,100 mm
Height	765 mm	765 mm	965 mm	965 mm
Depth	450 mm	450 mm	450 mm	450 mm
Weight, with packaging	132 kg	132 kg	150 kg	150 kg
Weight, ready for operation	114 kg	114 kg	128 kg	128 kg
Weight, ready for operation, left-/right-hand side	38 kg/76 kg	38 kg/76 kg	43 kg/85 kg	43 kg/85 kg
Connection, heating circuit	G 1 1/4 "	G 1 1/4 "	G 1 1/4 "	G 1 1/4 "
Rated voltage	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE
Rated power, maximum	3.40 kW	3.40 kW	3.50 kW	3.50 kW
Rated power factor	1.0	1.0	1.0	1.0
Rated current, maximum	14.3 A	14.3 A	15.0 A	15.0 A
In-rush current	14.3 A	14.3 A	15.0 A	15.0 A
IP rating	IP 15 B	IP 15 B	IP 15 B	IP 15 B
Overvoltage category	II	II	II	II
Fan, power consumption	40 W	40 W	40 W	40 W
Fan, quantity	1	1	1	1
Fan, rotational speed, maximum	620 rpm	620 rpm	620 rpm	620 rpm
Fan, air flow, maximum	2,300 m ³ /h	2,300 m ³ /h	2,300 m ³ /h	2,300 m ³ /h
Heating pump, power consumption	2 to 50 W	2 to 50 W	2 to 50 W	2 to 50 W

	VWL 105/6 A 230V S2	VWL 105/6 A S2	VWL 125/6 A 230V S2	VWL 125/6 A S2
Width	1,100 mm	1,100 mm	1,100 mm	1,100 mm
Height	1,565 mm	1,565 mm	1,565 mm	1,565 mm
Depth	450 mm	450 mm	450 mm	450 mm
Weight, with packaging	223 kg	239 kg	223 kg	239 kg
Weight, ready for operation	194 kg	210 kg	194 kg	210 kg
Weight, ready for operation, left-/right-hand side	65 kg/129 kg	70 kg/140 kg	65 kg/129 kg	70 kg/140 kg
Connection, heating circuit	G 1 1/4"	G 1 1/4"	G 1 1/4"	G 1 1/4"
Rated voltage	230 V (+10%/-15%), 50 Hz, 1~/N/PE	400 V (+10%/-15%), 50 Hz, 3~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE	400 V (+10%/-15%), 50 Hz, 3~/N/PE
Rated power, maximum	5.40 kW	8.00 kW	5.40 kW	8.00 kW
Rated power factor	1.0	1.0	1.0	1.0
Rated current, maximum	23.3 A	15.0 A	23.3 A	15.0 A
In-rush current	23.3 A	15.0 A	23.3 A	15.0 A
IP rating	IP 15 B	IP 15 B	IP 15 B	IP 15 B
Overvoltage category	II	II	II	II
Fan, power consumption	50 W	50 W	50 W	50 W
Fan, quantity	2	2	2	2
Fan, rotational speed, maximum	680 rpm	680 rpm	680 rpm	680 rpm
Fan, air flow, maximum	5,100 m ³ /h	5,100 m ³ /h	5,100 m ³ /h	5,100 m ³ /h
Heating pump, power consumption	3 to 87 W	3 to 87 W	3 to 87 W	3 to 87 W

Technical data - Heating circuit

	VWL 35/6 A 230V S2	VWL 55/6 A 230V S2	VWL 65/6 A 230V S2	VWL 75/6 A 230V S2
Heating water temperature, minimum/maximum	20 to 75 °C	20 to 75 °C	20 to 75 °C	20 to 75 °C
Basic length of the heating water pipe, maximum, between the outdoor unit and indoor unit	20 m	20 m	20 m	20 m
Operating pressure, minimum	0.05 MPa	0.05 MPa	0.05 MPa	0.05 MPa
Operating pressure, maximum	0.30 MPa	0.30 MPa	0.30 MPa	0.30 MPa
Volume flow, minimum	400 l/h	400 l/h	540 l/h	540 l/h
Volume flow, maximum	860 l/h	860 l/h	1,205 l/h	1,205 l/h
Water volume, in the outdoor unit	1.5 l	1.5 l	2.0 l	2.0 l
Water volume, in the heating circuit, minimum, thawing mode, activated/deactivated back-up heater	15 l / 40 l	15 l / 40 l	20 l / 55 l	20 l / 55 l
Remaining feed pressure, hydraulic	56.0 kPa	56.0 kPa	44.0 kPa	44.0 kPa

	VWL 105/6 A 230V S2	VWL 105/6 A S2	VWL 125/6 A 230V S2	VWL 125/6 A S2
Heating water temperature, minimum/maximum	20 to 75 °C	20 to 75 °C	20 to 75 °C	20 to 75 °C
Basic length of the heating water pipe, maximum, between the outdoor unit and indoor unit	20 m	20 m	20 m	20 m
Operating pressure, minimum	0.05 MPa	0.05 MPa	0.05 MPa	0.05 MPa
Operating pressure, maximum	0.30 MPa	0.30 MPa	0.30 MPa	0.30 MPa
Volume flow, minimum	995 l/h	995 l/h	995 l/h	995 l/h
Volume flow, maximum	2,065 l/h	2,065 l/h	2,065 l/h	2,065 l/h
Water volume, in the outdoor unit	2.5 l	2.5 l	2.5 l	2.5 l
Water volume, in the heating circuit, minimum, thawing mode, activated/deactivated back-up heater	45 l / 150 l	45 l / 150 l	45 l / 150 l	45 l / 150 l
Remaining feed pressure, hydraulic	55.0 kPa	55.0 kPa	55.0 kPa	55.0 kPa

Technical data - Refrigerant circuit

	VWL 35/6 A 230V S2	VWL 55/6 A 230V S2	VWL 65/6 A 230V S2	VWL 75/6 A 230V S2
Refrigerant, type	R290	R290	R290	R290
Refrigerant, fill quantity	0.60 kg	0.60 kg	0.90 kg	0.90 kg
Refrigerant, Global Warming Potential (GWP)	3	3	3	3
Refrigerant, CO ₂ equivalent	0.0018 t	0.0018 t	0.0027 t	0.0027 t
Permissible operating pressure, maximum	3.15 MPa	3.15 MPa	3.15 MPa	3.15 MPa
Compressor, type	Rotary compressor	Rotary compressor	Rotary compressor	Rotary compressor
Compressor, oil type	Specific polyalkylene glycol (PAG)	Specific polyalkylene glycol (PAG)	Specific polyalkylene glycol (PAG)	Specific polyalkylene glycol (PAG)
Compressor, control	Electronic	Electronic	Electronic	Electronic

	VWL 105/6 A 230V S2	VWL 105/6 A S2	VWL 125/6 A 230V S2	VWL 125/6 A S2
Refrigerant, type	R290	R290	R290	R290
Refrigerant, fill quantity	1.30 kg	1.30 kg	1.30 kg	1.30 kg
Refrigerant, Global Warming Potential (GWP)	3	3	3	3
Refrigerant, CO ₂ equivalent	0.0039 t	0.0039 t	0.0039 t	0.0039 t
Permissible operating pressure, maximum	3.15 MPa	3.15 MPa	3.15 MPa	3.15 MPa
Compressor, type	Scroll compressor	Scroll compressor	Scroll compressor	Scroll compressor
Compressor, oil type	Specific polyalkylene glycol (PAG)	Specific polyalkylene glycol (PAG)	Specific polyalkylene glycol (PAG)	Specific polyalkylene glycol (PAG)
Compressor, control	Electronic	Electronic	Electronic	Electronic

Technical data - Power, heating mode

	VWL 35/6 A 230V S2	VWL 55/6 A 230V S2	VWL 65/6 A 230V S2	VWL 75/6 A 230V S2
Heating output, A2/W35	2.00 kW	2.00 kW	3.10 kW	3.10 kW
Coefficient of performance, COP, EN 14511, A2/W35	3.90	3.90	4.10	4.10
Power consumption, effective, A2/W35	0.51 kW	0.51 kW	0.76 kW	0.76 kW
Power consumption, A2/W35	2.60 A	2.60 A	3.70 A	3.70 A
Heat output, minimum/maximum, A7/W35	2.10 to 5.50 kW	2.10 to 6.90 kW	3.00 to 7.30 kW	3.00 to 7.40 kW
Heat output, nominal, A7/W35	3.30 kW	3.40 kW	4.50 kW	4.60 kW
Coefficient of performance, COP, EN 14511, A7/W35	4.80	4.80	4.80	4.80
Power consumption, effective, A7/W35	0.69 kW	0.71 kW	0.94 kW	0.96 kW
Power consumption, A7/W35	3.30 A	3.30 A	4.40 A	4.50 A
Heating output, A7/W45	3.10 kW	3.10 kW	4.20 kW	4.20 kW
Coefficient of performance, COP, EN 14511, A7/W45	3.60	3.60	3.60	3.60
Power consumption, effective, A7/W45	0.86 kW	0.86 kW	1.17 kW	1.17 kW
Power consumption, A7/W45	4.00 A	4.00 A	5.40 A	5.40 A
Heating output, A7/W55	4.80 kW	4.80 kW	4.90 kW	5.00 kW
Coefficient of performance, COP, EN 14511, A7/W55	2.80	2.80	2.90	2.90
Power consumption, effective, A7/W55	1.71 kW	1.71 kW	1.69 kW	1.72 kW
Power consumption, A7/W55	7.70 A	7.70 A	7.60 A	7.70 A
Heat output, A7/W65	4.50 kW	4.50 kW	6.30 kW	6.30 kW
Coefficient of performance, COP, EN 14511, A7/W65	2.30	2.30	2.30	2.30
Power consumption, effective, A7/W65	1.96 kW	1.96 kW	2.74 kW	2.74 kW
Power consumption, A7/W65	9.00 A	9.00 A	12.20 A	12.20 A
Heat output, A-7/W35	3.60 kW	5.40 kW	5.40 kW	7.00 kW
Coefficient of performance, COP, EN 14511, A-7/W35	2.70	2.60	3.00	2.80
Power consumption, effective, A-7/W35	1.33 kW	2.08 kW	1.80 kW	2.50 kW
Power consumption, A-7/W35	6.10 A	10.00 A	8.10 A	11.50 A

	VWL 105/6 A 230V S2	VWL 105/6 A S2	VWL 125/6 A 230V S2	VWL 125/6 A S2
Heating output, A2/W35	5.80 kW	5.80 kW	5.90 kW	5.90 kW
Coefficient of performance, COP, EN 14511, A2/W35	4.60	4.60	4.60	4.60
Power consumption, effective, A2/W35	1.26 kW	1.26 kW	1.28 kW	1.28 kW
Power consumption, A2/W35	6.20 A	2.80 A	6.20 A	2.90 A
Heat output, minimum/maximum, A7/W35	5.40 to 12.50 kW	5.40 to 12.50 kW	5.40 to 14.00 kW	5.40 to 14.00 kW
Heat output, nominal, A7/W35	8.10 kW	8.10 kW	8.50 kW	8.50 kW
Coefficient of performance, COP, EN 14511, A7/W35	5.30	5.30	5.40	5.40
Power consumption, effective, A7/W35	1.53 kW	1.53 kW	1.57 kW	1.57 kW
Power consumption, A7/W35	7.40 A	3.00 A	7.60 A	3.10 A
Heating output, A7/W45	8.10 kW	8.10 kW	8.10 kW	8.10 kW
Coefficient of performance, COP, EN 14511, A7/W45	4.10	4.10	4.10	4.10
Power consumption, effective, A7/W45	1.98 kW	1.98 kW	1.98 kW	1.98 kW
Power consumption, A7/W45	9.40 A	3.60 A	9.40 A	3.60 A
Heating output, A7/W55	9.10 kW	9.10 kW	9.10 kW	9.10 kW
Coefficient of performance, COP, EN 14511, A7/W55	3.10	3.10	3.10	3.10
Power consumption, effective, A7/W55	2.94 kW	2.94 kW	2.94 kW	2.94 kW
Power consumption, A7/W55	13.50 A	5.10 A	13.50 A	5.10 A
Heat output, A7/W65	11.40 kW	11.40 kW	11.40 kW	11.40 kW
Coefficient of performance, COP, EN 14511, A7/W65	2.30	2.30	2.30	2.30
Power consumption, effective, A7/W65	4.96 kW	4.96 kW	4.96 kW	4.96 kW
Power consumption, A7/W65	22.20 A	7.90 A	22.20 A	7.90 A

	VWL 105/6 A 230V S2	VWL 105/6 A S2	VWL 125/6 A 230V S2	VWL 125/6 A S2
Heat output, A-7/W35	9.20 kW	9.20 kW	12.20 kW	12.20 kW
Coefficient of performance, COP, EN 14511, A-7/W35	2.70	2.70	2.70	2.70
Power consumption, effective, A-7/W35	3.41 kW	3.41 kW	4.52 kW	4.52 kW
Power consumption, A-7/W35	15.40 A	5.70 A	20.10 A	7.30 A

Technical data - Power, cooling mode

Validity: Product with cooling mode

	VWL 35/6 A 230V S2	VWL 55/6 A 230V S2	VWL 65/6 A 230V S2	VWL 75/6 A 230V S2
Cooling output, A35/W18	4.50 kW	4.50 kW	6.40 kW	6.40 kW
Energy efficiency ratio, EER, EN 14511, A35/W18	4.30	4.30	4.20	4.20
Power consumption, effective, A35/W18	1.05 kW	1.05 kW	1.52 kW	1.52 kW
Power consumption, A35/W18	4.90 A	4.90 A	7.00 A	7.00 A
Cooling output, minimum/maximum, A35/W7	1.80 to 5.20 kW	1.80 to 5.20 kW	2.50 to 7.20 kW	2.40 to 7.20 kW
Cooling output, A35/W7	3.40 kW	3.40 kW	5.00 kW	4.90 kW
Energy efficiency ratio, EER, EN 14511, A35/W7	3.40	3.40	3.50	3.50
Power consumption, effective, A35/W7	1.00 kW	1.00 kW	1.43 kW	1.40 kW
Power consumption, A35/W7	4.70 A	4.70 A	6.60 A	6.60 A

	VWL 105/6 A 230V S2	VWL 105/6 A S2	VWL 125/6 A 230V S2	VWL 125/6 A S2
Cooling output, A35/W18	10.90 kW	10.90 kW	10.80 kW	10.80 kW
Energy efficiency ratio, EER, EN 14511, A35/W18	4.60	4.60	4.60	4.60
Power consumption, effective, A35/W18	2.37 kW	2.37 kW	2.35 kW	2.35 kW
Power consumption, A35/W18	10.90 A	4.20 A	10.90 A	4.20 A
Cooling output, minimum/maximum, A35/W7	4.40 to 12.10 kW	4.40 to 12.10 kW	4.30 to 12.00 kW	4.30 to 12.00 kW
Cooling output, A35/W7	7.90 kW	7.90 kW	7.80 kW	7.80 kW
Energy efficiency ratio, EER, EN 14511, A35/W7	3.50	3.50	3.50	3.50
Power consumption, effective, A35/W7	2.26 kW	2.26 kW	2.23 kW	2.23 kW
Power consumption, A35/W7	10.20 A	4.00 A	10.20 A	4.00 A

Technical data - Noise emissions, heating mode

	VWL 35/6 A 230V S2	VWL 55/6 A 230V S2	VWL 65/6 A 230V S2	VWL 75/6 A 230V S2
Sound power, EN 12102, EN 14511 LWA, A7/W35	51 dB(A)	51 dB(A)	53 dB(A)	53 dB(A)
Sound power, EN 12102, EN 14511 LWA, A7/W45	53 dB(A)	53 dB(A)	53 dB(A)	53 dB(A)
Sound power, EN 12102, EN 14511 LWA, A7/W55	54 dB(A)	54 dB(A)	55 dB(A)	55 dB(A)
Sound power, EN 12102, EN 14511 LWA, A7/W65	54 dB(A)	54 dB(A)	55 dB(A)	55 dB(A)
Sound power, EN 12102, EN 14511 LWA, A-7/W35, 40% noise reduction mode	48 dB(A)	48 dB(A)	50 dB(A)	50 dB(A)
Sound power, EN 12102, EN 14511 LWA, A-7/W35, 50% noise reduction mode	47 dB(A)	47 dB(A)	48 dB(A)	48 dB(A)
Sound power, EN 12102, EN 14511 LWA, A-7/W35, 60% noise reduction mode	46 dB(A)	46 dB(A)	46 dB(A)	46 dB(A)

	VWL 105/6 A 230V S2	VWL 105/6 A S2	VWL 125/6 A 230V S2	VWL 125/6 A S2
Sound power, EN 12102, EN 14511 LWA, A7/W35	58 dB(A)	59 dB(A)	58 dB(A)	59 dB(A)
Sound power, EN 12102, EN 14511 LWA, A7/W45	58 dB(A)	59 dB(A)	58 dB(A)	59 dB(A)
Sound power, EN 12102, EN 14511 LWA, A7/W55	60 dB(A)	59 dB(A)	60 dB(A)	59 dB(A)
Sound power, EN 12102, EN 14511 LWA, A7/W65	61 dB(A)	59 dB(A)	61 dB(A)	59 dB(A)
Sound power, EN 12102, EN 14511 LWA, A-7/W35, 40% noise reduction mode	54 dB(A)	55 dB(A)	54 dB(A)	55 dB(A)
Sound power, EN 12102, EN 14511 LWA, A-7/W35, 50% noise reduction mode	51 dB(A)	51 dB(A)	51 dB(A)	51 dB(A)
Sound power, EN 12102, EN 14511 LWA, A-7/W35, 60% noise reduction mode	51 dB(A)	51 dB(A)	51 dB(A)	51 dB(A)

Technical data - Noise emissions, cooling mode

Validity: Product with cooling mode

	VWL 35/6 A 230V S2	VWL 55/6 A 230V S2	VWL 65/6 A 230V S2	VWL 75/6 A 230V S2
Sound power, EN 12102, EN 14511 LWA, A35/W18	53 dB(A)	53 dB(A)	55 dB(A)	55 dB(A)
Sound power, EN 12102, EN 14511 LWA, A35/W7	53 dB(A)	53 dB(A)	55 dB(A)	55 dB(A)

	VWL 105/6 A 230V S2	VWL 105/6 A S2	VWL 125/6 A 230V S2	VWL 125/6 A S2
Sound power, EN 12102, EN 14511 LWA, A35/W18	58 dB(A)	59 dB(A)	58 dB(A)	59 dB(A)
Sound power, EN 12102, EN 14511 LWA, A35/W7	59 dB(A)	59 dB(A)	59 dB(A)	59 dB(A)

9.5 Sound power evaluation level

Note

K_T (supplement for the tone incorporation) is taken into account in line with the third-octave band process. K_R is country-specific and was assumed to be 0 in this calculation. This value is only required for day mode.



For the **aroTHERM plus** heat pump, planning should take account of the following sound power levels (heating mode).

VWL 35/6 A 230 V (S2) and VWL 55/6 A 230 V (S2) evaluation level

VWL 35/6 A 230 V (S2) VWL 55/6 A 230 V (S2)				Distance from heat source in m										K_R
	Sound power in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day mode	55.4	0	3	47.4	41.4	37.9	35.4	33.4	31.8	29.3	27.4	25.8	23.9	0
			6	50.4	44.4	40.9	38.4	36.4	34.8	32.3	30.4	28.8	26.9	
			9	53.4	47.4	43.9	41.4	39.4	37.8	35.3	33.4	31.8	29.9	
Night mode (40% reduced compressor output)	48.3	0	3	40.3	34.3	30.8	28.3	26.3	24.7	22.2	20.3	18.7	16.8	-
			6	43.3	37.3	33.8	31.3	29.3	27.7	25.2	23.3	21.7	19.8	
			9	46.3	40.3	36.8	34.3	32.3	30.7	28.2	26.3	24.7	22.8	
Night mode (50% reduced compressor output)	47.0	0	3	39.0	33.0	29.5	27.0	25.0	23.4	20.9	19.0	17.4	15.5	-
			6	42.0	36.0	32.5	30.0	28.0	26.4	23.9	22.0	20.4	18.5	
			9	45.0	39.0	35.5	33.0	31.0	29.4	26.9	25.0	23.4	21.5	
Night mode (60% reduced compressor output)	46.4	0	3	38.4	32.4	28.9	26.4	24.4	22.8	20.3	18.4	16.8	14.9	-
			6	41.4	35.4	31.9	29.4	27.4	25.8	23.3	21.4	19.8	17.9	
			9	44.4	38.4	34.9	32.4	30.4	28.8	26.3	24.4	22.8	20.9	

Output adjustment for the noise reduction function

Reduction of the compressor output by:	Sound power in accordance with EN 12102 [dB(A)]	Max. compressor speed [rpm]	Max. fan speed [rpm]	Heat output for A-7/W35 in accordance with DIN EN 14511 [kW]	COP for A-7/W35 in accordance with DIN EN 14511
40%	48.3	72	507	3.4	3.0
50%	47.0	60	478	2.7	2.9
60%	46.4	50	450	2.2	2.9

VWL 65/6 A 230 V (S2) and VWL 75/6 A 230 V (S2) evaluation level

VWL 65/6 A 230 V (S2) VWL 75/6 A 230 V (S2)				Distance from heat source in m										K_R
	Sound power in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day mode	57.0	0	3	49.0	43.0	39.5	37.0	35.0	33.4	30.9	29.0	27.4	25.5	0
			6	52.0	46.0	42.5	40.0	38.0	36.4	33.9	32.0	30.4	28.5	
			9	55.0	49.0	45.5	43.0	41.0	39.4	36.9	35.0	33.4	31.5	

VWL 65/6 A 230 V (S2) VWL 75/6 A 230 V (S2)				Distance from heat source in m										K _R
Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15		
			Evaluation level in dB(A)											
Night mode (40% reduced compressor output)	49.7	0	3	41.7	35.7	32.2	29.7	27.7	26.1	23.6	21.7	20.1	18.2	-
			6	44.7	38.7	35.2	32.7	30.7	29.1	26.6	24.7	23.1	21.2	
			9	47.7	41.7	38.2	35.7	33.7	32.1	29.6	27.7	26.1	24.2	
Night mode (50% reduced compressor output)	47.6	0	3	39.6	33.6	30.1	27.6	25.6	24.0	21.5	19.6	18.0	16.1	-
			6	42.6	36.6	33.1	30.6	28.6	27.0	24.5	22.6	21.0	19.1	
			9	45.6	39.6	36.1	33.6	31.6	30.0	27.5	25.6	24.0	22.1	
Night mode (60% reduced compressor output)	46.2	0	3	38.2	32.2	28.7	26.2	24.2	22.6	20.1	18.2	16.6	14.7	-
			6	41.2	35.2	31.7	29.2	27.2	25.6	23.1	21.2	19.6	17.7	
			9	44.2	38.2	34.7	32.2	30.2	28.6	26.1	24.2	22.6	20.7	

Output adjustment for the noise reduction function

Reduction of the compressor output by:	Sound power in accordance with EN 12102 [dB(A)]	Max. compressor speed [rpm]	Max. fan speed [rpm]	Heat output for A-7/W35 in accordance with DIN EN 14511 [kW]	COP for A-7/W35 in accordance with DIN EN 14511
40%	49.7	72	507	3.8	3.0
50%	47.6	60	478	2.7	2.6
60%	46.2	50	450	2.5	2.6

VWL 105/6 A 230 V (S2) and VWL 125/6 A 230 V (S2) evaluation level

VWL 105/6 A 230 V (S2) VWL 125/6 A 230 V (S2)				Distance from heat source in m										K _R
Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15		
			Evaluation level in dB(A)											
Day mode	60.9	0	3	52.9	46.9	43.4	40.9	38.9	37.3	34.8	32.9	31.3	29.4	0
			6	55.9	49.9	46.4	43.9	41.9	40.3	37.8	35.9	34.3	32.4	
			9	58.9	52.9	49.4	46.9	44.9	43.3	40.8	38.9	37.3	35.4	
Night mode (40% reduced compressor output)	54.2	0	3	46.2	40.2	36.7	34.2	32.2	30.6	28.1	26.2	24.6	22.7	-
			6	49.2	43.2	39.7	37.2	35.2	33.6	31.1	29.2	27.6	25.7	
			9	52.2	46.2	42.7	40.2	38.2	36.6	34.1	32.2	30.6	28.7	
Night mode (50% reduced compressor output)	51.4	0	3	43.4	37.4	33.9	31.4	29.4	27.8	25.3	23.4	21.8	19.9	-
			6	46.4	40.4	36.9	34.4	32.4	30.8	28.3	26.4	24.8	22.9	
			9	49.4	43.4	39.9	37.4	35.4	33.8	31.3	29.4	27.8	25.9	
Night mode (60% reduced compressor output)	51.0	0	3	43.0	37.0	33.5	31.0	29.0	27.4	24.9	23.0	21.4	19.5	-
			6	46.0	40.0	36.5	34.0	32.0	30.4	27.9	26.0	24.4	22.5	
			9	49.0	43.0	39.5	37.0	35.0	33.4	30.9	29.0	27.4	25.5	

Output adjustment for the noise reduction function

Reduction of the compressor output by:	Sound power in accordance with EN 12102 [dB(A)]	Max. compressor speed [rpm]	Max. fan speed [rpm]	Heat output for A-7/W35 in accordance with DIN EN 14511 [kW]	COP for A-7/W35 in accordance with DIN EN 14511
40%	54.2	66	507 / 527	8.0	3.4
50%	51.4	55	468 / 488	6.8	3.5
60%	51.0	50	430 / 450	6.4	3.4

VWL 105/6 A 400 V (S2) and VWL 125/6 A 400 V (S2) evaluation level

VWL 105/6 A 400 V (S2) VWL 125/6 A 400 V (S2)				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day mode	60.5	0	3	52.5	46.5	43.0	40.5	38.5	36.9	34.4	32.5	30.9	29.0	0
			6	55.5	49.5	46.0	43.5	41.5	39.9	37.4	35.5	33.9	32.0	
			9	58.5	52.5	49.0	46.5	44.5	42.9	40.4	38.5	36.9	35.0	
Night mode (40% reduced compressor output)	54.8	0	3	46.8	40.8	37.3	34.8	32.8	31.2	28.7	26.8	25.2	23.3	-
			6	49.8	43.8	40.3	37.8	35.8	34.2	31.7	29.8	28.2	26.3	
			9	52.8	46.8	43.3	40.8	38.8	37.2	34.7	32.8	31.2	29.3	
Night mode (50% reduced compressor output)	51.4	0	3	43.4	37.4	33.9	31.4	29.4	27.8	25.3	23.4	21.8	19.9	-
			6	46.4	40.4	36.9	34.4	32.4	30.8	28.3	26.4	24.8	22.9	
			9	49.4	43.4	39.9	37.4	35.4	33.8	31.3	29.4	27.8	25.9	
Night mode (60% reduced compressor output)	50.9	0	3	42.9	36.9	33.4	30.9	28.9	27.3	24.8	22.9	21.3	19.4	-
			6	45.9	39.9	36.4	33.9	31.9	30.3	27.8	25.9	24.3	22.4	
			9	48.9	42.9	39.4	36.9	34.9	33.3	30.8	28.9	27.3	25.4	

Output adjustment for the noise reduction function

Reduction of the compressor output by:	Sound power in accordance with EN 12102 [dB(A)]	Max. compressor speed [rpm]	Max. fan speed [rpm]	Heat output for A-7/W35 in accordance with DIN EN 14511 [kW]	COP for A-7/W35 in accordance with DIN EN 14511
40%	54.8	66	507 / 527	8.0	3.4
50%	51.4	55	468 / 488	6.8	3.5
60%	50.9	50	430 / 450	6.4	3.4

9.6 Application limits

The product works between a minimum and maximum outdoor temperature. These outdoor temperatures define the application limits for the heating mode, domestic hot water generation and cooling mode. Operating outside of the application limits leads to the product switching off.

9.6.1 Application limits, heating mode

In heating mode, the product works at outdoor temperatures of -25 °C to 43 °C.

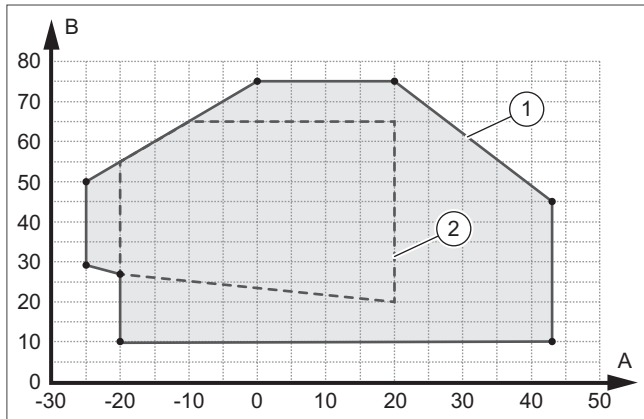


Fig 331: Application limits, heating mode

- A Outdoor temperature
- B Heating water temperature
- 1 Application limits, heating mode
- 2 Area of application, in accordance with EN 14511

9.6.2 Application limits, domestic hot water generation

For domestic hot water generation, the product works at outdoor temperatures of -20 °C to 43 °C.

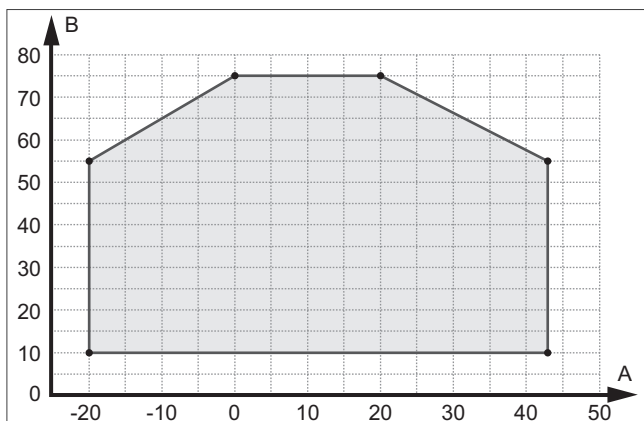


Fig 332: Application limits, domestic hot water generation

- A Outdoor temperature
- B Heating water temperature

9.6.3 Application limits, cooling mode

Validity: Product with cooling mode

In cooling mode, the product works at outdoor temperatures of 15 °C to 46 °C.

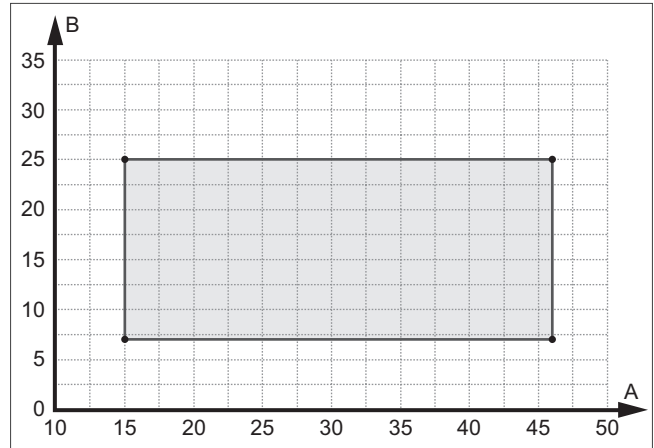


Fig 333: Application limits, cooling mode

- A Outdoor temperature
- B Heating water temperature

9.7 Performance data - heating mode

9.7.1 Heating mode performance data for 3 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C			40% red		50% red		60% red				
	85 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps	
-25	1,5	1,6	1,6	1,4	1,5	1,6					
-20	1,9	2,0	2,0	1,8	1,9	2,0					
-15	2,3	2,4	2,4	2,2	2,3	2,4					
-12	2,6	2,6	2,6	2,4	2,5	2,6	2,9				
-7	3,0	3,0	3,1	2,8	2,9	3,0	3,3	2,9	3,0		
-2	3,5	3,5	3,5	3,3	3,3	3,4	3,7	3,3	3,4	3,6	
0	3,7	3,7	3,8	3,5	3,6	3,6	3,9	3,5	3,5	3,7	
2	3,9	3,9	4,0	3,7	3,8	3,9	4,1	3,7	3,7	3,9	
7	4,5	4,5	4,6	4,4	4,5	4,5	4,8	4,3	4,3	4,5	
10	4,8	4,9	5,0	4,8	4,9	4,9	5,3	4,7	4,7	4,9	
12	5,0	5,1	5,3	5,1	5,1	5,2	5,5	5,0	5,0	5,2	
15	5,3	5,4	5,6	5,5	5,6	5,6	6,0	5,4	5,4	5,6	
20		6,2	6,4	6,3	6,3	6,4	6,8	6,1	6,1	6,3	

°C			40% red		50% red		60% red				
	85 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps	
-25	1,9	1,8	1,6	1,1	1,1	1,1					
-20	2,5	2,3	2,1	1,6	1,5	1,4					
-15	3,1	2,9	2,6	2,0	1,9	1,8					
-12	3,4	3,2	2,9	2,3	2,1	2,0	1,9				
-7	4,1	3,8	3,4	2,7	2,5	2,4	2,2	1,8	1,7		
-2	4,8	4,5	4,0	3,2	3,0	2,8	2,5	2,1	1,9	1,7	
0	5,2	4,9	4,2	3,4	3,2	2,9	2,7	2,3	2,0	1,8	
2	5,5	5,2	4,5	3,6	3,4	3,1	2,9	2,4	2,2	1,9	
7	6,3	5,9	5,2	4,2	3,9	3,6	3,3	2,8	2,5	2,2	
10	6,7	6,3	5,5	4,6	4,3	3,9	3,6	3,0	2,7	2,3	
12	6,9	6,5	5,8	4,8	4,5	4,1	3,8	3,2	2,9	2,5	
15	7,3	6,9	6,1	5,1	4,8	4,4	4,0	3,4	3,1	2,7	
20		7,7	6,8	5,7	5,3	4,8	4,4	3,8	3,4	3,0	

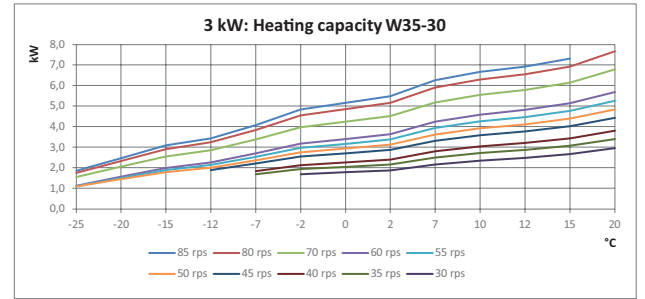
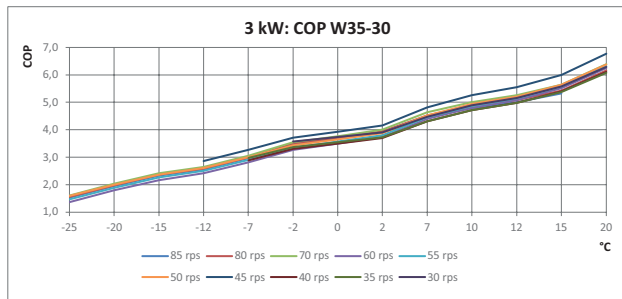


Fig 334: COP and heat output for A/W35-30

°C			40% red		50% red		60% red				
	85 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps	
-25	1,4	1,3	1,1	1,0	1,1	1,2					
-20	1,7	1,6	1,5	1,3	1,4	1,5					
-15	2,0	2,0	1,8	1,6	1,7	1,8					
-12	2,2	2,1	2,0	1,8	1,9	2,0	2,2				
-7	2,5	2,5	2,3	2,0	2,2	2,3	2,5	2,0	2,1		
-2	2,9	2,8	2,6	2,4	2,5	2,6	2,8	2,2	2,3	2,7	
0	3,1	3,0	2,8	2,5	2,6	2,8	3,0	2,4	2,5	2,8	
2	3,3	3,2	2,9	2,7	2,8	2,9	3,1	2,5	2,6	2,9	
7	3,7	3,6	3,4	3,1	3,2	3,4	3,6	2,9	3,0	3,4	
10	3,9	3,8	3,6	3,4	3,5	3,7	3,9	3,2	3,3	3,6	
12	4,1	4,0	3,8	3,5	3,7	3,8	4,1	3,4	3,5	3,8	
15	4,3	4,2	4,0	3,8	3,9	4,1	4,4	3,6	3,7	4,1	
20		4,7	4,5	4,2	4,3	4,6	4,9	4,0	4,2	4,6	

°C			40% red		50% red		60% red				
	85 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps	
-25	1,8	1,6	1,3	1,1	1,0	1,0					
-20	2,3	2,2	1,8	1,5	1,4	1,3					
-15	2,9	2,7	2,3	1,9	1,8	1,7					
-12	3,3	3,0	2,6	2,1	2,0	1,9	1,8				
-7	3,9	3,6	3,1	2,5	2,4	2,2	2,1	1,6	1,5		
-2	4,6	4,3	3,6	3,0	2,8	2,6	2,4	1,9	1,7	1,6	
0	4,9	4,5	3,9	3,2	3,0	2,7	2,5	2,0	1,8	1,7	
2	5,2	4,8	4,1	3,4	3,2	2,9	2,7	2,1	1,9	1,8	
7	5,9	5,5	4,8	4,0	3,7	3,4	3,1	2,5	2,2	2,0	
10	6,3	5,9	5,1	4,3	4,0	3,7	3,4	2,7	2,4	2,2	
12	6,5	6,1	5,3	4,5	4,2	3,8	3,5	2,9	2,6	2,3	
15	6,9	6,5	5,7	4,8	4,5	4,1	3,8	3,1	2,7	2,5	
20		7,2	6,3	5,3	4,9	4,5	4,1	3,5	3,1	2,8	

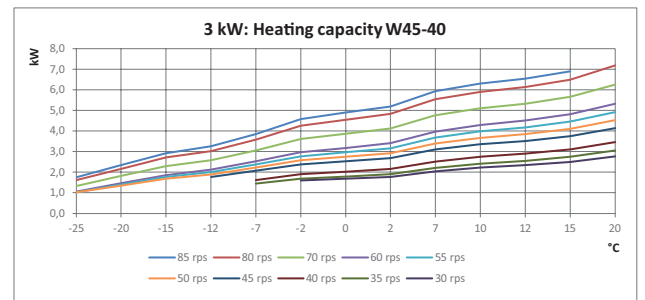
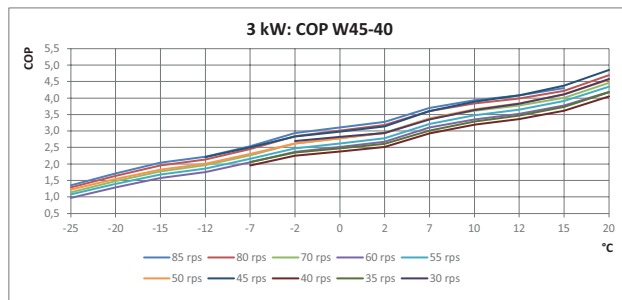


Fig 335: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

		85 rps		40% red		50% red		60% red									
		85 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps						
°C	-20	1,4	1,3	1,2	1,2	1,2	1,2										
	-15	1,6	1,6	1,5	1,4	1,4	1,5										
	-12	1,8	1,7	1,7	1,6	1,6	1,6	1,6									
	-7	2,0	2,0	1,9	1,9	1,8	1,8	1,8	1,8	1,8							
	-2	2,3	2,3	2,2	2,1	2,1	2,1	2,1	2,1	2,0	2,0						
	0	2,4	2,4	2,3	2,2	2,2	2,2	2,2	2,2	2,1	2,1						
	2	2,6	2,5	2,5	2,4	2,4	2,4	2,3	2,3	2,2	2,1						
	7	2,9	2,8	2,8	2,7	2,7	2,7	2,6	2,6	2,5							
	10	3,0	3,0	3,0	2,9	2,9	2,9	2,9	2,9	2,8	2,7						
	12	3,1	3,1	3,1	3,1	3,1	3,0	3,0	3,0	2,9	2,8						
	15	3,3	3,3	3,3	3,3	3,3	3,2	3,2	3,2	3,1	3,0						
20		3,6	3,6	3,6	3,6	3,6	3,6	3,5	3,5	3,3							

		85 rps		40% red		50% red		60% red									
		85 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps						
°C	-20	2,3	2,1	1,7	1,4	1,3	1,2										
	-15	2,9	2,6	2,1	1,8	1,6	1,5										
	-12	3,2	2,9	2,4	2,0	1,8	1,7	1,5									
	-7	3,8	3,4	2,8	2,4	2,2	2,0	1,8	1,6	1,4							
	-2	4,5	4,1	3,4	2,8	2,6	2,3	2,1	1,9	1,6	1,4						
	0	4,8	4,3	3,6	3,0	2,7	2,5	2,2	2,0	1,7	1,5						
	2	5,0	4,6	3,8	3,2	2,9	2,6	2,4	2,1	1,8	1,6						
	7	5,7	5,3	4,4	3,7	3,4	3,1	2,8	2,4	2,1	1,8						
	10	6,1	5,6	4,8	4,0	3,7	3,3	3,0	2,7	2,3	2,0						
	12	6,3	5,8	5,0	4,2	3,9	3,5	3,2	2,8	2,4	2,1						
	15	6,7	6,2	5,3	4,5	4,1	3,8	3,4	3,0	2,6	2,3						
20		6,8	5,8	5,0	4,6	4,2	3,7	3,3	2,9	2,5							

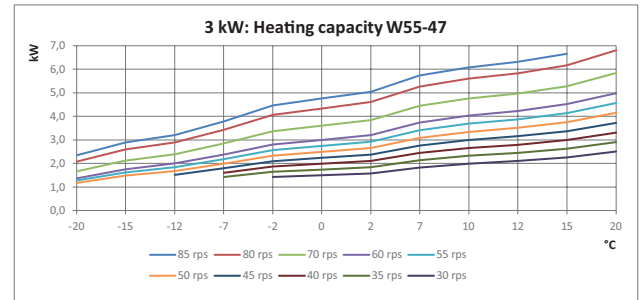
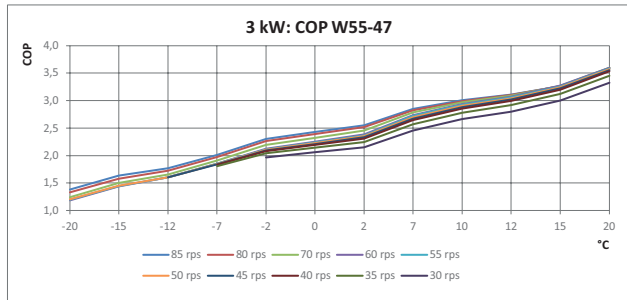


Fig 336: COP and heat output for A../W55-47

		85 rps		40% red		50% red		60% red									
		85 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps						
°C	-15																
	-13	1,2	1,3	1,4	1,3	1,2	1,2										
	-12	1,3	1,3	1,4	1,3	1,3	1,2	1,2									
	-7	1,5	1,5	1,6	1,5	1,5	1,4	1,4	1,4	1,5							
	-2	1,7	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,5						
	0	1,8	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,6						
	2	1,9	2,0	2,0	1,9	1,9	1,9	1,8	1,8	1,8	1,7						
	7	2,1	2,2	2,3	2,2	2,2	2,1	2,1	2,1	2,0	1,9						
	10	2,2	2,3	2,4	2,4	2,3	2,3	2,2	2,2	2,2	2,1						
	12	2,3	2,4	2,5	2,5	2,4	2,4	2,3	2,3	2,3	2,2						
	15	2,4	2,5	2,6	2,6	2,6	2,5	2,5	2,5	2,4	2,3						
20		2,7	2,9	2,9	2,8	2,8	2,7	2,7	2,7	2,6							

		85 rps		40% red		50% red		60% red									
		85 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps						
°C	-15																
	-13	2,5	2,5	2,2	1,8	1,6	1,4										
	-12	2,6	2,5	2,3	1,8	1,7	1,5	1,3									
	-7	3,2	3,0	2,7	2,2	2,0	1,8	1,6	1,5	1,4							
	-2	3,8	3,6	3,2	2,6	2,3	2,1	1,8	1,7	1,6	1,3						
	0	4,1	3,9	3,4	2,8	2,5	2,2	2,0	1,8	1,7	1,4						
	2	4,3	4,1	3,6	3,0	2,7	2,4	2,1	1,9	1,7	1,4						
	7	4,9	4,7	4,2	3,5	3,1	2,8	2,5	2,2	2,0	1,7						
	10	5,3	5,0	4,4	3,7	3,4	3,0	2,7	2,4	2,2	1,8						
	12	5,5	5,2	4,6	3,9	3,6	3,2	2,8	2,6	2,3	1,9						
	15	5,8	5,5	4,9	4,2	3,8	3,4	3,0	2,7	2,5	2,1						
20		6,1	5,4	4,6	4,2	3,8	3,3	3,0	2,7	2,3							

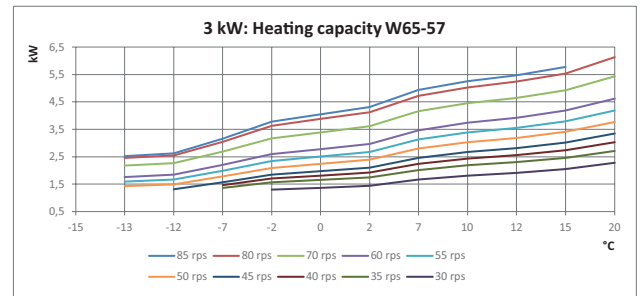
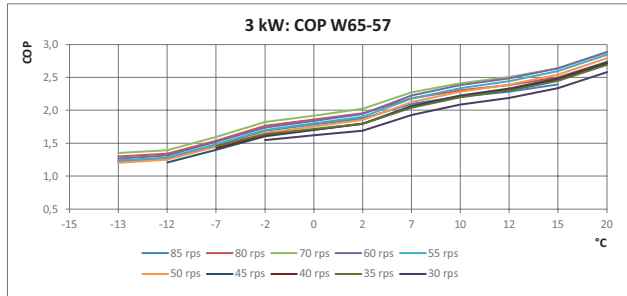


Fig 337: COP and heat output for A../W65-57

9.7.2 Heating mode performance data for 5 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		120 rps	110 rps	97 rps	90 rps	80 rps	70 rps	60 rps	50 rps	40 rps	30 rps
°C	-25	2,0	2,0	2,3	2,2	2,2	1,9	1,9	1,2		
	-20	2,2	2,2	2,5	2,5	2,5	2,4	2,6	2,5		
	-15	2,4	2,4	2,7	2,7	2,8	2,8	3,0	3,1		
	-12	2,5	2,5	2,8	2,8	2,9	2,8	3,0	3,1		
	-7	2,7	2,7	3,1	3,0	3,0	2,9	3,1	3,1	3,4	
	-2	3,0	3,0	3,4	3,3	3,4	3,3	3,5	3,4	3,7	3,6
	0	3,0	3,0	3,4	3,4	3,4	3,4	3,6	3,6	3,8	3,7
	2	3,1	3,1	3,4	3,4	3,5	3,5	3,7	3,7	4,0	3,9
	7	3,3	3,3	3,7	3,7	3,9	3,9	4,2	4,3	4,6	4,1
	10		3,9	4,5	4,5	4,5	4,5	4,7	4,7	5,1	5,0
	12			4,7	4,7	4,8	4,8	5,0	5,1	5,8	5,5
15				5,0	5,2	5,3	5,6	5,8	6,8	6,7	
20					5,8	6,0	6,6	7,0	8,5	8,9	

		120 rps	110 rps	97 rps	90 rps	80 rps	70 rps	60 rps	50 rps	40 rps	30 rps
°C	-25	3,6	3,2	2,6	2,2	1,7	1,2	0,7	0,3		
	-20	4,3	3,8	3,3	2,9	2,4	1,8	1,4	0,9		
	-15	4,9	4,5	3,9	3,5	3,0	2,5	2,0	1,6		
	-12	5,4	4,9	4,4	3,9	3,4	2,8	2,3	1,9		
	-7	6,2	5,6	5,1	4,5	3,9	3,3	2,8	2,2	1,7	
	-2	7,1	6,5	5,9	5,3	4,6	3,9	3,3	2,7	2,1	1,7
	0	7,2	6,6	6,0	5,4	4,7	4,1	3,5	2,9	2,3	1,8
	2	7,3	6,7	6,1	5,5	4,9	4,2	3,7	3,0	2,4	2,0
	7	8,0	7,3	6,7	6,2	5,5	4,9	4,3	3,7	2,9	2,1
	10		8,5	7,9	7,2	6,3	5,4	4,6	3,9	3,1	2,4
	12			8,2	7,5	6,5	5,7	4,8	4,0	3,4	2,5
15				7,7	6,7	5,9	5,0	4,2	3,5	2,6	
20					7,1	6,2	5,4	4,5	3,7	2,8	

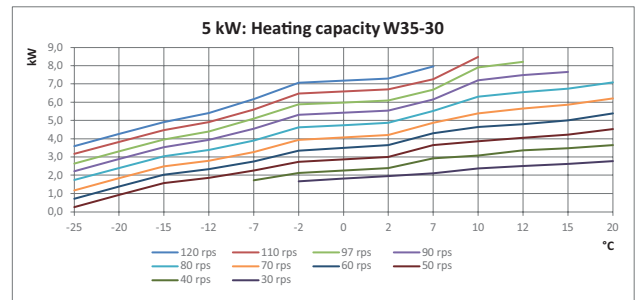
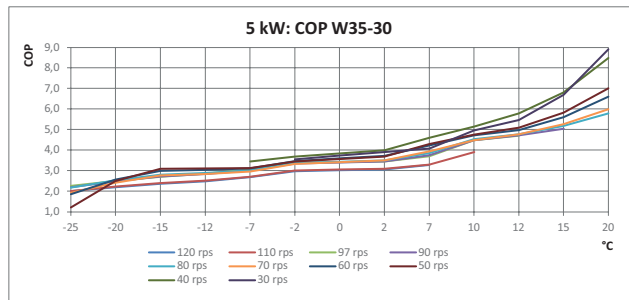


Fig 338: COP and heat output for A/W35-30

		120 rps	110 rps	97 rps	90 rps	80 rps	70 rps	60 rps	50 rps	40 rps	30 rps
°C	-25	1,7	1,6	1,7	1,7	1,7	1,5	1,4	0,5		
	-20	1,8	1,8	1,9	2,0	2,1	2,0	2,1	1,9		
	-15	2,0	2,0	2,2	2,3	2,4	2,3	2,5	2,6		
	-12	2,1	2,1	2,3	2,3	2,4	2,4	2,6	2,6		
	-7	2,3	2,3	2,4	2,5	2,6	2,5	2,7	2,7	2,6	
	-2	2,5	2,5	2,7	2,7	2,8	2,7	2,8	2,7	2,6	2,5
	0	2,7	2,7	2,8	2,8	2,9	2,8	3,0	2,9	2,8	2,7
	2	2,8	2,8	2,9	3,0	3,1	3,0	3,1	3,0	2,9	2,9
	7	3,0	3,1	3,3	3,3	3,4	3,3	3,4	3,3	3,1	3,1
	10		3,3	3,5	3,6	3,7	3,6	3,7	3,7	3,6	3,7
	12			3,6	3,7	3,8	3,8	3,8	3,7	3,7	3,9
15				3,9	4,0	4,0	4,1	4,1	4,1	4,4	
20					4,3	4,4	4,6	4,7	4,7	5,0	

		120 rps	110 rps	97 rps	90 rps	80 rps	70 rps	60 rps	50 rps	40 rps	30 rps
°C	-25	3,2	2,6	2,2	2,0	1,6	1,2	0,7	0,1		
	-20	3,9	3,2	2,9	2,7	2,3	1,8	1,4	0,8		
	-15	4,5	3,9	3,5	3,3	2,9	2,5	2,0	1,4		
	-12	4,9	4,2	3,9	3,7	3,2	2,7	2,3	1,7		
	-7	5,6	4,9	4,5	4,2	3,7	3,2	2,7	2,1	1,6	
	-2	6,6	5,9	5,3	5,0	4,4	3,8	3,2	2,5	2,0	1,5
	0	6,9	6,2	5,6	5,3	4,6	4,0	3,4	2,7	2,1	1,6
	2	7,3	6,5	5,9	5,5	4,9	4,2	3,6	2,8	2,3	1,7
	7	7,9	7,2	6,6	6,1	5,4	4,6	4,0	3,1	2,5	1,8
	10		7,8	7,2	6,7	6,0	5,2	4,4	3,6	2,9	2,2
	12			7,5	7,1	6,3	5,5	4,6	3,8	3,0	2,3
15				7,2	6,4	5,6	4,8	3,9	3,2	2,5	
20					6,7	5,9	5,1	4,1	3,4	2,6	

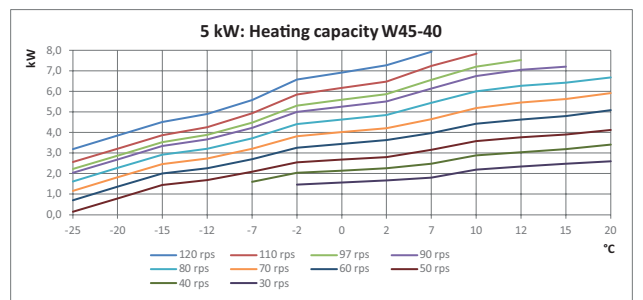
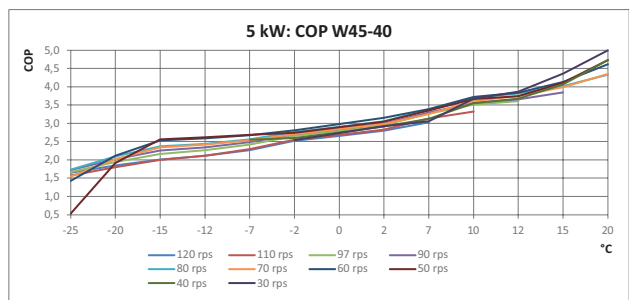


Fig 339: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

		120 rps		110 rps		97 rps		90 rps		80 rps		40% red		50% red		60% red				
		120 rps	110 rps	97 rps	90 rps	80 rps	70 rps	60 rps	50 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	
°C	-20	1,5	1,4	1,5	1,4	1,4	1,3	1,2												
	-15	1,7	1,7	1,8	1,8	1,8	1,8	1,8	1,5											
	-12	1,8	1,8	1,9	1,9	1,9	1,9	1,9	1,6											
	-7	1,9	1,9	2,0	2,0	2,1	2,0	2,0	1,8	1,4										
	-2	2,2	2,2	2,3	2,3	2,4	2,4	2,4	2,2	1,9	1,7									
	0	2,3	2,3	2,4	2,4	2,5	2,5	2,5	2,3	2,1	2,0									
	2	2,4	2,4	2,5	2,5	2,6	2,6	2,6	2,5	2,3	2,2									
	7	2,6	2,7	2,9	2,9	2,9	2,8	2,7	2,5	2,4	2,3									
	10		2,8	3,0	3,0	3,0	2,9	2,9	2,7	2,6	2,5									
	12			3,0	3,1	3,1	3,0	3,0	2,8	2,6	2,6									
	15				3,2	3,3	3,2	3,2	3,0	2,8	2,7									
20						3,5	3,5	3,3	3,1	2,8										

		120 rps		110 rps		97 rps		90 rps		80 rps		40% red		50% red		60% red				
		120 rps	110 rps	97 rps	90 rps	80 rps	70 rps	60 rps	50 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	
°C	-20	3,7	3,0	2,6	2,3	1,9	1,4	1,0												
	-15	4,5	3,8	3,4	3,1	2,7	2,2	1,8	1,2											
	-12	4,8	4,2	3,7	3,4	3,0	2,5	2,1	1,5											
	-7	5,5	4,8	4,2	3,9	3,5	3,0	2,5	1,8	1,1										
	-2	6,3	5,7	5,0	4,5	4,2	3,6	3,1	2,3	1,7	1,2									
	0	6,6	6,0	5,3	4,8	4,4	3,8	3,2	2,5	1,8	1,4									
	2	6,9	6,2	5,5	5,0	4,6	4,0	3,4	2,7	2,0	1,6									
	7	7,6	7,0	6,5	5,9	5,2	4,4	3,7	2,8	2,3	1,8									
	10		7,3	6,8	6,2	5,5	4,7	4,0	3,1	2,4	1,9									
	12			6,9	6,3	5,7	4,8	4,2	3,3	2,5	2,0									
	15				6,8	6,1	5,2	4,5	3,5	2,7	2,1									
20					6,6	5,7	4,7	3,7	2,7	2,1										

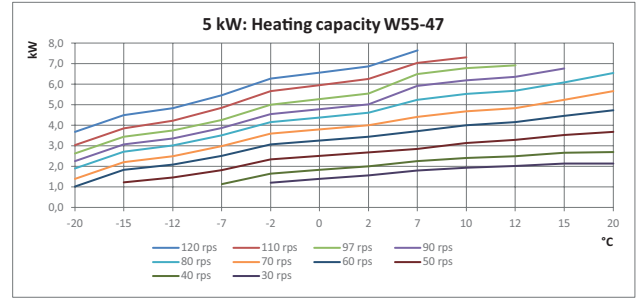
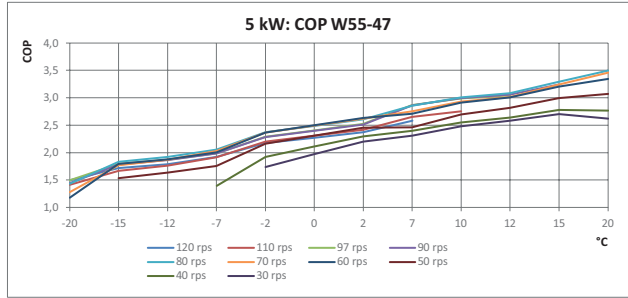


Fig 340: COP and heat output for A../W55-47

		120 rps		110 rps		97 rps		90 rps		80 rps		40% red		50% red		60% red				
		120 rps	110 rps	97 rps	90 rps	80 rps	70 rps	60 rps	50 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	
°C	-20																			
	-15																			
	-10	1,5	1,4	1,3	1,2	1,1														
	-7	1,8	1,7	1,6	1,6	1,5	1,4	1,2	1,0											
	-2	2,0	1,9	1,9	1,8	1,8	1,7	1,6	1,4	1,1										
	0	2,1	2,0	2,1	2,0	2,0	2,0	1,8	1,6	1,3	1,0									
	2	2,2	2,2	2,2	2,2	2,2	2,2	2,0	1,7	1,4	1,1									
	7	2,3	2,3	2,3	2,3	2,3	2,3	2,1	1,9	1,6	1,4									
	10		2,5	2,6	2,6	2,6	2,6	2,4	2,3	2,1	1,9									
	12			2,7	2,7	2,8	2,7	2,6	2,5	2,3	2,2									
	15				2,8	2,9	2,9	2,8	2,7	2,5	2,3									
20						2,9	2,9	2,9	2,8	2,6										

		120 rps		110 rps		97 rps		90 rps		80 rps		40% red		50% red		60% red				
		120 rps	110 rps	97 rps	90 rps	80 rps	70 rps	60 rps	50 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	40 rps	30 rps	
°C	-20																			
	-15																			
	-10	4,4	3,7	3,1	2,6	2,2														
	-7	5,4	4,7	4,1	3,6	3,1	2,5	1,9	1,3											
	-2	6,1	5,4	4,8	4,2	3,8	3,2	2,6	1,9	1,3										
	0	6,5	5,8	5,2	4,6	4,2	3,5	2,8	2,1	1,4	0,8									
	2	6,8	6,1	5,5	5,0	4,6	3,9	3,1	2,3	1,5	0,9									
	7	7,2	6,4	5,8	5,3	4,9	4,2	3,4	2,6	1,8	1,2									
	10		7,0	6,4	5,9	5,4	4,6	3,8	3,0	2,3	1,6									
	12			6,7	6,1	5,6	4,8	4,0	3,2	2,5	1,9									
	15				6,3	5,8	5,1	4,4	3,5	2,6	1,9									
20					5,8	5,1	4,4	3,5	2,7	1,9										

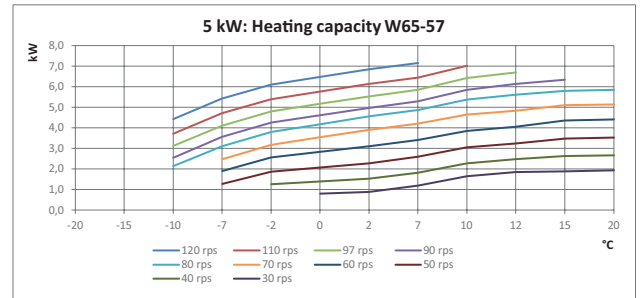
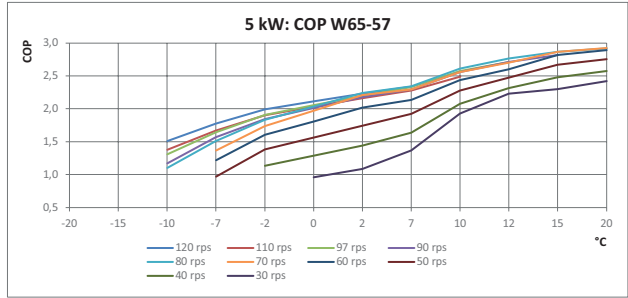


Fig 341: COP and heat output for A../W65-57

9.7.3 Heating mode performance data for 6 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C	90 rps		80 rps		40% red		50% red		60% red					
	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps						
-25	1,6	2,0	1,9	2,1	1,9	2,0								
-20	2,0	2,3	2,2	2,4	2,2	2,2								
-15	2,3	2,7	2,5	2,6	2,5	2,5								
-12	2,5	2,9	2,7	2,9	2,7	2,7	2,9							
-7	2,9	3,3	3,1	3,2	3,0	3,0	3,2	3,3	3,3					
-2	3,4	3,8	3,5	3,7	3,5	3,5	3,7	3,7	3,7	3,8				
0	3,6	4,0	3,8	3,9	3,7	3,7	3,9	3,9	3,9	3,9				
2	3,8	4,2	4,0	4,2	3,9	3,9	4,1	4,2	4,1	4,1				
7	4,4	4,8	4,6	4,9	4,6	4,6	4,8	4,8	4,7	4,7				
10	4,6	5,2	5,0	5,3	5,0	5,0	5,3	5,3	5,2	5,2				
12	4,8	5,4	5,2	5,6	5,3	5,3	5,6	5,7	5,5	5,5				
15	5,1	5,6	5,4	5,8	5,4	5,5	5,8	5,9	5,8	5,8				
20		6,0	5,6	6,0	5,7	5,8	6,1	6,3	6,2	6,3				

°C	90 rps		80 rps		40% red		50% red		60% red					
	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps						
-25	2,9	3,0	2,6	2,3	2,1	1,9								
-20	3,7	3,7	3,2	2,8	2,5	2,2								
-15	4,5	4,4	3,8	3,2	2,9	2,6								
-12	5,0	4,8	4,2	3,6	3,2	2,9	2,6							
-7	5,8	5,6	4,8	4,1	3,7	3,3	3,0	2,7	2,5					
-2	6,9	6,5	5,6	4,8	4,3	3,8	3,4	3,1	2,8	2,5				
0	7,4	6,9	6,0	5,1	4,6	4,1	3,7	3,3	3,0	2,6				
2	7,8	7,3	6,3	5,4	4,9	4,3	3,9	3,4	3,1	2,7				
7	8,9	8,3	7,2	6,3	5,6	5,0	4,5	4,0	3,6	3,1				
10	9,4	8,8	7,7	6,7	6,1	5,4	4,9	4,3	3,9	3,4				
12	9,7	9,1	8,1	7,0	6,4	5,7	5,1	4,6	4,1	3,6				
15	10,2	9,6	8,4	7,3	6,6	5,9	5,4	4,8	4,3	3,7				
20		10,3	9,0	7,8	7,1	6,4	5,8	5,2	4,6	4,1				

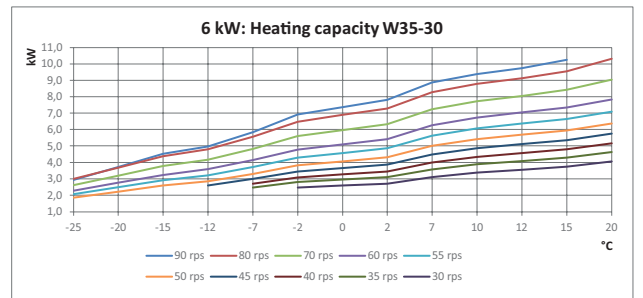
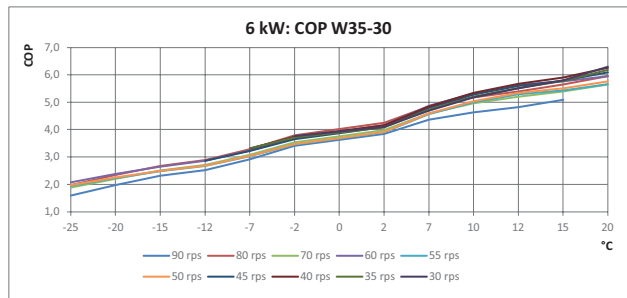


Fig 342: COP and heat output for A./W35-30

°C	90 rps		80 rps		40% red		50% red		60% red					
	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps						
-25	1,3	1,4	1,4	1,4	1,3	1,4								
-20	1,6	1,6	1,6	1,6	1,5	1,6								
-15	1,9	1,9	1,8	1,8	1,7	1,8								
-12	2,1	2,0	2,0	1,9	1,8	2,0	2,2							
-7	2,4	2,3	2,3	2,2	2,1	2,2	2,5	2,5	2,5					
-2	2,8	2,7	2,6	2,5	2,4	2,6	2,8	2,8	2,8	2,6				
0	3,0	2,8	2,7	2,7	2,5	2,7	3,0	2,9	2,9	2,8				
2	3,1	2,9	2,9	2,8	2,7	2,9	3,1	3,1	3,1	2,9				
7	3,5	3,3	3,3	3,2	3,1	3,3	3,6	3,6	3,5	3,3				
10	3,7	3,5	3,5	3,5	3,4	3,6	3,9	3,9	3,8	3,6				
12	3,8	3,6	3,7	3,7	3,6	3,8	4,1	4,1	4,0	3,8				
15	4,0	3,8	3,9	3,9	3,8	4,0	4,4	4,4	4,3	4,1				
20		4,2	4,3	4,4	4,2	4,5	4,9	4,9	4,9	4,7				

°C	90 rps		80 rps		40% red		50% red		60% red					
	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps						
-25	2,6	2,9	2,5	2,1	1,8	1,7								
-20	3,4	3,6	3,1	2,5	2,2	2,1								
-15	4,3	4,3	3,6	3,0	2,6	2,4								
-12	4,7	4,7	4,0	3,3	2,9	2,7	2,4							
-7	5,5	5,5	4,6	3,8	3,4	3,1	2,8	2,6	2,3					
-2	6,6	6,4	5,4	4,4	3,9	3,6	3,2	2,9	2,6	2,2				
0	7,0	6,7	5,7	4,7	4,2	3,8	3,4	3,1	2,8	2,3				
2	7,4	7,1	6,1	5,0	4,5	4,0	3,6	3,3	2,9	2,4				
7	8,4	8,0	6,9	5,8	5,2	4,7	4,2	3,8	3,3	2,7				
10	8,9	8,5	7,4	6,2	5,6	5,1	4,6	4,1	3,6	3,0				
12	9,2	8,8	7,7	6,5	5,9	5,3	4,8	4,3	3,8	3,2				
15	9,7	9,3	8,1	7,0	6,3	5,7	5,1	4,6	4,1	3,4				
20		10,1	8,9	7,7	6,9	6,3	5,7	5,1	4,5	3,8				

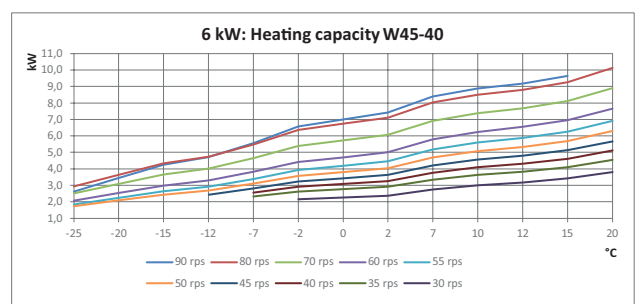
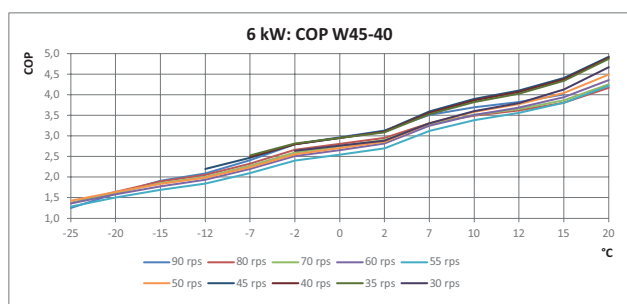


Fig 343: COP and heat output for A./W45-40

Update 10
New performance data (EN14511:2018)

				40% red		50% red		60% red							
		90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps				
°C	-20	1,3	1,4	1,5	1,5	1,5	1,5								
	-15	1,6	1,7	1,7	1,7	1,7	1,7								
	-12	1,7	1,8	1,8	1,9	1,8	1,8	1,8							
	-7	2,0	2,1	2,1	2,1	2,0	2,0	2,0	1,9	1,7					
	-2	2,3	2,4	2,4	2,4	2,3	2,3	2,2	2,1	2,0	1,7				
	0	2,4	2,5	2,5	2,5	2,4	2,4	2,4	2,2	2,0	1,8				
	2	2,6	2,6	2,6	2,6	2,6	2,5	2,5	2,3	2,1	1,9				
	7	2,8	2,9	2,9	3,0	2,9	2,8	2,8	2,7	2,5	2,2				
	10	3,0	3,1	3,1	3,2	3,1	3,1	3,1	2,9	2,7	2,4				
	12	3,1	3,2	3,2	3,3	3,3	3,2	3,2	3,0	2,8	2,6				
	15	3,2	3,3	3,4	3,5	3,5	3,4	3,4	3,2	3,0	2,8				
20		3,6	3,7	3,9	3,8	3,7	3,8	3,6	3,4	3,1					

				40% red		50% red		60% red							
		90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps				
°C	-20	3,3	3,3	2,9	2,5	2,2	2,1								
	-15	4,1	4,0	3,4	2,9	2,6	2,4								
	-12	4,6	4,4	3,8	3,2	2,9	2,6	2,3							
	-7	5,4	5,1	4,4	3,7	3,3	3,0	2,6	2,2	1,9					
	-2	6,4	5,9	5,1	4,2	3,8	3,5	3,0	2,6	2,1	1,7				
	0	6,8	6,3	5,4	4,5	4,1	3,7	3,2	2,7	2,3	1,8				
	2	7,2	6,7	5,7	4,8	4,3	3,9	3,4	2,9	2,4	1,9				
	7	8,1	7,5	6,5	5,5	5,0	4,5	3,9	3,4	2,8	2,2				
	10	8,5	8,0	7,0	6,0	5,4	4,9	4,3	3,7	3,1	2,5				
	12	8,8	8,2	7,2	6,2	5,7	5,1	4,5	3,9	3,3	2,6				
	15	9,3	8,7	7,7	6,6	6,0	5,5	4,8	4,2	3,5	2,9				
20		9,5	8,4	7,3	6,6	6,0	5,3	4,6	3,9	3,2					

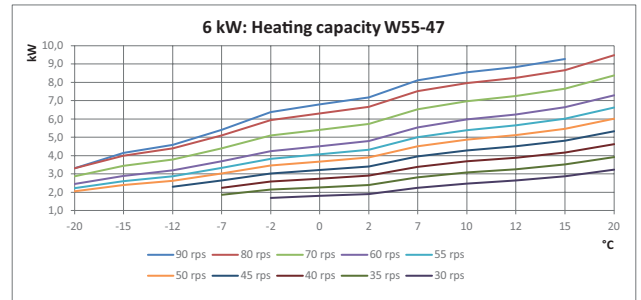
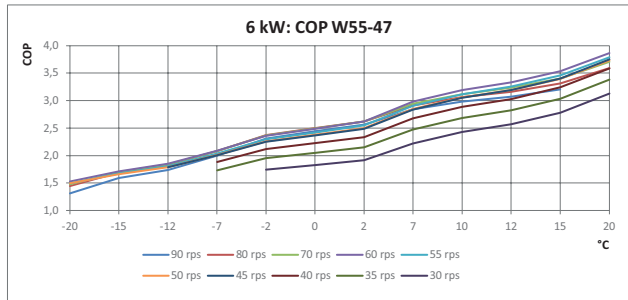


Fig 344: COP and heat output for A../W55-47

				40% red		50% red		60% red							
		90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps				
°C	-20														
	-15														
	-10	1,5	1,4	1,5	1,5	1,5	1,5	1,4	1,4						
	-7	1,7	1,6	1,6	1,7	1,6	1,6	1,5	1,6	1,4					
	-2	2,0	1,9	1,9	1,9	1,9	1,8	1,7	1,7	1,6	1,4				
	0	2,1	2,0	2,0	2,0	2,0	1,9	1,8	1,8	1,7	1,5				
	2	2,2	2,1	2,1	2,1	2,1	2,0	1,9	1,9	1,7	1,5				
	7	2,5	2,4	2,4	2,5	2,4	2,3	2,2	2,2	2,0	1,8				
	10	2,6	2,5	2,5	2,7	2,6	2,5	2,4	2,3	2,1	2,0				
	12	2,7	2,6	2,6	2,8	2,7	2,6	2,5	2,5	2,3	2,1				
	15		2,7	2,8	3,0	2,9	2,8	2,7	2,6	2,4	2,2				
20		3,0	3,1	3,3	3,2	3,1	2,9	2,9	2,6	2,4					

				40% red		50% red		60% red							
		90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps				
°C	-20														
	-15														
	-10	4,6	3,9	3,5	3,0	2,7	2,5	2,2	2,0						
	-7	5,1	4,4	3,9	3,3	3,0	2,7	2,4	2,2	1,8					
	-2	6,1	5,2	4,6	3,9	3,5	3,1	2,8	2,5	2,0	1,6				
	0	6,5	5,6	4,9	4,1	3,7	3,3	2,9	2,6	2,1	1,6				
	2	6,9	5,9	5,2	4,4	4,0	3,6	3,1	2,8	2,3	1,7				
	7	7,8	6,8	6,0	5,2	4,7	4,2	3,7	3,3	2,7	2,1				
	10	8,2	7,2	6,4	5,6	5,0	4,5	4,0	3,5	2,9	2,3				
	12	8,5	7,5	6,7	5,9	5,3	4,7	4,2	3,7	3,1	2,4				
	15		7,9	7,1	6,3	5,7	5,1	4,5	4,0	3,3	2,6				
20		8,8	7,9	6,9	6,3	5,6	5,0	4,5	3,7	3,0					

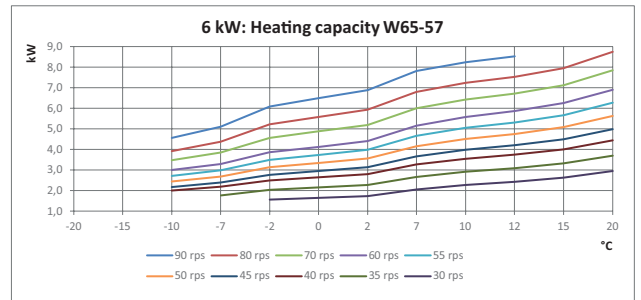
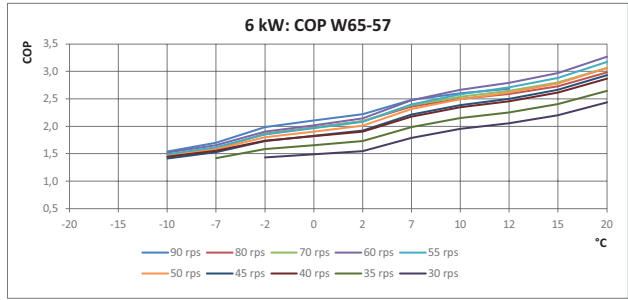


Fig 345: COP and heat output for A../W65-57

9.7.4 Heating mode performance data for 7 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		120 rps	110 rps	97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	40 rps	30 rps
°C	-25	1,8	1,7	1,6	1,6	1,7	1,5	1,7	1,5		
	-20	2,0	2,0	2,0	2,0	2,2	2,1	2,1	1,9		
	-15	2,3	2,3	2,4	2,5	2,7	2,7	2,6	2,4		
	-12	2,5	2,4	2,5	2,6	2,8	2,8	2,9	2,7		
	-7	2,6	2,6	2,7	2,8	3,0	3,0	3,1	3,0	3,1	
	-2	3,0	3,1	3,2	3,3	3,6	3,6	3,7	3,6	3,7	3,8
	0	3,2	3,2	3,3	3,4	3,8	3,8	3,9	3,9	3,9	4,1
	2	3,3	3,4	3,5	3,6	4,0	4,0	4,1	4,2	4,1	4,3
	7	3,9	3,9	3,9	4,1	4,5	4,6	4,8	4,8	4,8	4,9
	10		4,1	4,2	4,4	4,8	4,9	5,2	5,3	5,5	5,6
	12			4,4	4,5	5,0	5,1	5,4	5,6	5,9	6,0
15				4,6	5,0	5,1	5,4	5,5	5,8	5,8	
20					5,0	5,1	5,3	5,4	5,6	5,4	

		120 rps	110 rps	97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	40 rps	30 rps	
°C	-25	5,0	4,3	3,6	3,1	2,7	2,1	2,0	1,5			
	-20	5,8	5,1	4,4	3,9	3,4	2,9	2,4	1,8			
	-15	6,6	5,9	5,2	4,7	4,0	3,6	2,9	2,1			
	-12	7,2	6,4	5,8	5,2	4,5	4,0	3,4	2,7			
	-7	8,0	7,2	6,4	5,8	5,1	4,5	4,0	3,2	2,5		
	-2	9,4	8,5	7,7	7,0	6,2	5,5	4,7	3,9	3,1	2,4	
	0	9,9	9,0	8,1	7,4	6,6	5,9	5,1	4,2	3,2	2,6	
	2	10,4	9,5	8,6	7,9	7,0	6,3	5,4	4,5	3,4	2,8	
	7	12,3	11,1	9,8	9,0	8,1	7,2	6,3	5,1	4,0	3,2	
	10			11,7	10,3	9,4	8,4	7,5	6,6	5,4	4,3	3,4
	12				10,6	9,7	8,6	7,6	6,8	5,6	4,5	3,5
15					9,8	8,7	7,8	6,9	5,7	4,6	3,6	
20						8,9	8,0	7,0	5,9	4,8	3,7	

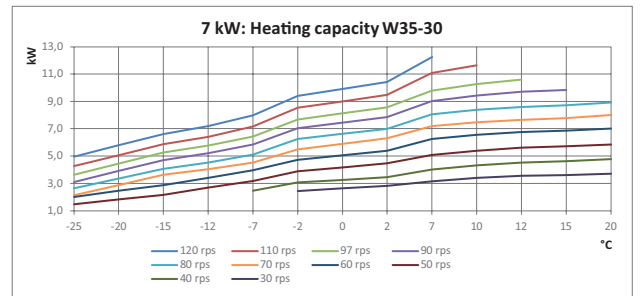
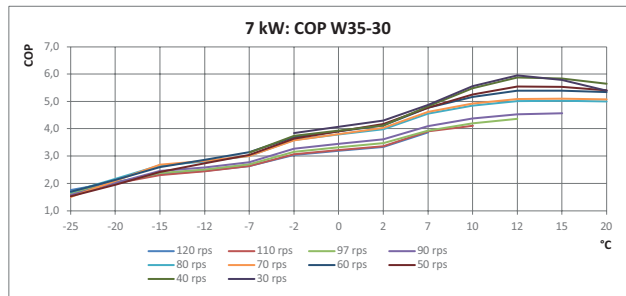


Fig 346: COP and heat output for A/W35-30

		120 rps	110 rps	97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	40 rps	30 rps
°C	-25	1,5	1,4	1,5	1,4	1,4	1,3	1,2	1,2		
	-20	1,7	1,7	1,8	1,7	1,7	1,7	1,6	1,5		
	-15	1,8	1,9	2,0	2,0	2,0	2,0	1,9	1,7		
	-12	2,0	2,0	2,2	2,2	2,2	2,1	2,1	2,0		
	-7	2,2	2,3	2,4	2,5	2,5	2,5	2,5	2,4	2,1	
	-2	2,5	2,6	2,8	2,8	2,9	3,0	3,0	2,8	2,6	2,8
	0	2,6	2,7	2,9	3,0	3,1	3,1	3,2	3,0	2,8	3,1
	2	2,7	2,8	3,0	3,1	3,2	3,3	3,3	3,2	3,0	3,3
	7	3,0	3,2	3,4	3,5	3,7	3,8	3,8	3,7	3,5	3,7
	10			3,3	3,5	3,6	3,8	3,9	3,9	3,6	3,7
	12				3,6	3,7	3,8	4,0	4,0	3,9	3,7
15					3,8	4,0	4,2	4,3	4,2	3,9	3,9
20						4,0	4,2	4,3	4,2	3,8	3,8

		120 rps	110 rps	97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	40 rps	30 rps	
°C	-25	4,4	3,9	3,4	2,8	2,3	1,7	1,3	1,0			
	-20	5,3	4,8	4,1	3,6	2,9	2,4	1,9	1,4			
	-15	6,1	5,6	4,9	4,4	3,6	3,1	2,4	1,8			
	-12	6,7	6,2	5,4	4,9	4,0	3,4	2,8	2,1			
	-7	7,8	7,2	6,3	5,7	4,8	4,1	3,4	2,7	2,1		
	-2	9,0	8,3	7,3	6,7	5,8	5,0	4,2	3,3	2,6	2,0	
	0	9,5	8,7	7,7	7,1	6,1	5,3	4,5	3,6	2,9	2,2	
	2	9,9	9,2	8,2	7,5	6,5	5,7	4,9	3,9	3,1	2,4	
	7	11,6	10,7	9,4	8,6	7,6	6,7	5,6	4,6	3,6	2,9	
	10			11,2	9,8	9,0	7,9	7,0	5,9	4,9	3,9	3,1
	12				10,2	9,3	8,2	7,2	6,1	5,1	4,1	3,2
15					9,8	8,6	7,8	6,8	5,6	4,5	3,5	
20						8,8	7,9	6,9	5,7	4,6	3,7	

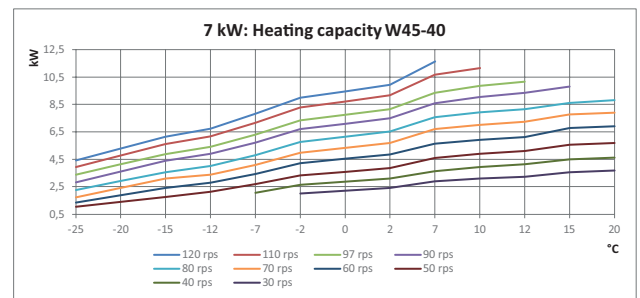
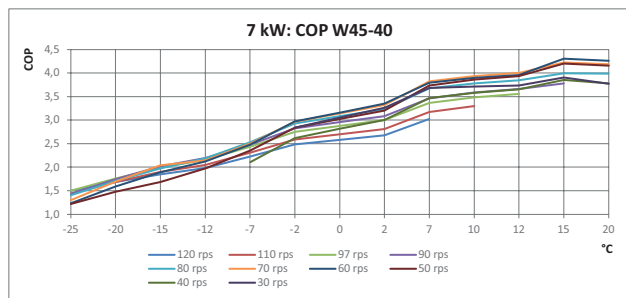


Fig 347: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

		120 rps	110 rps	97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	40 rps	30 rps
°C	-20	1,5	1,5	1,5	1,5	1,4	1,3	1,2	1,1		
	-15	1,6	1,6	1,7	1,7	1,7	1,7	1,5	1,3		
	-12		1,8	1,8	1,8	1,9	1,8	1,6	1,5		
	-7		2,0	2,0	2,1	2,1	2,1	2,0	2,0	1,7	
	-2		2,3	2,3	2,4	2,4	2,4	2,3	2,3	2,2	1,9
	0		2,4	2,4	2,5	2,5	2,5	2,5	2,5	2,3	2,0
	2		2,5	2,5	2,6	2,6	2,7	2,6	2,6	2,5	2,1
	7			2,8	2,9	3,0	3,0	2,9	3,0	2,8	2,5
	10			2,9	3,0	3,1	3,1	3,0	3,0	2,9	2,7
	12			2,9	3,0	3,1	3,1	3,1	3,1	3,1	3,0
	15				3,2	3,3	3,3	3,3	3,3	3,3	3,1
20					3,3	3,3	3,3	3,3	3,3	3,3	

		120 rps	110 rps	97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	40 rps	30 rps
°C	-20	5,1	4,5	3,9	3,5	2,6	2,1	1,7	1,2		
	-15	5,9	5,3	4,6	4,1	3,5	2,9	2,2	1,6		
	-12		5,9	5,1	4,6	3,9	3,2	2,5	1,8		
	-7		6,9	6,0	5,4	4,6	4,0	3,2	2,6	1,8	
	-2		8,0	7,0	6,3	5,4	4,9	3,9	3,2	2,3	1,5
	0		8,5	7,4	6,7	5,8	5,2	4,2	3,5	2,6	1,6
	2		9,0	7,8	7,1	6,1	5,5	4,5	3,7	2,8	1,7
	7			9,1	8,3	7,1	6,4	5,2	4,3	3,4	2,2
	10			9,6	8,8	7,6	6,7	5,5	4,6	3,6	2,4
	12			9,8	9,0	7,8	6,9	5,8	4,8	3,9	2,6
	15				9,7	8,4	7,5	6,3	5,3	4,2	2,8
20					8,6	7,7	6,5	5,5	4,4	3,0	

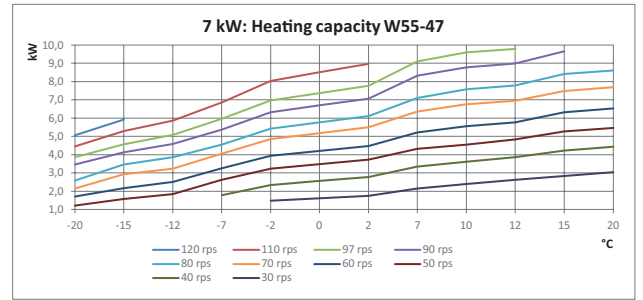
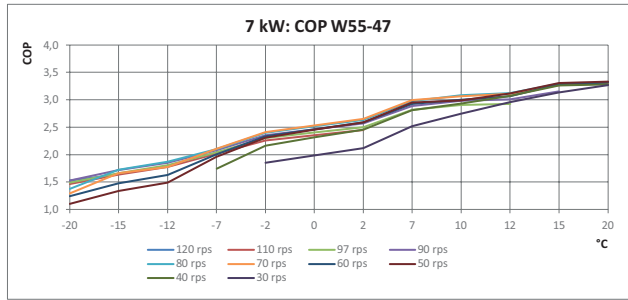


Fig 348: COP and heat output for A../W55-47

		120 rps	110 rps	97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	40 rps	30 rps
°C	-20										
	-15										
	-10	1,5	1,4	1,3	1,2	1,1					
	-7	1,8	1,7	1,6	1,6	1,5	1,4	1,2	1,0		
	-2	2,0	1,9	1,9	1,8	1,8	1,7	1,6	1,4	1,1	
	0	2,1	2,0	2,1	2,0	2,0	2,0	1,8	1,6	1,3	1,0
	2	2,2	2,2	2,2	2,2	2,2	2,2	2,0	1,7	1,4	1,1
	7	2,3	2,3	2,3	2,3	2,3	2,3	2,1	1,9	1,6	1,4
	10		2,5	2,6	2,6	2,6	2,6	2,4	2,3	2,1	1,9
	12			2,7	2,7	2,7	2,7	2,6	2,5	2,3	2,2
	15				2,8	2,9	2,9	2,8	2,7	2,5	2,3
20					2,9	2,9	2,9	2,8	2,6	2,4	

		120 rps	110 rps	97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	40 rps	30 rps
°C	-20										
	-15										
	-10	4,4	3,7	3,1	2,6	2,2					
	-7	5,4	4,7	4,1	3,6	3,1	2,5	1,9	1,3		
	-2	6,1	5,4	4,8	4,2	3,8	3,2	2,6	1,9	1,3	
	0	6,5	5,8	5,2	4,6	4,2	3,5	2,8	2,1	1,4	0,8
	2	6,8	6,1	5,5	5,0	4,6	3,9	3,1	2,3	1,5	0,9
	7	7,2	6,4	5,8	5,3	4,9	4,2	3,4	2,6	1,8	1,2
	10		7,0	6,4	5,9	5,4	4,6	3,8	3,0	2,3	1,6
	12			6,7	6,1	5,6	4,8	4,0	3,2	2,5	1,9
	15				6,3	5,8	5,1	4,4	3,5	2,6	1,9
20					5,8	5,1	4,4	3,5	2,7	1,9	

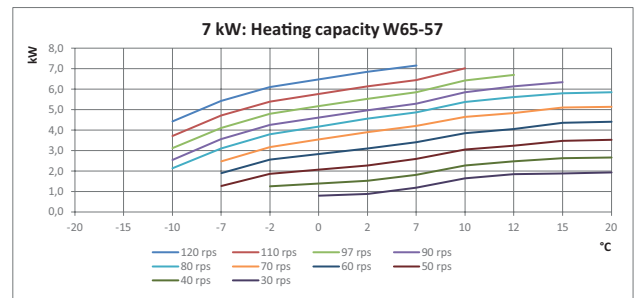
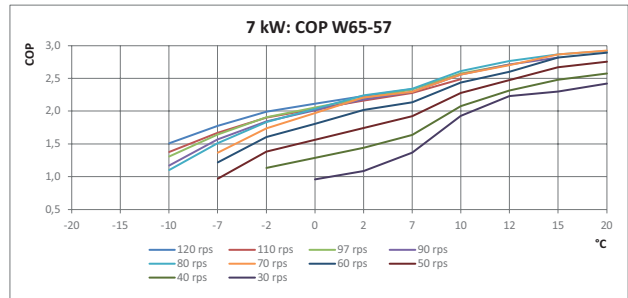


Fig 349: COP and heat output for A../W65-57

9.7.5 Heating mode performance data for 10 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C	90 rps		40% red		50% red		60% red					
	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps			
-25	1,5	1,6	1,7	1,7	1,7	1,8						
-20	1,9	2,1	2,1	2,2	2,2	2,2						
-15	2,3	2,5	2,6	2,6	2,6	2,7						
-12	2,6	2,8	2,8	2,9	2,9	2,9	3,1					
-7	3,0	3,2	3,3	3,3	3,4	3,5	3,6	3,7				
-2	3,5	3,7	3,8	3,8	3,8	4,0	4,1	4,2	4,2			
0	3,7	4,0	4,0	4,0	4,0	4,2	4,3	4,4	4,4			
2	3,9	4,2	4,2	4,2	4,2	4,4	4,5	4,6	4,7			
7	4,4	4,8	4,9	4,9	4,9	5,2	5,2	5,3	5,4			
10	4,8	5,2	5,3	5,5	5,4	5,4	5,7	5,8	5,9			
12	5,0	5,4	5,6	5,8	5,8	5,8	6,1	6,1	6,2	6,3		
15	5,4	5,9	6,1	6,3	6,2	6,2	6,6	6,6	6,7	6,8		
20		6,6	6,8	7,1	7,0	7,0	7,5	7,4	7,5	7,8		

°C	90 rps		40% red		50% red		60% red					
	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps			
-25	5,1	4,6	4,2	3,8	3,5	3,4						
-20	6,6	5,9	5,3	4,8	4,5	4,2						
-15	8,1	7,2	6,5	5,8	5,4	5,1						
-12	9,0	8,0	7,3	6,5	6,0	5,6	4,9					
-7	10,5	9,4	8,5	7,5	6,9	6,5	5,6	5,3	4,8			
-2	12,2	10,9	9,7	8,5	7,9	7,3	6,4	6,0	5,4	4,4		
0	13,0	11,5	10,2	8,9	8,3	7,7	6,7	6,3	5,6	4,6		
2	13,7	12,2	10,8	9,4	8,7	8,1	7,1	6,6	5,9	4,9		
7	15,5	13,9	12,3	10,8	10,0	9,3	8,1	7,5	6,7	5,5		
10	16,5	14,9	13,3	11,8	10,9	10,1	8,8	8,1	7,3	6,0		
12	17,3	15,6	14,0	12,4	11,5	10,6	9,3	8,6	7,6	6,3		
15	18,5	16,7	14,9	13,2	12,2	11,3	9,9	9,1	8,1	6,7		
20		18,3	16,4	14,5	13,4	12,4	10,9	10,0	8,9	7,4		

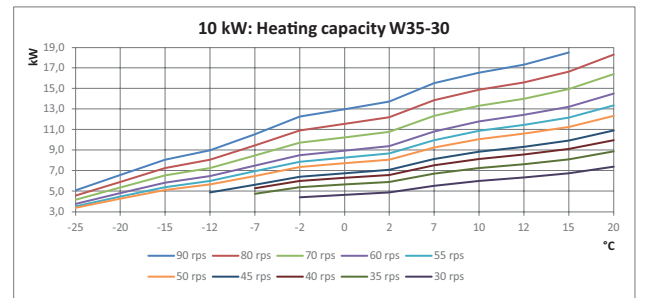
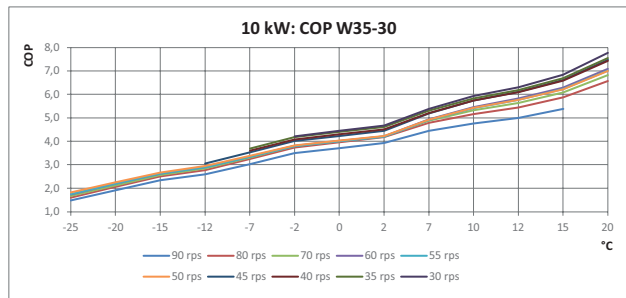


Fig 350: COP and heat output for A/W35-30

°C	90 rps		40% red		50% red		60% red					
	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps			
-25	1,2	1,2	1,2	1,3	1,3	1,3						
-20	1,6	1,6	1,6	1,7	1,7	1,7						
-15	1,9	1,9	1,9	2,0	2,0	2,0						
-12	2,1	2,1	2,1	2,2	2,2	2,3	2,3					
-7	2,4	2,4	2,4	2,5	2,6	2,6	2,7	2,7	2,8			
-2	2,8	2,8	2,8	2,8	2,9	3,0	3,0	3,1	3,2	3,2		
0	3,0	3,0	2,9	3,0	3,0	3,1	3,2	3,2	3,3	3,3		
2	3,1	3,1	3,1	3,1	3,2	3,3	3,3	3,4	3,5	3,5		
7	3,5	3,5	3,5	3,6	3,7	3,8	3,9	3,9	4,0	4,0		
10	3,8	3,8	3,8	4,0	4,0	4,1	4,2	4,3	4,4	4,3		
12	3,9	4,0	4,0	4,2	4,3	4,4	4,5	4,5	4,6	4,5		
15	4,2	4,3	4,3	4,5	4,6	4,7	4,8	4,8	4,9	4,9		
20		4,7	4,7	5,0	5,1	5,2	5,3	5,4	5,5	5,4		

°C	90 rps		40% red		50% red		60% red					
	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps				
-25	5,0	4,5	4,0	3,6	3,3	3,0						
-20	6,4	5,8	5,2	4,6	4,2	3,8						
-15	7,8	7,1	6,3	5,6	5,1	4,6						
-12	8,7	7,8	7,0	6,2	5,7	5,2	4,6					
-7	10,2	9,2	8,2	7,1	6,5	6,0	5,4	4,9	4,4			
-2	11,8	10,5	9,3	8,1	7,4	6,8	6,1	5,5	5,0			
0	12,5	11,1	9,8	8,5	7,8	7,1	6,4	5,8	5,3			
2	13,2	11,7	10,3	8,9	8,2	7,4	6,7	6,1	5,5			
7	14,8	13,3	11,8	10,2	9,4	8,5	7,7	6,9	6,2			
10	15,8	14,2	12,7	11,1	10,2	9,3	8,4	7,5	6,8			
12	16,5	14,9	13,3	11,7	10,8	9,8	8,8	7,9	7,1			
15	17,6	15,9	14,2	12,5	11,4	10,4	9,4	8,4	7,5			
20		17,4	15,6	13,7	12,6	11,4	10,3	9,2	8,3			

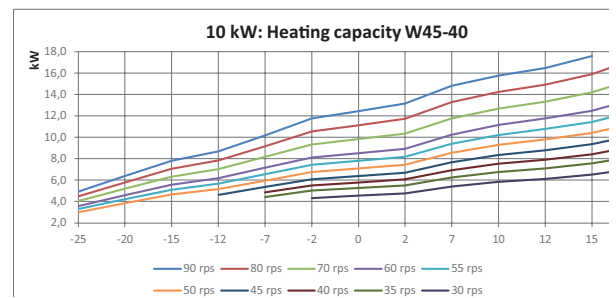
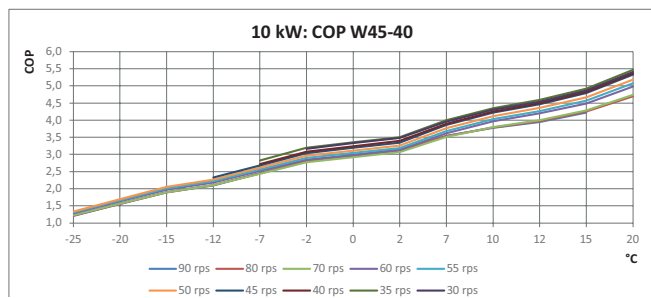


Fig 351: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

		40% red		50% red		60% red					
		90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps
°C	-20	1,3	1,4	1,4	1,4	1,4	1,4				
	-15	1,6	1,6	1,7	1,7	1,7	1,7				
	-12	1,8	1,8	1,9	1,9	1,9	1,9	2,0			
	-7	2,1	2,1	2,1	2,2	2,2	2,2	2,2	2,1	2,0	
	-2	2,4	2,4	2,4	2,5	2,4	2,5	2,5	2,4	2,3	2,3
	0	2,5	2,5	2,6	2,6	2,6	2,6	2,6	2,5	2,4	2,4
	2	2,7	2,7	2,7	2,7	2,7	2,7	2,8	2,6	2,6	2,5
	7	3,0	3,0	3,0	3,1	3,1	3,1	3,0	2,9	2,9	2,9
	10	3,2	3,2	3,3	3,4	3,3	3,4	3,4	3,2	3,2	3,1
	12	3,3	3,4	3,4	3,5	3,5	3,6	3,6	3,4	3,4	3,3
	15	3,5	3,6	3,7	3,8	3,7	3,8	3,8	3,7	3,6	3,5
20		3,9	4,0	4,2	4,1	4,2	4,2	4,0	4,0	3,9	

		40% red		50% red		60% red					
		90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps
°C	-20	6,4	5,8	5,1	4,5	4,1	3,8				
	-15	7,8	7,0	6,2	5,5	5,0	4,6				
	-12	8,6	7,8	6,9	6,1	5,5	5,1	4,6			
	-7	10,0	9,0	8,0	7,0	6,4	5,8	5,3	4,5	3,9	
	-2	11,5	10,3	9,1	7,9	7,2	6,6	6,0	5,1	4,4	3,8
	0	12,2	10,9	9,5	8,2	7,5	6,9	6,3	5,3	4,7	4,0
	2	12,8	11,4	10,0	8,6	7,9	7,2	6,6	5,6	4,9	4,2
	7	14,4	12,9	11,3	9,8	9,0	8,2	7,5	6,4	5,6	4,8
	10	15,3	13,7	12,2	10,7	9,8	8,9	8,1	6,9	6,1	5,2
	12	15,9	14,3	12,8	11,2	10,3	9,4	8,5	7,3	6,4	5,4
	15	16,9	15,2	13,6	11,9	10,9	9,9	9,0	7,8	6,8	5,8
20		16,7	14,8	13,0	11,9	10,9	9,9	8,5	7,5	6,4	

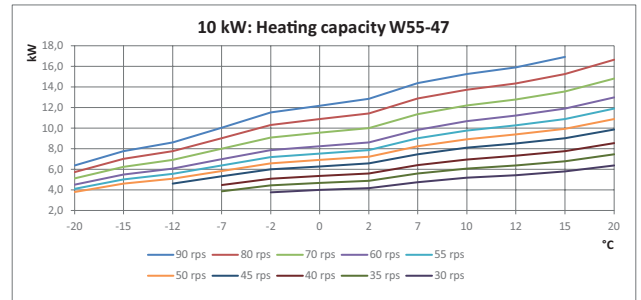
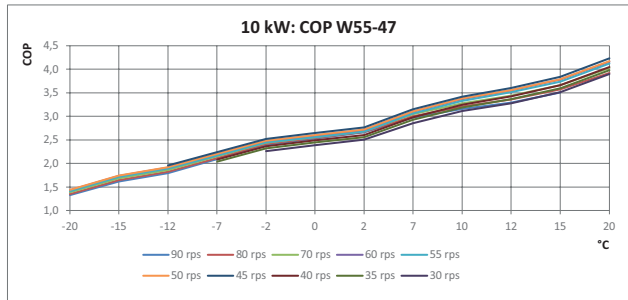


Fig 352: COP and heat output for A../W55-47

		40% red		50% red		60% red					
		90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps
°C	-20										
	-15										
	-10	1,6	1,5	1,5	1,6	1,6	1,6	1,6	1,5		
	-7	1,7	1,7	1,6	1,7	1,7	1,7	1,7	1,6	1,6	
	-2	1,9	1,9	1,8	1,9	1,9	1,9	1,9	1,8	1,8	1,8
	0	2,0	2,0	1,9	2,0	2,0	2,0	2,0	1,9	1,9	1,9
	2	2,1	2,1	2,0	2,1	2,1	2,1	2,1	2,0	2,0	1,9
	7	2,4	2,3	2,3	2,3	2,3	2,3	2,4	2,3	2,2	2,2
	10	2,5	2,5	2,4	2,5	2,5	2,5	2,6	2,4	2,4	2,4
	12		2,6	2,5	2,6	2,6	2,6	2,7	2,6	2,6	2,5
	15		2,7	2,7	2,8	2,8	2,8	2,9	2,7	2,7	2,7
20			2,9	3,0	3,0	3,1	3,1	3,0	3,0	2,9	

		40% red		50% red		60% red					
		90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps
°C	-20										
	-15										
	-10	8,8	8,0	6,9	6,1	5,6	5,1	4,6	3,9		
	-7	9,6	8,7	7,4	6,5	6,0	5,5	5,0	4,2	3,7	
	-2	11,0	9,9	8,4	7,3	6,7	6,2	5,6	4,8	4,1	3,5
	0	11,6	10,3	8,8	7,6	7,0	6,4	5,8	5,0	4,4	3,7
	2	12,1	10,8	9,2	8,0	7,3	6,7	6,1	5,2	4,5	3,9
	7	13,5	12,1	10,3	9,0	8,3	7,6	6,8	5,9	5,1	4,4
	10	14,2	12,8	11,1	9,7	8,9	8,1	7,4	6,4	5,6	4,8
	12		13,3	11,6	10,1	9,3	8,5	7,7	6,7	5,8	5,0
	15		14,1	12,2	10,7	9,8	9,0	8,1	7,1	6,2	5,3
20			13,3	11,6	10,7	9,8	8,9	7,7	6,8	5,8	

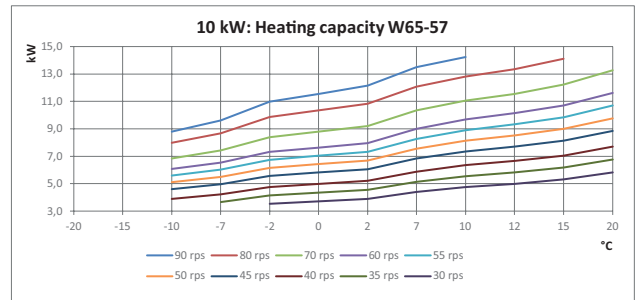
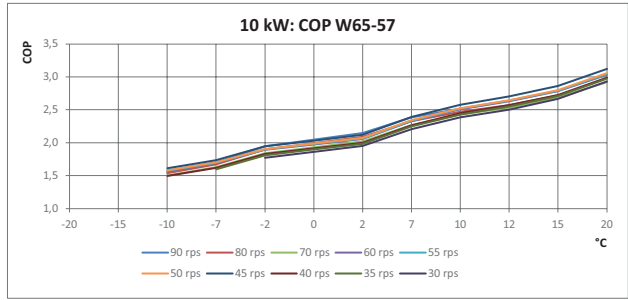


Fig 353: COP and heat output for A../W65-57

9.7.6 Heating mode performance data for 12 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		110 rps	105 rps	97 rps	90 rps	80 rps	40% red	50% red	60% red	40 rps	30 rps
°C	-25	1,9	2,0	2,0	2,0	2,0	1,9	1,9	1,8		
	-20	2,1	2,2	2,2	2,2	2,3	2,2	2,3	2,2		
	-15	2,2	2,3	2,4	2,4	2,5	2,4	2,6	2,6		
	-12	2,4	2,5	2,5	2,5	2,7	2,7	2,8	2,9		
	-7	2,7	2,8	2,8	2,8	3,0	3,1	3,3	3,3	3,4	
	-2	3,0	3,2	3,2	3,3	3,6	3,7	3,9	4,0	4,2	3,7
	0	3,2	3,3	3,4	3,4	3,8	4,0	4,2	4,3	4,4	4,0
	2	3,3	3,4	3,6	3,6	3,9	4,2	4,4	4,5	4,7	4,3
	7	3,6	3,8	3,9	4,0	4,5	4,8	5,1	5,2	5,5	5,2
	10		3,8	4,0	4,1	4,6	4,9	5,3	5,5	5,9	5,7
	12			4,0	4,2	4,6	5,0	5,5	5,7	6,1	6,0
15				4,2	4,7	5,2	5,7	5,9	6,4	6,4	
20					4,9	5,4	5,9	6,3	6,9	7,1	

		110 rps	105 rps	97 rps	90 rps	80 rps	40% red	50% red	60% red	40 rps	30 rps
°C	-25	8,9	8,7	8,2	7,2	6,0	4,7	4,0	2,9		
	-20	9,6	9,4	8,9	7,9	6,8	5,4	4,7	3,6		
	-15	10,4	10,1	9,6	8,6	7,5	6,1	5,4	4,3		
	-12	11,2	10,9	10,4	9,3	8,1	6,7	6,0	4,8		
	-7	12,7	12,2	11,6	10,3	9,0	7,8	6,9	5,5	4,3	
	-2	14,7	14,3	13,8	12,3	11,1	9,9	8,6	7,2	5,7	3,9
	0	15,6	15,2	14,7	13,1	11,9	10,8	9,3	7,8	6,2	4,4
	2	16,4	16,0	15,6	13,9	12,8	11,6	10,0	8,5	6,7	4,9
	7	17,9	17,5	17,0	15,6	14,4	13,1	11,5	9,6	7,8	5,8
	10		17,7	17,3	15,8	14,6	13,4	11,9	10,1	8,2	6,3
	12			17,4	15,9	14,8	13,6	12,2	10,4	8,5	6,5
15				16,0	14,8	13,6	12,3	10,5	8,5	6,6	
20					14,9	13,8	12,4	10,6	8,6	6,7	

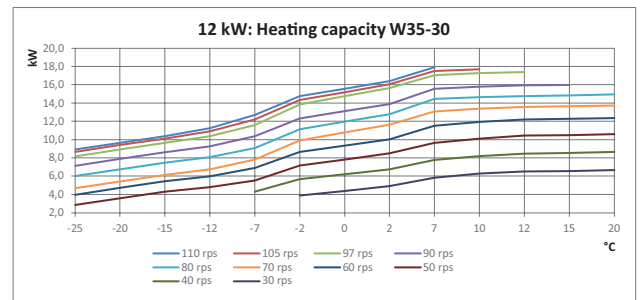
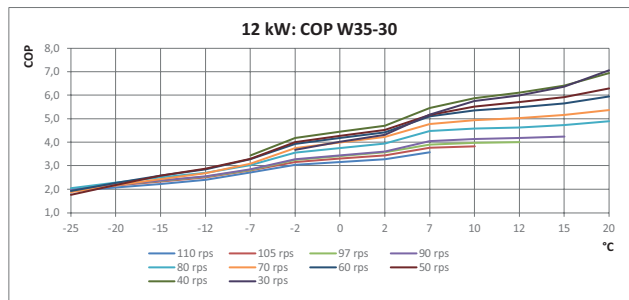


Fig 354: COP and heat output for A/W35-30

		110 rps	105 rps	97 rps	90 rps	80 rps	40% red	50% red	60% red	40 rps	30 rps
°C	-25	1,8	1,7	1,8	1,7	1,7	1,7	1,6	1,6		
	-20	1,9	1,9	1,9	1,9	1,9	1,8	1,8	1,9		
	-15	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,1		
	-12	2,1	2,1	2,1	2,2	2,2	2,2	2,2	2,3		
	-7	2,3	2,4	2,4	2,5	2,5	2,4	2,4	2,5	2,6	
	-2	2,5	2,6	2,7	2,8	2,9	2,9	2,8	3,0	3,2	2,9
	0	2,7	2,7	2,8	3,0	3,1	3,1	3,1	3,3	3,5	3,3
	2	2,8	2,9	3,0	3,1	3,3	3,4	3,3	3,5	3,8	3,6
	7	3,1	3,1	3,3	3,5	3,7	3,8	3,9	3,9	4,2	4,1
	10		3,2	3,3	3,5	3,8	3,9	4,0	4,2	4,4	4,4
	12			3,4	3,6	3,8	4,0	4,1	4,3	4,6	4,6
15				3,6	3,8	4,0	4,2	4,3	4,6	4,6	
20					3,8	4,1	4,2	4,4	4,6	4,7	

		110 rps	105 rps	97 rps	90 rps	80 rps	40% red	50% red	60% red	40 rps	30 rps
°C	-25	8,9	8,1	7,9	6,8	5,7	4,7	3,7	3,0		
	-20	9,5	8,9	8,5	7,4	6,3	5,3	4,3	3,6		
	-15	10,1	9,6	9,1	8,0	6,9	5,9	4,9	4,2		
	-12	11,0	10,6	10,0	8,9	7,6	6,6	5,5	4,7		
	-7	12,5	12,1	11,5	10,3	8,9	7,7	6,4	5,4	4,2	
	-2	13,7	13,3	12,9	11,8	10,4	9,2	7,7	6,6	5,4	3,6
	0	14,5	14,1	13,7	12,6	11,3	10,1	8,4	7,2	6,0	4,1
	2	15,3	14,9	14,5	13,4	12,1	10,9	9,1	7,9	6,6	4,6
	7	16,8	16,5	16,1	15,1	13,6	12,2	10,4	8,9	7,5	5,2
	10		16,8	16,4	15,3	13,8	12,6	10,8	9,3	7,9	5,6
	12			16,7	15,5	14,0	12,9	11,1	9,6	8,2	5,9
15				15,5	14,1	13,0	11,2	9,7	8,3	6,0	
20					14,2	13,1	11,3	9,8	8,4	6,1	

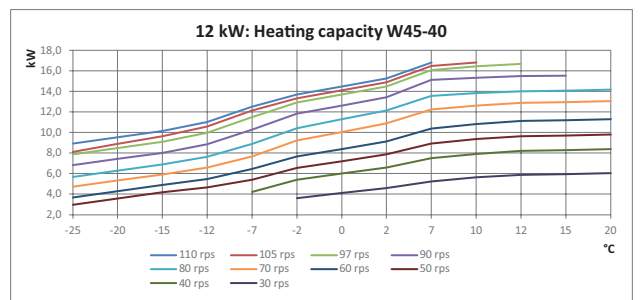
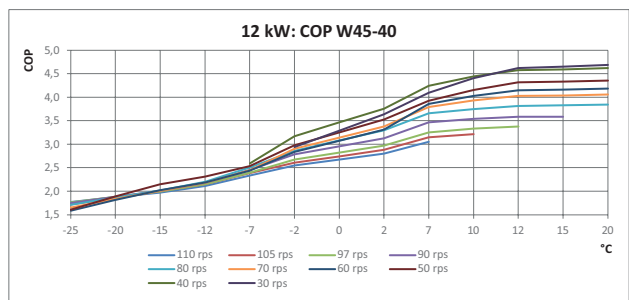


Fig 355: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

		110 rps	105 rps	97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	40 rps	30 rps
°C	-20				1,5	1,4	1,4	1,3	1,3		
	-15				1,7	1,6	1,5	1,5	1,5		
	-12			1,7	1,8	1,7	1,7	1,7	1,7		
	-7	1,8	1,8	1,8	2,0	2,0	2,0	1,9	2,0	2,0	
	-2	2,0	2,0	2,0	2,2	2,2	2,3	2,3	2,4	2,4	2,1
	0	2,2	2,1	2,2	2,4	2,4	2,4	2,5	2,7	2,6	2,4
	2	2,3	2,2	2,3	2,5	2,5	2,6	2,7	2,9	2,9	2,6
	7	2,5	2,4	2,5	2,7	2,7	2,8	2,9	3,1	3,0	2,7
	10		2,6	2,6	2,9	2,9	3,0	3,1	3,4	3,3	3,1
	12			2,7	3,0	3,0	3,1	3,3	3,5	3,6	3,4
	15				3,0	3,0	3,1	3,3	3,6	3,6	3,4
20					3,1	3,2	3,4	3,7	3,7	3,5	

		110 rps	105 rps	97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	40 rps	30 rps
°C	-20				7,1	5,9	4,9	4,0	3,0		
	-15				7,8	6,6	5,6	4,7	3,7		
	-12			9,0	8,4	7,3	6,3	5,3	4,2		
	-7	10,9	10,4	10,0	9,4	8,5	7,4	6,2	5,1	4,0	
	-2	12,1	11,6	11,2	10,6	9,5	8,6	7,4	6,1	5,0	3,4
	0	12,8	12,3	11,9	11,3	10,2	9,2	8,0	6,7	5,5	3,9
	2	13,6	13,0	12,6	12,0	10,9	9,8	8,7	7,3	6,0	4,3
	7	14,7	14,2	13,8	13,2	11,8	10,5	9,4	8,0	6,3	4,6
	10		15,0	14,6	14,0	12,6	11,4	10,2	8,6	7,1	5,2
	12			15,2	14,6	13,2	12,0	10,8	9,0	7,6	5,7
	15				14,7	13,3	12,1	10,9	9,1	7,7	5,8
20					13,5	12,3	11,2	9,4	7,9	6,0	

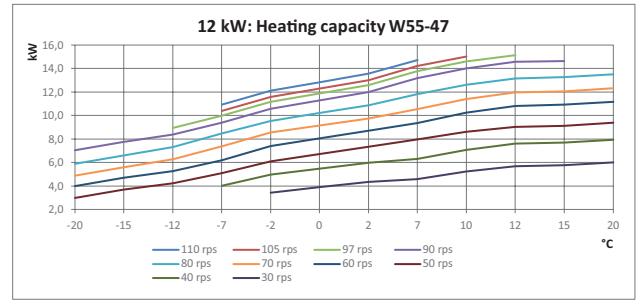
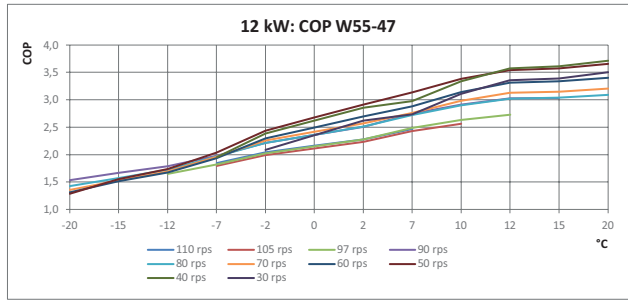


Fig 356: COP and heat output for A../W55-47

		97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	45 rps	40 rps	35 rps	30 rps
°C	-20										
	-15										
	-10		1,5	1,4	1,2	1,1	0,9	0,8	0,7		
	-7	1,6	1,7	1,5	1,4	1,3	1,1	1,0	1,0	0,6	
	-2	1,8	1,9	1,8	1,8	1,7	1,6	1,6	1,6	1,4	1,1
	0	1,8	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,5	1,2
	2	1,8	2,0	1,9	1,9	1,9	1,8	1,8	1,8	1,6	1,4
	7		2,3	2,3	2,2	2,3	2,2	2,3	2,3	2,2	2,0
	10		2,4	2,4	2,4	2,5	2,4	2,5	2,6	2,4	2,3
	12			2,4	2,4	2,5	2,5	2,6	2,7	2,5	2,4
	15			2,6	2,6	2,7	2,7	2,8	2,9	2,8	2,7
20				2,6	2,8	2,8	2,9	3,0	2,9	2,8	

		97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 50 rps	45 rps	40 rps	35 rps	30 rps
°C	-20										
	-15										
	-10		8,5	7,0	5,5	4,3	2,8	2,4	1,8		
	-7	9,7	9,1	7,6	6,1	5,0	3,5	3,0	2,4	1,4	
	-2	10,9	10,3	9,3	7,8	6,7	5,2	4,8	4,2	3,1	2,2
	0	11,1	10,5	9,5	8,0	7,0	5,5	5,1	4,5	3,4	2,5
	2	11,3	10,7	9,7	8,3	7,2	5,8	5,3	4,7	3,7	2,8
	7		12,7	11,7	10,1	8,9	7,4	6,8	6,2	5,1	4,1
	10		13,0	12,0	10,4	9,3	7,7	7,2	6,5	5,4	4,4
	12			12,1	10,6	9,5	7,9	7,4	6,7	5,6	4,6
	15			12,8	11,2	10,2	8,6	8,0	7,3	6,2	5,2
20				11,7	10,6	9,0	8,5	7,8	6,7	5,7	

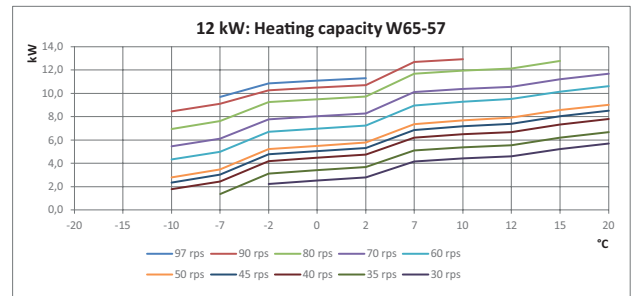
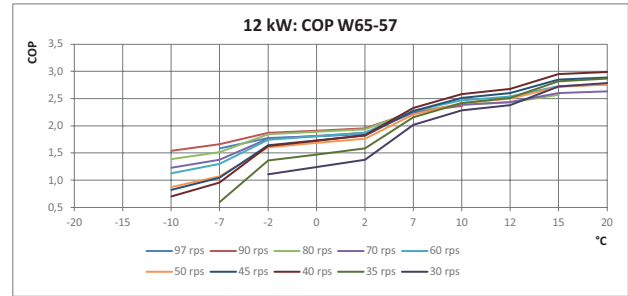


Fig 357: COP and heat output for A../W65-57

9.8 Performance data - cooling mode

9.8.1 Cooling mode performance data for 3 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ... %

°C			40% red		50% red		60% red			
	97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
15	3,1	3,3	3,7	4,3	4,9	5,4	5,8	6,2	6,2	6,5
20	2,9	3,1	3,4	3,8	4,4	4,7	5,0	5,4	5,4	5,7
25	2,9	3,2	3,5	3,8	4,1	4,4	4,6	4,8	4,8	5,0
30	2,8	3,0	3,2	3,4	3,7	3,9	4,0	4,2	4,1	4,2
35	2,5	2,6	2,8	3,0	3,2	3,3	3,5	3,6	3,5	3,4
40	2,2	2,3	2,5	2,6	2,8	2,9	3,0	3,0	2,8	2,7
46	1,9	2,0	2,1	2,2	2,4	2,4	2,4	2,4	2,2	1,9

°C			40% red		50% red		60% red			
	97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
15	6,2	5,9	5,4	4,9	4,3	4,0	3,8	3,4	3,0	2,4
20	6,0	5,7	5,2	4,7	4,1	3,9	3,6	3,2	2,9	2,3
25	6,2	5,9	5,4	4,7	4,1	3,8	3,4	3,1	2,7	2,2
30	6,0	5,7	5,1	4,5	3,9	3,6	3,3	2,9	2,6	2,0
35	5,6	5,3	4,7	4,2	3,6	3,3	3,0	2,7	2,4	1,8
40	5,2	4,9	4,4	3,9	3,4	3,1	2,8	2,5	2,0	1,5
46	4,8	4,5	4,0	3,5	3,1	2,8	2,4	2,0	1,7	1,2

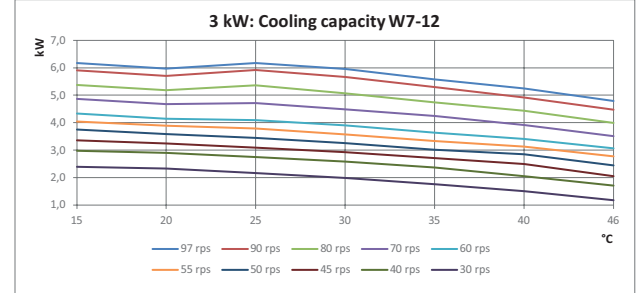
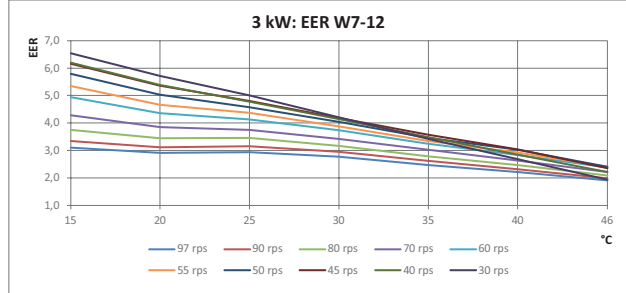


Fig 358: EER and cooling output for W7-12

°C			40% red		50% red		60% red			
	97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
15	4,1	4,6	5,2	6,0	6,4	6,8	7,3	7,9	9,3	
20	3,5	3,7	4,1	4,6	5,2	5,6	5,9	6,4	6,8	7,9
25	3,5	3,8	4,2	4,6	5,1	5,4	5,7	6,0	6,3	7,2
30	3,4	3,6	4,0	4,3	4,8	5,0	5,2	5,4	5,7	6,2
35	3,1	3,3	3,5	3,9	4,2	4,4	4,6	4,7	5,0	5,4
40	2,8	2,9	3,2	3,4	3,7	3,9	4,0	4,2	4,4	4,7
46	2,4	2,6	2,8	3,0	3,2	3,3	3,4	3,6	3,7	3,9

°C			40% red		50% red		60% red			
	97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
15	7,5	6,8	6,1	5,3	4,9	4,4	3,9	3,5	2,5	
20	7,6	7,3	6,6	5,9	5,2	4,7	4,3	3,8	3,4	2,5
25	7,7	7,4	6,7	6,0	5,1	4,7	4,3	3,8	3,4	2,5
30	7,6	7,3	6,6	5,9	5,1	4,7	4,2	3,8	3,3	2,4
35	7,3	7,0	6,3	5,6	4,9	4,5	4,1	3,6	3,2	2,4
40	7,0	6,7	6,1	5,4	4,7	4,3	3,9	3,5	3,1	2,3
46	6,5	6,2	5,7	5,0	4,4	4,0	3,6	3,3	2,9	2,1

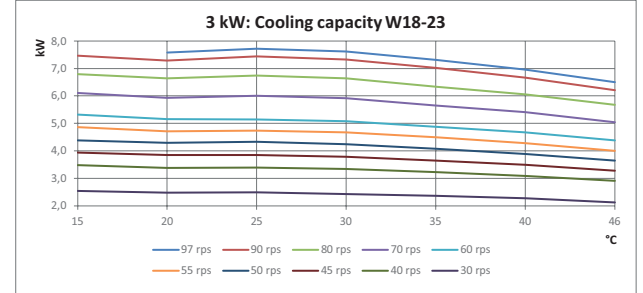
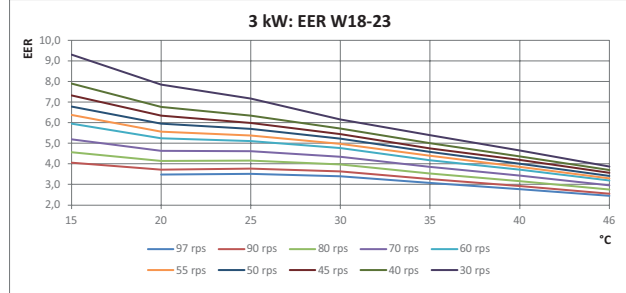


Fig 359: EER and cooling output for W18-23

9.8.2 Cooling mode performance data for 5 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

				40% red		50% red		60% red			
		97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
°C	15	3,1	3,3	3,7	4,3	4,9	5,4	5,8	6,2	6,2	6,5
	20	2,9	3,1	3,4	3,8	4,4	4,7	5,0	5,4	5,4	5,7
	25	2,9	3,2	3,5	3,8	4,1	4,4	4,6	4,8	4,8	5,0
	30	2,8	3,0	3,2	3,4	3,7	3,9	4,0	4,2	4,1	4,2
	35	2,5	2,6	2,8	3,0	3,2	3,3	3,5	3,6	3,5	3,4
	40	2,2	2,3	2,5	2,6	2,8	2,9	3,0	3,0	2,8	2,7
	46	1,9	2,0	2,1	2,2	2,4	2,4	2,4	2,4	2,2	1,9

				40% red		50% red		60% red			
		97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
°C	15	6,2	5,9	5,4	4,9	4,3	4,0	3,8	3,4	3,0	2,4
	20	6,0	5,7	5,2	4,7	4,1	3,9	3,6	3,2	2,9	2,3
	25	6,2	5,9	5,4	4,7	4,1	3,8	3,4	3,1	2,7	2,2
	30	6,0	5,7	5,1	4,5	3,9	3,6	3,3	2,9	2,6	2,0
	35	5,6	5,3	4,7	4,2	3,6	3,3	3,0	2,7	2,4	1,8
	40	5,2	4,9	4,4	3,9	3,4	3,1	2,8	2,5	2,0	1,5
	46	4,8	4,5	4,0	3,5	3,1	2,8	2,4	2,0	1,7	1,2

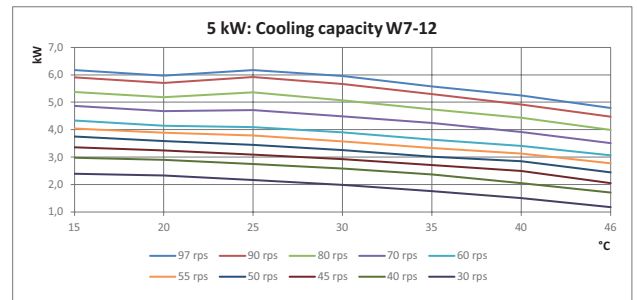
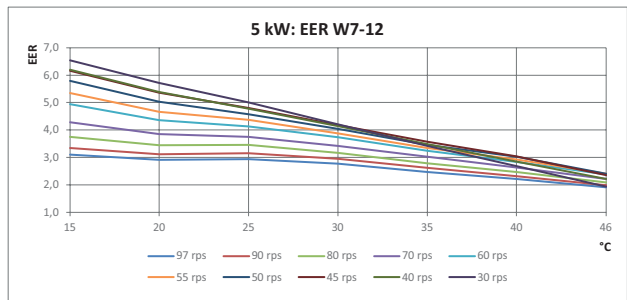


Fig 360: EER and cooling output for W7-12

				40% red		50% red		60% red			
		97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
°C	15	4,1	4,6	5,2	6,0	6,4	6,8	7,3	7,9	9,3	
	20	3,5	3,7	4,1	4,6	5,2	5,6	5,9	6,4	6,8	7,9
	25	3,5	3,8	4,2	4,6	5,1	5,4	5,7	6,0	6,3	7,2
	30	3,4	3,6	4,0	4,3	4,8	5,0	5,2	5,4	5,7	6,2
	35	3,1	3,3	3,5	3,9	4,2	4,4	4,6	4,7	5,0	5,4
	40	2,8	2,9	3,2	3,4	3,7	3,9	4,0	4,2	4,4	4,7
	46	2,4	2,6	2,8	3,0	3,2	3,3	3,4	3,6	3,7	3,9

				40% red		50% red		60% red			
		97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
°C	15	7,5	6,8	6,1	5,3	4,9	4,4	3,9	3,5	2,5	
	20	7,6	7,3	6,6	5,9	5,2	4,7	4,3	3,8	3,4	2,5
	25	7,7	7,4	6,7	6,0	5,1	4,7	4,3	3,8	3,4	2,5
	30	7,6	7,3	6,6	5,9	5,1	4,7	4,2	3,8	3,3	2,4
	35	7,3	7,0	6,3	5,6	4,9	4,5	4,1	3,6	3,2	2,4
	40	7,0	6,7	6,1	5,4	4,7	4,3	3,9	3,5	3,1	2,3
	46	6,5	6,2	5,7	5,0	4,4	4,0	3,6	3,3	2,9	2,1

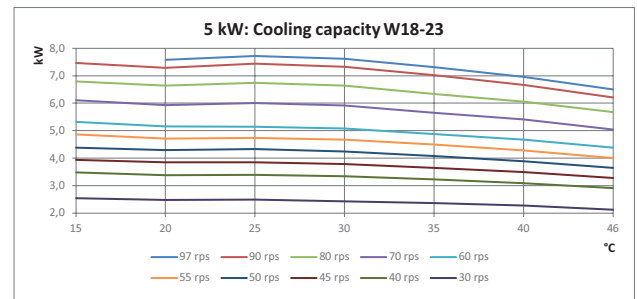
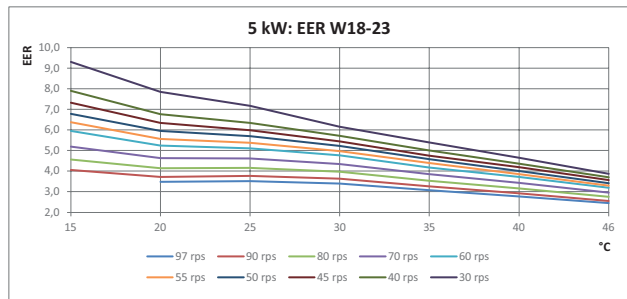


Fig 361: EER and cooling output for W18-23

9.8.3 Cooling mode performance data for 6 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	55 rps	60% red 50 rps	45 rps	40 rps	30 rps
°C	15		3,4	3,8	4,2	4,8	5,2	5,5	6,0	6,5	8,6
	20	3,1	3,3	3,6	4,0	4,4	4,7	4,9	5,2	5,6	6,8
	25	2,9	3,1	3,4	3,7	4,1	4,3	4,5	4,8	5,0	5,9
	30	2,8	2,9	3,1	3,4	3,7	3,9	4,0	4,2	4,3	4,7
	35	2,6	2,7	2,8	3,0	3,3	3,4	3,5	3,5	3,6	3,6
	40	2,4	2,4	2,6	2,7	2,9	3,0	3,0	3,0	3,0	2,8
	46		2,3	2,4	2,5	2,6	2,6	2,6	2,6	2,5	2,3

		97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	55 rps	60% red 50 rps	45 rps	40 rps	30 rps
°C	15		8,4	7,8	7,1	6,4	6,1	5,5	5,0	4,5	3,5
	20	8,7	8,3	7,7	7,1	6,3	5,9	5,4	4,9	4,4	3,4
	25	8,4	7,9	7,3	6,7	5,9	5,6	5,1	4,6	4,1	3,1
	30	8,0	7,6	7,0	6,3	5,6	5,3	4,8	4,3	3,8	2,8
	35	7,7	7,2	6,6	5,9	5,3	5,0	4,5	4,0	3,5	2,5
	40	7,4	7,0	6,4	5,7	5,0	4,7	4,2	3,7	3,2	2,2
	46		6,6	6,1	5,4	4,7	4,3	3,8	3,3	2,9	1,9

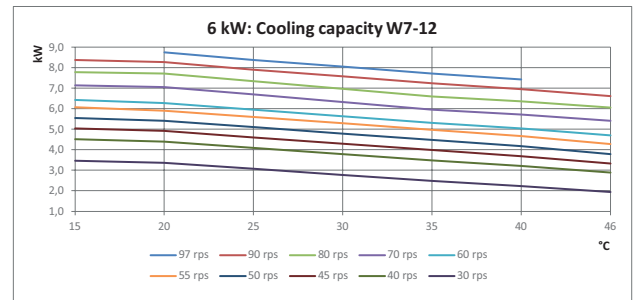
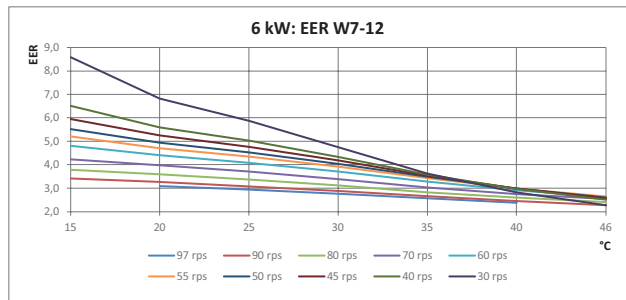


Fig 362: EER and cooling output for W7-12

		97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	55 rps	60% red 50 rps	45 rps	40 rps	30 rps
°C	15										
	20		3,3	3,7	4,1	4,7	5,1	5,4	5,9	6,3	7,3
	25		3,4	3,8	4,3	4,8	5,1	5,4	5,7	6,0	6,8
	30		3,4	3,8	4,2	4,6	4,8	5,1	5,3	5,6	6,3
	35	2,9	3,1	3,4	3,7	4,1	4,3	4,5	4,7	4,9	5,4
	40		2,8	3,0	3,3	3,6	3,8	4,0	4,1	4,4	4,7
	46		2,4	2,6	2,9	3,1	3,3	3,4	3,6	3,7	4,0

		97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	55 rps	60% red 50 rps	45 rps	40 rps	30 rps
°C	15										
	20		10,2	9,4	8,5	7,4	6,9	6,3	5,7	5,0	3,7
	25		10,4	9,6	8,6	7,5	7,0	6,3	5,7	5,0	3,7
	30		10,5	9,6	8,6	7,5	6,8	6,2	5,6	5,0	3,7
	35	11,0	10,0	9,1	8,2	7,1	6,6	6,0	5,4	4,8	3,6
	40		9,5	8,7	7,7	6,8	6,3	5,7	5,2	4,6	3,4
	46		8,8	8,1	7,3	6,3	5,9	5,4	4,9	4,4	3,3

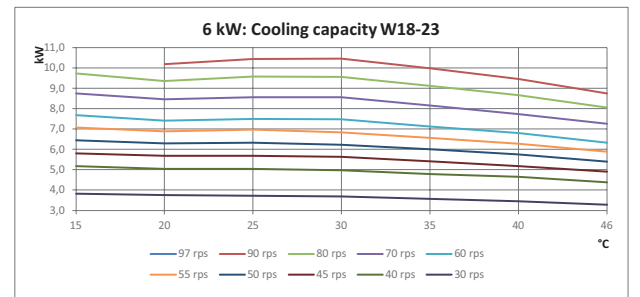
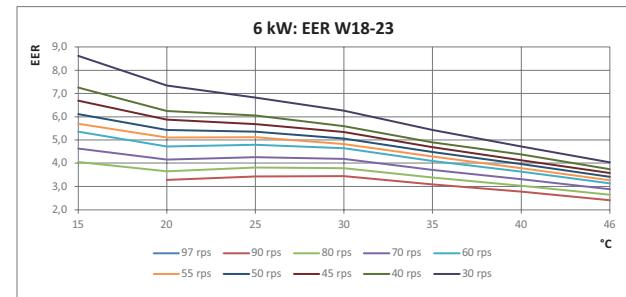


Fig 363: EER and cooling output for W18-23

9.8.4 Cooling mode performance data for 7 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 55 rps	50 rps	45 rps	40 rps	30 rps
°C	15		3,4	3,8	4,2	4,8	5,2	5,5	6,0	6,5	8,6
	20	3,1	3,3	3,6	4,0	4,4	4,7	4,9	5,2	5,6	6,8
	25	2,9	3,1	3,4	3,7	4,1	4,3	4,5	4,8	5,0	5,9
	30	2,8	2,9	3,1	3,4	3,7	3,9	4,0	4,2	4,3	4,7
	35	2,6	2,7	2,8	3,0	3,3	3,4	3,5	3,5	3,6	3,6
	40	2,4	2,4	2,6	2,7	2,9	3,0	3,0	3,0	3,0	2,8
	46		2,3	2,4	2,5	2,6	2,6	2,6	2,6	2,5	2,3

		97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 55 rps	50 rps	45 rps	40 rps	30 rps
°C	15		8,4	7,8	7,1	6,4	6,1	5,5	5,0	4,5	3,5
	20	8,7	8,3	7,7	7,1	6,3	5,9	5,4	4,9	4,4	3,4
	25	8,4	7,9	7,3	6,7	5,9	5,6	5,1	4,6	4,1	3,1
	30	8,0	7,6	7,0	6,3	5,6	5,3	4,8	4,3	3,8	2,8
	35	7,7	7,2	6,6	5,9	5,3	5,0	4,5	4,0	3,5	2,5
	40	7,4	7,0	6,4	5,7	5,0	4,7	4,2	3,7	3,2	2,2
	46		6,6	6,1	5,4	4,7	4,3	3,8	3,3	2,9	1,9

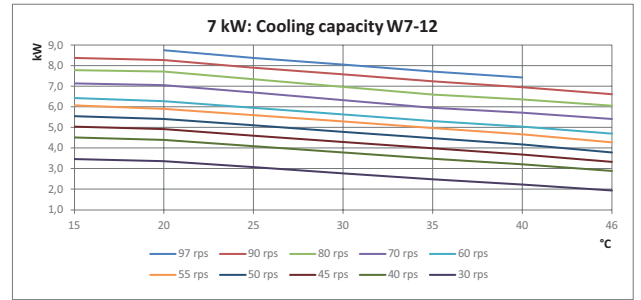
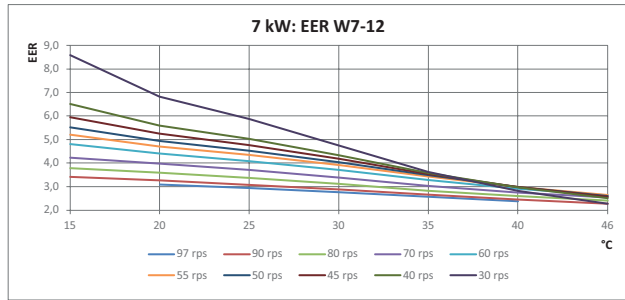


Fig 364: EER and cooling output for W7-12

		97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 55 rps	50 rps	45 rps	40 rps	30 rps
°C	15										
	20		3,3	3,7	4,1	4,7	5,1	5,4	5,9	6,3	7,3
	25		3,4	3,8	4,3	4,8	5,1	5,4	5,7	6,0	6,8
	30		3,4	3,8	4,2	4,6	4,8	5,1	5,3	5,6	6,3
	35	2,9	3,1	3,4	3,7	4,1	4,3	4,5	4,7	4,9	5,4
	40		2,8	3,0	3,3	3,6	3,8	4,0	4,1	4,4	4,7
	46		2,4	2,6	2,9	3,1	3,3	3,4	3,6	3,7	4,0

		97 rps	90 rps	80 rps	40% red 70 rps	50% red 60 rps	60% red 55 rps	50 rps	45 rps	40 rps	30 rps
°C	15										
	20		10,2	9,4	8,5	7,4	6,9	6,3	5,7	5,0	3,7
	25		10,4	9,6	8,6	7,5	7,0	6,3	5,7	5,0	3,7
	30		10,5	9,6	8,6	7,5	6,8	6,2	5,6	5,0	3,7
	35	11,0	10,0	9,1	8,2	7,1	6,6	6,0	5,4	4,8	3,6
	40		9,5	8,7	7,7	6,8	6,3	5,7	5,2	4,6	3,4
	46		8,8	8,1	7,3	6,3	5,9	5,4	4,9	4,4	3,3

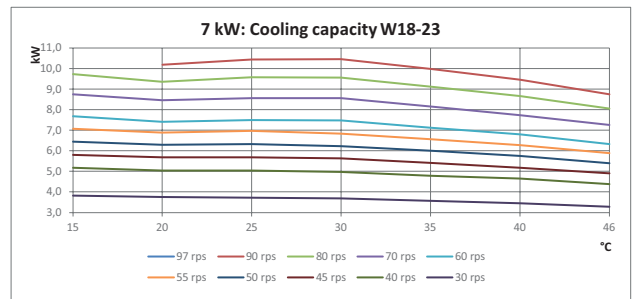
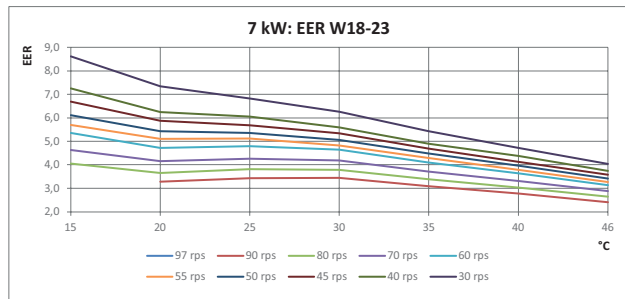


Fig 365: EER and cooling output for W18-23

9.8.5 Cooling mode performance data for 10 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C			40% red		50% red		60% red			
	97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
15		3,4	3,8	4,3	5,0	5,4	5,8	6,3	6,9	8,7
20	3,0	3,2	3,6	4,0	4,6	4,9	5,2	5,6	6,0	7,0
25	2,9	3,1	3,5	3,9	4,4	4,6	4,9	5,2	5,6	6,3
30	2,7	2,9	3,2	3,5	3,9	4,1	4,3	4,5	4,7	4,9
35	2,5	2,7	2,9	3,2	3,5	3,6	3,7	3,8	3,9	3,8
40	2,4	2,5	2,7	2,9	3,0	3,1	3,2	3,2	3,2	2,9
46	2,2	2,3	2,5	2,7	2,8	2,8	2,8	2,8	2,8	2,4

°C			40% red		50% red		60% red			
	97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
15		13,6	12,7	11,6	10,4	9,8	9,1	8,4	7,6	6,0
20	14,2	13,4	12,5	11,4	10,2	9,6	8,9	8,2	7,4	5,8
25	13,9	13,1	12,2	11,1	9,9	9,3	8,6	7,9	7,1	5,5
30	13,4	12,6	11,7	10,6	9,4	8,8	8,1	7,4	6,6	5,0
35	12,8	12,0	11,1	10,0	8,8	8,2	7,5	6,8	6,0	4,4
40	12,3	11,4	10,5	9,5	8,3	7,6	6,9	6,2	5,5	3,8
46	11,9	11,0	10,1	9,1	7,9	7,2	6,5	5,8	5,1	3,4

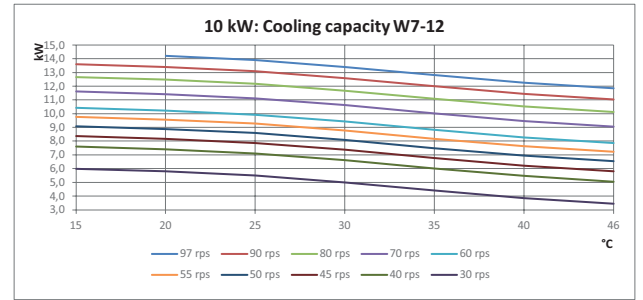
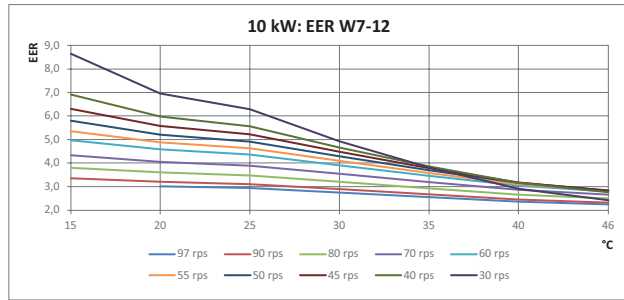


Fig 366: EER and cooling output for W7-12

°C			40% red		50% red		60% red			
	97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
15			4,5	5,1	5,9	6,4	6,9	7,6	8,1	9,8
20		3,6	4,0	4,5	5,2	5,5	6,0	6,4	6,9	8,2
25		3,8	4,2	4,6	5,2	5,5	5,9	6,2	6,6	7,5
30		3,7	4,0	4,4	4,9	5,1	5,4	5,7	5,9	6,5
35	3,3	3,3	3,6	3,9	4,3	4,5	4,8	5,0	5,2	5,7
40	3,0	3,0	3,2	3,5	3,8	4,0	4,1	4,3	4,5	4,9
46	2,7	2,6	2,8	3,0	3,3	3,4	3,5	3,7	3,8	4,3

°C			40% red		50% red		60% red			
	97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
15			16,3	14,7	12,9	11,9	10,9	9,9	8,7	6,5
20		17,0	15,5	14,0	12,3	11,3	10,5	9,4	8,3	6,3
25		17,4	15,9	14,2	12,4	11,5	10,5	9,4	8,3	6,3
30		17,2	15,7	14,0	12,2	11,2	10,3	9,3	8,2	6,1
35	18,0	16,5	15,0	13,4	11,6	10,8	9,9	9,0	7,9	6,0
40	17,2	15,7	14,2	12,6	11,1	10,3	9,4	8,4	7,6	5,8
46	16,2	14,7	13,2	11,9	10,3	9,5	8,7	7,9	7,0	5,6

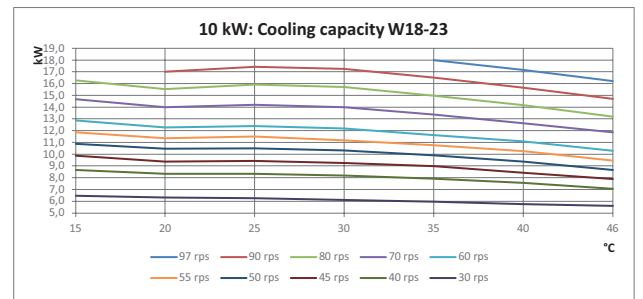
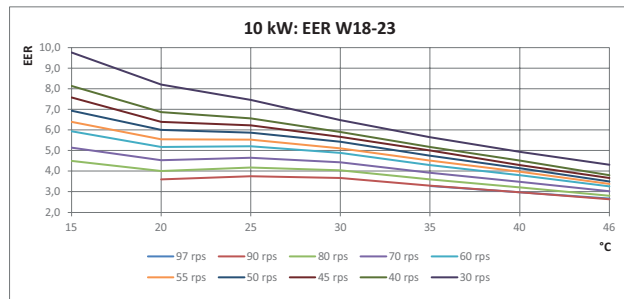


Fig 367: EER and cooling output for W18-23

9.8.6 Cooling mode performance data for 12 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

				40% red		50% red		60% red			
		97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
°C	15		3,4	3,8	4,3	5,0	5,4	5,8	6,3	6,9	8,7
	20	3,0	3,2	3,6	4,0	4,6	4,9	5,2	5,6	6,0	7,0
	25	2,9	3,1	3,5	3,9	4,4	4,6	4,9	5,2	5,6	6,3
	30	2,7	2,9	3,2	3,5	3,9	4,1	4,3	4,5	4,7	4,9
	35	2,5	2,7	2,9	3,2	3,5	3,6	3,7	3,8	3,9	3,8
	40	2,4	2,5	2,7	2,9	3,0	3,1	3,2	3,2	3,2	2,9
	46	2,2	2,3	2,5	2,7	2,8	2,8	2,8	2,8	2,8	2,4

				40% red		50% red		60% red			
		97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
°C	15		13,6	12,7	11,6	10,4	9,8	9,1	8,4	7,6	6,0
	20	14,2	13,4	12,5	11,4	10,2	9,6	8,9	8,2	7,4	5,8
	25	13,9	13,1	12,2	11,1	9,9	9,3	8,6	7,9	7,1	5,5
	30	13,4	12,6	11,7	10,6	9,4	8,8	8,1	7,4	6,6	5,0
	35	12,8	12,0	11,1	10,0	8,8	8,2	7,5	6,8	6,0	4,4
	40	12,3	11,4	10,5	9,5	8,3	7,6	6,9	6,2	5,5	3,8
	46	11,9	11,0	10,1	9,1	7,9	7,2	6,5	5,8	5,1	3,4

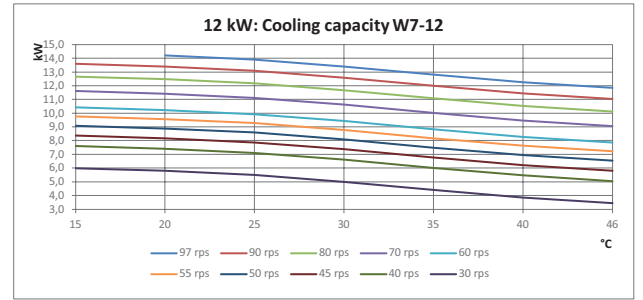
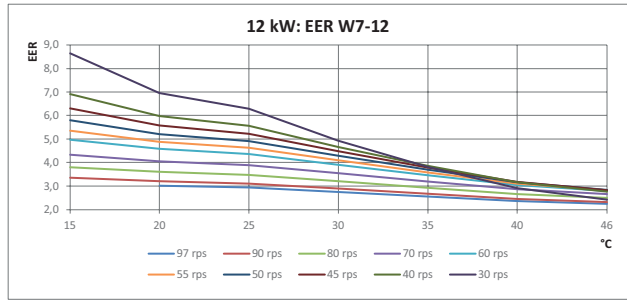


Fig 368: EER and cooling output for W7-12

				40% red		50% red		60% red			
		97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
°C	15			4,5	5,1	5,9	6,4	6,9	7,6	8,1	9,8
	20		3,6	4,0	4,5	5,2	5,5	6,0	6,4	6,9	8,2
	25		3,8	4,2	4,6	5,2	5,5	5,9	6,2	6,6	7,5
	30		3,7	4,0	4,4	4,9	5,1	5,4	5,7	5,9	6,5
	35	3,3	3,3	3,6	3,9	4,3	4,5	4,8	5,0	5,2	5,7
	40	3,0	3,0	3,2	3,5	3,8	4,0	4,1	4,3	4,5	4,9
	46	2,7	2,6	2,8	3,0	3,3	3,4	3,5	3,7	3,8	4,3

				40% red		50% red		60% red			
		97 rps	90 rps	80 rps	70 rps	60 rps	55 rps	50 rps	45 rps	40 rps	30 rps
°C	15			16,3	14,7	12,9	11,9	10,9	9,9	8,7	6,5
	20		17,0	15,5	14,0	12,3	11,3	10,5	9,4	8,3	6,3
	25		17,4	15,9	14,2	12,4	11,5	10,5	9,4	8,3	6,3
	30		17,2	15,7	14,0	12,2	11,2	10,3	9,3	8,2	6,1
	35	18,0	16,5	15,0	13,4	11,6	10,8	9,9	9,0	7,9	6,0
	40	17,2	15,7	14,2	12,6	11,1	10,3	9,4	8,4	7,6	5,8
	46	16,2	14,7	13,2	11,9	10,3	9,5	8,7	7,9	7,0	5,6

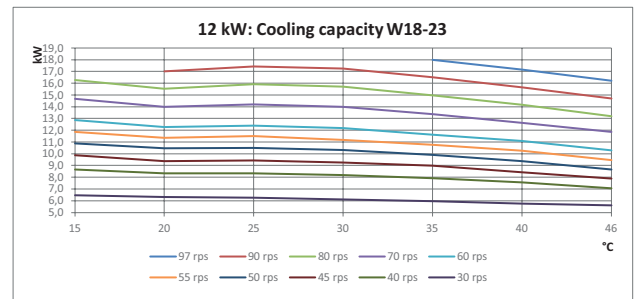
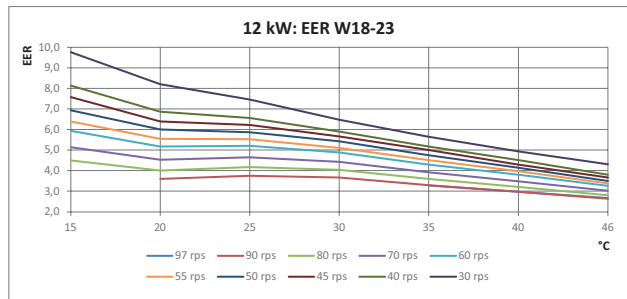


Fig 369: EER and cooling output for W18-23

9.9 Thawing mode

At outdoor temperatures below 5 °C, condensation on the fins of the evaporator may freeze and frost may form. This frost is automatically detected and is automatically thawed at certain intervals.

The thawing occurs by reversing the refrigeration circuit while the heat pump is operating. The heat energy that is required for this is taken from the heating installation.

Correct thawing operation is only possible if the minimum volume of heating water is circulating in the heating installation:

aroTHERM plus aroTHERM split	3-5 kW	6-7 kW	10-12 kW
Activated back-up heater, heating water temperature > 25 °C	15 l	20 l	45 l
Recommended buffer cylinder	18 l return flow sequence cylinder (uniTOWER (plus))	18 l return flow sequence cylinder (uniTOWER (plus))	VP RW 45/2 B
Deactivated back-up heater, heating water temperature > 15 °C	40 l	55 l	150 l
Recommended buffer cylinder	VP RW 45/2 B	VP RW 45/2 B	VPS R 200/1 B

9.10 Protective zone

9.10.1 Protective zone

The product contains R290 refrigerant. Note that this refrigerant has a higher density than air and, in the event of a leak, escaping refrigerant may collect near the ground.

The refrigerant must not collect in any way that may lead to a dangerous, explosive, suffocating or toxic atmosphere. The refrigerant must not get inside the building via building openings. The refrigerant must not collect in grooves. The refrigerant must not get into the waste-water system.

A protective zone is defined around the product. There must be no windows, doors, light shafts, cellar entrances, escape hatches, flat-roof windows or ventilation openings in the protective zone.

Ventilation openings are openings into the inside of the building. You must prevent refrigerant from getting inside the building.

There must be no ignition sources, such as plug sockets, light switches, lamps, electrical switches or other permanent ignition sources, in the protective zone.

The protective zone must not extend to adjacent buildings or public traffic areas.

In the protective zone, you are not permitted to make any subsequent structural alterations which infringe the stated rules for the protective zone.

Protective zone, for ground installation, on the premises

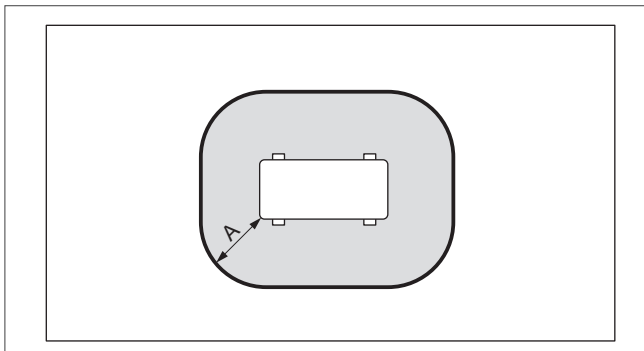


Fig 370: Protective zone, for ground installation, on the premises

A 1000 mm

Dimension A is a clearance around the product.

Protective zone, for ground installation, in front of a building wall

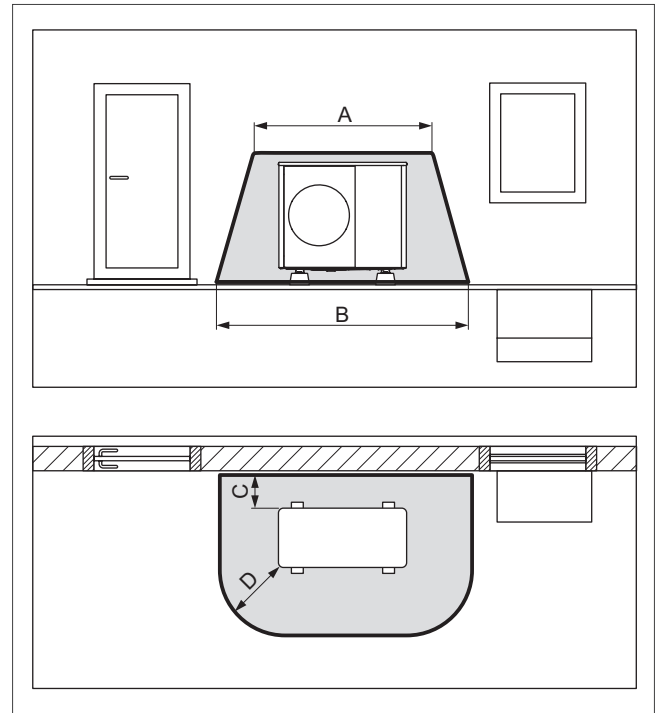


Fig 371: Protective zone, for ground installation, in front of a building wall

- A 2100 mm
- B 3100 mm
- C 200 mm/250 mm
- D 1000 mm

Dimension C is the minimum clearance that must be maintained to the wall (→ Maintaining minimum clearances).

Protective zone, for ground installation, in a building corner

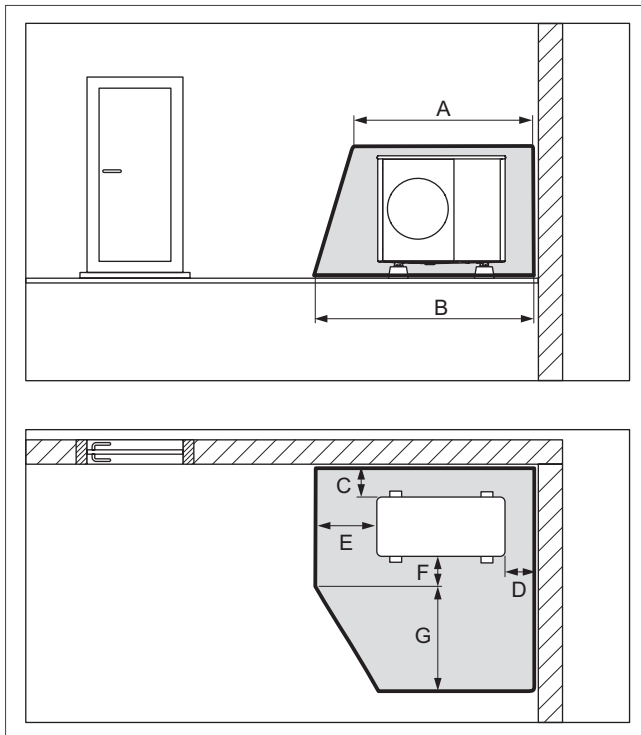


Fig 372: Protective zone, for ground installation, in a building corner

- A 2100 mm
- B 2600 mm
- C 200 mm/250 mm
- D 500 mm
- E 1000 mm
- F 500 mm
- G 1800 mm

The right-hand corner of the building is shown here. Dimensions C and D are the minimum clearance that must be maintained to the wall (→ Maintaining minimum clearances). Dimension D varies for the left-hand corner of the building.

Protective zone, for wall installation, in front of a building wall

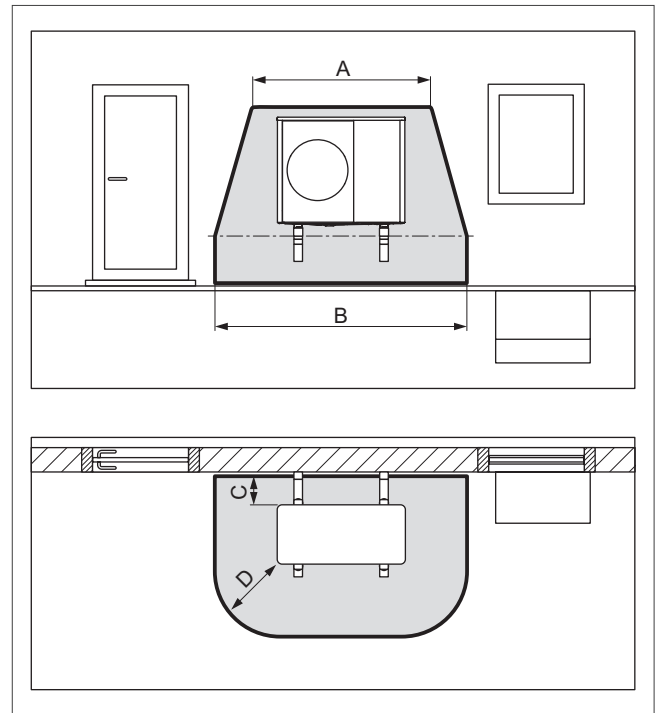


Fig 373: Protective zone, for wall installation, in front of a building wall

- A 2100 mm
- B 3100 mm
- C 200 mm
- D 1000 mm

Dimension C is the minimum clearance that must be maintained to the wall (→ Maintaining minimum clearances).

Protective zone, for wall installation, in a building corner

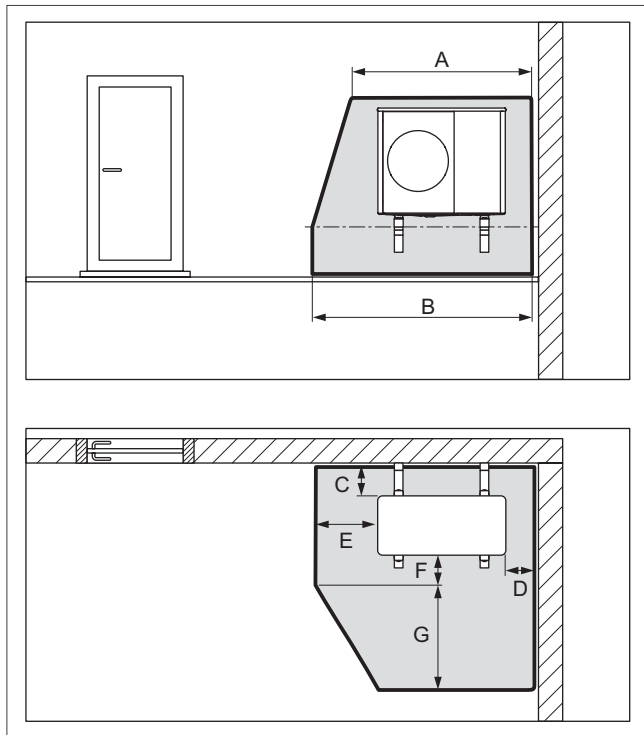


Fig 374: Protective zone, for wall installation, in a building corner

- A 2100 mm
- B 2600 mm
- C 200 mm
- D 500 mm
- E 1000 mm
- F 500 mm
- G 1800 mm

The right-hand corner of the building is shown here. Dimensions C and D are the minimum clearance that must be maintained to the wall (→ Maintaining minimum clearances). Dimension D varies for the left-hand corner of the building.

Protective zone, for flat-roof installation

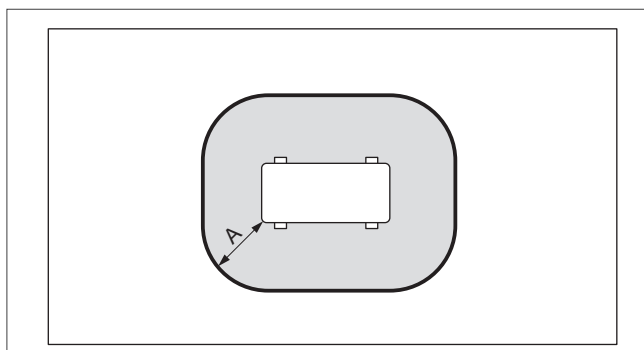


Fig 375: Protective zone, for flat-roof installation

- A 1000 mm

Dimension A is a clearance around the product.

Overview of the protective zones and minimum clearances

The following figure summarises the relevant protective zones clearly in one graphic.

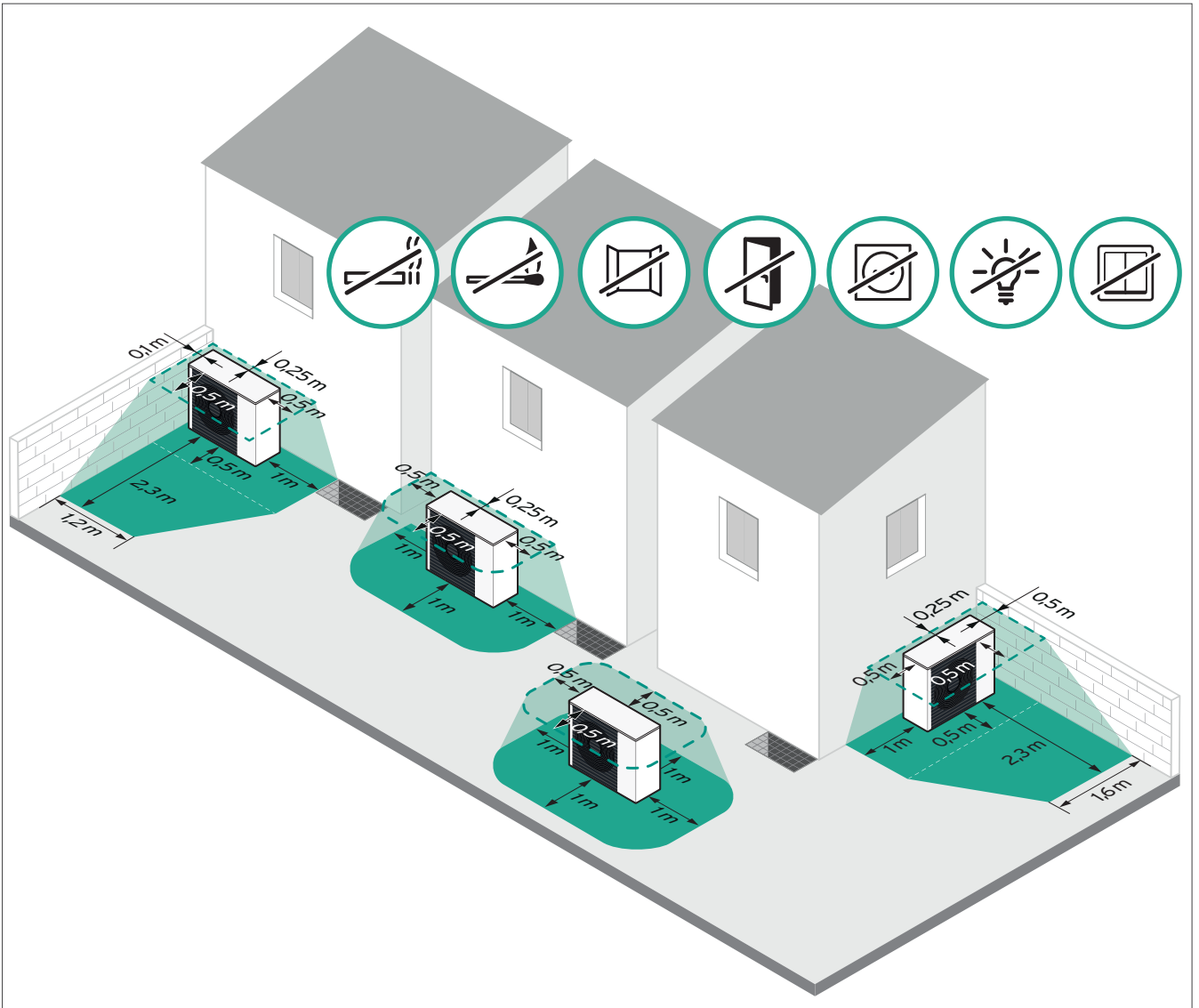


Fig 376: Overview of the protective zones

Observe the requirements for the installation site in order to guarantee that the heat pump operates safely.
The following figure shows the minimum clearances that must be taken into consideration when planning the installation site.

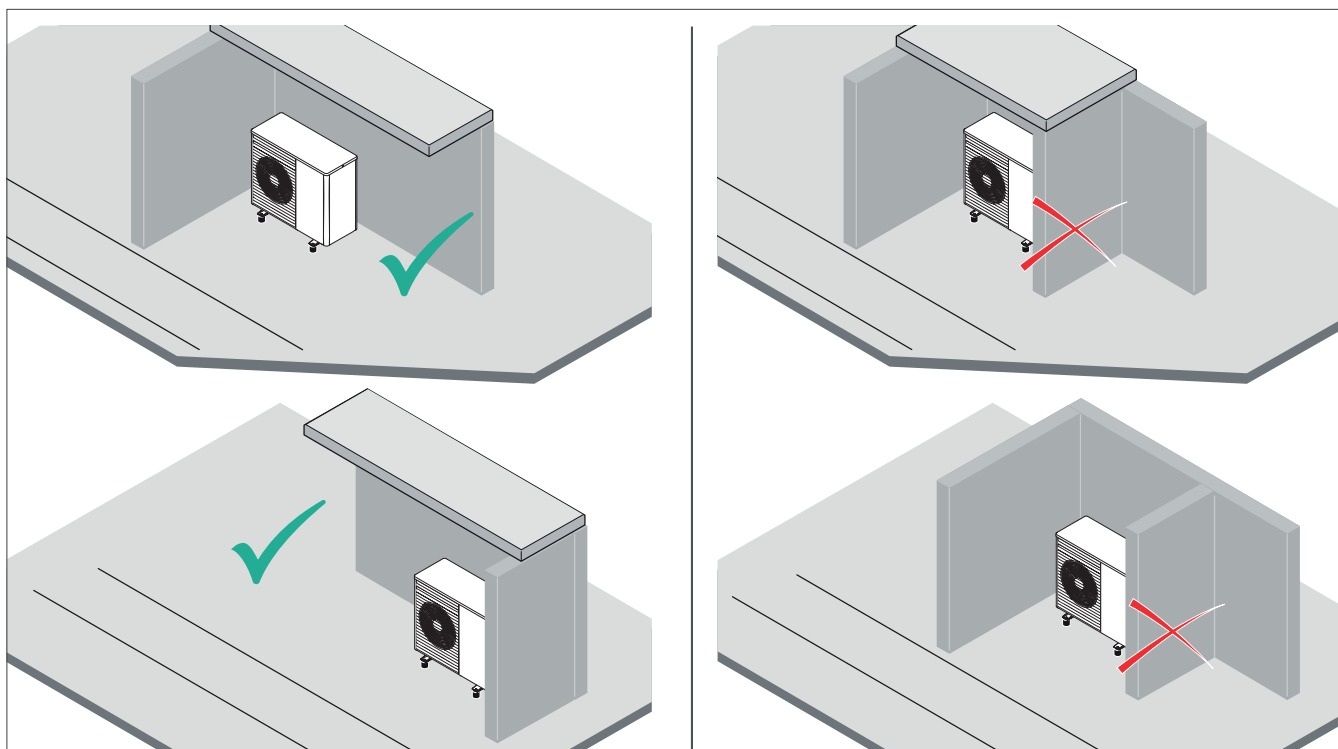


Fig 377: Requirements for the installation site

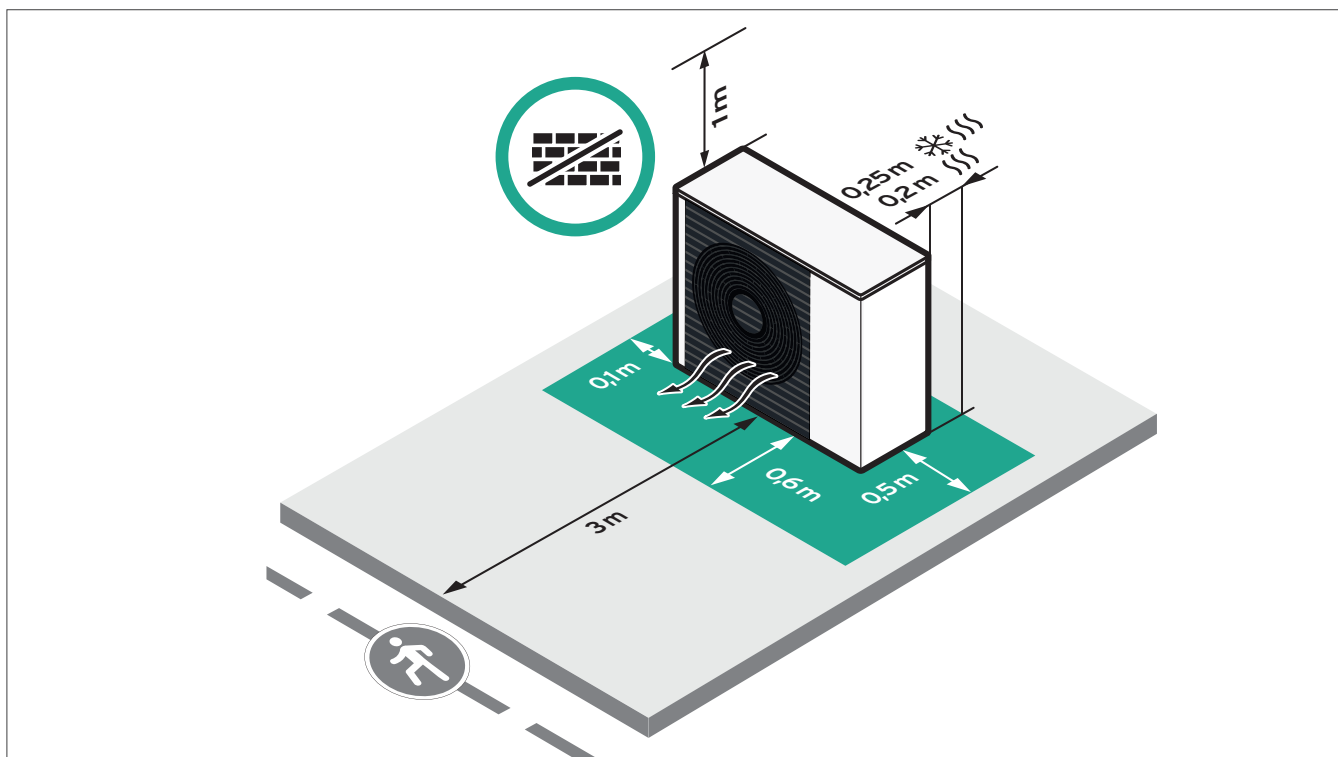


Fig 378: Minimum clearances for the installation

9.10.2 Safer design of the condensate discharge

The product contains R290 refrigerant. In the event of a leak, escaping refrigerant may get into the ground via the condensate discharge.

For the ground installation, the condensate must be discharged via a downpipe into a gravel bed which is located in the frost-free area.

Safe execution of the condensate discharge, for ground installation, on the premises

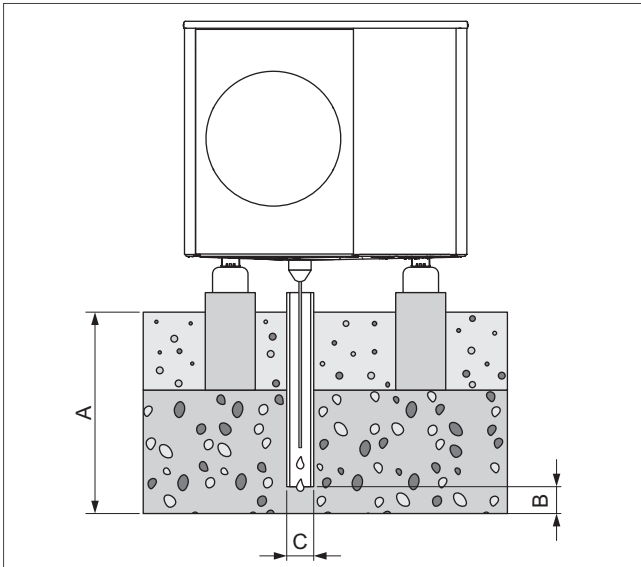


Fig 379: Safe execution of the condensate discharge, for ground installation, on the premises

- A ≥ 900 mm for a region with ground frost, ≥ 600 mm for a region without ground frost
- B 100 mm
- C 100 mm

The downpipe must flow into a sufficiently large gravel bed so that the condensate can trickle away freely.

To prevent the condensate from freezing, the heating wire must be threaded into the downpipe via the condensate discharge tundish.

9.11 Product dimensions and connection dimensions

9.11.1 Front view

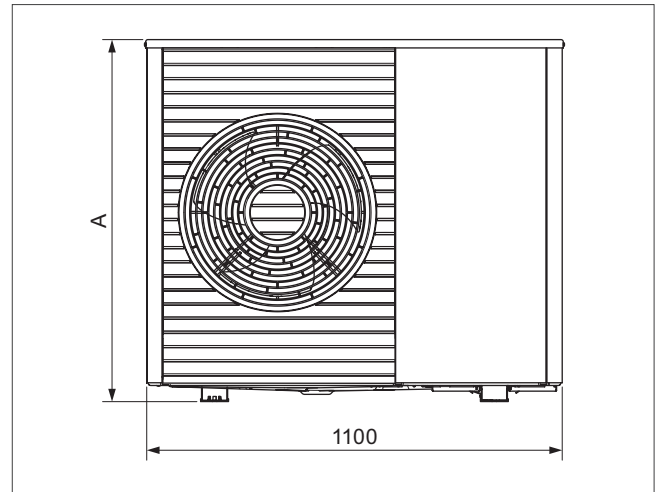


Fig 380: Dimensions, front view

Product	A
VWL 35/6 ...	765
VWL 55/6 ...	765
VWL 65/6 ...	965
VWL 75/6 ...	965

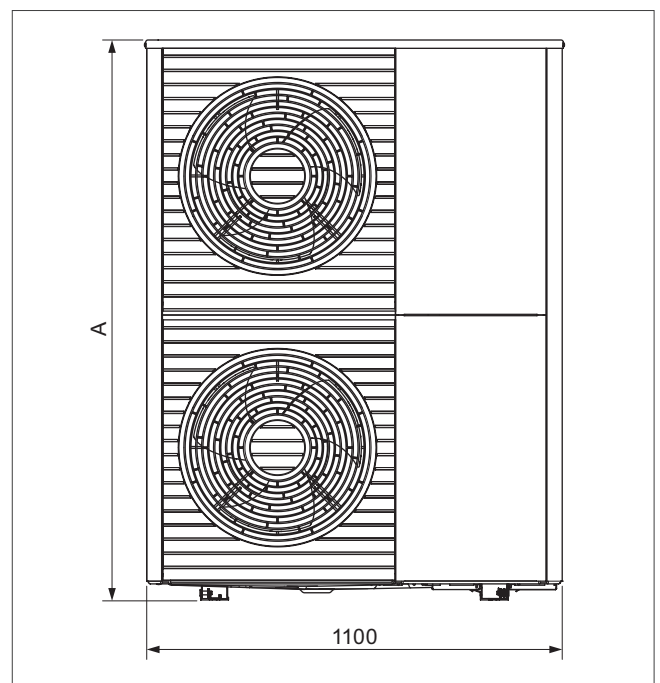


Fig 381: Dimensions, front view

Product	A
VWL 105/6 ...	1565
VWL 125/6 ...	1565

9.11.2 Side view, right

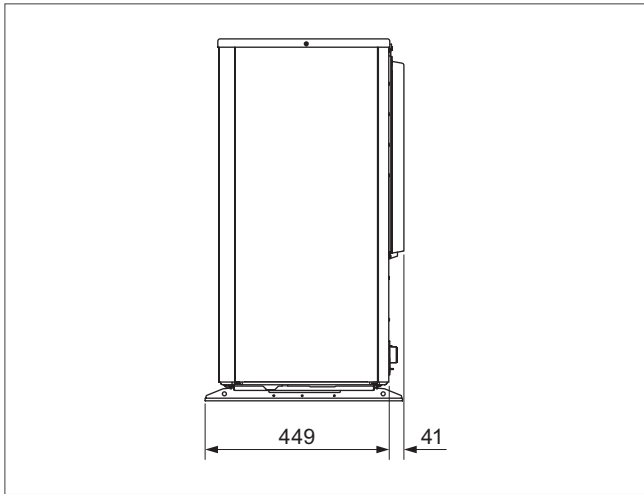


Fig 382: Dimensions, side view from the right

9.11.4 Rear view

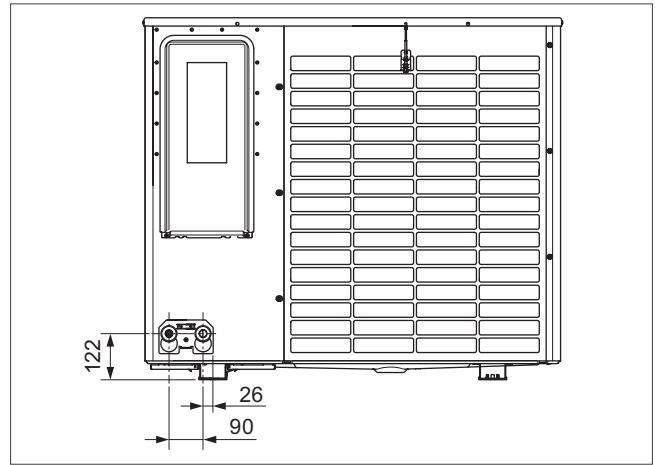


Fig 384: Dimensions, rear view

9.11.3 Bottom view

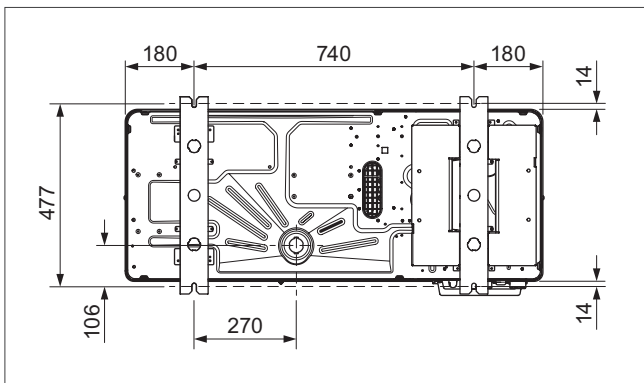


Fig 383: Dimensions, bottom view

9.12 Minimum clearances

9.12.1 Minimum clearances, ground installation and flat-roof installation

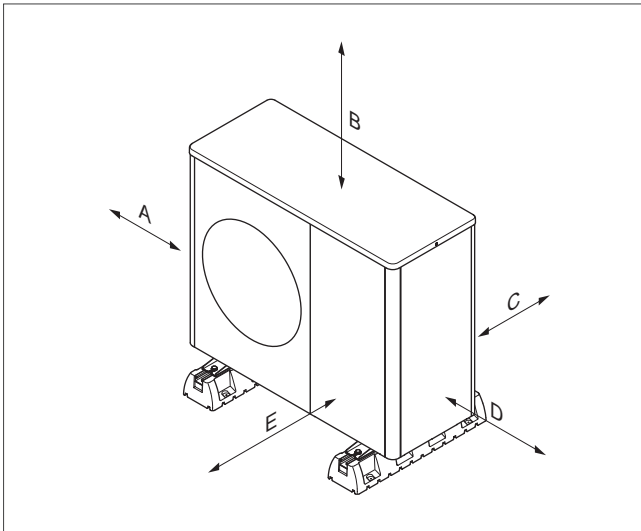


Fig 385: Minimum clearances, ground installation and flat-roof installation

Minimum clearance	Heating mode	Heating and cooling mode
A	100 mm	100 mm
B	1000 mm	1000 mm
C	200 mm	250 mm
D	500 mm	500 mm
E	600 mm	600 mm

9.12.2 Minimum clearances, wall installation

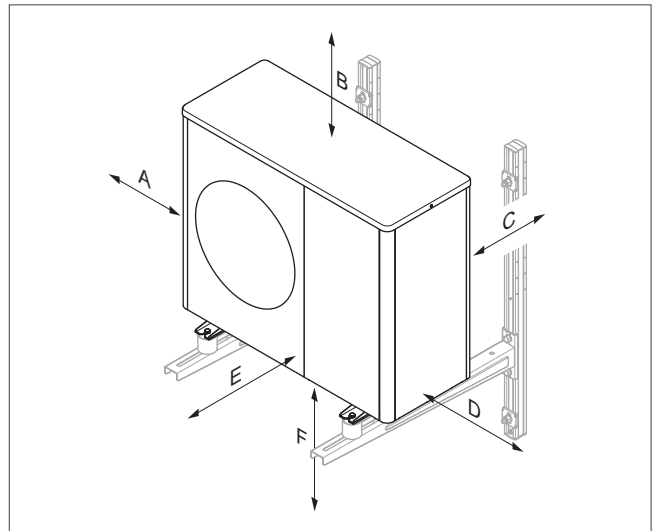


Fig 386: Minimum clearances, wall installation

Minimum clearance	Heating mode	Heating and cooling mode
A	100 mm	100 mm
B	1000 mm	1000 mm
C	200 mm	250 mm
D	500 mm	500 mm
E	600 mm	600 mm
F	300 mm	300 mm

9.13 Types of installation

9.13.1 Conditions for the installation type

The product is suitable for the following installation types: Ground installation, wall installation and flat-roof installation.

The pitched-roof installation is not permitted.

Wall installation with the unit mounting bracket from the accessories is not permitted for products VWL 105/6 and VWL 125/6.

9.13.2 Selecting the installation site



Danger!

Risk of injury due to ice formation.

The air temperature at the air outlet is below the outdoor temperature. This can lead to ice formation.

» Select a site and an orientation at which the air outlet is at least 3 m away from walkways, plastered surfaces and downpipes.

- » Note that installation in sinks or areas that do not allow free outflow of air is not permitted.
- » If the installation site is in the immediate vicinity of the coastline, ensure that the product is protected against spraying water by an additional protection device.
- » Keep away from flammable substances or flammable gases.
- » Keep away from heat sources.
- » Do not expose the outdoor unit to dirty, dusty or corrosive air.
- » Keep away from ventilation openings or ventilation ducts.
- » Keep away from deciduous trees and shrubs.
- » Please note that the installation site must be below 2000 m above sea level.
- » Please note the noise emissions. Maintain sufficient clearance from noise-sensitive areas of the adjacent building. Select an installation site that is as far away from the windows of adjacent building as possible. Select a location that is as far away from your own bedroom as possible.
- » Select an installation site that is easily accessible so that maintenance and service work can be carried out.
- » If the installation site is adjacent to a vehicle shunting area, protect the product using ram protection.

Condition: Especially for ground installation

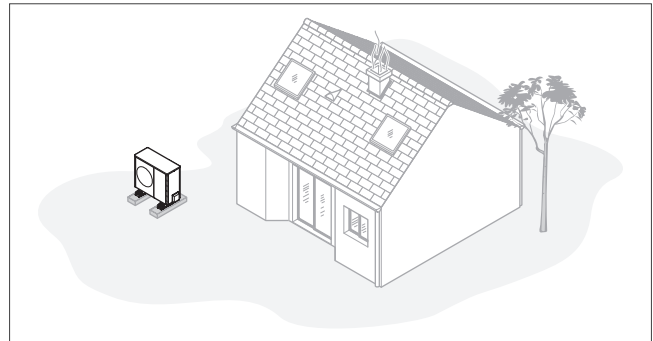


Fig 387: Installation site, ground installation

- » Avoid choosing an installation site that is in the corner of a room, between walls or between fences.
- » Prevent the return intake of air from the air outlet.
- » Ensure that water cannot collect on the subsoil. Ensure that the subsoil can absorb water well.
- » Plan a bed of gravel and rubble for the condensate discharge.
- » Select an installation site which is free from significant accumulations of snow in winter.
- » Select an installation site at which the air inlet is not affected by strong winds. Position the unit as crosswise to the main direction of wind as possible.
- » If the installation site is not protected against the wind, you should plan to set up a protective wall.
- » Please note the noise emissions. Avoid corners of rooms, recesses or an installation site between walls. Select an installation site with excellent sound absorption (e.g. thanks to grass, hedges, fencing).
- » Route the hydraulic lines and electrical wires underground. Provide a safety pipe that leads from the outdoor unit through the wall of the building.

Condition: Especially for wall installation

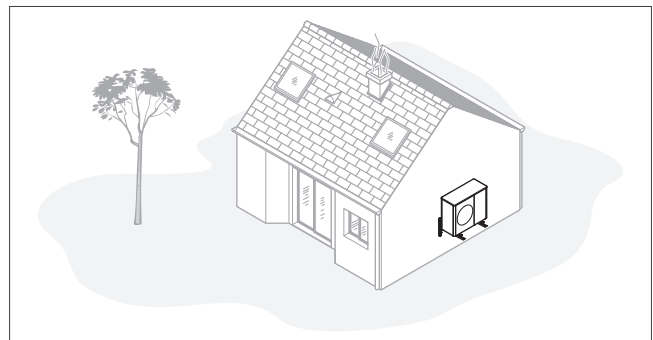


Fig 388: Installation site, wall installation

- » Ensure that the wall fulfils the static requirements. Please note the weight of the unit mounting bracket (accessory) and the outdoor unit.
- » Avoid choosing an installation position which is near to a window.
- » Please note the noise emissions. Maintain sufficient clearance from reflective building walls.
- » Route the hydraulic lines and electrical wires. Provide a wall duct.

Condition: Especially for flat-roof installation

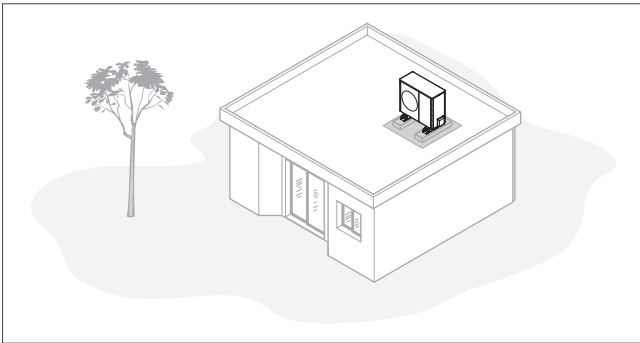


Fig 389: Installation site, flat-roof installation

- » Only install the product in buildings with a solid construction and that have cast concrete ceilings throughout.
- » Do not install the product in buildings with a wooden structure or with a lightweight roof.
- » Select an installation site that is easily accessible so that foliage or snow can be regularly removed from the product.
- » Select an installation site at which the air inlet is not affected by strong winds. Position the unit as crosswise to the main direction of wind as possible.
- » If the installation site is not protected against the wind, you should plan to set up a protective wall.
- » Please note the noise emissions. Maintain sufficient clearance from adjacent buildings.
- » Route the hydraulic lines and electrical wires. Provide a wall duct.

9.13.3 Ground installation

Creating a foundation

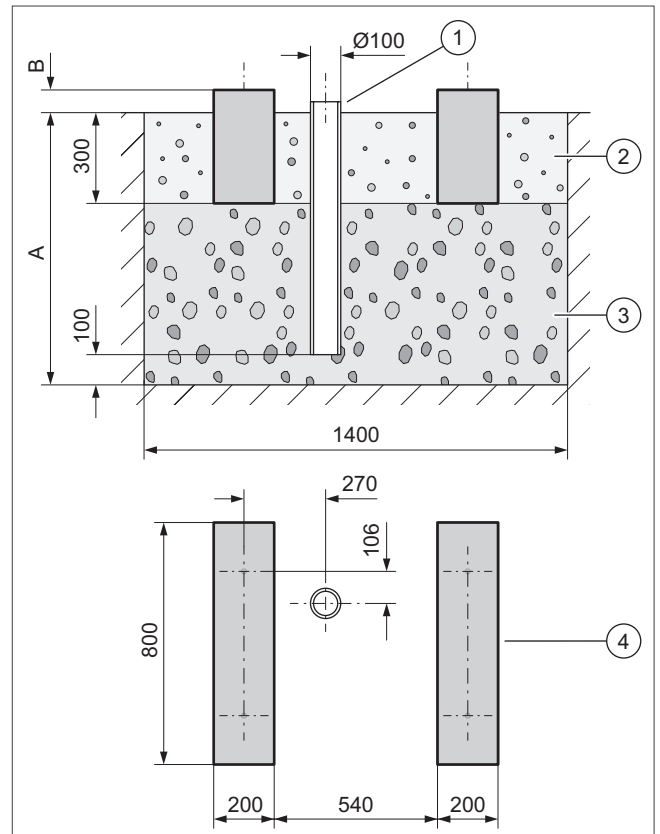


Fig 390: Dimension drawing, creating a foundation

- » Dig a hole in the ground. The recommended dimensions can be found in the figure.
- » Insert a downpipe (1) to divert the condensate.
- » Add a layer of water-permeable coarse rubble (2).
- » Calculate the depth (A) in accordance with local conditions.
 - Region with ground frost: Minimum depth: 900 mm
 - Region without ground frost: Minimum depth: 600 mm
- » Calculate the height (B) in accordance with local conditions.
- » Create two concrete strip foundations (4). The recommended dimensions can be found in the figure.
- » Add a gravel bed between and beside the strip foundations (2) to divert the condensate.

Installing the product

1. Use the appropriate products from the accessories, depending on the required installation type.
 - Small damping feet
 - Large damping feet
 - Raised base and small damping feet
2. Align the product exactly horizontally.

Installing the product, small rubber feet

Validity: Floor installation

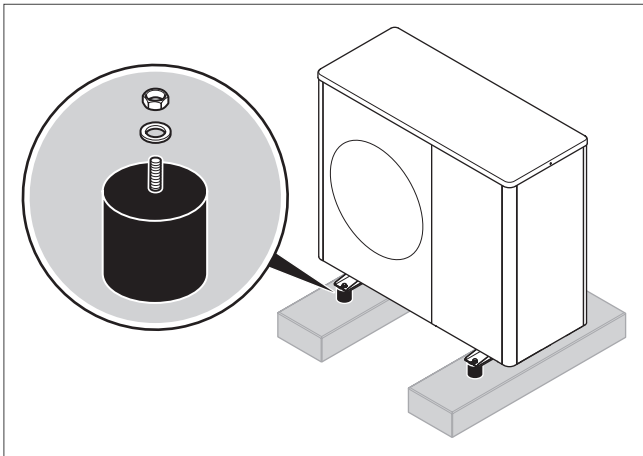


Fig 391: Ground installation with small rubber feet

1. Use the small rubber feet from the accessories. Use the enclosed set-up instructions.
2. Screw the rubber feet to the foundation.
3. Install the product. Align the product exactly horizontally.
4. Screw the rubber feet to the product.

Installing the product, large rubber feet

Validity: Floor installation

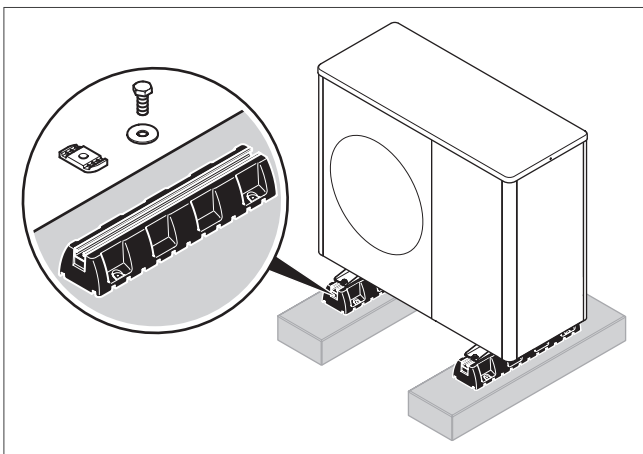


Fig 392: Ground installation with large rubber feet

1. Use the large rubber feet from the accessories. Use the enclosed set-up instructions.
2. Screw the rubber feet to the foundation.
3. Install the product. Align the product exactly horizontally.
4. Screw the rubber feet to the product.

Setting up the product, raised base for snowy regions

Validity: Floor installation

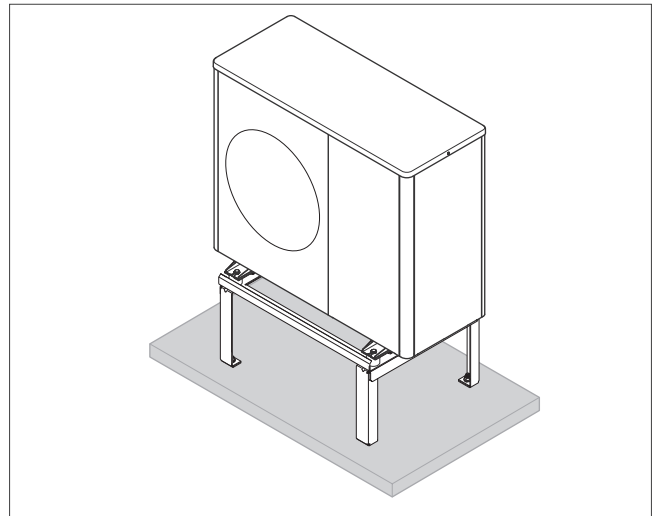


Fig 393: Ground installation with raised base

1. Use the raised base from the accessories. Use the enclosed set-up instructions.
2. Screw the raised base to the foundation.
3. Install the product. Align the product exactly horizontally.
4. Screw the raised base to the product.

Installing the condensate discharge pipe



Danger!

Risk of injury due to frozen condensate.

Frozen condensate on paths may cause falls.

- » Ensure that condensate does not discharge onto paths and that ice cannot build up there.

Condition: Region with ground frost

- » Connect the condensate discharge tundish to the product's floor plate, and secure this in place by turning it by a 1/4 rotation.
- » Slide the heating wire through the condensate discharge tundish.
- » Ensure that the condensate discharge tundish is positioned in the centre above the downpipe. See dimension drawing .

Condition: Region without ground frost

- » Connect the condensate discharge tundish to the product's floor plate, and secure this in place by turning it by a 1/4 rotation.
- » Connect the condensate discharge tundish to an elbow and a condensate discharge hose.
- » Slide the heating wire through the condensate discharge tundish and the elbow into the condensate discharge hose.

9.13.4 Wall installation

Guaranteeing occupational safety

- » Ensure that the installation position on the wall can be safely accessed.
- » If the work on the product takes place at a height above 3 m, install technical fall protection.
- » Observe the local laws and regulations.

Installing the product on the wall

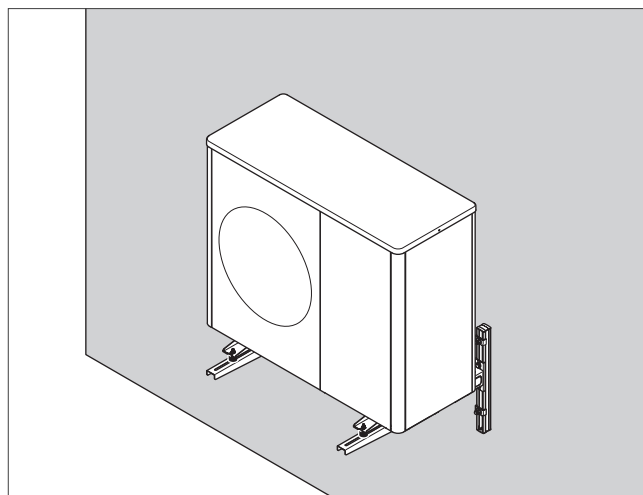


Fig 394: Installing the product on the wall

Note

Wall installation with the unit mounting bracket from the accessories is not permitted for 10 kW and 12 kW heat pumps.



Pay attention to the following information during the wall installation:

Installing the product

1. Check the design and load-bearing capacity of the wall. Note the weight of the product.
2. Use the unit mounting bracket that is suitable for wall mounting from the accessories.
3. Use the small damping feet from the accessories.
4. Align the product exactly horizontally.

Wall installation for insulated and uninsulated walls

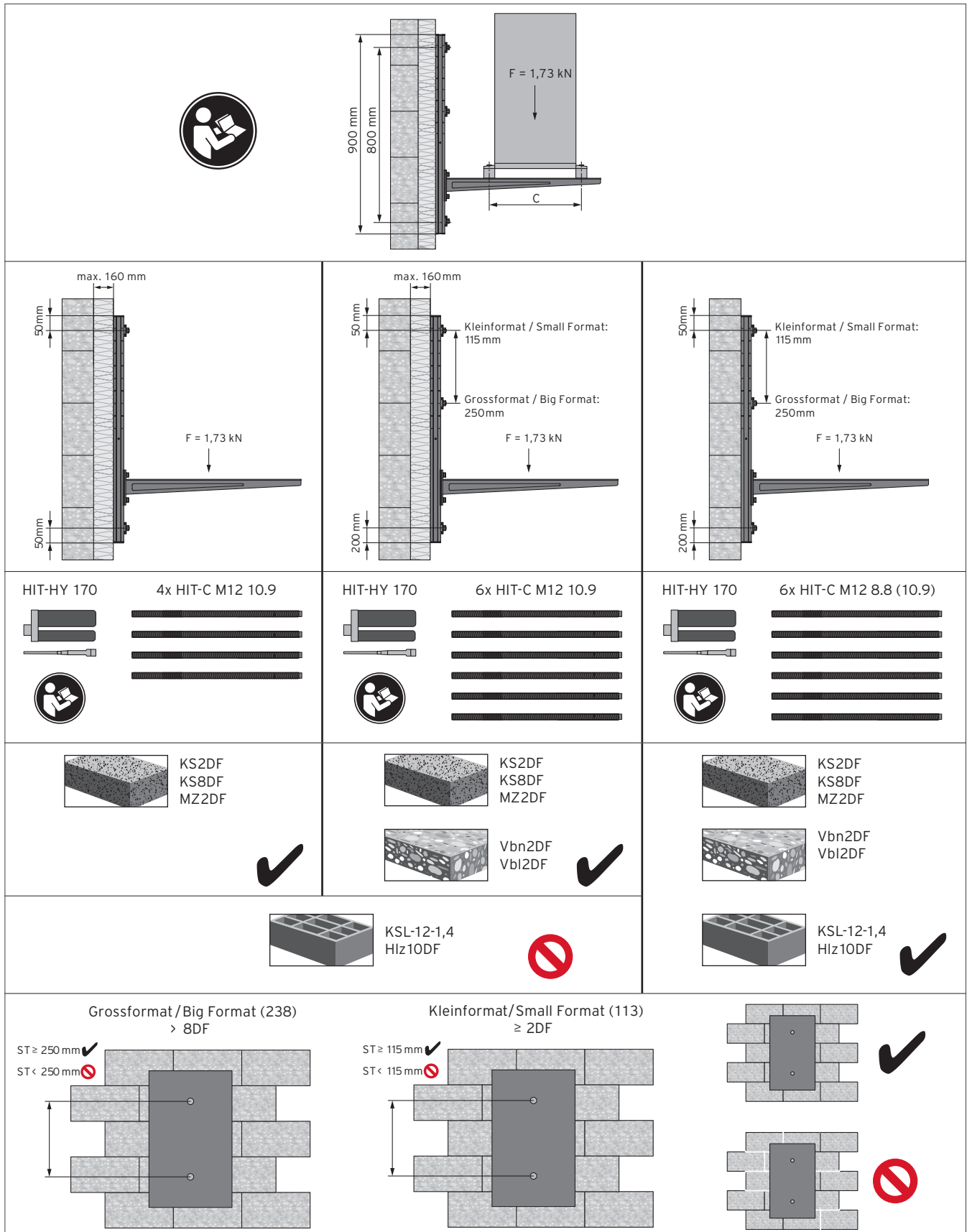


Fig 395: Wall installation on insulated and uninsulated walls

Installing the condensate discharge pipe



Danger!

Risk of injury due to frozen condensate.

Frozen condensate on paths may cause falls.

- > Ensure that condensate does not discharge onto paths and that ice cannot build up there.

1. Connect the condensate discharge tundish to the product's floor plate, and secure this in place by turning it by a 1/4 rotation.
2. Below the product, create a gravel bed into which any condensate can drain.

9.13.5 Flat-roof installation

Information on occupational safety

Note

Information on occupational safety

During a flat roof installation, the flat roof is a safety-critical working area. When planning and when carrying out work on the flat roof, you must always comply with the relevant health and safety regulations. The occupational safety must be guaranteed.

- Ensure that the flat roof can be safely accessed.
- The roof construction must have sufficient load-bearing capacity for being walked on.
- Maintain a safety area of 2 m to the fall edge and to skylights that are not safe to walk on plus any clearance that is required for carrying out work on the heat pump.
- Install a technical fall protection (e.g. reliable railings) on the fall edges if the safety clearance cannot be complied with.
- Install technical catch equipment (e.g. scaffolding or a safety net) if technical fall protection cannot be set up.

Flat-roof installation

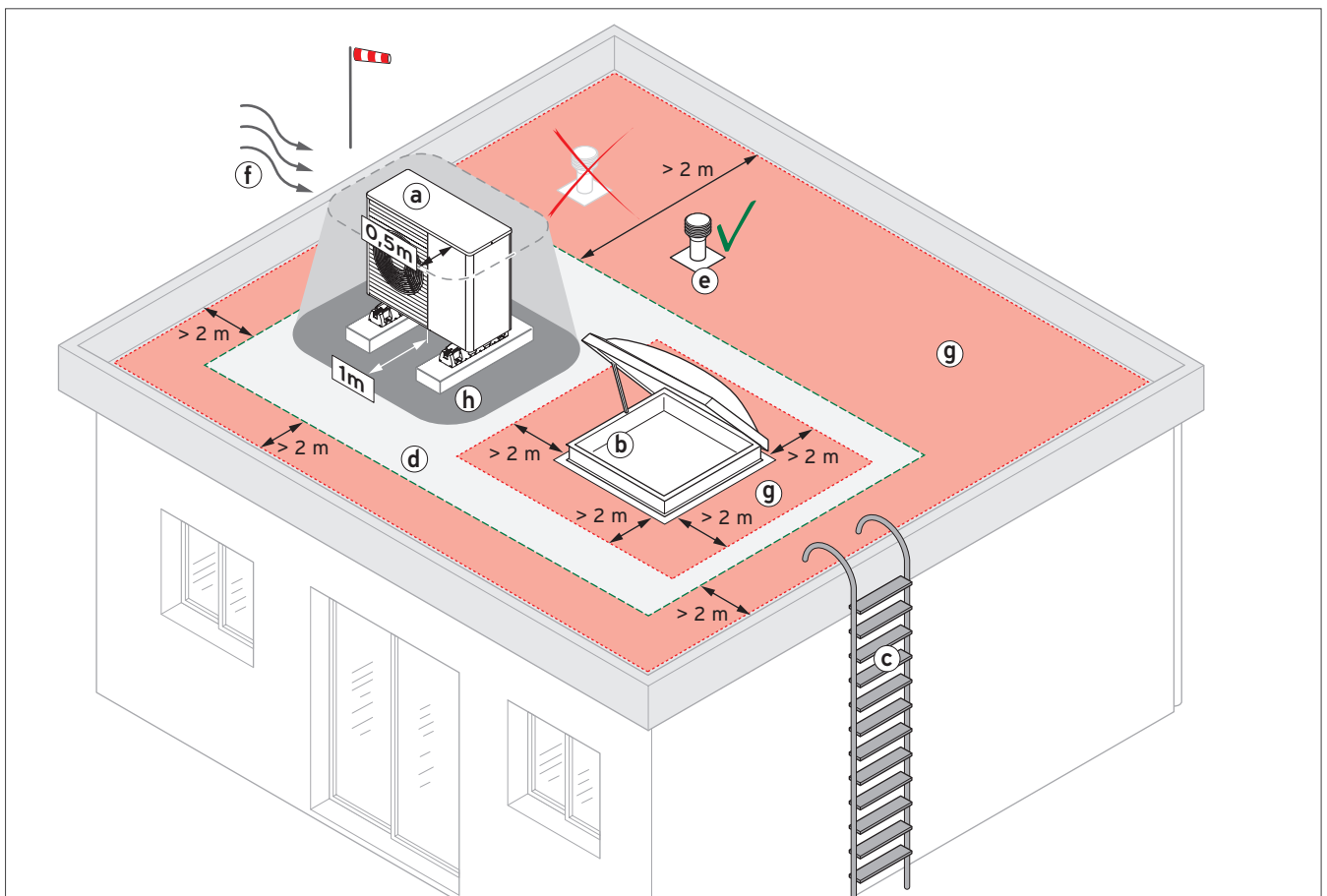


Fig 396: Flat-roof installation

- | | | | |
|---|---|---|---|
| a | Heat pump | e | Duct ventilation |
| b | Skylight (not guarded to prevent falls) | f | Fall edge |
| c | Secured ladder | g | Safety area |
| d | Installation area | h | Protective zone (without building openings, rain drainage and ignition sources) |

Planning information for flat-roof installation

The components of the heat pump must always be accessible in order to carry out maintenance work.

For access to the roof installation from inside, e.g. via a skylight (b), you must also ensure that at least the minimum access route is provided.

Secure the heat pump to concrete slabs in order to prevent the roof skin from being damaged. The number and weight of the slabs depends on the heat pump's output.

Ensure that the structural design requirements are complied with.

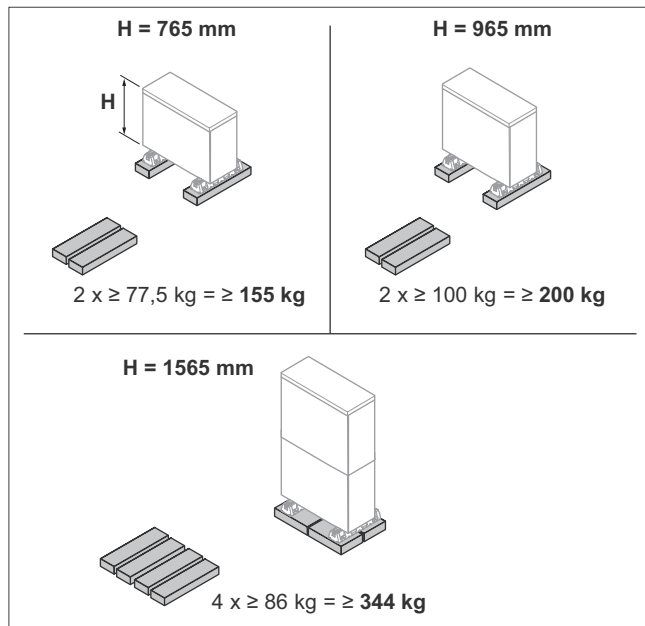


Fig 397: Number and weights of the concrete slabs

When work is carried out, moisture and dirt must be prevented from getting into the room below.

The secured ladder (c) must be designed in such a way that start-up, maintenance and repair work can be carried out by one person with the required tools and material, even in snowy conditions. In addition, a proper fixing device can be set for personal safety.

Note the following points:

- Do not install the unit at the fall edge (f)
- Duct ventilation (e) must not occur in the intake area of the heat pump
- Discharge must not occur towards the skylight
- Condensate discharge must be guaranteed
- Avoid discharge against the main direction of wind

Note

For information on installing REHAU accessories, see the separate section.



Installing the product



Warning.

Risk of injury due to toppling over in the wind. The product may topple over if there is a wind load.

- > Use two concrete bases and an anti-slip protective mat.
- > Screw the product to the concrete base.

1. Use the large damping feet from the accessories.
2. Align the product exactly horizontally.

Installing the condensate discharge pipe

1. Connect the condensate discharge pipe to a downpipe over a short distance.
2. Depending on the local condition, install electrical trace heating in order to keep the condensate discharge pipe frost-free.

9.14 Hydraulics installation

9.14.1 Routing pipelines to the product

1. Route the pipelines for the heating circuit from the building, through the wall duct and to the product.

Validity: Floor installation

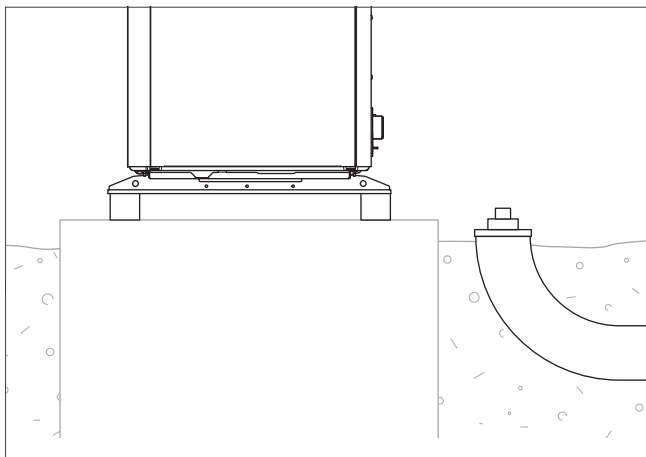


Fig 398: xxx

- » Route the pipelines through a suitable safety pipe in the ground, as shown in the example in the figure.
- » You can find the dimensions and clearances in the set-up instructions for the accessories (pre-installation jig, installation set).

Validity: Wall-mounting

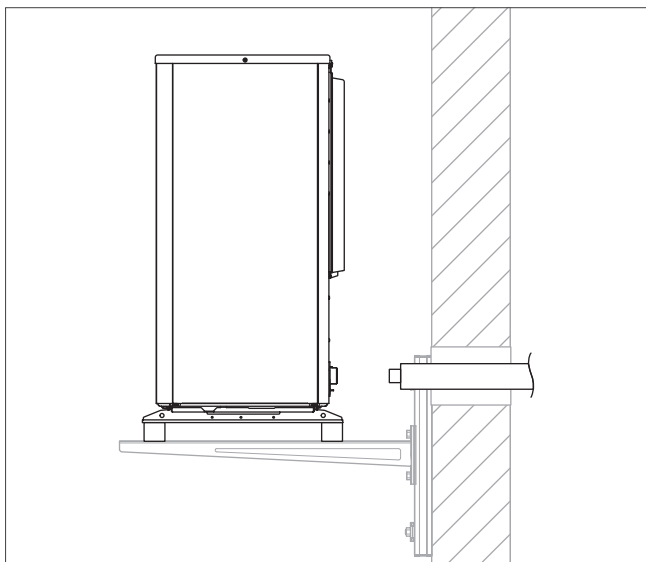


Fig 399: xxx

- » Route the pipelines through the wall duct to the product, as shown in the figure.
- » Route the pipelines from the inside outwards with a downward gradient of approx. 2°.
- » You can find the dimensions and clearances in the set-up instructions for the accessories (pre-installation jig, installation set).

9.14.2 Connecting the pipelines to the product

2. Remove the covering caps from the hydraulic connections.

Validity: Floor installation

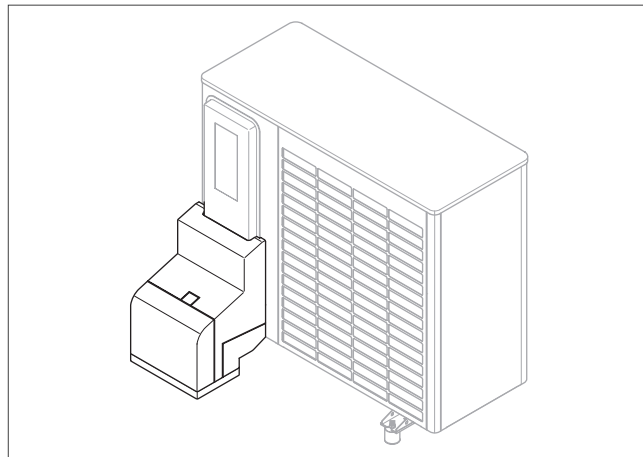


Fig 400: xxx

- » Use the pre-installation jig and the enclosed components from the accessories.
- » Check all connections for tightness.

Validity: Wall-mounting

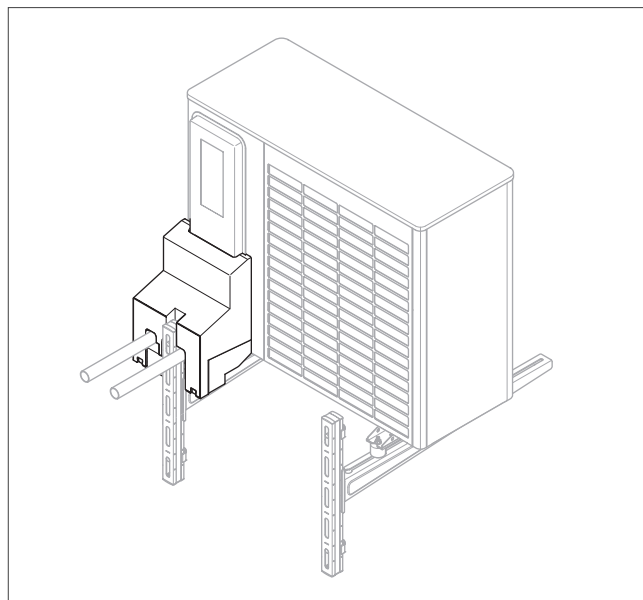


Fig 401: xxx

- » Use the pre-installation jig and the enclosed components from the accessories.
- » Check all connections for tightness.

9.14.3 Available remaining feed pressure

The following characteristics apply to the heating circuit for the outdoor unit and relate to a heating water temperature of 20 °C.

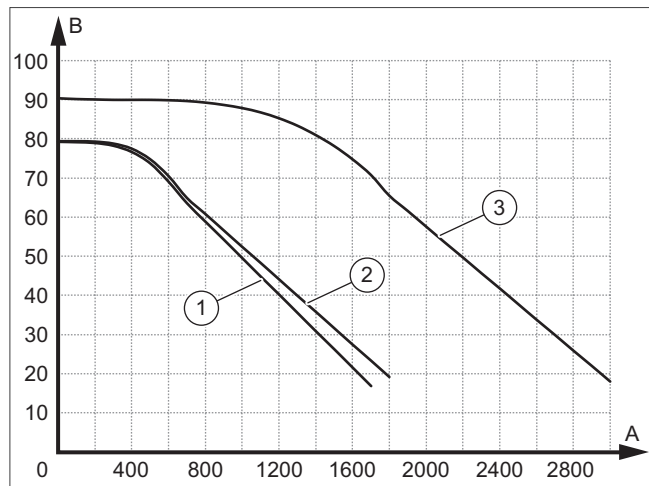


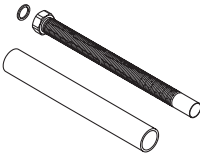
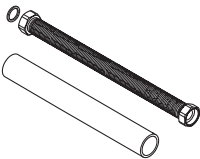
Fig 402: Available remaining feed pressure

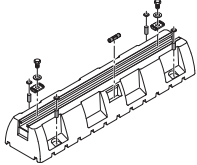

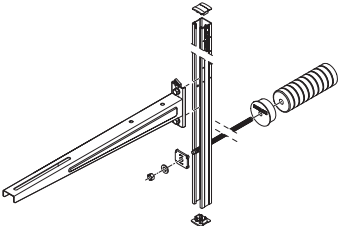
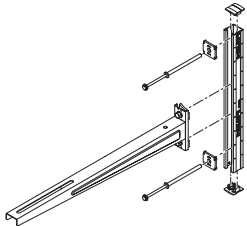

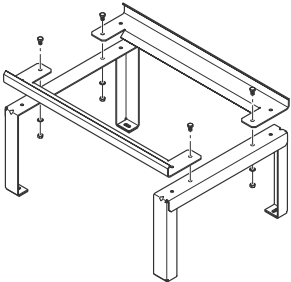
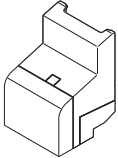
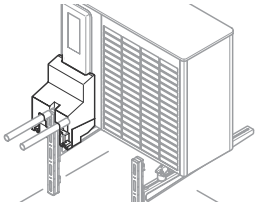
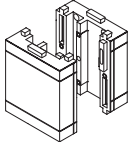
- A Volume flow, in l/h
- B Remaining feed pressure, in kPa
- 1 VWL 35/6 and VWL 55/6
- 2 VWL 65/6 and VWL 75/6
- 3 VWL 105/6 and VWL 125/6

9.15 Installation accessories

Suitable mounting accessories are available for mounting the aroTHERM plus.

The following overview shows the use of the accessories for the different types of installation and the possible combinations of the installation accessories.

Connection	Installation type	
	Floor/roof	Wall
Flat	Installation set, unprofiled pipe Article no. 0010027976 	
Nut	Installation set, union nut Article no. 0010027989 	

	Installation type	
	Floor/roof	Wall
Set-Up		
Single	<p>Damping base (2 pcs) Article no. 0020250226</p> 	<p>Vibration damper (4 pcs) Article no. 0020252091</p>  <p>Unit mounting bracket for complete heat insulation up to 16 cm Article no. 0020250224</p>  <p>Unit mounting bracket for solid construction without thermal insulation Article no. 0020250225</p> 
Snow	<p>Vibration damper (4 pcs) Article no. 0020252091</p>  <p>Elevated base Article no. 0010027984</p> 	
Pipe insulation		
Single	<p>Installation set for ground installation Article no. 0010027971</p> 	<p>Installation set for wall installation Article no. 0010027974</p> 
Snow	<p>Installation set expansion for ground installation Article no. 0010027972</p> 	

9.16 Product description for the uniTOWER plus VIH QW 190/6 (E)



Fig 403: uniTOWER plus VIH QW 190/6

Type overview

Unit designation	Article number
VIH QW 190/6 (without electric back-up heater)	–
VIH QW 190/6 E (with electric back-up heater)	–

9.16.1 Potential applications

The **uniTOWER plus** is used only in combination with an **aroTHERM plus** and acts as a link between the heat pump and the heating installation.

9.16.2 Special features

- Extremely short installation times thanks to the compact design
- Accessories that can be integrated (intermediate heat exchanger, 18 l buffer module, potable water expansion vessel, circulation set, connection set) can be added
- Also available with an integrated intermediate heat exchanger, which comes in two sizes (up to 7 kW or up to 12 kW).
- SplitMountingConcept for easier positioning in two parts

9.16.3 Equipment

- Integrated 185 litre domestic hot water coiled tube cylinder
- High-efficiency pump for the version with an intermediate heat exchanger
- 6 kW/9 kW (230 V/400 V) electric back-up heater with safety cut-out and electrical connection boxes
- Automatic air vent for back-up heater
- 15 litre diaphragm expansion vessel for heating
- 3-port diverter valve for heating/domestic hot water
- 3 bar expansion relief valve with drain pipework and brine collecting vessel (for the version with intermediate heat exchanger)
- Filling and flushing valves with a mechanical manometer for the heating circuit
- Brine circuit with manometer

9.16.4 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.



Technical data - General

	VIH QW 190/6	VIH QW 190/6 E
Product dimensions, width	595 mm	595 mm
Product dimensions, height	1,880 mm	1,880 mm
Product dimensions, depth	693 mm	693 mm
Weight, without packaging	143 kg	146 kg
Weight, ready for operation	347 kg	351 kg
IP rating	IP 10B	IP 10B
Heating circuit connections	G 1"	G 1"
Heat source connections	G 1 1/4"	G 1 1/4"
Cold water and domestic hot water connections	G 3/4"	G 3/4"
Permissible height difference between outdoor unit and indoor unit	≤ 15 m	≤ 15 m

Technical data - Heating circuit

	VIH QW 190/6	VIH QW 190/6 E
Material in the heating circuit	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron
Permissible water composition	Technical data calculated without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) in accordance with Directive VDI2035 sheet 1	Technical data calculated without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) in accordance with Directive VDI2035 sheet 1
Water content	16.0 l	16.0 l
Volume of the internal diaphragm expansion vessel	15 l	15 l
Minimum operating pressure	0.05 MPa	0.05 MPa
Maximum operating pressure	0.3 MPa	0.3 MPa
Max. heating mode flow temperature with compressor	75 °C	75 °C
Max. heating mode flow temperature with back-up heater		75 °C
Min. cooling mode flow temperature	7 °C	7 °C
Permissible medium in the decoupling circuit (separation heat exchanger accessory)	Propylene glycol/water mixture	Propylene glycol/water mixture
Sound power A7/W35 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 30 dB(A)	≤ 30 dB(A)
Sound power A7/W45 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 30 dB(A)	≤ 30 dB(A)
Sound power A7/W55 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 30 dB(A)	≤ 30 dB(A)
Sound power A7/W65 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 30 dB(A)	≤ 30 dB(A)
Sound power A35/W7 in accordance with EN 12102 / EN 14511 L _{wi} in cooling mode	≤ 30 dB(A)	≤ 30 dB(A)
Sound power A35/W18 in accordance with EN 12102 / EN 14511 L _{wi} in cooling mode	≤ 31 dB(A)	≤ 31 dB(A)

Technical data - Domestic hot water

	VIH QW 190/6	VIH QW 190/6 E
Water content of the domestic hot water cylinder	185 l	185 l
Heat exchanger nominal volume (heating coil)	8.6 l	8.6 l
Surface area of the heat exchanger	1.3 m ²	1.3 m ²
Domestic hot water cylinder material	Steel, enamelled	Steel, enamelled
Insulation material for the domestic hot water cylinder	Neopor	Neopor
Min. insulating thickness	26 mm	26 mm
Max. insulating thickness	74 mm	74 mm
Corrosion protection	Magnesium anode	Magnesium anode
Maximum operating pressure	1.0 MPa	1.0 MPa
Set opening temperature and pressure of the expansion relief valve	90 °C - 0.7 MPa (7 bar)	90 °C - 0.7 MPa (7 bar)
Max. cylinder temperature due to the heat pump	70 °C	70 °C
Max. cylinder temperature due to back-up heater		70 °C
Heat-up time in accordance with DIN EN 16147 to target cylinder temperature, A7 with an outdoor unit up to 5 kW	192 min	192 min
Power consumption during standby in accordance with DIN EN 16147, A7 - with an outdoor unit up to 5 kW	22 W	22 W
Coefficient of performance (COP _{dhw}) in accordance with EN 16147, A7, L profile - with an outdoor unit up to 5 kW	2.57	2.57
Reference domestic hot water temperature in accordance with DIN EN 16147, A7 - with an outdoor unit up to 5 kW	49.9 °C	49.9 °C
Mixed water volume V40 in accordance with DIN EN 16147, A7 - with an outdoor unit up to 5 kW	230 l	230 l
Heat-up time in accordance with DIN EN 16147 to target cylinder temperature, A7 with an outdoor unit up to 7 kW	125 min	125 min
Power consumption during standby in accordance with DIN EN 16147, A7 - with an outdoor unit up to 7 kW	45 W	45 W
Coefficient of performance (COP _{dhw}) in accordance with EN 16147, A7, XL profile - with an outdoor unit up to 7 kW	2.55	2.55
Reference domestic hot water temperature in accordance with DIN EN 16147, A7 - with an outdoor unit up to 7 kW	51.6 °C	51.6 °C
Mixed water volume V40 in accordance with DIN EN 16147, A7 - with an outdoor unit up to 7 kW	246 l	246 l
Heat-up time in accordance with DIN EN 16147 to target cylinder temperature, A7 with an outdoor unit up to 12 kW	80 min	80 min
Power consumption during standby in accordance with DIN EN 16147, A7 - with an outdoor unit up to 12 kW	39 W	39 W
Coefficient of performance (COP _{dhw}) in accordance with EN 16147, A7, XL profile - with an outdoor unit up to 12 kW	2.61	2.61
Reference domestic hot water temperature in accordance with DIN EN 16147, A7 - with an outdoor unit up to 12 kW	52.1 °C	52.1 °C
Mixed water volume V40 in accordance with DIN EN 16147, A7 - with an outdoor unit up to 12 kW	258 l	258 l

Technical data - Electrics

	VIH QW 190/6	VIH QW 190/6 E
Rated voltage	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE
Rated voltage		400 V (+10%/-15%), 50 Hz, 3~/N/PE
Rated power, maximum	0.06 kW	8.6 kW
Rated current, maximum, 230 V	2.6 A	23.5 A
Rated current, maximum, 400 V		13.6 A
Oversvoltage category	II	II
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams

5.4 kW back-up heater at 230 V

Internal control of the output levels at 230 V	Power consumption	Set value
0	0.0 kW	
1	0.7 kW	1 kW
2	1.2 kW	
3	1.8 kW	2 kW
4	2.2 kW	3 kW
5	3.2 kW	
6	3.8 kW	4 kW
7	4.7 kW	5 kW
8	5.4 kW	6 kW

8.54 kW back-up heater at 400 V

Internal control of the output levels at 400 V	Power consumption	Set value
0	0.0 kW	
1	0.7 kW	1 kW
2	1.2 kW	
3	1.8 kW	2 kW
4	2.3 kW	
5	3.0 kW	3 kW
6	3.9 kW	4 kW
7	4.7 kW	5 kW
8	5.6 kW	6 kW
9	6.2 kW	
10	7.0 kW	7 kW
11	7.9 kW	8 kW
12	8.5 kW	9 kW

9.16.5 Product dimensions and connection dimensions

Dimension drawing and connection dimensions

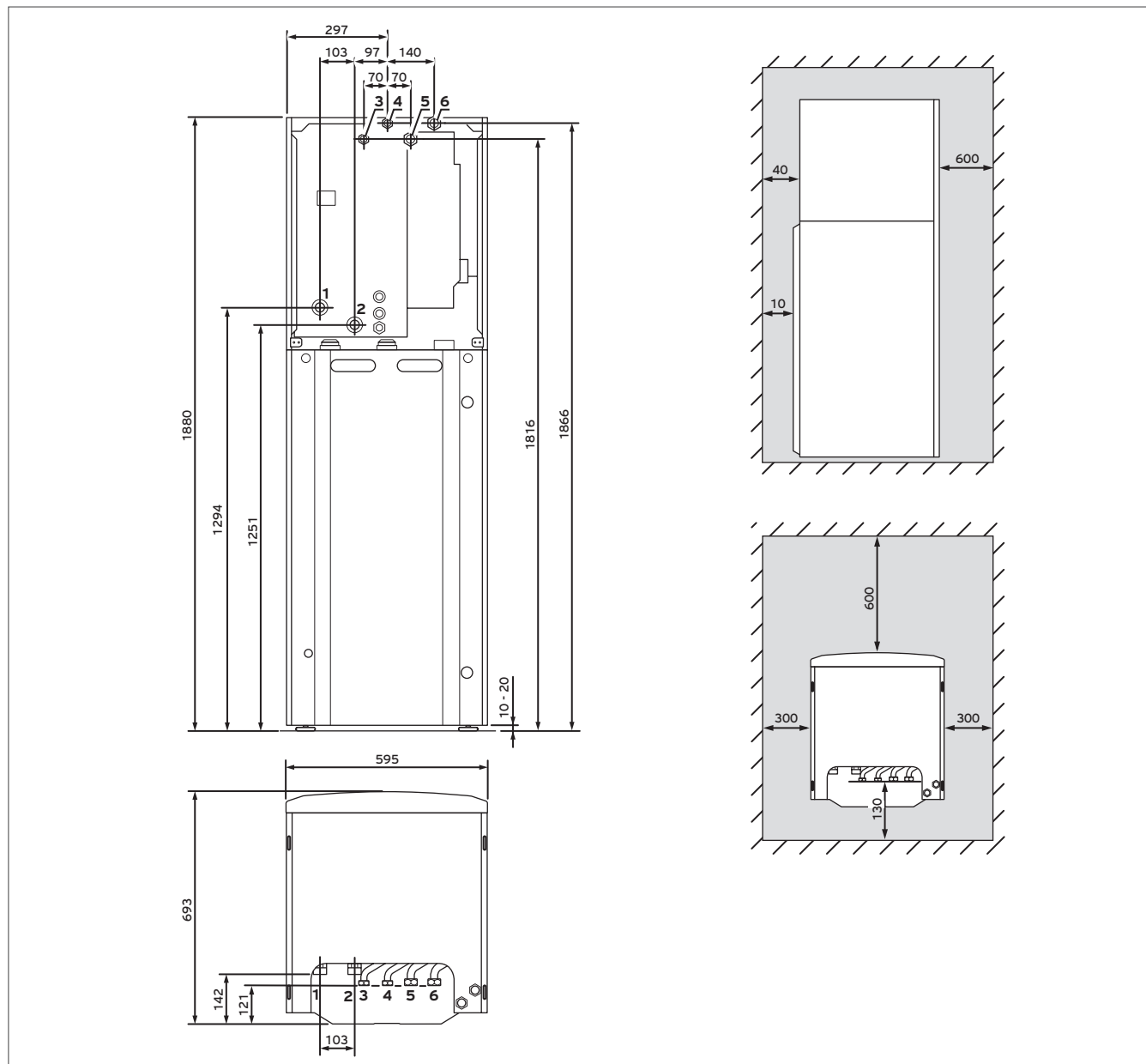


Fig 404: unitTOWER VIH QW 190/6 E dimension drawing and connection dimensions

- 1 Flow from heat pump G 1 1/4
- 2 Return to the heat pump G 1 1/4
- 3 G 3/4 cold water connection
- 4 G 3/4 domestic hot water connection
- 5 G 1 heating flow
- 6 G 1 heating return

Product dimensions for the transport

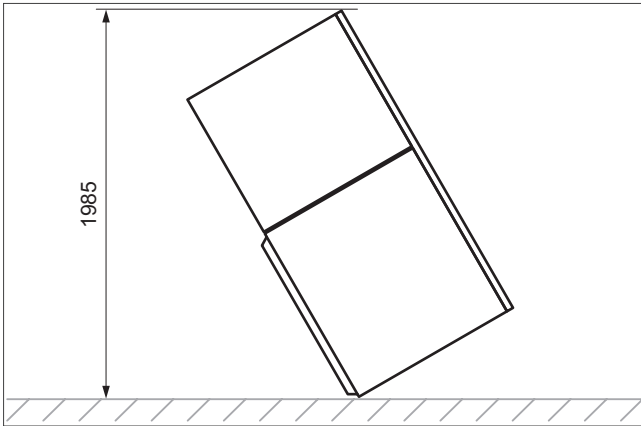


Fig 405: Dimensions for transport

9.16.6 Total pressure loss (without intermediate heat exchanger)

The diagram shows the total pressure loss for the product variant without an intermediate heat exchanger.

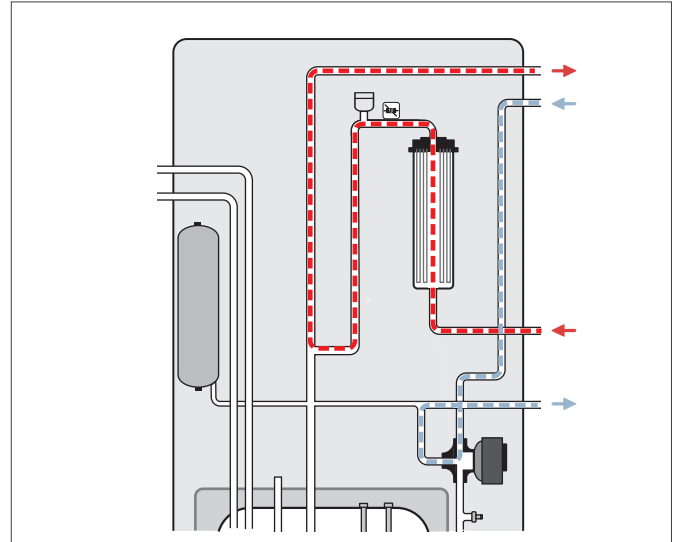


Fig 406: Basic diagram: Total pressure losses for the uniTOWER plus

Total pressure loss in the product, building circuit

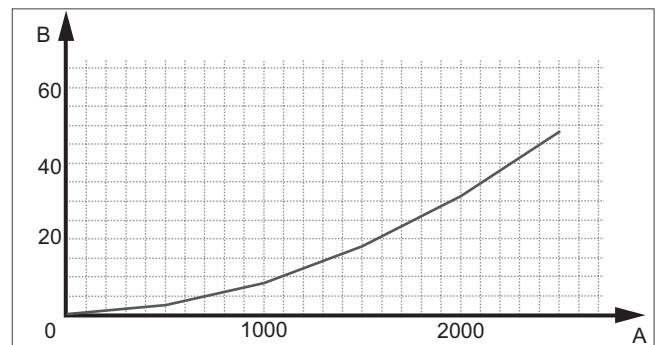


Fig 407: Pressure loss

- A Flow rate in the building circuit (l/h)
- B Pressure loss (kPa)

Note

Pressure losses/remaining feed head in the heat pump circuit version with intermediate heat exchanger; see „uniTOWER plus accessories, intermediate heat exchanger“.



9.16.7 Connecting the heat pump to the indoor unit

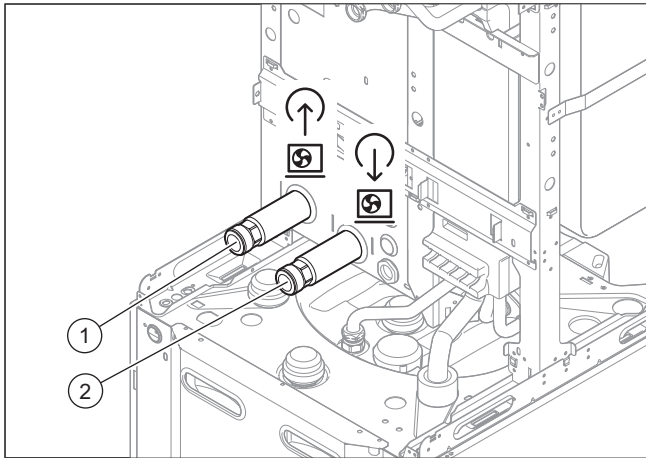


Fig 408: Overview of the connections

- 1 G 1 1/4" connection, heating flow from the heat pump
- 2 G 1 1/4" connection, heating return to the heat pump

1. Blow or flush the supply pipes thoroughly prior to installation.
2. Connect the heat pump to the product.
3. Check whether the connections are leak-tight.

Connection and design of the lines to the heat pump

Connection accessories are available for connecting the lines to the heat pump.

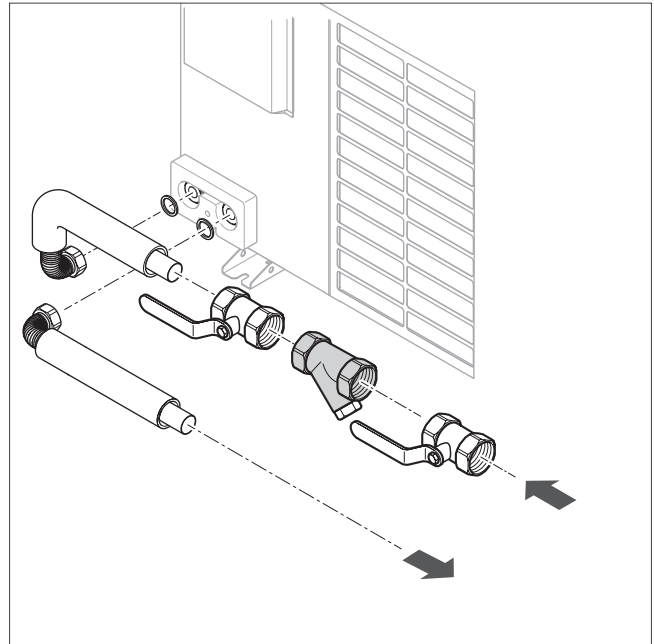


Fig 409: Connection to the heat pump

The following table shows the recommended pipe lengths of the connection cables when using different line materials (internal diameter of DIN", Δt 8 K, flow speed < 1.0 m/s, pressure loss < 100 pa/m.)

Design of the connection cables

	Copper pipe		Plastic pipe	
	0-5 m	5-10 m	0-10 m	10-20 m
VWL 35/6	20 mm	20 mm	25 mm	25 mm
VWL 55/6	25 mm	25 mm	32 mm	32 mm
VWL 65/6	25 mm	25 mm	32 mm	32 mm
VWL 75/6	25 mm	25 mm	32 mm	32 mm
VWL 105/6	32 mm	32 mm	32 mm	32 mm
VWL 125/6	32 mm	32 mm	40 mm	40 mm

9.17 uniTOWER plus accessories

9.17.1 Product description for the 18 l integrated buffer cylinder



Fig 410: Buffer cylinder, 18 l

Potential applications

The buffer cylinder is used as a return flow series cylinder. It increases the water volume in the heating installation and therefore extends the heat pump's running time.

It can be used as a cylinder for heating water or cooling water, depending on the demand. Vapour-diffusion insulation makes it possible to buffer cooling water. The buffer volume is also used to de-ice the evaporator of ice which may form in the outdoor unit.

Intermediate heat exchanger for the following outputs

Output ranges	Order no.
Heat pumps, up to 7 kW	0020269273

Technical data

	Buffer module
Total contents of cylinder	18 l
Maximum operating pressure	3.0 bar
Minimum operating pressure	0.5 bar
Maximum heating temperature	95 °C
Minimum heating temperature	5 °C
Hydraulic connection as	Return flow series cylinder
Insulation	Vapour diffusion-tight

9.17.2 Product description for the intermediate heat exchanger module



Fig 411: Intermediate heat exchanger module

Potential applications

The intermediate heat exchanger module is an additional module that can be used for the retroactive installation in **uniTOWER**.

Thanks to its built-in heat exchanger, it can be used as a hydraulic system separation between the heat pump and heating installation. This means that the heat pump can be protected against frost without having to fill the entire installation with antifreeze.

Equipment

The intermediate heat exchanger module consists of:

- High-efficiency pump
- Plate heat exchanger
- Expansion relief valve for heating

Intermediate heat exchanger for the following outputs:

Output ranges	Order no.
Heat pumps, up to 7 kW	0010027982
Heat pumps, 10 to 12 kW	0010027973

Pressure losses in the heat pump circuit version with intermediate heat exchanger

The diagram shows the pressure losses for the product variant with an intermediate heat exchanger.

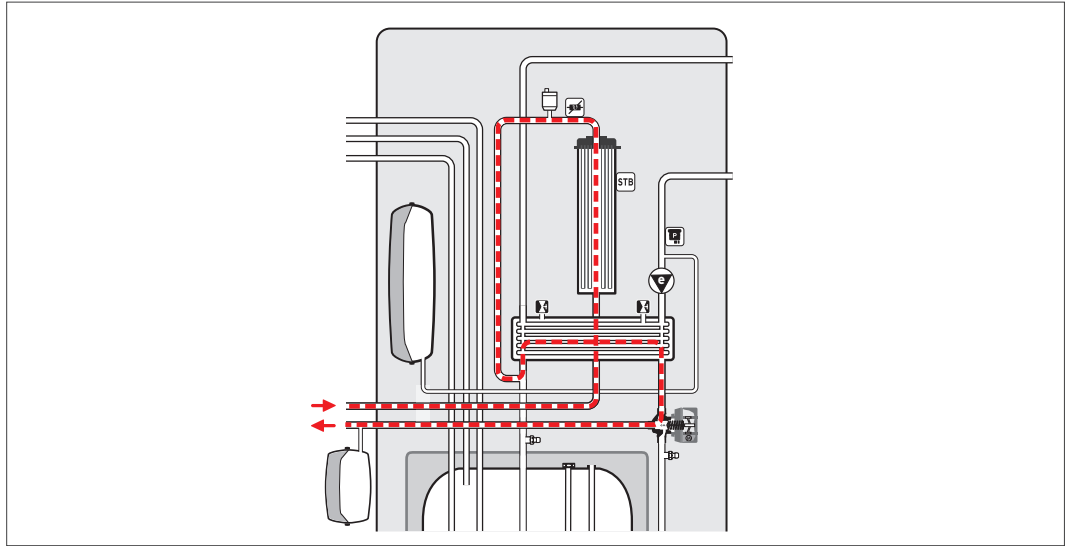


Fig 412: Basic diagram of the pressure losses in the heat pump circuit for the uniTOWER plus

Pressure loss in the product in the heat pump circuit

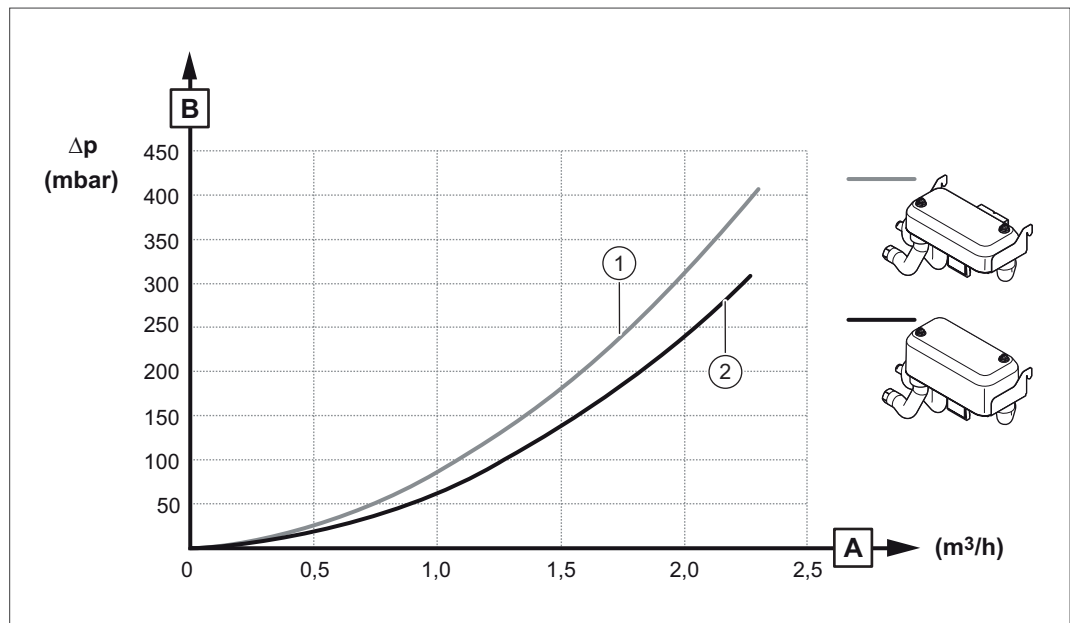


Fig 413: Pressure loss in the product in the heat pump circuit

- 1 Intermediate heat exchanger (3-7 kW)
- 2 Intermediate heat exchanger (10-12 kW)
- A Volume flow
- B Pressure

Remaining feed head version with intermediate heat exchanger (heating circuit)

The diagram shows the remaining feed head for the product variant with an intermediate heat exchanger.

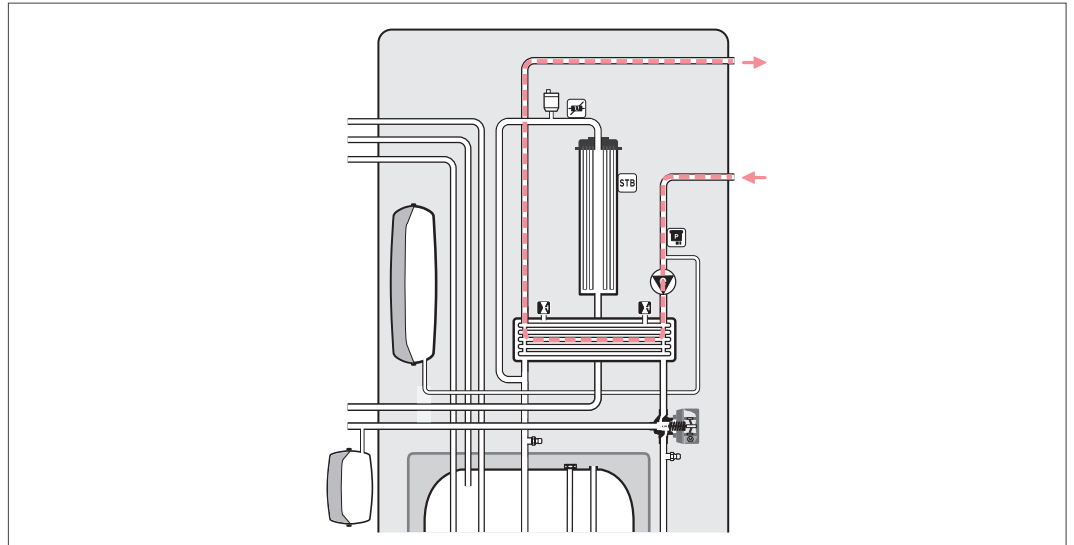


Fig 414: Remaining feed head basic diagram

Remaining feed head with intermediate heat exchanger (3-7 kW)

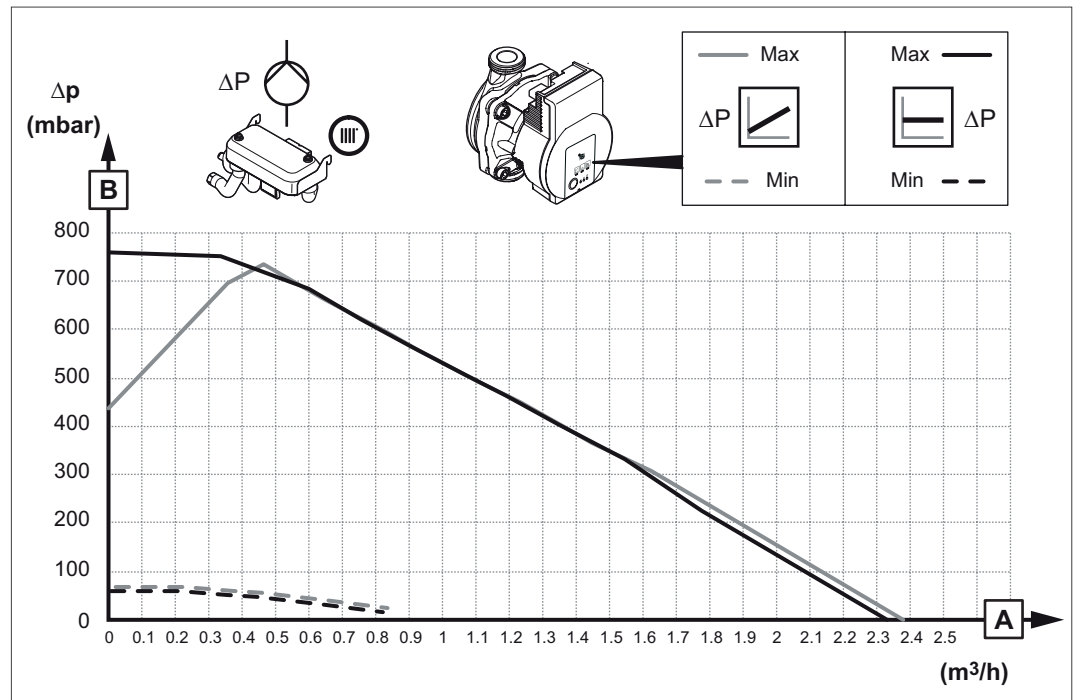


Fig 415: Remaining feed head with intermediate heat exchanger (3-7 kW)

- A Volume flow
- B Available pressure

Remaining feed head with intermediate heat exchanger (10-12 kW)

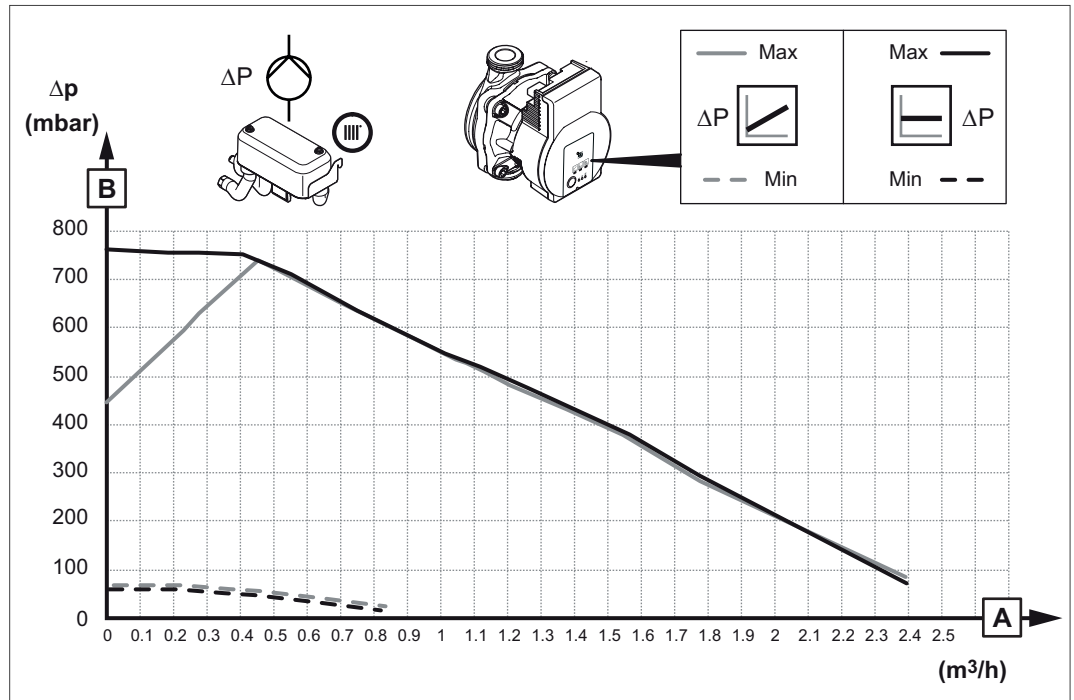
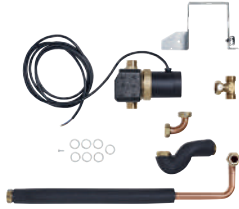



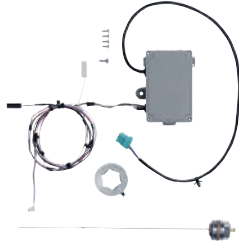




Fig 416: Remaining feed head with intermediate heat exchanger (10-12 kW)

- A Volume flow
- B Available pressure



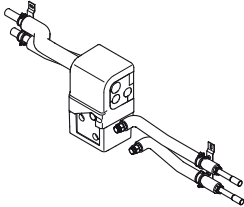
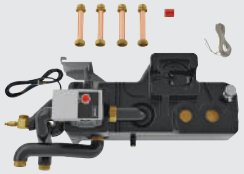


9.17.3 Domestic hot water connection accessories

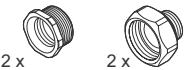

Accessories	Description	Order no.
Domestic hot water connection accessories		
	<p>Circulation set with pump</p> <p>High-efficiency circulation pump with non-return valve, connection pipe, connection fittings, brass G 3/4" connection T-piece, G 3/4" coupling with integrated non-return valve, cut-off for auro-/ecoCOMPACT, pipe set with pump for circulation connection on the rear of the unit</p>	0020170503
	<p>Circulation set without pump</p> <p>Semi-insulated connection pipe with G 3/4" coupling, copper elbow with G 3/4" coupling, insulated G 3/4" connector with G 3/4" coupling, brass G 3/4" connection T-piece, G 3/4" coupling with integrated non-return valve</p> <p>Pipe set for circulation connection on the rear of the unit, for connection to the circulation pump that already exists on-site</p>	0020170502
	<p>Potable water expansion vessel installation kit</p> <p>8 l potable water expansion vessel (flow-through), 3/4" connection fittings, G 3/4" flexible connection pipes, EPS padding</p>	0020180979
	<p>Potable water expansion vessel installation kit</p> <p>For installation on the front of the outer casing</p> <p>8-litre potable water expansion vessel (not through-flow), connection fittings, connection cable, retainers</p>	0020170500 (Not in DE)
	<p>Universal external current anode with connection accessories</p> <p>M8 external current anode with 3/4" adapter, power supply unit, cable, small parts for replacing the magnesium protection anode that is already available on-site</p>	0020170505

9.17.4 Separation of the heat pump circuit and heating circuit


Accessories	Description	Order no.
Separation of the heat pump circuit and heating circuit		
	<p>Intermediate heat exchanger as an accessory (3-7 kW) For separating the heat pump circuit from the heating circuit With pressure sensor, high-efficiency pump, plate heat exchanger, connection pipes, brine collecting vessel and brine expansion relief valve Can be used for aroTHERM plus 3-7 kW with uniTOWER plus</p>	0010027982
	<p>Intermediate heat exchanger as an accessory (10-12 kW) For separating the heat pump circuit from the heating circuit With pressure sensor, high-efficiency pump, plate heat exchanger, connection pipes, brine collecting vessel and brine expansion relief valve Can be used for aroTHERM plus 10-12 kW with uniTOWER plus</p>	0010027973
	<p>Brine expansion vessel 2 l brine expansion vessel for the brine circuit when using an intermediate heat exchanger</p>	0010030975
	<p>Brine expansion vessel 18 l 25 l Brine expansion vessel for the brine circuit when using an intermediate heat exchanger and larger volumes of brine</p>	302097 302098
	<p>10 l brine fluid 20 l brine fluid 10/20 l canister of ready-mixed brine fluid for temperatures up to -28 °C Can be used for aroTHERM plus in installations with system separation</p>	302363 302498

9.17.5 Hydraulic connection to the heating circuit

Accessories	Description	Order no.
	<p>Flexible installation set, left- and right-hand side Stainless steel flexible pipes with unit mounting bracket for quick pre-installation. Easy press-fitting for further routing in the building, heat insulation covers that comply with the Energy Saving Ordinance and are suitable for the active cooling mode. 10 bar expansion relief valve, 1" service valves, filling/draining cock, 3 bar expansion relief valve, stainless steel flexible pipe with unit mounting bracket, heat insulation covers, small parts, drain hoses, manometer, purging.</p>	0020250219
	<p>Installation set for connection to on-site piping Left- or right-hand connection or from the rear, Heat insulation covers that comply with the Energy Saving Ordinance and are suitable for the active cooling mode. 10 bar expansion relief valve, 1" service valves, filling/draining cock, 3 bar expansion relief valve, heat insulation covers, small parts, drain hoses, manometer, purging.</p>	0020250220
	<p>Surface-mounted connection set Extension set with two pipes, 3/4" union nut with 22 mm straight pipe for HT2, XPE insulation</p>	0010027981 (UK only)
	<p>Installation set for a non-regulated heating circuit High-efficiency pump, distribution manifold for two heating circuits With integrated low loss header, Kvs = 6.2, heat insulation, non-return flap, connection pipes (copper) with G 3/4" connection, seals, sensor for installing in the compact unit Note: A regulated heating circuit can be added to the set using order no. 0020170508.</p>	0020170507
	<p>Extension set for a regulated heating circuit (Only in conjunction with order no. 0020170507) High-efficiency pump, 3-port mixing valve, non-return flap, connection pipes (copper) with G3/4" connection, seals Note: Installation set for non-regulated heating circuit (order no. 0020170507) must be available.</p>	0020170508
	<p>Extension set for a non-regulated heating circuit (Only in conjunction with order no. 0020170507) High-efficiency pump, non-return flap, insulated connection pipes (copper) with G3/4" connection, seals Note: Installation set for non-regulated heating circuit (order no. 0020170507) must be available.</p>	0020170509

Accessories	Description	Order no.
	Adapter set Adapter set for the installation set for a non-regulated heating circuit 4 x reducer from 1" to 3/4"	0020269275
	Rp 3/4 bypass valve Adjustable from 150 to 350 mbar Note: Can be used for heat pumps up to 11 kW. Can only be used for single-circuit systems where no low loss header is used.	0020059561

9.17.6 Hydraulic connection to the heat pump

Accessories	Description	Order no.
Hydraulic connection to the heat pump		
	Heat pump circuit installation set, flexible, for uniTOWER, 35 mm press connection 2 x 425 mm stainless-steel corrugated pipe, 2 x 1 1/4" flat seal, 2 x 370 mm Armaflex insulation, EnEV-compliant, length: 500 mm	0010027979

9.18 Product description for the VWZ MEH 97/6 hydraulic station



Fig 417: VWZ MEH 97/6 hydraulic station

9.18.1 Potential applications

The **VWZ MEH 97/6 hydraulic station** is an electric post-heating module with integrated heat pump control interface module and 3-port diverter valve for the **aroTHERM** heating system.

Depending on the system design and configuration, it supplements the heat supply from the heat pump.

The output of the electrical immersion heater can be set as required to 6 kW/9 kW (230 V/400 V).

The hydraulic station is connected to a 230 V or 400 V power supply.

9.18.2 Equipment

- eBUS interface
- Appliance interface with display and control buttons
- 6 kW/9 kW (230 V/400 V) electric back-up heater with safety cut-out
- 10 l expansion vessel for heating
- 3-port diverter valve for heating/domestic hot water
- Water pressure sensor
- Expansion relief valve for heating
- VF1 temperature sensor
- Connection cable

9.18.3 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.



Technical data - General

	VWZ MEH 97/6
Product dimensions, width	440 mm
Product dimensions, height	720 mm
Product dimensions, depth	350 mm
Weight, without packaging	20 kg
Weight, ready for operation	28 kg
IP rating	IP 10B
Heating circuit connections	G 1"
Heat source connections	G 1 1/4"
Permissible height difference between outdoor unit and indoor unit	≤ 15 m

Technical data - Heating circuit

	VWZ MEH 97/6
Material in the heating circuit	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, steel, composite materials
Permissible water composition	Technical data calculated without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16,8° dH) in accordance with Directive VDI2035 sheet 1
Water content	8 l
Volume of the internal diaphragm expansion vessel	10 l
Minimum operating pressure	0.05 MPa
Maximum operating pressure	0.3 MPa
Max. heating mode flow temperature with compressor	75 °C
Max. heating mode flow temperature with back-up heater	75 °C
Min. cooling mode flow temperature	7 °C
Sound power A7/W35 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 29 dB(A)
Sound power A7/W45 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 29 dB(A)
Sound power A7/W55 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 29 dB(A)
Sound power A7/W65 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 29 dB(A)
Sound power A35/W7 in accordance with EN 12102 / EN 14511 L _{wi} in cooling mode	≤ 29 dB(A)
Sound power A35/W18 in accordance with EN 12102 / EN 14511 L _{wi} in cooling mode	≤ 30 dB(A)

Technical data - Electrics

	VWZ MEH 97/6
Rated voltage	230 V (+10%/-15%), 50 Hz, 1~/N/PE
Rated voltage	400 V (+10%/-15%), 50 Hz, 3~/N/PE
Rated power, maximum	8.6 kW
Rated current, maximum, 230 V	23.5 A
Rated current, maximum, 400 V	13.6 A
Overtoltage category	II
Fuse type, 230 V	C characteristics, slow-blow
Fuse type, 400 V	C characteristics (slow-blow), 3-pole switching

5.4 kW back-up heater at 230 V

Internal control of the output levels at 230 V	Power consumption	Set value
0	0.0 kW	
1	0.7 kW	1 kW
2	1.2 kW	
3	1.8 kW	2 kW
4	2.2 kW	3 kW
5	3.2 kW	
6	3.8 kW	4 kW
7	4.7 kW	5 kW
8	5.4 kW	6 kW

8.54 kW back-up heater at 400 V

Internal control of the output levels at 400 V	Power consumption	Set value
0	0.0 kW	
1	0.7 kW	1 kW
2	1.2 kW	
3	1.8 kW	2 kW
4	2.3 kW	
5	3.0 kW	3 kW
6	3.9 kW	4 kW
7	4.7 kW	5 kW
8	5.6 kW	6 kW
9	6.2 kW	
10	7.0 kW	7 kW
11	7.9 kW	8 kW
12	8.5 kW	9 kW

9.18.4 Product dimensions, connections and minimum clearances

Dimensions

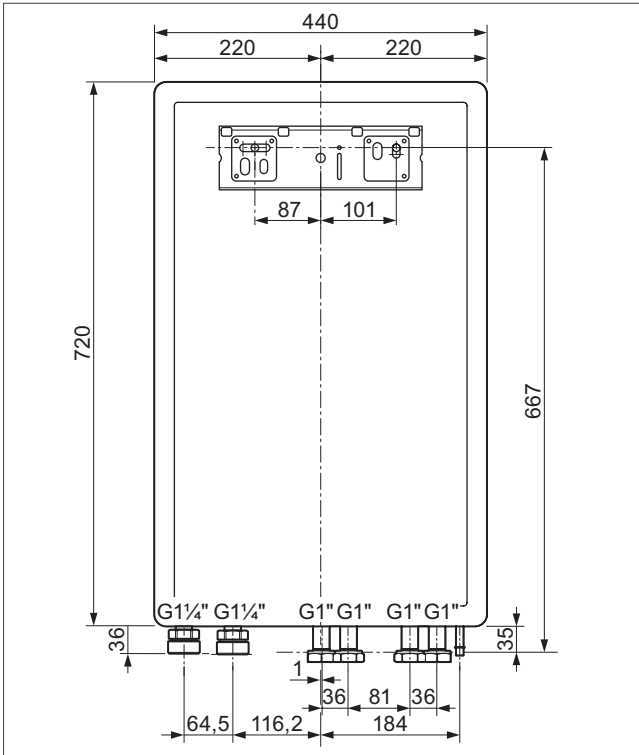


Fig 418: Dimensions, front view

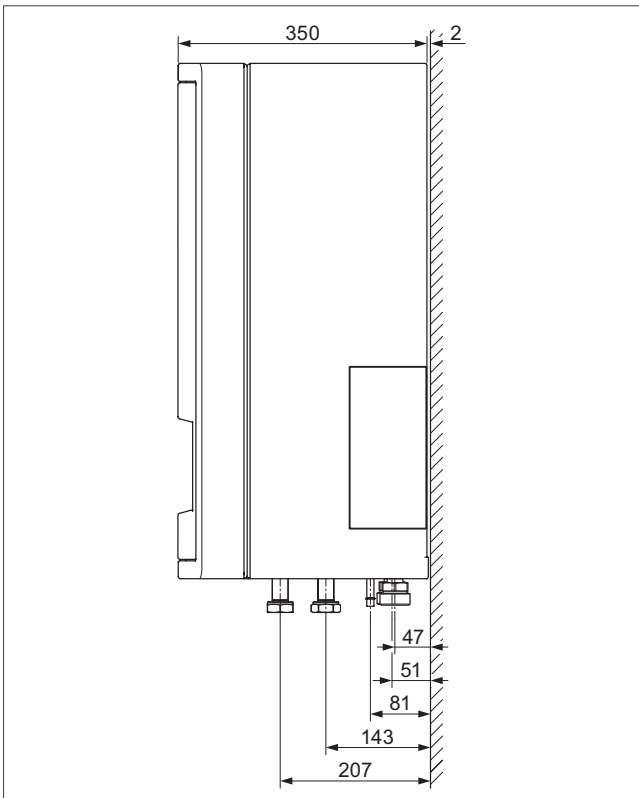


Fig 419: Dimensions, side view

Underside of the product

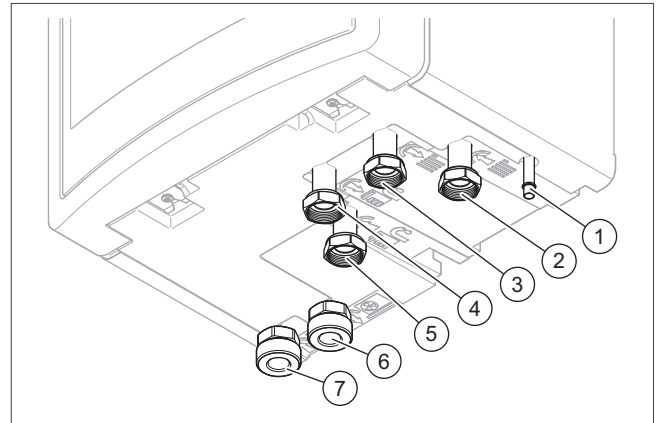


Fig 420: Underside of the product

- 1 Drain for expansion relief valve
- 2 Building circuit return
- 3 Building circuit flow
- 4 Domestic hot water cylinder flow
- 5 Domestic hot water cylinder return
- 6 Heating return, to the heat pump
- 7 Heating flow, from the heat pump

Required minimum clearances

The following minimum clearances and installation clearances are recommended for installation and maintenance:

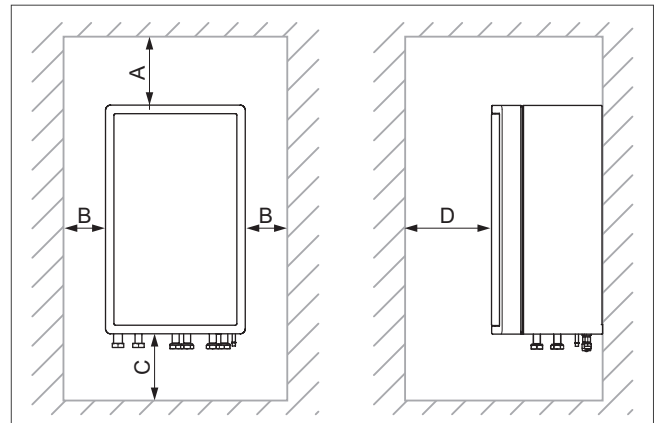


Fig 421: Recommended minimum clearances/installation clearances

- A Min. 200 mm
- B Min. 200 mm
- C 1000 mm
- D > 600 mm

9.18.5 Total pressure loss

The diagram shows the total pressure loss for the hydraulic station.

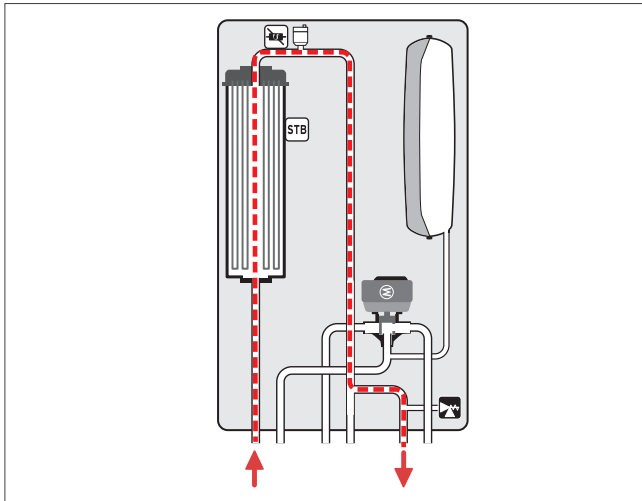


Fig 422: Basic diagram: Total pressure losses for the hydraulic station

Total pressure loss in the product, heating circuit and domestic hot water

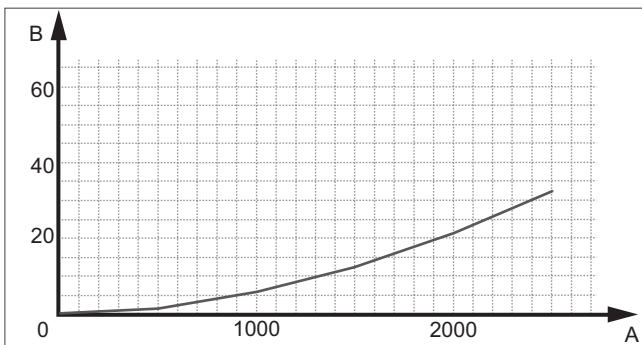


Fig 423: Pressure loss

- A Flow rate in the building circuit (l/h)
- B Pressure loss (kPa)

9.19 Product description for the VWZ MEH 60 immersion heater

Order no. 0020145030



Fig 424: 6 kW immersion heater

9.19.1 Potential applications

The electrical immersion heater in the reheater module supplements the heat pump when operating in mono-energy mode. The module can be connected to a 230 V or 400 V supply. Depending on the electrical wiring mode, the heat output can be set to 2, 4 or 6 kW as required. The electric module is connected to the heat pump control interface module via a control cable.

9.19.2 Equipment

The electric reheater module consists of:

- Safety cut-out for the back-up heater
- Electrical connection box
- Purging valve
- Drain valve

9.19.3 Technical data

	VWZ MEH 60		
Operating voltage U_{\max}	230 V/50 Hz	230 V/50 Hz	400 V/50 Hz
Maximum power consumption (P_{\max})	6.0 kW	4.0 kW	6.0 kW
Max. power consumption (I_{\max})	30 A	20 A	10 A
IP rating	IP X4		
Maximum operating pressure	3.0 bar		
Minimum operating pressure	0.5 bar		
Weight	4 kg		
Height	500 mm		
Width	280 mm		
Depth	250 mm		

9.19.4 Dimension drawing

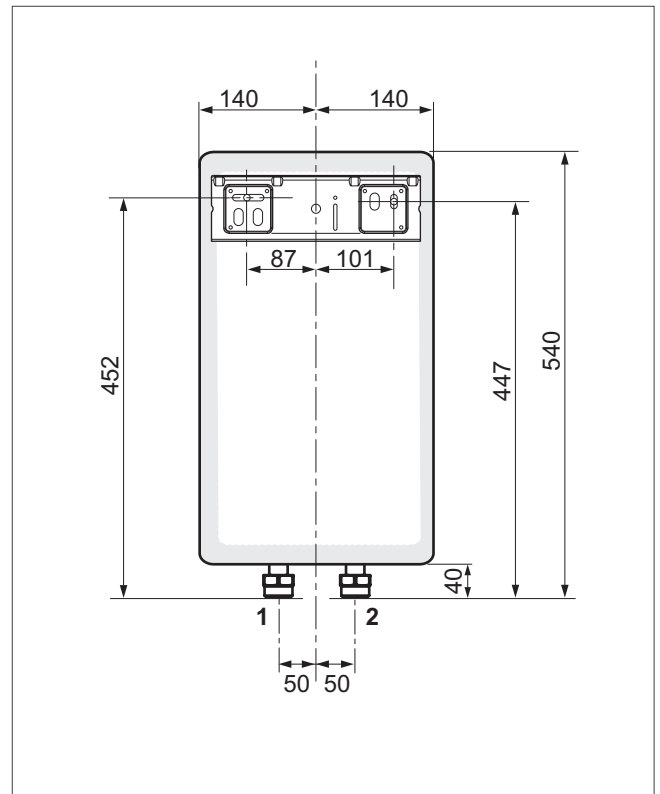


Fig 425: VWZ MEH 60 - Connections and dimensions

- 1 Connection to heating circuit (R 1")
- 2 Connection to heat pump (R 1")

9.19.5 Pressure loss diagram

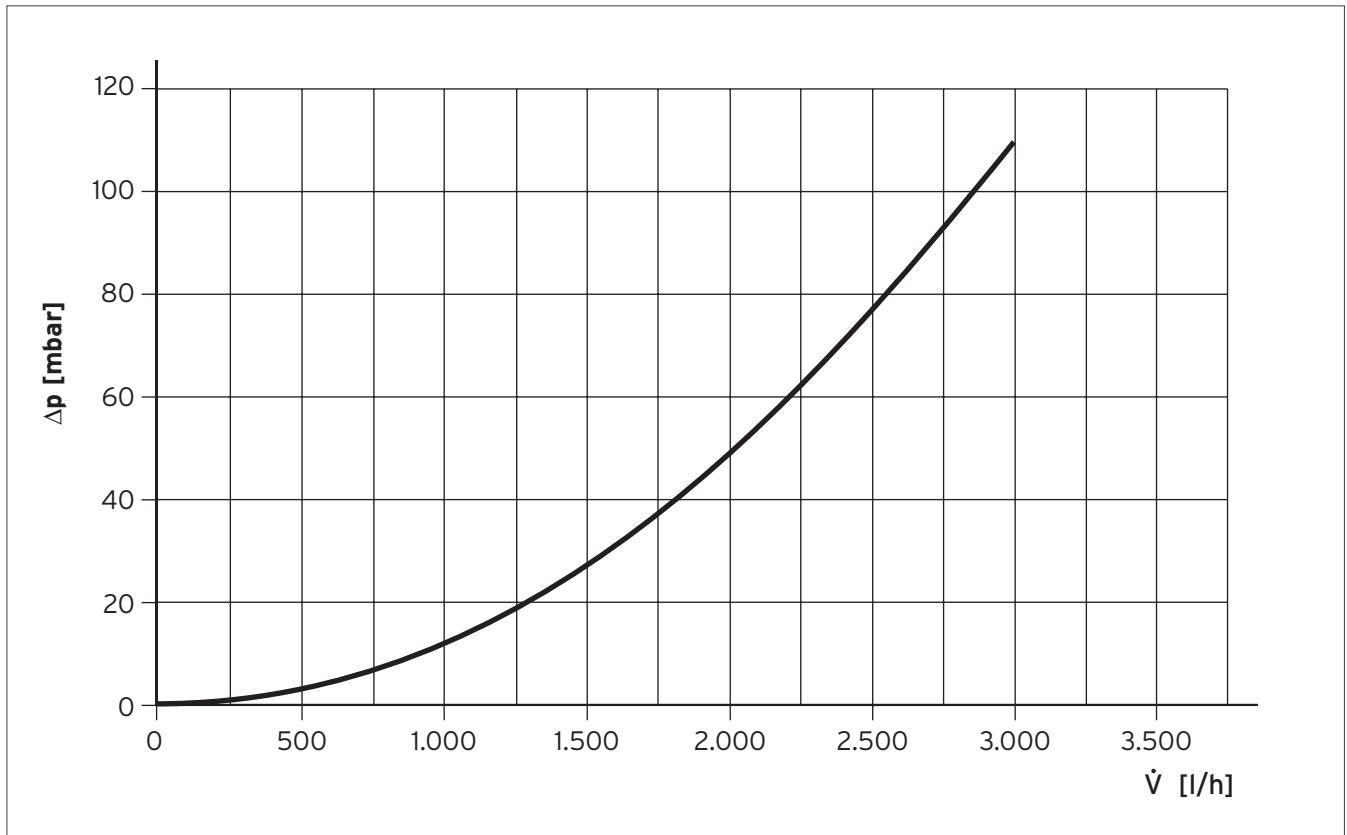


Fig 426: Pressure loss curve for VWZ MEH 60

9.20 Product description for the VWZ MWT 150 heat exchanger module

Order no. 0020143800



Fig 427: VWZ MWT 150 heat exchanger module

9.20.1 Potential applications

The **VWZ MWT 150** heat exchanger module is an additional module for the **aroTHERM** heating system. Thanks to its built-in heat exchanger, it can be used as a hydraulic system separation between the heat pump and heating installation. This means that the heat pump can be protected against frost without having to fill the entire installation with antifreeze.

Note

Ready-mixed brine fluid (article number 0020147182) should be used as the antifreeze.



9.20.2 Equipment

The heat exchanger module consists of:

- High-efficiency pump
- Plate heat exchanger
- Filling device for the brine circuit
- Expansion relief valve for heating

9.20.3 Technical data

	VWZ MWT 150
Operating voltage U_{max}	230 V
Maximum electrical power consumption (pump)	45 W
Maximum operating pressure	3.0 bar
Minimum operating pressure	0.5 bar
IP rating	IP 20

	VWZ MWT 150
Protection class	II
Maximum environmental temperature	40 °C
Height	500 mm
Width	360 mm
Depth	250 mm

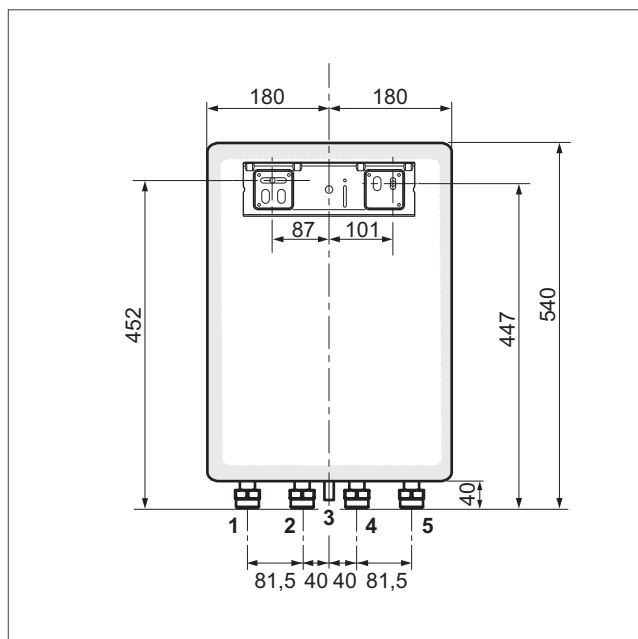


Fig 428: VWZ MWT 150 - Connections and dimensions

- 1 Return from heating circuit (R 1")
- 2 Flow to heating circuit (R 1")
- 3 Drain for expansion relief valve
- 4 Return to heat pump (R 1")
- 5 Flow from heat pump (R 1")

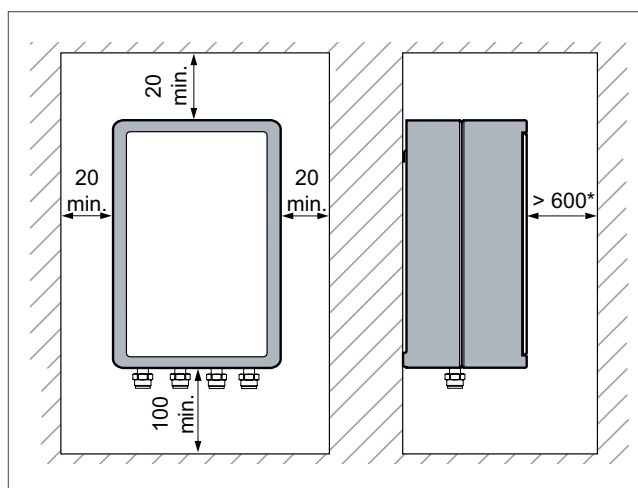


Fig 429: Installation clearance

* Free space required for installing or maintaining the unit.

9.20.4 Available feed head for the heating circuit

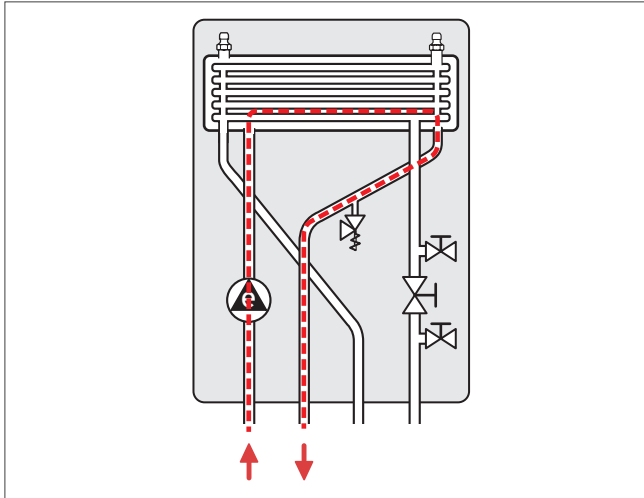


Fig 430: Basic diagram of the available feed head for the heating circuit

Available feed head for the heating circuit

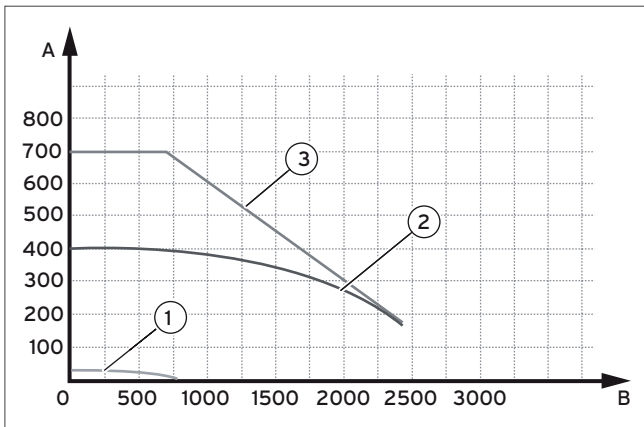


Fig 431: Available feed head for the heating circuit

- A Pressure (mbar)
- B Flow rate (l/hr)
- 01 "I" position
- 02 "II" position
- 03 "III" position

Heating circuits connection

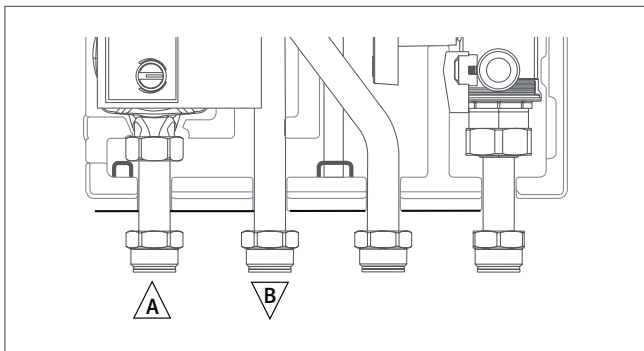


Fig 432: Heating circuit flow/return connection

- A Heating circuit return
- B Heating circuit flow

9.20.5 Pressure loss

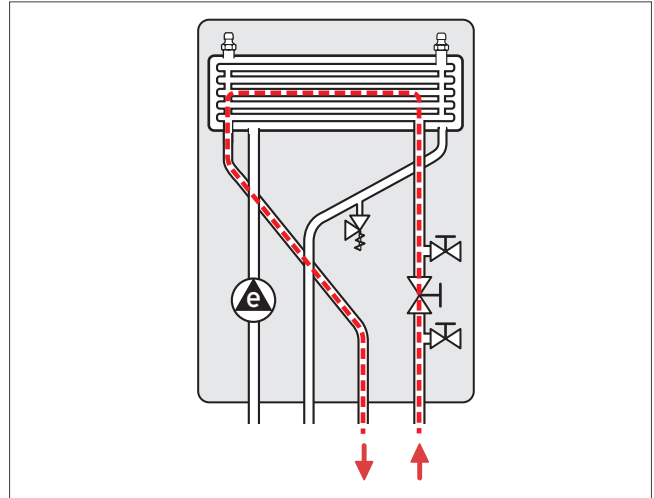


Fig 433: Pressure loss basic diagram

Pressure loss in the heat pump's circuit

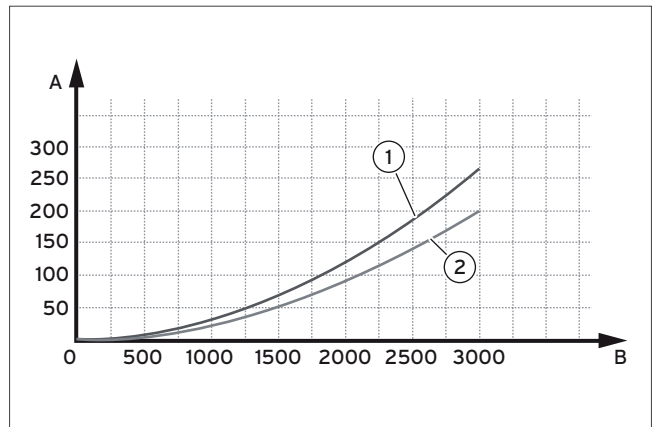


Fig 434: Pressure loss in the heat pump's circuit

- A Pressure (mbar)
- B Flow rate (l/hr)
- 01 Flow rate in the circuit with 30% glycol
- 02 Flow rate in the water circuit

Heat pump connection

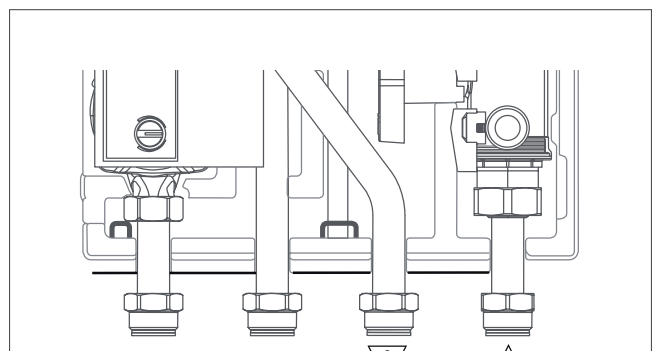


Fig 435: Heat pump connection

- A Glycol/water circuit flow to the heat pump
- B Glycol/water circuit return from the heat pump

9.21 Basic hydraulic and wiring diagrams

9.21.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections

Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

9.21.2 Übersicht der Hydraulik- und Verdrahtungspläne

Im Folgenden sind die Hydraulik- und Verdrahtungspläne zur Produktgruppe dargestellt.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				regulated	direct		DHW	Heating	
0020277459	aroTHERM plus	VWZ AI VRC 720 VR 71 VR 92 VR 921	-	2 FBH	-	VWZ MPS 40 VWZ MWT 150	-	-	uniSTOR VIH RW
0020256933	aroTHERM plus	VRC 720 VR 921	-	-	1 FBH	-	-	-	-
0020212735	aroTHERM plus	VRC 720 VR 71 VR 92 VR 921	-	3 FBH	-	VWZ MPS 40	-	-	uniSTOR VIH RW
0020280031	aroTHERM plus	VRC 720 VR 921	-	-	1 FBH	VWZ MWT 150	-	-	uniSTOR VIH RW
0020284456	aroTHERM plus	VRC 720 VR 71 VR 92 VR 921	-	1 FBH	1 HC	VP RW 45/2 B	●	-	uniSTOR VIH SW
0020223729	aroTHERM plus	VRC 720 VR 70 VR 921	-	-	1 HC	VWZ MPS 40	-	-	uniTOWER plus VIH QW 190/6
0020212728	aroTHERM plus	VRC 720 VR 71 VR 92 VR 921	-	1 FBH	1 HC	VWZ MPS 40	-	-	uniTOWER plus VIH QW 190/6

0020277459 - Basic hydraulic diagram

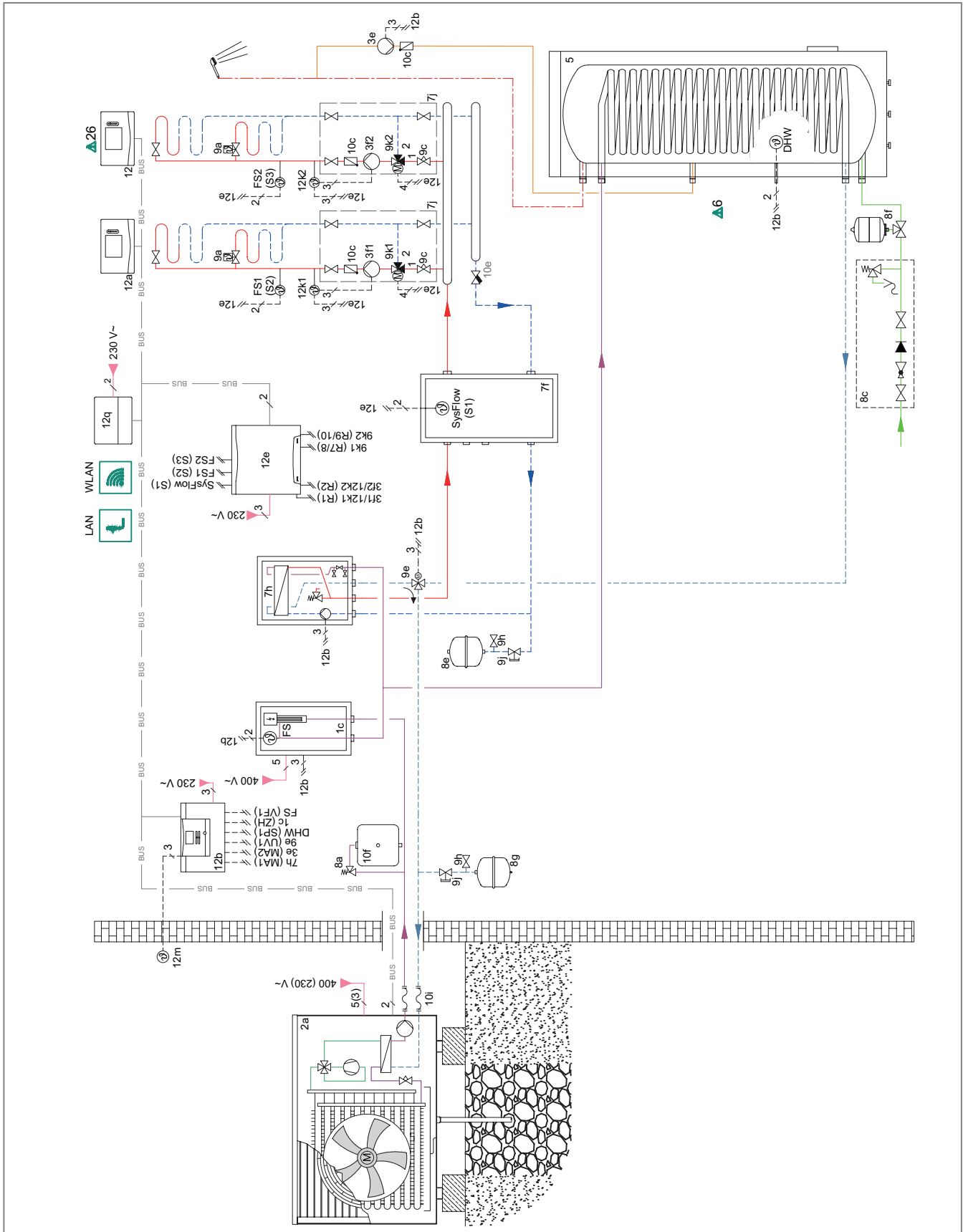


Fig. 436: Basic hydraulic diagram

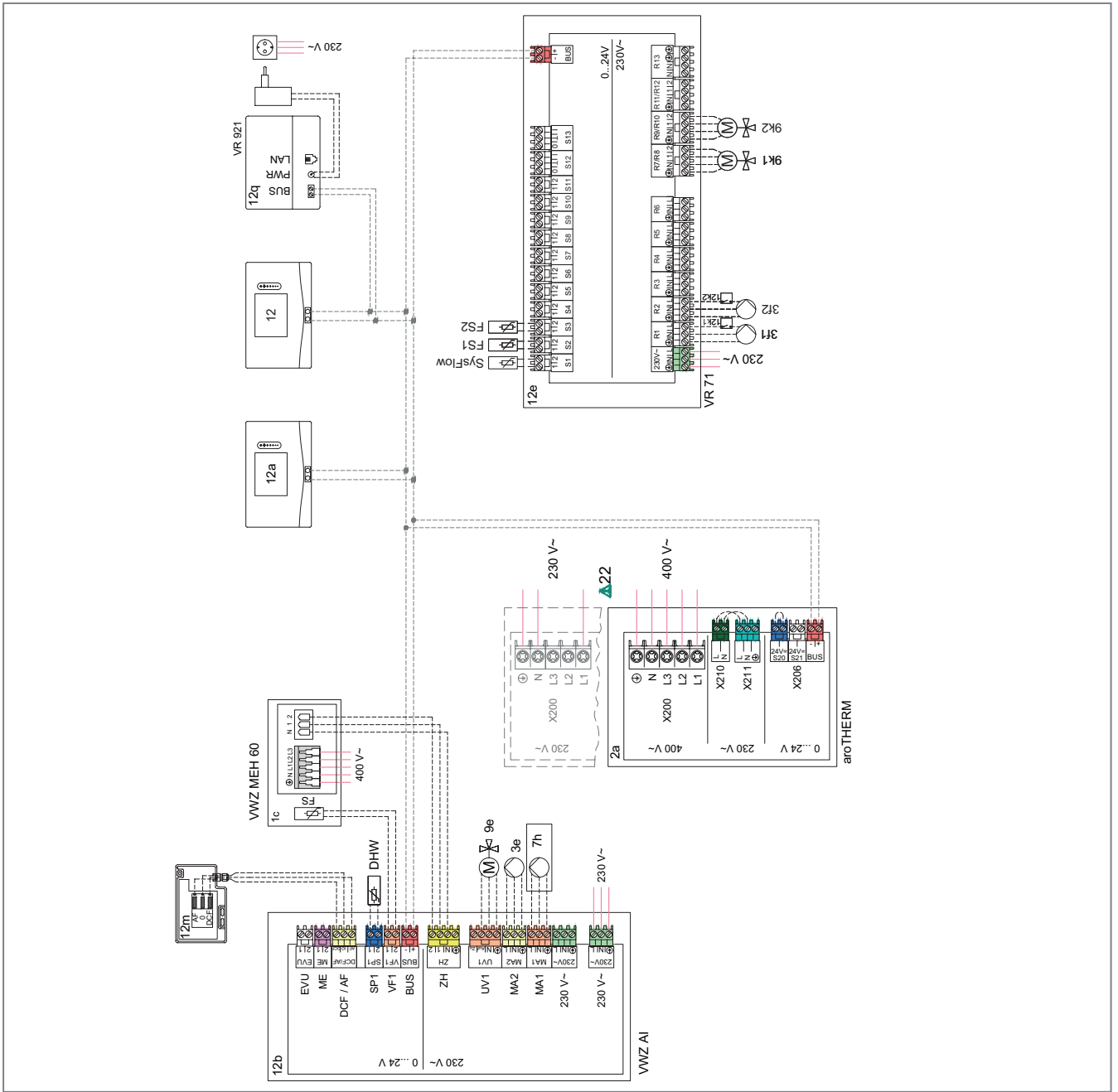


Fig. 437: Wiring diagram

Individual components

- aroTHERM plus
- uniSTOR VIH RW
- VWZ MEH 60
- VWZ MPS 40
- VWZ MWT 150
- VWZ AI
- VRC 720
- VR 71
- VR 92
- VR 921

Setting

VRC 720 System diagram setting:
10

FM 5 Module setting: 3

0020256933 - Basic hydraulic diagram

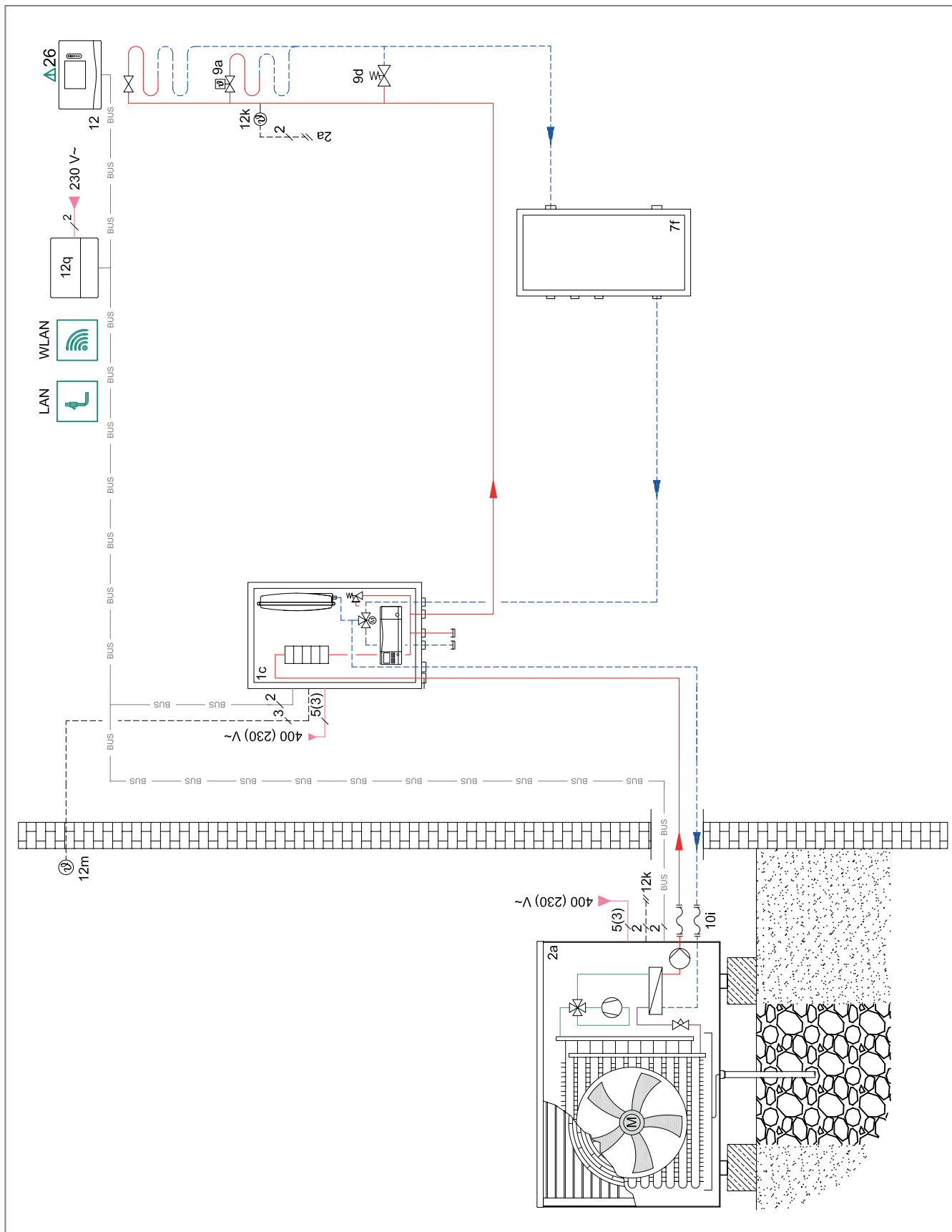


Fig. 438: Basic hydraulic diagram

0020256933 - Wiring diagram

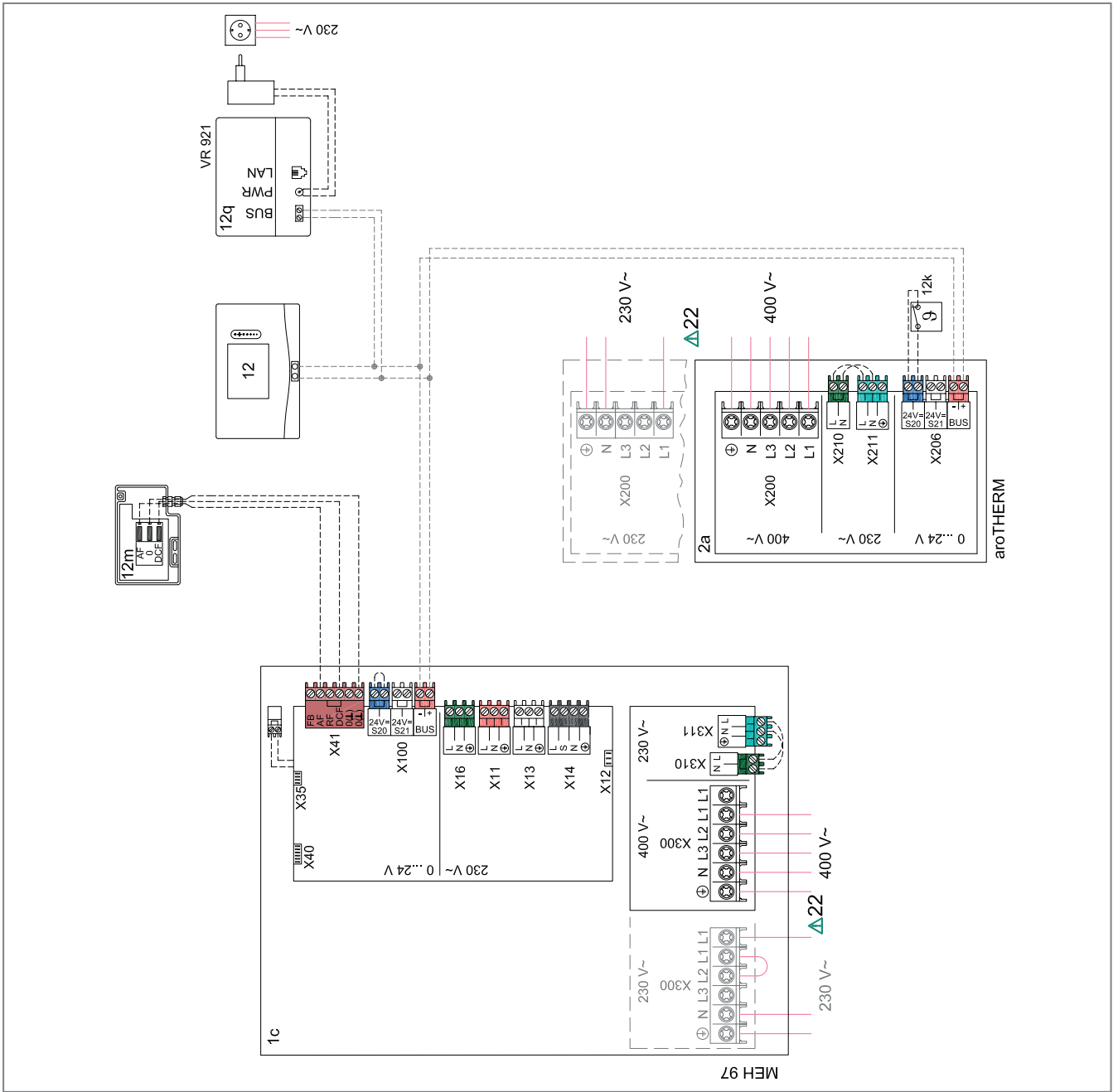


Fig. 439: Wiring diagram

Individual components

- aroTHERM plus
- VWZ MEH 97/6
- VWZ MPS 40
- VRC 720
- VR 921

Setting

VRC 720 System diagram setting:

8

0020212735 - Basic hydraulic diagram

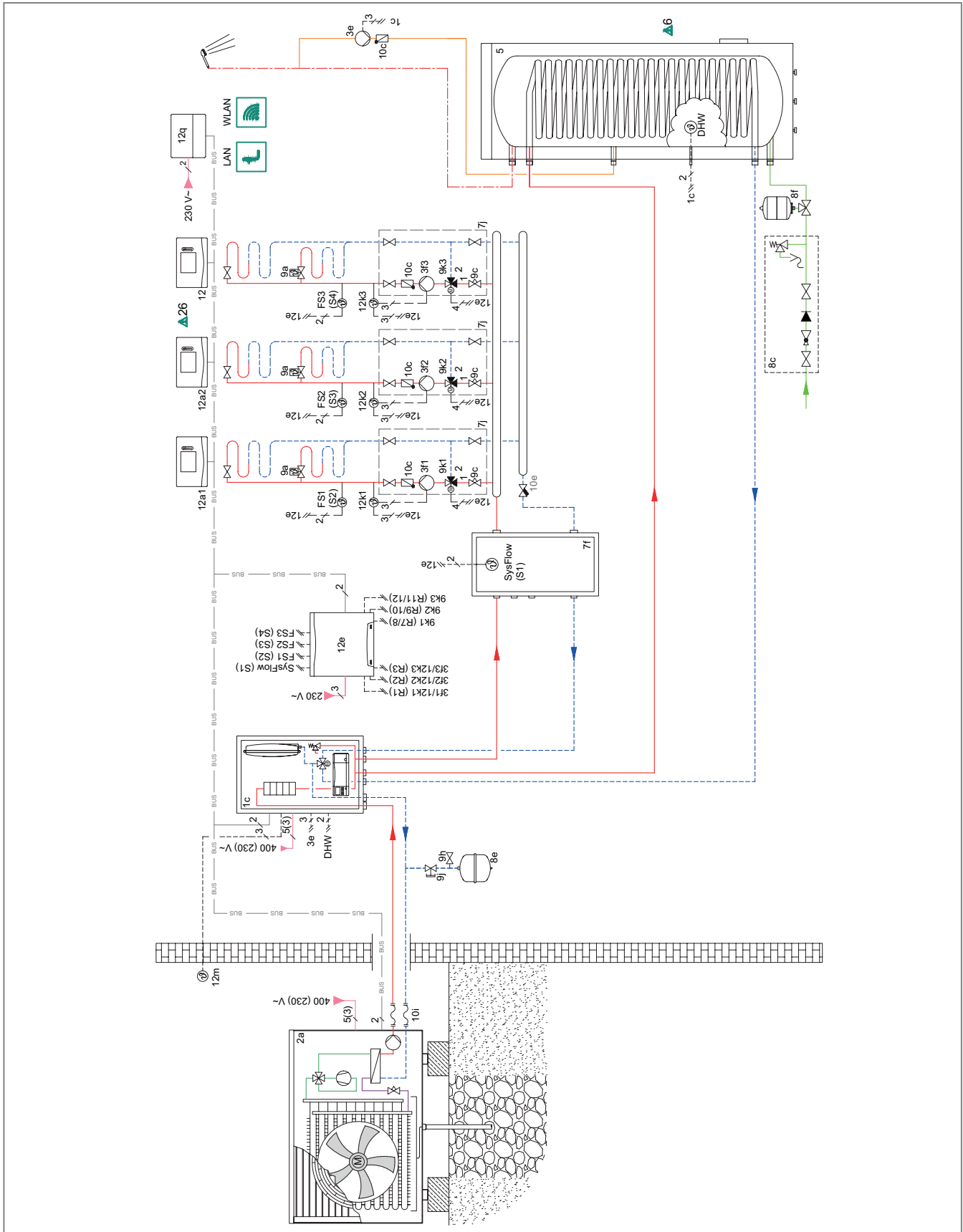


Fig. 440: Basic hydraulic diagram

0020212735 - Wiring diagram

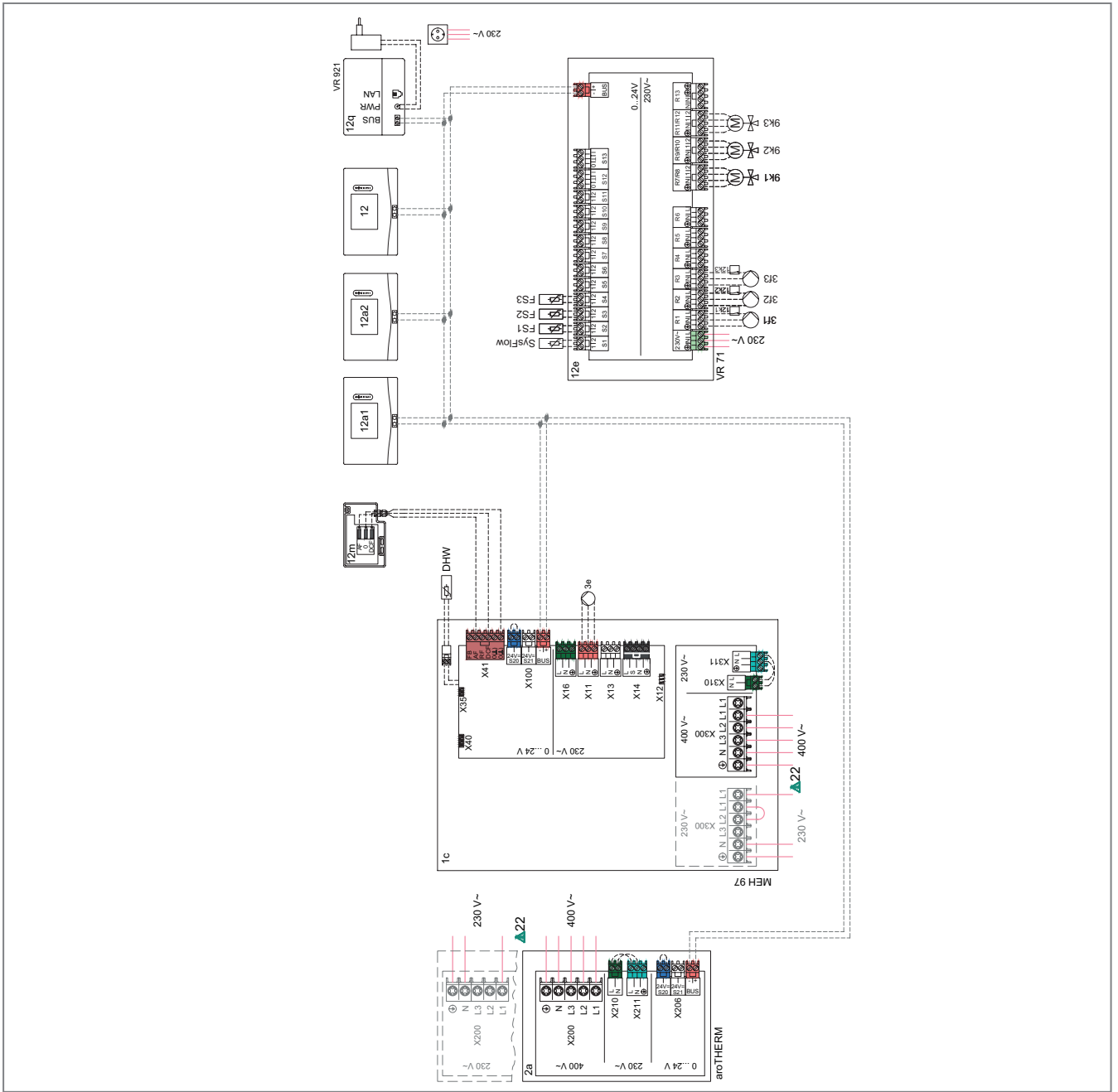


Fig. 441: Wiring diagram

Individual components

- arOTHERM plus
- uniSTOR VIH RW
- VWZ MEH 97/6
- VWZ MPS 40
- VRC 720
- VR 71
- VR 92
- VR 921

Setting

VRC 720 System diagram setting:
8

FM 5 Module setting: 3

0020280031 - Basic hydraulic diagram

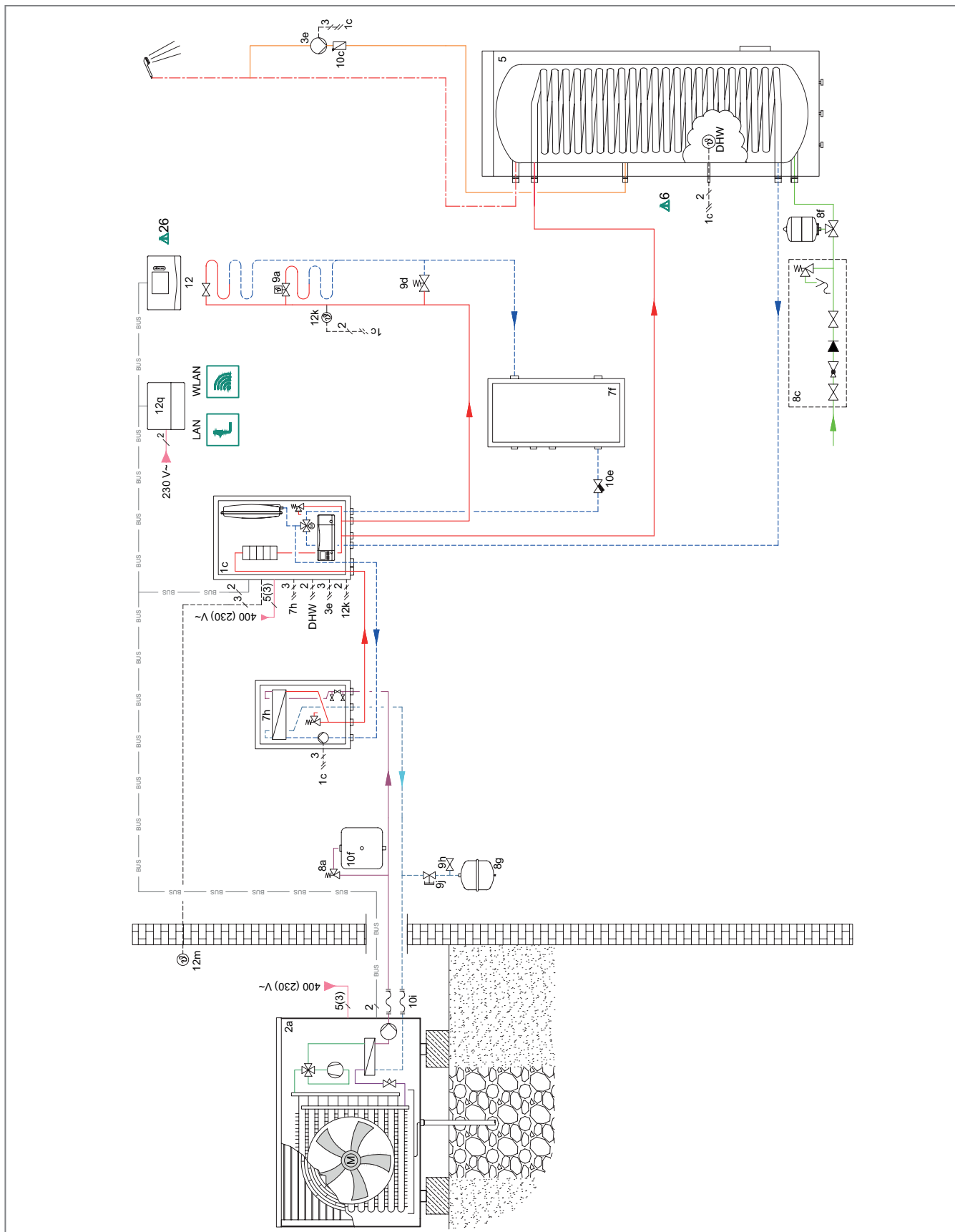


Fig. 442: Basic hydraulic diagram

0020280031 - Wiring diagram

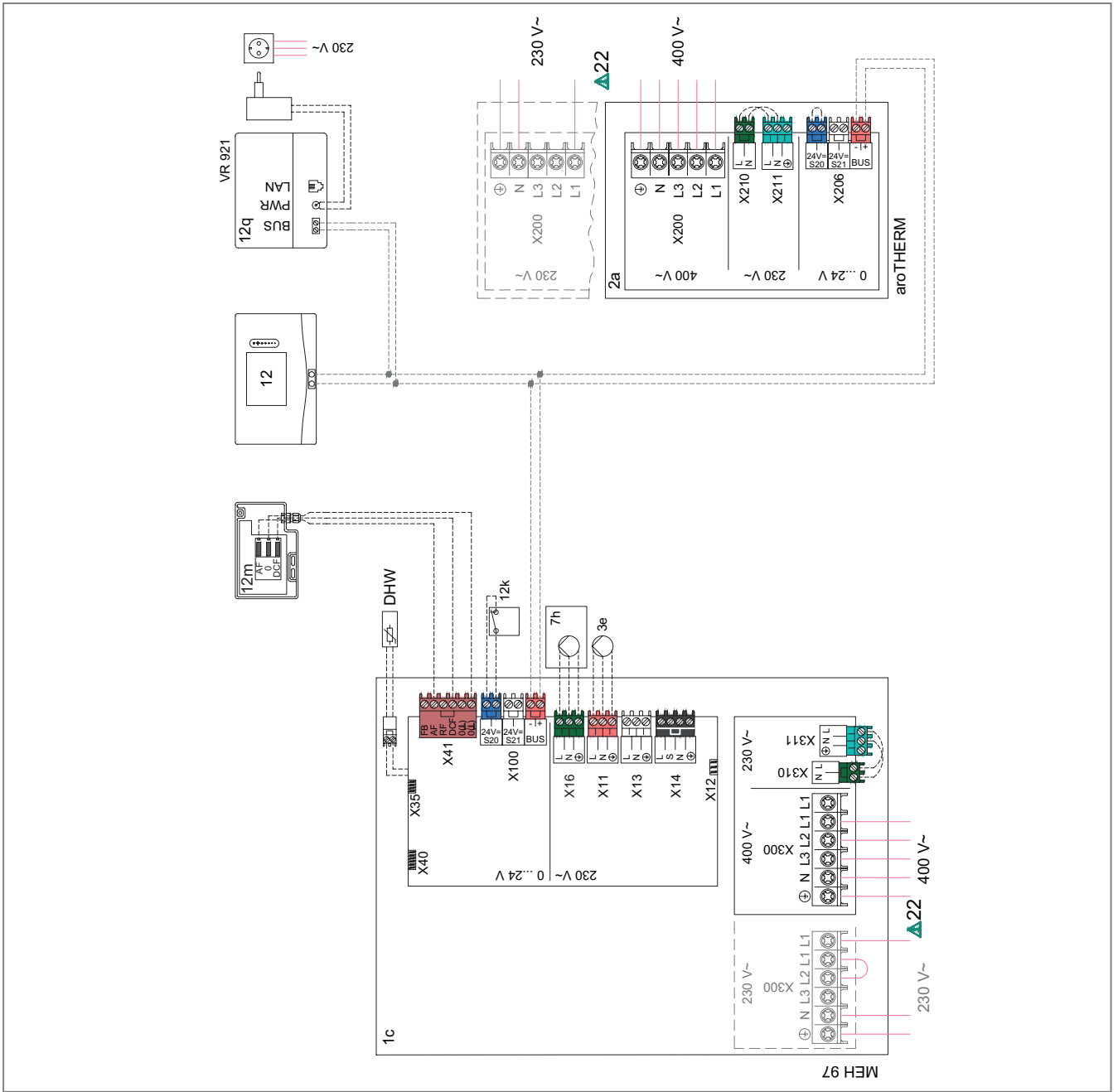


Fig. 443: Wiring diagram

Individual components

- arOTHERM plus
- uniSTOR VIH RW
- VWZ MEH 97/6
- VWZ MWT 150
- VWZ MPS 40
- VRC 720
- VR 921

Setting

VRC 720 System diagram setting:
16

0020284456 - Basic hydraulic diagram

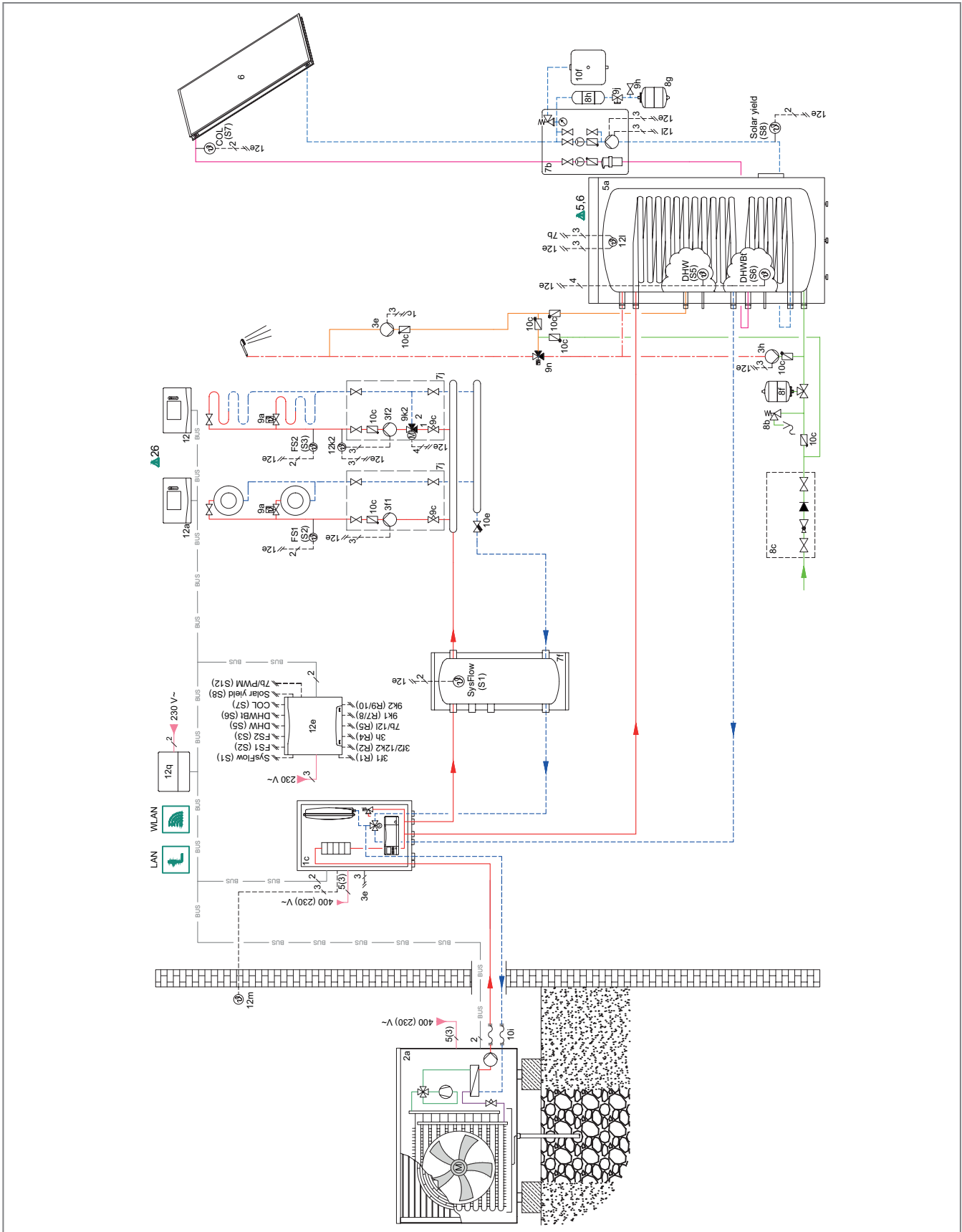


Fig. 444: Basic hydraulic diagram

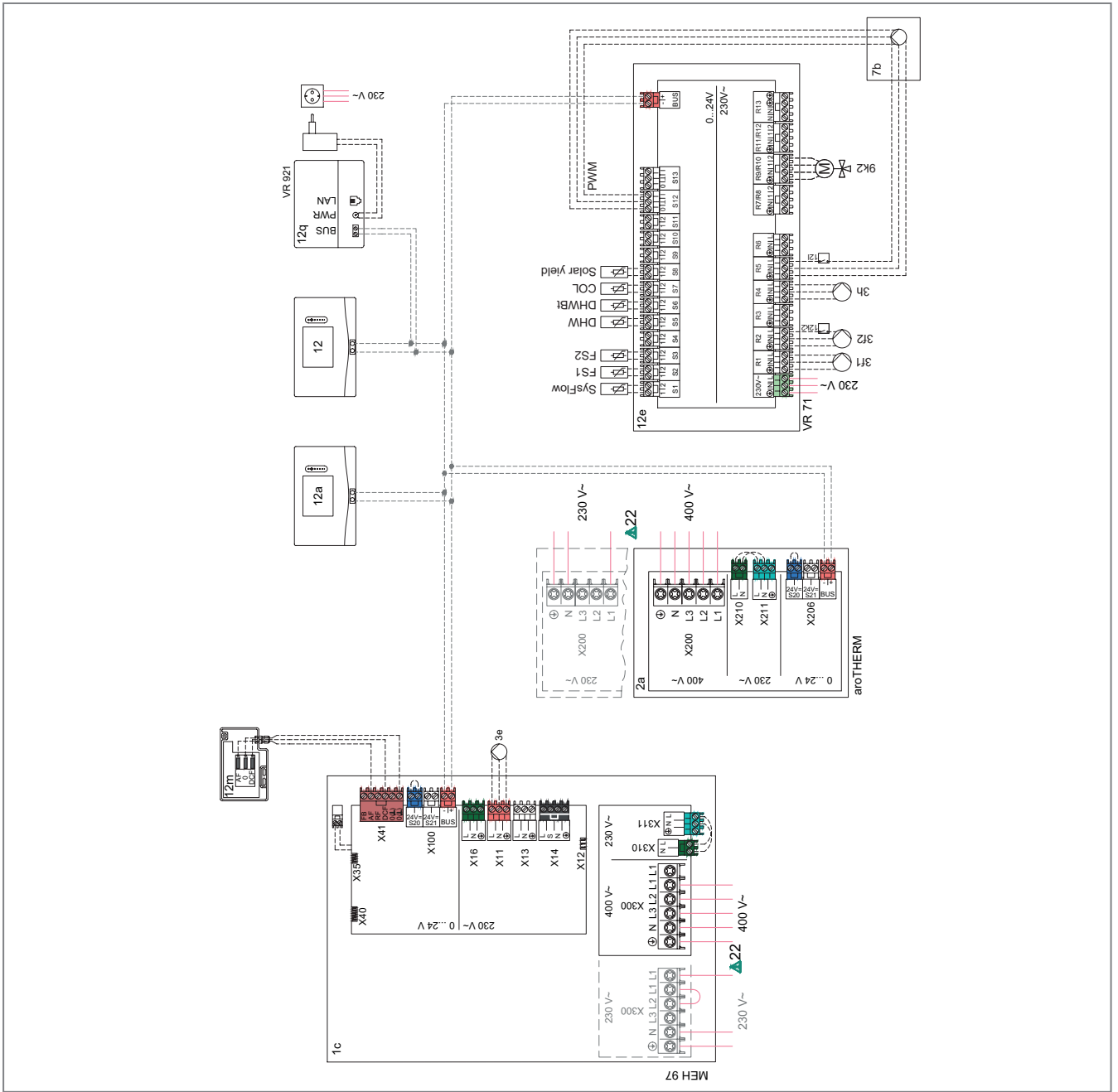


Fig. 445: Wiring diagram

Individual components

- aroTHERM plus
- VWZ MEH 97/6
- uniSTOR VIH SW
- VP RW 45/2 B
- auroFLOW VMS 70
- VRC 720
- VR 71
- VR 92
- VR 921

Setting

VRC 720 System diagram setting:
8

FM 5 Module setting: 1

0020223729 - Basic hydraulic diagram

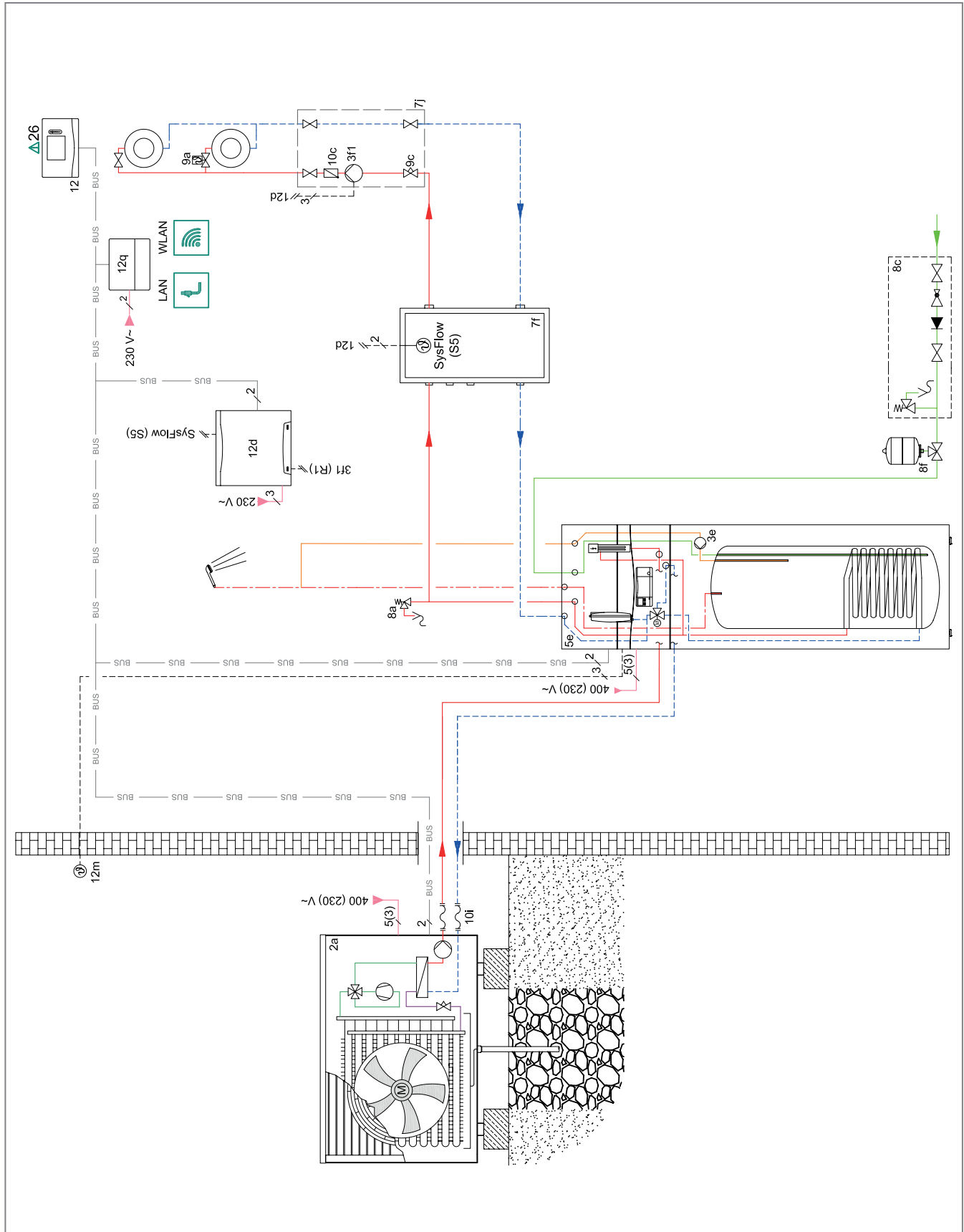


Fig. 446: Basic hydraulic diagram

0020223729 - Wiring diagram

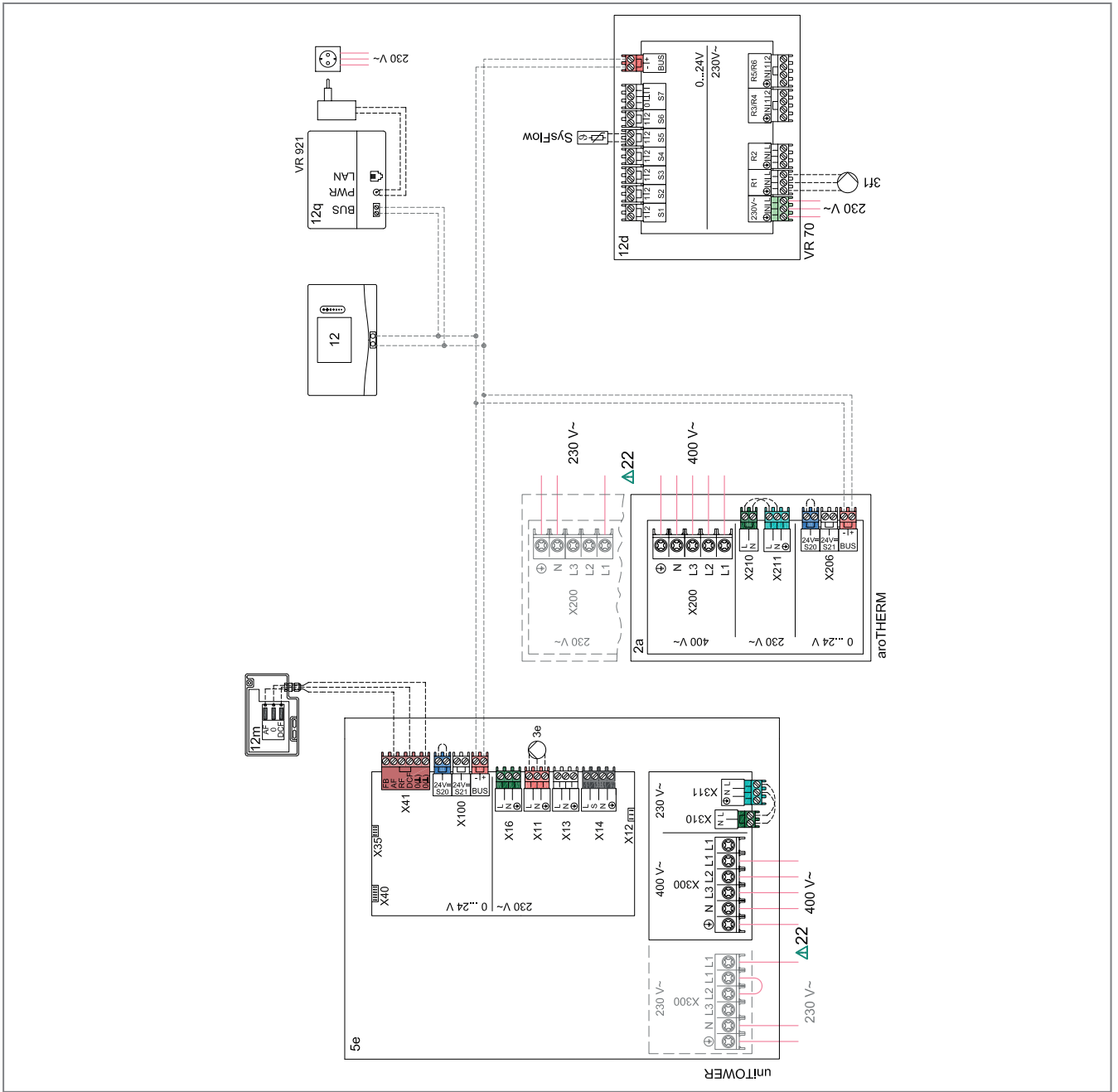


Fig. 447: Wiring diagram

Individual components

- aroTHERM plus
- unTOWER plus VIH QW 190/6
- VWZ MPS 40
- VRC 720
- VR 70
- VR 921

Setting

VRC 720 System diagram setting: 8

FM 3 Module setting: 1

0020212728 - Basic hydraulic diagram

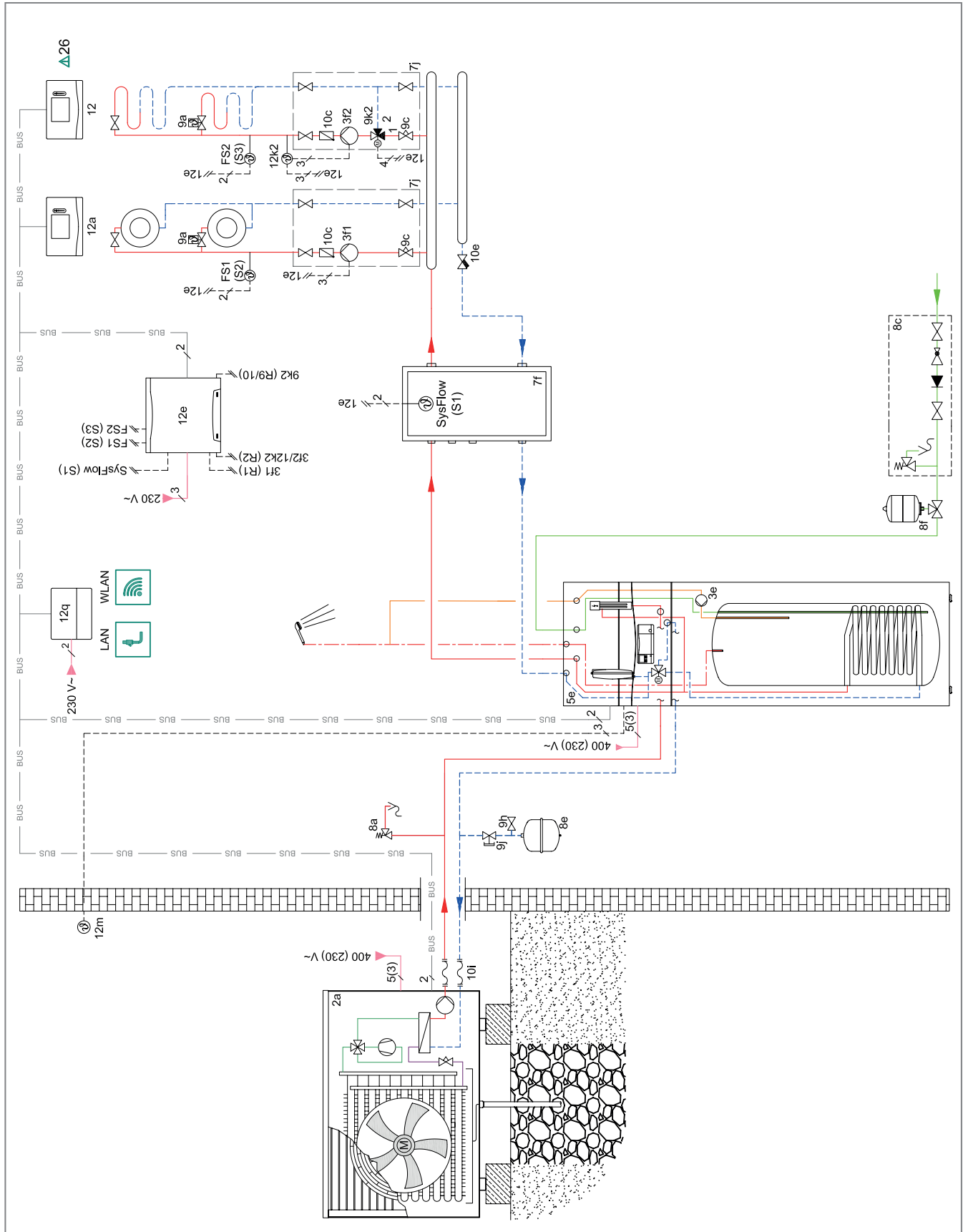


Fig. 448: Basic hydraulic diagram

0020212728 - Wiring diagram

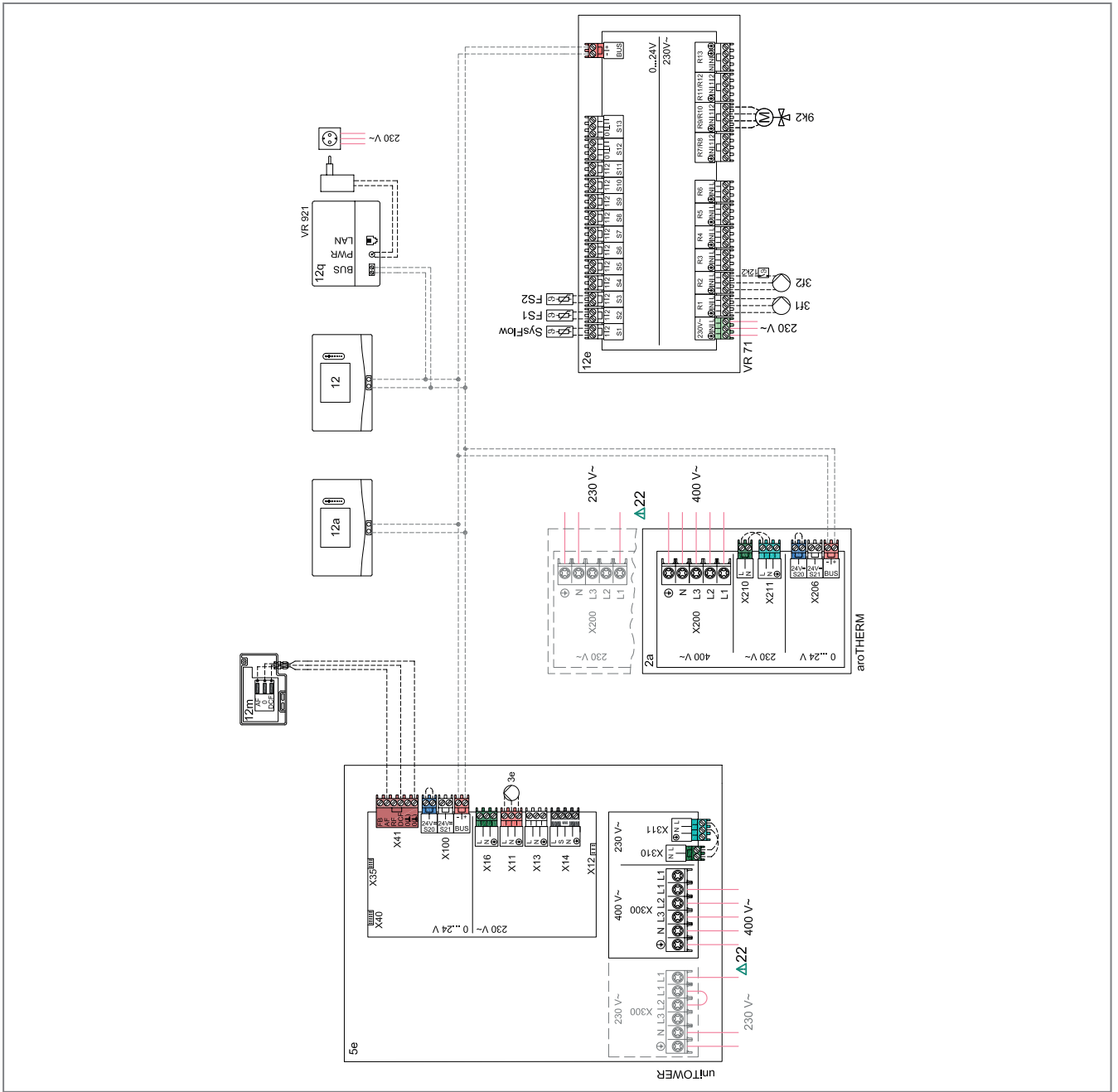


Fig. 449: Wiring diagram

Individual components

- aroTHERM plus
- uniTOWER plus VIH QW 190/6 E
- VWZ MPS 40
- VRC 720
- VR 71
- VR 92
- VR 921

Setting

VRC 720 System diagram setting:
8

FM 5 Module setting: 3



10. Product information for the aroTHERM ../2 and ../3

Update 10
New product overview

10.1 Product combinations



Fig 450: Product combinations

Product combination overview for the aroTHERM VWL ../3

	Heat pump	Decoupler modules				Domestic hot water cylinder	Control	Photovoltaics
	aroTHERM VWL ../5/3 (1)	uniTOWER VIH 190 (2)	Hydraulic station VWZ MEH 61 (3) VWZ MEH 60 (4) VWZ MWT 150 (5)	Buffer cylinder, heating and cooling VP RW 45/2 B (6) VPS R 100/1 M (7) VPS R 200/1 B (8)	Buffer cylinder Heating allSTOR plus/ allSTOR exclusive (9)	uniSTOR (10)	VRC 720 (11) VWZ AI (12)	PV modules and inverters (13)
Heating only	•	–	•	○	○	–	•	•
Heating and compact domestic hot water generation	•	•	–	○	○	–	•	•
Heating and domestic hot water generation	•	–	•	○	○	•	•	•
Heating, domestic hot water generation and cooling	•	–	•	•	–	•	•	•
Heat pump cascade (heating)	•	–	•	–	•	–	•	•

• Recommended / ○ Recommended under certain circumstances / – Not recommended

10.2 Product description for aroTHERM VWL ..5/2 and VWL ..5/3

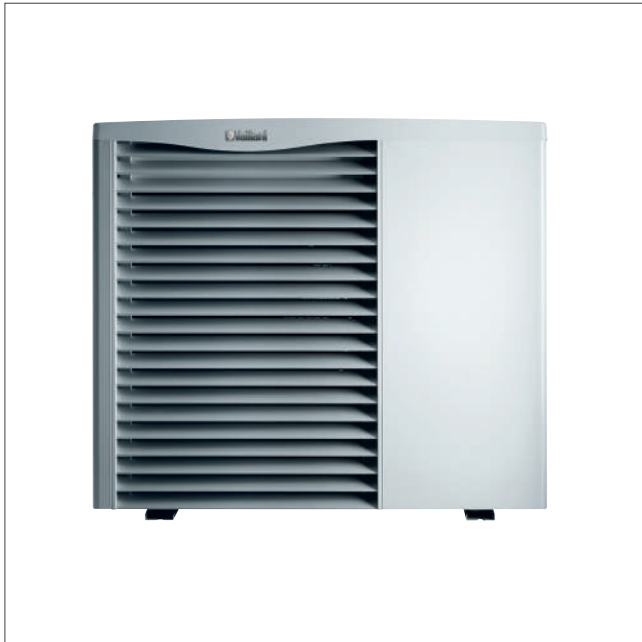


Fig 451: aroTHERM VWL ..5/2

10.2.1 Special features

- Compact and space-saving monoblock heat pump
- Compressor with inverter technology
- Bivalent alternative or parallel operation possible
- triVAL control in combination with VRC 700 (cost-optimised operation based on energy prices entered)
- Increased living comfort in the summer thanks to integrated active cooling function
- Easy transportation and straightforward assembly

10.2.2 Product equipment

- High-efficiency pumps
- Integrated green energy utilisation indicator
- Electronic expansion valve
- Noise reduction function

10.2.3 Potential applications

The aroTHERM heat pump is a compact and space-saving air-water monoblock-type heat pump for installation outside the building.

It is especially suited to being used in heating installations with low flow temperatures (ideally 30 °C to 35 °C), e.g. under-floor heating systems.

The heat pump can be used equally well in new-build and renovated properties (as defined by the German energy conservation ordinance - EnEV). The heat pump can simply be retrofitted in existing heating installations with a Vaillant gas-fired wall-hung boiler with eBUS interface or other heat generators.

The aroTHERM heat pump only uses the outside air as its source of heat and can also provide an active cooling function in the summer.

In order to use the active cooling function, the heating system must be prepared on-site.

Update 10 New efficiency class (EN14511:2018)

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Domestic hot water generation energy efficiency class	Order no.
VWL 55/3 230 V	A+ / A+ (A+++ to D)	–	0010019758
VWL 55/3 A 230 V with uniTOWER	A+ / A+ (A+++ to D)	A (A+ to F)	0020234432
VWL 85/3 230 V	A++ / A+ (A+++ to D)	–	0010019759
VWL 85/3 A 230 V with uniTOWER	A++ / A+ (A+++ to D)	A (A+ to F)	0020234433
VWL 115/2 400 V	A+ / A+ (A+++ to D)	–	0010013290
VWL 115/2 A 400 V with uniTOWER	A+ / A+ (A+++ to D)	A (A+ to F)	0020234434
VWL 155/2 400 V	A+ / A+ (A+++ to D)	–	0010014568
VWL 155/2 A 400 V with uniTOWER	A+ / A+ (A+++ to D)	A (A+ to F)	0020234435

10.3 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.



Technical data - General

	VWL 115/2 A 400 V	VWL 155/2 A 400 V
Heat pump type	Monoblock air/ water heat pump	Monoblock air/ water heat pump
Flow/return heating connections, boiler side	1 1/4"	1 1/4"
Product dimensions, width	1,103 mm	1,103 mm
Product dimensions, height	975 mm	1,375 mm
Product dimensions, depth	463 mm	463 mm
Net weight	124 kg	165 kg
Hydraulic lines material	Copper	Copper
Hydraulic connections material	Brass	Brass
Hydraulic seals material	EPDM	EPDM
Plate heat exchanger material	AISI 304 stainless steel	AISI 304 stainless steel
Pump casing material	Painted cast iron	Painted cast iron
Pollution rating	2	2
Electrical connection	400 V (+10%/-15%) 3N ~50 Hz	400 V (+10%/-15%) 3N ~50 Hz
Fuse type	Characteristic C, slow-blow, three-pole switching	Characteristic C, slow-blow, three-pole switching
Optional on-site universal-current-sensitive residual-current circuit breaker	RCCB type B (universal-current-sensitive residual-current circuit breaker, type B)	RCCB type B (universal-current-sensitive residual-current circuit breaker, type B)
Level of protection	IP 25	IP 25
Maximum in-rush current	16 A	9 A
Maximum current consumption	3.5 A	16 A
Pump power consumption	15 to 70 W	6 to 87 W
Fan power consumption	15 to 76 W	15 to 76 W Note 2 x Note 2 x
Electrical classification	I	I
Overvoltage category	II	II
Fan rotational speed	700 rpm	600 rpm
Sound power level for A7W35 according to EN 12102 and EN ISO 9614-1	65 dB(A)	66 dB(A)
Sound power level for A7W45 according to EN 12102 and EN ISO 9614-1	65 dB(A)	65 dB(A)
Sound power level for A7W55 according to EN 12102 and EN ISO 9614-1	66 dB(A)	65 dB(A)
Sound power level for A35W18 according to EN 12102 and EN ISO 9614-1	66 dB(A)	65 dB(A)
Max. flow temperature	63 °C	63 °C
Minimum air temperature (heating and cylinder charging)	-20 °C	-20 °C

	VWL 115/2 A 400 V	VWL 155/2 A 400 V
Maximum air temperature (heating)	28 °C	28 °C
Max. air temperature (cylinder charging)	46 °C	46 °C
Minimum air temperature (cooling)	10 °C	10 °C
Maximum air temperature (cooling)	46 °C	46 °C
Max. air flow	3,400 m ³ /h	5,500 m ³ /h

Technical data - Heating circuit

	VWL 115/2 A 400 V	VWL 155/2 A 400 V
Minimum operating pressure	0.1 MPa	0.1 MPa
Maximum operating pressure	0.3 MPa	0.3 MPa
Heating circuit water contents in the heat pump	2.1 l	2.7 l
Minimum heating circuit water contents	35 l	60 l
Min. volume flow rate	540 l/h	1,200 l/h
Nominal volume flow rate, max. volume flow rate	1,900 l/h	2,590 l/h
Hydraulic pressure difference	300 mbar	370 mbar

Technical data - Refrigerant circuit

	VWL 115/2 A 400 V	VWL 155/2 A 400 V
Refrigerant type	R410A	R410A
Refrigerant content	3.53 kg	4.40 kg
Maximum permissible operating overpressure	4.15 MPa	4.15 MPa
Compressor type	Rotary piston	Rotary piston
Oil type	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)
Refrigerant circuit control system	Electronic	Electronic

Update 10
New technical data (EN14511:2018)

Technical data - Heat pump system performance data

	VWL 115/2 A 400 V	VWL 155/2 A 400 V
Heat output A2/W35	5.18 kW	8.30 kW
A2/W35 output figure/EN 14511 coefficient of performance	3.24	3.12
Power consumption effective at A2/W35	1.60 kW	2.66 kW
Heat output A7/W35	9.80 kW	14.26 kW
A7/W35 output figure/EN 14511 coefficient of performance	3.85	3.85
Power consumption effective at A7/W35	2.55 kW	3.70 kW
Heat output A7/W45	9.28 kW	13.20 kW
A7/W45 output figure/EN 14511 coefficient of performance	3.04	3.07
Power consumption effective at A7/W45	3.05 kW	4.30 kW
Heat output A7/W55	8.69 kW	10.68 kW
A7/W55 output figure/EN 14511 coefficient of performance	2.47	2.30
Power consumption effective at A7/W55	3.51 kW	4.65 kW
A35/W18 cooling output	9.97 kW	13.79 kW
A35/W18 coefficient of performance/EN 14511 energy efficiency ratio	3.13	3.06
Power consumption effective at A35/W18	3.18 kW	4.51 kW
A35/W7 cooling output	7.21 kW	10.59 kW
A35/W7 coefficient of performance/EN 14511 energy efficiency ratio	2.51	2.31
Power consumption effective at A35/W7	2.87 kW	4.58 kW

10.4 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.



Technical data - General

	VWL 55/3 A 230 V	VWL 85/3 A 230 V
Heat pump type	Monoblock air/water heat pump	Monoblock air/water heat pump
Flow/return heating connections, boiler side	1 1/4"	1 1/4"
Product dimensions, width	970 mm	1,103 mm
Product dimensions, height	834 mm	975 mm
Product dimensions, depth	408 mm	463 mm
Net weight	90 kg	106 kg
Hydraulic lines material	Copper	Copper
Hydraulic connections material	Brass	Brass
Hydraulic seals material	EPDM	EPDM
Plate heat exchanger material	AISI 304 stainless steel	AISI 304 stainless steel
Pump casing material	Painted cast iron	Painted cast iron
Pollution rating	2	2
Electrical connection	230 V (+10% / -14%) ~50 Hz	230 V (+10% / -14%) ~50 Hz
Fuse type	Characteristic C, slow-blow, single-pole switching	
Optional on-site universal-current-sensitive residual-current circuit breaker	RCCB type B (universal-current-sensitive residual-current circuit breaker, type B)	
IP rating	IP 25	IP 25
Maximum in-rush current	13 A	16 A
Maximum current consumption	16 A	16 A
Pump power consumption	15 to 70 W	15 to 70 W
Fan power consumption	15 to 42 W	15 to 42 W
Electrical classification	I	I
Overvoltage category	II	II
Fan rotational speed	550 rpm	550 rpm
Sound power level for A7W35 according to EN 12102 and EN ISO 9614-1	58 dB(A)	59 dB(A)
Sound power level for A7W45 according to EN 12102 and EN ISO 9614-1	58 dB(A)	59 dB(A)
Sound power level for A7W55 according to EN 12102 and EN ISO 9614-1	58 dB(A)	60 dB(A)
Sound power level for A35W18 according to EN 12102 and EN ISO 9614-1	56 dB(A)	60 dB(A)
Max. flow temperature	60 °C	63 °C
Minimum air temperature (heating and cylinder charging)	-15 °C	-20 °C
Maximum air temperature (heating)	28 °C	28 °C
Max. air temperature (cylinder charging)	46 °C	46 °C

Update 10
New technical data (EN14511:2018)

	VWL 55/3 A 230 V	VWL 85/3 A 230 V
Minimum air temperature (cooling)	10 °C	10 °C
Maximum air temperature (cooling)	46 °C	46 °C
Max. air flow	2,000 m³/h	2,700 m³/h

Technical data - Heating circuit

	VWL 55/3 A 230 V	VWL 85/3 A 230 V
Minimum operating pressure	0.1 MPa	0.1 MPa
Maximum operating pressure	0.3 MPa	0.3 MPa
Heating circuit water contents in the heat pump	1.1 l	1.6 l
Minimum heating circuit water contents	17 l	21 l
Min. volume flow rate	380 l/h	380 l/h
Nominal volume flow rate, max. volume flow rate	860 l/h	1,400 l/h
Hydraulic pressure difference	640 mbar	450 mbar

Technical data - Refrigerant circuit

	VWL 55/3 A 230 V	VWL 85/3 A 230 V
Refrigerant type	R410A	R410A
Refrigerant content	1.80 kg	1.95 kg
Maximum permissible operating overpressure	4.15 MPa	4.15 MPa
Compressor type	Rotary piston	Rotary piston
Oil type	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)
Refrigerant circuit control system	Electronic	Electronic

Technical data - Heat pump system performance data

	VWL 55/3 A 230 V	VWL 85/3 A 230 V
Heat output A2/W35	2.86 kW	4.19 kW
A2/W35 output figure/EN 14511 coefficient of performance	3.49	3.44
Power consumption effective at A2/W35	0.82 kW	1.22 kW
Heat output A7/W35	4.40 kW	7.07 kW
A7/W35 output figure/EN 14511 coefficient of performance	4.53	4.07
Power consumption effective at A7/W35	0.97 kW	1.74 kW
Heat output A7/W45	4.09 kW	6.71 kW
A7/W45 output figure/EN 14511 coefficient of performance	3.42	3.24

	VWL 55/3 A 230 V	VWL 85/3 A 230 V
Power consumption effective at A7/W45	1.19 kW	2.07 kW
Heat output A7/W55	3.94 kW	6.34 kW
A7/W55 output figure/EN 14511 coefficient of performance	2.73	2.66
Power consumption effective at A7/W55	1.45 kW	2.38 kW
A35/W18 cooling output	4.70 kW	7.35 kW
A35/W18 coefficient of performance/EN 14511 energy efficiency ratio	3.43	3.39
Power consumption effective at A35/W18	1.37 kW	2.17 kW
A35/W7 cooling output	3.45 kW	5.29 kW
A35/W7 coefficient of performance/EN 14511 energy efficiency ratio	2.60	2.71
Power consumption effective at A35/W7	1.33 kW	1.95 kW

10.5 Sound power evaluation level

For the **aroTHERM** heat pump, planning should take account of the following sound power levels (heating mode).

VWL 55/3 evaluation level

VWL 55/3				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K ₀	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	58	3	3	53.0	47.0	43.5	41.0	39.0	37.4	34.9	33.0	31.4	29.5	0
			6	56.0	50.0	46.5	44.0	42.0	40.4	37.9	36.0	34.4	32.5	
			9	59.0	53.0	49.5	47.0	45.0	43.4	40.9	39.0	37.4	35.5	
Set-back	55	3	3	50.0	44.0	40.5	38.0	36.0	34.4	31.9	30.0	28.4	26.5	-
			6	53.0	47.0	43.5	41.0	39.0	37.4	34.9	33.0	31.4	29.5	
			9	56.0	50.0	46.5	44.0	42.0	40.4	37.9	36.0	34.4	32.5	

VWL 85/3 evaluation level

VWL 85/3				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K ₀	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	60	3	3	55.0	49.0	45.5	43.0	41.0	39.4	36.9	35.0	33.4	31.5	0
			6	58.0	52.0	48.5	46.0	44.0	42.4	39.9	38.0	36.4	34.5	
			9	61.0	55.0	51.5	49.0	47.0	45.4	42.9	41.0	39.4	37.5	
Set-back	57	3	3	52.0	46.0	42.5	40.0	38.0	36.4	33.9	32.0	30.4	28.5	-
			6	55.0	49.0	45.5	43.0	41.0	39.4	36.9	35.0	33.4	31.5	
			9	58.0	52.0	48.5	46.0	44.0	42.4	39.9	38.0	36.4	34.5	

VWL 115/2 400 V and VWL 115/2 230 V evaluation level

VWL 115/2 400 V and VWL 115/2 230 V				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K ₀	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	66	3	3	61.0	55.0	51.5	49.0	47.0	45.4	42.9	41.0	39.4	37.5	0
			6	64.0	58.0	54.5	52.0	50.0	48.4	45.9	44.0	42.4	40.5	
			9	67.0	61.0	57.5	55.0	53.0	51.4	48.9	47.0	45.4	43.5	
Set-back	63	3	3	58.0	52.0	48.5	46.0	44.0	42.4	39.9	38.0	36.4	34.5	-
			6	61.0	55.0	51.5	49.0	47.0	45.4	42.9	41.0	39.4	37.5	
			9	64.0	58.0	54.5	52.0	50.0	48.4	45.9	44.0	42.4	40.5	

VWL 155/2 400 V and VWL 155/2 230 V evaluation level

VWL 155/2 400 V and VWL 155/2 230 V				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K ₀	1	2	3	4	5	6	8	10	12	15	
				Evaluation level in dB(A)										
Day	66	3	3	61.0	55.0	51.5	49.0	47.0	45.4	42.9	41.0	39.4	37.5	0
			6	64.0	58.0	54.5	52.0	50.0	48.4	45.9	44.0	42.4	40.5	
			9	67.0	61.0	57.5	55.0	53.0	51.4	48.9	47.0	45.4	43.5	
Set-back	63	3	3	58.0	52.0	48.5	46.0	44.0	42.4	39.9	38.0	36.4	34.5	-
			6	61.0	55.0	51.5	49.0	47.0	45.4	42.9	41.0	39.4	37.5	
			9	64.0	58.0	54.5	52.0	50.0	48.4	45.9	44.0	42.4	40.5	

10.6 Application limits

Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

10.6.1 Operating limits in heating mode (VWL 55/3 A 230V)

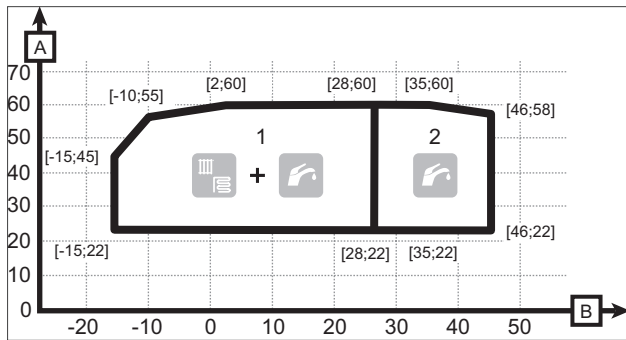


Fig 452: Application limits in heating mode

- 1 Heating mode application limits
- 2 Domestic hot water generation operating limits
- A Water temperature
- B Air temperature

10.6.2 Operating limits in heating mode (VWL 85/3 A 230 V, VWL 115/2 A 230 V, VWL 115/2 A 400 V, VWL 155/2 A 230 V, VWL 155/2 A 400 V)

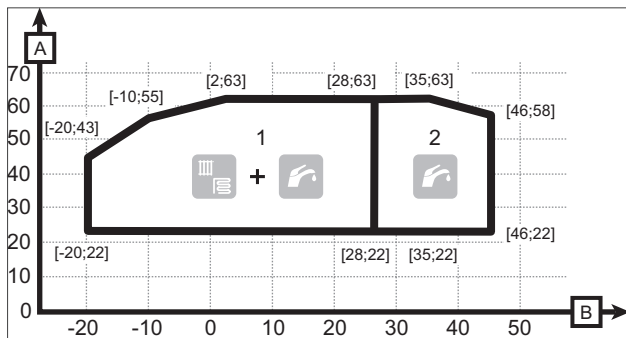


Fig 453: Application limits in heating mode

- 1 Heating mode application limits
- 2 Domestic hot water generation operating limits
- A Water temperature
- B Air temperature

10.6.3 Application limits in cooling mode

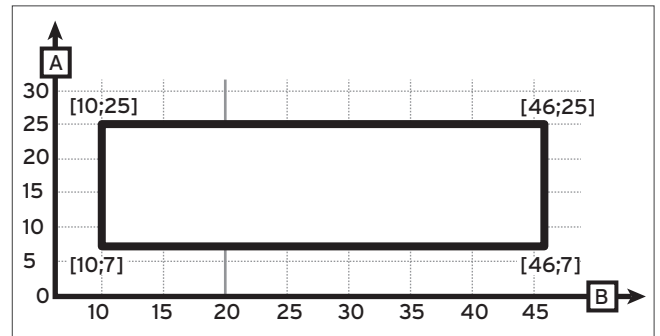


Fig 454: Application limits in cooling mode

- A Water temperature
- B Air temperature

10.7 Available pressure in the heat pump heating circuit

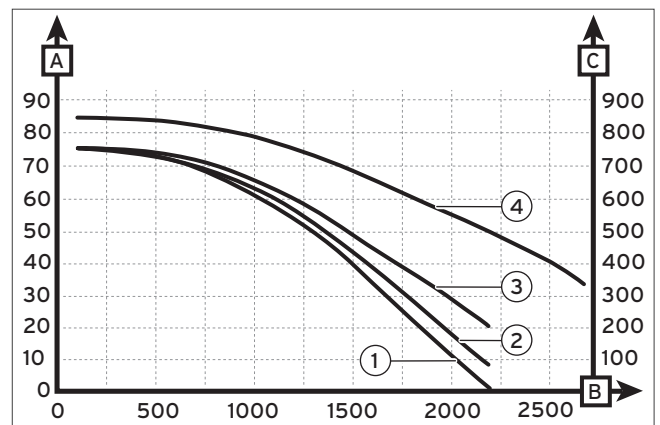


Fig 455: Available pressure in the heat pump heating circuit

- 1 VWL 55/3 A 230 V (water temperature 20 °C)
- 2 VWL 85/3 A 230 V (water temperature 20 °C)
- 3 VWL 115/2 (water temperature 20 °C)
- 4 VWL 155/2 (water temperature 20 °C)
- A Remaining feed head (kPa)
- B Flow rate (l/h)
- C Remaining feed head [mbar]

10.8 Product dimensions and connection dimensions

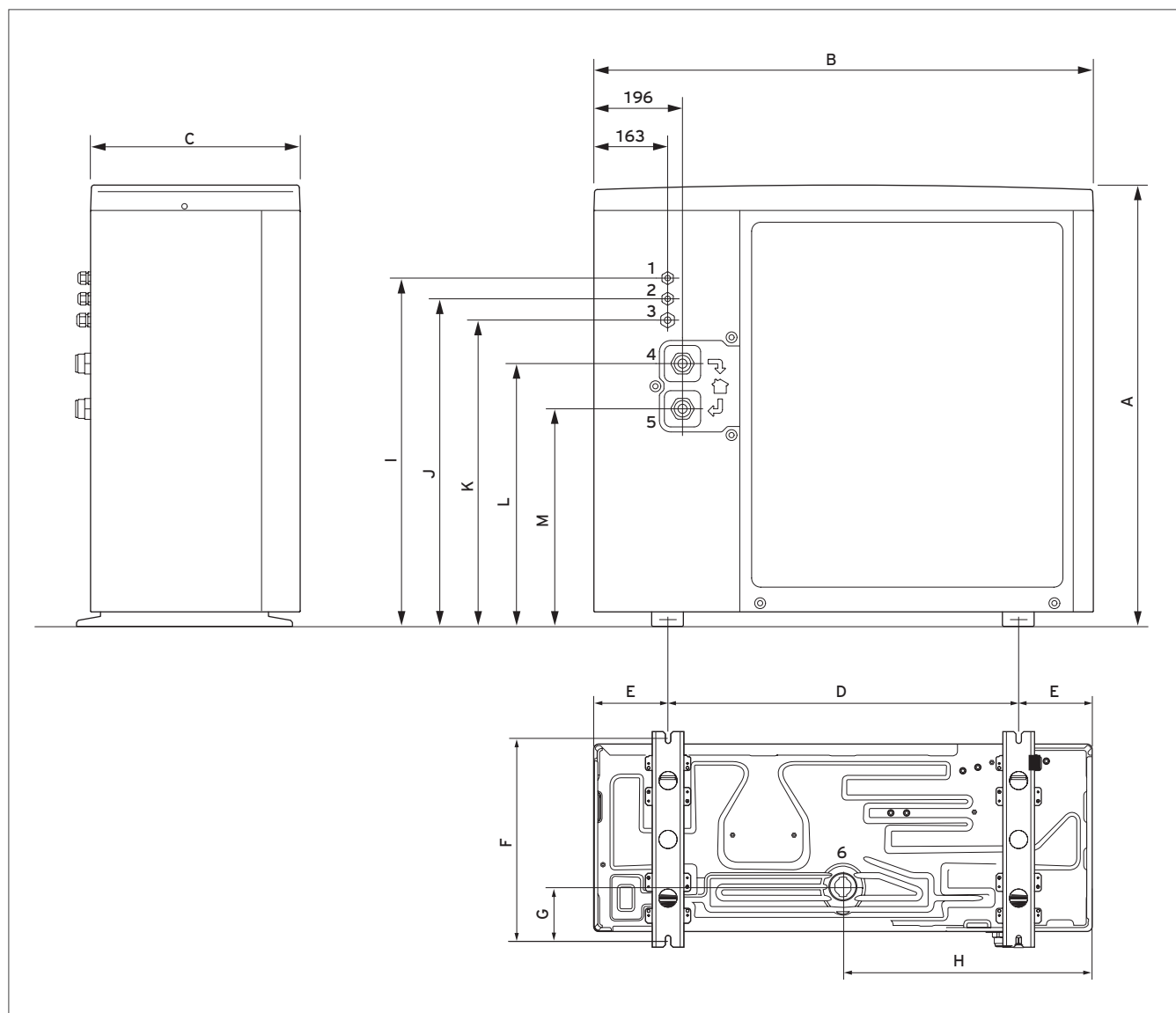


Fig 456: Dimension drawing and connection dimensions

- 1 eBUS grommet
- 2 Electric connection grommet
- 3 Electric connection grommet
- 04 Heating flow 1 1/4
- 05 Heating return 1 1/4
- 06 Condensate discharge

Dimensions

Unit type	A	B	C	D	E	F	G	H	I	J	K	L	M
VWL 55/3	834	980	408	740	120	386	70	490	626	581	534	470	370
VWL 85/3	973	1103	463	778	162	437	102	550	769	724	677	581	481
VWL 115/2	973	1103	463	778	162	437	102	550	769	724	677	581	481
VWL 155/2	1375	1103	463	778	162	437	102	550	769	724	677	581	481

Dimensions in mm

10.9 Installation clearance

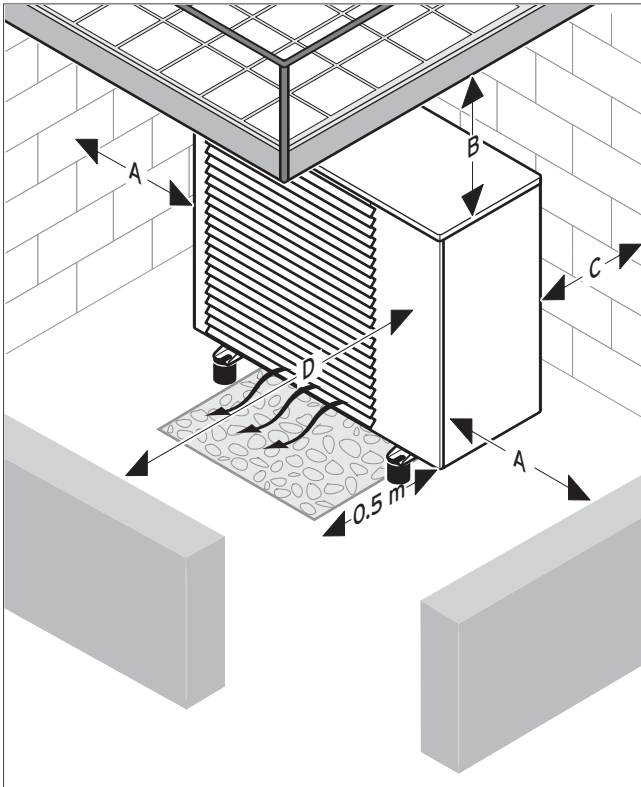


Fig 457: Installation clearance

Installation clearance

Clearance	Only for heating mode	For heating and cooling mode
A	> 250 mm	> 250 mm
B	> 1000 mm	> 1000 mm
C	> 120 mm*	> 300 mm*
D	> 600 mm	> 600 mm

***Caution:** If the minimum clearances are not maintained, the efficiency of the product may be affected.

- » To guarantee sufficient air flow and to facilitate maintenance work, observe the minimum clearances that are specified above.
- » Ensure that there is sufficient room to install the hydraulic lines.
- » If the product is to be installed in areas where heavy snow falls, ensure that the snow does not accumulate around the product and that the minimum clearances specified above are observed. If you cannot ensure this, install an additional heat generator in the heating circuit. A raised base is available as an accessory. In order to adapt the product to higher levels of snow, only use the Vaillant raised base.

10.10 Requirements for the installation site

10.10.1 Selecting the installation site

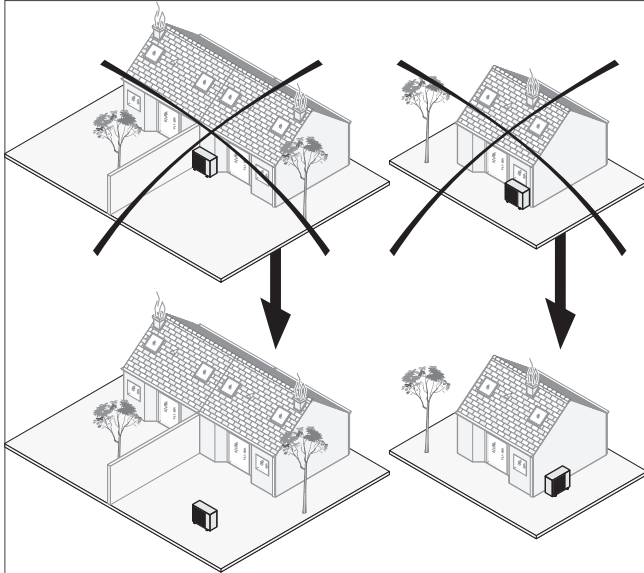


Fig 458: Recommended installation sites

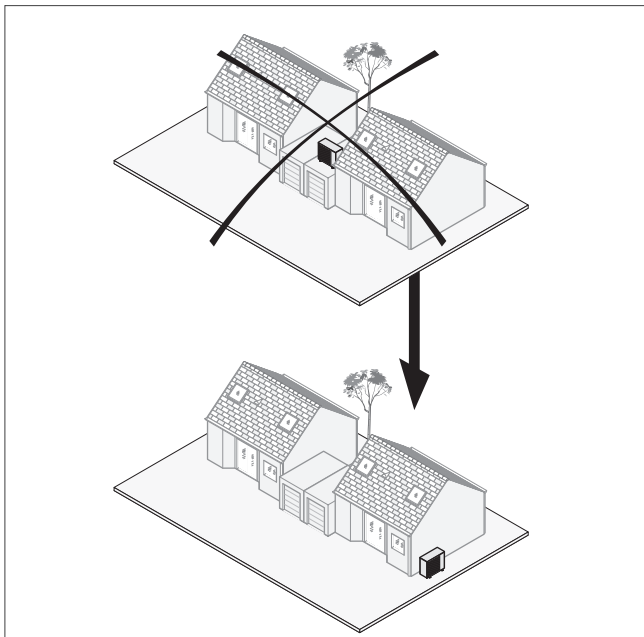


Fig 459: Recommended installation sites

Observe all valid regulations.

Install the heat pump outside of the building.

Do not install a the heat pump:

- Near a heat source,
- Near flammable materials,
- Near ventilation openings for adjacent buildings,
- Under deciduous trees.

The following installation sites are not suitable:

- Adjacent to a neighbouring building
- Below windows
- On garage roofs between two buildings

Take into account the following points when installing the heat pump:

- Prevailing winds,
- The visual impression on the environment

Avoid places where strong winds blow on the heat pump's air outlet.

Point the fan away from nearby windows. Install noise protection if necessary.

Install the heat pump on one of the following supports:

- Concrete slab,
- Steel T-beam,
- Concrete block,
- Raised base (Vaillant accessory),
- Wall bracket (Vaillant accessory)

Do not expose the heat pump to dusty or corrosive air (e.g. close to unsurfaced roads).

Do not install the heat pump close to ventilation shafts.

Prepare the routing for the electrical wires. Note any noise emissions from the fan and compressor

10.10.2 Flat roof installation

Information on occupational safety

Note

Information on occupational safety

During a flat roof installation, the flat roof is a safety-critical working area. When planning and when carrying out work on the flat roof, you must always comply with the relevant health and safety regulations. The occupational safety must be guaranteed.



- Ensure that the flat roof can be safely accessed.
- The roof construction must have sufficient load-bearing capacity for being walked on.
- Maintain a safety area of 2 m to the fall edge and to skylights that are not safe to walk on plus any clearance that is required for carrying out work on the heat pump.
- Install a technical fall protection (e.g. reliable railings) on the fall edges if the safety clearance cannot be complied with.
- Install technical catch equipment (e.g. scaffolding or a safety net) if technical fall protection cannot be set up.

Flat-roof installation

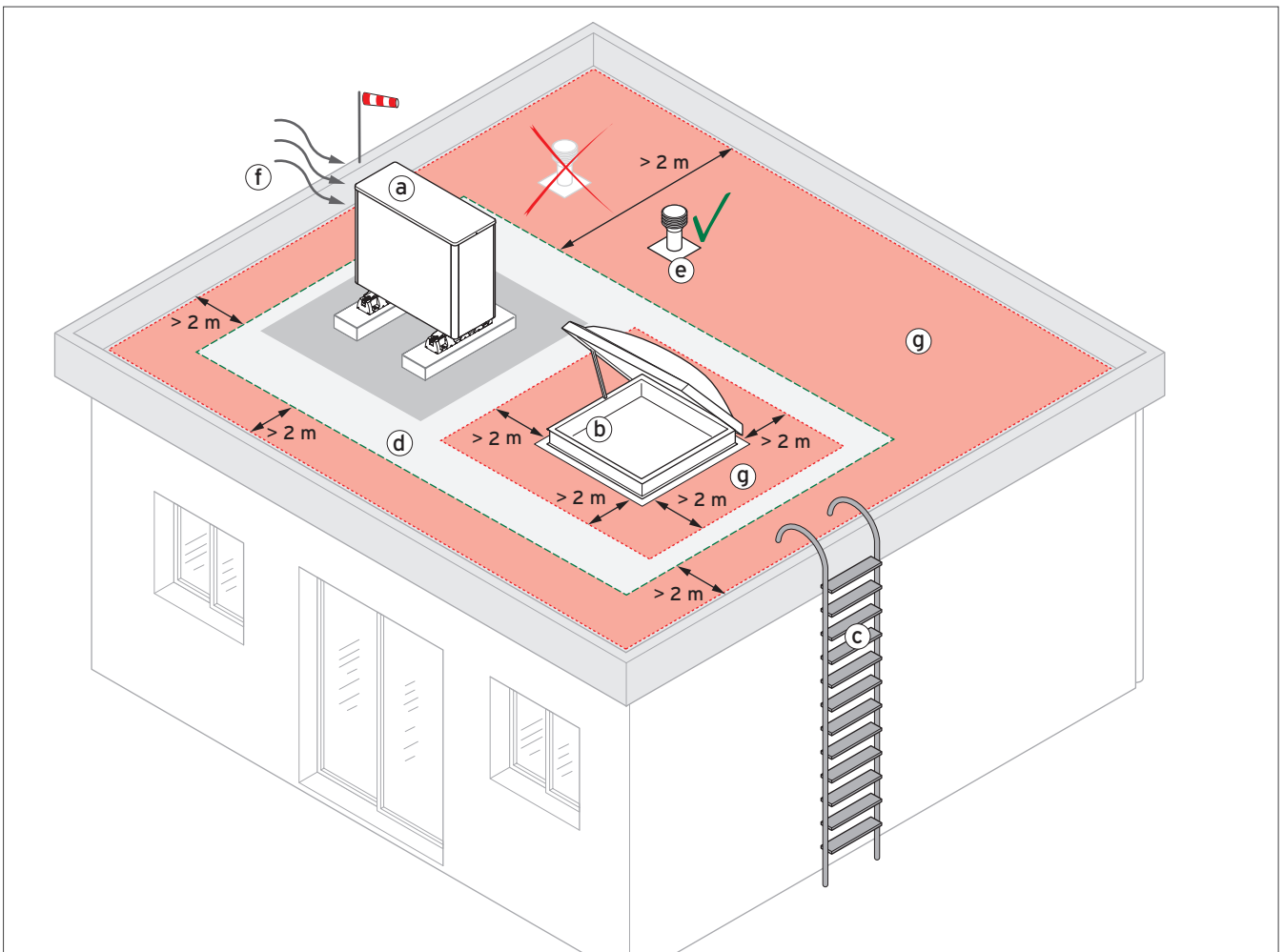


Fig 460: Flat-roof installation

- | | | | |
|---|---|---|------------------|
| a | Heat pump | e | Duct ventilation |
| b | Skylight (not guarded to prevent falls) | f | Fall edge |
| c | Secured ladder | g | Safety area |
| d | Installation area | | |

Planning information for flat-roof installation

The components of the heat pump must always be accessible in order to carry out maintenance work.

For access to the roof installation from inside, e.g. via a skylight (b), you must also ensure that at least the minimum access route is provided.

Secure the heat pump to concrete slabs in order to prevent the roof skin from being damaged. The number and weight of the slabs depends on the heat pump's output.

Ensure that the structural design requirements are complied with.

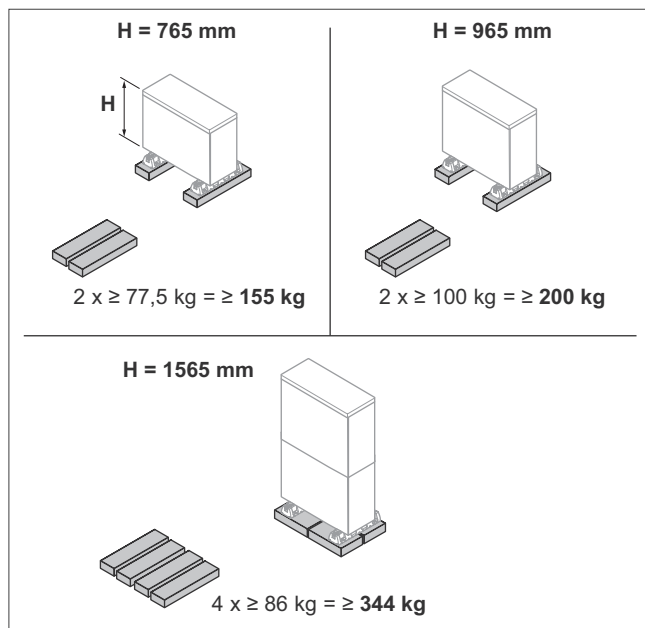


Fig 461: Number and weights of the concrete slabs

When work is carried out, moisture and dirt must be prevented from getting into the room below.

The secured ladder (c) must be designed in such a way that start-up, maintenance and repair work can be carried out by one person with the required tools and material, even in snowy conditions. In addition, a proper fixing device can be set for personal safety.

Note the following points:

- Do not install the unit at the fall edge (f)
- Duct ventilation (e) must not occur in the intake area of the heat pump
- Discharge must not occur towards the skylight
- Condensate discharge must be guaranteed
- Avoid discharge against the main direction of wind

Note

For information on installing REHAU accessories, see the separate section.



Installing the product



Warning.

Risk of injury due to toppling over in the wind.

The product may topple over if there is a wind load.

- > Use two concrete bases and an anti-slip protective mat.
- > Screw the product to the concrete base.

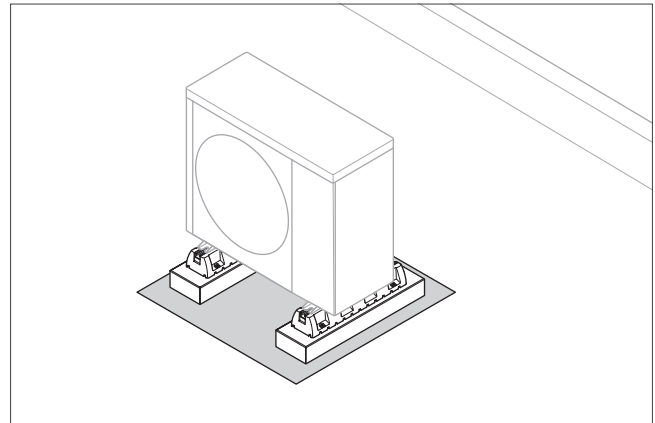


Fig 462: Setting up the product, flat roof

1. Use the large damping feet from the accessories.
2. Align the product horizontally.

10.11 Product description for the uniTOWER VIH QW 190/1 E



Fig 463: uniTOWER VIH QW 190/1 E

Type overview

Unit designation	Art. no.
VIH QW 190/1 E	0010019709
VIH QW 190/1 E	0010019373

10.11.1 Special features

- Extremely short installation times thanks to the compact design
- Can be extended using accessories that can be integrated
- Also available with integrated intermediate heat exchanger
- SplitMountingConcept for easier positioning in two parts

10.11.2 Equipment

- Integrated 190 litre domestic hot water coiled tube cylinder
- High-efficiency pump for the version with an intermediate heat exchanger (22 plates)
- 6 kW electric back-up heater with safety cut-out and electrical connection box
- Purging and draining the back-up heater
- 15 litre diaphragm expansion vessel for heating
- 3-port diverter valve for heating/domestic hot water
- 3 bar expansion relief valve with drain pipework and brine collecting vessel (for the version with intermediate heat exchanger)
- Filling connection
- Brine circuit with manometer

10.11.3 Potential applications

The uniTOWER is used only in combination with an aroTHERM VWL ..5/2 and VWL ..5/3 or geoTHERM VWS 36/4.1 heat pump and acts as a link between the heat pump and heating installation.

10.11.4 Technical data

Technical data - Heating

	VIH QW 190/1
Filling type	Cartridge immersion heater
Heating output range	2 to 6 kW Δ: 2 kW
Maximum water pressure in heating mode (PMS)	0.3 MPa
Maximum heating flow temperature	77 °C
Maximum volume of the system heating circuit	220 l
Maximum volume of the heat pump circuit	30 l
Maximum volume of the heat pump circuit	30 l NoteWith a 2 l expansion vessel. Note With a 2 l expansion vessel.

Technical data - Heating

	VIH QW 190/1
Filling type	Cartridge immersion heater
Heating output range	2 to 6 kW Δ: 2 kW
Maximum water pressure in heating mode (PMS)	0.3 MPa
Maximum heating flow temperature	77 °C
Maximum volume of the system heating circuit	220 l

Technical data - General

	VIH QW 190/1
System type	System with heat pump circuit/complete heating and hot water module disconnected
System type	System without decoupling module
Product dimensions, width	599 mm
Product dimensions, depth	693 mm
Product dimensions, height	1,880 mm
Net weight	170 kg
Weight when filled with water	360 kg

Technical data - Electrics

	VIH QW 190/1
Electrical connection	400 V (+10%/-15%) 3N ~50Hz
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)
Integrated fuse (SMU - eBox)	T4A, 250V
Energy consumption in standby operation	1.2 W
Level of protection	IPX4
Max amperage of the power supply circuit	9 A

10.11.5 Product dimensions and connection dimensions

Dimension drawing and connection dimensions

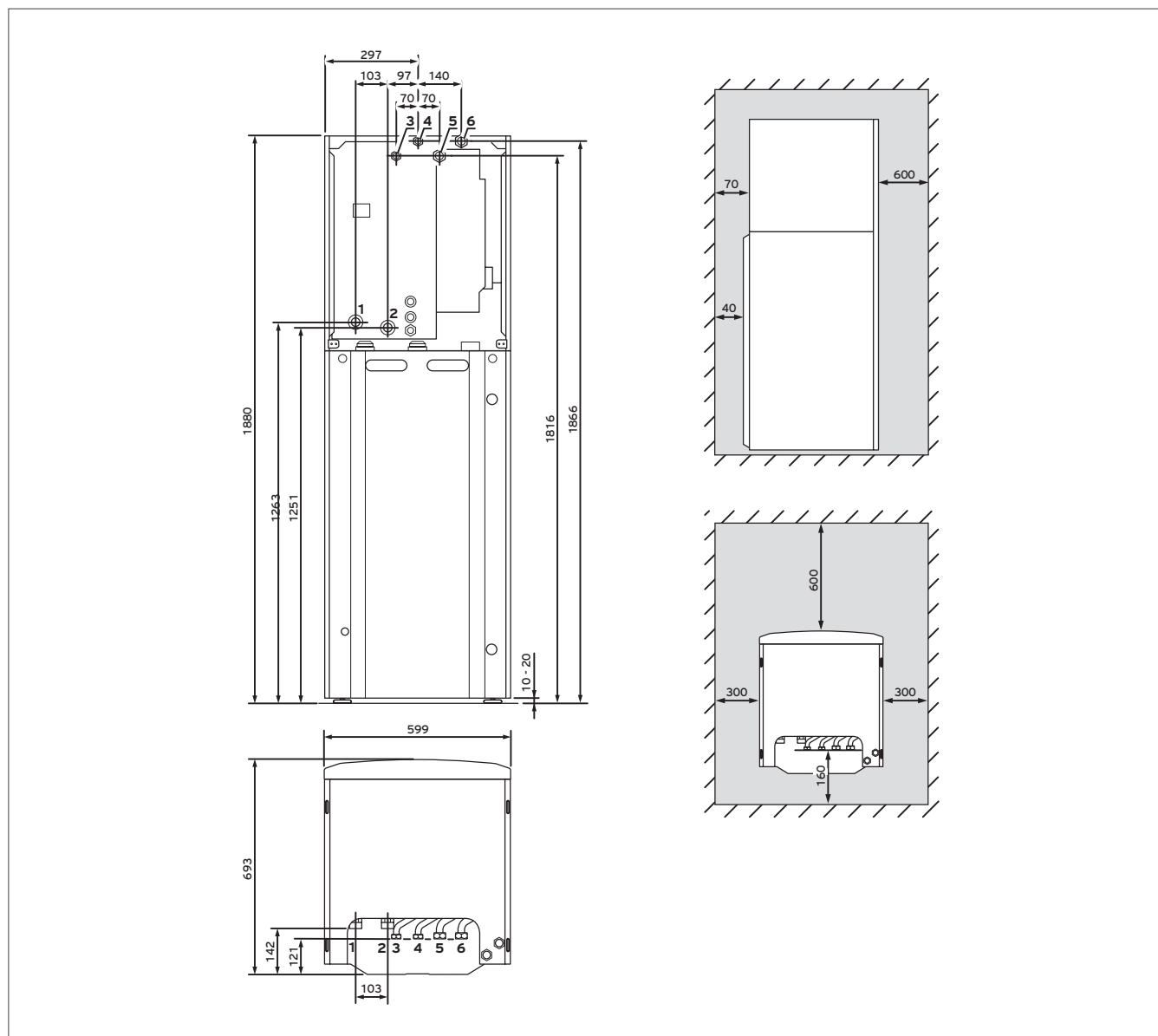


Fig 464: unitTOWER VIH QW 190/1 E dimension drawing and connection dimensions

- 1 Flow from heat pump G 1 1/4
- 2 Return to the heat pump G 1 1/4
- 3 Cold water connection G 3/4
- 4 Hot water connection G 3/4
- 5 G 1 heating flow
- 6 G 1 heating return

Product dimensions for the transport

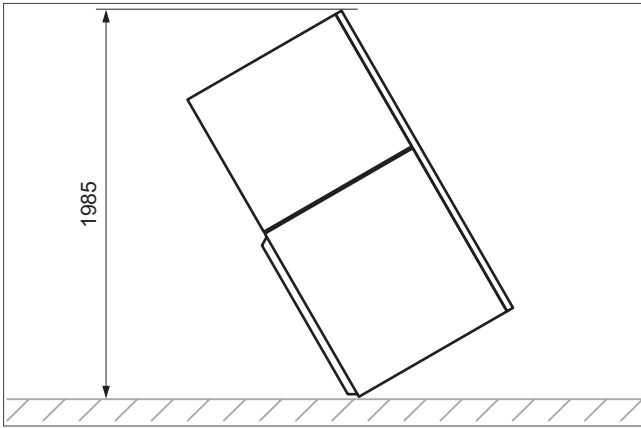


Fig 465: Dimensions for transport

10.11.6 Pressure losses

Total pressure loss (without intermediate heat exchanger)

The diagram shows the total pressure loss for the product variant without an intermediate heat exchanger.

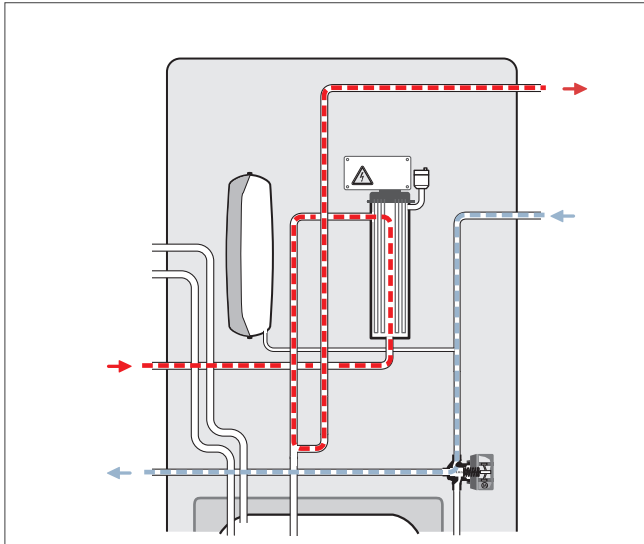


Fig 466: Basic diagram showing total pressure losses for the unitOWER VIH QW 190/1 E

Pressure losses in the heat pump circuit version with intermediate heat exchanger

The diagram shows the pressure losses for the product variant with an intermediate heat exchanger.

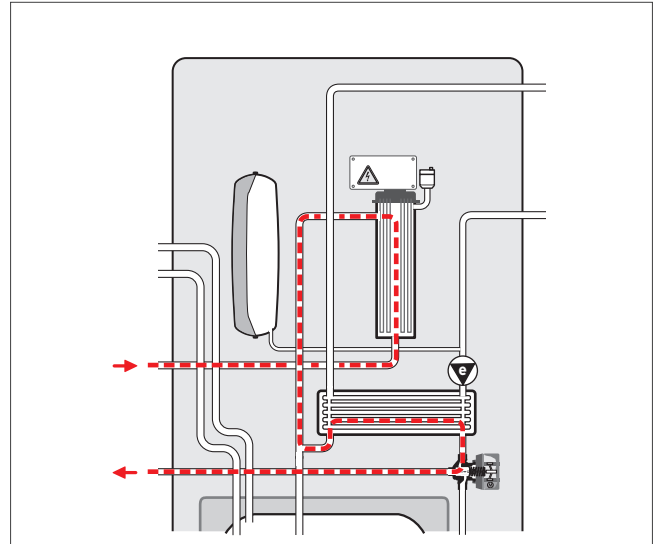


Fig 468: Basic diagram showing the pressure loss in the heat pump circuit for the unitOWER VIH QW 190/1 E

Total pressure loss in the product

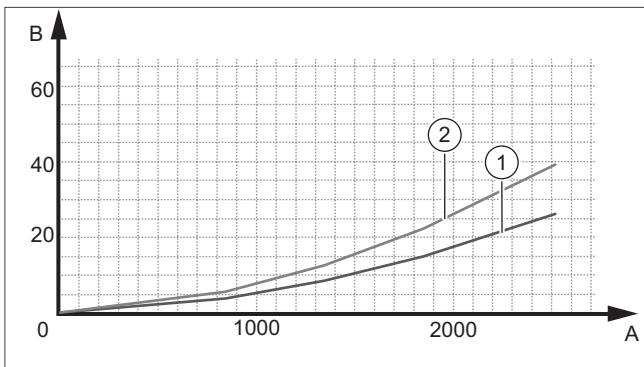


Fig 467: Pressure loss

- 1 Product only
- 2 Product with installation set
- A Flow rate in the circuit (l/h)
- B Pressure (kPa)

Pressure losses in the unit in the heat pump circuit

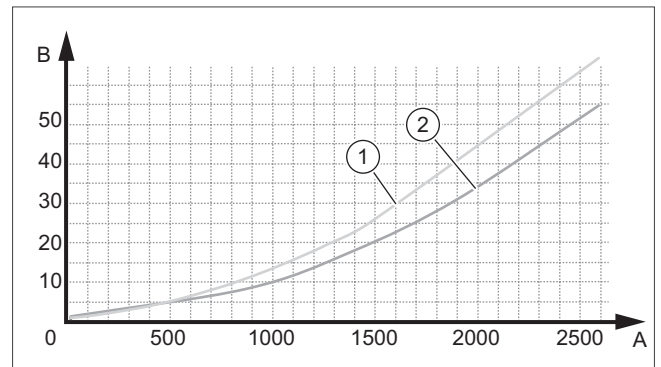


Fig 469: Pressure losses in the unit in the heat pump circuit

- 1 Brine 50% (35 °C)
- 2 Pure water (20 °C)
- A Throughput in circuit (l/h)
- B Pressure (kPa)

10.11.7 Remaining feed head version with intermediate heat exchanger (heating circuit)

The diagram shows the remaining feed head for the product variant with an intermediate heat exchanger.

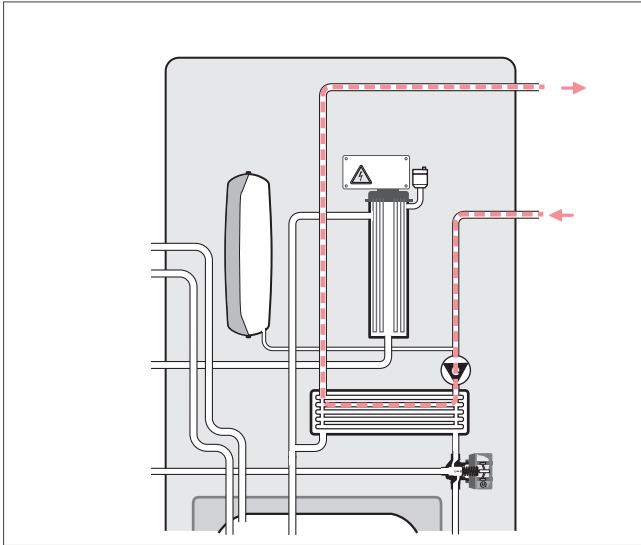


Fig 470: Remaining feed head basic diagram

Remaining feed head, constant pressure mode

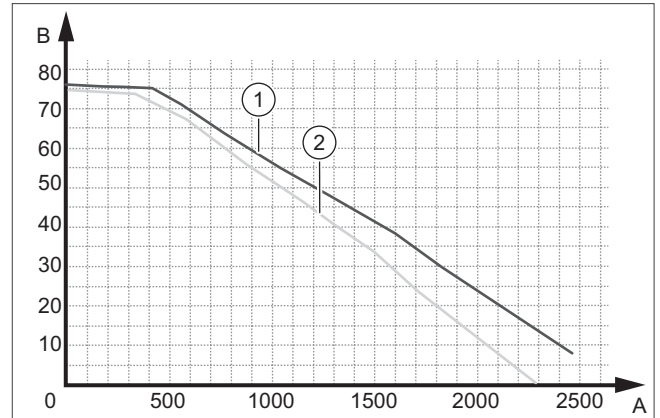


Fig 472: Remaining feed head, constant pressure mode

- 1 PCmax/product only
- 2 PCmax/with installation set
- A Flow rate in the circuit (l/h)
- B Available pressure (kPa)

Remaining feed head

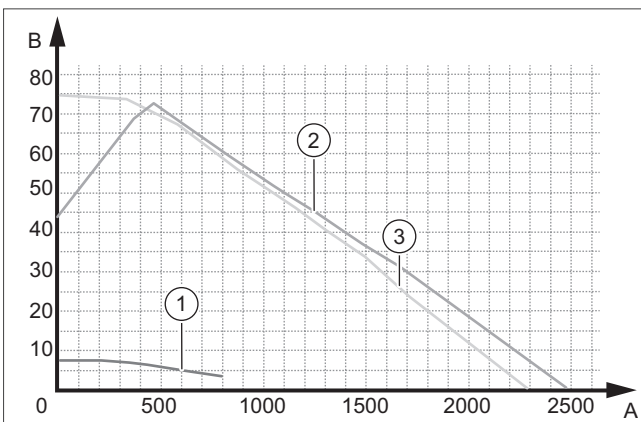


Fig 471: Remaining feed head

- 1 PVmin/PCmin product only
- 2 PVmax/product only
- 3 PCmax/product only
- A Flow rate in the circuit (l/h)
- B Available pressure (kPa)

Remaining feed head, variable pressure mode

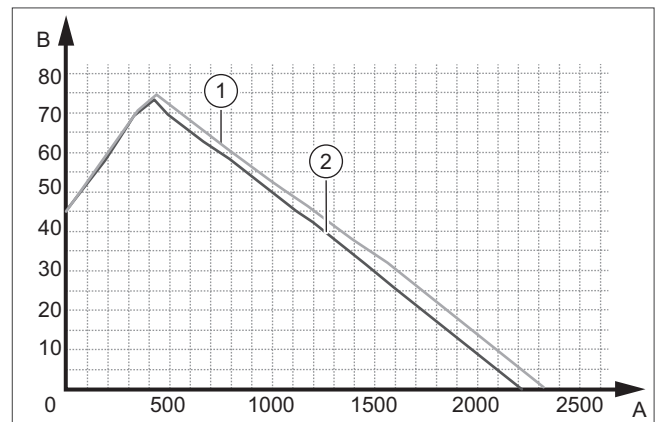


Fig 473: Remaining feed head, variable pressure mode

- 1 PVmax/product only
- 2 PVmax/with installation set
- A Flow rate in the circuit (l/h)
- B Available pressure (kPa)

10.11.8 Connecting gas and water

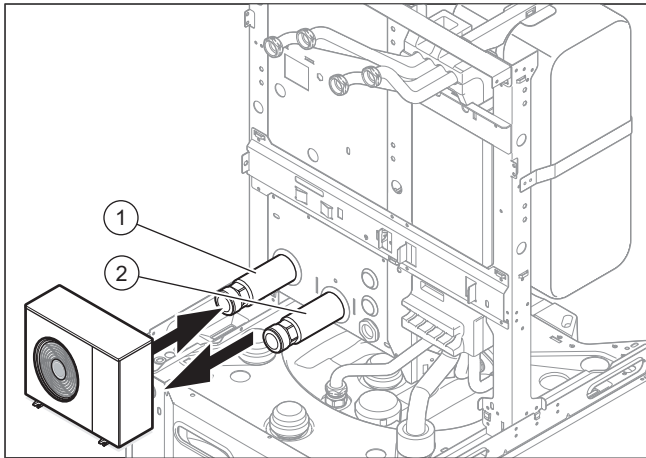


Fig 474: Overview of the connections

- 1 Connection G1/25", heat pump return
- 2 Connection G1/25", heat pump flow

10.11.9 Designing the connection cable

Connecting the product's hydraulic system

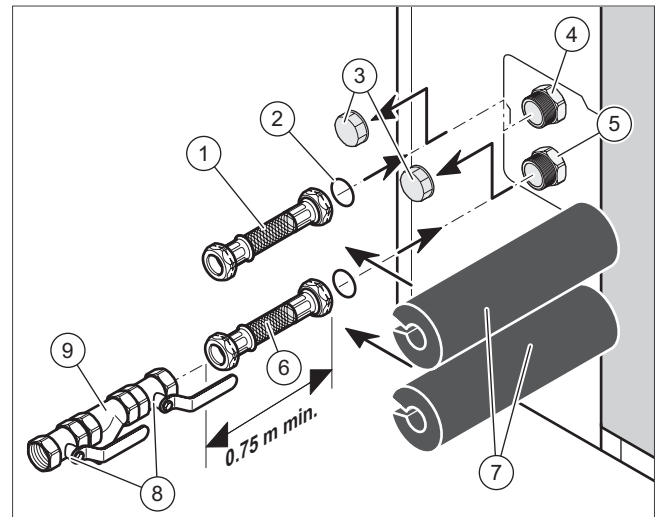


Fig 475: Connecting the product's hydraulic system




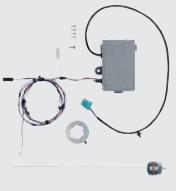
- 1 Connection hose in the heating flow to the building (on-site)
- 2 O-ring seal
- 3 Covering cap
- 4 Heating flow connection (diameter 1 1/4") to the building
- 5 Heating return connection (diameter 1 1/4") to the heat pump
- 6 Connection hose in the heating return to the heat pump (on-site)
- 7 Insulation (on-site)
- 8 Stop valve
- 9 Dirt filter

Routing the connection cable

	Recommended pipe length*			
	Copper pipe		Plastic pipe	
	0-5 m	0-10 m	0-10 m	0-20 m
VWL 55/3	20 mm	20 mm	32 mm	32 mm
VWL 85/3	25 mm	25 mm	32 mm	32 mm
VWL 115/2	25 mm	25 mm	32 mm	32 mm
VWL 155/2	32 mm	32 mm	32 mm	40 mm

* With an internal diameter of DIN" Δt 8k and a flow speed of < 1.0 m/s and a pressure loss of < 100 pa/m.

10.11.10 uniTOWER accessories

Accessories	Description	Order no.
Domestic hot water connection accessories		
	<p>Circulation set with pump High-efficiency circulation pump with non-return valve, connection pipe, connection fittings, brass G 3/4" connection T-piece, G 3/4" coupling with integrated non-return valve, cut-off for auro-/ecoCOMPACT, pipe set with pump for circulation connection on the rear of the unit</p> <p>Can be used for the aroTHERM with uniTOWER and aroTHERM Split with uniTOWER</p>	0020170503
	<p>Circulation set without pump Semi-insulated connection pipe with G 3/4" coupling, copper elbow with G 3/4" coupling, insulated G 3/4" connection piece with G 3/4" coupling, brass G 3/4" connection T-piece, G 3/4" coupling with integrated non-return valve</p> <p>Pipe set for circulation connection on the rear of the unit, for connection to the circulation pump that already exists on-site</p> <p>Can be used for the aroTHERM with uniTOWER and aroTHERM Split with uniTOWER</p>	0020170502
Expansion vessel		
	<p>Potable water expansion vessel installation kit</p> <p>8 l potable water expansion vessel (flow-through), 3/4" connection fittings, G 3/4" flexible connection pipes, EPS padding</p> <p>Can be used for the aroTHERM with uniTOWER and aroTHERM Split with uniTOWER</p>	0020180979
System protection		
	<p>Universal external current anode with connection accessories</p> <p>M8 external current anode with 3/4" adapter, power supply unit, cable, small parts for replacing the magnesium protection anode that is already available on-site.</p> <p>Can be used for the aroTHERM with uniTOWER and aroTHERM Split with uniTOWER</p>	0020170505

10.12 Basic hydraulic and wiring diagrams

10.12.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections

Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

10.12.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				regulated	direct		Domestic hot water	Heating	
0020212723	aroTHERM	VRC 700/2	integrated, active	1 UFH	-	VWZ MPS 40	-	-	uniTOWER
0020185687	aroTHERM VWZ MEH 60	VRC 700, VR 91	integrated, active	2 UFH	-	-	-	-	geoSTOR VIH RW
0020232118	aroTHERM ecoTEC VC	VRC 700/4, VR 71, VR 91, VR 32	integrated, active	3 UFH	-	VWZ MPS 40	-	-	allSTOR VPS
0020234154	aroTHERM ecoTEC VC	VRC 700/4, VR 70 VR 91	integrated, active	2 UFH	-	VWZ MPS 40	-	-	uniSTOR VIH R
0020212725	aroTHERM	VRC 700/2, VR 70, VR 91	integrated, active	1 UFH	1 HC	VWZ MPS 40	-	-	uniTOWER
0020199366	aroTHERM ecoTEC plus VC	VRC 700, VR 70 VR 91	integrated, active	2 UFH	-	VWZ MPS 40	-	-	geoSTOR VIH RW
0020199448	aroTHERM auroTHERM plus	VRC 700, VR 70 VR 91	integrated, active	-	1 UFH	VWZ MPS 40	●	-	geoSTOR VIH RW

0020212723 - Basic hydraulic diagram

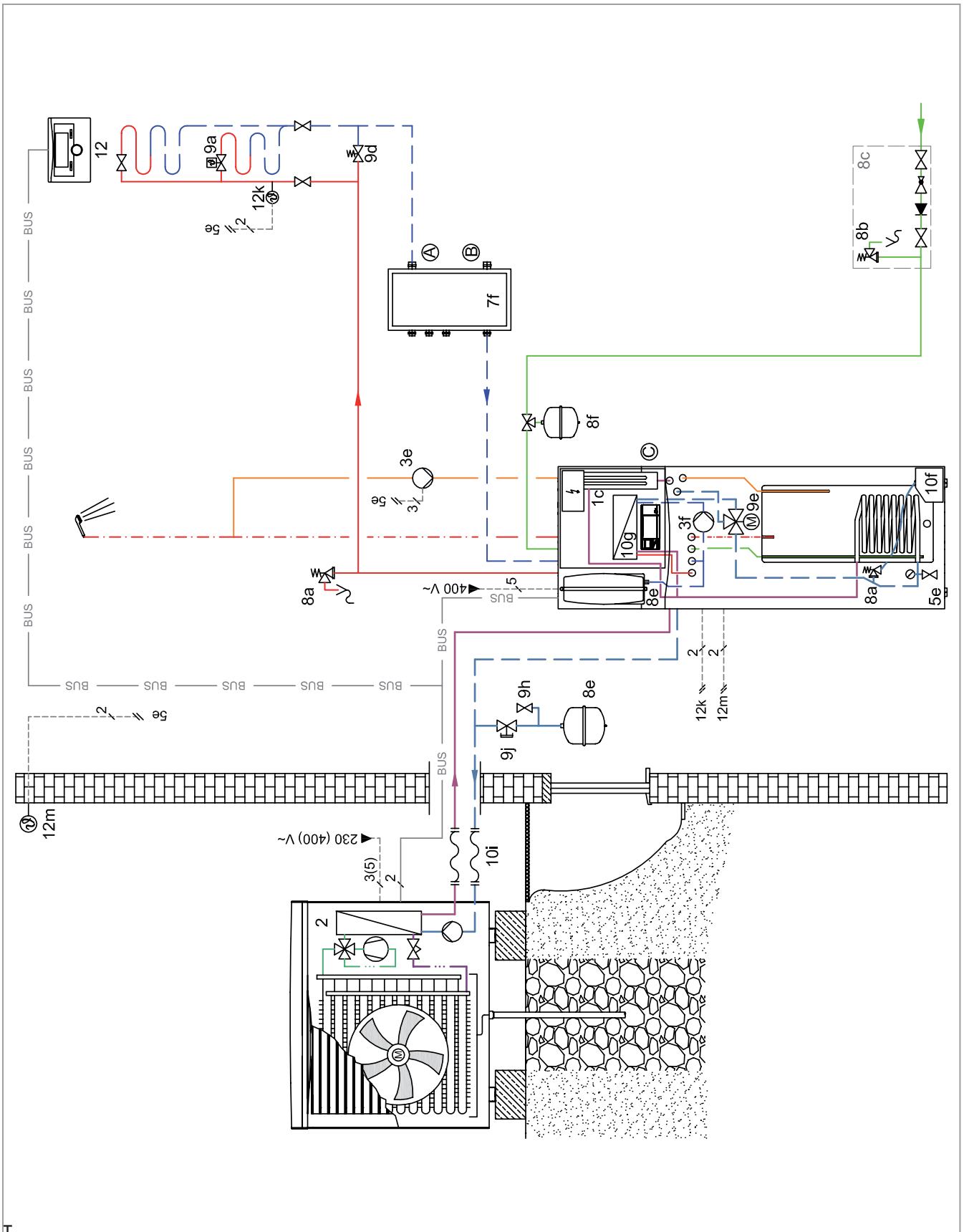


Fig 476: Basic hydraulic diagram

0020212723 - Wiring diagram

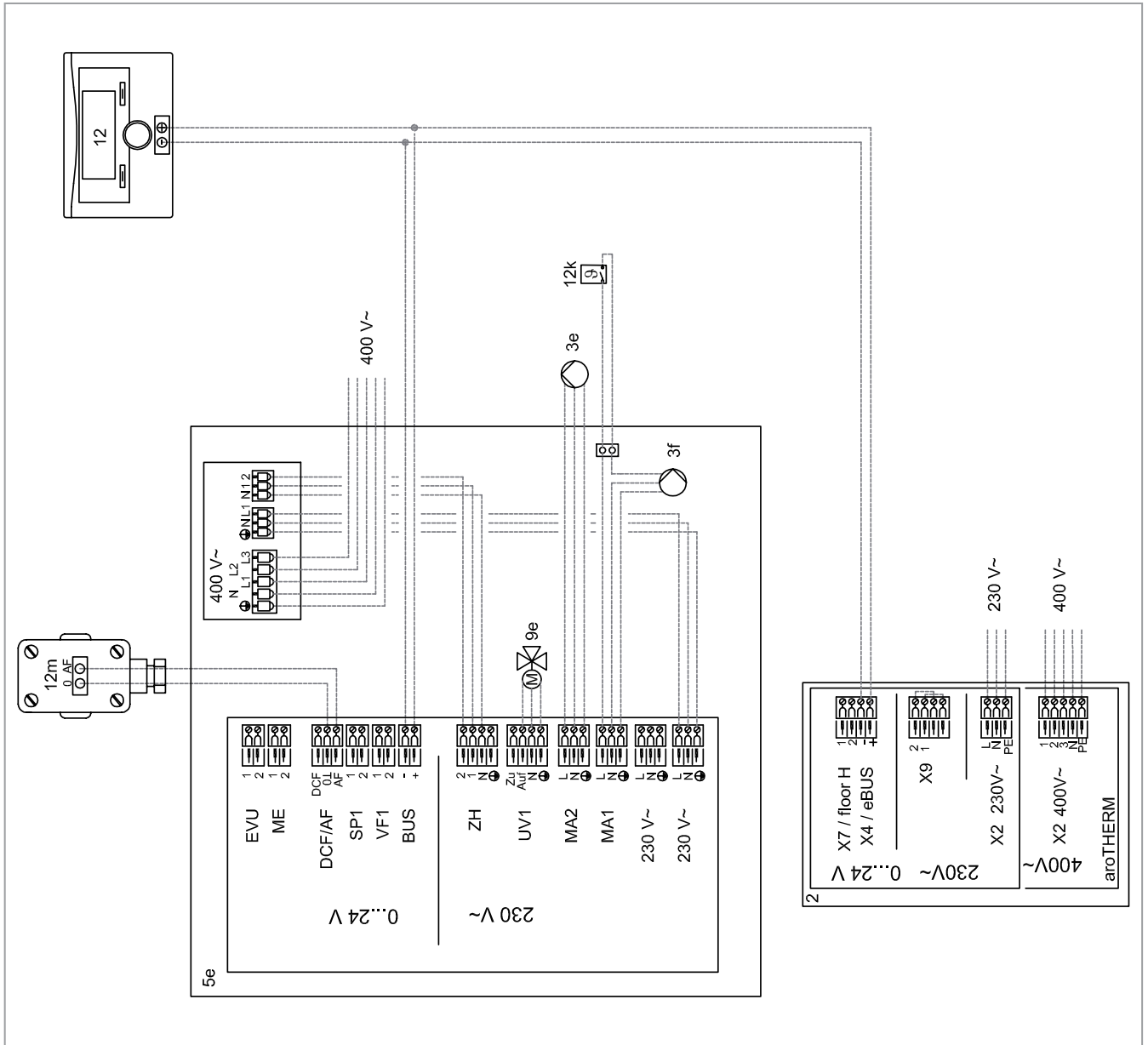


Fig 477: Wiring diagram

Description

Houses with one non-mixed heating circuit. The heat pump supports the heating and hot water system. The electric immersion heater also supports the heating and domestic hot water systems. The hydraulic tower must be designed in accordance with the applicable standards and regulations.

Note: A decoupler module is required if the system's output is greater than:
 VWL 55/85/115/155 heating output
 5 kW 8 kW 11 kW 15 kW min. Water content
 17 l 21 l 35 l 60 l of the heating system. The VWZ AI wiring centre is integrated into the hydraulic tower.

Individual components

- aroTHERM
- uniTOWER
- VWZ MPS 40
- VRC 700/2

Setting

VRC 700/2 system diagram setting: 11

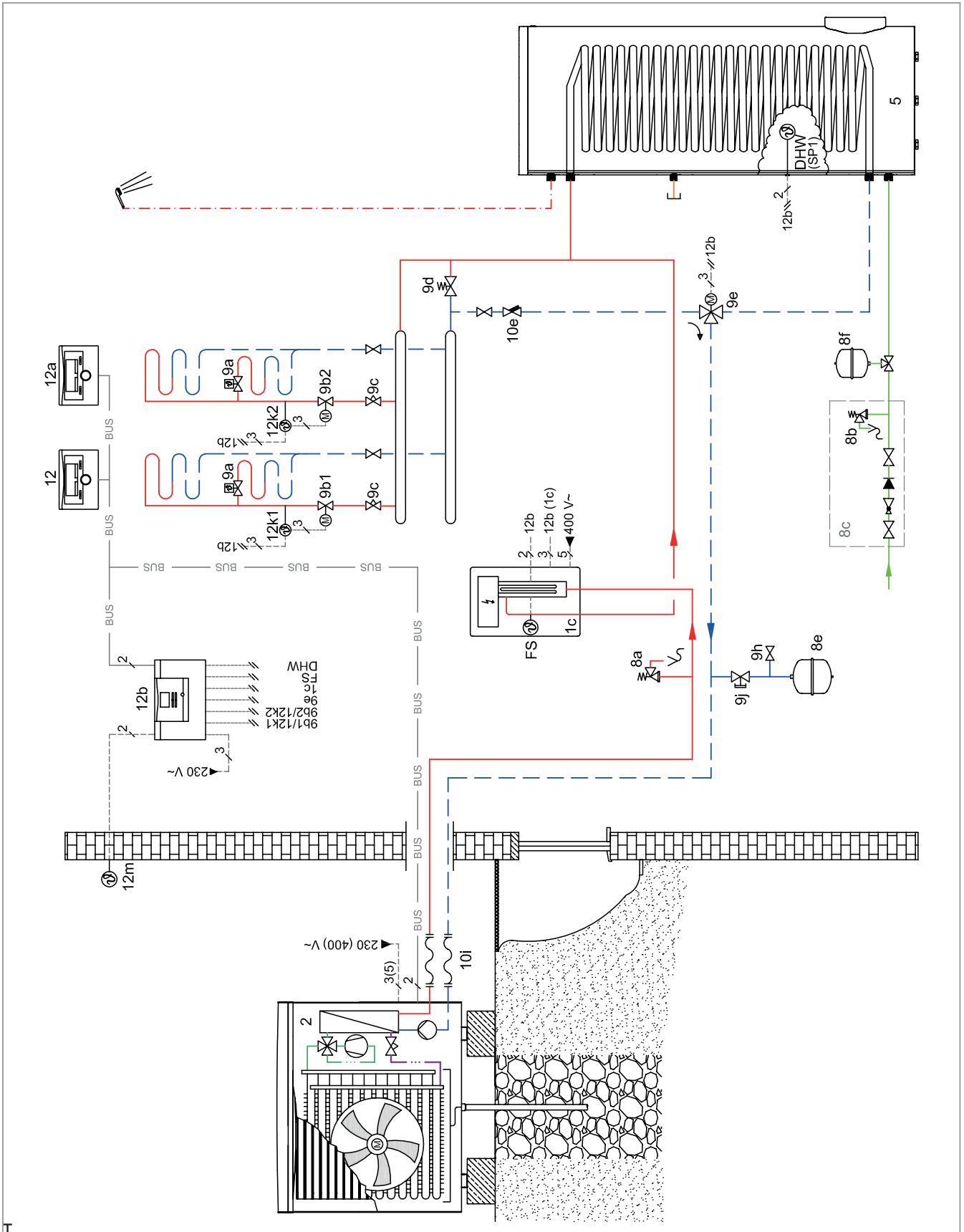


Fig 478: Basic hydraulic diagram

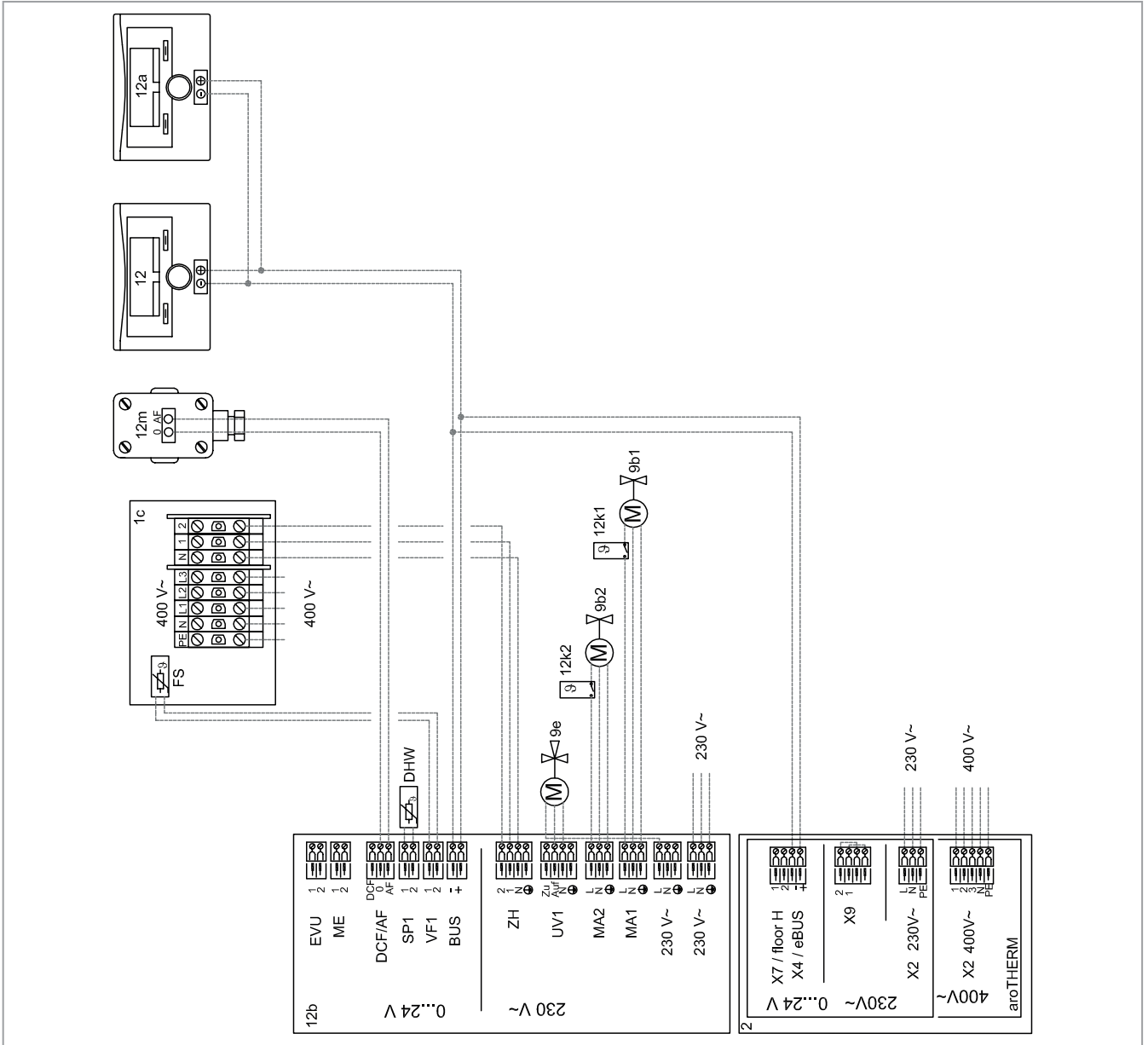


Fig 479: Wiring diagram

Description

Houses with several heating circuits (underfloor heating). The domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Individual components

- aroTHERM
- VWZ MEH 60
- VWZ AI
- VRC 700
- VR 91
- geoSTOR VIH RW

Setting

VRC 700 system diagram setting: 8

0020232118 - Basic hydraulic diagram

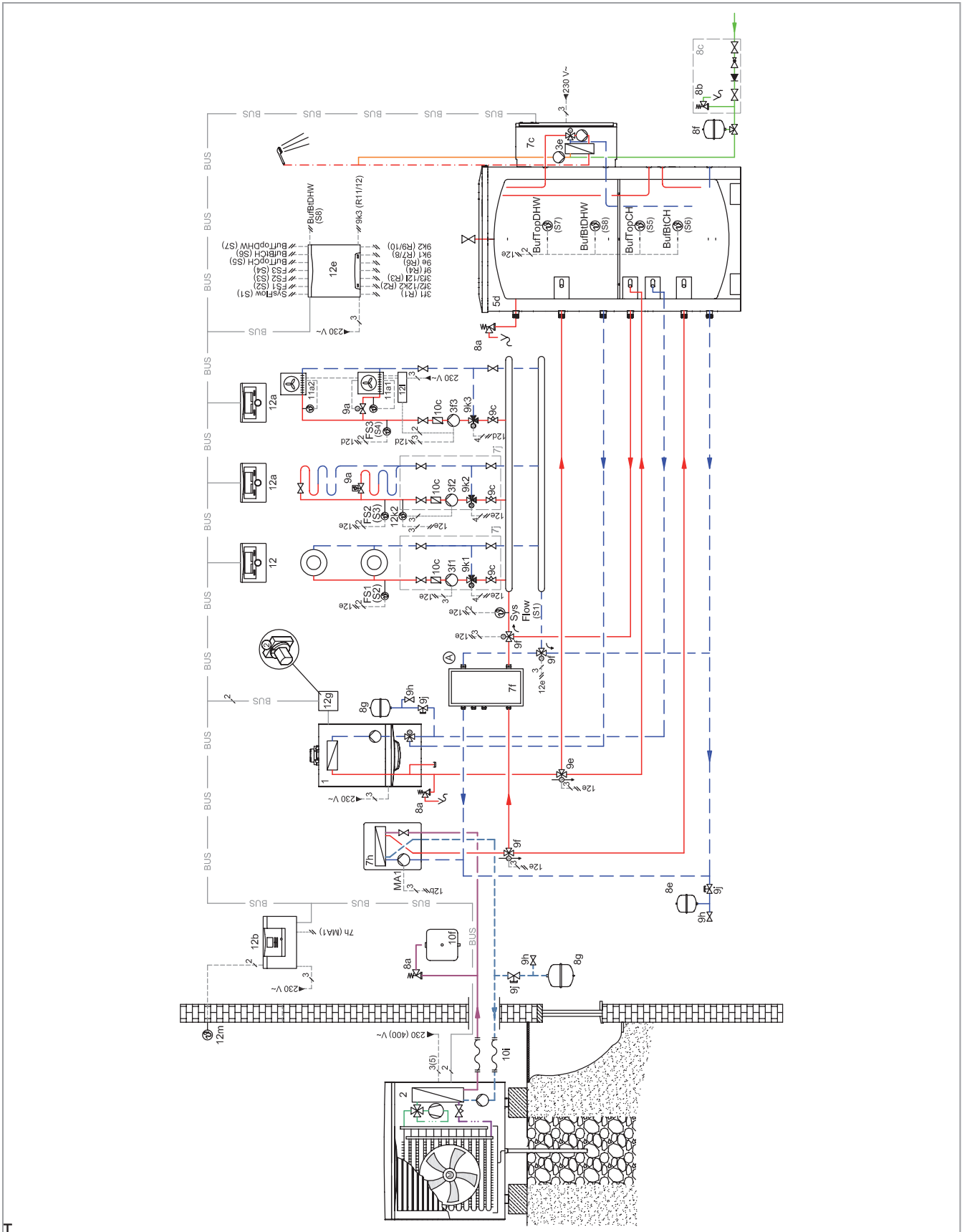


Fig 480: Basic hydraulic diagram

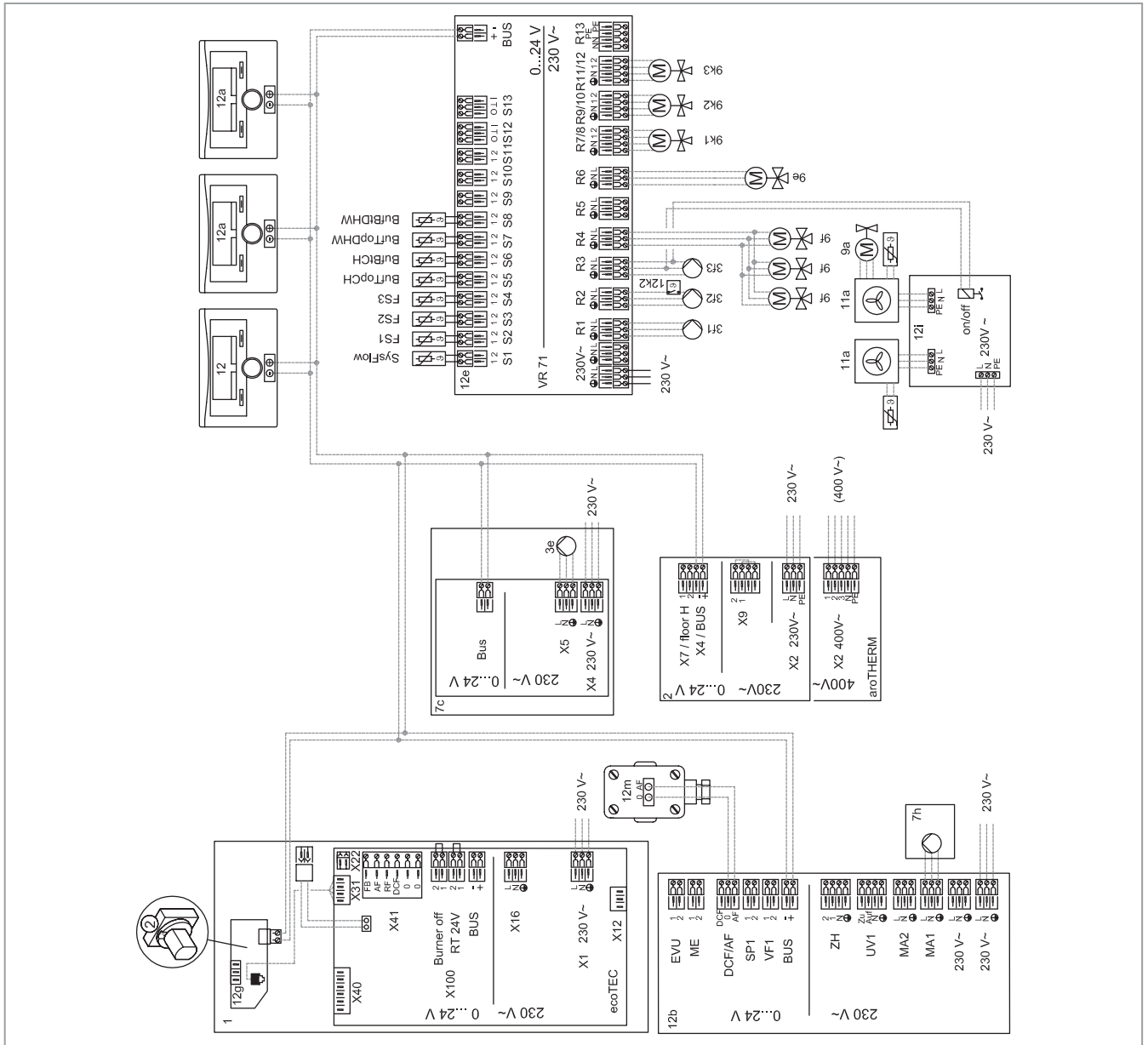


Fig 481: Wiring diagram

Description

Houses with three mixed heating circuits. Hot water is generated by the heat pump, which also supports the heating system. The heat generator also supports the heating and hot water system. The domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Note: When using the VWZ MPS 40 decoupler module, the nominal flow rate must not exceed 2600 l/h.

Individual components

- aroTHERM
- ecoTEC VC
- VWZ MWT 150
- VWZ AI
- VWZ MPS 40
- aIISTOR VPS
- VR 71
- VRC 700/4
- VR 91
- VR 32

Setting

- VRC 700 system diagram setting: 16
- VC 70 module setting: 6

0020234154 - Basic hydraulic diagram

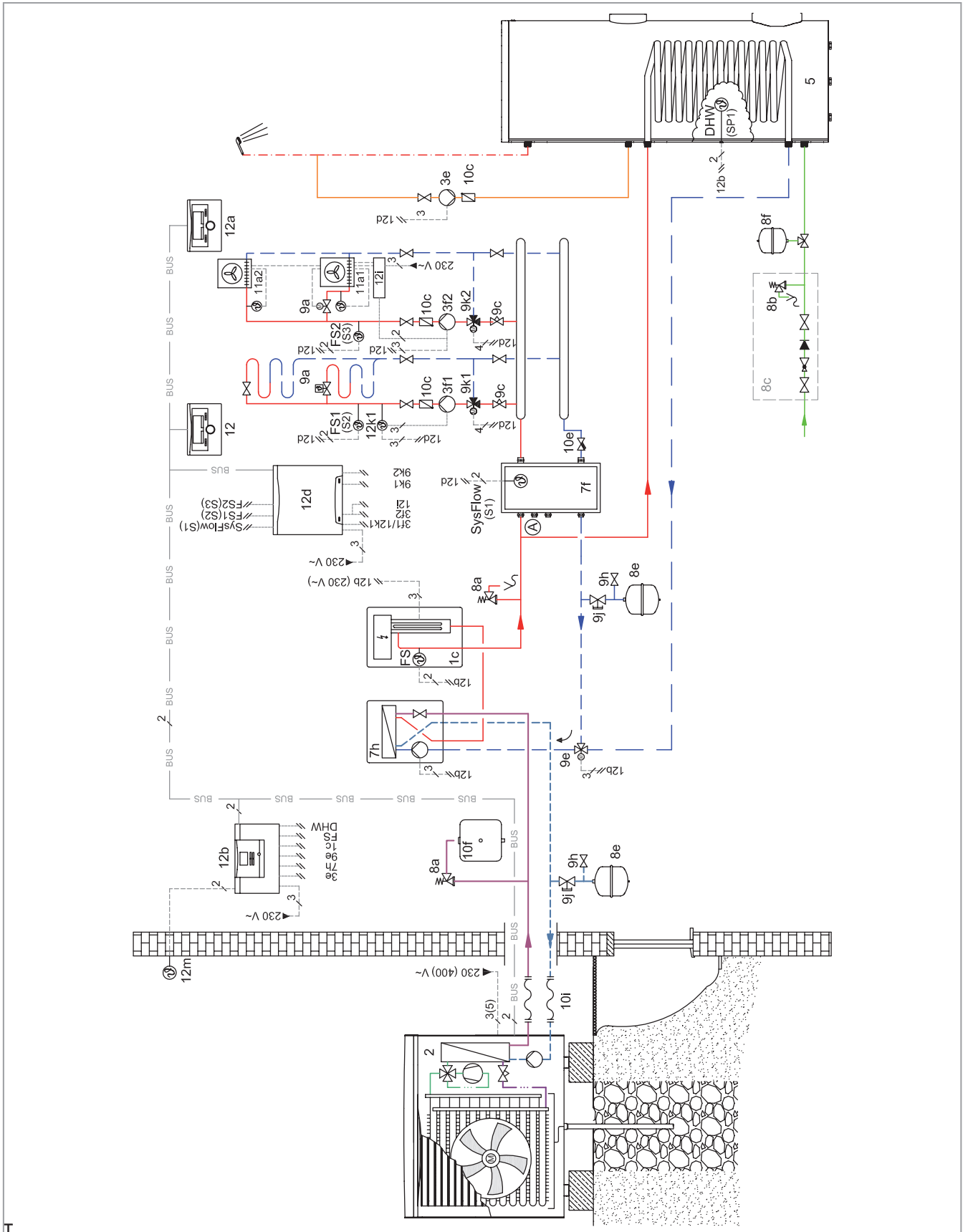


Fig 482: Basic hydraulic diagram

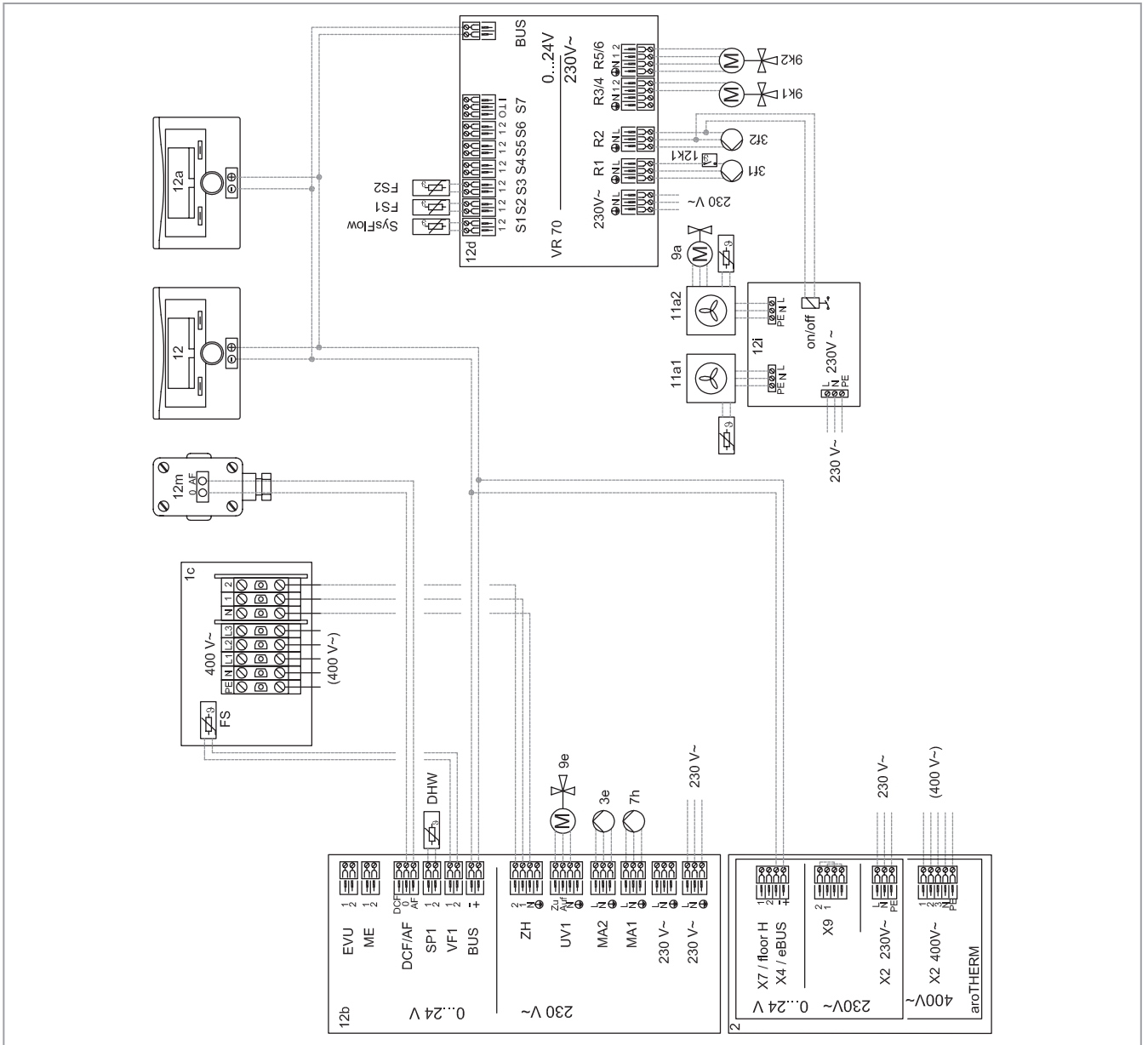


Fig 483: Wiring diagram

Description

Houses with two mixed heating circuits. Hot water is generated by the heat pump, which also supports the heating system. The electrical after-heater also supports the heating and domestic hot water system. The domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Note: When using the VWZ MPS 40 decoupler module, the nominal flow rate must not exceed 2600 l/h.

Individual components

- aroTHERM
- VWZ MWT 150
- VWZ MEH 60
- VWZ MPS 40
- VWZ AI
- uniSTOR VIH R
- VR 70
- VRC 700/4
- VR 91

Setting

- VRC 700 system diagram setting: 8
- VC 70 module setting: 5

0020212725 - Basic hydraulic diagram

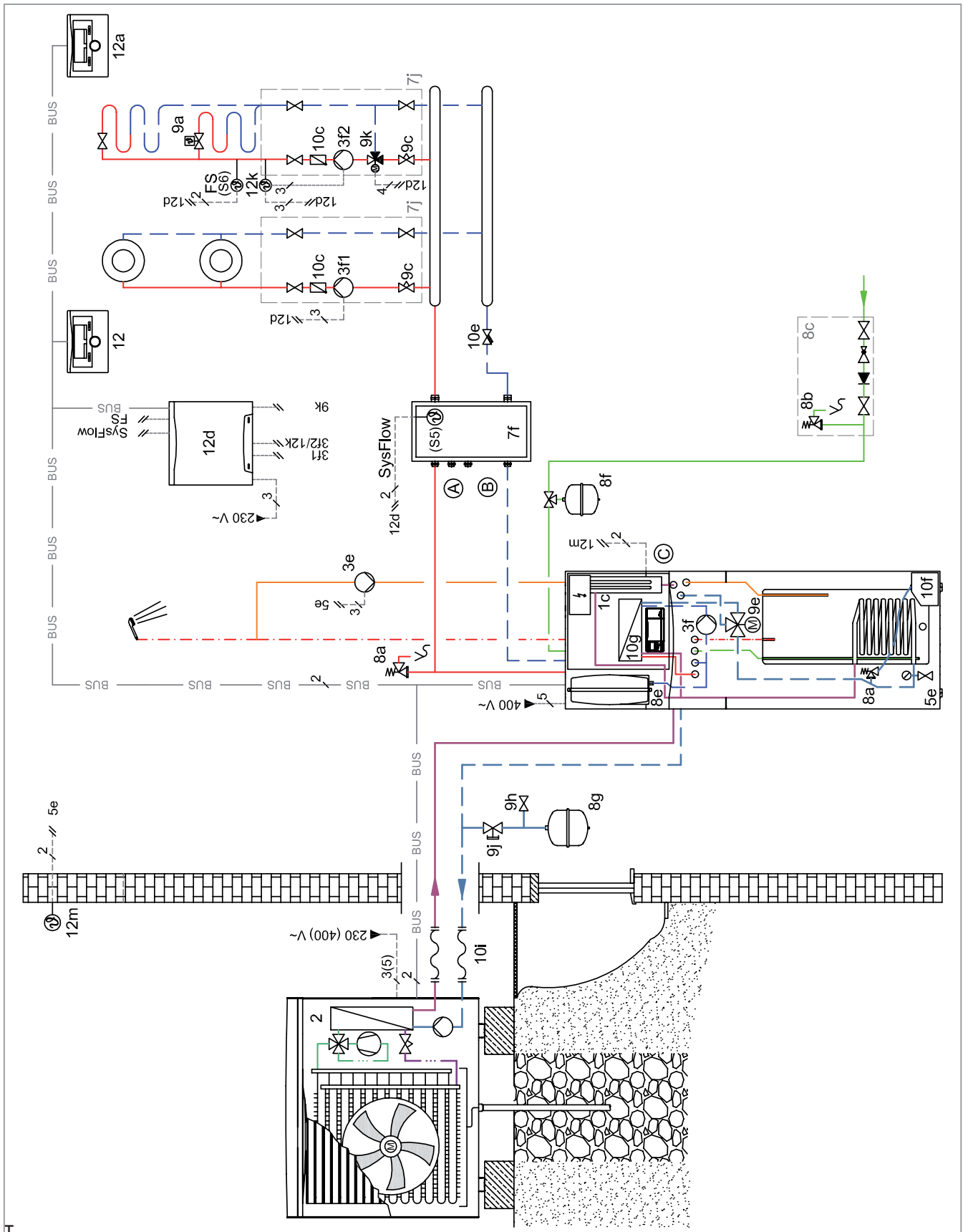


Fig 484: Basic hydraulic diagram

0020212725 - Wiring diagram

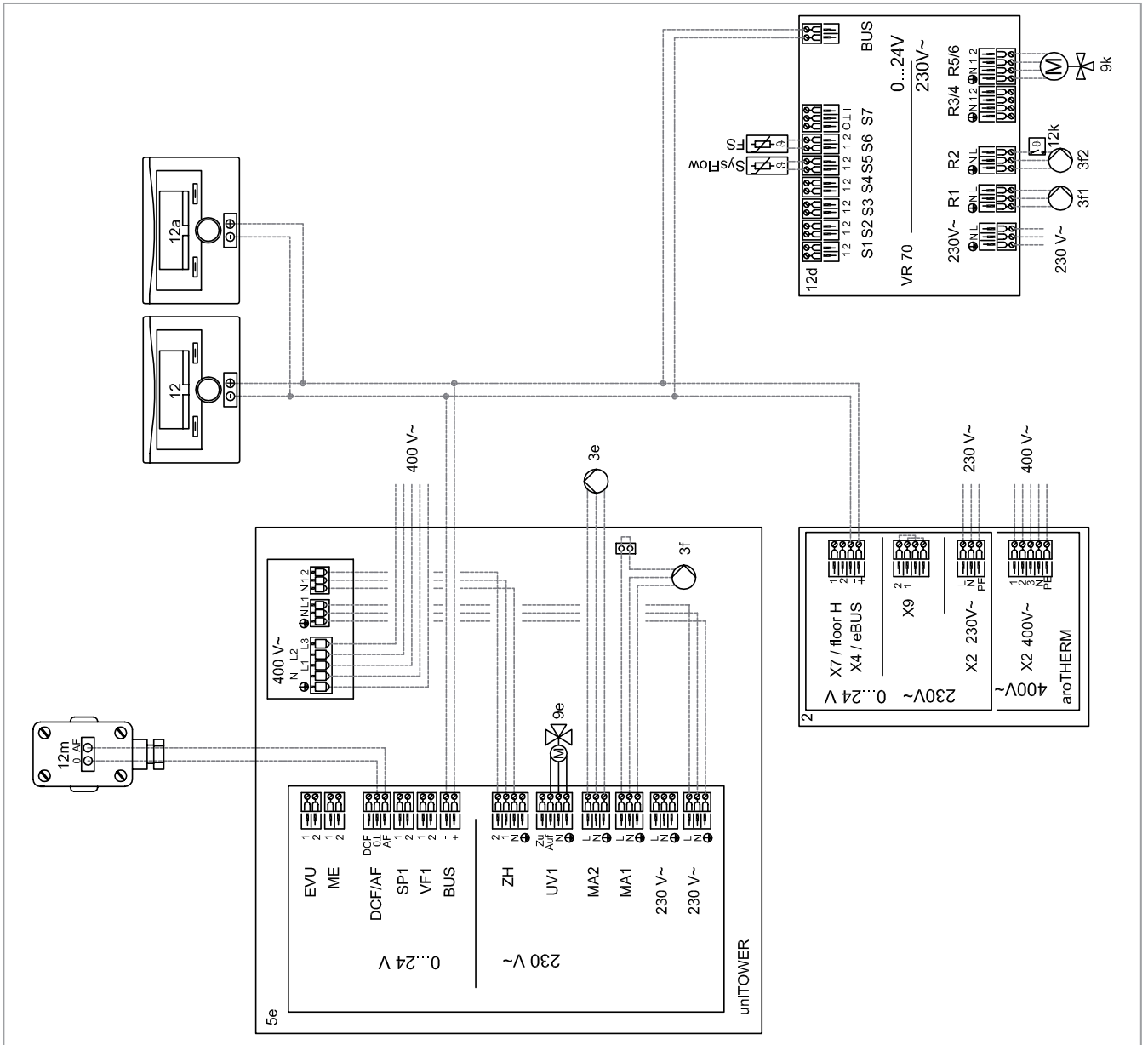


Fig 485: Wiring diagram

Description

Houses with two heating circuits. The heat pump supports the heating and hot water system. The electric immersion heater also supports the heating and domestic hot water systems. The hydraulic tower must be designed in accordance with the applicable standards and regulations.

Note: When using the VWZ MPS 40 decoupler module, the nominal flow rate must not exceed 2600 l/h. B. The VWZ AI wiring centre is integrated into the hydraulic tower.

Individual components

- aroTHERM
- uniTOWER
- VWZ MPS 40
- VRC 700/2
- VR 70
- VR 91

Setting

- VRC 700/2 system diagram setting: 11
- VC 70 module setting: 1

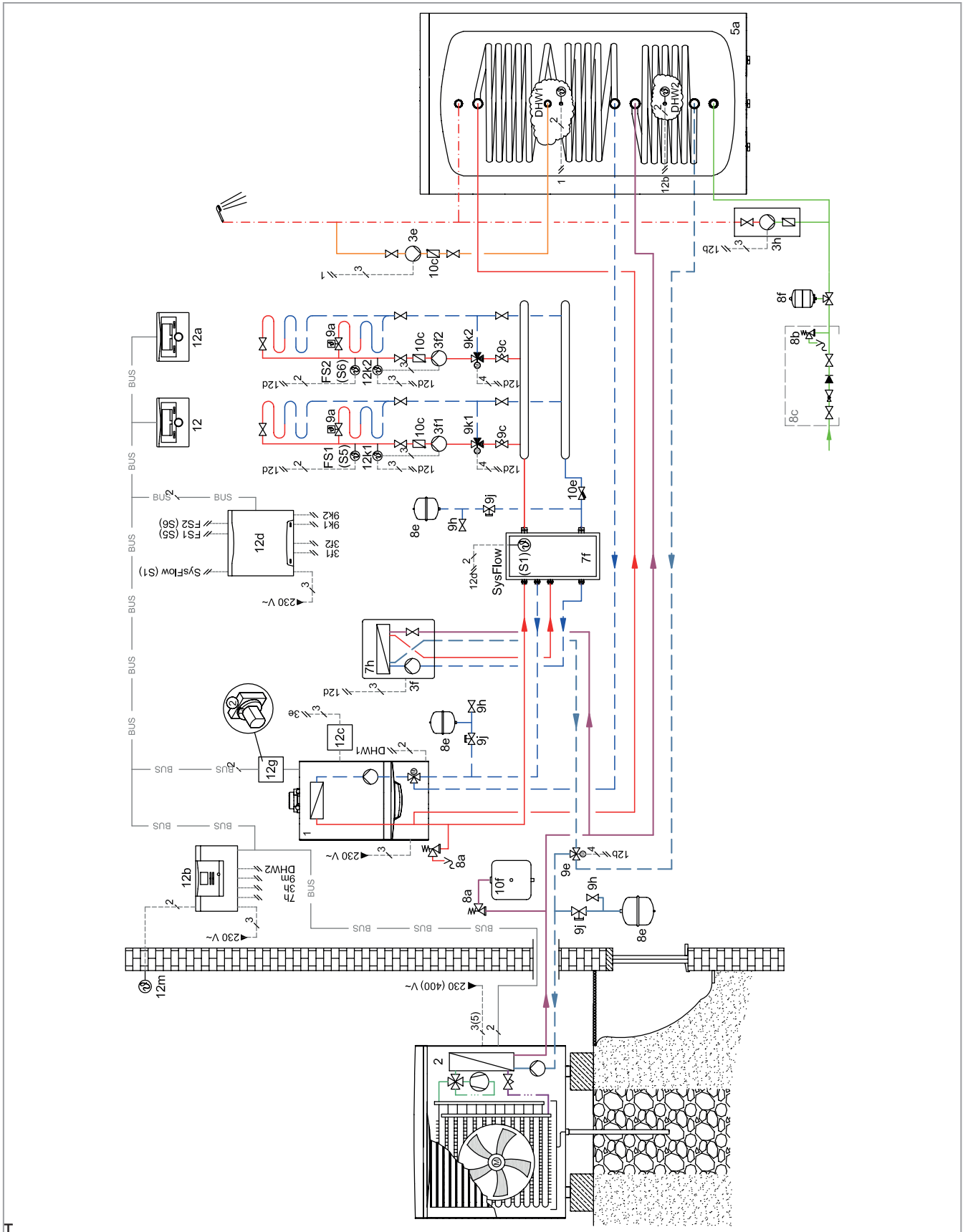


Fig 486: Basic hydraulic diagram

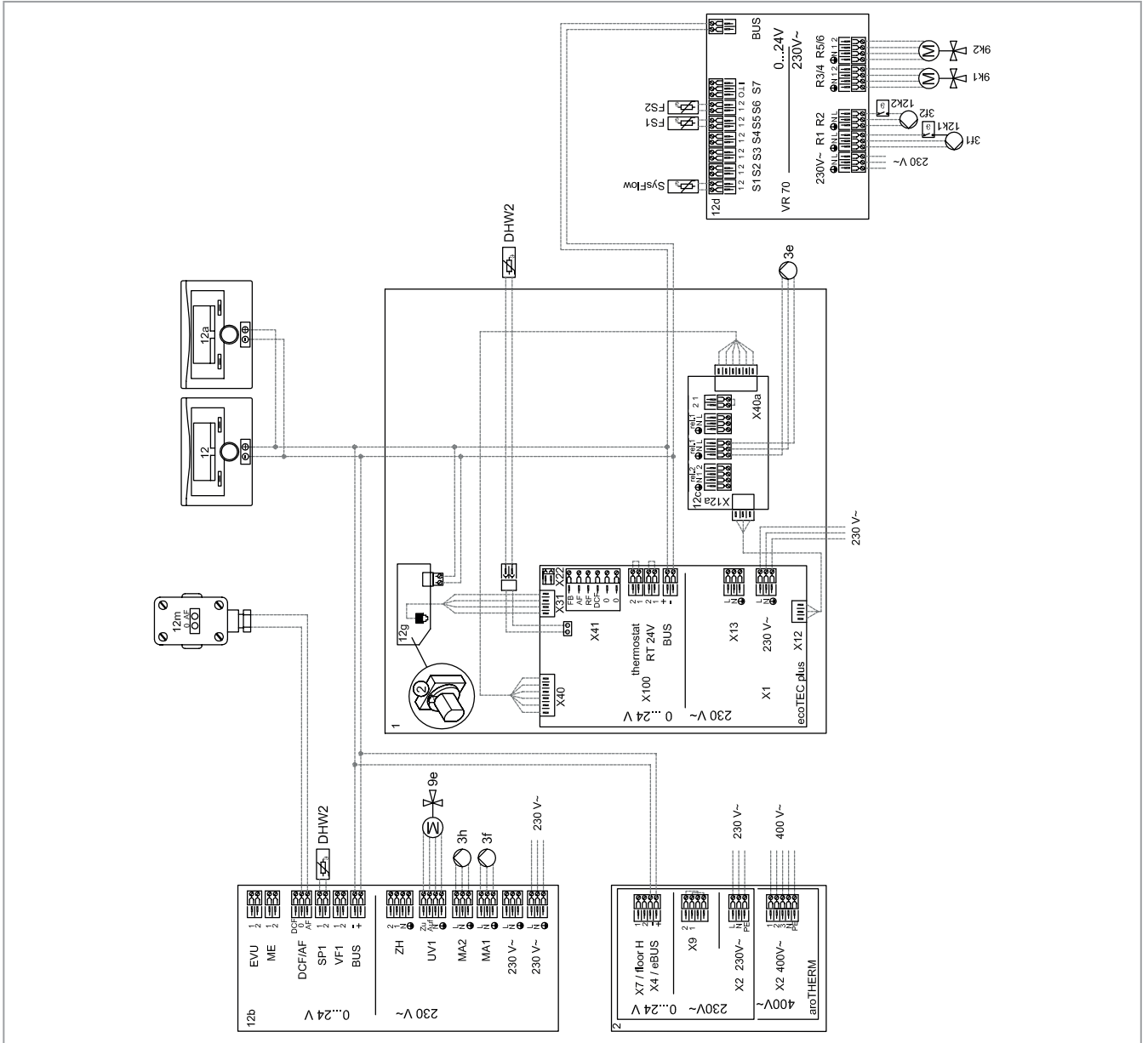


Fig 487: Wiring diagram

Description

Houses with two mixed heating circuits. Hot water is generated by the heat pump, which also supports the heating system. The electric immersion heater supports the heating and domestic hot water systems. The domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Caution: * integrated in the heat generator. If an expansion vessel is not integrated, plans must be made for an additional expansion vessel in the hot-water charging circuit. Use the VWZ MPS 40 compact buffer cylinder if the flow rate is less than or equal to 2600 l/h.

eBUS interface (13h): Address setting 2.

Individual components

- arOTHERM
- ecoTEC plus VC
- VWZ AI
- VRC 700, VR 70, VR 91
- VWZ MPS 40
- geoSTOR VIH RW

Setting

- VRC 700 system diagram setting: 13
- VC 70 module setting: 5

0020199448 - Basic hydraulic diagram

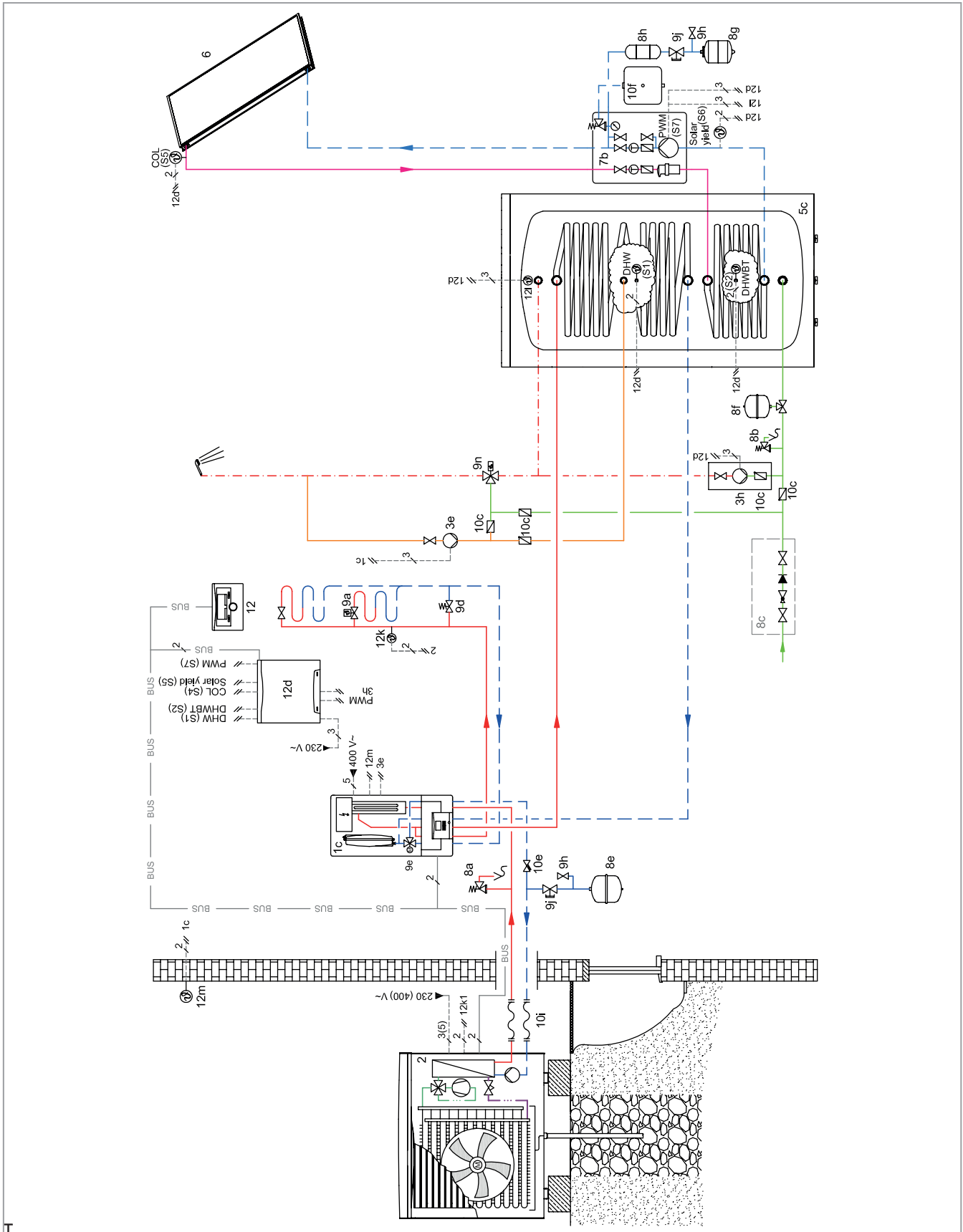


Fig 488: Basic hydraulic diagram

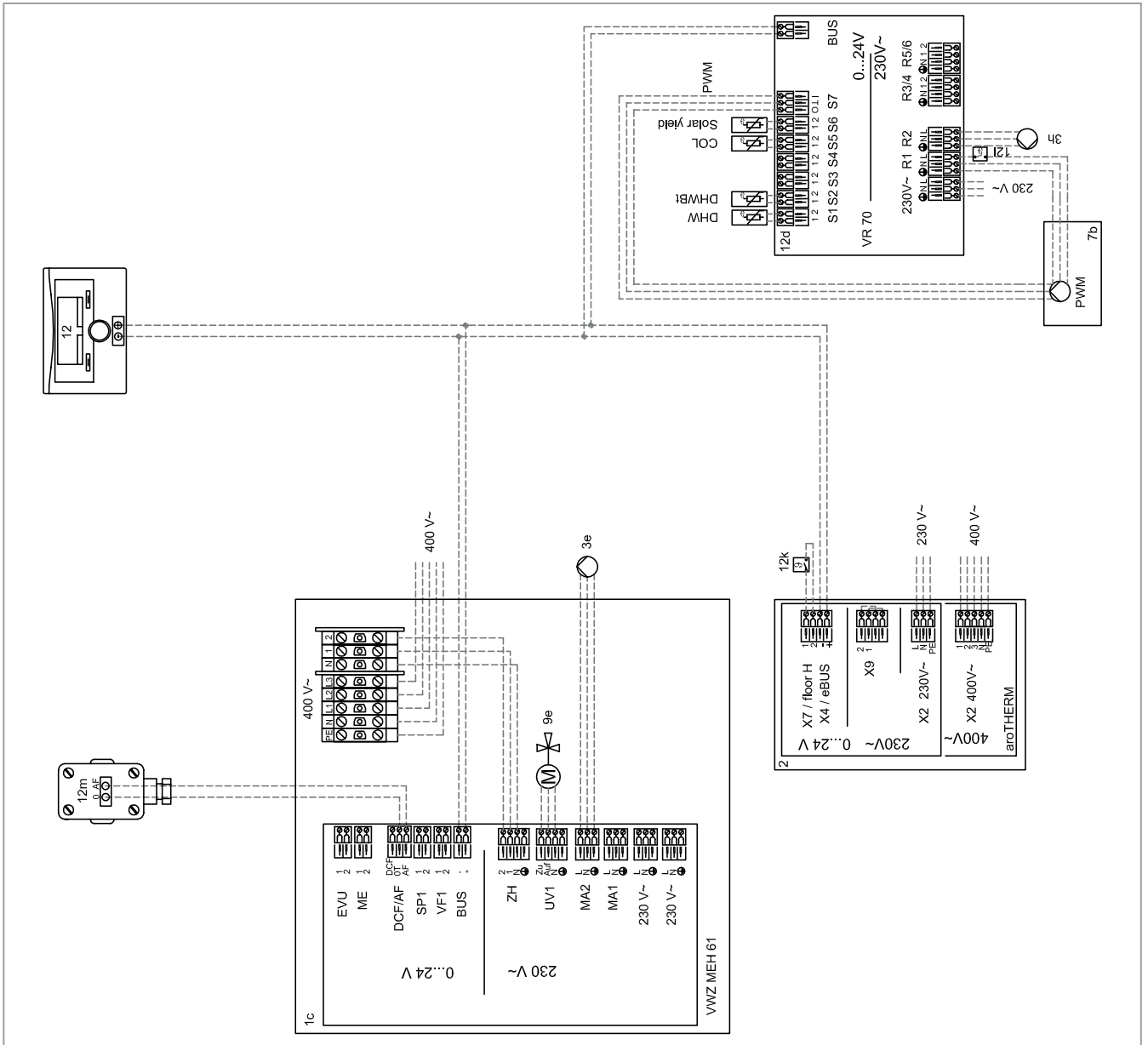


Fig 489: Wiring diagram

Description

Houses with one heating circuit. Hot water is generated by the heat pump. The heat generator also supports the heating and hot water system. The domestic hot water cylinder must be designed in accordance with the applicable standards and regulations.

Caution: To avoid cylinder temperatures above 100 °C, install the sensor for the overheating protection thermostat in an appropriate position. The heat pump's heating output must be adjusted such that it is appropriate for the size of the domestic hot water cylinder.

Individual components

- aroTHERM
- auroTHERM plus
- VR 70
- VRC 700
- VWZ MEH 61
- geoSTOR VIH RW

Setting

VRC 700 system diagram setting: 8

VC 70 module setting: 6



11. Product information for the aroTHERM ..5/5 AS

Update 10
New product overview

11.1 Product combinations



Fig 490: Product combinations

Product combination overview for the aroTHERM split VWL ..5/5 AS

	Heat pump	Decoupler modules		Buffer cylinder, heating and cooling	Buffer cylinder, heating	Domestic hot water cylinder	Control	Photovoltaics
	aroTHERM VWL ..5/5 AS (1)	uniTOWER VWL ..8/5 IS (2)	Hydraulic station VWL ..7/5 IS (3)	VP RW 45/2 B (4) VPS R 100/1 M VPS R 200/1 B (5)	aIISTOR plus/exclusive (6)	uniSTOR (7)	VRC 720 (8)	PV modules and inverters (9)
Heating only	•	–	•	◦	◦	–	•	•
Heating and compact domestic hot water generation	•	•	–	◦	◦	–	•	•
Heating and domestic hot water generation	•	–	•	◦	◦	•	•	•
Heating, domestic hot water generation and cooling	•	–	•	•	–	•	•	•
Heat pump cascade (heating)	•	–	•	–	•	–	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

11.2 Product description for aroTHERM ..5/5 AS



Fig 491: aroTHERM ..5/5 AS

11.2.1 Special features

- Compact and space-saving refrigerant-split heat pump
- Compressor with inverter technology
- Bivalent alternative or parallel operation possible
- triVAL control process in combination with **sensoCOMFORT** (cost-optimised operation based on energy prices entered)
- Increased living comfort in the summer thanks to integrated active cooling function (optional)
- Simple transport and straightforward set-up

11.2.2 Product equipment

- Integrated green energy utilisation indicator
- Electronic expansion valve
- Noise reduction function

11.2.3 Potential applications

The aroTHERM ..5/5 AS heat pump is a compact and space-saving air-to-water heat pump with split construction for installation outside the building.

It is especially suited to being used in heating installations with low flow temperatures (ideally 30 °C to 35 °C), e.g. under-floor heating systems.

The heat pump can be used equally well in new-build and renovated properties (as defined by the German energy conservation ordinance - EnEV). The heat pump can simply be retrofitted in existing heating installations with a gas-fired wall-hung boiler and eBUS interface or other heat generators.

The aroTHERM ..5/5 AS heat pump only uses the outdoor air as its heat source and can also provide an active cooling function in the summer.

In order to use the active cooling function, the heating system must be prepared on-site.

Note

The coding resistor accessory (order no. 0020269259) is required for the activation.



Update 10 New efficiency class (EN14511:2018)

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Domestic hot water generation energy efficiency class	Order no.
VWL 35/5 AS (230 V)	A+++ / A++ (A+++ to D)	A (A+ to F)	0020273178 with uniTOWER
	A+++ / A++ (A+++ to D)	-	0020273183 with hydraulic station
VWL 55/5 AS (230 V)	A++ / A++ (A+++ to D)	A (A+ to F)	0020273179 with uniTOWER
	A++ / A++ (A+++ to D)	-	0020273184 with hydraulic station
VWL 75/5 AS (230 V)	A++ / A++ (A+++ to D)	A (A+ to F)	0020273180 with uniTOWER
	A++ / A++ (A+++ to D)	-	0020273185 with hydraulic station
VWL 105/5 AS (230 V)	A+++ / A++ (A+++ to D)	A (A+ to F)	### with uniTOWER
	A+++ / A++ (A+++ to D)	-	### with hydraulic station
VWL 105/5 AS (400 V)	A+++ / A++ (A+++ to D)	A (A+ to F)	0020273181 with uniTOWER
	A+++ / A++ (A+++ to D)	-	0020273186 with hydraulic station
VWL 125/5 AS (230 V)	A++ / A++ (A+++ to D)	A (A+ to F)	### with uniTOWER
	A++ / A++ (A+++ to D)	-	### with hydraulic station
VWL 125/5 AS (400 V)	A++ / A++ (A+++ to D)	A (A+ to F)	0020273182 with uniTOWER
	A++ / A++ (A+++ to D)	-	0020273187 with hydraulic station

11.3 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.



Note

The performance data also covers the noise reduction mode (unit operates with reduced noise emissions).



Note

The performance data is determined using a special test method. You can find information about this from the manufacturer of the product by stating „Performance data test method“.



Technical data - General

	VWL 35/5 AS 230V (S2)	VWL 55/5 AS 230V (S2)	VWL 75/5 AS 230V (S2)	VWL 105/5 AS 230V (S2)	VWL 105/5 AS (S2)	VWL 125/5 AS 230V (S2)	VWL 125/5 AS (S2)
Width	1,100 mm	1,100 mm	1,100 mm	1,100 mm	1,100 mm	1,100 mm	1,100 mm
Height	765 mm	765 mm	965 mm	1,565 mm	1,565 mm	1,565 mm	1,565 mm
Depth	450 mm	450 mm	450 mm	450 mm	450 mm	450 mm	450 mm
Weight, with packaging	111.4 kg	111.4 kg	126 kg	187 kg	206 kg	187 kg	206 kg
Weight, ready for operation	92.2 kg	92.2 kg	106.3 kg	162.5 kg	181.5 kg	162.5 kg	181.5 kg
Rated voltage	230 V (+10%/-15%), 50 Hz, 1~/N/ PE	230 V (+10%/-15%), 50 Hz, 1~/N/ PE	230 V (+10%/-15%), 50 Hz, 1~/N/ PE	230 V (+10%/-15%), 50 Hz, 1~/N/ PE	400 V (+10%/-15%), 50 Hz, 3~/N/ PE	230 V (+10%/-15%), 50 Hz, 1~/N/ PE	400 V (+10%/-15%), 50 Hz, 3~/N/ PE
Rated power, maximum	2.96 kW	2.96 kW	3.84 kW	4.90 kW	7.60 kW	4.90 kW	7.60 kW
Rated current, maximum	11.5 A	11.5 A	14.9 A	21.3 A	13.5 A	21.3 A	13.5 A
In-rush current	11.5 A	11.5 A	14.9 A	21.3 A	13.5 A	21.3 A	13.5 A
IP rating	IP 15 B	IP 15 B	IP 15 B	IP 15 B	IP 15 B	IP 15 B	IP 15 B
Fuse type	Characteristic C, slow-blow, single-pole switching	Characteristic C, slow-blow, single-pole switching	Characteristic C, slow-blow, single-pole switching	Characteristic C, slow-blow, single-pole switching	Characteristic C, slow-blow, three-pole switching	Characteristic C, slow-blow, single-pole switching	Characteristic C, slow-blow, three-pole switching
Overvoltage category	II	II	II	II	II	II	II
Fan, power consumption	50 W	50 W	50 W	50 W	50 W	50 W	50 W
Fan, quantity	1	1	1	2	2	2	2
Fan, rotational speed, maximum	620 rpm	620 rpm	620 rpm	680 rpm	680 rpm	680 rpm	680 rpm
Fan, air flow, maximum	2,300 m³/h	2,300 m³/h	2,300 m³/h	5,100 m³/h	5,100 m³/h	5,100 m³/h	5,100 m³/h

Technical data - Refrigerant circuit

	VWL 35/5 AS 230V (S2)	VWL 55/5 AS 230V (S2)	VWL 75/5 AS 230V (S2)	VWL 105/5 AS 230V (S2)	VWL 105/5 AS (S2)	VWL 125/5 AS 230V (S2)	VWL 125/5 AS (S2)
Material, refrigerant pipe	Copper	Copper	Copper	Copper	Copper	Copper	Copper
Basic length, refrigerant pipe, minimum	3 m	3 m	3 m	3 m	3 m	3 m	3 m
Basic length of the refrigerant pipe, maximum, outdoor unit above indoor unit	40 m	40 m	40 m	40 m	40 m	40 m	40 m
Permissible height difference, outdoor unit above the indoor unit	30 m	30 m	30 m	30 m	30 m	30 m	30 m

Update 10
New technical data (EN14511:2018)

	VWL 35/5 AS 230V (S2)	VWL 55/5 AS 230V (S2)	VWL 75/5 AS 230V (S2)	VWL 105/5 AS 230V (S2)	VWL 105/5 AS (S2)	VWL 125/5 AS 230V (S2)	VWL 125/5 AS (S2)
Basic length of the refrigerant pipe, maximum, indoor unit above outdoor unit	25 m	25 m	25 m	25 m	25 m	25 m	25 m
Permissible height difference, indoor unit above the outdoor unit	10 m	10 m	10 m	10 m	10 m	10 m	10 m
Connection technology, refrigerant pipe	Flare connection	Flare connection	Flare connection	Flare connection	Flare connection	Flare connection	Flare connection
Outer diameter, hot gas pipe	1/2 " (12.7 mm)	1/2 " (12.7 mm)	5/8" (15.875 mm)	5/8" (15.875 mm)	5/8" (15.875 mm)	5/8" (15.875 mm)	5/8" (15.875 mm)
Outer diameter, liquid pipe	1/4" (6.35 mm)	1/4" (6.35 mm)	3/8" (9.575 mm)	3/8" (9.575 mm)	3/8" (9.575 mm)	3/8" (9.575 mm)	3/8" (9.575 mm)
Minimum wall thickness, hot gas pipe	0.8 mm	0.8 mm	0.95 mm	0.95 mm	0.95 mm	0.95 mm	0.95 mm
Minimum wall thickness, liquid pipe	0.8 mm	0.8 mm	0.8 mm	0.8 mm	0.8 mm	0.8 mm	0.8 mm
Refrigerant, type	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant, fill quantity	1.50 kg	1.50 kg	2.39 kg	3.60 kg	3.60 kg	3.60 kg	3.60 kg
Refrigerant, Global Warming Potential (GWP)	2088	2088	2088	2088	2088	2088	2088
Refrigerant, CO ₂ equivalent	3.13 t	3.13 t	4.99 t	7.52 t	7.52 t	7.52 t	7.52 t
Permissible operating pressure, maximum	4.15 MPa	4.15 MPa	4.15 MPa	4.15 MPa	4.15 MPa	4.15 MPa	4.15 MPa
Compressor, type	Rotary piston	Rotary piston	Rotary piston	Rotary piston	Rotary piston	Rotary piston	Rotary piston
Compressor, oil type	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)	Specific polyvinyl ether (PVE)
Compressor, control	Electronic	Electronic	Electronic	Electronic	Electronic	Electronic	Electronic

Technical data - Application limits, heating mode

	VWL 35/5 AS 230V (S2)	VWL 55/5 AS 230V (S2)	VWL 75/5 AS 230V (S2)	VWL 105/5 AS 230V (S2)	VWL 105/5 AS (S2)	VWL 125/5 AS 230V (S2)	VWL 125/5 AS (S2)
Air temperature, minimum	-20 °C	-20 °C	-20 °C	-20 °C	-20 °C	-20 °C	-20 °C
Air temperature, maximum	20 °C	20 °C	20 °C	20 °C	20 °C	20 °C	20 °C
Air temperature, minimum, during domestic hot water generation	-20 °C	-20 °C	-20 °C	-20 °C	-20 °C	-20 °C	-20 °C
Air temperature, maximum, during domestic hot water generation	43 °C	43 °C	43 °C	43 °C	43 °C	43 °C	43 °C

Technical data - Application limits, cooling mode

Validity: Product with cooling mode

	VWL 35/5 AS 230V (S2)	VWL 55/5 AS 230V (S2)	VWL 75/5 AS 230V (S2)	VWL 105/5 AS 230V (S2)	VWL 105/5 AS (S2)	VWL 125/5 AS 230V (S2)	VWL 125/5 AS (S2)
Air temperature, minimum	15 °C	15 °C	15 °C	15 °C	15 °C	15 °C	15 °C
Air temperature, maximum	46 °C	46 °C	46 °C	46 °C	46 °C	46 °C	46 °C

Update 10
New technical data (EN14511:2018)

Technical data - Power, heating mode

	VWL 35/5 AS 230V (S2)	VWL 55/5 AS 230V (S2)	VWL 75/5 AS 230V (S2)	VWL 105/5 AS 230V (S2)	VWL 105/5 AS (S2)	VWL 125/5 AS 230V (S2)	VWL 125/5 AS (S2)
Heat output, A2/W35	2.46 kW	3.37 kW	4.51 kW	8.20 kW	8.20 kW	8.23 kW	8.23 kW
Coefficient of performance, COP, EN 14511, A2/W35	3.75	3.67	3.68	3.87	3.87	3.64	3.64
Power consumption, effective, A2/W35	0.66 kW	0.92 kW	1.23 kW	2.12 kW	2.12 kW	2.26 kW	2.26 kW
Power consumption, A2/W35	3.20 A	4.40 A	5.50 A	10.20 A	3.30 A	10.50 A	3.40 A
Heat output, A7/W35	3.13 kW	4.42 kW	5.78 kW	9.70 kW	9.70 kW	10.25 kW	10.25 kW
Coefficient of performance, COP, EN 14511, A7/W35	4.89	4.68	4.58	4.57	4.57	4.54	4.54
Power consumption, effective, A7/W35	0.64 kW	0.95 kW	1.26 kW	2.12 kW	2.12 kW	2.26 kW	2.26 kW
Power consumption, A7/W35	3.20 A	4.60 A	5.80 A	9.90 A	3.20 A	10.50 A	3.50 A
Heat output, A7/W45	3.05 kW	4.04 kW	5.47 kW	9.06 kW	9.06 kW	9.60 kW	9.60 kW
Coefficient of performance, COP, EN 14511, A7/W45	3.54	3.49	3.57	3.49	3.49	3.49	3.49
Power consumption, effective, A7/W45	0.86 kW	1.16 kW	1.53 kW	2.60 kW	2.60 kW	2.75 kW	2.75 kW
Power consumption, A7/W45	4.10 A	5.40 A	6.80 A	12.00 A	4.10 A	12.70 A	4.30 A
Heat output, A7/W55	2.73 kW	3.69 kW	4.95 kW	10.35 kW	10.35 kW	10.90 kW	10.90 kW
Coefficient of performance, COP, EN 14511, A7/W55	2.62	2.67	2.69	2.77	2.77	2.77	2.77
Power consumption, effective, A7/W55	1.05 kW	1.38 kW	1.84 kW	3.74 kW	3.74 kW	3.94 kW	3.94 kW
Power consumption, A7/W55	4.90 A	6.30 A	8.00 A	17.00 A	5.80 A	18.30 A	6.20 A
Heat output, A-7/W35	3.56 kW	4.88 kW	6.68 kW	10.15 kW	10.15 kW	11.80 kW	11.80 kW
Coefficient of performance, COP, EN 14511, A-7/W35	3.11	2.67	2.64	2.78	2.78	2.45	2.45
Power consumption, effective, A-7/W35	1.15 kW	1.83 kW	2.53 kW	3.65 kW	3.65 kW	4.81 kW	4.81 kW
Power consumption, A-7/W35	5.40 A	8.60 A	11.80 A	17.40 A	5.70 A	22.70 A	7.50 A
Heat output, A-7/W35, noise reduction mode 40 %	3.20 kW	3.20 kW	4.20 kW	7.50 kW	7.50 kW	7.50 kW	7.50 kW
Coefficient of performance, COP, EN 14511, A-7/W35, noise reduction mode 40 %	3.10	3.10	3.10	2.90	2.90	2.90	2.90
Heat output, A-7/W35, noise reduction mode 50%	2.70 kW	2.70 kW	3.50 kW	6.30 kW	6.30 kW	6.30 kW	6.30 kW
Coefficient of performance, COP, EN 14511, A-7/W35, noise reduction mode 50%	3.20	3.20	3.20	3.00	3.00	3.00	3.00
Heat output, A-7/W35, noise reduction mode 60%	2.20 kW	2.20 kW	2.80 kW	5.10 kW	5.10 kW	5.10 kW	5.10 kW
Coefficient of performance, COP, EN 14511, A-7/W35, noise reduction mode 60%	3.20	3.20	3.20	2.90	2.90	2.90	2.90

Update 10
New technical data (EN14511:2018)

Technical data - Power, cooling mode

Validity: Product with cooling mode

	VWL 35/5 AS 230V (S2)	VWL 55/5 AS 230V (S2)	VWL 75/5 AS 230V (S2)	VWL 105/5 AS 230V (S2)	VWL 105/5 AS (S2)	VWL 125/5 AS 230V (S2)	VWL 125/5 AS (S2)
Cooling output, A35/W18	4.83 kW	4.83 kW	6.30 kW	12.78 kW	12.78 kW	12.78 kW	12.78 kW
Energy efficiency ratio, EER, EN 14511, A35/W18	3.76	3.76	3.58	3.28	3.28	3.28	3.28
Power consumption, effective, A35/W18	1.29 kW	1.29 kW	1.76 kW	3.90 kW	3.90 kW	3.90 kW	3.90 kW
Power consumption, A35/W18	6.00 A	6.00 A	7.90 A	17.40 A	5.90 A	17.40 A	5.90 A
Cooling output, A35/W7	3.12 kW	3.12 kW	6.17 kW	8.69 kW	8.69 kW	8.69 kW	8.69 kW
Energy efficiency ratio, EER, EN 14511, A35/W7	2.69	2.69	2.32	2.49	2.49	2.49	2.49
Power consumption, effective, A35/W7	1.16 kW	1.16 kW	2.66 kW	3.49 kW	3.49 kW	3.49 kW	3.49 kW
Power consumption, A35/W7	5.40 A	5.40 A	7.30 A	15.50 A	5.10 A	15.50 A	5.10 A

Technical data - Noise emissions, heating mode

	VWL 35/5 AS 230V (S2)	VWL 55/5 AS 230V (S2)	VWL 75/5 AS 230V (S2)	VWL 105/5 AS 230V (S2)	VWL 105/5 AS (S2)	VWL 125/5 AS 230V (S2)	VWL 125/5 AS (S2)
Sound power, EN 12102, EN ISO 9614-1, A7/W35	51 dB(A)	53 dB(A)	54 dB(A)	58 dB(A)	58 dB(A)	59 dB(A)	58 dB(A)
Sound power, EN 12102, EN ISO 9614-1, A7/W45	51 dB(A)	53 dB(A)	55 dB(A)	59 dB(A)	58 dB(A)	59 dB(A)	59 dB(A)
Sound power, EN 12102, EN ISO 9614-1, A7/W55	53 dB(A)	54 dB(A)	54 dB(A)	60 dB(A)	60 dB(A)	60 dB(A)	60 dB(A)
Sound power, EN 12102, EN ISO 9614-1, A-7/W35, noise reduction mode 40%	52 dB(A)	52 dB(A)	52 dB(A)	57 dB(A)	59 dB(A)	57 dB(A)	59 dB(A)
Sound power, EN 12102, EN ISO 9614-1, A-7/W35, noise reduction mode 50%	50 dB(A)	50 dB(A)	50 dB(A)	56 dB(A)	57 dB(A)	56 dB(A)	57 dB(A)
Sound power, EN 12102, EN ISO 9614-1, A-7/W35, noise reduction mode 60%	46 dB(A)	46 dB(A)	48 dB(A)	53 dB(A)	55 dB(A)	53 dB(A)	55 dB(A)

Technical data - Noise emissions, cooling mode

Validity: Product with cooling mode

	VWL 35/5 AS 230V (S2)	VWL 55/5 AS 230V (S2)	VWL 75/5 AS 230V (S2)	VWL 105/5 AS 230V (S2)	VWL 105/5 AS (S2)	VWL 125/5 AS 230V (S2)	VWL 125/5 AS (S2)
Sound power, EN 12102, EN ISO 9614-1, A35/W18	54 dB(A)	54 dB(A)	56 dB(A)	59 dB(A)	59 dB(A)	59 dB(A)	59 dB(A)
Sound power, EN 12102, EN ISO 9614-1, A35/W7	54 dB(A)	54 dB(A)	55 dB(A)	58 dB(A)	59 dB(A)	58 dB(A)	59 dB(A)

11.4 Sound power evaluation level

For the aroTHERM split heat pump, planning should take account of the following sound power levels (heating mode).

VWL 35/5 AS and VWL 55/5 AS evaluation level

VWL 35/5 AS 230 V (S2), VWL 55/5 AS 230 V (S2)				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	55	0	3	47	40	37.5	35	33	31.4	28.9	27	25.4	23.5	0
			6	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	
			9	53	47	43.5	41	39	37.4	34.9	33	31.4	29.5	
Set-back (40% reduced compressor output)	52	0	3	44	38	34.5	32	30	28.4	25.9	24	22.4	20.5	-
			6	47	41	37.5	35	33	31.4	28.9	27	25.4	23.5	
			9	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	
Set-back (50% reduced compressor output)	50	0	3	42	36	32.5	30	28	26.4	23.9	22	20.4	18.5	-
			6	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	
			9	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	
Set-back (60% reduced compressor output)	46	0	3	38	32	28.5	26	24	22.4	19.9	18	16.4	14.5	-
			6	41	35	31.5	29	27	25.4	22.9	21	19.4	17.5	
			9	44	38	34.5	32	30	28.4	25.9	24	22.4	20.5	

Output adjustment for the noise reduction function

Reduction of the compressor output by:	Sound power in accordance with EN 12102 [dB(A)]	Max. compressor speed [rpm]	Max. fan speed [rpm]	Heat output for A-7/W35 in accordance with DIN EN 14511 [kW]	COP for A-7/W35 in accordance with DIN EN 14511
40%	51.8	72	507	3.2	3.1
50%	49.6	60	478	2.7	3.2
60%	46.4	50	450	2.2	3.2

VWL 75/5 AS evaluation level

VWL 75/5 AS 230 V (S2)				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	56	0	3	48	41	38.5	36	34	32.4	29.9	28	26.4	24.5	0
			6	51	45	41.5	39	37	35.4	32.9	31	29.4	27.5	
			9	54	48	44.5	42	40	38.4	35.9	34	32.4	30.5	
Set-back (40% reduced compressor output)	52	0	3	44	38	34.5	32	30	28.4	25.9	24	22.4	20.5	-
			6	47	41	37.5	35	33	31.4	28.9	27	25.4	23.5	
			9	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	
Set-back (50% reduced compressor output)	50	0	3	42	36	32.5	30	28	26.4	23.9	22	20.4	18.5	-
			6	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	
			9	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	
Set-back (60% reduced compressor output)	48	0	3	40	34	30.5	28	26	24.4	21.9	20	18.4	16.5	-
			6	43	37	33.5	31	29	27.4	24.9	23	21.4	19.5	
			9	46	40	36.5	34	32	30.4	27.9	26	24.4	22.5	

Output adjustment for the noise reduction function

Reduction of the compressor output by:	Sound power in accordance with EN 12102 [dB(A)]	Max. compressor speed [rpm]	Max. fan speed [rpm]	Heat output for A-7/W35 in accordance with DIN EN 14511 [kW]	COP for A-7/W35 in accordance with DIN EN 14511
40%	52.0	72	507	4.2	3.1
50%	50.1	60	478	3.5	3.2
60%	48.4	50	450	2.8	3.2

VWL 105/5 AS and VWL 125/5 AS (230 V) evaluation level

VWL 105/5 AS 230 V (S2) and VWL 125/5 AS 230 V (S2)				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	61	0	3	53	47	43.5	41	39	37.4	34.9	33	31.4	29.5	0
			6	56	50	46.5	44	42	40.4	37.9	36	34.4	32.5	
			9	59	53	49.5	47	45	43.4	40.9	39	37.4	35.5	
Set-back (40% reduced compressor output)	57	0	3	49	43	39.5	37	35	33.4	30.9	29	27.4	25.5	-
			6	52	46	42.5	40	38	36.4	33.9	32	30.4	28.5	
			9	55	49	45.5	43	41	39.4	36.9	35	33.4	31.5	
Set-back (50% reduced compressor output)	56	0	3	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	-
			6	51	45	41.5	39	37	35.4	32.9	31	29.4	27.5	
			9	54	48	44.5	42	40	38.4	35.9	34	32.4	30.5	
Set-back (60% reduced compressor output)	53	0	3	45	39	35.5	33	31	29.4	26.9	25	23.4	21.5	-
			6	48	42	38.5	36	34	32.4	29.9	28	26.4	24.5	
			9	51	45	41.5	39	37	35.4	32.9	31	29.4	27.5	

Output adjustment for the noise reduction function

Reduction of the compressor output by:	Sound power in accordance with EN 12102 [dB(A)]	Max. compressor speed [rpm]	Max. fan speed [rpm] VWL 105/5 AS 230 V / VWL 125/5 AS 230 V	Heat output for A-7/W35 in accordance with DIN EN 14511 [kW]	COP for A-7/W35 in accordance with DIN EN 14511
40%	56.7	72	507 / 527	7.6	3.0
50%	56.3	60	468 / 488	6.2	3.0
60%	53.2	50	430 / 450	5.2	3.0

VWL 105/5 AS and VWL 125/5 AS (400 V) evaluation level

VWL 105/5 AS 400 V (S2) and VWL 125/5 AS 400 V (S2)				Distance from heat source in m										K _R
	Sound power in dB(A)	K _T	K _O	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	61	3	3	56	50	46.5	44	42	40.4	37.9	36	34.4	32.5	0
			6	59	53	49.5	47	45	43.4	40.9	39	37.4	35.5	
			9	62	56	52.5	50	48	46.4	43.9	42	40.4	38.5	
Set-back (40% reduced compressor output)	59	3	3	54	48	44.5	42	40	38.4	35.9	34	32.4	30.5	-
			6	57	51	47.5	45	33	41.4	39.9	37	35.4	33.5	
			9	60	54	50.5	48	46	44.4	41.9	40	38.4	36.5	
Set-back (50% reduced compressor output)	57	3	3	52	46	42.5	40	38	36.4	33.9	32	30.4	28.5	-
			6	55	49	45.5	44	41	39.4	36.9	35	33.4	31.5	
			9	58	52	48.5	46	44	42.4	39.9	38	36.4	34.5	
Set-back (60% reduced compressor output)	55	3	3	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	-
			6	53	47	43.5	41	39	37.4	34.9	33	31.4	29.5	
			9	56	50	46.5	44	42	40.4	37.9	36	34.4	32.5	

Output adjustment for the noise reduction function

Reduction of the compressor output by:	Sound power in accordance with EN 12102 [dB(A)]	Max. compressor speed [rpm]	Max. fan speed [rpm] VWL 105/5 AS / VWL 125/5 AS	Heat output for A-7/W35 in accordance with DIN EN 14511 [kW]	COP for A-7/W35 in accordance with DIN EN 14511
40%	58.6	72	507 / 527	7.6	3.0
50%	57.1	60	468 / 488	6.2	3.0
60%	55.2	50	430 / 450	5.2	3.0

11.5 Application limits

The product works between a minimum and maximum outdoor temperature. These outdoor temperatures define the application limits for the heating mode, domestic hot water mode and cooling mode. See Technical data . Operating outside of the application limits leads to the product switching off.

11.5.1 Heating mode

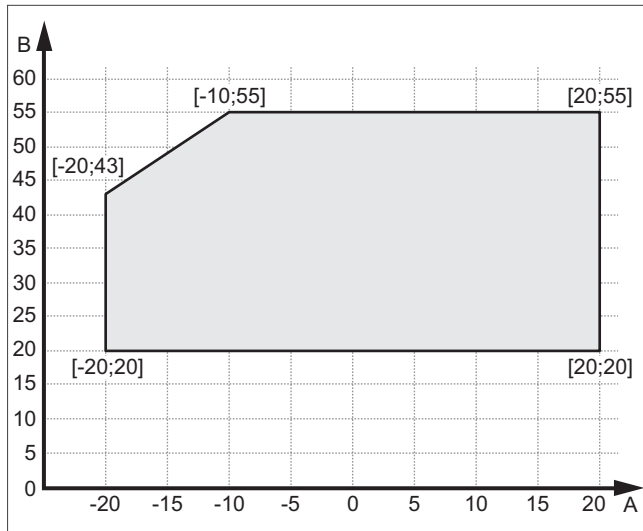


Fig 492: Application limits, heating mode

- A Outdoor temperature
- B Heating water temperature

11.5.2 DHW mode

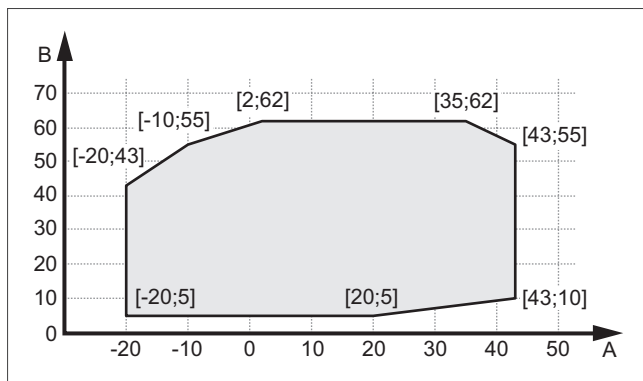


Fig 493: Application limits, domestic hot water mode

- A Outdoor temperature
- B Heating water temperature

11.5.3 Heat output

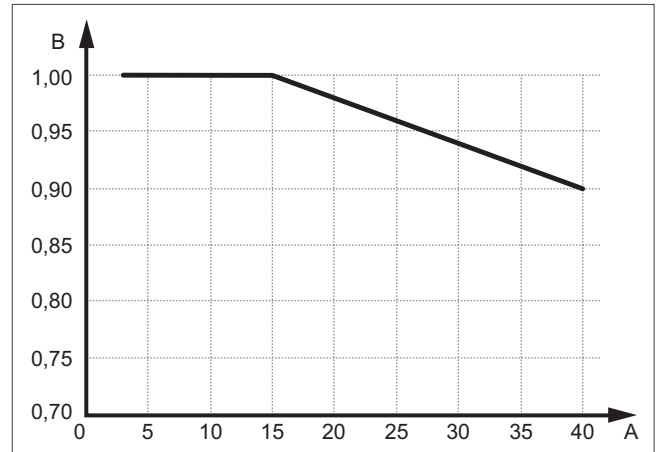


Fig 494: Application limits, heat output

- A Basic length of the refrigerant pipes in metres
- B Power factor

11.5.4 Cooling mode

Validity: Product with cooling mode

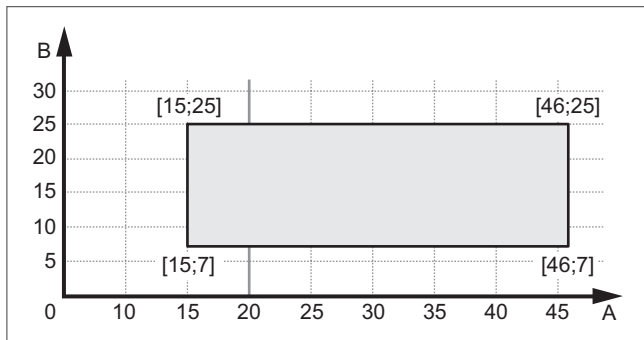


Fig 495: Application limits, cooling mode

- A Outdoor temperature
- B Heating water temperature

11.5.5 Cooling output

Validity: Product with cooling mode

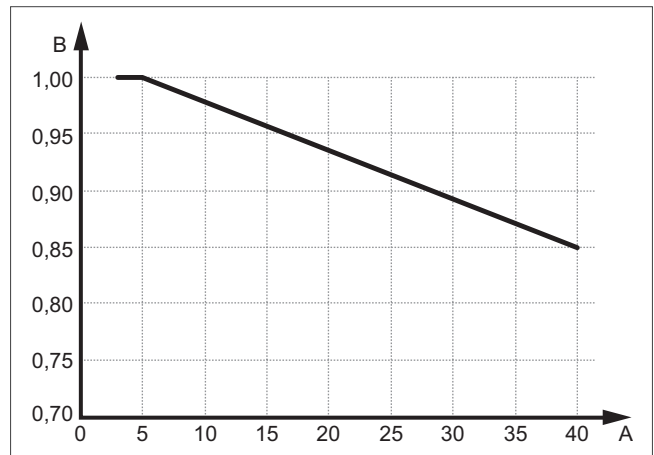


Fig 496: Application limits, cooling output

- A Basic length of the refrigerant pipes in metres
- B Power factor

11.6 Performance data - heating mode

11.6.1 Heating mode performance data for 3 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C	40% red		50% red		60% red				
	77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	45 rps	40 rps	30 rps
-20	2,00	2,01	2,05	2,03	2,01	2,00			
-15	2,40	2,41	2,44	2,42	2,40	2,39			
-12	2,65	2,66	2,68	2,66	2,64	2,63			
-7	3,16	3,18	3,23	3,20	3,18	3,17			
-2	3,41	3,43	3,51	3,49	3,48	3,47	3,43	3,38	3,21
0	3,50	3,53	3,61	3,60	3,59	3,58	3,55	3,51	3,36
2	3,59	3,63	3,73	3,73	3,72	3,72	3,69	3,67	3,56
7	4,42	4,49	4,70	4,74	4,76	4,77	4,79	4,79	4,74
10	4,84	4,94	5,21	5,26	5,28	5,30	5,33	5,34	5,31
12	5,14	5,25	5,56	5,61	5,65	5,67	5,72	5,75	5,75
15	5,59	5,74	6,14	6,23	6,27	6,30	6,37	6,42	6,46
20	6,51	6,69	7,21	7,32	7,38	7,42	7,52	7,61	7,74

°C	40% red		50% red		60% red				
	77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	45 rps	40 rps	30 rps
-20	2,14	1,98	1,61	1,47	1,39	1,33			
-15	2,65	2,46	2,01	1,84	1,73	1,66			
-12	2,99	2,78	2,27	2,07	1,96	1,88			
-7	3,65	3,40	2,79	2,56	2,42	2,32			
-2	3,93	3,68	3,04	2,79	2,64	2,54	2,28	2,02	1,47
0	4,00	3,74	3,09	2,84	2,69	2,59	2,33	2,06	1,51
2	4,05	3,80	3,15	2,90	2,74	2,64	2,38	2,11	1,55
7	5,57	5,22	4,35	4,02	3,81	3,67	3,31	2,94	2,17
10	5,80	5,45	4,55	4,20	3,99	3,84	3,47	3,08	2,29
12	5,95	5,59	4,68	4,32	4,10	3,96	3,58	3,19	2,37
15	6,16	5,80	4,89	4,52	4,30	4,14	3,75	3,34	2,48
20	6,54	6,17	5,20	4,81	4,57	4,41	3,99	3,56	2,64

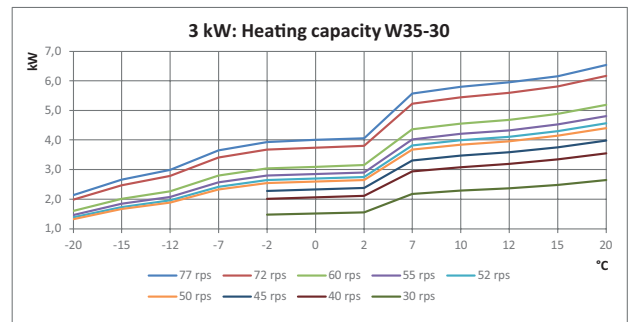
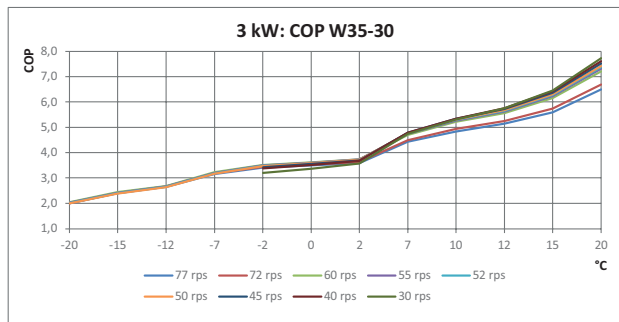


Fig 497: COP and heat output for A/W35-30

°C	40% red		50% red		60% red				
	77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	45 rps	40 rps	30 rps
-20									
-15	1,83	1,82	1,79	1,78	1,77	1,76			
-12	2,05	2,04	2,00	1,99	1,99	1,98			
-7	2,47	2,46	2,44	2,42	2,42	2,41	2,39	2,36	2,26
-2	2,69	2,69	2,69	2,68	2,67	2,67	2,65	2,61	2,51
0	2,75	2,76	2,77	2,77	2,77	2,76	2,74	2,72	2,61
2	2,83	2,84	2,87	2,86	2,86	2,86	2,84	2,83	2,75
7	3,34	3,38	3,49	3,51	3,52	3,52	3,53	3,53	3,46
10	3,59	3,64	3,77	3,80	3,81	3,81	3,83	3,83	3,78
12	3,75	3,81	3,97	4,00	4,02	4,03	4,04	4,05	4,00
15	4,01	4,08	4,27	4,31	4,33	4,34	4,36	4,37	4,33
20	4,46	4,54	4,77	4,82	4,84	4,85	4,88	4,90	4,88

°C	40% red		50% red		60% red				
	77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	45 rps	40 rps	30 rps
-20									
-15	2,27	2,11	1,72	1,57	1,48	1,42			
-12	2,63	2,44	2,00	1,82	1,72	1,65			
-7	3,33	3,10	2,55	2,33	2,20	2,12	1,90	1,67	1,22
-2	3,79	3,54	2,92	2,68	2,53	2,43	2,18	1,93	1,41
0	3,92	3,66	3,03	2,79	2,64	2,53	2,28	2,02	1,48
2	4,05	3,80	3,15	2,89	2,74	2,64	2,37	2,10	1,54
7	4,93	4,63	3,87	3,57	3,38	3,26	2,94	2,61	1,93
10	5,28	4,96	4,15	3,83	3,63	3,50	3,16	2,81	2,09
12	5,51	5,18	4,34	4,01	3,81	3,67	3,32	2,96	2,19
15	5,88	5,54	4,66	4,31	4,09	3,94	3,56	3,18	2,36
20	6,52	6,14	5,17	4,78	4,54	4,38	3,96	3,53	2,62

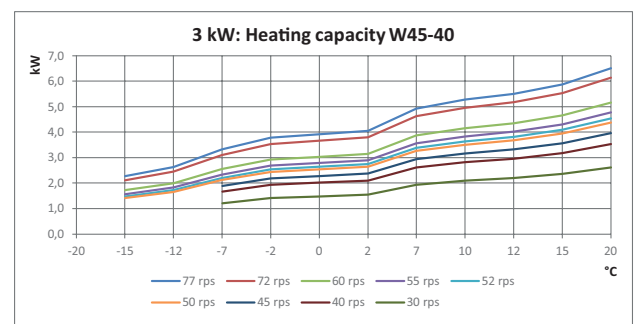
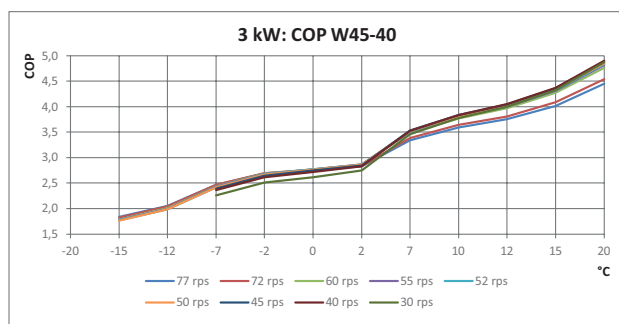


Fig 498: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

		40% red		50% red		60% red							
°C		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	45 rps	40 rps	30 rps			
-20													
-15													
-12													
-10		1,74	1,72	1,66	1,66	1,65	1,65						
-7		1,89	1,88	1,83	1,83	1,82	1,82						
-2		2,14	2,13	2,09	2,09	2,09	2,08						
0		2,22	2,22	2,20	2,20	2,19	2,19	2,17	2,15				
2		2,31	2,31	2,30	2,30	2,30	2,29	2,28	2,26				
7		2,49	2,51	2,55	2,56	2,57	2,57	2,57	2,56				
10		2,69	2,72	2,78	2,80	2,81	2,81	2,82	2,81				
12		2,82	2,86	2,95	2,97	2,98	2,98	2,98	2,98				
15		3,05	3,09	3,20	3,22	3,23	3,23	3,24	3,23				
20		3,43	3,48	3,62	3,64	3,66	3,66	3,67	3,67				

		40% red		50% red		60% red							
°C		77 rps	72 rps	60 rps	55 rps	52 rps	50 rps	45 rps	40 rps	30 rps			
-20													
-15													
-12													
-10		2,80	2,61	2,14	1,96	1,84	1,77						
-7		3,12	2,91	2,40	2,19	2,07	1,99						
-2		3,43	3,20	2,64	2,43	2,30	2,21						
0		3,57	3,34	2,77	2,55	2,41	2,32	2,08	1,85				
2		3,72	3,48	2,89	2,66	2,52	2,42	2,18	1,93				
7		4,44	4,17	3,48	3,21	3,05	2,93	2,65	2,35				
10		4,68	4,40	3,68	3,40	3,22	3,11	2,81	2,50				
12		4,83	4,55	3,82	3,53	3,35	3,23	2,92	2,60				
15		5,09	4,79	4,03	3,72	3,53	3,41	3,08	2,74				
20		5,49	5,17	4,35	4,02	3,82	3,68	3,33	2,97				

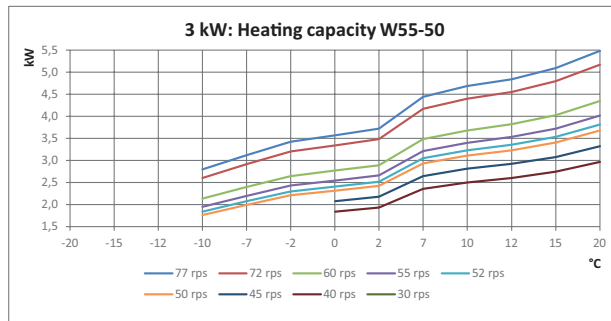
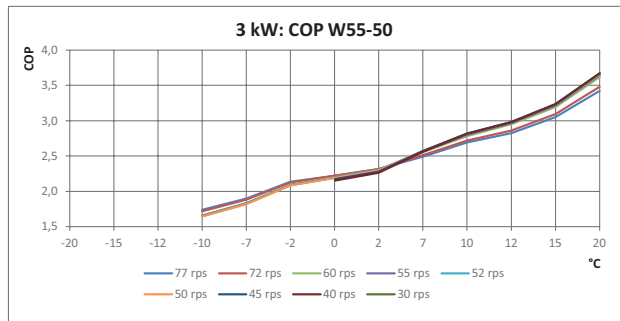


Fig 499: COP and heat output for A./W55-50

11.6.2 Heating mode performance data for 5 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20		2,19	2,20	2,22	2,24	2,26	2,30	2,26		
	-15	2,36	2,38	2,41	2,45	2,48	2,49	2,53	2,49		
	-12	2,45	2,49	2,53	2,59	2,61	2,63	2,66	2,62		
	-7	2,69	2,76	2,85	2,89	2,92	2,97	2,93			
	-2		3,08	3,21	3,27	3,31	3,39	3,36	3,27	3,11	
	0			3,21	3,36	3,42	3,47	3,55	3,53	3,46	3,32
	2			3,35	3,51	3,57	3,64	3,75	3,74	3,69	3,59
	7			4,04	4,28	4,40	4,51	4,72	4,78	4,82	4,77
	10			4,28	4,56	4,74	4,89	5,17	5,24	5,30	5,28
	12			4,46	4,79	4,98	5,15	5,46	5,55	5,66	5,66
	15			4,74	5,12	5,34	5,56	5,96	6,08	6,23	6,27
20			5,23	5,76	6,07	6,34	6,83	7,00	7,22	7,34	

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20		4,02	3,60	3,18	2,79	2,48	2,01	1,73		
	-15	4,78	4,36	3,93	3,49	3,08	2,74	2,23	1,93		
	-12	4,96	4,54	4,10	3,66	3,24	2,89	2,35	2,03		
	-7	4,86	4,42	3,97	3,53	3,16	2,59	2,24			
	-2		4,77	4,30	3,84	3,46	2,85	2,48	1,89	1,38	
	0			5,13	4,64	4,14	3,73	3,09	2,68	2,05	1,50
	2			5,51	4,98	4,46	4,02	3,34	2,90	2,23	1,63
	7			7,02	6,38	5,73	5,18	4,32	3,77	2,91	2,15
	10			7,32	6,66	6,01	5,45	4,56	3,99	3,08	2,28
	12			7,53	6,87	6,20	5,63	4,71	4,13	3,21	2,38
	15			7,85	7,17	6,48	5,91	4,97	4,37	3,40	2,52
20			8,40	7,72	7,01	6,40	5,39	4,74	3,68	2,74	

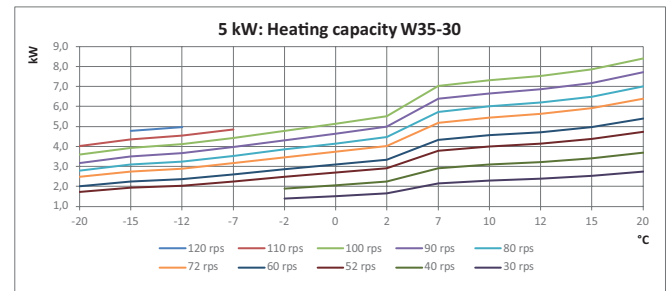
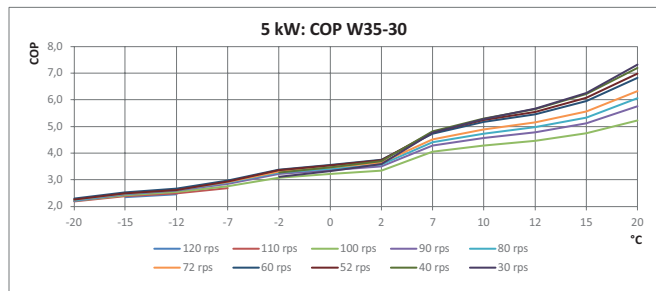


Fig 500: COP and heat output for A/W35-30

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-15		2,00	2,04	2,10	2,09	2,07	2,03	2,01		
	-12		2,09	2,15	2,23	2,21	2,20	2,16	2,14		
	-7		2,27	2,36	2,46	2,46	2,45	2,43	2,41	2,36	2,26
	-2		2,47	2,58	2,71	2,73	2,74	2,73	2,72	2,66	2,55
	0		2,49	2,61	2,75	2,77	2,78	2,80	2,79	2,74	2,64
	2		2,52	2,64	2,79	2,82	2,85	2,87	2,87	2,83	2,76
	7			3,06	3,25	3,31	3,37	3,48	3,51	3,51	3,45
	10			3,22	3,46	3,55	3,63	3,76	3,80	3,83	3,77
	12			3,35	3,61	3,71	3,80	3,96	4,01	4,04	3,99
	15			3,54	3,83	3,97	4,08	4,27	4,32	4,36	4,32
20			3,89	4,25	4,41	4,55	4,77	4,84	4,90	4,87	

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-15		3,75	3,38	3,00	2,65	2,36	1,93	1,65		
	-12		4,02	3,64	3,25	2,87	2,56	2,09	1,80		
	-7		4,55	4,14	3,71	3,30	2,95	2,42	2,09	1,59	1,15
	-2		4,99	4,56	4,11	3,67	3,30	2,73	2,36	1,80	1,31
	0		5,30	4,85	4,38	3,91	3,52	2,92	2,54	1,94	1,42
	2		5,62	5,15	4,66	4,17	3,77	3,12	2,72	2,08	1,53
	7			6,41	5,82	5,22	4,73	3,95	3,45	2,67	1,97
	10			6,67	6,09	5,49	4,98	4,17	3,65	2,83	2,09
	12			6,87	6,28	5,66	5,14	4,31	3,79	2,94	2,18
	15			7,16	6,55	5,93	5,41	4,55	3,99	3,10	2,30
20			7,67	7,04	6,39	5,82	4,90	4,31	3,35	2,48	

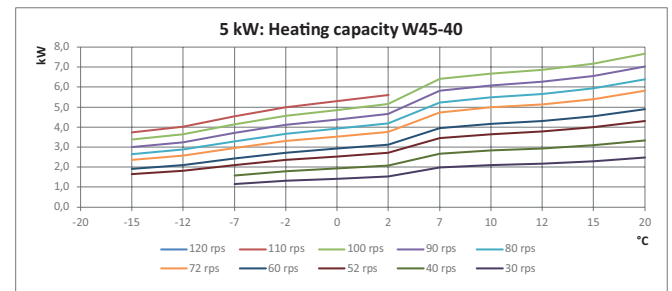
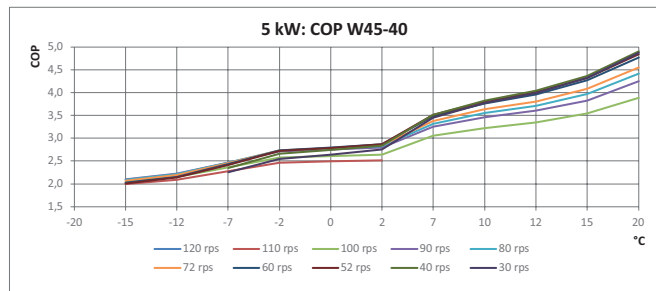


Fig 501: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-15										
	-12										
	-10			1,84	1,92	1,90	1,87	1,80	1,79		
	-7			2,01	2,11	2,09	2,06	2,01	2,00		
	-2			2,06	2,18	2,18	2,16	2,13	2,12		
	0			2,10	2,23	2,23	2,23	2,21	2,20	2,16	
	2			2,15	2,29	2,30	2,30	2,29	2,28	2,25	
	7			2,40	2,57	2,61	2,64	2,68	2,70	2,69	
	10			2,52	2,71	2,76	2,81	2,87	2,90	2,90	
	12			2,60	2,80	2,86	2,92	3,01	3,04	3,04	
15			2,72	2,95	3,03	3,10	3,20	3,23	3,24		
20			2,94	3,20	3,30	3,38	3,51	3,55	3,57		

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps	
°C	-20											
	-15											
	-12											
	-10						3,73	3,34	2,96	2,64	2,17	1,87
	-7						4,14	3,72	3,30	2,96	2,43	2,11
	-2						4,48	4,04	3,60	3,24	2,67	2,32
	0						4,68	4,23	3,78	3,41	2,83	2,46
	2						4,89	4,44	3,97	3,59	2,98	2,59
	7						5,72	5,20	4,68	4,24	3,54	3,10
	10						6,05	5,52	4,98	4,52	3,77	3,31
	12						6,28	5,73	5,17	4,70	3,95	3,46
15						6,62	6,07	5,49	5,00	4,20	3,69	
20						7,24	6,64	6,02	5,48	4,61	4,05	

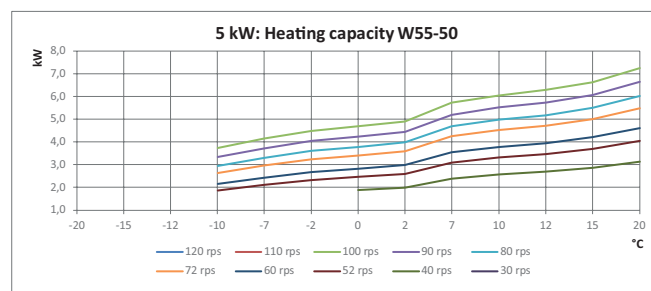
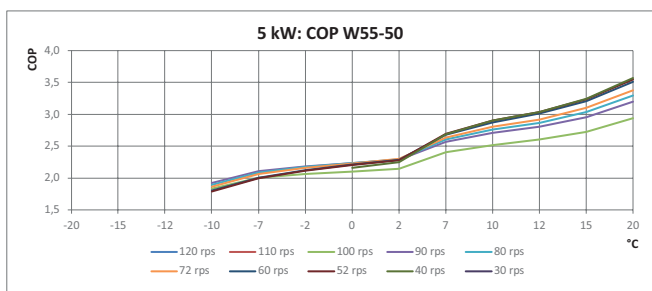


Fig 502: COP and heat output for A./W55-50

11.6.3 Heating mode performance data for 7 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20		2,24	2,29	2,35	2,41	2,48	2,62	2,58		
	-15	2,38	2,44	2,52	2,61	2,68	2,75	2,89	2,85		
	-12	2,49	2,56	2,65	2,76	2,84	2,90	3,04	3,00		
	-7	2,68	2,78	2,90	3,06	3,15	3,23	3,41	3,36		
	-2		2,82	2,97	3,17	3,28	3,38	3,58	3,55	3,45	3,27
	0			3,04	3,25	3,36	3,47	3,67	3,65	3,57	3,41
	2			3,10	3,32	3,44	3,56	3,79	3,78	3,71	3,55
	7				4,01	4,18	4,35	4,71	4,75	4,76	4,67
	10				4,16	4,38	4,60	5,02	5,08	5,10	5,04
	12				4,29	4,53	4,76	5,21	5,28	5,36	5,32
	15				4,47	4,72	5,00	5,54	5,65	5,75	5,75
20				4,81	5,14	5,46	6,09	6,23	6,40	6,46	

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20		4,70	4,26	3,82	3,38	3,03	2,50	2,15		
	-15	5,74	5,29	4,83	4,36	3,88	3,49	2,89	2,49		
	-12	6,11	5,64	5,16	4,68	4,17	3,76	3,12	2,69		
	-7	6,76	6,29	5,79	5,28	4,73	4,28	3,58	3,09		
	-2		6,83	6,33	5,80	5,22	4,74	3,99	3,46	2,63	1,90
	0			6,65	6,10	5,50	5,00	4,21	3,65	2,78	2,02
	2			6,97	6,40	5,78	5,26	4,44	3,86	2,95	2,15
	7				7,99	7,24	6,60	5,60	4,89	3,76	2,76
	10				8,40	7,64	7,00	5,96	5,20	4,00	2,95
	12				8,71	7,93	7,26	6,18	5,41	4,19	3,08
	15				9,15	8,34	7,67	6,57	5,76	4,46	3,29
20				9,95	9,12	8,39	7,20	6,31	4,89	3,61	

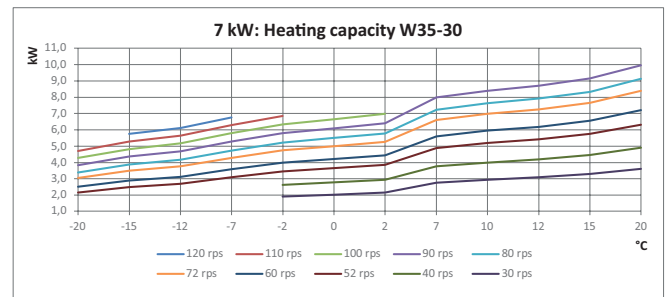
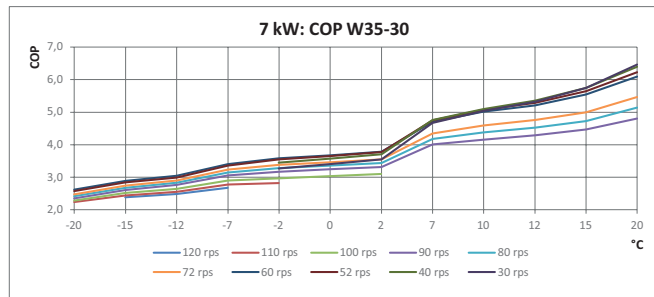


Fig 503: COP and heat output for A/W35-30

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps	
°C	-20											
	-15		1,99	2,07	2,18	2,20	2,22	2,26	2,24			
	-12		2,05	2,15	2,28	2,30	2,32	2,37	2,35			
	-7		2,18	2,30	2,46	2,50	2,53	2,60	2,58	2,52	2,42	
	-2		2,38	2,53	2,72	2,78	2,84	2,94	2,92	2,86	2,74	
	0		2,38	2,53	2,73	2,79	2,85	2,97	2,96	2,91	2,79	
	2		2,37	2,52	2,73	2,81	2,88	3,01	3,00	2,95	2,83	
	7			2,90	3,15	3,26	3,37	3,59	3,62	3,61	3,52	
	10				3,02	3,31	3,46	3,59	3,85	3,87	3,89	3,81
	12					3,43	3,59	3,73	4,02	4,06	4,08	4,00
	15					3,59	3,78	3,96	4,28	4,33	4,35	4,28
20					3,92	4,13	4,33	4,70	4,76	4,80	4,74	

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps	
°C	-20											
	-15		5,17	4,71	4,25	3,78	3,40	2,83	2,43			
	-12		5,47	5,01	4,54	4,05	3,65	3,04	2,61			
	-7		6,06	5,58	5,08	4,55	4,12	3,44	2,97	2,25	1,62	
	-2		6,56	6,07	5,56	5,01	4,54	3,82	3,31	2,51	1,82	
	0		6,81	6,31	5,79	5,21	4,74	3,99	3,47	2,64	1,92	
	2		7,05	6,54	6,01	5,43	4,94	4,17	3,63	2,77	2,02	
	7			8,20	7,56	6,84	6,25	5,32	4,64	3,57	2,62	
	10				8,51	7,89	7,18	6,57	5,59	4,88	3,77	2,78
	12					8,11	7,39	6,76	5,78	5,06	3,91	2,88
	15					8,43	7,71	7,09	6,07	5,32	4,11	3,03
20					9,02	8,26	7,59	6,51	5,71	4,41	3,25	

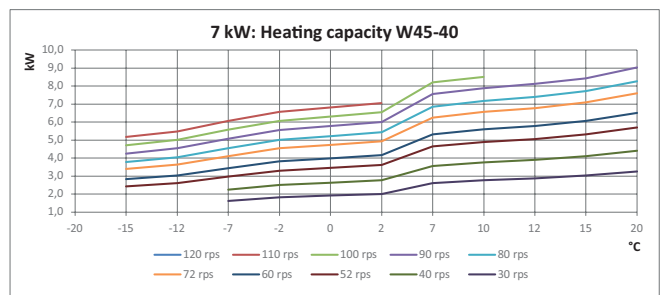
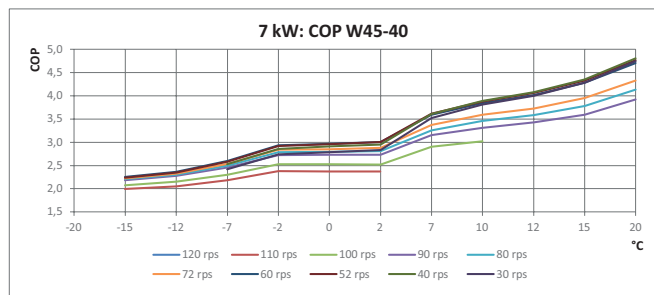


Fig 504: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-15										
	-12										
	-10			1,88	2,01	2,02	2,02	2,02	2,01		
	-7			2,00	2,15	2,16	2,17	2,19	2,18		
	-2			2,00	2,17	2,20	2,22	2,26	2,25		
	0			1,99	2,16	2,19	2,22	2,28	2,28	2,23	
	2			1,97	2,15	2,19	2,23	2,30	2,29	2,24	
	7			2,25	2,45	2,53	2,60	2,73	2,74	2,72	
	10			2,34	2,57	2,67	2,75	2,91	2,93	2,92	
	12			2,41	2,65	2,75	2,85	3,04	3,06	3,05	
15			2,50	2,77	2,90	3,01	3,22	3,24	3,24		
20			2,68	2,98	3,12	3,25	3,50	3,53	3,53		

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps		
°C	-20												
	-15												
	-12												
	-10						5,01	4,55	4,07	3,67	3,07	2,64	
	-7						5,54	5,05	4,52	4,09	3,43	2,96	
	-2						5,80	5,31	4,78	4,33	3,64	3,16	
	0						5,90	5,41	4,88	4,44	3,75	3,25	2,48
	2						6,01	5,53	4,99	4,55	3,84	3,34	2,55
	7						7,42	6,85	6,22	5,69	4,84	4,22	3,24
	10						7,87	7,29	6,63	6,07	5,16	4,52	3,49
	12						8,17	7,58	6,90	6,32	5,41	4,73	3,66
15						8,63	8,03	7,34	6,74	5,76	5,05	3,90	
20						9,47	8,82	8,07	7,41	6,35	5,56	4,30	

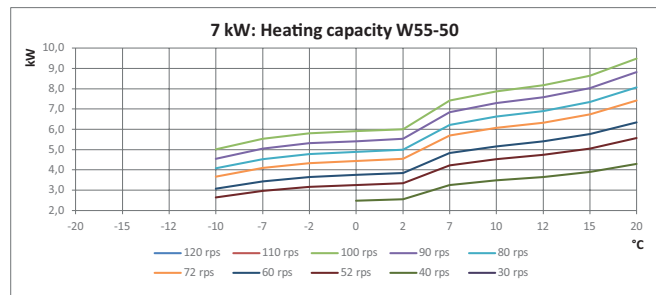
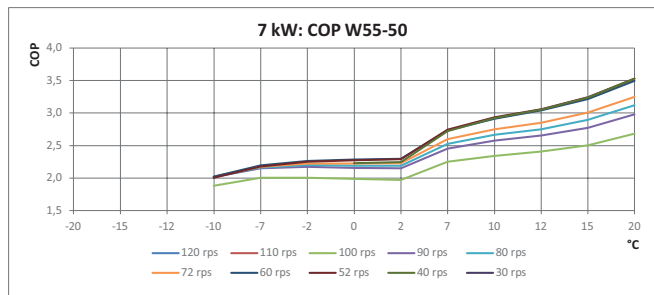


Fig 505: COP and heat output for A./W55-50

11.6.4 Heating mode performance data for 10 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C										
	90 rps	80 rps	75 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	50 rps	45 rps	40 rps	30 rps
-20	2,05	2,05	2,04	2,04	2,04	2,03	2,03			
-15	2,35	2,36	2,37	2,37	2,40	2,39	2,38			
-12	2,52	2,55	2,56	2,57	2,62	2,60	2,59			
-7	2,87	2,92	2,95	2,97	3,07	3,05	3,04			
-2	3,02	3,10	3,14	3,17	3,31	3,30	3,30	3,30	3,29	3,24
0	3,23	3,31	3,36	3,40	3,58	3,59	3,60	3,60	3,60	3,58
2	3,44	3,54	3,61	3,66	3,89	3,91	3,92	3,93	3,94	3,93
7		4,06	4,16	4,23	4,56	4,62	4,63	4,67	4,71	4,79
10		4,34	4,44	4,51	4,91	5,00	5,02	5,09	5,15	5,29
12		4,53	4,63	4,71	5,14	5,25	5,29	5,37	5,46	5,68
15		4,81	4,92	4,99	5,50	5,67	5,71	5,83	5,96	6,29
20		5,31	5,43	5,51	6,14	6,39	6,45	6,63	6,84	7,36

°C										
	90 rps	80 rps	75 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	50 rps	45 rps	40 rps	30 rps
-20	6,30	5,49	5,10	4,86	3,91	3,39	3,25			
-15	7,53	6,62	6,17	5,89	4,80	4,15	3,99			
-12	8,29	7,32	6,83	6,54	5,36	4,63	4,45			
-7	9,76	8,68	8,13	7,80	6,46	5,59	5,37			
-2	10,96	9,80	9,21	8,85	7,37	6,39	6,14	5,52	4,89	3,61
0	12,13	10,86	10,21	9,82	8,21	7,13	6,86	6,17	5,47	4,05
2	13,38	12,01	11,31	10,89	9,12	7,93	7,63	6,87	6,10	4,52
7		13,98	13,20	12,72	10,73	9,37	9,02	8,15	7,26	5,43
10		14,70	13,86	13,35	11,31	9,93	9,57	8,67	7,75	5,85
12		15,18	14,30	13,76	11,69	10,29	9,94	9,03	8,09	6,15
15		15,89	14,94	14,37	12,28	10,88	10,51	9,58	8,62	6,61
20		17,12	16,06	15,43	13,26	11,83	11,45	10,49	9,48	7,35

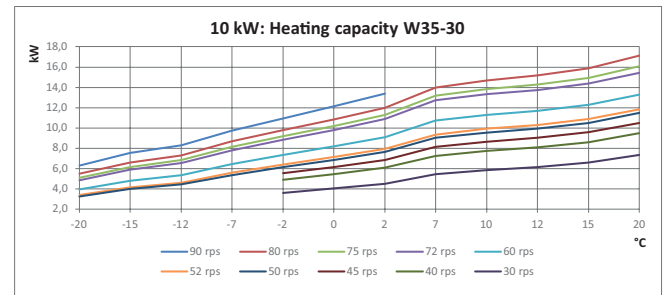
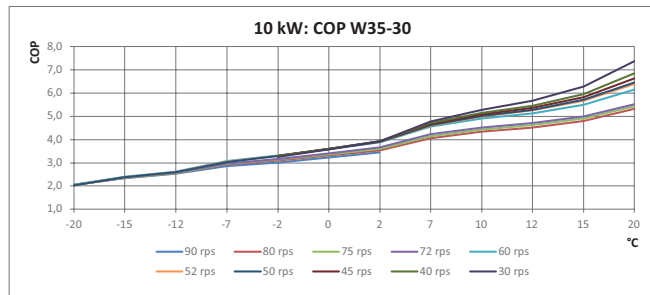


Fig 506: COP and heat output for A/W35-30

°C										
	90 rps	80 rps	75 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	50 rps	45 rps	40 rps	30 rps
-20										
-15	1,88	1,89	1,90	1,90	1,92	1,90	1,89			
-12	2,23	2,25	2,27	2,27	2,31	2,29	2,28			
-7	2,46	2,49	2,51	2,52	2,58	2,55	2,55	2,52	2,49	2,39
-2	2,49	2,54	2,57	2,59	2,67	2,66	2,65	2,64	2,63	2,57
0	2,62	2,69	2,72	2,74	2,86	2,86	2,86	2,85	2,84	2,79
2	2,77	2,84	2,88	2,91	3,06	3,06	3,06	3,06	3,05	3,01
7		3,16	3,22	3,26	3,46	3,49	3,50	3,51	3,52	3,53
10		3,38	3,45	3,49	3,73	3,77	3,78	3,82	3,85	3,90
12		3,53	3,60	3,64	3,91	3,98	3,99	4,03	4,08	4,17
15		3,76	3,83	3,88	4,19	4,28	4,30	4,37	4,43	4,58
20		4,16	4,23	4,28	4,66	4,80	4,84	4,93	5,04	5,29

°C										
	90 rps	80 rps	75 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	50 rps	45 rps	40 rps	30 rps
-20										
-15	6,95	6,11	5,69	5,44	4,43	3,81	3,66			
-12	8,84	7,82	7,30	6,99	5,74	4,95	4,75			
-7	10,13	8,99	8,41	8,06	6,65	5,74	5,52	4,94	4,36	3,19
-2	10,95	9,78	9,18	8,82	7,33	6,34	6,09	5,47	4,84	3,55
0	11,86	10,62	9,98	9,60	8,01	6,94	6,67	6,00	5,31	3,91
2	12,83	11,50	10,83	10,41	8,71	7,56	7,27	6,53	5,79	4,27
7		13,10	12,36	11,91	10,03	8,74	8,41	7,59	6,75	5,04
10		13,93	13,12	12,63	10,68	9,35	9,02	8,16	7,30	5,50
12		14,48	13,63	13,11	11,12	9,79	9,45	8,57	7,68	5,82
15		15,32	14,41	13,85	11,81	10,44	10,09	9,19	8,26	6,31
20		16,78	15,74	15,11	12,96	11,54	11,16	10,21	9,22	7,12

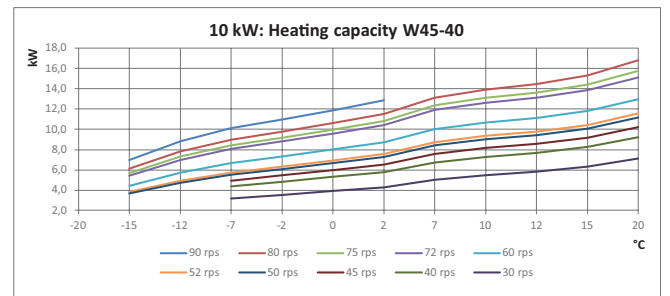
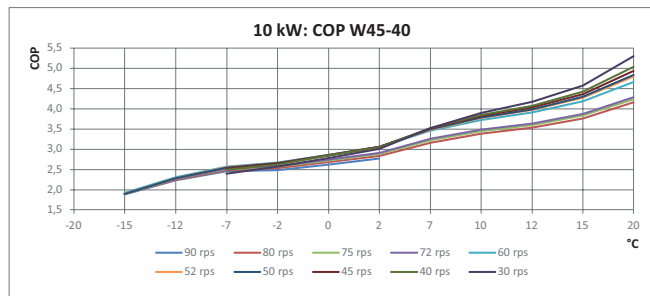


Fig 507: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

°C				40% red	50% red	60% red						
	90 rps	80 rps	75 rps	72 rps	60 rps	52 rps	50 rps	45 rps	40 rps	30 rps		
-20												
-15												
-12												
-10	1,66	1,67	1,68	1,68	1,70	1,67	1,67					
-7	1,98	2,00	2,01	2,02	2,05	2,02	2,01					
-2	2,21	2,24	2,27	2,28	2,34	2,32	2,31	2,30	2,27			
0	2,29	2,33	2,35	2,37	2,45	2,43	2,43	2,41	2,39			
2	2,35	2,40	2,43	2,45	2,55	2,54	2,53	2,52	2,50			
7		2,64	2,68	2,71	2,85	2,85	2,85	2,85	2,84			
10		2,81	2,86	2,89	3,05	3,07	3,08	3,09	3,10			
12		2,93	2,98	3,01	3,19	3,23	3,24	3,26	3,27			
15		3,13	3,18	3,21	3,41	3,47	3,48	3,51	3,54			
20		3,46	3,51	3,54	3,80	3,88	3,90	3,95	4,01			

°C				40% red	50% red	60% red						
	90 rps	80 rps	75 rps	72 rps	60 rps	52 rps	50 rps	45 rps	40 rps	30 rps		
-20												
-15												
-12												
-10	7,87	6,95	6,48	6,20	5,07	4,36	4,18					
-7	9,68	8,57	8,02	7,68	6,31	5,44	5,22					
-2	10,34	9,21	8,64	8,30	6,88	5,95	5,71	5,12	4,52			
0	11,22	10,03	9,42	9,05	7,52	6,51	6,25	5,61	4,96			
2	12,12	10,85	10,19	9,80	8,16	7,07	6,80	6,10	5,40			
7		12,50	11,78	11,34	9,50	8,27	7,96	7,17	6,37			
10		13,18	12,40	11,93	10,05	8,80	8,48	7,68	6,85			
12		13,64	12,83	12,33	10,44	9,18	8,85	8,03	7,18			
15		14,38	13,51	12,98	11,03	9,74	9,41	8,56	7,68			
20		15,64	14,66	14,07	12,03	10,69	10,34	9,45	8,52			

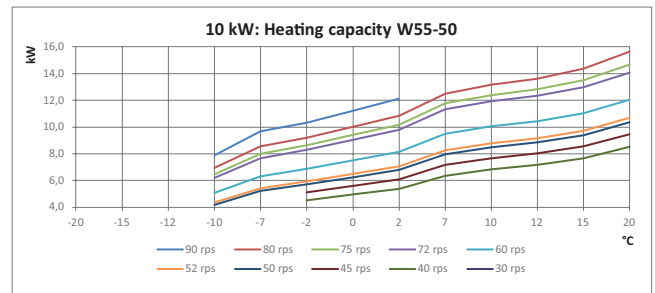
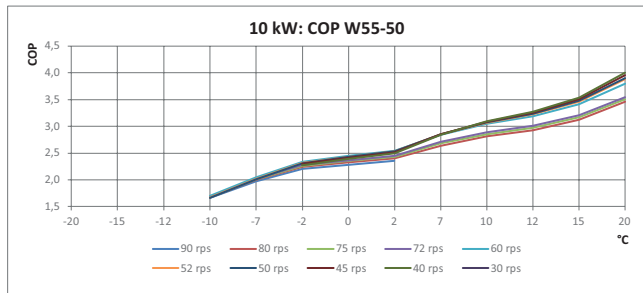


Fig 508: COP and heat output for A./W55-50

11.6.5 Heating mode performance data for 12 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20		1,92	1,99	2,07	2,06	2,06	2,05	2,05		
	-15	2,10	2,17	2,26	2,37	2,39	2,40	2,43	2,41		
	-12	2,23	2,32	2,43	2,56	2,58	2,61	2,65	2,63		
	-7	2,50	2,61	2,76	2,93	2,98	3,04	3,13	3,11		
	-2		2,78	2,98	3,06	3,13	3,27	3,26	3,24	3,20	
	0		2,88	3,10	3,19	3,27	3,44	3,46	3,47	3,44	
	2			2,98	3,23	3,33	3,44	3,66	3,68	3,70	3,70
	7				4,02	4,19	4,51	4,57	4,67	4,75	
	10					4,22	4,39	4,78	4,87	5,01	5,16
	12					4,36	4,53	4,95	5,06	5,26	5,47
	15					4,55	4,72	5,20	5,36	5,64	5,95
20					4,88	5,06	5,64	5,87	6,29	6,78	

		120 rps	110 rps	100 rps	90 rps	80 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20		8,61	7,79	6,95	6,06	5,35	4,31	3,73		
	-15	10,42	9,58	8,73	7,84	6,89	6,13	5,00	4,32		
	-12	10,98	10,13	9,27	8,34	7,37	6,58	5,39	4,66		
	-7	12,00	11,15	10,27	9,29	8,26	7,42	6,15	5,32		
	-2		11,92	10,83	9,69	8,75	7,29	6,32	4,83	3,57	
	0		12,89	11,74	10,51	9,50	7,94	6,90	5,29	3,92	
	2			13,91	12,70	11,40	10,33	8,66	7,53	5,79	4,30
	7				13,98	12,72	10,73	9,37	7,26	5,43	
	10					14,62	13,27	11,25	9,87	7,70	5,82
	12					15,04	13,63	11,59	10,20	8,02	6,10
	15					15,66	14,16	12,11	10,72	8,50	6,51
20					16,73	15,08	12,97	11,56	9,27	7,18	

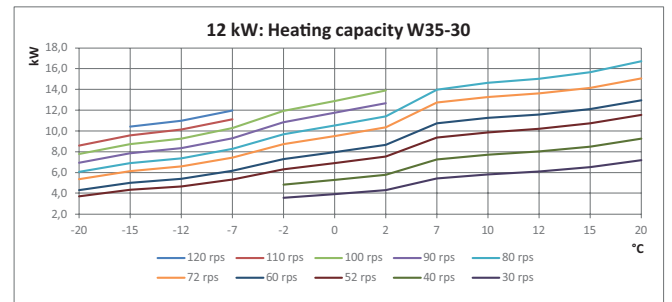
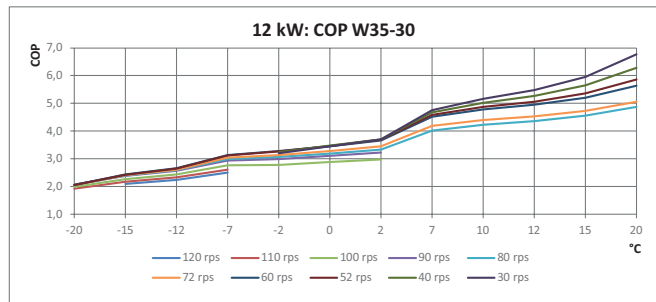


Fig 509: COP and heat output for A/W35-30

		100 rps	95 rps	90 rps	80 rps	75 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-15	2,02	2,07	2,13	2,14	2,14	2,15	2,16	2,14		
	-12	2,10	2,15	2,22	2,24	2,25	2,25	2,28	2,26		
	-7	2,24	2,31	2,39	2,42	2,44	2,45	2,51	2,48	2,43	2,33
	-2	2,32	2,40	2,49	2,54	2,57	2,59	2,67	2,66	2,63	2,57
	0	2,39	2,47	2,58	2,64	2,67	2,70	2,81	2,81	2,79	2,74
	2		2,56	2,67	2,74	2,78	2,81	2,95	2,96	2,95	2,91
	7				3,16	3,22	3,26	3,47	3,49	3,52	3,53
	10				3,36	3,43	3,47	3,71	3,75	3,83	3,88
	12				3,49	3,56	3,60	3,87	3,94	4,04	4,13
	15				3,70	3,77	3,82	4,12	4,21	4,36	4,51
20				4,05	4,12	4,17	4,53	4,67	4,90	5,15	

		100 rps	95 rps	90 rps	80 rps	75 rps	40% red 72 rps	50% red 60 rps	60% red 52 rps	40 rps	30 rps
°C	-20										
	-15	8,50	8,06	7,63	6,70	6,24	5,97	4,86	4,18		
	-12	9,36	8,89	8,43	7,44	6,94	6,64	5,44	4,68		
	-7	10,99	10,47	9,95	8,82	8,25	7,91	6,53	5,64	4,28	3,13
	-2	11,93	11,40	10,85	9,69	9,09	8,73	7,26	6,28	4,79	3,52
	0	12,90	12,33	11,75	10,52	9,89	9,51	7,94	6,88	5,26	3,88
	2		13,34	12,72	11,41	10,73	10,33	8,63	7,49	5,74	4,24
	7				13,23	12,48	12,03	10,12	8,82	6,82	5,08
	10				14,06	13,24	12,75	10,78	9,44	7,36	5,55
	12				14,61	13,75	13,23	11,22	9,88	7,75	5,88
	15				15,46	14,53	13,97	11,92	10,54	8,33	6,37
20				16,92	15,87	15,24	13,07	11,63	9,30	7,18	

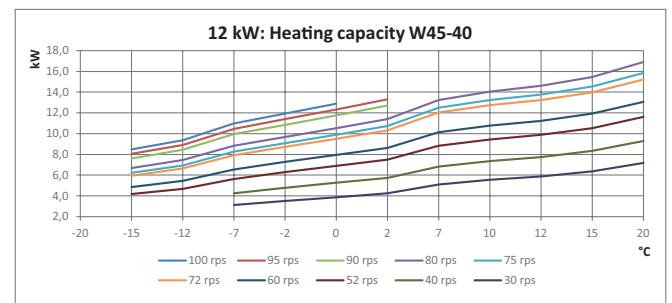
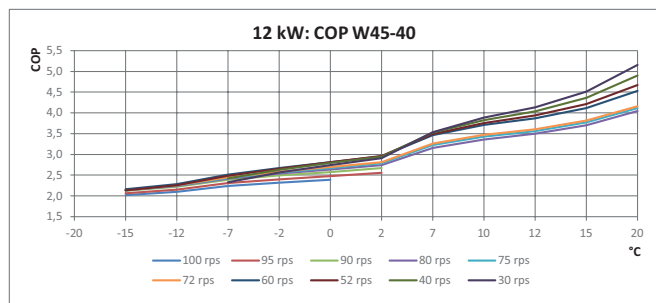


Fig 510: COP and heat output for A/W45-40

Update 10
New performance data (EN14511:2018)

				40% red		50% red		60% red			
°C		90 rps	80 rps	75 rps	72 rps	60 rps	55 rps	52 rps	50 rps	45 rps	40 rps
-20											
-15											
-12											
-10		1,90	1,91	1,92	1,92	1,94	1,93	1,91	1,90		
-7		1,99	2,01	2,02	2,03	2,06	2,05	2,04	2,03		
-2		2,19	2,23	2,25	2,26	2,32	2,31	2,30	2,30	2,28	2,25
0		2,23	2,28	2,30	2,32	2,39	2,39	2,38	2,38	2,36	2,34
2		2,27	2,32	2,35	2,37	2,46	2,45	2,45	2,44	2,43	2,41
7		2,61	2,69	2,73	2,76	2,90	2,90	2,90	2,90	2,90	2,89
10		2,73	2,80	2,84	2,87	3,03	3,05	3,06	3,06	3,08	3,08
12		2,80	2,87	2,92	2,95	3,13	3,15	3,17	3,17	3,19	3,21
15		2,92	2,99	3,04	3,07	3,27	3,30	3,32	3,33	3,36	3,39
20		3,11	3,18	3,23	3,26	3,49	3,54	3,57	3,59	3,64	3,69

				40% red		50% red		60% red			
°C		90 rps	80 rps	75 rps	72 rps	60 rps	55 rps	52 rps	50 rps	45 rps	40 rps
-20											
-15											
-12											
-10		8,53	7,53	7,02	6,72	5,49	5,01	4,72	4,52		
-7		9,49	8,41	7,86	7,53	6,19	5,66	5,33	5,12		
-2		10,36	9,23	8,66	8,31	6,90	6,32	5,96	5,73	5,13	4,53
0		11,29	10,09	9,47	9,10	7,57	6,93	6,55	6,29	5,64	4,99
2		12,23	10,94	10,28	9,88	8,23	7,55	7,13	6,86	6,15	5,44
7		14,15	12,73	11,99	11,55	9,68	8,90	8,43	8,11	7,31	6,49
10		14,89	13,35	12,56	12,08	10,18	9,39	8,92	8,59	7,78	6,94
12		15,38	13,76	12,94	12,45	10,53	9,74	9,26	8,93	8,10	7,25
15		16,16	14,43	13,56	13,03	11,07	10,27	9,78	9,44	8,59	7,71
20		17,50	15,56	14,58	13,99	11,97	11,15	10,64	10,29	9,40	8,48

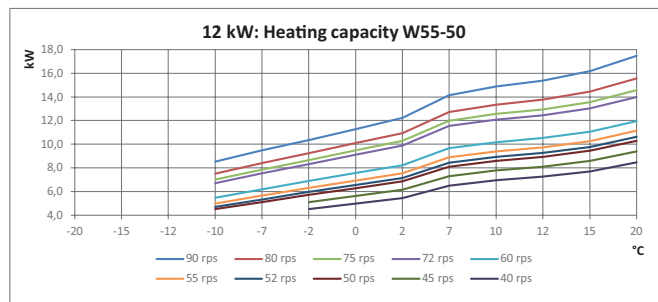
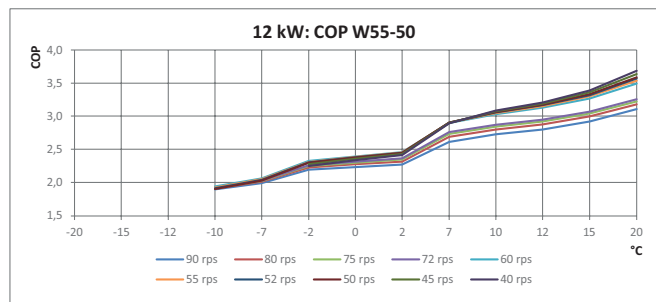


Fig 511: COP and heat output for A/W55-50

11.7 Performance data - cooling mode

11.7.1 Cooling mode performance data for 3 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ... %

°C		40% red.					50% red.			60% red.		
		100 rps	95 rps	90 rps	75 rps	60 rps	55 rps	50 rps	40 rps	35 rps	30 rps	
15	15	2,77	2,92	3,09	3,78	4,67	5,05	5,47	6,64	7,39	8,21	
	20	2,48	2,61	2,74	3,23	3,88	4,15	4,48	5,37	5,87	6,42	
	25	2,43	2,54	2,66	3,08	3,60	3,82	4,05	4,52	4,83	5,20	
	30			2,49	2,83	3,24	3,37	3,53	3,87	4,00	4,09	
35	35			2,18	2,45	2,76	2,87	2,97	3,16	3,28	3,32	
	40			1,86	2,11	2,34	2,40	2,47	2,62			

°C		40% red.					50% red.			60% red.		
		100 rps	95 rps	90 rps	75 rps	60 rps	55 rps	50 rps	40 rps	35 rps	30 rps	
15	15	5,65	5,50	5,32	4,76	4,05	3,79	3,50	2,90	2,57	2,20	
	20	5,31	5,15	4,98	4,41	3,74	3,49	3,23	2,66	2,35	2,02	
	25	5,23	5,06	4,88	4,28	3,58	3,34	3,07	2,47	2,17	1,83	
	30			4,69	4,09	3,40	3,13	2,86	2,30	1,99	1,65	
35	35			4,31	3,74	3,09	2,85	2,59	2,05	1,78	1,48	
	40			3,90	3,40	2,78	2,53	2,30	1,83			

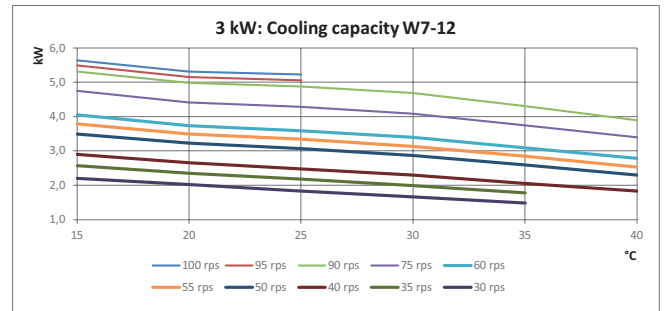
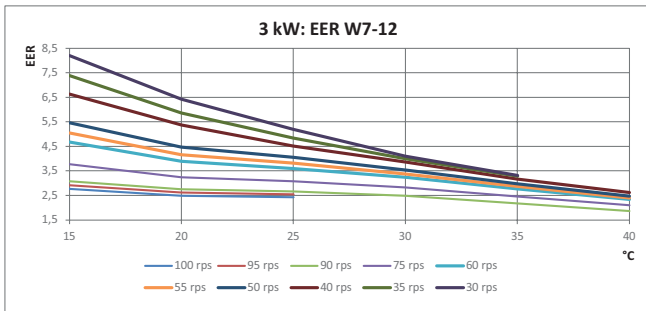


Fig 512: EER and cooling output for W7-12

°C		40% red.					50% red.			60% red.		
		90 rps	79 rps	75 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps	
15	15	3,57	4,20	4,61	6,12	6,84	7,71	8,79	10,22	12,20	15,22	
	20		3,66	3,88	5,16	5,69	6,35	7,11	8,06	9,31	11,00	
	25		3,61	3,80	4,87	5,28	5,78	6,36	7,09	7,95	8,96	
	30				4,28	4,59	4,94	5,30	5,71	6,21	7,02	
35	35				3,70	3,89	4,14	4,41	4,69			
	40				2,92	3,23	3,44	3,67	3,88			

°C		40% red.					50% red.			60% red.		
		90 rps	79 rps	75 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps	
15	15	6,63	6,23	6,13	5,36	5,06	4,73	4,37	3,96	3,48	3,01	
	20		5,80	5,66	5,02	4,74	4,44	4,10	3,74	3,35	2,93	
	25		5,79	5,60	4,90	4,59	4,28	3,94	3,58	3,19	2,77	
	30				4,64	4,34	4,03	3,69	3,32	2,95	2,56	
35	35				4,32	4,00	3,71	3,38	3,04			
	40				3,60	3,56	3,32	3,07	2,76			

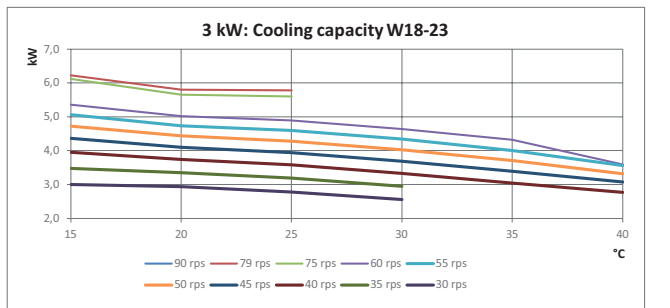
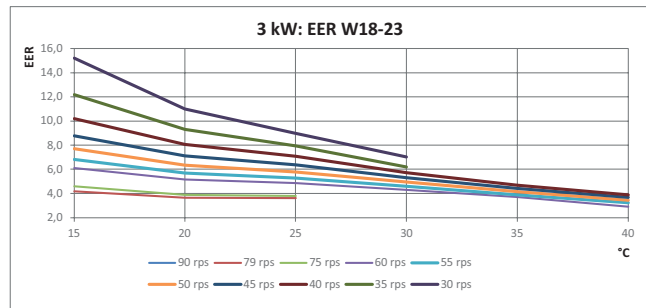


Fig 513: EER and cooling output for W18-23

11.7.2 Cooling mode performance data for 5 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C				40% red.		50% red.		60% red.		
	100 rps	95 rps	90 rps	75 rps	60 rps	55 rps	50 rps	40 rps	35 rps	30 rps
15	2,77	2,92	3,09	3,78	4,67	5,05	5,47	6,64	7,39	8,21
20	2,48	2,61	2,74	3,23	3,88	4,15	4,48	5,37	5,87	6,42
25	2,43	2,54	2,66	3,08	3,60	3,82	4,05	4,52	4,83	5,20
30			2,49	2,83	3,24	3,37	3,53	3,87	4,00	4,09
35			2,18	2,45	2,76	2,87	2,97	3,16	3,28	3,32
40			1,86	2,11	2,34	2,40	2,47	2,62		

°C				40% red.		50% red.		60% red.		
	100 rps	95 rps	90 rps	75 rps	60 rps	55 rps	50 rps	40 rps	35 rps	30 rps
15	5,65	5,50	5,32	4,76	4,05	3,79	3,50	2,90	2,57	2,20
20	5,31	5,15	4,98	4,41	3,74	3,49	3,23	2,66	2,35	2,02
25	5,23	5,06	4,88	4,28	3,58	3,34	3,07	2,47	2,17	1,83
30			4,69	4,09	3,40	3,13	2,86	2,30	1,99	1,65
35			4,31	3,74	3,09	2,85	2,59	2,05	1,78	1,48
40			3,90	3,40	2,78	2,53	2,30	1,83		

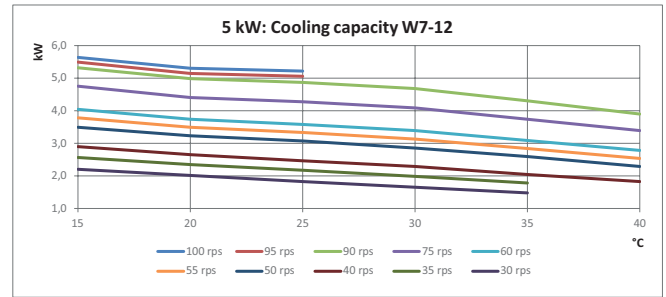
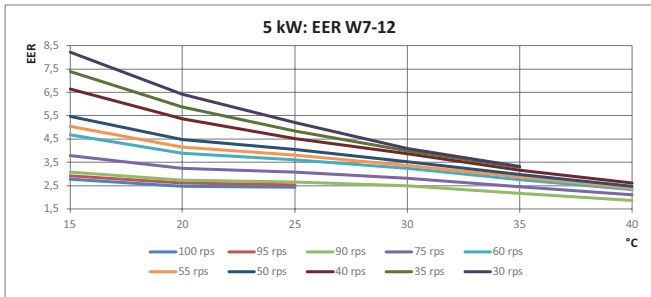


Fig 514: EER and cooling output for W7-12

°C				40% red.		50% red.		60% red.		
	90 rps	79 rps	75 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps
15	3,57	4,20	4,61	6,12	6,84	7,71	8,79	10,22	12,20	15,22
20		3,66	3,88	5,16	5,69	6,35	7,11	8,06	9,31	11,00
25		3,61	3,80	4,87	5,28	5,78	6,36	7,09	7,95	8,96
30				4,28	4,59	4,94	5,30	5,71	6,21	7,02
35				3,70	3,89	4,14	4,41	4,69		
40				2,92	3,23	3,44	3,67	3,88		

°C				40% red.		50% red.		60% red.		
	90 rps	79 rps	75 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps
15	6,63	6,23	6,13	5,36	5,06	4,73	4,37	3,96	3,48	3,01
20		5,80	5,66	5,02	4,74	4,44	4,10	3,74	3,35	2,93
25		5,79	5,60	4,90	4,59	4,28	3,94	3,58	3,19	2,77
30				4,64	4,34	4,03	3,69	3,32	2,95	2,56
35				4,32	4,00	3,71	3,38	3,04		
40				3,60	3,56	3,32	3,07	2,76		

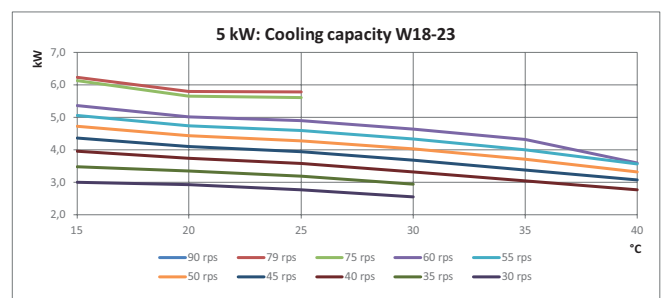
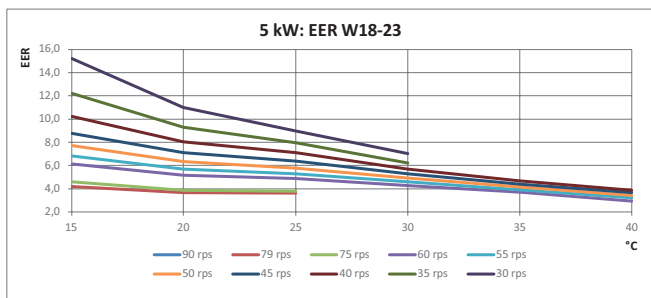


Fig 515: EER and cooling output for W18-23

11.7.3 Cooling mode performance data for 7 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

°C			40% red.			50% red		60% red.		
	100 rps	95 rps	90 rps	79 rps	60 rps	55 rps	50 rps	40 rps	35 rps	30 rps
15	2,54	2,68								
20			2,57	3,05	3,82	4,09	4,43	5,30	5,83	6,43
25			2,52	2,96	3,51	3,71	4,01	4,82	5,16	5,73
30			2,41	2,78	3,26	3,45	3,67	4,10	4,37	4,79
35			2,17	2,50	2,88	3,01	3,20	3,55	3,86	4,00
40				2,22	2,52	2,68	2,81	3,11		

°C			40% red.			50% red		60% red.		
	100 rps	95 rps	90 rps	79 rps	60 rps	55 rps	50 rps	40 rps	35 rps	30 rps
15	7,33	7,17								
20			6,99	6,34	5,57	5,19	4,86	4,09	3,70	3,18
25			6,52	5,89	5,06	4,72	4,46	3,75	3,33	2,94
30			6,34	5,67	4,88	4,60	4,29	3,54	3,14	2,68
35			5,96	5,37	4,59	4,26	3,99	3,31	2,94	2,45
40				4,98	4,22	4,02	3,73	3,12		

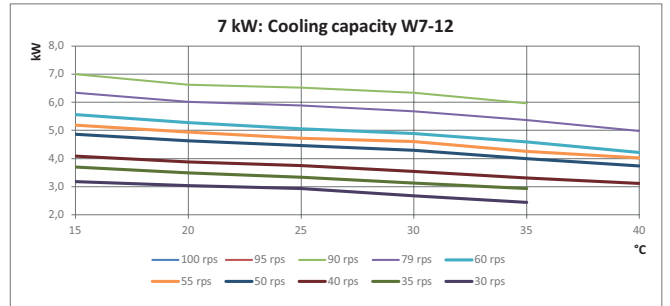
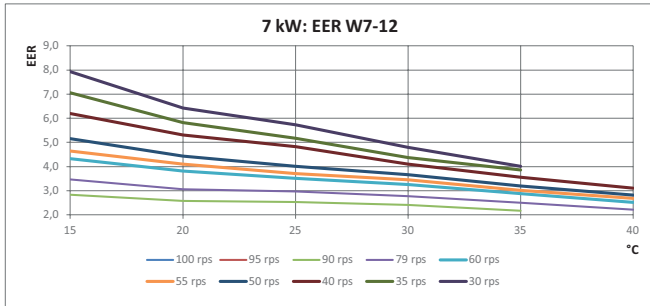


Fig 516: EER and cooling output for W7-12

°C			40% red		50% red		60% red			
	90 rps	79 rps	75 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps
15										
20		3,46	3,67	4,75	5,14	5,68	6,34	7,09	8,06	9,21
25			3,64	4,59	4,93	5,42	5,90	6,50	7,19	8,01
30				4,16	4,46	4,81	5,18	5,76	6,18	6,76
35				3,67	3,90	4,14	4,43	4,75		
40				3,05	3,38	3,58	3,84	4,05		

°C			40% red		50% red		60% red			
	90 rps	79 rps	75 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps
15										
20		8,26	8,10	7,19	6,80	6,33	5,91	5,43	4,87	4,28
25			7,65	6,74	6,31	5,95	5,49	5,02	4,49	3,94
30				6,47	6,10	5,72	5,28	4,83	4,29	3,76
35				6,12	5,76	5,35	4,94	4,50		
40				5,21	5,17	4,93	4,63	4,18		

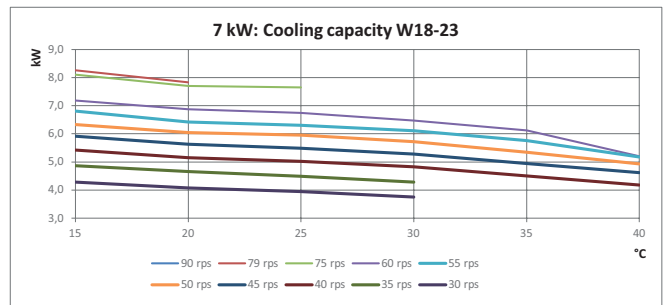
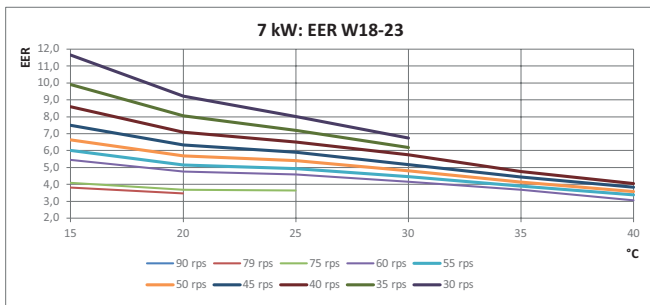


Fig 517: EER and cooling output for W18-23

11.7.4 Cooling mode performance data for 10 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		100 rps	95 rps	90 rps	79 rps	75 rps	60 rps	50 rps	40 rps	35 rps	30 rps
°C	15						40% red	50% red	60% red		
	20	2,60	2,78	2,95	3,34	3,52	4,44	5,26	6,49	7,26	8,30
	25		2,54	2,64	3,00	3,14	3,84	4,56	5,51	6,09	6,76
	30			2,61	2,92	3,06	3,64	4,16	4,83	5,24	5,63
	35					2,86	3,35	3,76	4,25	4,53	4,81
	40					2,57	2,97	3,29	3,66	3,87	4,05
						2,59	2,85	3,16			

		100 rps	95 rps	90 rps	79 rps	75 rps	60 rps	50 rps	40 rps	35 rps	30 rps
°C	15						40% red	50% red	60% red		
	20	12,64	12,47	12,14	11,32	10,96	9,45	8,24	6,92	6,16	5,40
	25		11,94	11,54	10,66	10,29	8,86	7,80	6,54	5,83	5,07
	30			11,46	10,52	10,18	8,66	7,52	6,29	5,57	4,79
	35					9,85	8,38	7,24	6,02	5,32	4,60
	40					9,29	7,87	6,79	5,60	4,96	4,25
						7,26	6,27	5,18			

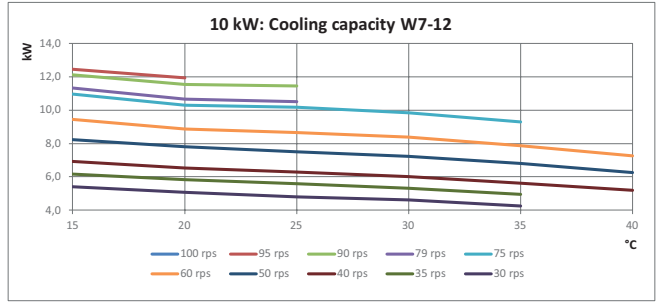
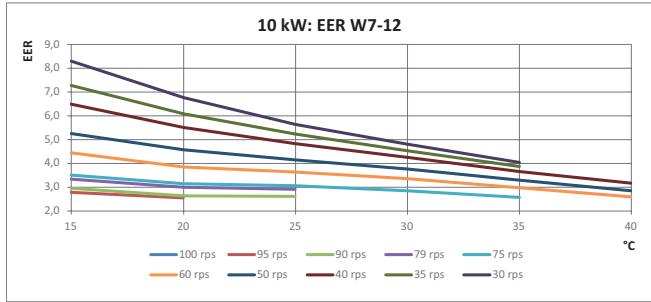


Fig 518: EER and cooling output for W7-12

		90 rps	79 rps	75 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps
°C	15				40% red	50% red	60% red				
	20	3,34	3,90	4,14	5,46	6,06	6,78	7,67	8,82	10,35	12,51
	25	3,03	3,48	3,70	4,71	5,26	5,82	6,50	7,35	8,43	9,83
	30			3,47	4,19	4,50	4,85	5,26	5,73	6,26	6,87
	35			3,30	3,63	3,88	4,16	4,47	4,82	5,20	5,62
	40				3,02	3,31	3,54	3,78	4,04		

		90 rps	79 rps	75 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps
°C	15				40% red	50% red	60% red				
	20	15,49	14,51	14,11	12,45	11,77	11,04	10,25	9,39	8,48	7,49
	25	14,68	13,70	13,30	11,57	10,95	10,24	9,48	8,66	7,79	6,85
	30			12,92	11,15	10,49	9,79	9,05	8,26	7,40	6,49
	35			12,65	10,35	9,74	9,09	8,40	7,65	6,84	5,99
	40				9,14	8,91	8,33	7,70	7,01		

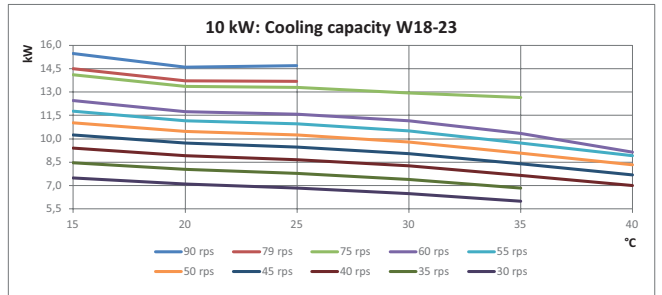
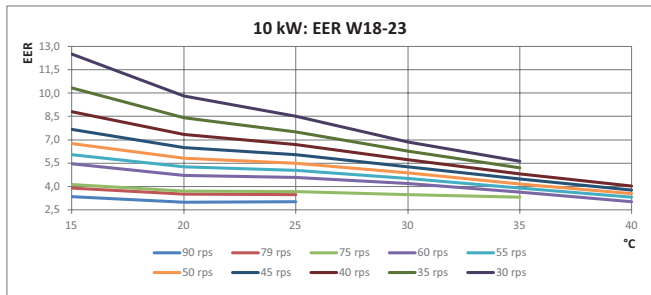


Fig 519: EER and cooling output for W18-23

11.7.5 Cooling mode performance data for 12 kW air-to-water heat pumps

rps = revolutions per second

red = Reduction by ...%

		100 rps	95 rps	90 rps	79 rps	75 rps	40% red	50% red	60% red.			
°C		15	19	24	30	35	40	45	50	55	60	30 rps
12 kW	15	2,60	2,78	2,95	3,34	3,52	4,44	5,26	6,49	7,26	8,30	
	19		2,54	2,64	3,00	3,14	3,84	4,56	5,51	6,09	6,76	
	24			2,61	2,92	3,06	3,64	4,16	4,83	5,24	5,63	
	30					2,86	3,35	3,76	4,25	4,53	4,81	
	35					2,57	2,97	3,29	3,66	3,87	4,05	
	40						2,59	2,85	3,16			

		100 rps	95 rps	90 rps	79 rps	75 rps	40% red	50% red	60% red.			
°C		15	20	25	30	35	40	45	50	55	60	30 rps
12 kW	15	12,64	12,47	12,14	11,32	10,96	9,45	8,24	6,92	6,16	5,40	
	20		11,94	11,54	10,66	10,29	8,86	7,80	6,54	5,83	5,07	
	25			11,46	10,52	10,18	8,66	7,52	6,29	5,57	4,79	
	30					9,85	8,38	7,24	6,02	5,32	4,60	
	35					9,29	7,87	6,79	5,60	4,96	4,25	
	40						7,26	6,27	5,18			

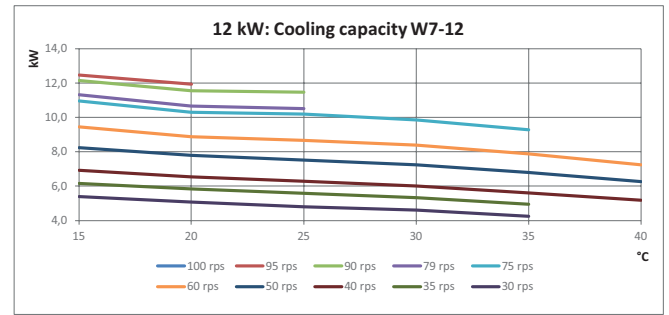
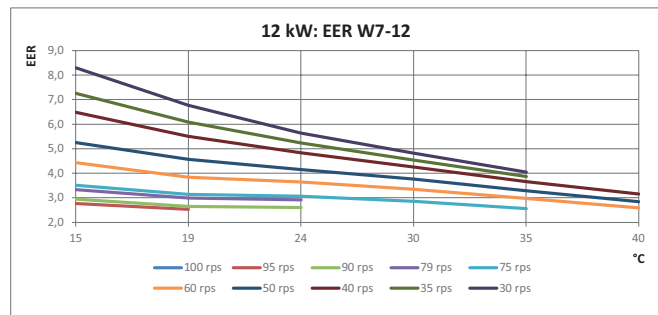


Fig 520: EER and cooling output for W7-12

		40% red.			50% red.		60% red.					
°C		90 rps	79 rps	75 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps	
12 kW	15	3,34	3,90	4,14	5,46	6,06	6,78	7,67	8,82	10,35	12,51	
	20	3,00	3,50	3,70	4,71	5,26	5,82	6,50	7,35	8,43	9,83	
	25	3,03	3,48	3,67	4,57	5,02	5,49	6,05	6,70	7,51	8,50	
	30			3,47	4,19	4,50	4,85	5,26	5,73	6,26	6,87	
	35			3,30	3,63	3,88	4,16	4,47	4,82	5,20	5,62	
	40				3,02	3,31	3,54	3,78	4,04			

		40% red.			50% red.		60% red.					
°C		90 rps	79 rps	75 rps	60 rps	55 rps	50 rps	45 rps	40 rps	35 rps	30 rps	
12 kW	15	15,49	14,51	14,11	12,45	11,77	11,04	10,25	9,39	8,48	7,49	
	20	14,59	13,72	13,35	11,73	11,15	10,46	9,72	8,91	8,04	7,11	
	25	14,68	13,70	13,30	11,57	10,95	10,24	9,48	8,66	7,79	6,85	
	30			12,92	11,15	10,49	9,79	9,05	8,26	7,40	6,49	
	35			12,65	10,35	9,74	9,09	8,40	7,65	6,84	5,99	
	40				9,14	8,91	8,33	7,70	7,01			

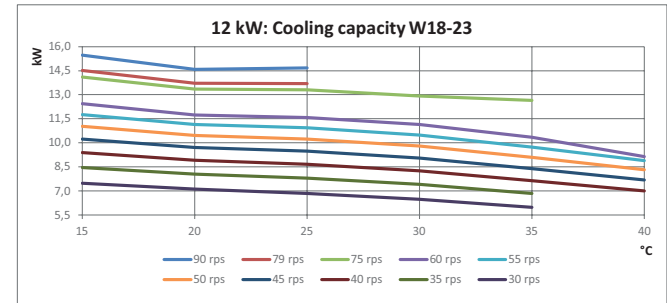
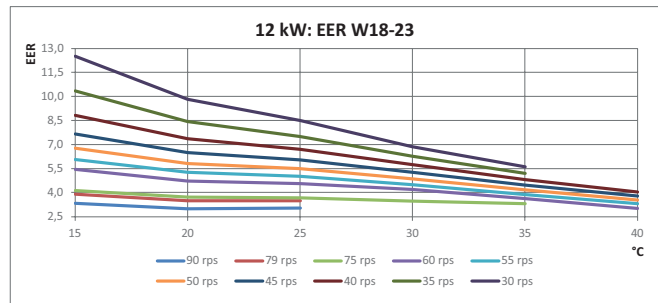


Fig 521: EER and cooling output for W18-23

11.8 Product dimensions and connection dimensions

11.8.1 Front view

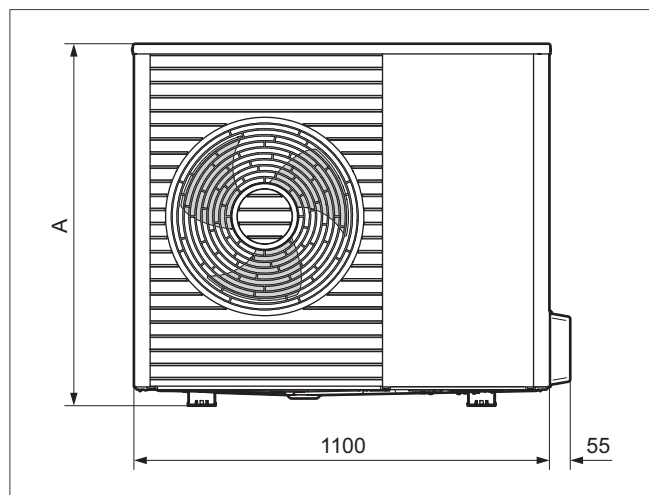


Fig 522: Dimensions, front view

Product	A
VWL 35/5 ...	765
VWL 55/5 ...	765
VWL 75/5 ...	965

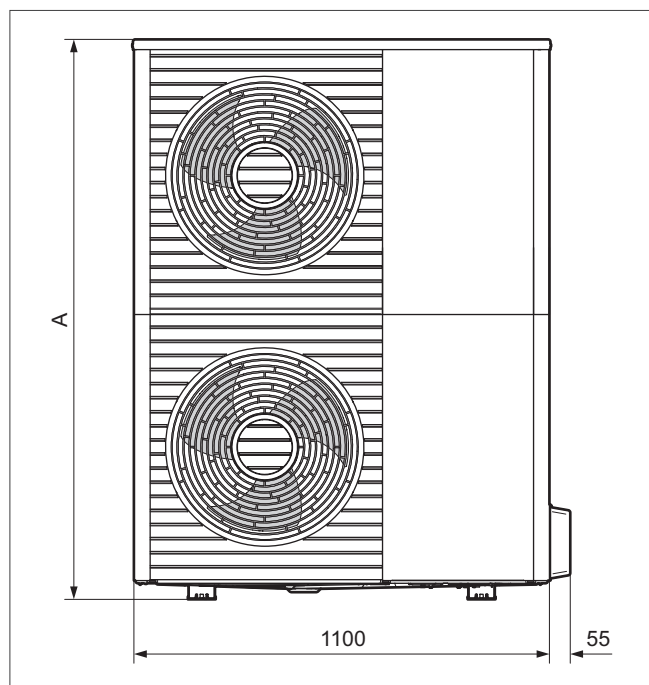


Fig 523: Dimensions, front view

Product	A
VWL 105/5 ...	1565
VWL 125/5 ...	1565

11.8.2 Side view, right

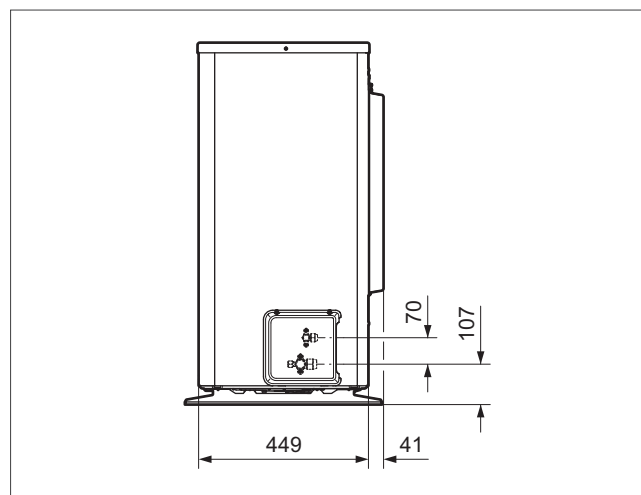


Fig 524: Dimensions, side view from the right

11.8.3 Bottom view

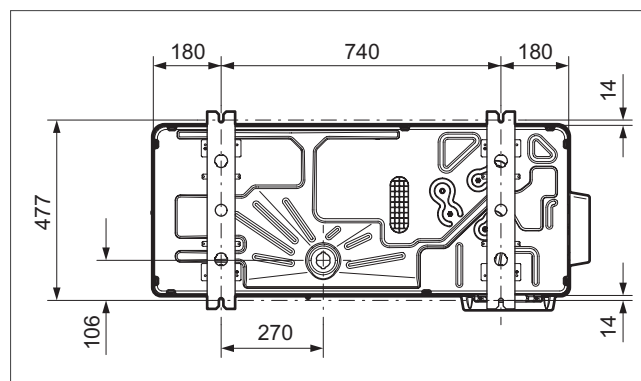


Fig 525: Dimensions, bottom view

11.9 Minimum clearances

11.9.1 Minimum clearances, ground installation and flat-roof installation

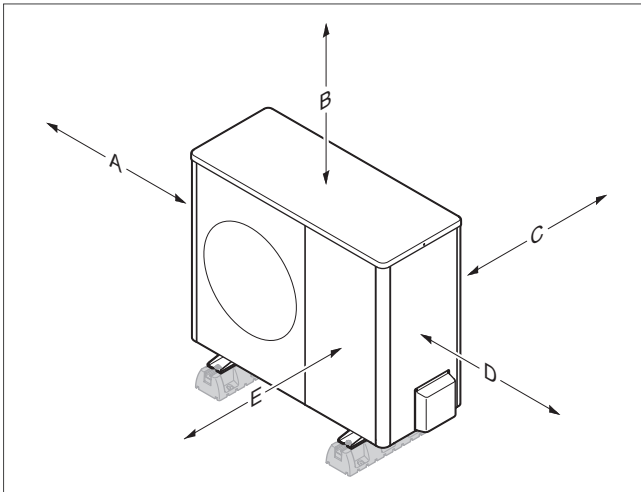


Fig 526: Minimum clearances, ground installation and flat-roof installation

Minimum clearance	Heating mode	Heating and cooling mode
A	100 mm	100 mm
B	1000 mm	1000 mm
C	200 mm ¹⁾	250 mm
D	500 mm	500 mm
E	600 mm	600 mm

1) 250 mm is recommended for dimension C in order to guarantee good access during the electrical installation.

11.9.2 Minimum clearances, wall installation

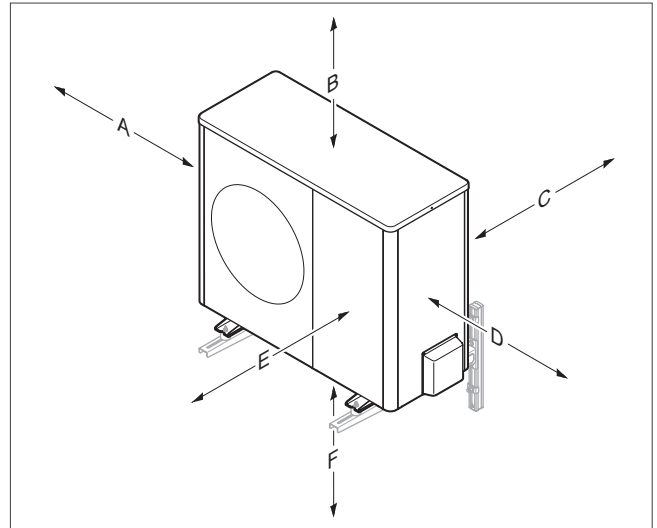


Fig 527: Minimum clearances, wall installation

Minimum clearance	Heating mode	Heating and cooling mode
A	100 mm	100 mm
B	1000 mm	1000 mm
C	200 mm ¹⁾	250 mm
D	500 mm	500 mm
E	600 mm	600 mm
F	300 mm	300 mm

1) 250 mm is recommended for dimension C in order to guarantee good access during the electrical installation.

11.10 Requirements for the installation site



Danger!

Risk of injury due to ice formation.

The air temperature at the air outlet is below the outdoor temperature. This can lead to ice formation.

> Select a site and an orientation at which the air outlet is at least 3 m away from walkways, plastered surfaces and downpipes.

- » If the installation site is in the immediate vicinity of the coastline, ensure that the product is protected against spraying water by an additional protection device. In doing so, the minimum clearances must be complied with .
- » Observe the permissible height difference between outdoor unit and indoor unit. See Technical data .
- » Keep away from flammable substances or flammable gases.
- » Keep away from heat sources. Avoid using preloaded extract air (e.g. from an industrial plant or bakery).
- » Keep away from ventilation openings or extract-air shafts.
- » Keep away from deciduous trees and shrubs.
- » Do not expose the outdoor unit to dusty air.
- » Do not expose the outdoor unit to corrosive air. Keep away from animal stalls or stables.
- » Please note that the installation site must be below 2000 m above sea level.
- » Please note the noise emissions. Maintain sufficient clearance from noise-sensitive areas of the adjacent building. Select a location that is as far away from the windows of adjacent building as possible. Select a location that is as far away from your own bedroom as possible.

Condition: Especially for ground installation

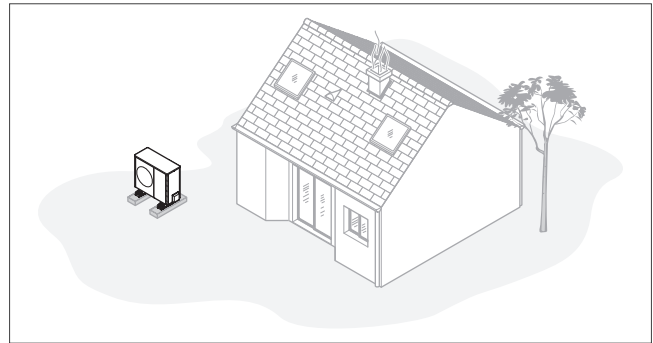


Fig 528: Installation site, ground installation

- » Avoid choosing an installation site that is in the corner of a room, between walls or between fences.
- » Prevent the return intake of air from the air outlet.
- » Ensure that water cannot collect on the subsoil. Ensure that the subsoil can absorb water well.
- » Plan a bed of gravel and rubble for the condensate discharge.
- » Select a site which is free from significant accumulations of snow in winter.
- » Select a site at which the air inlet is not affected by strong winds. Position the unit as crosswise to the main direction of wind as possible.
- » If the installation site is not protected against the wind, you should plan to set up a protective wall.
- » Please note the noise emissions. Avoid corners of rooms, recesses or sites between walls. Select a site with excellent sound absorption (e.g. thanks to grass, hedges, fencing).
- » Route the hydraulic lines and electrical wires underground. Provide a safety pipe that leads from the outdoor unit through the wall of the building.

Condition: Especially for wall installation

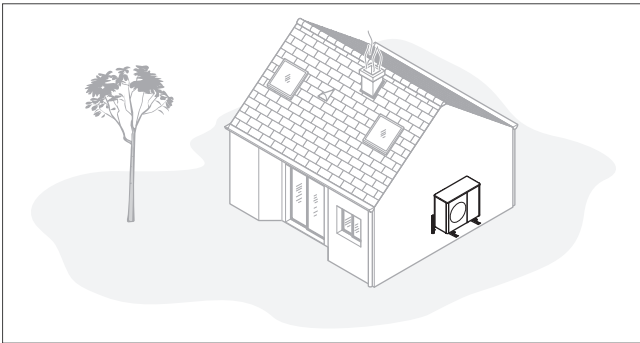


Fig 529: Installation site, wall installation

- » Ensure that the wall fulfils the static requirements. Please note the weight of the unit mounting bracket (accessory) and the outdoor unit. See Technical data .
- » Avoid choosing an installation position which is near to a window.
- » Please note the noise emissions. Maintain sufficient clearance from reflective building walls.
- » Route the hydraulic lines and electrical wires. Provide a wall duct.

Condition: Especially for flat-roof installation

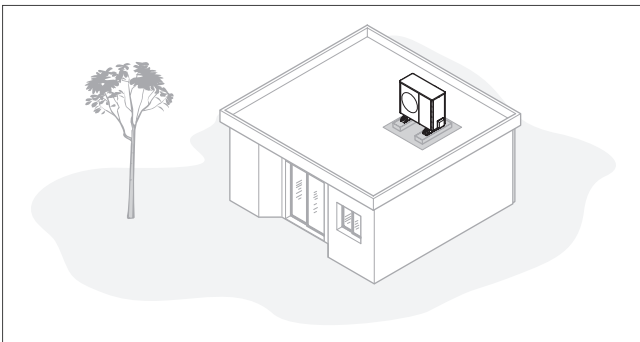


Fig 530: Installation site, flat-roof installation

- » Only install the product in buildings with a solid construction and that have cast concrete ceilings throughout.
- » Do not install the product in buildings with a wooden structure or with a lightweight roof.
- » Select a location that is easily accessible so that maintenance and service work can be carried out.
- » Select a location that is easily accessible so that foliage or snow can be regularly removed from the product.
- » Select a location that is close to a downpipe.
- » Select a site at which the air inlet is not affected by strong winds. Position the unit as crosswise to the main direction of wind as possible.
- » If the installation site is not protected against the wind, you should plan to set up a protective wall.
- » Please note the noise emissions. Maintain sufficient clearance from adjacent buildings.
- » Route the hydraulic lines and electrical wires. Provide a wall duct.

11.11 Types of installation

11.11.1 Conditions for the installation type

The product is suitable for these installation types:

- Ground installation
- Wall installation
- Flat-roof installation

The following conditions must be observed for this installation type:

- Wall-mounting with the unit mounting bracket from the accessories is not permitted for products VWL 105/5 and VWL 125/5.
- Flat-roof installation is not suitable for extremely cold or snowy regions.

11.11.2 Floor installation

Creating a foundation

Validity: Region with ground frost

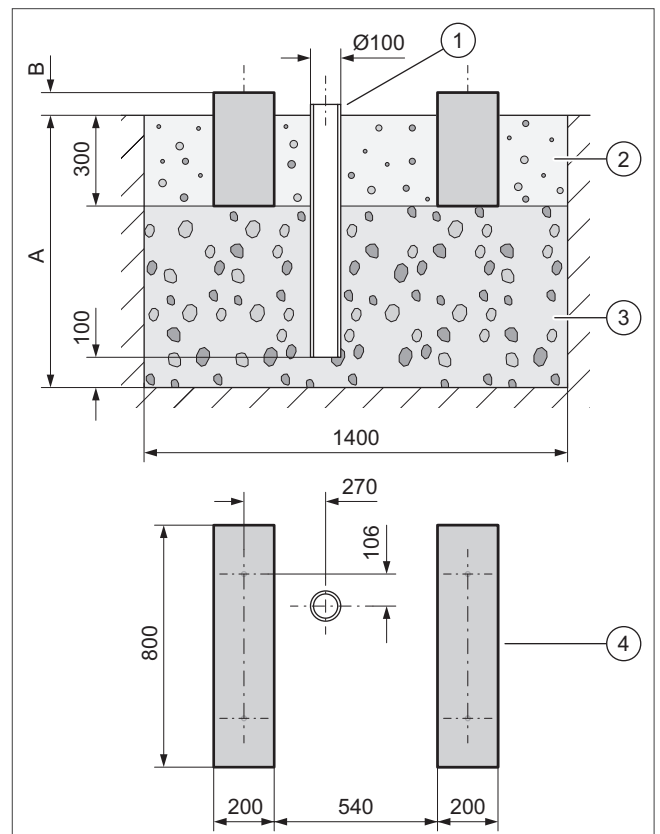


Fig 531: Dimension drawing, creating a foundation

- » Dig a hole in the ground. The recommended dimensions can be found in the figure.
- » Insert a downpipe (1).
- » Insert a layer of coarse rubble (3). Calculate the depth (A) in accordance with local conditions.
 - Minimum depth: 900 mm
 - Minimum depth: 900 mm

- » Calculate the height (B) in accordance with local conditions.
- » Create two concrete strip foundations (4). The recommended dimensions can be found in the figure.
- » Place a gravel bed (2) between and beside the strip foundations.

Installing the product, small rubber feet

Validity: Floor installation

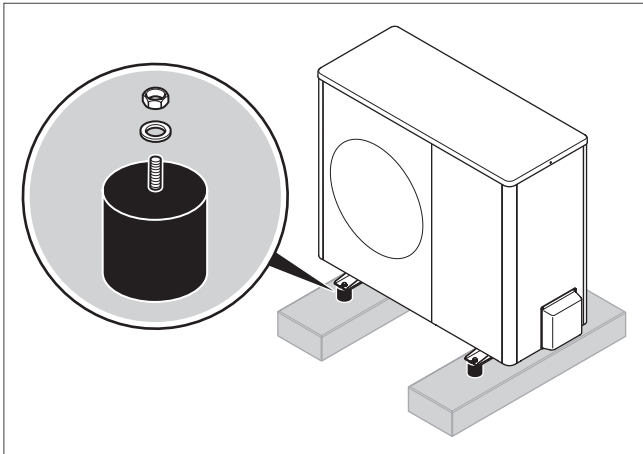


Fig 532: xxx

1. Use the small rubber feet from the accessories. Use the enclosed set-up instructions.
2. Screw the rubber feet to the foundation.
3. Install the product. Align the product exactly horizontally.
4. Screw the rubber feet to the product.

Installing the product, large rubber feet

Validity: Floor installation

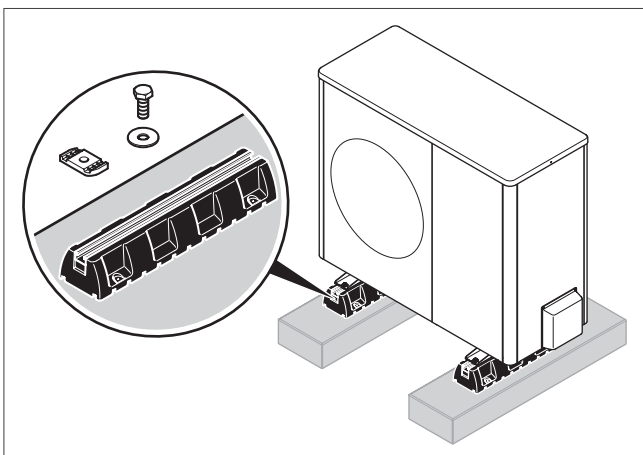


Fig 533: xxx

1. Use the large rubber feet from the accessories. Use the enclosed set-up instructions.
2. Screw the rubber feet to the foundation.
3. Install the product. Align the product exactly horizontally.
4. Screw the rubber feet to the product.

Setting up the product, raised base for snowy regions

Validity: Floor installation

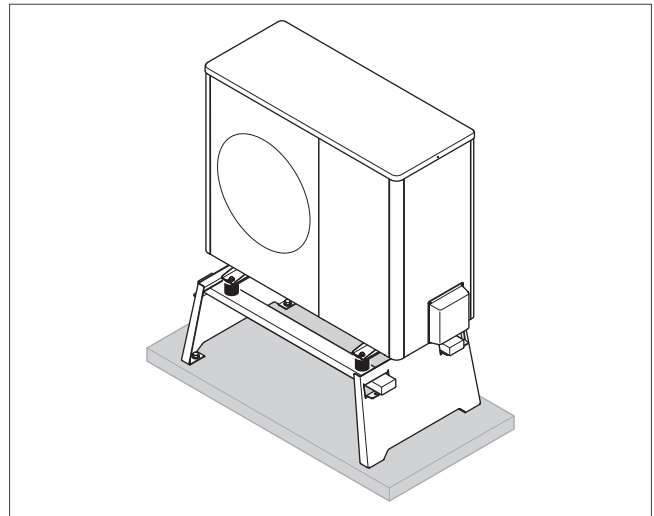


Fig 534: xxx

1. Use the raised base from the accessories. Use the enclosed set-up instructions.
2. Screw the raised base to the foundation.
3. Install the product. Align the product exactly horizontally.
4. Screw the raised base to the product.

11.11.3 Wall installation

Installing the product

Validity: Product VWL 35/5 to VWL 75/5

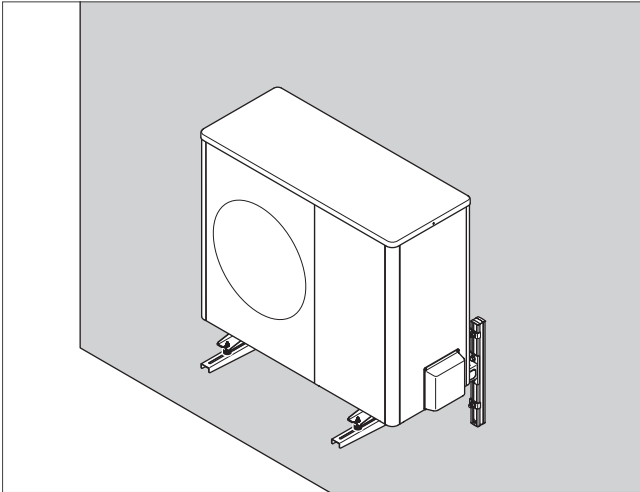


Fig 535: Installing the product, unit mounting bracket

- » Check the design and load-bearing capacity of the wall. Note the weight of the product.
- » Use the unit mounting bracket that is suitable for wall mounting from the accessories.
- » Use the small damping feet from the accessories.
- » Align the product horizontally.

Validity: Product VWL 105/5 and VWL 125/5

- » Wall installation is not permitted for these products.

Wall installation for insulated and uninsulated walls

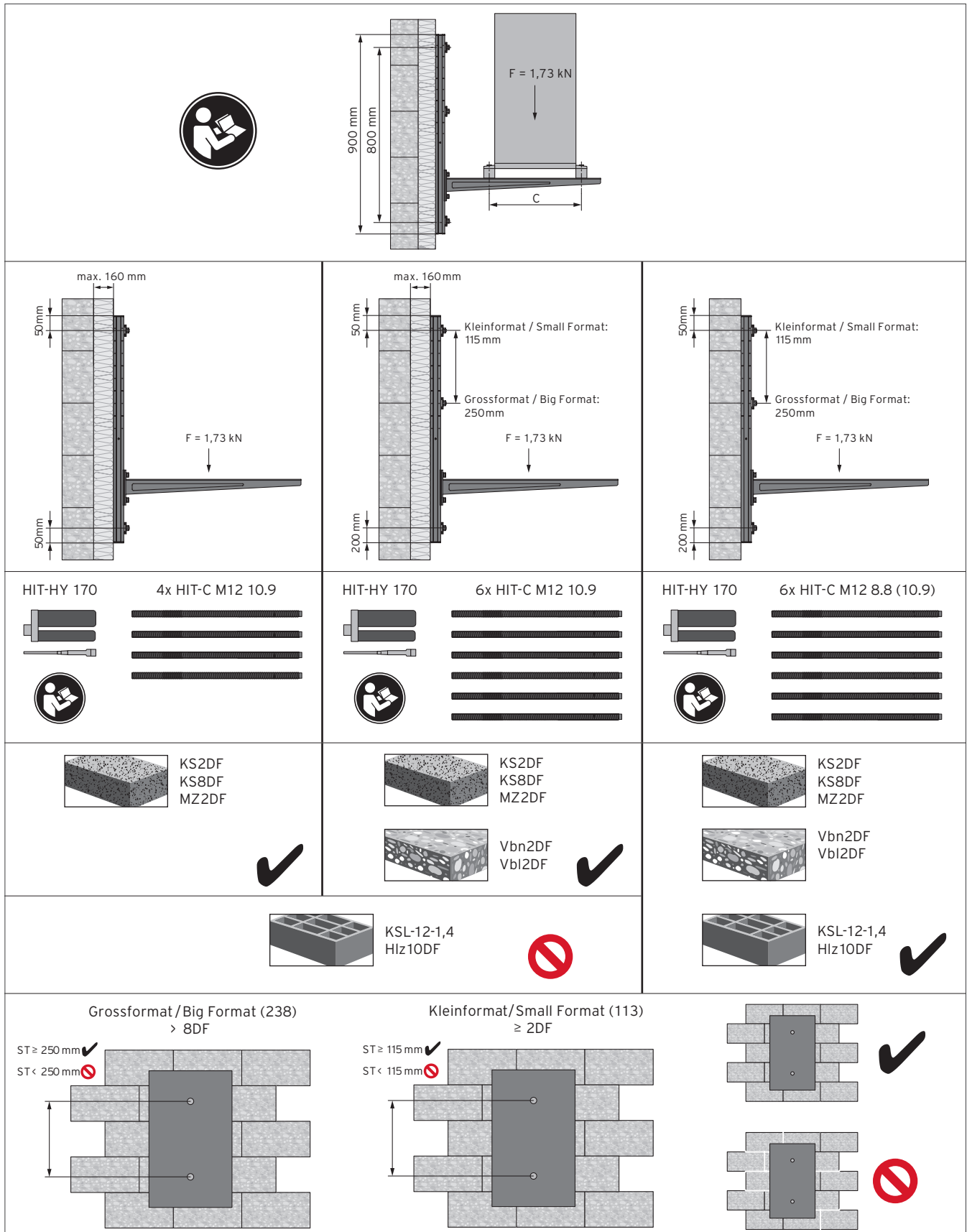


Fig 536: Wall installation on insulated and uninsulated walls

11.11.4 Flat-roof installation

Information on occupational safety

Note

Information on occupational safety

During a flat roof installation, the flat roof is a safety-critical working area. When planning and when carrying out work on the flat roof, you must always comply with the relevant health and safety regulations. The occupational safety must be guaranteed.



- Ensure that the flat roof can be safely accessed.
- The roof construction must have sufficient load-bearing capacity for being walked on.
- Maintain a safety area of 2 m to the fall edge and to skylights that are not safe to walk on plus any clearance that is required for carrying out work on the heat pump.
- Install a technical fall protection (e.g. reliable railings) on the fall edges if the safety clearance cannot be complied with.
- Install technical catch equipment (e.g. scaffolding or a safety net) if technical fall protection cannot be set up.

Flat-roof installation

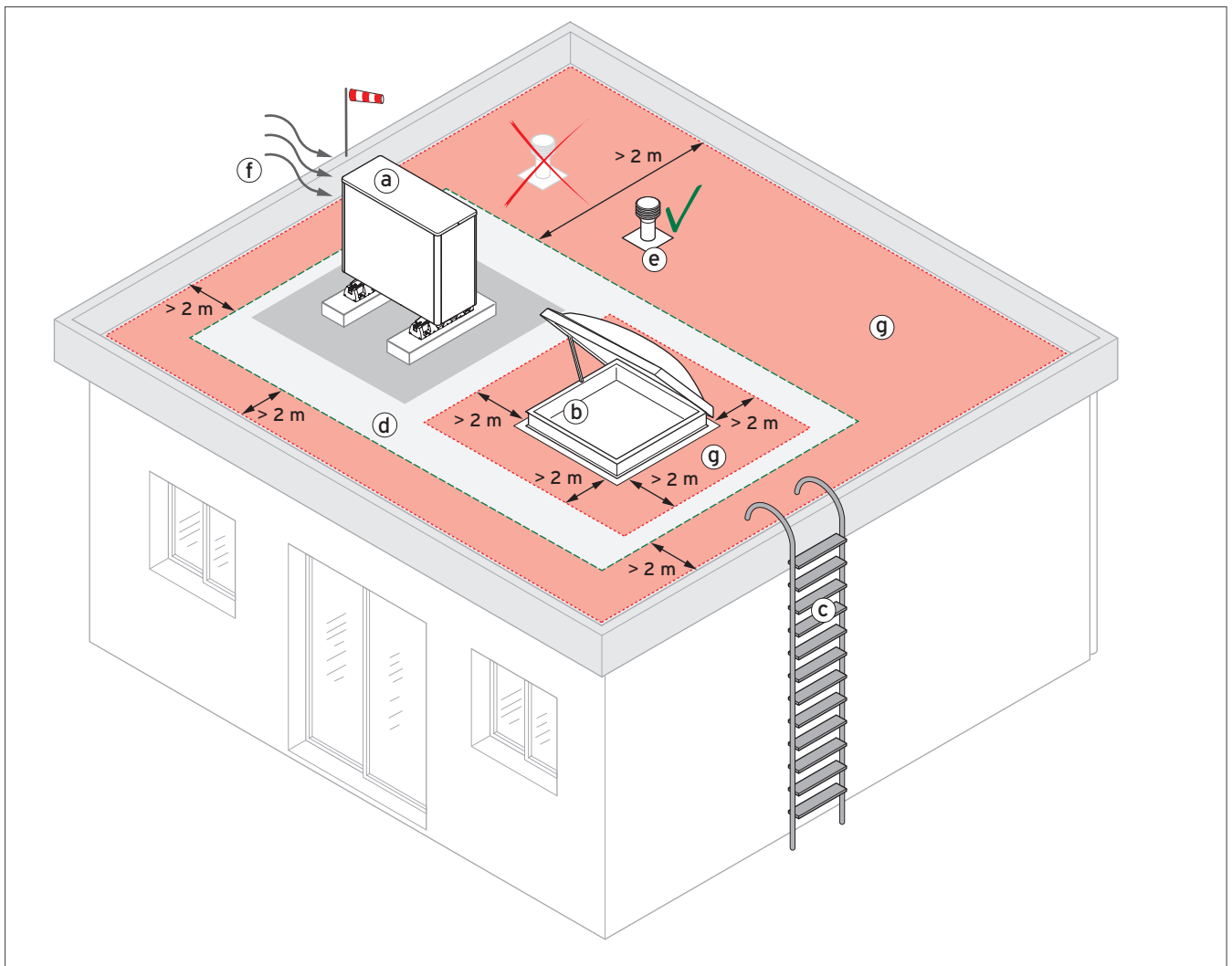


Fig 537: Flat-roof installation

- a Heat pump
- b Skylight (not guarded to prevent falls)
- c Secured ladder
- d Installation area
- e Duct ventilation
- f Fall edge
- g Safety area

Planning information for flat-roof installation

The components of the heat pump must always be accessible in order to carry out maintenance work.

For access to the roof installation from inside, e.g. via a skylight (b), you must also ensure that at least the minimum access route is provided.

Secure the heat pump to concrete slabs in order to prevent the roof skin from being damaged. The number and weight of the slabs depends on the heat pump's output.

Ensure that the structural design requirements are complied with.

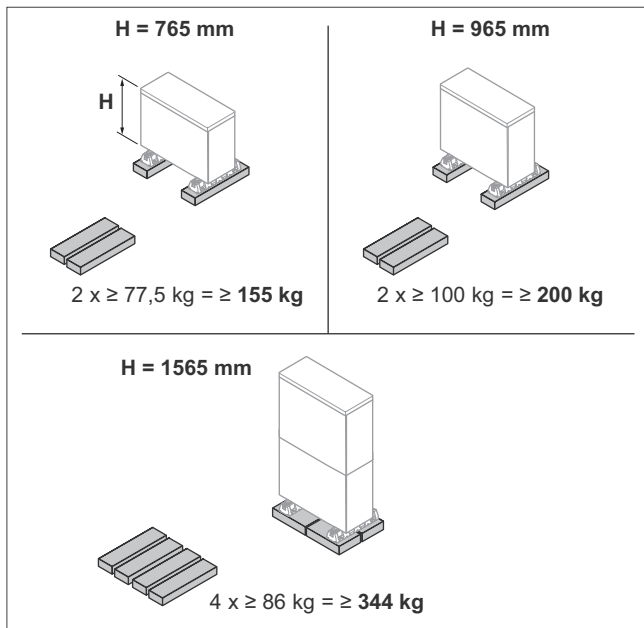


Fig 538: Number and weights of the concrete slabs

When work is carried out, moisture and dirt must be prevented from getting into the room below.

The secured ladder (c) must be designed in such a way that start-up, maintenance and repair work can be carried out by one person with the required tools and material, even in snowy conditions. In addition, a proper fixing device can be set for personal safety.

Note the following points:

- Do not install the unit at the fall edge (f)
- Duct ventilation (e) must not occur in the intake area of the heat pump
- Discharge must not occur towards the skylight
- Condensate discharge must be guaranteed
- Avoid discharge against the main direction of wind

Note

For information on installing REHAU accessories, see the separate section.



Installing the product



Warning.

Risk of injury due to toppling over in the wind.
 The product may topple over if there is a wind load.

- > Use two concrete bases and an anti-slip protective mat.
- > Screw the product to the concrete base.

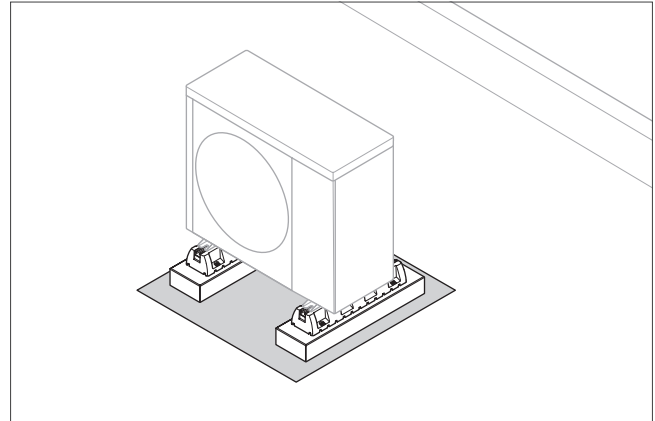


Fig 539: Setting up the product, flat roof

1. Use the large damping feet from the accessories.
2. Align the product horizontally.

11.12 Hydraulics installation

11.12.1 Planning the routing of the refrigerant pipes

Outdoor unit above indoor unit

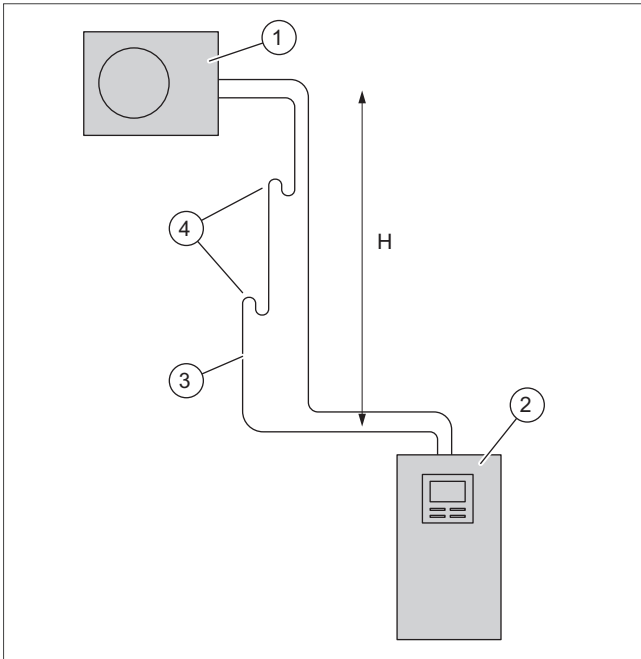


Fig 540: Outdoor unit above the indoor unit, height difference, oil elevation elbows

- 1 Outdoor unit
- 2 Indoor unit
- 3 Hot gas pipe
- 4 Oil elevation elbow

The outdoor unit can be installed up to a maximum height difference H of 30 m above the indoor unit. In this case, a refrigerant pipe with a maximum length of 40 m is permitted. Depending on the height difference, oil elevation elbows must be installed in the hot gas pipe

Geometry of the oil elevation elbow

Height difference H	Oil elevation elbow
up to 10 m	No oil elevation elbow required
Up to 20 m	One oil elevation elbow at 10 m high
Above 20 m	One oil elevation elbow at 10 m high, one additional oil elevation elbow at 20 m high

The oil elevation elbow must comply with these geometric requirements.

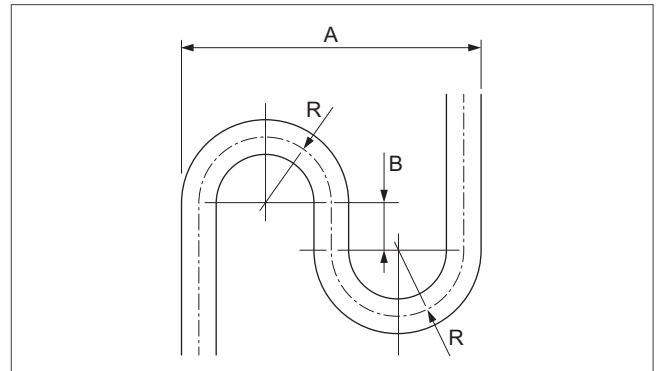


Fig 541: Geometry of the oil elevation elbow

Geometry, oil elevation elbow

Product	Outer diameter, hot gas pipe	A	B	R
VWL 35/5 and VWL 55/5	1/2 "	173	40	40
VWL 75/5 to VWL 125/5	5/8 "	256	40	60

Indoor unit above the outdoor unit

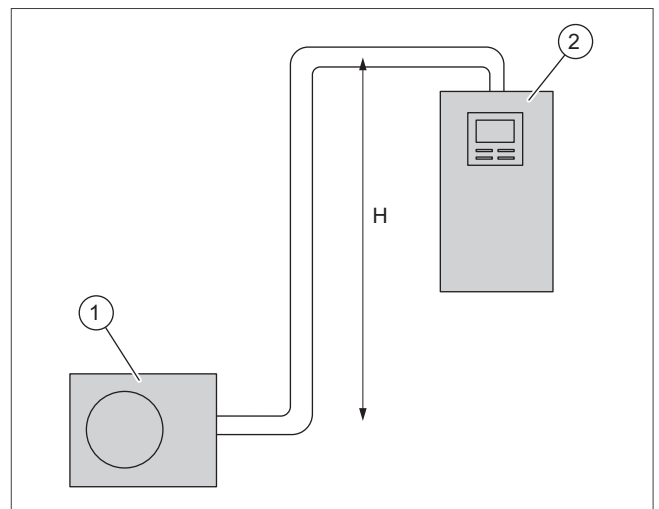


Fig 542: Indoor unit above the outdoor unit, height difference

- 1 Outdoor unit
- 2 Indoor unit

The indoor unit can be installed up to a maximum height difference H of 10 m above the outdoor unit. In this case, a refrigerant pipe with a maximum length of 25 m is permitted. No oil elevation elbow is required.

11.12.2 Routing refrigerant pipes to the product

Validity: Floor installation

1. Route the refrigerant pipe through the wall duct and to the product.

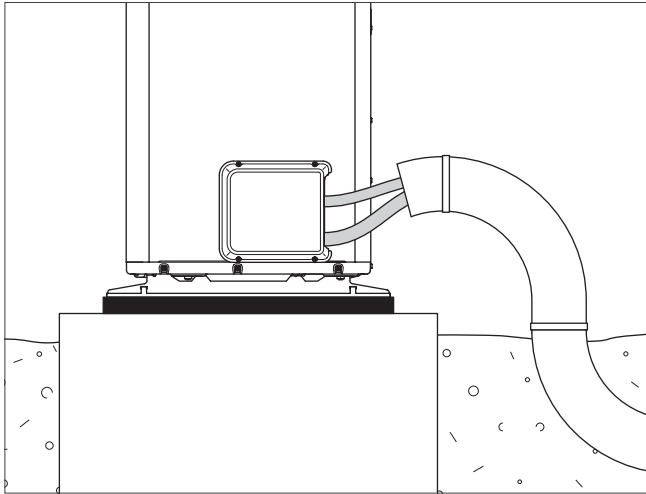


Fig 543: Routing refrigerant pipes to the product, ground installation

2. Route the refrigerant pipes through a suitable safety pipe in the ground, as shown in the figure.
3. Bend the refrigerant pipes only once into their final position. Use a bending spring or a bending tool to avoid kinks.
4. Route the refrigerant pipes in the wall duct with a slight downward gradient to the outside.
5. Route the refrigerant pipe centrally through the wall duct without the lines touching the wall.

11.12.3 Routing refrigerant pipes to the product

Validity: Wall-mounting

1. Route the refrigerant pipe through the wall duct and to the product.

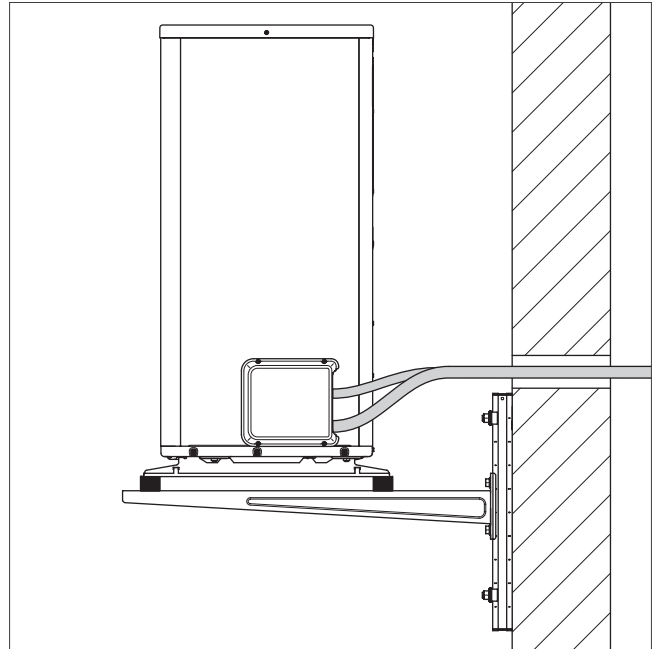


Fig 544: Routing refrigerant pipes to the product, wall installation

2. Bend the refrigerant pipes only once into their final position. Use a bending spring or a bending tool to avoid kinks.
3. Ensure that the refrigerant pipes do not come into contact with the wall and the product's casing sections.
4. Route the refrigerant pipes in the wall duct with a slight downward gradient to the outside.
5. Route the refrigerant pipe centrally through the wall duct without the lines touching the wall.

11.12.4 Routing refrigerant pipes in the building



Caution.
Risk of noise transmission.

If the refrigerant pipes are routed incorrectly, noise may be transmitted to the building during operation.

- > Do not route the refrigerant pipes in screed or masonry in the building.
- > Do not route the refrigerant pipes through living rooms in the building.

1. Route the refrigerant pipes from the wall duct to the indoor unit.
2. Bend the refrigerant pipes only once into their final position. Use a bending spring or a bending tool to avoid kinks.
3. Bend the refrigerant pipes at the right angle to the wall and avoid mechanical tension during the routing.
4. Ensure that the refrigerant pipes do not come into contact with the wall.
5. Use wall brackets with rubber insert to secure these. Place the wall brackets around the thermal insulation of the refrigerant pipe.
6. Check whether oil elevation elbows are required .
7. If required, install oil elevation elbows in the hot gas pipe.

11.12.5 Adding additional refrigerant



Danger!
Risk of injury due to escaping refrigerant.

Touching any escaping refrigerant may cause injury.

- > Wear personal protective equipment.

1. Determine the basic length of the refrigerant pipe.
2. Calculate the required volume of additional refrigerant.

Required volume of refrigerant

Product	Basic length	Refrigerant volume
VWL 35/5 and VWL 55/5	< 15 m	None
	15 m to 25 m	30 g for every additional metre (above 15 m)
	25 m to 40 m	300 g + 47 g for every additional metre (above 25 m)

Required volume of refrigerant

Product	Basic length	Refrigerant volume
VWL 75/5	< 15 m	None
	15 m to 25 m	70 g for every additional metre (above 15 m)
	25 m to 40 m	700 g + 107 g for every additional metre (above 25 m)

Required volume of refrigerant

Product	Basic length	Refrigerant volume
VWL 105/5 and VWL 125/5	< 15 m	None
	15 m to 25 m	70 g for every additional metre (above 15 m)
	25 m to 40 m	700 g + 83 g for every additional metre (above 25 m)

Condition: Length of the refrigerant pipe > 15 m

- » Ensure that the two isolation valves on the outdoor unit are still closed.

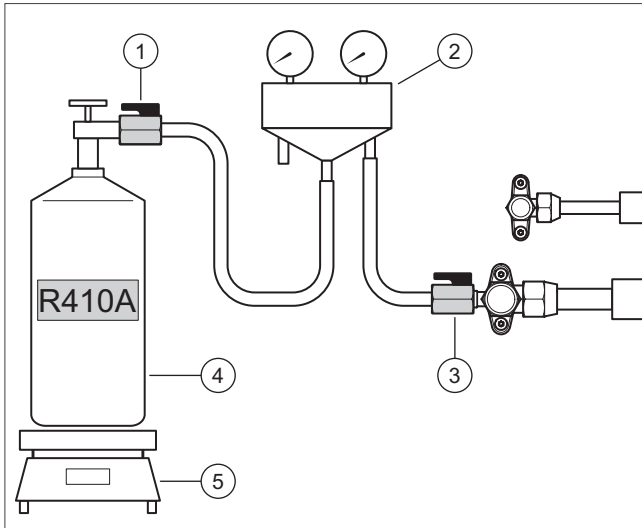


Fig 545: Adding additional refrigerant

- » Connect the refrigerant fitting (2) with the ball valve (1) to a refrigerant cylinder (4).
 - Refrigerant to be used: R410A
 - Refrigerant to be used: R410A
- » Put the refrigerant cylinder on the scales (5). If the refrigerant cylinder does not have an immersion sleeve, put it on the scales upside down.
- » Leave the ball valve (3) closed. Open the refrigerant cylinder and the ball valve (1).
- » If the hoses have been filled with refrigerant, set the scales to zero.
- » Open the ball valve (3). Fill the outdoor unit with the calculated refrigerant volume.
- » Close both of the ball valves.
- » Close the refrigerant cylinder.

11.12.6 Measures for reducing the noise for refrigerant-split heat pumps

Vibrations that arise while the compressor is operating may be transferred to the indoor unit via the heat pump's service valve and via the refrigerant pipe. This transmission of structure-borne/fluid-borne sound can propagate in the house in the form of airborne sound if the system is not installed correctly.

Furthermore, structure-borne sound input via components of the building may lead to sound propagation.

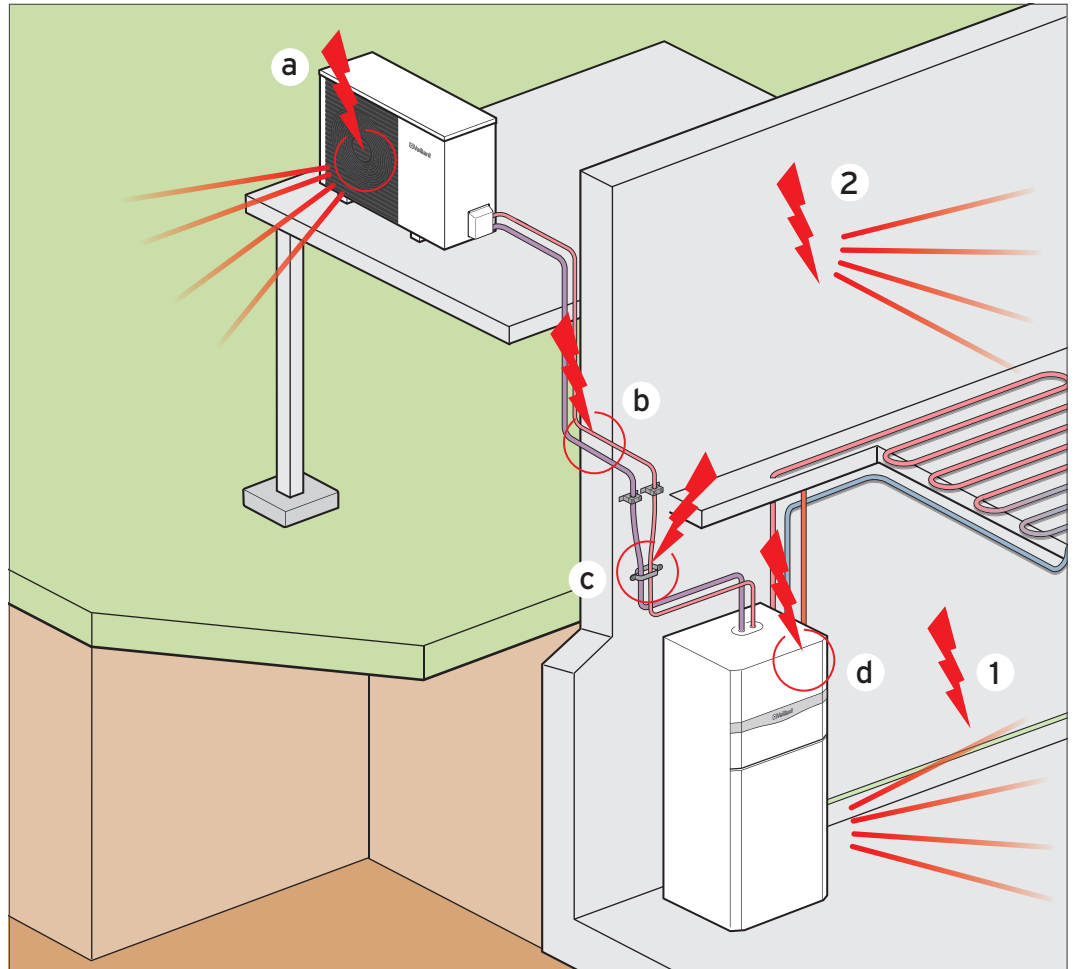


Fig 546: Difference between airborne sound and structure-borne sound

Sound perception and sound sources

Item	Perception in the building
1	Sound propagation in the installation room for the indoor unit (airborne sound)
2	Sound propagation in the living room (airborne sound)
Potential sound sources	
a	Structure-borne sound input via floors, ceilings, walls, etc.
b	Structure-borne sound input in the wall opening
c	Structure-borne sound input via pipeline fastenings
d	Transmission of structure-borne sound from the condenser to the indoor unit

To prevent the sound from potentially getting into the building, the following unfavourable installations must be avoided right from the planning phase:

- Pipe routing via inhabited rooms
- Setting up the indoor unit in living rooms
- Pipe routing in the masonry (concealed)
- Pipe routing in or under the screed
- Pipe routing in or on lightweight construction walls and panelling
- Long pipe routing in the building
- Setting up the indoor unit in „open“ rooms
- Installing the heat pump on flat roofs that may oscillate

If unfavourable installations/piping cannot be avoided, oval clamps and block clamps can be installed on-site.

Oval clamps without inserts are ideal for securing refrigerant pipes. In this case, the refrigerant pipes should be held loosely in the insulation. To guarantee the decoupling, the insulation must not be crushed.

Block clamps are recommended for tightly securing pipes and have vibration- and noise-damping properties. The block clamps should be installed as close as possible to the wall duct for the refrigerant pipes in the building. If required, only the hot gas pipe (the larger diameter) is secured using a block clamp. If an area of the pipeline is identified as having particularly large vibrations, the block clamp(s) should be installed there; if required, two sets of block clamps must be installed.

11.13 Product description for the uniTOWER VWL ..8/5 IS



Fig 547: uniTOWER VWL .../5 IS

Type overview

Unit designation	Art. no.
VWL 58/5 IS	0010022070
VWL 78/5 IS	0010022071
VWL 128/5 IS	0010022072

11.13.1 Special features

- Pre-installed hydraulic tower for **arOTHERM VWL AS**
- Extremely short installation times thanks to the compact design
- Can be extended using accessories that can be integrated
- SplitMountingConcept for easier positioning in two parts

11.13.2 Equipment

- Integrated 190 litre domestic hot water coiled tube cylinder
- 6 kW electric back-up heater with safety cut-out and electrical connection box
- Purging and draining the back-up heater
- 15 litre diaphragm expansion vessel for heating
- 3-port diverter valve for heating/domestic hot water
- Filling connection

11.13.3 Potential applications

The **uniTOWER VWL ..8/5 IS** is used only in combination with an **arOTHERM VWL AS** heat pump and acts as a link between the heat pump and the heating installation.

11.13.4 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.



Technical data - General

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Product dimensions, width	595 mm	595 mm	595 mm
Product dimensions, height	1,880 mm	1,880 mm	1,880 mm
Product dimensions, depth	693 mm	693 mm	693 mm
Weight, without packaging	158 kg	159 kg	160 kg
Weight, ready for operation	365 kg	367 kg	369 kg
Rated voltage	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE
Rated voltage	400 V (+10%/-15%), 50 Hz, 3~/N/PE	400 V (+10%/-15%), 50 Hz, 3~/N/PE	400 V (+10%/-15%), 50 Hz, 3~/N/PE
Rated power, maximum	5.4 kW	5.4 kW	8.8 kW
Rated current, maximum	23.50 A (230 V), 14.50 A (400 V)	23.50 A (230 V) 14.50 A (400 V)	23.50 A (230 V), 14.00 A (400 V)
IP rating	IP 10B	IP 10B	IP 10B
Overvoltage category	II	II	II
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams
Heating circuit connections	G 1"	G 1"	G 1"
Cold water and domestic hot water connections	G 3/4"	G 3/4"	G 3/4"

Technical data - Heating circuit

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Water content	16.6 l	17.1 l	17.6 l
Material in the heating circuit	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron		
Permissible water composition	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.		
Minimum operating pressure	0.05 MPa	0.05 MPa	0.05 MPa
Maximum operating pressure	0.3 MPa	0.3 MPa	0.3 MPa
Min. heating mode flow temperature	20 °C	20 °C	20 °C
Max. heating mode flow temperature with compressor	55 °C	55 °C	55 °C
Max. heating mode flow temperature with back-up heater	75 °C	75 °C	75 °C
Min. cooling mode flow temperature	7 °C	7 °C	7 °C
Max. flow temperature in cooling mode	25 °C	25 °C	25 °C
Min. nominal volume flow with 3kW outdoor unit	0.3 m³/h		
Min. nominal volume flow with 5kW outdoor unit	0.4 m³/h		
Minimum nominal volume flow rate		0.55 m³/h	
Min. nominal volume flow with 10 kW outdoor unit			1.13 m³/h
Min. nominal volume flow with 12 kW outdoor unit			1.18 m³/h
Nominal volume flow ΔT 5K with 3kW outdoor unit	0.54 m³/h		
Nominal volume flow ΔT 5K with 5kW outdoor unit	0.79 m³/h		
Nominal volume flow ΔT 5 K		1.02 m³/h	
Nominal volume flow ΔT 5 K with 10 kW outdoor unit			1.70 m³/h
Nominal volume flow ΔT 5 K with 12 kW outdoor unit			1.80 m³/h

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Nominal volume flow ΔT 8K with 3kW outdoor unit	0.3 m ³ /h		
Nominal volume flow ΔT 8K with 5kW outdoor unit	0.4 m ³ /h		
Nominal volume flow ΔT 8 K		0.55 m ³ /h	
Nominal volume flow ΔT 8 K with 10 kW outdoor unit			1.13 m ³ /h
Nominal volume flow ΔT 8 K with 12 kW outdoor unit			1.18 m ³ /h
Remaining feed head ΔT 5K with 3kW outdoor unit	71 kPa		
Remaining feed head ΔT 5K with 5kW outdoor unit	68 kPa		
Remaining feed head ΔT 5 K		66 kPa	
Remaining feed head ΔT 5 K with 10 kW outdoor unit			54 kPa
Remaining feed head ΔT 5 K with 12 kW outdoor unit			51.5 kPa
Remaining feed head ΔT 8K with 3kW outdoor unit	71 kPa		
Remaining feed head ΔT 8K with 5kW outdoor unit	68 kPa		
Remaining feed head ΔT 8 K		73 kPa	
Remaining feed head ΔT 8 K with 10 kW outdoor unit			82 kPa
Remaining feed head ΔT 8 K with 12 kW outdoor unit			81 kPa
Min. volume flow during continuous operation at the application limits with a 3kW outdoor unit	0.3 m ³ /h		
Min. volume flow during continuous operation at the application limits with a 5kW outdoor unit	0.4 m ³ /h		
Min. volume flow during continuous operation at the application limits		0.55 m ³ /h	
Min. volume flow during continuous operation at the application limits with a 10 kW outdoor unit			1.13 m ³ /h
Min. volume flow during continuous operation at the operating limits with a 12 kW outdoor unit			1.18 m ³ /h
Max. volume flow during continuous operation at the application limits with a 3kW outdoor unit	0.54 m ³ /h		
Max. volume flow during continuous operation at the application limits with a 5kW outdoor unit	0.79 m ³ /h		
Max. volume flow during continuous operation at the application limits		1.08 m ³ /h	
Max. volume flow during continuous operation at the application limits with a 10 kW outdoor unit			1.7 m ³ /h
Max. volume flow during continuous operation at the operating limits with a 12 kW outdoor unit			1.8 m ³ /h
Pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump
Energy efficiency index (EEI) of the pump	≤0.2	≤0.2	≤ 0.23

Technical data - Domestic hot water

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Water content of the domestic hot water cylinder	185 l	185 l	185 l
Domestic hot water cylinder material	Steel, enamelled	Steel, enamelled	Steel, enamelled
Maximum operating pressure	1.0 MPa	1.0 MPa	1.0 MPa
Max. cylinder temperature due to the heat pump	57 °C	57 °C	57 °C
Max. cylinder temperature due to back-up heater	75 °C	75 °C	75 °C
Heat-up time to 53 °C target cylinder temperature, eco mode, A7	2.53 h	1.75 h	1.08 h
Power consumption during standby in accordance with DIN EN 16147 at 53 °C target cylinder temperature and 7 K hysteresis, eco mode, A7	31.3 W	31.9 W	44.6 W
Power consumption during standby in accordance with DIN EN 16147 at 53 °C target cylinder temperature and 20 K hysteresis, eco mode, A7	19 W	22 W	26 W

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Coefficient of performance (COP _{dhw}) in accordance with EN 16147 at 53 °C target cylinder temperature and 7 K hysteresis, ECO mode, A7	2.45	2.73	2.36
Coefficient of performance (COP _{dhw}) in accordance with EN 16147 at 53 °C target cylinder temperature and 20 K hysteresis, eco mode, A7	2.51	3.06	2.56

Technical data - Electrics

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Min. electrical power consumption of the heating pump	2 W	2 W	3 W
Max. electrical power consumption of the heating pump	60 W	60 W	100 W
Electrical power consumption of the heating pump at A7/35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	20 W	20 W	40 W

Technical data - Refrigerant circuit

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Material, refrigerant pipe	Copper	Copper	Copper
Connection technology, refrigerant pipe	Flare connection	Flare connection	Flare connection
Outer diameter, hot gas pipe	1/2 " (12.7 mm)	5/8" (15.875 mm)	5/8" (15.875 mm)
Outer diameter, liquid pipe	1/4" (6.35 mm)	3/8" (9.575 mm)	3/8" (9.575 mm)
Minimum wall thickness, hot gas pipe	0.8 mm	0.95 mm	0.95 mm
Minimum wall thickness, liquid pipe	0.8 mm	0.8 mm	0.8 mm
Refrigerant, type	R410A	R410A	R410A
Refrigerant, Global Warming Potential (GWP)	2088	2088	2088

Note

All specific and required information for the split installation and components of the outdoor unit are included in the corresponding installation instructions for the outdoor unit, which is used in combination with the current indoor unit.



11.13.5 Remaining feed head of the unit for the heating circuit

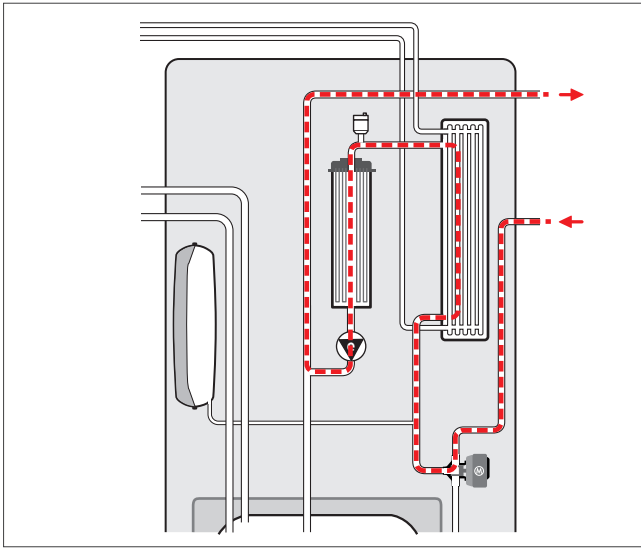


Fig 548: Heating water course

VWL 78/5 remaining feed head at nominal volume flow

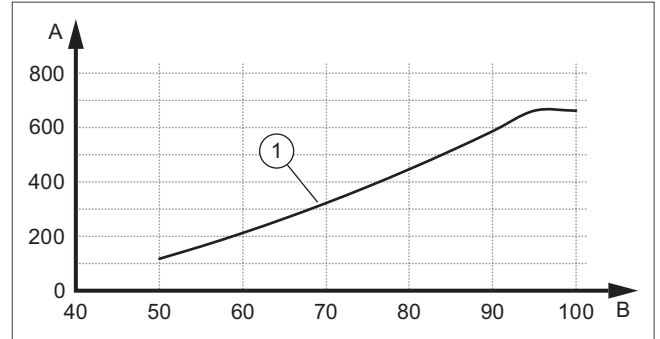


Fig 550: VWL 78/5 remaining feed head

- 1 VWL 78/5, 7 kW/1020 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

VWL 58/5 remaining feed head at nominal volume flow

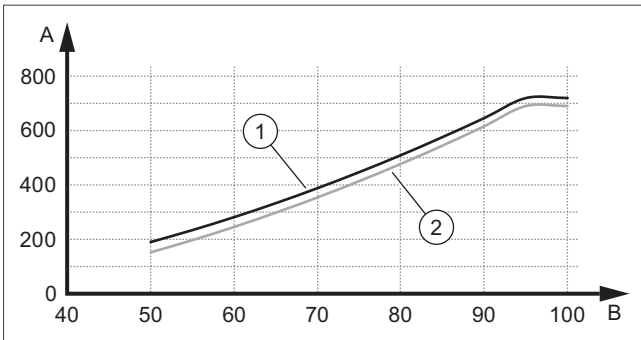


Fig 549: VWL 58/5 remaining feed head

- 1 VWL 58/5, 3.5 kW/540 l/h
- 2 VWL 58/5, 5 kW/790 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

VWL 128/5 remaining feed head at nominal volume flow

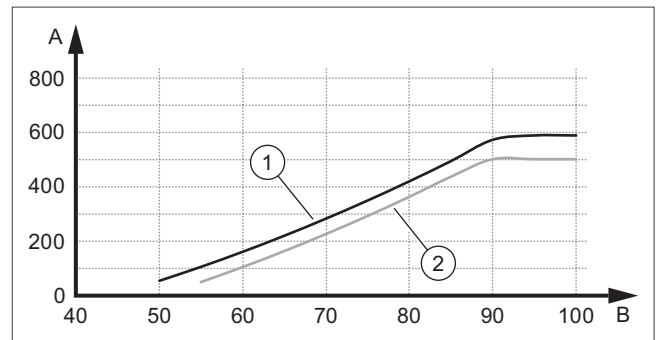


Fig 551: VWL 128/5 remaining feed head

- 1 VWL 128/5, 10 kW/1670 l/h
- 2 VWL 128/5, 12 kW/1850 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

11.13.6 Product dimensions and connection dimensions

Dimensions

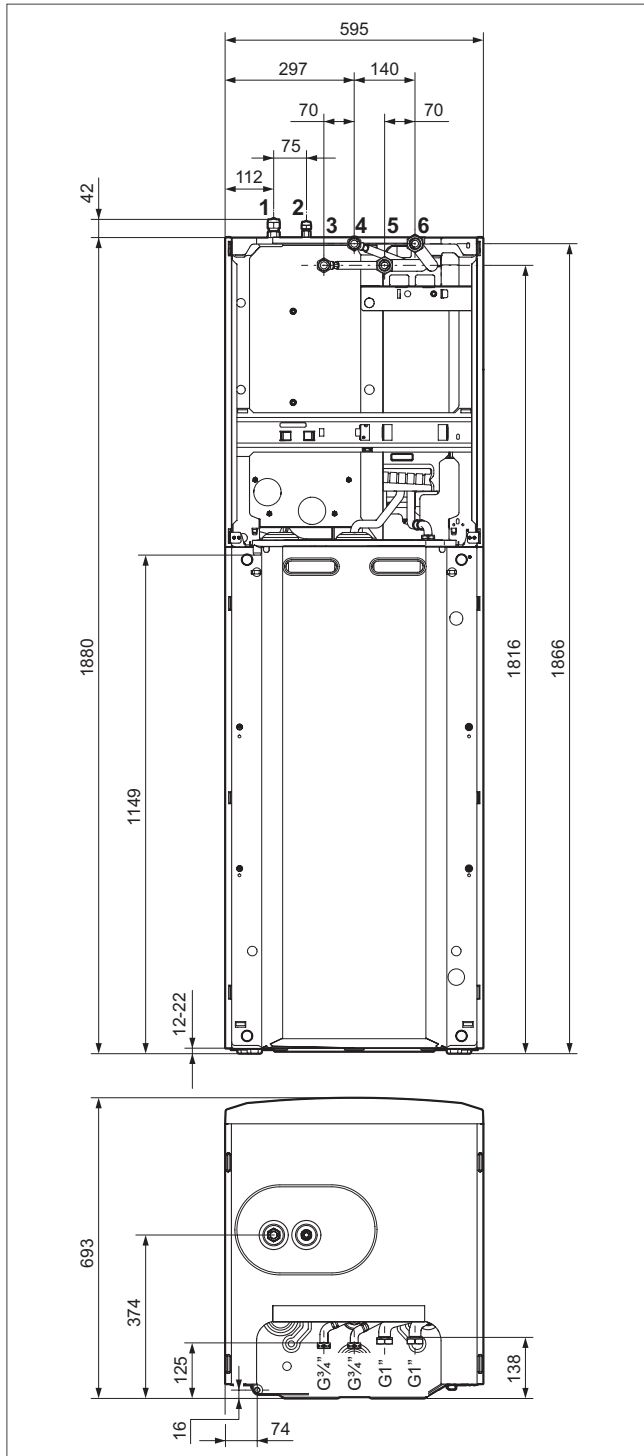


Fig 552: Dimension drawing and connection dimensions

- 1 Suction gas pipe
- 2 Liquid pipe
- 3 Condensate discharge
- 4 G 3/4 domestic hot water connection
- 5 G 1 heating flow
- 6 G 1 heating return

Product dimensions four the transport

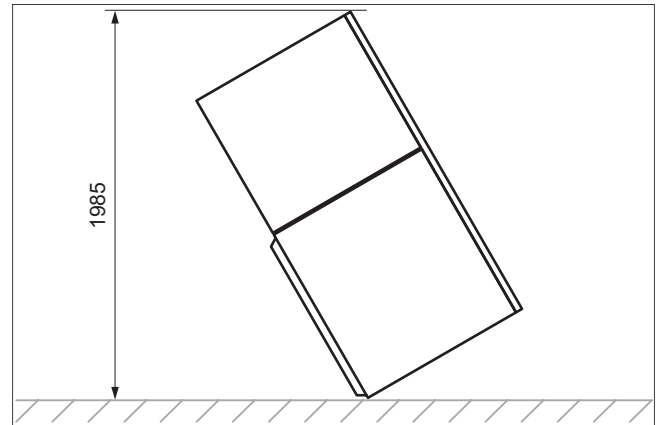


Fig 553: Dimensions for transport

11.13.7 Requirements for the installation site

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Coolant pipe max. [m]	Minimum size for the installation room [m ³]
VWL 35/5 AS + VWL 58/5 IS	R 410a	1.50	15	3.4
VWL 35/5 AS + VWL 58/5 IS	R 410a	1.80	25	4.1
VWL 35/5 AS + VWL 58/5 IS	R 410a	2.51	40	5.7
VWL 55/5 AS + VWL 58/5 IS	R 410a	1.50	15	3.4
VWL 55/5 AS + VWL 58/5 IS	R 410a	1.80	25	4.1
VWL 55/5 AS + VWL 58/5 IS	R 410a	2.51	40	5.7
VWL 75/5 AS + VWL 78/5 IS	R 410a	2.39	15	5.4
VWL 75/5 AS + VWL 78/5 IS	R 410a	3.10	25	7.1
VWL 75/5 AS + VWL 78/5 IS	R 410a	4.71	40	10.7
VWL 105/5 AS + VWL 128/5 IS	R 410a	3.60	15	8.2
VWL 105/5 AS + VWL 128/5 IS	R 410a	4.30	25	9.8
VWL 105/5 AS + VWL 128/5 IS	R 410a	5.55	40	12.6
VWL 125/5 AS + VWL 128/5 IS	R 410a	3.60	15	8.2
VWL 125/5 AS + VWL 128/5 IS	R 410a	4.30	25	9.8
VWL 125/5 AS + VWL 128/5 IS	R 410a	5.55	40	12.6

11.14 Product description for the VWL ..7/5 IS hydraulic station



Fig 554: VWL ..7/5 IS hydraulic station

11.14.1 Equipment

- eBUS interface
- Appliance interface with display and control buttons
- Electrical immersion heater with safety cut-out
- 10 l expansion vessel for heating
- 3-port diverter valve
- Water pressure sensor
- Expansion relief valve for heating
- VF1 temperature sensor
- Connection cable

11.14.2 Potential applications

The **VWL ..7/5 IS hydraulic station** is an electric reheater module with integrated heat pump control interface module and diverter valve for the aroTHERM heating system. Depending on the system design and configuration, it can supplement the heat supply from the heat pump.

The heat output of the electrical heating rod can be set as required to either 2, 4 or 6 kW. The module can be connected to a 230 V or 400 V power supply.

Product types and article numbers

Unit designation	Art. no.
VWL 57/ 5 IS	0010023494
VWL 77/ 5 IS	0010023498
VWL 127/ 5 IS	0010023523

Note

The following performance data is only applicable to new products with clean heat exchangers.

**Technical data - General**

	VWL 57/5 IS	VWL 77/5 IS	VWL 127/5 IS
Product dimensions, width	440 mm	440 mm	440 mm
Product dimensions, height	720 mm	720 mm	720 mm
Product dimensions, depth	350 mm	350 mm	350 mm
Weight, without packaging	23 kg	24 kg	26.5 kg
Rated voltage	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE
Rated voltage	400 V (+10%/-15%), 50 Hz, 3~/N/PE	400 V (+10%/-15%), 50 Hz, 3~/N/PE	400 V (+10%/-15%), 50 Hz, 3~/N/PE
Rated power, maximum	5.4 kW	5.4 kW	8.8 kW
Rated current, maximum	23.50 A (230 V), 14.50 A (400 V)	23.50 A (230 V) 14.50 A (400 V)	23.50 A (230 V), 14.00 A (400 V)
IP rating	IP 10B	IP 10B	IP 10B
Overvoltage category	II	II	II
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams
Heating circuit connections	G 1"	G 1"	G 1"
Domestic hot water cylinder connections	G 1"	G 1"	G 1"

Technical data - Heating circuit

	VWL 57/5 IS	VWL 77/5 IS	VWL 127/5 IS
Material in the heating circuit	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, steel, composite materials		
Permissible water composition	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.		
Minimum operating pressure	0.05 MPa	0.05 MPa	0.05 MPa
Maximum operating pressure	0.3 MPa	0.3 MPa	0.3 MPa
Min. heating mode flow temperature	20 °C	20 °C	20 °C
Max. heating mode flow temperature with compressor	55 °C	55 °C	55 °C
Max. heating mode flow temperature with back-up heater	75 °C	75 °C	75 °C
Min. cooling mode flow temperature	7 °C	7 °C	7 °C
Max. flow temperature in cooling mode	25 °C	25 °C	25 °C
Min. nominal volume flow with 3kW outdoor unit	0.3 m³/h		
Min. nominal volume flow with 5kW outdoor unit	0.4 m³/h		
Minimum nominal volume flow rate		0.55 m³/h	
Min. nominal volume flow with 10 kW outdoor unit			1.13 m³/h
Min. nominal volume flow with 12 kW outdoor unit			1.18 m³/h
Nominal volume flow ΔT 5K with 3kW outdoor unit	0.54 m³/h		
Nominal volume flow ΔT 5K with 5kW outdoor unit	0.79 m³/h		
Nominal volume flow ΔT 5 K		1.02 m³/h	
Nominal volume flow ΔT 5 K with 10 kW outdoor unit			1.70 m³/h
Nominal volume flow ΔT 5 K with 12 kW outdoor unit			1.80 m³/h
Nominal volume flow ΔT 8K with 3kW outdoor unit	0.3 m³/h		
Nominal volume flow ΔT 8K with 5kW outdoor unit	0.4 m³/h		
Nominal volume flow ΔT 8 K		0.55 m³/h	

	VWL 57/5 IS	VWL 77/5 IS	VWL 127/5 IS
Nominal volume flow ΔT 8 K with 10 kW outdoor unit			1.13 m ³ /h
Nominal volume flow ΔT 8 K with 12 kW outdoor unit			1.18 m ³ /h
Remaining feed head ΔT 5K with 3kW outdoor unit	71 kPa		
Remaining feed head ΔT 5K with 5kW outdoor unit	68 kPa		
Remaining feed head ΔT 5 K		66 kPa	
Remaining feed head ΔT 5 K with 10 kW outdoor unit			54 kPa
Remaining feed head ΔT 5 K with 12 kW outdoor unit			51.5 kPa
Remaining feed head ΔT 8K with 3kW outdoor unit	71 kPa		
Remaining feed head ΔT 8K with 5kW outdoor unit	68 kPa		
Remaining feed head ΔT 8 K		73 kPa	
Remaining feed head ΔT 8 K with 10 kW outdoor unit			82 kPa
Remaining feed head ΔT 8 K with 12 kW outdoor unit			81 kPa
Min. volume flow during continuous operation at the application limits with a 3kW outdoor unit	0.3 m ³ /h		
Min. volume flow during continuous operation at the application limits with a 5kW outdoor unit	0.4 m ³ /h		
Min. volume flow during continuous operation at the application limits		0.55 m ³ /h	
Min. volume flow during continuous operation at the application limits with a 10 kW outdoor unit			1.13 m ³ /h
Min. volume flow during continuous operation at the operating limits with a 12 kW outdoor unit			1.18 m ³ /h
Max. volume flow during continuous operation at the application limits with a 3kW outdoor unit	0.54 m ³ /h		
Max. volume flow during continuous operation at the application limits with a 5kW outdoor unit	0.79 m ³ /h		
Max. volume flow during continuous operation at the application limits		1.08 m ³ /h	
Max. volume flow during continuous operation at the application limits with a 10 kW outdoor unit			1.7 m ³ /h
Max. volume flow during continuous operation at the operating limits with a 12 kW outdoor unit			1.8 m ³ /h
Pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump
Energy efficiency index (EEI) of the pump	≤0.2	≤0.2	≤ 0.23

Technical data - Electrics

	VWL 57/5 IS	VWL 77/5 IS	VWL 127/5 IS
Min. electrical power consumption of the heating pump	2 W	2 W	3 W
Max. electrical power consumption of the heating pump	60 W	60 W	100 W
Electrical power consumption of the heating pump at A7/35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	20 W	20 W	40 W

Technical data - Refrigerant circuit

	VWL 57/5 IS	VWL 77/5 IS	VWL 127/5 IS
Material, refrigerant pipe	Copper	Copper	Copper
Connection technology, refrigerant pipe	Flare connection	Flare connection	Flare connection
Outer diameter, hot gas pipe	1/2" (12.7 mm)	5/8" (15.875 mm)	5/8" (15.875 mm)
Outer diameter, liquid pipe	1/4" (6.35 mm)	3/8" (9.575 mm)	3/8" (9.575 mm)
Minimum wall thickness, hot gas pipe	0.8 mm	0.95 mm	0.95 mm
Minimum wall thickness, liquid pipe	0.8 mm	0.8 mm	0.8 mm
Refrigerant, type	R410A	R410A	R410A
Refrigerant, Global Warming Potential (GWP)	2088	2088	2088

Note

All specific and required information for the split installation and components of the outdoor unit are included in the corresponding installation instructions for the outdoor unit, which is used in combination with the current indoor unit.



11.14.3 Remaining feed head at nominal volume flow

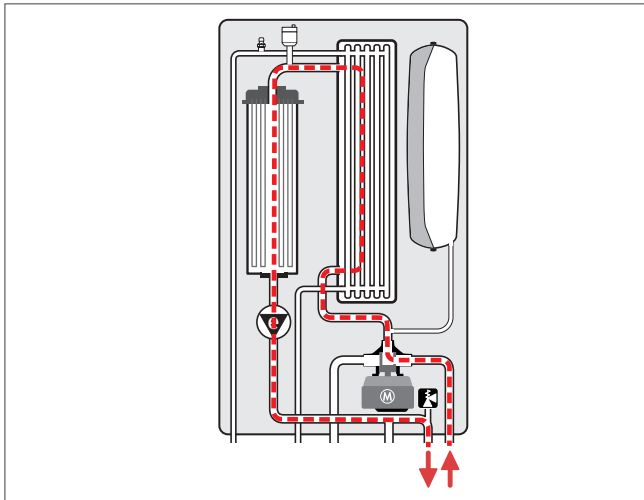


Fig 555: Heating water course

VWL 77/5 remaining feed head at nominal volume flow

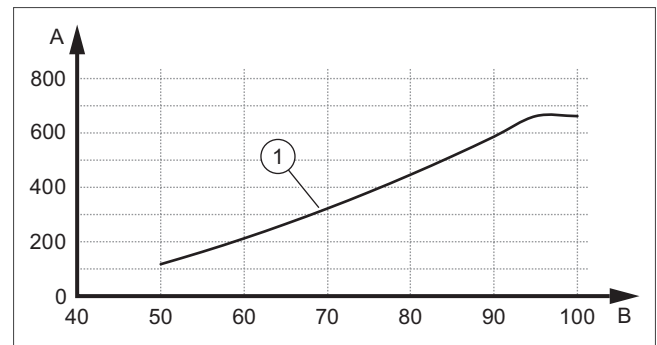


Fig 557: VWL 77/5 remaining feed head

- 1 VWL 77/5, 7 kW/1020 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

VWL 57/5 remaining feed head at nominal volume flow

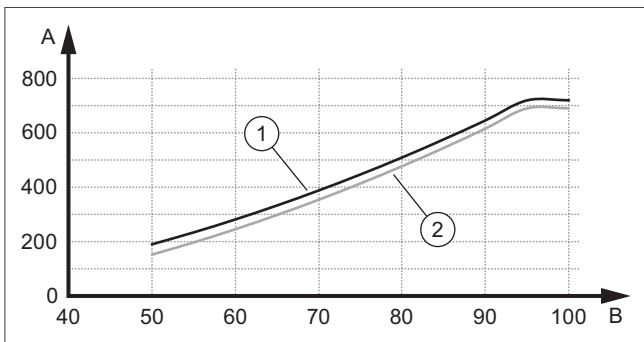


Fig 556: VWL 57/5 remaining feed head

- 1 VWL 57/5, 3.5 kW/540 l/h
- 2 VWL 57/5, 5 kW/790 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

VWL 127/5 remaining feed head at nominal volume flow

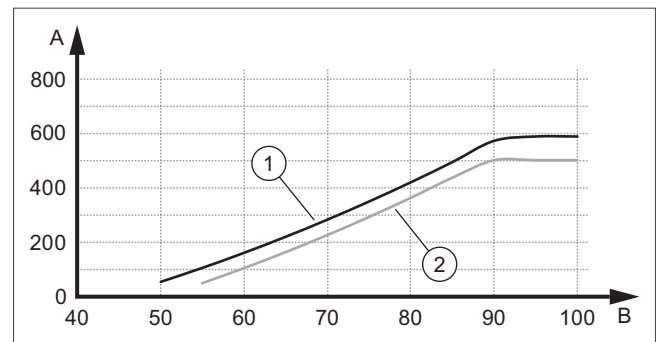


Fig 558: VWL 127/5 remaining feed head

- 1 VWL 127/5, 10 kW/1670 l/h
- 2 VWL 127/5, 12 kW/1850 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

11.14.4 Product dimensions and connection dimensions

Dimensions

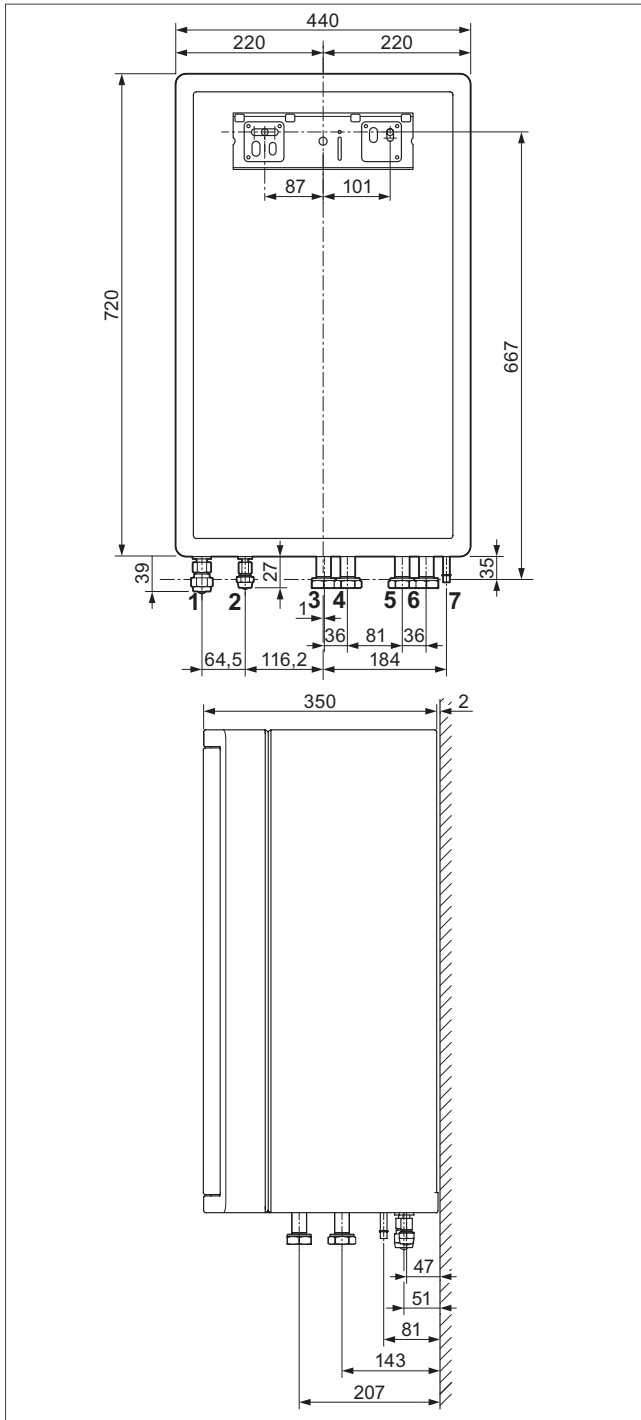


Fig 559: VWL ..7/5 IS - dimensions

- 1 Hot gas pipe
- 2 Liquid pipe
- 3 Domestic hot water cylinder return
- 4 Domestic hot water cylinder flow
- 5 Heating flow
- 6 Heating return
- 7 Expansion relief valve outlet

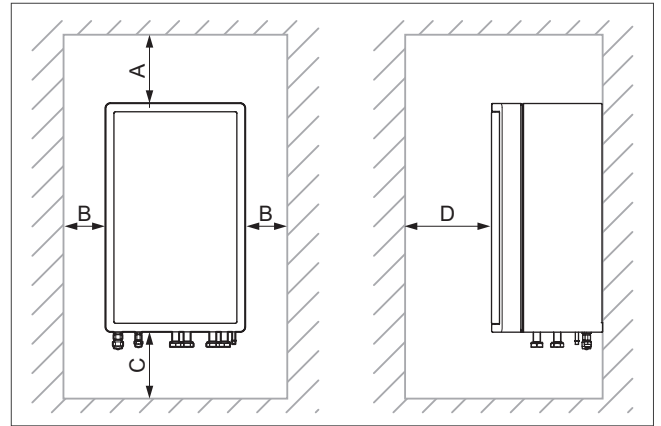



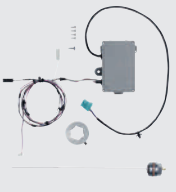





Fig 560: Recommended minimum clearances and installation clearances

11.14.5 Requirements for the installation site

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Coolant pipe [m]	Minimum size for the installation room [m ³]
VWL 35/5 AS + VWL 57/5 IS	R 410a	1.50	15	3.4
VWL 35/5 AS + VWL 57/5 IS	R 410a	1.80	25	4.1
VWL 35/5 AS + VWL 57/5 IS	R 410a	2.51	40	5.7
VWL 55/5 AS + VWL 57/5 IS	R 410a	1.50	15	3.4
VWL 55/5 AS + VWL 57/5 IS	R 410a	1.80	25	4.1
VWL 55/5 AS + VWL 57/5 IS	R 410a	2.51	40	5.7
VWL 75/5 AS + VWL 77/5 IS	R 410a	2.39	15	5.4
VWL 75/5 AS + VWL 77/5 IS	R 410a	3.10	25	7.1
VWL 75/5 AS + VWL 77/5 IS	R 410a	4.71	40	10.7
VWL 105/5 AS + VWL 127/5 IS	R 410a	3.60	15	8.2
VWL 105/5 AS + VWL 127/5 IS	R 410a	4.30	25	9.8
VWL 105/5 AS + VWL 127/5 IS	R 410a	5.55	40	12.6
VWL 125/5 AS + VWL 127/5 IS	R 410a	3.60	15	8.2
VWL 125/5 AS + VWL 127/5 IS	R 410a	4.30	25	9.8
VWL 125/5 AS + VWL 127/5 IS	R 410a	5.55	40	12.6

11.15 uniTOWER accessories

Accessories	Description	Order no.
Domestic hot water connection accessories		
	<p>Circulation set with pump High-efficiency circulation pump with non-return valve, connection pipe, connection fittings, brass G 3/4" connection T-piece, G 3/4" coupling with integrated non-return valve, cut-off for auro-/ecoCOMPACT, pipe set with pump for circulation connection on the rear of the unit</p> <p>Can be used for the aroTHERM with uniTOWER and aroTHERM Split with uniTOWER</p>	0020170503
	<p>Circulation set without pump Semi-insulated connection pipe with G 3/4" coupling, copper elbow with G 3/4" coupling, insulated G 3/4" connection piece with G 3/4" coupling, brass G 3/4" connection T-piece, G 3/4" coupling with integrated non-return valve</p> <p>Pipe set for circulation connection on the rear of the unit, for connection to the circulation pump that already exists on-site</p> <p>Can be used for the aroTHERM with uniTOWER and aroTHERM Split with uniTOWER</p>	0020170502
Expansion vessel		
	<p>Potable water expansion vessel installation kit 8 l potable water expansion vessel (flow-through), 3/4" connection fittings, G 3/4" flexible connection pipes, EPS padding</p> <p>Can be used for the aroTHERM with uniTOWER and aroTHERM Split with uniTOWER</p>	0020180979
System protection		
	<p>Universal external current anode with connection accessories M8 external current anode with 3/4" adapter, power supply unit, cable, small parts for replacing the magnesium protection anode that is already available on-site.</p> <p>Can be used for the aroTHERM with uniTOWER and aroTHERM Split with uniTOWER</p>	0020170505

Accessories	Description	Order no.
Heat generator connection accessories		
	<p>Flexible installation set for uniTOWER for aroTHERM Split Flexible connection, left- and right-hand side Stainless steel flexible pipes with wall bracket for quick pre-installation.</p> <p>Easy press-fitting for further routing in the building, heat insulation covers that comply with the Energy Saving Ordinance and are suitable for the active cooling mode.</p> <p>10 bar expansion relief valve, 1" service valves, filling/draining cock, 3 bar expansion relief valve, stainless steel flexible pipe with wall bracket, heat insulation covers, small parts, drain hoses, manometer, purging.</p>	0020250219
	<p>Installation set on on-site piping for uniTOWER for aroTHERM Split Left-or right-hand connection or from the rear, Heat insulation covers that comply with the Energy Saving Ordinance and are suitable for the active cooling mode.</p> <p>10 bar expansion relief valve, 1" service valves, filling/draining cock, 3 bar expansion relief valve, heat insulation covers, small parts, drain hoses, manometer, purging.</p>	0020250220
	<p>Buffer module for uniTOWER for aroTHERM Split Series buffer cylinder can be integrated in the uniTOWER for aroTHERM Split, To guarantee the heat pump's minimum running time</p>	0020269273

11.16 Basic hydraulic and wiring diagrams

11.16.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections

Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

11.16.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				regulated	direct		Domestic hot water	Heating	
0020232127	aroTHERM AS VWL ..7/5 IS	VRC 700	integrated, active	-	1 UFH	VWZ MPS 40	-	-	uniTOWER VWL ..8/5 IS
0020234149	aroTHERM AS ecoTEC VCW VWL ..7/5 IS	VRC 700	integrated, active	-	1 UFH	VWZ MPS 40	-	-	ecoTEC VCW
0020234148	aroTHERM AS VWL ..7/5 IS	VRC 700	integrated, active	-	1 UFH	VWZ MPS 40	-	-	geoSTOR VIH RW

0020232127 - Basic hydraulic diagram

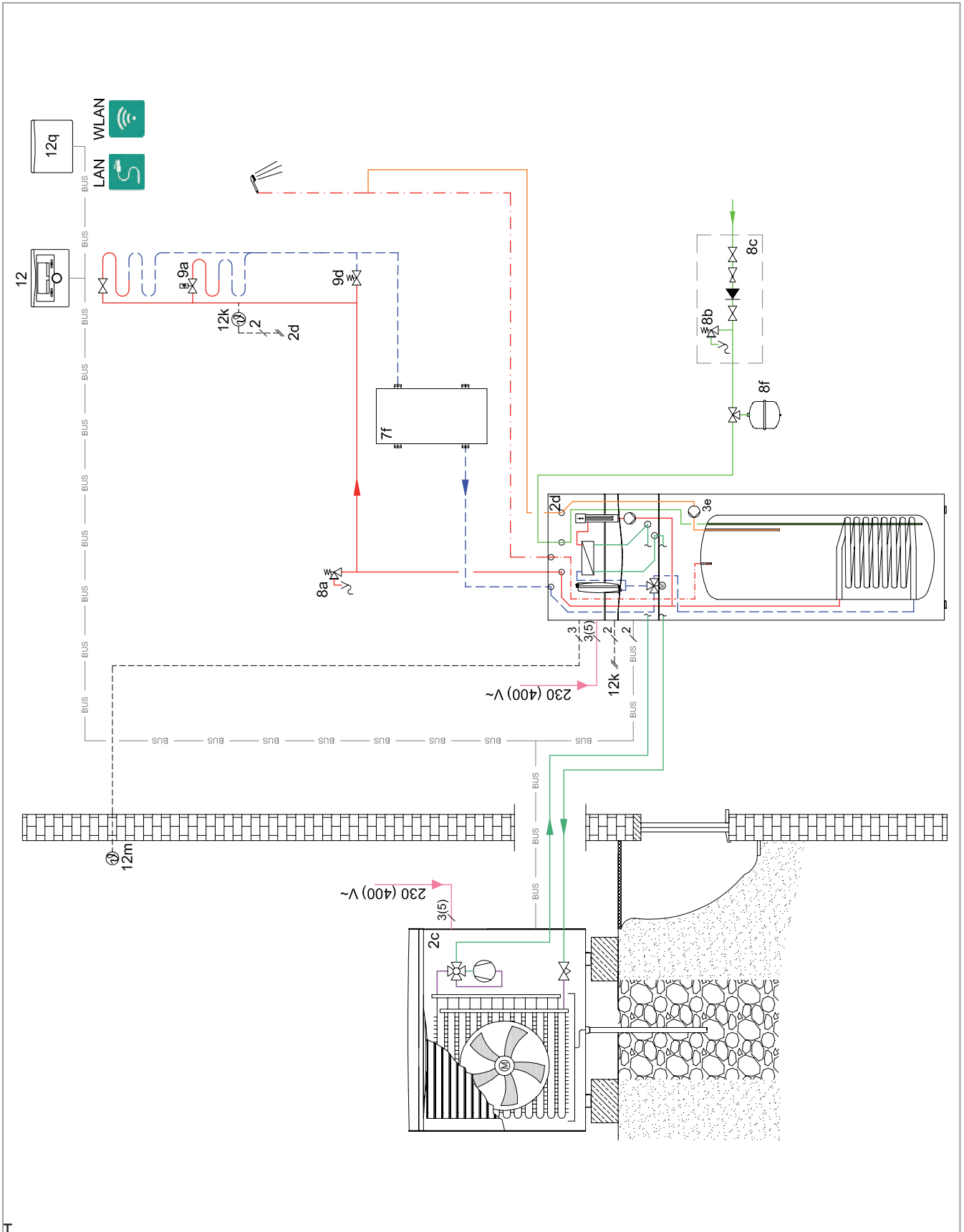


Fig 561: Basic hydraulic diagram

0020232127 - Wiring diagram

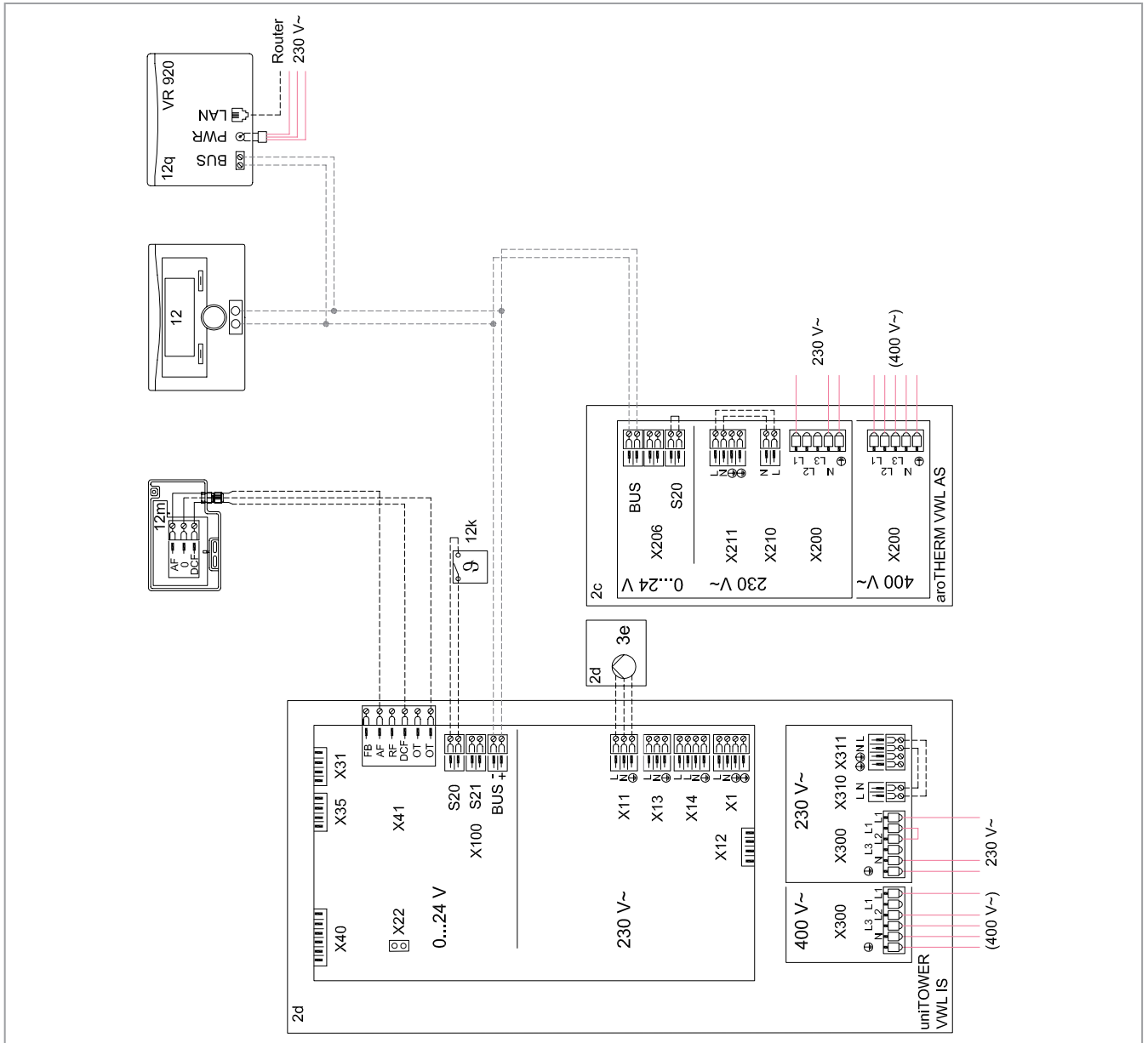


Fig 562: Wiring diagram

Individual components

- aroTHERM AS
- uniTOWER VWL IS
- VWZ MPS 40
- VRC 700/5
- VWL ..7/5 IS

Setting

VRC 700/5 system diagram setting: 8

0020234149 - Basic hydraulic diagram

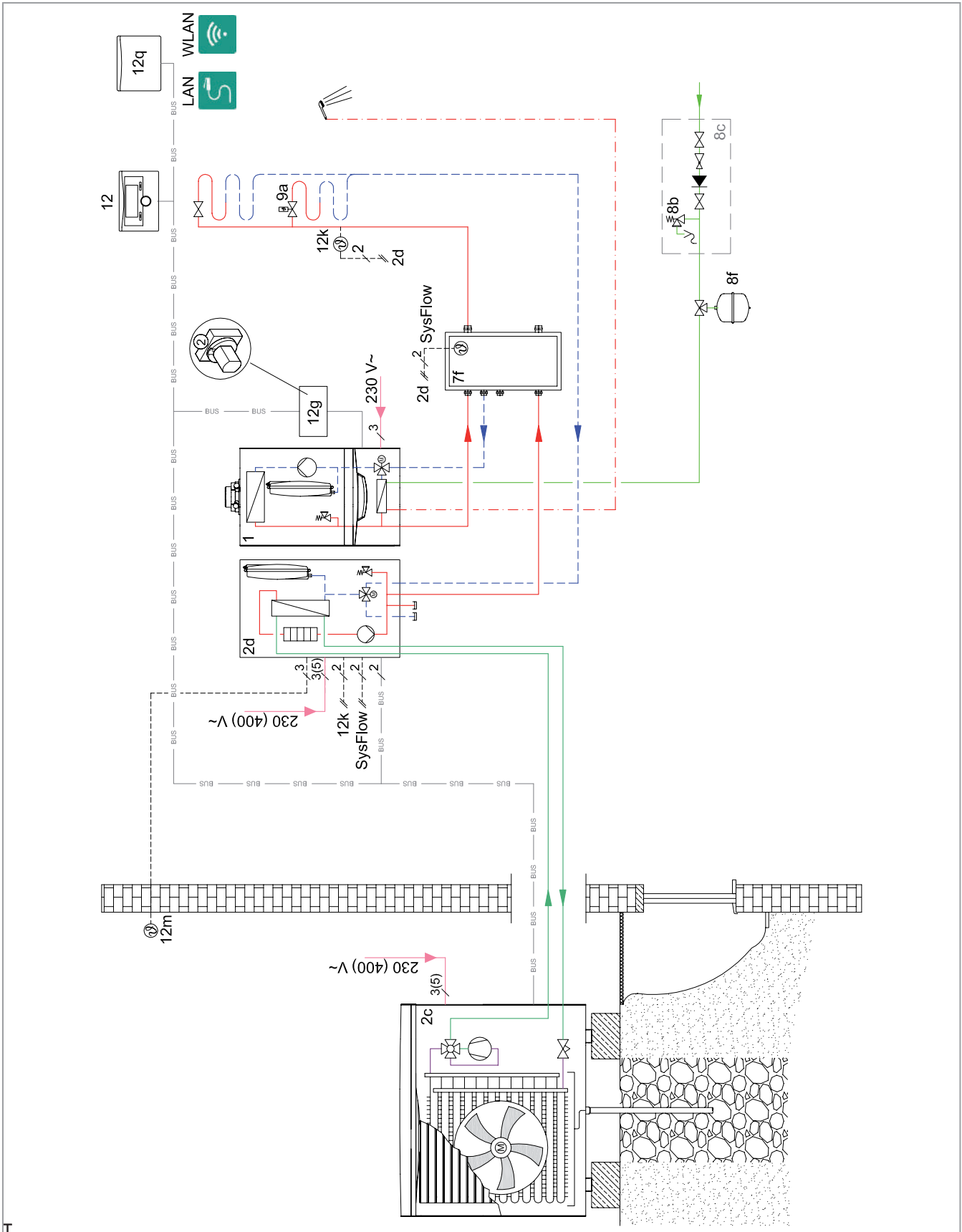


Fig 563: Basic hydraulic diagram

0020234148 - Wiring diagram

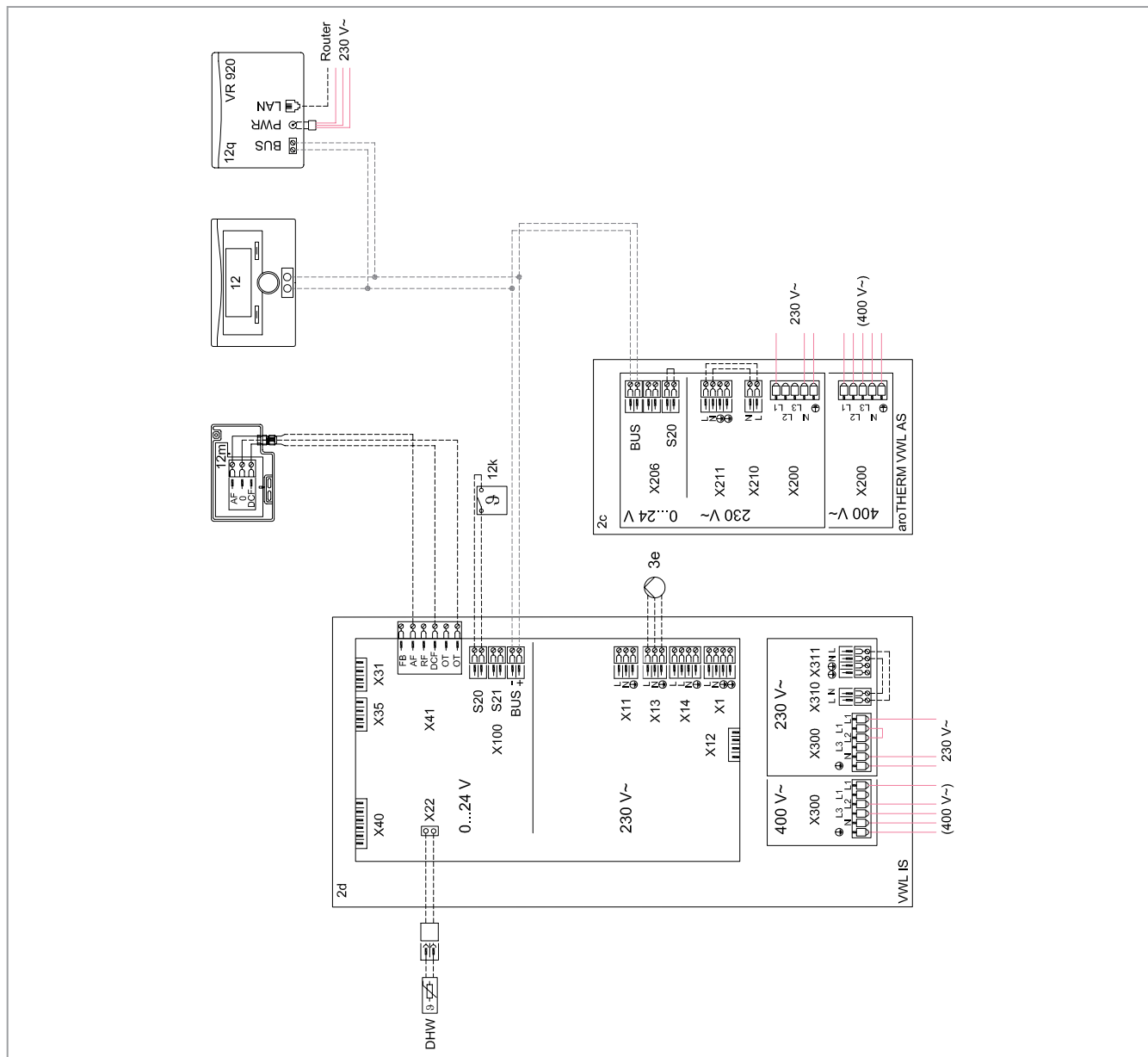


Fig 566: Wiring diagram

Individual components

- aroTHERM AS
- VRC 700/5
- VWL ..7/5 IS
- geoSTOR VIH RW

Setting

VRC 700/5 system diagram setting: 8



12. Product information for the aroTHERM perform VWL ..5/3 AS

Update 10
New chapter new product

12.1 Product combinations



Fig. 567: Product combinations

Product combinations aroTHERM perform VWL ..5/3 AS

	Heat pump	Decoupler modules				Control	Photovoltaics
	Air-to-water (split) aroTHERM perform VWL .../3 (1)	Back-up boiler (2) Electric or gas	Buffer cylinder allSTOR plus (3)	Multi-functional buffer cylinder allSTOR exclusive (4)	Domestic hot water station aquaFLOW exclusive or aquaFLOW plus (5)	Integrated (6)	PV modules and inverters (7)
Heating only	•	•	•	–	–	•	•
Heating and domestic hot water generation	•	•	◦	•	•	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

12.2 Product description for the aroTHERM perform VWL ..5/3 AS



Fig. 568: aroTHERM perform VWL ..5/3 AS with VWL ..5/3 IS

12.2.2 Product equipment

- In-rush current limiter
- Actuator for electric back-up heaters up to 8.8 kW integrated
- Sensor-controlled refrigeration circuit
- Integrated active cooling mode (the heating system must be prepared on-site)
- Expansion relief valve, heat insulation, 3 bar
- Heat-source-side expansion vessel, 24 litres (VWL 185/3 IS S1 only)
- Actuation of one mixed heating circuit and one non-mixed heating circuit
- Yield detection and display integrated as standard
- Weather-compensated system control
- Noise reduction function

12.2.3 Potential applications

- Heating and domestic hot water generation
- Up to 8 units in a cascade
- Up to 16 heating circuits possible using an integrated control
- In order to use the active cooling function, the heating system must be prepared on-site.

12.2.1 Special features

- Air-to-water heat pump as a split installation;
- Consisting of a heat pump indoor unit and outdoor unit (table evaporator)
- Heat pump with R407C refrigerant
- Flow temperatures up to 65 °C for modernisation and a high level of domestic hot water comfort
- Floor or flat-roof installation possible
- High level of efficiency thanks to the advanced, durable heat pump scroll compressor
- Bivalent alternative or parallel operation possible
- Increased living comfort in the summer thanks to integrated active cooling function
- Frost protection for the outdoor unit using refrigerant split technology
- Noise-optimised air outlet opening of the outdoor unit
- Outdoor unit with axial fan
- SG and PV Ready

Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Order no.
VWL 185/3 AS + VWL 185/3 IS S1	A+ / A++ (A+++ to D)	0010037601 + 0010037600
VWL 185/3 AS S4 + VWL 185/3 IS S1	A+ / A++ (A+++ to D)	0010037602 + 0010037600
VWL 255/3 AS + VWL 255/3 IS S1	A++ / A++ (A+++ to D)	0010037611 + 0010037610
VWL 255/3 AS S4 + VWL 255/3 IS S1	A++ / A++ (A+++ to D)	0010037612 + 0010037610

12.3 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.



Technical data - General

	VWL 185/3 IS S1	VWL 255/3 IS S1
Product dimensions, width	600 mm	600 mm
Product dimensions, height	1,289 mm	1,289 mm
Product dimensions, depth	680 mm	680 mm
Weight, without packaging	160 kg	164 kg
Heating circuit connections	DN 40 (1 1/2")	DN 50 (2")
Liquid pipe connection	16 mm	18 mm
Hot gas connection	35 mm	35 mm

Technical data - Heating mode

	VWL 185/3 IS S1	VWL 255/3 IS S1
Heat output A-7/W35	18.9 kW	26.0 kW
A-7/W35 power consumption	5.7 kW	7.9 kW
A-7/W35 coefficient of performance	3.3	3.3
Heat output A2/W35	21.1 kW	28.0 kW
A2/W35 power consumption	5.9 kW	8.0 kW
A2/W35 coefficient of performance	3.6	3.5
Heat output A7/W35	26.5 kW	37.0 kW
A7/W35 power consumption	6.4 kW	8.8 kW
A7/W35 coefficient of performance	4.2	4.2
Heat output A7/W55	27.0 kW	34.0 kW
A7/W55 power consumption	8.5 kW	11.3 kW
A7/W55 DT 8K coefficient of performance	3.2	3.0

Technical data - Cooling mode

	VWL 185/3 IS S1	VWL 255/3 IS S1
A35/W18 cooling output	20.1 kW	30.6 kW
A35/W18 power consumption	9.8 kW	14.4 kW
A35/W18 energy efficiency ratio	2.1	2.1
A35/W7 cooling output	18.1 kW	27.3 kW
A35/W7 power consumption	8.8 kW	13 kW
A35/W7 energy efficiency ratio	2.1	2.1

Technical data - Electrics and acoustics

	VWL 185/3 IS S1	VWL 255/3 IS S1
Rated voltage	400 V (+10%/-15%), 50 Hz, 3~/N/PE	400 V (+10%/-15%), 50 Hz, 3~/N/PE
cos Φ power factor	0.71	0.71
Fuse	C25A	C25A
Main electrical circuit nominal output	8.5 kW	11.3 kW
Operating current	≤ 21.1 A	≤ 24.8 A
In-rush current	≤ 49.5 A	≤ 63.5 A
Sound power level	56 dB(A)	56 dB(A)
Clock power reserve	≈ 300 d	≈ 300 d

Technical data - Heating circuit

	VWL 185/3 IS S1	VWL 255/3 IS S1
Operating pressure	≤ 0.3 MPa	≤ 0.3 MPa
Maximum heating flow temperature (outdoor temperature -10 °C)	65 °C	65 °C
Maximum heating flow temperature (outdoor temperature -15 °C)	60 °C	60 °C
Maximum heating flow temperature (outdoor temperature -20 °C)	55 °C	55 °C
Nominal flow	4.4 m³/h	6.0 m³/h
Minimum flow rate	36 l/min	50 l/min
Pressure level	27.3 kPa	40.6 kPa
Integrated heating pump	Stratos Para 25/1-8	Stratos Para 25/1-12

Technical data - Refrigerant circuit

	VWL 185/3 IS S1	VWL 255/3 IS S1
Refrigerant, type	R407C	R407C
Refrigerant, volume (for line length < 4 m)	14 kg	15 kg
Refrigerant, Global Warming Potential (GWP)	1774	1774
Refrigerant, operating pressure	≤ 3 MPa	≤ 3 MPa
Thawing technology	Hot gas	Hot gas

Technical data - Condenser

	VWL 185/3 IS S1	VWL 255/3 IS S1
Type	Plate heat exchanger	Plate heat exchanger
Material	Stainless steel 1.4301	Stainless steel 1.4301

Technical data - Compressor

	VWL 185/3 IS S1	VWL 255/3 IS S1
Type	Fully hermetic/scroll	Fully hermetic/scroll
Voltage/frequency	400 V/50 Hz	400 V/50 Hz
Rotations	2,900 rpm	2,900 rpm

Note

You can find all of the specific and required information about the components of the outdoor unit in the corresponding installation instructions for the outdoor unit.



12.4 Performance data - heating mode

12.4.1 aroTHERM perform power output graph

X = outdoor temperature, Y = heat output

aroTHERM perform VWL 185/3

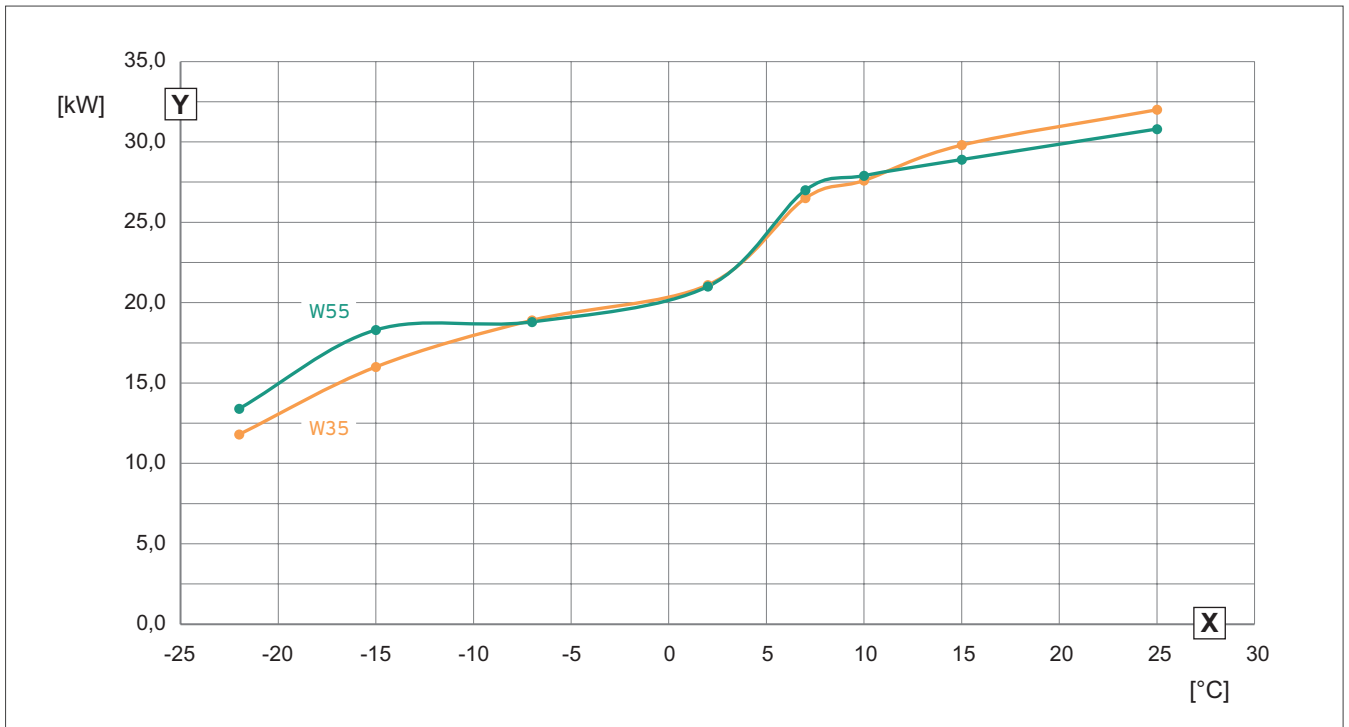


Fig. 569: aroTHERM perform VWL 185/3 - heat output for A.../W35 and W55

aroTHERM perform VWL 255/3

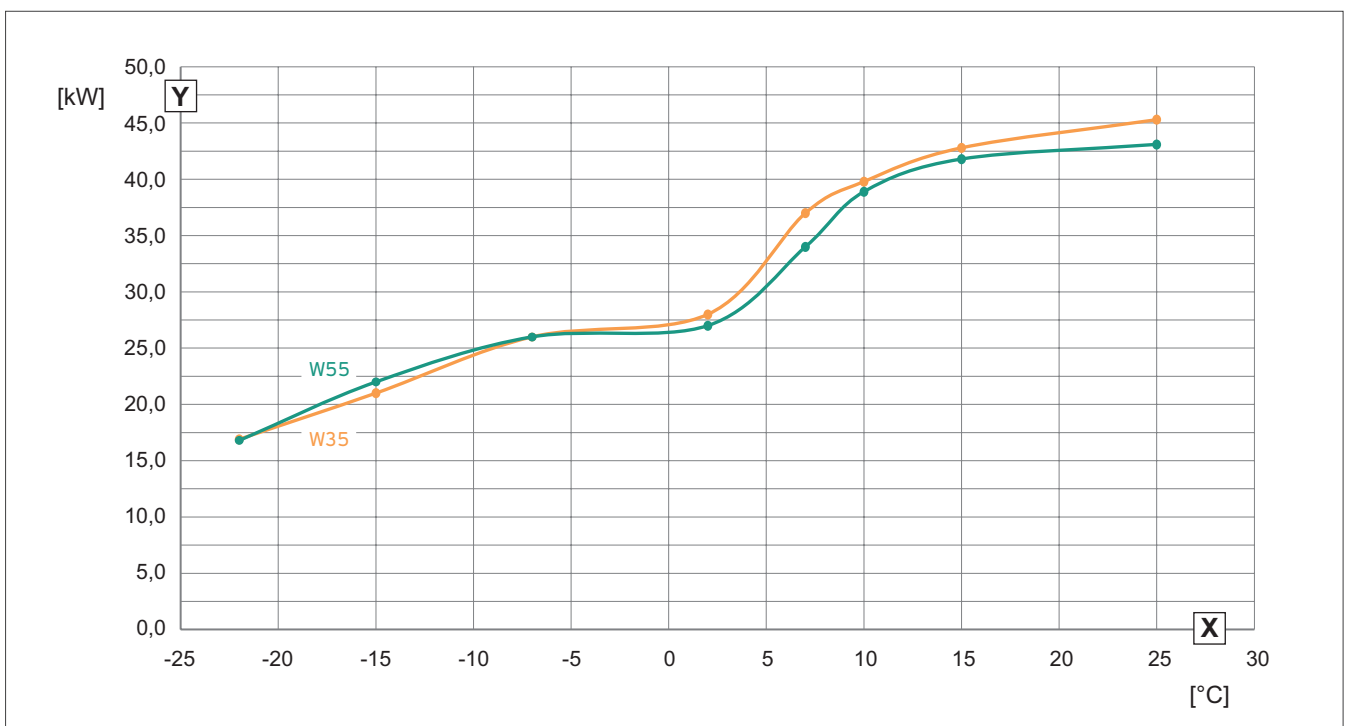


Fig. 570: aroTHERM perform VWL 255/3 - heat output for A.../W35 and W55

12.5 Dimensions

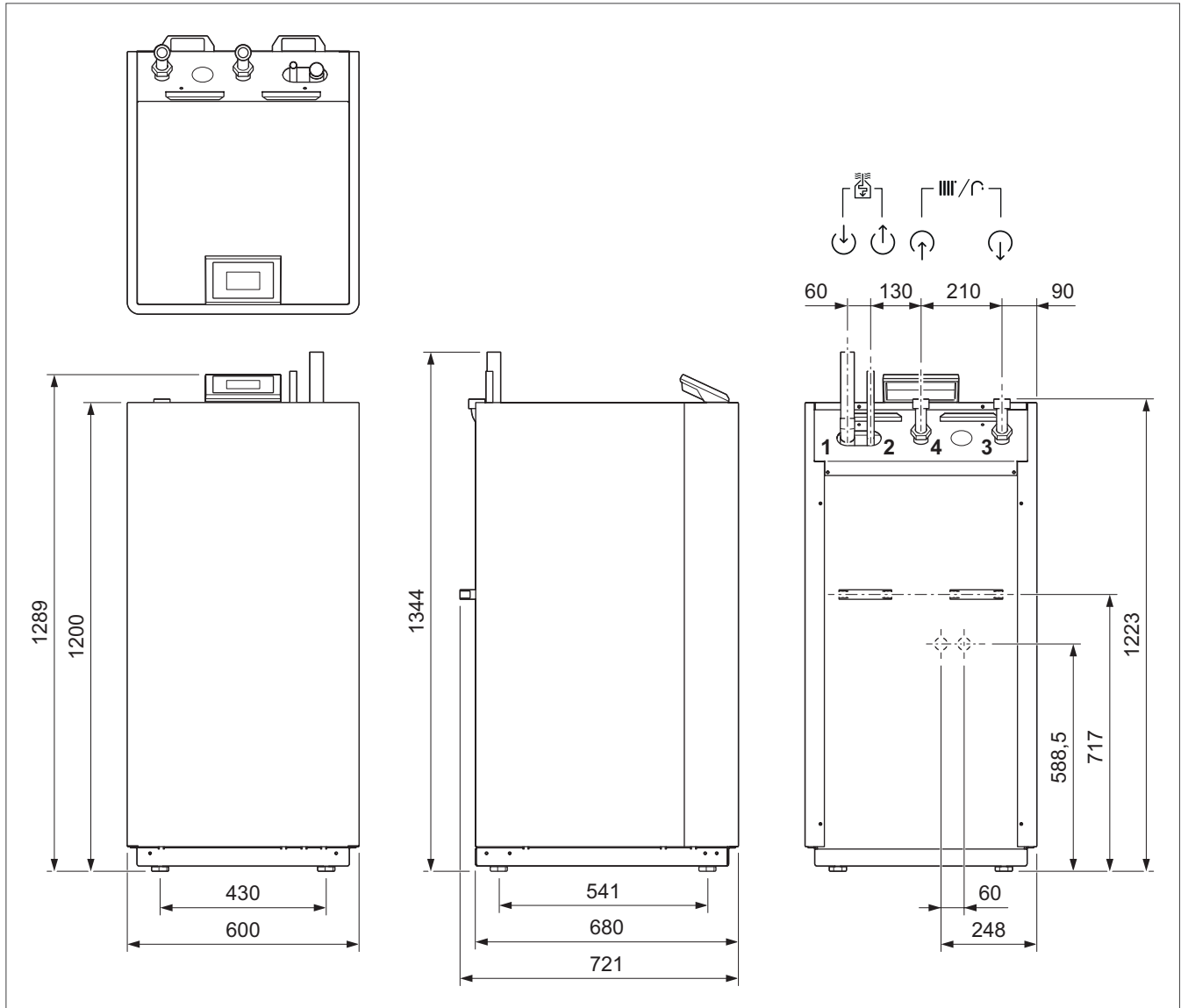


Fig. 571: Dimensions

- 1 From heat source (outdoor unit) to heat pump (hot gas line)
- 2 From heat pump to outdoor unit (liquid line)
- 3 Heating return
- 4 Heating flow

12.5.1 Pipe diameter [mm] of the refrigerant pipe

Product	Refrigerant pipe up to 15 m		Refrigerant pipe up to 20 m	
	Liquid (outer diameter)	Suction gas	Liquid (outer diameter)	Suction gas
VWL 185/3 IS S1	16	2 × 22	16	35*
VWL 255/3 IS S1	16	42*	-	3 × 22
		4 × 22		-

* Pipe with 2 mm wall thickness

12.6 Application limits

The product works between a minimum and maximum outdoor temperature. These outdoor temperatures define the application limits for the heating mode, domestic hot water mode and cooling mode. See technical data . Operating the product outside the application limits results in the product being switched off.

12.6.1 Heating mode

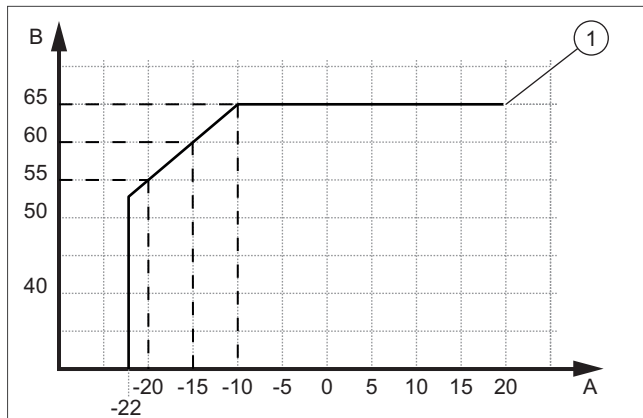


Fig. 572: Application limits, heating mode

- A Outdoor temperature [°C]
- B Flow temperature [°C]
- 1 Flow temperature application limit

12.6.2 Cooling mode

Note

Cooling mode is then only available if the VRT 310 room temperature control is connected to the system.

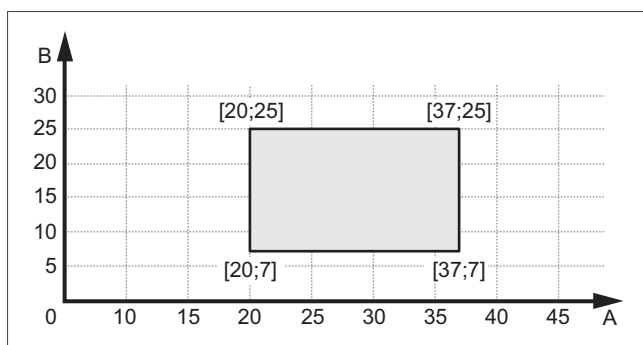


Fig. 573: Application limits, cooling mode

- A Outdoor temperature
- B Heating water temperature

12.7 Thawing mode

If the outdoor temperature is too low, condensation on the fins of the evaporator may freeze and frost may form. This frost is automatically detected and is automatically thawed at certain intervals.

The thawing occurs by reversing the refrigeration circuit while the heat pump is operating. The heat energy that is required for this is taken from the heating installation.

Correct thawing operation is only possible if the minimum volume of heating water is circulating in the heating installation:

Product	Minimum heating water volume
VWL 185/3 IS S1	660 litres
VWL 255/3 IS S1	910 litres

12.8 Selecting the installation site

- » Select a dry room that is frost-proof throughout and in which the maximum installation height is not exceeded and the environmental temperature is neither above nor below the permitted range.
 - Permissible environmental temperature: 7 to 30 °C
 - Permissible relative air humidity: 40 to 70 %
- » Ensure that the installation room has the required minimum volume.

Heat pump	R407C refrigerant filling volume	Minimum installation room volume
VWL 185/3 IS S1	14 kg	45.2 m ³
VWL 255/3 IS S1	15 kg	48.4 m ³

Minimum installation room (m³) = refrigerant filling volume (kg)/practical limit value (kg/m³) (for R407C = 0.31 kg/m³)

- » Ensure that the required minimum clearances can be maintained.
- » Observe the permissible height difference between outdoor unit and indoor unit.
- » When selecting the installation site, you must take into consideration that when the heat pump is in operation, it will transfer vibrations to the floor and the nearby walls.
- » Ensure that the floor is even and offers sufficient load-bearing capacity to bear the total weight of the product.
- » Ensure that pipes can be easily routed in an appropriate way (heating side and refrigerant side).
- » Ensure that there is no risk of explosion in the installation room caused by dust, gases or vapours.
- » Cover the product with the plastic cover while the construction work is being carried out.

12.9 Minimum clearances and installation clearances

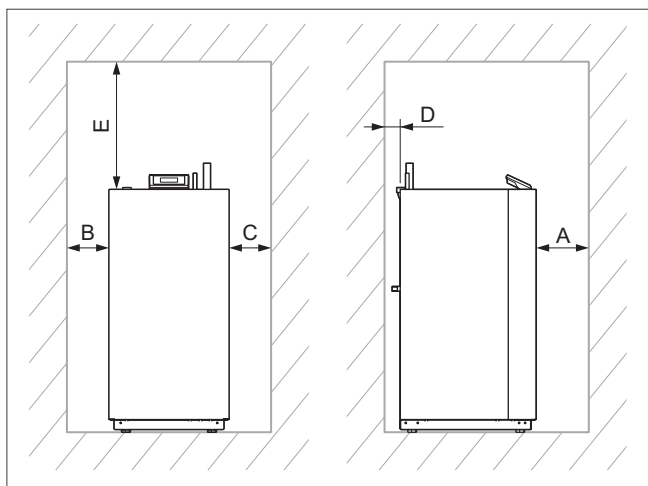


Fig. 574: Recommended minimum clearances/installation clearances

- A 1000 mm
- B 500 mm
- C 500 mm
- D 50 mm
- E 500 mm

» When using the accessories, observe the minimum clearances/installation clearances.

12.9.1 Minimum clearances for individual and cascade installation

Compliance with the specified minimum clearances when planning the indoor unit is important for

- A correct unit installation,
- Fault-free operation,
- Maintenance work on the unit.

You should therefore note the following minimum clearances for the individual installation:

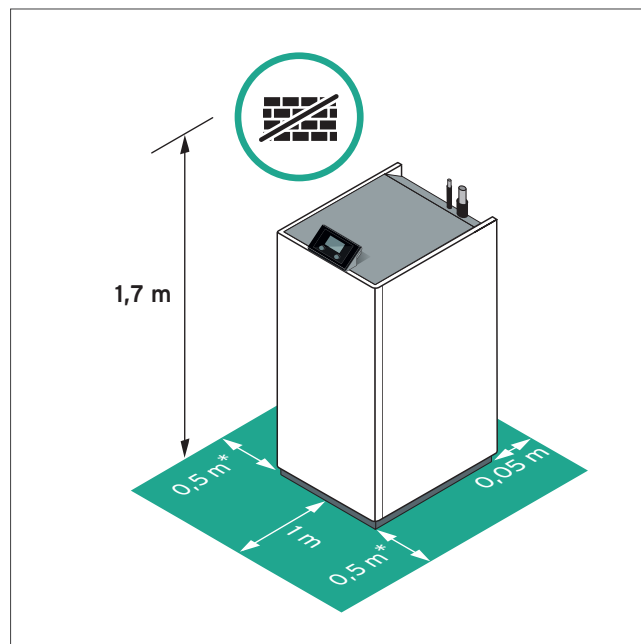


Fig. 575: Minimum clearances for aroTHERM perform

For the cascade installation of two heat pumps, the following minimum clearances must be observed:

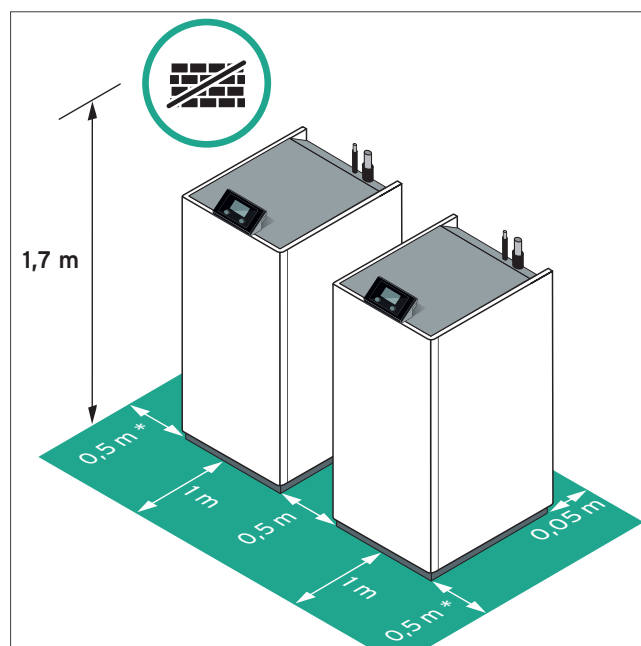


Fig. 576: Minimum clearances for aroTHERM perform in cascade (* 0.4 m clearance to a cylinder)

12.10 Maximum lengths of the refrigerant pipes

12.10.1 Outdoor unit above the indoor unit

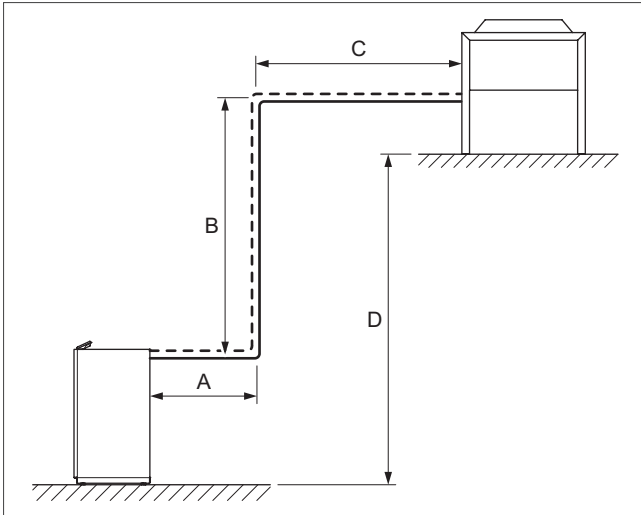


Fig. 577: Outdoor unit above the indoor unit

12.10.2 Indoor unit above the outdoor unit

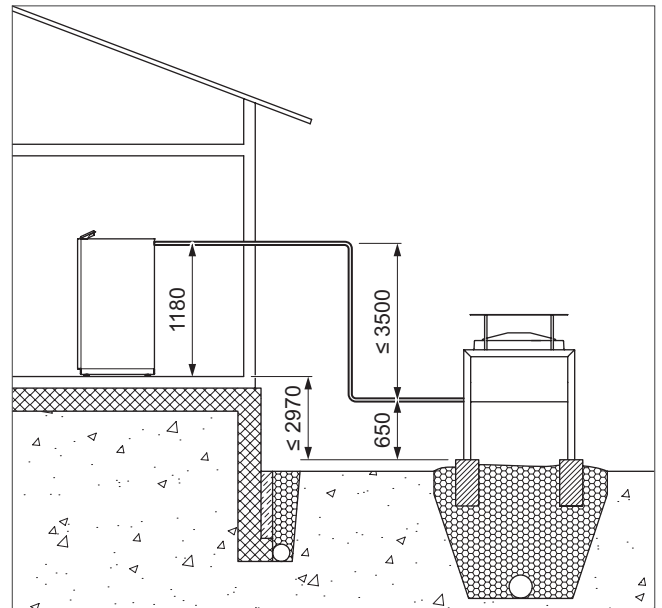


Fig. 578: Indoor unit above the outdoor unit

Maximum lengths of the refrigerant pipes

	A + B + C	D
VWL 185/3 IS S1	≤ 20 m	≤ 10 m
VWL 185/3 AS	≤ 20 m	≤ 10 m
VWL 185/3 AS S4	≤ 20 m	≤ 10 m
VWL 255/3 IS S1	≤ 16 m	≤ 5 m
VWL 255/3 AS	≤ 16 m	≤ 5 m
VWL 255/3 AS S4	≤ 16 m	≤ 5 m

12.10.3 Refrigerant pipes on the ceiling, connected by a sensor pocket that is laid in the ground

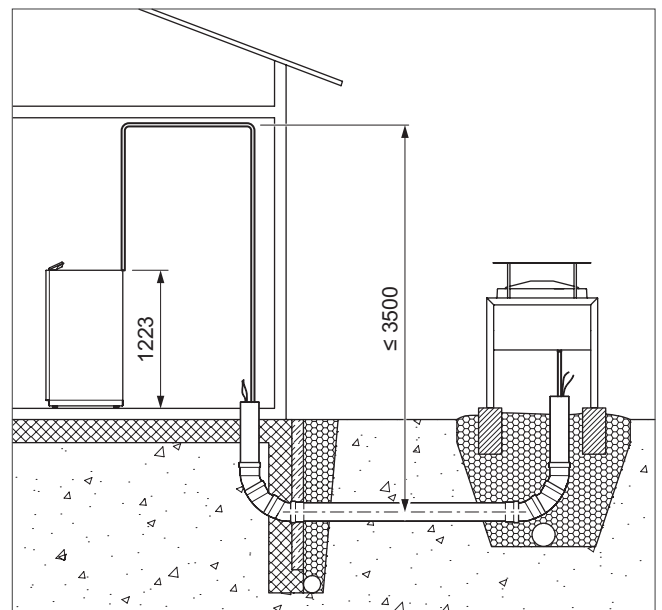


Fig. 579: Refrigerant pipes on the ceiling, connected by a sensor pocket that is laid in the ground

12.11 Establishing elbows in refrigerant pipes

1. Route the refrigerant pipes with a maximum of eight 90° elbows.

Note
Bend radii of ≥ 1 m are classed as straight sections.



Condition: Pipe diameter = 22 mm:

- » Use a flexible spring or a bending tool to bend the pipes into the desired shape.

Condition: Pipe diameter ≥ 35 mm:

- » Use the pipe elbows from the installation set.

12.12 Preparing the wall duct

- » For both freely guided and underground refrigerant pipes between the indoor unit and the outdoor unit, provide a professional and installation-specific wall duct through the building's external wall.
- » Take the given composition of the wall into account (brick, concrete).
- » Take the given groundwater conditions into account.
- » Use a professional sensor pocket or a wall sleeve for the wall duct.
- » Integrate the outer end of the wall duct into the building's outer sealing level.
- » Ensure that the sensor pocket is designed with a slight downward gradient outwards (at least 2%).
- » On both the outer and inner edge of the wall, use a professional annular space seal for the annular space between the wall sleeve and the routed refrigerant pipes and electrical wires.

12.13 Routing refrigerant pipes to the product

1. Route the refrigerant pipe through the wall duct and to the product.

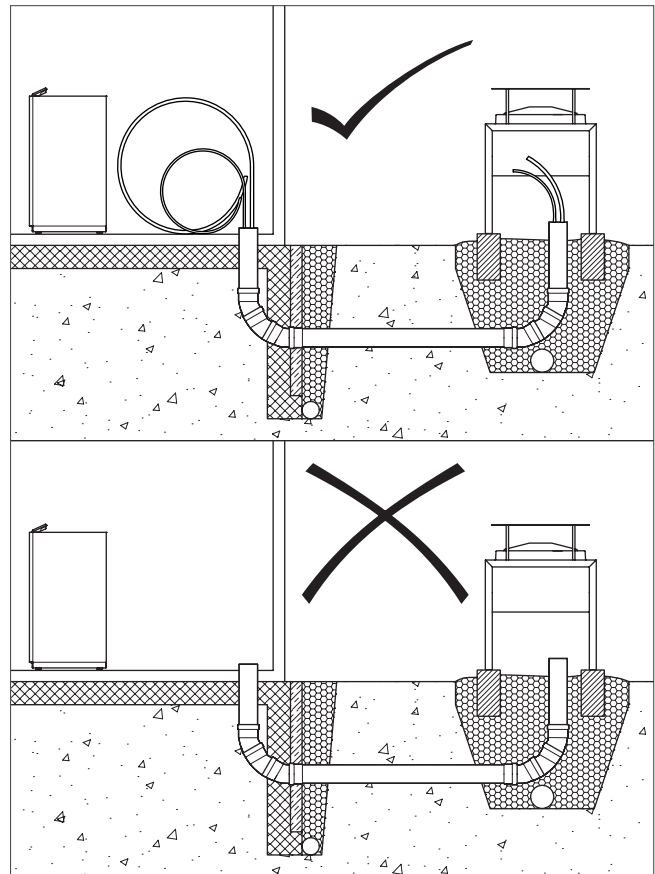


Fig. 580: Routing refrigerant pipes to the product, ground installation

2. Route the refrigerant pipes through a suitable safety pipe in the ground, as shown in the figure.
 - Use rigid sewage pipes for the underground sensor pocket.
 - Select a suitable pipe diameter.
 - For 90° pipe diversions, use either three 30° pipe elbows or six 15° pipe elbows (depending on the sensor pocket diameter and the installation depth).
3. Prepare a suitable installation pit at the connection point for the refrigerant pipes on the outdoor unit (→ Installation and maintenance instructions for the outdoor unit).
4. Create a straight installation trench between the wall duct and the installation pit on the outdoor unit.
5. Route the sensor pocket together with the refrigerant pipes that have already been established in the installation trench between the outdoor unit and the indoor unit.
 - The refrigerant pipes cannot be pulled through retroactively.
6. Route the electrical control and supply cables in a suitable electrical installation pipe.
7. Guide the refrigerant pipes with slight overhangs to the connections for the indoor unit and the outdoor unit.
8. We recommend establishing a vibration balance. To do so, bend the pipes in such a way that a 360° elbow with a diameter of 500 mm is created, as shown in the figure.

9. Route the refrigerant pipes in the wall duct with a slight downward gradient to the outside.
10. Route the refrigerant pipe centrally through the wall duct without the lines touching the wall.

Validity: Installation set 0010037616 OR
Installation set 0010037617 AND Installation set 0010037618

- » Ensure that the pressure loss in each of the 22 mm pipes is the same so that the oil can flow back into the compressor.
 - Pay particular attention to the position and number of elbows.

Validity: Installation set 0010037618

- » Align the distribution pipe from the installation set horizontally or vertically.
 - You must ensure that the pressure loss is the same in the 22 mm pipes.
- 11. Ensure that the exposed end of the sensor pocket for the outdoor unit is sealed correctly. To seal the refrigerant pipes in the sensor pocket, use a suitable annular space seal or a UV-resistant, permanently elastic sealant, for example.
 - Do not use PU foam for the sealing.
- 12. Insulate the exposed refrigerant pipes outside of the sensor pocket against condensation using professional insulation material. Outdoors, the insulation material must also be provided with UV protection.
 - Heat insulation that is used at floor level must be made of closed-pore material.

12.14 Routing refrigerant pipes in the building



Caution.

Risk of noise transmission.

If the refrigerant pipes are routed incorrectly, noise may be transmitted to the building during operation.

- > Do not route the refrigerant pipes in screed or masonry in the building.
- > Do not route the refrigerant pipes through living rooms in the building.

1. Route the refrigerant pipes from the wall duct to the indoor unit.
2. Bend the pipes only once into their final position. Use a bending spring or a bending tool to avoid kinks.
3. Bend the refrigerant pipes at the right angle to the wall and avoid mechanical tension during the routing.
4. If you cannot use the bending spring for this, proceed as follows: Cut out the heat insulation at the point at which it should be bent. Use a pipe bender to bend the refrigerant pipe to the desired shape. Then reroute the heat insulation around the refrigerant pipe, and use suitable insulating tape to seal the cutting edges.
5. Ensure that the refrigerant pipes do not come into contact with the wall.
6. Use wall brackets with rubber insert to secure these. Place the wall brackets around the heat insulation of the refrigerant pipe.

12.15 Filling the refrigerant circuit

Note

The refrigerant circuit of the aroTHERM perform is not pre-filled.



The R407C refrigerant must be ordered separately and filled during the start-up.

The following basic fill quantities are required:

- aroTHERM perform VWL 185/3: 14 kg
- aroTHERM perform VWL 255/3: 15 kg

The total fill quantity depends on the installed line length. The following diagram shows the refrigerant filling volume [kg] depending on the line length.

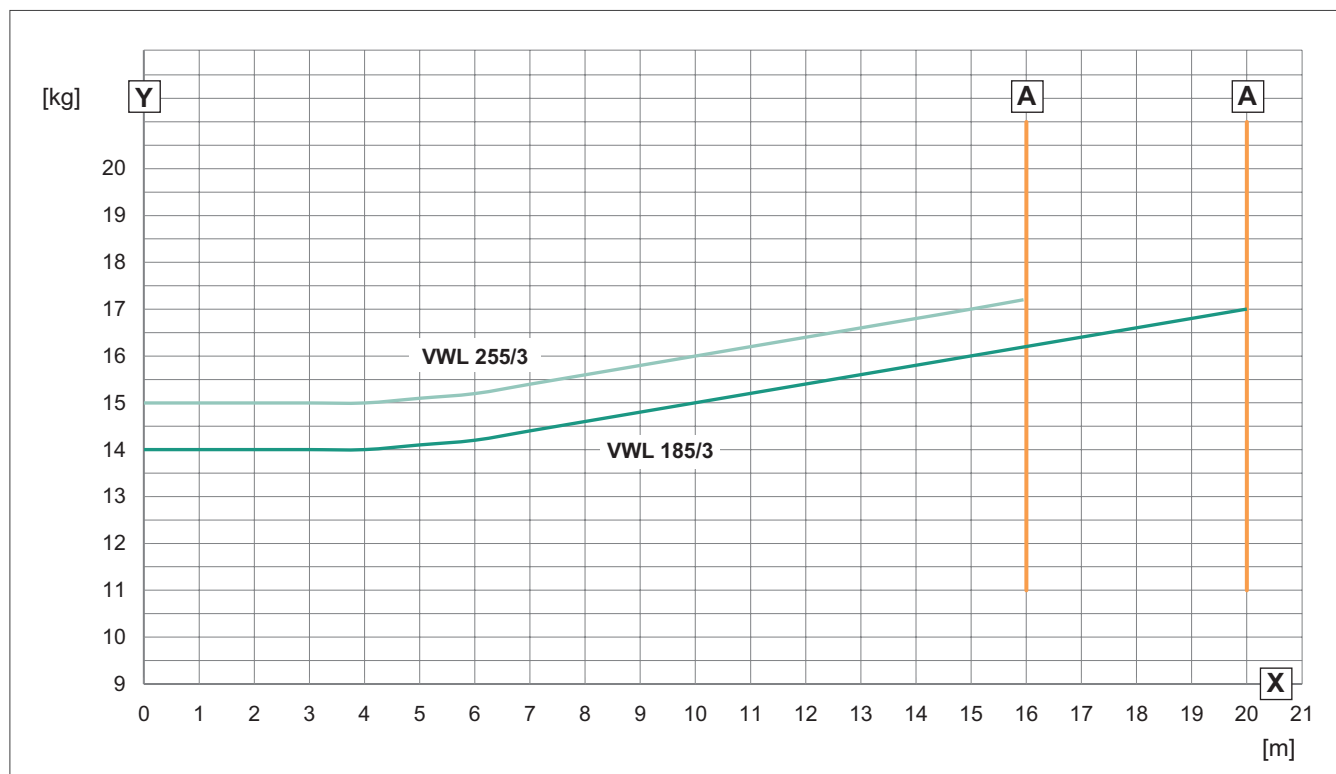


Fig. 581: Refrigerant filling volume depending on the line length

A Maximum length of the refrigerant pipe

X Refrigerant filling volume [kg]

Y Refrigerant pipe length [m]

12.16 Pressure level of the internal heating pump

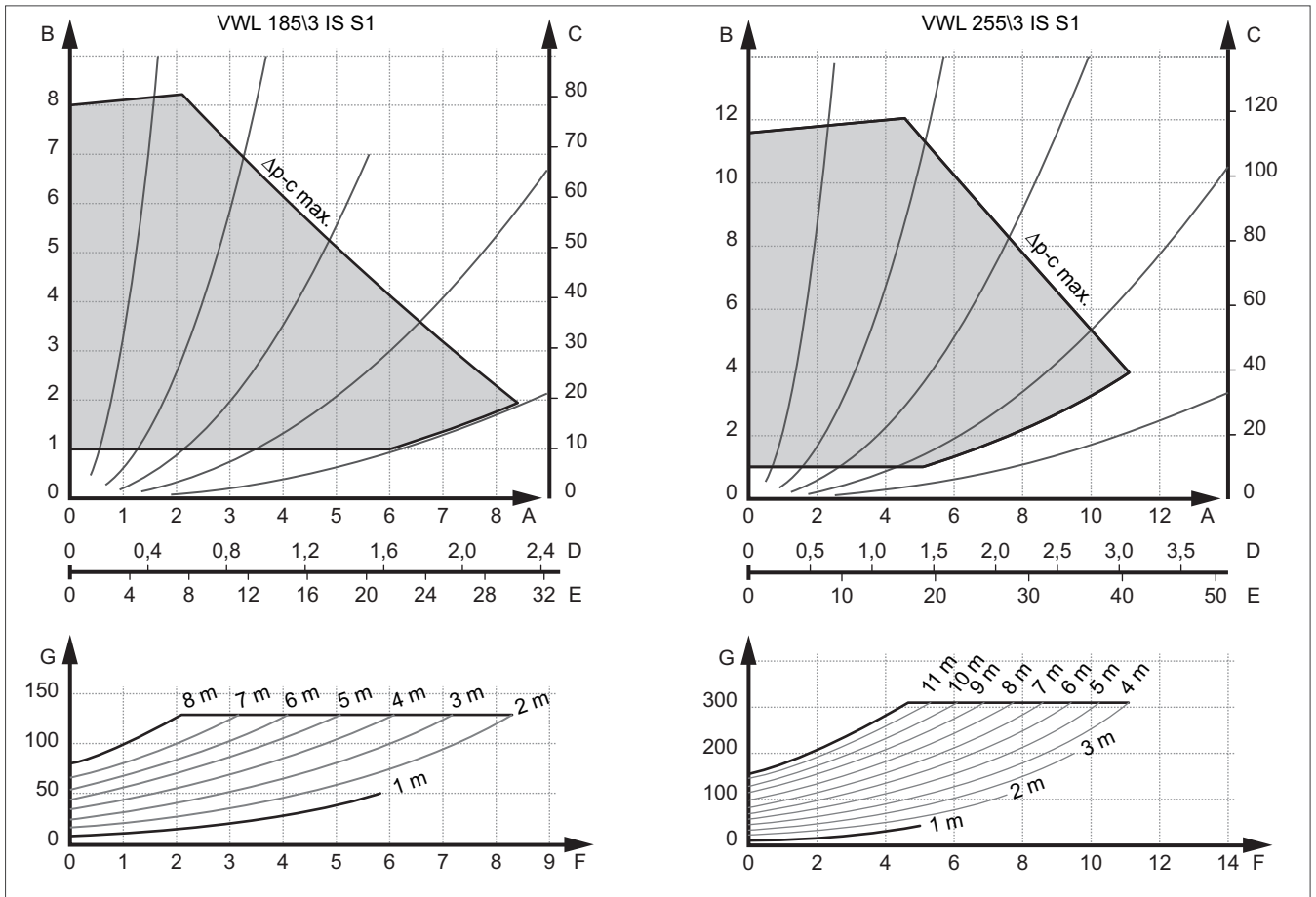


Fig. 582: Pressure level

- A Flow rate [m³/h]
- B Pressure level [m]
- C Pressure level [kPa]
- D Flow rate [l/s]
- E Flow rate [lgpm]
- F Flow rate [m³/h]
- G Output [W]

12.17 Dimensioning buffer cylinders

Buffer cylinders are mainly used for on/off heat pumps in order to reduce the heat pump's switching frequency. When selecting the buffer cylinder, the heat pump's output is crucial. If you are planning a cascade system of multiple heat pumps, the number of units also plays a role.

As a guideline value for the volume of the buffer cylinder, 30 l/kW heat output applies for A2/W35. For cascade systems, 10 l/kW of the total heat output can be used. However, the number of heat pumps is important here.

The following cylinder volumes arise for the aroTHERM perform:

Number of heat pumps	aroTHERM perform VWL 185/3		aroTHERM perform VWL 255/3	
	Volume [l]	Volume flow [m ³ /h]	Volume [l]	Volume flow [m ³ /h]
1	800	4.4	1,000	6.0
2	1,000	8.8	1,000	12.0
3	1,000	13.2	1500	18.0
4	1500	17.6	1500	24.0
5	1500	22.0	2,000	30.0
6	1500	26.4	2,000	36.0
7	2,000	30.8	3000	42.0
8	2,000	35.2	3000	48.0

12.18 aroTHERM perform outdoor unit

For connecting to the aroTHERM perform indoor unit.

The air/brine collector is used to exchange heat between the brine circuit and the outdoor air.

12.18.1 Technical data

Technical data - General

	VWL 185/3 AS	VWL 185/3 AS S4	VWL 255/3 AS	VWL 255/3 AS S4
Width	965 mm	965 mm	965 mm	965 mm
Height	1,104 mm	1,404 mm	1,104 mm	1,404 mm
Depth	2,224 mm	2,224 mm	2,224 mm	2,224 mm
Empty weight	175 kg	235 kg	180 kg	240 kg
Empty weight	175 kg	235 kg	180 kg	240 kg

Technical data - Application limits, heating mode

	VWL 185/3 AS	VWL 185/3 AS S4	VWL 255/3 AS	VWL 255/3 AS S4
Air temperature, minimum	-22 °C	-22 °C	-22 °C	-22 °C
Air temperature, maximum	40 °C	40 °C	40 °C	40 °C

Technical data - Application limits, cooling mode

	VWL 185/3 AS	VWL 185/3 AS S4	VWL 255/3 AS	VWL 255/3 AS S4
Air temperature, minimum	20 °C	20 °C	20 °C	20 °C
Air temperature, maximum	37 °C	37 °C	37 °C	37 °C

Technical data - noise emissions

	VWL 185/3 AS	VWL 185/3 AS S4	VWL 255/3 AS	VWL 255/3 AS S4
Sound power, EN 12102, EN ISO 9614-1, A7/W55	62 dB(A)	59 dB(A)	64 dB(A)	61 dB(A)
Noise reduction mode sound power, EN 12102, EN ISO 9614-1, A7/W55	58 dB(A)	55 dB(A)	60 dB(A)	57 dB(A)

12.18.2 Sound power evaluation level

For the **aroTHERM perform** heat pump, planning should take account of the following sound power levels (heating mode).

Note

K_T (supplement for the tone incorporation) is taken into account in line with the third-octave band process. K_R is country-specific and was assumed to be 0 in this calculation. This value is only required for day mode.



VWL 185/3 AS and VWL 185/3 IS S1				Distance from heat source in m										K_R
	Sound power in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	62	0	3	54	48	44.5	42	40	38.4	35.9	34	32.4	30.5	0
			6	57	51	47.5	45	43	41.4	38.9	37	35.4	33.5	
			9	60	54	50.5	48	46	44.4	41.9	40	38.4	36.5	
Set-back (reduced compressor output)	58	0	3	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	-
			6	53	47	43.5	41	39	37.4	34.9	33	31.4	29.5	
			9	56	50	46.5	44	42	40.4	37.9	36	34.4	32.5	

VWL 185/3 AS S4 and VWL 185/3 IS S1				Distance from heat source in m										K_R
	Sound power in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	59	0	3	51	45	41.5	39	37	35.4	32.9	31	29.4	27.5	0
			6	54	48	44.5	42	40	38.4	35.9	34	32.4	30.5	
			9	57	51	47.5	45	43	41.4	38.9	37	35.4	33.5	
Set-back (reduced compressor output)	55	0	3	57	41	37.5	35	33	31.4	28.9	27	25.4	23.5	-
			6	50	44	40.5	38	36	34.4	31.9	30	28.4	26.5	
			9	53	47	43.5	41	39	37.4	34.9	33	31.4	29.5	

VWL 255/3 AS and VWL 255/3 IS S1				Distance from heat source in m										K_R
	Sound power in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	64	0	3	56	50	46.5	44	42	40.4	37.9	36	34.4	32.5	0
			6	59	53	49.5	47	45	43.4	40.9	39	37.4	35.5	
			9	62	56	52.5	50	48	46.4	43.9	42	40.4	38.5	
Set-back (reduced compressor output)	60	0	3	52	46	42.5	40	38	36.4	33.9	32	30.4	28.5	-
			6	55	49	45.5	43	41	39.4	36.9	35	33.4	31.5	
			9	58	52	48.5	46	44	42.4	39.9	38	36.4	34.5	

VWL 255/3 AS S4 and VWL 255/3 IS S1				Distance from heat source in m										K_R
	Sound power in dB(A)	K_T	K_o	1	2	3	4	5	6	8	10	12	15	
				Evaluation level										
Day	61	0	3	53	47	43.5	41	39	37.4	34.9	33	31.4	29.5	0
			6	56	50	46.5	44	42	40.4	37.9	36	34.4	32.5	
			9	59	53	49.5	47	45	43.4	40.9	39	37.4	35.5	
Set-back (reduced compressor output)	57	0	3	49	43	39.5	37	35	33.4	30.9	29	27.4	25.5	-
			6	52	46	42.5	40	38	36.4	33.9	32	30.4	28.5	
			9	55	49	45.5	43	41	39.4	36.9	35	33.4	31.5	

12.18.3 Dimensions

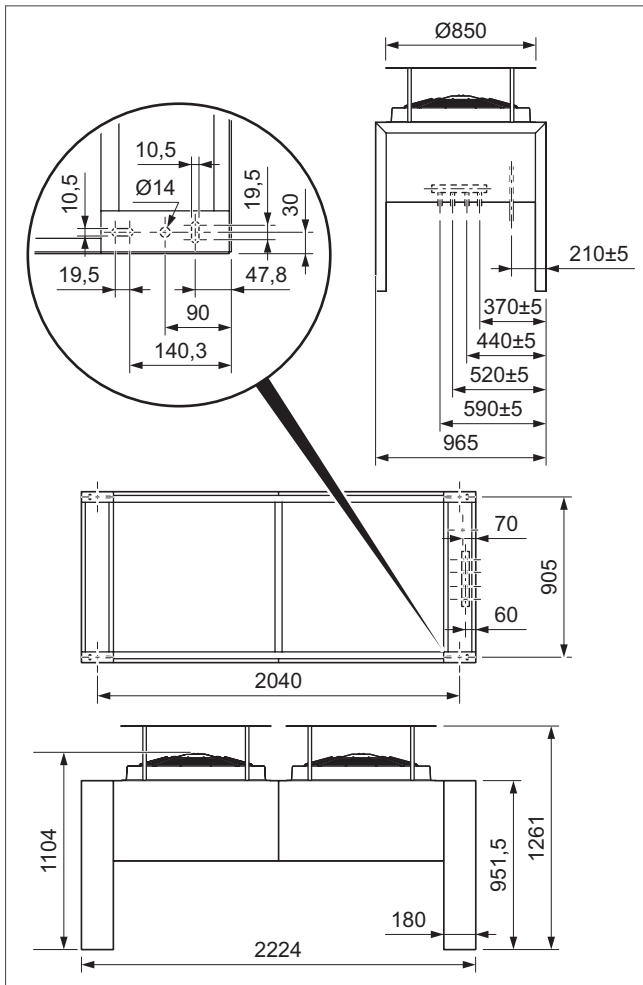


Fig. 583: Dimensions

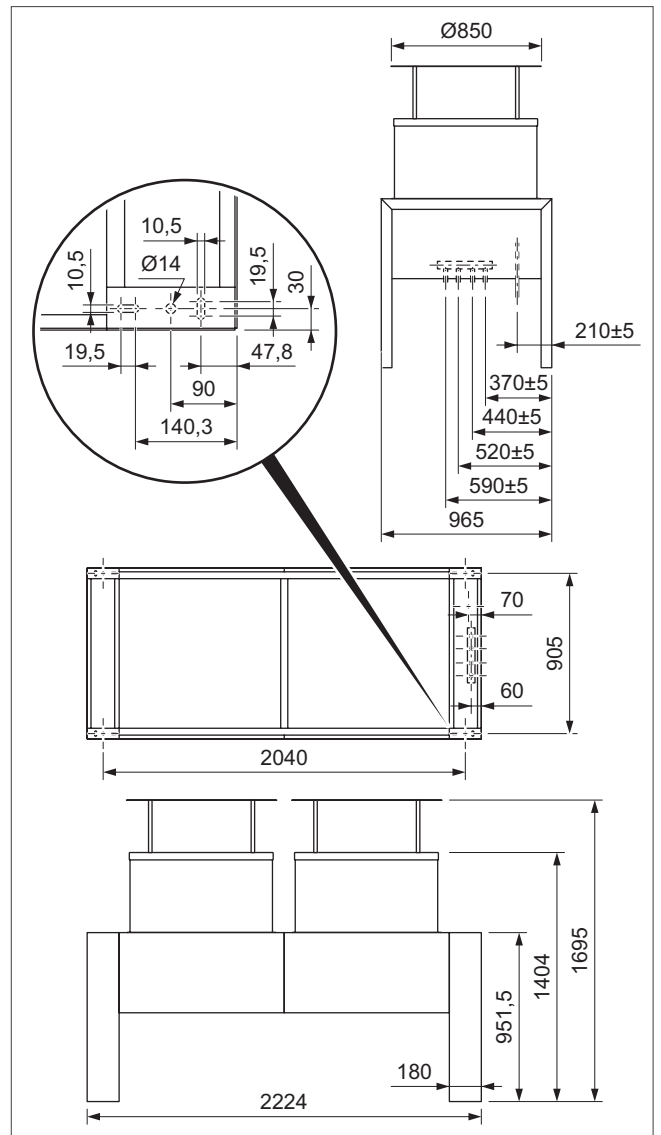


Fig. 584: Dimensions

12.18.4 Connections for the refrigerant pipes

Depending on the length of the refrigerant pipe and the type of heat pump, different diameters are to be planned for the refrigerant pipe.

Alternatively, the refrigerant pipes can be connected to the 22 mm outflows or the 42 mm connection.

Two installation sets are available for the installation (set 1 and 2) (see overview of the accessories).

The different connection options and the use of the sets are shown in the following figure.

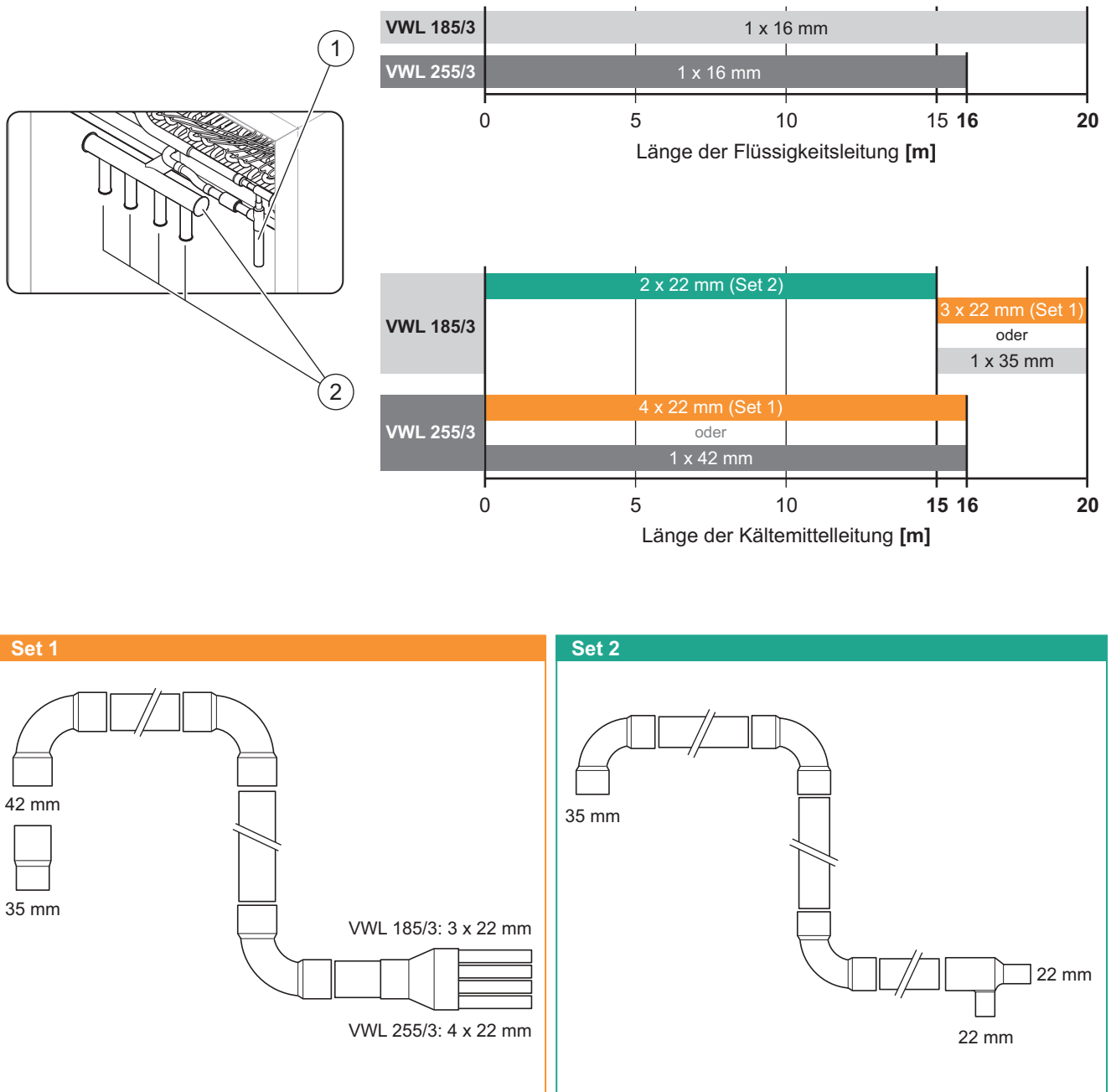


Fig. 585: Connection types for the liquid pipe and the refrigerant pipes

12.18.5 Complying with minimum clearances

- » To guarantee sufficient air flow and to facilitate maintenance work, observe the minimum clearances that are specified.
- » Ensure that there is sufficient room to install the hydraulic lines.

Minimum clearances, ground installation and flat-roof installation

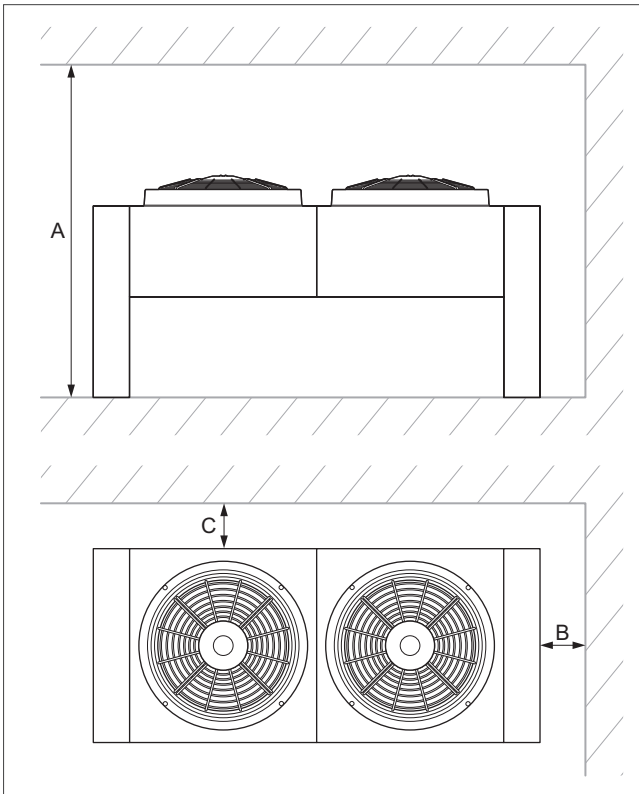


Fig. 586: Minimum clearances, ground installation and flat-roof installation

Dimension	Minimum clearance	Description
A	≥ 3,000 mm	Minimum ceiling height
B	≥ 1,000 mm	Minimum clearance to a wall
C	100 mm or ≥ 1,000 mm	Minimum clearance to a wall, lengthwise
C	≥ 1,000 mm	Minimum clearance between two outdoor unit in cascade mode

Minimum clearances for individual and cascade installation

For the individual installation of the outdoor unit, the following minimum clearances must be observed:

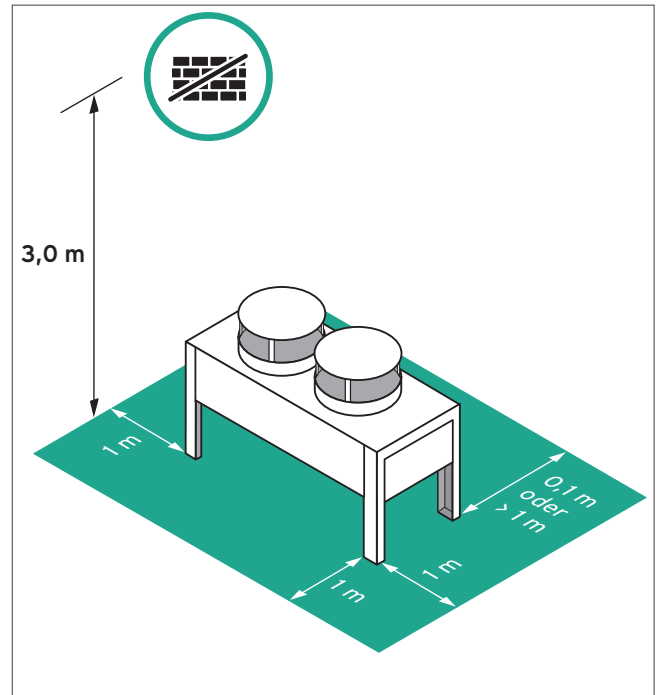


Fig. 587: Minimum clearances for individual installation of the outdoor unit

For the cascade installation of two outdoor units, the following minimum clearances must be observed:

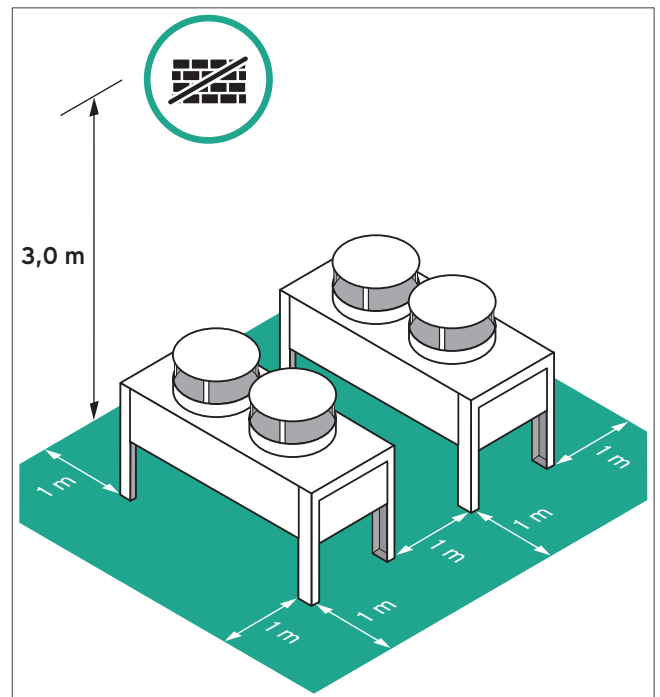


Fig. 588: Minimum clearances for cascade installation of the outdoor unit

12.18.6 Conditions for the installation type

The product is suitable for these installation types:

- Ground installation
- Flat-roof installation
- The flat-roof installation is not suitable for extremely cold or snowy regions.

Requirements for the installation site



Danger!
Risk of injury due to ice formation.

The air temperature at the air outlet is below the outdoor temperature. This can lead to ice formation.

- > Select a site and an orientation at which the air outlet is at least 3 m away from walkways, plastered surfaces and downpipes.



Danger!
Risk of injury due to ice formation.

If there is insufficient draining of the condensate, ice may form in the around the outdoor unit in winter.

- > Ensure that the condensate can drain properly, even at low temperatures.
- > Ensure that no ice is formed, particularly in the area of walkways and entrances around the outdoor unit.

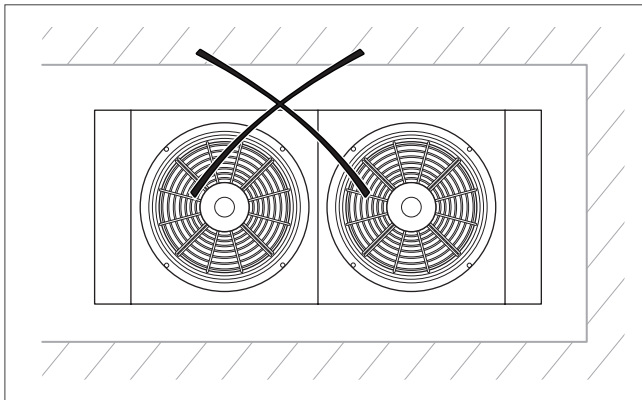


Fig. 589: Incorrect installation site

- » If the installation site is in the immediate vicinity of the coastline, ensure that the product is protected against spraying water by an additional protection device. Comply with the minimum clearances.
- » Observe the permissible height difference between outdoor unit and indoor unit. See technical data .
- » Keep away from flammable substances or flammable gases.
- » Keep away from heat sources. Avoid using preloaded extract air (e.g. from an industrial plant or bakery).
- » Keep away from ventilation openings or extract-air shafts.
- » Keep away from deciduous trees and shrubs.
- » Do not expose the outdoor unit to dusty air.
- » Do not expose the outdoor unit to corrosive air. Keep away from animal stalls or stables.
- » Note that the installation site must be below 1000 m above sea level.
- » Ensure that the installation site is more than 1000 m away from the sea and is located on the side of the building that is facing away from the sea.
- » Please note the noise emissions. Maintain sufficient clearance from noise-sensitive areas of the adjacent building. Select a location that is as far away from the windows of adjacent building as possible. Select a location that is as far away from your own bedroom as possible.
- » Avoid installing the outdoor unit on reverberant floors.

Condition: Especially for ground installation

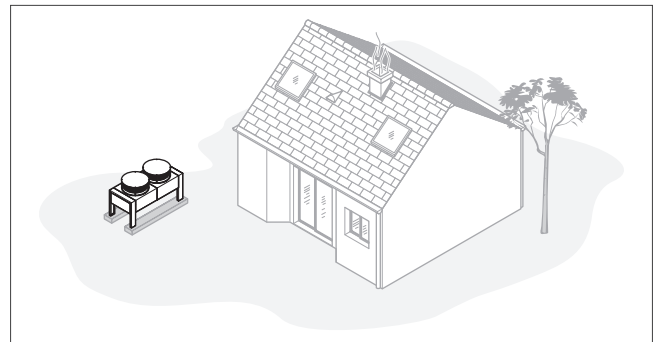


Fig. 590: Installation site, ground installation

- » Avoid choosing an installation site that is in a corner, between walls or between fences.
- » Prevent the return intake of air from the air outlet.
- » Ensure that water cannot collect on the subsoil. Ensure that the subsoil can absorb water well.
- » Do not install the product in a trough or pit („cold air pocket“).
- » Plan a bed of gravel and rubble for the condensate discharge.
- » Select a site which is free from significant accumulations of snow in winter.
 - Install the optional snow protection to protect the fan against heavy snowfall.
- » Select a site at which the air inlet is not affected by strong winds. Position the unit as crosswise to the main direction of wind as possible.

- » If the installation site is not protected against the wind, you should plan to set up a protective wall.
- » Please note the noise emissions. Avoid corners of rooms, recesses or sites between walls. Select a site with excellent sound absorption (e.g. thanks to grass, hedges, fencing).
- » Route the hydraulic lines and electrical wires underground. Provide a safety pipe that leads from the outdoor unit through the wall of the building.

Condition: Especially for flat-roof installation

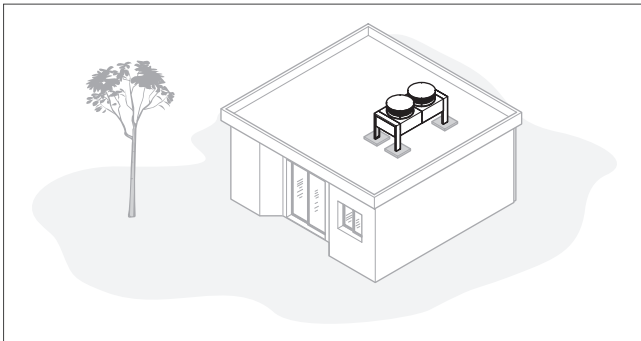


Fig. 591: Installation site, flat-roof installation

- » Only install the product in buildings with a solid construction and that have cast concrete ceilings throughout.
- » Do not install the product in buildings with a wooden structure or with a lightweight roof.
- » Select a location that is easily accessible so that maintenance and service work can be carried out.
- » Select a location that is easily accessible so that foliage or snow can be regularly removed from the product.
 - Install the optional snow protection to protect the fan against heavy snowfall.
- » Select a location that is close to a downpipe.
- » Select a site at which the air inlet is not affected by strong winds. Position the unit as crosswise to the main direction of wind as possible.
- » If the installation site is not protected against the wind, you should plan to set up a protective wall.
- » Please note the noise emissions. Maintain sufficient clearance from adjacent buildings.
- » Route the hydraulic lines and electrical wires. Provide a wall duct.

Ground installation

A permanent foundation is required as a base for the outdoor unit.

- » When laying the foundation, take the weight of the product into consideration (→ Technical data in the appendix).
- » When installing the product, ensure that the fixing elements and the floor have sufficient load-bearing capacity.
- » Ensure that the fixing elements have sufficient wind resistance.

For the ground installation, the condensate must be discharged via a drain pipe into a gravel bed which is located in the frost-free area.

The drain pipe must flow into a sufficiently large gravel bed so that the condensate can trickle away freely.

The drain pipe must not be connected to an existing pipe that is connected to the waste-water system.

12.18.7 Laying a strip foundation

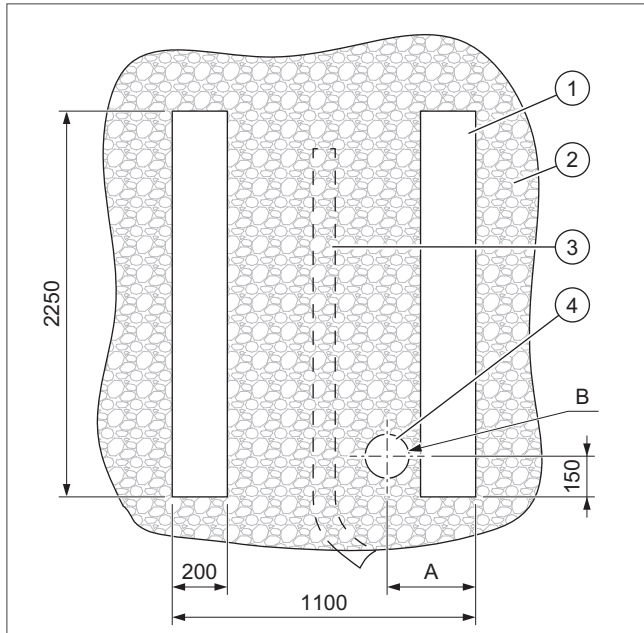


Fig. 592: Strip foundation

- 1 Reinforced concrete strip foundation
- 2 Gravel bed
- 3 Drainage pipe
- 4 Sensor pocket for electrical cables and refrigerant pipes (if laid in the ground)

Clearances

	A	B
VWL 185/3 AS	320 mm	≥ 200 mm
VWL 185/3 AS S4	320 mm	≥ 200 mm
VWL 255/3 AS	350 mm	≥ 250 mm
VWL 255/3 AS S4	350 mm	≥ 250 mm

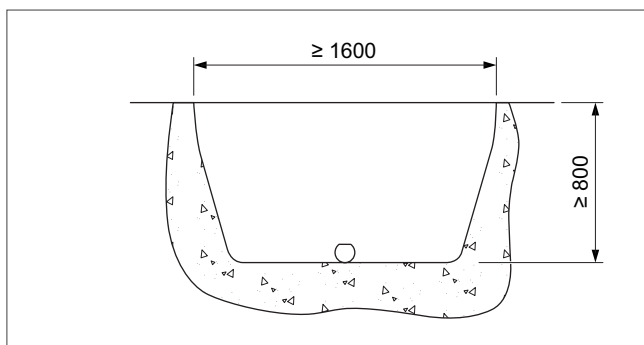


Fig. 593: Dimension drawing, laying a strip foundation

- » Dig out the foundation pit.

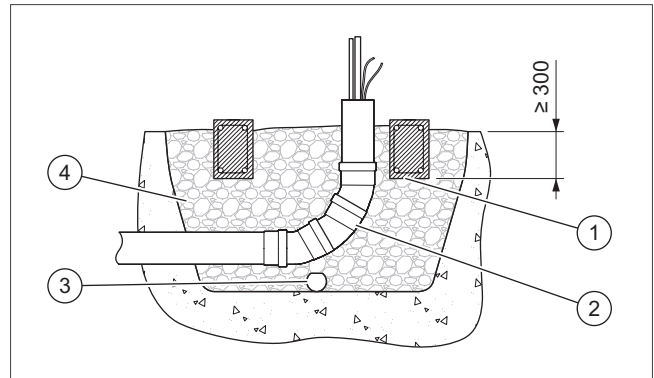


Fig. 594: Gravel bed

- » Position a drainage pipe (3) on the pit floor so that it is protected against frost.
- » Position the sensor pocket (2) for the electrical cables and refrigerant pipes that are to be routed in the earth.
- » Fill the foundation pit with coarse gravel (4).
- » If, when using buried connection cables, the sensor pocket (with the refrigerant pipes) needs to be installed retroactively, you must take this into consideration when digging the foundation pit.
- » Lay the two strip foundations (1) using reinforced concrete.

12.18.8 Laying the pad foundation

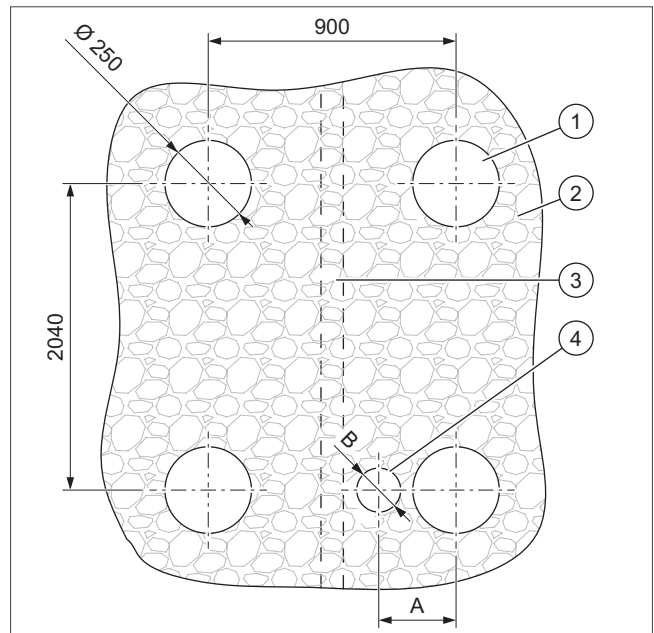


Fig. 595: Pad foundation

- 1 Pad foundation (with header pipes)
- 2 Gravel bed
- 3 Drainage pipe
- 4 Sensor pocket for electrical cables and refrigerant pipes (if laid in the ground)

Clearances

	A	B
VWL 185/3 AS	300 mm	≥ 200 mm
VWL 185/3 AS S4	300 mm	≥ 200 mm
VWL 255/3 AS	330 mm	≥ 250 mm
VWL 255/3 AS S4	330 mm	≥ 250 mm

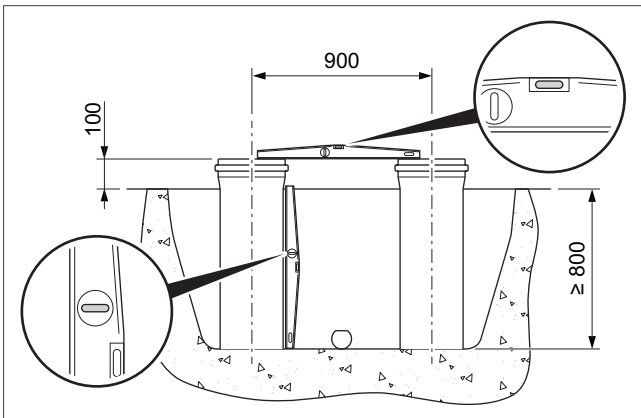


Fig. 596: Dimension drawing, laying the pad foundation

- » Dig out the foundation pit.
- » Position four horizontally and vertically aligned rigid header pipes (smooth inside).
 - Diameter of the pipes: ≥ 250 mm
 - Diameter of the pipes: ≥ 250 mm

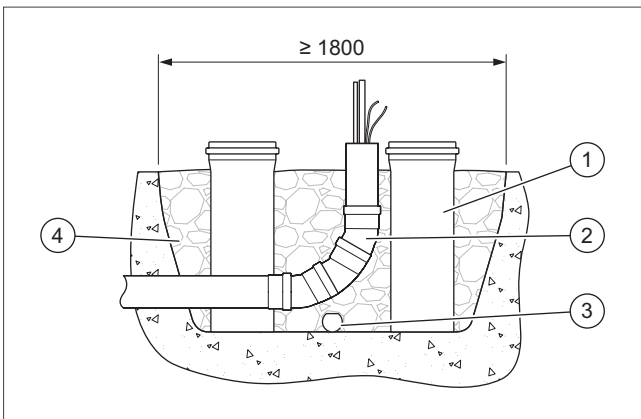


Fig. 597: Gravel bed

- » Position a drainage pipe (3) on the pit floor so that it is protected against frost.
- » Position the sensor pocket (2) for the electrical cables and refrigerant pipes that are to be routed in the earth.
- » Fill the foundation pit with coarse gravel (4).
- » If, when using buried connection cables, the sensor pocket (with the refrigerant pipes) needs to be installed retroactively, you must take this into consideration when digging the foundation pit.
- » Fill the header pipes (1) with concrete.

12.18.9 Installing the product

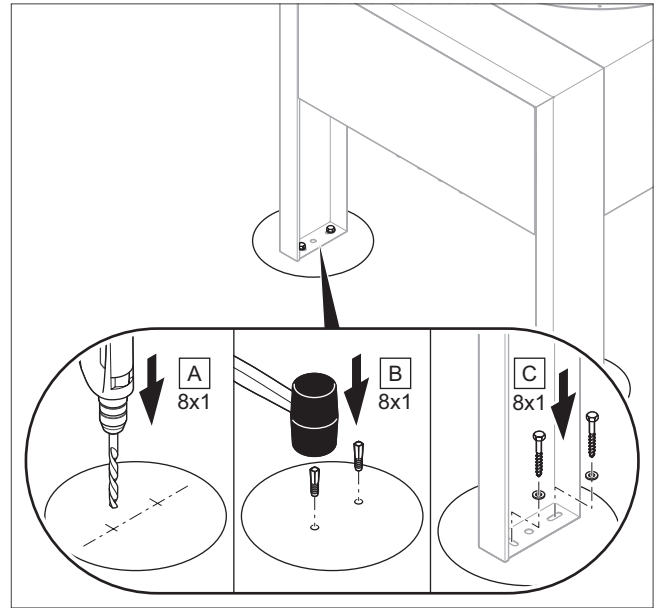


Fig. 598: Installing the product

12.18.10 Setting up a protective wall

Condition: The installation site is not protected against the wind

- » Set up a protective wall upstream of the air inlet to protect against the wind.

12.18.11 Flat-roof installation

Information on occupational safety

Note

Information on occupational safety

During a flat roof installation, the flat roof is a safety-critical working area. When planning and when carrying out work on the flat roof, you must always comply with the relevant health and safety regulations. The occupational safety must be guaranteed.



- Ensure that the flat roof can be safely accessed.
- The roof construction must have sufficient load-bearing capacity for being walked on.
- Maintain a safety area of 2 m to the fall edge and to skylights that are not safe to walk on plus any clearance that is required for carrying out work on the heat pump.
- Install a technical fall protection (e.g. reliable railings) on the fall edges if the safety clearance cannot be complied with.
- Install technical catch equipment (e.g. scaffolding or a safety net) if technical fall protection cannot be set up.

Flat-roof installation

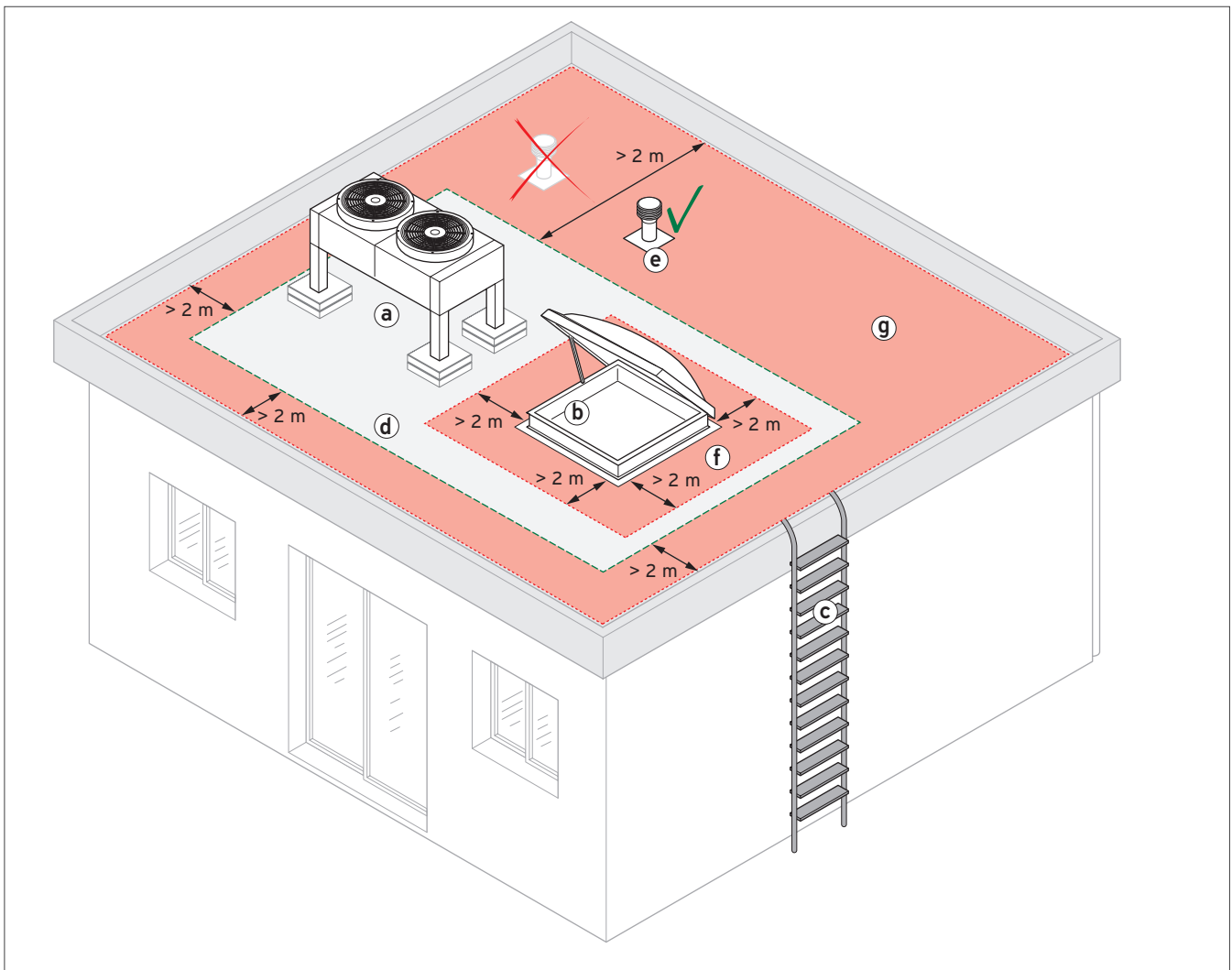


Fig. 599: Flat-roof installation

- a Heat pump, outdoor unit
- b Skylight (not guarded to prevent falls)
- c Secured ladder

- d Installation area
- e Duct ventilation
- f Safety area

Installing the product

1. To keep the structure-borne sound low, avoid installing the outdoor unit on the roof of living rooms or carports.
2. Ensure that the roof structure can bear the weight of the outdoor unit and an ice load of 400 kg/m² which may form below the product.
3. If you install the outdoor unit on an unprotected carport, a garage roof or storeroom roof, ensure that the fixing elements have sufficient wind resistance..

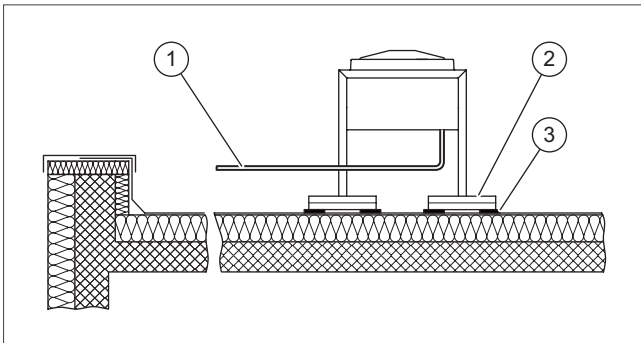


Fig. 600: Flat-roof installation

4. Attach a damping plate (3) to each foot on the product.
5. Install two concrete slabs (2) connected using flexible adhesive to each foot on the product.
6. Align the product exactly horizontally.
7. Plan the installation of a UV-resistant heat insulation on the refrigerant pipes (1).

Setting up a protective wall

Condition: The installation site is not protected against the wind

- » Set up a protective wall upstream of the air inlet to protect against the wind.

Installing the condensate discharge pipe

1. Connect the condensate discharge pipe to a downpipe over a short distance.
2. Depending on the local condition, install electrical trace heating in order to keep the condensate discharge pipe frost-free.

12.19 aroTHERM perform accessories

12.19.1 3-port diverter valve, DN 40, DN 50

Order no. 0010037625, 0010037626

3-port diverter valve (DN 40/DN 50) with servo motor and connection cable, suitable for mixed or zone operation

Can be used for **allISTOR exclusive**, **allISTOR plus**, **aroTHERM perform**, **geoTHERM perform**



Fig. 601: 3-port diverter valve

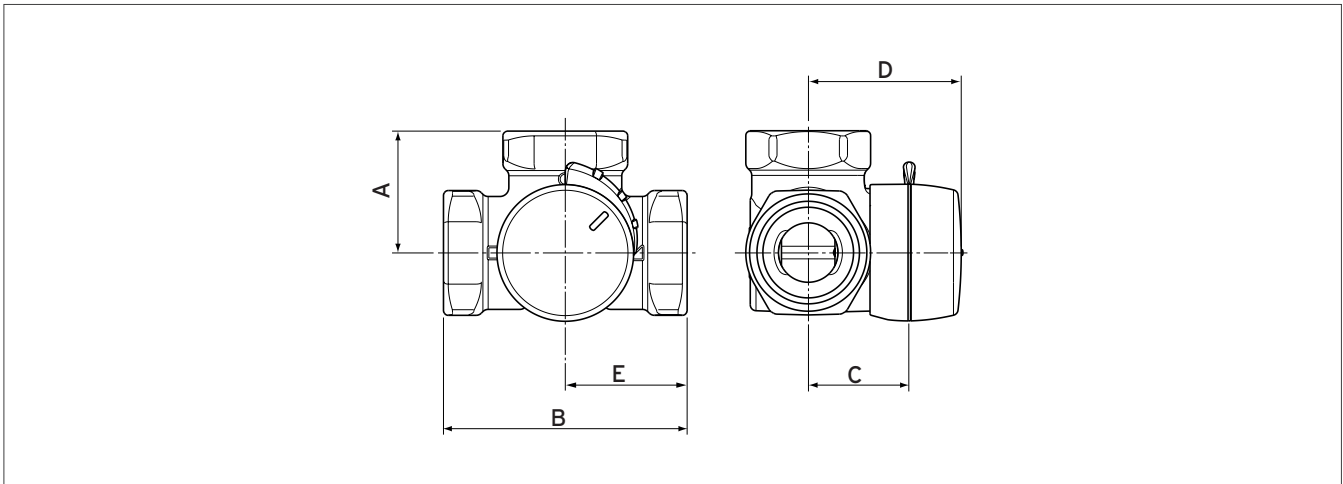


Fig. 602: Dimension drawing

Order no.	3-port diverter valve	Heat pump	K_{Vs}	Connection	A	B	C	D	E
0010037625	DN 40	aroTHERM perform VWL 185/3 and VWL 255/3 geoTHERM perform VWS 260/3	25	Rp 1 1/2"	53	106	44	62	53
0010037626	DN 50	geoTHERM perform VWS 400/3 and VWS 780/3	40	Rp 2"	60	120	46	64	60

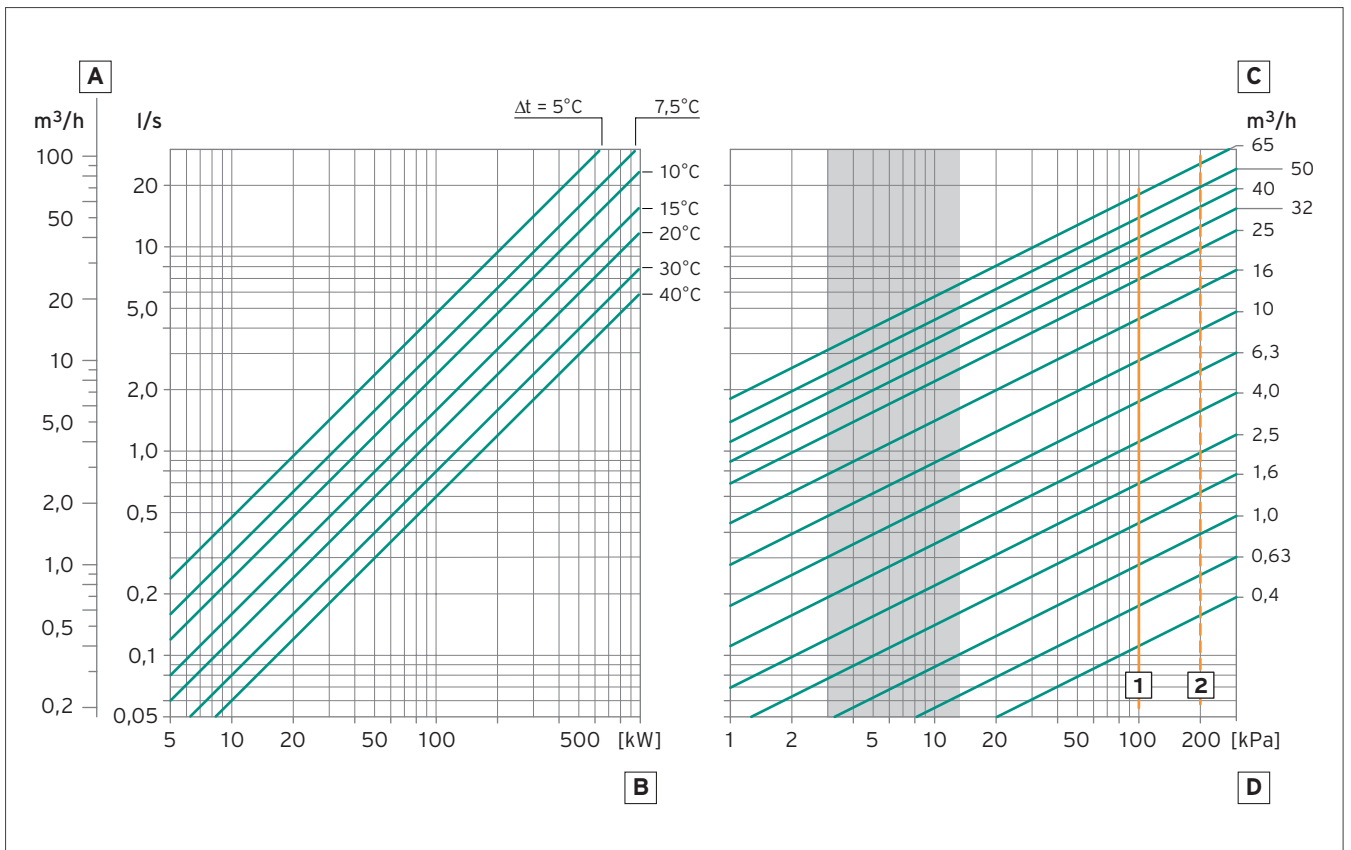




Fig. 603: Pressure loss


- A Flow
- B Power
- C K_{vs} value
- D Pressure drop ΔP
- 1 Max. ΔP for mixing
- 2 Max. ΔP for distributing

12.19.2 Accessories for installing the outdoor unit

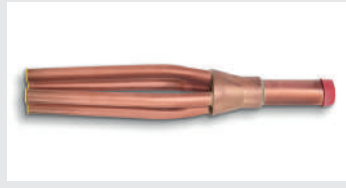
Refrigerant pipes

Accessories	Description	Order no.
 <p>Can be used for:</p> <ul style="list-style-type: none"> - VWL 185/3 AS with VWL 185/3 IS S1, - VWL 185/3 AS with VWL 185/3 IS S4 (Sound Safe Plus)  <p>Can be used for:</p> <ul style="list-style-type: none"> - VWL 255/3 AS with VWL 255/3 IS S1, - VWL 255/3 AS with VWL 255/3 IS S4 (Sound Safe Plus) 	Refrigerant pipes (connection set) for the liquid and suction gas side, 16+22 mm Pressure-tested with nitrogen at the factory, incl. cable harness, Length 5 m	0010037603
	Refrigerant pipes (connection set) for the liquid and suction gas side, 16+22 mm Pressure-tested with nitrogen at the factory, incl. cable harness, Length 10 m	0010037604
	Refrigerant pipes (connection set) for the liquid and suction gas side, 16+22 mm Pressure-tested with nitrogen at the factory, incl. cable harness, Length 15 m	0010037605
	Refrigerant pipes (connection set) for the liquid and suction gas side, 16+22 mm Pressure-tested with nitrogen at the factory, incl. cable harness, Length 20 m	0010037606
	Refrigerant pipes (connection set) for the liquid and suction gas side, 16+22 mm Pressure-tested with nitrogen at the factory, incl. cable harness, Length 5 m	0010037613
	Refrigerant pipes (connection set) for the liquid and suction gas side, 16+22 mm Pressure-tested with nitrogen at the factory, incl. cable harness, Length 10 m	0010037614
Refrigerant pipes (connection set) for the liquid and suction gas side, 16+22 mm Pressure-tested with nitrogen at the factory, incl. cable harness, Length 15 m	0010037615	

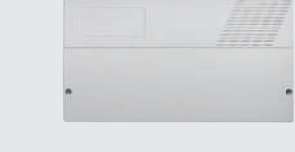




Snow cap accessories

Accessories	Description	Order no.
	Snow cap for the VWL 185-255/3 AS S4 outdoor unit incl. fixing material Can be used for VWL 185/3 IS S1 with VWL 185/3 AS S4 (Sound Safe Plus), VWL 255/3 IS S1 with VWL 255/3 AS S4 (Sound Safe Plus) Note: Order 2 x snow caps	0010037609
	Snow cap for the VWL 185-255/3 AS outdoor unit incl. fixing material Can be used for VWL 185/3 IS S1 with VWL 185/3 AS, VWL 255/3 IS S1 with VWL 255/3 AS Note: Order 2 x snow caps	0010037608

Installation sets

Accessories	Description	Order no.
 <p>Not shown here</p>	<p>Venturi manifold Depending on the refrigerant pipe length and the output, a Venturi manifold must be installed in the suction gas pipe.</p> <p>Note: The Venturi manifold is only available from a Vaillant service technician.</p>	0010037618
<p>Not shown here</p>	<p>Installation set 1 Comprising: - Venturi manifold, - Three 42 mm solder elbows, - 1 x adapter, 42 mm to 35 mm - 1 m refrigerant pipe, 42 mm</p> <p>Note: The installation set is only available from a Vaillant service technician.</p>	0010037617
<p>Not shown here</p>	<p>Installation set 2 Comprising: - Three 35 mm solder elbows, - 1 m refrigerant pipe, 35 mm - 1 x T-piece of 35 mm to two of 22 mm</p> <p>Note: The installation set 2 is only available from a Vaillant service technician.</p>	0010037616

12.20 Unit and control modules

Accessories	Description	Order no.
	<p>VR 640 additional module Including sensor set (2 x surface-mounted sensors, 1 x dry pocket sensor) for the multifunctional function expansion, e.g. by adding two mixed heating circuit, peak load actuation</p> <p>Can be used for aroTHERM perform and geoTHERM perform</p>	0010037632
	<p>VR 310 remote control As a remote control, required for the cooling function for monitoring the dew point.</p> <p>Can be used for aroTHERM perform and geoTHERM perform</p>	0010037630
	<p>VWZ MC Modbus gateway Interface from the heat pump control to the Modbus/RTU for reading and actuating</p> <p>Can be used for aroTHERM perform and geoTHERM perform</p>	0010041870
	<p>Surface-mounted sensor For using the cooling function for the aroTHERM perform and geoTHERM perform</p>	0010040731
	<p>VR 42 additional module Relay switching of the sensors to increase efficiency in cooling mode</p> <p>Can be used for aroTHERM perform</p>	0010037633

12.21 Basic system diagrams and wiring diagrams

12.21.1 Key for basic system diagrams and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Domestic hot water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Refrigerant-split heat pump indoor unit
2e	Ground water module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)

Number	Designation
7a	Heat pump brine filling unit
7b	Solar pump station
7c	Domestic hot water station
7d	Heat interface unit
7e	Hydraulic block
7f	Decoupler module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety group - drinking water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar protection vessel
8i	Thermal safety assembly
9a	Single-room temperature control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-port mixing valve
9l	Cooling 3-port mixing valve
9m	Increase in return for 3-port mixing valve
9n	Thermostatic mixing valve
9o	Flow meter (TacoSetter)
9p	Cascade valve

Number	Designation
10a	Thermometer
10b	Manometer
10c	Non-return valve
10d	Air separator
10e	Line strainer with magnetite separator
10f	Solar/brine collecting vessel
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump appliance interface
12c	2 in 7 multi-functional module
12d	Wiring centre/mixer module
12e	Main expansion module
12f	Wiring centre
12g	eBUS bus coupler
12h	Solar control
12i	External control
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature cut-out
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway

Number	Designation
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
ESCO	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MO	Multi-function output
MI	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch contact for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

12.21.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				regulated	direct		DHW	Heating	
0020318062	aroTHERM perform eloBLOCK	Integrated weather-compensated system controller	-	Home station	-	allSTOR plus VPS	-	-	Home station
0020318063	aroTHERM perform eloBLOCK	Integrated weather-compensated system controller VR 310	-	2 UFH	-	allSTOR plus VPS	•	•	aguaFLOW
0020318064	aroTHERM perform eloBLOCK	Integrated weather-compensated system controller VR 310 VR 640	-	2 UFH	-	allSTOR plus VPS	-	-	aguaFLOW
0020318065	aroTHERM perform eloBLOCK	Integrated weather-compensated system controller VR 310 VR 42	•	1 UFH	1 DHC	External cylinder	-	-	aguaFLOW

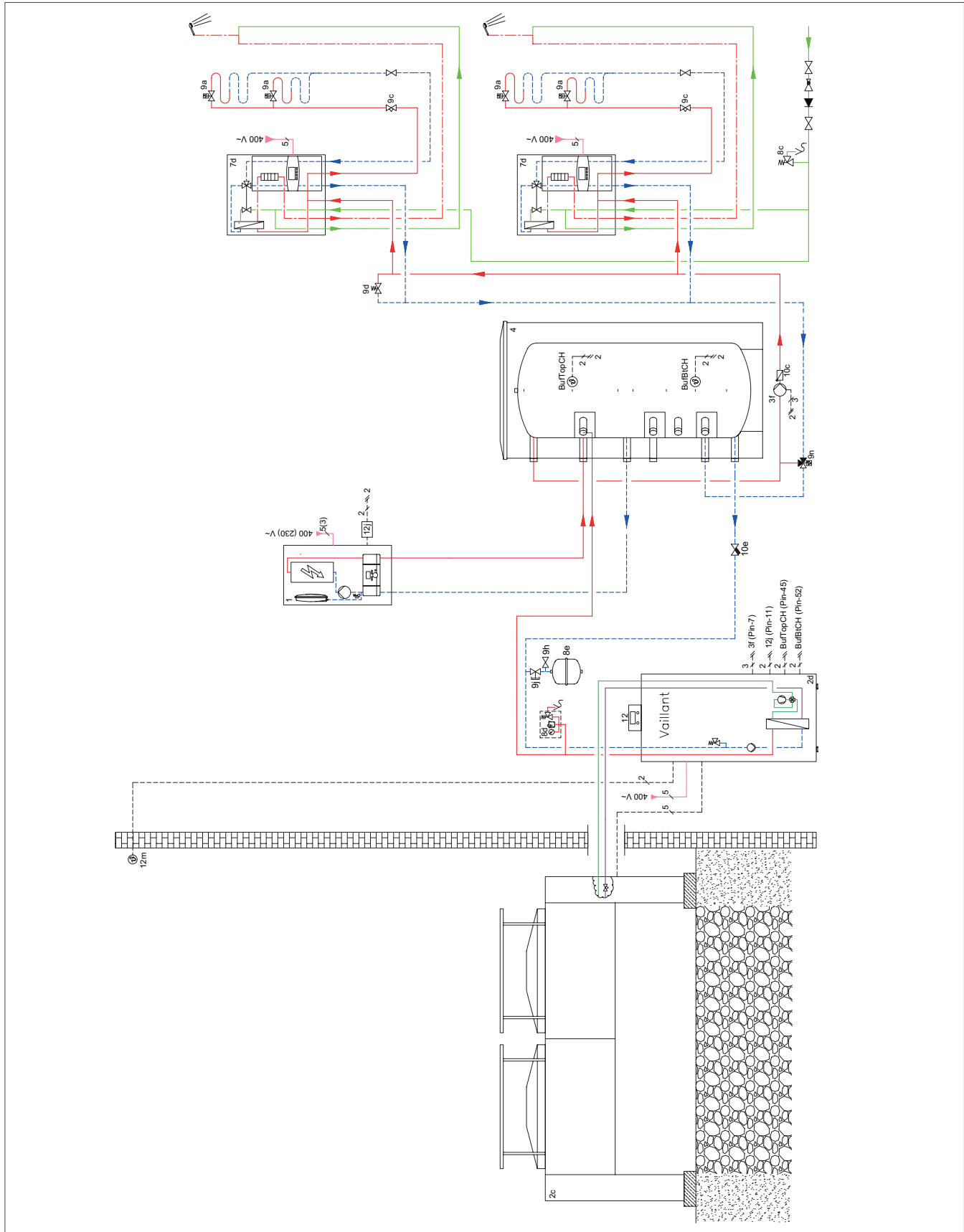


Fig. 604: Basic hydraulic diagram

Individual components

- aroTHERM perform VWL
- eIoBLOCK VE
- aLIStOR plus VPS
- Integrated weather-compensated system control

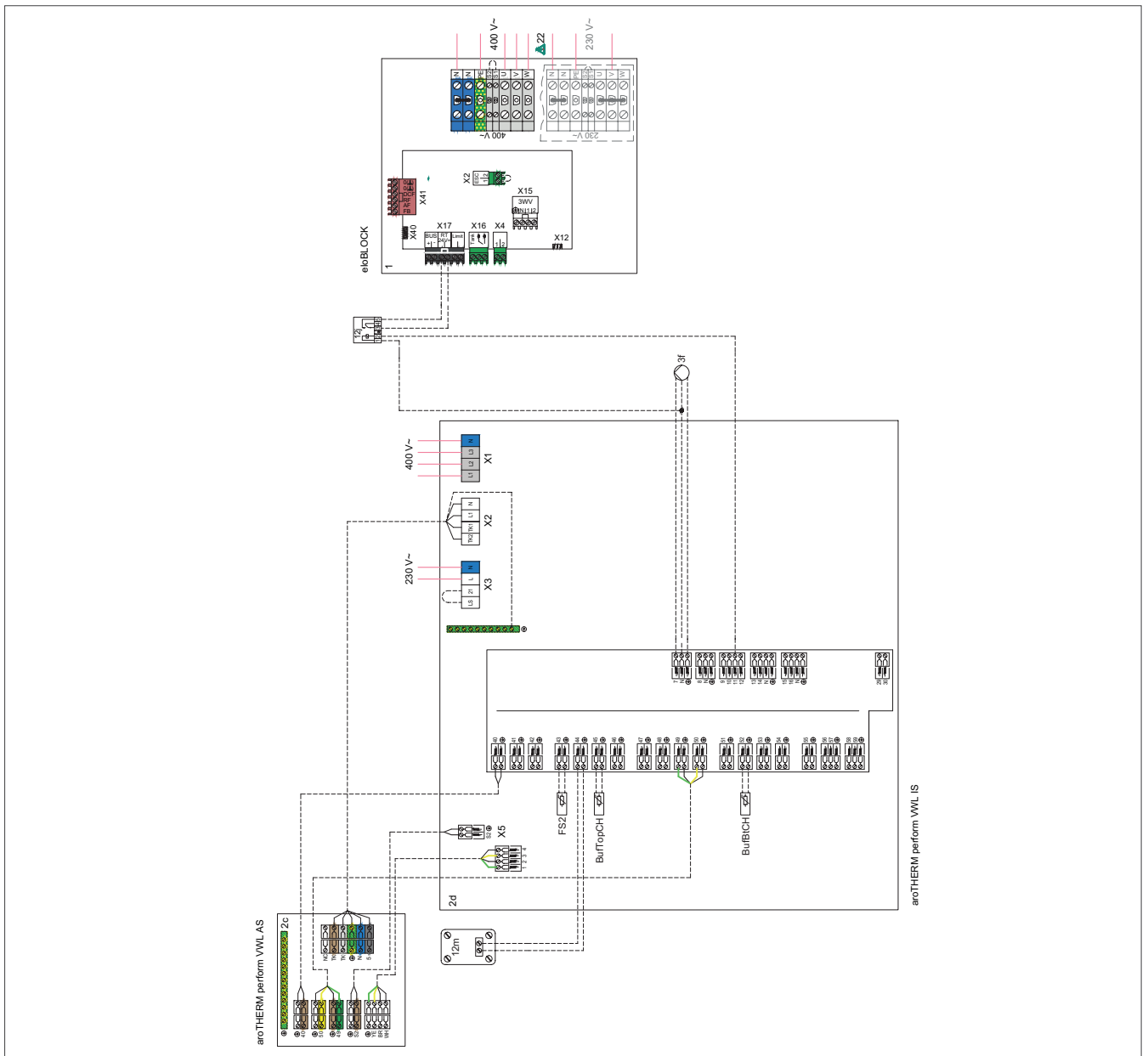


Fig. 605: Wiring diagram

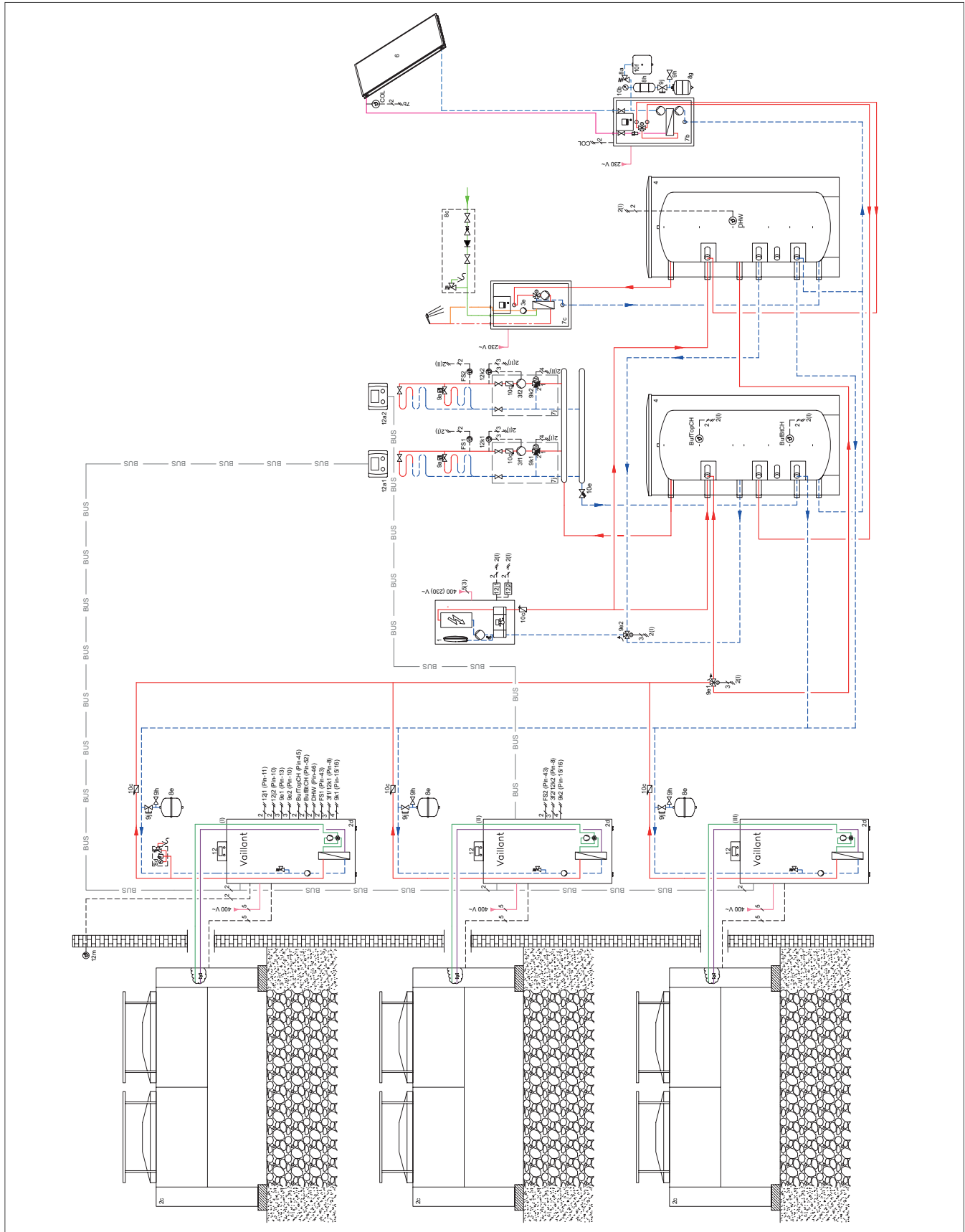


Fig. 606: Basic hydraulic diagram

- Individual components**
- aroTHERM perform VWL
 - eIoBLOCK VE
 - allSTOR plus VPS
 - aquaFLOW VPM W
 - aquaFLOW VPM S
 - Integrated weather-compensated system control
 - VR 310

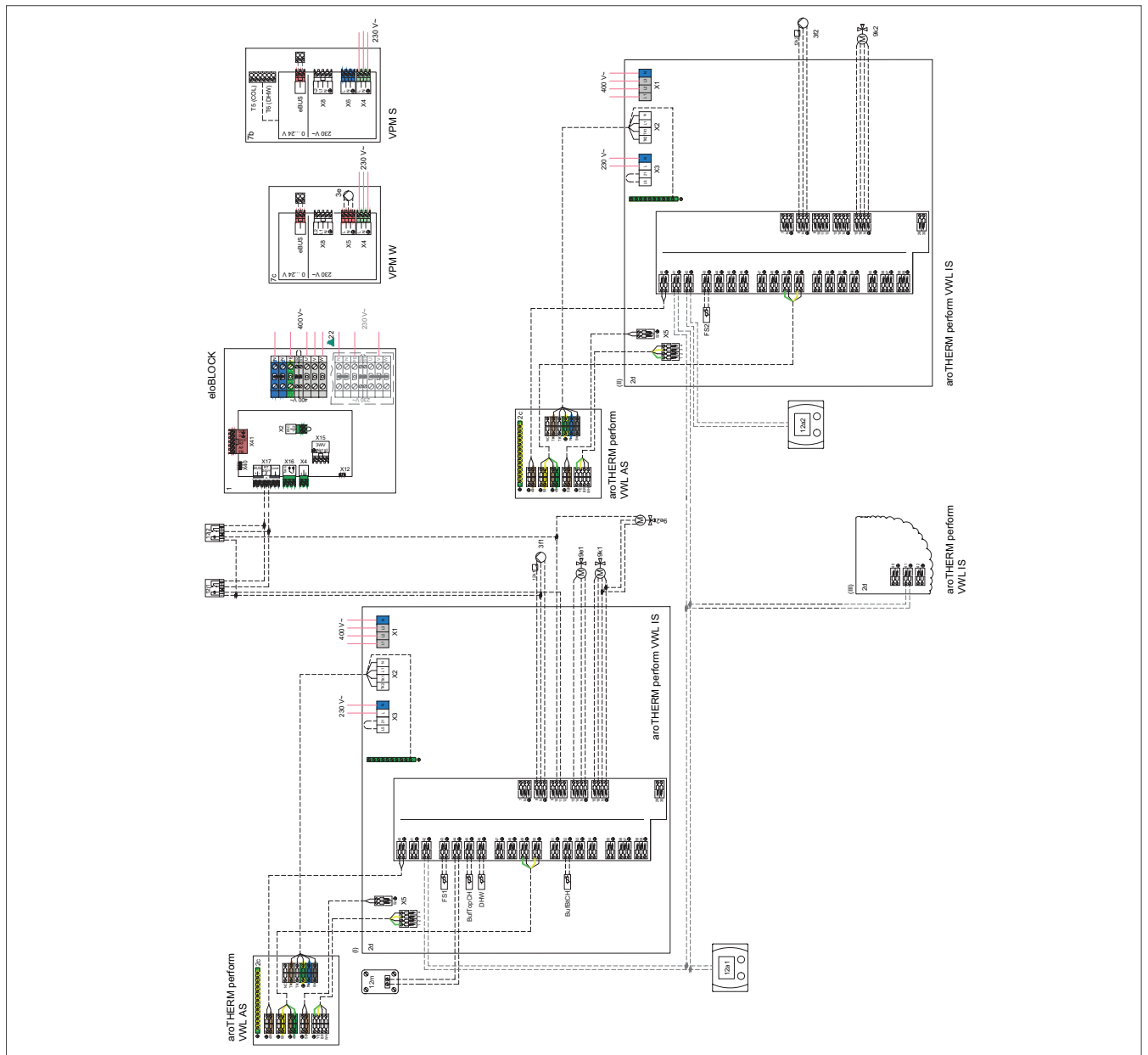


Fig. 607: Wiring diagram

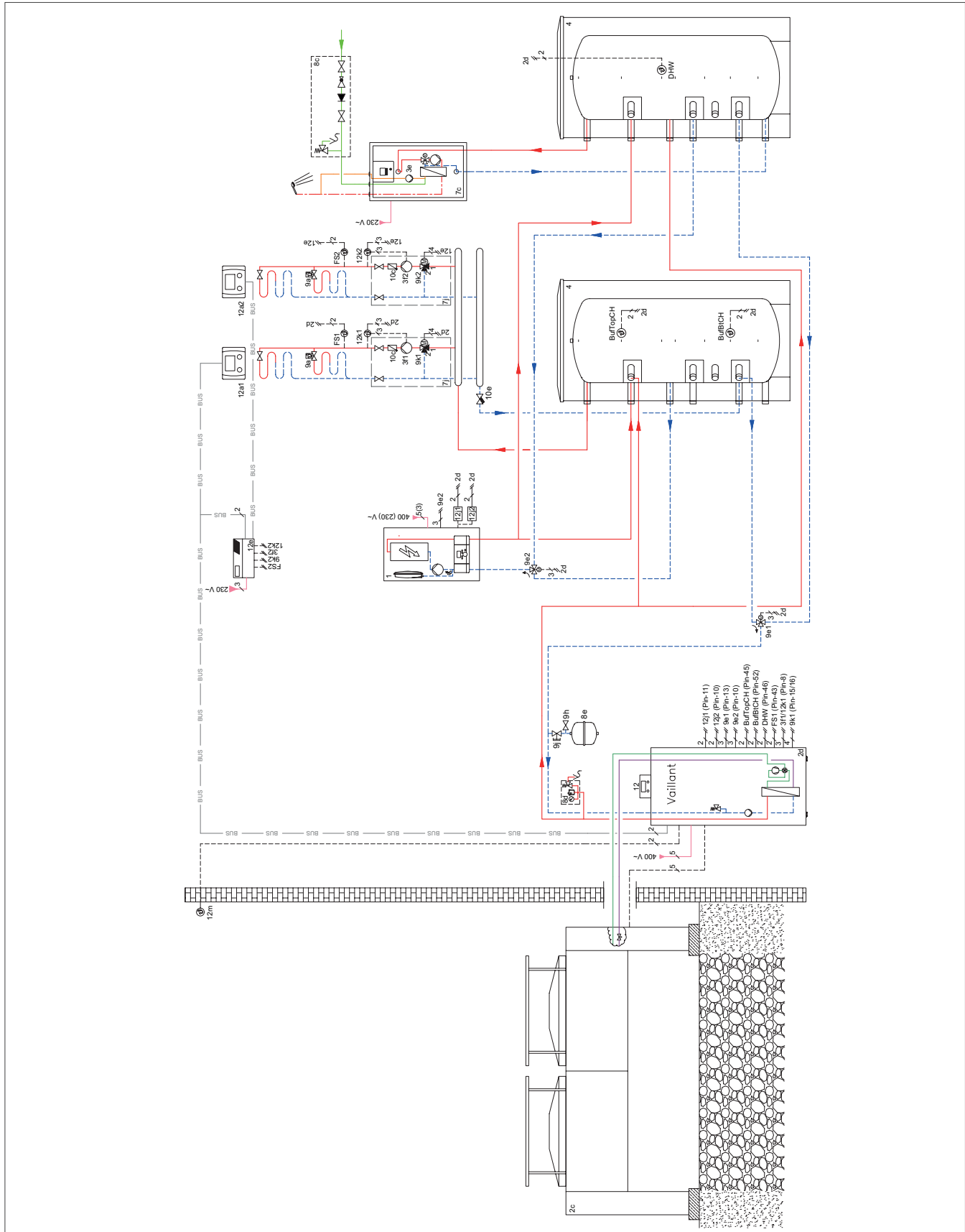


Fig. 608: Basic hydraulic diagram

- Individual components**
- aroTHERM perform VWL
 - eIoBLOCK VE
 - allSTOR plus VPS
 - aquaFLOW VPM W
 - Integrated weather-compensated system control
 - VR 310
 - VR 640

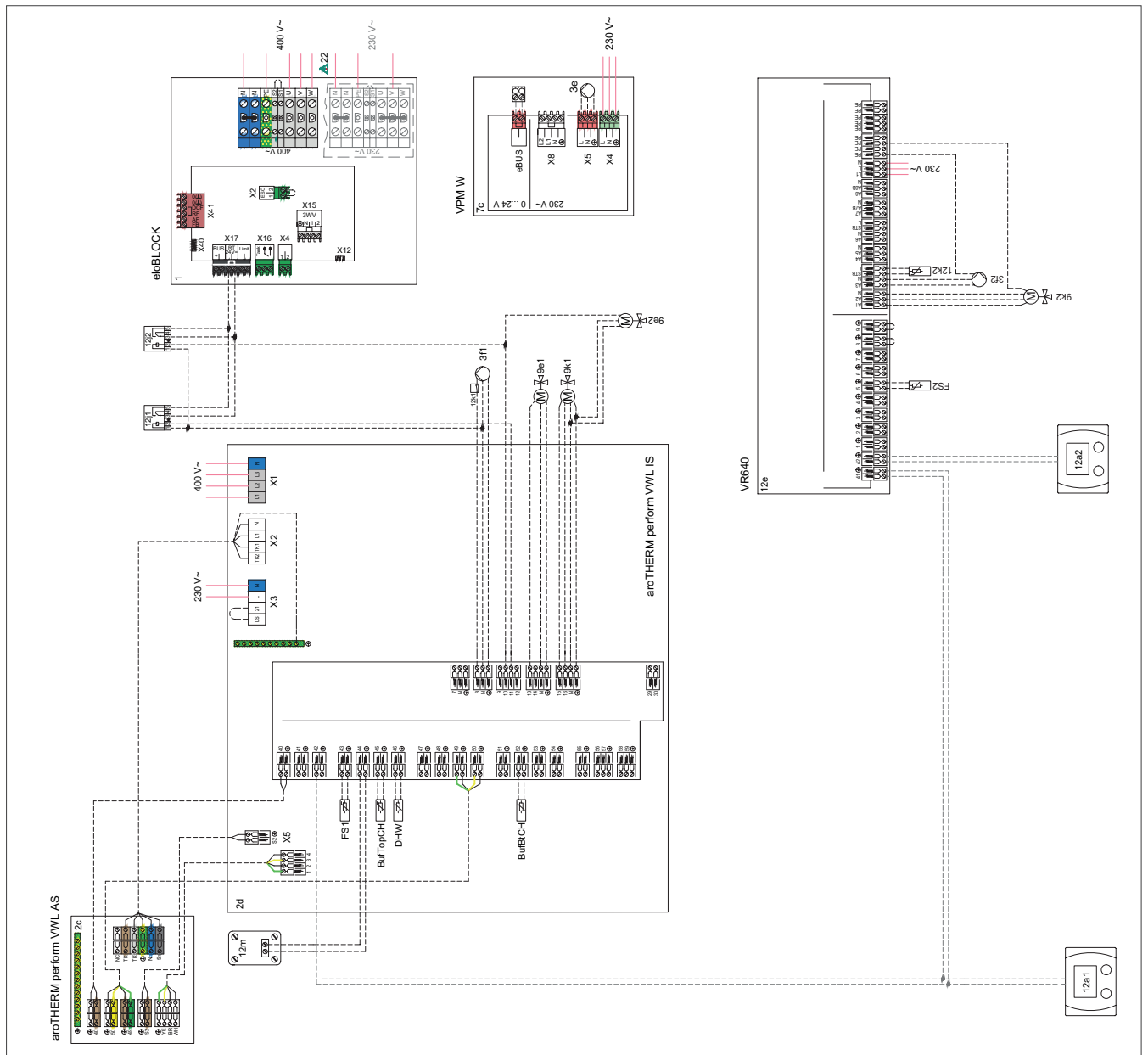


Fig. 609: Wiring diagram

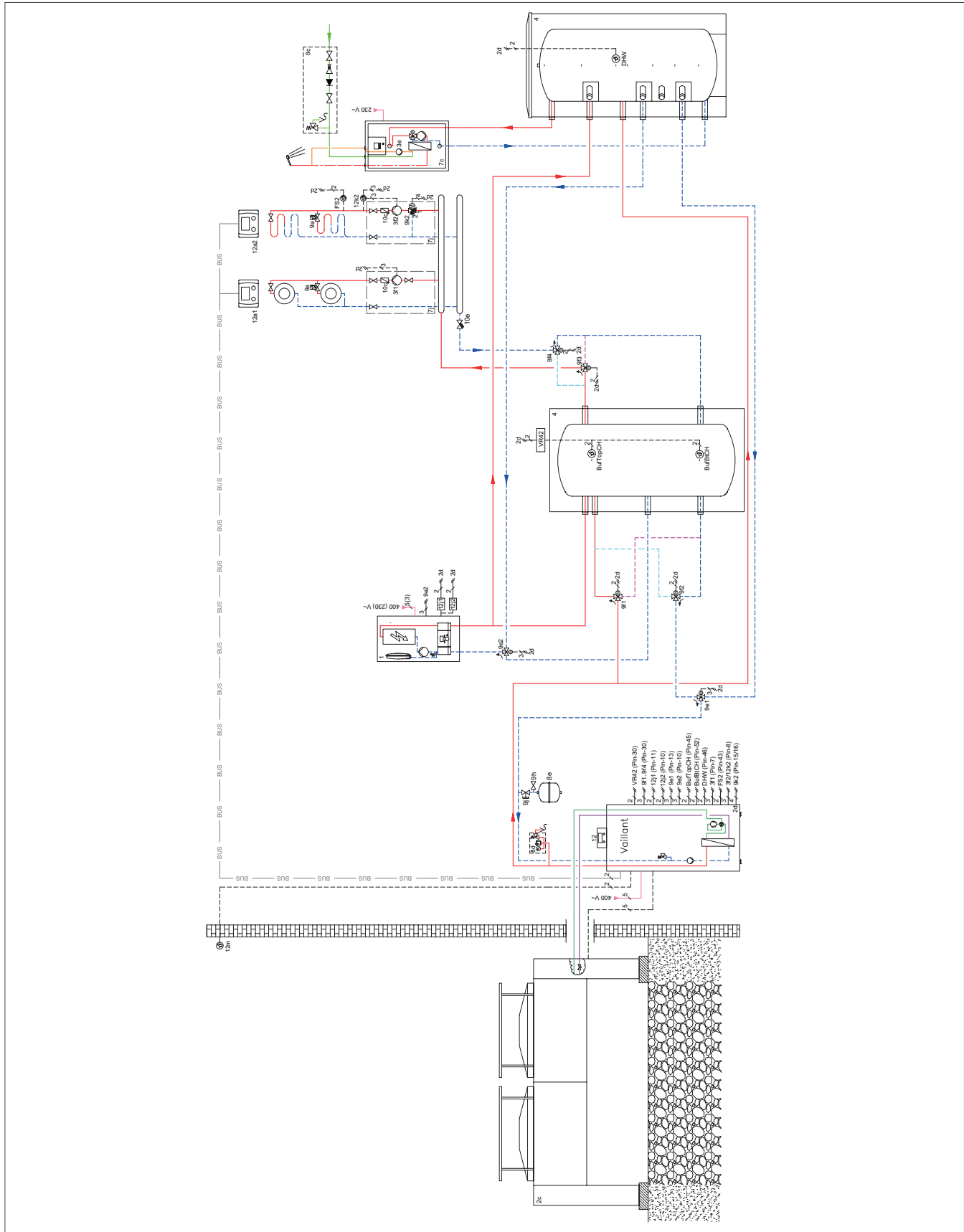


Fig. 610: Basic hydraulic diagram

- Individual components**
- aroTHERM perform VWL
 - eloBLOCK VE
 - allSTOR plus VPS
 - aquaFLOW VPM W
 - External cylinder
 - Integrated weather-compensated system control
 - VR 310
 - VR 42

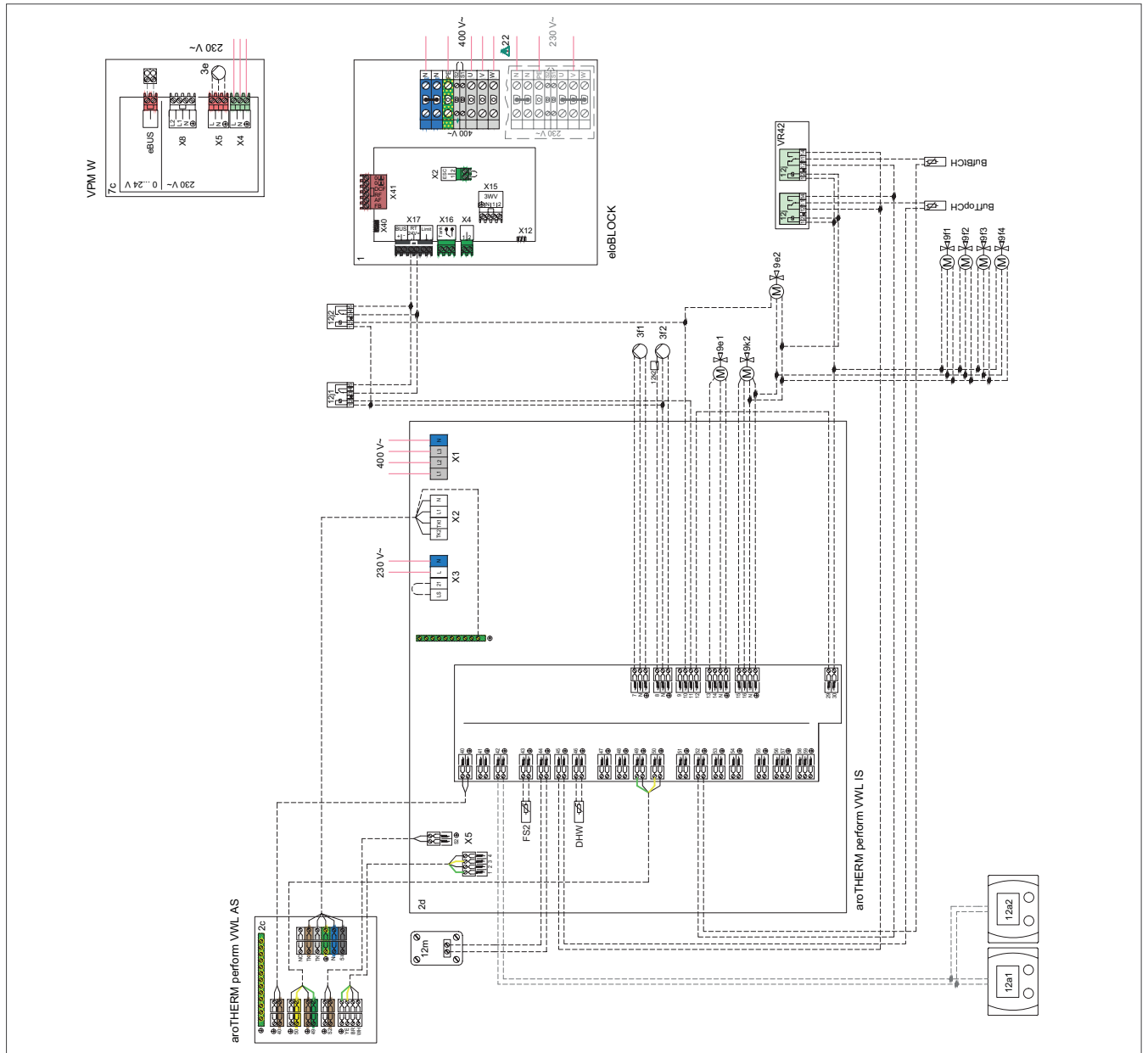


Fig. 611: Wiring diagram



13. Product information for the geoTHERM perform

Update 10
New chapter new product

13.1 Product combinations



Fig. 612: Product combinations

	Heat pump	Decoupler modules					Control	Photovoltaics
	Brine-to-water geoTHERM perform VWS .../3 (1)	Back-up boiler (2) Electric or gas	Buffer cylinder allSTOR plus (3)	Multi-functional buffer cylinder allSTOR exclusive (4)	Brine and heating circuit pumps .../1-8 .../1-12 (5)	Domestic hot water station aguaFLOW exclusive or aguaFLOW plus (6)	Integrated (7)	PV modules and inverters (8)
Heating only	•	•	•	–	•	–	•	•
Heating and domestic hot water generation	•	•	◦	•	•	•	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

13.2 Product description for the geoTHERM perform VWS 260/3 - VWS 780/3



Fig. 613: geoTHERM perform VWS

13.2.1 Special features

- The brine-to-water heat pump is designed for use as a heat generator for closed heating installations.
- Heat pump with R410a refrigerant
- Flow temperatures up to 65 °C for modernisation and a high level of domestic hot water comfort
- High level of efficiency thanks to the advanced, durable heat pump scroll compressor
- Bivalent alternative or parallel operation possible
- Increased living comfort in the summer thanks to integrated cooling function
- SG and PV Ready

13.2.2 Potential applications

- Heating and domestic hot water generation
- Up to 8 units in a cascade
- Up to 16 heating circuits possible using an integrated control
- In order to use the passive cooling function, the heating system must be prepared on-site. (No active cooling possible.)

13.2.3 Equipment

- In-rush current limiter
- Actuator for electric back-up heaters up to 8.8 kW integrated
- Expansion relief valve, heat utilisation and heat source side (VWS 260/3 S1 only)
- Heat-source-side expansion vessel, 24 litres (VWS 260/3 IS S1 only)
- Volume flow sensor (VWS 260/3 S1 internal, otherwise it is included in the scope of delivery for the external installation)
- Heating/brine circuit pump (VWS 260/3 S1 internal, otherwise external available as an accessory)
- Acoustic decoupling for the hydraulic connections
- Yield detection and display integrated as standard
- Weather-compensated system control
- Noise reduction function

Note

High-efficiency pumps and volume flow meters for the geoTHERM perform VWS 400/3 S1 and VWS 780/3 S1 must be ordered and installed separately.



Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Order no.
VWS 260/3 S1	A+++ / A++ (A+++ to D)	0010037620
VWS 400/3 S1	A+++ / A++ (A+++ to D)	0010037621
VWS 780/3 S1	A++ / A+ (A+++ to D)	0010037622

13.3 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.



General

	VWS 260/3 S1	VWS 400/3 S1	VWS 780/3 S1
Product dimensions, width	600 mm	680 mm	680 mm
Product dimensions, height	1,289 mm	1,889 mm	1,889 mm
Product dimensions, depth	680 mm	698 mm	698 mm
Weight, without packaging	250 kg	228 kg	306 kg
Heating pipe connections	DN 40 (1 1/2")	DN 50 (2")	DN 50 (2")
Brine pipe connections	DN 40 (1 1/2")	DN 50 (2")	DN 50 (2")

Heating mode

	VWS 260/3 S1	VWS 400/3 S1	VWS 780/3 S1
Heat output B0/W35	24.5 kW	40.4 kW	77.5 kW
Power consumption B0/W35	5.6 kW	8.6 kW	17.6 kW
Coefficient of performance B0/W35	4.4	4.7	4.4
Heat output B0/W55	22.59 kW	36.5 kW	67.2 kW
Power consumption B0/W55	7.95 kW	12.25 kW	23.91 kW
Coefficient of performance B0/W55	2.84	2.98	2.81

Electrics

	VWS 260/3 S1	VWS 400/3 S1	VWS 780/3 S1
Rated voltage	400 V 3N ~50Hz	400 V 3N ~50Hz	400 V 3N ~50Hz
cos Φ power factor	0.79	0.8	0.8
Fuse type, characteristic C	25 A	40 A	80 A
Required network impedance Z_{max}	-	$\leq 0.116 \Omega$	$\leq 0.329 \Omega$
Main electrical circuit nominal output	9.3 kW	14.9 kW	26.1 kW
Max. rated current	≤ 21.0 A	≤ 31.5 A	≤ 64.0 A
Max. in-rush current	≤ 62.5 A	≤ 79 A	≤ 94.4 A

Building circuit/heating circuit

	VWS 260/3 S1	VWS 400/3 S1	VWS 780/3 S1
Operating pressure	≤ 0.6 MPa	≤ 0.6 MPa	≤ 0.6 MPa
Max. flow temperature	65 °C	65 °C	65 °C
Pressure level	18.7 kPa	65.0 kPa (650.0 mbar)* **	74.8 kPa (748.0 mbar)* **
Heating pump	Stratos Para 25/1-8	Stratos 40/1-8 (accessory, not included in the scope of delivery)	Stratos 65/1-12 (accessory, not included in the scope of delivery)
Nominal volume flow	73.6 l/min	115 l/min	221.6 l/min
Min. volume flow	24.5 l/min	57.5 l/min	111 l/min
Temperature difference	5 K	5 K	5 K
Volume flow sensor	Internal	External (Included in scope of delivery)	External (Included in scope of delivery)
Sound power level	≤ 60 dB(A)	≤ 54 dB(A)	≤ 60 dB(A)

* Including external flow rate sensor (included in the scope of delivery).

** When using the accessory pump.

Heat source circuit/brine circuit

	VWS 260/3 S1	VWS 400/3 S1	VWS 780/3 S1
Source inlet temperature range	-6 to 20 °C	-6 to 20 °C	-6 to 20 °C
Brine pump	Stratos Para 25/1-12	Stratos 40/1-12 (accessory, not included in the scope of delivery)	Stratos 65/1-12 (accessory, not included in the scope of delivery)
Nominal volume flow	79.1 l/min	166.5 l/min	313.6 l/min
Min. volume flow	34.5 l/min	83.5 l/min	157 l/min
Heat transfer fluid temperature difference	4 K	3 K	3 K
Pressure level	52.3 kPa	75.7 kPa (757.0 mbar)* **	54.4 kPa (544.0 mbar)* **
Volume flow sensor	Internal	External (Included in scope of delivery)	External (Included in scope of delivery)

* Including external flow rate sensor and pipelines (included in the scope of delivery).

** When using the accessory pump.

Refrigerant circuit

	VWS 260/3 S1	VWS 400/3 S1	VWS 780/3 S1
Compressor type	Scroll	Scroll	Scroll
Circulation speed	2,900 rpm	2,900 rpm	2,900 rpm
Rated voltage	400 V ~50Hz	400 V ~50Hz	400 V ~50Hz
Refrigerant type	R410A	R410A	R410A
Refrigerant volume	4.5 kg	10.4 kg	13.3 kg
Permissible operating pressure	4.6 MPa	4.6 MPa	4.6 MPa

13.4 Performance data - heating mode

13.4.1 geoTHERM perform power output graphs

X = outdoor temperature, Y = heat output

geoTHERM perform VWS 260/3

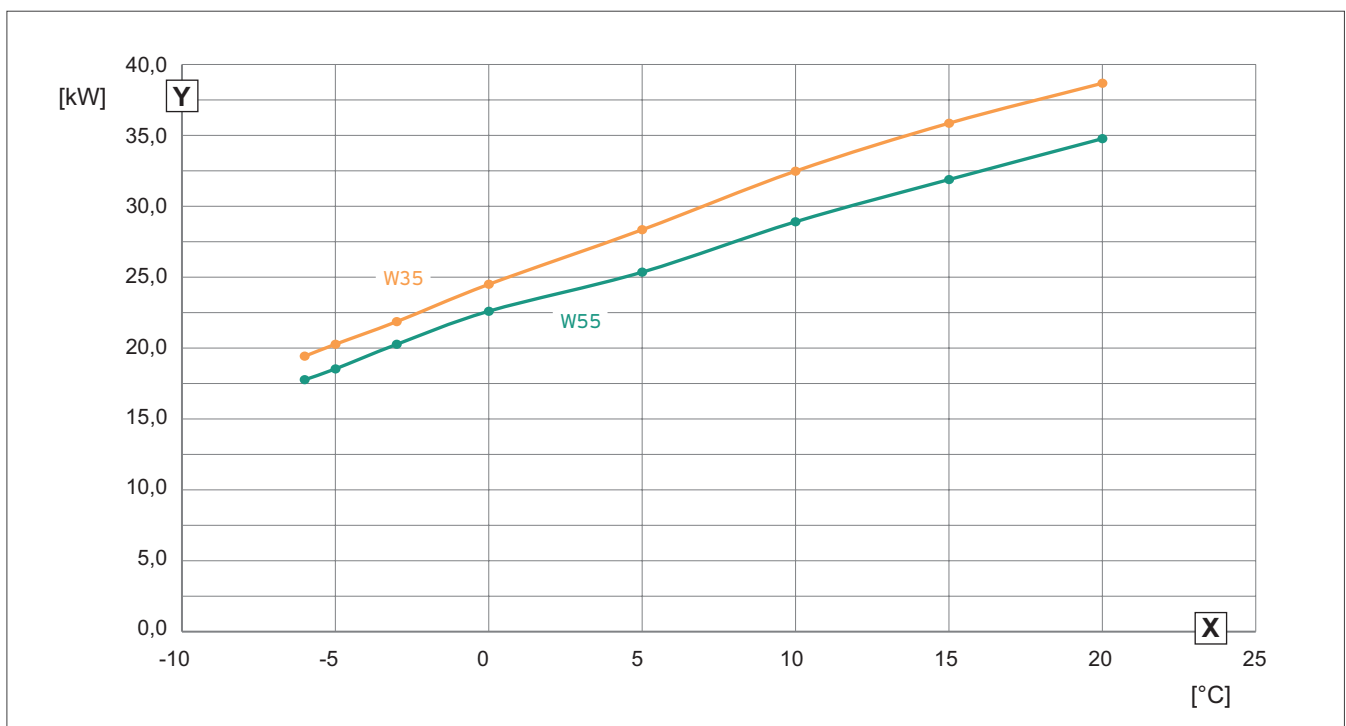


Fig. 614: geoTHERM perform VWS 260/3 - heat output for S.../W35 and W55

geoTHERM perform VWS 400/3

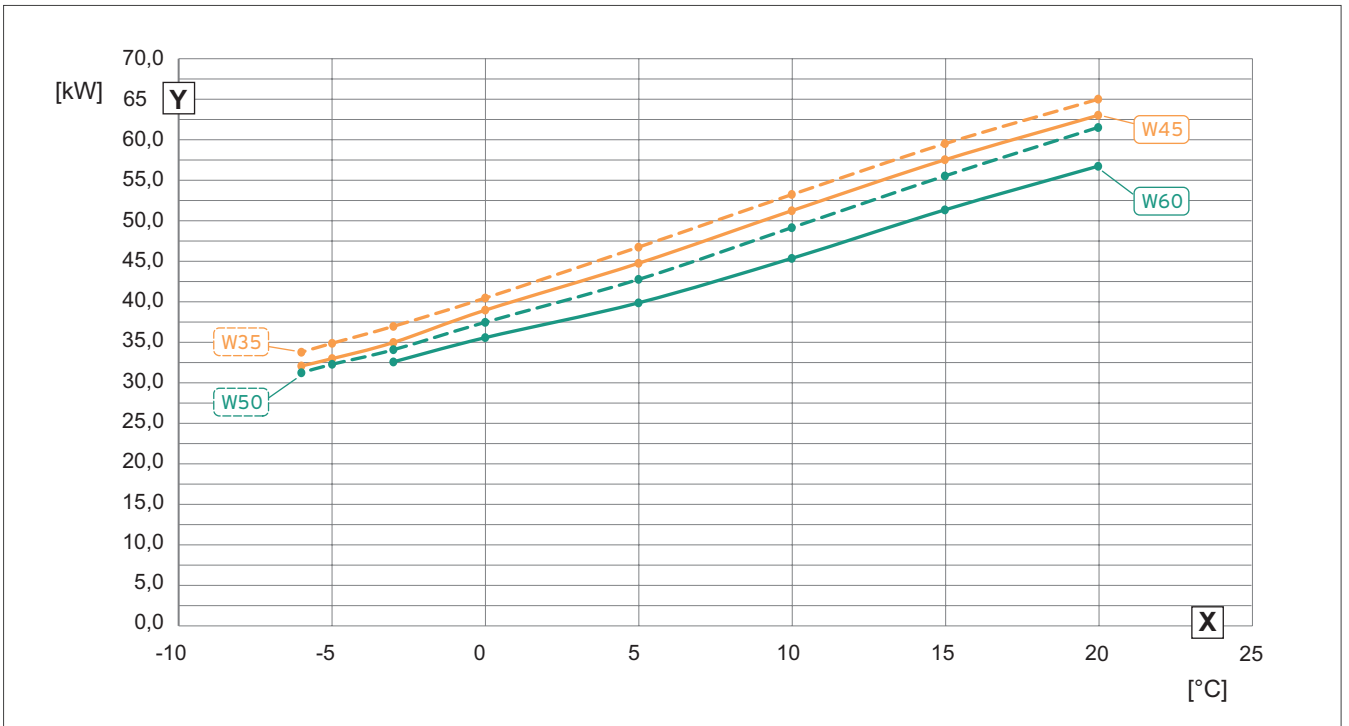


Fig. 615: geoTHERM perform VWS 400/3 - heat output for S.../W35, W45, W50 and W60

geoTHERM perform VWS 780/3

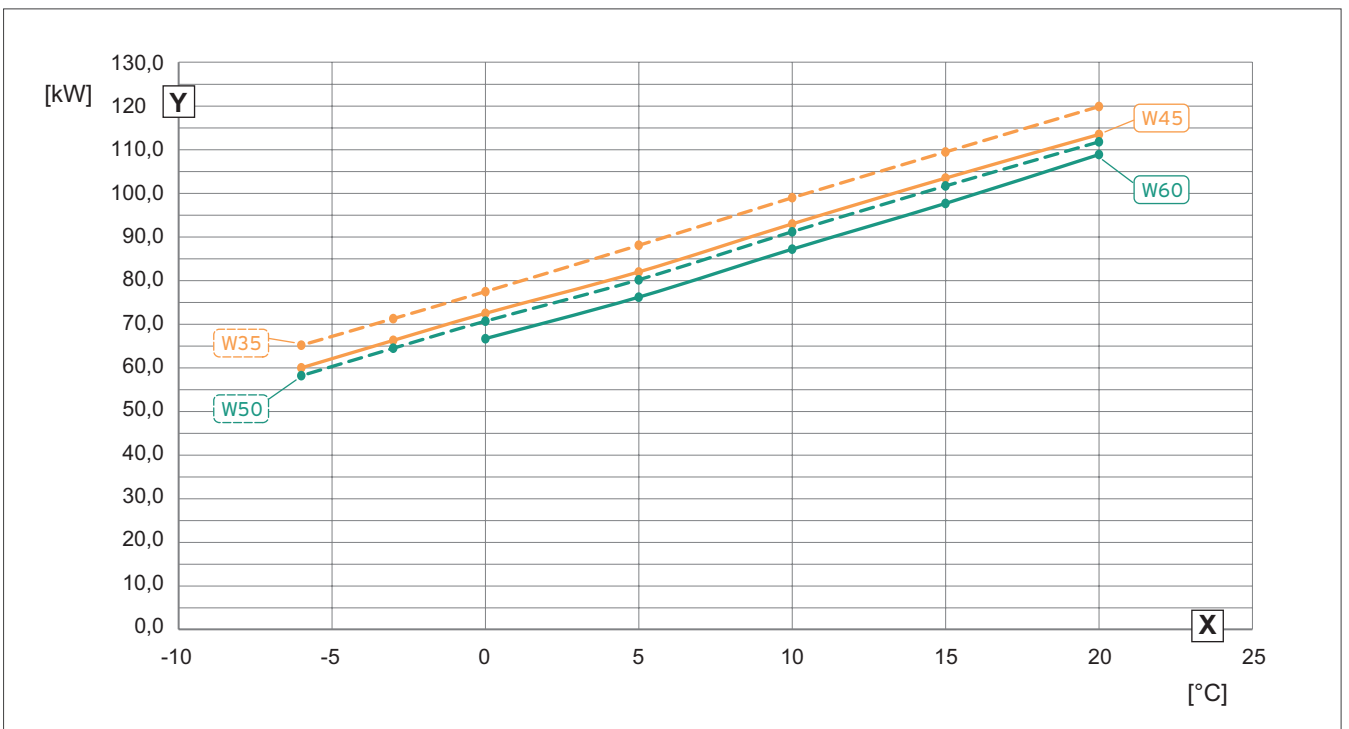


Fig. 616: geoTHERM perform VWS 780/3 - heat output for S.../W35, W45, W50 and W60

13.5 Product dimensions and connection dimensions

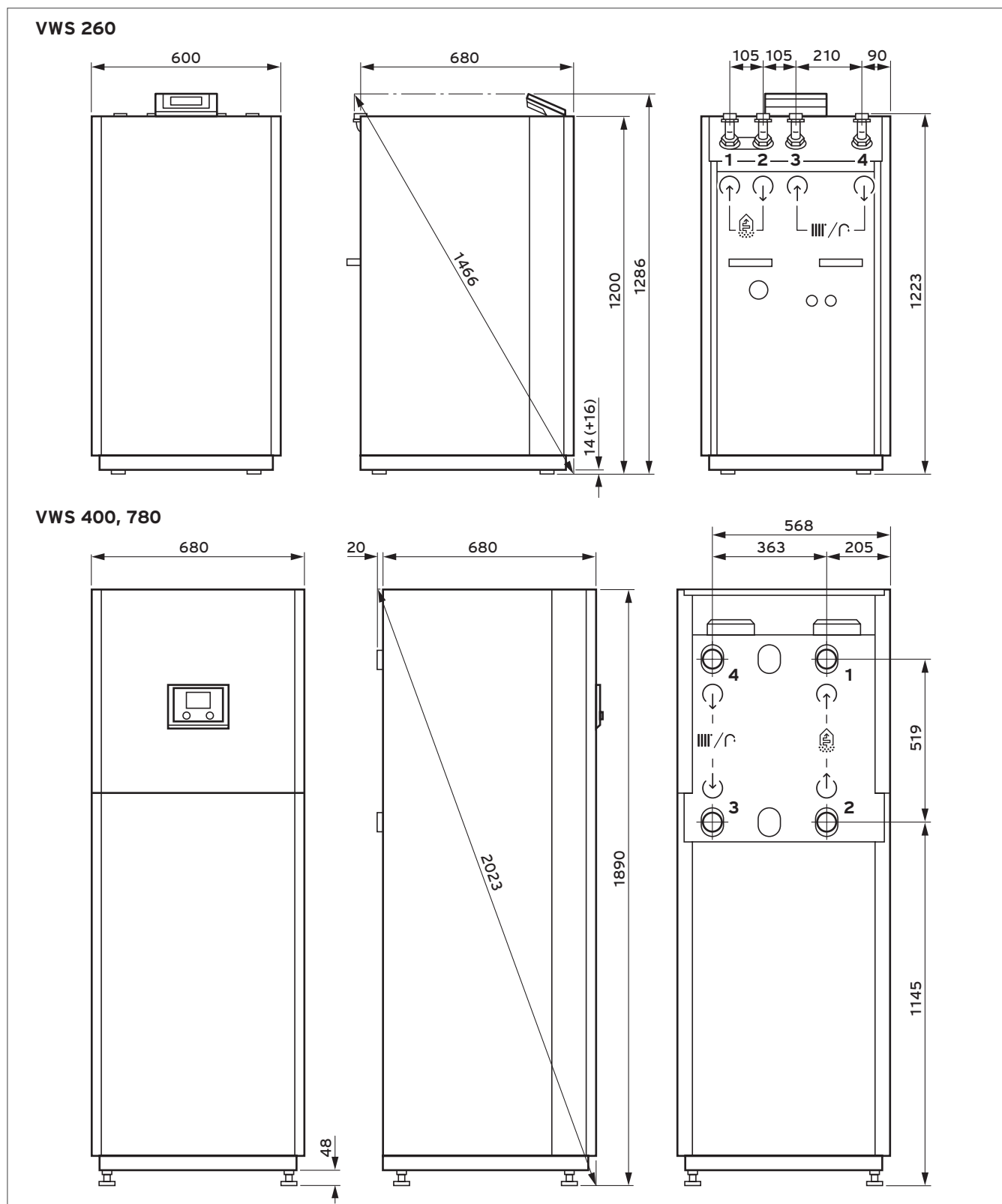


Fig. 617: Dimensions

- 1 From the heat source to the heat pump (hot brine)
- 2 From the heat pump to the heat source (cold brine)
- 3 Heating return
- 4 Heating flow

13.6 Minimum clearances and installation clearances

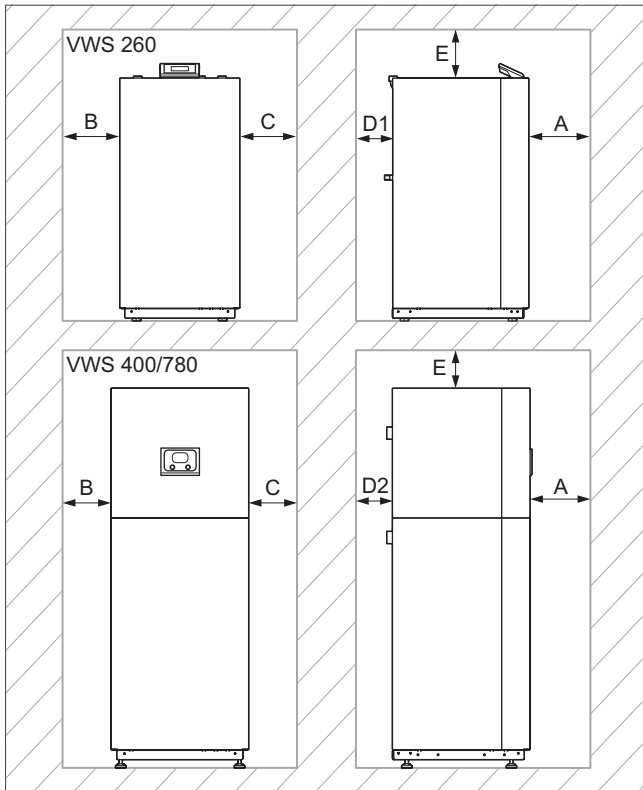


Fig. 618: Recommended minimum clearances/installation clearances

- A 1000 mm
- B 500 mm
- C 500 mm
- D1 50 mm
- D2 800 mm
- E 500 mm

» When using the accessories, observe the minimum clearances/installation clearances.

13.6.1 Minimum clearances for individual and cascade installation

For the individual installation of the heat pump, the following minimum clearances must be observed:

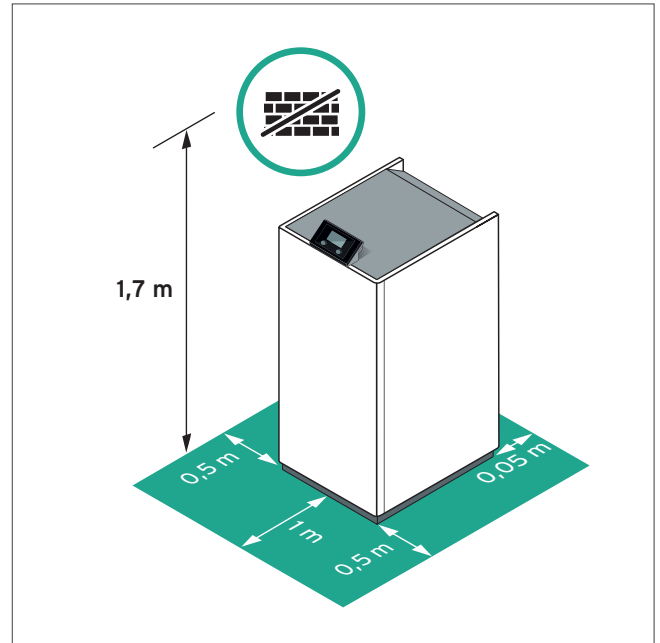


Fig. 619: Minimum clearances for the geoTHERM perform VWS 260/3 S1

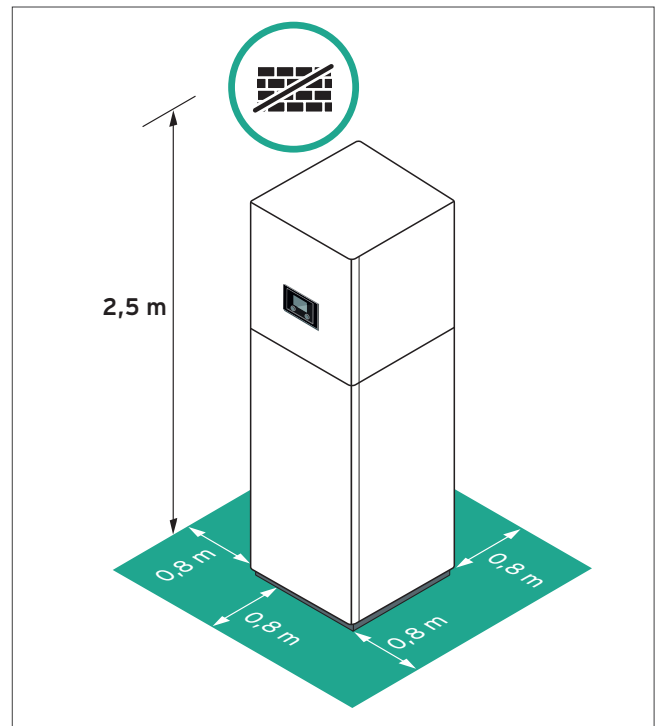


Fig. 620: Minimum clearances for the geoTHERM perform VWS 400 ... 780/3 S1

For the cascade installation of two heat pumps, the following minimum clearances must be observed:

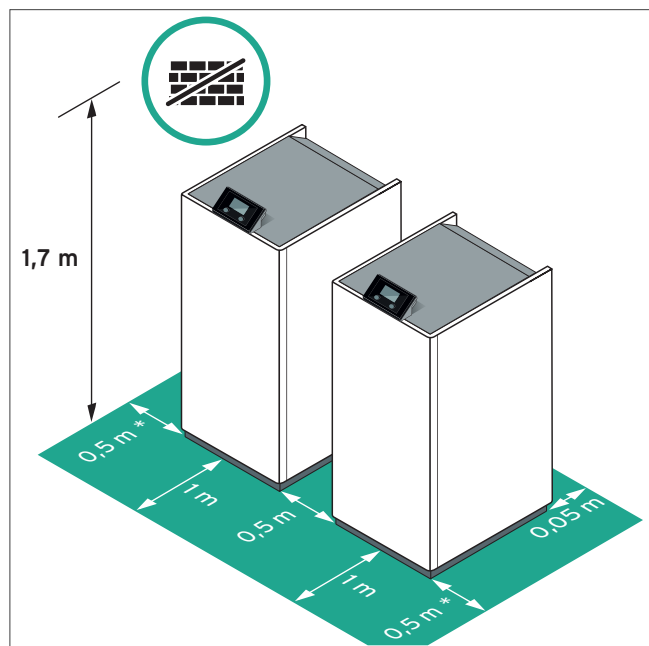


Fig. 621: Minimum clearances for the geoTHERM perform VWS 260/3 S1 in cascade (* 0.4 m clearance to a cylinder)

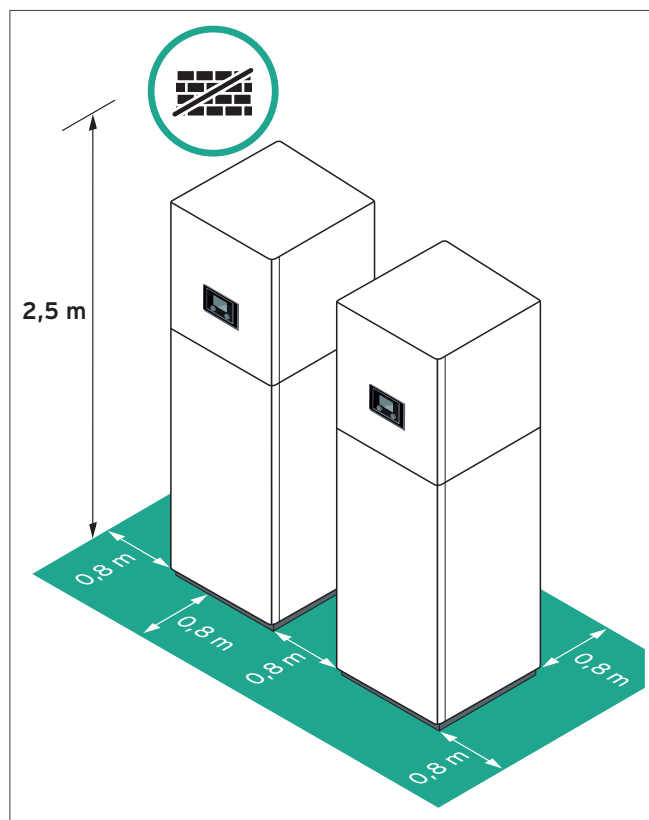


Fig. 622: Minimum clearances for the geoTHERM perform VWS 400 ... 780/3 S1 in cascade

13.7 Selecting the installation site

- » Ensure that the installation site is located lower than 1000 metres above sea level.
- » Select an installation room that is frost-proof throughout and that guarantees the permissible environmental conditions:
 - Permissible environmental temperature: 7 to 30 °C
 - Permissible relative air humidity: 40 to 70 %
- » Ensure that the installation room has the required minimum volume.

Heat pump	Fill quantity for R410A refrigerant	Minimum volume of the installation room
VWS 260/3 S1	4.5 kg	10.2 m ³
VWS 400/3 S1	10.4 kg	23.6 m ³
VWS 780/3 S1	13.3 kg	30.2 m ³

- » Comply with the required minimum clearances.
- » When selecting the installation site, you must take into consideration that when the heat pump is in operation, it will transfer vibrations to the floor and the nearby walls.
- » Ensure that the floor is even and offers sufficient load-bearing capacity to bear the total weight of the product.
- » Ensure that pipes can be easily routed in an appropriate way (heating side and refrigerant side).

13.8 Pressure levels for the internal pumps

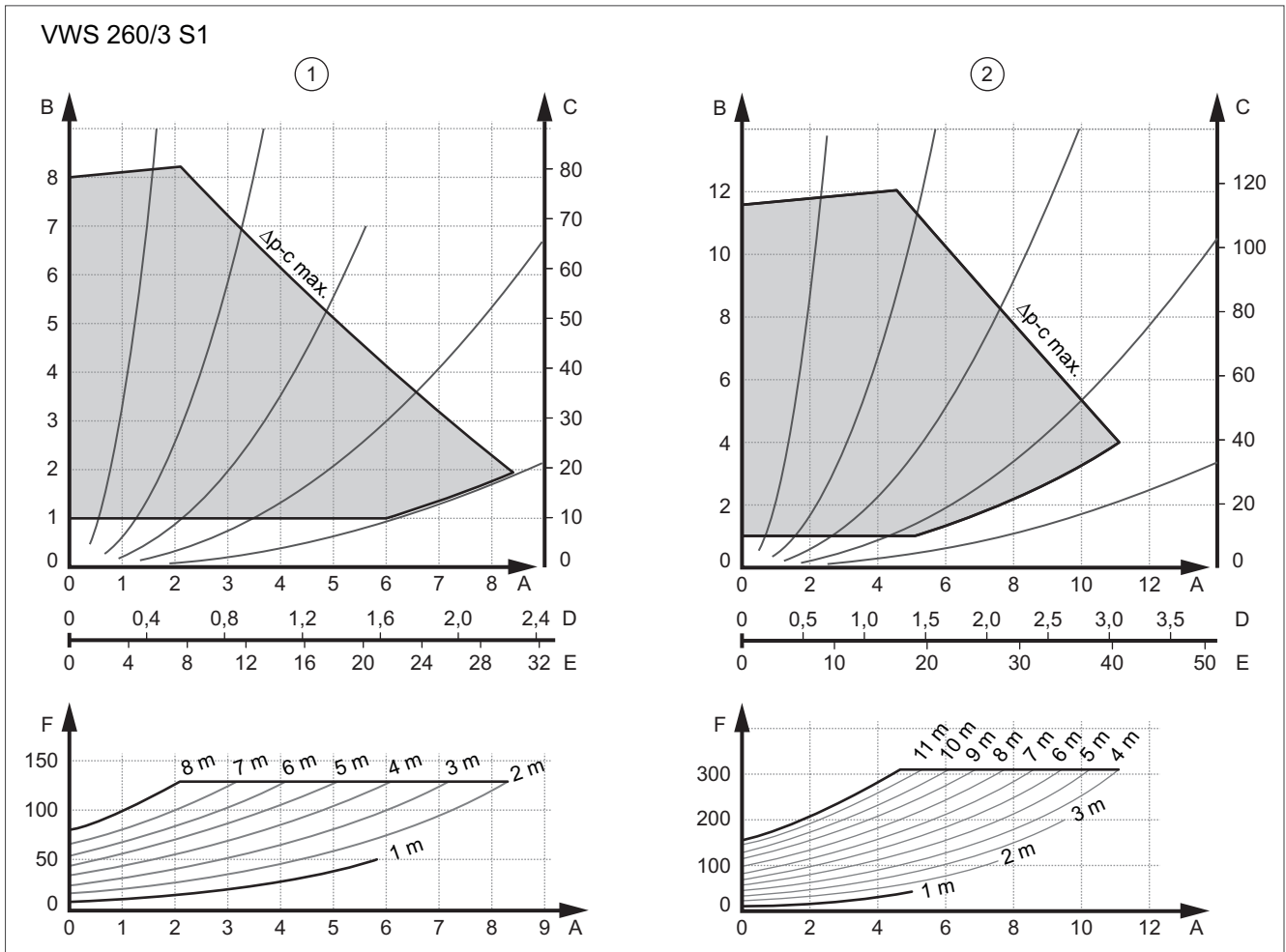


Fig. 623: Pressure level

- 1 Heating pump
- 2 Brine pump
- A Flow rate [m³/h]
- B Pressure level [m]
- C Pressure level [kPa]
- D Flow rate [l/s]
- E Flow rate [gpm]
- F Output [W]

13.9 Dimensioning buffer cylinders

Buffer cylinders are mainly used for on/off heat pumps in order to reduce the heat pump's switching frequency. When selecting the buffer cylinder, the heat pump's output is crucial. If you are planning a cascade system of multiple heat pumps, the number of units also plays a role.

As a guideline value for the volume of the buffer cylinder, 30 l/kW heat output applies for B0/W35. For cascade systems, 10 l/kW of the total heat output can be used. However, the number of heat pumps is important here.

The following cylinder volumes arise for the geoTHERM perform:

Number of heat pumps	geoTHERM VWS 260/3		geoTHERM VWS 400/3		geoTHERM VWS 780/3	
	Volume [l]	Volume flow [m³/h]	Volume [l]	Volume flow [m³/h]	Volume [l]	Volume flow [m³/h]
1	800	4.42	1,000	6.9	2,000	13.3
2	1,000	8.84	1,000	13.8	2,000	26.6
3	1,000	13.26	1500	20.7	2500	39.9
4	1500	17.68	2,000	27.6	3000	53.2
5	1500	22.10	2,000	34.5	4,000	66.5
6	2,000	26.52	3000	41.4	4,500	79.8
7	2,000	30.94	3000	48.3	5,000	93.1
8	2,000	35.36	3000	55.2	6,000	106.4

13.10 geoTHERM perform accessories

13.10.1 geoTHERM perform high-efficiency pumps

Order no. 0010037627, 0010037623, 0010037624



Fig. 624: DN 40 brine high-efficiency pump for geoTHERM perform VWS 400/3 S1

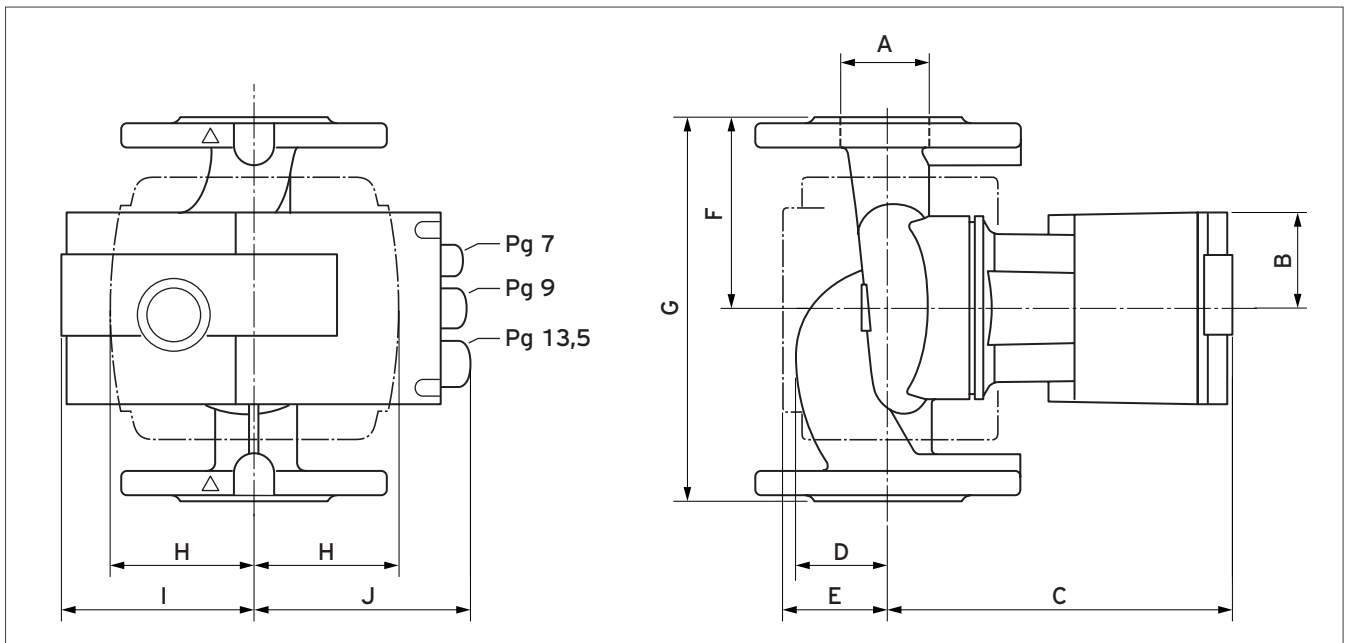


Fig. 625: Dimension drawing of the high-efficiency pumps

Order no.	High-efficiency pump	A	B	C	D	E	F	G	H	I	J
0010037627	40/1-8	DN 40	55	203	53	63	110	220	82	106	120
0010037623	40/1-12	DN 40	66	252	62	84	125	250	96	120	136
0010037624	65/1-12	DN 65	78	319	66	115	170	340	147	156	164

Design of heat source pumps

Brine circuit

geoTHERM perform	Recommended pump	Mass flow with 30% glycol and at 0 °C, given a temperature difference of 3 K (m ³ /h)	Pressure loss in the unit (mbar)	Remaining feed head (mbar)	Order no.
VWS 400/3 S1	40/1-12 high-efficiency pump	10700	90	770	0010037623
VWS 780/3 S1	65/1-12 high-efficiency pump	20000	150	465	0010037624

Heating circuit

geoTHERM perform	Recommended pump	Mass flow with 5 K temperature difference (m ³ /h)	Pressure loss in the unit (mbar)	Remaining feed head (mbar)	Order no.
VWS 400/3 S1	40/1-8 high-efficiency pump	6900	40	780	0010037627
VWS 780/3 S1	65/1-12 high-efficiency pump	13300	50	849	0010037624

Pressure heads of the external accessory pumps (not included in the scope of delivery)

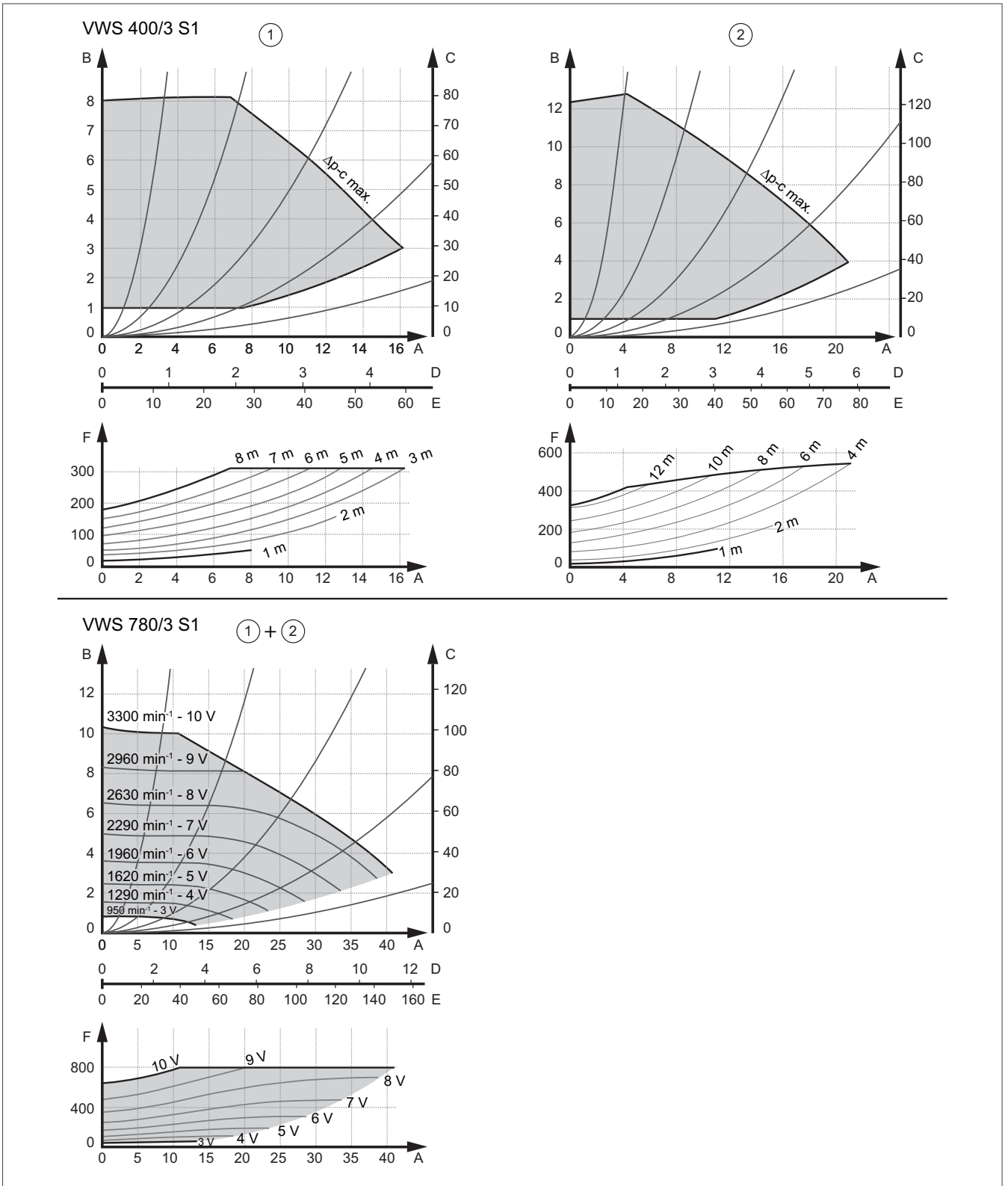


Fig. 626: Pressure level

- 1 Heating pump
- 2 Brine pump
- A Flow rate [m³/h]
- B Pressure level [m]

- C Pressure level [kPa]
- D Flow rate [l/s]
- E Flow rate [lgpm]
- F Output [W]

13.10.2 3-port diverter valve, DN 40, DN 50

Order no. 0010037625, 0010037626

3-port diverter valve (DN 40/DN 50) with servo motor and connection cable, suitable for mixed or zone operation

Can be used for **allSTOR exclusive**, **allSTOR plus**, **aroTHERM perform**, **geoTHERM perform**



Fig. 627: 3-port diverter valve

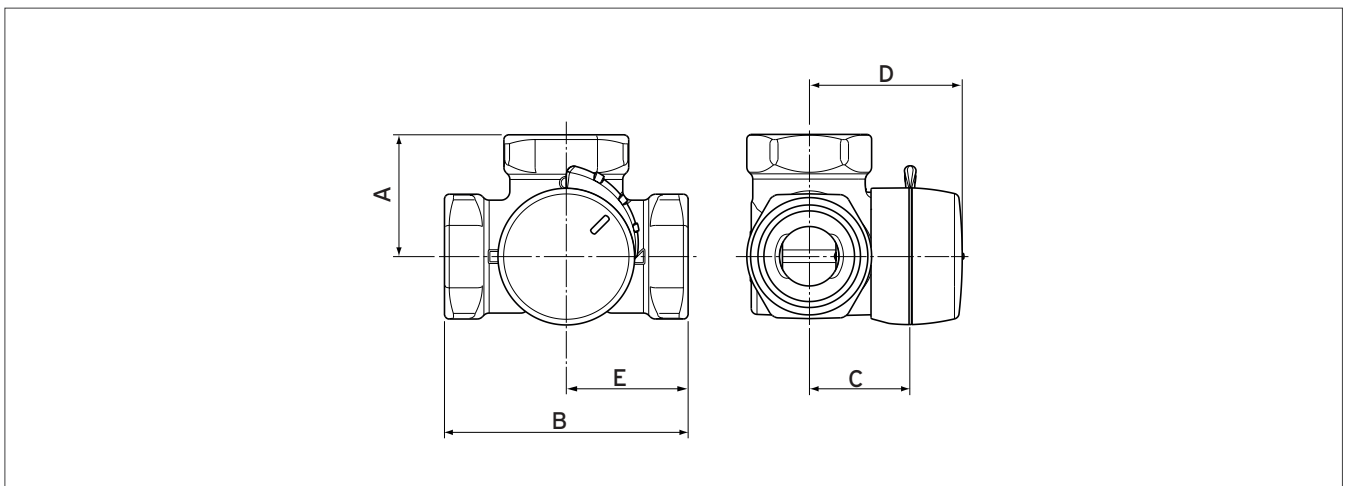


Fig. 628: Dimension drawing

Order no.	3-port diverter valve	Heat pump	K_{vs}	Connection	A	B	C	D	E
0010037625	DN 40	aroTHERM perform VWL 185/3 and VWL 255/3 geoTHERM perform VWS 260/3	25	Rp 1 1/2"	53	106	44	62	53
0010037626	DN 50	geoTHERM perform VWS 400/3 and VWS 780/3	40	Rp 2"	60	120	46	64	60

Pressure loss 3-port diverter valve

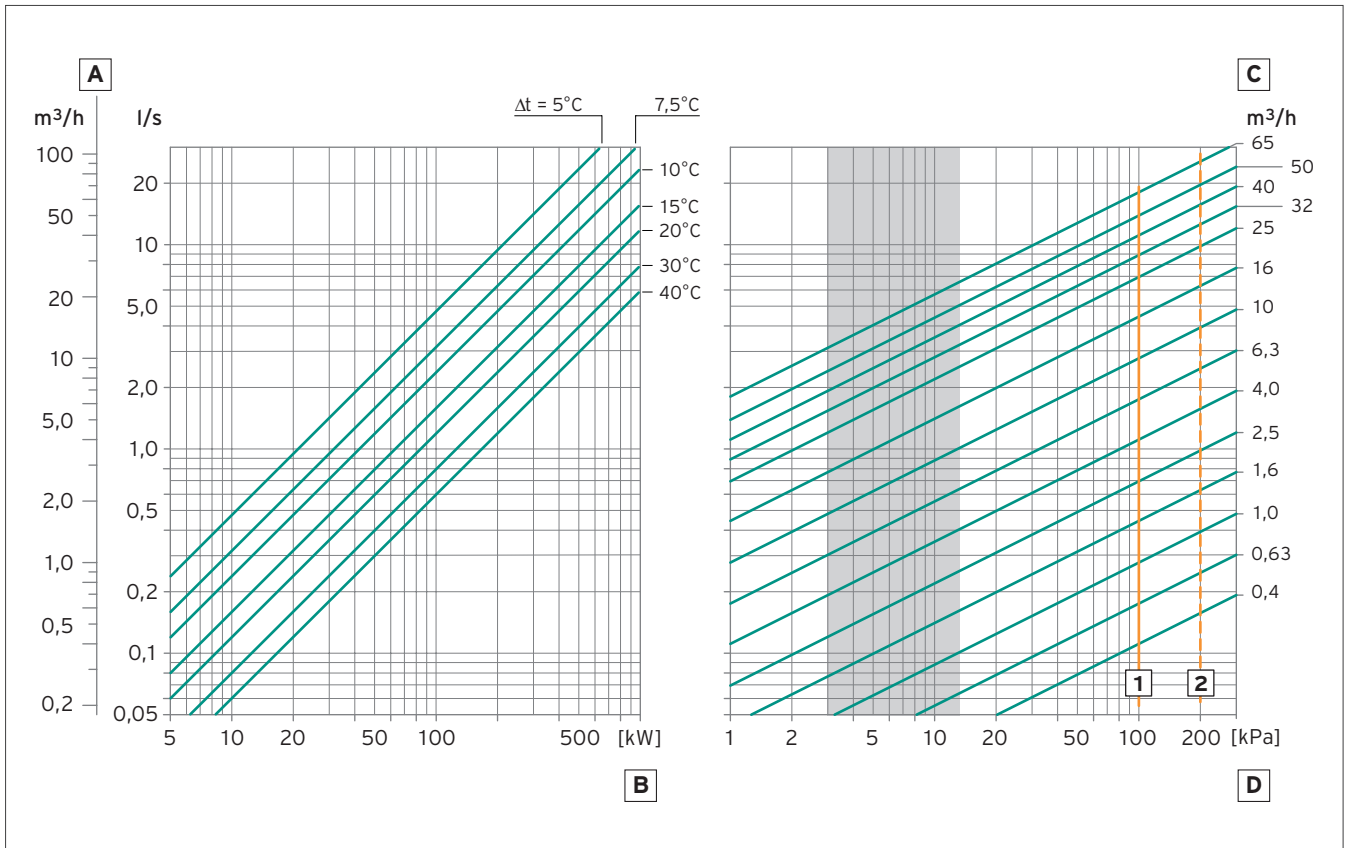
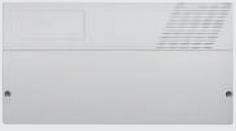

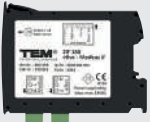



Fig. 629: Pressure loss

- A Flow
- B Power
- C K_{vs} value
- D Pressure drop ΔP
- 1 Max. ΔP for mixing
- 2 Max. ΔP for distributing

13.11 Unit and control modules

Accessories	Description	Order no.
	<p>VR 640 additional module Including sensor set (2 x surface-mounted sensors, 1 x dry pocket sensor) for the multifunctional function expansion, e.g. by adding two mixed heating circuit, peak load actuation</p> <p>Can be used for aroTHERM perform and geoTHERM perform</p>	0010037632
	<p>VR 310 remote control As a remote control, required for the cooling function for monitoring the dew point.</p> <p>Can be used for aroTHERM perform and geoTHERM perform</p>	0010037630
	<p>VWZ MC Modbus gateway Interface from the heat pump control to the Modbus/RTU for reading and actuating</p> <p>Can be used for aroTHERM perform and geoTHERM perform</p>	0010041870
	<p>Surface-mounted sensor For using the cooling function for the aroTHERM perform and geoTHERM perform</p>	0010040731

13.12 Basic system diagrams and wiring diagrams

13.12.1 Key for basic system diagrams and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Domestic hot water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Refrigerant-split heat pump indoor unit
2e	Ground water module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump station
7c	Domestic hot water station
7d	Heat interface unit
7e	Hydraulic block
7f	Decoupler module
7g	Heat recovery module

Number	Designation
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety group - drinking water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar protection vessel
8i	Thermal safety assembly
9a	Single-room temperature control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-port mixing valve
9l	Cooling 3-port mixing valve
9m	Increase in return for 3-port mixing valve
9n	Thermostatic mixing valve
9o	Flow meter (TacoSetter)
9p	Cascade valve
10a	Thermometer
10b	Manometer
10c	Non-return valve
10d	Air separator
10e	Line strainer with magnetite separator
10f	Solar/brine collecting vessel
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections

Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump appliance interface
12c	2 in 7 multi-functional module
12d	Wiring centre/mixer module
12e	Main expansion module
12f	Wiring centre
12g	eBUS bus coupler
12h	Solar control
12i	External control
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature cut-out
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway

Number	Designation
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
ESCO	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MO	Multi-function output
MI	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch contact for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

13.12.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				regulated	direct		DHW	Heating	
0020318058	geoTHERM perform eloBLOCK	Integrated weather-compensated system controller	-	Home station	-	allSTOR plus VPS	-	-	Home station
0020318059	geoTHERM perform eloBLOCK	Integrated weather-compensated system controller VR 310	-	2 UFH	-	allSTOR plus VPS	•	•	aguaFLOW
0020318060	geoTHERM perform eloBLOCK	Integrated weather-compensated system controller VR 310 VR 640	-	2 UFH	-	allSTOR plus VPS	-	-	aguaFLOW
0020318061	geoTHERM perform eloBLOCK	Integrated weather-compensated system controller VR 310	•	1 UFH	1 DHC	allSTOR plus VPS	-	-	aguaFLOW

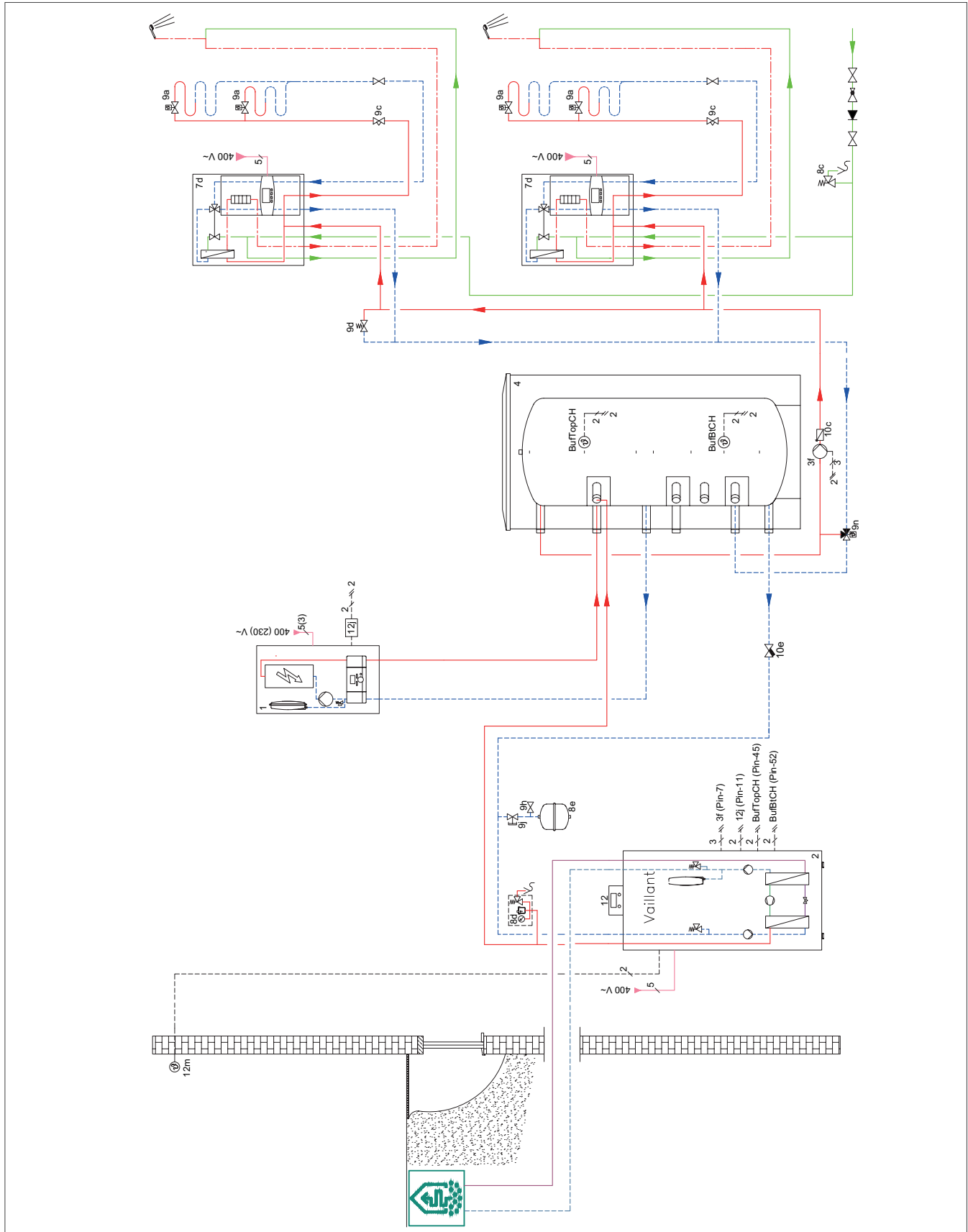


Fig. 630: Basic hydraulic diagram

Individual components

- geoTHERM perform VWS
- eloBLOCK VE
- allSTOR plus VPS
- Integrated weather-compensated system control

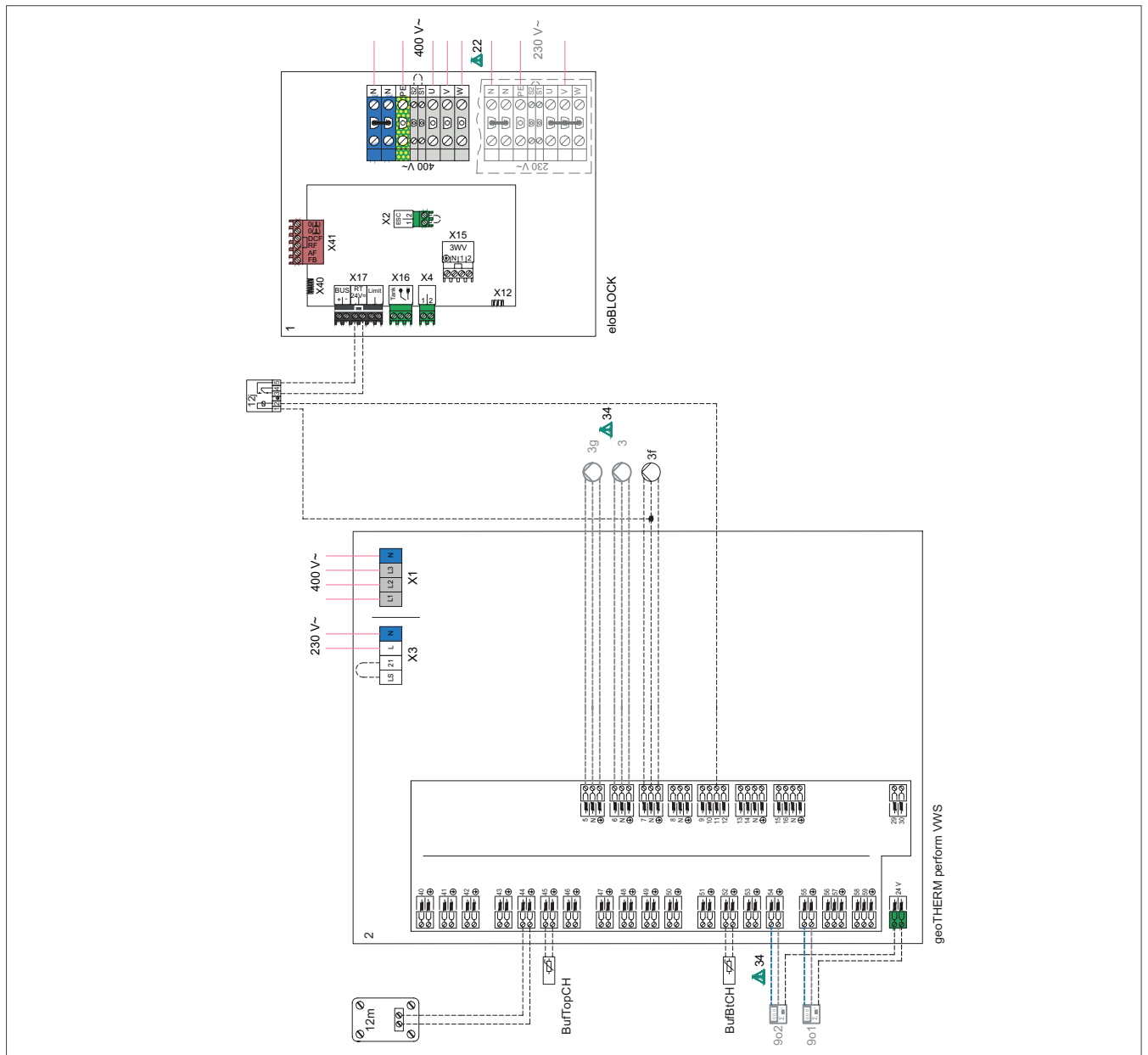


Fig. 631: Wiring diagram

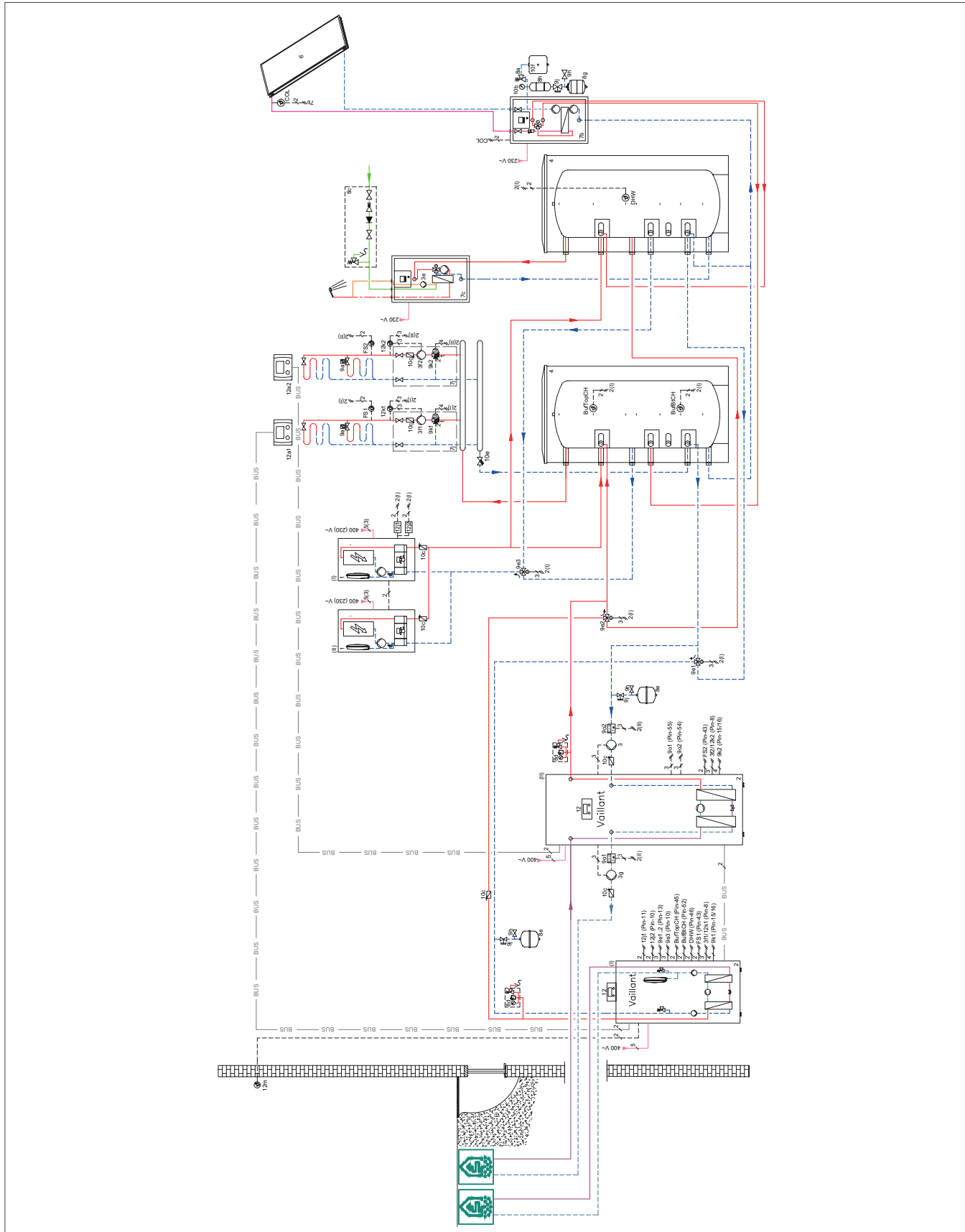


Fig. 632: Basic hydraulic diagram

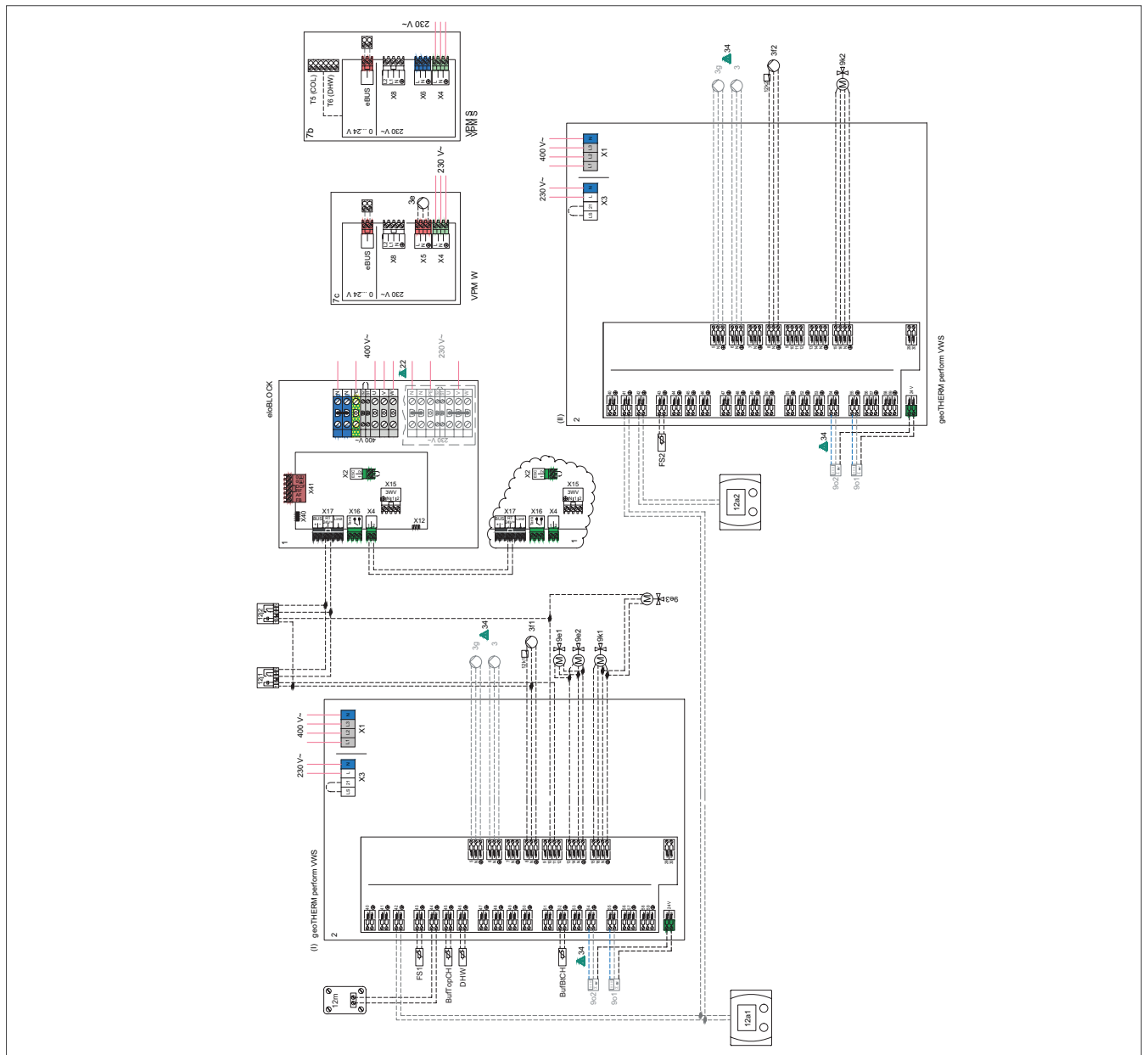


Fig. 633: Wiring diagram

- Individual components**
- geOTHERM perform VWS
 - eIoBLOCK VE
 - allSTOR plus VPS
 - aquaFLOW VPM W
 - aquaFLOW VPM S
 - Integrated weather-compensated system control
 - VR 310

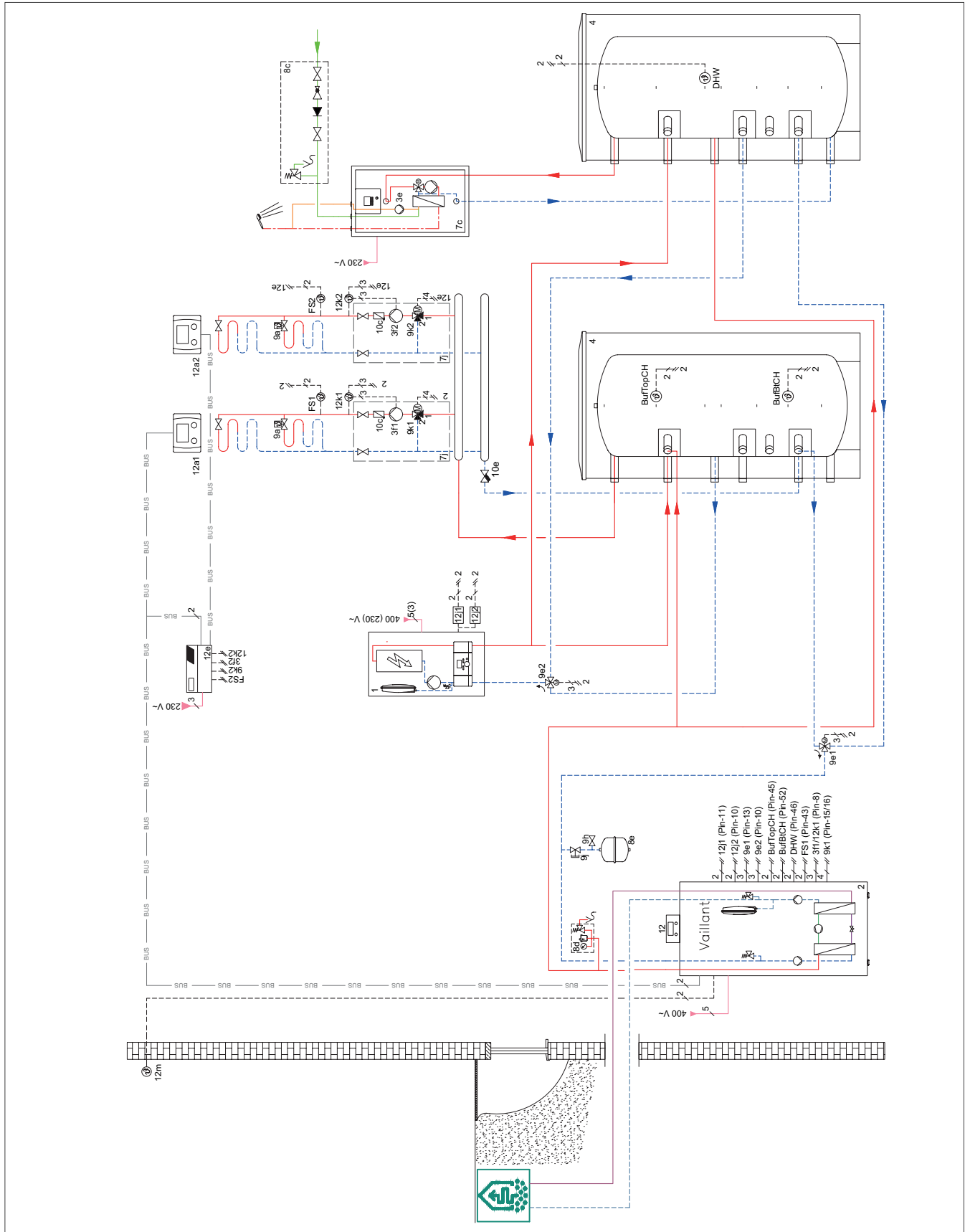


Fig. 634: Basic hydraulic diagram

- Individual components**
- geoTHERM perform VWS
 - eloBLOCK VE
 - allSTOR plus VPS
 - aquaFLOW VPM W
 - Integrated weather-compensated system control
 - VR 310
 - VR 640

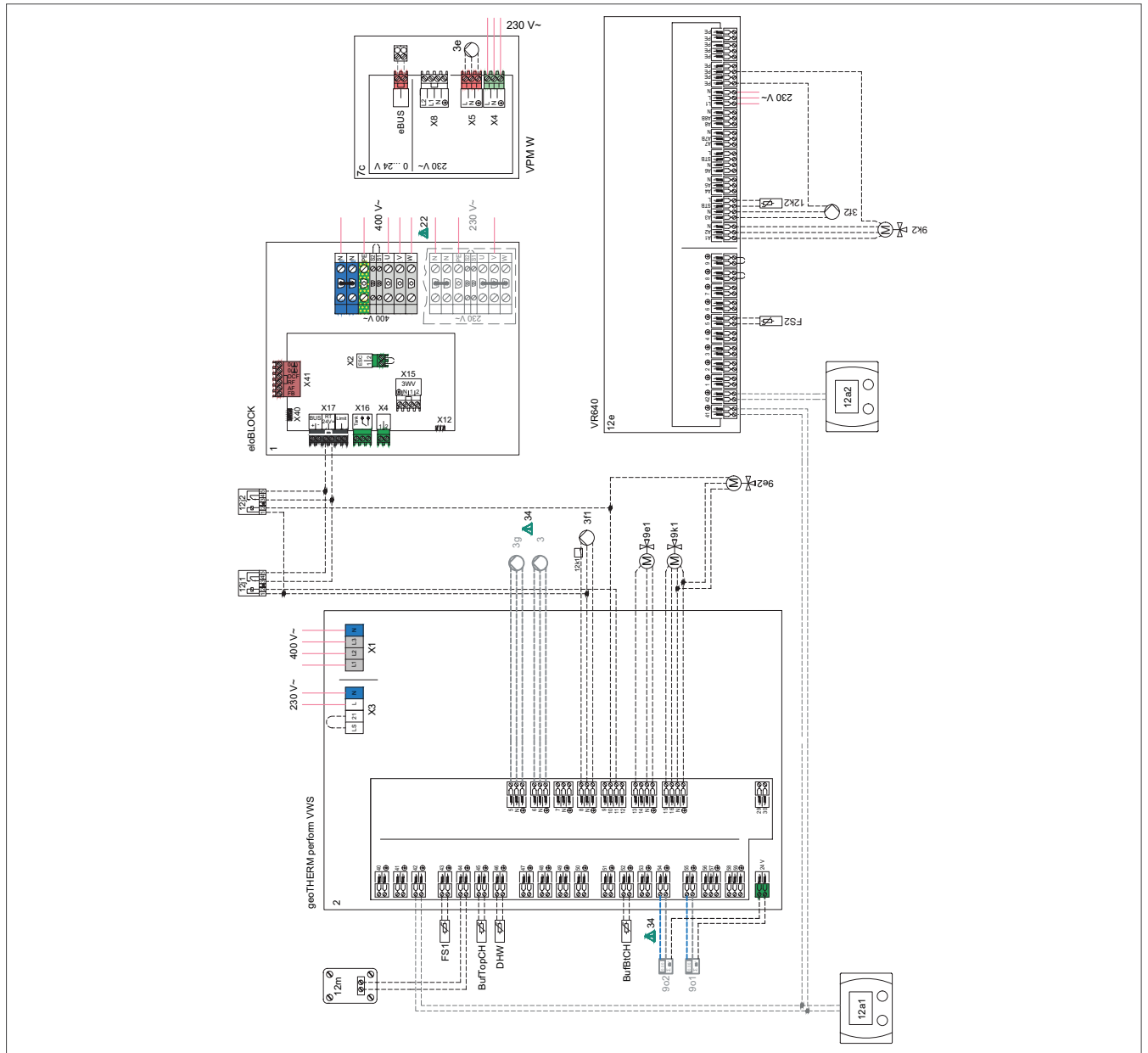


Fig. 635: Wiring diagram

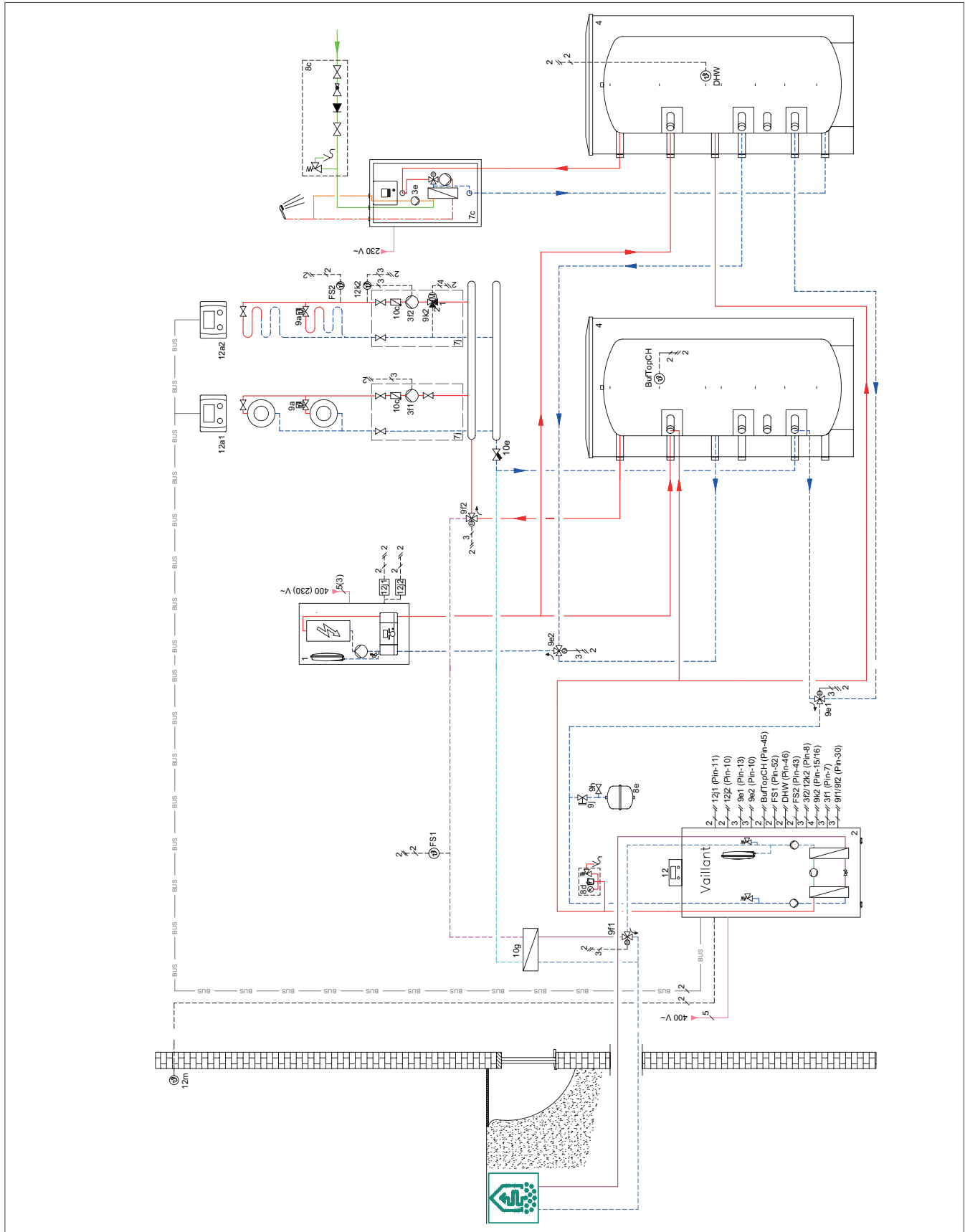


Fig. 636: Basic hydraulic diagram

- Individual components**
- geoTHERM perform VWS
 - eIoBLOCK VE
 - allSTOR plus VPS
 - aquaFLOW VPM W
 - Integrated weather-compensated system control
 - VR 310

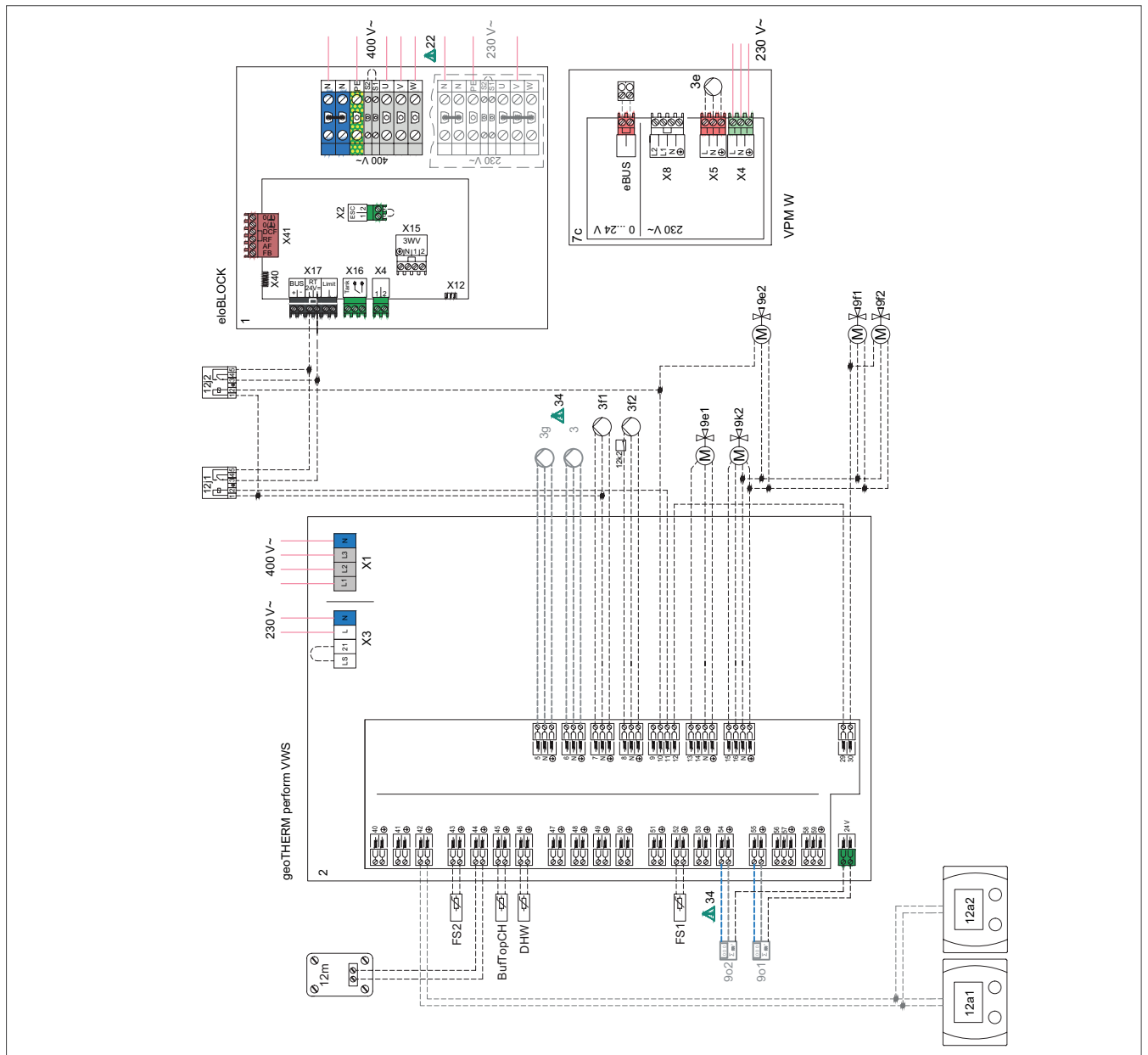


Fig. 637: Wiring diagram



14. Product information for the geoTHERM 3 kW

Update 10
New product overview

14.1 Product combinations



Fig 638: Product combinations

Product combination overview for the geoTHERM VWS 36/4.1

	Heat pump	Decoupler modules				Control	Photovoltaics
	geoTHERM VWS 36/4.1 (1)	uniTOWER VIH 190 (2)	Hydraulic station VWZ MEH 61 (3) VWZ MEH 60 (4) VWZ MWT 150 (5)	VWZ ZK 2-zone kit (6)	Domestic hot water cylinder uniSTOR (7)	VRC 720 (8) VWZ AI (9)	PV modules and inverters (10)
Heating only	•	–	•	•	–	•	•
Heating and compact domestic hot water generation	•	•	–	•	–	•	•
Heating and domestic hot water generation	•	–	•	•	•	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

14.2 Product description for geoTHERM VWS 36/4.1



Fig 639: geoTHERM VWS 36/4.1

14.2.1 Special features

- Compact wall-hung heat pump
- Simple retrofit of Vaillant wall-hung boilers with eBUS interface
- Integrated cooling function provides greater living comfort in the summer
- Easy transportation and straightforward assembly

14.2.2 Product equipment

- High-efficiency pumps (efficiency class A)
- Integrated cooling function

Note
Requires a **sensoCOMFORT 720** control



Type overview

Unit designation	Space heating energy efficiency class at 35 °C/55 °C	Domestic hot water generation energy efficiency	Order no.
VWS 36/4.1	A++ / A+ (A+++ to D)	–	0010022462
VWS 36/4.1	A++ / A+ (A+++ to D)	A (A+ to F)	0010030826 with uniTOWER

14.3 Technical data

Technical data - General

	VWS 36/4.1 230V
Flow/return heating connections, boiler side	22 mm diameter
Boiler-side flow/return heat source connections	22 mm diameter
Product dimensions, width	440 mm
Product dimensions, height	720 mm
Product dimensions, depth	435 mm
Weight without packaging	59 kg
Weight with packaging	67 kg
Weight when ready for operation	66 kg
Heating circuit/compressor rated voltage	1/N/PE 230 V / 50 Hz
Control circuit rated voltage	1/N/PE 230 V / 50 Hz
Fuse type B, slow-blow	16 A
Optional on-site residual-current circuit breaker	RCB type A or RCB type B
In-rush current without in-rush current limiter	23 A
Min. electrical power consumption for B-10/W20	0.6 kW
Max. electrical power consumption for B20/W55	1 kW
Max. electrical power consumption in continuous operation	4.7 A
IP rating in accordance with EN 60529	IP 20
Inner sound power level (LWi) in accordance with EN 12102; heating mode at B0/W35	41.1 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at B0/W45	43.6 dB(A)
Inner sound power level (LWi) in accordance with EN 12102; heating mode at B0/W55	44.7 dB(A)
Permissible environmental temperature	7 to 40 °C
Installation room at a refrigerant volume of 0.70 kg	1.6 m ³
Installation site	Interior/dry

Technical data - Source circuit

	VWS 36/4.1 230V
Min. brine fluid operating pressure	0.05 MPa
Max. brine fluid operating pressure	0.3 MPa
Nominal volume flow ΔT 3 K for B0/W35	600 l/h
Min. source inlet temperature (hot brine) in heating mode	-10 °C
Max. source inlet temperature (hot brine) in heating mode	20 °C
Brine content of the brine circuit in the heat pump	3.5 l
Remaining feed head at max. ΔT 3 K B0/W35	590 mbar
Electrical power consumption of the brine pump at B0/W35 ΔT 3 K with an external pressure loss of 250 mbar in the source circuit	21 W
Electrical power consumption of the brine pump	3 to 70 W
Pump type	High-efficiency pump
Materials	Cu CuZn alloy Stainless steel EPDM Brass Fe
Brine fluid type	Ethylene glycol 30% vol.

Update 10
New technical data (EN14511:2018)

Technical data - Heating circuit

	VWS 36/4.1 230V
Minimum operating pressure	0.05 MPa
Maximum operating pressure	0.3 MPa
Min. heating mode flow temperature	20 °C
Max. heating mode flow temperature	60 °C
Min. cooling mode flow temperature	16 °C
Heating circuit water contents in the heat pump	3.5 l
Nominal volume flow at BO ΔT 3 K / W35 ΔT 5 K	470 l
Nominal volume flow at BO ΔT 3 K / W55 ΔT 8 K	250 l
Max. remaining feed head BO ΔT 3 K / W35 ΔT 5 K	400 mbar
Max. remaining feed head at BO ΔT 3 K / W55 ΔT 8 K	680 mbar
Electrical power consumption of the heating pump	4 to 63 W
Electrical power consumption of the heating pump at BO/W35 ΔT 5 K for a 250 mbar external pressure loss in the heating circuit	21 W
Permissible heating water condition	Only add permitted antifreeze or corrosion inhibitors to the heating water if these are approved in the installation instructions. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.
Pump type	High-efficiency pump
Materials	Cu CuZn alloy Stainless steel EPDM Brass Fe

Technical data - Refrigeration circuit

	VWS 36/4.1 230V
Refrigerant type	R410A
Refrigerant content of the refrigerant circuit in the heat pump	0.7 kg
Global warming potential (GWP) in accordance with regulation (EU) no. 517/2014	2088
CO ₂ equivalent	1.46 t
Expansion valve design	Electronic
Permissible operating pressure (relative)	4.15 MPa
Compressor type	Rotary piston
Oil type	FV50S
Oil level	0.3 l

Update 10
New technical data (EN14511:2018)

Technical data - Heat pump system performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWS 36/4.1 230V
Heat output B0/W35 ΔT 5 K	2.46 kW
Power consumption B0/W35 ΔT 5 K	0.74 kW
Effective power consumption B0/W35 ΔT 5 K	0.66 kW
Coefficient of performance EN 14511 B0/W35 ΔT 5 K	3.74
Heating output B0/W45	2.30 kW
Power consumption B0/W45	0.85 kW
Effective power consumption B0/W45 ΔT 8 K	0.77 kW
Coefficient of performance EN 14511 B0/W45	2.97
Heat output B0/W55 ΔT 8 K	2.17 kW
Power consumption B0/W55 ΔT 8 K	0.94 kW
Effective power consumption B0/W55 ΔT 8 K	0.88 kW
Coefficient of performance EN 14511 B0/W55 ΔT 8 K	2.48
Cooling output B10/W18(22), passive	5 kW

Application limits for the heat pump: Heating (heat source = brine)

- At the same volume flow rates in the heating circuit (ΔT 5 K or ΔT 8 K) and the brine circuit (ΔT 3 K) as for the nominal heat output test under standard nominal conditions. Operating the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

Application limits for the heat pump: Heating:

- B-10/W20
- B-10/W55
- B-3/W60
- B20/W60
- B20/W20
- To be able to achieve the B-10/W20 and B-10/W55 operating limits, you must change the freeze protection in the configuration from the factory setting to -13 °C.

14.4 Power output graph for the VWS 36/4.1 - brine-to-water

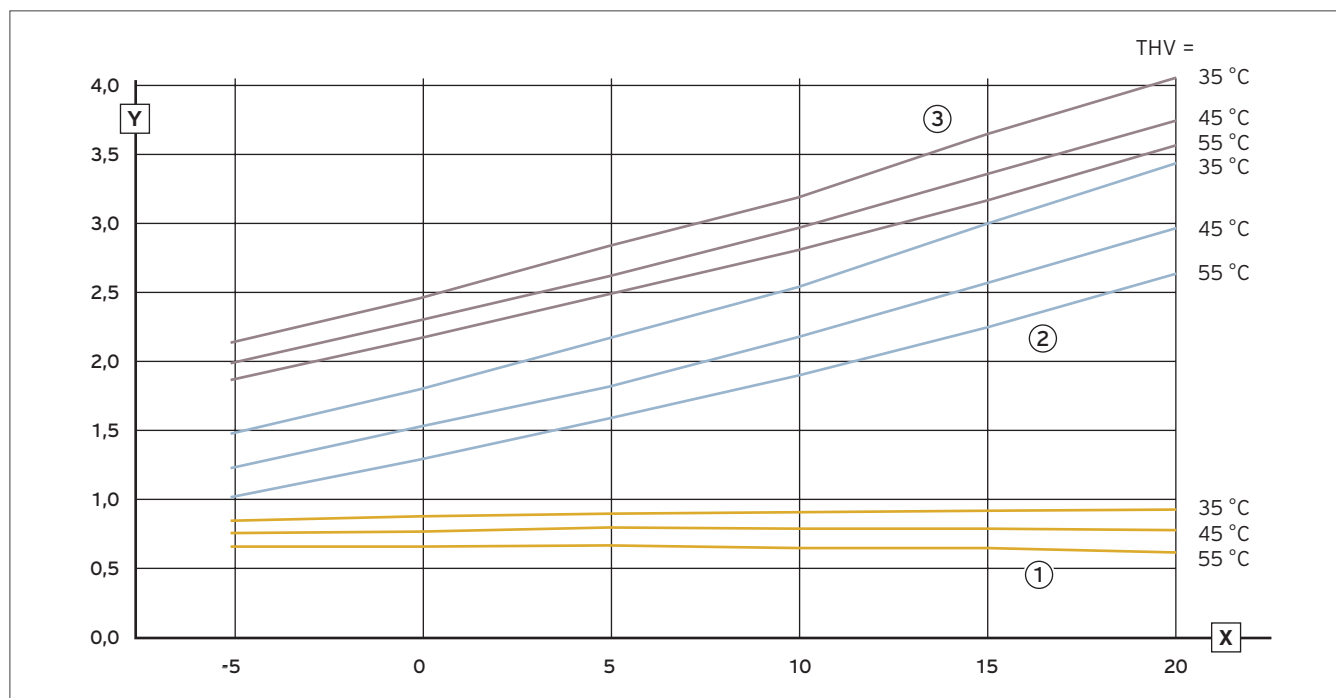


Fig 640: Power output graph for the VWS 36/4.1 - brine-to-water

- Y Power output [kW]
- X Brine temperature [°C]
- 1 Electrical power consumption
- 2 Extraction performance
- 3 Heat output

14.5 Pump diagrams

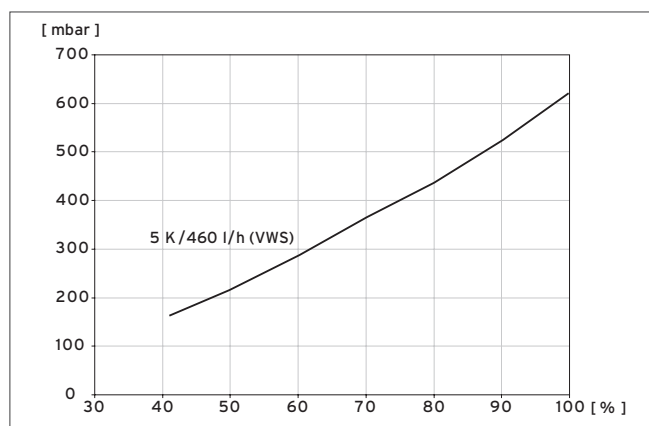


Fig 641: Pump diagram for the building circuit pump (temperature spread 5 K)

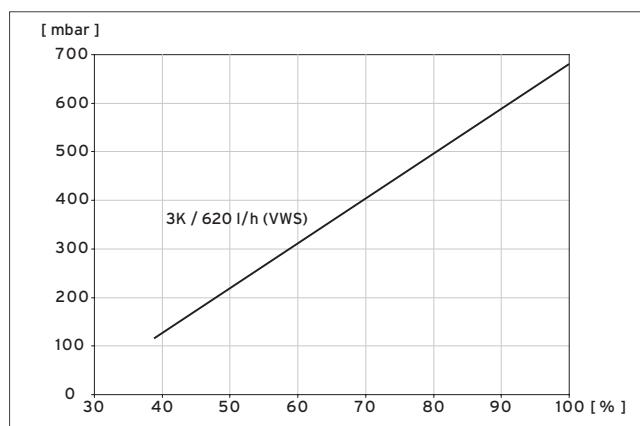


Fig 642: Pump diagram for the environment circuit pump

14.6 Product dimensions and connection dimensions

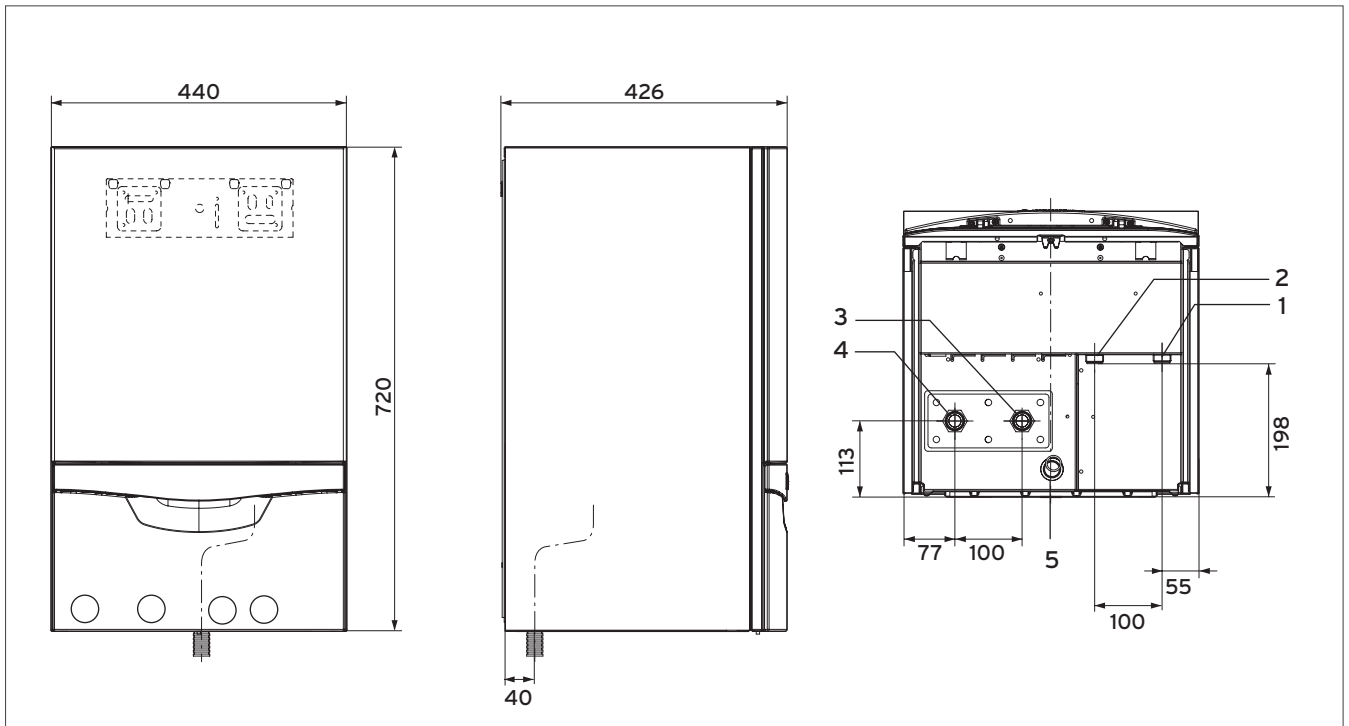


Fig 643: Dimensions

- 1 Heating water return
- 2 Heating water flow
- 3 Brine from the heat pump to the heat source
- 4 Brine from the heat source to the heat pump
- 5 Drain for expansion relief valve

14.7 Minimum clearances

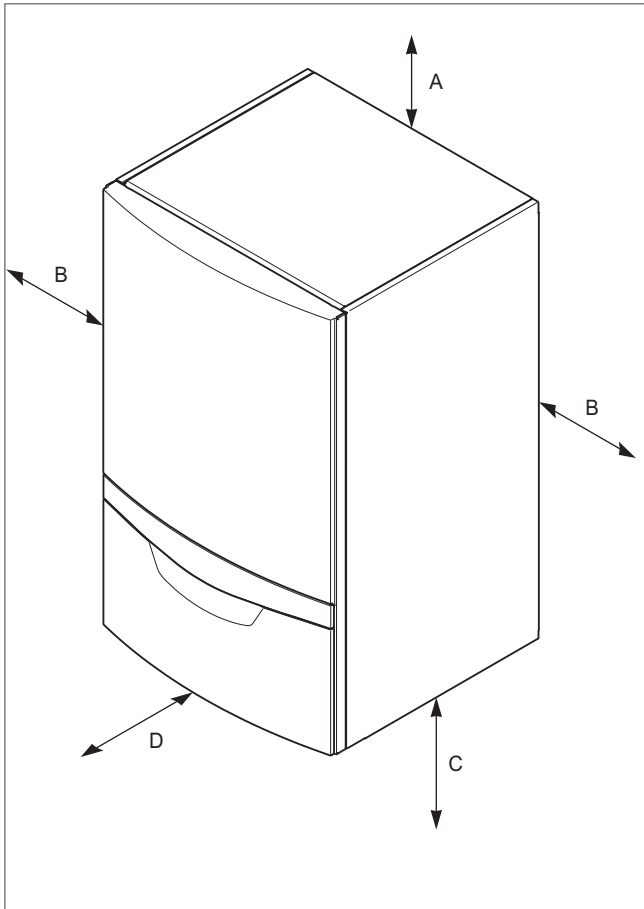


Fig 644: Heat pump installation clearance

The product is securely mounted on a wall.

	Minimum clearance to the unitOWER and domestic hot water cylinder	Minimum clearance to the MEH 60, MEH 61 and gas-fired wall-hung boiler
A	200 mm	
B	300 mm	100 mm
C	500 mm	
D	600 mm	

» Comply with the minimum clearances specified in order to facilitate maintenance work.

If the product is mounted next to the unitOWER accessory module, a clearance of 300 mm must be maintained.

If the product is mounted next to the MEH61/60 accessory module, a clearance of 100 mm must be maintained.

14.8 Minimum sizes for the installation rooms

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Minimum size for the installation room (m³)
VWS 36/4.1	R 410a	0.70	1.6

14.9 Basic hydraulic and wiring diagrams

14.9.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections

Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

14.9.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Cooling function	Heating circuits		System separation	Solar system		Domestic hot water
				regulated	direct		Domestic hot water	Heating	
0020232108	3 kW geoTHERM	VRC 700	-	-	1 UFH	-	-	-	uniTOWER
0020235577	3 kW geoTHERM	VRC 700, VWZ AI	-	-	1 UFH	-	-	-	uniSTOR
0020235580	3 kW geoTHERM	VRC 700, VWZ AI	-	-	1 HC	-	-	-	uniSTOR
0020235626	hybrid system 3 kW geoTHERM ecoTEC	VRC 700, VR 70, VR 91, VR 32	-	1 UFH	1 HC	VWZ MPS 40	-	-	uniSTOR
0020249867	3 kW geoTHERM	VRC 700, VWZ AI	-	-	1 HC	-	-	-	uniSTOR

002032108 - Basic hydraulic diagram

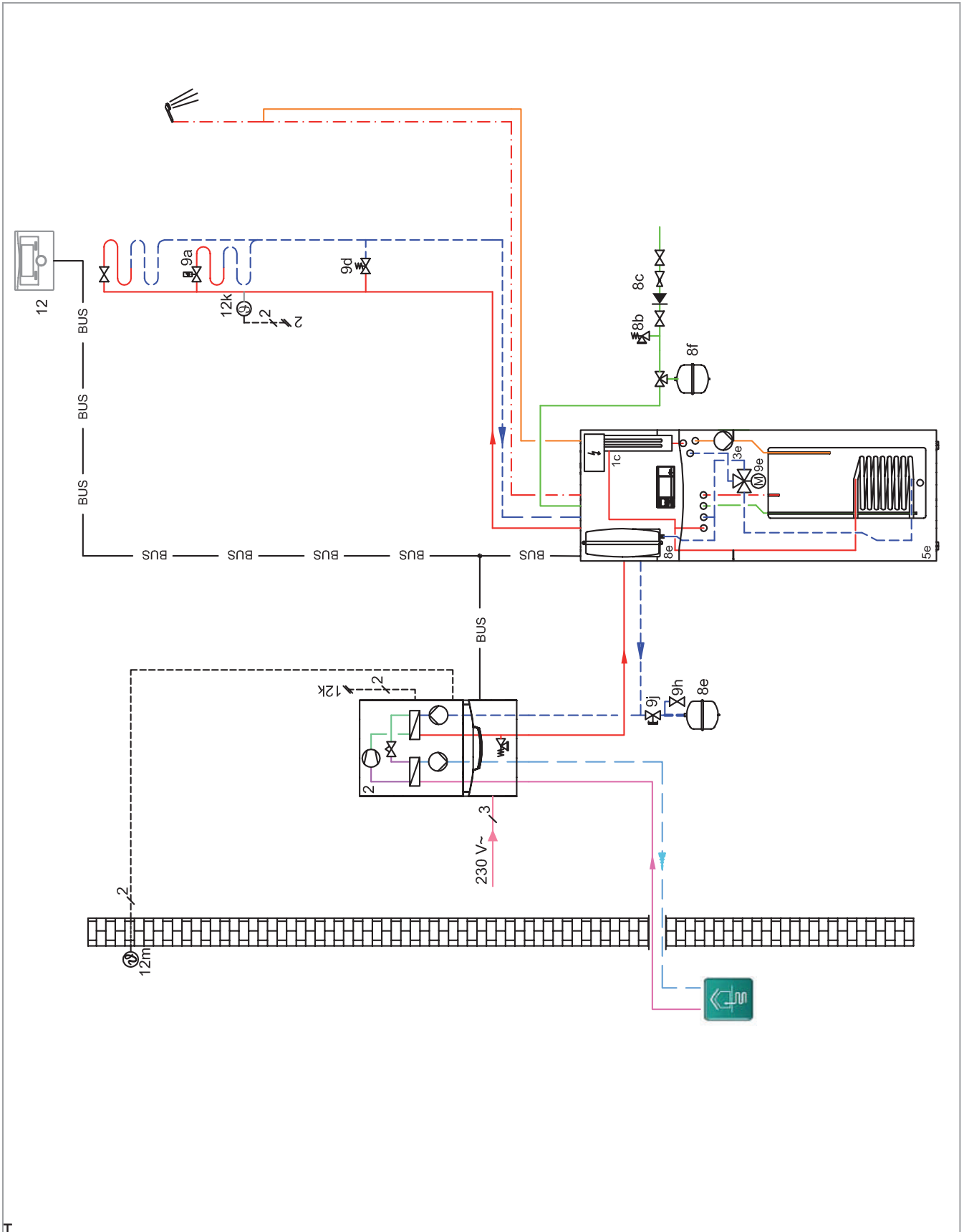


Fig 645: Basic hydraulic diagram

0020232108 - Wiring diagram

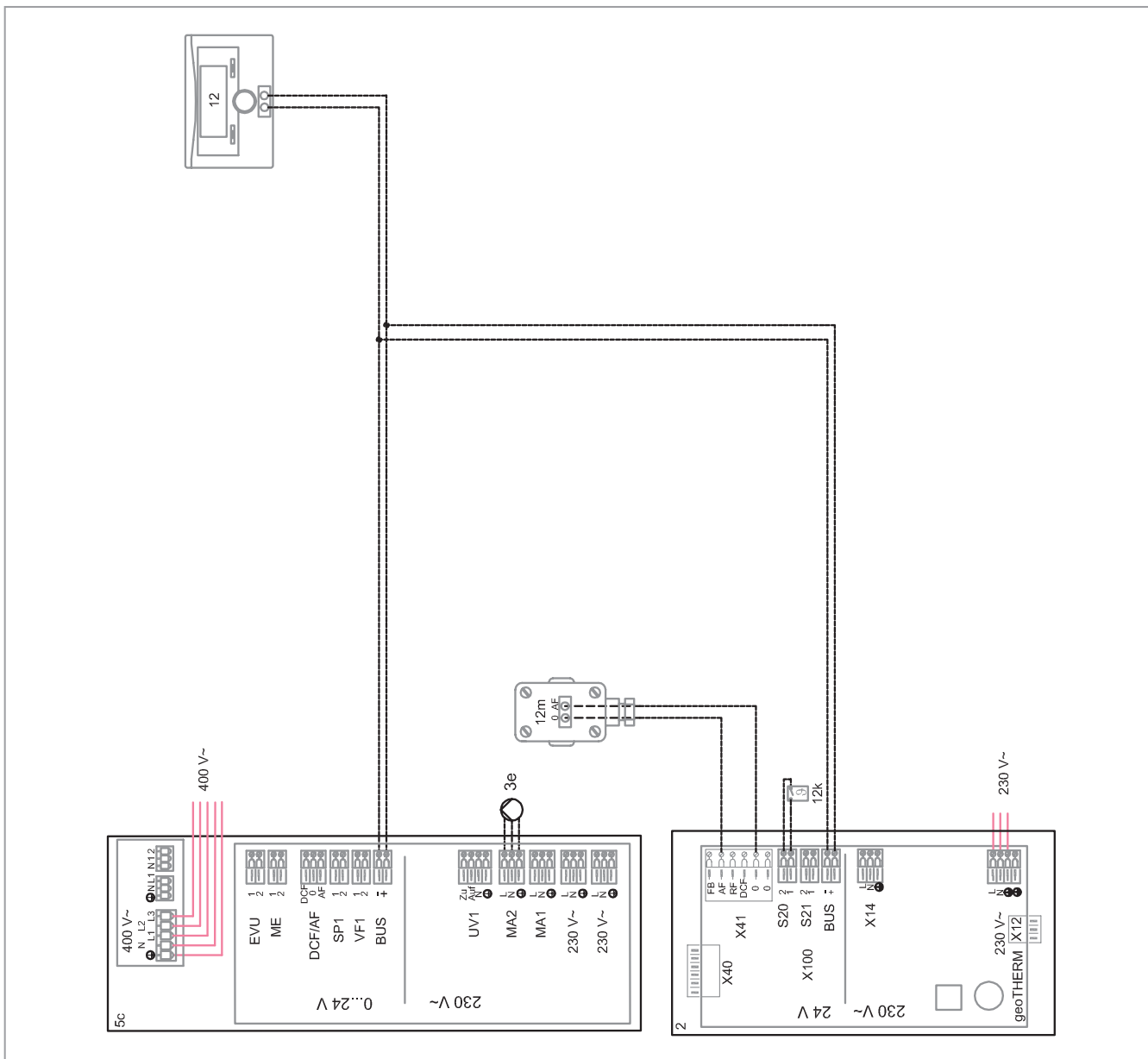


Fig 646: Wiring diagram

Individual components

- geoTHERM VWS 36/4.1
- uniTOWER
- VRC 700

Setting

VRC 700 Setting: 8

0020235577 - Basic hydraulic diagram

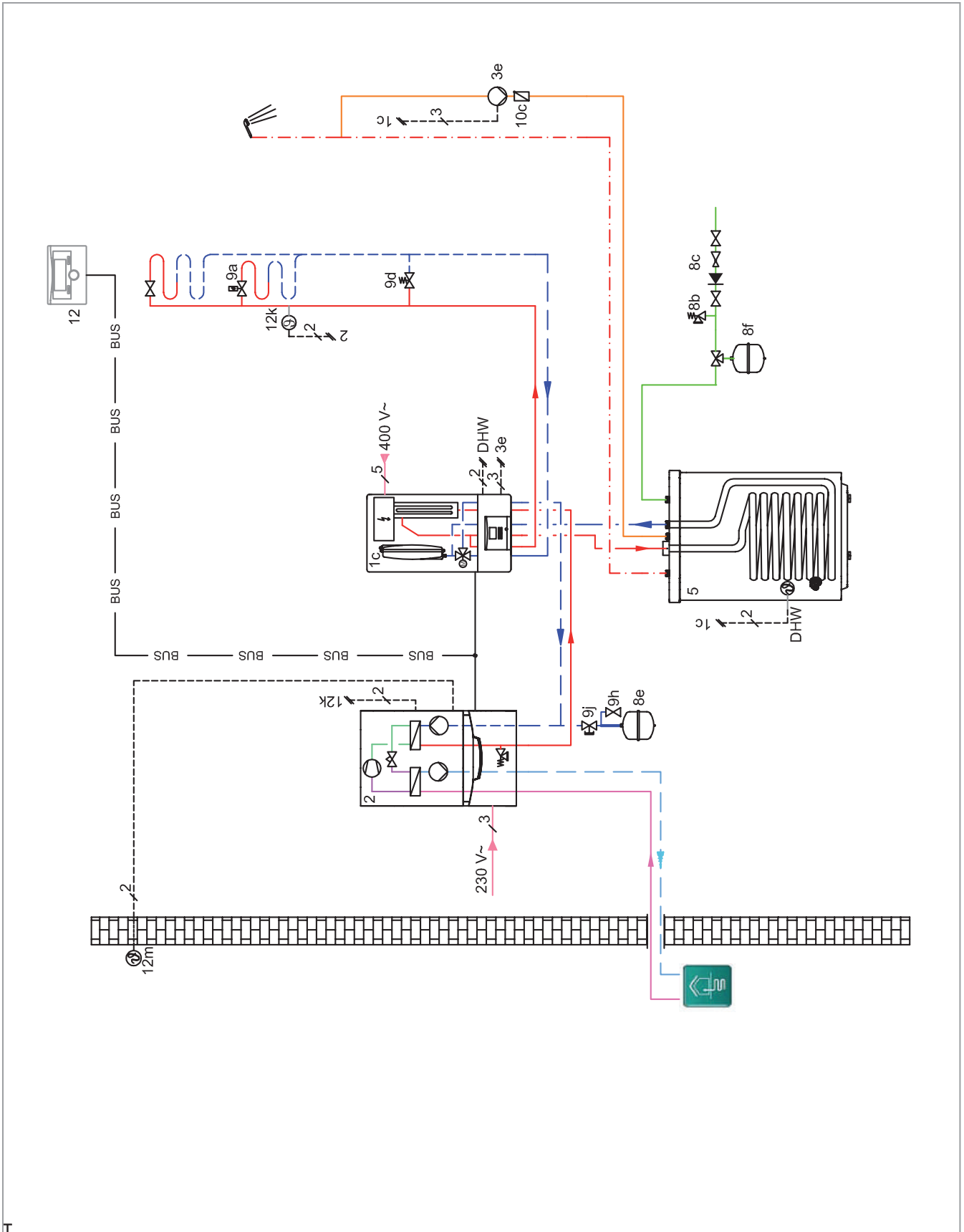


Fig 647: Basic hydraulic diagram

0020235577 - Wiring diagram

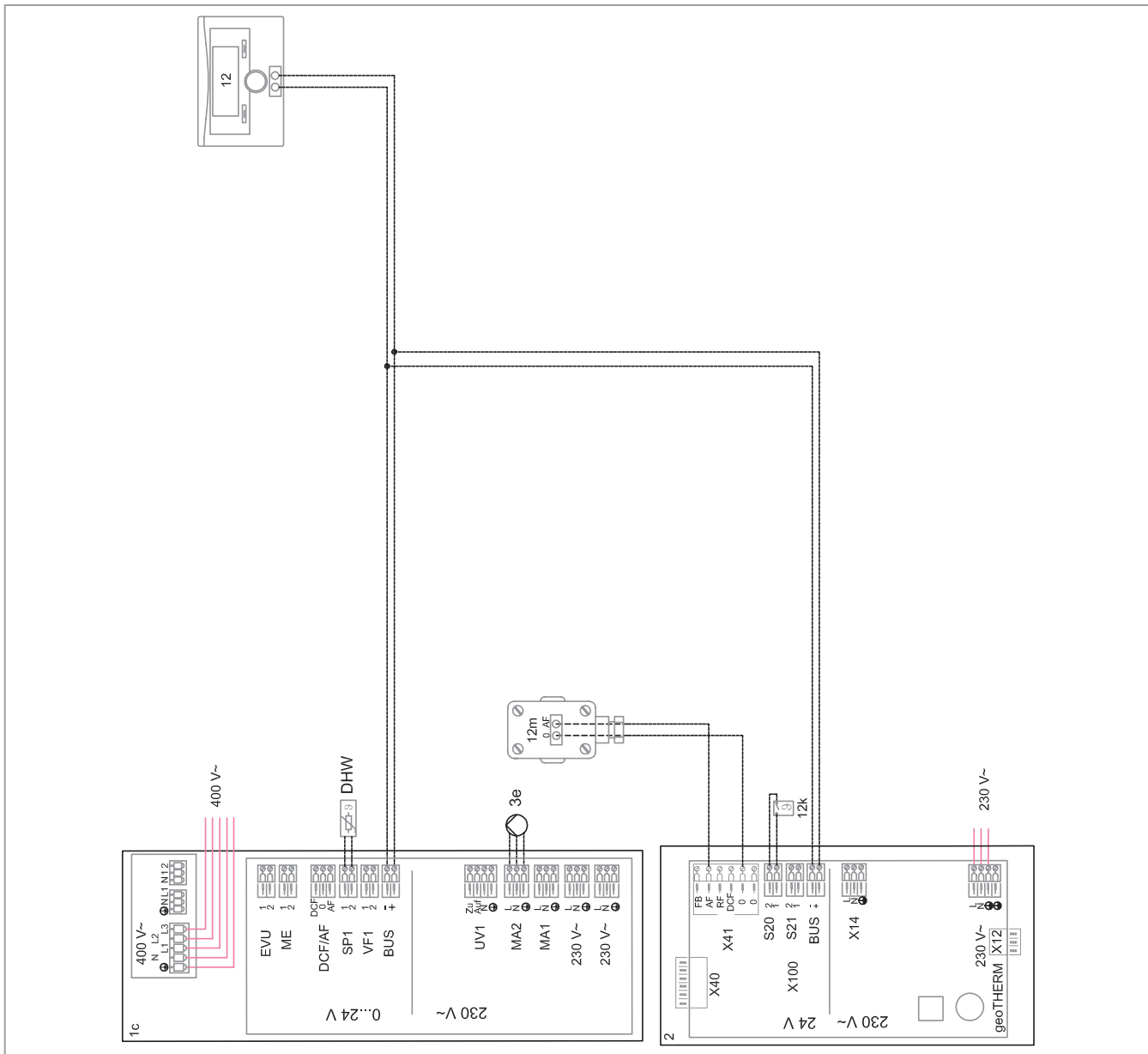


Fig 648: Wiring diagram

Individual components

- geoTHERM VWS 36/4.1
- VWZ MEH 61
- uniSTOR
- VRC 700

Setting

VRC 700 Setting: 8

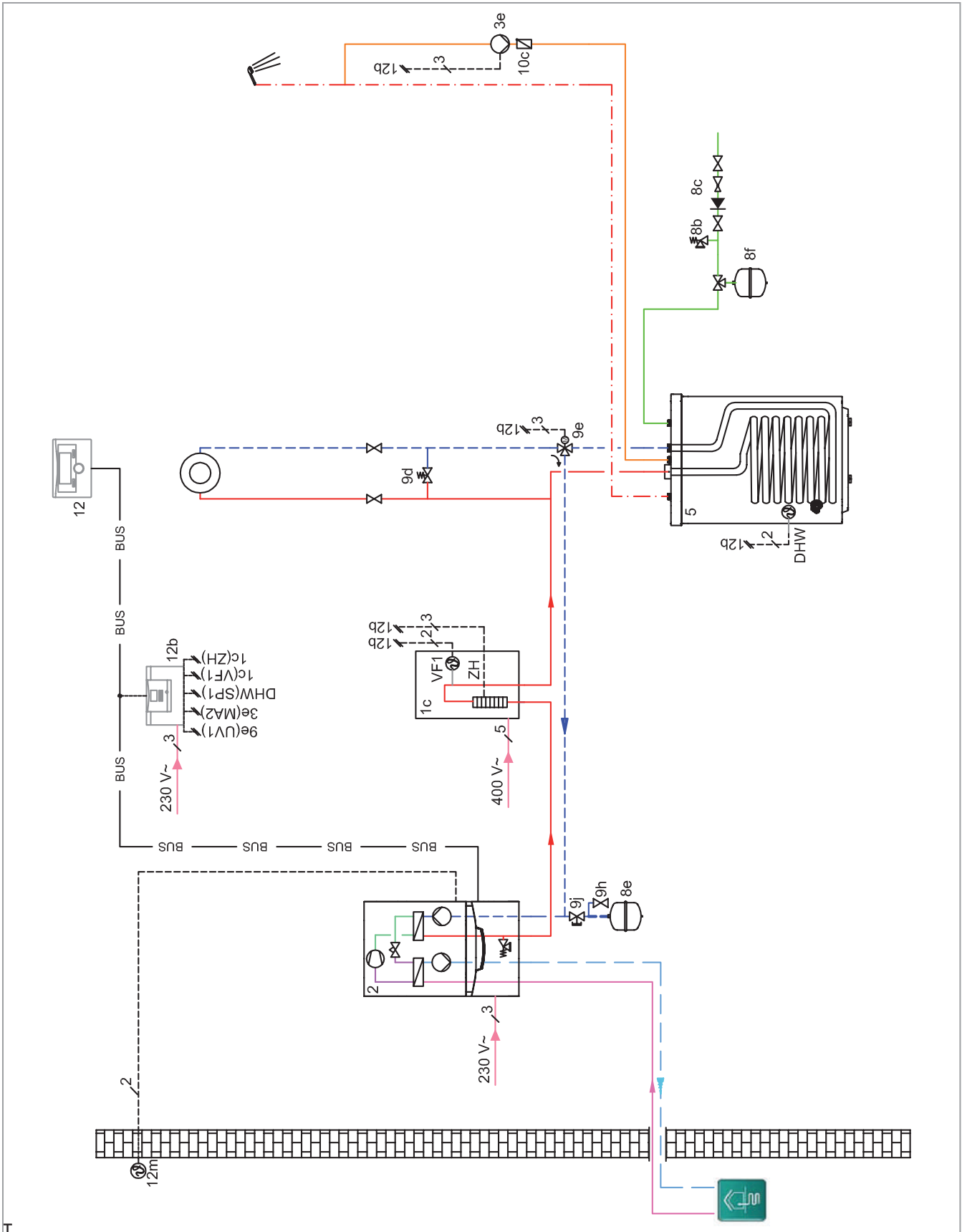


Fig 649: Basic hydraulic diagram

0020235580 - Wiring diagram

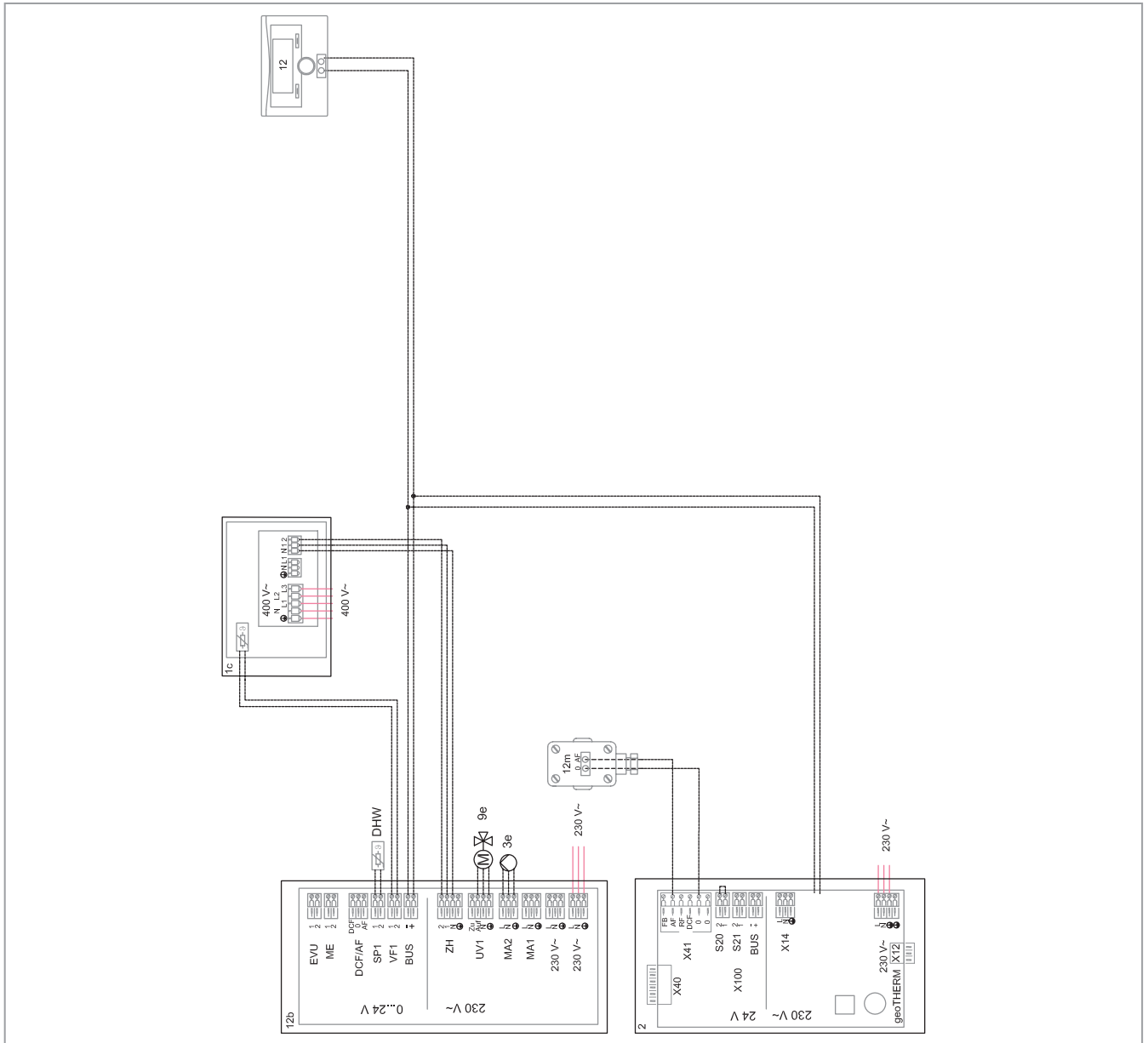


Fig 650: Wiring diagram

Individual components

- geoTHERM VWS 36/4.1
- VWZ MEH 60
- uniSTOR
- VRC 700
- VWZ AI

Setting

VRC 700 Setting: 8

0020235626 - Basic hydraulic diagram

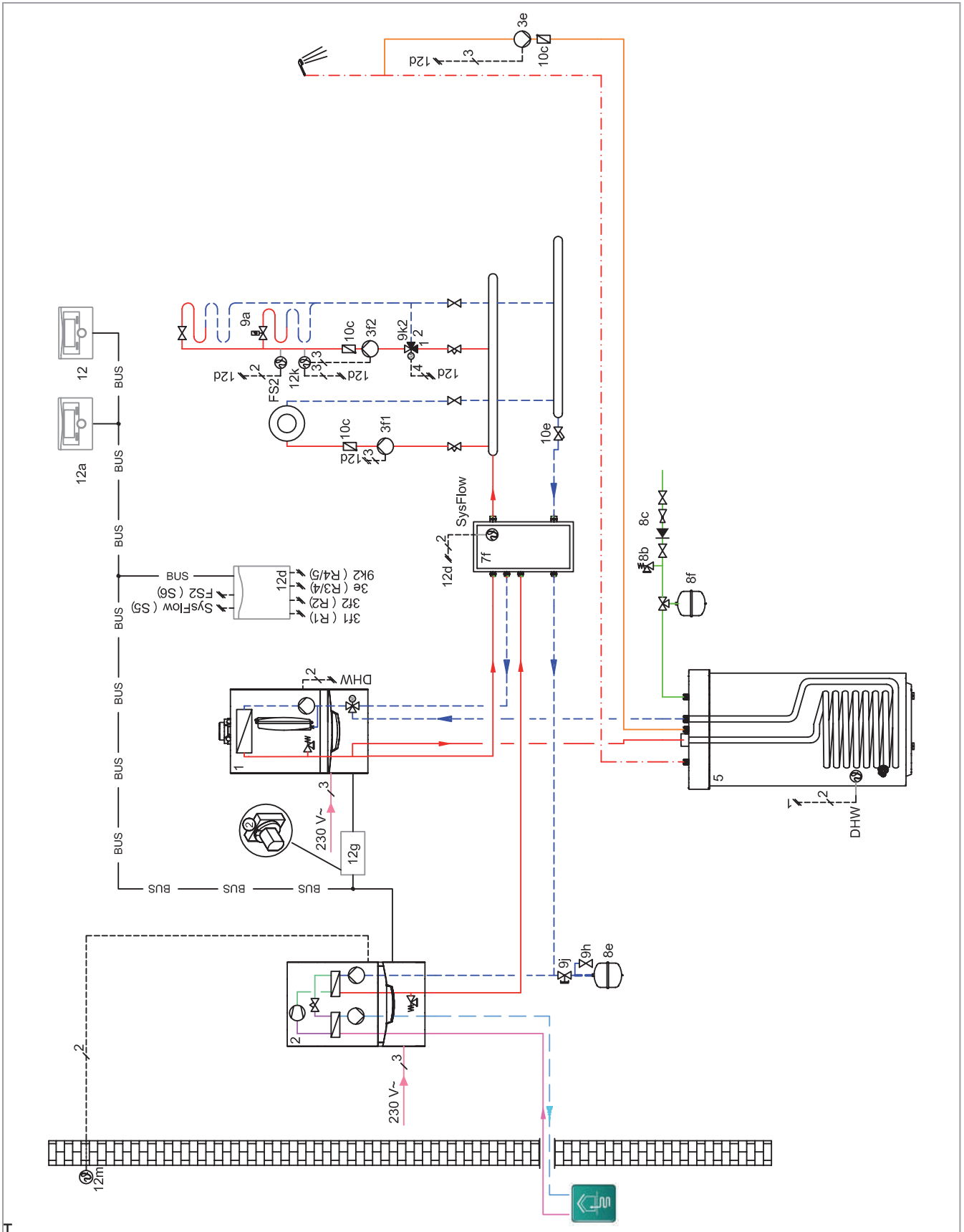


Fig 651: Basic hydraulic diagram

0020235626 - Wiring diagram

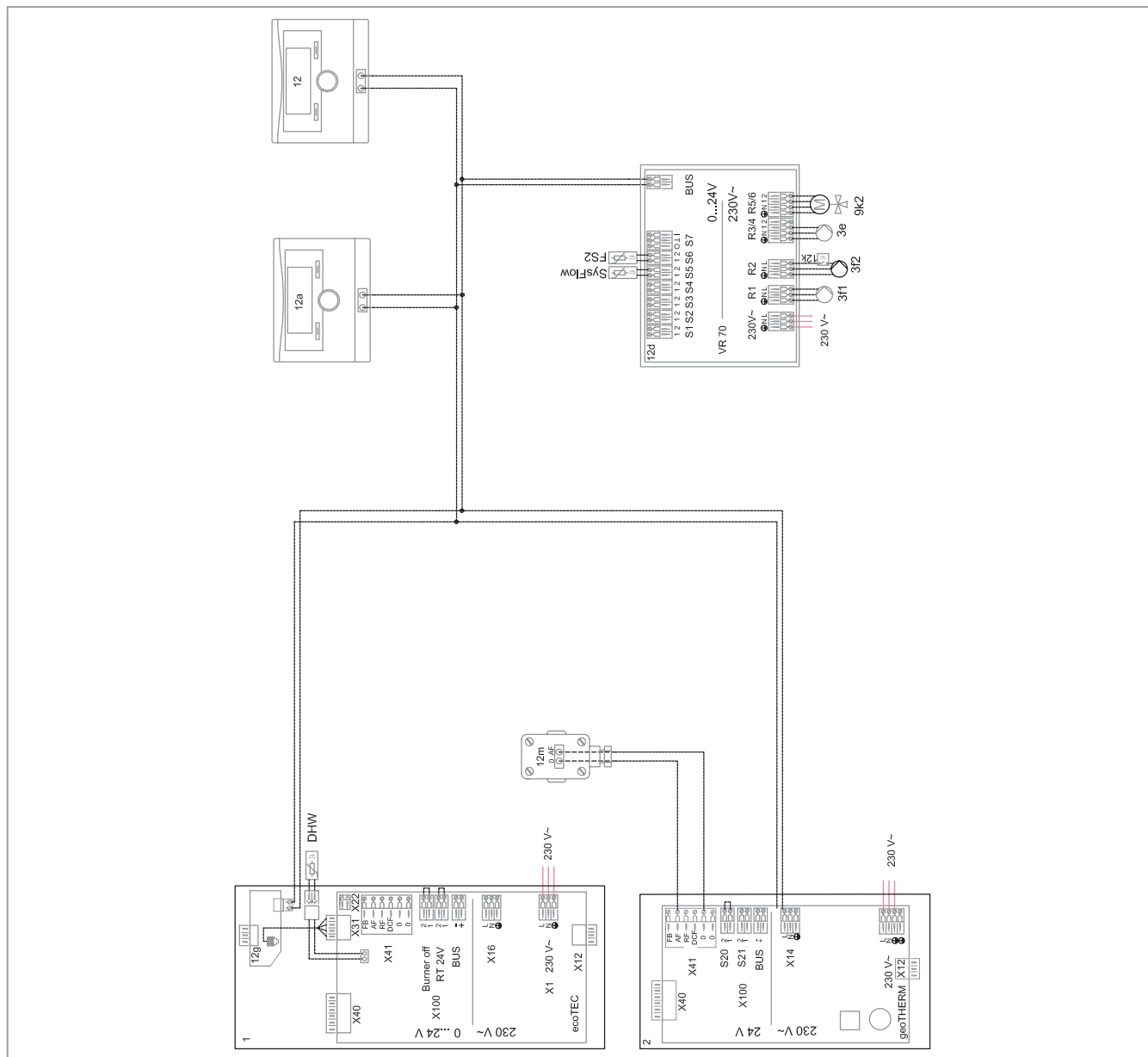


Fig 652: Wiring diagram

Individual components

- geoTHERM VWS 36/4.1
- ecoTEC
- uniSTOR
- VWZ MPS 40
- VRC 700
- VR 70
- VR 91
- VR 32

Setting

VRC 700 Setting: 9

VR 70 Setting: 1

0020249867 - Basic hydraulic diagram

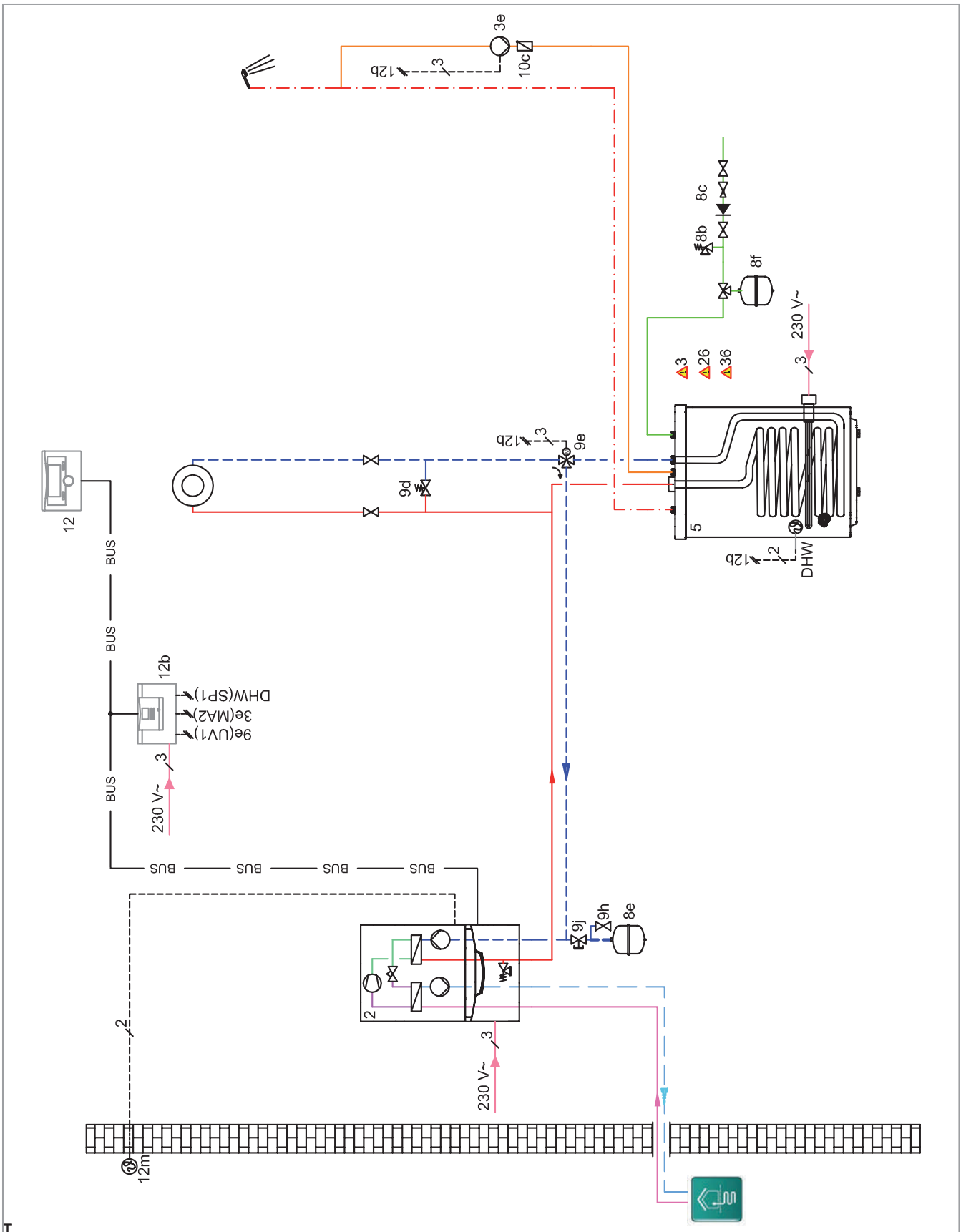


Fig 653: Basic hydraulic diagram

0020249867 - Wiring diagram

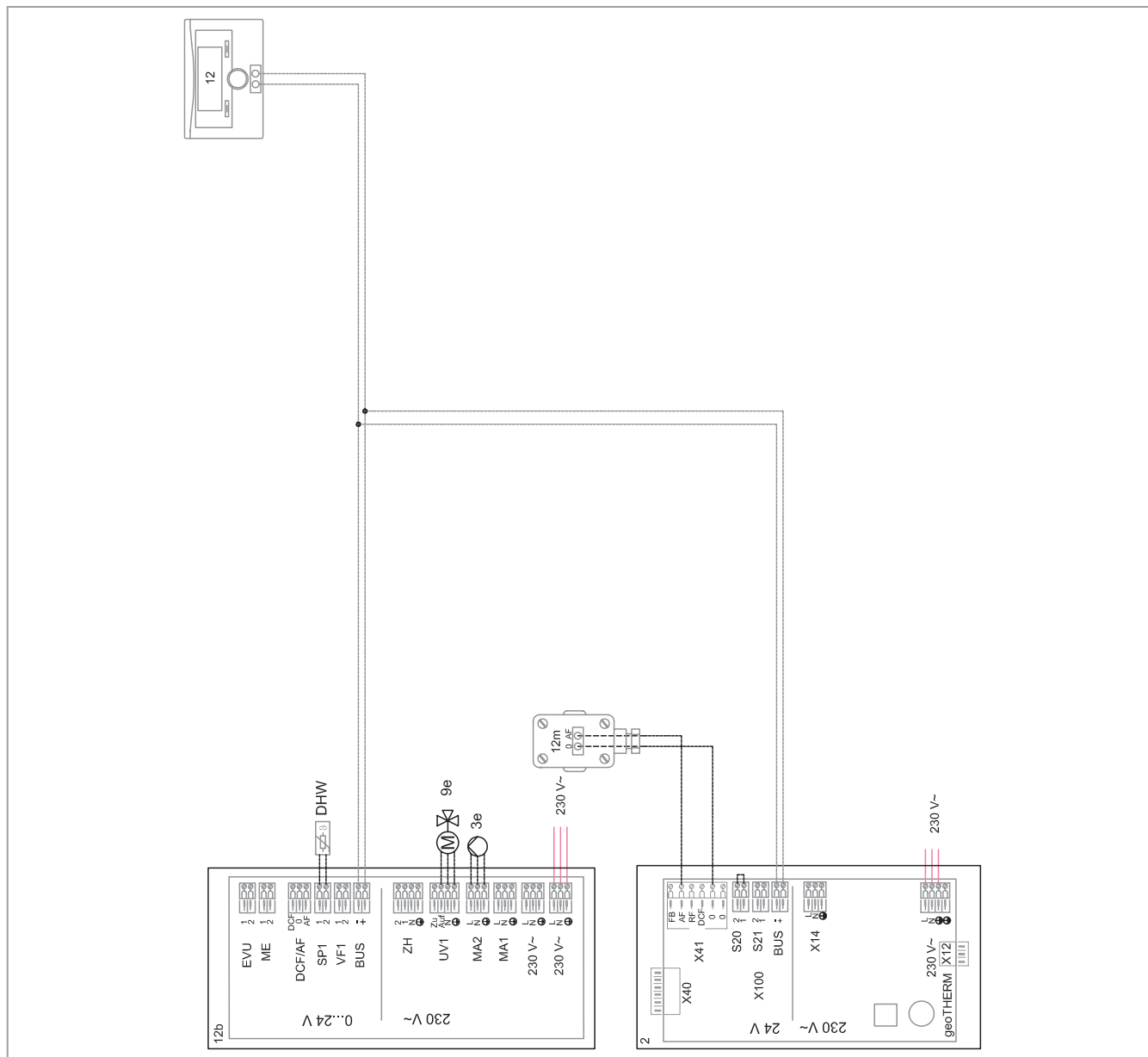


Fig 654: Wiring diagram

Individual components

- geoTHERM VWS 36/4.1
- uniSTOR
- VRC 700
- VWZ AI

Setting

VRC 700 Setting: 8



15. Product information for the aroSTOR VWL B 80/5 - 150/5 domestic hot water heat pumps

15.1 Product combinations



Fig. 655: Product combinations

Product combination overview for the aroSTOR VWL B 80 - 150/5

	Domestic hot water heat pump	Control	Photovoltaics
	aroSTOR (1) VWL B 80/5 VWL B 100/5 VWL B 150/5	Integrated (2)	PV modules and inverters (3)
Domestic hot water generation	•	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

15.2 aroSTOR VWL B 80/5 - 150/5 product description



Fig. 656: aroSTOR VWL B 80/5 - 150/5

15.2.1 Special features

- Domestic hot water temperatures of up to 55 °C possible in heat pump mode
- Up to 65 °C is possible with back-up heating
- Wall-hung
- Intelligent use of self-generated energy (PV)
- Free choice of target value for compressor operation when energy is generated using PV
- Boost function (single cylinder charging at maximum possible output)
- Plug-socket-ready connection cable
- Concentric ventilation connection 360°, swivelling

15.2.2 Equipment

- 1.2 kW electric back-up heater
- Domestic hot water cylinder with high-quality enamelling
- Magnesium protection anode
- Premium-quality PU foam heat insulation

15.2.3 Potential applications

- Domestic hot water generation
- Potable water comfort for up to four people for central domestic hot water supply for flats and houses:
- 80 litres: 1-2 people
- 100 litres: 2-3 people
- 150 litres: 3-4 people

Type overview (valid in Austria)

Unit designation	Domestic hot water generation energy efficiency class	Order no.
aroSTOR VWL B 80/5	A+ (A+ - F)	0010026815
aroSTOR VWL B 100/5	A+ (A+ - F)	0010026813
aroSTOR VWL B 150/5	A+ (A+ - F)	0010026814

15.3 Technical data

Technical data - General

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5	aroSTOR VWL B 150/5
Nominal capacity	80 l	100 l	150 l
Outer diameter	525 mm	525 mm	525 mm
Height	1,145 mm	1,290 mm	1,660 mm
Weight (when empty)	44.5 kg	47 kg	57.5 kg
Weight (filled)	124.5 kg	147 kg	207.5 kg
Material of the product container	Enamelled steel	Enamelled steel	Enamelled steel
Heat insulation	Polyurethane foam 50 mm	Polyurethane foam 50 mm	Polyurethane foam 50 mm
Corrosion protection	-	-	-
Maximum pressure in the drinking water circuit	0.6 MPa	0.6 MPa	0.6 MPa
Max. domestic hot water temperature with the heat pump	55 °C	55 °C	55 °C
Max. hot water temperature with the additional electric heating	65 °C	65 °C	65 °C

Technical data - Electrical specifications

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5	aroSTOR VWL B 150/5
Voltage and frequency of the product's power supply	230 V - 50 Hz	230 V - 50 Hz	230 V - 50 Hz
Max amperage of the power supply circuit	8 A	8 A	8 A
Length of the electrical cable supplied	1.5 m	1.5 m	1.5 m
Max. output	1.600 W	1.600 W	1.600 W
IP rating	IPX4	IPX4	IPX4
Nominal heat output of the electric back-up heater	1,200 W	1,200 W	1,200 W
Heat input of the electric back-up heater	7 W/cm ²	7 W/cm ²	7 W/cm ²
Fuse	8 A	8 A	8 A

Technical data - Hydraulic connections

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5	aroSTOR VWL B 150/5
Connections for the domestic hot water circuit	3/4" outside thread, cylindrical	3/4" outside thread, cylindrical	3/4" outside thread, cylindrical

Technical data - Specifications for the heat pump

* In accordance with EN 16147:2017

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5	aroSTOR VWL B 150/5
Refrigerant type	R 290	R 290	R 290
Refrigerant volume for complete filling	0.15 kg	0.15 kg	0.15 kg
Max. overpressure in the heat pump	2.5 MPa	2.5 MPa	2.5 MPa
Max. low pressure in the heat pump	1.5 MPa	1.5 MPa	1.5 MPa
Permitted air temperature	-7 to 45 °C	-7 to 45 °C	-7 to 45 °C
Max. air flow	160 m ³ /h	160 m ³ /h	160 m ³ /h
Total length of the supply-air and extract-air pipe (piping laid in a straight line without elbows)	5 m	5 m	5 m
Sound pressure level, LpA, in 1 m clearance (V1/V2)	36 dB	36 dB	36 dB
Sound power level, LWA, in 1 m clearance (V1/V2)	43 dB	43 dB	43 dB
Max. condensate flow rate	0.15 l/h	0.15 l/h	0.15 l/h
Nominal heat output of the heat pump (water temperature: 55 °C)	350 W	350 W	350 W
Nominal heat output of the heat pump (water temperature: 45 °C)	920 W	920 W	920 W

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5	aroSTOR VWL B 150/5
Nominal heat output of the heat pump (water temperature: 45 °C)	1,420 W	1,420 W	1,420 W
Coefficient of performance (COP _{DHW}) (outdoor air temperature: 7 °C, extraction cycle: M)*	2.34	2.38	2.504
Coefficient of performance (COP _{DHW}) (outdoor air temperature: 7 °C, extraction cycle: L)*	-	-	-
Maximum usable domestic hot water volume (outdoor air temperature: 7 °C, extraction cycle: M)*	101.5 l	141.7 l	198.8 l
Maximum usable domestic hot water volume (outdoor air temperature: 7 °C, extraction cycle: L)*	-	-	-
Reference domestic hot water temperature Θ'_{WH} (outdoor air temperature: 7 °C, extraction cycle: M)*	52.7 °C	53.6 °C	53.5 °C
Reference domestic hot water temperature Θ'_{WH} (outdoor air temperature: 7 °C, extraction cycle: L)*	-	-	-
Heat-up time (environmental air temperature: 7 °C, extraction cycle: M)*	4.38 h	6.48 h	9.37 h
Heat-up time (environmental air temperature: 7 °C, extraction cycle: L)*	-	-	-
Power consumption during standby periods P _{es} (outdoor air temperature: 7 °C, extraction cycle: M)*	13 W	16 W	17 W
Power consumption during standby periods P _{es} (outdoor air temperature: 7 °C, extraction cycle: L)*	-	-	-

15.4 Heat pump output curves

Validity: aroSTOR VWL B 80/5

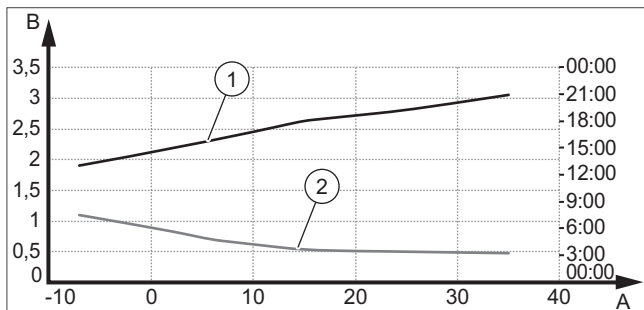


Fig. 657: Heat pump output curve

Validity: aroSTOR VWL B 150/5

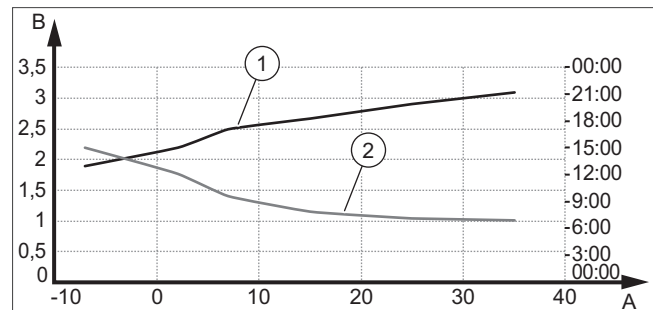


Fig. 659: Heat pump output curve

Validity: aroSTOR VWL B 100/5

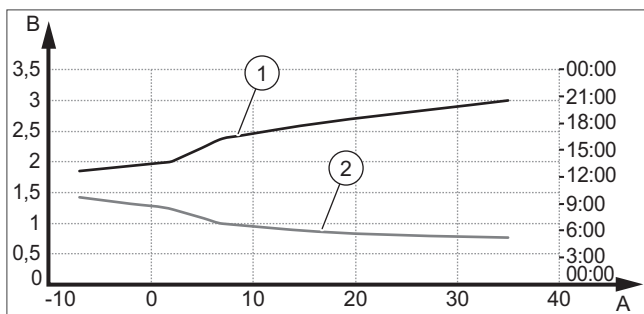


Fig. 658: Heat pump output curve

- A Air temperature in °C
- B Working figure (COP)
- 1 COP
- 2 Domestic hot water temperature of 55 °C (EN 16147:2017/extraction cycle M)

15.5 Unit dimensions and connection dimensions

15.5.1 Unit dimensions and connection dimensions, 80 and 100 l

Validity: aroSTOR VWL B 80/5OR aroSTOR VWL B 100/5

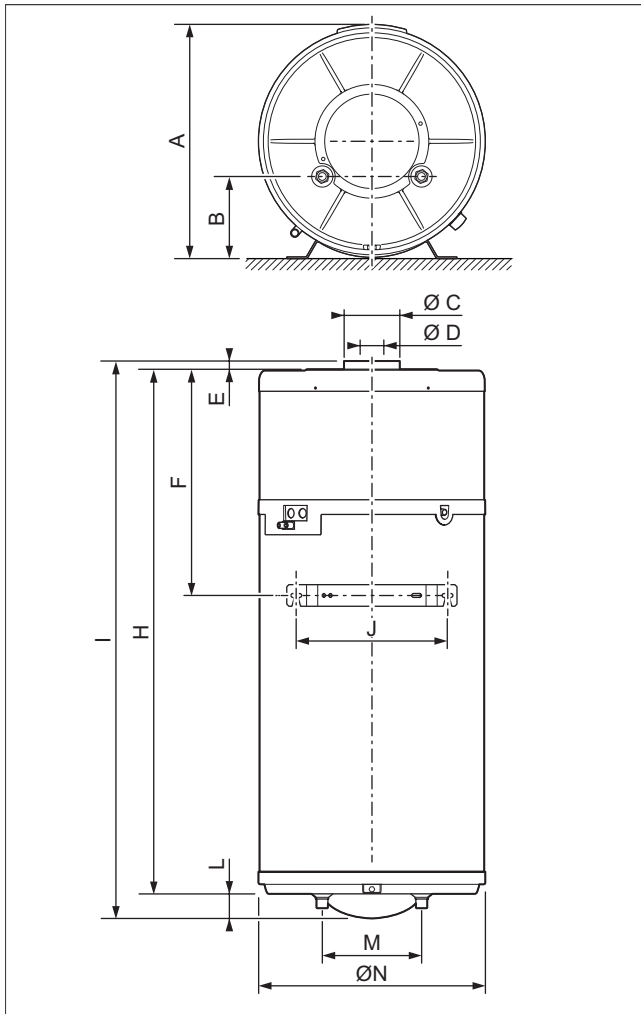


Fig. 660: Dimensions

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5
A	543 mm	543 mm
B	190 mm	190 mm
C	129 mm	129 mm
D	80 mm	80 mm
E	22 mm	22 mm
F	518 mm	518 mm
H	1,065 mm	1,210 mm
I	1,145 mm	1,290 mm
J	350 mm	350 mm
L	57 mm	57 mm
M	230 mm	230 mm
N	525 mm	525 mm

15.5.2 Dimensions and connection dimensions, 150 l

Validity: aroSTOR VWL B 150/5

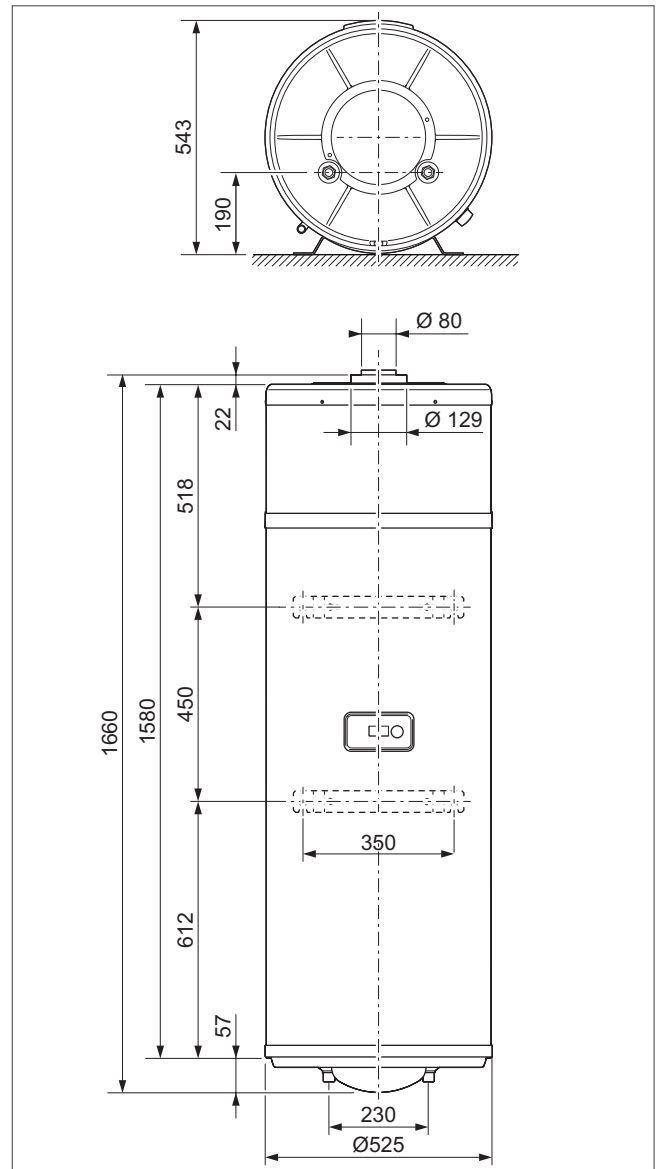


Fig. 661: Dimensions

15.6 Minimum clearances

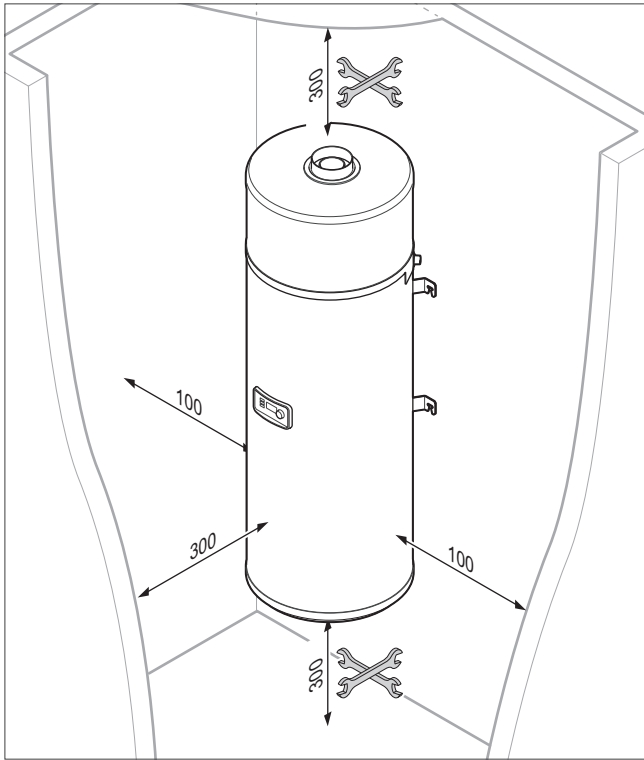


Fig. 662: Minimum clearances

1. To guarantee sufficient air flow and to facilitate maintenance work, observe the minimum clearances that are specified above.
2. Ensure that the cables are routed appropriately.

15.7 Requirements for the installation site

- » Select a dry room that is frost-proof throughout and in which the maximum installation height is not exceeded and the environmental temperature is neither above nor below the permitted range.
- » If the product is to operate as room-sealed, it must not come within 500 m of any coastline.
- » Do not place the product in the vicinity of another unit which could damage it (e.g. next to a unit which releases vapour or grease), or in a room with a high level of exposure to dust or in a corrosive environment.
- » Ensure that the required minimum clearances can be maintained.
- » When selecting the installation site, you must take into consideration that when the heat pump is in operation, it will transfer vibrations to the floor and the nearby walls.
- » In order to avoid noise disturbance, do not install the product near bedrooms.

15.8 Luftzufuhr und -abfuhr installieren

15.8.1 Air duct systems



Caution.

Risk of material damage caused by incorrect installation.

- > Do not connect the product to extractor hoods.



Caution.

Risk of material damage due to condensation forming on the outside of the pipe.

The difference in temperature between the air flowing through the pipe and the air in the installation room can cause condensation to form on the outside surface of the pipe.

- > For wall ducts with plastics, use ventilation pipes that have sufficient heat insulation.

1. You must use accessories that have been homologated as part of the product certification in order to prevent water and foreign substances from getting into the pipes.
 2. Always protect the product against modification or intervention in order to prevent water or foreign substances from penetrating as this may damage the pipes or other components.
- Air/flue pipe diameter (Concentric air/flue pipe): 0.64 mm

Total length of the air ducts	
Condition: Installing a system with a heat-insulated concentric air/flue pipe	≤ 5 m
Condition: Installing a partial pipe system	≤ 10 m
Length that must be deducted from the total length for each elbow that is used	
Condition: Installing a system with a heat-insulated concentric air/flue pipe	2 m
Condition: Installing a partial pipe system	1 m

15.8.2 Installing a system with a heat-insulated concentric air/flue pipe

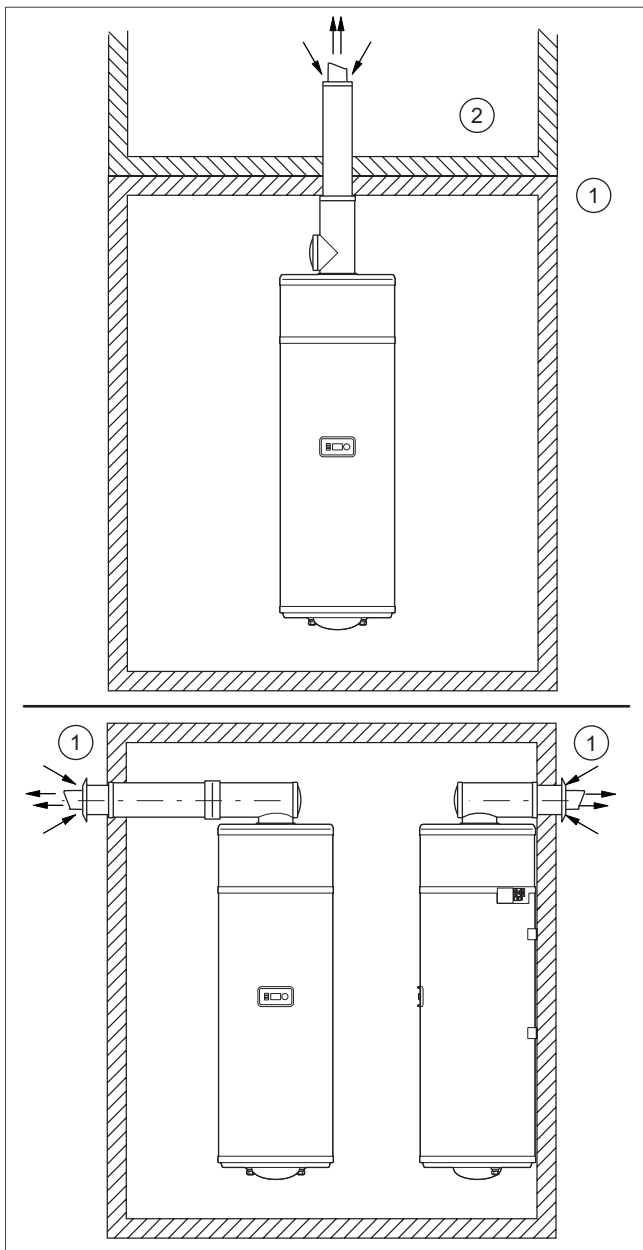


Fig. 663: Complete pipe system

- 1 External area
- 2 Internal area (heated or not heated)
- 3 Internal area (not heated)

The air intake and outlet lie outside the heated room volume. This installation is suitable for small rooms (supply or store room, etc.).

This configuration prevents a room from being cooled and does not impair ventilation.

» Check whether the pipe configurations depicted above are feasible depending on ceiling height.

Dimensions of a system with vertical, heat-insulated concentric air/flue pipe, 80 and 100 l

Validity: aroSTOR VWL B 80/5OR aroSTOR VWL B 100/5

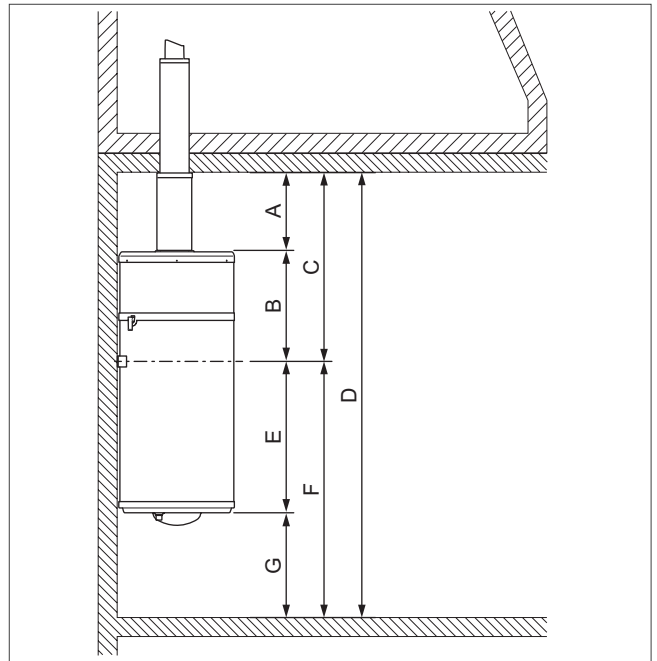


Fig. 664: Dimensions

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5
A	300 mm	300 mm
B	518 mm	518 mm
C	805.5 mm	808.5 mm
D	1,650 mm	1,796 mm
E	545.5 mm	691 mm
F	1,261.5 mm	1,261.5 mm
G	Min. 300 mm	Min. 300 mm

Dimensions of a system with vertical, heat-insulated concentric air/flue pipe, 150 I

Validity: aroSTOR VWL B 150/5

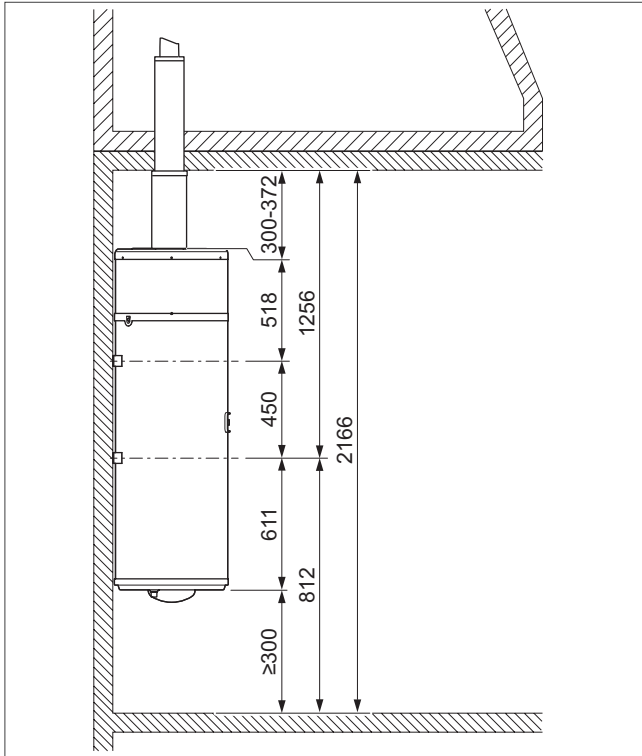


Fig. 665: Dimensions

Dimensions of a system with vertical, heat-insulated concentric air/flue pipe and tripod stands, 80 and 100 I

Validity: aroSTOR VWL B 80/5OR aroSTOR VWL B 100/5

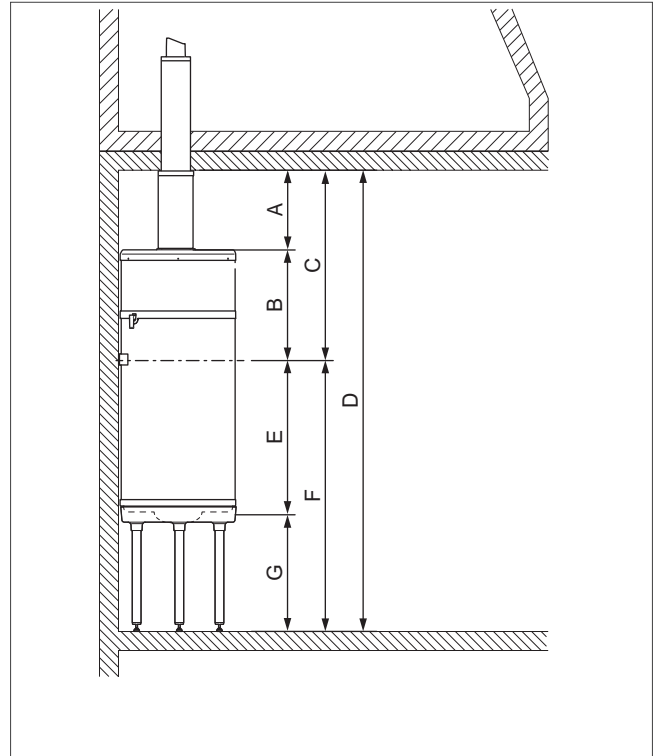


Fig. 666: Dimensions

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5
A	300 mm	300 mm
B	518 mm	518 mm
C	805.5 mm	808.5 mm
D	1,650 mm	1,796 mm
E	545.5 mm	691 mm
F	1,261.5 mm	1,261.5 mm
G	300-556 mm	300-556 mm

Dimensions of a system with vertical, heat-insulated concentric air/flue pipe and tripod stand, 150 l

Validity: aroSTOR VWL B 150/5

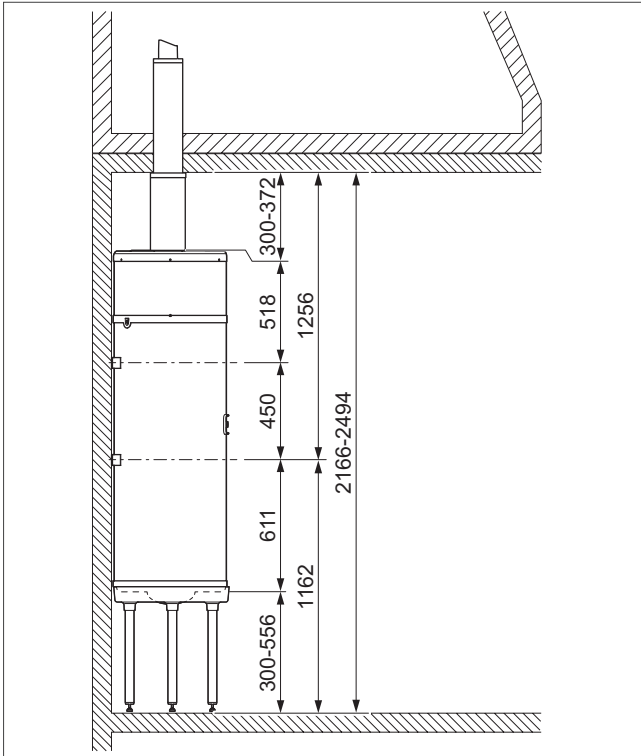


Fig. 667: Dimensions

Dimensions of a system with horizontal, heat-insulated concentric air/flue pipe, 80 and 100 l

Validity: aroSTOR VWL B 80/5OR aroSTOR VWL B 100/5

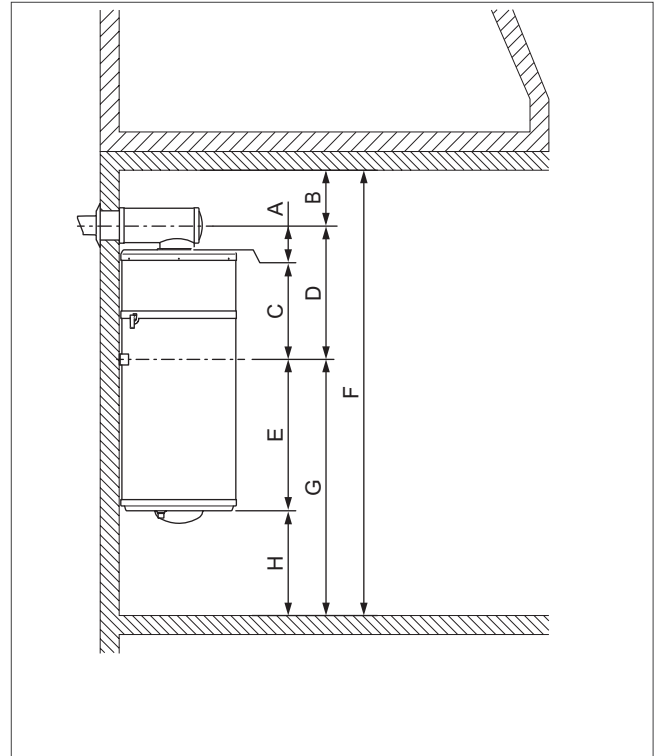


Fig. 668: Dimensions

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5
A	114.5 mm	114.5 mm
B	300 mm	300 mm
C	518 mm	518 mm
D	620 mm	620 mm
E	545.5 mm	690.5 mm
F	1,765.5 mm	1,910.5 mm
G	1,261.5 mm	1,261.5 mm
H	Min. 300 mm	Min. 300 mm

Dimensions of a system with horizontal, heat-insulated concentric air/flue pipe, 150 l

Validity: aroSTOR VWL B 150/5

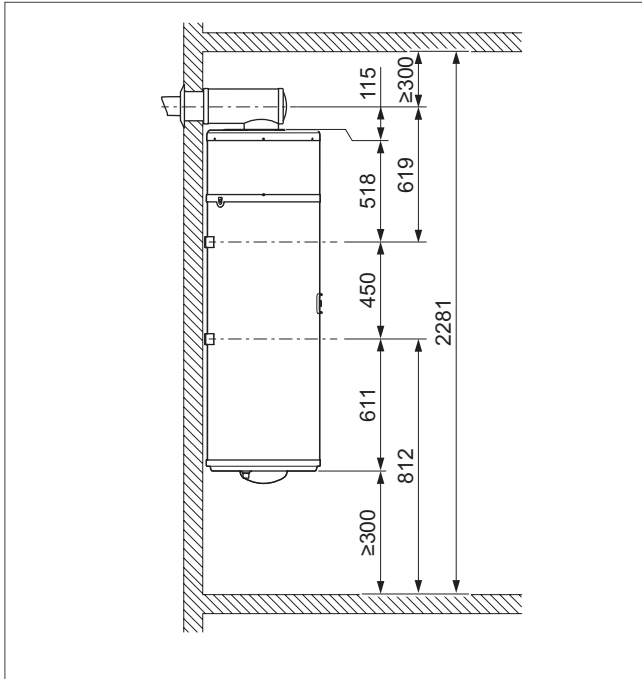


Fig. 669: Dimensions

Dimensions of a system with horizontal, heat-insulated concentric air/flue pipe and with tripod stand, 80 and 100 l

Validity: aroSTOR VWL B 80/5OR aroSTOR VWL B 100/5

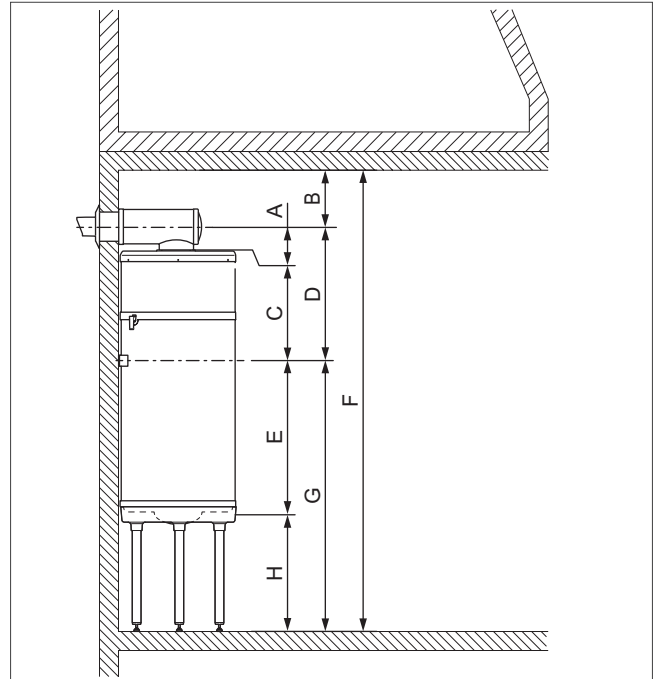


Fig. 670: Dimensions

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5
A	114.5 mm	114.5 mm
B	300 mm	300 mm
C	518 mm	518 mm
D	620 mm	620 mm
E	545.5 mm	690.5 mm
F	1,765.5 mm	1,910.5 mm
G	1,261.5 mm	1,261.5 mm
H	300-556 mm	300-556 mm

Dimensions of a system with horizontal, heat-insulated concentric air/flue pipe and with tripod stand, 150 l

Validity: aroSTOR VWL B 150/5

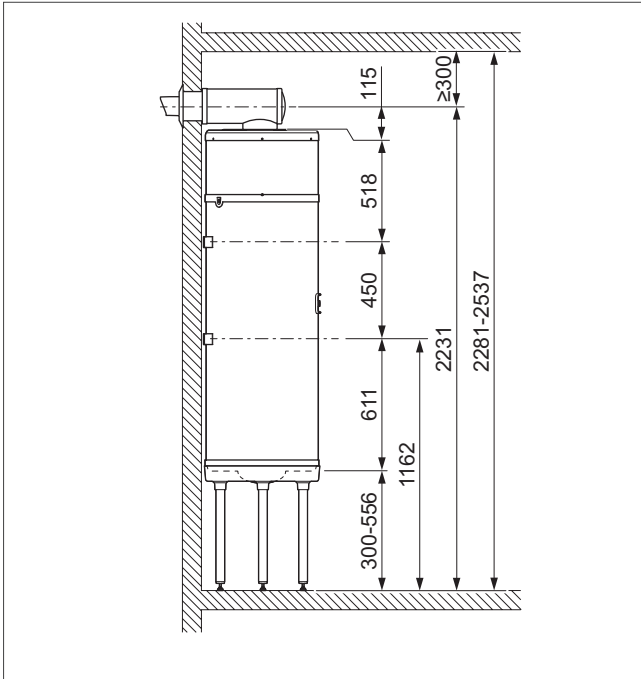


Fig. 671: Dimensions

15.8.3 Installing the partial pipe system

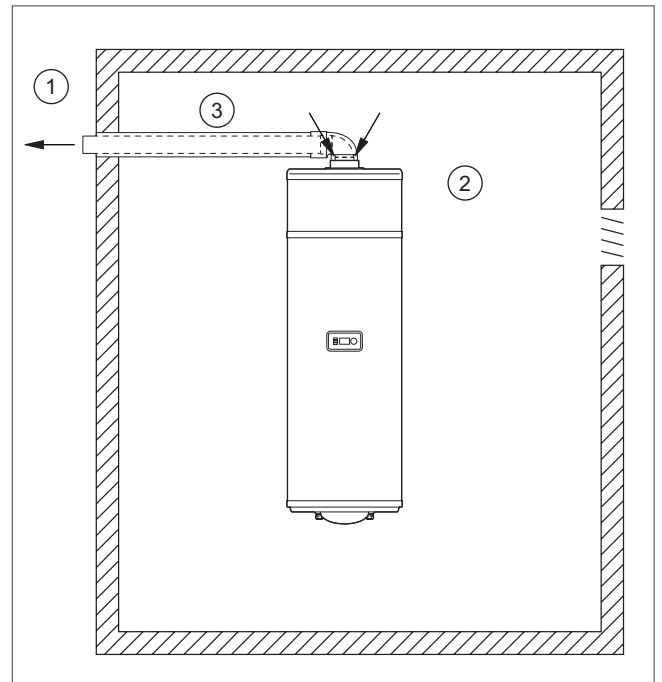


Fig. 672: Partial pipe system

- 1 External area
- 2 Internal area (heated or not heated)
- 3 Heat-insulated pipe (diameter ≥ 80 mm)

The hot air is drawn into the room and the cold air is released outside.

With this installation type, the room is used as an energy collector. The room is cooled by outdoor air which flows in via the ventilation openings.

- Room volume at installation site: ≥ 20 m³



Caution.

Risk of material damage due to condensation forming on the outside of the pipe.

The difference in temperature between the air flowing through the pipe and the air in the installation room can cause condensation to form on the outside surface of the pipe.

- > Use air pipes with suitable heat insulation.

- » Avoid having negative pressure in the installation room, so that air is not extracted from surrounding heated rooms.
- » Check whether the existing ventilation can compensate for the withdrawn air flow.
 - Air flow: ≥ 140 m³/h
- » Add to the withdrawn air flow the flow rate that is required for normal ventilation of the installation room.
- » If required, adjust the ventilation.

Dimensions of a partial pipe system without tripod stand, 80 and 100 l

Validity: aroSTOR VWL B 80/5OR aroSTOR VWL B 100/5

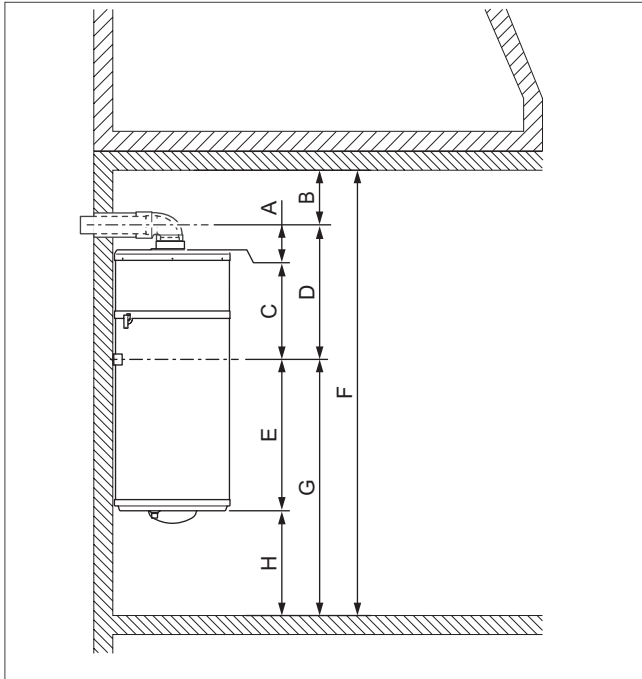


Fig. 673: Dimensions

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5
A	114.5 mm	114.5 mm
B	300 mm	300 mm
C	518 mm	518 mm
D	620 mm	620 mm
E	545.5 mm	690.5 mm
F	1,765.5 mm	1,910.5 mm
G	1,261.5 mm	1,261.5 mm
H	Min. 300 mm	Min. 300 mm

Dimensions of a partial pipe system without tripod stand, 150 l

Validity: aroSTOR VWL B 150/5

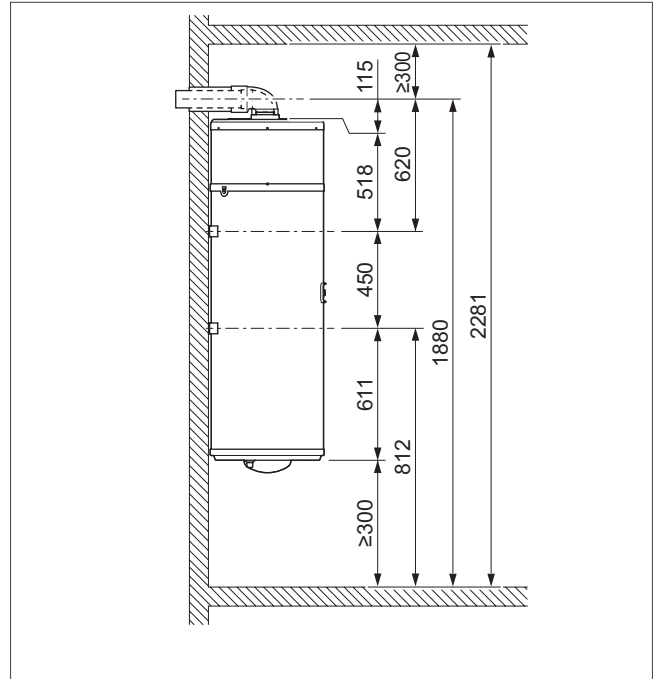


Fig. 674: Dimensions

Dimensions of a partial pipe system with tripod stand, 80 and 100 l

Validity: aroSTOR VWL B 80/5OR aroSTOR VWL B 100/5

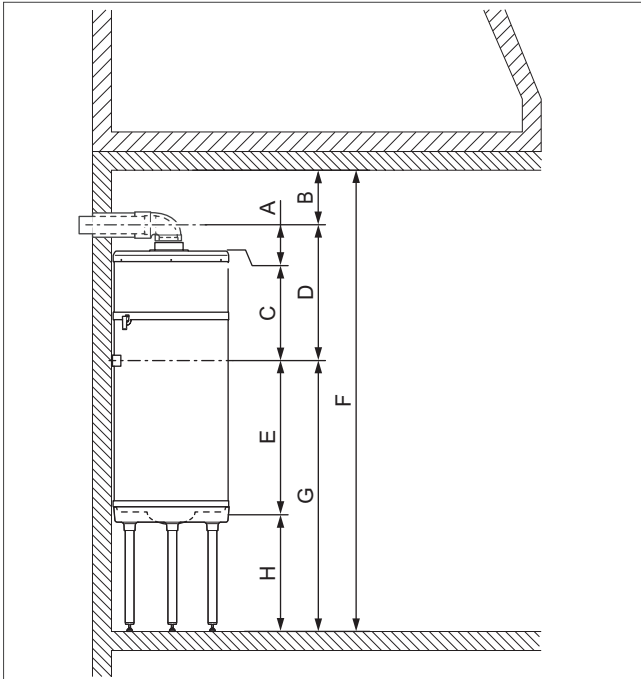


Fig. 675: Dimensions

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5
A	114.5 mm	114.5 mm
B	300 mm	300 mm
C	518 mm	518 mm
D	620 mm	620 mm
E	545.5 mm	690.5 mm
F	1,765.5 mm	1,910.5 mm
G	1,261.5 mm	1,261.5 mm
H	300-556 mm	300-556 mm

Dimensions of a partial pipe system with tripod stand, 150 l

Validity: aroSTOR VWL B 150/5

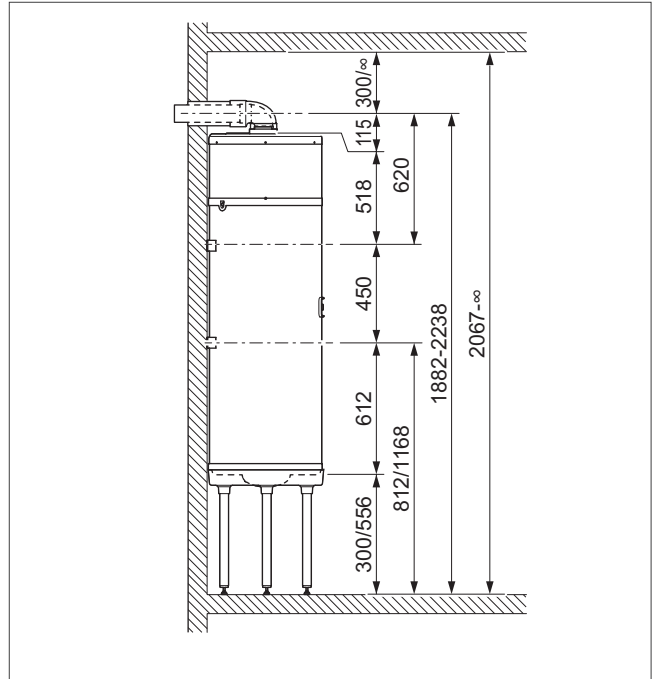


Fig. 676: Dimensions

15.8.4 Installing without a pipework system

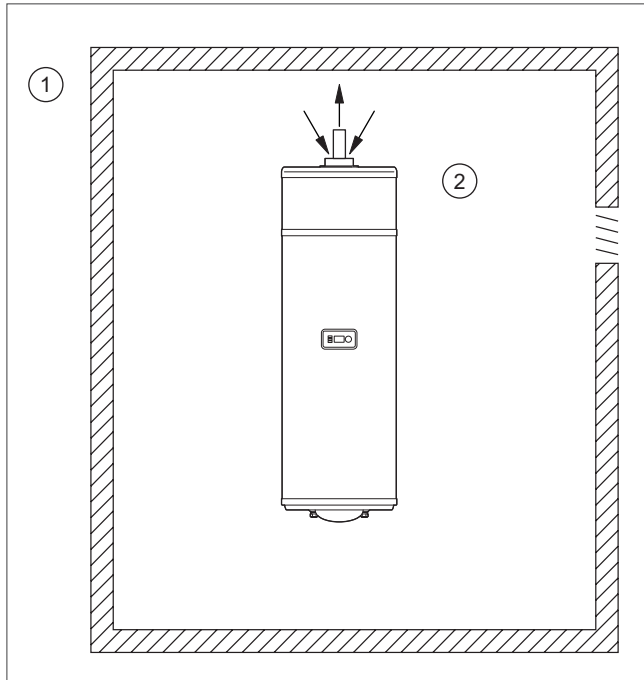


Fig. 677: Without the pipe system

- 1 External area
- 2 Internal area (heated or not heated)

The air is drawn into and conducted away from the same room. With this installation type, the room is used as an energy collector. The room is cooled by the hot and cold air that the product emits.



Caution.
Risk of material damage caused by frost inside the house

Even at outdoor temperatures above 0 °C, there is a risk of frost in the installation room.

- > Use suitable heat insulation to protect pipelines and other elements in the installation room that are sensitive to cold.

To prevent the cold air emitted by the product from re-entering it, maintain the minimum clearance between the upper side of the product and the ceiling (see section → Minimum clearances).

- Room volume at installation site: $\geq 20 \text{ m}^3$
- » Replace the sleeve on the fan outlet with a pipe that is 80 mm in diameter and a suitable minimum length.

Dimensions of a system without pipes and without tripod stand, 80 and 100 l

Validity: aroSTOR VWL B 80/5OR aroSTOR VWL B 100/5

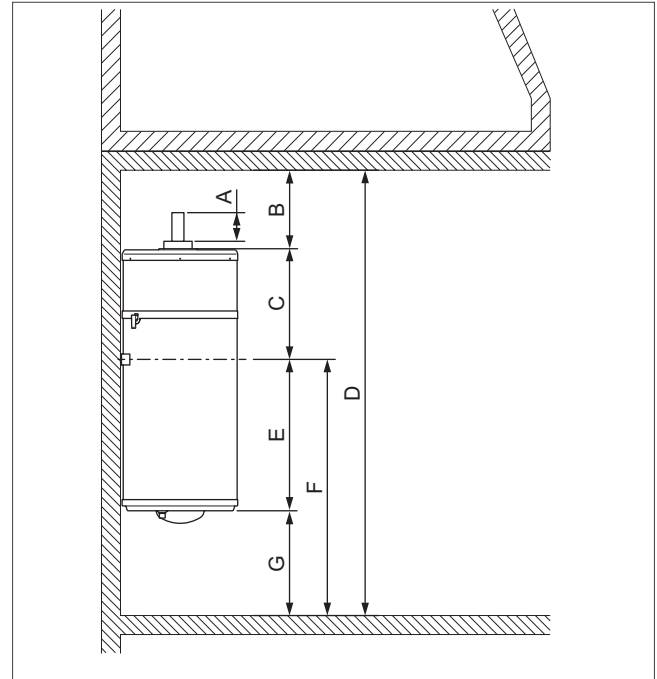


Fig. 678: Dimensions

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5
A	130 mm	130 mm
B	300 mm	300 mm
C	518 mm	518 mm
D	1,651 mm	1,796 mm
E	545.5 mm	690.5 mm
F	1,263.85 mm	1,263.85 mm
G	Min. 300 mm	Min. 300 mm

Dimensions of a system without pipes and without tripod stand, 150 l

Validity: aroSTOR VWL B 150/5

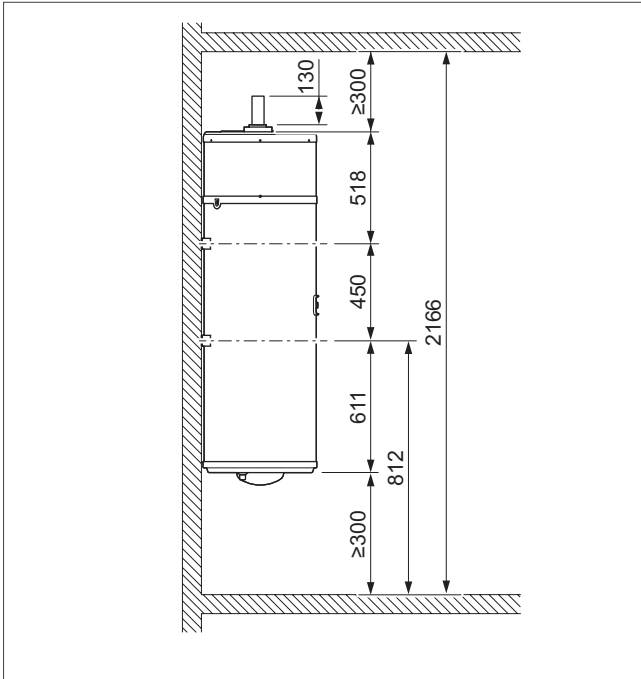


Fig. 679: Dimensions

Dimensions of a system without pipes and with tripod stand, 80 and 100 l

Validity: aroSTOR VWL B 80/5OR aroSTOR VWL B 100/5

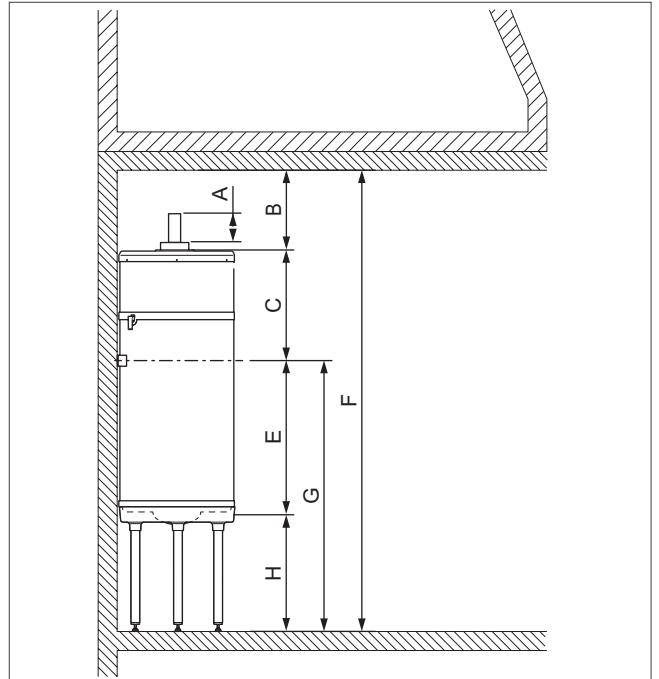


Fig. 680: Dimensions

	aroSTOR VWL B 80/5	aroSTOR VWL B 100/5
A	130 mm	130 mm
B	300 mm	300 mm
C	518 mm	518 mm
E	545.5 mm	690.5 mm
F	1,651 mm	1,796 mm
G	1,263.85 mm	1,263.85 mm
H	300-556 mm	300-556 mm

Dimensions of a system without pipes and with tripod stand, 150 l

Validity: aroSTOR VWL B 150/5

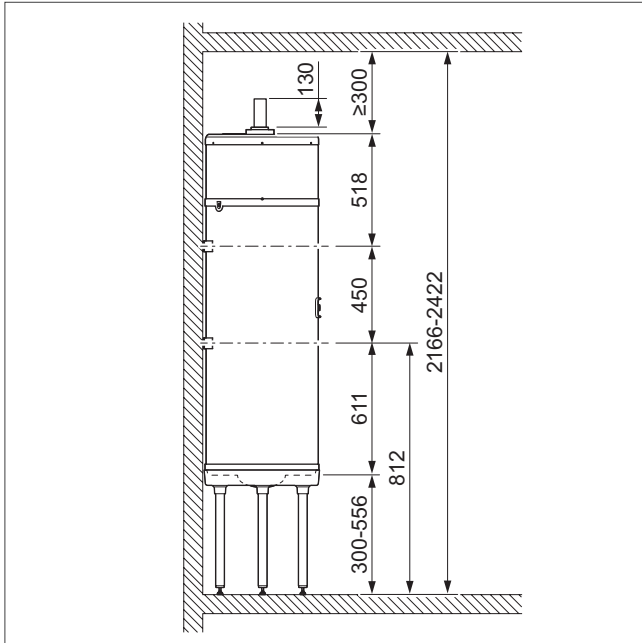


Fig. 681: Dimensions

15.9 Connecting DHW

15.9.1 Connecting the domestic hot water cylinder

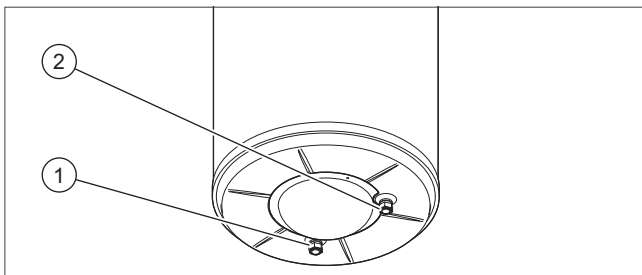


Fig. 682: Connecting the domestic hot water cylinder

1. Use only dielectric connections (to be provided on-site) to connect the water-carrying lines in order to ensure galvanic partitioning.
 - Tightening torque of the water connections: ≤ 30 Nm

Note

The length of the lines must be as short as possible. The lines must have correct heat insulation in order to prevent heat losses and condensation.



2. Connect the cold water pipe to (2).
3. Connect the domestic hot water flow to (1).
4. Carry out a leak-tightness check on all connections.

15.9.2 Connecting the condensate discharge pipe

1. Observe the locally applicable rules and regulations on condensate discharge.

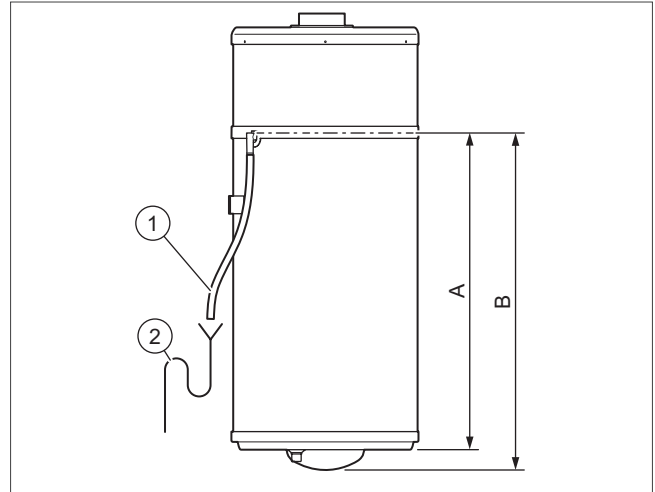


Fig. 683: Connecting the condensate discharge pipe

2. Connect the condensate discharge pipe (1) to a pre-installed drain siphon (2).

Dimensions

	A	B
aroSTOR VWL B 80/5	748 mm	805 mm
aroSTOR VWL B 100/5	893 mm	950 mm
aroSTOR VWL B 150/5	1,118 mm	1,175 mm

3. Route the condensate discharge pipe with a downward gradient and without any kinks.
4. Fill the drain siphon with water.
5. Leave a small clearance between the end of the condensate discharge pipe and the drain siphon.
6. Ensure that the connection between the condensate discharge pipe and the drain siphon is not air-tight.
7. Check whether the condensate drains off without any problems.



16. Product information for the aroSTOR VWL B 200/5 and 270/5 domestic hot water heat pumps

16.1 Product combinations



Fig. 684: Product combinations

Product combination overview for the aroSTOR VWL B 200/5 and 270/5

	Domestic hot water heat pump	Control	Photovoltaics
	aroSTOR (1) VWL B 200/5 VWL B 270/5	Integrated (2)	PV modules and inverters (3)
Domestic hot water generation	•	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

16.2 Product description for the aroSTOR VWL B 200/5 and 270/5



Fig. 685: aroSTOR VWL B 200/5 and 270/5

16.2.2 Equipment

- 1.2 kW electric back-up heater
- Stainless steel cylinder material
- Premium-quality PU foam heat insulation

16.2.3 Potential applications

- Domestic hot water generation
- Potable water comfort for up to six people for central domestic hot water supply for flats and houses:
- 200 litres: 4-5 people
- 270 litres: 5-6 people

16.2.1 Special features

- Domestic hot water temperatures of up to 60 °C possible in heat pump mode
- Up to 65 °C is possible with back-up heating
- Intelligent use of self-generated energy (PV)
- Free choice of target value for compressor operation when energy is generated using PV
- Boost function (single cylinder charging at maximum possible output)
- Plug-socket-ready connection cable

Type overview

Unit designation	Domestic hot water generation energy efficiency class	Order no.
aroSTOR VWL B 200/5	A+ (A+ - F)	0010026816
aroSTOR VWL B 270/5	A+ (A+ - F)	0010026817

16.3 Technical data

Technical data - General

	aroSTOR VWL B 200/5	aroSTOR VWL B 270/5
Nominal capacity	200 l	270 l
Outer diameter	634 mm	634 mm
Height	1,458 mm	1,783 mm
Weight (when empty)	55 kg	68 kg
Weight (filled)	255 kg	338 kg
Material of the product container	Stainless steel	Stainless steel
Heat insulation	Polyurethane foam 50 mm	Polyurethane foam 50 mm
Corrosion protection	-	-
Maximum pressure in the drinking water circuit	0.6 MPa	0.6 MPa
Max. domestic hot water temperature with the heat pump	60 °C	60 °C
Max. hot water temperature with the additional electric heating	65 °C	65 °C

Technical data - Electrical specifications

	aroSTOR VWL B 200/5	aroSTOR VWL B 270/5
Voltage and frequency of the product's power supply	230 V - 50 Hz	230 V - 50 Hz
Max amperage of the power supply circuit	8 A	8 A
Length of the electrical cable supplied	1.5 m	1.5 m
Max. output	1,900 W	1,900 W
IP rating	IPX4	IPX4
Nominal heat output of the electric back-up heater	1,200 W	1,200 W
Heat input of the electric back-up heater	7 W/cm ²	7 W/cm ²
Fuse	8 A	8 A

Technical data - Hydraulic connections

	aroSTOR VWL B 200/5	aroSTOR VWL B 270/5
Connections for the hot water circuit	External thread 3/4" cylindrical	External thread 3/4" cylindrical
Connecting the circulation circuit	M 3/4"	M 3/4"

Technical data - Specifications for the heat pump

* In accordance with EN 16147:2017

	aroSTOR VWL B 200/5	aroSTOR VWL B 270/5
Refrigerant type	R 290	R 290
Refrigerant volume for complete filling	0.15 kg	0.15 kg
Max. overpressure in the heat pump	2.5 MPa	2.5 MPa
Max. low pressure in the heat pump	1.5 MPa	1.5 MPa
Permitted air temperature	-7 to 45 °C	-7 to 45 °C
Max. air flow	400 m ³ /h	400 m ³ /h
Total length of the supply-air and extract-air pipe (piping laid in a straight line without elbows)	10 m	10 m
Sound pressure level, LpA, in 1 m clearance (V1/V2)	40/43 dB	40/43 dB
Sound power level, LWA, in 1 m clearance (V1/V2)	50/52 dB	50/52 dB
Max. condensate flow rate	0.30 l/h	0.30 l/h

	aroSTOR VWL B 200/5	aroSTOR VWL B 270/5
Nominal heat output of the heat pump (water temperature: 55 °C)	700 W	700 W
Nominal heat output of the heat pump (water temperature: 45 °C)	1,420 W	1,420 W
Coefficient of performance (COP _{DHW}) (outdoor air temperature: 7 °C, extraction cycle: L)*	2.99	3.00
Maximum usable domestic hot water volume V _{max} (outdoor air temperature: 7 °C, extraction cycle: L)*	250.8 l	334.5 l
Reference domestic hot water temperature Θ'_{WH} (outdoor air temperature: 7 °C, extraction cycle: L)*	54.6 °C	53.7 °C
Heat-up time (environmental air temperature: 7 °C, extraction cycle: L)*	6.57 h	9.26 h
Power consumption during standby periods P _{es} (outdoor air temperature: 7 °C, extraction cycle: L)*	25 W	27 W

16.4 Heat pump output curves

Validity: aroSTOR VWL B 200/5

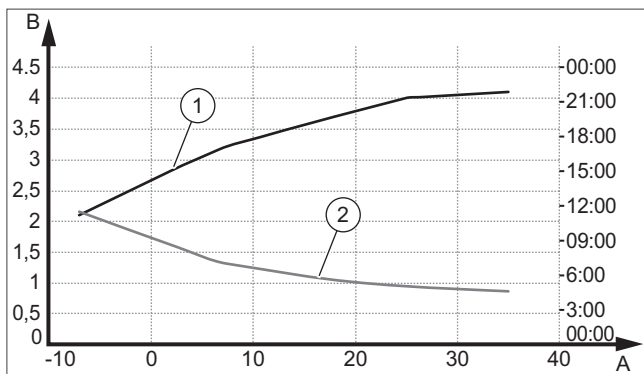


Fig. 686: Heat pump output curve

- A Air temperature in °C
 B Working figure (COP)
 1 COP at a cold water temperature of 10 °C for a target temperature of 55 °C (EN 16147:2017/extraction cycle L)
 2 Heating time at a water temperature of 10 °C for a target temperature of 55 °C (EN 16147:2017/extraction cycle L)

Validity: aroSTOR VWL B 270/5

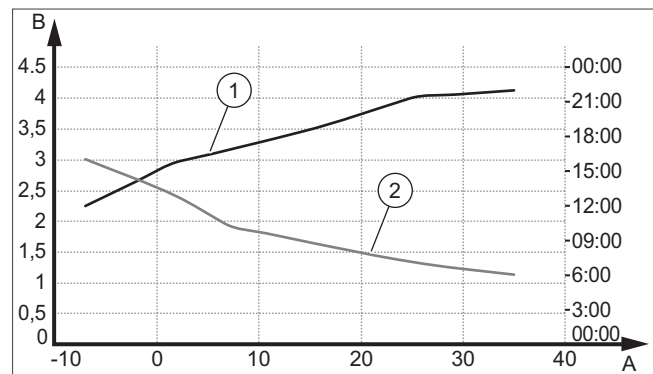


Fig. 687: Heat pump output curve

- A Air temperature in °C
 B Working figure (COP)
 1 COP at a cold water temperature of 10 °C for a target temperature of 55 °C (EN 16147:2017/extraction cycle L)
 2 Heating time at a water temperature of 10 °C for a target temperature of 55 °C (EN 16147:2017/extraction cycle L)

16.5 Product dimensions and connection dimensions

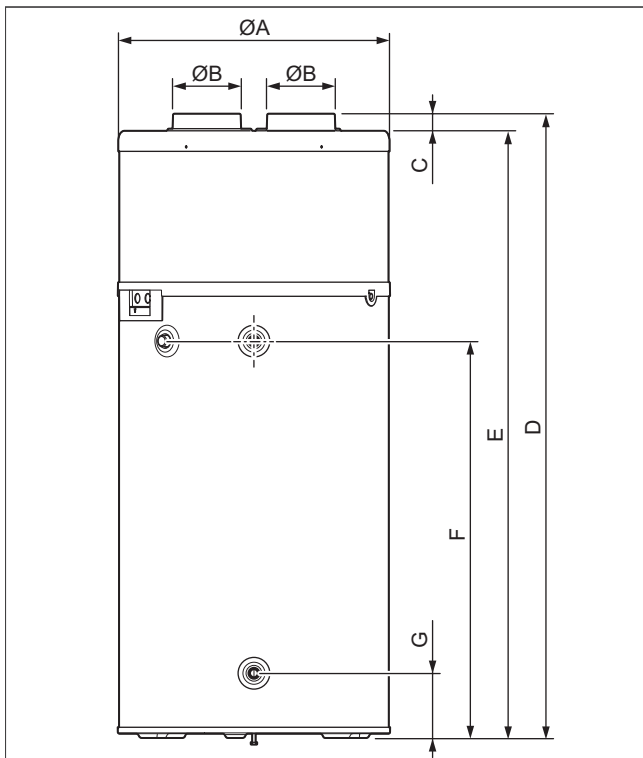


Fig. 688: Product dimensions and connection dimensions

	aroSTOR VWL B 200/5	aroSTOR VWL B 270/5
A	634 mm	634 mm
B	158 mm	158 mm
C	40 mm	40 mm
D	1,458 mm	1,783 mm
E	1,418 mm	1,743 mm
F	927 mm	1,255 mm
G	152 mm	152 mm

16.6 Minimum clearances

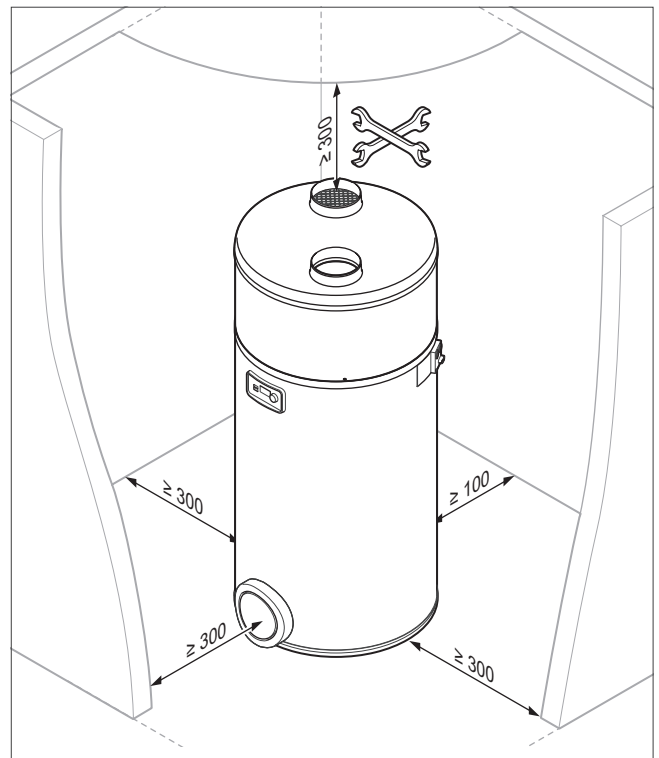


Fig. 689: Minimum clearances

1. To guarantee sufficient air flow and to facilitate maintenance work, observe the minimum clearances that are specified above.
2. Ensure that the cables are routed appropriately.

16.7 Requirements for the installation site

- » Select a dry room that is frost-proof throughout and in which the maximum installation height is not exceeded and the environmental temperature is neither above nor below the permitted range.
- » If the product is to operate as room-sealed, it must not come within 500 m of any coastline.
- » Do not place the product in the vicinity of another unit which could damage it (e.g. next to a unit which releases vapour or grease), or in a room with a high level of exposure to dust or in a corrosive environment.
- » Ensure that the required minimum clearances can be maintained.
- » When selecting the installation site, you must take into consideration that when the heat pump is in operation, it will transfer vibrations to the floor and the nearby walls.
- » In order to avoid noise disturbance, do not install the product near bedrooms.

16.8 Installing the air supply and air exhaust

16.8.1 Selecting air duct systems

Validity: Vaillant



Caution.
Risk of material damage caused by incorrect installation.

> Do not connect the product to extractor hoods.

1. Use only commercially available, insulated air ducts with suitable heat insulation, to prevent energy loss and condensation from forming on the air ducts.

Maximum length of the air pipes L1 + L2 (L1 = air intake pipe; L2 = air outlet pipe)

Standard value	L1 + L2
Condition: Flexible pipes	10 m Note In addition to the total length, two 90° elbows can be added. Note In addition to the total length, two 90° elbows can be added.
Condition: Fixed pipes	20 m Note In addition to the total length, two 90° elbows can be added. Note In addition to the total length, two 90° elbows can be added.

Note

In an installation with rigid pipes, elbows, attachments and mesh create additional pressure losses in the air duct system that may correspond to five metres of straight pipe length per element. Make sure that the maximum permitted lengths are not exceeded with the elements used.



2. Protection devices must be installed at the openings of the air ducts to prevent water or foreign bodies from penetrating the pipelines (protective grille for vertical walls, roof terminals).
3. Always protect the product against modification or intervention in order to prevent water or foreign substances from penetrating as this may damage the pipes or other components.
4. Use a circulation pump with a throughput between 0.5 and 4 l/min.

16.8.2 Installing the complete pipe system

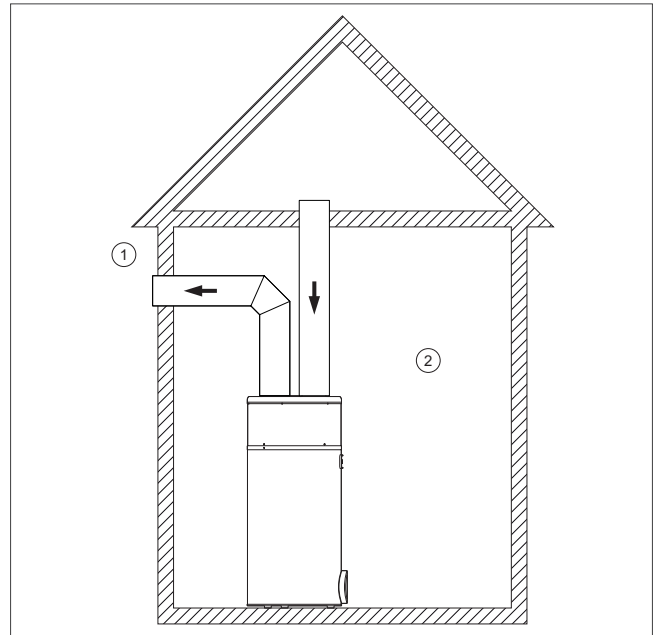


Fig. 690: Complete pipe system

- 1 External area
- 2 Internal area (heated or not heated)

The air inlet and outlet are located in the external area.

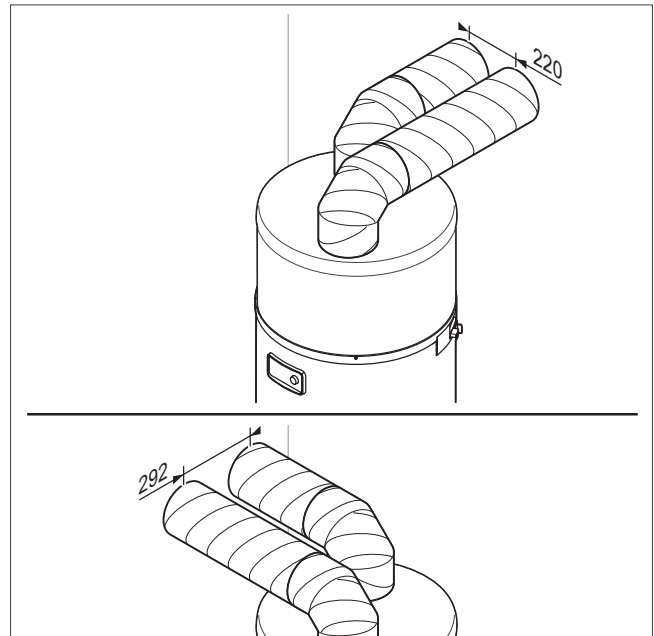


Fig. 691: The air inlet and outlet are located in the external area.

This installation type is particularly suitable for small rooms (supply or store room, etc.).

This configuration prevents the room to cool down and allows an unimpaired ventilation.

» In order to prevent leak air from being extracted by recirculation, maintain a clearance between the ends of the air pipes.

- Clearance: ≥ 220 mm

16.8.3 Installing the partial pipe system

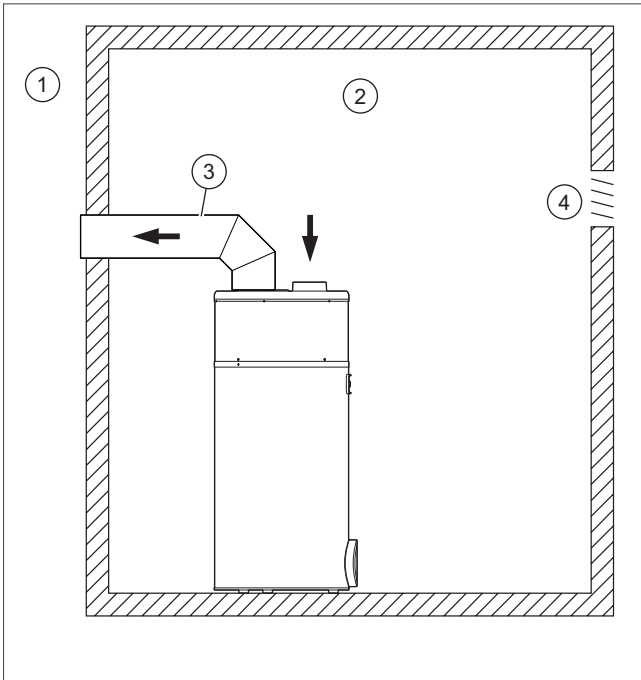


Fig. 692: Partial pipe system

- 1 External area
- 2 Internal area (heated or not heated)
- 3 Heat-insulated pipe (diameter ≥ 160 mm)
- 4 Ventilation

The hot air is drawn into the room and the cold air is released outside.

With this installation type, the room is used as an energy collector. The room is cooled by outdoor air which flows in via the ventilation openings.

- Room volume at installation site: ≥ 20 m³



Caution.
Risk of material damage due to condensation forming on the outside of the pipe.

The difference in temperature between the air flowing through the pipe and the air in the installation room can cause condensation to form on the outside surface of the pipe.

- > Use air pipes with suitable heat insulation.

- » Avoid having negative pressure in the installation room, so that air is not extracted from surrounding heated rooms.
- » Check whether the existing ventilation can compensate for the withdrawn air flow.
 - Air flow: ≥ 400 m³/h
- » Add to the withdrawn air flow the flow rate that is required for normal ventilation of the installation room.
- » If required, adjust the ventilation.

16.8.4 Installing without a pipework system

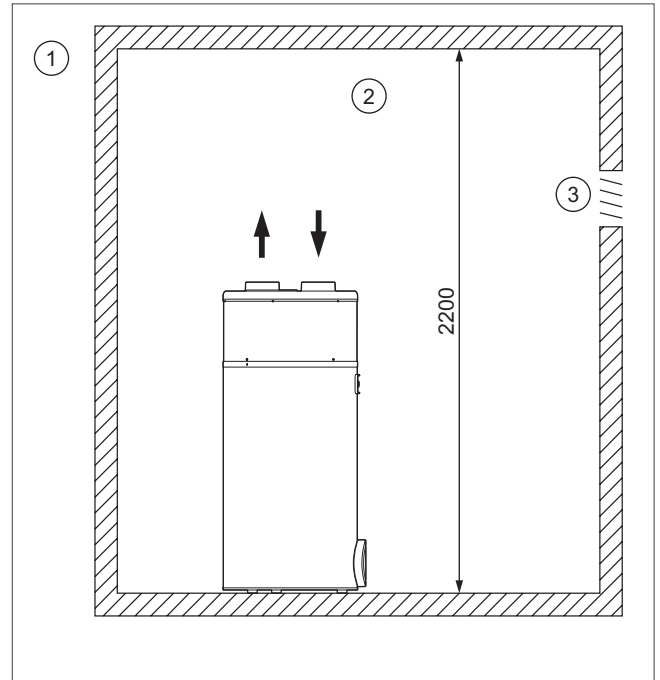


Fig. 693: Without the pipe system

- 1 External area
- 2 Internal area (heated or not heated)
- 3 Ventilation

The air is drawn into and conducted away from the same room.

With this installation type, the room is used as an energy collector. The room is cooled by the hot and cold air that the product emits.



Caution.
Risk of material damage caused by frost inside the house

Even at outdoor temperatures above 0 °C, there is a risk of frost in the installation room.

- > Use suitable heat insulation to protect pipelines and other elements in the installation room that are sensitive to cold.

To prevent the cold air emitted by the product from re-entering it, maintain the minimum clearance between the upper side of the product and the ceiling.

- Room volume at installation site: ≥ 20 m³
- Minimum room height: ≥ 2.20 m

16.9 Installing the water connections

16.9.1 Connecting the domestic hot water cylinder

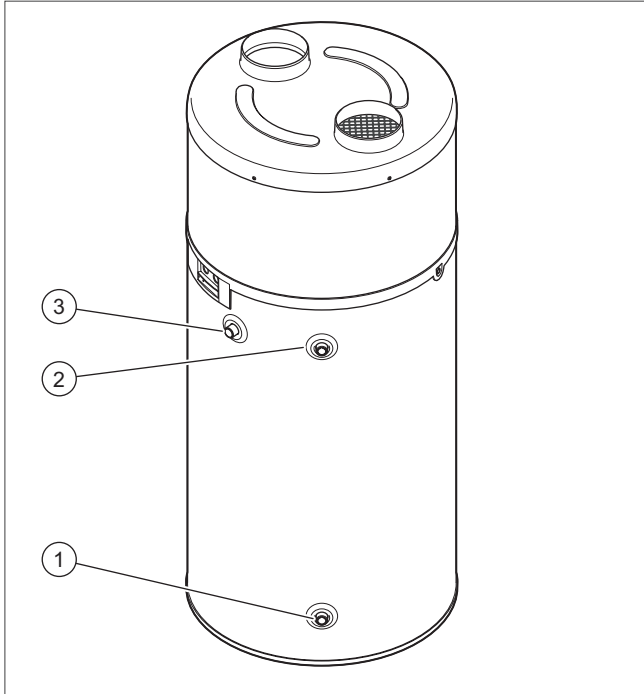


Fig. 694: Connecting the domestic hot water cylinder

» Use only dielectric connections (to be provided on-site) to connect the water-carrying lines in order to ensure galvanic partitioning.

1. Connect the cold water pipe (1).
2. Connect the domestic hot water flow to (2).
3. Carry out a leak-tightness check on all connections, including the domestic hot water circulation (3).

Note

The length of the lines must be as short as possible. The lines must have correct heat insulation in order to prevent heat losses and condensation. Unused lines must be removed.



Note

Information about the circulation circuit:
Restrict the running time of the circulation pump.

To prevent a complete mixing of the cylinder, do not connect the circulation circuit to the cold water inlet.



16.9.2 Connecting the condensate discharge pipe for 200 and 270 l

1. Observe the locally applicable rules and regulations on condensate discharge.

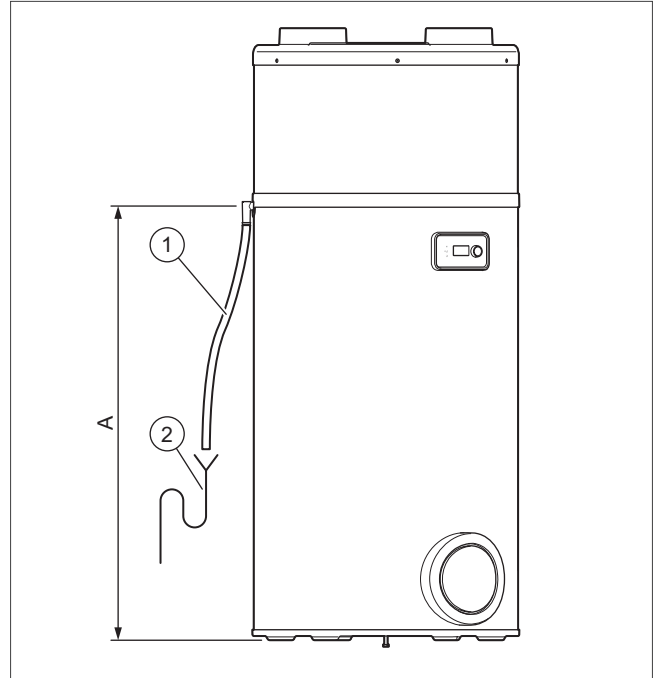


Fig. 695: Connecting the condensate discharge pipe

2. Connect the condensate discharge pipe (1) to a pre-installed drain siphon (2).

Cylinder height

Cylinder volume	Dimensions (A)
aroSTOR VWL B 200/5	1047 mm
aroSTOR VWL B 270/5	1367 mm

3. Route the condensate discharge pipe with a downward gradient and without any kinks.
4. Fill the drain siphon with water.
5. Leave a small clearance between the end of the condensate discharge pipe and the drain siphon.
6. Ensure that the connection between the condensate discharge pipe and the drain siphon is not air-tight.
7. Check whether the condensate drains off without any problems.



17. Product information for the aroSTOR VWL BM 200/5 and 270/5 domestic hot water heat pumps

17.1 Product combinations



Fig. 696: Product combinations

Product combination overview for the aroSTOR VWL BM 200/5 and 270/5

Domestic hot water heat pump	Control	Photovoltaics	Back-up boiler
aroSTOR (1) VWL BM 200/5 VWL BM 270/5	Integrated (2)	PV modules and inverters (3)	Gas or oil (4)
Domestic hot water generation with post-heating via a boiler	•	•	•

• Recommended / ◦ Recommended under certain circumstances / – Not recommended

17.2 aroSTOR VWL BM 200/5 and 270/5 product description



Fig. 697: aroSTOR VWL BM 200/5 and 270/5

17.2.1 Special features

- Domestic hot water temperatures of up to 60 °C possible in heat pump mode
- Up to 65 °C is possible with back-up heating
- Intelligent use of self-generated energy (PV)
- Free choice of target value for compressor operation when energy is generated using PV
- Boost function (single cylinder charging at maximum possible output)
- Plug-socket-ready connection cable
- Easy to install and integrate into existing heating installations

17.2.2 Equipment

- Pipe-coil heat exchanger for post-heating using a heat generator (gas, oil or solid fuel)
- 1.2 kW electric back-up heater
- Stainless steel cylinder material
- Premium-quality PU foam heat insulation

17.2.3 Potential applications

- Domestic hot water generation
- Potable water comfort for up to six people for central domestic hot water supply for flats and houses:
- 200 litres: 4-5 people
- 270 litres: 5-6 people

Typenübersicht

Gerätebezeichnung	Klasse der Warmwasserbereitungs-Energieeffizienz	Bestell-Nr.
aroSTOR VWL BM 200/5	A+ (A+ - F)	0010026818
aroSTOR VWL BM 270/5	A+ (A+ - F)	0010026819

17.3 Technical data

Technical data - General

	aroSTOR VWL BM 200/5	aroSTOR VWL BM 270/5
Nominal capacity	200 l	270 l
Outer diameter	634 mm	634 mm
Height	1,458 mm	1,783 mm
Net weight (unfilled)	60.5 kg	73.5 kg
Net weight (filled)	259.5 kg	342.5 kg
Material of the product container	Stainless steel	Stainless steel
Heat insulation	Polyurethane foam 50 mm	Polyurethane foam 50 mm
Corrosion protection	-	-
Maximum pressure in the drinking water circuit	0.6 MPa	0.6 MPa
Max. domestic hot water temperature with the heat pump	60 °C	60 °C
Max. hot water temperature with the additional electric heating	65 °C	65 °C
Max. domestic hot water temperature with the floor-standing boiler back-up heater	70 °C	70 °C

Technical data - Electrical specifications

	aroSTOR VWL BM 200/5	aroSTOR VWL BM 270/5
Voltage and frequency of the product's power supply	230 V - 50 Hz	230 V - 50 Hz
Max amperage of the power supply circuit	8 A	8 A
Length of the electrical cable supplied	1.5 m	1.5 m
Max. output	1,900 W	1,900 W
IP rating	IPX4	IPX4
Nominal heat output of the electric back-up heater	1,200 W	1,200 W
Heat input of the electric back-up heater	7 W/cm ²	7 W/cm ²
Fuse	8 A	8 A

Technical data - Hydraulic connections

	aroSTOR VWL BM 200/5	aroSTOR VWL BM 270/5
Connections for the domestic hot water circuit	3/4" outside thread, cylindrical	3/4" outside thread, cylindrical
Heat exchanger connections	M 3/4"	M 3/4"

Technical data - Specifications for the heat pump

* In accordance with EN 16147:2017

	aroSTOR VWL BM 200/5	aroSTOR VWL BM 270/5
Refrigerant type	R 290	R 290
Refrigerant volume for complete filling	0.15 kg	0.15 kg
Max. overpressure in the heat pump	2.5 MPa	2.5 MPa
Max. low pressure in the heat pump	1.5 MPa	1.5 MPa
Permitted air temperature	-7 to 45 °C	-7 to 45 °C
Max. air flow	400 m ³ /h	400 m ³ /h
Total length of the supply-air and extract-air pipe (piping laid in a straight line without elbows)	10 m	10 m
Sound pressure level, LpA, in 1 m clearance (V1/V2)	40/43 dB	40/43 dB
Sound power level, LWA, in 1 m clearance (V1/V2)	50/52 dB	50/52 dB

	aroSTOR VWL BM 200/5	aroSTOR VWL BM 270/5
Max. condensate flow rate	0.30 l/h	0.30 l/h
Nominal heat output of the heat pump (water temperature: 55 °C)	700 W	700 W
Nominal heat output of the heat pump (water temperature: 45 °C)	1,420 W	1,420 W
Coefficient of performance (COP _{DHW} (outdoor air temperature: 7 °C, extraction cycle: L)*	2.99	3.00
Maximum usable domestic hot water volume V_{max} (outdoor air temperature: 7 °C, extraction cycle: L)*	250.8 l	334.5 l
Reference domestic hot water temperature Θ'_{WH} (outdoor air temperature: 7 °C, extraction cycle: L)*	54.6 °C	53.7 °C
Heat-up time (environmental air temperature: 7 °C, extraction cycle: L)*	6.57 h	9.26 h
Power consumption during standby periods P_{es} (outdoor air temperature: 7 °C, extraction cycle: L)*	25 W	27 W

Technical data - heat exchanger

	aroSTOR VWL BM 200/5	aroSTOR VWL BM 270/5
Heat exchanger surface area	0.8 m ²	0.8 m ²
Heat output	20 kW	20 kW
Pressure loss	0.036 MPa	0.036 MPa
Flow rate quantity	2 m ³ /h	2 m ³ /h
Internal volume	3.9 l	3.9 l
Maximum possible cylinder temperature	70 °C	70 °C

17.4 Heat pump output curves

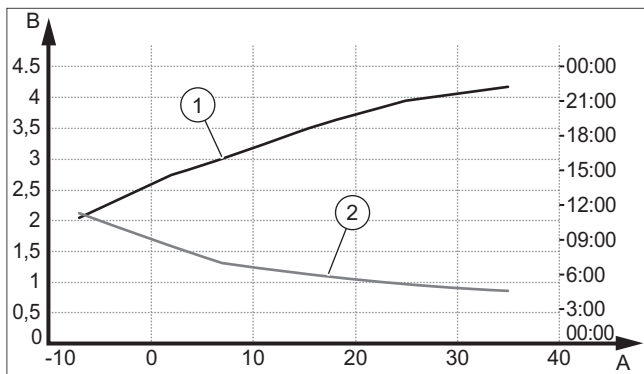


Fig. 698: Heat pump output curve

- A Air temperature in °C
 B Working figure (COP)
 1 COP at a cold water temperature of 10 °C for a target temperature of 55 °C (EN 16147:2017/extraction cycle L)
 2 Heating time at a water temperature of 10 °C for a target temperature of 55 °C (EN 16147:2017/extraction cycle L)

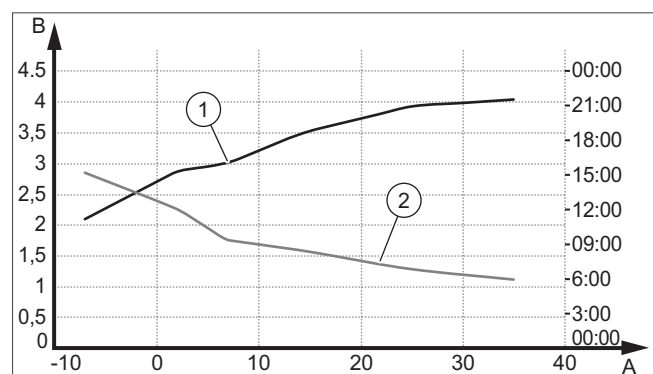


Fig. 699: Heat pump output curve

- A Air temperature in °C
 B Working figure (COP)
 1 COP at a cold water temperature of 10 °C for a target temperature of 55 °C (EN 16147:2017/extraction cycle L)
 2 Heating time at a water temperature of 10 °C for a target temperature of 55 °C (EN 16147:2017/extraction cycle L)

17.5 Product dimensions and connection dimensions

Validity: aroSTOR VWL BM 200/5, aroSTOR VWL BM 270/5

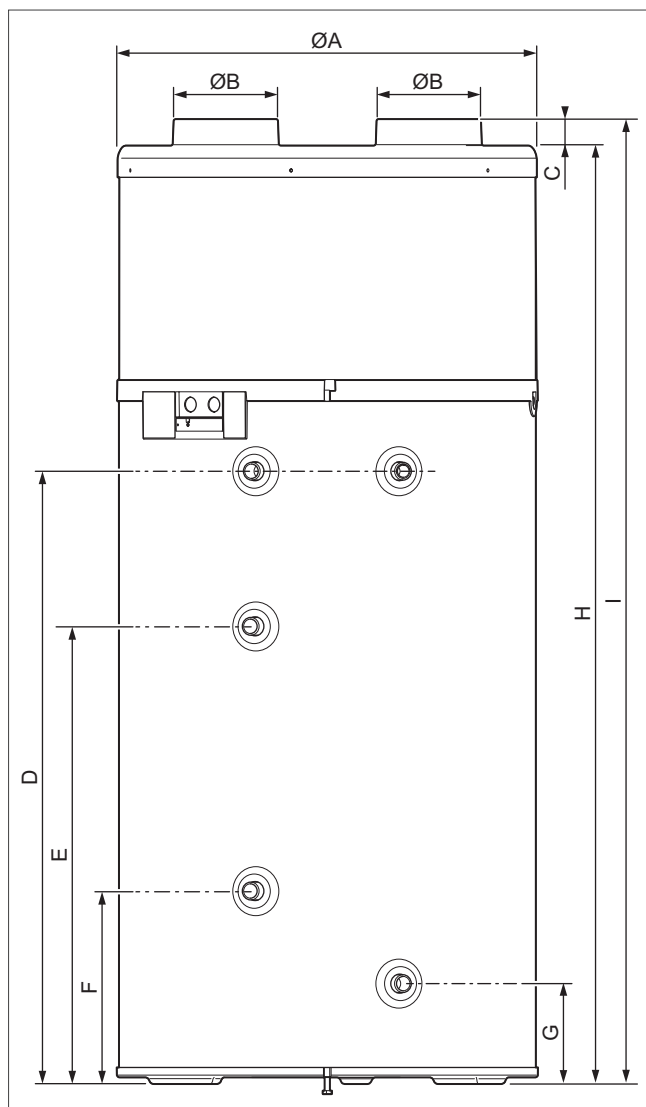


Fig. 700: Product dimensions and connection dimensions

	aroSTOR VWL BM 200/5	aroSTOR VWL BM 270/5
A	634 mm	634 mm
B	158 mm	158 mm
C	40 mm	40 mm
D	926 mm	1,254 mm
E	692 mm	688 mm
F	292 mm	288 mm
G	152 mm	152 mm
H	1,418 mm	1,743 mm
I	1,458 mm	1,783 mm

17.6 Minimum clearances

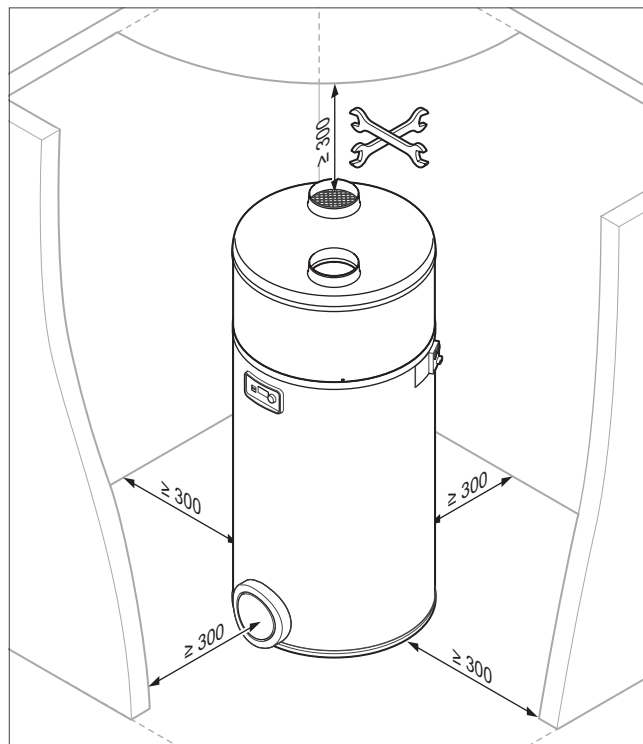


Fig. 701: Minimum clearances

1. To guarantee sufficient air flow and to facilitate maintenance work, observe the minimum clearances that are specified above.
2. Ensure that the cables are routed appropriately.

17.7 Requirements for the installation site

- » Select a dry room that is frost-proof throughout and in which the maximum installation height is not exceeded and the environmental temperature is neither above nor below the permitted range.
- » If the product is to operate as room-sealed, it must not come within 500 m of any coastline.
- » Do not place the product in the vicinity of another unit which could damage it (e.g. next to a unit which releases vapour or grease), or in a room with a high level of exposure to dust or in a corrosive environment.
- » Ensure that the required minimum clearances can be maintained.
- » When selecting the installation site, you must take into consideration that when the heat pump is in operation, it will transfer vibrations to the floor and the nearby walls.
- » In order to avoid noise disturbance, do not install the product near bedrooms.

17.8 Installing the air supply and air exhaust

17.8.1 Selecting air duct systems

Validity: Vaillant



Caution.
Risk of material damage caused by incorrect installation.

> Do not connect the product to extractor hoods.

1. Use only commercially available, insulated air ducts with suitable heat insulation, to prevent energy loss and condensation from forming on the air ducts.

Maximum length of the air pipes L1 + L2 (L1 = air intake pipe; L2 = air outlet pipe)

Standard value	L1 + L2
Condition: Flexible pipes	10 m Note In addition to the total length, two 90° elbows can be added. Note In addition to the total length, two 90° elbows can be added.
Condition: Fixed pipes	20 m Note In addition to the total length, two 90° elbows can be added. Note In addition to the total length, two 90° elbows can be added.

Note

In an installation with rigid pipes, elbows, attachments and mesh create additional pressure losses in the air duct system that may correspond to five metres of straight pipe length per element. Make sure that the maximum permitted lengths are not exceeded with the elements used.

2. Protection devices must be installed at the openings of the air ducts to prevent water or foreign bodies from penetrating the pipelines (protective grille for vertical walls, roof terminals).
3. Always protect the product against modification or intervention in order to prevent water or foreign substances from penetrating as this may damage the pipes or other components.
4. Use a circulation pump with a throughput between 0.5 and 4 l/min.

17.8.2 Installing the complete pipe system

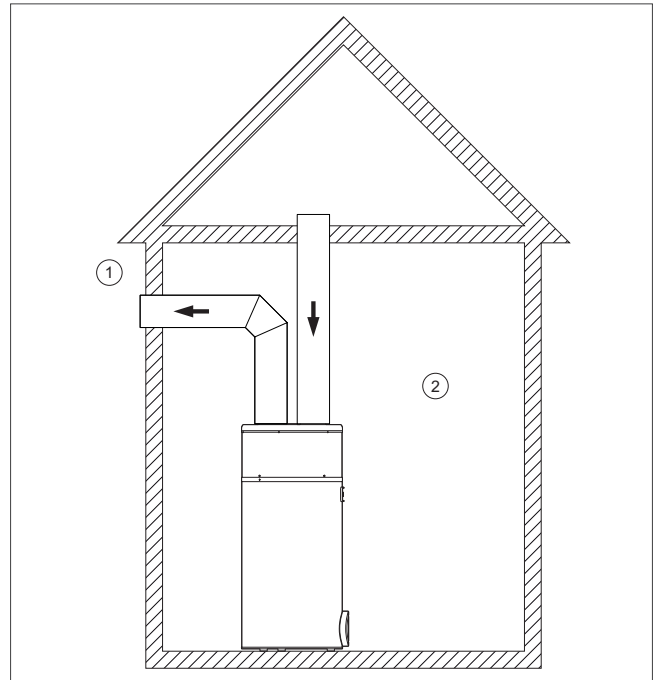


Fig. 702: Complete pipe system

- 1 External area
- 2 Internal area (heated or not heated)

The air inlet and outlet are located in the external area.

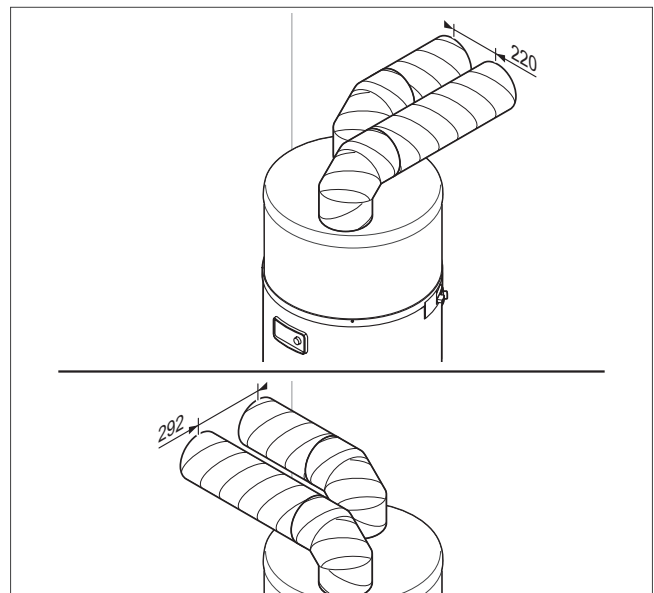


Fig. 703: The air inlet and outlet are located in the external area.

This installation type is particularly suitable for small rooms (supply or store room, etc.).

This configuration prevents the room to cool down and allows an unimpaired ventilation.

» In order to prevent leak air from being extracted by recirculation, maintain a clearance between the ends of the air pipes.

- Clearance: ≥ 220 mm

17.8.3 Installing the partial pipe system

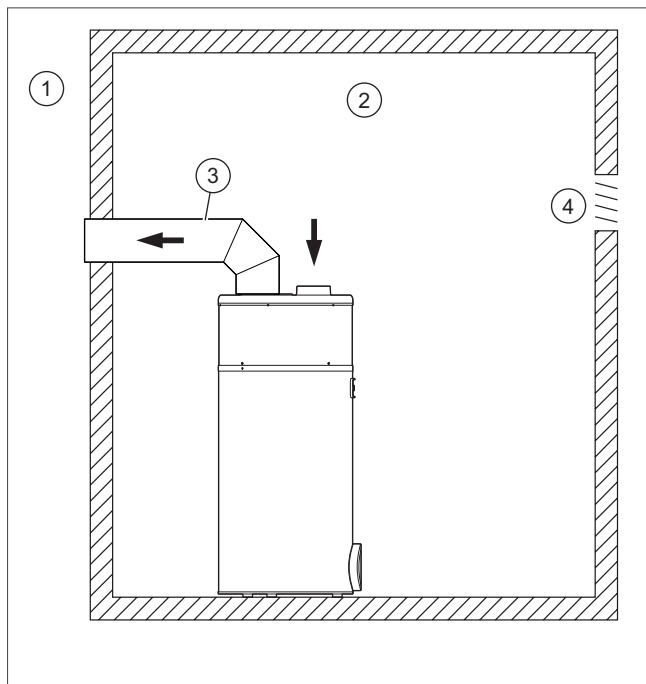


Fig. 704: Partial pipe system

- 1 External area
- 2 Internal area (heated or not heated)
- 3 Heat-insulated pipe (diameter ≥ 160 mm)
- 4 Ventilation

The hot air is drawn into the room and the cold air is released outside.

With this installation type, the room is used as an energy collector. The room is cooled by outdoor air which flows in via the ventilation openings.

- Room volume at installation site: ≥ 20 m³



Caution.

Risk of material damage due to condensation forming on the outside of the pipe.

The difference in temperature between the air flowing through the pipe and the air in the installation room can cause condensation to form on the outside surface of the pipe.

- > Use air pipes with suitable heat insulation.

- » Avoid having negative pressure in the installation room, so that air is not extracted from surrounding heated rooms.
- » Check whether the existing ventilation can compensate for the withdrawn air flow.
 - Air flow: ≥ 400 m³/h
- » Add to the withdrawn air flow the flow rate that is required for normal ventilation of the installation room.
- » If required, adjust the ventilation.

17.8.4 Installing without a pipework system

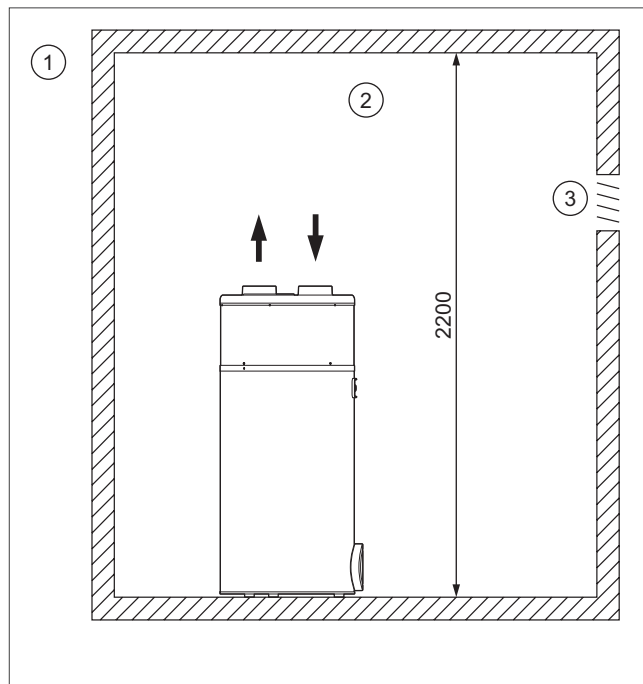


Fig. 705: Without the pipe system

- 1 External area
- 2 Internal area (heated or not heated)
- 3 Ventilation

The air is drawn into and conducted away from the same room.

With this installation type, the room is used as an energy collector. The room is cooled by the hot and cold air that the product emits.



Caution.

Risk of material damage caused by frost inside the house

Even at outdoor temperatures above 0 °C, there is a risk of frost in the installation room.

- > Use suitable heat insulation to protect pipelines and other elements in the installation room that are sensitive to cold.

To prevent the cold air emitted by the product from re-entering it, maintain the minimum clearance between the upper side of the product and the ceiling.

- Room volume at installation site: ≥ 20 m³
- Minimum room height: ≥ 2.20 m

17.9 Installing the water connections

17.9.1 Connecting the pipe coil cylinder

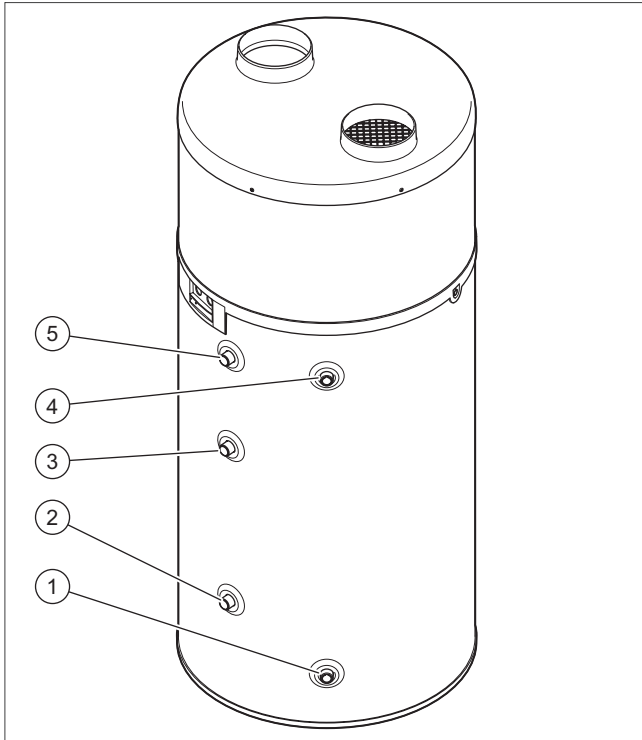


Fig. 706: Connecting the pipe coil cylinder

1. Use only dielectric connections (to be provided on-site) to connect the water-carrying lines in order to ensure galvanic partitioning.

Note

The length of the lines must be as short as possible. The lines must have correct heat insulation in order to prevent heat losses and condensation.



2. Connect the cold water pipe (1).
3. Connect the domestic hot water flow to (4).
4. Carry out a leak-tightness check on all connections.

17.9.2 Connecting the condensate discharge pipe for 200 and 270 l

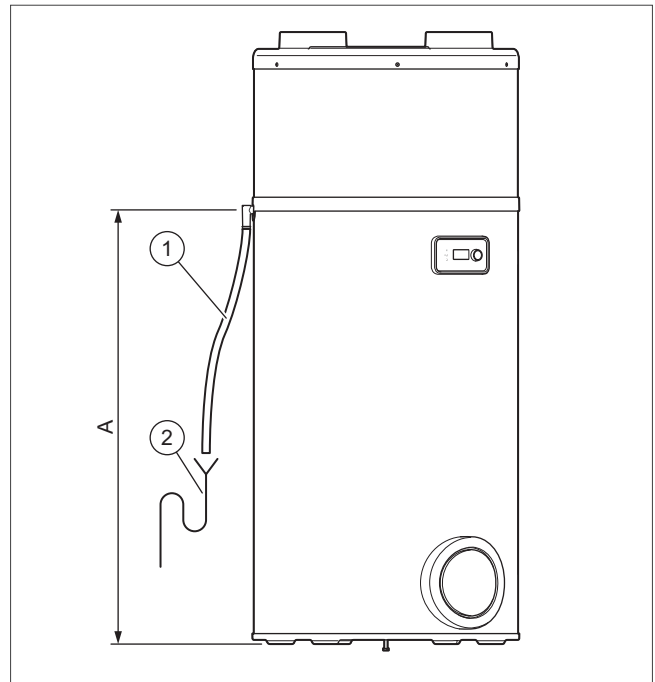


Fig. 707: Connecting the condensate discharge pipe for 270 l

1. Connect the condensate discharge pipe (1) to a pre-installed drain siphon (2).

Cylinder height

Cylinder volume	Dimensions (A)
aroSTOR VWL BM 200/5	1047 mm
aroSTOR VWL BM 270/5	1367 mm

2. Route the condensate discharge pipe with a downward gradient and without any kinks.
3. Fill the drain siphon with water.
4. Leave a small clearance between the end of the condensate discharge pipe and the drain siphon.
5. Ensure that the connection between the condensate discharge pipe and the drain siphon is not air-tight.
6. Check whether the condensate drains off without any problems.

17.10 Basic hydraulic and wiring diagrams

17.10.1 Key of the basic hydraulic and wiring diagrams

Number	Designation
1	Heat generator
1a	Domestic hot water back-up boiler
1b	Heating back-up boiler
1c	Heating/domestic hot water back-up boiler
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air/brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Split heat pump inner unit
2e	Groundwater module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Heat exchanger pump
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder (tank in tank)
5d	Multi-functional buffer cylinder
5e	uniTOWER
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump unit
7c	Domestic hot water station
7d	Home unit

Number	Designation
7e	Hydraulic block
7f	Hydraulic module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly - potable water connection
8d	Boiler safety group
8e	Heating diaphragm expansion vessel
8f	Domestic hot water diaphragm expansion vessel
8g	Solar/brine diaphragm expansion vessel
8h	Solar in-line vessel
8i	Thermal discharge safety device
9a	Individual room control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Domestic hot water generation prioritising diverter valve
9f	Cooling prioritising diverter valve
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-way mixer
9l	Cooling 3-port mixing valve
9m	Increase in return flow for 3-way mixer
9n	Thermostatic mixing valve
9o	Flow meter (Taco setter)
9p	Cascade valve
10a	Thermometer
10b	Pressure gauge
10c	non-return valve
10d	Air separator
10e	Dirt trap with magnetite separator
10f	Solar/brine collecting container
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections









Number	Designation
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control unit
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Expansion/mixer module
12e	Main expansion module
12f	Wiring box
12g	eBUS bus coupler
12h	Solar controller
12i	External controller
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature limiter
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBUS power supply unit
12p	Radio receiver unit
12q	Internet gateway
Electrics	
BufTop	Top temperature sensor of buffer cylinder
BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBT	Bottom cylinder temperature sensor (DHW cylinder)
EVU	Energy supply company switching contact
FS	Flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	PV interface to PV inverter
RT	Room thermostat
SCA	Cooling signal

Number	Designation
SG	Transmission system operator interface
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch input for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn)

17.10.2 Overview of the basic hydraulic and wiring diagrams

The basic hydraulic and wiring diagrams for the product group are shown below.

Basic system diagram	Heat generator	Control system	Heating circuits		System separation	Solar system		Domestic hot water
			 regulated	 direct		 Domestic hot water	 Heating	
0020220318	ecoVIT	VRC 700	-	1 HC	-	-	-	aroSTOR

0020220318 - Basic hydraulic diagram

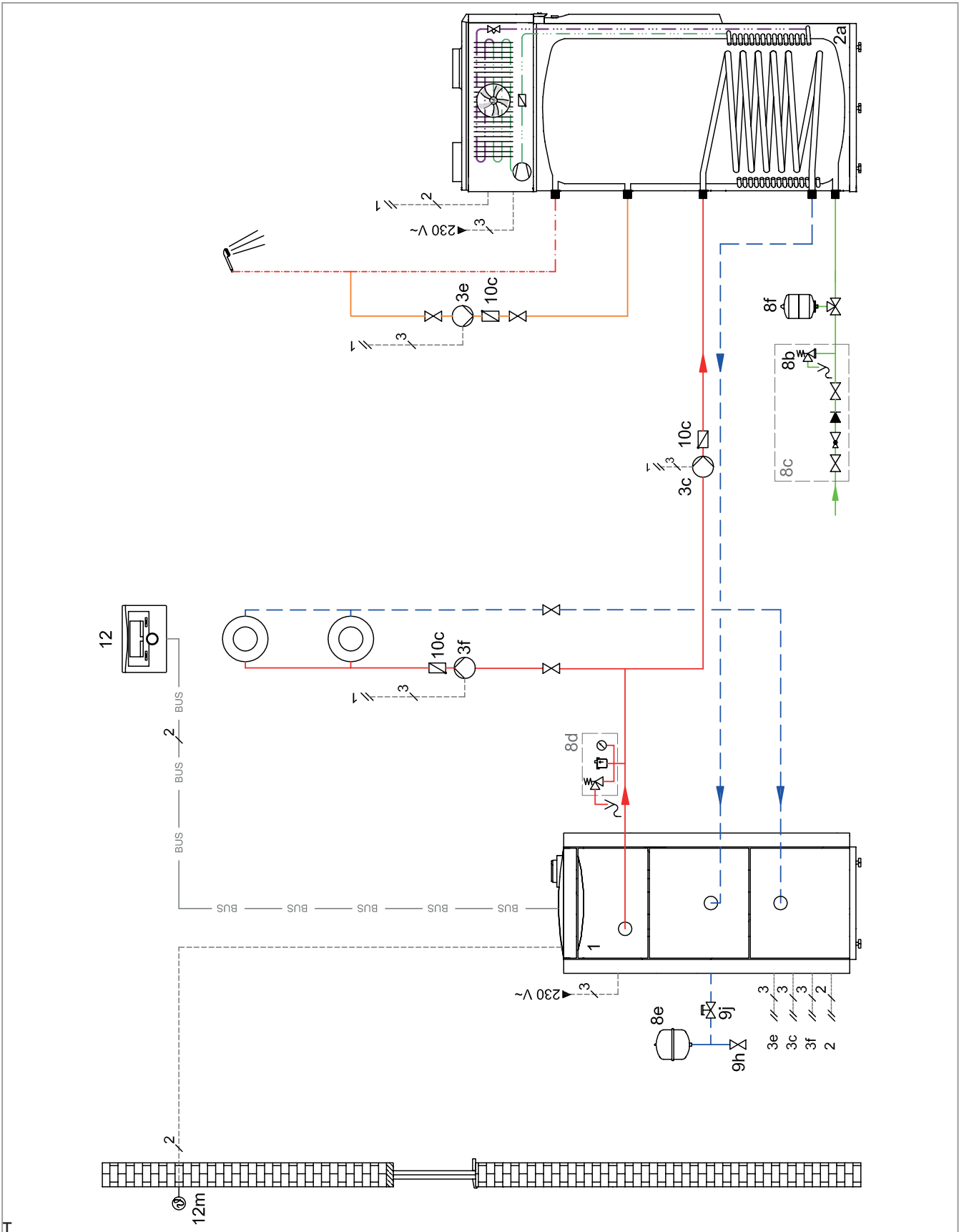


Fig 708: Basic hydraulic plan

0020220318 - Wiring diagram

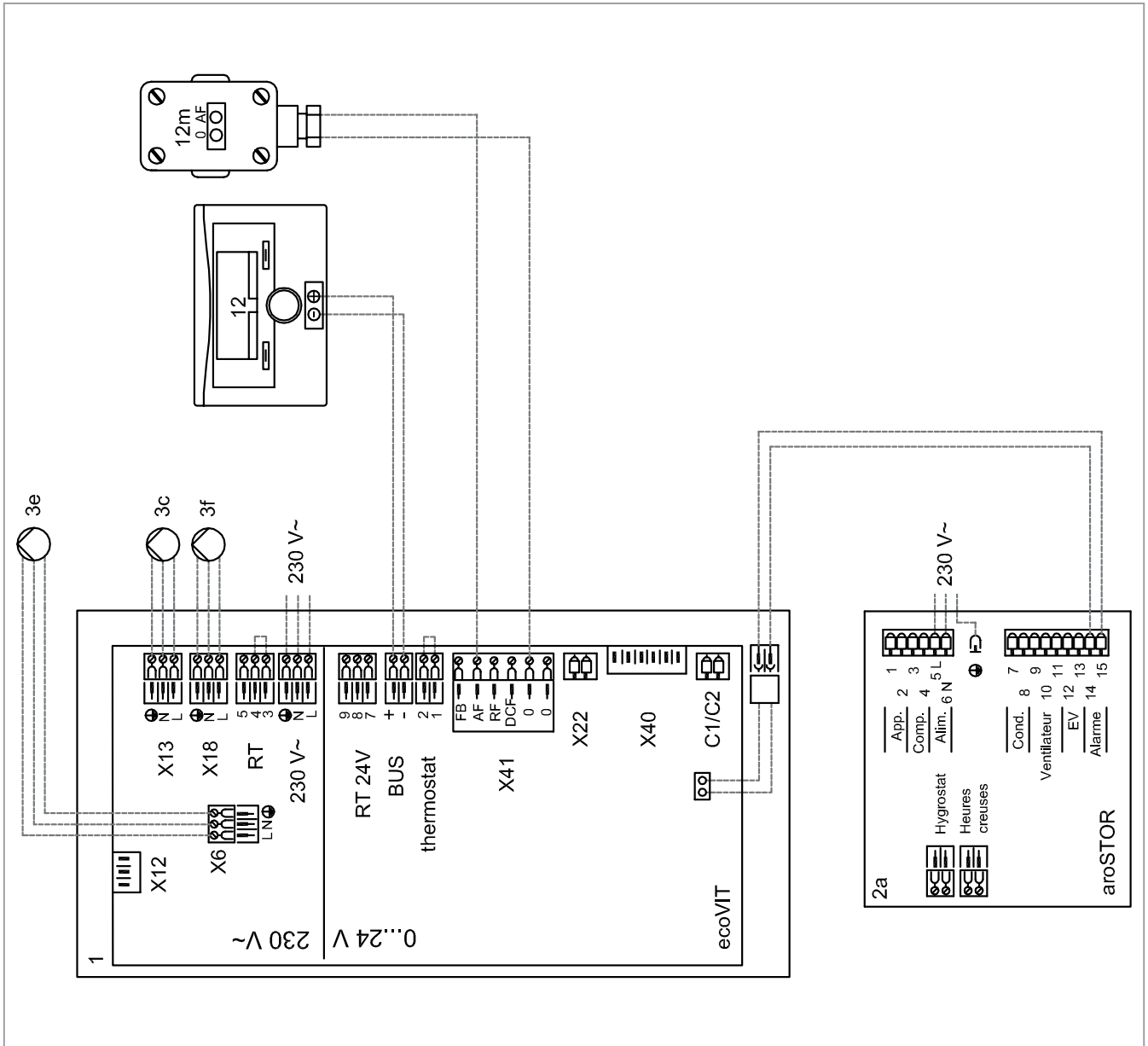


Fig 709: Wiring diagram

Description

Houses with one non-mixed heating circuit.

Caution: The domestic hot water user settings must be applied on the domestic hot water heat pump. Process hot water heat pump. -Backup: BOIL.BACKP.

Individual components

- aroSTOR VWL
- ecoVIT
- VRC 700

Setting

VRC 700 system diagram setting: 1



18. Buffer cylinder

Update 10
New product overview

18.1 Product overview for the buffer cylinder



Fig. 710: Buffer cylinder - Product overview

		Buffer cylinder heating	Buffer cylinder cooling	Wall-hung/installed on the cylinder	Floor-standing	Heating pressure rating
	Multifunctional cylinder aIISTOR exclusiv					
1	VPS 300/3-7 - 2000/3-7	•	–	–	•	3 bar
	Multifunctional cylinder aIISTOR plus					
2	VPS 300/3-5 - 2000/3-5	•	–	–	•	3 bar
2	VPS 800/4-5 - 2000/4-5	•	–	–	•	6 bar
	Buffer cylinder					
3	VP RW 45/2 B	•	•	•	–	3 bar
4	VPS R 100/1 M	•	•	•	•	3 bar
5	VPS R 200/1 B	•	•	–	•	3 bar
	Integrated buffer cylinder					
6	18 l integrated buffer cylinder for unitOWER	•	–	•	–	3 bar

18.2 Vaillant Buffer cylinder – Overview

Vaillant heating buffer cylinder - Overview

		uniTOWER (plus) incl. 18 l buffer module				Buffer cylinder			Buffer cylinder					
		VIH QW 190/1	VIH QW 190/6 E	VWL 58/5 IS	VWL 78/5 IS	VP RW 45/2 B at 35 °C flow	VP RW 45/2 B at 45 °C flow	VP RW 45/2 B at 55 °C flow	VPS R 100/1 M at 35 °C flow	VPS R 100/1 M at 45 °C flow	VPS R 100/1 M at 55 °C flow	VPS R 200/1 B at 35 °C flow	VPS R 200/1 B at 45 °C flow	VPS R 200/1 B at 55 °C flow
flexoCOMPACT Brine-to-water 5,2 - 11,3 kW	VWF 58/4	-	-	-	-	•	•	-	-	•	•	-	-	•
	VWF 88/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 118/4	-	-	-	-	•	-	-	-	•	-	-	-	•
flexoCOMPACT Air-to-waterr 5,4 - 9,6 kW	VWF 58/4	-	-	-	-	•	•	-	-	•	•	-	-	•
	VWF 88/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 118/4	-	-	-	-	•	-	-	-	•	-	-	-	•
flexoCOMPACT Water-to-water 6,3 - 13,5 kW	VWF 58/4	-	-	-	-	•	•	-	-	•	•	-	-	•
	VWF 88/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 118/4	-	-	-	-	•	-	-	-	•	-	-	-	•
flexoTHERM Brine-to-water 5,2 - 19,3 kW	VWF 57/4	-	-	-	-	•	•	-	-	•	•	-	-	•
	VWF 87/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 117/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 157/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 197/4	-	-	-	-	-	-	-	-	•	-	-	-	-
flexoTHERM Air-to-waterr 5,4 - 17,9 kW	VWF 57/4	-	-	-	-	•	•	-	-	•	•	-	-	•
	VWF 87/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 117/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 157/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 197/4	-	-	-	-	•	•	-	-	•	•	-	-	•
flexoTHERM Water-to-water 6,3 - 23,4 kW	VWF 57/4	-	-	-	-	•	•	-	-	•	•	-	-	•
	VWF 87/4	-	-	-	-	•	•	-	-	•	-	-	-	•
	VWF 117/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 157/4	-	-	-	-	•	-	-	-	•	-	-	-	•
	VWF 197/4	-	-	-	-	-	-	-	-	•	-	-	-	-
aroTHERM Air-to-water 5,0 - 12,0 kW	VWL 55/3	•	-	-	-	-	•	•	-	•	•	•	•	•
	VWL 85/3	•	-	-	-	•	•	•	-	•	•	•	•	•
	VWL 115/2	-	-	-	-	•	•	•	-	•	•	•	•	•
	VWL 155/2	-	-	-	-	-	-	-	-	•	•	•	•	•
aroTHERM Split Air-to-water 3,0 kW - 12,0 kW	VWL 35/5 AS	-	-	•	-	•	•	•	-	o	o	o	o	o
	VWL 55/5 AS	-	-	•	-	•	•	•	-	o	o	o	o	o
	VWL 75/5 AS	-	-	-	•	•	•	•	-	o	o	o	o	o
	VWL 105/5 AS	-	-	-	-	•	•	-	-	o	o	o	o	o
	VWL 125/5 AS	-	-	-	-	•	•	-	-	o	o	o	o	o
aroTHERM plus Air-to-water 3,0 kW - 12,0 kW	VWL 35/6 A	-	•	-	-	•	•	•	-	o	o	o	o	o
	VWL 55/6 A	-	•	-	-	•	•	•	-	o	o	o	o	o
	VWL 65/6 A	-	•	-	-	•	•	•	-	o	o	o	o	o
	VWL 75/6 A	-	•	-	-	•	•	•	-	o	o	o	o	o
	VWL 105/6 A	-	-	-	-	•	•	-	-	o	o	o	o	o
	VWL 125/6 A	-	-	-	-	•	•	-	-	o	o	o	o	o
versoTHERM Air-to-water 3,5 kW - 6,6 kW	VWL 37/5	-	-	-	-	-	-	•	-	o	o	o	o	o
	VWL 57/5	-	-	-	-	-	-	•	-	o	o	o	o	o
	VWL 77/5	-	-	-	-	-	•	•	-	o	o	o	o	o
geoTHERM Brine-to-water (2,5 kW)	VWS 36/4.1	•	•	-	-	-	-	-	-	-	-	-	-	-
aroTHERM perform Air-to-water 18 - 25 kW	VWL 185/3	-	-	-	-	-	-	-	-	-	-	-	-	-
	VWL 255/3	-	-	-	-	-	-	-	-	-	-	-	-	-
geoTHERM perform Brine-to-water 26 - 78 kW	VWS 260/3	-	-	-	-	-	-	-	-	-	-	-	-	-
	VWL 780/3	-	-	-	-	-	-	-	-	-	-	-	-	-

• Recommended / o Recommended under certain circumstances / - Not recommended

Vaillant heating buffer cylinder - Overview

		allSTOR exclusiv						allSTOR plus						allSTOR plus (6 bar)			
		VPS 300 / 3-7	VPS 500 / 3-7	VPS 800 / 3-7	VPS 1000 / 3-7	VPS 1500 / 3-7	VPS 2000 / 3-7	VPS 300 / 3-5	VPS 500 / 3-5	VPS 800 / 3-5	VPS 1000 / 3-5	VPS 1500 / 3-5	VPS 2000 / 3-5	VPS 800 / 3-5	VPS 1000 / 3-5	VPS 1500 / 3-5	VPS 2000 / 3-5
flexoCOMPACT Brine-to-water 5,2 - 11,3 kW	VWF 58/4	-	-	-	-	-	-	•	•	•	-	-	-	•	-	-	-
	VWF 88/4	-	-	-	-	-	-	o	•	•	-	-	-	•	-	-	-
	VWF 118/4	-	-	-	-	-	-	-	•	•	-	-	-	•	-	-	-
flexoCOMPACT Air-to-waterr 5,4 - 9,6 kW	VWF 58/4	-	-	-	-	-	-	•	•	•	-	-	-	•	-	-	-
	VWF 88/4	-	-	-	-	-	-	o	•	•	-	-	-	•	-	-	-
	VWF 118/4	-	-	-	-	-	-	-	•	•	-	-	-	•	-	-	-
flexoCOMPACT Water-to-water 6,3 - 13,5 kW	VWF 58/4	-	-	-	-	-	-	•	•	•	-	-	-	•	-	-	-
	VWF 88/4	-	-	-	-	-	-	o	•	•	-	-	-	•	-	-	-
	VWF 118/4	-	-	-	-	-	-	-	•	•	-	-	-	•	-	-	-
flexoTHERM Brine-to-water 5,2 - 19,3 kW	VWF 57/4	•	o	o	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWF 87/4	o	•	o	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWF 117/4	-	o	•	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWF 157/4	-	o	•	•	o	o	o	•	o	o	o	o	o	o	o	o
	VWF 197/4	-	-	o	•	•	o	o	•	•	o	o	o	o	•	o	o
flexoTHERM Air-to-waterr 5,4 - 17,9 kW	VWF 57/4	•	o	o	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWF 87/4	o	•	o	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWF 117/4	-	o	•	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWF 157/4	-	o	•	•	o	o	o	•	o	o	o	o	o	o	o	o
	VWF 197/4	-	-	o	•	•	o	o	•	•	o	o	o	o	•	o	o
flexoTHERM Water-to-water 6,3 - 23,4 kW	VWF 57/4	•	o	o	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWF 87/4	o	•	o	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWF 117/4	-	o	•	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWF 157/4	-	o	•	•	o	o	o	•	o	o	o	o	o	o	o	o
	VWF 197/4	-	-	o	•	•	o	o	•	•	o	o	o	o	•	o	o
aroTHERM Air-to-water 5,0 - 12,0 kW	VWL 55/3	•	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
	VWL 85/3	o	•	o	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWL 115/2	o	•	•	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWL 155/2	o	o	•	•	o	o	•	•	o	o	o	o	o	o	o	o
aroTHERM Split Air-to-water 3,0 kW - 12,0 kW	VWL 35/5 AS	•	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
	VWL 55/5 AS	•		o	o	o	o	o	o	o	o	o	o	o	o	o	o
	VWL 75/5 AS	o	•	o	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWL 105/5 AS	o	•	•	o	o	o	•	o	o	o	o	o	o	o	o	o
aroTHERM plus Air-to-water 3,0 kW - 12,0 kW	VWL 125/5 AS	o	o	•	•	o	o	•	•	o	o	o	o	o	o	o	o
	VWL 35/6 A	•	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
	VWL 55/6 A	•	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
	VWL 65/6 A	o	•	o	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWL 75/6 A	o	•	o	o	o	o	•	o	o	o	o	o	o	o	o	o
versoTHERM Air-to-water 3,5 kW - 6,6 kW	VWL 105/6 A	o	•	•	o	o	o	•	o	o	o	o	o	o	o	o	o
	VWL 125/6 A	o	o	•	•	o	o	•	•	o	o	o	o	o	o	o	o
	VWL 37/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
geoTHERM Brine-to-water (2,5 kW)	VWL 57/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VWL 77/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VWS 36/4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
aroTHERM perform Air-to-water 18 - 25 kW	VWL 185/3	-	-	•	o	o	o	-	•	o	o	o	o	•	o	o	o
	VWL 255/3	-	-	•	o	o	o	-	•	o	o	o	o	•	o	o	o
geoTHERM perform Brine-to-water 26 - 78 kW	VWS 260/3	-	-	•	o	o	o	-	•	o	o	o	o	•	o	o	o
	VWS 400/3	-	-	-	•	o	o	-	•	o	o	o	o	•	o	o	o
	VWL 780/3	-	-	-	-	•	o	-	-	•	o	o	o	•	o	o	o

• Recommended / o Recommended under certain circumstances / - Not recommended

Vaillant cooling buffer cylinder - Overview

		Buffer cylinder		Buffer cylinder			
		VP RW 45/2 B at 10 °C flow	VP RW 45/2 B at 18 °C flow	VPS R 100/1 M at 10 °C flow	VPS R 100/1 M at 18 °C flow	VPS R 200/1 B at 10 °C flow	VPS R 200/1 B at 18 °C flow
flexoCOMPACT Brine-to-water 5,2 - 11,3 kW	VWF 58/4	–	•	•	•	•	•
	VWF 88/4	–	•	–	•	•	•
	VWF 118/4	–	•	–	•	–	•
flexoCOMPACT Air-to-waterr 5,4 - 9,6 kW	VWF 58/4	–	•	•	•	•	•
	VWF 88/4	–	•	–	•	•	•
	VWF 118/4	–	•	–	•	•	•
flexoCOMPACT Water-to-water 6,3 - 13,5 kW	VWF 58/4	–	•	•	•	•	•
	VWF 88/4	–	•	–	•	•	•
	VWF 118/4	–	•	–	•	–	•
flexoTHERM Brine-to-water 5,2 - 19,3 kW	VWF 57/4	–	•	•	•	•	•
	VWF 87/4	–	•	–	•	•	•
	VWF 117/4	–	•	–	•	–	•
	VWF 157/4	–	–	–	•	–	•
	VWF 197/4	–	–	–	•	–	•
flexoTHERM Air-to-waterr 5,4 - 17,9 kW	VWF 57/4	–	•	•	•	•	•
	VWF 87/4	–	•	–	•	•	•
	VWF 117/4	–	•	–	•	•	•
	VWF 157/4	–	•	–	•	–	•
	VWF 197/4	–	–	–	•	–	•
flexoTHERM Water-to-water 6,3 - 23,4 kW	VWF 57/4	–	•	•	•	•	•
	VWF 87/4	–	•	–	•	•	•
	VWF 117/4	–	–	–	•	–	•
	VWF 157/4	–	–	–	•	–	•
	VWF 197/4	–	–	–	•	–	•
aroTHERM Air-to-waterr 5,0 - 12,0 kW	VWL 55/3	•	•	•	•	•	•
	VWL 85/3	•	•	•	•	•	•
	VWL 115/2	•	•	•	•	•	•
	VWL 155/2	•	•	•	•	•	•
aroTHERM Split Air-to-water 3,0 kW - 12,0 kW	VWL 35/5 AS	•	•	○	○	○	○
	VWL 55/5 AS	•	•	○	○	○	○
	VWL 75/5 AS	–	•	•	○	○	○
	VWL 105/5 AS	–	•	•	○	○	○
	VWL 125/5 AS	–	•	•	○	○	○
aroTHERM plus Air-to-water 3,0 kW - 12,0 kW	VWL 35/6 A	•	•	○	○	○	○
	VWL 55/6 A	•	•	○	○	○	○
	VWL 65/6 A	–	•	•	○	○	○
	VWL 75/6 A	–	•	•	○	○	○
	VWL 105/6 A	–	–	•	•	○	○
	VWL 125/6 A	–	–	•	•	○	○
versoTHERM Air-to-water 3,5 kW - 6,6 kW	VWL 37/5	•	•	○	○	○	○
	VWL 57/5	•	•	○	○	○	○
	VWL 77/5	–	•	•	○	○	○
geoTHERM Brine-to-water (2,5 kW)	VWS 36/4.1	–	–	–	–	–	–
aroTHERM perform Air-to-water 18 - 25 kW	VWL 185/3	–	–	–	–	–	–
	VWL 255/3	–	–	–	–	–	–
geoTHERM perform Brine-to-water 26 - 78 kW	VWS 260/3	–	–	–	–	–	–
	VWS 400/3	–	–	–	–	–	–
	VWL 780/3	–	–	–	–	–	–

• Recommended / ○ Recommended under certain circumstances / – Not recommended

18.3 Product description for the 18 l integrated buffer cylinder



Fig. 711: Buffer cylinder, 18 l

18.3.1 Potential applications

The buffer cylinder is used as a return flow series cylinder. It increases the water volume in the heating installation and therefore extends the heat pump's running time.

It can be used as a cylinder for heating water or cooling water, depending on the demand. Vapour-diffusion insulation makes it possible to buffer cooling water. The buffer volume is also used to de-ice the evaporator of ice which may form in the outdoor unit.

Intermediate heat exchanger for the following outputs:

Output ranges	Order no.
Heat pumps, up to 7 kW	0020269273

18.3.2 Technical data

	Buffer module
Total contents of cylinder	18 l
Maximum operating pressure	3.0 bar
Minimum operating pressure	0.5 bar
Maximum heating temperature	95 °C
Minimum heating temperature	5 °C
Hydraulic connection as	Return flow series cylinder
Insulation	Vapour diffusion-tight

18.4 Product description for the VP RW 45/2 B buffer cylinder



Fig. 712: VP RW 45/2 B buffer cylinder

Product types and article numbers

Unit designation	ErP label (range)	Cylinder capacity in l	Order no.
VR RW 45/2 B	B	45	0010034126

18.4.1 Equipment

- Multiple connection options for flow and return
- Secondary-side connectors for the flow and return of the heating circuits
- Inlet panels for optimising the distribution in the cylinder
- Optional temperature sensor
- Cylinder volume 45 l
- Diffusion-tight cold insulation with ErP Label B

18.4.2 Potential applications

The buffer cylinder can be used to hydraulically separate the heat pump and heating installation. This ensures that a minimum circulation water volume is always maintained even with sealed underfloor circuits.

In a heating system that operates in bivalent mode, the additional boiler can be hydraulically connected to the buffer cylinder. It can also be used as a return flow sequence cylinder. As such, it serves to increase the water volume in the heating installation and thus extend the running time of the heat pump.

The buffer cylinder is used as a cylinder for heating water or cooling water, depending on the requirement. Vapour-diffusion insulation makes it possible to buffer cooling water.

18.4.3 Technical data

	Value
Nominal capacity	45 l
Outer diameter of the cylinder	365 mm
Diameter incl. insulation caps	467 mm
Height of the cylinder	888 mm
Height of the cylinder incl. insulation caps	939 mm
Net weight	24 kg
Weight when filled with water	71 kg
Material of the cylinder and the connections	Steel
Cylinder standby heat loss	0.94 kWh/24 hrs
Water pressure range	0.1 to 0.3 MPa
Maximum operating temperature	85 °C
Minimum operating temperature	5 °C
Diameter of the hydraulic connections	G 1 1/4"
Diameter of the sensor pocket	G 1/2"

18.4.4 Product dimensions and connection dimensions

Dimensions

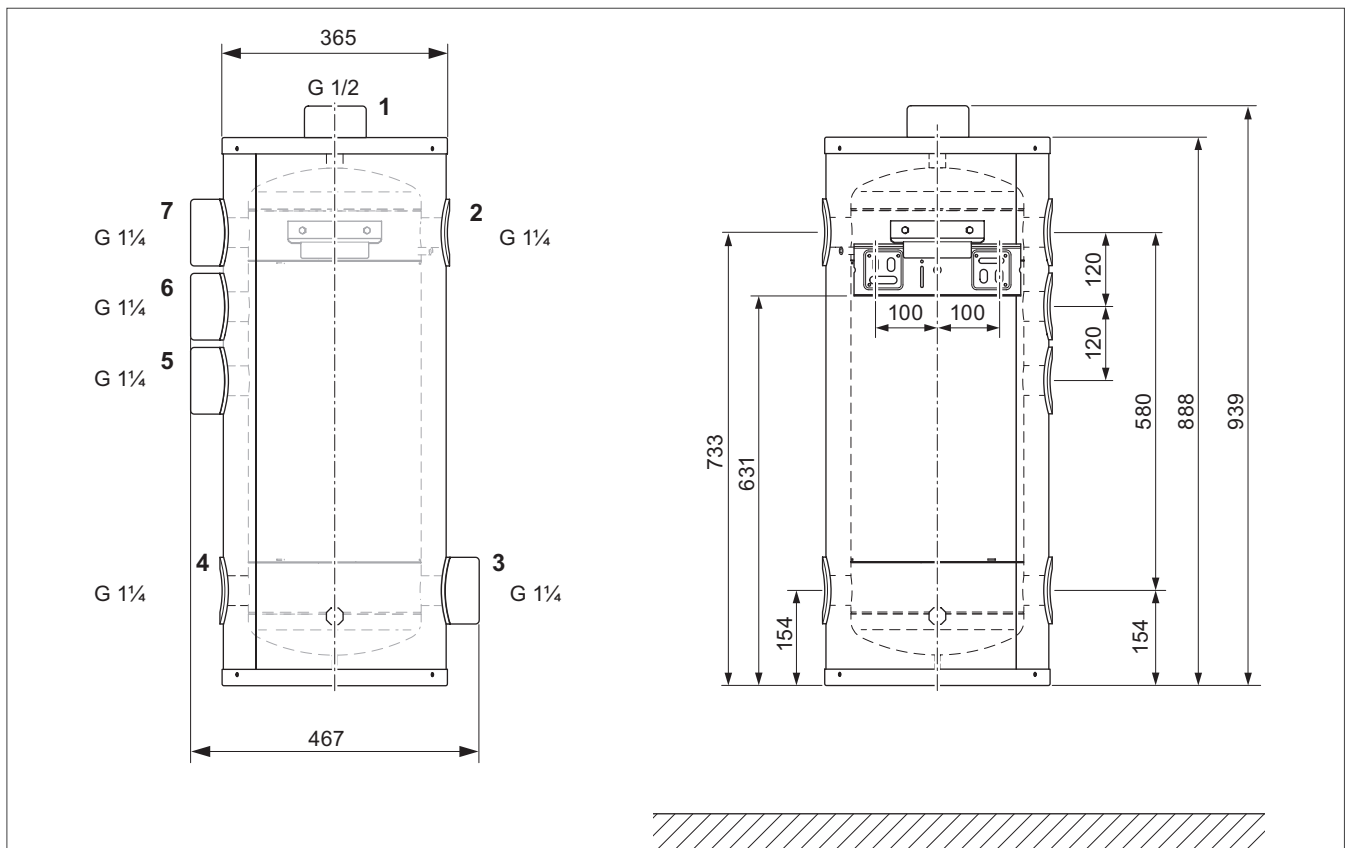


Fig. 713: Dimensions

- 1 Air vent connection
- 2 Depending on the hydraulic connection
- 3 Depending on the hydraulic connection
- 4 Depending on the hydraulic connection
- 5 Depending on the hydraulic connection
- 6 Depending on the hydraulic connection
- 7 Depending on the hydraulic connection

Required minimum clearances

For the installation and maintenance, the following minimum clearances and installation clearances are recommended:

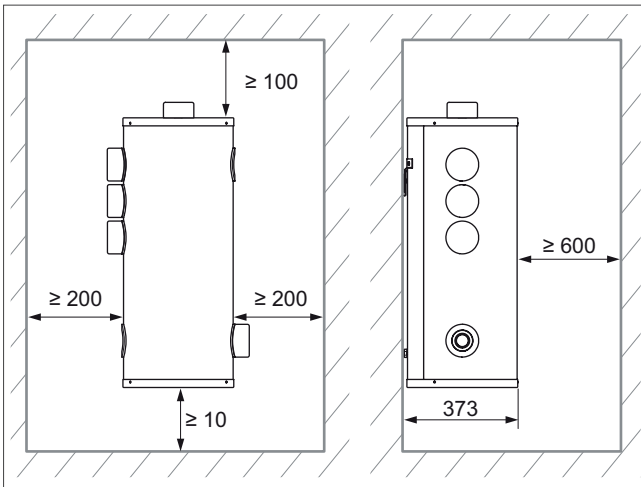


Fig. 714: Recommended minimum clearances and installation clearances

18.4.5 Hydraulic connection options

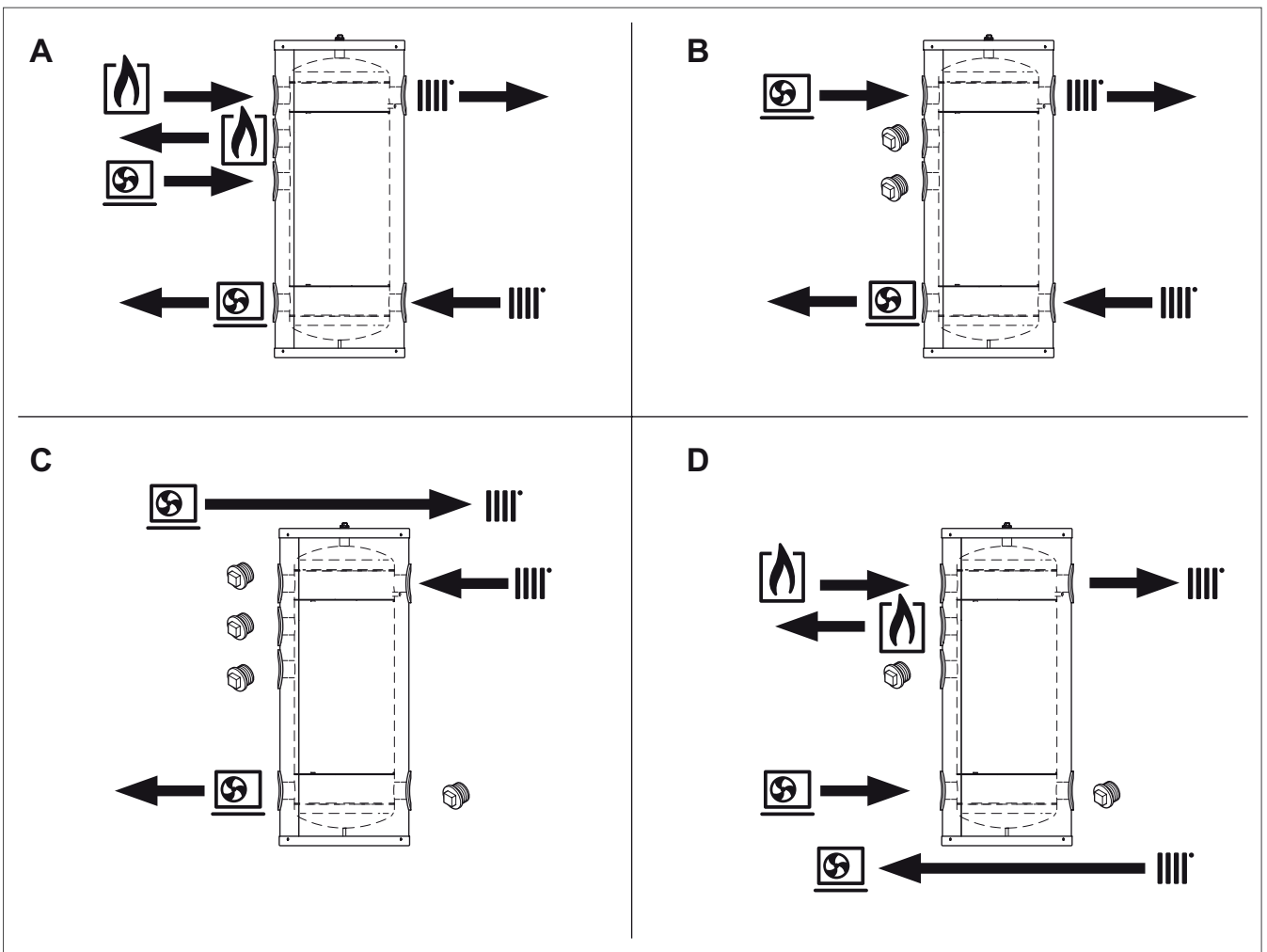


Fig. 715: Hydraulic connection options for the buffer cylinder

18.4.6 Pressure losses for different installation site requirements

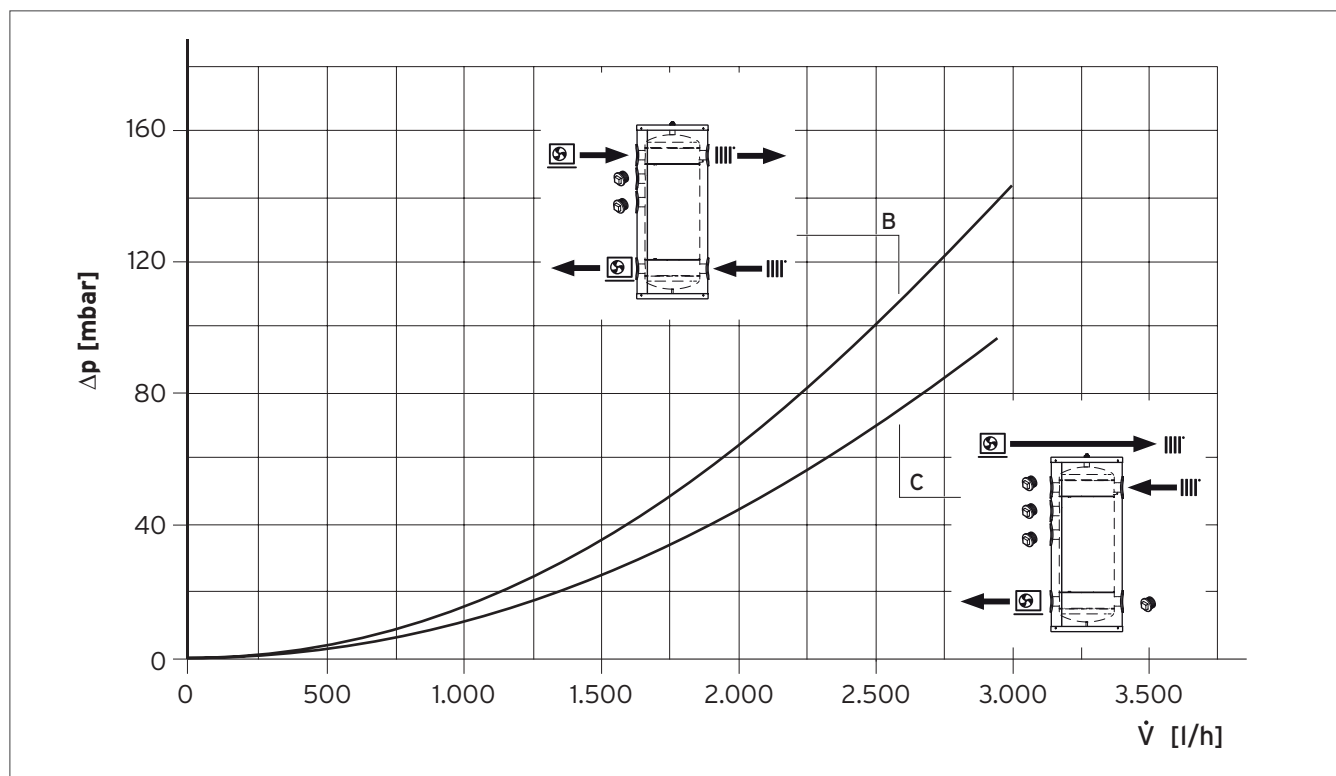


Fig. 716: Pressure losses for different installation site requirements

18.4.7 Purging

A purging valve must be provided in order to purge the buffer cylinder. This is included with the product.

Open the purging valve (1) when filling the heating circuit with water.

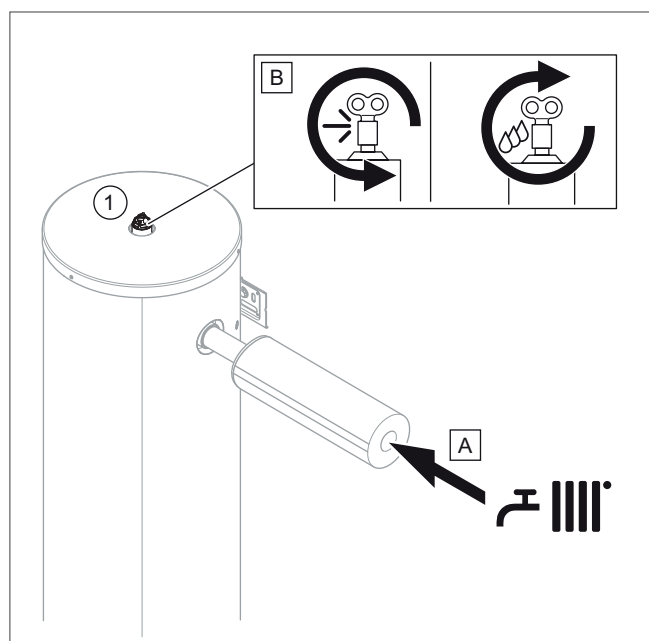


Fig. 717: Purging when filling the heating circuit

18.5 Product description for the VPS R 100/1 M and VPS R 200/1 B buffer cylinders



Fig. 718: VPS R 100/1 M buffer cylinder



Fig. 719: VPS R 200/1 B buffer cylinder

Type overview

Product	Order no.
VPS R 100/1 M	0010021456
VPS R 200/1 B	0010021457

18.5.1 Potential applications

The VPS R 100/1 M and VPS R 200/1 B buffer cylinders can be used to hydraulically separate from the heat pump and heating installation. This ensures that a minimum circulation water volume is always maintained even with sealed underfloor circuits.

In a heating system that operates in bivalent mode, the additional boiler can be hydraulically connected to the buffer cylinder. It can also be used as a return flow sequence cylinder. As such, it serves to increase the water volume in the heating pump and thus extend the running time of the heat pump.

The buffer cylinder is used as a cylinder for heating water or cooling water, depending on the requirement. Vapour-diffusion insulation makes it possible to buffer cooling water.

18.5.2 Equipment

The VPS R 100/1 M and VPS R 200/1 B buffer cylinders come with several connection options for the heat generator circuit flow and return. On the secondary side, there are flow and return connectors for the heating circuits. Inlet panels in the buffer cylinder ensure optimum distribution in the cylinder; the heat transfer takes place in the module. This prevents intermixing of the different volume flows and/or temperature zones. A temperature sensor can be installed in the buffer cylinder.

The cylinder volume is 101 and 202 litres.

Technical data

	VPS R 100/1 M	VPS R 200/1 B
Nominal capacity	101 l	202 l
Outer diameter of the cylinder	550 mm	600 mm
Height of the cylinder	932 mm	1,202 mm
Net weight	34 kg	44 kg
Weight when filled with water	135 kg	246 kg
Material of the cylinder and the connections	Steel	Steel
Water pressure range	0.1 to 0.3 MPa	0.1 to 0.3 MPa
Maximum operating temperature	95 °C	95 °C
Diameter of the hydraulic connections	G1" 1/2	G1" 1/2
Diameter of the sensor pocket	G1/2	G1/2

Cylinder with 100-litre capacity

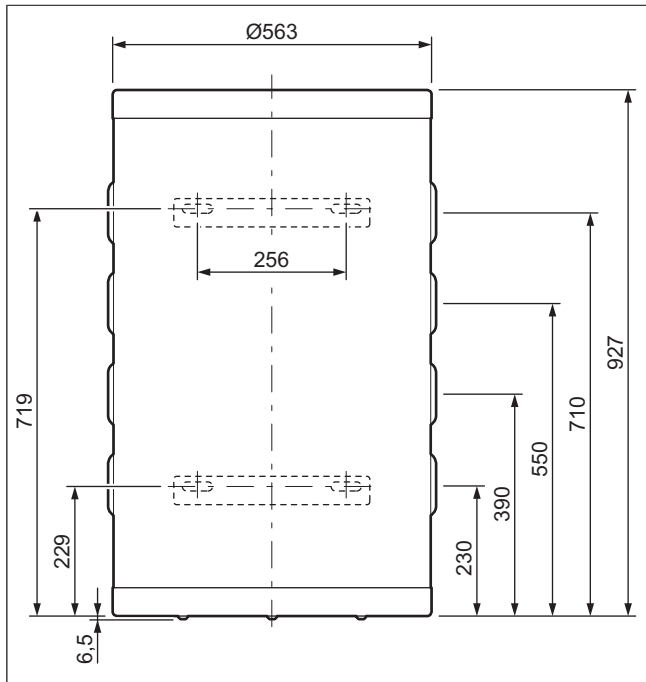


Fig. 720: Product dimensions

Cylinder with 200-litre capacity

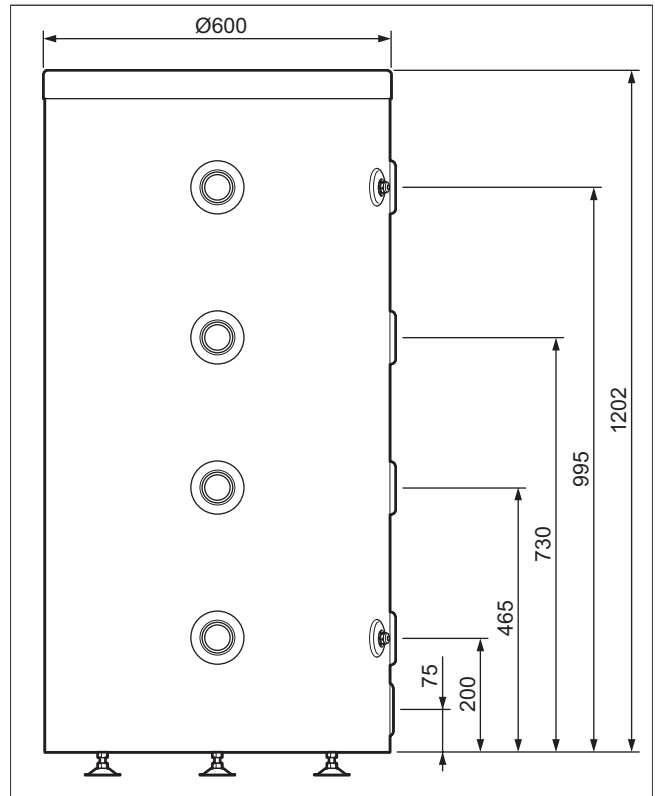


Fig. 721: Product dimensions

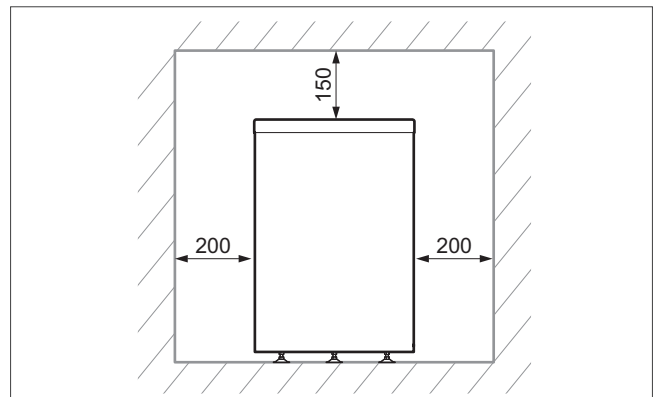


Fig. 722: Minimum clearances

18.5.3 Hydraulic basic connection diagram

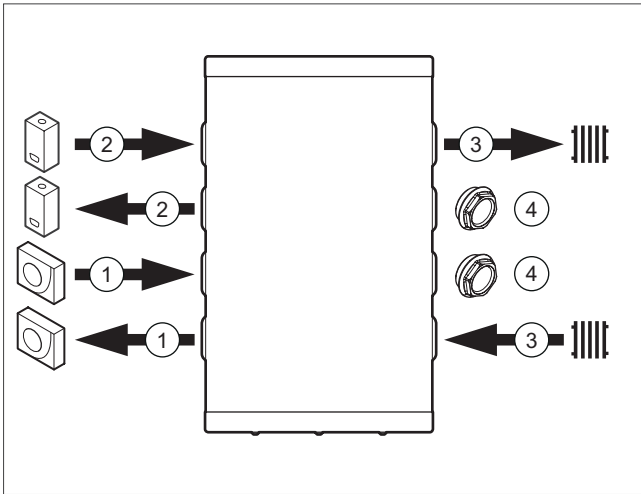


Fig. 723: Case no. 1

Case no. 1

- 1 Heat pump
- 2 Boiler
- 3 Heating circuit
- 4 Plug

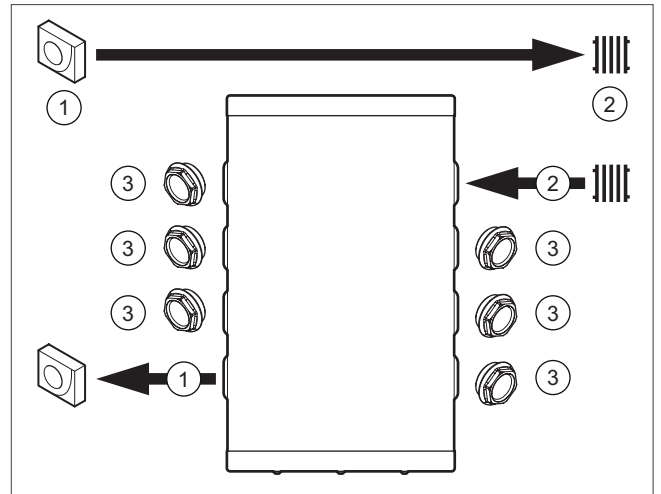


Fig. 725: Case no. 3

Case no. 3

- 1 Heat pump
- 2 Heating circuit
- 3 Plug

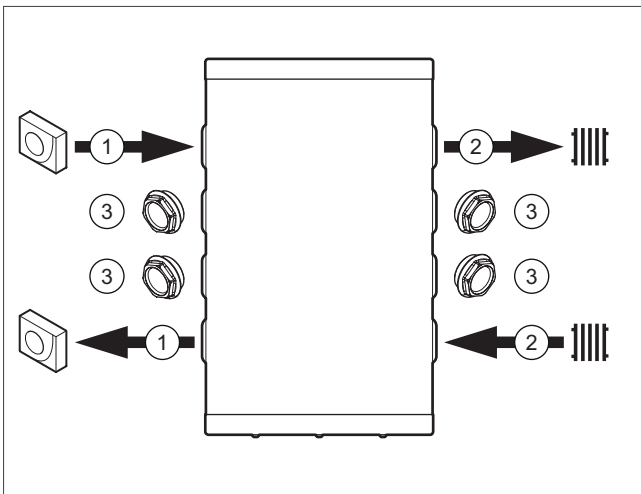


Fig. 724: Case no. 2

Case no. 2

- 1 Heat pump
- 2 Heating circuit
- 3 Plug

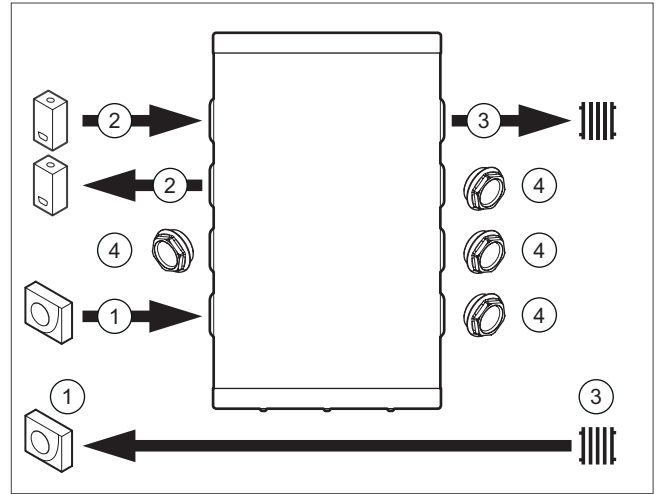


Fig. 726: Case no. 4

Case no. 4

- 1 Heat pump
- 2 Boiler
- 3 Heating circuit
- 4 Plug

18.5.4 Purging

A purging valve must be provided for purging the buffer cylinder. Open the purging valve (1) when filling the heating circuit with water.

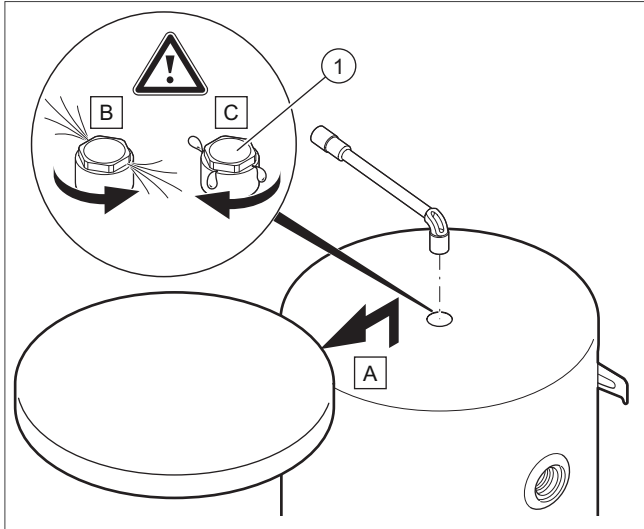


Fig. 727: VPS R 100/1 M purging

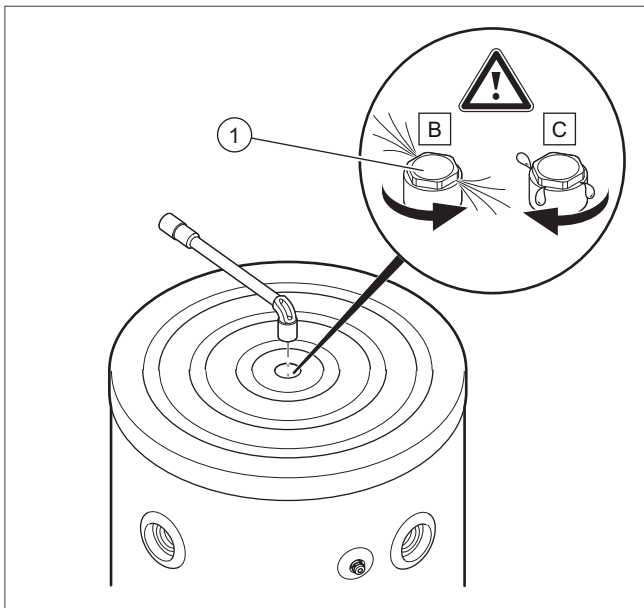


Fig. 728: VPS R 200/1 B purging

18.6 Product description for the allSTOR multi-functional cylinder

18.6.1 Differences between the allSTOR exclusive and allSTOR plus equipment variants

The multi-functional cylinders are available as an „exclusive“ variant and a „plus“ variant.

Both variants have connections for the heating circuit and boiler pipelines. In addition, the allSTOR exclusive has connections for a solar loading module and a domestic hot water station.

A baffle plate, various flow dampers and pipes for optimal and efficient stratification from above (hot) to below (cold) are located inside the allSTOR exclusive. The baffle plate is located in the centre of the cylinder so that the areas for heating and domestic hot water are the same size.

There are also flow dampers in the „plus“ variants, but they do not have the same properties. There is no inner chamber. This means that the inflowing heating water is guided downwards, as the kinetic energy cannot be completely eliminated by the „half“ flow dampers.



Fig. 729: allSTOR exclusive profile



Fig. 730: Differences between the allSTOR exclusive and the allSTOR plus

18.6.2 Overview of the cylinder connections

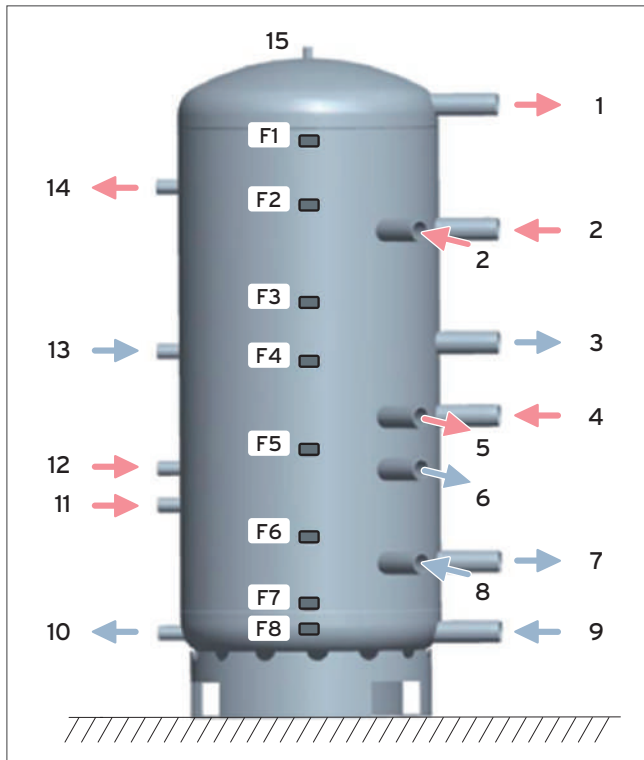


Fig. 731: Cylinder connections - Overview

- 1 Heating water flow to VPM-W for wall-mounted installations or cylinder cascades
- 2 Two boiler flow connections for the process water part of the cylinder
- 3 Boiler return
- 4 Boiler flow connection for the heating part of the cylinder
- 5 Heating circuits flow
- 6 Boiler return
- 7 Boiler return
- 8 Heating circuits return
- 9 Heating water return to VPM-W for wall-mounted installations or cylinder cascades
- 10 Heating water return to VPM-S
- 11 VPM-S heating water flow at low temperatures
- 12 VPM-S heating water flow at high temperatures
- 13 Heating water return to VPM-W
- 14 VPM-W heating water flow
- 15 Connectors for purging valve
- F Sensor straps for the temperature sensor
- 1-8

18.6.3 Temperature zones for allSTOR exclusive

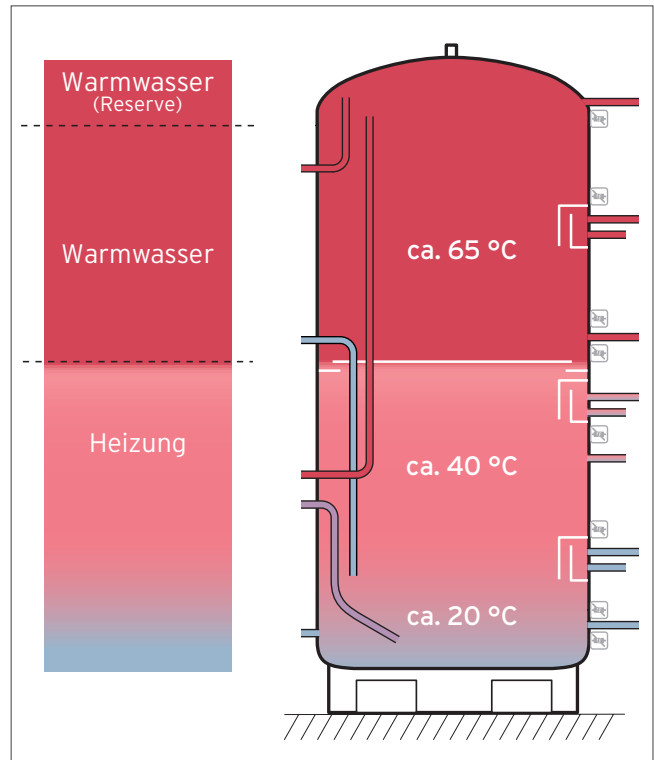


Fig. 732: Temperature zones

One after the other, starting from the top, three cylinder temperature sensors each trigger a heat requirement if a target value is not reached. The cylinder is divided into three temperature zones by the way in which the sensors are arranged according to the product and the system. If a solar loading module is used, first the **auroFLOW** and then the post-heating installations are triggered, depending on the current solar energy input.

Sensor 1 (domestic hot water, reserve): For the upper 10% of the cylinder volume (domestic hot water).

Sensor 2 (domestic hot water, comfort zone): For the approx. 40% of the cylinder volume that lies below.

Sensor 3 (heating): For the approx. 50% of the cylinder volume that lies below.

18.6.4 Planning the installation site

When setting up, installing and operating the buffer cylinder system, proceed in accordance with the local regulations, rules, directives and guidelines on electrical connection issued by the power supply network operator of the water supply company regarding the use of geothermal energy to connect heat source systems and heating installations.

The system components must be installed in dry and permanently frost-free rooms.

The environmental temperature must not exceed 40 °C.

The installation site must be selected such that, in the event of damage, relatively large volumes of water can be drained effectively (e.g. via a floor drain).

The weight of the buffer cylinder when it is full must be compared with the load-bearing capacity of the floor.

When planning the installation site, the weight of the buffer cylinder, including the water content when filled to capacity, **MUST** be taken into account, and this weight must then be compared with the load-bearing capacity of the floor.

Take the tilt dimension of the buffer cylinder into account.

18.6.5 Product description for the allSTOR exclusive VPS 300/3-7 to 2000/3-7



Fig. 733: allSTOR VPS 300/3-7 to VPS 2000/3-7

Type overview

Unit designation	ErP label (range)	Cylinder capacity in l	Order no.
VPS 300/3-7	B (A+ to F)	303	0010015112
VPS 500/3-7	B (A+ to F)	491	0010015113
VPS 800/3-7	B (A+ to F)	778	0010015114
VPS 1000/3-7	B (A+ to F)	962	0010015115
VPS 1500/3-7	B (A+ to F)	1505	0010015116
VPS 2000/3-7	B (A+ to F)	1917	0010015117

Special features

- Compact buffer shift-load cylinder for combining various energy sources, such as solar, heat pump, wood, oil, gas or CHP
- Hygienic potable water preparation via the domestic hot water station that is suitable for flange mounting
- Additional solar pump station that is suitable for flange mounting for solar domestic hot water generation and heating support
- Easy to carry to the installation site; the heat insulation has not been prefit
- Split heat insulation (two-part up to 1000 l, three-part 1500 l and 2000 l)
- Optional thermal insulation caps for unused connections
- Tail lift from 500 l with pallet truck

Possible application

The multi-functional cylinder is supplied via various heat generators and/or a solar charging system. It is used as a buffer cylinder for heating water and provides heat energy to various consumers, such as domestic hot water stations, heating circuits, swimming pools, etc.

Equipment

- Steel buffer shift-load cylinder
- Baffle plates and control units for optimum stratification
- Highly efficient thermal insulation (140 mm for 300 l-1000 l, 200 mm for 1500 l and 2000 l) made from polyester fibre fleece
- Circulation pump as an accessory
- 8 surface mount sensor straps
- 15 charging and discharging connections for individual cylinder zones
- One sleeve for purging

Note

To prevent corrosion and depositions (scale) in the cylinder, you must observe VDI 2035 T1 and T2. This VDI contains, among other things, information about the water hardness level that must be maintained.



Note

The connections are designed so that the following **maximum volume flows** are permitted for allSTOR exclusive and allSTOR plus:

allSTOR VPS 300/3 and VPS 500/3: 8 m³/h

allSTOR VPS 800/3 and VPS 1000/3: 15 m³/h

allSTOR VPS 1500/3 and VPS 2000/3: 30 m³/h



Minimum clearances

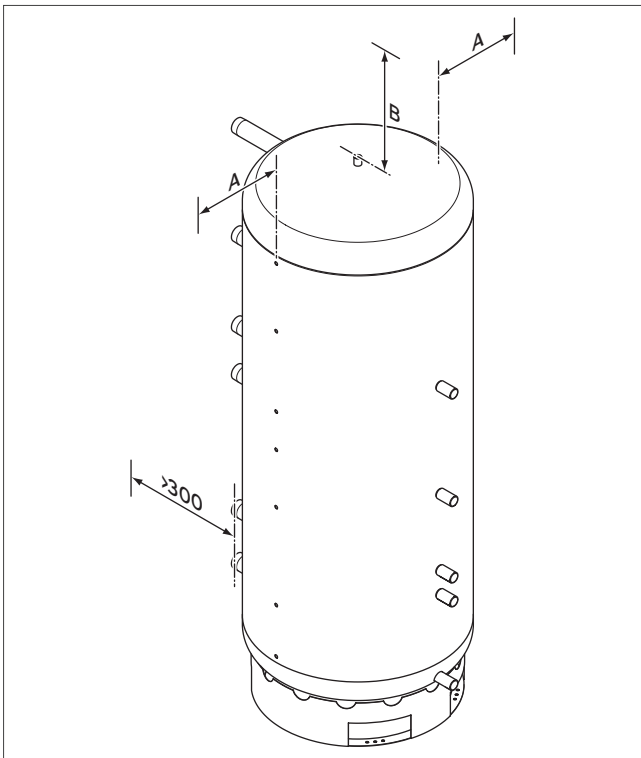


Fig. 734: Required minimum clearances

Side clearance between the cylinder and the wall

Type designation	Side clearance A [mm]	Ceiling clearance B [mm]
VPS 300/3	350	350
VPS 500/3	450	
VPS 800/3	500	
VPS 1000/3	500	
VPS 1500/3	600	
VPS 2000/3	650	

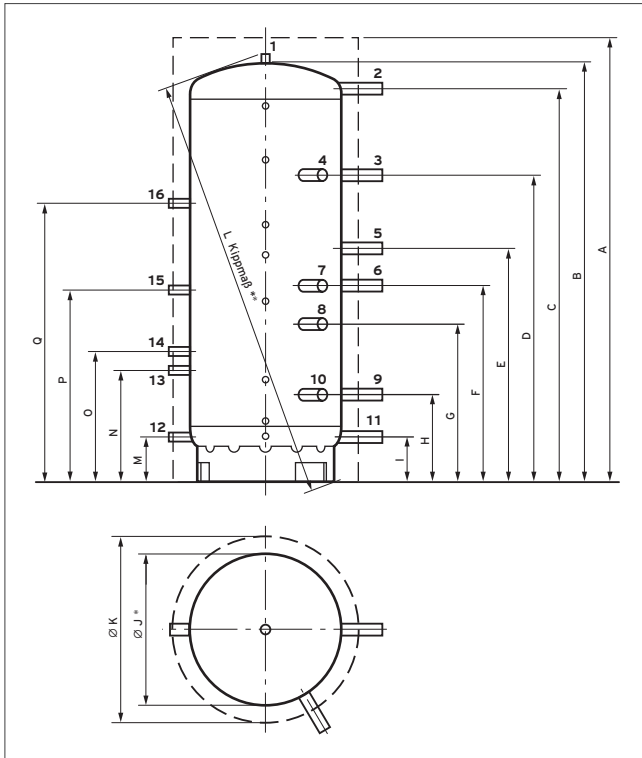
Take into consideration the height and position of the pipelines when installing the domestic hot water station and solar loading module.

Technical data

Description	Unit	Tolerance	VPS 300/3	VPS 500/3	VPS 800/3	VPS 1000/3	VPS 1500/3	VPS 2000/3
Cylinder tank capacity	l	± 2	303	491	778	962	1505	1917
Perm. system overpressure (heating side)	MPa (bar)	–	0.3 (3)					
Heating water temperature	°C	–	95					
Cylinder tank outer diameter (without heat insulation)	mm	± 2	500	650	790	790	1000	1100
Cylinder tank outer diameter (with heat insulation)	mm	± 10	780	930	1070	1070	1400	1500
Cylinder tank depth (incl. heat insulation and connections)	mm	± 10	828	978	1118	1118	1448	1548
Cylinder tank height (incl. purging valve and positioning ring)	mm	± 10	1735	1715	1846	2226	2205	2330
Buffer cylinder height (incl. heat insulation)	mm	± 10	1833	1813	1944	2324	2362	2485
Cylinder tank weight (empty)	kg	± 10	70	90	130	145	210	240
Cylinder tank weight (full)	kg	± 10	373	581	908	1107	1715	2157
Tilt measurement	mm	± 20	1734	1730	1870	2243	2253	2394
Standby energy consumption	KWh/24 hrs	–	< 1.7	< 2.0	< 2.4	< 2.5	< 2.9	< 3.3

Product dimensions and connection dimensions

Dimension drawing



- 01 Opening for purging valve
- 02 Heating water flow for domestic hot water station in the case of wall-mounting/flow or return for cascade
- 03 Boiler flow for hot water demand
- 04 Boiler flow for hot water demand
- 05 Boiler return for hot water demand
- 06 Boiler flow for heating water demand/heating circuit flow
- 07 Boiler flow for heating water demand/heating circuit flow
- 08 Boiler return for hot water demand
- 09 Boiler return for domestic hot water demand/heating circuit return
- 10 Boiler return for heating water demand/heating circuit return
- 11 Heating water return for domestic hot water station in the case of wall-mounting/flow or return for cascade
- 12 Heating water return for the solar charging system (VPS/3-E only)
- 13 Heating water flow for the solar charging system for low temperatures (VPS/3-E only)
- 14 Heating water flow for the solar charging system for high temperatures (VPS/3-E only)
- 15 Heating water return for the domestic hot water station (VPS/3-E only)
- 16 Heating water flow for the domestic hot water station (VPS/3-E only)

Fig. 735: Dimension drawing

Connection dimensions

Unit type	A	B	C	D	E	F	G	H	I	J diameter	K diameter	L	M	N	O	P	Q
VPS 300/3	1833	1720	1617	1210	920	744	574	365	130	500	780	1734	130	480	580	900	1350
VPS 500/3	1813	1700	1570	1230	930	750	579	394	190	650	930	1730	190	540	640	960	1410
VPS 800/3	1944	1832	1670	1330	1020	820	636	421	231	790	1070	1870	231	581	681	1001	1451
VPS 1000/3	2324	2215	2051	1598	1220	1020	822	451	231	790	1070	2243	231	581	681	1001	1451
VPS 1500/3	2362	2190	1973	1573	1227	1000	797	521	291	1000	1400	2253	291	641	741	1061	1511
VPS 2000/3	2485	2313	2080	1656	1201	1008	803	551	298	1100	1500	2394	298	648	748	1068	1518

Dimensions in mm, all dimensions ± 10 mm, * ± 2 mm, ** ± 20 mm

Connection sizes

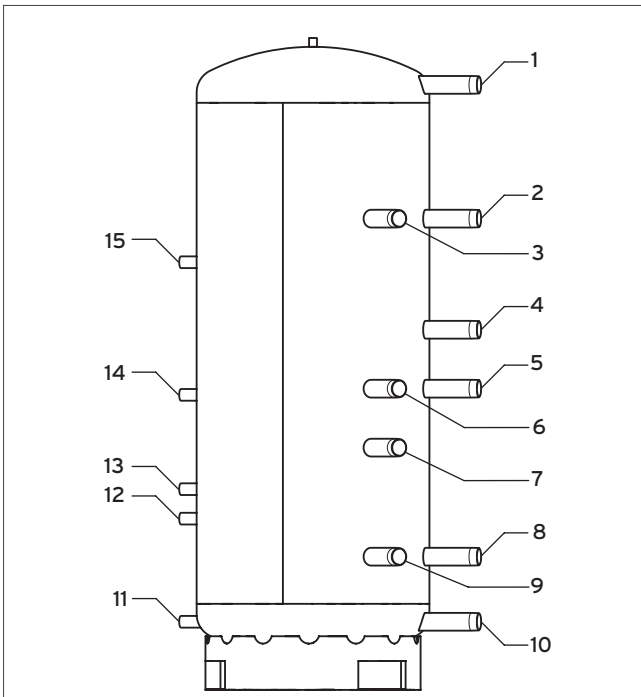


Fig. 736: Buffer cylinder connections

Connection sizes

	Domestic hot water station	Solar loading module	Rear connections
	Item no. 14, 15	Item no. 11, 12, 13	Item no. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
VPS 300/3	DN 25 G 1 IG	DN 25 G 1 IG	R 1 1/2
VPS 500/3			
VPS 800/3			R 2
VPS 1000/3			
VPS 1500/3			R 2 1/2
VPS 2000/3			

18.6.6 Product description for the allSTOR plus VPS 300/3-5 to 2000/3-5



Fig. 737: allSTOR VPS 300/3-5 to VPS 2000/3-5

Type overview

Unit designation	ErP label (range)	Cylinder capacity in l	Order no.
VPS 300/3-5	B (A+ to F)	303	0010015118
VPS 500/3-5	B (A+ to F)	491	0010015119
VPS 800/3-5	B (A+ to F)	778	0010015120
VPS 1000/3-5	B (A+ to F)	962	0010015121
VPS 1500/3-5	B (A+ to F)	1505	0010015122
VPS 2000/3-5	B (A+ to F)	1917	0010015123

Special features

- Compact buffer shift-load cylinder for combining various energy sources, such as solar, heat pump, wood, oil, gas or CHP
- Cascading up to 6000 l is possible
- Easy to carry to the installation site; the heat insulation has not been prefit
- Split heat insulation (two-part up to 1000 l, three-part 1500 l and 2000 l)
- Optional thermal insulation caps for unused connections

Possible application

The multi-functional cylinder is supplied via various heat generators and/or a solar charging system. It is used as a buffer cylinder for heating water and provides heat energy to various consumers, such as drinking water stations, heating circuits, swimming pools, etc.

Equipment

- Steel buffer shift-load cylinder
- Flow damper for optimum stratification
- Highly efficient thermal insulation (140 mm for 300 l-1000 l, 200 mm for 1500 l and 2000 l) made from polyester fibre fleece
- Circulation pump as an accessory
- 8 surface mount sensor straps
- 10 charging and discharging connections for individual cylinder zones
- One sleeve for purging

Note

To prevent corrosion and depositions (scale) in the cylinder, you must observe VDI 2035 T1 and T2. This VDI contains, among other things, information about the water hardness level that must be maintained.



Note

The connections are designed so that the following **maximum volume flows** are permitted for allSTOR exclusive and allSTOR plus:

allSTOR VPS 300/3 and VPS 500/3: 8 m³/h

allSTOR VPS 800/3 and VPS 1000/3: 15 m³/h

allSTOR VPS 1500/3 and VPS 2000/3: 30 m³/h



Minimum clearances

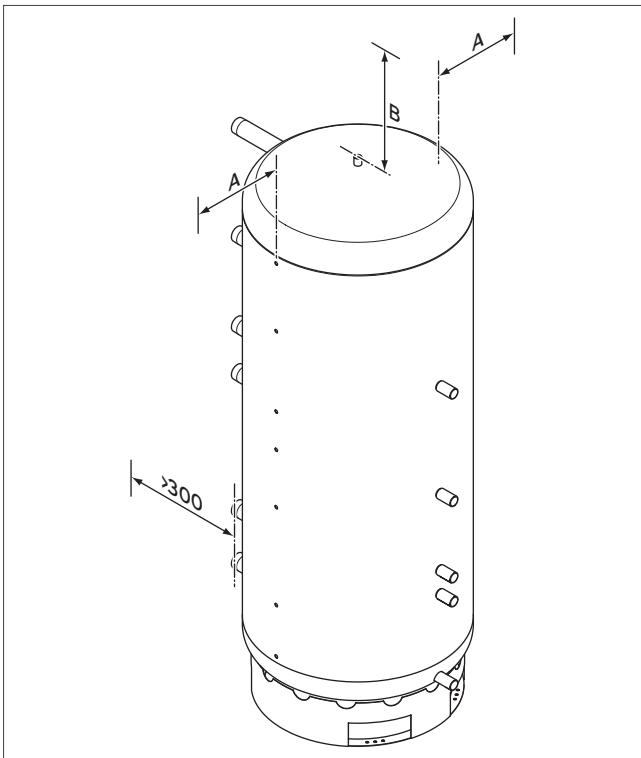


Fig. 738: Required minimum clearances

Side clearance between the cylinder and the wall

Type designation	Side clearance A [mm]	Ceiling clearance B [mm]
VPS 300/3	350	350
VPS 500/3	450	
VPS 800/3	500	
VPS 1000/3	500	
VPS 1500/3	600	
VPS 2000/3	650	

Technical data

Description	Unit	Tolerance	VPS 300/3	VPS 500/3	VPS 800/3	VPS 1000/3	VPS 1500/3	VPS 2000/3
Cylinder tank capacity	l	± 2	303	491	778	962	1505	1917
Perm. system overpressure (heating side)	MPa (bar)	–	0.3 (3)					
Heating water temperature	°C	–	95					
Cylinder tank outer diameter (without heat insulation)	mm	± 2	500	650	790	790	1000	1100
Cylinder tank outer diameter (with heat insulation)	mm	± 10	780	930	1070	1070	1400	1500
Cylinder tank depth (incl. heat insulation and connections)	mm	± 10	828	978	1118	1118	1448	1548
Cylinder tank height (incl. purging valve and positioning ring)	mm	± 10	1735	1715	1846	2226	2205	2330
Buffer cylinder height (incl. heat insulation)	mm	± 10	1833	1813	1944	2324	2362	2485
Cylinder tank weight (empty)	kg	± 10	70	90	130	145	210	240
Cylinder tank weight (full)	kg	± 10	373	581	908	1107	1715	2157
Tilt measurement	mm	± 20	1734	1730	1870	2243	2253	2394
Standby energy consumption	KWh/24 hrs	–	< 1.7	< 2.0	< 2.4	< 2.5	< 2.9	< 3.3

Product dimensions and connection dimensions

Dimension drawing

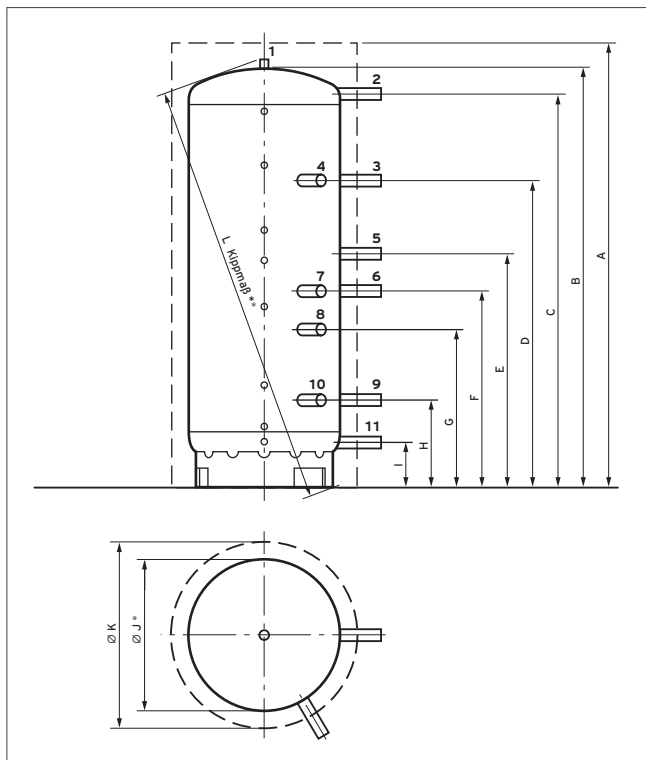


Fig. 739: Dimension drawing

- 01 Opening for purging valve
- 02 Heating water flow for domestic hot water station in the case of wall-mounting/flow or return for cascade
- 03 Boiler flow for hot water demand
- 04 Boiler flow for hot water demand
- 05 Boiler return for hot water demand
- 06 Boiler flow for heating water demand/heating circuit flow
- 07 Boiler flow for heating water demand/heating circuit flow
- 08 Boiler return for hot water demand
- 09 Boiler return for domestic hot water demand/heating circuit return
- 10 Boiler return for heating water demand/heating circuit return
- 11 Heating water return for domestic hot water station in the case of wall-mounting/flow or return for cascade

Connection dimensions

Unit type	A	B	C	D	E	F	G	H	I	J diameter	K diameter	L
VPS 300/3	1833	1720	1617	1210	920	744	574	365	130	500	780	1734
VPS 500/3	1813	1700	1570	1230	930	750	579	394	190	650	930	1730
VPS 800/3	1944	1832	1670	1330	1020	820	636	421	231	790	1070	1870
VPS 1000/3	2324	2215	2051	1598	1220	1020	822	451	231	790	1070	2243
VPS 1500/3	2362	2190	1973	1573	1227	1000	797	521	291	1000	1400	2253
VPS 2000/3	2485	2313	2080	1656	1201	1008	803	551	298	1100	1500	2394

Dimensions in mm, all dimensions ± 10 mm, * ± 2 mm, ** ± 20 mm

Connection sizes

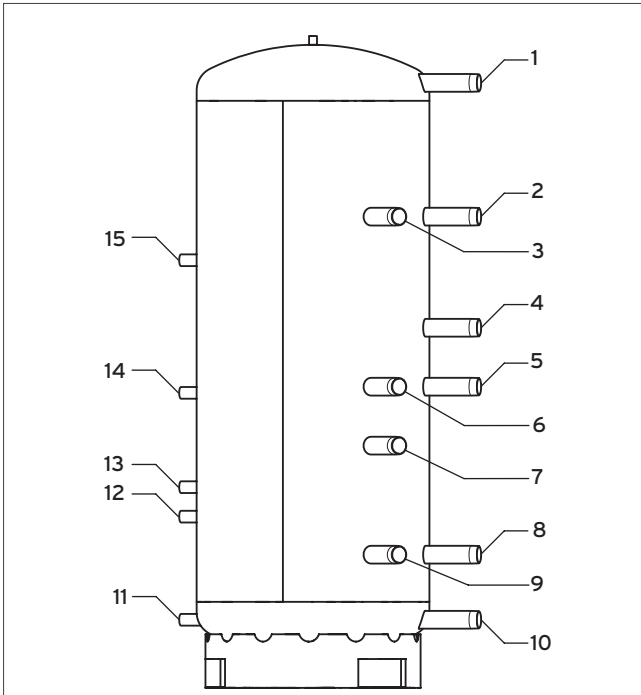


Fig. 740: Buffer cylinder connections

Connection sizes

	Domestic hot water station	Solar loading module	Rear connections
	Item no. 14, 15	Item no. 11, 12, 13	Item no. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
VPS 300/3	DN 25 G 1 IG	DN 25 G 1 IG	R 1 1/2
VPS 500/3			
VPS 800/3			R 2
VPS 1000/3			
VPS 1500/3			R 2 1/2
VPS 2000/3			

18.6.7 Product description for the allSTOR plus VPS 800/4-5 up to 2000/4-5 (6 bar system pressure)



Fig. 741: allSTOR VPS 800/4-5 to VPS 2000/4-5

Type overview

Unit designation	ErP label (range)	Cylinder capacity in l	Order no.
VPS 800/4-5	B (A+ to F)	778	0010039300
VPS 1000/4-5	B (A+ to F)	962	0010039301
VPS 1500/4-5	B (A+ to F)	1505	0010039302
VPS 2000/4-5	B (A+ to F)	1917	0010039303

Special features

- Compact buffer shift-load cylinder for combining various energy sources, such as solar, heat pump, wood, oil, gas or CHP
- Cascading up to 6000 l is possible
- Easy to carry to the installation site; the heat insulation has not been prefit
- Split heat insulation (two-part up to 1000 l, three-part 1500 l and 2000 l)
- Optional thermal insulation caps for unused connections

Possible application

The multi-functional cylinder is supplied via various heat generators and/or a solar loading module. It is used as a buffer cylinder for heating water and provides heat energy to various consumers, such as domestic hot water stations, heating circuits, swimming pools, etc. It can be used at a system pressure up to 6 bar.

Equipment

- Steel buffer shift-load cylinder
- Flow damper for optimum stratification
- Highly efficient heat insulation (140 mm for 800 l + 1000 l, 200 mm for 1500 l and 2000 l) made from polyester fibre fleece
- Circulation pump as an accessory
- 8 surface mount sensor straps
- 10 charging and discharging connections for individual cylinder zones
- One sleeve for purging

Note

To prevent corrosion and depositions (scale) in the cylinder, you must observe VDI 2035 T1 and T2. This VDI contains, among other things, information about the water hardness level that must be maintained.



Product description

The product intermediately stores the heating water from one or more heat generators in a heating system. A domestic hot water station for generating domestic hot water can also be connected.

Product design

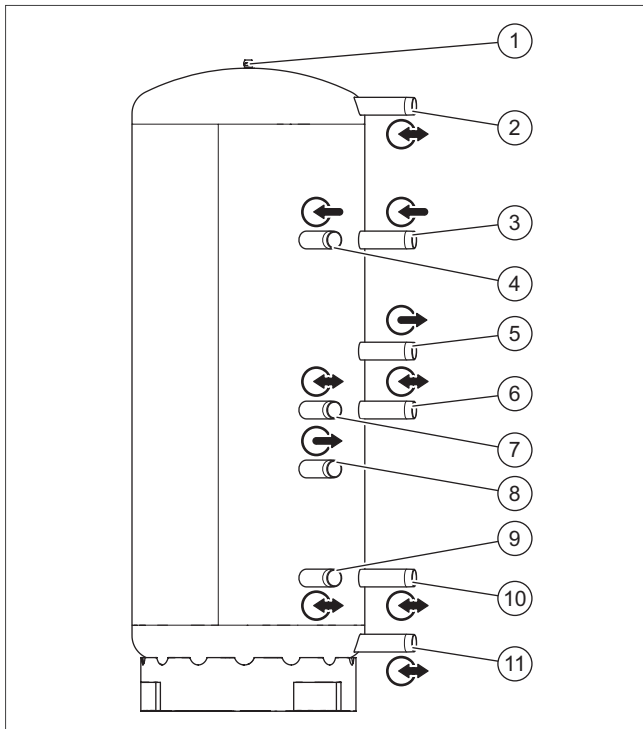


Fig. 742: Product design

- 1 Opening for purging valve
- 2 Heating water flow for domestic hot water station
- 3 Boiler flow for domestic hot water demand
- 4 Boiler flow for domestic hot water demand
- 5 Boiler return for domestic hot water demand
- 6 Boiler flow for heating water demand/heating circuit flow
- 7 Boiler flow for heating water demand/heating circuit flow
- 8 Boiler return for heating water demand
- 9 Boiler return for domestic hot water demand/heating circuit return
- 10 Boiler return for heating water demand/heating circuit return
- 11 Heating water return for domestic hot water station

Positions of the sensor straps

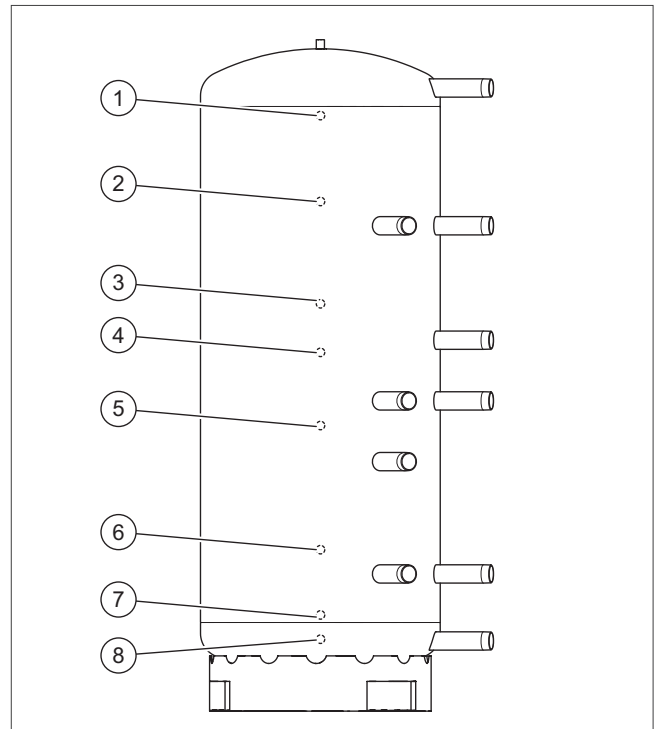


Fig. 743: Buffer cylinder sensor straps

- 1-8 Sensor straps 1-8

18.6.8 Minimum clearances

Type designation	Clearance [mm]		
	To the sides	To the rear	Upwards
VPS 800/4-5	500	300	350
VPS 1000/4-5	500		
VPS 1500/4-5	600		
VPS 2000/4-5	650		

18.6.9 Technical data

	VPS 800/4-5	VPS 1000/4-5	VPS 1500/4-5	VPS 2000/4-5
Nominal capacity	773 l	961 l	1,496 l	1,907 l
Outer diameter of the cylinder (without heat insulation)	790 mm	790 mm	1,000 mm	1,100 mm
Outer diameter of the cylinder (with heat insulation)	1,070 mm	1,070 mm	1,400 mm	1,500 mm
Height (incl. purging valve)	1,846 mm	2,226 mm	2,205 mm	2,330 mm
Height (incl. purging valve + heat insulation)	1,944 mm	2,324 mm	2,362 mm	2,485 mm
Net weight	117 kg	132 kg	207 kg	242 kg
Total weight	890 kg	1,093 kg	1,703 kg	2,149 kg
Connections	R 2"	R 2"	R 2 1/2"	R 2 1/2"
Material of the cylinder and the connections	Steel	Steel	Steel	Steel
Operating pressure	0.1 to 0.6 MPa	0.1 to 0.6 MPa	0.1 to 0.6 MPa	0.1 to 0.6 MPa
Maximum operating temperature	95 °C	95 °C	95 °C	95 °C
Standby energy consumption	< 2.4 kWh/24 h	< 2.5 kWh/24 h	< 2.9 kWh/24 h	< 3.3 kWh/24 h

Connection dimensions

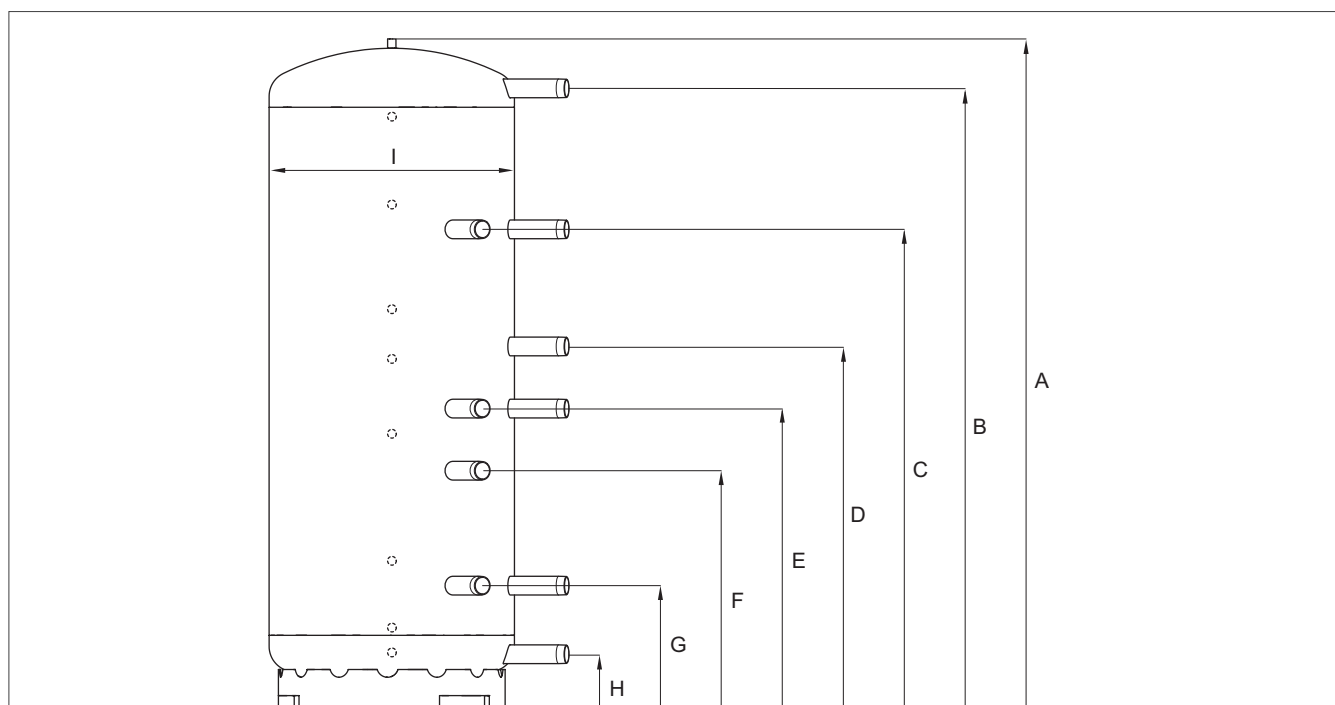


Fig. 744: Buffer cylinder connection dimensions

Dimension	Unit	Tolerance	VPS 800/4-5	VPS 1000/4-5	VPS 1500/4-5	VPS 2000/4-5
A	mm	± 10	1832	2212	2190	2313
B	mm	± 10	1670	2051	1973	2080
C	mm	± 10	1330	1598	1573	1656
D	mm	± 10	1020	1220	1227	1201
E	mm	± 10	820	1020	1000	1008
F	mm	± 10	636	822	797	803
G	mm	± 10	421	451	521	551
H	mm	± 10	231	231	291	298
I	mm	± 2	790 diameter	790 diameter	1000 diameter	1100 diameter

18.6.10 Tilt dimension

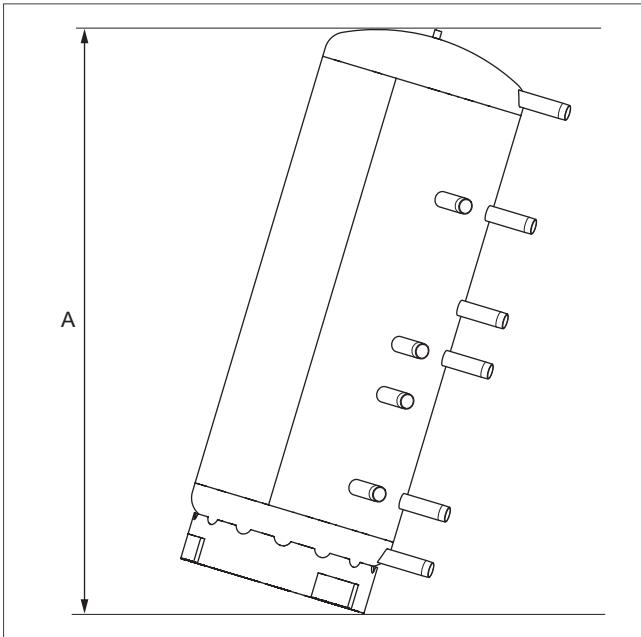


Fig. 745: Buffer cylinder tilt dimension

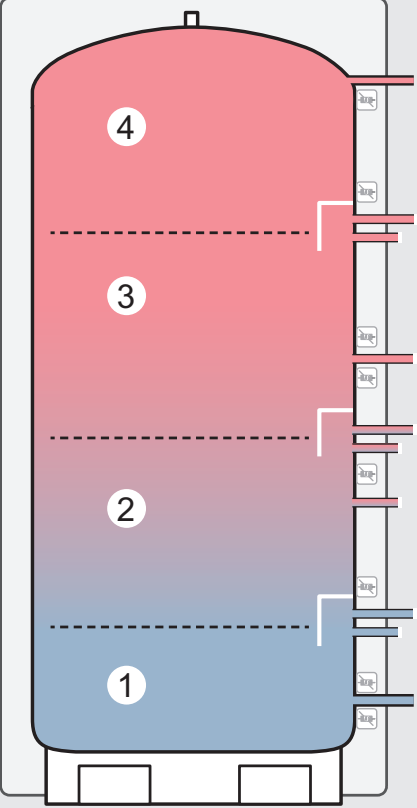
A Tilt dimension

When planning the installation site, adhere to the dimensions below.

Type designation	Tilt dimension A [mm]
VPS 800/4-5	1890
VPS 1000/4-5	2263
VPS 1500/4-5	2273
VPS 2000/4-5	2414

18.6.11 Temperature zones and water volume

The following overview shows the water volume in the individual zones of the buffer cylinder. You can use this information to estimate whether the water volume is sufficient for the planned heating circuits and the domestic hot water generation or whether a second buffer cylinder must be planned.

Zone	Proportion of the zone [%]	Water volume per zone [l]			
		VPS 800/4-5	VPS 1000/4-5	VPS 1500/4-5	VPS 2000/4-5
	Approx. 30 %	204.06	257.40	400.87	516.16
	Approx. 30 %	248.06	281.53	448.61	612.09
	Approx. 25 %	194.75	277.16	375.52	432.64
	Approx. 15 %	129.39	144.43	271.31	344.23
Total:	100%	776.26	960.52	1496.31	1905, 12

This results in the following maximum total output for the heating circuits:

- VPS 800: 15 m³/h
- VPS 1000: 15 m³/h
- VPS 1500: 30 m³/h
- VPS 2000: 30 m³/h



19. Control system

Intelligent control technology networks the units in a modern heating system or ventilation system together, and thus allows the system to be controlled conveniently and efficiently.

19.1 Product description for the sensoCOMFORT VRC 720



Fig. 746: sensoCOMFORT 720

19.1.1 Technical data

Rated voltage	9 to 24 V ~
Rated surge voltage	330 V
Pollution degree	2
Rated current	< 50 mA
Supply line cross-section	0.75 to 1.5 mm ²
IP rating	IP 20
Protection class	III
Temperature for the ball pressure test	75 °C
Maximum permitted environmental temperature	0 to 60 °C
Current room air hum.	35 to 95 %
Mode of operation	Type 1
Height	109 mm
Width	175 mm
Depth	26 mm

19.1.2 Special features

- Weather-compensated eBUS control with TFT graphic display
- Comfortable sensoApp control for Android and iOS (VR 921 Internet module required)
- Intuitive operation without the need for prior knowledge using touch control elements
- Fast start-up and system configuration thanks to guided questions in the installation assistant
- Can be used for domestic hot water generation (cylinder charging) without an additional module and in a non-regulated heating circuit
- Can be added to with VR 70 and VR 71 modules
- triVAL parameter for optimising the efficiency of the hybrid system
- Moisture sensor control in conjunction with the geoTHERM VWL... 5/4, flexoTHERM VWF... 7/4, flexoCOMPACT VWF... 8/4 and aroTHERM for humidity prevention in cooling mode
- Integrated actuation of Vaillant recoVAIR ventilation units
- Integrated actuation of hybrid systems
- Cascade system of up to seven conventional (gas/oil) eBUS heat generators of the same type and output for heating and domestic hot water
- Cascade system of up to seven heat pumps (flexoTHERM or aroTHERM) of the same type and output for heating, cooling and domestic hot water. A back-up boiler (eBUS boiler) can also be incorporated
- **External cooling mode: A heat or cooling demand is specified for the VRC 720/2 via an external control**

19.1.3 Equipment

- Adaptive heat curve
- Room temperature modulation for adjusting the flow temperature
- TFT graphic display (70 x 53 mm)
- Weekly programme
- Time programme for heating, cooling, domestic hot water and circulation
- „Days away from home“ function
- Ventilation function
- One-time cylinder charging outside of time programming
- Thermal disinfection
- Anti-legionella function for bivalent solar cylinders
- Flexible screed-drying function
- Graphical solar yield, environmental yield and power consumption indicator
- EEBus ready (VR 921 Internet module required)
- **Isolating circuit in cascade mode**

19.1.4 Potential applications

- Can be used with a VR 71 main wiring centre as a solar control (up to 3 x regulated heating circuits)
- Can be used with a VR 70 wiring centre (1 x direct and 1 x non-regulated heating circuit)
- Up to nine heating circuits can be used (1 x VR 71 + 3 x VR 70)
- VR 92 remote control can be added
- For all Vaillant boilers with an eBUS interface
- A control can be used for renewable energies and conventional heating equipment with an eBUS interface
- A VR 32/3 bus coupler is required to integrate a recoVAIR ventilation unit or a hybrid unit
- To cascade conventional (gas/oil) heat generators with eBUS electronics and the flexoTHERM heat pump, a VR 32/3 is required for every heat generator from the second one onwards
- To cascade the aroTHERM heat pump, a VR 32 B is required for every heat pump from the second one onwards

Note

For underfloor heating, a VRC 9642 surface-mounted thermostat is also required for the underfloor heating circuit.



19.1.5 sensoCOMFORT VRC 720 and control module combinations

The following combinations are possible:

- VR 71 and optional 1 to 3 x VR 92f

or

- VR 71 and 1 to 3 x VR 70 and optional 1 to 4 x VR 92
- Maximum number of VR 92 remote controls:
 - Without VPM W and without VPM S: Maximum 4 x VR 92
 - With VPM W and without VPM S: Maximum 4 x VR 92
 - With VPM W and with VPM S: Maximum 4 x VR 92

Update 10
New feature VRC 720f

19.2 Product description for the sensoCOMFORT VRC 720f



Fig. 747: sensoCOMFORT 720f

19.2.1 Technical data

System control

Battery type	LRO6
Rated surge voltage	330 V
Frequency band	868.0 to 868.6 MHz
Max. transmission power	< 25 mW
Range outdoors	≤ 100 m
Range indoors	≤ 25 m
Pollution degree	2
IP rating	IP 20
Protection class	III
Temperature for the ball pressure test	75 °C
Maximum permitted environmental temperature	0 to 45 °C
Current room air hum.	35 to 95 %
Mode of operation	Type 1
Height	109 mm
Width	175 mm
Depth	27 mm

Radio receiver unit

Rated voltage	9 to 24 V ~
Rated current	< 50 mA
Rated surge voltage	330 V
Frequency band	868.0 to 868.6 MHz
Max. transmission power	< 25 mW
Range outdoors	≤ 100 m
Range indoors	≤ 25 m
Pollution degree	2
IP rating	IP 21
Protection class	III
Temperature for the ball pressure test	75 °C
Maximum permitted environmental temperature	0 to 60 °C
Rel. room humidity	35 to 90 %
Supply line cross-section	0.75 to 1.5 mm ²
Height	115.0 mm
Width	142.5 mm
Depth	26.0 mm

19.2.2 Special features

- Weather-compensated radio eBUS control with TFT graphic display
- Comfortable sensoApp control for Android and iOS (VR 921 Internet module required)
- Intuitive operation without the need for prior knowledge using touch control elements
- Fast start-up and system configuration thanks to guided questions in the installation assistant
- Can be used for domestic hot water generation (cylinder charging) without an additional module and in a non-regulated heating circuit
- Can be added to with VR 70 and VR 71 modules
- triVAL parameter for optimising the efficiency of the hybrid system
- Humidity sensor control in conjunction with the geoTHERM VWL... 5/4, flexoTHERM VWF... 7/4, flexoCOMPACT VWF... 8/4 and aroTHERM for humidity prevention in cooling mode
- Integrated actuation of Vaillant recoVAIR ventilation units
- Integrated actuation of hybrid systems
- Cascade system of up to seven conventional (gas/oil) eBUS heat generators of the same type and output for heating and domestic hot water
- Cascade system of up to seven heat pumps (flexoTHERM or aroTHERM) of the same type and output for heating, cooling and domestic hot water. A back-up boiler (eBUS boiler) can also be incorporated.
- External cooling mode: A heat or cooling demand is specified for the VRC 720/2 via an external control

19.2.3 Equipment

- Adaptive heat curve
- Room temperature modulation for adjusting the flow temperature
- TFT graphic display (70 x 53 mm)
- Weekly programme
- Time programme for heating, cooling, domestic hot water and circulation
- „Days away from home“ function
- Ventilation function
- One-time cylinder charging outside of time programming
- Thermal disinfection
- Anti-legionella function for bivalent solar cylinders
- Flexible screed-drying function
- Graphical solar yield, environmental yield and power consumption indicator
- EEBus ready (VR 921 Internet module required)
- [Isolating circuit in cascade mode](#)

19.2.4 Potential applications

- Can be used with a VR 71 main wiring centre as a solar control (up to 3 x regulated heating circuits)
- Can be used with a VR 70 wiring centre (1 x direct and 1 x non-regulated heating circuit)
- Up to nine heating circuits can be used (1 x VR 71 + 3 x VR 70)
- VR 92f remote control can be added
- For all Vaillant boilers with an eBUS interface
- A control can be used for renewable energies and conventional heating equipment with an eBUS interface
- A VR 32/3 bus coupler is required to integrate a recoVAIR ventilation unit or a hybrid unit
- To cascade conventional (gas/oil) heat generators with eBUS electronics and the flexoTHERM heat pump, a VR 32/3 is required for every heat generator from the second one onwards
- To cascade the aroTHERM heat pump, a VR 32 B is required for every heat pump from the second one onwards

Note

For underfloor heating, a VRC 9642 surface-mounted thermostat is also required for the underfloor heating circuit.



19.2.5 sensoCOMFORT VRC 720f and control module combinations

The following combinations are possible:

- VR 71 and optional 1 to 2 x VR 92f

or

- VR 71 and 1 to 3 x VR 70 and optional 1 to 2 x VR 92f
- Maximum number of VR 92f remote controls:
 - Without VPM W and without VPM S: Maximum 2 x VR 92f
 - With VPM W and without VPM S: Maximum 2 x VR 92f
 - With VPM W and with VPM S: Maximum 2 x VR 92f

19.3 Product description for the VR 71 main wiring centre



Fig. 748: VR 71 main wiring centre

VR 71 main wiring centre: Order no. 0020184846

Technical data

Rated voltage	230 V AC
Mains frequency	50 Hz
Total current	≤ 6.3 A
Rated surge voltage	2,500 V
Max. extra-low voltage (ELV)	24 V DC
Safety extra-low voltage (SELV)	24 V DC
Mode of operation	Type 1.B.C.Y
Connection type	Y
IP rating	IP 20
Protection class	I
Pollution degree	2
Environmental temperature	0 to 60 °C
Relative humidity	20 to 95 %
Height	293 mm
Width	277 mm
Depth	68 mm

The VR 71 main wiring centre is used to expand the VRC 720(f) system control.

In addition to the system control, two VR 92(f) remote controls can be connected. This set-up enables ErP class VIII to be achieved (increases the efficiency of the system by 5%).

Using the main wiring centre makes it possible to set/select the following functions:

Each configuration corresponds to a defined connection assignment of the FM5 functional module.

Configuration of the FM5 functional module

Configuration	System property	Mixed heating circuits
1	Solar heating and/or domestic hot water support with two solar cylinders	Max. 2
2	Solar heating and/or domestic hot water support with one solar cylinder	Max. 3
3	3 x mixed heating circuits	Max. 3
6	allSTOR multi-functional buffer cylinder and domestic hot water station	Max. 3

If a FM3 functional module is installed, the system has one mixed and one non-mixed heating circuit.

The potential configuration (FM3) corresponds to a defined terminal assignment for the FM3 functional module.

If the FM3 and FM5 functional modules are installed in a system, each additional installed FM3 functional module adds two mixed heating circuits to the system.

The potential configuration (FM3+FM5) corresponds to a defined terminal assignment for the FM3 functional module.

Connecting the actuators to the FM5 functional module

Configuration	R1	R2	R3	R4	R5	R6	R7/R8	R9/R10	R11/R12	R13
1	3f1	3f2	9gSolar	MA	3j	3c/9e	9k1op/9k1cl	9k2op/9k2cl	-	-
2	3f1	3f2	3f3	MA	3j	3c/9e	9k1op/9k1cl	9k2op/9k2cl	9k3op/9k3cl	-
3	3f1	3f2	3f3	MA	-	3c/9e	9k1op/9k1cl	9k2op/9k2cl	9k3op/9k3cl	-
6	3f1	3f2	3f3	MA	9gSolar	3c/9e	9k1op/9k1cl	9k2op/9k2cl	9k3op/9k3cl	-

Connecting the sensors to the FM5 functional module

Configuration	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
1	SysFlow	FS1	FS2	DHWBt2	DHW	DHWBt	COL	Solar yield	DEM2	TD1	TD2	PWM	-
2	SysFlow	FS1	FS2	FS3	DHW	DHWBt	COL	Solar yield	-	TD1	TD2	PWM	-
3	SysFlow	FS1	FS2	FS3	BufBt	DEM1	DEM2	DEM3	DHW	-	-	-	-
6	SysFlow	FS1	FS2	FS3	BufBt	BufBtCH	BufTopDHW	BufBt-DHW	DEM1	DEM2	DEM3	-	-

Meaning of the abbreviations

Abbreviation	Meaning
3c	Cylinder charging pump
3f[x]	Heating pump
3j	Solar pump
9e	Diverter valve for potable water
9gSolar	Solar diverter valve
9k[x]	3-port mixing valve
BufBt	Bottom buffer cylinder temperature sensor
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
COL	Collector temperature sensor
DEM[x]	External heat demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBt	Bottom cylinder temperature sensor (domestic hot water cylinder)
DHWBt2	Cylinder temperature sensor (second solar cylinder)
FS[x]	Flow temperature sensor for heating circuit/swimming pool sensor
MA	Multi-function output
PWM	PWM signal for pump
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD1, TD2	Temperature sensor for a differential temperature control

Sensor assignment

Sensor assignment for the FM5 functional module

Configuration	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
1	VR 10	VR 10	VR 10	VR 10	VR 10	VR 10	VR 11	VR 10	-	VR 10	VR 10	-	-
2	VR 10	VR 10	VR 10	VR 10	VR 10	VR 10	VR 11	VR 10	-	VR 10	VR 10	-	-
3	VR 10	VR 10	VR 10	VR 10	VR 10	-	-	-	VR 10	VR 10	-	-	-
6	VR 10	VR 10	VR 10	VR 10	VR 10	VR 10	VR 10	VR 10	-	-	-	VR 10	-

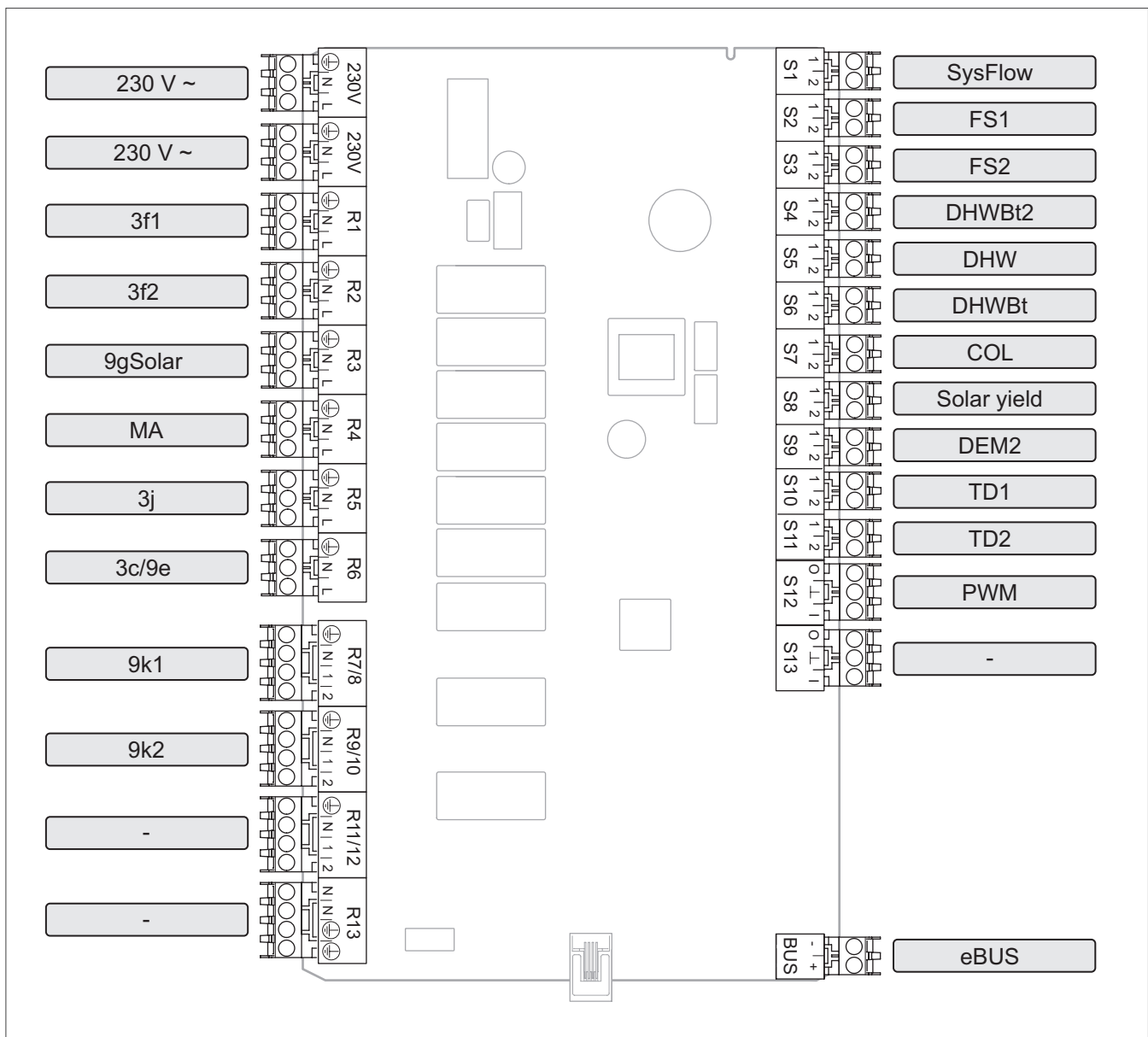


Fig. 749: Configuration 1

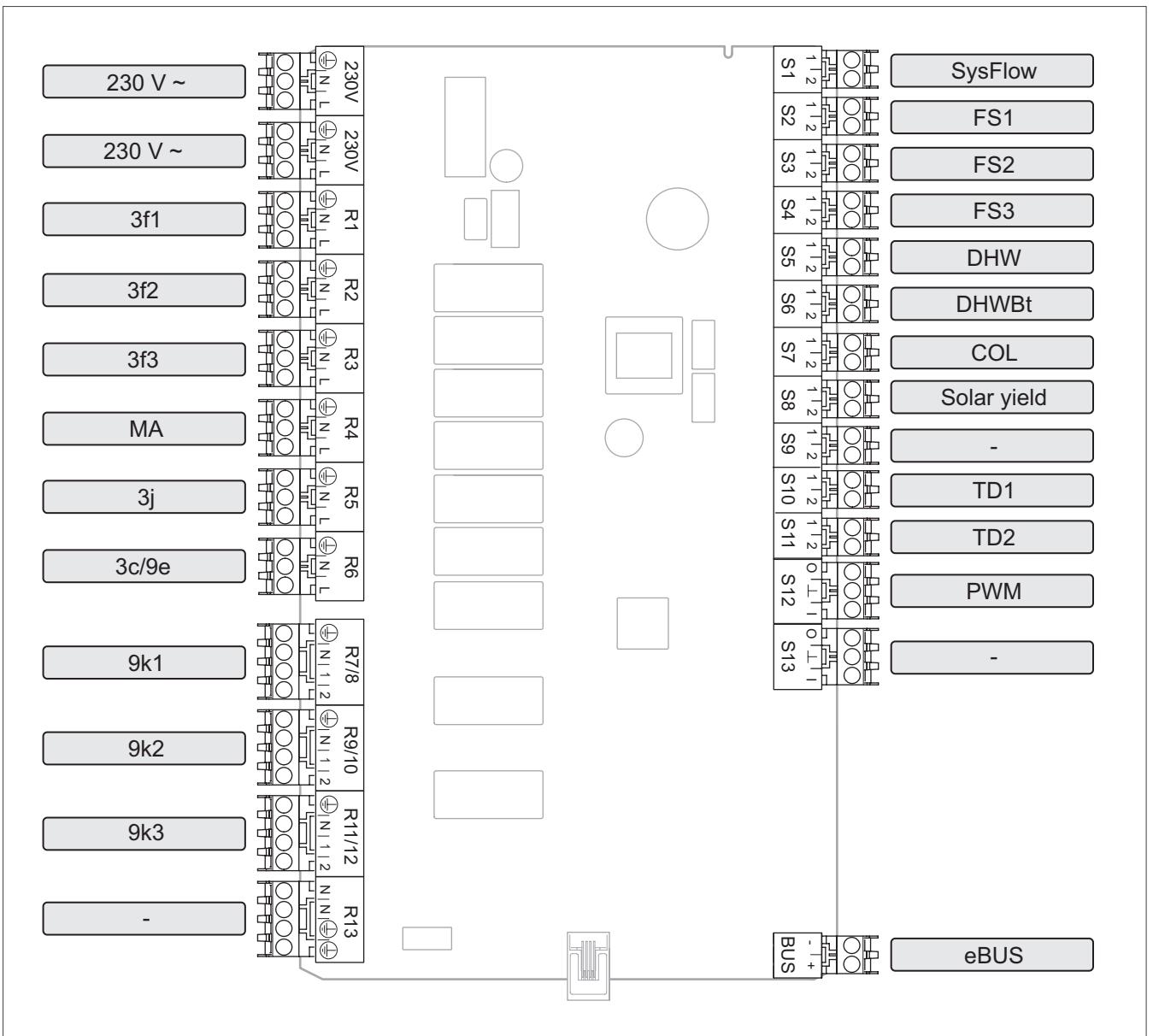


Fig. 750: Configuration 2

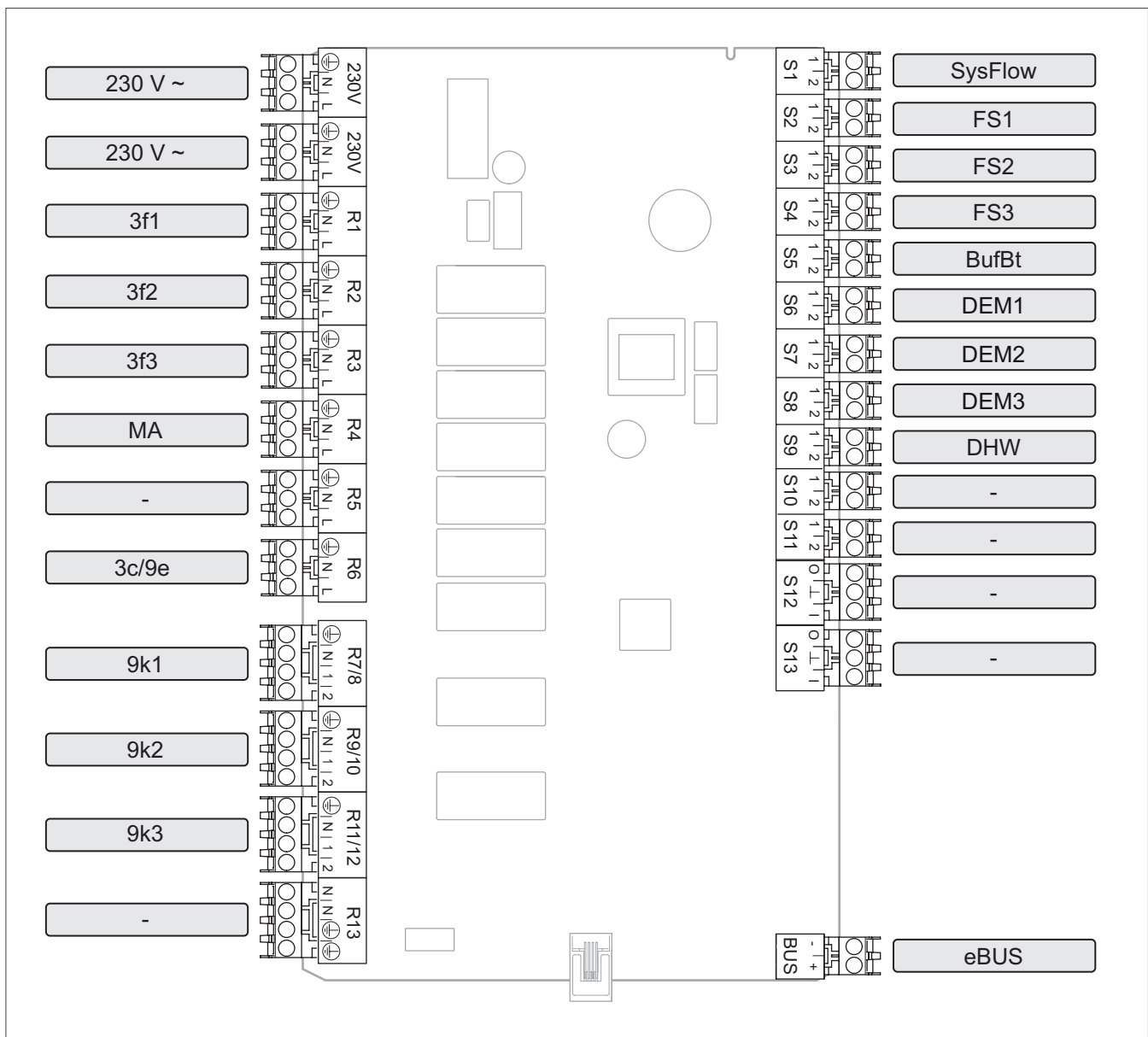


Fig. 751: Configuration 3

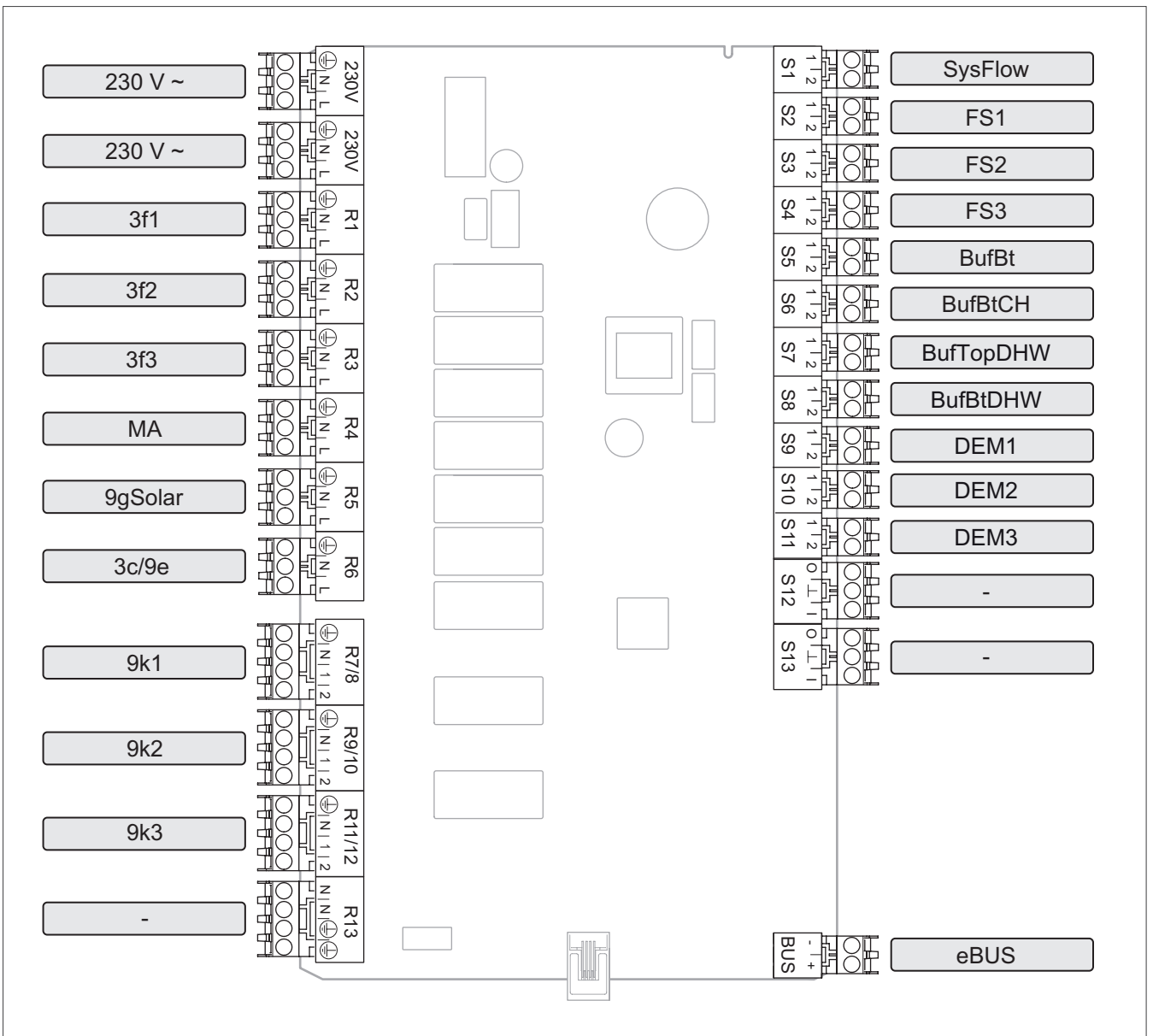


Fig. 752: Configuration 6

You can use the table to check the selected combination of the basic system diagram code and the configuration of functional modules.

Combinations of basic system diagram and configuration of functional modules

Basic system diagram code:	System	Without FM5, without FM3	With FM3	With FM5						With FM5 + Max. 3 x FM3
				Configuration						
				1	2	1	2	3	6	
Solar domestic hot water generation		Solar heating support								
For conventional heat generators										
1	Gas-/oil-fired boiler	x	x ¹⁾	x	x	-	-	x ¹⁾	x ¹⁾	x
	Gas-/oil-fired boiler, cascade	-	-	-	-	-	-	x ¹⁾	-	x
2	Gas-/oil-fired boiler	-	x ¹⁾	-	-	x	x	x ¹⁾	-	x
	Gas-/oil-fired boiler, cascade	-	-	-	-	-	-	x ¹⁾	x ¹⁾	x
For heat pump systems										
8	Monoenergetic heat pump system	x	x ¹⁾	x	x	-	-	x ¹⁾	x ¹⁾	x
	Hybrid system	x	-	-	-	-	-	-	-	-
9	Hybrid system	-	x ¹⁾	-	-	-	-	x ¹⁾	-	x
	Cascade of heat pumps	-	-	-	-	-	-	x ¹⁾	-	x
10	Mono-energy heat pump system with heat exchanger ²⁾	x	x ¹⁾	-	-	-	-	x ¹⁾	-	x
	Hybrid system with heat exchanger ²⁾	x	x ¹⁾	-	-	-	-	x ¹⁾	-	x
11	Mono-energy heat pump system with heat exchanger ²⁾	x	x ¹⁾	x	x	-	-	x ¹⁾	-	x
12	Hybrid system	x	x ¹⁾	-	-	-	-	x ¹⁾	-	x
13	Hybrid system with heat exchanger ²⁾	-	x ¹⁾	-	-	-	-	x ¹⁾	-	x
16	Hybrid system with heat exchanger ²⁾	-	x ¹⁾	-	-	-	-	x ¹⁾	x ¹⁾	x
	Cascade of heat pumps	-	-	-	-	-	-	x ¹⁾	x ¹⁾	x
	Mono-energy heat pump system with heat exchanger ²⁾	x	x ¹⁾	-	-	-	-	x ¹⁾	x ¹⁾	x

x: Combination possible
 -: Combination not possible
 1) Buffer management possible
 2) E.g. **VWZ MWT**

19.4 Product description for the VR 70 wiring centre



Fig. 753: VR 70 wiring centre

VR 70 wiring centre: Order no. 0020184843

Technical data

Rated voltage	230 V AC
Mains frequency	50 Hz
Total current	≤ 4 A
Rated surge voltage	2,500 V
Max. extra-low voltage (ELV)	24 V DC
Safety extra-low voltage (SELV)	24 V DC
Mode of operation	Type 1.B.C.Y
Connection type	Y
IP rating	IP 20
Protection class	I
Pollution degree	2
Environmental temperature	0 to 60 °C
Relative humidity	20 to 95 %
Height	293 mm
Width	277 mm
Depth	68 mm

The VR 70 wiring centre is used to expand the functions of the VRC 720(f) system control using the VR 71 main wiring centre.

The VR 70 wiring centre can be used to control an additional two heating circuits.

Up to 3 x VR 70 wiring centres can be combined with the VR 71 main wiring centre. Up to 9 x regulated heating circuits are therefore possible (1 x VR 71 + 3 x VR 70).

This module enables VR 92(f) remote controls to be connected to the system.

If a FM3 functional module is installed, the system has one mixed and one non-mixed heating circuit.

The potential configuration (FM3) corresponds to a defined terminal assignment for the FM3 functional module.

If the FM3 and FM5 functional modules are installed in a system, each additional installed FM3 functional module adds two mixed heating circuits to the system.

The potential configuration (FM3+FM5) corresponds to a defined terminal assignment for the FM3 functional module.

Connecting the actuators and sensors to the FM3 functional module

Configuration	R1	R2	R3/R4	R5/R6	S1	S2	S3	S4	S5	S6	S7
FM3+FM5	3fa	3fb	9kaop/9kacl	9kbop/9kbccl	-	DEMa	DEMb	-	FSa	FSb	-
FM3	3f1	3f2	MA	9k2op/9k2cl	BufBt/DHW	DEM1	DEM2	-	SysFlow	FS2	-

Meaning of the abbreviations

Abbreviation	Meaning
3c	Cylinder charging pump
3f[x]	Heating pump
3j	Solar pump
9e	Diverter valve for potable water
9gSolar	Solar diverter valve
9k[x]	3-port mixing valve
BufBt	Bottom buffer cylinder temperature sensor
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
COL	Collector temperature sensor
DEM[x]	External heat demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBt	Bottom cylinder temperature sensor (domestic hot water cylinder)
DHWBt2	Cylinder temperature sensor (second solar cylinder)
FS[x]	Flow temperature sensor for heating circuit/swimming pool sensor
MA	Multi-function output
PWM	PWM signal for pump
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD1, TD2	Temperature sensor for a differential temperature control

Sensor assignment

Sensor assignment for the FM3 functional module

Configuration	S1	S2	S3	S4	S5	S6	S7
FM3+FM5	-	-	-	-	VR 10	VR 10	-
FM3	VR 10	-	-	-	VR 10	VR 10	-

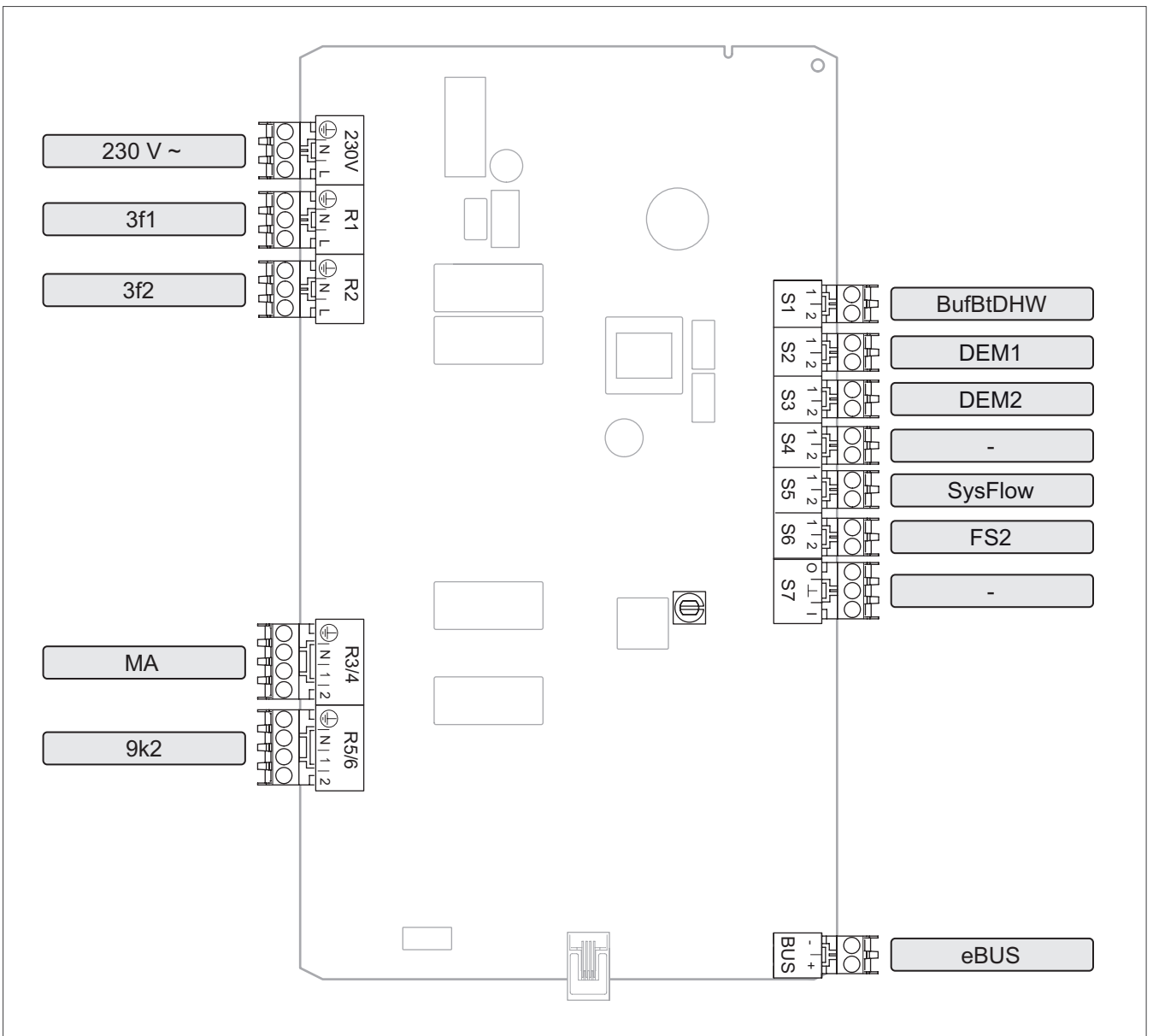


Fig. 754: Configuration FM3 (VR 70)

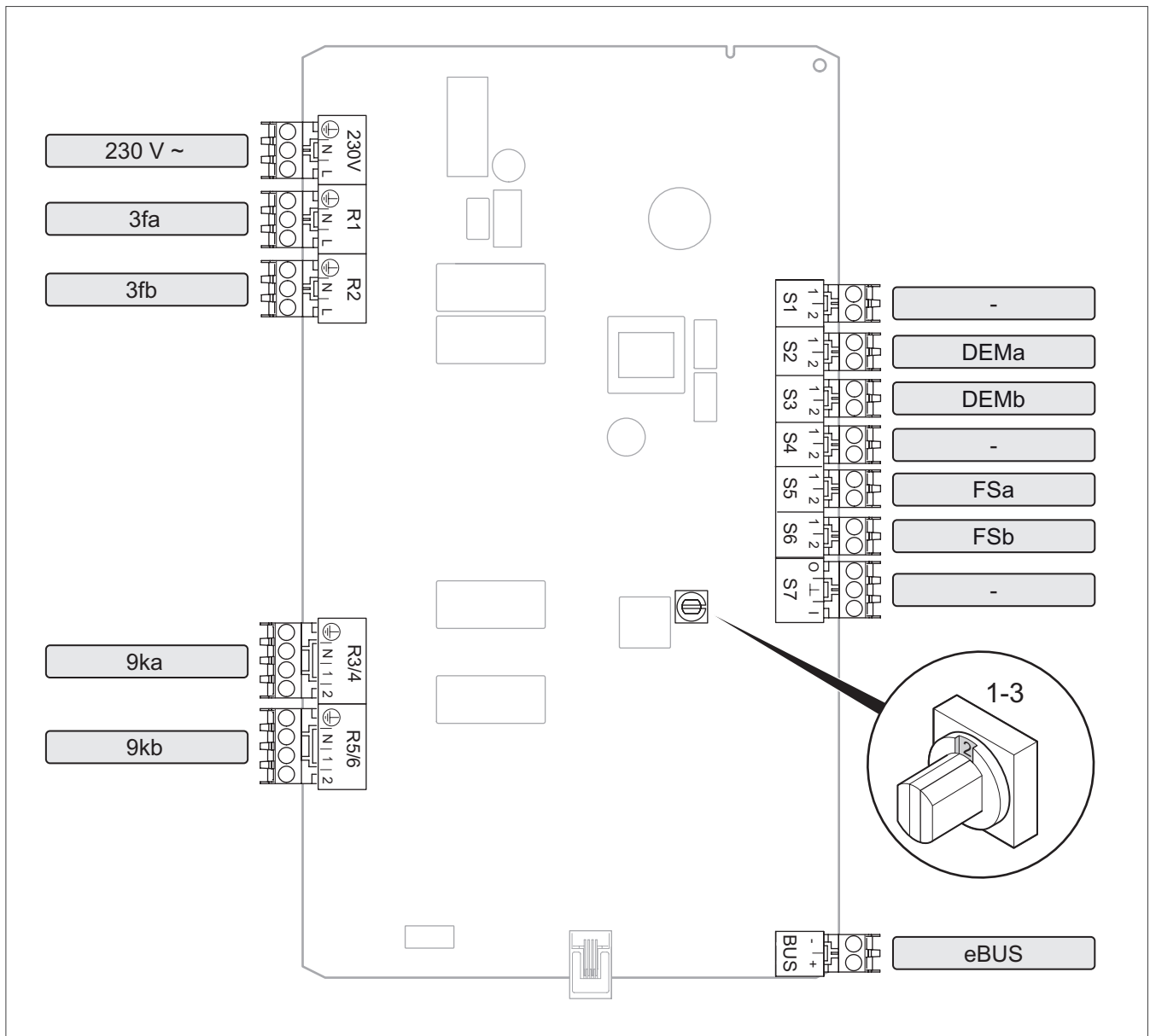


Fig. 755: Configuration FM3 (VR 70) + FM5 (VR 71)

You can use the table to check the selected combination of the basic system diagram code and the configuration of functional modules.

Combinations of basic system diagram and configuration of functional modules

Basic system diagram code:	System	Without FM5, without FM3	With FM3	With FM5						With FM5 + Max. 3 x FM3
				Configuration						
				1	2	1	2	3	6	
		Solar domestic hot water generation		Solar heating support						
For conventional heat generators										
1	Gas-/oil-fired boiler	x	x ¹⁾	x	x	-	-	x ¹⁾	x ¹⁾	x
	Gas-/oil-fired boiler, cascade	-	-	-	-	-	-	x ¹⁾	-	x
2	Gas-/oil-fired boiler	-	x ¹⁾	-	-	x	x	x ¹⁾	-	x
	Gas-/oil-fired boiler, cascade	-	-	-	-	-	-	x ¹⁾	x ¹⁾	x
For heat pump systems										
8	Monoenergetic heat pump system	x	x ¹⁾	x	x	-	-	x ¹⁾	x ¹⁾	x
	Hybrid system	x	-	-	-	-	-	-	-	-
9	Hybrid system	-	x ¹⁾	-	-	-	-	x ¹⁾	-	x
	Cascade of heat pumps	-	-	-	-	-	-	x ¹⁾	-	x
10	Mono-energy heat pump system with heat exchanger ²⁾	x	x ¹⁾	-	-	-	-	x ¹⁾	-	x
	Hybrid system with heat exchanger ²⁾	x	x ¹⁾	-	-	-	-	x ¹⁾	-	x
11	Mono-energy heat pump system with heat exchanger ²⁾	x	x ¹⁾	x	x	-	-	x ¹⁾	-	x
12	Hybrid system	x	x ¹⁾	-	-	-	-	x ¹⁾	-	x
13	Hybrid system with heat exchanger ²⁾	-	x ¹⁾	-	-	-	-	x ¹⁾	-	x
16	Hybrid system with heat exchanger ²⁾	-	x ¹⁾	-	-	-	-	x ¹⁾	x ¹⁾	x
	Cascade of heat pumps	-	-	-	-	-	-	x ¹⁾	x ¹⁾	x
	Mono-energy heat pump system with heat exchanger ²⁾	x	x ¹⁾	-	-	-	-	x ¹⁾	x ¹⁾	x

- x: Combination possible
- : Combination not possible
- 1) Buffer management possible
- 2) E.g. **VWZ MWT**

19.5 VRC 700/6 product description



Fig. 756: VRC 700/6

19.5.1 Technical data

Technical data	Unit	VRC 700/6
Operating voltage U _{max} .	V	24
Control power consumption	mA	< 50
Maximum permissible environmental temperature	°C	60
Relative room humidity	%	20 - 95
Supply line cross-section	mm ²	0.75 - 1.5
Dimensions with wall-mounting casing:		
Height	mm	115
Width	mm	147
Depth	mm	50
IP rating	-	IP 20
Protection class for the control	-	III
Order no.	-	0020266797

19.5.2 Special features

- Weather-compensated eBUS control with plain text display
- Convenient operation via an app for Android and iOS (VR 920 Internet module required)
- Intuitive operation without the need for prior knowledge
- Fast start-up and system configuration thanks to guided questions in the installation assistant
- Can be used for domestic hot water generation (cylinder charging) without an additional module and in a non-regulated heating circuit
- Can be added to with VR 70 and VR 71 modules
- triVAL parameter for optimising the efficiency of the hybrid system
- Moisture sensor control in conjunction with the geoTHERM VWL... 5/4, flexoTHERM VWF... 7/4, flexoCOMPACT VWF... 8/4 and aroTHERM for humidity prevention in cooling mode
- Integrated actuation of Vaillant recoVAIR ventilation units (recoVAIR, recoCOMPACT and versoTHERM with versoVAIR)
- Integrated actuation of hybrid systems
- Cascade system of up to seven conventional (gas/oil) eBUS heat generators of the same type and output for heating and domestic hot water
- Cascade system of up to seven heat pumps (flexoTHERM or aroTHERM) of the same type and output for heating, cooling and domestic hot water. A back-up boiler (eBUS boiler) can also be incorporated
- Second solar cylinder possible

19.5.3 Equipment

- Adaptive heating curve
- Room temperature modulation for adjusting the flow temperature
- Extra-wide, illuminated plain text display
- Weekly programme
- Time programme for heating circuits, cylinder charging circuit and circulation circuit
- Holiday programme
- Ventilation function
- Party function
- One-time cylinder charging outside of time programming
- Thermal disinfection
- Anti-legionella function for bivalent solar cylinders
- Screed-drying function
- Graphical solar yield, environmental yield and power consumption indicator
- EEBus ready (VR 920 Internet module required)
- KNX (ise smart connect KNX Vaillant gateway required. Available from ise GmbH)

19.5.4 Potential applications

- Can be used as a solar control with the VR 70 wiring centre and solar module (one direct/regulated heating circuit)
- When used with the VR 71 wiring centre and solar module, can be used as a solar control (three regulated heating circuits)
- Can be used with up to nine regulated heating circuits
- For all Vaillant boilers with an eBUS interface
- A control can be used for ventilation, renewable energies and conventional heating equipment with an eBUS interface
- A VR 32/3 bus coupler is required to integrate a recoVAIR ventilation unit or a hybrid unit
- To cascade conventional (gas/oil) heat generators with eBUS electronics and the flexoTHERM heat pump, a VR 32/3 is required for every heat generator from the second one onwards
- To cascade the aroTHERM heat pump, a VR 32 B is required for every heat pump from the second one onwards
- To cascade the aroTHERM split heat pump, a VR 32/3 is required for every heat pump from the second one onwards

Note

For underfloor heating, a VRC 9642 surface-mounted thermostat is also required for the underfloor heating circuit.



19.5.5 VRC 700/6 and control module combinations

The following combinations are possible:

- VR 70 and optional 1 x VR 91

or

- VR 71 and optional 1 to 3 x VR 91f

or

- VR 71 and 1 to 3 x VR 70 and optional 1 to 8 x VR 91
- Maximum number of VR 91 remote controls:
 - Without VPM W and without VPM S: Maximum 8 x VR 91
 - With VPM W and without VPM S: Maximum 7 x VR 91
 - With VPM W and with VPM S: Maximum 6 x VR 91

19.6 VRC 700f/4 product description



Fig. 757: VRC 700f/4

19.6.1 Technical data

Technical data	Unit	VRC 700f/4
Battery type		LR06
Transmission frequency	MHz	868
Transmission power	mW	≤ 10
Range outdoors	m	≤ 100
Range indoors	m	≤ 25
Maximum permissible environmental temperature	°C	60
Relative room humidity	%	35 ... 90
Dimensions with wall-mounting casing:		
Height	mm	115
Width	mm	147
Depth	mm	50
IP rating	-	IP 20
Protection class for controls	-	III
Order no.	-	0020218359

Technical data	Unit	Radio receiver unit
Max. operating voltage	V	24
Power consumption	mA	< 50
Connection cable cross-section	mm ²	0.75 - 1.5
Transmission frequency	MHz	868
Transmission power	mW	≤ 10
Range outdoors	m	≤ 100
Range indoors	m	≤ 25
Maximum permissible environmental temperature	°C	60
Relative room humidity	%	35 ... 90
Dimensions with wall-mounting casing:		
Height	mm	115
Width	mm	147
Depth	mm	50

19.6.2 Special features

- Weather-compensated radio eBUS control with plain text display
- Convenient operation via an app for Android and iOS (only possible with the VR 920 Internet module)
- Intuitive operation without the need for prior knowledge
- Fast start-up and system configuration thanks to guided questions in the installation assistant
- Can be used for domestic hot water generation (cylinder charging) without an additional module and in a non-regulated heating circuit
- Can be added to with VR 70 and VR 71 modules
- triVAL parameter for optimising the efficiency of the hybrid system
- Moisture sensor control in conjunction with the geoTHERM VWL... 5/4; flexoTHERM VWF... 7/4; flexoCOMPACT VWF... 8/4 and aroTHERM for humidity prevention in cooling mode
- Integrated actuation of Vaillant recoVAIR ventilation units
- Integrated actuation of hybrid systems
- Cascade system of up to seven conventional (gas/oil) eBUS heat generators of the same type and output for heating and domestic hot water
- Cascade system of up to seven heat pumps (flexoTHERM or aroTHERM) of the same type and output for heating and domestic hot water. A back-up boiler (eBUS boiler) can also be incorporated.

19.6.3 Equipment

- Adaptive heating curve
- Room temperature modulation for adjusting the flow temperature
- Weekly programme
- Extra-wide, illuminated plain text display
- Time programme for heating circuits, cylinder charging circuit and circulation circuit
- Holiday programme
- Ventilation function
- Party function
- One-time cylinder charging outside of time programming
- Thermal disinfection
- Anti-legionella function for bivalent solar cylinders
- Screed-drying function
- Graphical solar yield indicator, environmental yield and energy consumption indicator
- EEBus ready (VR 920 Internet module required)
- KNX (ise smart connect KNX Vaillant gateway required. Available from ise GmbH)

19.6.4 Potential applications

- Can be used as a solar control with the VR 70 wiring centre and solar module (one direct/regulated heating circuit)
- Can be used as a solar control with the VR 71 wiring centre and solar module (three regulated heating circuits)
- Can be used with up to three regulated heating circuits
- For all Vaillant boilers with an eBUS interface
- A control can be used for ventilation, renewable energies and conventional heating technology with an eBUS interface
- A VR 32/3 bus coupler is required to integrate a recoVAIR ventilation unit or a hybrid unit
- To cascade conventional (gas/oil) heat generators with eBUS electronics and the flexoTHERM heat pump, a VR 32/3 is required for every heat generator from the second one onwards
- To cascade the aroTHERM heat pumps, a VR 32 B is required for every heat pump from the second one onwards

Note

For underfloor heating, a VRC 9642 surface-mounted thermostat is also required for the underfloor heating circuit.



19.6.5 VRC 700f/4 and control module combinations

The following combinations are possible:

- VR 70 and optional 1 x VR 91f

or

- VR 71 and optional 1 to 3 x VR 91f

19.7 VR 70 mixer and solar module product description



Fig. 758: VR 70 mixer and solar module

VR 70 mixer and solar module: Order no. 0020184843

The mixer and solar module expands the functions of the VRC 700(f) and VRC 720.

This module enables a VR 91(f) and VR 92 remote control unit to be connected to the system.

Using the wiring centre makes it possible to set/select the following functions:

- Conf. 1: One non-mixed heating circuit, one mixed heating circuit and domestic hot water cylinder charging
- Conf. 3: Multi-functional buffer cylinder with one non-mixed and one mixed heating circuit
- Conf. 5: Two mixed heating circuits added
- Conf. 6: Solar domestic hot water generation with one non-mixed heating circuit
- Conf. 12: Solar heating support with one mixed heating circuit

Note

A VR 11 (collector sensor) must be used for the „COL“ sensor; all other sensors require a VR 10 (standard sensor).



VR 70 configuration - configuring the actuator outputs and sensor inputs

Conf. VR 70	Assigning the actuator outputs						Assigning the sensor inputs						
	R1	R2	R3	R4	R5	R6	S1	S2	S3	S4	S5	S6	S7
1	HC1P	HC2P	MA	–	HC2 _{op}	HC2 _{cl}	DHW1/ Buf _{Bt}	DEM1	DEM2	–	Sys _{Flow} / Buf _{Top}	FS2	–
3	MA	HC2P	LP/3WV	–	HC2 _{op}	HC2 _{cl}	Buf _{TopDHW}	Buf _{BtDHW}	Buf _{BtCH}	Sys _{Flow}	Buf _{TopCH}	FS2	–
5	HC1P	HC2P	HC1 _{op}	HC1 _{cl}	HC2 _{op}	HC2 _{cl}	Sys _{Flow}	DEM1	DEM2	–	FS1	FS2	–
6	COLP	LegP	MA	–	ZV1	–	DHW1	DHW _{Bt}	–	Sys _{Flow}	COL	Solar yield	PWM
12	COLP	HC1P	TDO	3WV	HC1 _{op}	HC1 _{cl}	Solar yield	Buf _{Bt}	TD1	TD2	COL	FS1	PWM

Key

HC1P/HC2P/HC3P	Heating pump for heating circuit 1/2/3
HC1 _{cl} /HC2 _{cl} /HC3 _{cl}	Close mixer for heating circuit 1/2/3
HC1 _{op} /HC2 _{op} /HC3 _{op}	Open mixer for heating circuit 1/2/3
DEM1/DEM2/DEM3	External heating switch-off for heating circuit 1/2/3
FS1/FS2/FS3	Flow temperature sensor for heating circuit 1/2/3
MA	Multi-function output
DHW1	Cylinder temperature sensor
DHW _{Top}	Top cylinder temperature sensor for DHW cylinder
DHW _{Bt}	Bottom cylinder temperature sensor for DHW cylinder
Sys _{Flow}	System flow temperature (low loss header)
ZV1	Zone valve for zone 1
Buf _{Top}	Top cylinder sensor for the buffer cylinder
Buf _{Bt}	Bottom cylinder sensor for the buffer cylinder
Buf _{TopDHW}	Top cylinder sensor for the DHW section of the allSTOR buffer cylinder
Buf _{BtDHW}	Bottom cylinder sensor for the DHW section of the allSTOR buffer cylinder
Buf _{TopCH}	Top cylinder sensor for the heating section of the allSTOR buffer cylinder
Buf _{BtCH}	Bottom cylinder sensor for the heating section of the allSTOR buffer cylinder
TD1/TD2	1st/2nd temperature sensor for a ΔT control system
TDO	Output for an actuator for a ΔT control system
LP/3WV	Charging pump or 3-port valve switch to DHW cylinder
COLP1	Collector pump
COL1	Collector temperature sensor
LegP	Anti-legionella pump
Yield	Solar yield sensor
PWM1	PWM actual value input/target value output of the PWM pump 1 (only in combination with the VMS 70 solar pump station)

Settings for the basic system diagram and VR 70 configuration

VRC 700(f) and VRC 720 configuration: Basic system diagram		No VR 70/71	Configuring the VR 70				
			1	3	5	6	12
1	System with gas- or oil-fired boiler Domestic hot water control via the boiler, i.e. cylinder sensor and cylinder charging pump connected to the boiler		Two heating circuits	allSTOR exclusive	2 x mixed heating circuits	Solar domestic hot water generation	Solar heating support
		One direct heating circuit	One direct and/or one mixed heating circuit	One direct and/or one mixed heating circuit	Up to two mixed heating circuits	One direct heating circuit	1 x mixed heating circuit
		•	• Buffer management possible	/	•	/	/
2	System with gas- or oil-fired boiler + solar domestic hot water generation Domestic hot water control via the VRC 700(f)/VRC 720, i.e. cylinder sensor and cylinder charging pump connected to the VR 70/VR 71	/	/	• Buffer management possible	/	•	/
		/	•	/	/	/	•
6	3 kW hybrid system (alternative mode of operation) Domestic hot water from back-up boiler only	•	•	/	/	/	/
7	3 kW hybrid system (parallel mode of operation) With two circuits/zones Domestic hot water from back-up boiler only	/	•	/	/	/	/
8	Monoenergetic heat pump system Back-up boiler requires the pump in the heat pump Domestic hot water via a heat pump and back-up heater	•	• Buffer management possible	• Buffer management possible	•	•	/
	Simple hybrid system Back-up boiler requires the pump in the heat pump Domestic hot water from back-up boiler only	•	/	/	/	/	/
9	Simple hybrid system Back-up boiler requires the pump in the heat pump Domestic hot water from back-up boiler only	/	• Buffer management possible	/	•	/	/
10	Monoenergetic heat pump system with system separation Back-up boiler requires the pump from the heat exchanger module Domestic hot water from heat pump only	•	• Buffer management possible	/	•	/	/
	Simple hybrid system with system separation Back-up boiler requires the pump from the heat exchanger module Domestic hot water from back-up boiler only	•	• Buffer management possible	/	•	/	/
11	Monoenergetic heat pump system with system separation Back-up boiler requires the pump in the heat pump Domestic hot water via a heat pump and back-up boiler	•	• Buffer management possible	/	•	•	/
12	Full hybrid system Back-up boiler does not require the pump in the heat pump Domestic hot water via a heat pump and back-up boiler (Domestic hot water partially controlled by the boiler)	/	• Buffer management possible	/	•	/	/

• Setting possible
 / Settings not possible

VRC 700(f) and VRC 720 configuration: Basic system diagram		No VR 70/71	Configuring the VR 70				
			1	3	5	6	12
13	Full hybrid system with system separation Back-up boiler does not require the pump in the heat pump Domestic hot water via a heat pump and back-up boiler (Domestic hot water partially controlled by the boiler)	/	• Buffer management possible	/	•	/	/
16	Full hybrid system with system separation as an option Back-up boiler does not require the pump in the heat pump Domestic hot water via a heat pump and back-up boiler (Domestic hot water control via VRC 700(f)/VRC 720)	/	• Buffer management possible	• Buffer management possible	/	/	/
	Monoenergetic heat pump system with system separation Back-up boiler requires the pump from the heat exchanger module Domestic hot water via a heat pump and back-up boiler	/	• Buffer management possible	• Buffer management possible	/	/	/

- Setting possible
- / Settings not possible

Assigning basic system diagrams to heat generators

Basic system diagram	Heat generator
1, 2	Conventional heat generator
6, 7, 8, 9	geoTHERM 3 kW heat pump
8, 9, 12, 16	flexoTHERM/flexoCOMPACT heat pump
8, 9, 12, 16	versoTHERM heat pump
8, 9, 12, 16	recoCOMPACT heat pump
8, 9, 10, 11, 12, 13, 16	aroTHERM (Split), aroTHERM plus heat pump

If you are cascading the VR 70 mixer and solar modules, the individual modules must be assigned their own unique addresses using the address switch:

- VR 70, address 1 = address switch to 1
- VR 70, address 2 = address switch to 2
- VR 70, address 3 = address switch to 3

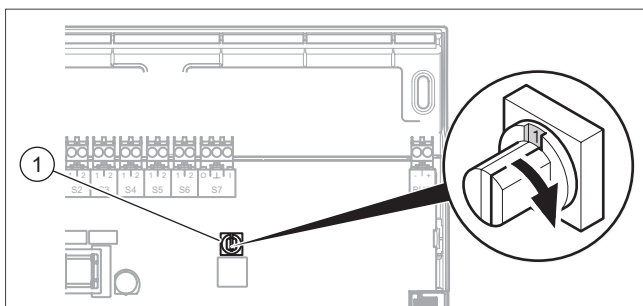


Fig. 759: Setting the bus address

- 1 Address switch

19.8 VR 71 mixer and solar module product description



Fig. 760: VR 71 mixer and solar module

VR 71 mixer and solar module: Order no. 0020184846

The VR 71 mixer and solar module is used to expand the VRC 700(f) control.

Two VR 91 (f) and VR 92 remote control units can also be connected. This set-up enables ErP class VIII to be achieved (increases the efficiency of the system by 5%).

Using the wiring centre makes it possible to set/select the following functions:

- Conf. 1: Solar domestic hot water generation and two solar cylinders with two mixed heating circuits
- Conf. 1: Solar heating support and two solar cylinder with three mixed heating circuits
- Conf. 2: Solar domestic hot water generation with three mixed heating circuits
- Conf. 2: Solar heating support with three mixed heating circuits
- Conf. 3: Three mixed heating circuits added
- Conf. 6: Multi-functional buffer cylinder with three mixed heating circuits

VR 71 configuration - configuring the sensor inputs

Conf. VR 71	Assigning the sensor inputs												
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
1	Sys _{Flow}	FS1	FS2	DHW _{Bt2}	DHW _{Top1}	DHW _{Bt1}	COL1	Yield	DEM2	TD1	TD2	PWM1	–
2	Sys _{Flow}	FS1	FS2	FS3	DHW _{Top}	DHW _{Bt}	COL1	Yield	–	TD1	TD2	PWM1	–
3	Sys _{Flow} / Buf _{Top}	FS1	FS2	FS3	Buf _{Bt}	DEM1	DEM2	DEM3	DHW1	–	–	–	–
6	Sys _{Flow} / Buf _{Top}	FS1	FS2	FS3	Buf _{TopCH}	Buf _{BtCH}	Buf _{TopDHW}	Buf _{BtDHW}	DEM1	DEM2	DEM3	DHW _{Bt2}	–

VR 71 configuration - configuring the actuator outputs

Conf. VR 71	Assigning the actuator outputs											
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
1	HC1P	HC2P	UV _{Solar}	MO	COLP1	LP/3WV	HC1 _{op}	HC1 _{cl}	HC2 _{op}	HC2 _{cl}	–	–
2	HC1P	HC2P	HC3P	MO	COLP1	LP/3WV	HC1 _{op}	HC1 _{cl}	HC2 _{op}	HC2 _{cl}	HC3 _{op}	HC3 _{cl}
3	HC1P	HC2P	HC3P	MO	–	LP/3WV	HC1 _{op}	HC1 _{cl}	HC2 _{op}	HC2 _{cl}	HC3 _{op}	HC3 _{cl}
6	HC1P	HC2P	HC3P	MO	UV _{Solar}	LP/3WV	HC1 _{op}	HC1 _{cl}	HC2 _{op}	HC2 _{cl}	HC3 _{op}	HC3 _{cl}

Key

HC1P/HC2P/HC3P	Heating pump for heating circuit 1/2/3
HC1 _{cl} /HC2 _{cl} /HC3 _{cl}	Close mixer for heating circuit 1/2/3
HC1 _{op} /HC2 _{op} /HC3 _{op}	Open mixer for heating circuit 1/2/3
DEM1/DEM2/DEM3	External heating switch-off for heating circuit 1/2/3
FS1/FS2/FS3	Flow temperature sensor for heating circuit 1/2/3
MO	Multi-function output
DHW1	Cylinder temperature sensor
DHW _{Top}	Top cylinder temperature sensor for DHW cylinder
DHW _{Bt}	Bottom cylinder temperature sensor for DHW cylinder
Sys _{Flow}	System flow temperature (low loss header)
ZV1	Zone valve for zone 1
Buf _{Top}	Top cylinder sensor for the buffer cylinder
Buf _{Bt}	Bottom cylinder sensor for the buffer cylinder
Buf _{TopDHW}	Top cylinder sensor for the DHW section of the allSTOR buffer cylinder
Buf _{BtDHW}	Bottom cylinder sensor for the DHW section of the allSTOR buffer cylinder
Buf _{TopCH}	Top cylinder sensor for the heating section of the allSTOR buffer cylinder
Buf _{BtCH}	Bottom cylinder sensor for the heating section of the allSTOR buffer cylinder
TD1/TD2	1st/2nd temperature sensor for a ΔT control system
TDO	Output for an actuator for a ΔT control system
LP/3WV	Charging pump or 3-port valve switch to DHW cylinder
COLP1	Collector pump
COL1	Collector temperature sensor
LegP	Anti-legionella pump
Yield	Solar yield sensor
UV _{Solar}	Solar cylinder diverter valve
PWM1	PWM actual value input/target value output of the PWM pump 1 (only in combination with the VMS 70 solar pump station)

Settings for the basic system diagram and VR 71 configuration

VRC 700(f) and VRC 720 configuration: Basic system diagram		No VR 70/71	VR 71 configuration					
			1	2	3	6		
			Solar domestic hot water generation and two solar cylinders	Solar heating support and two solar cylinders	Solar domestic hot water generation	Solar heating support	3 x mixed heating circuits	allSTOR exclusive
		One direct heating circuit	Up to two mixed heating circuits	Up to three mixed heating circuits				
1	System with gas- or oil-fired boiler Domestic hot water control via the boiler, i.e. cylinder sensor and cylinder charging pump connected to the boiler	•	/	/	/	/	• Buffer management possible	/
	System with gas- or oil-fired boiler + solar domestic hot water generation Domestic hot water control via the VRC 700(f)/VRC 720, i.e. cylinder sensor and cylinder charging pump connected to the VR 70/VR 71	/	•	/	•	/	/	• Buffer management possible
2	System with gas- or oil-fired boiler Domestic hot water control via the VRC 700(f)/VRC 720, i.e. cylinder sensor and cylinder charging pump connected to the VR 70/VR 71	/	/	•	/	•	• Buffer management possible	/
6	3 kW hybrid system (alternative mode of operation) Domestic hot water from back-up boiler only	•	/	/	/	/	/	/
7	3 kW hybrid system (parallel mode of operation) With two circuits/zones Domestic hot water from back-up boiler only	/	/	/	/	/	/	/
8	Monoenergetic heat pump system Back-up boiler requires the pump in the heat pump Domestic hot water via a heat pump and back-up heater	•	•	/	•	/	• Buffer management possible	• Buffer management possible
	Simple hybrid system Back-up boiler requires the pump in the heat pump Domestic hot water from back-up boiler only	•	/	/	/	/	/	/
9	Simple hybrid system Back-up boiler requires the pump in the heat pump Domestic hot water from back-up boiler only	/	/	/	/	/	• Buffer management possible	/
10	Monoenergetic heat pump system with system separation Back-up boiler requires the pump from the heat exchanger module Domestic hot water from heat pump only	•	/	/	/	/	• Buffer management possible	/
	Simple hybrid system with system separation Back-up boiler requires the pump from the heat exchanger module Domestic hot water from back-up boiler only	•	/	/	/	/	• Buffer management possible	/
11	Monoenergetic heat pump system with system separation Back-up boiler requires the pump in the heat pump Domestic hot water via a heat pump and back-up boiler	•	•	/	•	/	• Buffer management possible	/
12	Full hybrid system Back-up boiler does not require the pump in the heat pump Domestic hot water via a heat pump and back-up boiler (Domestic hot water partially controlled by the boiler)	/	/	/	/	/	• Buffer management possible	/

- Setting possible
- / Settings not possible

VRC 700(f) and VRC 720 configuration: Basic system diagram		No VR 70/71	VR 71 configuration					
			1	2	3	6		
13	Full hybrid system with system separation Back-up boiler does not require the pump in the heat pump Domestic hot water via a heat pump and back-up boiler (Domestic hot water partially controlled by the boiler)	/	/	/	/	/	• Buffer management possible	/
16	Full hybrid system with system separation as an option Back-up boiler does not require the pump in the heat pump Domestic hot water via a heat pump and back-up boiler (Domestic hot water control via VRC 700(f)/VRC 720)	/	/	/	/	/	• Buffer management possible	• Buffer management possible
	Monoenergetic heat pump system with system separation Back-up boiler requires the pump from the heat exchanger module Domestic hot water via a heat pump and back-up boiler	•	/	/	/	/	• Buffer management possible	• Buffer management possible

- Setting possible
- / Settings not possible

Assigning basic system diagrams to heat generators

Basic system diagram	Heat generator
1, 2	Conventional heat generator
6, 7, 8, 9	geoTHERM 3 kW heat pump
8, 9, 12, 16	flexoTHERM/flexoCOMPACT heat pump
8, 9, 12, 16	versoTHERM heat pump
8, 9, 12, 16	recoCOMPACT heat pump
8, 9, 10, 11, 12, 13, 16	aroTHERM (Split), aroTHERM plus heat pump

19.9 Product description for the VWZ AI heat pump control interface module for aroTHERM mono



Fig. 761: VWZ AI VWL X/2 heat pump control interface module

Article number

Product	Article number
VWZ AI VWL X/2 A West	0020117049
VWZ AI VWL X/2 A East	0020139944

Technical data

	VWZ AI VWL X/2 A
Operating voltage U_{max}	230 V
Power consumption	≤ 2 V·A
Contact loading of the output relay	≤ 2 A
Total current	≤ 4 A
Sensor operating voltage	3.3 V
Cross-section of eBUS line (extra low voltage)	≥ 0.75 mm ²
Cross-section of sensor line (extra low voltage)	≥ 0.75 mm ²
Cross-section of 230 V connection cable (pump or mixer connection cable)	≥ 1.5 mm ²
IP rating	IP 20
Protection class	II
Maximum environmental temperature	40 °C
Height	174 mm
Width	272 mm
Depth	52 mm

19.9.1 Special features

- Connection option for the following sensors:
 - Outdoor temperature sensor
 - DHW cylinder sensor
 - System flow sensor
 - Multi-function input (can be configured)
 - ESCO switch-off signal (can be configured)
- Connection option for the following actuators:
 - Back-up heater (1 to 3 levels)
 - Domestic hot water prioritising diverter valve
 - One configurable multi-function output (cooling signal or heat exchanger pump)
 - One freely configurable multi-function output

19.9.2 Equipment

- eBUS interface
- Appliance interface with display and control buttons
- VR 10 temperature sensor

19.9.3 Potential applications

Wall-hung heat pump control interface module for the **aroTHERM** heat pumps with integrated PCB.

The heat pump control interface module is already integrated in the **VWZ MEH 61** hydraulic station, in the **uniTOWER VIH QW 190** and in the **geoTHERM VWS 36/4.1**.

19.10 Product description for the VWZ AI heat pump control module for aroTHERM plus



Fig. 762: VWZ AI heat pump control module

Order no. 0010031643

Technical data

	VWZ AI VWL X/6 A
Operating voltage U_{\max}	230 V
Power consumption	$\leq 2 \text{ V}\cdot\text{A}$
Contact loading of the output relay	$\leq 2 \text{ A}$
Total current	$\leq 4 \text{ A}$
Sensor operating voltage	3.3 V
Cross-section of eBUS line (extra low voltage)	$\geq 0.75 \text{ mm}^2$
Cross-section of sensor line (extra low voltage)	$\geq 0.75 \text{ mm}^2$
Cross-section of 230 V connection cable (pump or mixer connection cable)	$\geq 1.5 \text{ mm}^2$
IP rating	IP 20
Protection class	II
Maximum environmental temperature	40 °C
Height	174 mm
Width	272 mm
Depth	52 mm

19.10.1 Special features

- Connection option for the following sensors:
 - Outdoor temperature sensor
 - DHW cylinder sensor
 - System flow sensor
 - Multi-function input (can be configured)
 - ESCO switch-off signal (can be configured)
- Connection option for the following actuators:
 - Back-up heater (1 to 3 levels)
 - Domestic hot water prioritising diverter valve
 - One configurable multi-function output (cooling signal or heat exchanger pump)
 - One freely configurable multi-function output

19.10.2 Equipment

- eBUS interface
- Appliance interface with display and control buttons
- VR 10 temperature sensor

19.10.3 Potential applications

Wall-hung heat pump control interface module for the **aroTHERM plus** heat pumps with integrated PCB.

The heat pump control interface module is already integrated in the **VWZ MEH 97/6** hydraulic station and in the **uniTOWER plus VIH QW 190/6**.



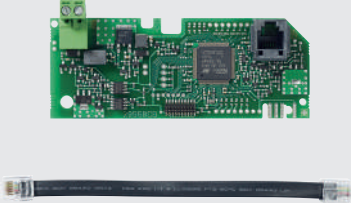


20. Control accessories





20.1 Combination options for controls with additional modules

Accessories	Weather-compensated system control	
	multiMATIC VRC 700 multiMATIC VRC 700f/4	sensoCOMFORT VRC 720 sensoCOMFORT VRC 720f
VR 70 wiring centre (FM3) 	• Connection via eBUS	
VR 71 main wiring centre (FM5) 	• Connection via eBUS	
VR 91(f) remote control 	• VR 91 connection via eBUS VR 91f connection via radio	-
VR 92(f) remote control 	-	• VR 92 connection via eBUS VR 92f connection via radio
Multi-functional accessories for the "2 in 7" module 	• Wiring centre for additional connections Direct connection to the heat generator	
Remote diagnostics and app control process VR 920 Internet module 	•	-
sensoNET VR 921 	•	•

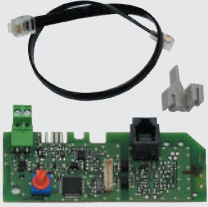




• can be used 7 – cannot be used

20.2 Accessories for the VRC, sensoCOMFORT


	Accessories	Order no.
	<p>VR 71 main wiring centre Special features Flexible extension module eBUS interface Product equipment Main wiring centre VR 10 (4x) standard sensor VR 11 (1) collector sensor Potential applications 2 x mixed heating circuits and solar heating support and/or domestic hot water generation with 2 x solar cylinders or 3 x mixed heating circuits and solar heating support and/or domestic hot water generation with 1 x solar cylinder or Three mixed heating circuits or Three mixed heating circuits in conjunction with a buffer cylinder Can be used for sensoCOMFORT 720 and sensoCOMFORT 720f</p>	0020184846
	<p>VR 70 wiring centre (FM3) Special features Flexible extension module eBUS interface Product equipment Wiring centre VR 10 (2x) standard sensor Potential applications If an FM3 functional module is installed, the system has 1 x mixed and 1 x non-mixed heating circuit. If the FM3 and FM5 functional modules are installed in a system, each additional installed FM3 functional module (maximum three) adds two mixed heating circuits to the system. Can be used for sensoCOMFORT 720 and sensoCOMFORT 720f</p>	0020184843
	<p>VR 39 additional module Special features Wiring centre for connecting an existing or new Vaillant heat generator with a 7-8-9 interface, bidirectionally to an eBUS control Can be installed in the electronics box Product equipment Plug-in module Connection cable Potential applications Can be used for the VRC 700 Note: Cannot be used with wiring centres.</p>	0020139898
	<p>VR 91 remote control unit for controlling a heating zone or a heating circuit Can be used for the VRC 700 Wired remote control for a zone (room temperature control by setting the target value) or a heating circuit in combination with the VRC 700 control. Zone assignment: One zone can be assigned to a VR 91. The controls must be installed in the relevant room; the thermostat function must also be switched on when using the VRC 700. The controls set the temperatures for the zones.</p>	0020171333
	<p>VR 91f remote control unit for controlling a heating zone or a heating circuit Can be used for the VRC 700f(4) Wireless remote control for a zone (room temperature control by setting the target value) or a heating circuit in combination with the VRC 700f(4) control. Zone assignment: One zone can be assigned to a VR 91f. The controls must be installed in the relevant room; the thermostat function must also be switched on when using the VRC 700(4). The controls set the temperatures for the zones.</p>	0020231565

	Accessories	Order no.
	<p>VR 92 remote control unit for controlling a heating zone or a heating circuit Can be used for the sensoCOMFORT Wired remote control for a zone (room temperature control by setting the target value) or a heating circuit in combination with the VRC 720 control. Zone assignment: One zone can be assigned to a VR 92. Up to four VR 92 units can be connected in a system. The controls must be installed in the relevant room; the thermostat function must also be switched on when using the VRC 720. The controls set the temperatures for the zones.</p>	0020260923
	<p>VR 92f remote control unit for controlling a heating zone or a heating circuit Can be used for sensoCOMFORT VRC 720f Wireless remote control for a zone (room temperature control by setting the target value) or a heating circuit in combination with the VRC 720f control. Zone assignment: One zone can be assigned to a VR 92f. Up to two VR 92f units can be connected in a system. The controls must be installed in the relevant room; the thermostat function must also be switched on when using the VRC 720f. The controls set the temperatures for the zones.</p>	0020260938
	<p>VR 920 Internet module Special features Access to the Vaillant profiDIALOG remote diagnostics portal for eBUS-enabled heat generators as of 2007 Remote parameter setting on, analysing and alerting from one to six separate boilers that are connected to a common Vaillant eBUS control and the VR 38 eBUS power supply unit Remote parameter setting on, analysing and alerting multi-circuit heating installations with eBUS controller Radio communication (868 MHz) with ambiSENSE thermostat possible Communication via EEBUS with the SMA Sunny Home Manager Potential applications For all Vaillant heat generators with eBUS interface as of 2007 Compatible control for the profiDIALOG remote diagnostics portal: All VRC 700 eBUS controls Up to six boilers can be integrated with the VR 38 eBUS power supply unit</p>	0020252922
	<p>sensonet VR 921 Special features Access to the Vaillant profiDIALOG remote diagnostics portal for eBUS-enabled heat generators as of 2007 Remote parameter setting on, analysing and alerting from one to six separate boilers that are connected to a common Vaillant eBUS control and the VR 38 eBUS power supply unit Remote parameter setting on, analysing and alerting multi-circuit heating installations with eBUS controller Radio communication (868 MHz) with ambiSENSE thermostat possible Communication via EEBUS with the SMA Sunny Home Manager Potential applications For all Vaillant heat generators with eBUS interface as of 2007 Compatible control for the profiDIALOG remote diagnostics portal: All sensoCOMFORT 720, sensoDIRECT 710, VRC 700(f), eBUS controls Up to six boilers can be integrated with the VR 38 eBUS power supply unit</p>	0020260962

20.3 Bus coupler

	Accessories	Order no.
	<p>VR 32/3 modulating eBUS bus coupler For cascading heat generators with eBUS interface Can be used for the sensoCOMFORT VRC 720, VRC 700, auroMATIC 620, VWS 36/4.1, aroTHERM split</p> <p>Note: With two or more heat generators, a bus coupler is required.</p>	0020139895
	<p>VR 32 B modulating eBUS bus coupler for the aroTHERM cascade system Can be used for sensoCOMFORT VRC 720, VRC 700(f) in conjunction with an aroTHERM cascade system</p> <p>Note: As of the second aroTHERM heat pump, a bus coupler must be used.</p>	0020235465
	<p>VR 30/3 modulating bus coupler For cascading modulating heat generators Maximum of eight modulating bus couplers</p> <p>Note: With three or more heat generators, a bus coupler must be used. Cannot be used with Vaillant boilers that have eBUS interfaces.</p>	0020139894
	<p>VR 31 switching bus coupler for cascading heat generators For all Vaillant switching heat generators with a 3-4-5 interface</p>	306786
	<p>VR 55 wall-mounting base As an accessory for mounting the energy balance control on the wall as a remote control unit, including a cover plate for the wall-mounting casing.</p>	306790

20.4 General control system accessories

	Accessories	Order no.
	<p>VR 10 standard sensor Can be used as a flow temperature sensor (surface-mounted sensor) or an immersion sensor Can be used for sensoCOMFORT, auroMATIC, VRT 370 (f), VRT 350, VRT 332, VRC 700 and integrated control</p>	306787
	<p>VR 11 collector temperature sensor As an accessory for the auroMATIC to connect a second collector field or solid fuel boiler</p>	306788
	<p>VRC 9642 surface-mounted thermostat with switching contact and enclosed strap fastening Adjustment range +10 to +90 °C, contact loading 230 V, switching differential (static) 5 K, can be used for sensoCOMFORT, auroMATIC 620, VRT 370 (f), VRC 700 Note: Required for underfloor heating.</p>	009642
	<p>2 in 7 multi-functional module Option for actuating "2 in 7" functions (can be installed in the electronics box) circulation pump/external heating pump, cylinder charging pump, external solenoid valve, operating/fault display, extraction hood, flue non-return flap/response. Can be used for the atmoTEC exclusive, atmoTEC plus, auroCOMPACT, ecoCOMPACT, ecoCRAFT exclusive, ecoTEC exclusive, ecoTEC plus VC 146 - 316, ecoTEC plus VCI, ecoTEC plus VCW, ecoVIT exclusive, icoVIT exclusive, flexoTHERM Note: Can only be used with Vaillant boilers that have eBUS electronics.</p>	0020017744
	<p>Anti-legionella pump connection cable Can be used to connect the external anti-legionella pump to the integrated control in the VMS 8 solar pump station</p>	0020183366



21. Domestic hot water cylinder

21.1 Product overview for the domestic hot water cylinder



Fig. 763: Indirectly heated domestic hot water cylinder and shift-load cylinder – product overview

		Indirectly heated	Wall-hung cylinder	Upright cylinder	Monovalent	Bivalent	Heating pressure rating	DHW pressure rating
	uniSTOR							
1	VIH Q 75 B	•	•	–	•	–	10 bar	10 bar
	uniSTOR exclusive							
2	VIH R 120/6 H - 200/6 H	•	–	•	•	–	10 bar	10 bar
3	VIH RW 200	•	–	•	•	–	10 bar	10 bar
4	VIH RW 300/3 MR - 500/3 MR	•	–	•	•	–	10 bar	10 bar
4	VIH SW 400/3 MR - 500/3 MR	•	–	•	–	•	10 bar	10 bar
	uniSTOR plus							
2	VIH R 120/6 B - 200/6 B	•	–	•	•	–	10 bar	10 bar
4	VIH RW 300/3 BR - 500/3 BR	•	–	•	•	–	10 bar	10 bar
4	VIH SW 300/3 BR - 500/3 BR	•	–	•	–	•	10 bar	10 bar
5	VIH RW 750/2 bis 2000/2	•	–	•	•	–	10 bar	10 bar
	uniTOWER							
6	VIH QW 190/1	•	–	•	•	–	3 bar	10 bar
6	VWL ..8/5 IS	•	–	•	•	–	3 bar	10 bar
	uniTOWER plus							
6	VIH QW 190/6	•	–	•	•	–	3 bar	10 bar

21.2 Product overview for the buffer cylinder with domestic hot water station



Fig. 764: Buffer cylinder with domestic hot water station – product overview

		Multi-functional cylinder	Domestic hot water station	Wall-hung/ installed on the cylinder	Floor-standing	Pump	Heating pressure rating	DHW pressure rating
	aIISTOR exclusiv							
1	VPS 300/3-7 - 2000/3-7	•	–	–	•	–	3 bar	–
	aIISTOR plus							
2	VPS 300/3-5 - 2000/3-5	•	–	–	•	–	3 bar	–
2	VPS 800/4-5 - 2000/4-5	•	–	–	•	–	6 bar	–
	aguaFLOW exclusive							
3	VPM 20/25/2 W - 40/45/2 W	–	•	•	–	–	3 bar	10 bar
	aguaFLOW plus							
4	VPM 60/3 W - VPM 135/3 W	–	•	–	•	Stage-wise	10 bar	10 bar
4	VPM 45/3 W - VPM 180/3 W	–	•	–	•	Modulating	10 bar	10 bar

		uniTOWER (plus)						uniSTOR	uniSTOR exclusive/ plus			uniSTOR	uniSTOR exclusive/plus					uniSTOR plus			
		Integrated domestic hot water cylinder	VIH OW 190/1 E (1.3 m ² *)	VIH OW 190/6 (1.3 m ² *)	VWL 58/5 IS (1.3 m ² *)	VWL 78/5 IS (1.3 m ² *)	VWL 128/5 IS (1.3 m ² *)	VIH Q 75 B (0.85 m ² *)	VIH R 120/6 H or B (0.7 m ² *)	VIH R 150/6 H or B (0.9 m ² *)	VIH R 200/6 H or B (1 m ² *)	VIH RW 200 (1.81 m ² *)	VIH RW 300/3 MR or BR (3.12 m ² *)	VIH RW 400/3 MR or BR (4.42 m ² *)	VIH RW 500/3 MR or BR (5.9 m ² *)	VIH SW 400/3 MR or BR (3.24 m ² *)	VIH SW 500/3 MR or BR (4.42 m ² *)	VIH RW 750/2 (7.00 m ² *)	VIH RW 1000/2 (9.20 m ² *)	VIH RW 1500/2 (14.00 m ² *)	VIH RW 2000/2 (16.00 m ² *)
aroTHERM air-to-water 5.0-12.0 kW	VWL 55/3	/	•	/	/	/	/	/	/	/	•	•	o	o	•	o	/	/	/	/	
	VWL 85/3	/	•	/	/	/	/	/	/	/	•	•	o	o	•	o	/	/	/	/	
	VWL 115/2	/	•	/	/	/	/	/	/	/	•	•	•	o	•	•	/	/	/	/	
aroTHERM plus air-to-water 3.0-12.0 kW	VWL 155/2	/	•	/	/	/	/	/	/	/	•	•	•	•	•	•	/	/	/	/	
	VWL 35/6	/	/	•	/	/	/	/	/	/	•	•	o	o	•	o	/	/	/	/	
	VWL 55/6	/	/	•	/	/	/	/	/	/	•	•	o	o	•	o	/	/	/	/	
	VWL 65/6	/	/	•	/	/	/	/	/	/	•	•	•	o	•	•	/	/	/	/	
	VWL 75/6	/	/	•	/	/	/	/	/	/	•	•	•	o	•	•	/	/	/	/	
aroTHERM Split air-to-water 3.0 kW-12.0 kW	VWL 105/6	/	/	•	/	/	/	/	/	/	•	•	•	•	•	•	/	/	/	/	
	VWL 125/6	/	/	•	/	/	/	/	/	/	•	•	•	•	•	•	/	/	/	/	
	VWL 35/5 AS	/	/	/	•	/	/	/	/	/	•	•	o	o	•	o	/	/	/	/	
	VWL 55/5 AS	/	/	/	•	/	/	/	/	/	•	•	o	o	•	o	/	/	/	/	
	VWL 75/5 AS	/	/	/	/	•	/	/	/	/	•	•	•	o	•	•	/	/	/	/	
versoTHERM air-to- water 3.5-6.6 kW	VWL 105/5 AS	/	/	/	/	•	/	/	/	/	•	•	•	•	•	•	/	/	/	/	
	VWL 125/5 AS	/	/	/	/	•	/	/	/	/	•	•	•	•	•	•	/	/	/	/	
	VWL 37/5	/	/	/	/	/	/	/	/	/	•	•	o	o	•	o	/	/	/	/	
	VWL 57/5	/	/	/	/	/	/	/	/	/	•	•	o	o	•	o	/	/	/	/	
geoTHERM brine-to-water 2.5 kW	VWL 77/5	/	/	/	/	/	/	/	/	/	•	•	•	o	•	•	/	/	/	/	
	VWS 36/4.1	/	•	/	/	/	/	•	•	•	•	/	/	/	/	/	/	/	/	/	
aroTHERM perform air-to-water 18 kW-25 kW	VWL 185/3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	•	•	•	•	
	VWL 255/3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	•	•	•	•	
geoTHERM perform brine-to-water 26 kW-78 kW	VWS 260/3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	•	•	•	•	
	VWS 400/3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	•	•	•	•	
	VWS 780/3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	•	•	•	•	

• Recommended; o Recommended under certain circumstances; - Not recommended; / No selection available
* Heat exchanger surface area

21.3.1 Vaillant buffer cylinder with DHW station - Overview

		allSTOR exclusive 3 bar					allSTOR plus 3 bar					allSTOR plus 6 bar				aguaFLOW			aguaFLOW plus 10 bar						
		VPS 300/3-7	VPS 500/3-7	VPS 800/3-7	VPS 1000/3-7	VPS 1500/3-7	VPS 2000/3-7	VPS 300/3-5	VPS 500/3-5	VPS 800/3-5	VPS 1000/3-5	VPS 1500/3-5	VPS 2000/3-5	VPS 800/4-5	VPS 1000/4-5	VPS 1500/4-5	VPS 2000/4-5	VPM 20/25/2 W	VPM 30/35/2 W	VPM 40/45/2 W	VPM 45/3 W	VPM 60/3 W	VPM 90/3 W	VPM 135/3 W	VPM 180/3 W
flexoCOMPACT brine-to-water 5.2 kW-11.3 kW	VWF 58/4	/	/	/	/	/	/	•	•	•	/	/	/	•	/	/	/	/	/	/	/	/	/	/	/
	VWF 88/4	/	/	/	/	/	/	o	•	•	/	/	/	•	/	/	/	/	/	/	/	/	/	/	/
	VWF 118/4	/	/	/	/	/	/	-	•	•	/	/	/	•	/	/	/	/	/	/	/	/	/	/	/
flexoCOMPACT air-to-water 5.4-9.6 kW	VWF 58/4	/	/	/	/	/	/	•	•	•	/	/	/	•	/	/	/	/	/	/	/	/	/	/	
	VWF 88/4	/	/	/	/	/	/	•	•	•	/	/	/	•	/	/	/	/	/	/	/	/	/	/	
	VWF 118/4	/	/	/	/	/	/	o	•	•	/	/	/	•	/	/	/	/	/	/	/	/	/	/	
flexoCOMPACT water-to-water 6.3-13.5 kW	VWF 58/4	/	/	/	/	/	/	•	•	•	/	/	/	•	/	/	/	/	/	/	/	/	/	/	
	VWF 88/4	/	/	/	/	/	/	o	•	•	/	/	/	•	/	/	/	/	/	/	/	/	/	/	
	VWF 118/4	/	/	/	/	/	/	-	•	•	/	/	/	•	/	/	/	/	/	/	/	/	/	/	
flexoTHERM brine-to-water 5.2 kW-19.3 kW	VWF 57/4	/	•	•	o	o	o	/	•	•	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 87/4	/	o	•	o	o	o	/	o	•	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 117/4	/	o	•	o	o	o	/	o	•	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 157/4	/	o	o	•	o	o	/	o	o	•	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 197/4	/	-	o	•	o	o	/	-	o	•	o	o	•	o	o	o	o	o	o	o	/	/	/	
flexoTHERM air-to-water 5.4-17.9 kW	VWF 57/4	o	•	•	o	o	o	o	•	•	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 87/4	o	o	•	o	o	o	o	o	•	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 117/4	o	o	•	o	o	o	o	o	•	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 157/4	-	o	o	•	o	o	-	o	o	•	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 197/4	-	-	o	•	o	o	-	-	o	•	o	o	•	o	o	o	o	o	o	o	/	/	/	
flexoTHERM, water-to-water 6.3-23.4 kW	VWF 57/4	/	•	•	o	o	o	/	•	•	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 87/4	/	o	•	o	o	o	/	o	•	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 117/4	/	o	•	o	o	o	/	o	•	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 157/4	/	o	o	•	o	o	/	o	o	•	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWF 197/4	/	-	o	•	o	o	/	-	o	•	o	o	•	o	o	o	o	o	o	o	/	/	/	
aroTHERM air-to-water 5.0 kW-15.0 kW	VWL 55/3	•	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	/	/	/	
	VWL 85/3	o	•	o	o	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWL 115/2	o	•	•	o	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWL 155/2	o	o	•	•	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
aroTHERM plus air-to-water 3.0 kW-12.0 kW	VWL 35/6	•	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	/	/	/	
	VWL 55/6	o	•	o	o	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWL 65/6	o	•	•	o	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWL 75/6	o	•	•	o	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWL 105/6	o	o	•	•	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
aroTHERM Split air-to-water 3.0 kW-12.0 kW	VWL 125/6	o	o	•	•	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWL 35/5 AS	•	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	/	/	/	
	VWL 55/5 AS	o	•	o	o	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWL 75/5 AS	o	•	•	o	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
	VWL 105/5 AS	o	o	•	•	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/	
VWL 125/5 AS	o	o	•	•	o	o	•	o	o	o	o	o	•	o	o	o	o	o	o	o	/	/	/		

• Recommended; o Recommended under certain circumstances; - Not recommended; / No selection available

		allISTOR exclusive 3 bar					allISTOR plus 3 bar					allISTOR plus 6 bar				aguaFLOW			aguaFLOW plus 10 bar						
		VPS 300/3-7	VPS 500/3-7	VPS 800/3-7	VPS 1000/3-7	VPS 1500/3-7	VPS 2000/3-7	VPS 300/3-5	VPS 500/3-5	VPS 800/3-5	VPS 1000/3-5	VPS 1500/3-5	VPS 2000/3-5	VPS 800/4-5	VPS 1000/4-5	VPS 1500/4-5	VPS 2000/4-5	VPM 20/25/2 W	VPM 30/35/2 W	VPM 40/45/2 W	VPM 45/3 W	VPM 60/3 W	VPM 90/3 W	VPM 135/3 W	VPM 180/3 W
aroTHERM perform air-to-water 18 kW-25 kW	VWL 185/3	/	/	/	/	/	/	/	o	o	o	/	o	o	o	/	o	o	o	o	o	o	o	o	o
	VWL 255/3	/	/	/	/	/	/	/	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
geoTHERM perform brine-to-water 26 kW-78 kW	VWS 260/3	/	/	/	/	/	/	/	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
	VWS 400/3	/	/	/	/	/	/	/	/	o	o	o	/	o	o	o	o	o	o	o	o	o	o	o	o
	VWS 780/3	/	/	/	/	/	/	/	/	/	o	o	/	/	o	o	o	o	o	o	o	o	o	o	o

• Recommended; o Recommended under certain circumstances; - Not recommended; / No selection available

21.4 Heat-up times for the domestic hot water cylinder and heat generator - Overview

Heat pumps	Design parameters	Domestic hot water cylinder	Cylinder volume [litres]	Heat output for B0/W55 [kW]	Heat output for A2/W55 [kW]	Heat output for W10/W55 [kW]	Domestic hot water output 10 °C to 40 °C [litres/10 min.]	Heat-up time for the domestic hot water cylinder 10 °C to 40 °C [min]	Mixed water volume at 40 °C with cylinder temperature of 50 °C, cold water 10 °C [litres]
flexoCOMPACT Brine-to-water 5.2-11.3 kW	VWF 58/4	Integrated	171	5.4	-	-	26	67	226
	VWF 88/4	Integrated	171	9.0	-	-	43	40	226
	VWF 118/4	Integrated	171	11.4	-	-	54	32	226
flexoCOMPACT Air-to-water 5.4-9.6 kW	VWF 58/4	Integrated	171	-	5.5	-	26	66	226
	VWF 88/4	Integrated	171	-	8.6	-	41	42	226
	VWF 118/4	Integrated	171	-	10.6	-	50	34	226
flexoCOMPACT Water/water 6.3-13.5 kW	VWF 58/4	Integrated	171	-	-	6.3	30	57	226
	VWF 88/4	Integrated	171	-	-	10.3	49	35	226
	VWF 118/4	Integrated	171	-	-	13.3	63	27	226
recoCOMPACT Air-to-water	VWL 39/5	Integrated	211	-	3.9	-	18	114	279
	VWL 59/5	Integrated	211	-	5.0	-	24	89	279
	VWL 79/5	Integrated	211	-	6.3	-	30	71	279
flexoTHERM Brine-to-water 5.2-19.3 kW	VWF 57/4	VIH RW 200	193	5.4	-	-	26	75	255
	VWF 57/4	VIH RW 300/3	281	5.4	-	-	26	110	372
	VWF 57/4	VIH RW 400/3	375	5.4	-	-	26	147	496
	VWF 57/4	VIH SW 500/3	460	5.4	-	-	26	180	608
	VWF 57/4	VIH SW 400/3	372	5.4	-	-	26	145	492
	VWF 57/4	VIH SW 500/3	456	5.4	-	-	26	178	603
	VWF 87/4	VIH RW 300/3	281	9.0	-	-	43	66	372
	VWF 87/4	VIH RW 400/3	375	9.0	-	-	43	88	496
	VWF 87/4	VIH RW 500/3	460	9.0	-	-	43	108	608
	VWF 87/4	VIH SW 400/3	372	9.0	-	-	43	87	492
	VWF 87/4	VIH SW 500/3	456	9.0	-	-	43	107	603
	VWF 117/4	VIH RW 300/3	281	11.4	-	-	54	52	372
	VWF 117/4	VIH RW 400/3	375	11.4	-	-	54	69	496
	VWF 117/4	VIH RW 500/3	460	11.4	-	-	54	85	608
	VWF 117/4	VIH SW 400/3	372	11.4	-	-	54	69	492
	VWF 117/4	VIH SW 500/3	456	11.4	-	-	54	84	603
	VWF 157/4	VIH RW 400/3	375	14.7	-	-	70	54	496
	VWF 157/4	VIH RW 500/3	460	14.7	-	-	70	66	608
	VWF 157/4	VIH SW 500/3	456	14.7	-	-	70	65	603
VWF 197/4	VIH RW 500/3	460	20.0	-	-	95	49	608	

Heat pumps	Design parameters	Domestic hot water cylinder	Cylinder volume [litres]	Heat output for B0/W55 [kW]	Heat output for A2/W55 [kW]	Heat output for W10/W55 [kW]	Domestic hot water output 10 °C to 40 °C [litres/10 min.]	Heat-up time for the domestic hot water cylinder 10 °C to 40 °C [min]	Mixed water volume at 40 °C with cylinder temperature of 50 °C, cold water 10 °C [litres]
flexoTHERM Air-to-water 5.4-17.9 kW	VWF 57/4	VIH RW 200	193	–	5.5	–	26	74	255
	VWF 57/4	VIH RW 300/3	281	–	5.5	–	26	108	372
	VWF 57/4	VIH RW 400/3	375	–	5.5	–	26	144	496
	VWF 57/4	VIH RW 500/3	460	–	5.5	–	26	176	608
	VWF 57/4	VIH SW 400/3	372	–	5.5	–	26	143	492
	VWF 57/4	VIH SW 500/3	456	–	5.5	–	26	175	603
	VWF 87/4	VIH RW 300/3	281	–	8.6	–	41	69	372
	VWF 87/4	VIH RW 400/3	375	–	8.6	–	41	92	496
	VWF 87/4	VIH RW 500/3	460	–	8.6	–	41	113	608
	VWF 87/4	VIH SW 400/3	372	–	8.6	–	41	91	492
	VWF 87/4	VIH SW 500/3	456	–	8.6	–	41	112	603
	VWF 117/4	VIH RW 300/3	281	–	10.6	–	50	56	372
	VWF 117/4	VIH RW 400/3	375	–	10.6	–	50	75	496
	VWF 117/4	VIH RW 500/3	460	–	10.6	–	50	92	608
	VWF 117/4	VIH SW 400/3	372	–	10.6	–	50	74	492
	VWF 117/4	VIH SW 500/3	456	–	10.6	–	50	91	603
	VWF 157/4	VIH RW 400/3	375	–	14.2	–	67	56	496
	VWF 157/4	VIH RW 500/3	460	–	14.2	–	67	68	608
	VWF 157/4	VIH SW 500/3	456	–	14.2	–	67	68	603
	VWF 197/4	VIH RW 500/3	460	–	18.6	–	88	52	608
flexoTHERM Water-to-water 6.3-23.4 kW	VWF 57/4	VIH RW 200	193	–	–	6.3	30	65	255
	VWF 57/4	VIH RW 300/3	281	–	–	6.3	30	94	372
	VWF 57/4	VIH RW 400/3	375	–	–	6.3	30	126	496
	VWF 57/4	VIH RW 500/3	460	–	–	6.3	30	154	608
	VWF 57/4	VIH SW 400/3	372	–	–	6.3	30	125	492
	VWF 57/4	VIH SW 500/3	456	–	–	6.3	30	153	603
	VWF 87/4	VIH RW 300/3	281	–	–	10.3	49	58	372
	VWF 87/4	VIH RW 400/3	375	–	–	10.3	49	77	496
	VWF 87/4	VIH RW 500/3	460	–	–	10.3	49	94	608
	VWF 87/4	VIH SW 400/3	372	–	–	10.3	49	76	492
	VWF 87/4	VIH SW 500/3	456	–	–	10.3	49	93	603
	VWF 117/4	VIH RW 300/3	281	–	–	13.3	63	45	372
	VWF 117/4	VIH RW 400/3	375	–	–	13.3	63	60	496
	VWF 117/4	VIH RW 500/3	460	–	–	13.3	63	73	608
	VWF 117/4	VIH SW 400/3	372	–	–	13.3	63	59	492
	VWF 117/4	VIH SW 500/3	456	–	–	13.3	63	72	603
	VWF 157/4	VIH RW 400/3	375	–	–	17.1	81	46	496
	VWF 157/4	VIH RW 500/3	460	–	–	17.1	81	57	608
	VWF 157/4	VIH SW 500/3	456	–	–	17.1	81	56	603
	VWF 197/4	VIH RW 500/3	460	–	–	23.8	113	41	608

Heat pumps	Design parameters	Domestic hot water cylinder	Cylinder volume [litres]	Heat output for B0/W55 [kW]	Heat output for A2/W55 [kW]	Heat output for W10/W55 [kW]	Domestic hot water output 10 °C to 40 °C [litres/10 min.]	Heat-up time for the domestic hot water cylinder 10 °C to 40 °C [min]	Mixed water volume at 40 °C with cylinder temperature of 50 °C, cold water 10 °C [litres]
aroTHERM Air-to-water 5.0-12.0 kW	VWL 55/3	VIH QW 190/1	188	-	5.8	-	27	68	249
	VWL 55/3	VIH RW 200	193	-	5.8	-	27	70	255
	VWL 55/3	VIH RW 300/3	281	-	5.8	-	27	102	372
	VWL 55/3	VIH RW 400/3	375	-	5.8	-	27	136	496
	VWL 55/3	VIH RW 500/3	460	-	5.8	-	27	167	608
	VWL 55/3	VIH SW 400/3	372	-	5.8	-	27	135	492
	VWL 55/3	VIH SW 500/3	456	-	5.8	-	27	166	603
	VWL 85/3	VIH QW 190/1	188	-	5.7	-	27	70	249
	VWL 85/3	VIH RW 200	193	-	5.7	-	27	71	255
	VWL 85/3	VIH RW 300/3	281	-	5.7	-	27	104	372
	VWL 85/3	VIH RW 400/3	375	-	5.7	-	27	139	496
	VWL 85/3	VIH RW 500/3	460	-	5.7	-	27	170	608
	VWL 85/3	VIH SW 400/3	372	-	5.7	-	27	138	492
	VWL 85/3	VIH SW 500/3	456	-	5.7	-	27	169	603
	VWL 115/2	VIH QW 190/1	188	-	6.9	-	33	57	249
	VWL 115/2	VIH RW 200	193	-	6.9	-	33	59	255
	VWL 115/2	VIH RW 300/3	281	-	6.9	-	33	86	372
	VWL 115/2	VIH RW 400/3	375	-	6.9	-	33	115	496
	VWL 115/2	VIH RW 500/3	460	-	6.9	-	33	141	608
	VWL 115/2	VIH SW 400/3	372	-	6.9	-	33	114	492
	VWL 115/2	VIH SW 500/3	456	-	6.9	-	33	139	603
	VWL 155/2	VIH QW 190/1	188	-	9.2	-	44	43	249
	VWL 155/2	VIH RW 200	193	-	9.2	-	44	44	255
	VWL 155/2	VIH RW 300/3	281	-	9.2	-	44	64	372
	VWL 155/2	VIH RW 400/3	375	-	9.2	-	44	86	496
	VWL 155/2	VIH RW 500/3	460	-	9.2	-	44	106	608
VWL 155/2	VIH SW 400/3	372	-	9.2	-	44	85	492	
VWL 155/2	VIH SW 500/3	456	-	9.2	-	44	105	603	

Heat pumps	Design parameters	Domestic hot water cylinder	Cylinder volume [litres]	Heat output for B0/W55 [kW]	Heat output for A2/W55 [kW]	Heat output for W10/W55 [kW]	Domestic hot water output 10 °C to 40 °C [litres/10 min.]	Heat-up time for the domestic hot water cylinder 10 °C to 40 °C [min]	Mixed water volume at 40 °C with cylinder temperature of 50 °C, cold water 10 °C [litres]
aroTHERM plus Air-to-water 3.0-12.0 kW	VWL 35/6	VIH QW 190/6	188	–	4.8	–	23	83	249
	VWL 35/6	VIH RW 200	193	–	4.8	–	23	85	255
	VWL 35/6	VIH RW 300/3	281	–	4.8	–	23	124	372
	VWL 35/6	VIH RW 400/3	375	–	4.8	–	23	165	496
	VWL 35/6	VIH RW 500/3	460	–	4.8	–	23	202	608
	VWL 35/6	VIH SW 400/3	372	–	4.8	–	23	164	492
	VWL 35/6	VIH SW 500/3	456	–	4.8	–	23	200	603
	VWL 55/6	VIH QW 190/6	188	–	6.9	–	33	57	249
	VWL 55/6	VIH RW 200	193	–	6.9	–	33	59	255
	VWL 55/6	VIH RW 300/3	281	–	6.9	–	33	86	372
	VWL 55/6	VIH RW 400/3	375	–	6.9	–	33	115	496
	VWL 55/6	VIH RW 500/3	460	–	6.9	–	33	141	608
	VWL 55/6	VIH SW 400/3	372	–	6.9	–	33	114	492
	VWL 55/6	VIH SW 500/3	456	–	6.9	–	33	139	603
	VWL 65/6	VIH QW 190/6	188	–	6.6	–	31	60	249
	VWL 65/6	VIH RW 200	193	–	6.6	–	31	62	255
	VWL 65/6	VIH RW 300/3	281	–	6.6	–	31	90	372
	VWL 65/6	VIH RW 400/3	375	–	6.6	–	31	120	496
	VWL 65/6	VIH RW 500/3	460	–	6.6	–	31	147	608
	VWL 65/6	VIH SW 400/3	372	–	6.6	–	31	119	492
	VWL 65/6	VIH SW 500/3	456	–	6.6	–	31	146	603
	VWL 75/6	VIH QW 190/6	188	–	9.0	–	43	44	249
	VWL 75/6	VIH RW 200	193	–	9.0	–	43	45	255
	VWL 75/6	VIH RW 300/3	281	–	9.0	–	43	66	372
	VWL 75/6	VIH RW 400/3	375	–	9.0	–	43	88	496
	VWL 75/6	VIH RW 500/3	460	–	9.0	–	43	108	608
	VWL 75/6	VIH SW 400/3	372	–	9.0	–	43	87	492
	VWL 75/6	VIH SW 500/3	456	–	9.0	–	43	107	603
	VWL 105/6	VIH QW 190/6	188	–	11.4	–	54	35	249
	VWL 105/6	VIH RW 200	193	–	11.4	–	54	36	255
	VWL 105/6	VIH RW 300/3	281	–	11.4	–	54	52	372
	VWL 105/6	VIH RW 400/3	375	–	11.4	–	54	69	496
	VWL 105/6	VIH RW 500/3	460	–	11.4	–	54	85	608
	VWL 105/6	VIH SW 400/3	372	–	11.4	–	54	69	492
	VWL 105/6	VIH SW 500/3	456	–	11.4	–	54	84	603
	VWL 125/6	VIH QW 190/6	188	–	13.6	–	64	29	249
	VWL 125/6	VIH RW 200	193	–	13.6	–	64	30	255
	VWL 125/6	VIH RW 300/3	281	–	13.6	–	64	44	372
	VWL 125/6	VIH RW 400/3	375	–	13.6	–	64	58	496
	VWL 125/6	VIH RW 500/3	460	–	13.6	–	64	71	608
VWL 125/6	VIH SW 400/3	372	–	13.6	–	64	58	492	
VWL 125/6	VIH SW 500/3	456	–	13.6	–	64	71	603	

Heat pumps	Design parameters	Domestic hot water cylinder	Cylinder volume [litres]	Heat output for B0/W55 [kW]	Heat output for A2/W55 [kW]	Heat output for W10/W55 [kW]	Domestic hot water output 10 °C to 40 °C [litres/10 min.]	Heat-up time for the domestic hot water cylinder 10 °C to 40 °C [min]	Mixed water volume at 40 °C with cylinder temperature of 50 °C, cold water 10 °C [litres]
aroTHERM split Air-to-water 3.0-12.0 kW	VWL 35/5 AS	VWL 58/5 IS	188	–	3.7	–	18	107	249
	VWL 35/5 AS	VIH RW 200	193	–	3.7	–	18	110	255
	VWL 35/5 AS	VIH RW 300/3	281	–	3.7	–	18	160	372
	VWL 35/5 AS	VIH RW 400/3	375	–	3.7	–	18	214	496
	VWL 35/5 AS	VIH RW 500/3	460	–	3.7	–	18	262	608
	VWL 35/5 AS	VIH SW 400/3	372	–	3.7	–	18	212	492
	VWL 35/5 AS	VIH SW 500/3	456	–	3.7	–	18	260	603
	VWL 55/5 AS	VWL 58/5 IS	188	–	4.9	–	23	81	249
	VWL 55/5 AS	VIH RW 200	193	–	4.9	–	23	83	255
	VWL 55/5 AS	VIH RW 300/3	281	–	4.9	–	23	121	372
	VWL 55/5 AS	VIH RW 400/3	375	–	4.9	–	23	162	496
	VWL 55/5 AS	VIH RW 500/3	460	–	4.9	–	23	198	608
	VWL 55/5 AS	VIH SW 400/3	372	–	4.9	–	23	160	492
	VWL 55/5 AS	VIH SW 500/3	456	–	4.9	–	23	196	603
	VWL 75/5 AS	VWL 78/5 IS	188	–	6.0	–	28	66	249
	VWL 75/5 AS	VIH RW 200	193	–	6.0	–	28	68	255
	VWL 75/5 AS	VIH RW 300/3	281	–	6.0	–	28	99	372
	VWL 75/5 AS	VIH RW 400/3	375	–	6.0	–	28	132	496
	VWL 75/5 AS	VIH RW 500/3	460	–	6.0	–	28	162	608
	VWL 75/5 AS	VIH SW 400/3	372	–	6.0	–	28	131	492
	VWL 75/5 AS	VIH SW 500/3	456	–	6.0	–	28	160	603
	VWL 105/5 AS	VWL 128/5 IS	188	–	12.6	–	60	31	249
	VWL 105/5 AS	VIH RW 200	193	–	12.6	–	60	32	255
	VWL 105/5 AS	VIH RW 300/3	281	–	12.6	–	60	47	372
	VWL 105/5 AS	VIH RW 400/3	375	–	12.6	–	60	63	496
	VWL 105/5 AS	VIH RW 500/3	460	–	12.6	–	60	77	608
	VWL 105/5 AS	VIH SW 400/3	372	–	12.6	–	60	62	492
	VWL 105/5 AS	VIH SW 500/3	456	–	12.6	–	60	76	603
	VWL 125/5 AS	VWL 128/5 IS	188	–	13.7	–	65	29	249
	VWL 125/5 AS	VIH RW 200	193	–	13.7	–	65	30	255
	VWL 125/5 AS	VIH RW 300/3	281	–	13.7	–	65	43	372
	VWL 125/5 AS	VIH RW 400/3	375	–	13.7	–	65	58	496
	VWL 125/5 AS	VIH RW 500/3	460	–	13.7	–	65	71	608
	VWL 125/5 AS	VIH SW 400/3	372	–	13.7	–	65	57	492
	VWL 125/5 AS	VIH SW 500/3	456	–	13.7	–	65	70	603

Heat pumps	Design parameters	Domestic hot water cylinder	Cylinder volume [litres]	Heat output for B0/W55 [kW]	Heat output for A2/W55 [kW]	Heat output for W10/W55 [kW]	Domestic hot water output 10 °C to 40 °C [litres/10 min.]	Heat-up time for the domestic hot water cylinder 10 °C to 40 °C [min]	Mixed water volume at 40 °C with cylinder temperature of 50 °C, cold water 10 °C [litres]
versoTHERM Air-to-water 3.5-6.6 kW	VWL 37/5	VIH RW 200	193	–	3.9	–	18	104	255
	VWL 37/5	VIH RW 300/3	281	–	3.9	–	18	152	372
	VWL 37/5	VIH RW 400/3	375	–	3.9	–	18	203	496
	VWL 37/5	VIH RW 500/3	460	–	3.9	–	18	249	608
	VWL 37/5	VIH SW 400/3	372	–	3.9	–	18	201	492
	VWL 37/5	VIH SW 500/3	456	–	3.9	–	18	247	603
	VWL 57/5	VIH RW 200	193	–	5.0	–	24	81	255
	VWL 57/5	VIH RW 300/3	281	–	5.0	–	24	119	372
	VWL 57/5	VIH RW 400/3	375	–	5.0	–	24	158	496
	VWL 57/5	VIH RW 500/3	460	–	5.0	–	24	194	608
	VWL 57/5	VIH SW 400/3	372	–	5.0	–	24	157	492
	VWL 57/5	VIH SW 500/3	456	–	5.0	–	24	192	603
	VWL 77/5	VIH RW 200	193	–	6.3	–	30	65	255
	VWL 77/5	VIH RW 300/3	281	–	6.3	–	30	94	372
	VWL 77/5	VIH RW 400/3	375	–	6.3	–	30	126	496
	VWL 77/5	VIH RW 500/3	460	–	6.3	–	30	154	608
	VWL 77/5	VIH SW 400/3	372	–	6.3	–	30	125	492
	VWL 77/5	VIH SW 500/3	456	–	6.3	–	30	153	603
geoTHERM Brine-to-water 2.5 kW	VWS 36/4.1	VIH Q 75 B	68	2.2	–	–	10	65	90
	VWS 36/4.1	VIH QW 190/1	188	2.2	–	–	10	180	249
	VWS 36/4.1	VIH R 120/6	117	2.2	–	–	10	112	155
	VWS 36/4.1	VIH R 150/6	144	2.2	–	–	10	138	190
	VWS 36/4.1	VIH R 200/6	184	2.2	–	–	10	176	243
	VWS 36/4.1	VIH RW 200	193	2.2	–	–	10	185	255

21.5 uniSTOR VIH Q 75 B product description



Fig. 765: uniSTOR VIH QB 75 B

21.5.1 Special features

- Wall-hung, indirect domestic hot water cylinder
- Technology and design adapted to ecoTEC plus
- All connections routed downwards and out
- White powder-coated casing
- Matching connection piping available as an accessory

21.5.2 Potential applications

- Indirectly heated cylinder with 68 l capacity for centralised domestic hot water supply to provide a high level of hot water comfort in small spaces
- For combination with the ecoTEC plus VC 146/5-5, 206/5-5 and 266/5-5;
- Cylinder control system and connection piping are configured accordingly

21.5.3 Equipment

- Domestic hot water cylinder with high-quality enamelling
- Magnesium protection anode
- Powder-coated casing (white)
- Premium-quality PU foam thermal insulation
- Internal pipe heat exchanger
- Circulation connection
- Impressed current anode (order no. 302042) available as an accessory
- Cylinder piping set for horizontal installation (order no. 0020152956) available as an accessory
- Casing element (two pieces, order no. 0020152968) available as an accessory

Type overview

Unit designation	ErP label (range)	Cylinder capacity in l	Order no.
VIH Q 75 B	B (A+ to F)	68	0010015978

To be ordered separately: VC boiler from the **ecoTEC plus** series, safety group and control system

21.5.4 Technical data

	Unit	VIH Q 75 B
Weight		
Net weight	kg	55
Weight (ready for operation)	kg	123
Hydraulic connection		
Cold/hot water connection	–	R 3/4
Flow and return connection	–	R 3/4
Domestic hot water cylinder output data		
Nominal capacity	l	68
Inner vessel	Steel, enamelled, with magnesium protection anode	
Max. operating pressure (hot water)	MPa (bar)	1 (10)
Max. permitted hot water temperature	°C	85
Continuous hot water output (80 °C flow temperature)	kW (l/h)	30.0 (738)
Continuous hot water output (70 °C flow temperature)	kW (l/h)	23.0 (566)
Continuous hot water output (60 °C flow temperature)	kW (l/h)	16.7 (411)
Standby energy consumption	kWh/24 hrs	0.9
Output characteristic figure NL * (60 °C cylinder temperature)	N _{L (60 °C)}	0.7
Output characteristic figure NL * (70 °C cylinder temperature)	N _{L (70 °C)}	1.0
Hot water output * (60 °C cylinder temperature)	l/10 min	122
Hot water output * (70 °C cylinder temperature)	l/10 min	143
Specific flow rate (30 K) (60 °C cylinder temperature)	l/min	14.2
Specific flow rate (30 K) (70 °C cylinder temperature)	l/min	16.7
Specific flow rate (45 K) (60 °C cylinder temperature)	l/min	9.5
Specific flow rate (45 K) (70 °C cylinder temperature)	l/min	11.1
Heat-up time from 10 to 60 °C	min	12
Heat-up time from 10 to 70 °C	min	17
Minimum power transmitted by the pipe coil (80 °C flow temperature; 60 °C cylinder temperature)	kW	11
Maximum power transmitted by the pipe coil (80 °C flow temperature; 10 °C cylinder temperature)	kW	37
Heating circuit output data		
Nominal heating medium volume flow	m ³ /h	1.3
Pressure loss at nominal heating medium volume flow	MPa (mbar)	0.008 (80)
Maximum operating pressure (heating)	MPa (bar)	1.0 (10)
Maximum hot water flow temperature	°C	110
Heating area of the heat exchanger	m ²	0.85
Heating water of the heat exchanger	l	3.5
* Flow volume flow: 1.3 m ³ /h; flow temperature: 80 °C		

Connection dimensions, next to each other

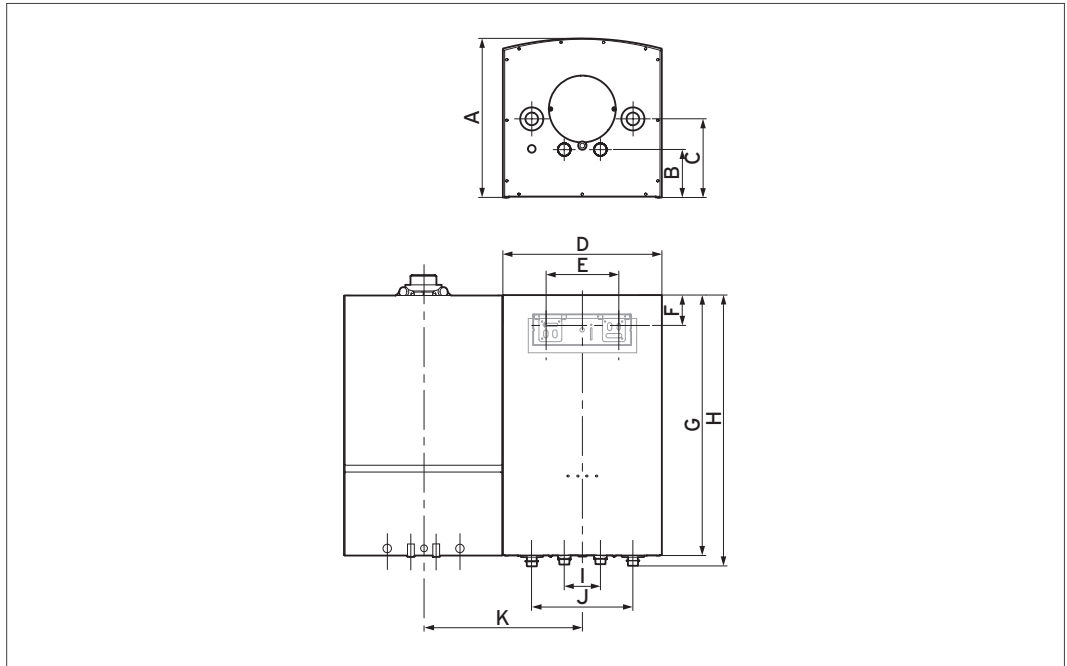


Fig. 766: VIH Q 75 B connection dimensions

A	B	C	D	E	F	G	H	I	J	K
440	132	217	440	200	80	720	746	100	280	440

Connection dimensions, on top of each other

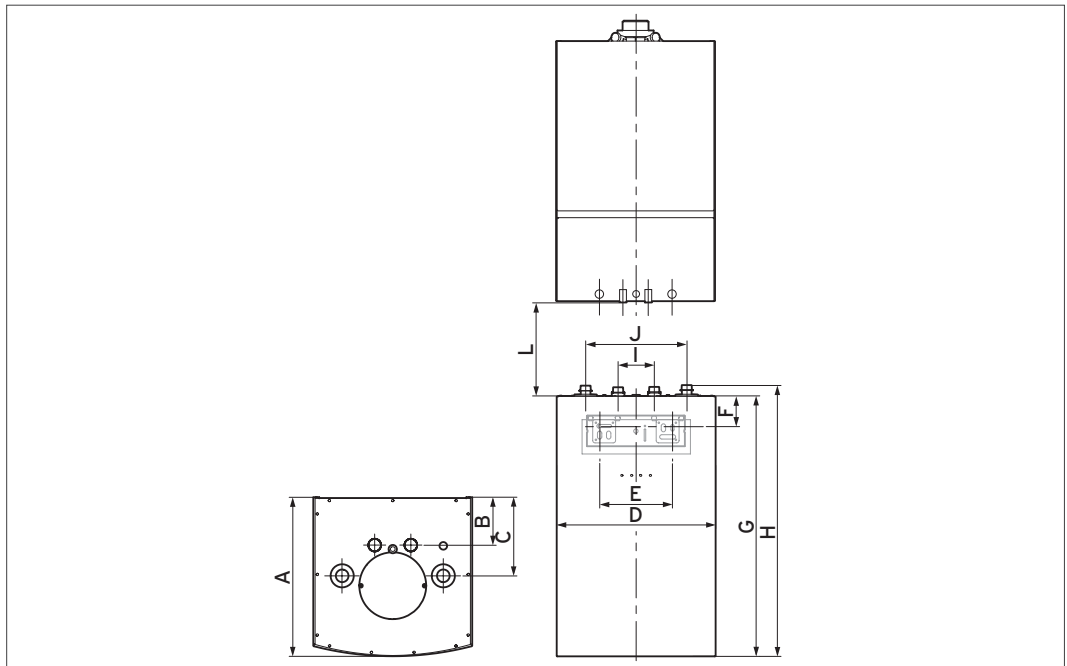


Fig. 767: VIH Q 75 B connection dimensions

A	B	C	D	E	F	G	H	I	J	L
440	132	217	440	200	80	720	746	100	280	350

21.5.5 Continuous output diagram

Continuous output diagram

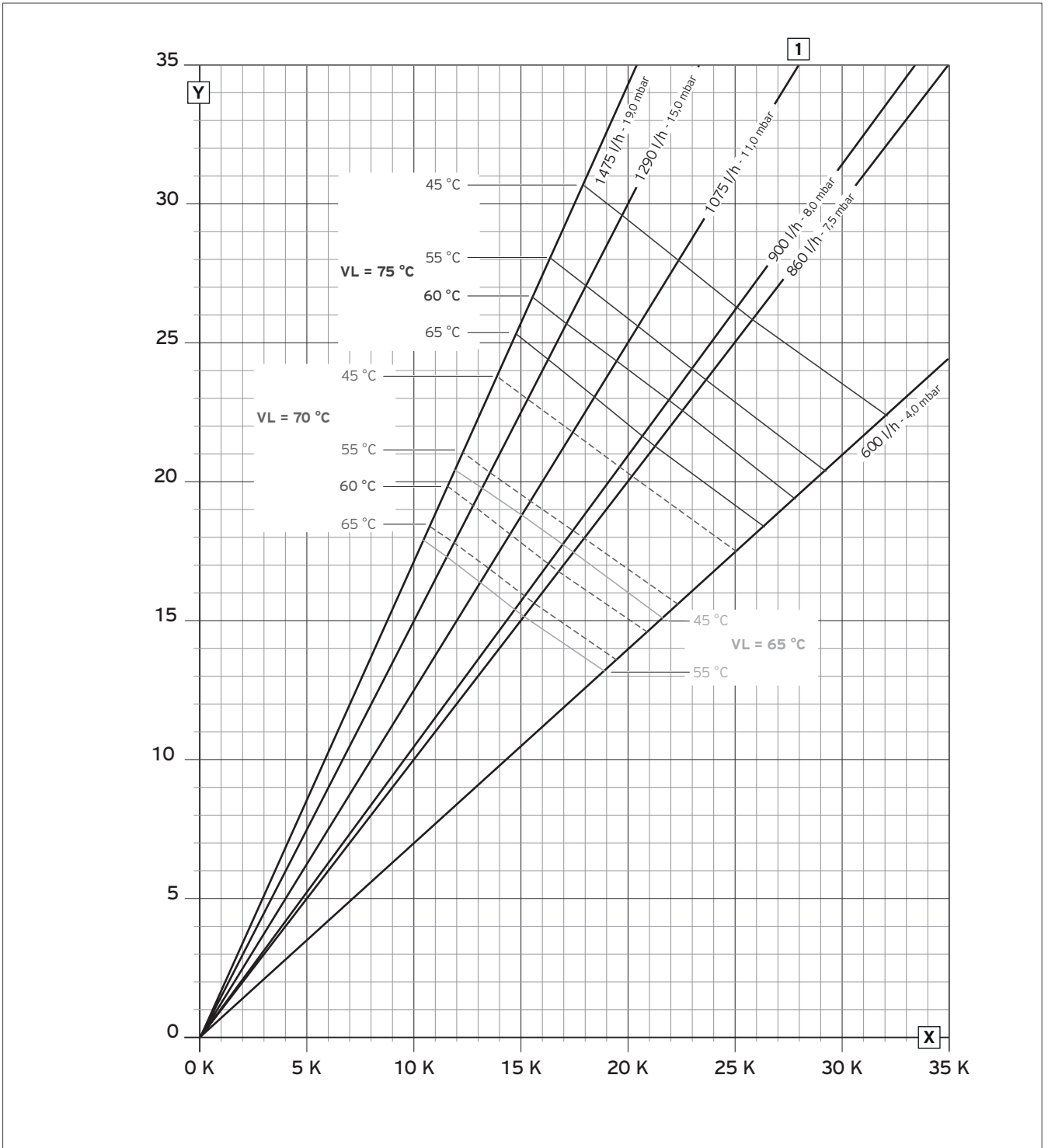


Fig. 768: Continuous output diagram for the cylinder design

- X Δt heating medium flow in K
- Y Continuous output in kW
- 1 Heating medium flow in l/h

21.6 uniSTOR exclusive/plus VIH R 120/6 H/B to VIH R 200/6 H/B product description

21.6.1 uniSTOR exclusive VIH R 120/6 H to VIH R 200/6 H



Fig. 769: uniSTOR exclusive VIH R .../6 H

Equipment

- Domestic hot water cylinder with high-quality enamelling
- Magnesium protection anode
- Highly innovative combination of vacuum and thermal insulation
- Internal pipe heat exchanger
- Drain valve
- Non-return valve
- Circulation connection
- Impressed current anode (order no. 302 042) available as an accessory
- Adjustable screw-on feet

Type overview

Unit designation	ErP label (range)	Cylinder capacity in l	Order no.
VIH R 120/6 H	A+ (A+ to F)	117	0010015928
VIH R 150/6 H	A+ (A+ to F)	144	0010015929
VIH R 200/6 H	A+ (A+ to F)	184	0010015930

Special features

- Indirectly heated domestic hot water cylinder
- Technology configured to gas-fired wall-hung boilers and floor-standing boilers
- Highly innovative combination of vacuum and thermal insulation minimises energy supply costs
- All connections routed upwards and out
- White casing
- Matching connection piping available as an accessory
- Insulation and casing top for insulating and covering the piping on the cylinder

Potential applications

- Indirectly heated cylinder with 120, 150 or 200 litre capacity for providing a centralised domestic hot water supply in flats and houses
- In combination with ecoTEC/atmoTEC:
- Can be arranged below the VC units (VIH R 120 and VIH R 150 only).
- Cylinder control system and connection piping are configured accordingly.
- In combination with geoTHERM:
- Can only be combined with geoTHERM VWS 36/4.1.

21.6.2 uniSTOR plus VIH R 120/6 B to VIH R 200/6 B



Fig. 770: uniSTOR plus VIH R .../6 B

Equipment

- Domestic hot water cylinder with high-quality enamelling
- Magnesium protection anode
- Premium-quality PU foam thermal insulation
- Internal pipe heat exchanger
- Drain valve
- Non-return valve
- Circulation connection
- Impressed current anode (order no. 302 042) available as an accessory
- Adjustable screw-on feet
- Casing top in accessories (order no. 0020174083)

Type overview

Unit designation	ErP label (range)	Cylinder capacity in l	Order no.
VIH R 120/6 B	B (A+ to F)	117	0010016414
VIH R 150/6 B	B (A+ to F)	144	0010015947
VIH R 200/6 B	B (A+ to F)	184	0010015948

Special features

- Indirectly heated domestic hot water cylinder
- Technology configured to gas-fired wall-hung boilers and floor-standing boilers
- All connections routed upwards and out
- Matching piping set available

Potential applications

- Indirectly heated cylinder with 120, 150 or 200 litre capacity for providing a centralised domestic hot water supply in flats and houses
- In combination with ecoTEC/atmoTEC:
- Can be arranged below the VC units (VIH R 120 and VIH R 150 only).
- Cylinder control system and connection piping are configured accordingly.
- In combination with geoTHERM:
- Can only be combined with geoTHERM VWS 36/4.1.

21.6.3 uniSTOR exclusive VIH R 120/6 H to VIH R 200/6 H dimension drawing

Dimension drawing

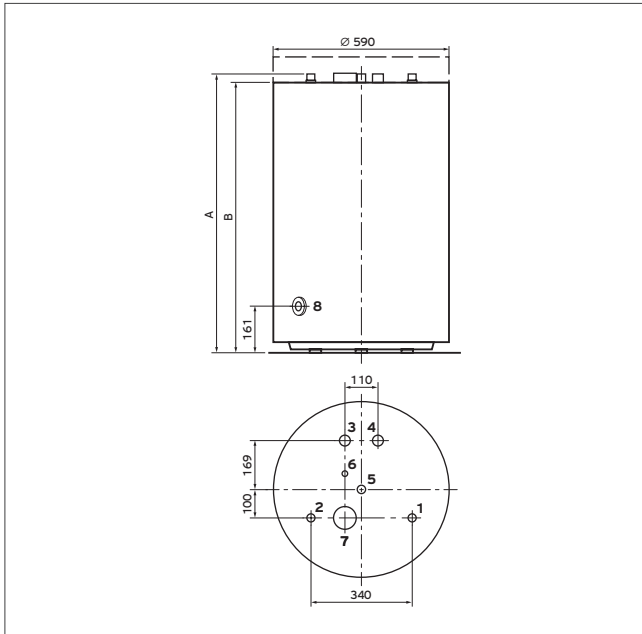


Fig. 771: Dimension drawing

- 1 R 3/4 cold water connection
- 2 R 3/4 domestic hot water connection
- 3 R 3/4 cylinder flow
- 4 R 3/4 cylinder return
- 5 R 3/4 circulation connection
- 6 Temperature sensor cylinder dry pocket
- 7 Protection anode
- 8 Drain cock

21.6.4 uniSTOR plus VIH R 120/6 B to VIH R 200/6 B dimension drawing

Dimension drawing

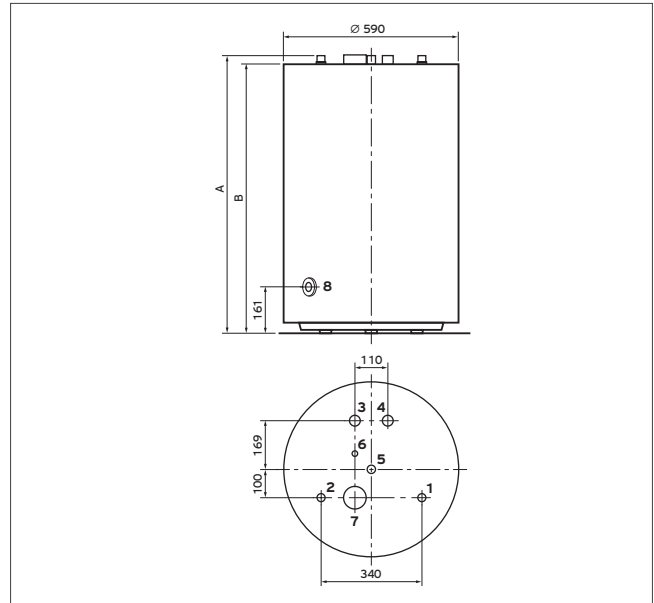


Fig. 772: Dimension drawing

- 1 R 3/4 cold water connection
- 2 R 3/4 domestic hot water connection
- 3 R 3/4 cylinder flow
- 4 R 3/4 cylinder return
- 5 R 3/4 circulation connection
- 6 Temperature sensor cylinder dry pocket
- 7 Protection anode
- 8 Drain cock

21.6.5 Technical data

	Unit	VIH R 120/6	VIH R 150/6	VIH R 200/6
Weight				
Net weight	kg	68	79	97
Weight (ready for operation)	kg	185	223	281
Hydraulic connection				
Cold/hot water connection	–		R 3/4	
Flow and return connection	–		R 1	
Circulation connection	–		R 3/4	
Domestic hot water cylinder output data				
Nominal capacity	l	117	144	184
Inner vessel		Enamelled steel with protection anode		
Max. operating pressure (hot water)	MPa (bar)	1 (10)	1 (10)	1 (10)
Max. permitted hot water temperature	°C	85	85	85
Continuous hot water output * (45 °C draw-off temperature)	kW (l/h)	21.4 (527)	27.4 (674)	33.7 (829)
Continuous hot water output * (50 °C draw-off temperature)	kW (l/h)	19.0 (409)	26.7 (575)	33.1 (713)
Continuous hot water output * (55 °C draw-off temperature)	kW (l/h)	17.7 (339)	25.5 (488)	30.2 (578)
Standby energy consumption (VIH R ... H types)	KWh/24 hrs	0.62	0.63	0.69
Standby energy consumption (VIH R ... M types)	KWh/24 hrs	0.74	0.77	0.83
Standby energy consumption (VIH R ... B types)	KWh/24 hrs	0.96	1.13	1.34
Standby energy consumption (VIH R ... BR types)	KWh/24 hrs	1.1	1.3	1.4
Output characteristic figure N_L * (50 °C cylinder temperature)	$N_{L(50\text{ °C})}$	0.9	1.4	2.7
Output characteristic figure N_L * (55 °C cylinder temperature)	$N_{L(55\text{ °C})}$	1.2	1.8	3.3
Output characteristic figure N_L * (60 °C cylinder temperature)	$N_{L(60\text{ °C})}$	1.4	2.2	3.8
Output characteristic figure N_L * (65 °C cylinder temperature)	$N_{L(65\text{ °C})}$	1.6	2.5	4.4
Hot water output * (50 °C cylinder temperature)	l/10 min	137	166	222
Hot water output * (55 °C cylinder temperature)	l/10 min	155	186	244
Hot water output * (60 °C cylinder temperature)	l/10 min	163	199	261
Hot water output * (65 °C cylinder temperature)	l/10 min	176	217	279
Specific flow rate (30 K) * (50 °C cylinder temperature)	l/min	16.0	19.4	25.9
Specific flow rate (30 K) * (55 °C cylinder temperature)	l/min	18.1	21.7	28.5
Specific flow rate (30 K) * (60 °C cylinder temperature)	l/min	19.0	23.2	30.5
Specific flow rate (30 K) * (65 °C cylinder temperature)	l/min	20.5	25.3	32.6
Specific flow rate (45 K) * (50 °C cylinder temperature)	l/min	10.7	12.9	17.3
Specific flow rate (45 K) * (55 °C cylinder temperature)	l/min	12.1	14.5	19.0
Specific flow rate (45 K) * (60 °C cylinder temperature)	l/min	12.7	15.5	20.3
Specific flow rate (45 K) * (65 °C cylinder temperature)	l/min	13.7	16.9	21.7
Heat-up time from 10 to 50 °C *	min	15.8	18.8	20.8
Heat-up time from 10 to 55 °C *	min	19.0	22.5	25.0
Heat-up time from 10 to 60 °C *	min	23.3	27.5	30.8
Heat-up time from 10 to 65 °C *	min	28.5	33.8	37.5
Minimum power transmitted by the pipe coil (80 °C flow temperature; 60 °C cylinder temperature)	kW	11.1	12.9	14.8
Minimum power transmitted by the pipe coil (80 °C flow temperature; 10 °C cylinder temperature)	kW	30.9	35.9	41.4
Heating circuit output data				
Nominal heating medium volume flow	m ³ /h	1.4	1.4	1.4
Pressure loss at nominal heating medium volume flow	MPa (mbar)	0.0017 (17)	0.002 (20)	0.0022 (22)
Maximum operating pressure (heating)	MPa (bar)	1 (10)	1 (10)	1 (10)
Max. heating water flow temperature **	°C	110	110	110
Heating area of the heat exchanger	m ²	0.7	0.9	1.0
Heating water of the heat exchanger	l	4.8	5.7	6.8
* Flow temperature 80 °C				
** The maximum heating water flow temperature is 100 °C in units with a display for the magnesium protection anode.				

21.6.6 Continuous output diagrams

Continuous output diagram

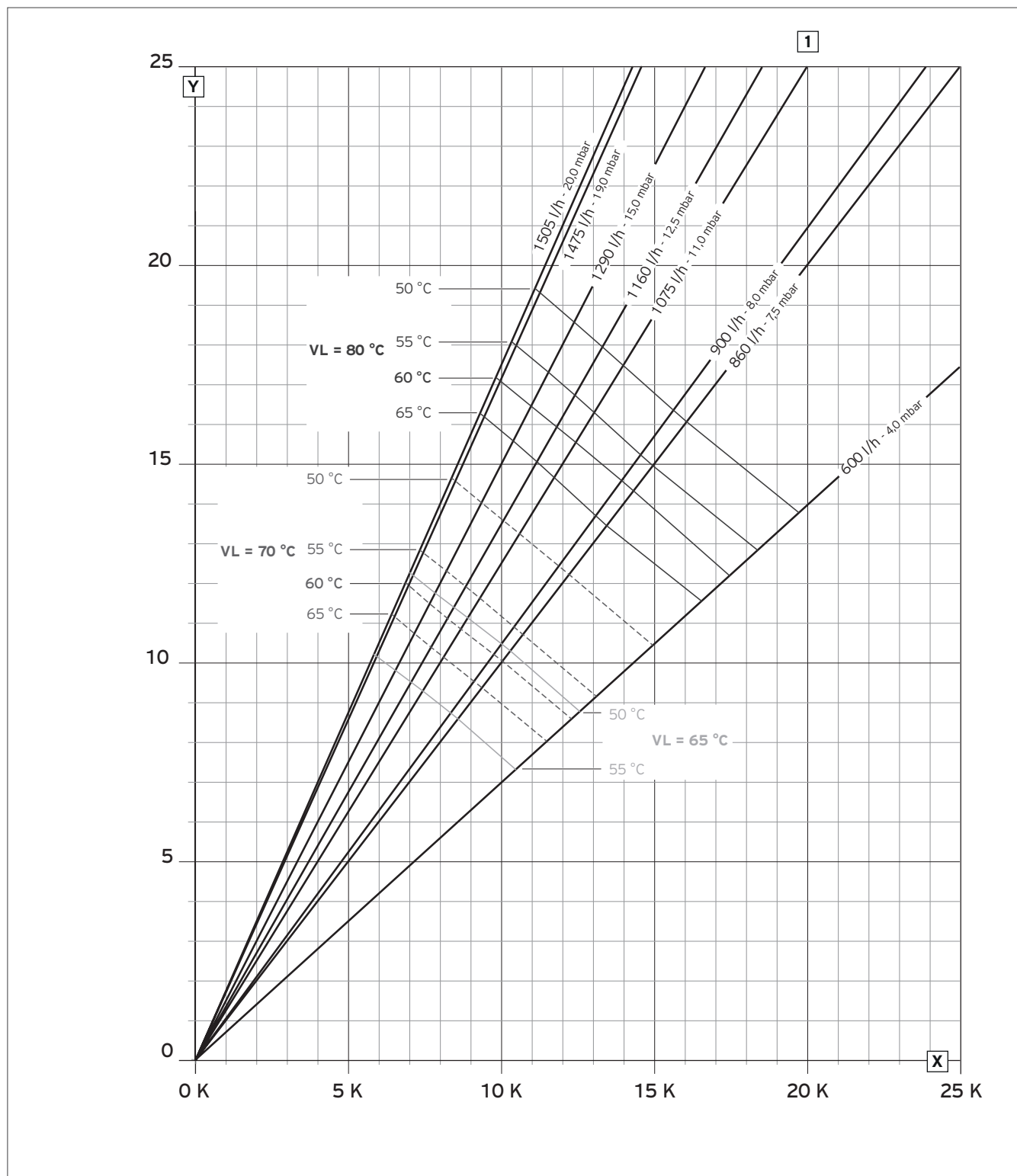


Fig. 773: Continuous output diagram for cylinder dimensioning - uniSTOR VIH R 120/6

- X Δt heating medium flow in K
- Y Continuous output in kW
- 1 Heating medium flow in l/h

Continuous output diagram

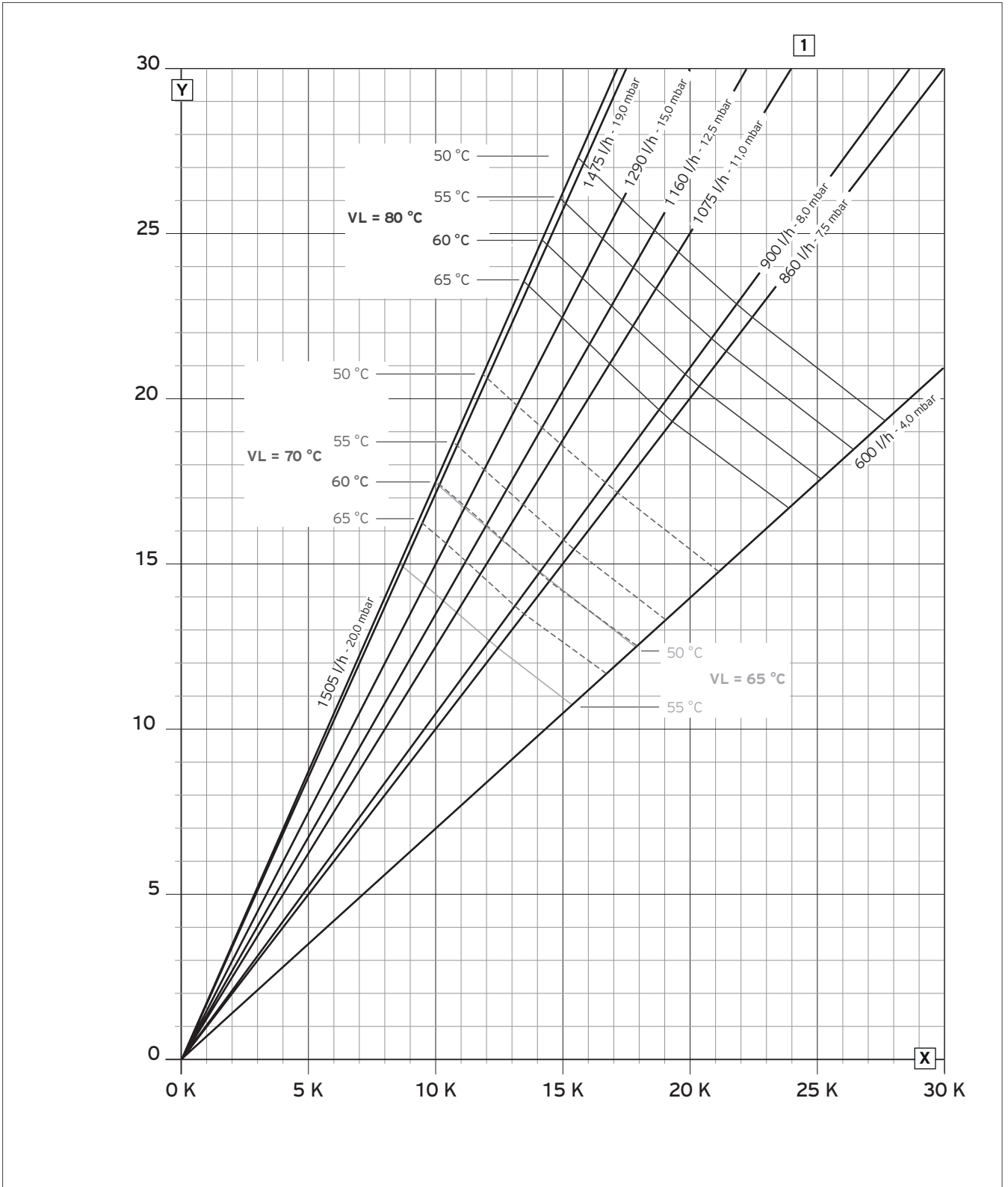


Fig. 774: Continuous output diagram for cylinder dimensioning - uniSTOR VIH R 150/6

- X Δt heating medium flow in K
- Y Continuous output in kW
- 1 Heating medium flow in l/h

Continuous output diagram

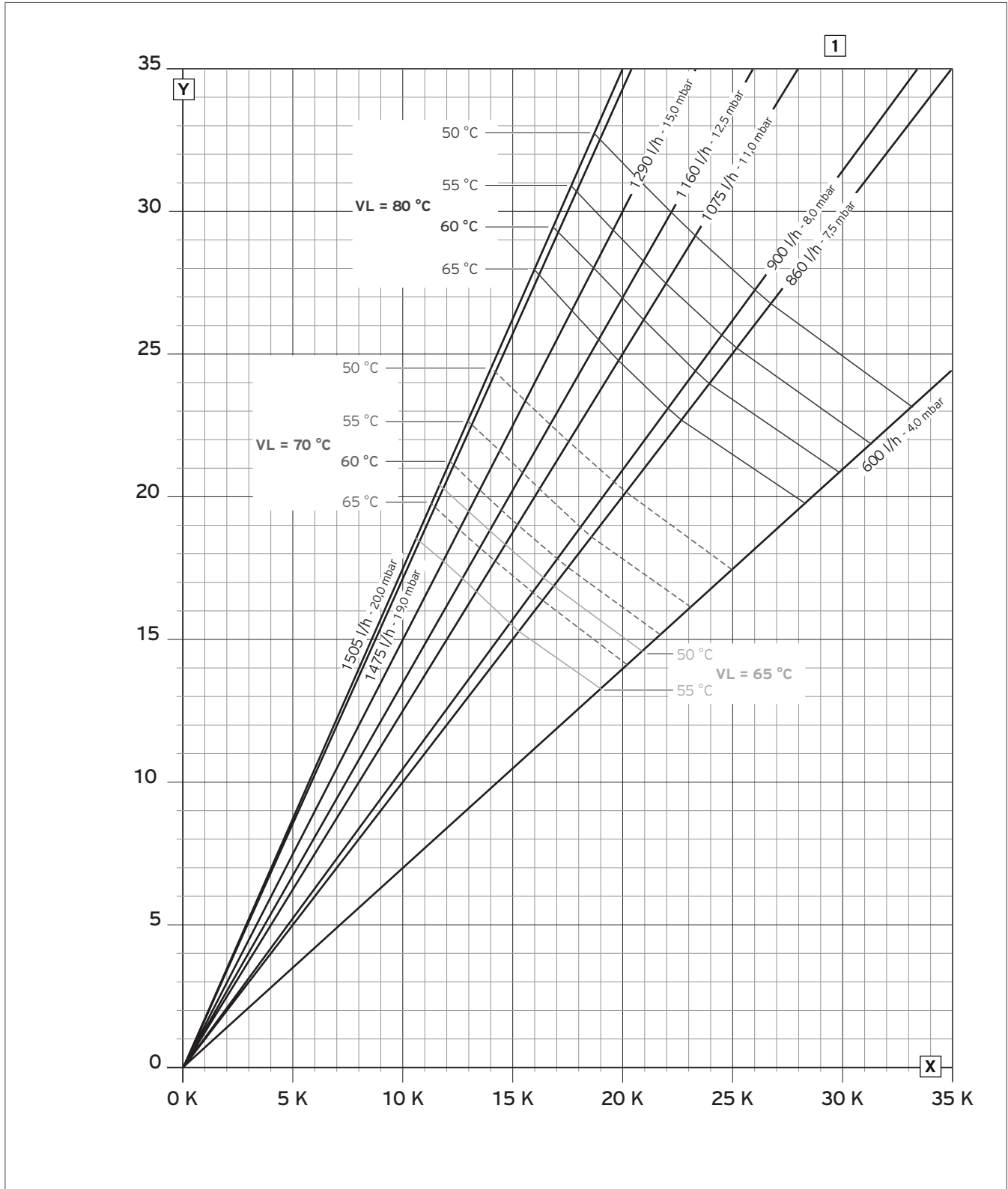


Fig. 775: Continuous output diagram for cylinder dimensioning - uniSTOR VIH R 200/6

- X Δt heating medium flow in K
- Y Continuous output in kW
- 1 Heating medium flow in l/h

21.6.7 Pressure losses in the VIH cylinders depending on the heating medium flow

Pressure loss in the heating coil

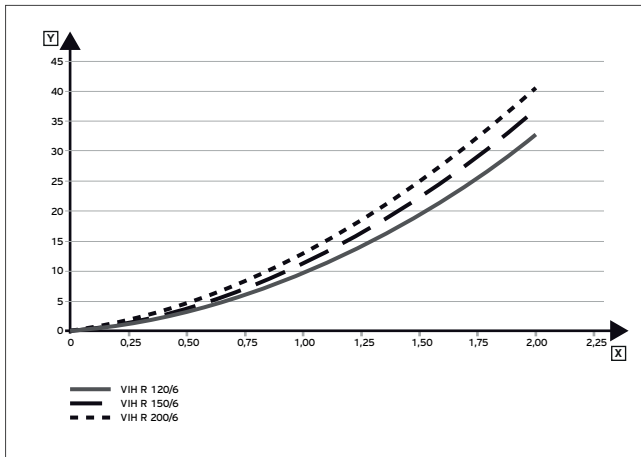


Fig. 776: Pressure loss in the heating coil

- X Heating medium flow in m³/h
- Y Pressure losses in mbar

21.7 Product description for uniSTOR VIH RW 200



Fig. 777: uniSTOR VIH RW 200

21.7.1 Equipment

- Enamelled steel tank
- Smooth pipe matrix
- Magnesium protection anode
- Cleaning flange

21.7.2 Special features

- Smooth-pipe matrix with large heat-transfer surface area designed specially for heat pumps
- Low standby losses

Unit designation	ErP label	Cylinder capacity in l	Order no.
VIH RW 200	B (A+ to F)	193	0020214407

Technical data - weight/cylinder dimensions

	VIH RW 200
Net weight	103 kg
Weight (ready for operation)	296 kg
Weight (incl. packaging and insulation)	113 kg
Height	1,340 mm
Depth	625 mm
Outer diameter of the cylinder	600 mm

Technical data - Hydraulic connection

	VIH RW 200
Circulation connection	3/4"
Flow heating circuit	1"
Return heating circuit	1"
Cold water connection	1"
Domestic hot water connection	1"
Magnesium protection anode	5/4"

Technical data - performance data for the domestic hot water cylinder

*Applies for EN12897

	VIH RW 200
Total volume (V)	200 l
Actual volume	193 l
Nominal volume (V _s)	200 l
Inner vessel	Steel, enamelled, with one magnesium protection anode
Max. operating pressure (P _{max})	1 MPa
Domestic hot water volume*	274 l
Time past*	9 min
Domestic hot water output (heat exchanger output)*	44.9 kW
Throughput	1,105 l/h
Standby energy consumption*	57 W
Standby energy consumption*	1368 Wh / 24h
Cooling constant (Cr)	0.2 Wh / 24 h·K
Heat exchanger pressure drop or domestic hot water room pressure drop	31 mbar
Operating pressure on the potable water side	1 MPa
Operating pressure on the heat source side	1 MPa
Max. operating temperature of the heating medium	110 °C
Operating temperature	65 °C
Max. operating temperature (T _{max})	95 °C
Heat exchanger volume	11.8 l
Surface of the heat exchanger (S)	1.81 m ²

Technical data - Material

	VIH RW 200
Insulation material	PU
Insulation thickness	50 mm
Corrosion protection in the cylinder	MG anode
Magnesium protection anode for the cylinder (length x diameter)	480 mm x 33 mm
Diameter of the flange	180 mm

21.7.3 Dimension drawing and connection dimensions

uniSTOR VIH RW 200 connection dimensions

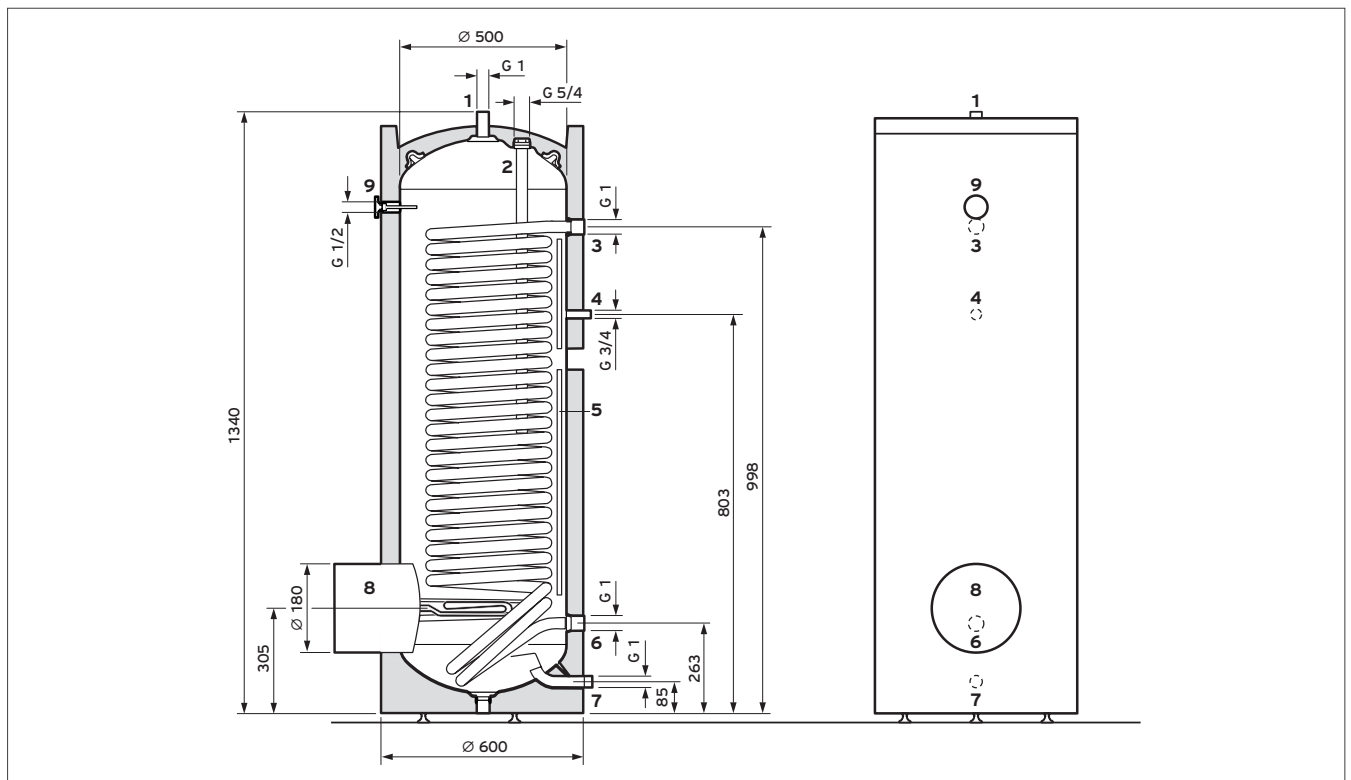


Fig. 778: uniSTOR VIH RW 200 connection dimensions

- 1 G 1 domestic hot water connection
- 2 G 5/4 magnesium protection anode
- 3 G 1 heating flow
- 4 G 3/4 circulation connection
- 5 Rail for temperature sensor
- 6 G 1 heating return
- 7 G 1 cold water connection
- 8 G 1/2 thermometer

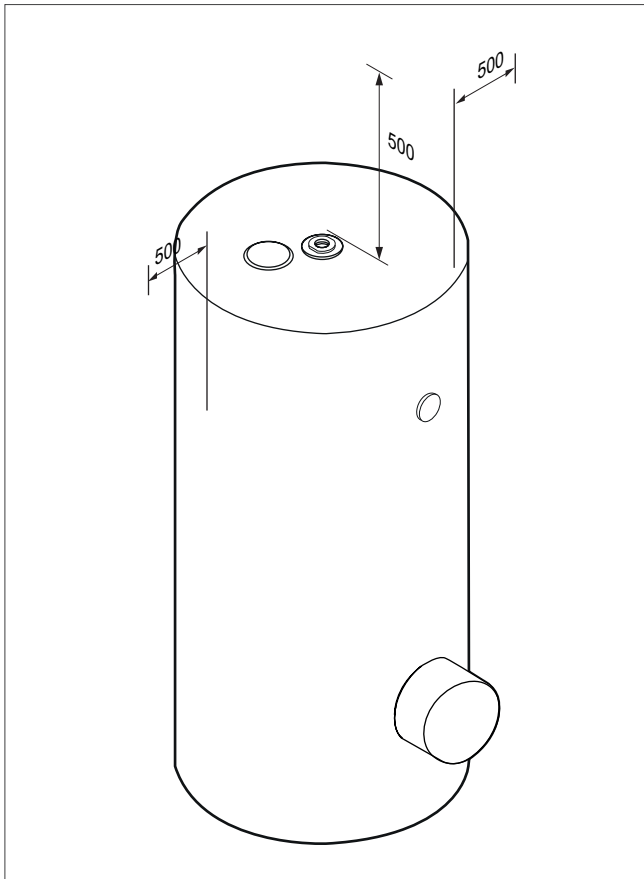


Fig. 779: Minimum clearances

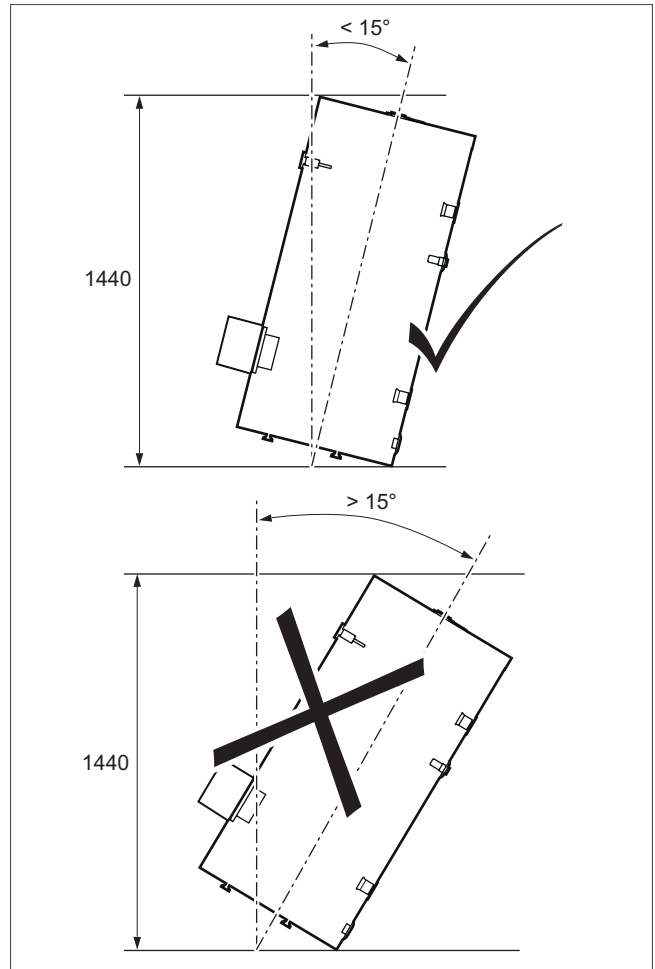


Fig. 780: Tilt dimension

21.8 Product description for the uniSTOR exclusive VIH RW 300/3 MR - VIH RW 500/3 MR



Fig. 781: uniSTOR exclusive VIH RW.../3 MR

21.8.1 Equipment

- High-quality vacuum heat insulation
- Integrated external current anode
- Pipe coil heat exchanger
- Cleaning eye/flange for electric immersion heater
- Circulation connection
- Transport straps enclosed

21.8.2 Special features

- Bears the Green iQ label
- Indirectly heated domestic hot water cylinder
- Potable water side (cylinder and heat exchanger) with high-quality enamelling
- Digital cylinder display (temperature, cylinder charging and fault messages)
- Smooth-pipe matrix with large heat-transfer surface area designed specially for heat pumps
- Easy to carry to installation site thanks to removable heat insulation

21.8.3 Potential applications

Cylinder that is specially adapted to domestic hot water generation with heat pumps.

Type overview

Unit designation	ErP label	Cylinder capacity in l	Order no.
VIH RW 300/3 MR	A (A+ to F)	281	0010020667
VIH RW 400/3 MR	A (A+ to F)	375	0010020668
VIH RW 500/3 MR	A (A+ to F)	460	0010020669

21.8.4 Technical data

(1) Technical data - General

	VIH S 300/3 MR	VIH S 400/3 MR	VIH S 500/3 MR
(2) Nominal capacity	281 l	375 l	460 l
(3) Heating water capacity of the heating coil for the heating circuit	20,4 l	28,9 l	38,6 l
(4) Heat transfer fluid capacity of the heating coil for the solar circuit/ environment circuit			
(5) Maximum pressure of the heating coil during operation	1 MPa	1 MPa	1 MPa
(6) Operating pressure	1 MPa	1 MPa	1 MPa
(7) Maximum temperature of the heating circuit	110 °C	110 °C	110 °C
(8) Maximum domestic hot water temperature	85 °C	85 °C	85 °C
(9) Energy efficiency class	A	A	A
(10) Standby energy consumption per 24 hrs	1,05 kWh	1,16 kWh	1,04 kWh
(11) Heating coil pressure loss (heating circuit)	0,00106 MPa	0,0056 MPa	0,00117 MPa
(12) Heating coil surface (heating circuit)	3,1 m ²	4,4 m ²	5,9 m ²
(13) Volume of mixing water at 40 °C (V ₄₀) (heating circuit)	423 l	577 l	710 l
(14) Heating coil pressure loss (solar circuit/environment circuit)			
(15) Heating coil surface (solar circuit)			
(16) Volume of mixing water at 40 °C (V ₄₀) (solar circuit)			
(17) Net weight	153 kg	195 kg	251 kg
(18) Weight when filled ready for operation	454 kg	599 kg	750 kg
(19) Electrical connection for the power supply unit	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz
(20) IP rating	XX	XX	XX
(21) Cylinder material	(21.1) Black steel (S235JR)	(21.1) Black steel (S235JR)	(21.1) Black steel (S235JR)
(22) Corrosion protection	(22.2) Enamel with external current protection anode	(22.2) Enamel with external current protection anode	(22.2) Enamel with external current protection anode
(23) Insulating material	(23.2) Polyurethane + vacuum panel	(23.2) Polyurethane + vacuum panel	(23.2) Polyurethane + vacuum panel
(24) Thick insulating material	95 mm	100 mm	100 mm
(25) Propellant for insulating material	1233zd(E)	1233zd(E)	1233zd(E)
(26) Ozone depletion potential ODP	WP 1	WP 1	WP 1

(27) Technical data - Output

	VIH RW 300/3 MR	VIH RW 400/3 MR	VIH RW 500/3 MR
(28) Output characteristic figure NL (60 °C)	3.8	6.1	8.9
(29) Continuous domestic hot water output (heating circuit) (60 °C 35 K)	43.2 kW	62.2 kW	83.0 kW
(29) Continuous domestic hot water output (heating circuit) (60 °C 35 K)	1,063 l/h	1,531 l/h	2,041 l/h
(30) Domestic hot water output (60 °C)	377 l/10 min	504 l/10 min	618 l/10 min
(31) Specific flow rate Delta (60 °C 30 K)	44.0 l/min	58.8 l/min	72.1 l/min
(32) Nominal heating medium volume flow (heating circuit)			
(33) Nominal heating medium volume flow (solar circuit)			

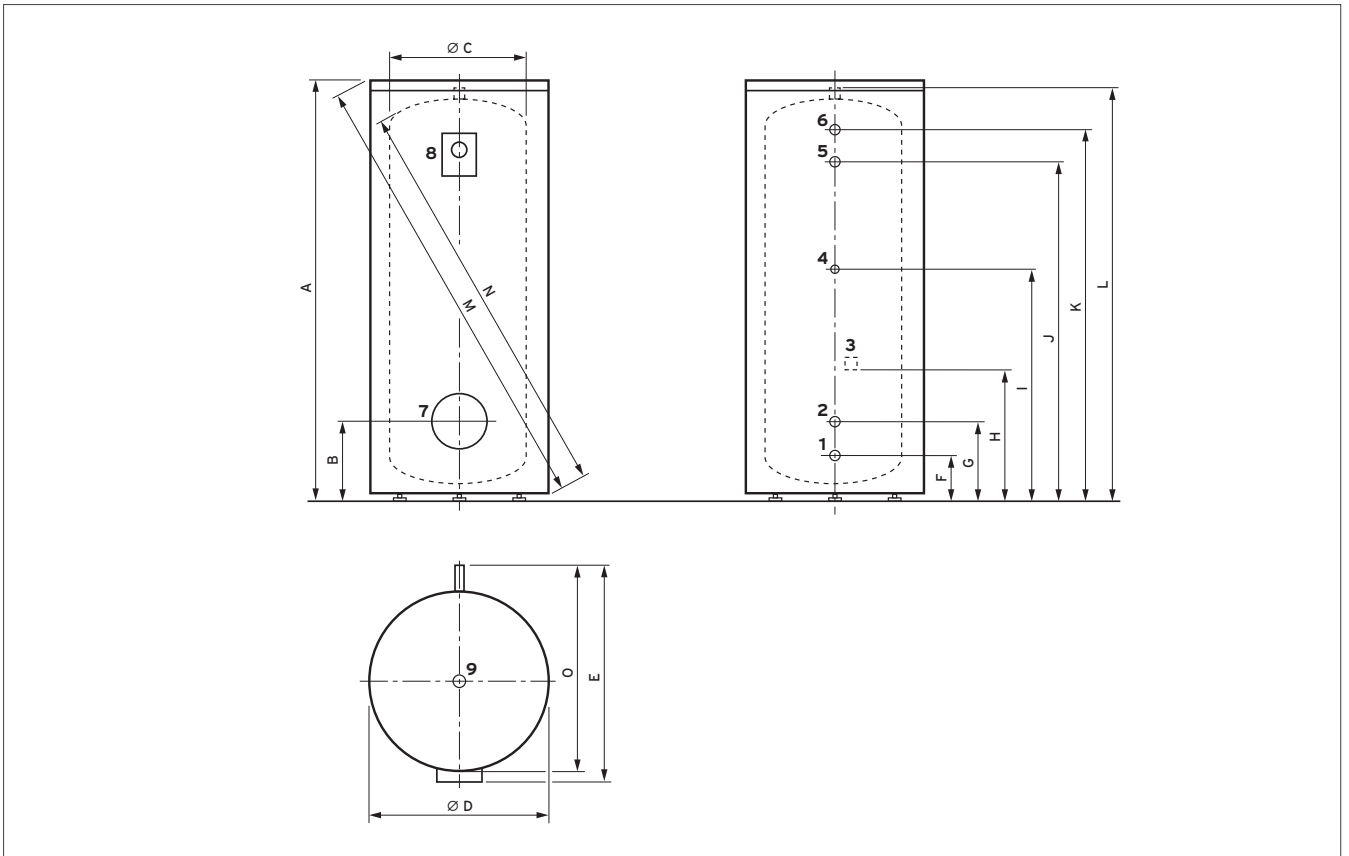


Fig. 782: Dimension drawing

- 1 Cold water connection
- 2 Heating return
- 3 Heating sensor removal tab
- 4 Circulation
- 5 Heating flow
- 6 Domestic hot water
- 7 Inspection opening
- 8 Thermometer
- 9 Protection anode

Unit type	A	B	C (dia.)	D (dia.)	E	F	G	H	I	J	K	L	M	N	O
VIH RW 300/3 MR	1929	313	500	690	775	168	250	522	1059	1555	1636	1773	2049	1850	725
VIH RW 400/3 MR	1633	357	650	850	930	208	294	522	824	1034	1294	1471	1841	1565	880
VIH RW 500/3 MR	1933	357	650	850	930	208	294	522	1124	1259	1594	1771	2112	1850	880

Dimensions in mm

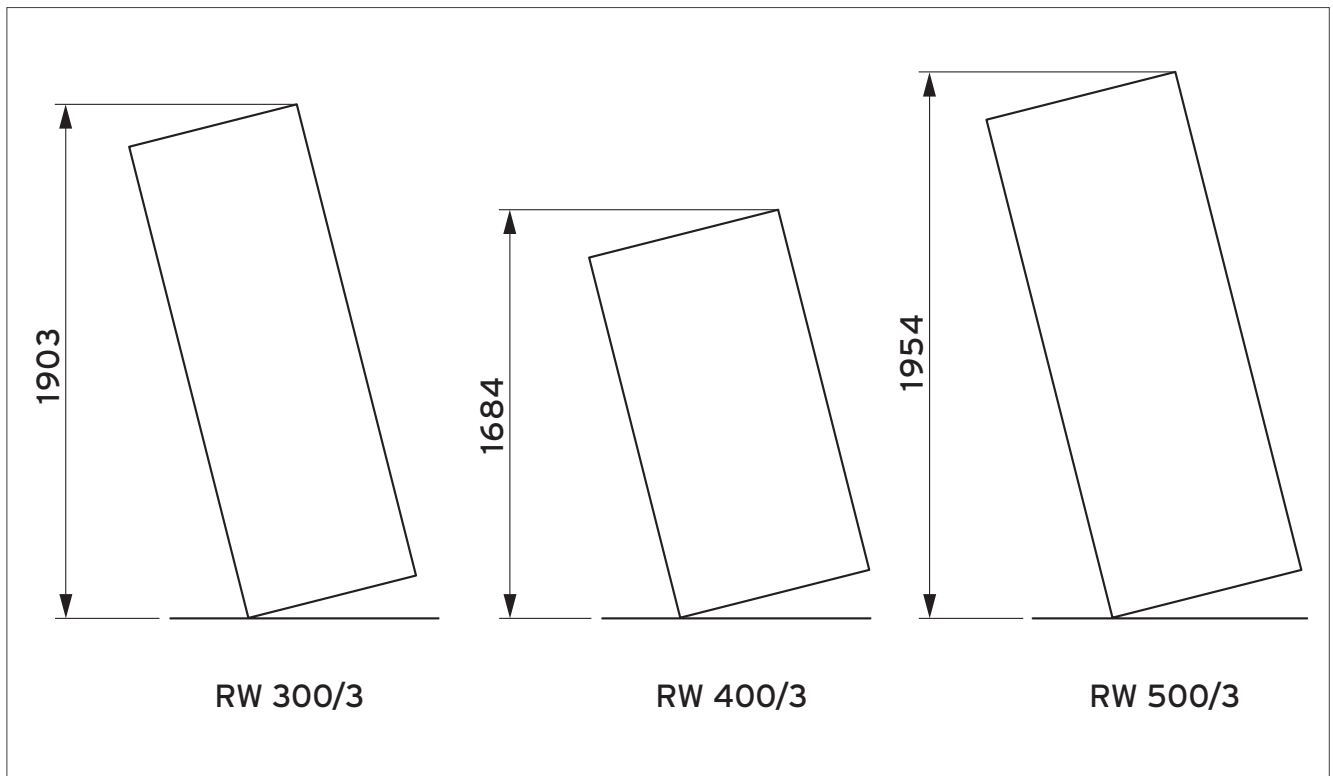


Fig. 783: Tilt dimension

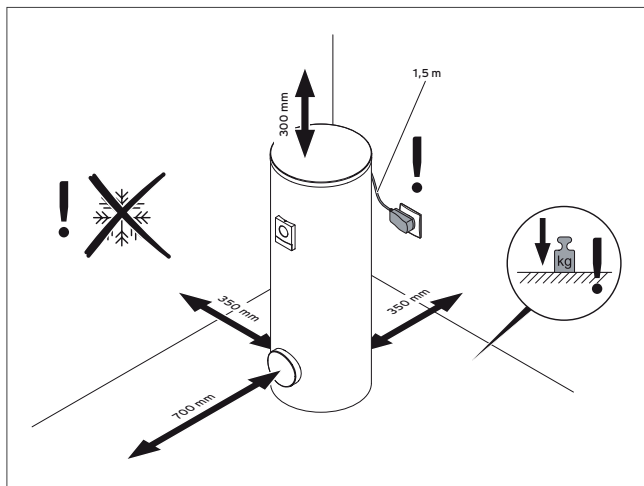


Fig. 784: Minimum clearances

21.9 Product description for the uniSTOR plus VIH RW 300/3 BR - VIH RW 500/3 BR



Fig. 785: uniSTOR plus VIH RW.../3 BR

21.9.1 Equipment

- Removable outer casing (not insulation)
- Magnesium protection anode
- Pipe coil heat exchanger
- Cleaning eye/flange for electric immersion heater
- Circulation connection
- Transport straps enclosed
- Cylinder is firmly embedded

21.9.2 Special features

- Indirectly heated domestic hot water cylinder
- Potable water side (cylinder and heat exchanger) with high-quality enamelling
- Analogue cylinder temperature display
- Smooth-pipe matrix with large heat-transfer surface area designed specially for heat pumps
- High-quality heat insulation

21.9.3 Potential applications

Cylinder that is specially adapted to domestic hot water generation with heat pumps.

Type overview

Unit designation	ErP label	Cylinder capacity in l	Order no.
VIH RW 300/3 BR	B (A+ to F)	281	0010020645
VIH RW 400/3 BR	B (A+ to F)	375	0010020646
VIH RW 500/3 BR	B (A+ to F)	460	0010020647

21.9.4 Technical data

(27) Technical data - General

	VIH RW 300/3 BR	VIH RW 400/3 BR	VIH RW 500/3 BR
(2) Nominal capacity	281 l	375 l	460 l
(3) Heating water capacity of the heating coil for the heating circuit	20.4 l	28.9 l	38.6 l
(4) Heat transfer fluid capacity of the heating coil for the solar circuit/ environment circuit			
(5) Maximum pressure of the heating coil during operation	1 MPa	1 MPa	1 MPa
(6) Operating pressure	1 MPa	1 MPa	1 MPa
(7) Maximum temperature of the heating circuit	110 °C	110 °C	110 °C
(8) Maximum domestic hot water temperature	85 °C	85 °C	85 °C
(9) Energy efficiency class	B	B	B
(10) Standby energy consumption per 24 hrs	1.40 kWh	1.54 kWh	1.84 kWh
(11) Heating coil pressure loss (heating circuit)	0.00106 MPa	0.0056 MPa	0.00117 MPa
(12) Heating coil surface (heating circuit)	3.1 m ²	4.4 m ²	5.9 m ²
(13) Volume of mixing water at 40 °C (V ₄₀) (heating circuit)	423 l	577 l	710 l
(14) Heating coil pressure loss (solar circuit/environment circuit)			
(15) Heating coil surface (solar circuit)			
(16) Volume of mixing water at 40 °C (V ₄₀) (solar circuit)			
(17) Net weight	141 kg	181 kg	235 kg
(18) Weight when filled ready for operation	422 kg	585 kg	734 kg
(19) Electrical connection for the power supply unit	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz
(20) IP rating	XX	XX	XX
(21) Cylinder material	(21.1) Black steel (S235JR)	(21.1) Black steel (S235JR)	(21.1) Black steel (S235JR)
(22) Corrosion protection	(22.1) Enamel with magnesium protection anode	(22.1) Enamel with magnesium protection anode	(22.1) Enamel with magnesium protection anode
(23) Insulating material	(23.1) Polyurethane	(23.1) Polyurethane	(23.1) Polyurethane
(24) Thick insulating material	75 mm	70 mm	70 mm
(25) Propellant for insulating material	HFO-1233zd(E)	HFO-1233zd(E)	HFO-1233zd(E)
(26) Ozone depletion potential ODP	WP 1	WP 1	WP 1

(27) Technical data - Output

	VIH RW 300/3 BR	VIH RW 400/3 BR	VIH RW 500/3 BR
(28) Output characteristic figure NL (60 °C)	3.8	6.1	8.9
(29) Continuous domestic hot water output (heating circuit) (60 °C 35 K)	43.2 kW	62.2 kW	83.0 kW
(29) Continuous domestic hot water output (heating circuit) (60 °C 35 K)	1,063 l/h	1,531 l/h	2,041 l/h
(30) Domestic hot water output (60 °C)	377 l/10 min	504 l/10 min	618 l/10 min
(31) Specific flow rate Delta (60 °C 30 K)	44.0 l/min	58.8 l/min	72.1 l/min
(32) Nominal heating medium volume flow (heating circuit)			
(33) Nominal heating medium volume flow (solar circuit)			

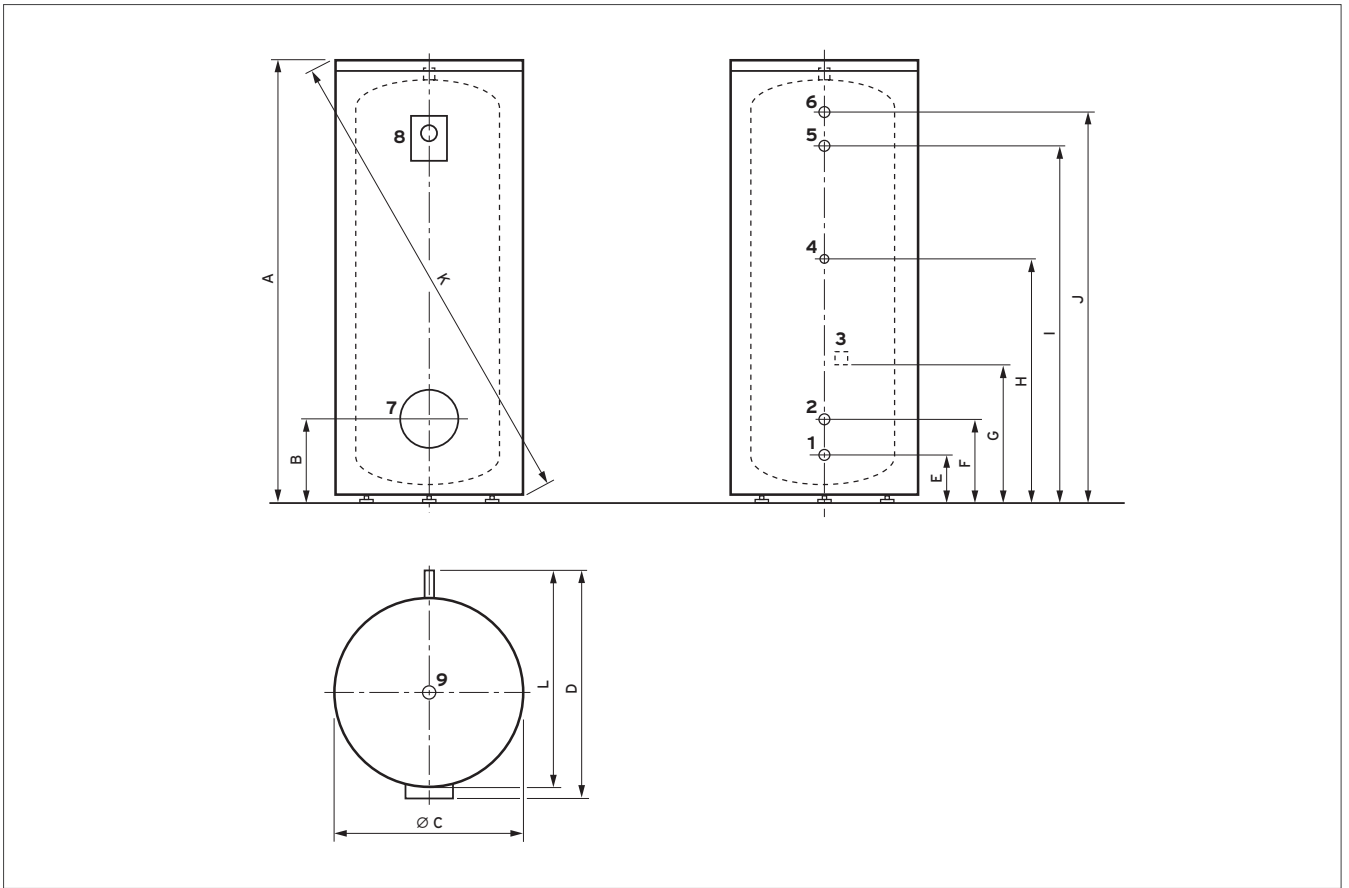


Fig. 786: Dimension drawing

- 1 Cold water connection
- 2 Heating return
- 3 Heating sensor removal tab
- 4 Circulation
- 5 Heating flow
- 6 Domestic hot water
- 7 Inspection opening
- 8 Thermometer
- 9 Protection anode

Dimensions

Unit type	A	B	C (dia.)	D	E	F	G	H	I	J	K	L
VIH RW 300/3 BR	1804	313	650	755	168	250	522	1059	1555	1636	1903	705
VIH RW 400/3 BR	1502	357	790	900	208	294	522	824	1034	1294	1684	850
VIH RW 500/3 BR	1802	357	790	900	208	294	522	1124	1259	1594	1954	850

Dimensions in mm

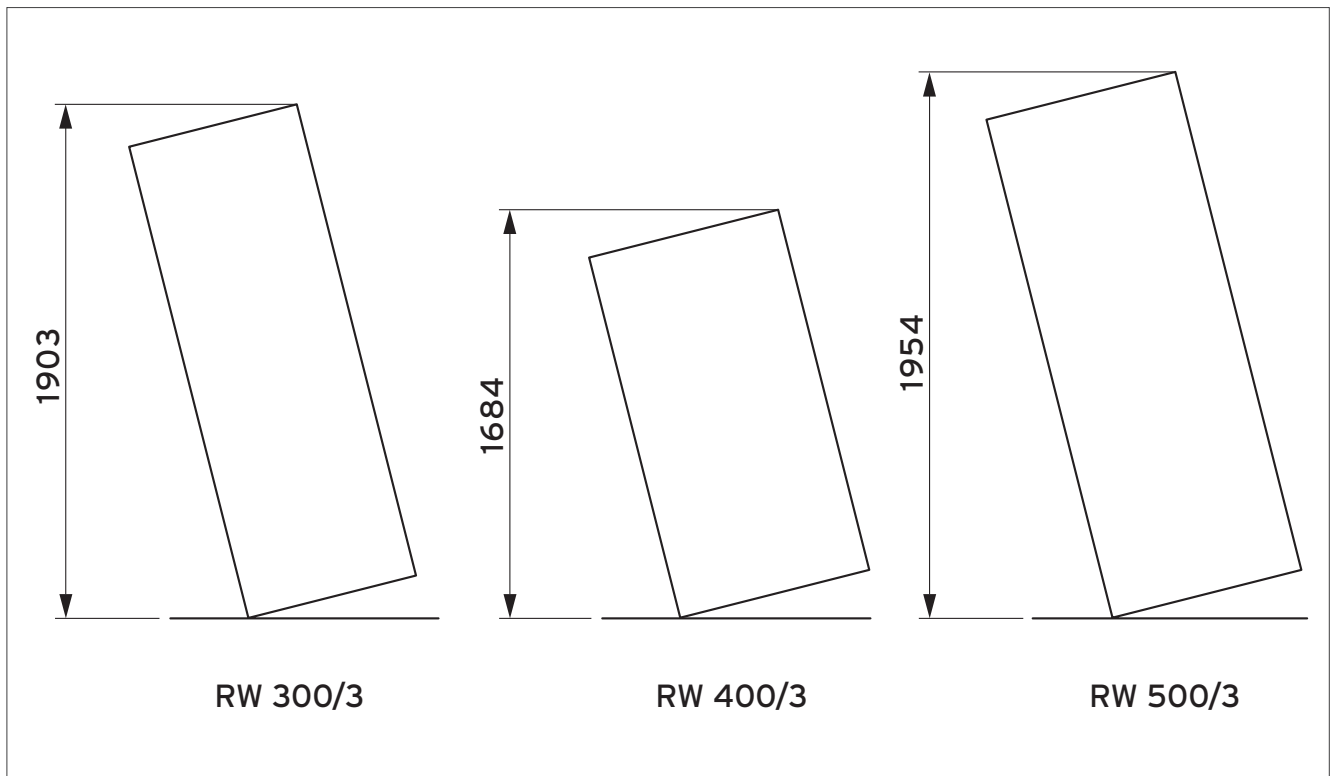


Fig. 787: Tilt dimension

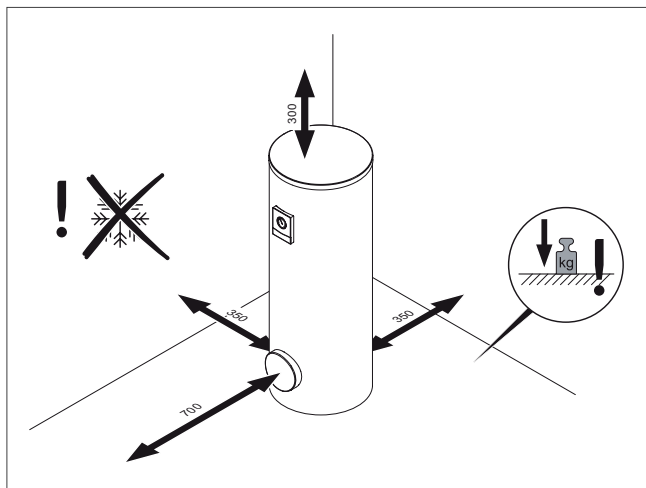


Fig. 788: Minimum clearances

21.10 Product description for the uniSTOR exclusive VIH SW 400/3 MR - VIH SW 500/3 MR



Fig. 789: uniSTOR exclusive VIH SW.../3 MR

21.10.1 Special features

- Bears the Green iQ label
- Bivalent domestic hot water cylinder, indirectly heated
- Potable water side (cylinder and heat exchanger) with high-quality enamelling
- Digital cylinder display (temperature, cylinder charging and fault messages)
- Easy to carry to installation site thanks to removable heat insulation

21.10.2 Equipment

- High-quality vacuum heat insulation
- Integrated external current anode
- Pipe coil heat exchanger
- Cleaning eye/flange for electric immersion heater
- Circulation connection
- Transport straps enclosed

21.10.3 Potential applications

Indirectly heated solar hot water cylinder for solar-assisted domestic hot water supply, specifically for heat pumps, for group or central supply for system pressures up to 10 bar.

Type overview

Unit designation	ErP label	Cylinder capacity in l	Order no.
VIH SW 400/3 MR	A (A+ to F)	372	0010020670
VIH SW 500/3 MR	A (A+ to F)	456	0010020671

21.10.4 Technical data

(1) Technical data - General

	VIH SW 400/3 MR	VIH SW 500/3 MR
(2) Nominal capacity	372 l	456 l
(3) Heating water capacity of the heating coil for the heating circuit	21.2 l	28.9 l
(4) Heat transfer fluid capacity of the heating coil for the solar circuit/ environment circuit	9.6 l	13.5 l
(5) Maximum pressure of the heating coil during operation	1 MPa	1 MPa
(6) Operating pressure	1 MPa	1 MPa
(7) Maximum temperature of the heating circuit	110 °C	110 °C
(8) Maximum domestic hot water temperature	85 °C	85 °C
(9) Energy efficiency class	A	A
(10) Standby energy consumption per 24 hrs	1.23 kWh	1.38 kWh
(11) Heating coil pressure loss (heating circuit)	0.0026 MPa	0.0057 MPa
(12) Heating coil surface (heating circuit)	3.2 m ²	4.4 m ²
(13) Volume of mixing water at 40 °C (V ₄₀) (heating circuit)	386 l	471 l
(14) Heating coil pressure loss (solar circuit/environment circuit)	0.0021 MPa	0.0027 MPa
(15) Heating coil surface (solar circuit)	1.5 m ²	2.1 m ²
(16) Volume of mixing water at 40 °C (V ₄₀) (solar circuit)	606 l	771 l
(17) Net weight	203 kg	265 kg
(18) Weight when filled ready for operation	606 kg	763 kg
(19) Electrical connection for the power supply unit	230 V, 50 Hz	230 V, 50 Hz
(20) IP rating	XX	XX
(21) Cylinder material	(21.1) Black steel (S235JR)	(21.1) Black steel (S235JR)
(22) Corrosion protection	(22.2) Enamel with external current protection anode	(22.2) Enamel with external current protection anode
(23) Insulating material	(23.2) Polyurethane + vacuum panel	(23.2) Polyurethane + vacuum panel
(24) Thick insulating material	100 mm	100 mm
(25) Propellant for insulating material	1233zd(E)	1233zd(E)
(26) Ozone depletion potential ODP	WP 1	WP 1

(27) Technical data - Output

	VIH SW 400/3 MR	VIH SW 500/3 MR
(28) Output characteristic figure NL (60 °C)	1.5	2.8
(29) Continuous domestic hot water output (heating circuit) (60 °C 35 K)	44.3 kW	62.2 kW
(29) Continuous domestic hot water output (heating circuit) (60 °C 35 K)	1,091 l/h	1,530 l/h
(30) Domestic hot water output (60 °C)	266 l/10 min	330 l/10 min
(31) Specific flow rate Delta (60 °C 30 K)	31.0 l/min	38.5 l/min
(32) Nominal heating medium volume flow (heating circuit)	1.7 m ³ /h	2.6 m ³ /h
(33) Nominal heating medium volume flow (solar circuit)	2.0 m ³ /h	2.0 m ³ /h

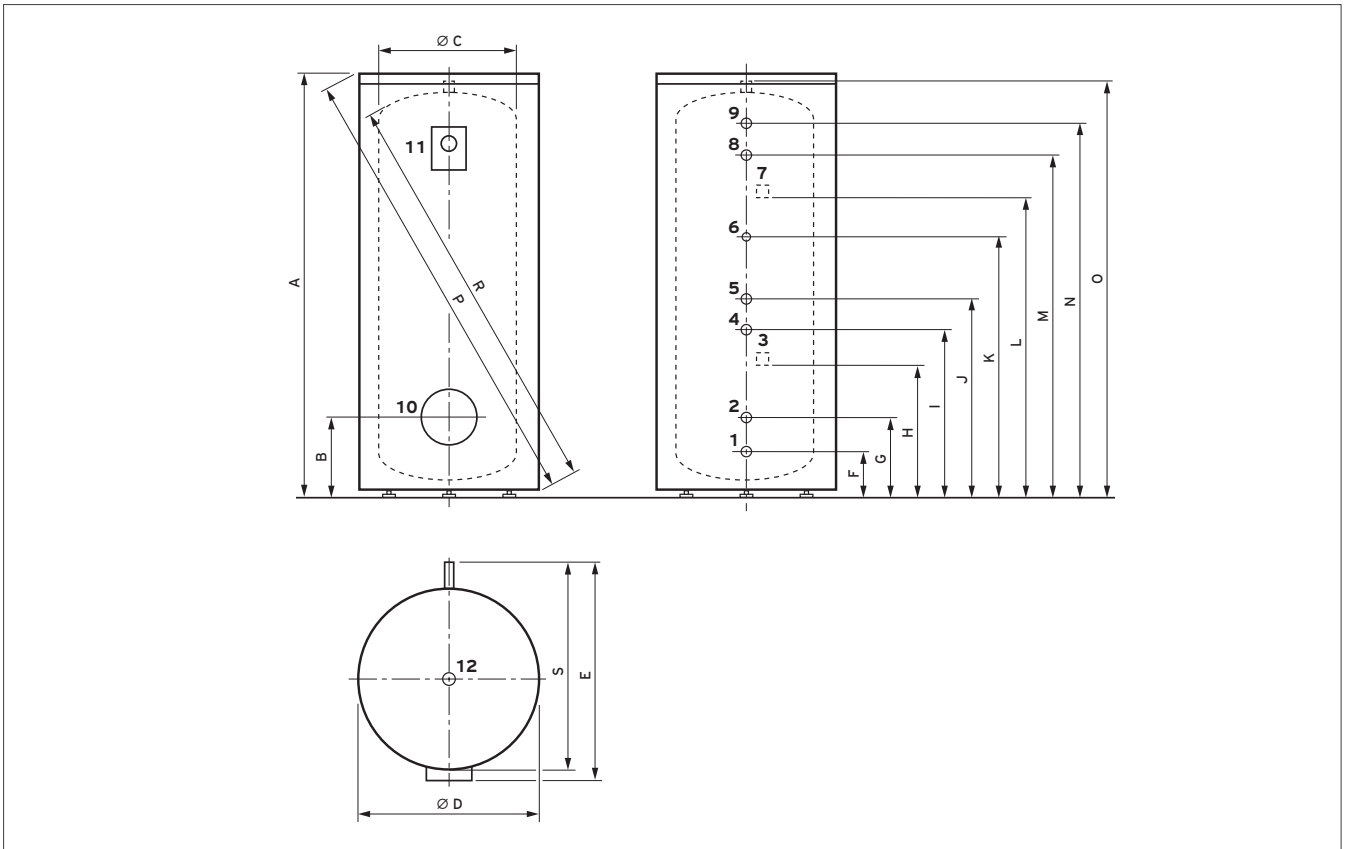


Fig. 790: Dimension drawing

- 1 Cold water connection
- 2 Solar return
- 3 Solar sensor removal tab
- 4 Solar flow
- 5 Heating return
- 6 Circulation
- 7 Heating sensor removal tab
- 8 Heating flow
- 9 Domestic hot water
- 10 Inspection opening
- 11 Thermometer
- 12 Protection anode

Dimensions

Unit type	A	B	C (dia.)	D (dia.)	E	F	G	H	I	J	K	L	M	N	O	P	R	S
VIH SW 400/3 MR	1633	357	650	850	930	208	294	522	584	698	824	996	1208	1294	1471	1841	1565	880
VIH SW 500/3 MR	1933	357	650	850	930	208	294	522	674	818	1124	1275	1508	1594	1771	2112	1850	880

Dimensions in mm

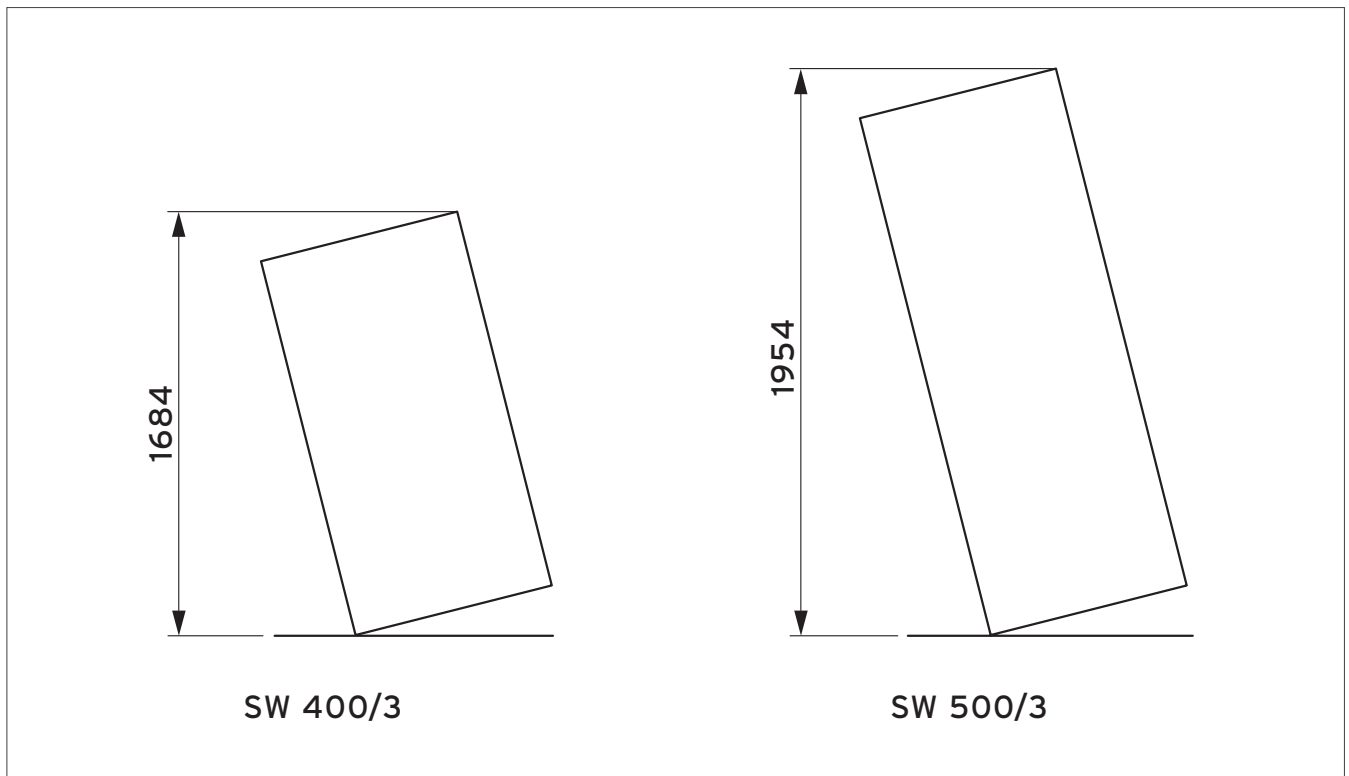


Fig. 791: Tilt dimension

21.11 Product description for the uniSTOR plus VIH SW 400/3 BR - VIH SW 500/3 BR



Fig. 792: uniSTOR plus VIH SW../3 BR

21.11.1 Equipment

- Removable outer casing (not insulation)
- Magnesium protection anode
- Pipe coil heat exchanger
- Cleaning eye/flange for electric immersion heater
- Circulation connection
- Transport straps enclosed
- Cylinder is firmly embedded

21.11.2 Special features

- Bivalent domestic hot water cylinder, indirectly heated
- Potable water side (cylinder and heat exchanger) with high-quality enamelling
- Analogue cylinder temperature display
- Smooth-pipe matrix with large heat-transfer surface area designed specially for heat pumps
- High-quality heat insulation

21.11.3 Potential applications

Indirectly heated solar hot water cylinder for solar-assisted domestic hot water supply, specifically for heat pumps, for group or central supply for system pressures up to 10 bar.

Type overview

Unit designation	ErP label	Cylinder capacity in l	Order no.
VIH SW 400/3 BR	B (A+ to F)	372	0010020648
VIH SW 500/3 BR	B (A+ to F)	456	0010020649

21.11.4 Technical data

(1) Technical data - General

	VIH SW 400/3 BR	VIH SW 500/3 BR
(2) Nominal capacity	372 l	456 l
(3) Heating water capacity of the heating coil for the heating circuit	21.2 l	28.9 l
(4) Heat transfer fluid capacity of the heating coil for the solar circuit/ environment circuit	9.6 l	13.5 l
(5) Maximum pressure of the heating coil during operation	1 MPa	1 MPa
(6) Operating pressure	1 MPa	1 MPa
(7) Maximum temperature of the heating circuit	110 °C	110 °C
(8) Maximum domestic hot water temperature	85 °C	85 °C
(9) Energy efficiency class	B	B
(10) Standby energy consumption per 24 hrs	1.58 kWh	1.85 kWh
(11) Heating coil pressure loss (heating circuit)	0.0026 MPa	0.0057 MPa
(12) Heating coil surface (heating circuit)	3.2 m ²	4.4 m ²
(13) Volume of mixing water at 40 °C (V ₄₀) (heating circuit)	386 l	471 l
(14) Heating coil pressure loss (solar circuit/environment circuit)	0.0021 MPa	0.0027 MPa
(15) Heating coil surface (solar circuit)	1.5 m ²	2.1 m ²
(16) Volume of mixing water at 40 °C (V ₄₀) (solar circuit)	606 l	771 l
(17) Net weight	189 kg	249 kg
(18) Weight when filled ready for operation	592 kg	747 kg
(19) Electrical connection for the power supply unit	230 V, 50 Hz	230 V, 50 Hz
(20) IP rating	XX	XX
(21) Cylinder material	(21.1) Black steel (S235JR)	(21.1) Black steel (S235JR)
(22) Corrosion protection	(22.1) Enamel with magnesium protection anode	(22.1) Enamel with magnesium protection anode
(23) Insulating material	(23.1) Polyurethane	(23.1) Polyurethane
(24) Thick insulating material	70 mm	70 mm
(25) Propellant for insulating material	HFO-1233zd(E)	HFO-1233zd(E)
(26) Ozone depletion potential ODP	WP 1	WP 1

(27) Technical data - Output

	VIH SW 400/3 BR	VIH SW 500/3 BR
(28) Output characteristic figure NL (60 °C)	1.5	2.8
(29) Continuous domestic hot water output (heating circuit) (60 °C 35 K)	44.3 kW	62.2 kW
(29) Continuous domestic hot water output (heating circuit) (60 °C 35 K)	1,091 l/h	1,530 l/h
(30) Domestic hot water output (60 °C)	266 l/10 min	330 l/10 min
(31) Specific flow rate Delta (60 °C 30 K)	31.0 l/min	38.5 l/min
(32) Nominal heating medium volume flow (heating circuit)	1.7 m ³ /h	2.6 m ³ /h
(33) Nominal heating medium volume flow (solar circuit)	2.0 m ³ /h	2.0 m ³ /h

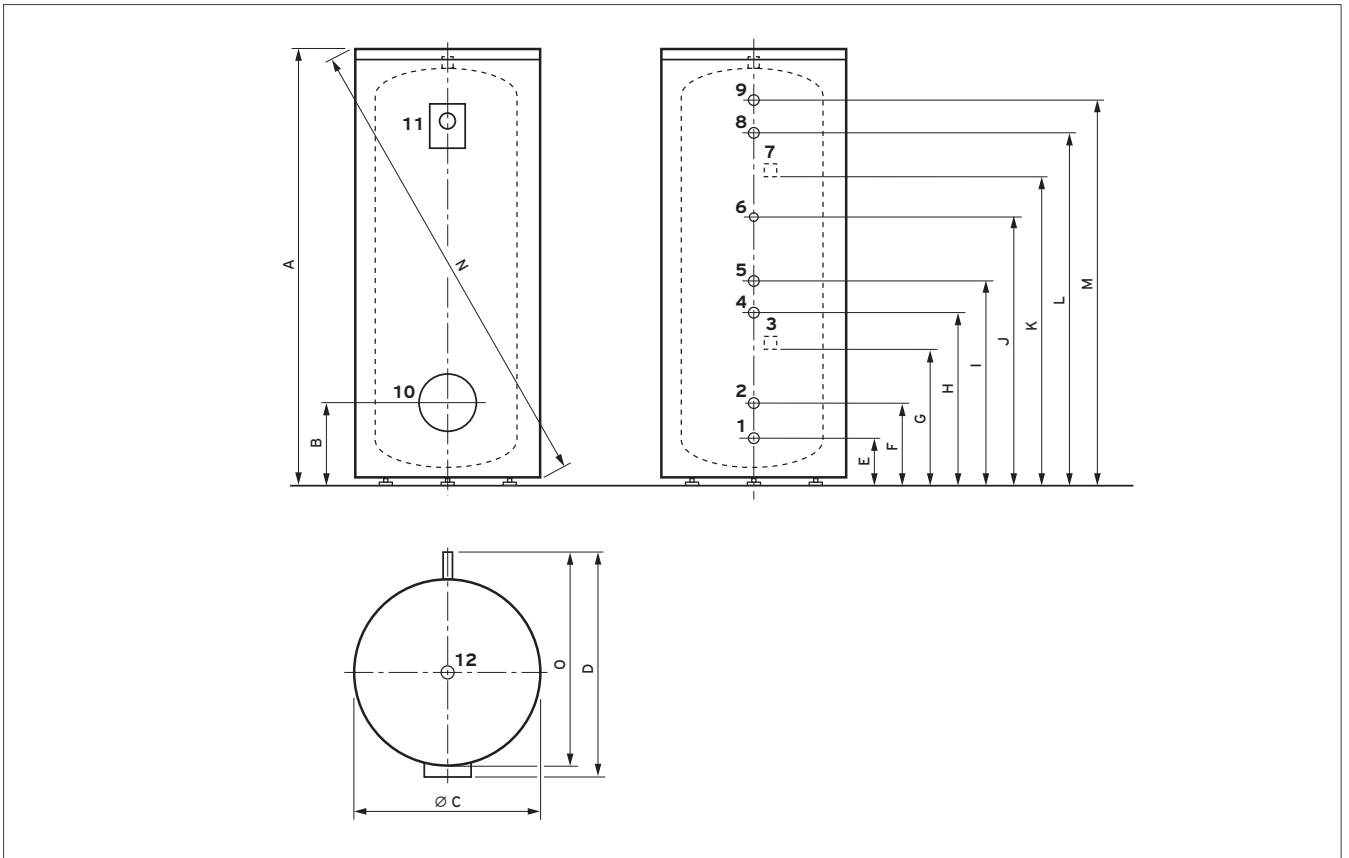


Fig. 793: Dimension drawing

- 1 Cold water connection
- 2 Solar return
- 3 Solar sensor removal tab
- 4 Solar flow
- 5 Heating return
- 6 Circulation
- 7 Heating sensor removal tab
- 8 Heating flow
- 9 Domestic hot water
- 10 Inspection opening
- 11 Thermometer
- 12 Protection anode

Dimensions

Unit type	A	B	C (dia.)	D	E	F	G	H	I	J	K	L	M	N	O
VIH SW 400/3 BR	1502	357	790	900	208	294	522	584	698	824	996	1208	1294	1684	850
VIH SW 500/3 BR	1802	357	790	900	208	294	522	674	818	1124	1275	1508	1594	1954	2112

Dimensions in mm

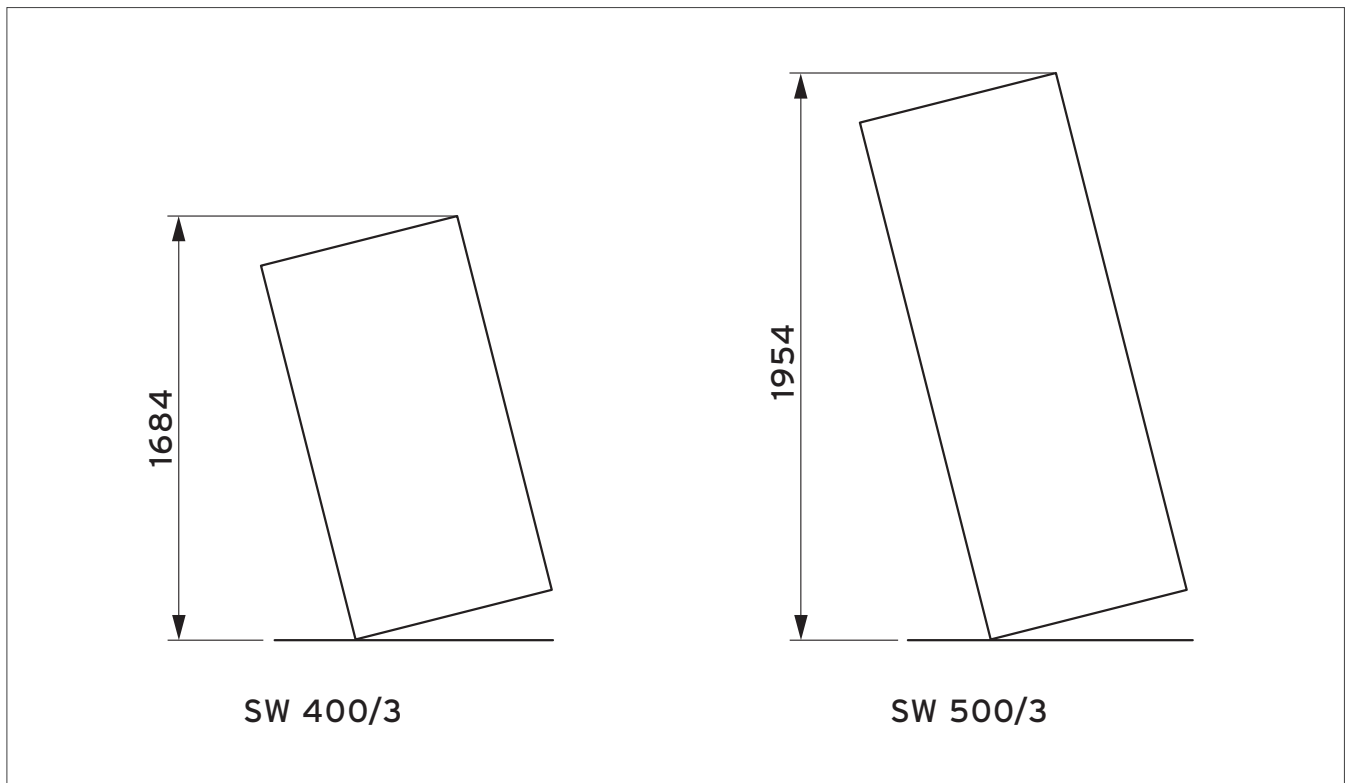


Fig. 794: Tilt dimension

21.12 Product description of the uniSTOR domestic hot water cylinder models VIH RW 750/2 to 2000/2 (up to 10 bar)



Fig. 795: uniSTOR VIH RW 750/2 to 2000/2 (up to 10 bar)

Type overview

Unit designation	Article number
VIH RW 750/2	0010039308
VIH RW 1000/2	0010039309
VIH RW 1500/2	xxx
VIH RW 2000/2	xxx

21.12.1 Special features

- Monovalent domestic hot water cylinder, indirectly heated
- High continuous hot water output

21.12.2 Product equipment

- Domestic hot water cylinder with high-quality enamelling
- High-quality heat insulation
- Magnesium protection anode (750 and 1000 l) or external current anode (1500 and 2000 l)
- Pipe heat exchanger
- Inspection opening
- Circulation connection
- Option to connect to immersion heater

21.12.3 Potential applications

Indirect domestic hot water cylinder for domestic hot water supply, for group or centralised supply at a mains overpressure of up to 10 bar.

Cylinder that is specially adapted to domestic hot water generation with heat pumps.

21.12.4 Description of the unit

VIH RW

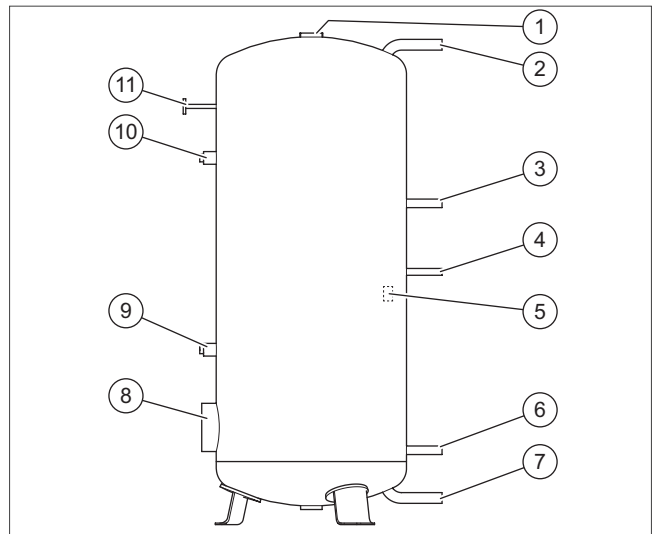


Fig. 796: Product design

- 1 Magnesium protection anode*
 - 2 Domestic hot water connection
 - 3 Heating flow connection from the heat generator
 - 4 Secondary return pipe connection
 - 5 Sensor removal tab
 - 6 Heating return connection to the heat generator
 - 7 Cold water connection
 - 8 Inspection opening/connection flange for the electric back-up heater
 - 9 Second magnesium protection anode*
 - 10 Connection for screw-in electric back-up heater
 - 11 Thermometer
- * VIH RW 750/1000 only

21.12.5 Minimum clearances

Domestic hot water cylinder minimum clearances

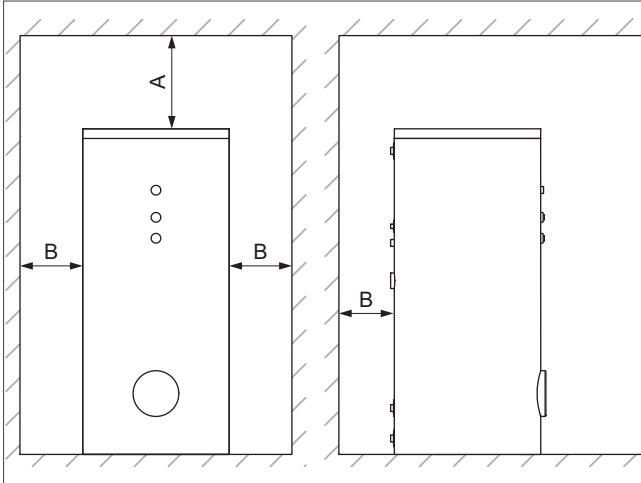


Fig. 797: Domestic hot water cylinder minimum clearances

- A Clearance to the ceiling
- B Clearance to walls

During installation, ensure that there is sufficient clearance to the ceiling (A) and the walls (B).

- Ceiling clearance A: 400 mm
- Side clearance B: 250 mm
- Rear wall clearance B: 250 mm

21.12.6 Tilt dimensions

Domestic hot water cylinder tilt dimensions

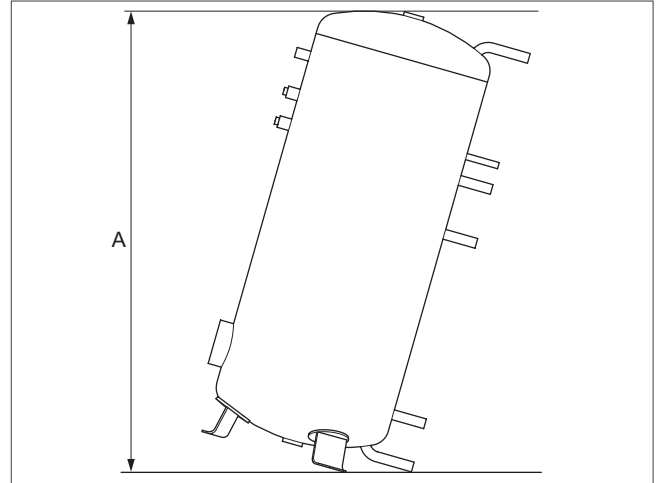


Fig. 798: Domestic hot water cylinder tilt dimensions

- A Tilt dimension

When selecting the installation room, note the tilt dimension of the cylinder.

Type designation	Tilt dimension A [mm]	
	Without heat insulation	With heat insulation
VIH RW 750/2	2106	2264
VIH RW 1000/2	2159	2340
VIH RW 1500/2	xxx	xxx
VIH RW 2000/2	xxx	xxx

Technical data

	VIH RW 750/2	VIH RW 1000/2	VIH RW 1500/2	VIH RW 2000/2
Nenninhalt	729 l	965 l	1.500 l	2.000 l
Außendurchmesser des Speichers (ohne Wärmedämmung)	750 mm	850 mm	1.000 mm	1.200 mm
Außendurchmesser des Speichers (mit Wärmedämmung)	960 mm	1.051 mm	1.230 mm	1.440 mm
Höhe (inkl. Entlüftungsventil)	1.937 mm	1.962 mm	2.128 mm	2.039 mm
Höhe (inkl. Entlüftungsventil + Wärmedämmung)	2.050 mm	2.085 mm	2.230 mm	2.140 mm
Nettogewicht	251 kg	329 kg	469 kg	763 kg
Gesamtgewicht	980 kg	1.249 kg	1.969 kg	2.763 kg
Material of the cylinder and the connections	Stahl	Stahl	Stahl	Stahl
Schutzart	2x Magnesium-Schutzanode	2x Magnesium-Schutzanode	1x Fremdstromanode	1x Fremdstromanode
Operating pressure	≤ 1,0 MPa (≤ 10,0 bar)	≤ 1,0 MPa (≤ 10,0 bar)	≤ 1,0 MPa (≤ 10,0 bar)	≤ 1,0 MPa (≤ 10,0 bar)
Maximum domestic hot water temperature	95 °C	95 °C	95 °C	95 °C
Temperaturverlust	123 W	142 W	171 W	188 W
Vorlauf Heizspirale	3 m³/h	3 m³/h	7,25 m³/h	7,25 m³/h
Operating pressure of the spiral immersion heaters	≤ 1,6 MPa (≤ 16,0 bar)	≤ 1,6 MPa (≤ 16,0 bar)	≤ 1,6 MPa (≤ 16,0 bar)	≤ 1,6 MPa (≤ 16,0 bar)
Maximum flow temperature of the spiral immersion heater	110 °C	110 °C	110 °C	110 °C

21.12.7 Dimensions and connection dimensions

VIH RW .../2 connection dimensions

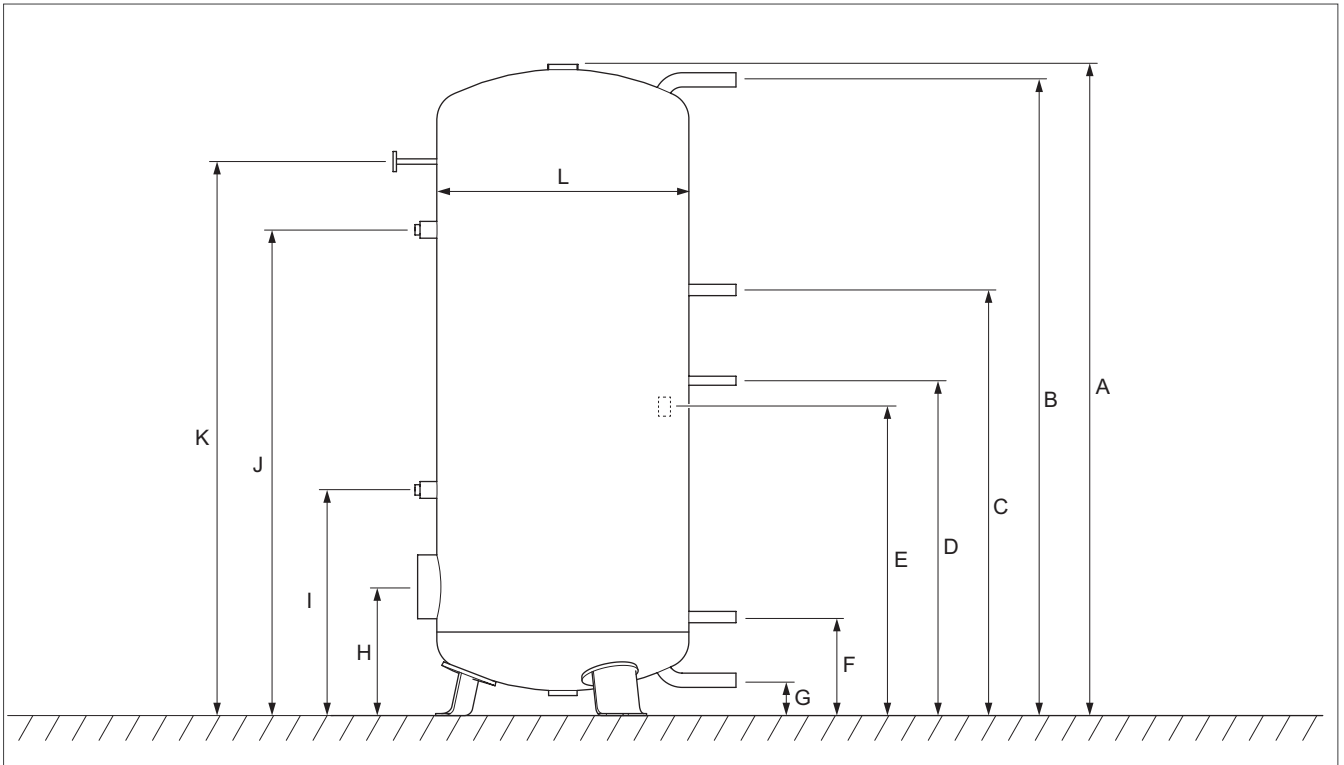


Fig. 799: Domestic hot water cylinder connection dimensions

Dimension	Unit	Tolerance	VIH RW 750/2	VIH RW 1000/2	VIH RW 1500/2	VIH RW 2000/2
A	mm	± 5	1937	1962	X	X
B	mm	± 5	1891	1905		
C	mm	± 5	1433	1483		
D	mm	± 5	1123	1173		
E	mm	± 5	1016	1004		
F	mm	± 5	294	301		
G	mm	± 5	105	106		
H	mm	± 5	383	391		
I	mm	± 5	727	780		
J	mm	± 5	1491	1547		
K	mm	± 5	1694	1694		
L	mm	± 5	750 diameter	850 diameter		

21.12.8 Continuous output diagrams

Continuous output diagram - uniSTOR VIH RW 750/2

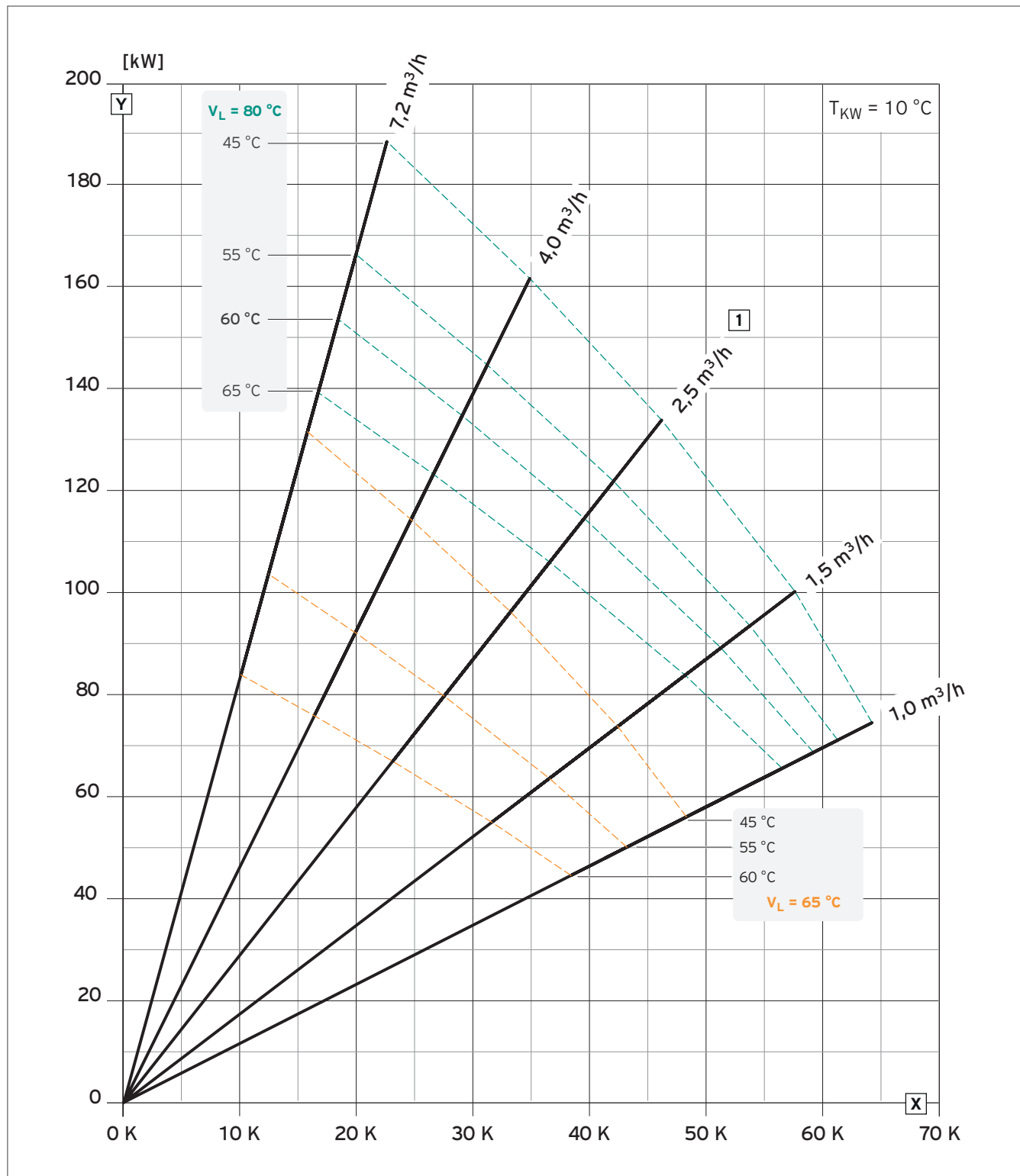


Fig. 800: Continuous output diagram for cylinder dimensioning - uniSTOR VIH RW 750/2

- X Δt heating medium flow in K
- Y Continuous output in kW
- 1 Heating medium flow in l/h

Continuous output diagram - uniSTOR VIH RW 1000/2

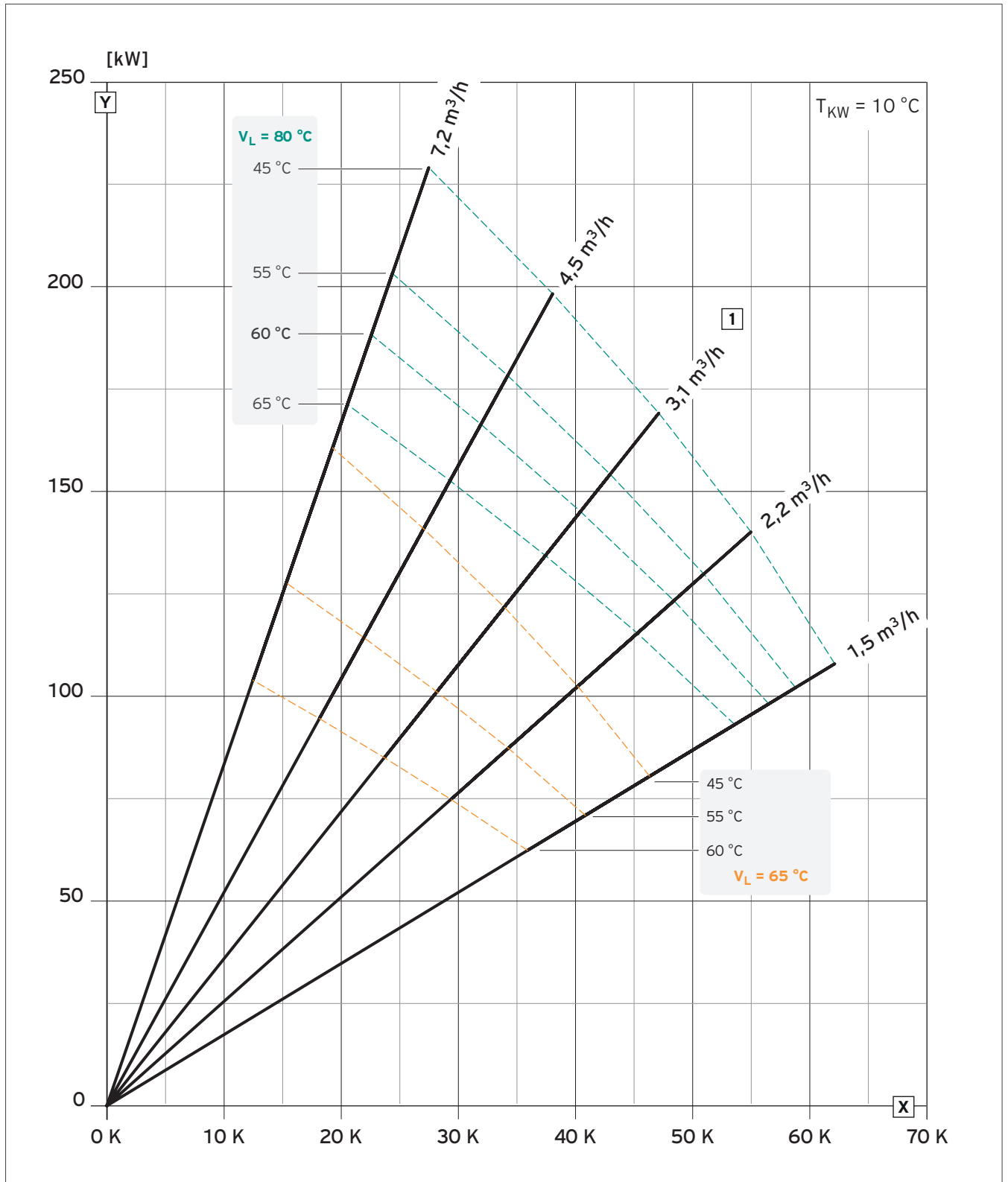


Fig. 801: Continuous output diagram for cylinder dimensioning - uniSTOR VIH RW 1000/2

- X Δt heating medium flow in K
- Y Continuous output in kW
- 1 Heating medium flow in l/h

Continuous output diagram - uniSTOR VIH RW 1500/2

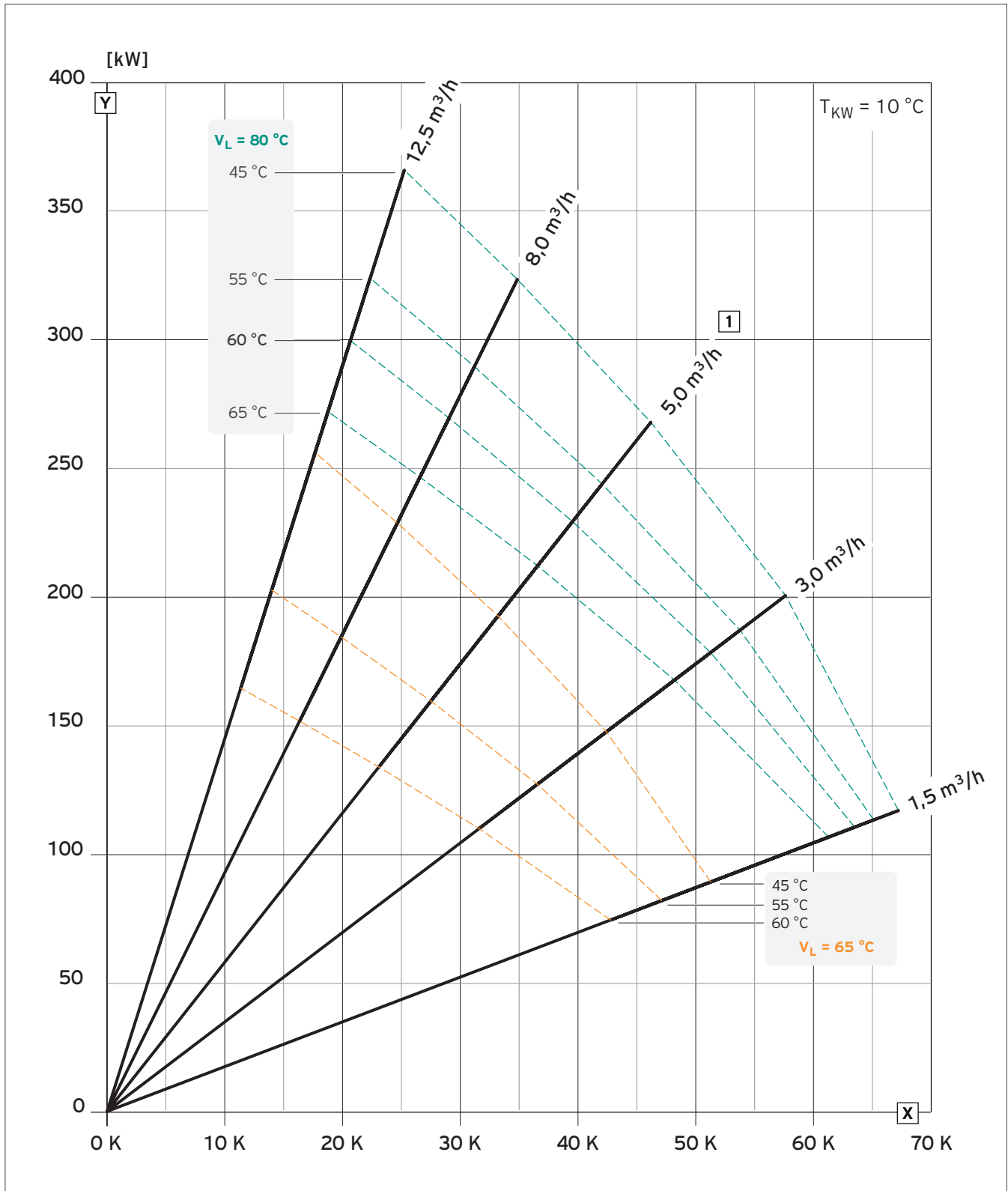


Fig. 802: Continuous output diagram for cylinder dimensioning - uniSTOR VIH RW 1500/2

- X Δt heating medium flow in K
- Y Continuous output in kW
- 1 Heating medium flow in l/h

Continuous output diagram - uniSTOR VIH RW 2000/2

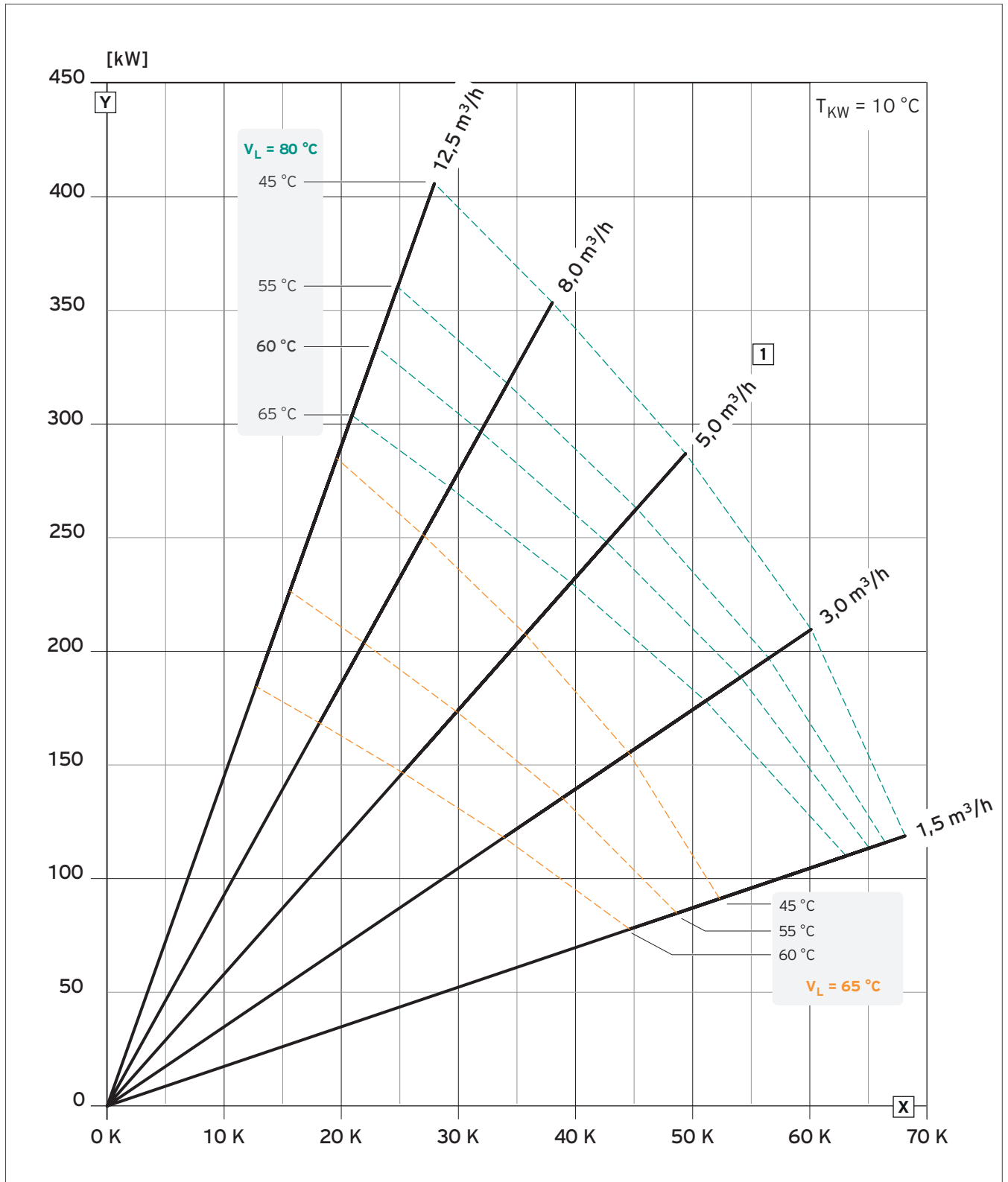


Fig. 803: Continuous output diagram for cylinder dimensioning - uniSTOR VIH RW 2000/2

- X Δt heating medium flow in K
- Y Continuous output in kW
- 1 Heating medium flow in l/h

21.12.9 Accessories - Immersion heater

Figure	Description	VIH R 750/2	VIH R 1000/2	VIH R 1500/2	VIH R 2000/2	VIH RW 750/2	VIH RW 1000/2	VIH RW 1500/2	VIH RW 2000/2	Article number
	<p>Immersion heater - 7.5 kW heat output</p> <ul style="list-style-type: none"> - 7.5 kW / 3N ~ 400 V - 1 1/2" screw-in thread - Safety cut-out secured <p>Installation length: 720 mm</p>	-	-	-	-	•	•	•	•	0010040068
	<p>Immersion heater - 16 kW heat output</p> <ul style="list-style-type: none"> - 16 kW / 3N ~ 400 V - Three output levels (8, 11 or 16 kW) - DN 180 flange connection - Safety cut-out secured <p>Installation length: 610 mm</p>	•	•	•	•	•	•	•	•	0010040069
	<p>Immersion heater - 19 kW heat output</p> <ul style="list-style-type: none"> - 19 kW / 3N ~ 400 V - Three output levels (9, 12.7 or 19 kW) - DN 180 flange connection - Safety cut-out secured <p>Installation length: 740 mm</p>	-	•	•	•	-	-	•	•	0010040070
	<p>Immersion heater - 25 kW heat output</p> <ul style="list-style-type: none"> - 25 kW / 3N ~ 400 V - Three output levels (12.5, 18.8 or 25 kW) - DN 180 flange connection - Safety cut-out secured <p>Installation length: 740 mm</p>	-	•	•	•	-	-	•	•	0010040071
	<p>Immersion heater - 35 kW heat output</p> <ul style="list-style-type: none"> - 35 kW / 3N ~ 400 V - Three output levels (17.5, 24.6 or 35 kW) - DN 180 flange connection - Safety cut-out secured <p>Installation length: 900 mm</p>	-	-	•	•	-	-	-	•	0010040072

21.13 Product description for the uniTOWER VIH QW 190/1 E



Fig. 804: uniTOWER VIH QW 190/1 E

Type overview

Unit designation	Art. no.
VIH QW 190/1 E	0010019709
VIH QW 190/1 E	0010019373

21.13.1 Special features

- Extremely short installation times thanks to the compact design
- Can be extended using accessories that can be integrated
- Also available with integrated intermediate heat exchanger
- SplitMountingConcept for easier positioning in two parts

21.13.2 Equipment

- Integrated 190 litre domestic hot water coiled tube cylinder
- High-efficiency pump for the version with an intermediate heat exchanger (22 plates)
- 6 kW electric back-up heater with safety cut-out and electrical connection box
- Purging and draining the back-up heater
- 15 litre diaphragm expansion vessel for heating
- 3-port diverter valve for heating/domestic hot water
- 3 bar expansion relief valve with drain pipework and brine collecting vessel (for the version with intermediate heat exchanger)
- Filling connection
- Brine circuit with manometer

21.13.3 Potential applications

The uniTOWER is used only in combination with an aroTHERM VWL ..5/2 and VWL ..5/3 or geoTHERM VWS 36/4.1 heat pump and acts as a link between the heat pump and heating installation.

21.13.4 Technical data

Technical data - Heating

	VIH QW 190/1
Filling type	Cartridge immersion heater
Heating output range	2 to 6 kW Δ: 2 kW
Maximum water pressure in heating mode (PMS)	0.3 MPa
Maximum heating flow temperature	77 °C
Maximum volume of the system heating circuit	220 l
Maximum volume of the heat pump circuit	30 l
Maximum volume of the heat pump circuit	30 l Note: With a 2 l expansion vessel. Note: With a 2 l expansion vessel.

Technical data - Heating

	VIH QW 190/1
Filling type	Cartridge immersion heater
Heating output range	2 to 6 kW Δ: 2 kW
Maximum water pressure in heating mode (PMS)	0.3 MPa
Maximum heating flow temperature	77 °C
Maximum volume of the system heating circuit	220 l

Technical data - General

	VIH QW 190/1
System type	System with heat pump circuit/complete heating and hot water module disconnected
System type	System without decoupling module
Product dimensions, width	599 mm
Product dimensions, depth	693 mm
Product dimensions, height	1,880 mm
Net weight	170 kg
Weight when filled with water	360 kg

Technical data - Electrics

	VIH QW 190/1
Electrical connection	400 V (+10%/-15%) 3N ~50Hz
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)
Integrated fuse (SMU - eBox)	T4A, 250V
Energy consumption in standby operation	1.2 W
Level of protection	IPX4
Max amperage of the power supply circuit	9 A

21.13.5 Product dimensions and connection dimensions

Dimension drawing and connection dimensions

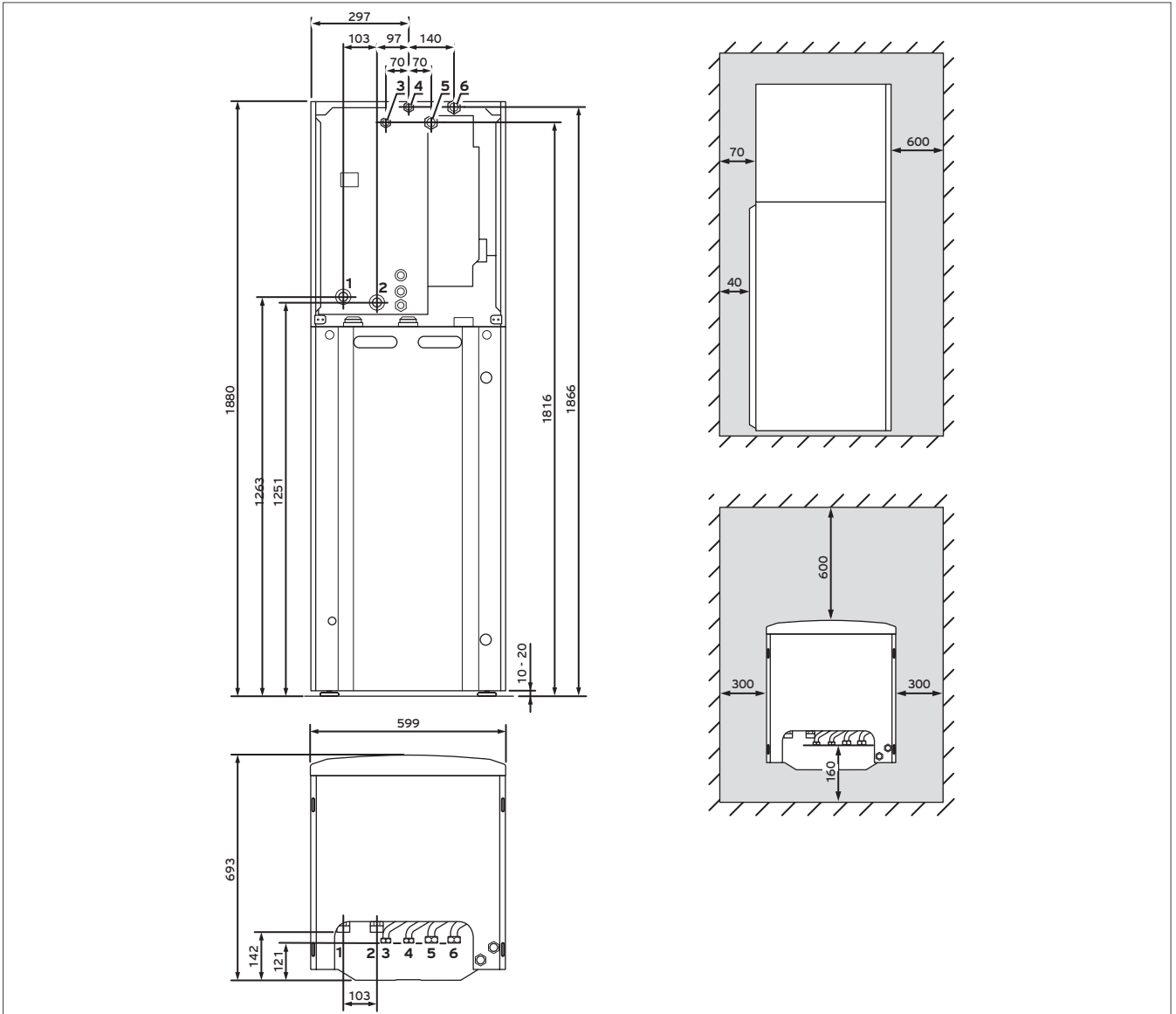


Fig. 805: uniTOWER VIH QW 190/1 E dimension drawing and connection dimensions

- 1 Flow from heat pump G 1 1/4
- 2 Return to the heat pump G 1 1/4
- 3 Cold water connection G 3/4
- 4 Hot water connection G 3/4
- 5 G 1 heating flow
- 6 G 1 heating return

Product dimensions for the transport

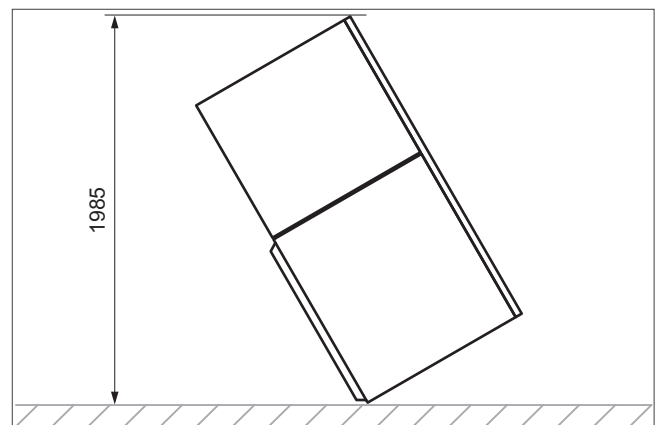


Fig. 806: Dimensions for transport

21.13.6 Pressure losses

Total pressure loss (without intermediate heat exchanger)

The diagram shows the total pressure loss for the product variant without an intermediate heat exchanger.

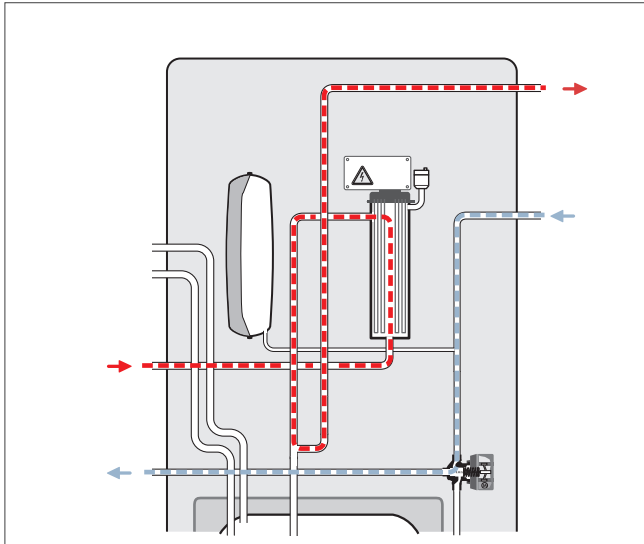


Fig. 807: Basic diagram showing total pressure losses for the uniTOWER VIH QW 190/1 E

Pressure losses in the heat pump circuit version with intermediate heat exchanger

The diagram shows the pressure losses for the product variant with an intermediate heat exchanger.

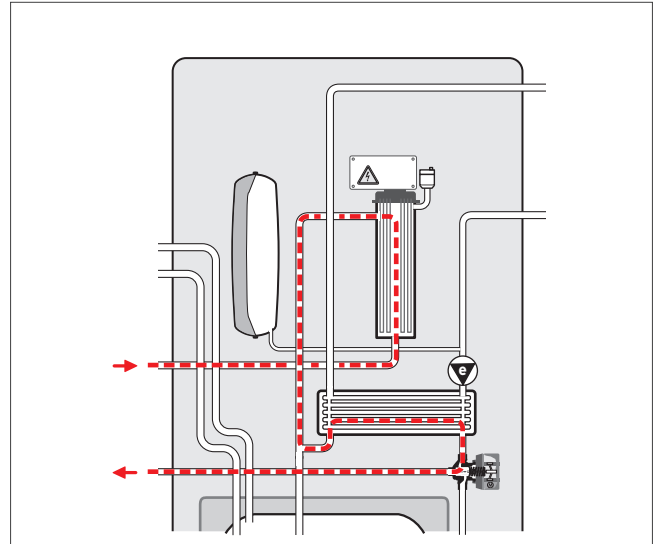


Fig. 809: Basic diagram showing the pressure loss in the heat pump circuit for the uniTOWER VIH QW 190/1 E

Total pressure loss in the product

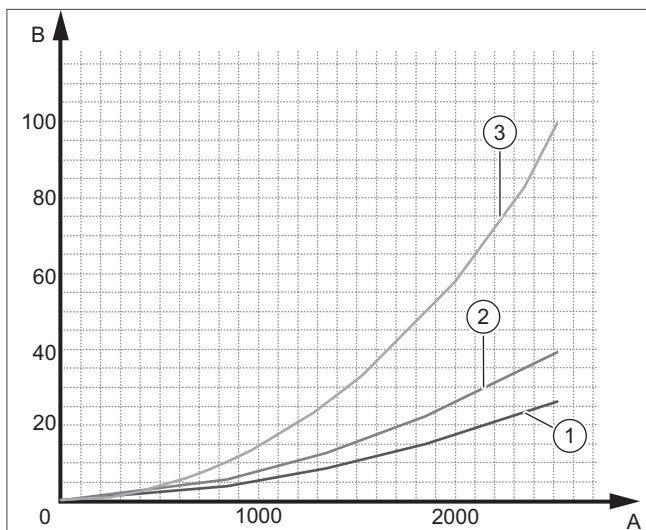


Fig. 808: Pressure loss

- 1 Product only
- 2 Product with installation set
- 3 Product with flexible installation set
- A Flow rate in the circuit (l/h)
- B Pressure (kPa)

Pressure losses in the unit in the heat pump circuit

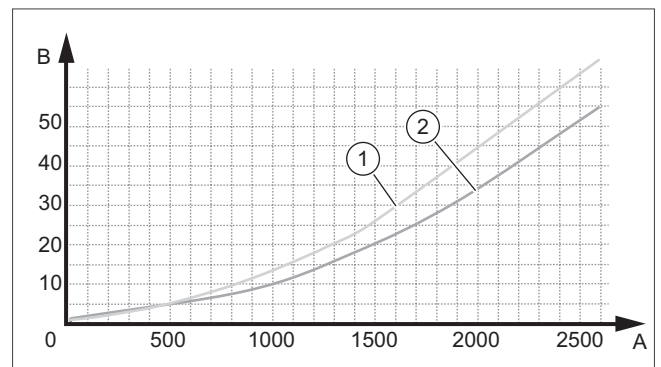


Fig. 810: Pressure losses in the unit in the heat pump circuit

- 1 Brine 50% (35 °C)
- 2 Pure water (20 °C)
- A Throughput in circuit (l/h)
- B Pressure (kPa)

21.13.7 Remaining feed head version with intermediate heat exchanger (heating circuit)

The diagram shows the remaining feed head for the product variant with an intermediate heat exchanger.

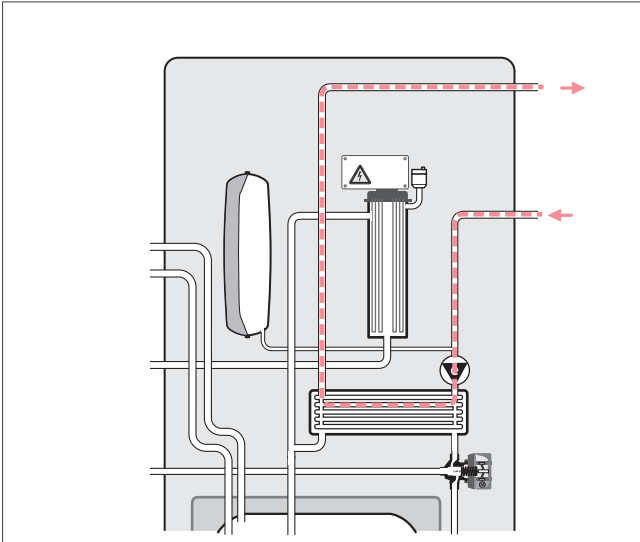


Fig. 811: Remaining feed head basic diagram

Remaining feed head, constant pressure mode

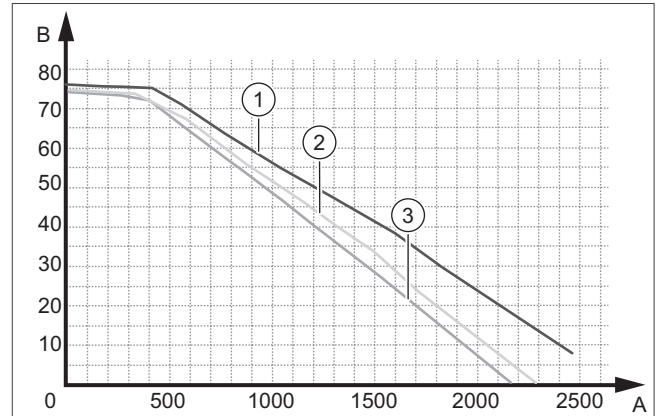


Fig. 813: Remaining feed head, constant pressure mode

- 1 PCmax/product only
- 2 PCmax/with installation set
- 3 PCmax/with flexible installation set
- A Flow rate in the circuit (l/h)
- B Available pressure (kPa)

Remaining feed head

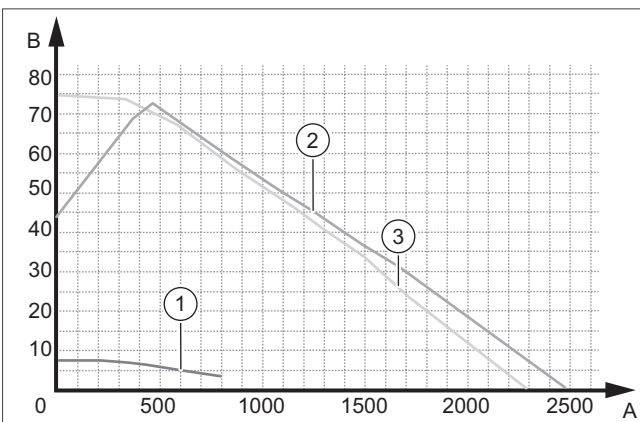


Fig. 812: Remaining feed head

- 1 PVmin/PCmin product only
- 2 PVmax/product only
- 3 PCmax/product only
- A Flow rate in the circuit (l/h)
- B Available pressure (kPa)

Remaining feed head, variable pressure mode

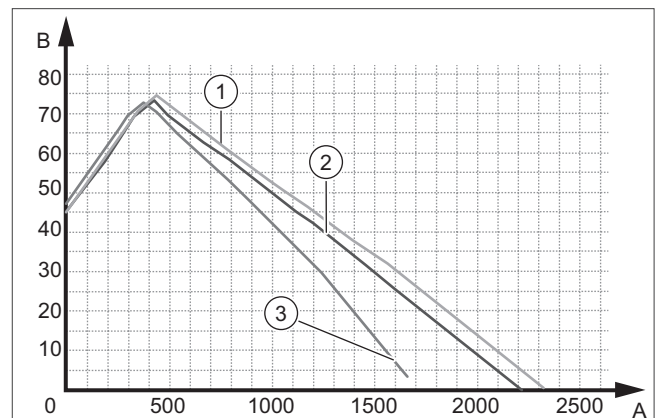


Fig. 814: Remaining feed head, variable pressure mode

- 1 PVmax/product only
- 2 PVmax/with installation set
- 3 PVmax/with flexible installation set
- A Flow rate in the circuit (l/h)
- B Available pressure (kPa)

21.14 Product description for the uniTOWER plus VIH QW 190/6 (E)



Fig. 815: uniTOWER plus VIH QW 190/6

Type overview

Unit designation	Article number
VIH QW 190/6 (without electric back-up heater)	–
VIH QW 190/6 E (with electric back-up heater)	–

21.14.1 Potential applications

The **uniTOWER plus** is used only in combination with an **aroTHERM plus** and acts as a link between the heat pump and the heating installation.

21.14.2 Special features

- Extremely short installation times thanks to the compact design
- Accessories that can be integrated (intermediate heat exchanger, 18 l buffer module, potable water expansion vessel, circulation set, connection set) can be added
- Also available with an integrated intermediate heat exchanger, which comes in two sizes (up to 7 kW or up to 12 kW).
- SplitMountingConcept for easier positioning in two parts

21.14.3 Equipment

- Integrated 185 litre domestic hot water coiled tube cylinder
- High-efficiency pump for the version with an intermediate heat exchanger
- 6 kW/9 kW (230 V/400 V) electric back-up heater with safety cut-out and electrical connection boxes
- Automatic air vent for back-up heater
- 15 litre diaphragm expansion vessel for heating
- 3-port diverter valve for heating/domestic hot water
- 3 bar expansion relief valve with drain pipework and brine collecting vessel (for the version with intermediate heat exchanger)
- Filling and flushing valves with a mechanical manometer for the heating circuit
- Brine circuit with manometer

21.14.4 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.



Technical data - General

	VIH QW 190/6	VIH QW 190/6 E
Product dimensions, width	595 mm	595 mm
Product dimensions, height	1,880 mm	1,880 mm
Product dimensions, depth	693 mm	693 mm
Weight, without packaging	143 kg	146 kg
Weight, ready for operation	347 kg	351 kg
IP rating	IP 10B	IP 10B
Heating circuit connections	G 1"	G 1"
Heat source connections	G 1 1/4"	G 1 1/4"
Cold water and domestic hot water connections	G 3/4"	G 3/4"
Permissible height difference between outdoor unit and indoor unit	≤ 15 m	≤ 15 m

Technical data - Heating circuit

	VIH QW 190/6	VIH QW 190/6 E
Material in the heating circuit	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron
Permissible water composition	Technical data calculated without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) in accordance with Directive VDI2035 sheet 1	Technical data calculated without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) in accordance with Directive VDI2035 sheet 1
Water content	16.0 l	16.0 l
Volume of the internal diaphragm expansion vessel	15 l	15 l
Minimum operating pressure	0.05 MPa	0.05 MPa
Maximum operating pressure	0.3 MPa	0.3 MPa
Max. heating mode flow temperature with compressor	75 °C	75 °C
Max. heating mode flow temperature with back-up heater		75 °C
Min. cooling mode flow temperature	7 °C	7 °C
Permissible medium in the decoupling circuit (separation heat exchanger accessory)	Propylene glycol/water mixture	Propylene glycol/water mixture
Sound power A7/W35 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 30 dB(A)	≤ 30 dB(A)
Sound power A7/W45 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 30 dB(A)	≤ 30 dB(A)
Sound power A7/W55 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 30 dB(A)	≤ 30 dB(A)
Sound power A7/W65 in accordance with EN 12102 / EN 14511 L _{wi} in heating mode	≤ 30 dB(A)	≤ 30 dB(A)
Sound power A35/W7 in accordance with EN 12102 / EN 14511 L _{wi} in cooling mode	≤ 30 dB(A)	≤ 30 dB(A)
Sound power A35/W18 in accordance with EN 12102 / EN 14511 L _{wi} in cooling mode	≤ 31 dB(A)	≤ 31 dB(A)

Technical data - Domestic hot water

	VIH QW 190/6	VIH QW 190/6 E
Water content of the domestic hot water cylinder	185 l	185 l
Heat exchanger nominal volume (heating coil)	8.6 l	8.6 l
Surface area of the heat exchanger	1.3 m ²	1.3 m ²
Domestic hot water cylinder material	Steel, enamelled	Steel, enamelled
Insulation material for the domestic hot water cylinder	Neopor	Neopor
Min. insulating thickness	26 mm	26 mm
Max. insulating thickness	74 mm	74 mm
Corrosion protection	Magnesium anode	Magnesium anode
Maximum operating pressure	1.0 MPa	1.0 MPa
Set opening temperature and pressure of the expansion relief valve	90 °C - 0.7 MPa (7 bar)	90 °C - 0.7 MPa (7 bar)
Max. cylinder temperature due to the heat pump	70 °C	70 °C
Max. cylinder temperature due to back-up heater		70 °C
Heat-up time in accordance with DIN EN 16147 to target cylinder temperature, A7 with an outdoor unit up to 5 kW	192 min	192 min
Power consumption during standby in accordance with DIN EN 16147, A7 - with an outdoor unit up to 5 kW	22 W	22 W
Coefficient of performance (COP _{dhw}) in accordance with EN 16147, A7, L profile - with an outdoor unit up to 5 kW	2.57	2.57
Reference domestic hot water temperature in accordance with DIN EN 16147, A7 - with an outdoor unit up to 5 kW	49.9 °C	49.9 °C
Mixed water volume V40 in accordance with DIN EN 16147, A7 - with an outdoor unit up to 5 kW	230 l	230 l
Heat-up time in accordance with DIN EN 16147 to target cylinder temperature, A7 with an outdoor unit up to 7 kW	125 min	125 min
Power consumption during standby in accordance with DIN EN 16147, A7 - with an outdoor unit up to 7 kW	45 W	45 W
Coefficient of performance (COP _{dhw}) in accordance with EN 16147, A7, XL profile - with an outdoor unit up to 7 kW	2.55	2.55
Reference domestic hot water temperature in accordance with DIN EN 16147, A7 - with an outdoor unit up to 7 kW	51.6 °C	51.6 °C
Mixed water volume V40 in accordance with DIN EN 16147, A7 - with an outdoor unit up to 7 kW	246 l	246 l
Heat-up time in accordance with DIN EN 16147 to target cylinder temperature, A7 with an outdoor unit up to 12 kW	80 min	80 min
Power consumption during standby in accordance with DIN EN 16147, A7 - with an outdoor unit up to 12 kW	39 W	39 W
Coefficient of performance (COP _{dhw}) in accordance with EN 16147, A7, XL profile - with an outdoor unit up to 12 kW	2.61	2.61
Reference domestic hot water temperature in accordance with DIN EN 16147, A7 - with an outdoor unit up to 12 kW	52.1 °C	52.1 °C
Mixed water volume V40 in accordance with DIN EN 16147, A7 - with an outdoor unit up to 12 kW	258 l	258 l

Technical data - Electrics

	VIH QW 190/6	VIH QW 190/6 E
Rated voltage	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE
Rated voltage		400 V (+10%/-15%), 50 Hz, 3~/N/PE
Rated power, maximum	0.06 kW	8.6 kW
Rated current, maximum, 230 V	2.6 A	23.5 A
Rated current, maximum, 400 V		13.6 A
Overvoltage category	II	II
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams

5.4 kW back-up heater at 230 V

Internal control of the output levels at 230 V	Power consumption	Set value
0	0.0 kW	
1	0.7 kW	1 kW
2	1.2 kW	
3	1.8 kW	2 kW
4	2.2 kW	3 kW
5	3.2 kW	
6	3.8 kW	4 kW
7	4.7 kW	5 kW
8	5.4 kW	6 kW

8.54 kW back-up heater at 400 V

Internal control of the output levels at 400 V	Power consumption	Set value
0	0.0 kW	
1	0.7 kW	1 kW
2	1.2 kW	
3	1.8 kW	2 kW
4	2.3 kW	
5	3.0 kW	3 kW
6	3.9 kW	4 kW
7	4.7 kW	5 kW
8	5.6 kW	6 kW
9	6.2 kW	
10	7.0 kW	7 kW
11	7.9 kW	8 kW
12	8.5 kW	9 kW

21.14.5 Product dimensions and connection dimensions

Dimension drawing and connection dimensions

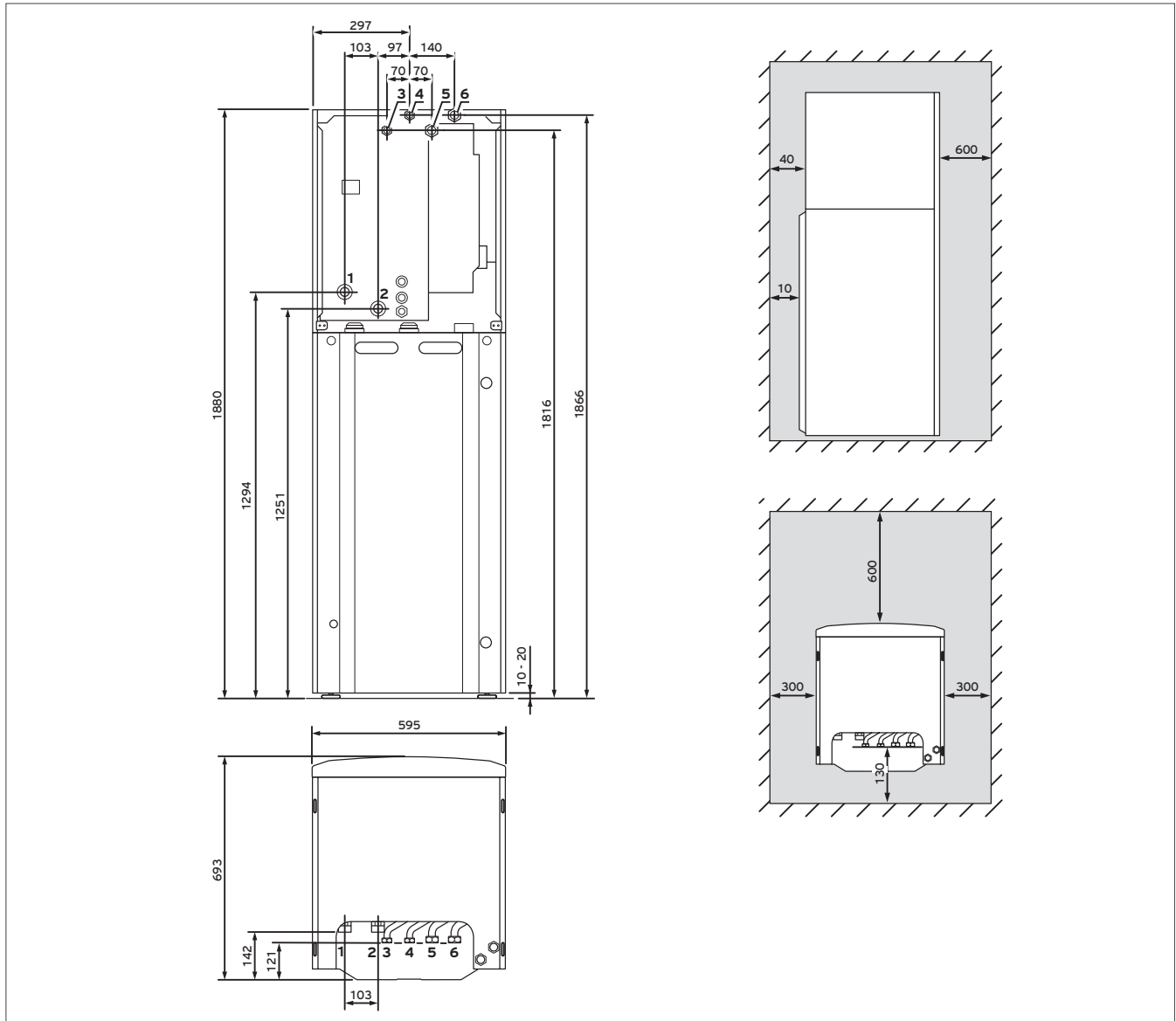


Fig. 816: uniTOWER VIH QW 190/6 E dimension drawing and connection dimensions

- 1 Flow from heat pump G 1 1/4
- 2 Return to the heat pump G 1 1/4
- 3 G 3/4 cold water connection
- 4 G 3/4 domestic hot water connection
- 5 G 1 heating flow
- 6 G 1 heating return

Product dimensions for the transport

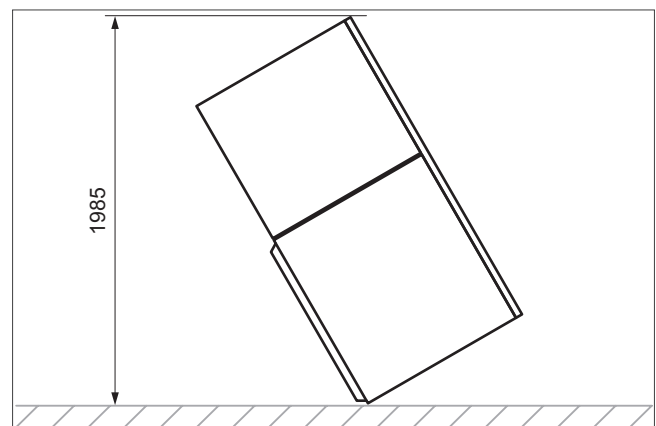


Fig. 817: Dimensions for transport

21.14.6 Total pressure loss (without intermediate heat exchanger)

The diagram shows the total pressure loss for the product variant without an intermediate heat exchanger.

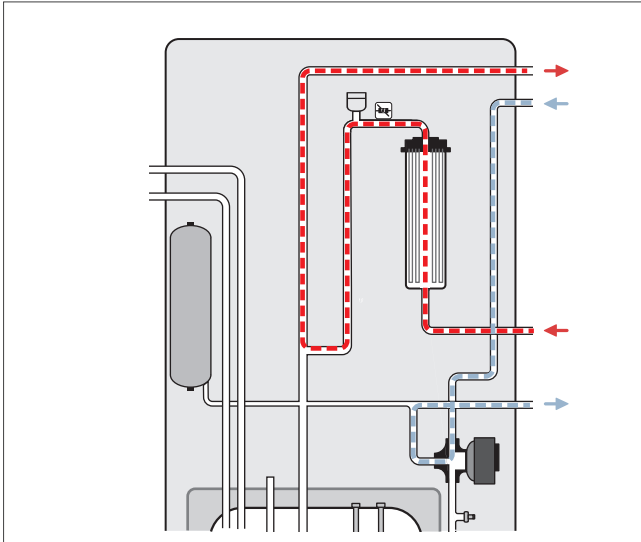


Fig. 818: Basic diagram: Total pressure losses for the uniTOWER plus

Total pressure loss in the product, building circuit

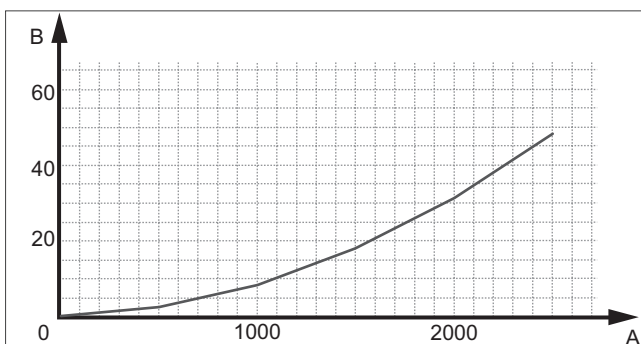


Fig. 819: Pressure loss

- A Flow rate in the building circuit (l/h)
- B Pressure loss (kPa)

Note

Pressure losses/remaining feed head in the heat pump circuit version with intermediate heat exchanger; see „uniTOWER plus accessories, intermediate heat exchanger“.



21.15 Product description for the uniTOWER VWL ..8/5 IS



Fig. 820: uniTOWER VWL .../5 IS

Type overview

Unit designation	Art. no.
VWL 58/5 IS	0010022070
VWL 78/5 IS	0010022071
VWL 128/5 IS	0010022072

21.15.1 Special features

- Pre-installed hydraulic tower for **aroTHERM VWL AS**
- Extremely short installation times thanks to the compact design
- Can be extended using accessories that can be integrated
- **SplitMountingConcept** for easier positioning in two parts

21.15.2 Equipment

- Integrated 190 litre domestic hot water coiled tube cylinder
- 6 kW electric back-up heater with safety cut-out and electrical connection box
- Purging and draining the back-up heater
- 15 litre diaphragm expansion vessel for heating
- 3-port diverter valve for heating/domestic hot water
- Filling connection

21.15.3 Potential applications

The **uniTOWER VWL ..8/5 IS** is used only in combination with an **aroTHERM VWL AS** heat pump and acts as a link between the heat pump and the heating installation.

21.15.4 Technical data

Note

The following performance data is only applicable to new products with clean heat exchangers.



Technical data - General

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Product dimensions, width	595 mm	595 mm	595 mm
Product dimensions, height	1,880 mm	1,880 mm	1,880 mm
Product dimensions, depth	693 mm	693 mm	693 mm
Weight, without packaging	158 kg	159 kg	160 kg
Weight, ready for operation	365 kg	367 kg	369 kg
Rated voltage	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE	230 V (+10%/-15%), 50 Hz, 1~/N/PE
Rated voltage	400 V (+10%/-15%), 50 Hz, 3~/N/PE	400 V (+10%/-15%), 50 Hz, 3~/N/PE	400 V (+10%/-15%), 50 Hz, 3~/N/PE
Rated power, maximum	5.4 kW	5.4 kW	8.8 kW
Rated current, maximum	23.50 A (230 V), 14.50 A (400 V)	23.50 A (230 V) 14.50 A (400 V)	23.50 A (230 V), 14.00 A (400 V)
IP rating	IP 10B	IP 10B	IP 10B
Overvoltage category	II	II	II
Fuse type, characteristic C, slow-blow, three-pole switching (disconnection of the three mains connection lines in one switching operation)	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams	Design in accordance with the selected connection diagrams
Heating circuit connections	G 1"	G 1"	G 1"
Cold water and domestic hot water connections	G 3/4"	G 3/4"	G 3/4"

Technical data - Heating circuit

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Water content	16.6 l	17.1 l	17.6 l
Material in the heating circuit	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron	Copper, copper-zinc alloy, stainless steel, ethylene propylene diene monomer rubber, brass, iron
Permissible water composition	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.	Without frost or corrosion protection. Soften the heating water at water hardnesses from 3.0 mmol/l (16.8° dH) according to Directive VDI 2035 sheet 1.
Minimum operating pressure	0.05 MPa	0.05 MPa	0.05 MPa
Maximum operating pressure	0.3 MPa	0.3 MPa	0.3 MPa
Min. heating mode flow temperature	20 °C	20 °C	20 °C
Max. heating mode flow temperature with compressor	55 °C	55 °C	55 °C
Max. heating mode flow temperature with back-up heater	75 °C	75 °C	75 °C
Min. cooling mode flow temperature	7 °C	7 °C	7 °C
Max. flow temperature in cooling mode	25 °C	25 °C	25 °C
Min. nominal volume flow with 3kW outdoor unit	0.3 m³/h		
Min. nominal volume flow with 5kW outdoor unit	0.4 m³/h		
Minimum nominal volume flow rate		0.55 m³/h	
Min. nominal volume flow with 10 kW outdoor unit			1.13 m³/h
Min. nominal volume flow with 12 kW outdoor unit			1.18 m³/h
Nominal volume flow ΔT 5K with 3kW outdoor unit	0.54 m³/h		

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Nominal volume flow ΔT 5K with 5kW outdoor unit	0.79 m ³ /h		
Nominal volume flow ΔT 5 K		1.02 m ³ /h	
Nominal volume flow ΔT 5 K with 10 kW outdoor unit			1.70 m ³ /h
Nominal volume flow ΔT 5 K with 12 kW outdoor unit			1.80 m ³ /h
Nominal volume flow ΔT 8K with 3kW outdoor unit	0.3 m ³ /h		
Nominal volume flow ΔT 8K with 5kW outdoor unit	0.4 m ³ /h		
Nominal volume flow ΔT 8 K		0.55 m ³ /h	
Nominal volume flow ΔT 8 K with 10 kW outdoor unit			1.13 m ³ /h
Nominal volume flow ΔT 8 K with 12 kW outdoor unit			1.18 m ³ /h
Remaining feed head ΔT 5K with 3kW outdoor unit	71 kPa		
Remaining feed head ΔT 5K with 5kW outdoor unit	68 kPa		
Remaining feed head ΔT 5 K		66 kPa	
Remaining feed head ΔT 5 K with 10 kW outdoor unit			54 kPa
Remaining feed head ΔT 5 K with 12 kW outdoor unit			51.5 kPa
Remaining feed head ΔT 8K with 3kW outdoor unit	71 kPa		
Remaining feed head ΔT 8K with 5kW outdoor unit	68 kPa		
Remaining feed head ΔT 8 K		73 kPa	
Remaining feed head ΔT 8 K with 10 kW outdoor unit			82 kPa
Remaining feed head ΔT 8 K with 12 kW outdoor unit			81 kPa
Min. volume flow during continuous operation at the application limits with a 3kW outdoor unit	0.3 m ³ /h		
Min. volume flow during continuous operation at the application limits with a 5kW outdoor unit	0.4 m ³ /h		
Min. volume flow during continuous operation at the application limits		0.55 m ³ /h	
Min. volume flow during continuous operation at the application limits with a 10 kW outdoor unit			1.13 m ³ /h
Min. volume flow during continuous operation at the operating limits with a 12 kW outdoor unit			1.18 m ³ /h
Max. volume flow during continuous operation at the application limits with a 3kW outdoor unit	0.54 m ³ /h		
Max. volume flow during continuous operation at the application limits with a 5kW outdoor unit	0.79 m ³ /h		
Max. volume flow during continuous operation at the application limits		1.08 m ³ /h	
Max. volume flow during continuous operation at the application limits with a 10 kW outdoor unit			1.7 m ³ /h
Max. volume flow during continuous operation at the operating limits with a 12 kW outdoor unit			1.8 m ³ /h
Pump type	High-efficiency pump	High-efficiency pump	High-efficiency pump
Energy efficiency index (EEI) of the pump	≤0.2	≤0.2	≤ 0.23

Technical data - Domestic hot water

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Water content of the domestic hot water cylinder	185 l	185 l	185 l
Domestic hot water cylinder material	Steel, enamelled	Steel, enamelled	Steel, enamelled
Maximum operating pressure	1.0 MPa	1.0 MPa	1.0 MPa
Max. cylinder temperature due to the heat pump	57 °C	57 °C	57 °C
Max. cylinder temperature due to back-up heater	75 °C	75 °C	75 °C
Heat-up time to 53 °C target cylinder temperature, eco mode, A7	2.53 h	1.75 h	1.08 h
Power consumption during standby in accordance with DIN EN 16147 at 53 °C target cylinder temperature and 7 K hysteresis, eco mode, A7	31.3 W	31.9 W	44.6 W
Power consumption during standby in accordance with DIN EN 16147 at 53 °C target cylinder temperature and 20 K hysteresis, eco mode, A7	19 W	22 W	26 W
Coefficient of performance (COP _{dhw}) in accordance with EN 16147 at 53 °C target cylinder temperature and 7 K hysteresis, ECO mode, A7	2.45	2.73	2.36
Coefficient of performance (COP _{dhw}) in accordance with EN 16147 at 53 °C target cylinder temperature and 20 K hysteresis, eco mode, A7	2.51	3.06	2.56

Technical data - Electrics

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Min. electrical power consumption of the heating pump	2 W	2 W	3 W
Max. electrical power consumption of the heating pump	60 W	60 W	100 W
Electrical power consumption of the heating pump at A7/35 ΔT 5 K with an external pressure loss of 250 mbar in the heating circuit	20 W	20 W	40 W

Technical data - Refrigerant circuit

	VWL 58/5 IS	VWL 78/5 IS	VWL 128/5 IS
Material, refrigerant pipe	Copper	Copper	Copper
Connection technology, refrigerant pipe	Flare connection	Flare connection	Flare connection
Outer diameter, hot gas pipe	1/2 " (12.7 mm)	5/8" (15.875 mm)	5/8" (15.875 mm)
Outer diameter, liquid pipe	1/4" (6.35 mm)	3/8" (9.575 mm)	3/8" (9.575 mm)
Minimum wall thickness, hot gas pipe	0.8 mm	0.95 mm	0.95 mm
Minimum wall thickness, liquid pipe	0.8 mm	0.8 mm	0.8 mm
Refrigerant, type	R410A	R410A	R410A
Refrigerant, Global Warming Potential (GWP)	2088	2088	2088

21.15.5 Remaining feed head of the unit for the heating circuit

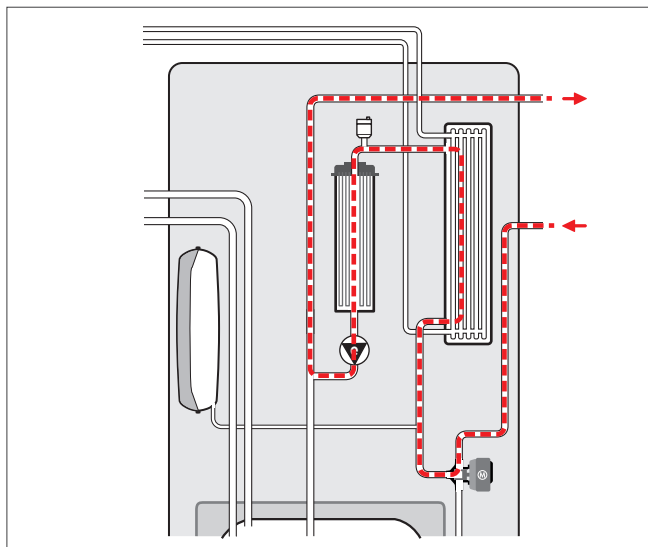


Fig. 821: Heating water course

VWL 78/5 remaining feed head at nominal volume flow

Validity: VWL 78/5 IS

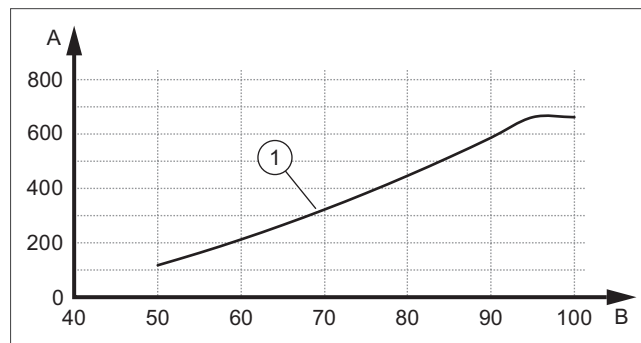


Fig. 823: VWL 78/5 remaining feed head

- 1 VWL 78/5, 7 kW/1020 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

VWL 58/5 remaining feed head at nominal volume flow

Validity: VWL 58/5 IS

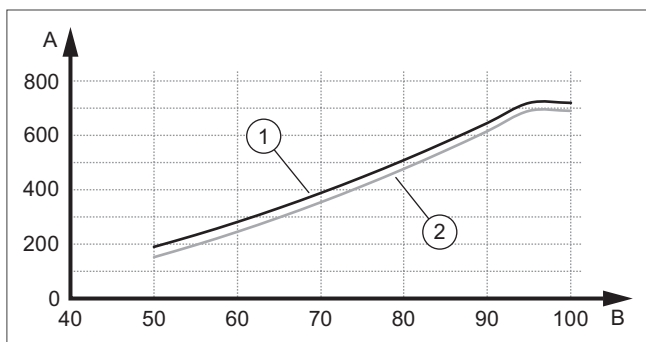


Fig. 822: VWL 58/5 remaining feed head

- 1 VWL 58/5, 3.5 kW/540 l/h
- 2 VWL 58/5, 5 kW/790 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

VWL 128/5 remaining feed head at nominal volume flow

Validity: VWL 128/5 IS

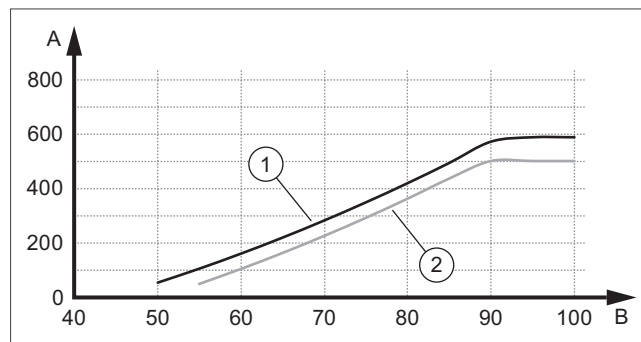


Fig. 824: VWL 128/5 remaining feed head

- 1 VWL 128/5, 10 kW/1670 l/h
- 2 VWL 128/5, 12 kW/1850 l/h
- A Remaining feed head in hPa (mbar)
- B Pump output in %

21.15.6 Product dimensions and connection dimensions

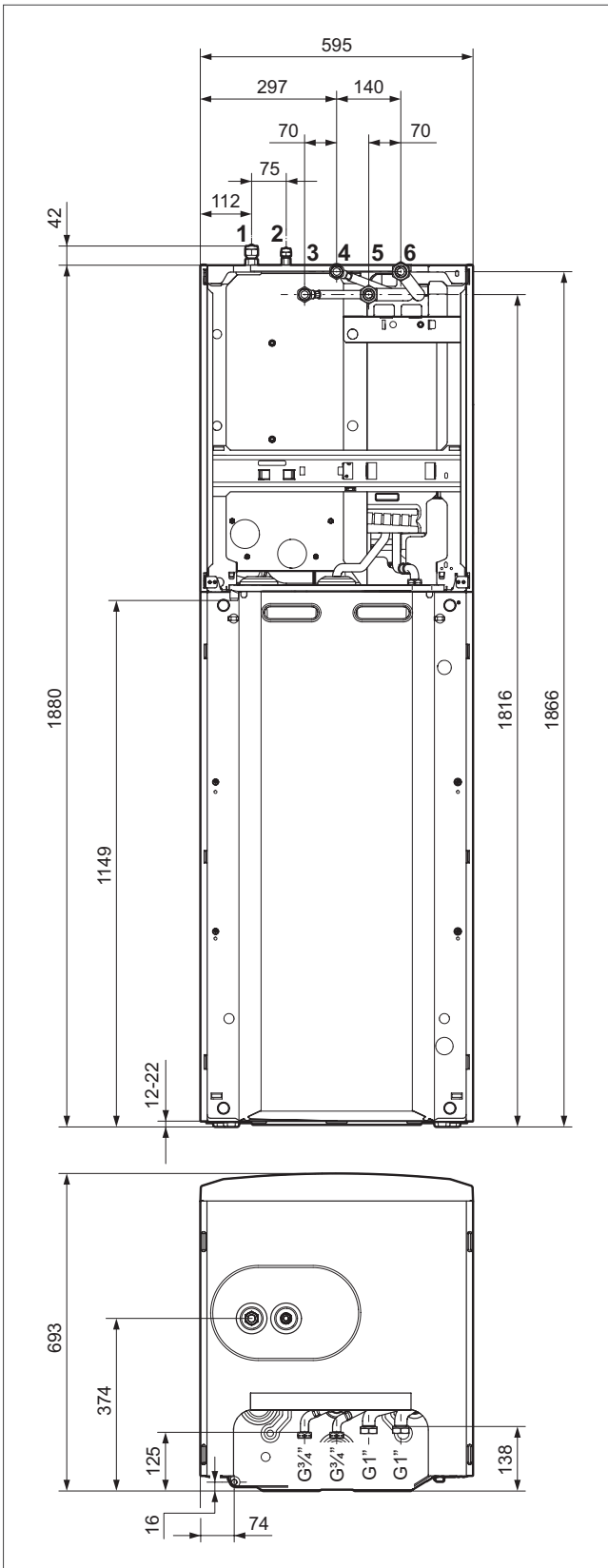


Fig. 825: Dimension drawing and connection dimensions

- 1 Suction gas pipe
- 2 Liquid pipe
- 3 Condensate discharge
- 4 G 3/4 domestic hot water connection
- 5 G 1 heating flow
- 6 G 1 heating return

Product dimensions for the transport

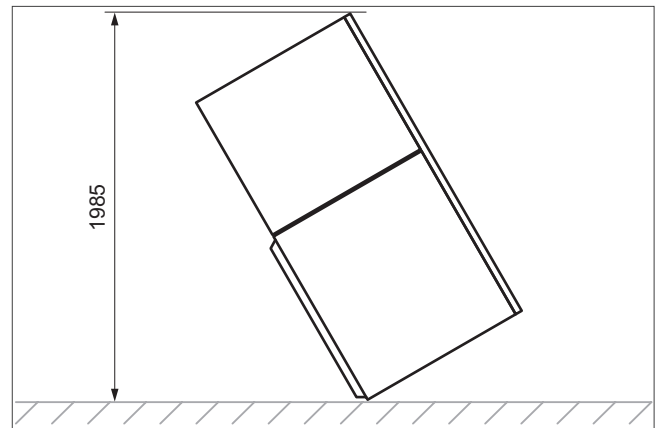


Fig. 826: Dimensions for transport

21.15.7 Requirements for the installation site

Minimum sizes for the installation rooms

Heat pump type	Refrigerant	Fill quantity [kg] (Clearance between the outdoor unit AS and the indoor unit IS)	Coolant pipe max. [m]	Minimum size for the installation room [m ³]
VWL 35/5 AS + VWL 58/5 IS	R 410a	1.50	15	3.4
VWL 35/5 AS + VWL 58/5 IS	R 410a	1.80	25	4.1
VWL 35/5 AS + VWL 58/5 IS	R 410a	2.51	40	5.7
VWL 55/5 AS + VWL 58/5 IS	R 410a	1.50	15	3.4
VWL 55/5 AS + VWL 58/5 IS	R 410a	1.80	25	4.1
VWL 55/5 AS + VWL 58/5 IS	R 410a	2.51	40	5.7
VWL 75/5 AS + VWL 78/5 IS	R 410a	2.39	15	5.4
VWL 75/5 AS + VWL 78/5 IS	R 410a	3.10	25	7.1
VWL 75/5 AS + VWL 78/5 IS	R 410a	4.71	40	10.7
VWL 105/5 AS + VWL 128/5 IS	R 410a	3.60	15	8.2
VWL 105/5 AS + VWL 128/5 IS	R 410a	4.30	25	9.8
VWL 105/5 AS + VWL 128/5 IS	R 410a	5.55	40	12.6
VWL 125/5 AS + VWL 128/5 IS	R 410a	3.60	15	8.2
VWL 125/5 AS + VWL 128/5 IS	R 410a	4.30	25	9.8
VWL 125/5 AS + VWL 128/5 IS	R 410a	5.55	40	12.6

21.16 Product description for the aquaFLOW exclusive VPM 20/25/2 W to VPM 40/45/2 W domestic hot water station



Fig. 827: aquaFLOW exclusive domestic hot water station

Type overview

Unit designation	Order no.
VPM 20/25/2 W	0010014311
VPM 30/35/2 W	0010014312
VPM 40/45/2 W	0010014313

21.16.1 Special features

- Hygienic potable water heating using the flow-through principle
- Can be installed directly on the allSTOR exclusive VPS/3 multi-functional cylinder using Plug & Play or can be wall-mounted
- Wall installation also possible using a wall console
- Various potential applications in combination with the Vaillant buffer cylinders
- It is also possible to operate it without an additional control
- Optional anti-legionella function to thermally disinfect domestic hot water and circulation pipe networks in the event of set specifications (time, disinfection temperature and duration) via a suitable system control
- A cascade solution of up to four aquaFLOW exclusive units is possible

21.16.2 Potential applications

The domestic hot water station is used to heat potable water to the exact desired temperature.

Potable water is guided via a plate heat exchanger using the flow-through principle. The DHW draw-off point is detected via an integrated volume flow sensor. The minimum draw-off quantity is:

- VPM 20/25/2 W: 2 l/min,
- VPM 30/35/2 W: 2 l/min and for
- VPM 40/45/2 W: 3.5 l/min.

21.16.3 Equipment

- Stainless steel plate heat exchanger
- Specially formed plate structure for preventing scale depositions
- EPP shell thermal insulation
- Integrated volume flow sensor
- High-efficiency pump
- eBUS interface
- Circulation pump as an accessory
- Wall consoles (also for cascade; order no. 0010014300 and/or 0010014301 and/or 0010013303)
- Unit mounting bracket for a station (order no. 0010018543)

Note

To prevent corrosion and depositions (scale) in the station's heat exchanger, you must observe VDI 2035 T1 and T2. This VDI contains, among other things, information about the water hardness level that must be maintained.

Depending on the quality and condition of the potable water, high potable water temperatures may lead to scale depositions on the potable water side of the heat exchanger.

If a max. potable water outlet temperature of 60 °C is set, the potable water hardness may be up to 15 °dH.

From a water hardness of 15 °dH or at a higher selected outlet temperature, we recommend that you use a potable water softener in order to guarantee that the domestic hot water station works correctly and to guarantee the quality of the potable water.

21.16.4 Technical data

Designation	Unit	VPM 20/25/2 W	VPM 30/35/2 W	VPM 40/45/2 W
Domestic hot water output at a target domestic hot water temperature of 60 °C and draw-off point temperature of 45 °C				
Output capacity	l/min	20	30	40
Max. output characteristic figure *	–	3	5	9.5
Nominal output	kW	49	73	97
Domestic hot water output at a target domestic hot water temperature of 65 °C and draw-off point temperature of 45 °C				
Output capacity	l/min	25	35	45
Max. output characteristic figure	–	4	7	11.5
Nominal output	kW	60	85	109
Temperatures				
Temperature range	°C	40 ... 60		
Temperature for anti-legionella programme	°C	70		
Electrical connection				
Rated voltage	V, Hz	230, 50		
Station power consumption	W	25 ... 93		
Circulation pump power consumption	W	25		
Pressure				
Remaining feed head on the heating side	MPa (mbar)	0.15 (150)	0.1 (100)	0.15 (150)
Operating pressure on the heating side	MPa (bar)	0.3 (3)		
Operating pressure on the water side	MPa (bar)	1 (10)		
Dimensions				
Height	mm	750		
Width	mm	450		
Depth if installed on the buffer cylinder	mm	275		
Weight	kg	16	16	19
Hydraulic connection				
Cold water, circulation, domestic hot water		DN 20, G 3/4, flat-sealing		
Hot water flow and return		DN 25, G 1, PTFE seal		

* Measured in accordance with DIN 4708-3: At a draw-off point temperature of 45 °C, a cold water temperature of 10 °C and a cylinder temperature of 65 °C.

The data for installations with heat pumps and pellet boilers can be found in the corresponding planning information.

21.16.5 Dimension drawing

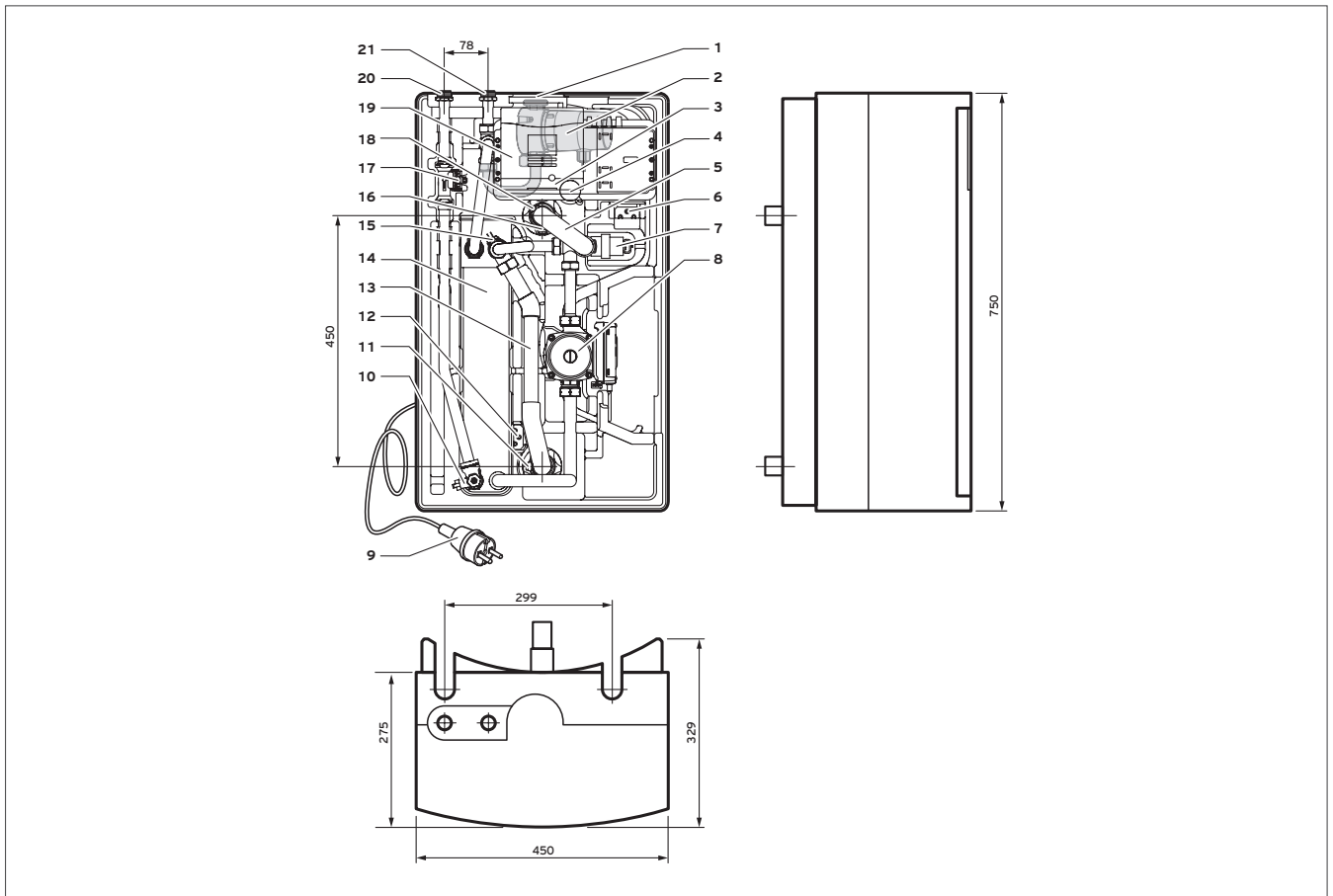


Fig. 828: Dimension drawing

- 01 Circulation pump connection (optional)
- 02 Circulation pump
- 03 Panel
- 04 Cable duct
- 05 Buffer circuit flow
- 06 Bracket for safety screw
- 07 Mixer
- 08 Buffer circuit circulation pump
- 09 Mains plug
- 10 Hot water temperature sensor
- 11 Stop valve return
- 12 Bracket for safety screw
- 13 Buffer circuit return
- 14 Plate heat exchanger
- 15 Buffer circuit return temperature sensor
- 16 Stop valve flow
- 17 Flow rate sensor
- 18 Buffer circuit flow temperature sensor
- 19 Controller
- 20 Hot water connection
- 21 Cold water connection

21.16.6 Pressure loss

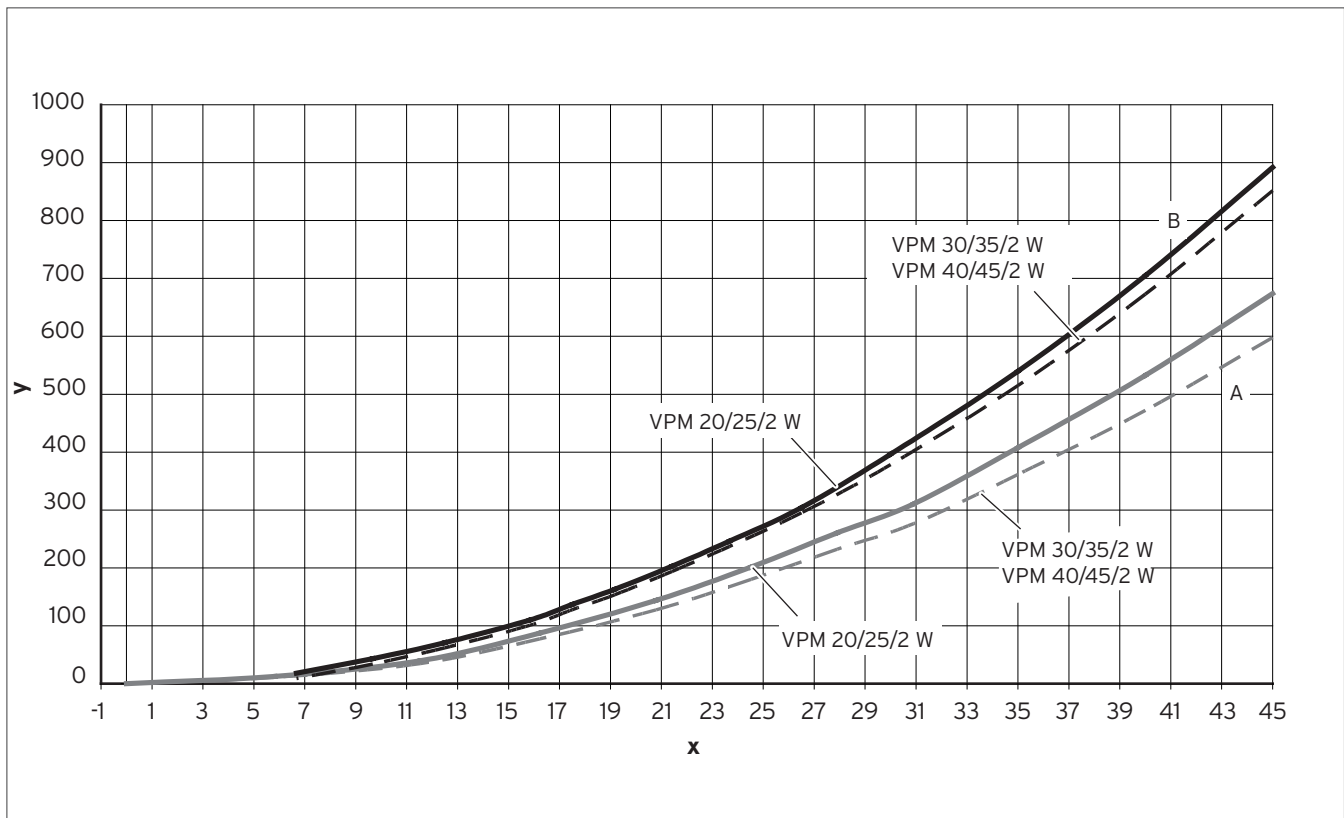


Fig. 829: VPM W pressure loss

- x Flow rate [l/min]
- y Pressure loss [mbar]
- A Drinking water
- B Heating

21.16.7 Power levels

VPM 20/25/2 W power levels

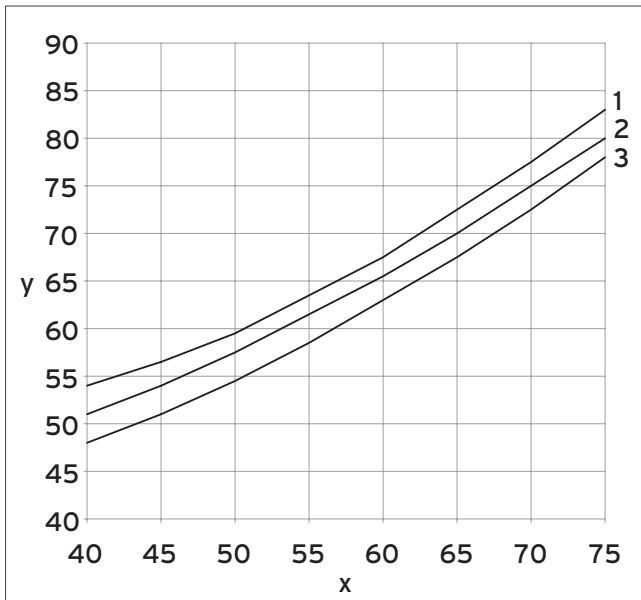


Fig. 830: VPM 20/25/2 W power levels

x Hot water target value [°C]
y Buffer cylinder target value [°C]

VPM 40/45/2 W power levels

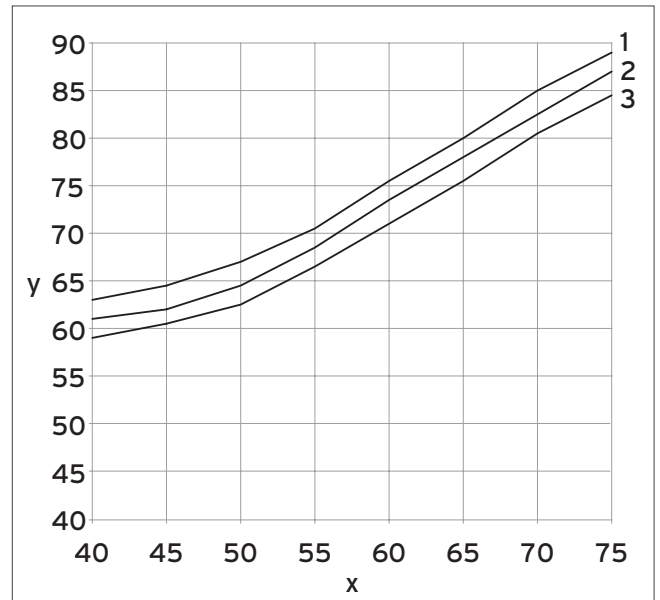


Fig. 832: VPM 40/45/2 W power levels

x Hot water target value [°C]
y Buffer cylinder target value [°C]

VPM 30/35/2 W power levels

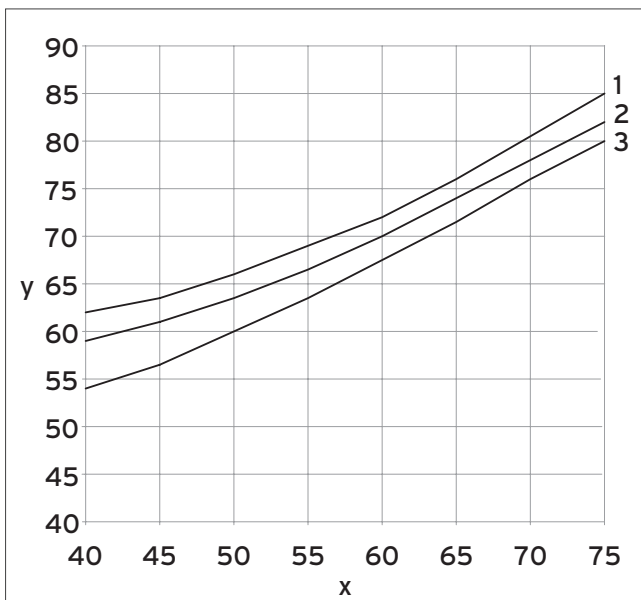


Fig. 831: VPM 30/35/2 W power levels

x Hot water target value [°C]
y Buffer cylinder target value [°C]

21.16.8 Settings for operating with a heat pump and allSTOR VPS cylinder

Condition: The heating system consists of heat pump + allSTOR VPS cylinder + aquaFLOW domestic hot water station + functional module 3 or 5 (VR 70 / VR 71) + VRC control

- » In the control's installation configuration, specify the following settings (→ Instructions for the control):
- The basic system diagram (→ Basic system diagram 8),
 - The configuration of the functional module that is used (VR 70 / VR 71) and
 - The maximum target flow temperature.

VRC 720		VRC 700	
→ Installer level → Installation configuration		→ Installer level → System configuration	
→ Basic system diagram config.		→ System diagram configuration	
	→ Basic system diagram code: = 8		→ System diagram = 8
	→ FM5 configuration: = 6		→ Config.: VR71 = 6
	→ FM3 configuration: = 3		→ Config.: VR70 addr. 1 = 3
→ Buffer cylinder		→ Buffer cylinder	
	→ MAX. DHW TARGET FLOW TEMP.		Max.DHW fl.targ.temp.

- » In the control's installation configuration, use the following table to set the maximum target flow temperature for the buffer cylinder and the corresponding target domestic hot water value for the domestic hot water station for domestic hot water generation (→ Instructions for the control).

	aroTHERM				flexoTHERM
	VWL55/2..3	VWL85/2..3 VWL115/2..3 VWL155/2..3	VWL/5	VWL/6	VWF/4
Refrigerant	R410a	R410a	R410a	R290	R410a
Target domestic hot water value [°C]	52* / 55**	55* / 55**	N/A* / 55**	60* / 60**	55* / 55**
Maximum target flow temperature of the buffer cylinder [°C]	54* / 60**	57* / 60**	N/A* / 60**	65* / 70**	58* / 62**

* Valid up to system control version **VRC 720**
 * Valid as of system control version **VRC 720/2**
 N/A = cannot be used for this system control

- » In the configuration for the domestic hot water station, set the output level.
- Output level 3 (= lower buffer cylinder temperature).
- » The following domestic hot water volume flow can be achieved at different target domestic hot water values and buffer cylinder temperatures:

	Target domestic hot water value [°C]										
	60	60	58	55	55	55	52	50	50	47	45
Maximum target flow temperature of the buffer cylinder [°C]	65	63	60	65	60	58	54	60	53	50	48
Max. potable water volume flow [l/min] *, for VPM 20/25 W for VPM 30/35 W for VPM 40/45 W	17 18 25	7 10 17	5 8 15	22 25 33	16 19 26	7 10 17	5 8 15	22 26 35	7 10 17	7 10 17	7 10 17
Max. potable water volume flow [l/min] **, for VPM 20/25 W for VPM 30/35 W for VPM 40/45 W	24 26 36	10 14.3 25.7	6.9 11 20.6	28 32 42	20 24 33	7.4 10.6 18	6 8.5 15.9	25 30 40	8 11.4 19.4	7.4 10.6 18	7 10 17

* At an outlet temperature equal to the target domestic hot water value that is set
 ** At an outlet temperature of 45 °C and a cold water temperature of 10 °C

Note

Adjusting the buffer cylinder's maximum target flow temperature restricts the activated anti-legionella function.



21.17 Product description for the aquaFLOW plus VPM 45/3 W up to VPM 180/3 W domestic hot water stations



Fig. 833: aquaFLOW plus domestic hot water station

Type overview

Unit designation	Order no. (Germany)
VPM 60/3 W	0010039313
VPM 90/3 W	0010039314
VPM 135/3 W	0010039315
VPM 45/3 W mod. pump	0010039317
VPM 60/3 W mod. pump	0010039318
VPM 90/3 W mod. pump	0010039319
VPM 135/3 W mod. pump	0010039320
VPM 180/3 W mod. pump	0010039321

21.17.1 Special features

- Hygienic heating of potable water using the counter-flow principle
- Various potential applications in combination with the Vaillant buffer cylinders
- Optional anti-legionella function to thermally disinfect domestic hot water and circulation pipe networks in the event of set specifications (time, disinfection temperature and duration) via the integrated control
- Screwed-in plate heat exchanger made from stainless steel with large exchanger surface areas and low water content to quickly transfer heat energy to the potable water
- Complete with EPP lining insulation
- Operating pressure: 10 bar
- Autonomous operation possible thanks to the integrated control
- Remote access via the Modbus RTU RS 485 protocol

21.17.2 Potential applications

The domestic hot water station is used to heat potable water to the exact desired temperature.

The potable water is guided via a plate heat exchanger using the counter-flow principle. The DHW draw-off point is detected via an integrated volume flow sensor.

The minimum draw-off quantity at a domestic hot water temperature of 45 °C, a cold water temperature of 10 °C and a cylinder temperature of 65 °C is as follows:

21.17.3 Equipment

- Screwed-in stainless steel plate heat exchanger
- Specially formed plate structure for preventing scale depositions
- EPP shell thermal insulation
- Modulating high-efficiency pump (country-specific)
 - VPM 45/3 W mod. pump: 40 l/min
 - VPM 60/3 W mod. pump: 60 l/min
 - VPM 90/3 W mod. pump: 90 l/min
 - VPM 135/3 W mod. pump: 135 l/min
 - VPM 180/3 W mod. pump: 180 l/min
- Staged high-efficiency pump (country-specific)
 - VPM 60/3 W: 60 l/min
 - VPM 90/3 W: 90 l/min
 - VPM 135/3 W: 135 l/min
- Modbus interface RTU RS 485 protocol

Note

To prevent corrosion and depositions (scale) in the station's heat exchanger, you must observe VDI 2035 T1 and T2. This VDI contains, among other things, information about the water hardness level that must be maintained.

Depending on the quality and condition of the potable water, high potable water temperatures may lead to scale depositions on the potable water side of the heat exchanger.

If a max. potable water outlet temperature of 60 °C is set, the potable water hardness may be up to 15 °dH.

From a water hardness of 15 °dH or at a higher selected outlet temperature, we recommend that you use a potable water softener in order to guarantee that the domestic hot water station works correctly and to guarantee the quality of the potable water.

21.17.4 Technical data

General information

	VPM 60/3 W Fix Pump	VPM 90/3 W Fix Pump	VPM 135/3 W Fix Pump	VPM 45/3 W Mod pump	VPM 60/3 W Mod pump	VPM 90/3 W Mod pump	VPM 135/3 W Mod pump	VPM 180/3 W Mod pump
Height	1,023 mm	1,023 mm	1,364 mm	1,023 mm	1,023 mm	1,023 mm	1,364 mm	1,364 mm
Width	340 mm	340 mm	340 mm	340 mm	340 mm	340 mm	340 mm	340 mm
Depth	528 mm	528 mm	743 mm	528 mm	528 mm	528 mm	743 mm	743 mm
Weight	46 kg	51 kg	136 kg	51 kg	52 kg	61 kg	146 kg	151 kg
Hydraulic connections: Heating side Hot water side	1 1/4 " 1 1/4 "	1 1/4 " 1 1/4 "	1 1/2 " 2 "	1 1/4 " 1 1/4 "	1 1/4 " 1 1/4 "	1 1/4 " 1 1/4 "	1 1/2 " 2 "	1 1/2 " 2 "
Heat exchanger, type	Plate heat exchanger							
Heat exchanger, material	Stainless steel 316							
Pump type	Multistage							
Control communication protocol	Modbus RTU / RS-485							
Temperature sensor; number	1	1	1	1	1	1	1	1
Temperature sensor; type	NTC20k	NTC20k	NTC20k	NTC20k	NTC20k	NTC20k	NTC20k	NTC20k

Temperatures

	VPM 60/3 W Fix Pump	VPM 90/3 W Fix Pump	VPM 135/3 W Fix Pump	VPM 45/3 W Mod pump	VPM 60/3 W Mod pump	VPM 90/3 W Mod pump	VPM 135/3 W Mod pump	VPM 180/3 W Mod pump
Temperature range	2 to 95 °C	2 to 95 °C	2 to 95 °C	2 to 95 °C	2 to 95 °C	2 to 95 °C	2 to 95 °C	2 to 95 °C
Temperature range	2 to 85 °C	2 to 85 °C	2 to 85 °C	2 to 85 °C	2 to 85 °C	2 to 85 °C	2 to 85 °C	2 to 85 °C
Anti-legionella function temperature	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C

Electrics

	VPM 60/3 W Fix Pump	VPM 90/3 W Fix Pump	VPM 135/3 W Fix Pump	VPM 45/3 W Mod pump	VPM 60/3 W Mod pump	VPM 90/3 W Mod pump	VPM 135/3 W Mod pump	VPM 180/3 W Mod pump
Rated voltage	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz
Power consumption (max.)	200 W	200 W	315 W	320 W	320 W	320 W	310 W	310 W
Amperage (max.)	1.8 A	1.8 A	1.8 A	1.8 A	1.8 A	1.8 A	1.8 A	1.8 A

Maximum operating pressure (primary and secondary side)

VPM 60/3 W Fix Pump	VPM 90/3 W Fix Pump	VPM 135/3 W Fix Pump	VPM 45/3 W Mod pump	VPM 60/3 W Mod pump	VPM 90/3 W Mod pump	VPM 135/3 W Mod pump	VPM 180/3 W Mod pump
10 bar	10 bar	10 bar	10 bar	10 bar	10 bar	10 bar	10 bar

Output 65 °C/ 10-45 °C

	VPM 60/3 W Fix Pump	VPM 90/3 W Fix Pump	VPM 135/3 W Fix Pump	VPM 45/3 W Mod pump	VPM 60/3 W Mod pump	VPM 90/3 W Mod pump	VPM 135/3 W Mod pump	VPM 180/3 W Mod pump
Flow rate	5.4 m³/h	6.8 m³/h	10.9 m³/h	5.4 m³/h	6.1 m³/h	7.5 m³/h	10.9 m³/h	12.6 m³/h
Flow rate	3.6 m³/h	5.4 m³/h	8.1 m³/h	2.7 m³/h	3.6 m³/h	5.4 m³/h	8.1 m³/h	10.8 m³/h
Nominal output	147 kW	220 kW	330 kW	110 kW	147 kW	220 kW	330 kW	440 kW
Pressure level	5 kPa	6 kPa	9 kPa	8 kPa	5 kPa	5 kPa	8 kPa	9 kPa

Output 65 °C/ 10-55 °C

	VPM 60/3 W Fix Pump	VPM 90/3 W Fix Pump	VPM 135/3 W Fix Pump	VPM 45/3 W Mod pump	VPM 60/3 W Mod pump	VPM 90/3 W Mod pump	VPM 135/3 W Mod pump	VPM 180/3 W Mod pump
Flow rate	5.4 m³/h	6.8 m³/h	10.9 m³/h	5.4 m³/h	6.1 m³/h	7.5 m³/h	10.9 m³/h	12.6 m³/h
Flow rate	1.9 m³/h	3.0 m³/h	4.3 m³/h	1.5 m³/h	1.9 m³/h	3.0 m³/h	4.3 m³/h	6.1 m³/h
Nominal output	100 kW	155 kW	225 kW	77 kW	100 kW	155 kW	225 kW	320 kW
Pressure level	5 kPa	6 kPa	9 kPa	7 kPa	5 kPa	5 kPa	8 kPa	8 kPa

Output 70 °C/ 10-55 °C

	VPM 60/3 W Fix Pump	VPM 90/3 W Fix Pump	VPM 135/3 W Fix Pump	VPM 45/3 W Mod pump	VPM 60/3 W Mod pump	VPM 90/3 W Mod pump	VPM 135/3 W Mod pump	VPM 180/3 W Mod pump
Flow rate	5.4 m³/h	6.8 m³/h	10.9 m³/h	5.4 m³/h	6.1 m³/h	7.5 m³/h	10.9 m³/h	12.6 m³/h
Flow rate	2.5 m³/h	3.8 m³/h	5.6 m³/h	2.0 m³/h	2.5 m³/h	3.8 m³/h	5.6 m³/h	7.8 m³/h
Nominal output	131 kW	198 kW	295 kW	102 kW	131 kW	198 kW	295 kW	405 kW
Pressure level	6 kPa	6 kPa	8 kPa	7 kPa	6 kPa	5 kPa	8 kPa	8 kPa

Output 70 °C/ 10-60 °C

	VPM 60/3 W Fix Pump	VPM 90/3 W Fix Pump	VPM 135/3 W Fix Pump	VPM 45/3 W Mod pump	VPM 60/3 W Mod pump	VPM 90/3 W Mod pump	VPM 135/3 W Mod pump	VPM 180/3 W Mod pump
Flow rate	5.4 m³/h	6.8 m³/h	10.9 m³/h	5.4 m³/h	6.1 m³/h	7.5 m³/h	10.9 m³/h	12.6 m³/h
Flow rate	1.8 m³/h	2.8 m³/h	4.2 m³/h	1.4 m³/h	1.8 m³/h	2.8 m³/h	4.2 m³/h	5.9 m³/h
Nominal output	107 kW	164 kW	242 kW	82 kW	107 kW	164 kW	242 kW	342 kW
Pressure level	6 kPa	6 kPa	5 kPa	7 kPa	6 kPa	5 kPa	5 kPa	5 kPa

Output 80 °C/ 10-55 °C

	VPM 60/3 W Fix Pump	VPM 90/3 W Fix Pump	VPM 135/3 W Fix Pump	VPM 45/3 W Mod pump	VPM 60/3 W Mod pump	VPM 90/3 W Mod pump	VPM 135/3 W Mod pump	VPM 180/3 W Mod pump
Flow rate	5.4 m³/h	6.8 m³/h	10.9 m³/h	5.4 m³/h	6.1 m³/h	7.5 m³/h	10.9 m³/h	12.6 m³/h
Flow rate	3.6 m³/h	5.3 m³/h	8.0 m³/h	2.9 m³/h	3.6 m³/h	5.3 m³/h	8.0 m³/h	10.7 m³/h
Nominal output	190 kW	275 kW	420 kW	150 kW	190 kW	275 kW	420 kW	560 kW
Pressure level	6 kPa	6 kPa	9 kPa	8 kPa	6 kPa	6 kPa	9 kPa	8 kPa

Output 80 °C/ 10-60 °C

	VPM 60/3 W Fix Pump	VPM 90/3 W Fix Pump	VPM 135/3 W Fix Pump	VPM 45/3 W Mod pump	VPM 60/3 W Mod pump	VPM 90/3 W Mod pump	VPM 135/3 W Mod pump	VPM 180/3 W Mod pump
Flow rate	5.4 m³/h	6.8 m³/h	10.9 m³/h	5.4 m³/h	6.1 m³/h	7.5 m³/h	10.9 m³/h	12.6 m³/h
Flow rate	3.0 m³/h	4.4 m³/h	6.6 m³/h	2.3 m³/h	3.0 m³/h	4.4 m³/h	6.6 m³/h	9.0 m³/h
Nominal output	172 kW	253 kW	382 kW	135 kW	172 kW	253 kW	382 kW	520 kW
Pressure level	6 kPa	6 kPa	8 kPa	7 kPa	6 kPa	5 kPa	5 kPa	5 kPa

21.17.5 Dimensions

VPM 45-90 W

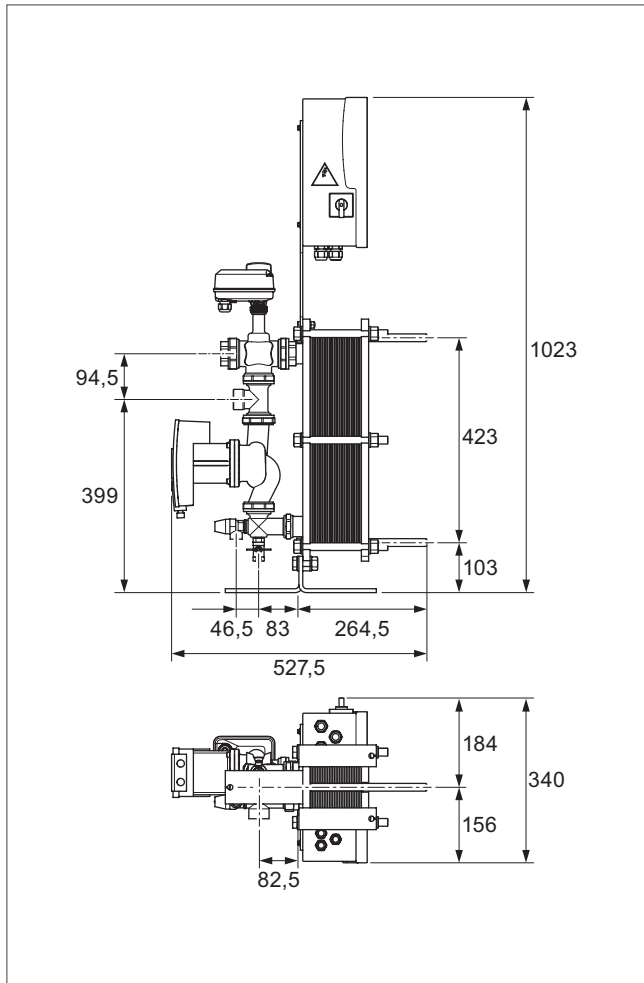


Fig. 834: Dimensions

VPM 135/180 W

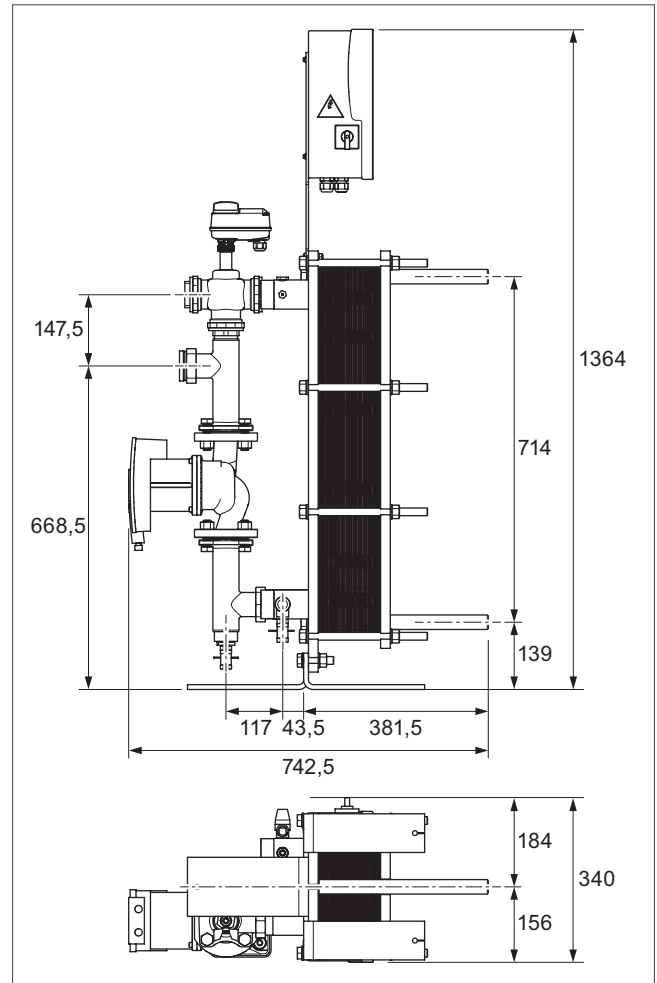


Fig. 835: Dimensions

21.17.6 Connection dimensions

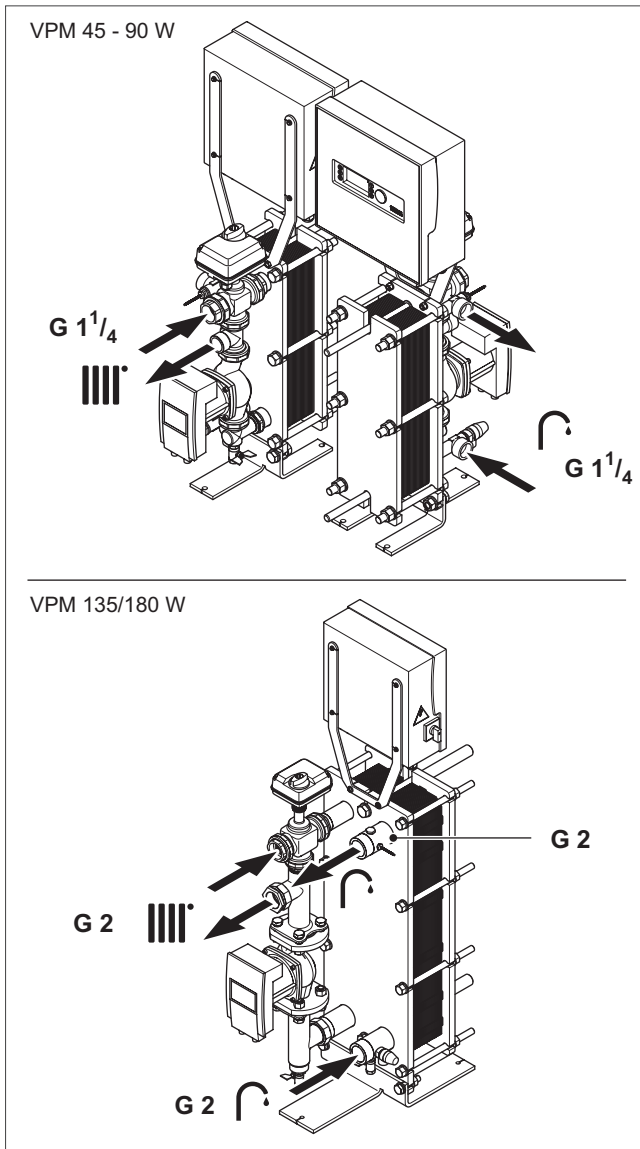


Fig. 836: Connections and connection dimensions

Pump diagram

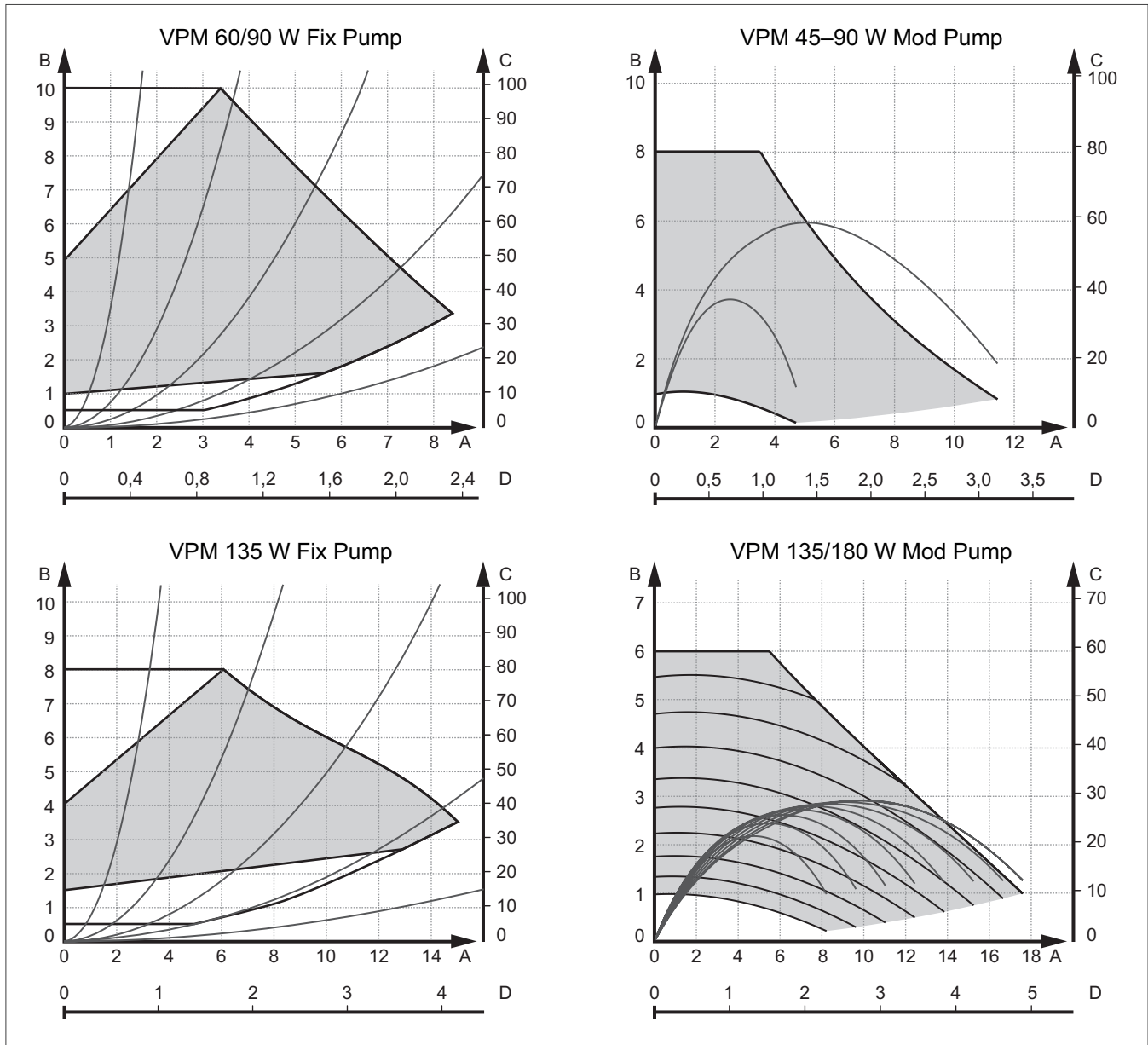




Fig. 837: Pump diagram

- A Flow rate [m³/h]
- B Pressure level [m]
- C Pressure level [kPa]
- D Flow rate [l/s]

21.17.7 Accessories

Figure	Description	Article number
	<p>Aluminium-laminated insulation for higher fire protection requirements</p> <p>Can be used for VPM 135 - 180/3 W</p>	0010040065
	<p>Circulation set with pump</p> <p>Can be used for VPM 45 - 60 - 90/3 W</p> <ul style="list-style-type: none"> - Non-return valve - Connection pipe - Connection fittings - 1 1/4" brass connection T-piece - 1 1/4"-1" union connection 	0010040066
	<p>Circulation set with pump</p> <p>Can be used for VPM 135 - 180/3 W</p> <ul style="list-style-type: none"> - Non-return valve - Connection pipe - Connection fittings - 2" brass connection T-piece - 1 1/4" union connection 	0010040067

21.17.8 Dimensioning table

In the table on the following double page you will find the data you need for the dimensioning of the domestic hot water station and - if desired - the buffer cylinder.

The following conditions apply:

	Unit	Value
Safety factor	-	1,5
Tapping time	min	10
Reload time	min	45

	Primary side		Secondary side				Primary side			
	TvL	Flow rate	Output warm water	Cold water inlet temperature	DHW temperature	Flow rate DHW	TRL	ΔT_{Prim}	V _{Prim}	
	°C	m ³ /h	kW	°C	°C	l/min	°C	K	l/min	
VPM W 60 fix pump	65	5,4	147	10	45	60,2	41,6	23,4	90,0	
VPM W 90 fix pump	65	6,8	220	10	45	90,2	37,2	27,8	113,3	
VPM W 135 fix pump	65	10,9	330	10	45	135,2	39,0	26,0	181,7	
VPM W 45 mod pump	65	5,2	110	10	45	45,1	46,8	18,2	86,7	
VPM W 60 mod pump	65	6,0	147	10	45	60,2	43,9	21,1	100,0	
VPM W 90 mod pump	65	7,9	220	10	45	90,2	41,1	23,9	131,7	
VPM W 135 mod pump	65	10,9	330	10	45	135,2	39,0	26,0	181,7	
VPM W 180 mod pump	65	12,6	440	10	45	180,3	35,0	30,0	210,0	
VPM W 60 fix pump	65	5,4	100	10	55	31,9	49,1	15,9	90,0	
VPM W 90 fix pump	65	6,8	155	10	55	49,4	45,4	19,6	113,3	
VPM W 135 fix pump	65	10,9	225	10	55	71,7	47,3	17,7	181,7	
VPM W 45 mod pump	65	5,2	77	10	55	24,5	52,3	12,7	86,7	
VPM W 60 mod pump	65	6,0	100	10	55	31,9	50,7	14,3	100,0	
VPM W 90 mod pump	65	7,9	155	10	55	49,4	48,1	16,9	131,7	
VPM W 135 mod pump	65	10,9	225	10	55	71,7	47,3	17,7	181,7	
VPM W 180 mod pump	65	12,6	320	10	55	102,0	43,2	21,8	210,0	
VPM W 60 fix pump	70	5,4	131	10	55	41,8	49,1	20,9	90,0	
VPM W 90 fix pump	70	6,8	198	10	55	63,1	45,0	25,0	113,3	
VPM W 135 fix pump	70	10,9	295	10	55	94,0	46,7	23,3	181,7	
VPM W 45 mod pump	70	5,2	102	10	55	32,5	53,1	16,9	86,7	
VPM W 60 mod pump	70	6,0	131	10	55	41,8	51,2	18,8	100,0	
VPM W 90 mod pump	70	7,9	198	10	55	63,1	48,4	21,6	131,7	
VPM W 135 mod pump	70	10,9	295	10	55	94,0	46,7	23,3	181,7	
VPM W 180 mod pump	70	12,6	405	10	55	129,1	42,4	27,6	210,0	
VPM W 60 fix pump	70	5,4	107	10	60	30,7	53,0	17,0	90,0	
VPM W 90 fix pump	70	6,8	164	10	60	47,0	49,3	20,7	113,3	
VPM W 135 fix pump	70	10,9	242	10	60	69,4	50,9	19,1	181,7	
VPM W 45 mod pump	70	5,2	82	10	60	23,5	56,4	13,6	86,7	
VPM W 60 mod pump	70	6,0	107	10	60	30,7	54,7	15,3	100,0	
VPM W 90 mod pump	70	7,9	164	10	60	47,0	52,2	17,8	131,7	
VPM W 135 mod pump	70	10,9	242	10	60	69,4	50,9	19,1	181,7	
VPM W 180 mod pump	70	12,6	342	10	60	98,1	46,7	23,3	210,0	
VPM W 60 fix pump	80	5,4	190	10	55	60,6	49,7	30,3	90,0	
VPM W 90 fix pump	80	6,8	275	10	55	87,7	45,2	34,8	113,3	
VPM W 135 fix pump	80	10,9	420	10	55	133,9	46,9	33,1	181,7	
VPM W 45 mod pump	80	5,2	150	10	55	47,8	55,2	24,8	86,7	
VPM W 60 mod pump	80	6,0	190	10	55	60,6	52,8	27,2	100,0	
VPM W 90 mod pump	80	7,9	275	10	55	87,7	50,1	29,9	131,7	
VPM W 135 mod pump	80	10,9	420	10	55	133,9	46,9	33,1	181,7	
VPM W 180 mod pump	80	12,6	560	10	55	178,5	41,8	38,2	210,0	
VPM W 60 fix pump	80	5,4	172	10	60	49,3	52,6	27,4	90,0	
VPM W 90 fix pump	80	6,8	253	10	60	72,6	48,0	32,0	113,3	
VPM W 135 fix pump	80	10,9	382	10	60	109,6	49,9	30,1	181,7	
VPM W 45 mod pump	80	5,2	135	10	60	38,7	57,7	22,3	86,7	
VPM W 60 mod pump	80	6,0	172	10	60	49,3	55,4	24,6	100,0	
VPM W 90 mod pump	80	7,9	253	10	60	72,6	52,5	27,5	131,7	
VPM W 135 mod pump	80	10,9	382	10	60	109,6	49,9	30,1	181,7	
VPM W 180 mod pump	80	12,6	520	10	60	149,2	44,5	35,5	210,0	

	Temp. buffer cylinder: 65 °C		Temp. buffer cylinder: 80 °C		Min. heating power (for reloading the buffer cylinder)	Heating power (for reloading the buffer cylinder safety factor)	Tapping volume in 10 min (at 45 °C)	NL-Value
	Min. volume buffer cylinder (at T _{VL})	Volume buffer cylinder (with safety factor)	Min. volume buffer cylinder (at T _{VL})	Volume buffer cylinder (with safety factor)				
	Liter	Liter	Liter	Liter	kW	kW	Liter/10 min	-
	1035	1553	631	946	37,6	56,4	602	19,9
	1303	1955	847	1270	56,2	84,3	902	39,8
	2089	3134	1325	1988	84,3	126,5	1352	75,3
	997	1495	546	819	28,1	42,2	451	11,7
	1150	1725	672	1008	37,6	56,4	602	19,9
	1514	2271	931	1396	56,2	84,3	902	39,8
	2089	3134	1325	1988	84,3	126,5	1352	75,3
	2415	3623	1610	2416	112,4	168,7	1803	115,8
	1035	1553	533	799	25,6	38,3	410	9,7
	1303	1955	738	1107	39,6	59,4	635	22,5
	2089	3134	1132	1698	57,5	86,3	922	41,3
	997	1495	458	686	19,7	29,5	316	5,7
	1150	1725	562	843	25,6	38,3	410	9,7
	1514	2271	802	1202	39,6	59,4	635	22,5
	2089	3134	1132	1698	57,5	86,3	922	41,3
	2415	3623	1432	2147	81,8	122,7	1311	71,8
	1035	1553	700	1049	33,5	50,2	537	16,2
	1303	1955	931	1397	50,6	75,9	811	33,6
	2089	3134	1461	2192	75,4	113,1	1209	63,3
	997	1495	626	939	26,1	39,1	418	10,1
	1150	1725	750	1125	33,5	50,2	537	16,2
	1514	2271	1034	1551	50,6	75,9	811	33,6
	2089	3134	1461	2192	75,4	113,1	1209	63,3
	2415	3623	1773	2660	103,5	155,3	1660	102,5
	1035	1553	652	978	27,3	41,0	438	11,1
	1303	1955	879	1319	41,9	62,9	672	24,7
	2089	3134	1371	2056	61,8	92,8	992	46,4
	997	1495	574	860	21,0	31,4	336	6,5
	1150	1725	696	1044	27,3	41,0	438	11,1
	1514	2271	970	1456	41,9	62,9	672	24,7
	2089	3134	1371	2056	61,8	92,8	992	46,4
	2415	3623	1691	2536	87,4	131,1	1402	79,5
	1035	1553	1035	1553	48,6	72,8	779	31,4
	1303	1955	1303	1955	70,3	105,4	1127	56,7
	2089	3134	2089	3134	107,3	161,0	1721	108,2
	997	1495	997	1495	38,3	57,5	615	21,3
	1150	1725	1150	1725	48,6	72,8	779	31,4
	1514	2271	1514	2271	70,3	105,4	1127	56,7
	2089	3134	2089	3134	107,3	161,0	1721	108,2
	2415	3623	2415	3623	143,1	214,7	2295	163,5
	1035	1553	1035	1553	44,0	65,9	705	26,7
	1303	1955	1303	1955	64,7	97,0	1037	49,8
	2089	3134	2089	3134	97,6	146,4	1565	94,0
	997	1495	997	1495	34,5	51,8	553	17,1
	1150	1725	1150	1725	44,0	65,9	705	26,7
	1514	2271	1514	2271	64,7	97,0	1037	49,8
	2089	3134	2089	3134	97,6	146,4	1565	94,0
	2415	3623	2415	3623	132,9	199,3	2131	147,3



22. System accessories

Vaillant offers an extensive range of accessories for every kind of installation.

This section describes the Vaillant accessories that may be required when using a Vaillant system with heat pumps.

The accessories are categorised by:

Accessories for the recoCOMPACT, versoTHERM and versoTHERM + versoVAIR heat pump systems

Accessories for the flexoTHERM heat pump system

Accessories for the aroTHERM heat pump system

Accessory for the geoTHERM heat pump system

Accessories for the aroTHERM split heat pump system

Accessories for heat distribution

Accessories for system separation

Accessories for the heat source

Accessories for domestic hot water generation

Accessories for unit installation

All accessories are clearly explained.

Accessories relevant to planning are described (if required) with their dimensions and technical data.


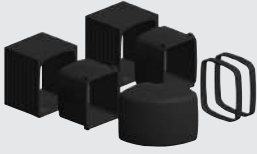



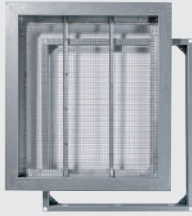
You can find further accessories in the current price list.

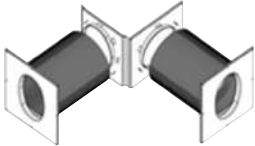


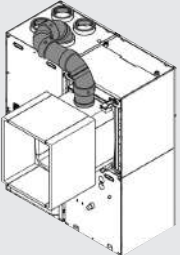
You can find accessories for aroTHERM plus heat pumps in the product information for the aroTHERM plus ..5/6.

22.1 Accessories for the recoCOMPACT, versoTHERM and versoTHERM + versoVAIR heat pump systems

22.1.1 Heat pump air duct accessories



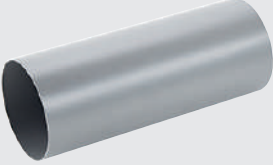


Accessories	Description	Pressure loss	Order no.	reco-COMPACT	verso-THERM + versoVAIR	verso-THERM
	VWZ 680 x 780 wall duct External dimensions: 680 x 780 mm Wall thickness: At least 30 mm Internal dimensions: 590 x 690 mm Note: Wall opening dimensions: 720 x 820 mm Two wall ducts required. Wall thickness: 250 mm-600 mm No additional insulation required.	1900 m ³ /h = 2.5 Pa 2200 m ³ /h = 3.0 Pa	0010023377	•	•	•
	VWZ 500 x 600 air duct Internal dimensions: 500 x 600 mm Wall thickness: At least 30 mm External dimensions: 580 x 680 mm Note: At least two air ducts required No additional insulation required. Enables a clearance of 100 mm-300 mm between the wall and the unit	1900 m ³ /h = 2.5 Pa 2200 m ³ /h = 3.0 Pa	0010023378	•	•	•
	VWZ noise insulation for 500 x 600 air duct Approx. 3-4 dB reduction in sound power Note: Can be installed without tools using self-adhesive plastic film	1900 m ³ /h = 2.5 Pa 2200 m ³ /h = 3.0 Pa	0010023379	•	•	•
	VWZ 500 x 600 air-duct elbow Note: Elbow width: 754 mm Take into account the total space required to the side of the unit.	1900 m ³ /h = 4.0 Pa 2200 m ³ /h = 5.0 Pa	0010023533	•	•	•
	VWZ 500 x 600 air-duct sleeve Note: For connecting the VWZ air-duct elbow to the VWZ air duct and, as an extension, for connecting two VWZ air ducts to each other. Two sleeves are required when connecting an elbow.	–	0010023534	•	•	•

Accessories	Description	Pressure loss	Order no.	reco-COMPACT	verso-THERM + versoVAIR	verso-THERM
	<p>Corner installation set Comprising: 2 x 0010023377 2 x 0010023378 Note: The weather guard grille and rodent guard (cellar installation) must be ordered separately</p>	–	Optional Set number (country-specific)	•	•	•
	<p>Single-wall installation set - small duct clearance Centre/centre ventilation duct: 950-1060 mm Comprising: 2 x 0010023377 2 x 0010023378 1 x 0010023533 2 x 0010023534</p>	–	Optional Set number (country-specific)	•	•	•
	<p>Single-wall installation set - large duct clearance Centre/centre ventilation duct: > 1060 mm Can be used if there is to be no wall installed between the supply and extract air grille. Comprising: 2 x 0010023377 3 x 0010023378 (depending on the grille clearance) 1 x 0010023533 3 x 0010023534 (depending on the grille clearance)</p>	–	Optional Set number (country-specific)	•	•	•
	<p>VWZ air duct with a height change of 410 mm For the simplified air pipe at installation sites below ground level Internal dimensions: 500 x 600 mm External dimensions: 580 x 680 mm Wall thickness: 30 mm Note: No additional insulation required. Enables a clearance of 450 mm-700 mm between the wall and the unit</p>	7 Pa at 2300 m ³ /h	0010031010	•	•	•
	<p>VWZ weather guard grille External dimensions: 720 x 820 mm Weather guard grille incl. a rodent guard grille with a mesh size of 10 mm. Material: Galvanised aluminium. Note: Can be painted</p>	1900 m ³ /h = 16.5 Pa 2200 m ³ /h = 19.0 Pa	0010023529	•	•	•
	<p>VWZ rodent guard grille External dimensions: 720 x 820 mm Mesh size: 10 mm Note: Install in place of the weather guard grille in the light well if the light well has a roof cover.</p>	1900 m ³ /h = 8.0 Pa 2200 m ³ /h = 10.0 Pa	0010023530	•	•	•

Accessories	Description	Pressure loss	Order no.	reco-COMPACT	verso-THERM + versoVAIR	verso-THERM
	<p>VWZ flexible adapter set (for VWL 71/91) Flexible air duct 500 mm internal diameter, 600 mm external diameter; length: 6 m, can be divided as required Bend radius 800 mm Includes: Two wall-connection plates, supply and extract air connection plates, eight hose clamps, two mounting brackets for the flexible hose Note: The VWL 71/91's existing wall ducts can continue to be used. If there are no wall ducts, two VWZ wall ducts 0010023377 are required. Can be connected to the 500 mm diameter air-duct system manufactured by Rehau for a wall duct that is impermeable to pressing water.</p>	<p>1900 m³/h = 5.5 Pa/m 2200 m³/h = 6.5 Pa/m</p>	0010023531	•	•	•
	<p>90° EPP elbow, 240/180 mm diameter Compact with integrated connecting sleeve and adapter Colour: Black-grey</p>	–	0010023536	•	–	–
	<p>90° EPP elbow, 240/180 mm diameter Compact without connecting sleeve Colour: Black-grey</p>	$\zeta = 0.22$	0010024178	•	–	–
	<p>VWZ adapter set Outdoor air - 210/180 diameter EPP pipe system Comprising: 1 x 0020210945 3 x 0020210949 1 x 0020212528 Note: If installing on the ground floor, this eliminates the need for an outdoor air wall opening for the ventilation system. Caution: The clearance from the wall to the rear must be increased to 300 mm. If installing in the cellar, the supply air for the ventilation system must be fed in separately in accordance with EN 1946-6, which means that this adapter set is not permissible. Installation: The air ducts 0010023378 have, as standard, an internal groove that can be cut.</p>	–	Optional Set number (country-specific)	•	–	–

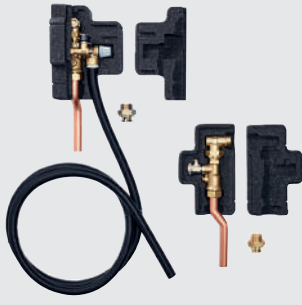



Accessories	Description	Pressure loss	Order no.	reco- COMPACT	verso- THERM + versoVAIR	verso- THERM
	<p>VWZ adapter set Outdoor air - 246/160 diameter EPP pipe system Comprising: 1 x 0020180861 2 x 0020180863 1 x 0020211859 1 x 0010024178 1 x 0020180865 1 x 0010025537 Note: If installing on the ground floor, this eliminates the need for an outdoor air wall opening for the ventilation system. Caution: The clearance from the wall to the rear must be increased to 370 mm. If installing in the cellar, the supply air for the ventilation system must be fed in separately in accordance with EN 1946-6, which means that this adapter set is not permissible. Installation: The air ducts 0010023378 have, as standard, an internal groove that can be cut.</p>	-	Optional Set number (country-specific)	•	-	-
	<p>Exhaust air adapter With a combination of wall-hung recoVAIR and versoTHERM for two-stage heat recovery Note: The recoVAIR's air distribution system accessories can be used. Suitable for 180/150 and 210/180 diameters.</p>	-	0010023538	-	-	•
	<p>EPP adapter, compact 246/160 mm diameter on 180/150 mm diameter For thick-walled EPP pipe, for connecting to the ventilation unit, a silencer with 150 mm diameter or a roof duct with 180/150 mm diameter</p>	-	0010025537	•	-	-
	<p>VWZ installation set For recoCOMPACT exhaust air module, left-hand installation EPP adapter for connecting the recoCOMPACT exhaust air module when installing the heat pump on the left</p>	-	0010035297	•	-	-



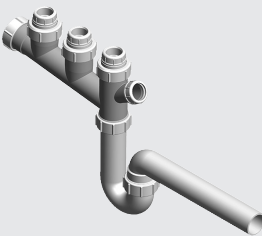
22.1.2 versoVAIR and accessories

Accessories	Description	Order no.	recoCOMPACT	versoTHERM + versoVAIR	versoTHERM
	<p>versoVAIR Extract air ventilation system in conjunction with the versoTHERM plus Volume flow: Up to 360 m³/h Unit height: versoTHERM plus and versoVAIR: 2200 mm Note: The recoVAIR's accessories/air distribution system can be used. Suitable for DN 180 and DN 150</p>	0010024013	–	–	•
	<p>Non-centralised 160 mm diameter air inlet For the non-centralised air inlet when using the versoTHERM with the versoVAIR. Enables volume flows of 50 m³/h at 30 Pa negative pressure and 25 m³/h at 8 Pa negative pressure. Comprising: 1 x 0020236365 1 x 0020236366 1 x 0010023375 1 x 0010023376 Includes removable restrictor rings for reducing the incoming flow of outdoor air.</p>	Optional Set number (country-specific)	–	•	–
	<p>VAZ WD 160 installation set 160 mm diameter connection For pre-assembly during the construction phase, consisting of a 160 mm diameter plastic installation pipe, length = 500 mm, can be shortened, incl. 2 x dust protection caps Note: For thicker walls up to 1 m, two pipes (installation sets) can be installed downstream of each other.</p>	0020236365	–	•	–
	<p>EPS brick</p>	0010024168	–	•	–
	<p>VAZ-G 160 exterior panel 160 mm diameter connection For the façade end of the non-centralised ventilation unit. Consisting of a mounting plate for securing it to the external wall and an exterior panel with click-in fastening and small animal guard; material: Plastic, white. L x W x D: 210 x 210 x 80 mm Note: Essential for the recoVAIR VAR 60/1 D(W).</p>	0020236366	–	•	–

Accessories	Description	Order no.	recoCOMPACT	versoTHERM + versoVAIR	versoTHERM
	G 3 filter set (10 pcs) Can be used for the recoVAIR VAR 60/1 D(W) Filter class G3 (EN 779) Filter class ISO-standard coarse 45% (ISO 16890)	0020236370	–	•	–
	VAZ-G filter set, ISO-standard coarse 65%, for the versoVAIR Spare filter for the versoVAIR. Contents: 2 pcs. Filter class G4 (EN 779) Filter class ISO-standard coarse 65% (ISO 16890)	0010023374	–	•	–
	VAZ-G160 interior panel Interior panel for the outdoor air inlet/outlet in the form of a single component. Enables volume flows of 50 m³/h at 30 Pa negative pressure and 25 m³/h at 8 Pa negative pressure. Material: Plastic. White. Includes ISO-standard coarse 45% filter (filter class G3 in accordance with EN 779) and wind-pressure relief device.	0010023375	–	•	–
	VAZ-G160 noise insulation Use for noise insulation for the outdoor air inlet/outlet in the form of a single component. Noise reduced by up to 50 dB(A) with a length of 300 mm. Length: 30 mm to 300 mm; can be used as required depending on wall thickness. Includes removable restrictor rings for reducing the incoming flow of outdoor air. Essential for the outdoor air inlet/outlet.	0010023376	–	•	–

22.1.3 Hydraulics accessories

Accessories	Description	Order no.	recoCOMPACT	versoTHERM + versoVAIR	versoTHERM
	<p>versoTHERM VWZ installation set Hydraulics only Comprising: 1" heating element, 3-bar expansion relief valve, 3/4" service valves (filling/draining cock), Manometer, Air vent, Pre-bent copper pipes, EPS insulation jacket for valve block Note: Flexible installation possible horizontally with respect to the wall or vertically with respect to the ceiling.</p>	0010023866	–	•	•
	<p>recoCOMPACT 10-bar VWZ connection set Hydraulics and domestic hot water Comprising: 1" heating element, 3-bar expansion relief valve, 3/4" service valves (filling/draining cock), Manometer, Air vent, Pre-bent copper pipes, EPS insulation jacket for valve block, 3/4" domestic hot water, 10-bar safety assembly, Drain pipe for expansion relief valve, EPS insulation jacket for valve block Note: Flexible installation possible horizontally with respect to the wall or vertically with respect to the ceiling.</p>	0010023867	•	–	–
<p>For Belgium only</p> 	<p>recoCOMPACT 7-bar VWZ connection set Hydraulics and domestic hot water Comprising: 1" heating element, 3-bar expansion relief valve, 3/4" service valves (filling/draining cock), Manometer, Air vent, Pre-bent copper pipes, EPS insulation jacket for valve block, 3/4" domestic hot water, 7-bar safety assembly, Drain pipe for expansion relief valve, EPS insulation jacket for valve block Note: Flexible installation possible horizontally with respect to the wall or vertically with respect to the ceiling.</p>	0010023868	•	–	–
	<p>Condensed water feed pump For installing on the floor or wall Nominal capacity: 1.7 l Electrical connection: 1 x 230 V Height: 180 mm Width: 126 mm Depth: 280 mm</p>	301368	•	•	•

Accessories	Description	Order no.	recoCOMPACT	versoTHERM + versoVAIR	versoTHERM
	<p>recoCOMPACT VWZ circulation set for installing in the unit</p> <p>Comprising: Circulation pump with non-return valve, connection pipes, connection fittings, brass G3/4 T-piece connection, G3/4 coupling with integrated non-return valve, pipe set with pump for circulation connection in the unit.</p> <p>Note: When installed, the ventilation tower must be divided using the split-mounting concept. The unit is electrically connected directly to the heat pump's PCB.</p>	0010023869	•	–	–
	<p>Coding resistor for activating the cooling function</p> <p>Note: For connecting to the heat pump's PCB.</p>	0020269259	•	•	•
	<p>5-in-1 collecting siphon</p>	0010028192	•	–	–

22.2 Accessories for the flexoTHERM/flexoCOMPACT heat pump system

22.2.1 aroCOLLECT VWL 11/4 SA air/brine collector

Order no. 0010016715



Fig. 838: aroCOLLECT air/brine collector

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

The air/brine collector is used to exchange heat between the brine circuit and the outdoor air.

Note

The entire purging/filling process should last at least 30 minutes. During this time, the purging valves for the air/brine collectors must be opened and closed every five minutes.



We recommend the brine purging support set for the air/brine collector as this makes the purging process significantly easier if it is to be carried out by one person. Observe the aroCOLLECT installation instructions (0020196699).

22.2.2 Pre-(installation) base

Order no. 0020213871



Fig. 839: Base for aroCOLLECT

For simple pre-installation of the aroCOLLECT VWL 11/4 SA air/brine collector.

The base is only required if the outdoor unit is ordered separately.

Note

A maximum of two bases must be installed on top of each other.



22.2.3 Installation set with Tichelmann



Fig. 840: Installation set with Tichelmann

System for the simple installation of two aroCOLLECTs.
Can be used for VWF 157/4, VWF 197/4.

Note
50 x 4.6 mm pipes must be used in the Tichelmann system.

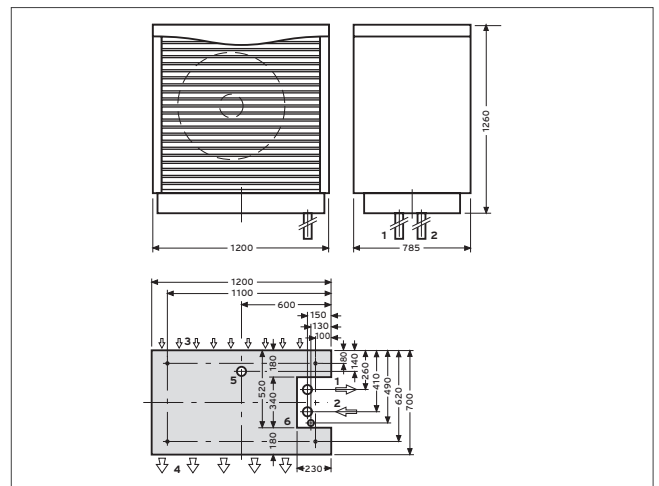


Fig. 841: aroCOLLECT dimension drawing

- 1 70 mm diameter empty pipe for hot brine from the heat source to the heat pump (hot brine)
- 2 70 mm diameter empty pipe for cold brine from the heat source to the heat pump (cold brine)
- 3 Air inlet side
- 4 Air outlet side
- 5 Empty pipe for condensate discharge, 120 mm diameter
- 6 Empty pipe for cable channel, 50 mm diameter

22.2.4 fluoCOLLECT VWW 11/4 SI and VWW 19/4 SI groundwater module

Order no. 0010016719, 0010016720



Fig. 842: fluoCOLLECT groundwater module

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

The groundwater module is used to transfer heat between the brine circuit and the groundwater.

VWW 11/4 SI for 5-11 kW heat pumps.

VWW 19/4 SI 15-19 kW heat pumps.

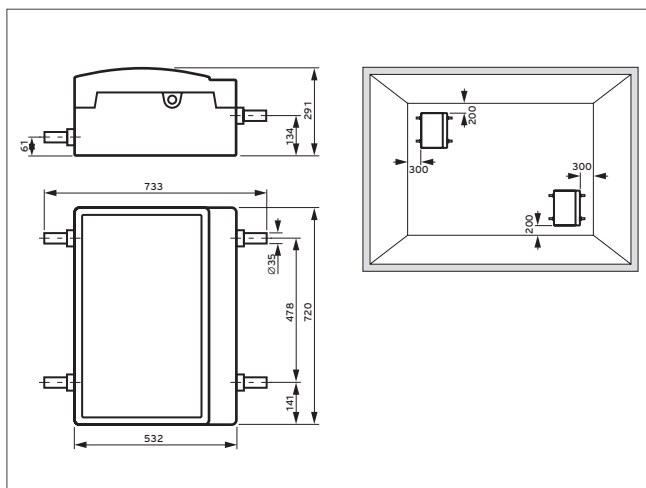


Fig. 843: fluoCOLLECT dimension drawing

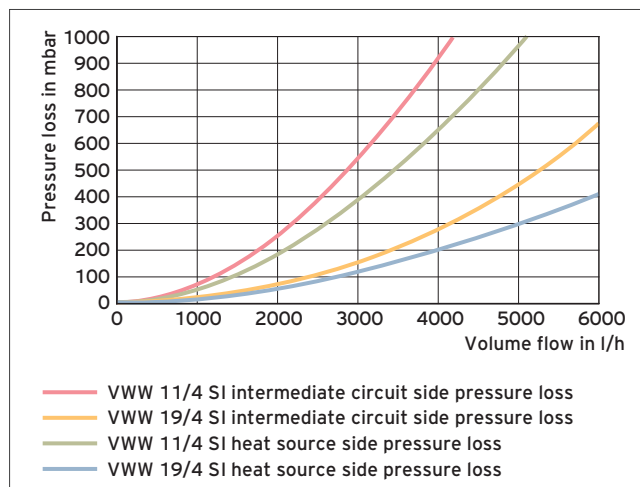


Fig. 844: VWW 11/4 SI and 19/4 SI pressure loss diagram

22.2.5 VWZ NC 11/4 and 19/4 passive cooling module

Order no. 0010016721, 0010016722



Fig. 845: VWZ NC passive cooling module

For connection to flexoCOMPACT exclusive or flexoTHERM exclusive.

Accessories for passive cooling with sensor (borehole) or collector.

VWZ NC 11/4 for 5-11 kW heat pumps.

VWZ NC 19/4 15-19 kW heat pumps.

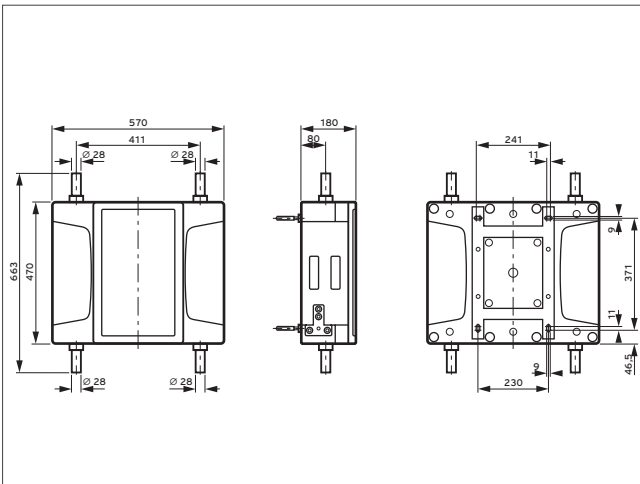


Fig. 846: VWZ NC dimension drawing

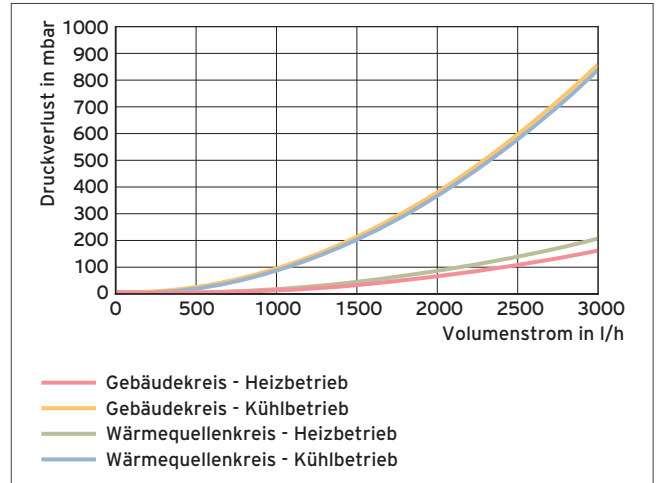


Fig. 847: VWZ NC 11/4 pressure loss diagram

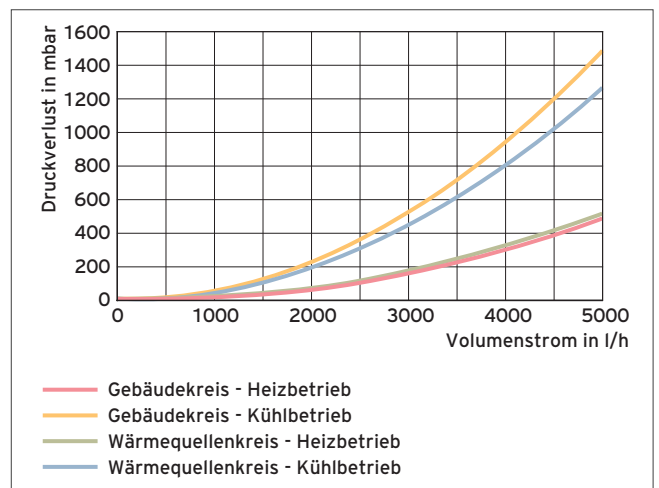


Fig. 848: VWZ NC 19/4 pressure loss diagram

22.2.6 flexoCOMPACT pre-installation jig

Order no. 0020205412



Fig. 849: flexoCOMPACT pre-installation jig

Pre-installation jig with flexible connection pipes for piping upwards and downwards with plain stainless steel pipes to facilitate routing (pressing) and ensure short set-up times, easy installation, and a high level of flexibility.

Compact combination option close to the wall guaranteed with the VWZ NC 11/4 and NC 19/4 natural cooling module.

22.2.7 flexoTHERM pre-installation jig

Order no. 0020205413



Fig. 850: flexoTHERM pre-installation jig

Pre-installation jig with flexible connection pipes for piping upwards and downwards with plain stainless steel pipes to facilitate routing (pressing) and ensure short set-up times, easy installation, and a high level of flexibility.

Compact combination option close to the wall guaranteed with the VWZ NC 11/4 and NC 19/4 natural cooling module.

22.2.8 Circulation set with pump for the flexoCOMPACT pre-installation jig

Order no. 0020229714



Fig. 851: Circulation set with pump for the flexoCOMPACT

High-efficiency circulation pump with non-return valve, connection pipe and connection fittings.

22.3 Accessories for the aroTHERM and 3 kW geoTHERM heat pump systems

22.3.1 VWZ MEH 61 hydraulic station - Product description

Order no. 0020143590



Fig. 852: VWZ MEH 61 hydraulic station

Potential applications

The VWZ MEH 61 hydraulic station is an electric reheater module with integrated heat pump control interface module and diverter valve for the **geoTHERM VWS 36/4.1** or **aroTHERM** heating system. Depending on the system design and configuration, it can supplement the heat supply from the heat pump.

The heat output of the electrical heating rod can be set as required to either 2, 4 or 6 kW. The module can be connected to a 230 V or 400 V power supply.

Equipment

The hydraulic station consists of:

- eBUS interface
- Appliance interface with display and control buttons
- Electrical immersion heater with safety cut-out
- 10 l expansion vessel for heating
- 3-port valve
- Water pressure sensor
- Expansion relief valve for heating
- VF1 temperature sensor
- Connection cable

Technical data

	VWZ MEH 61
Operating voltage U_{max}	400 V
Heating	Up to 70 °C
Cooling	Up to 7 °C
Level of protection	IP 20
Protection class	II
Internal temperature	Max. 70 °C
Maximum ambient temperature	40 °C
Height	720 mm
Width	440 mm
Depth	350 mm

Dimension drawing

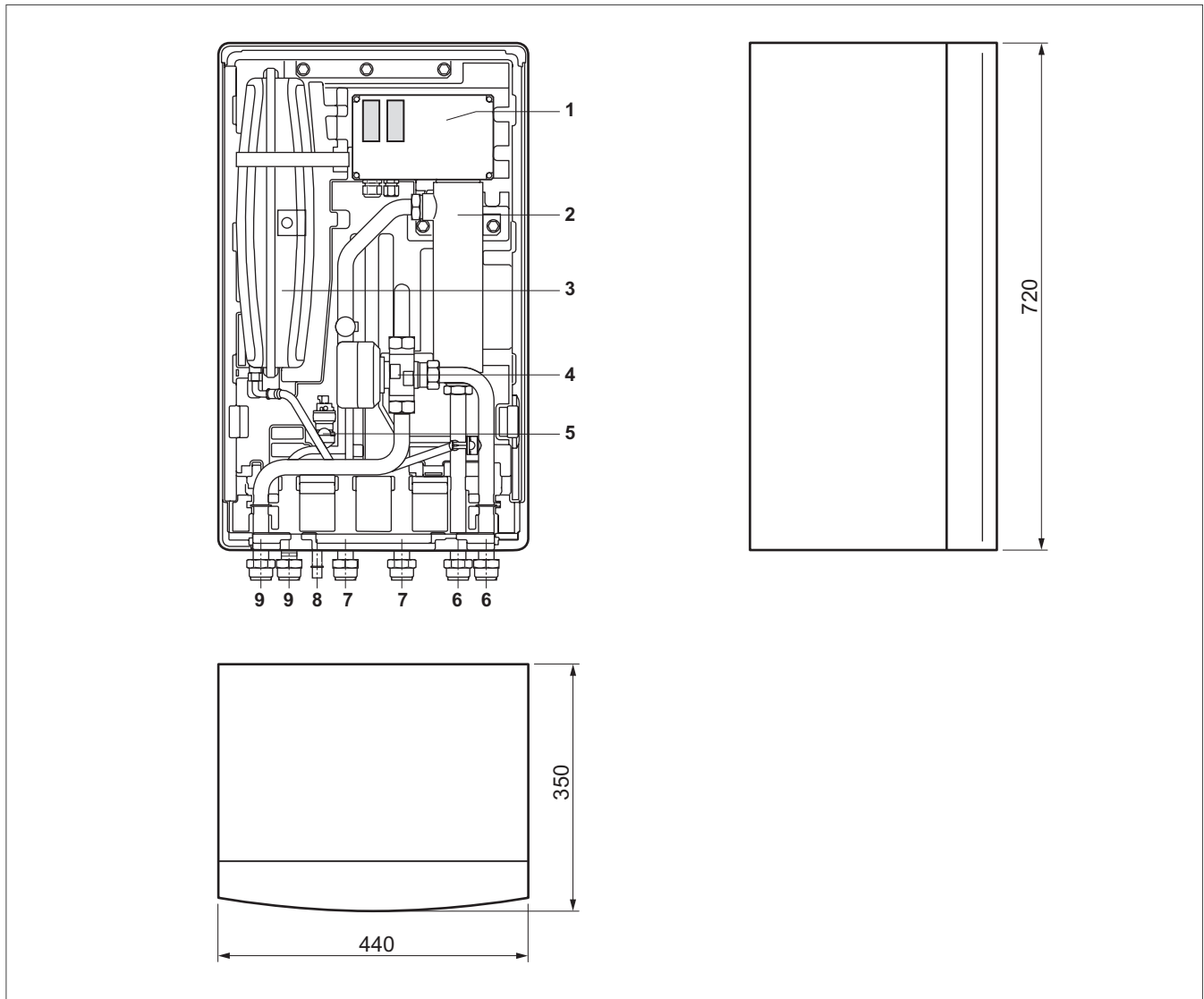


Fig. 853: VWZ MEH 61 - Design and dimensions

- 1 Terminal box
- 2 Electrical heating rod
- 3 Expansion vessel (10 l)
- 4 Diverter valve
- 5 Expansion relief valve
- 6 Flow/return to heat pump (R 1")
- 7 DHW cylinder flow/return (R 1")
- 8 Drain for expansion relief valve
- 9 Heating circuit flow/return (R 1")

Pressure loss diagram

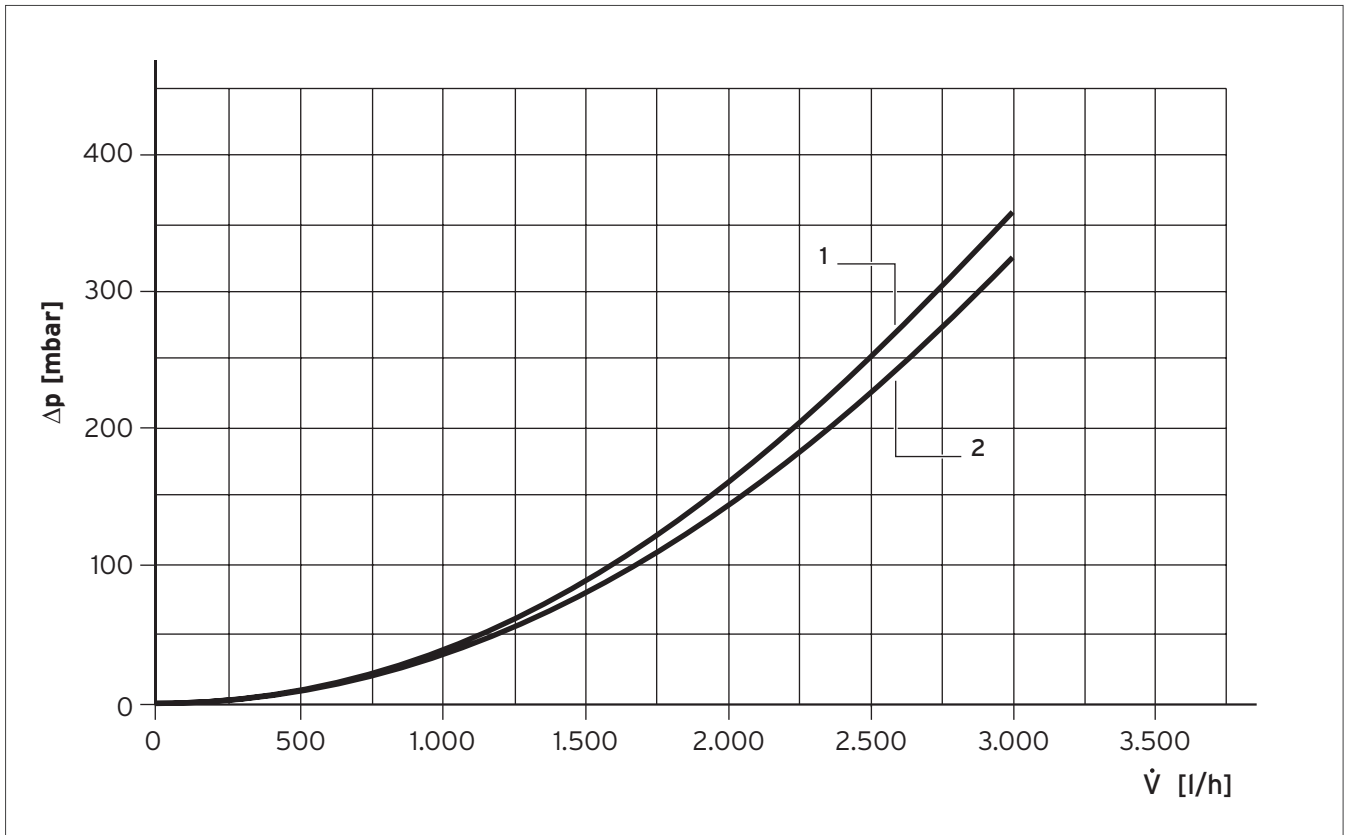


Fig. 854: VWZ MEH 61 pressure loss graph for heating and hot water handling

- 1 Heating mode
- 2 DHW mode

22.3.2 Product description for the VWZ MEH 60 immersion heater

Order no. 0020145030



Fig. 855: 6 kW immersion heater

Potential applications

The electrical immersion heater in the reheater module supplements the heat pump when operating in mono-energy mode. The module can be connected to a 230 V or 400 V supply. Depending on the electrical wiring mode, the heat output can be set to 2, 4 or 6 kW as required. The electric module is connected to the heat pump control interface module via a control cable.

Equipment

The electric reheater module consists of:

- Safety cut-out for the back-up heater
- Electrical connection box
- Purging valve
- Drain valve

Technical data

	VWZ MEH 60		
Operating voltage U_{max}	230 V/ 50 Hz	230 V/ 50 Hz	230 V/ 50 Hz
Maximum power consumption (P_{max})	6.0 kW	4.0 kW	6.0 kW
Max. power consumption (I_{max})	30 A	20 A	10 A
IP rating	IP X4		
Maximum operating pressure	3.0 bar		
Minimum operating pressure	0.5 bar		
Weight	4 kg		
Height	500 mm		
Width	280 mm		
Depth	250 mm		

Dimension drawing

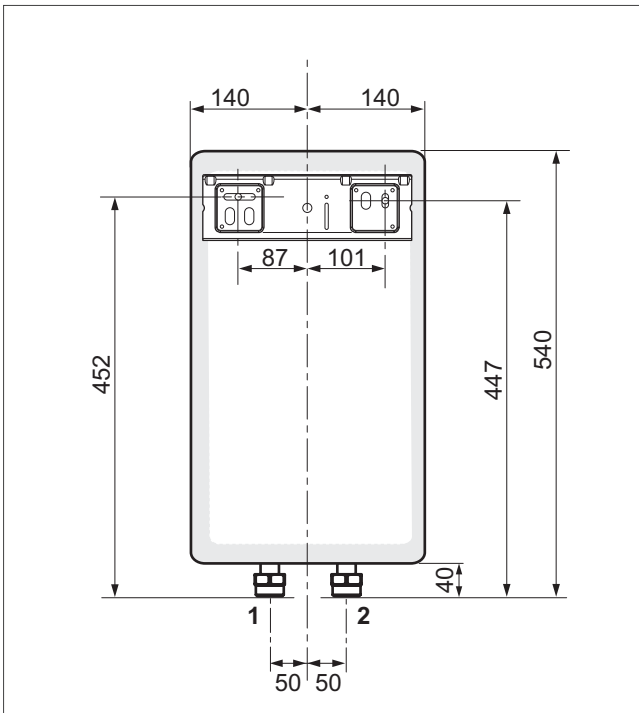


Fig. 856: VWZ MEH 60 - Connections and dimensions

- 1 Connection to heating circuit (R 1")
- 2 Connection to heat pump (R 1")

Pressure loss diagram

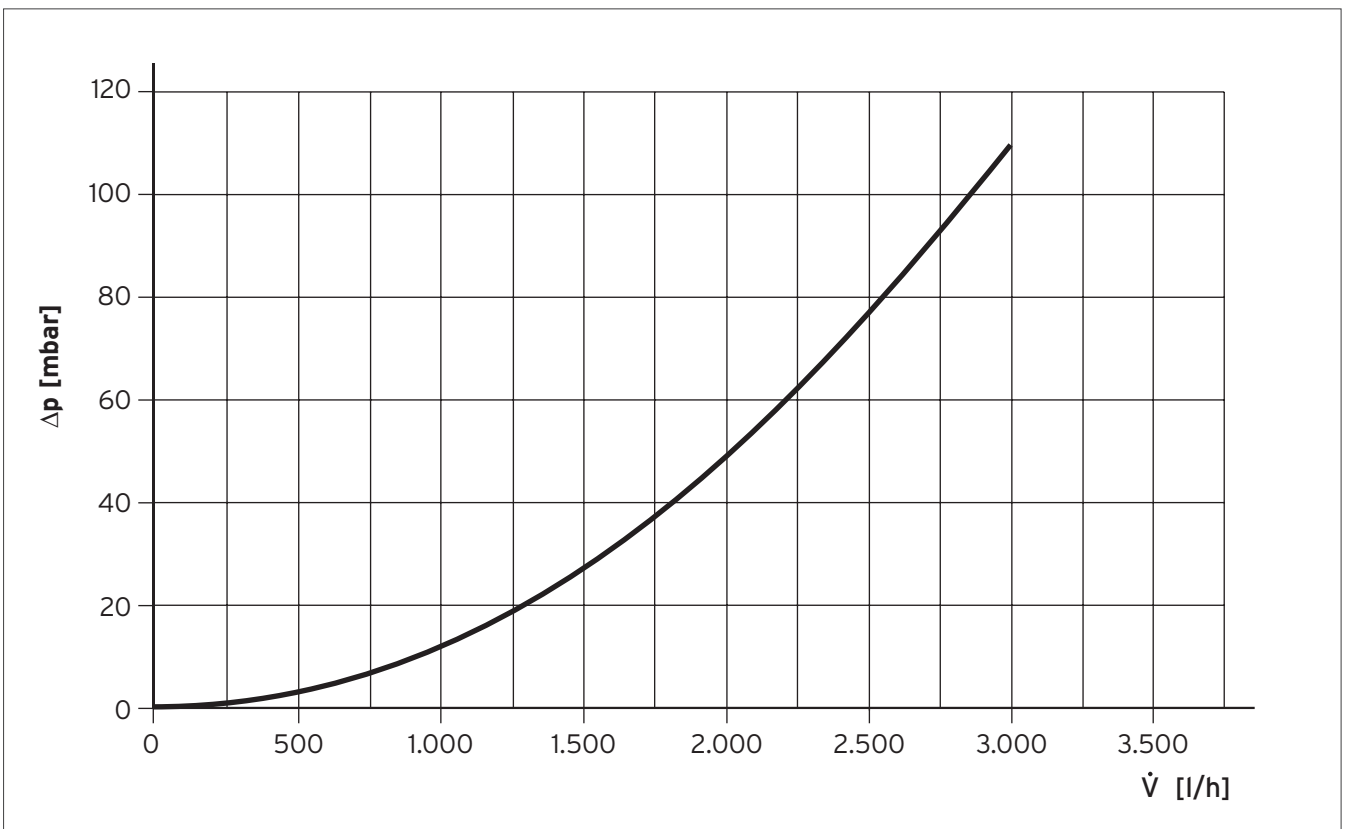


Fig. 857: Pressure loss curve for VWZ MEH 60

22.3.3 Product description for the VWZ MWT 150 heat exchanger module

Order no. 0020143800



Fig. 858: VWZ MWT 150 heat exchanger module

Potential applications

The **VWZ MWT 150** heat exchanger module is an additional module for the **aroTHERM** heating system. Thanks to its built-in heat exchanger, it can be used as a hydraulic system separation between the heat pump and heating installation. This means that the heat pump can be protected against frost without having to fill the entire installation with antifreeze.

Note

Ready-mixed brine fluid (article number 0020147182) should be used as the antifreeze.



Equipment

The heat exchanger module consists of:

- High-efficiency pump
- Plate heat exchanger
- Filling device for the brine circuit
- Expansion relief valve for heating

Technical data

	VWZ MWT 150
Operating voltage U_{max}	230 V
Maximum electrical power consumption (pump)	45 W
Maximum operating pressure	3.0 bar
Minimum operating pressure	0.5 bar
IP rating	IP 20
Protection class	II
Maximum environmental temperature	40 °C
Height	500 mm
Width	360 mm
Depth	250 mm

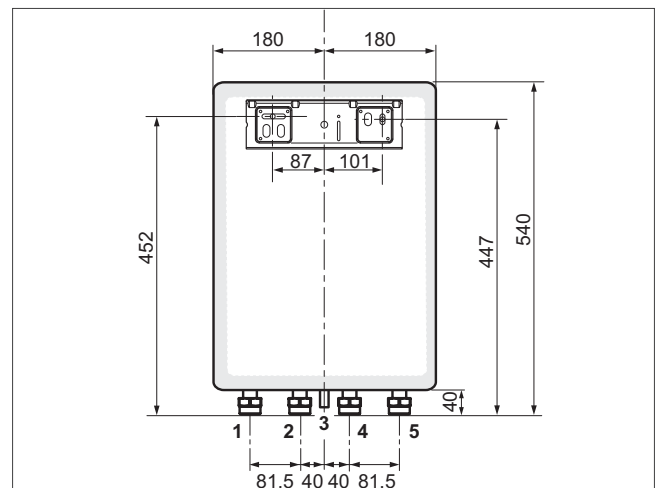


Fig. 859: VWZ MWT 150 - Connections and dimensions

- 1 Return from heating circuit (R 1")
- 2 Flow to heating circuit (R 1")
- 3 Drain for expansion relief valve
- 4 Return to heat pump (R 1")
- 5 Flow from heat pump (R 1")

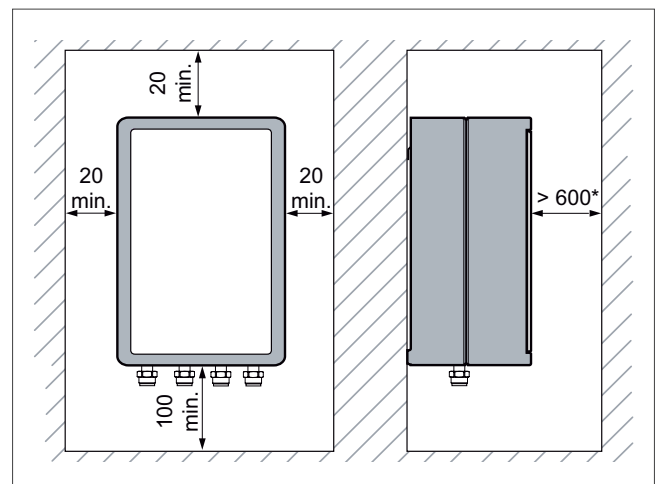


Fig. 860: Installation clearance

* Free space required for installing or maintaining the unit.

Available feed head for the heating circuit

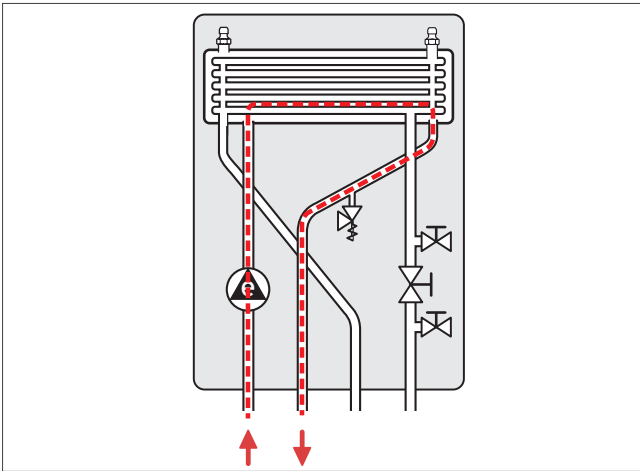


Fig. 861: Basic diagram of the available feed head for the heating circuit

Pressure loss

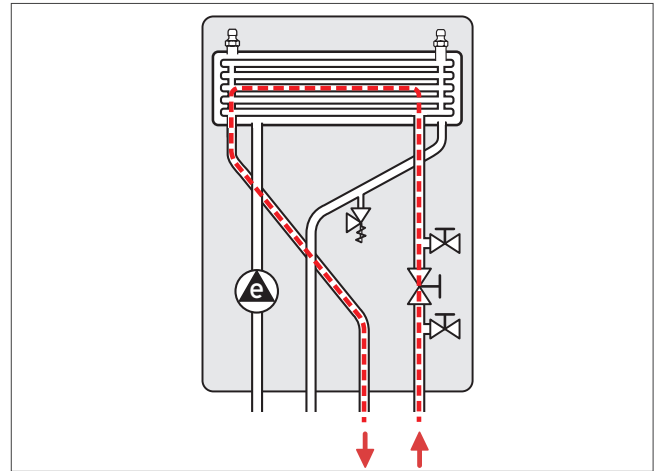


Fig. 864: Pressure loss basic diagram

Available feed head for the heating circuit

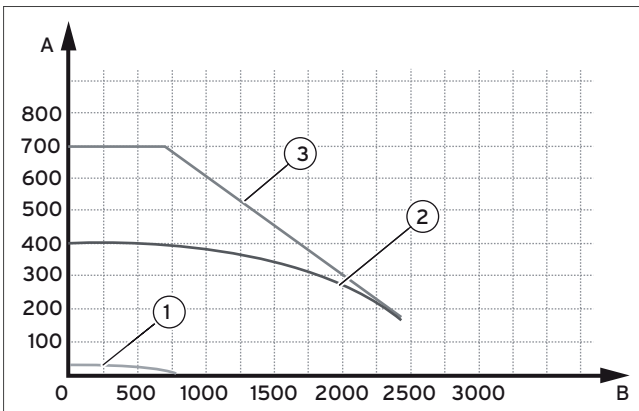


Fig. 862: Available feed head for the heating circuit

- A Pressure (mbar)
- B Flow rate (l/hr)
- 01 "I" position
- 02 "II" position
- 03 "III" position

Pressure loss in the heat pump's circuit

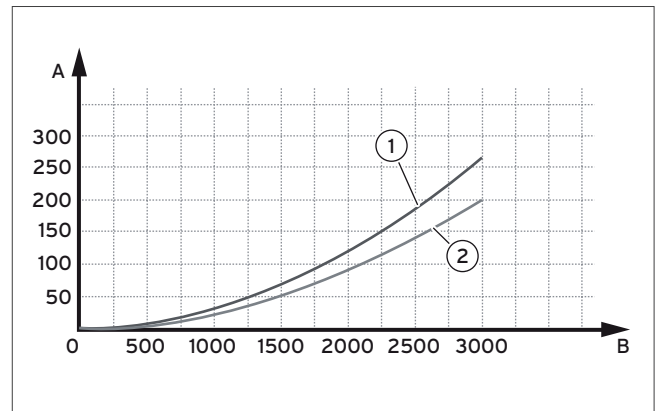


Fig. 865: Pressure loss in the heat pump's circuit

- A Pressure (mbar)
- B Flow rate (l/hr)
- 01 Flow rate in the circuit with 30% glycol
- 02 Flow rate in the water circuit

Heating circuits connection

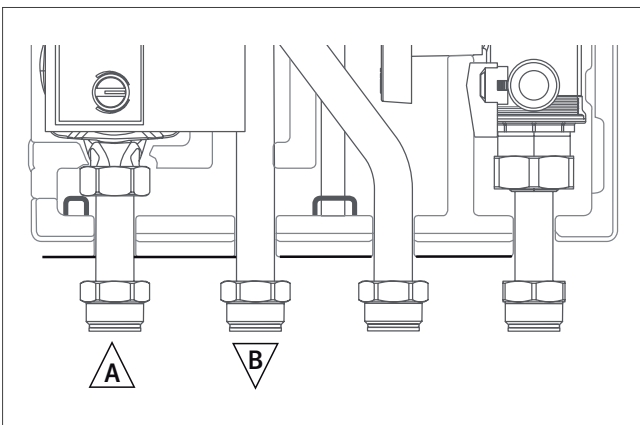


Fig. 863: Heating circuit flow/return connection

- A Heating circuit return
- B Heating circuit flow

Heat pump connection

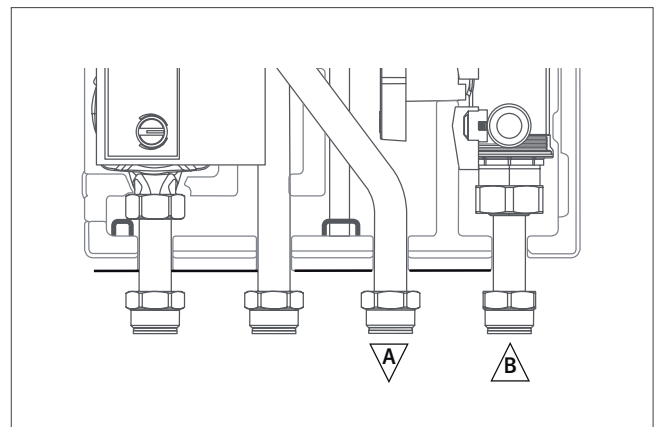


Fig. 866: Heat pump connection

- A Glycol/water circuit flow to the heat pump
- B Glycol/water circuit return from the heat pump

22.3.4 Product description for the intermediate heat exchanger module



Fig. 867: Intermediate heat exchanger module

Intermediate heat exchanger for the following outputs:

Output ranges	Order no.
Heat pumps, up to 7 kW	0010027982
Heat pumps, 10 to 12 kW	0010027973

Potential applications

The intermediate heat exchanger module is an additional module that can be used for the retroactive installation in **Genia-Set**.

Thanks to its built-in heat exchanger, it can be used as a hydraulic system separation between the heat pump and heating installation. This means that the heat pump can be protected against frost without having to fill the entire installation with antifreeze.

Equipment

The intermediate heat exchanger module consists of:

- High-efficiency pump
- Plate heat exchanger
- Expansion relief valve for heating

Pressure losses in the heat pump circuit version with intermediate heat exchanger

The diagram shows the pressure losses for the product variant with an intermediate heat exchanger.

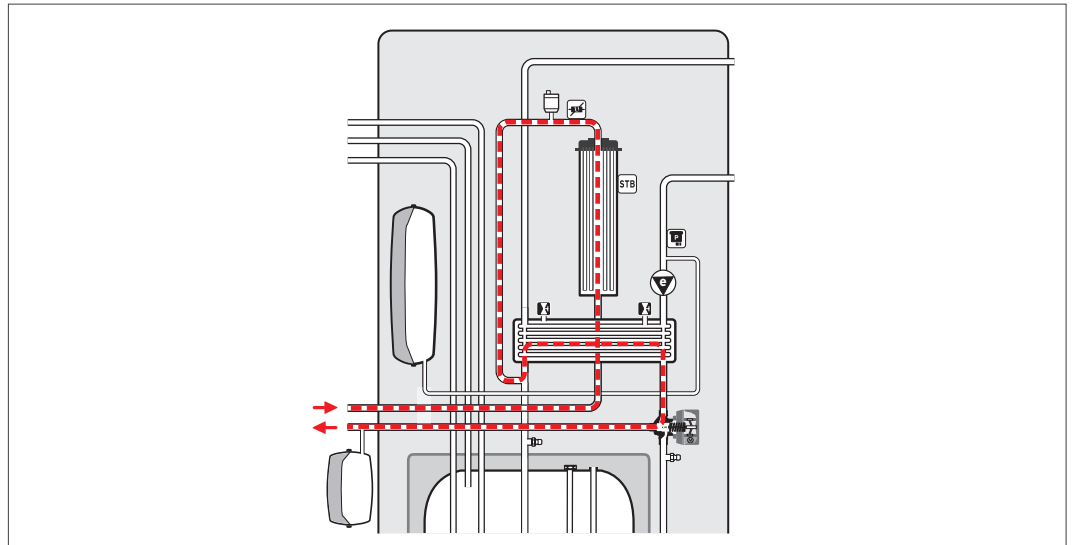


Fig. 868: Basic diagram of the pressure losses in the heat pump circuit for the uniTOWER plus

Pressure loss in the product in the heat pump circuit

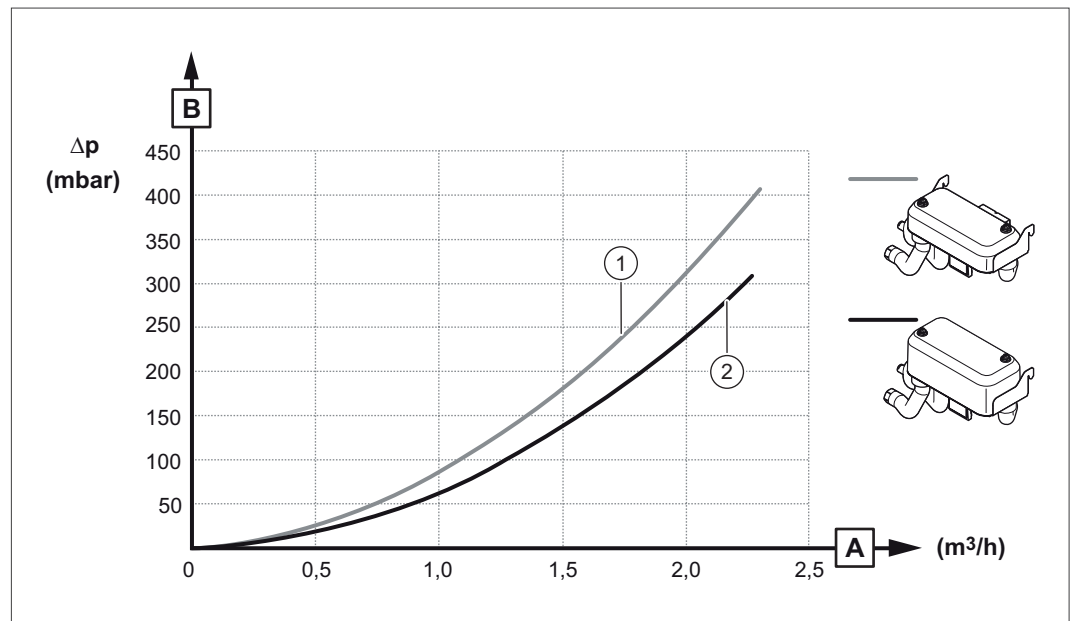


Fig. 869: Pressure loss in the product in the heat pump circuit

- 1 Intermediate heat exchanger (3-7 kW)
- 2 Intermediate heat exchanger (10-12 kW)
- A Volume flow
- B Pressure

Remaining feed head version with intermediate heat exchanger (heating circuit)

The diagram shows the remaining feed head for the product variant with an intermediate heat exchanger.

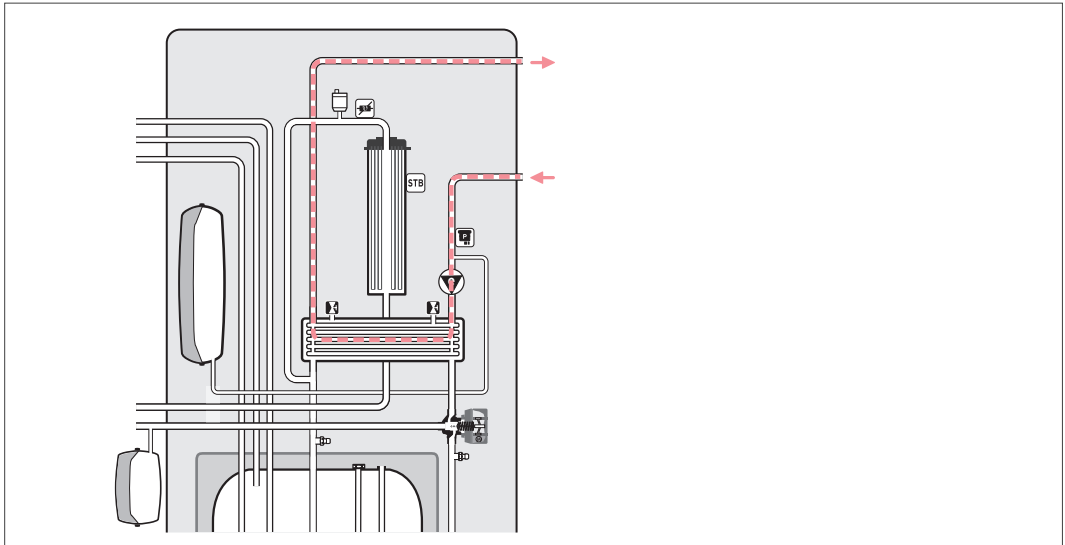


Fig. 870: Remaining feed head basic diagram

Remaining feed head with intermediate heat exchanger (3-7 kW)

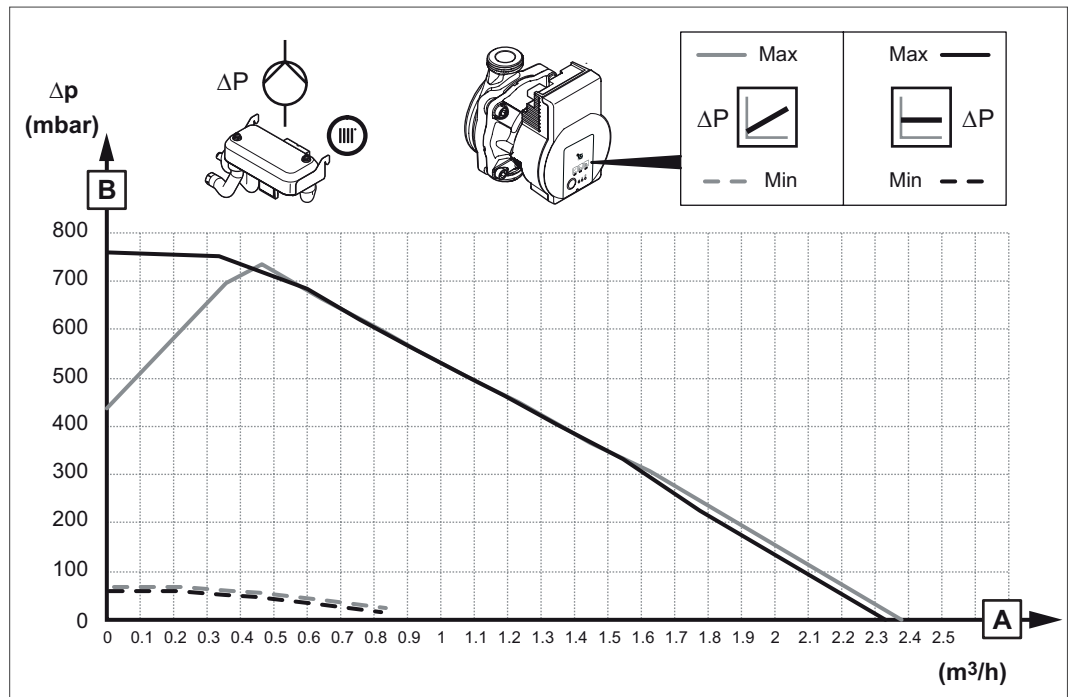


Fig. 871: Remaining feed head with intermediate heat exchanger (3-7 kW)

- A Volume flow
- B Available pressure

Remaining feed head with intermediate heat exchanger (10-12 kW)

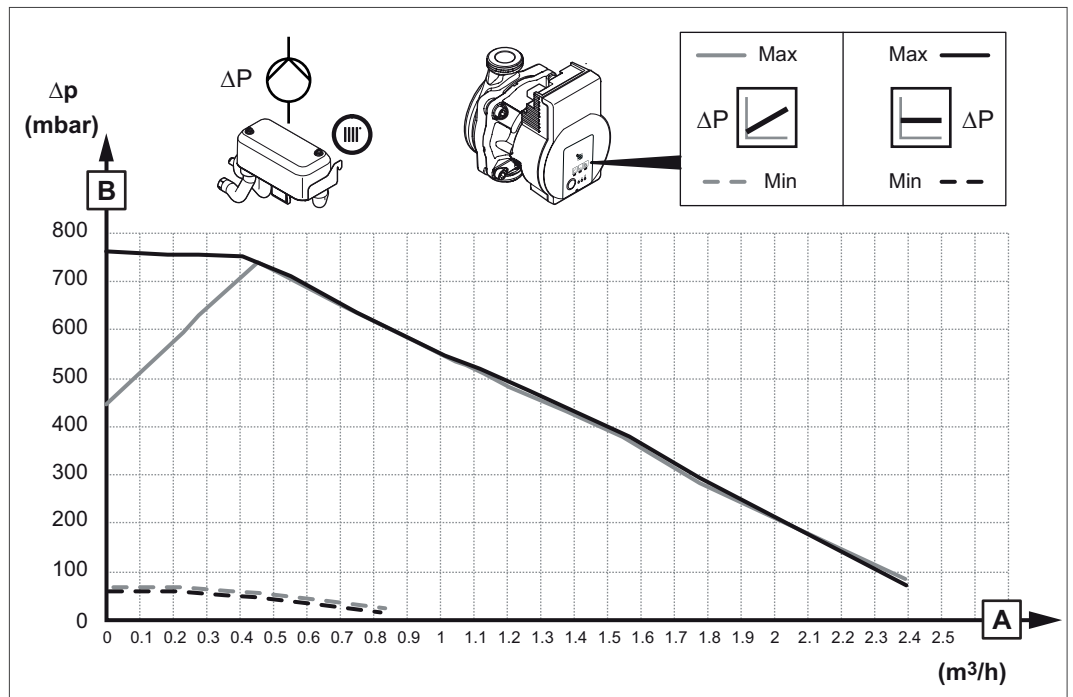







Fig. 872: Remaining feed head with intermediate heat exchanger (10-12 kW)

- A Volume flow
- B Available pressure

22.3.5 aroTHERM installation accessories

Accessories	Description	Order no.
Installation		
	<p>Elevated base for the aroTHERM. For an installation that is raised by 40 cm.</p> <p>Damping feet for reduction of structure-borne sound transmission are included in the scope of delivery.</p> <p>Can be used for VWL 35/6 A, VWL 55/6 A, VWL 65/6 A, VWL 75/6 A, VWL 105/6 A, VWL 125/6 A, VWL 35/5 AS, VWL 55/5 AS, VWL 65/5 AS, VWL 75/5 AS, VWL 105/5 AS, VWL 125/5 AS, VWL 55/3, VWL 85/3, VWL 115/2</p>	0010027984
	<p>Wall bracket for the aroTHERM. For mounting the heat pump on the wall; preinstalled damping feet.</p> <p>Can be used with the aroTHERM VWL 55/3, VWL 85/3 and VWL 115/2, and the aroTHERM split VWL 35/5 AS, VWL 55/5 AS and VWL 75/5 AS.</p> <p>Note: Cannot be used with the aroTHERM VWL 155/2 or the aroTHERM split VWL 105/5 AS and VWL 125/5 AS. Ensure that the wall construction is sufficiently sturdy.</p>	0020250225
	<p>Wall bracket for the aroTHERM. For mounting the heat pump on the insulated wall; for WDVS with an insulation thickness of up to 16 cm; preinstalled damping feet.</p> <p>Can be used with the aroTHERM VWL 55/3, VWL 85/3 and VWL 115/2, and the aroTHERM split VWL 35/5 AS, VWL 55/5 AS and VWL 75/5 AS.</p> <p>Note: Cannot be used with the aroTHERM VWL 155/2 or the aroTHERM split VWL 105/5 AS and VWL 125/5 AS. Ensure that the wall construction is sufficiently sturdy. The tools and adhesive (HIY-HY 170) required for installation can be obtained from any Hilti shop.</p>	0020250224
	<p>Damping base for the aroTHERM. Damping base, 60 cm (2 pcs), for decoupling the heat pump.</p>	0020250226
	<p>Damping feet for the aroTHERM. Damping feet, small (4 pcs), for decoupling the heat pump.</p>	0020252091

22.4 Accessories for the geoTHERM hybrid heat pump system

22.4.1 2-zone kit for actuating two heating circuits with different temperatures

Order no. 0020219775



Fig. 873: 2-zone kit

The optional 2-zone kit makes bivalent-parallel operation with triVAL parameters possible and, in particular, means that a geoTHERM and gas heating hybrid system can be retrofitted in an existing building.

- VR 70
- 3-way mixer and zone valve
- Temperature sensor
- Stable EPP casing with wall bracket and front panel
- Increasing the heat pump's percentage of cover by distributing to two heating circuits





22.5 Accessories for the aroTHERM split heat pump system

22.5.1 Coolant pipes






	3 kW	5 kW	7 kW	10 kW	12 kW
Material	Copper				
Minimum length	3 m				
Maximum length	25 m				
Additional refrigerant volume, For 15 to 25 m coolant pipe	30 g for every additional metre above 15 m		70 g for every additional metre above 15 m		
Additional refrigerant volume, For 25 to 40 m coolant pipe	300 g + 47 g for every additional metre (above 25 m)		700 g + 107 g for every additional metre (above 25 m)	700 g + 83 g for every additional metre (above 25 m)	
Outer diameter of the hot gas pipe	1/2"	1/2"	5/8"	5/8"	5/8"
Outer diameter, liquid pipe	1/4"	1/4"	3/8"	3/8"	3/8"
Coolant type	R410A				
Coolant volumetric capacity (incl. 15 m hose length)	1.5 kg	1.5 kg	2.4 kg	3.6 kg	3.6 kg
Maximum operating pressure	xxx bar/xxx PSI				
Maximum height difference between the outdoor unit and the indoor unit	30 m				

Refrigerant pipes

Accessories	Description	Order no.
Refrigerant pipes		
	1/4" and 1/2" 2-in-1 refrigerant pipe with eBUS With flare, incl. bending spring Length 5 m For VWL 35/5 AS - VWL 55/5 AS	0020250307
	1/4" and 1/2" 2-in-1 refrigerant pipe with eBUS With flare, incl. bending spring Length 10 m For VWL 35/5 AS - VWL 55/5 AS	0020250308
	3/8" and 5/8" 2-in-1 refrigerant pipe with eBUS With flare, incl. bending spring Length 5 m For VWL 75/5 AS - VWL 125/5 AS	0020250305
	3/8" and 5/8" 2-in-1 refrigerant pipe with eBUS With flare, incl. bending spring Length 10 m For VWL 75/5 AS - VWL 125/5 AS	0020250306
	1/4" refrigerant pipe Length 25 m For VWL 35/5 AS - VWL 55/5 AS	0020250311
	1/2" refrigerant pipe Length 25 m For VWL 35/5 AS - VWL 55/5 AS	0020250312
	3/8" refrigerant pipe Length 25 m For VWL 75/5 AS - VWL 125/5 AS	0020250309
	5/8" refrigerant pipe Length 25 m For VWL 75/5 AS - VWL 125/5 AS	0020250310

Accessories	Description	Order no.
	Insulating tape Self-adhesive for the refrigerant pipe	0020252090
SAE connector set		
	1/4" SAE screw-type connector (10 pcs) For VWL 35/5 AS - VWL 55/5 AS	0020252878
	1/2" SAE screw-type connector (10 pcs) For VWL 35/5 AS - VWL 55/5 AS	0020252880
	3/8" SAE screw-type connector (10 pcs) For VWL 75/5 AS - VWL 125/5 AS	0020252879
	5/8" SAE screw-type connector (10 pcs) For VWL 75/5 AS - VWL 125/5 AS	0020252881
	SAE calibration set 1/4", 1/2", 3/8", 5/8" Is required in order to establish the SAE connection	0020252903
Cooling function		
	Coding resistor for activating the cooling function Note: For connecting to the heat pump's PCB.	0020269259

22.5.2 aroTHERM split installation accessories



Accessories	Description	Order no.
Installation		
	<p>Elevated base for the aroTHERM For an installation that is raised by 40 cm.</p> <p>Damping feet for reduction of structure-borne sound transmission are included in the scope of delivery.</p> <p>Can be used for VWL 35/6 A, VWL 55/6 A, VWL 65/6 A, VWL 75/6 A, VWL 105/6 A, VWL 125/6 A VWL 35/5 AS, VWL 55/5 AS, VWL 65/5 AS, VWL 75/5 AS, VWL 105/5 AS, VWL 125/5 AS VWL 55/3, VWL 85/3, VWL 115/2</p>	0010027984
	<p>Wall bracket for the aroTHERM For mounting the heat pump on the wall; preinstalled damping feet.</p> <p>Can be used with the aroTHERM VWL 55/3, VWL 85/3 and VWL 115/2, and the aroTHERM split VWL 35/5 AS, VWL 55/5 AS and VWL 75/5 AS.</p> <p>Note: Cannot be used with the aroTHERM VWL 155/2 or the aroTHERM split VWL 105/5 AS and VWL 125/5 AS. Ensure that the wall construction is sufficiently sturdy.</p>	0020250225
	<p>Wall bracket for the aroTHERM For mounting the heat pump on the insulated wall; for WDVS with an insulation thickness of up to 16 cm; preinstalled damping feet.</p> <p>Can be used with the aroTHERM VWL 55/3, VWL 85/3 and VWL 115/2, and the aroTHERM split VWL 35/5 AS, VWL 55/5 AS and VWL 75/5 AS.</p> <p>Note: Cannot be used with the aroTHERM VWL 155/2 or the aroTHERM split VWL 105/5 AS and VWL 125/5 AS. Ensure that the wall construction is sufficiently sturdy. The tools and adhesive (HIY-HY 170) required for installation can be obtained from any Hilti shop.</p>	0020250224
	<p>Damping base for the aroTHERM Damping base, 60 cm (2 pcs), for decoupling the heat pump.</p>	0020250226
	<p>Damping feet for the aroTHERM Damping feet, small (4 pcs), for decoupling the heat pump.</p>	0020252091

22.6 Accessories for aroSTOR domestic hot water heat pumps

22.6.1 Accessories for 80- to 150-litre domestic hot water heat pumps

Accessories	Description	Order no.
Domestic hot water heat pump connection		
	Mounting bar (2 pcs) With six fixing points; increases the stability of the mounting if the condition of the wall is poor Prepared for three clearances: 250 mm, 350 mm and 440 mm	0020190188
	Tripod If the structure of the wall is not suitable for mounting the cylinder, the weight can be redistributed to the floor using the tripod. With adjustable feet, for adapting to the condition of the floor.	0020221305
	Supply air/extract air set 1 x connection adapter 1 x wall connection clamp 1 x pipe, insulated 1 x cover, insulated 1 x angle bracket, 90°, 80 mm diameter 1 x PVC pipe, 80 mm diameter, L = 970 mm 1 x PVC pipe, 125 mm diameter, L = 770 mm	0020190186
	Insulated air duct 1 x pipe, insulated, 125 mm diameter, L = 1 m 1 x PVC pipe, 80 mm diameter, L = 1 m 1 x PVC coupling, 80 mm diameter, F/F 1 x pipe, insulated, 125 mm diameter, F/F	0020190187
	Roof duct 1 x roof duct 1 x seal plate 1 x fastening clip 1 x PVC coupling, 80 mm diameter, F/F 1 x ring, smoke/wall connection, 155/125 mm diameter, F/F	0020271549
	45° angle bracket 45° PVC angle bracket, 80/125 mm Fastening clamp	0020271549
	Extension 1 x pipe, insulated, 125 mm diameter, L = 2 m 1 x PVC pipe, 80 mm diameter, L = 2 m 1 x PVC connection, 80 mm diameter, F/F 1 x PVC connection, 125 mm diameter, F/F	0020271549

22.6.2 Accessories for the aroSTOR VWL B/BM 200/5 - 270/5 domestic hot water heat pump

Accessories	Description	Order no.
Domestic hot water heat pump connection		
Not shown here	90° elbow Can be used for aroSTOR VWL	0020205773
Not shown here	90° elbow, insulated Can be used for aroSTOR VWL	0010029009
Not shown here	Flexible connection Can be used for aroSTOR VWL	0020205774
	Tundish to connect to the overflow line: R 1 tundish with syphon and collar.	000376
	Air connection set for aroSTOR VWL Can be used for aroSTOR.	0020205775
Safety equipment		
	R 3/4 safety assembly: Passage with stopcock, measuring stub pipes, non-return valve, R 3/4 diaphragm expansion relief valve and two threaded connections with R 1 outside thread for mains overpressure below 6 bar and a cylinder capacity of more than 200 l, can be used for eloSTOR VEH 200 - 400	000473
	Safety assembly with R 3/4 pressure reducer Passage with stopcock, measuring stub pipes, non-return valve, R 3/4 diaphragm expansion relief valve, pressure reducer and two threaded connections with R 1 outside thread for mains overpressure below 16 bar and a cylinder capacity of more than 200 l, can be used for eloSTOR VEH 200 - 400	000474

22.7 Accessories for heat distribution

22.7.1 Pipe group with high-efficiency pump, without mixer

Order no. 0020191817

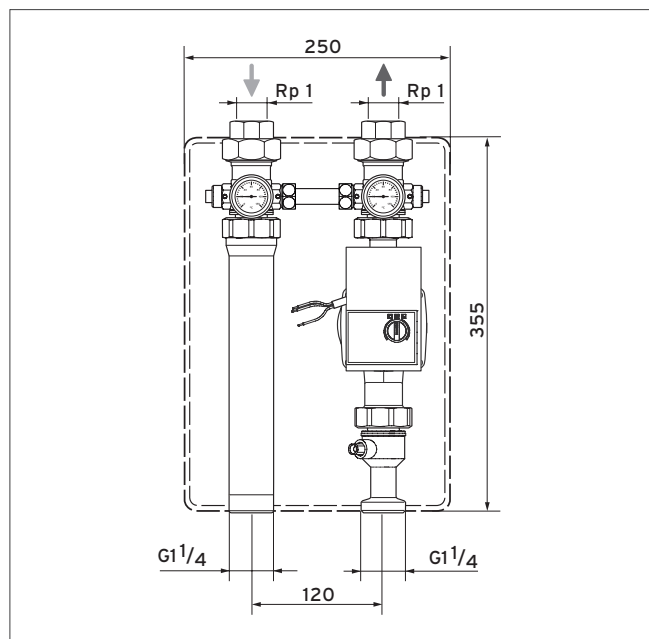


Fig. 874: Pipe group dimension drawing

Pump diagrams

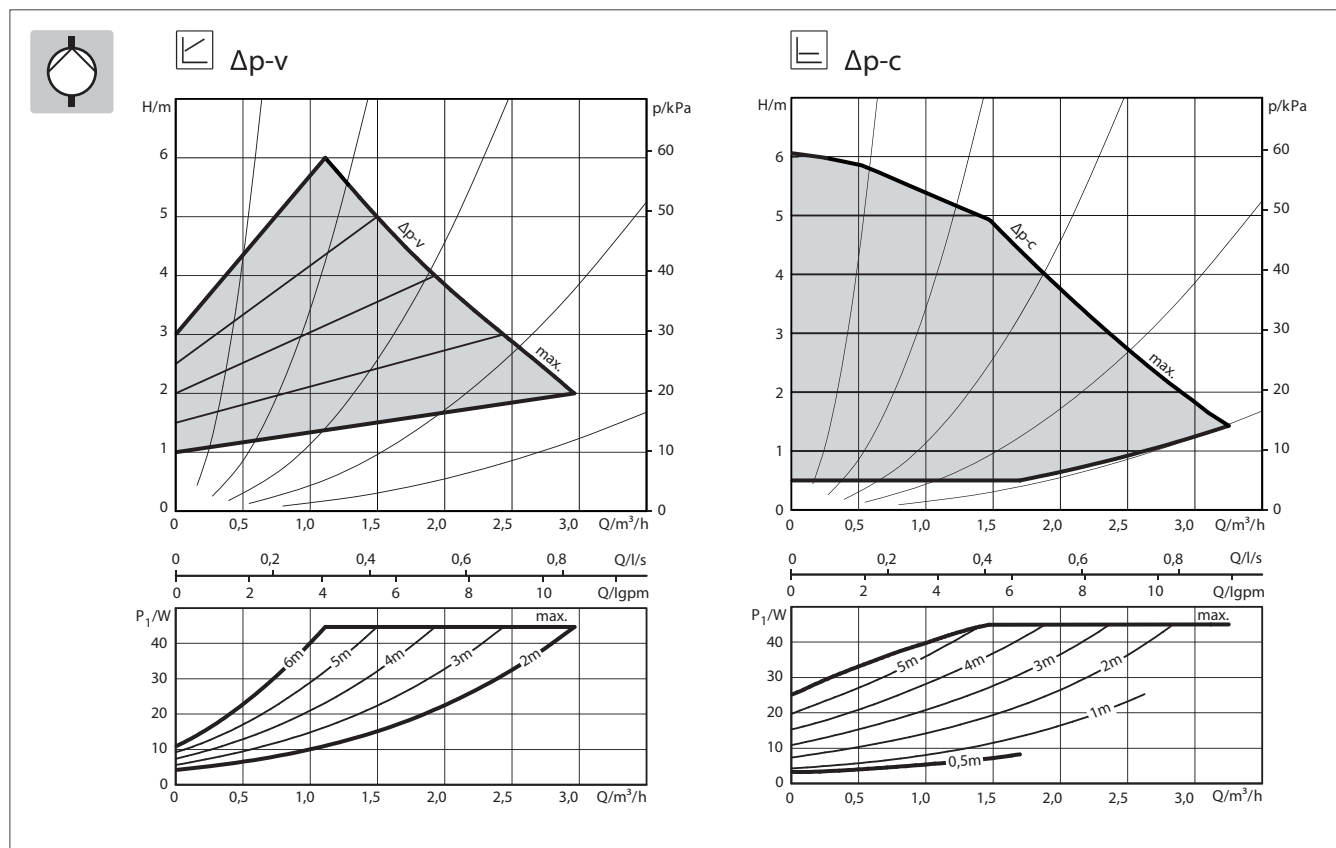


Fig. 875: Pump diagrams, order no. 0020191817

22.7.2 Pipe group with high-efficiency pump and 3-port mixing valve

Order no. 0020191813, 0020191814, 0020191788

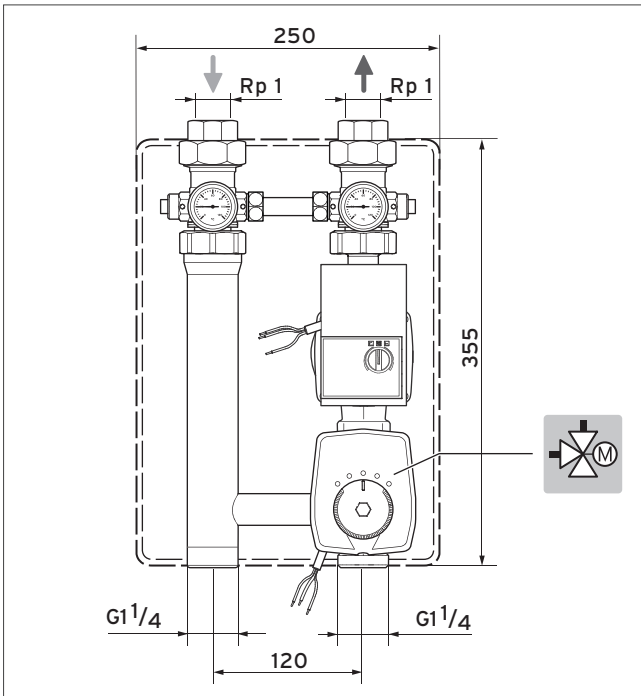


Fig. 876: Pipe group dimension drawing

Technical data

Technical data, order no. 0020191813, 0020191814, 0020191788

	Mixer	K_{vs}
0020191814	Rp 1/2	2.5
0020191813	Rp 3/4	6.3
0020191788	Rp 1	8.0

Pressure loss diagrams

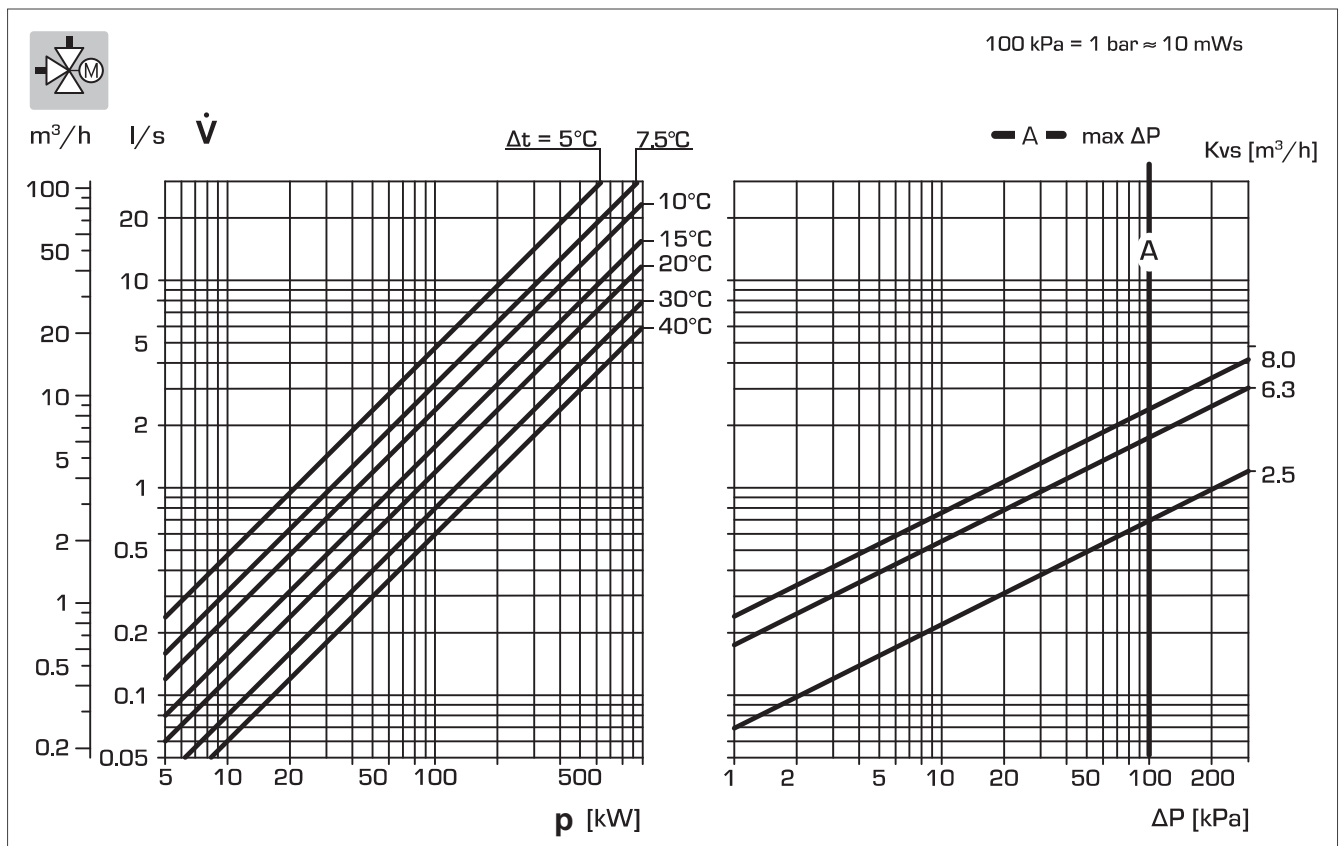


Fig. 877: Pressure loss diagrams, order no. 0020191813, 0020191814, 0020191788

22.7.3 3-port diverter valve

Order no. 0020036743

Choice of R 1 or G 1 1/4 connection, 230 V, $K_{vs}=7.7$



Fig. 878: 3-port diverter valve

1 x 3-port diverter valve with motor, 1 x connection cable with Molex connector, 3 x 28 mm connection pipes with support sleeves, 3 x G 1 1/4 union nuts with flat seals.

Can be used for **allSTOR exclusive**, **allSTOR plus**, **flexoTHERM exclusive**.

Pressure loss diagram

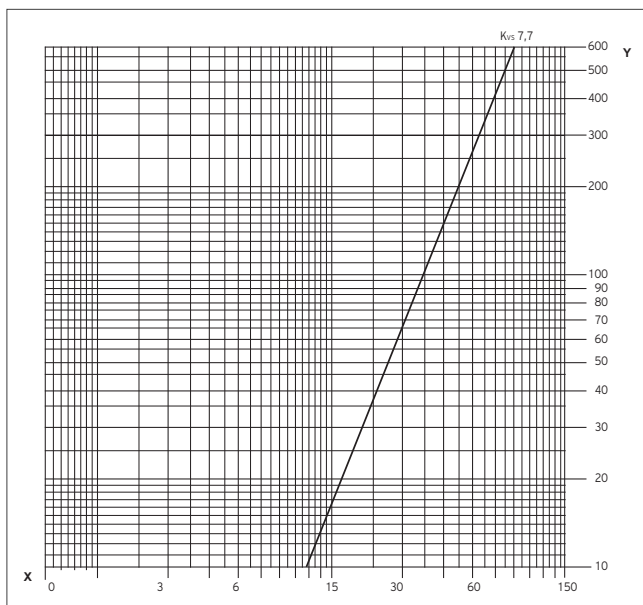


Fig. 879: 3-port valve pressure loss diagram

Y Pressure loss [mbar]

X Flow rate [l/min]

22.7.4 geoTHERM perform high-efficiency circulation pumps

Order no. 0010037627, 0010037623, 0010037624



Fig. 880: High-efficiency circulation pumps DN 40 Sole for geoTHERM perform

Dimensions

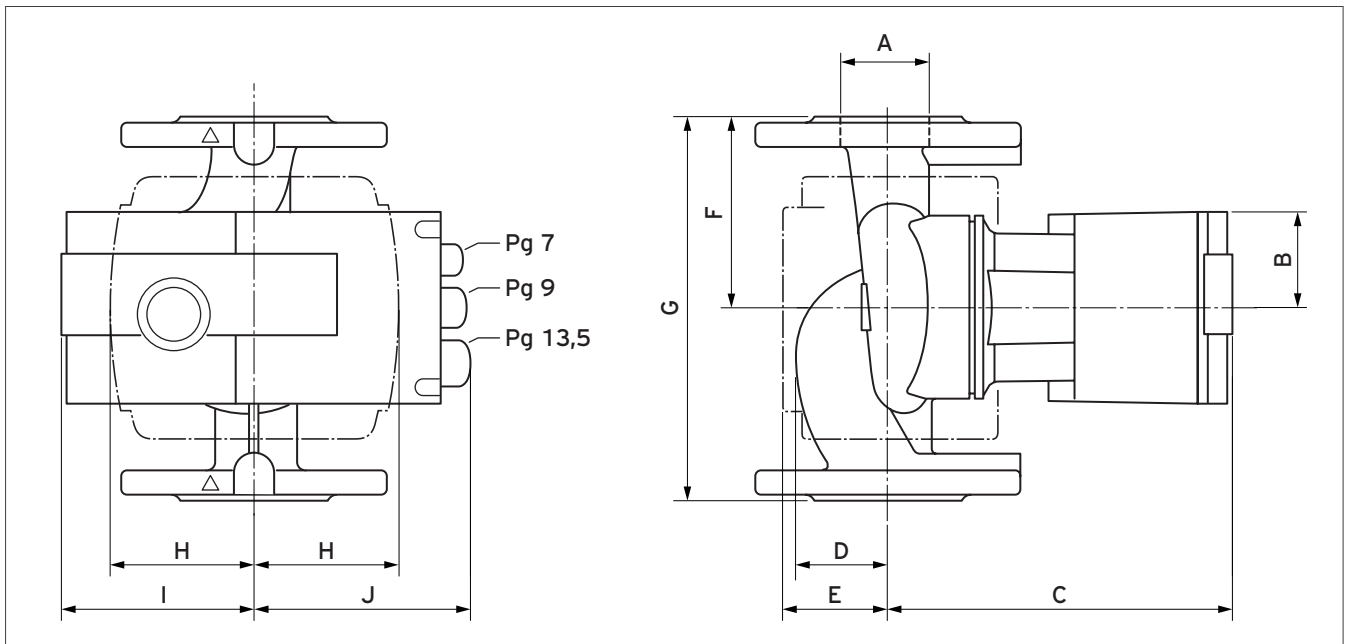


Fig. 881: Dimension drawing for the high-efficiency circulation pump

Order no.	High-efficiency circulation pump	A	B	C	D	E	F	G	H	I	J
0010037627	40/1-8	DN 40	55	203	53	63	110	220	82	106	120
0010037623	40/1-12	DN 40	66	252	62	84	125	250	96	120	136
0010037624	65/1-12	DN 65	78	319	66	115	170	340	147	156	164

Designing the heat source pumps

Brine circuit

geoTHERM perform	Recommended pump	Mass flow with 30% glycol and at 0 °C, given a temperature difference of 3 K (m ³ /h)	Pressure loss in the unit (mbar)	Remaining feed head (mbar)	Order no.
VWS 400/3 S1	40/1-12 high-efficiency pump	10700	90	770	0010037623
VWS 780/3 S1	65/1-12 high-efficiency pump	20000	150	465	0010037624

Heating circuit

geoTHERM perform	Recommended pump	Mass flow with 5 K temperature difference (m ³ /h)	Pressure loss in the unit (mbar)	Remaining feed head (mbar)	Order no.
VWS 400/3 S1	40/1-8 high-efficiency pump	6900	40	780	0010037627
VWS 780/3 S1	65/1-12 high-efficiency pump	13300	50	849	0010037624

Pressure heads of the external accessory pumps (not included in the scope of delivery)

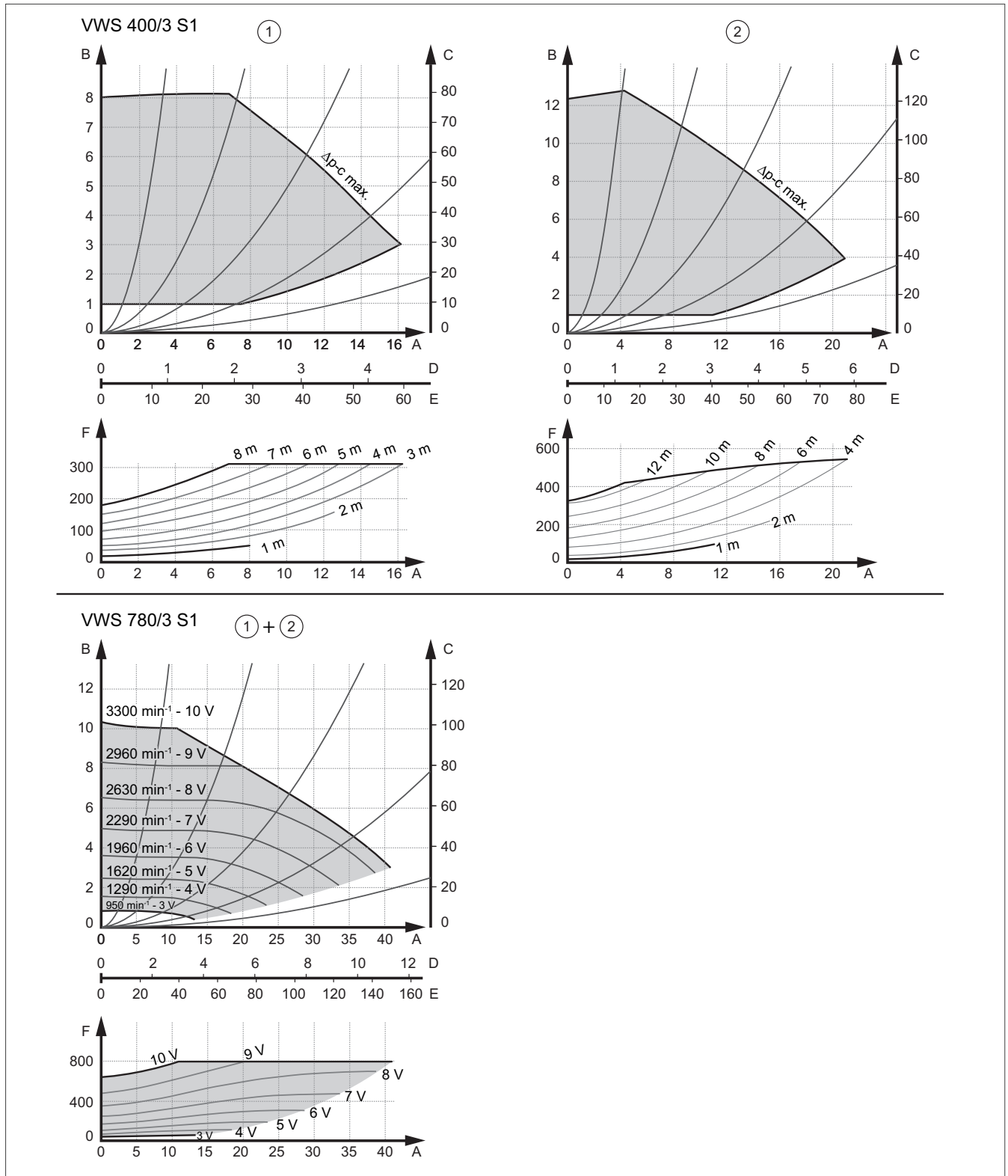


Fig. 882: Pressure head

- 1 Heating circuit pump
- 2 Brine pump
- A Mass flow [m³/h]
- B Pressure head [m]

- C Pressure head [kPa]
- D Mass flow [l/s]
- E Mass flow [lgpm]
- F Output [W]

22.7.5 Distribution manifold for two pipe groups

Order no. 307556

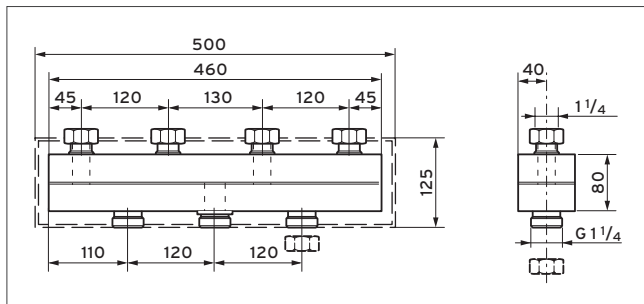


Fig. 883: Distribution manifold for two pipe groups

Fully preconfigured to connect two pipe groups (with or without a 3-port mixing valve), with heat insulation.

Technical data

	Unit	307556
Thermal insulation cover		EPP
Permissible operating temperature	°C	-20 to 110
Max. permissible operating pressure	bar	6
Weight	kg	6.3

Pressure loss

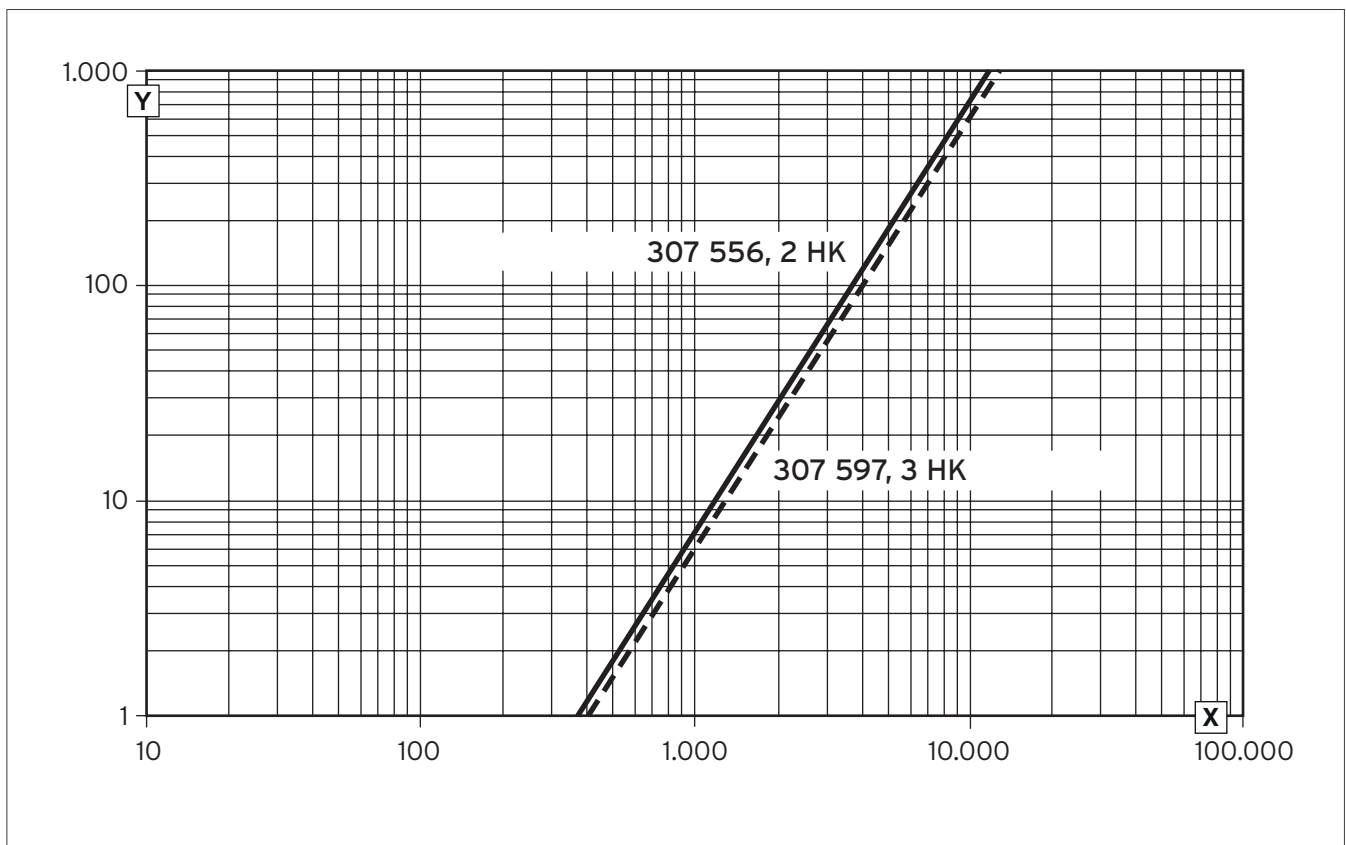


Fig. 884: Pressure loss

Y Pressure loss in mbar
X Volume flow l/h

22.7.6 Distribution manifold for three pipe groups

Order no. 307597

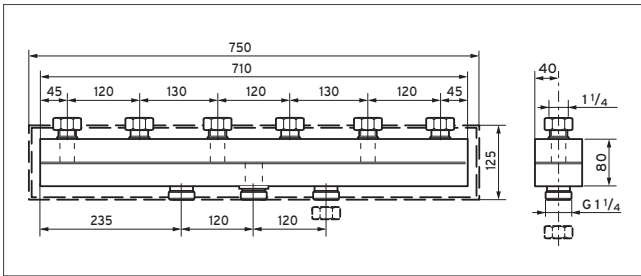


Fig. 885: Distribution manifold for three pipe groups

Fully preconfigured to connect three pipe groups (with or without a 3-port mixing valve), with heat insulation.

Technical data

	Unit	307597
Thermal insulation cover		EPP
Permissible operating temperature	°C	-20 to 110
Max. permissible operating pressure	bar	6
Weight	kg	9.2

Pressure loss

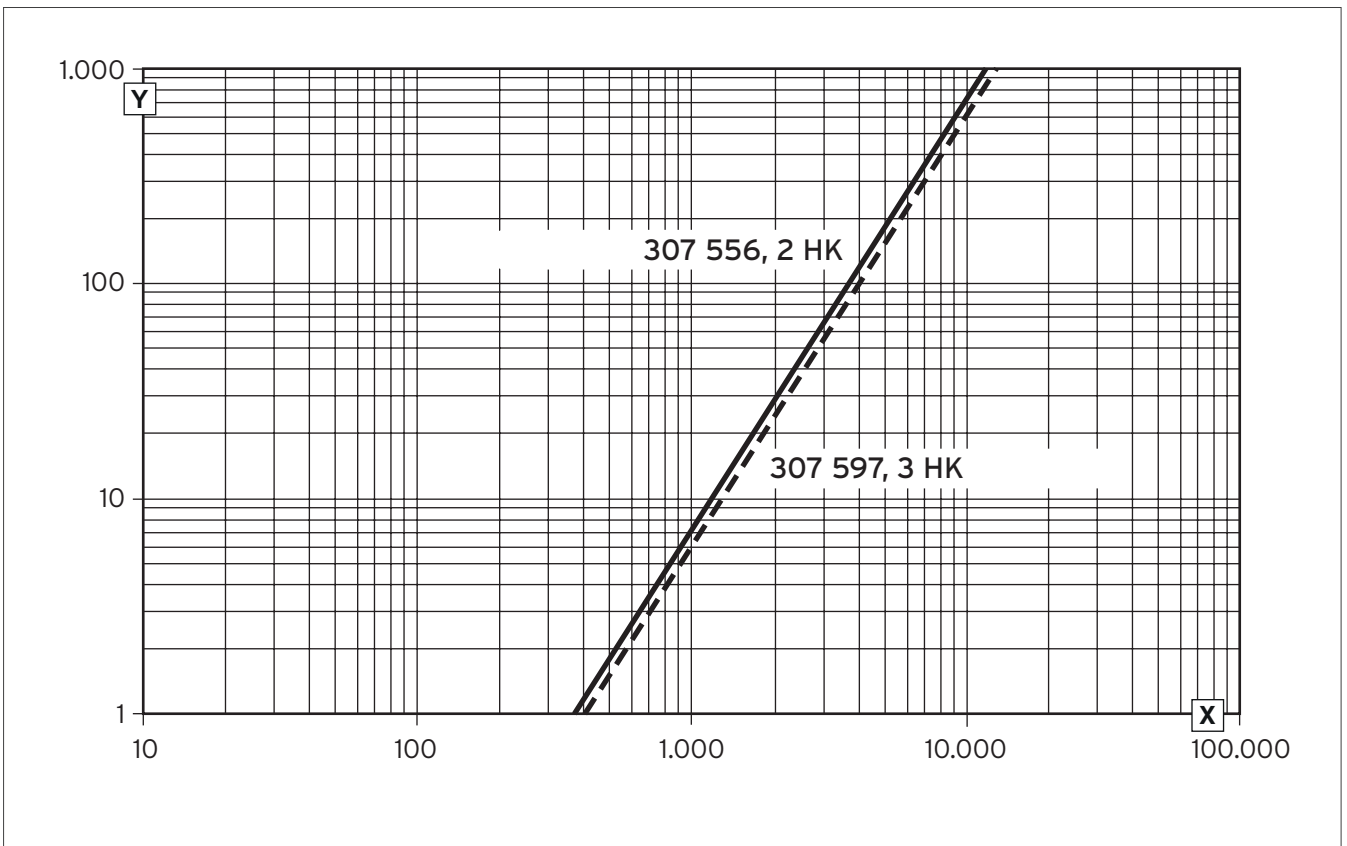


Fig. 886: Pressure loss

Y Pressure loss in mbar
X Volume flow l/h

22.8 Accessories for system separation

22.8.1 PHE S plate heat exchanger

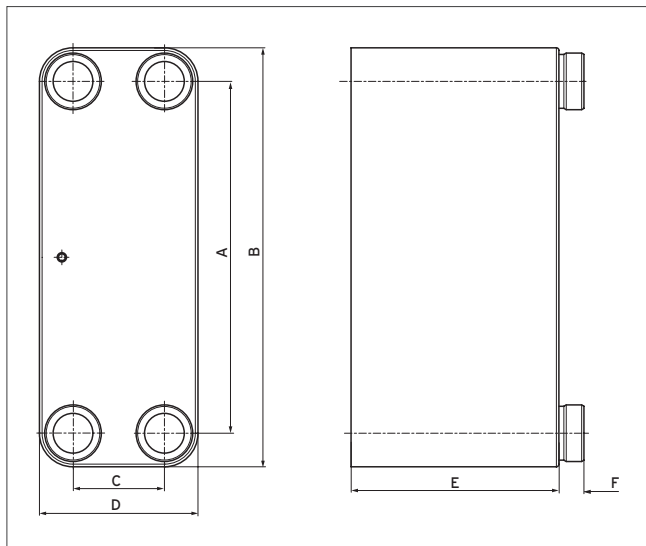


Fig. 887: PHE S heat exchanger

Transferable power: 120 kW (not available in Germany).

Dimensions

Dimension	Unit	PHE S 120-70
A	mm	281
B	mm	335
C	mm	73
D	mm	124
E	mm	166
F	mm	20

Primary side pressure loss

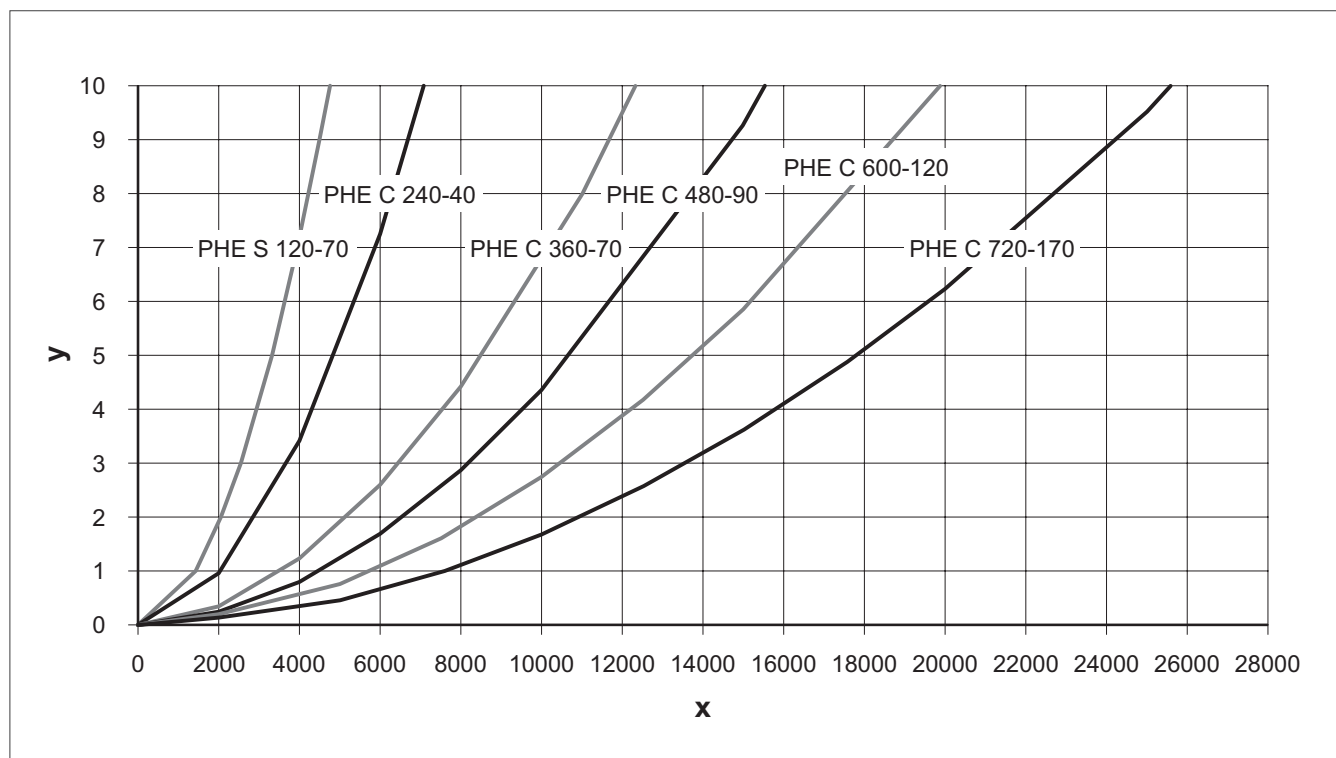
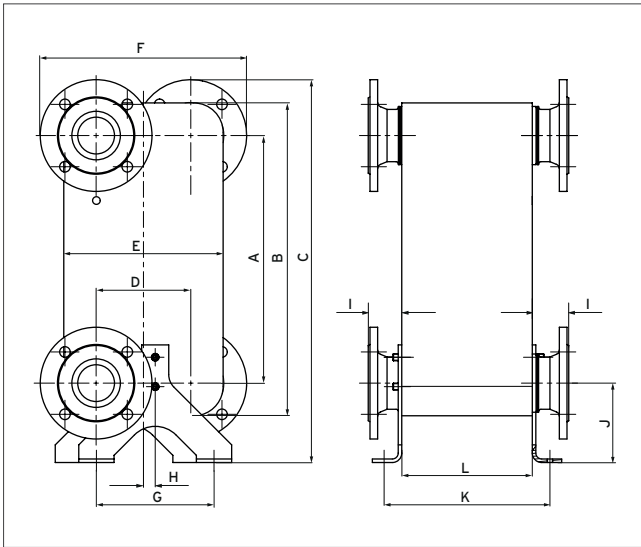


Fig. 888: Primary side pressure loss

Y Pressure loss in kPa
X Mass flow in kg/h

22.8.2 PHE C plate heat exchanger



Transferable power: 240-720 kW (not available in Germany).

Fig. 889: PHE C heat exchanger

Dimensions

Unit	Unit	A	B	C	D	E	F	G	H	I	J	K	L
PHE C 240-40	mm	421	532	636	161	271	321	200	20	86	135	175	105
PHE C 360-70	mm											246	176
PHE C 480-90	mm			651			351			62		292	222
PHE C 600-120	mm											362	292
PHE C 700-170	mm											479	409

Secondary side pressure loss

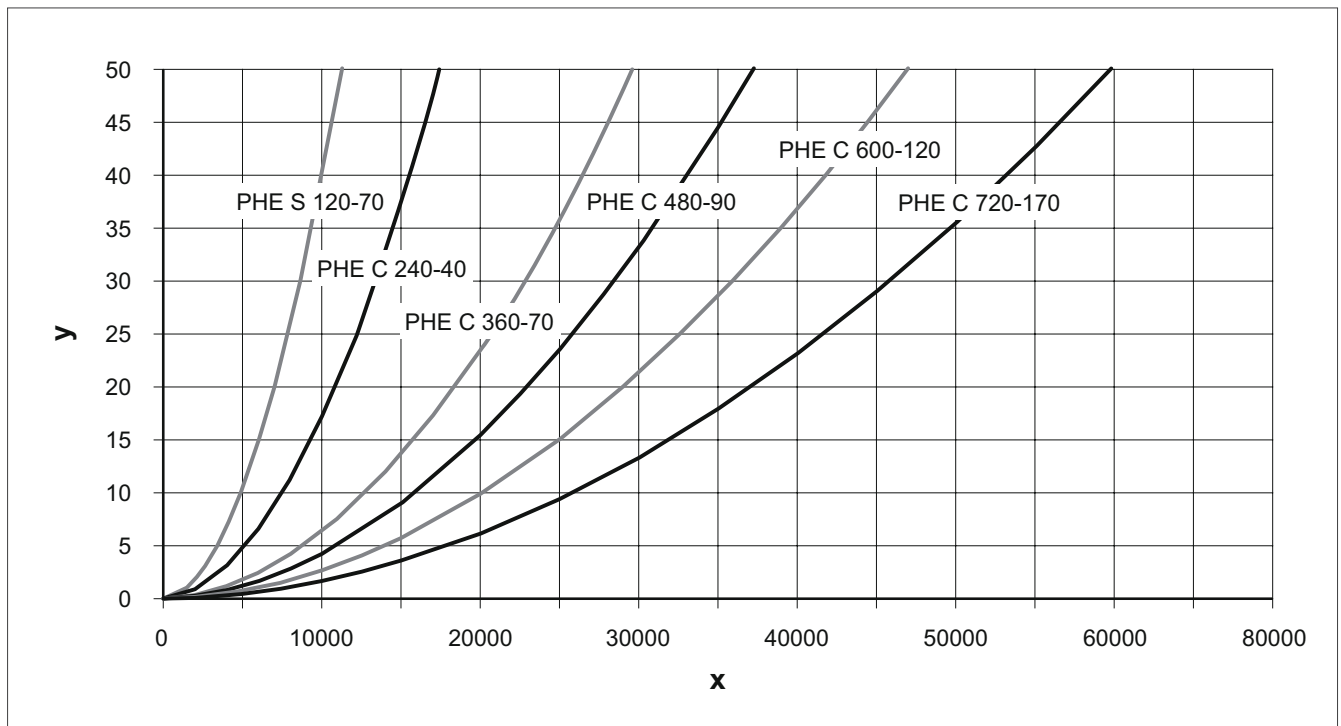
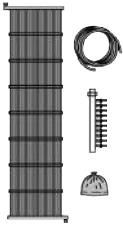



















Fig. 890: Secondary side pressure loss



Y Pressure loss in kPa
X Mass flow in kg/h

22.9 Heat source accessories






Accessories	Description	Order no.
Heat source exploitation		
	<p>VVZ KK 8 compact collector as a heat source for brine-to-water heat pumps, consisting of: 8 x 6 m x 1 m collector mats, 2 x DA 20 mm 100 m PP pipe, 8-outflow manifold incl. flow rate limiter, ball valve and manometer, 8-inflow collecting unit incl. ball valve, 16 x DA 20 45° PP angle, 2 x 8 pcs holding clips for positioning the manifold/collecting unit inflows/outflows and installation instructions Ground collector system that requires little space, is easy and quick to install, can be used for VWF 58/4, VWF 57/4</p> <p>Note: Before installation, observe the installation instructions and planning information. Unsuitable for the following applications: Heating the screed flooring to a high temperature/dry-heating the screed flooring Cooling function</p>	0020022301
	<p>VVZ KK 10 compact collector as a heat source for brine-to-water heat pumps, consisting of: 12 x 6 m x 1 m collector mats, 4 x DA 20 mm 100 m PP pipe, 12-outflow manifold incl. flow rate limiter, ball valve and manometer, 12-inflow collecting unit incl. ball valve, 24 x DA 20 45° PP angle, 2 x 12 pcs holding clips for positioning the manifold/collecting unit inflows/outflows and installation instructions Ground collector system that requires little space, is easy and quick to install, can be used for VWF 88/4, VWF 87/4</p> <p>Note: Before installation, observe the installation instructions and planning information. Unsuitable for the following applications: Heating the screed flooring to a high temperature/dry-heating the screed flooring Cooling function</p>	0020022302
	<p>40 mm installation set, consisting of: 4 x 40 x R 1 1/4 brass connector for 40 x 3.7 PE pipe, 2 x 90° brass threaded elbow joint, 40 x R 1 1/4 for connection to 40 x 3.7 PE pipe, 4 x 90° angular coupling for 40 x 3.7 PE pipe, 2 x T-piece for 40 x 3.7 PE pipe, 2 x empty pipe for routing the eBUS cable in the ground, 1 x pipe marking tape and cable ties for indicating the PE pipes. Can be used for VWF 157/4 with aroCOLLECT, VWF 197/4 with aroCOLLECT</p> <p>Note: For clearances between the outdoor unit and indoor unit of up to 10 m.</p>	0020115490
	<p>50 mm installation set, consisting of: 4 x 50 x R 1 1/4 brass connector for 50 x 4.6 PE pipe, 2 x 90° brass threaded elbow joint, 50 x R 1 1/2 for connection to 50 x 4.6 PE pipe, 4 x 90° angular coupling for 50 x 4.6 PE pipe, 2 x T-piece for 50 x 4.6 PE pipe, 2 x empty pipe for routing the eBUS cable in the ground, 1 x pipe marking tape and cable ties for indicating the PE pipes. Can be used for VWF 157/4 with aroCOLLECT, VWF 197/4 with aroCOLLECT</p> <p>Note: For clearances between the outdoor unit and indoor unit of 10 to 30 m. Not required when using the installation set with Tichelmann.</p>	0020115491
	<p>40 mm installation set between the indoor and outdoor unit, consisting of: 2 x 40 x R 1 1/4 brass connector for 40 x 3.7 PE pipe, 2 x 90° brass threaded elbow joint, 40 x R 1 1/4 for connection to 40 x 3.7 PE pipe, 2 x 90° angular coupling for 40 x 3.7 PE pipe, 1 x empty pipe for routing the eBUS cable in the ground, 1 x pipe marking tape and cable ties for indicating the PE pipes. Can be used for flexoCOMPACT exclusive air-to-water, VWF 57/4 with aroCOLLECT, VWF 87/4 with aroCOLLECT, VWF 117/4 with aroCOLLECT.</p> <p>Note: For clearances between the outdoor unit and indoor unit of up to 10 m.</p>	0020087227
	<p>50 mm installation set between the indoor and outdoor unit, consisting of: 2 x 50 x R 1 1/4 brass connector for 50 x 4.6 PE pipe, 2 x 90° brass threaded elbow joint, 50 x R 1 1/2 for connection to 50 x 4.6 PE pipe, 2 x 90° angular coupling for 50 x 4.6 PE pipe, 1 x empty pipe for routing the eBUS cable in the ground, 1 x pipe marking tape and cable ties for indicating the PE pipes. Can be used for flexoCOMPACT exclusive air-to-water, VWF 57/4 with aroCOLLECT, VWF 87/4 with aroCOLLECT, VWF 117/4 with aroCOLLECT.</p> <p>Note: For clearances between the outdoor unit and indoor unit of 10 to 30 m.</p>	0020087831
	<p>90° angular coupling (2 pcs) for diverting the PE connection pipe for 40 x 3.7 PE pipe</p>	0020112792

Accessories	Description	Order no.
	90° angular coupling (2 pcs) for diverting the PE connection pipe for 50 x 4.6 PE pipe	0020112793
	Installation set for installing the outdoor unit on a flat roof, consisting of: 2 x gravel tray; 2 x 28 mm dia. x 1.5 mm flat roof connection pipes, G 1 1/4; 1 x base panel for flat-roof installation; 1 x heat insulation for connection pipes; 4 x connecting elements for securing the gravel tray to the outdoor unit; 2 x brass threaded joints, R 5/4. Can be used for flexoCOMPACT exclusive air-to-water, flexoTHERM exclusive air-to-water	0020087826
	Installation set for laying a PE pipe at ground level, consisting of: 2 x 28 dia. x 1.5 mm G 1 1/4 connection pipes, 1 x base panel with cut-outs, 2 x R 1 1/4 brass threaded joint. Can be used for flexoCOMPACT exclusive air-to-water, flexoTHERM exclusive air-to-water	0020112803
	PE connection pipe between the indoor and outdoor unit 2 x 10 m, 40 x 3.7 mm Can be used for flexoCOMPACT exclusive air-to-water, flexoTHERM exclusive air-to-water	0020087224
	PE connection pipe between the indoor and outdoor unit 2 x 20 m, 50 x 4.6 mm Can be used for flexoCOMPACT exclusive air-to-water, flexoTHERM exclusive air-to-water	0020087225
	PE connection pipe between the indoor and outdoor unit 2 x 30 m, 50 x 4.6 mm Can be used for flexoCOMPACT exclusive air-to-water, flexoTHERM exclusive air-to-water	0020087226




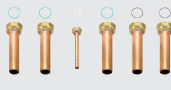


Accessories	Description	Order no.
	Key for PE pipe connecting elements 40/50 mm Can be used for flexoCOMPACT exclusive air-to-water, flexoTHERM exclusive air-to-water	0020115870
	Elevating base for installing the outdoor unit at a higher position (20 cm): Can be used for flexoCOMPACT exclusive air-to-water, flexoTHERM exclusive air-to-water Note: A maximum of two elevating bases may be used per outdoor unit.	0020093781
Brine circuit accessories		
	Solar/brine expansion vessel, 18 litres, wall-hung; resistant to solar fluids for installations up to 10 bar Suitable for flexoTHERM and flexoCOMPACT heat pumps Pre-charge pressure of 2.5 bar (to be reduced to 1.0 bar when used with heat pumps)	302097
	Solar/brine expansion vessel, 25 litres, wall-hung; resistant to solar fluids for installations up to 10 bar Suitable for flexoTHERM and flexoCOMPACT heat pumps Pre-charge pressure of 2.5 bar (to be reduced to 1.0 bar when used with heat pumps)	302098
	Heat pump brine filling unit for simple filling and rinsing of the brine circuit, consisting of: Brine flow/return connections for 35 mm diameter plain-end pipe, connection for brine expansion tank, connection for filling pump, diffusion-tight insulation, manometer. Can be used for flexoCOMPACT exclusive air-to-water, flexoCOMPACT exclusive brine-to-water, flexoTHERM exclusive air-to-water, flexoTHERM exclusive brine-to-water, VWS 220/3, VWS 300/3, VWS 380/3.	0020106265

Accessories	Description	Order no.
	<p>Solar/brine collecting vessel with a collection volume of 9 litres: (W x H x D): 300 mm x 270 mm x 140 mm.</p> <p>Incl. Installation accessories and combined filling/draining cock valve for draining, plastic vessel for absorbing discharged solar/brine fluid.</p> <p>Can be used for auroTHERM exclusive, auroTHERM plus, VFK 145 H, VFK 145 V, flexoCOMPACT exclusive, flexoTHERM exclusive, geoTHERM VWS > 20 kW, VWS 36/4.</p>	0020145563
	<p>20 l ready-mixed brine fluid with frost protection for temperatures down to -30 °C: 44 vol.% ethylene glycol/water mixture.</p> <p>Can be used for flexoCOMPACT exclusive air-to-water, flexoTHERM exclusive air-to-water.</p>	0020096232
	<p>30 l ready-mixed brine fluid with frost protection for temperatures down to -16 °C: 30 vol.% ethylene glycol/water mixture.</p> <p>Can be used for flexoCOMPACT exclusive brine-to-water, flexoTHERM exclusive brine-to-water, geoTHERM VWS > 20 kW, VWS 36/4.</p> <p>Note: Not for flexoTHERM with aroCOLLECT.</p>	0020147182
	<p>VWZ AV automatic air vent set for aroCOLLECT outdoor unit</p> <p>Can be used for flexoCOMPACT exclusive air-to-water, flexoTHERM exclusive air-to-water</p>	0020129148
	<p>Micro-bubble separator for the brine circuit</p> <p>Maximum volume flow 4.8 m³/h</p> <p>Application range: -28 to 100 °C</p>	0020212521
	<p>Heat insulation for the micro-bubble separator</p>	0020212523

22.10 Accessories for hot water generation

Accessories	Description	Order no.
Domestic hot water station accessories		
	1 1/4" circulation pump set Electrical connection: 230 volt/50 Hz, IP 44 Note: Observe the pressure loss of the potable water installation. If it is too high, the minimum volume flow of the domestic hot water station will not be reached.	0010015144
Safety assemblies		
	Cylinder safety assembly for a capacity of up to 200 l For cold water connection and mains overpressure of up to 10 bar, R 1/2 expansion relief valve, non-return valve, isolation valve, R 3/4 connections.	0020060434
	Cylinder safety assembly for a capacity of more than 200 l For cold water connection and mains overpressure of up to 10 bar, R 1 connections	305827
	R 3/4 safety assembly: Passage with stopcock, measuring stub pipes, non-return valve, R 3/4 diaphragm expansion relief valve and two threaded connections with R 1 outside thread for mains overpressure below 6 bar and a cylinder capacity of more than 200 l, can be used for eloSTOR VEH 200 - 400	000473
	Safety assembly with R 3/4 pressure reducer Passage with stopcock, measuring stub pipes, non-return valve, R 3/4 diaphragm expansion relief valve, pressure reducer and two threaded connections with R 1 outside thread for mains overpressure below 16 bar and a cylinder capacity of more than 200 l, can be used for eloSTOR VEH 200 - 400	000474

22.11 Accessories for unit installation

Accessories	Description	Order no.
Heat generator connection accessories		
	90° installation set for flexoCOMPACT , consisting of: 4 x 35 mm dia. 90° pipe for heating and brine with G 11/2 union nut; 2 x 1 1/2" rectangular seal; 2 x O-ring seal (for brine line), 1 x 15 mm dia. 90° pipe for expansion vessel with G 3/4 union nut and seal. Can be used for flexoCOMPACT exclusive .	0020212718
	90° installation set for flexoTHERM , consisting of: 5 x 35 mm dia. 90° pipe for heating and brine with G 11/2 union nut, 3 x 1 1/2" rectangular seal, 2 x O-ring seal (for brine line), 1 x 15 mm dia. 90° pipe for expansion vessel with G 3/4 union nut and seal. Can be used for flexoTHERM exclusive .	0020212716
	Straight installation set for flexoCOMPACT , consisting of: 4 x 35 mm dia. 20 cm long pipe for heating and brine with G 11/2 union nut, 2 x 1 1/2" rectangular seal, 2 x O-ring seal (for brine line), 1 x 15 mm dia. 20 cm long pipe for expansion vessel with G 3/4 union nut and seal. Can be used for flexoCOMPACT exclusive .	0020212717
	Straight installation set for flexoTHERM , consisting of: 5 x 35 mm dia. 20 cm long pipe for heating and brine with G 11/2 union nut, 3 x 1 1/2" rectangular seal, 2 x O-ring seal (for brine line), 1 x 15 mm dia. 20 cm long pipe for expansion vessel with G 3/4 union nut and seal. Can be used for flexoTHERM exclusive .	0020212715
Safety equipment		
	Rp 1/2 boiler safety group for ecoVIT up to 50 kW, fully preassembled, consisting of: Boiler safety group (≤ 65 kW), 3 bar to 50 kW expansion relief valve (Rp 1/2), removable EPP insulation jacket, manometer, automatic air vent, filling device, 3/4" sealing ring, connection pipe with insulation and 3/4" and 1" union nuts, 1" sealing ring (2 pcs), brass connection bracket with 1" union nut, G1 x R 3/4 adapter nipple with O-ring (enclosure).	307591
Other		
	Tundish to connect to the overflow line: R 1 tundish with siphon and collar.	000376



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