



Hoval

Hoval Product Overview

Innovative solutions for heating, hot water and ventilation

Shaping a Sustainable Future

Innovation, efficiency and sustainability in heating and ventilation

Internationally recognised as a leader in commercial heating and ventilation, Hoval goes beyond simply supplying products.

We provide complete, tailored solutions designed to meet the unique needs of every site. With a diverse product range - including heat pumps, gas condensing boilers, and domestic water heating and storage tanks - our expert area sales managers across the UK are ready to guide customers towards the most efficient and environmentally conscious solutions.

At Hoval, our mission is clear:

"Together, we create sustainable Hoval solutions for everyone to enjoy a lifetime of feel-good climate, stress-free."

This mission drives everything we do, from developing innovative products to building strong relationships with our customers and the community.

We are guided by four key values that define who we are and how we operate:

- **Family-spirited:** We foster a sense of belonging and collaboration, treating our team and community with respect and care.
- **Responsible:** We are committed to ethical and sustainable practices, ensuring a positive impact on the environment and society.
- **Technology-enthused:** Passionate about cutting-edge technology, we create advanced, efficient and reliable solutions.
- **Solution-focused:** We understand our customers' needs and provide tailored solutions that deliver exceptional results.

Our motto "responsibility for energy and environment" encapsulates our unwavering commitment to sustainability. We continuously strive to minimise our environmental footprint through innovative design, efficient manufacturing, and renewable energy integration.



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innovation, efficiency and performance at a glance



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Heat Pumps

The heat pump for commercial use,
efficient, sustainable and future-proof

Heat pumps are a highly sustainable and future-proof heating solution, operating without fossil fuels like oil or gas, heating buildings while significantly reducing carbon emissions. However, for larger buildings such as industrial facilities, hotels, and apartment blocks, several key factors must be considered when selecting the right heat pump system.

Hoval offers a range of heat pumps designed to meet varying demands, ensuring optimal efficiency and performance. In buildings with higher heat requirements, multiple heat pumps can be combined into a cascade system, delivering increased power and flexibility. As with single-family homes, keeping flow temperatures as low as possible is crucial for maximizing efficiency—this can be achieved through good thermal insulation or panel heating systems.

For existing buildings with higher heat demand, a hybrid system that integrates a heat pump with a gas heating system can provide an effective solution, offering both efficiency and reliability.

Hoval's heat pump portfolio includes:

- Belaria® fit (40-70)
- Belaria® pro (24)
- Belaria® pro (40, 50)
- Belaria® fit WLP
- Belaria® fit WLH



Hoval Belaria® fit (40-70)

Air/water heat pump

- Modulating air/water heat pump in compact design for outdoor installation
- For heating and cooling in cascades up to 16 machines
- Output modulation 30-100 %
- Flow temperatures up to 60 °C
- Supporting frame structure with powder coating (RAL 9001)
- External cladding made of surface-coated steel sheet (RAL 9001)
- Multi-row fin evaporator with large surface area with hydrophilic coating and speed-controlled axial fans
- Condense drip tray with electrical heating
- Safety valve 6 bar
- Flow switch
- Drain valve
- Temperature sensor
- Pressure relief valve
- Refrigerant R32
- Hermetically sealed compressors with inverter control
- Copper-soldered plate heat exchanger made of stainless steel with polypropylene insulation and frost protection heating
- Main switch
- Electrical box internally wired ready for connection
- Voltage-free contact for ON/OFF
- Voltage-free contact for summer/winter changeover

Including additional PCB for expanded functions

The available digital contacts enable the following remote functions:

- Remote switch-on/off
- Heating/cooling (summer/winter switch)
- Water heating
- Two-zone management
- SG ready
- Energy supply company lock (remote operation on/off)
- Demand limit
- Activation of "Super Silent" version (whisper mode, can be selected on user interface)

The additional PCB does not allow the simultaneous use of digital inputs and Modbus signals.

Condensate drain

- It must be ensured that the condensate produced can be absorbed to a sufficient extent by a gravel bed (see configuration and connection diagram).

Hydraulic connections

- Heating connections with supplied Victaulic couplings

Electrical connections

- See installation instructions

TopTronic® E controller (option)

For enabling the Belaria® fit and regulating the plant



Model range

Belaria® fit type

	35 °C	55 °C	Max. flow °C	Heat output ¹⁾ A2W35 kW	Cooling capacity ¹⁾ A35W18 kW
(40)	A+++	A++	60	22.7-40.6	33.8-59.3
(53)	A++	A+	60	25.4-53.2	37.5-78.0
(70)	A++	A+	60	41.0-71.0	58.5-104.0
	A+++ → D	A+++ → D			

¹⁾ Modulation range

Operator terminal

- Operator terminal with graphical display and function keys
- Control and monitoring of the modulating heat pumps
- Setting the heating and cooling curves
- Selection of the operating mode: Standard, Silent and Super Silent
- Display of the current operating parameters
- The operator terminal can be installed in any room.
- Can also be used as thermostat
- Control also possible via Modbus
- Operation available in 16 languages
- Included in the scope of delivery of the Belaria® fit



Belaria® fit (40-70)

Type		(40)	(53)	(70)
• Energy efficiency class of the compound system with control (A+++ → D)	35 °C/55 °C	A+++ / A++	A++ / A++	A++ / A+
• Energy efficiency heating "moderate climate" 35/55 °C $\eta_{S,h}$ ¹⁾	%	175 / 127	173 / 125	169 / 123
• Seasonal coefficient of performance heating moderate climate 35/55 °C	SCOP	4.46 / 3.24	4.41 / 3.19	4.29 / 3.16
• Energy efficiency cooling $\eta_{S,c}$	%	170.0	167.0	166.0
• Seasonal energy efficiency cooling	SEER	4.3	4.3	4.2
Max. performance data heating and cooling in acc. with EN				
• Heat output A2W35	kW	40.6	53.2	71
• Coefficient of performance A2W35	COP	3.6	3.4	3.1
• Heat output A-7W35	kW	30.7	40.5	59.2
• Coefficient of performance A-7W35	COP	2.9	2.8	2.7
• Cooling capacity A35W18	kW	59.3	78	104
• Energy efficiency ratio A35W18	EER	4.2	3.5	3.7
• Cooling capacity A35W7	kW	43.9	56.9	80.4
• Energy efficiency ratio A35W7	EER	3.1	2.9	2.9
Sound data according to EN ISO 9614-2				
• Sound power level "Standard"	dB(A)	75	78	81
• Sound power level "Supersilent" ²⁾	dB(A)	71	72	75
Hydraulic data				
• Maximum flow temperature	°C	60	60	60
• Nominal heating water quantity heating ΔT 5 K (A7W35)	m ³ /h	9.4	11.5	15.0
• Nominal heating water quantity heating ΔT 8 K (A7W35)	m ³ /h	5.9	7.2	9.4
• Nominal heating water quantity cooling ΔT 4 K (A35W7)	m ³ /h	9.5	12.3	17.3
• Nominal heating water quantity cooling ΔT 4 K (A35W18)	m ³ /h	12.8	16.8	22.4
• Max. operating pressure on the heating side	bar		6	
• Flow/return connection heating		2"	2"	2"
• Built-in fan		2 axial fans	2 axial fans	3 axial fans
• Nominal air quantity	m ³ /h	23040	27000	40500
Cooling technical data				
• Compressor stages		modulating	modulating	modulating
• Refrigerant		R32	R32	R32
• Refrigeration circuits		1	1	1
• Refrigerant filling quantity	kg	14	14	17.5
• Compressor oil type		DAPHNE HERMETIC OIL FW68S		
• Compressor oil filling quantity	l	4.6	4.6	6
Electrical data				
• Connections	V/Hz	3~400/50	3~400/50	3~400/50
• Starting current (compressor and fan)	A	20.3	20.3	31
• Main current fuse ³⁾	A	50	50	80
Dimensions/Weight				
• Dimensions (H x W x D)	mm	1480 x 2300 x 1060		1505 x 3325 x 1100
• Weight	kg	513	513	830

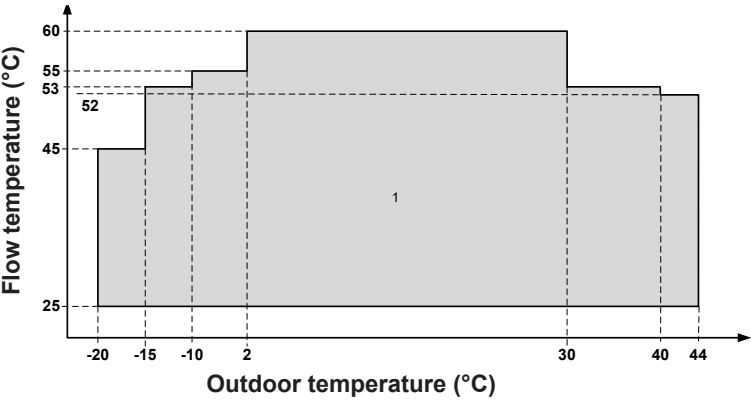
¹⁾ 2 % can be added for class II heat pump incl. control.

²⁾ Reduced heat outputs according to heating performance data

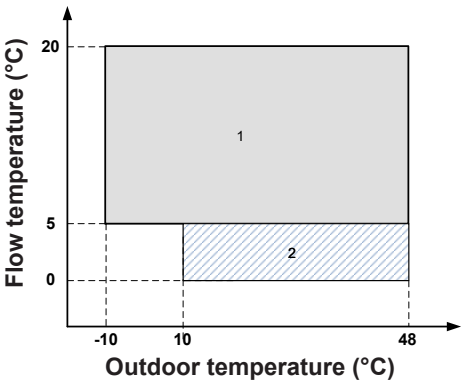
³⁾ Country-specific regulations must be observed. Selection of the fuse size by the electrician.

Diagrams of areas of application

Heating and hot water Belaria® fit (40-70)



Cooling Belaria® fit (40-70)



- 1 Normal operating range
- 2 Operating range in which the use of ethylene glycol is mandatory

Sound pressure level

Standard Type	Sound pressure level frequency band [Hz]								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
Belaria® fit (40)	76	75	70	71	73	65	60	50	58	75
Belaria® fit (53)	76	75	68	72	76	69	62	52	61	78
Belaria® fit (70)	59	67	70	75	79	73	68	60	63	81

Super Silent (whisper mode)										
Type	Sound pressure level frequency band [Hz]								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
Belaria® fit (40)	50	62	67	67	69	62	57	48	54	71
Belaria® fit (53)	73	72	67	68	70	62	57	47	55	72
Belaria® fit (70)	56	69	69	72	69	67	67	59	57	75

The sound levels refer to the nominal conditions of the heat pumps.

The sound pressure level refers to a distance of 1 meter from the outer surface of the unit during operation in the open.

The noise levels are determined according to the tensiometric method (EN ISO 9614-2).

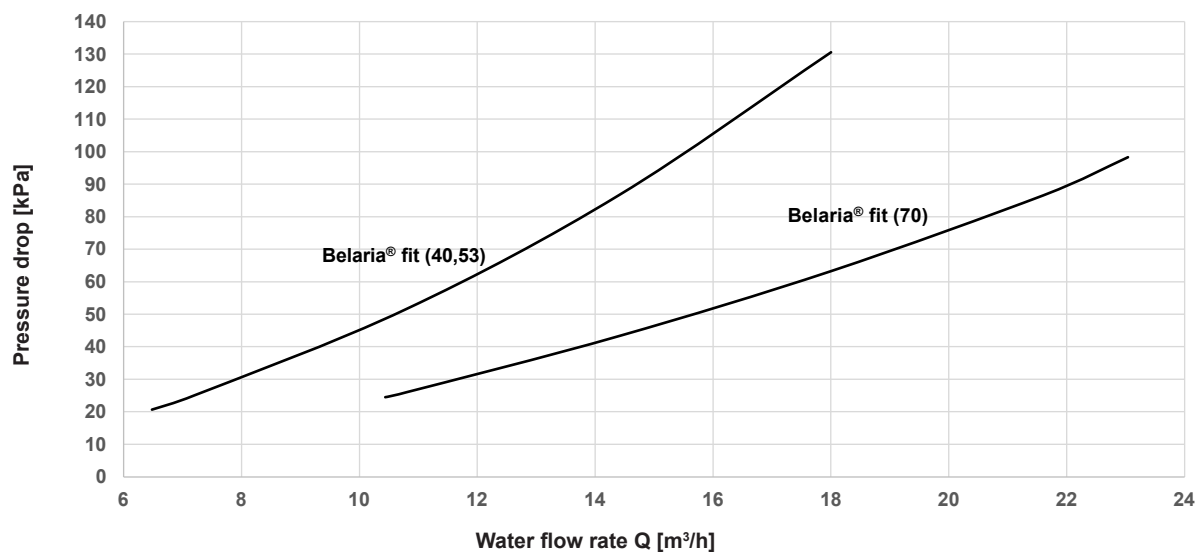
The data refers to the following conditions in heating mode:

- Water in the internal heat exchanger = 30/35 °C
- Ambient temperature 7 °C

The data refers to the following conditions in cooling mode:

- Water in the internal heat exchanger = 12/7 °C
- Ambient temperature 35 °C

Pressure drop of the internal heat exchanger



The water pressure drops are calculated assuming an average water temperature of 7 °C.

Permitted water flow rates

		Belaria® fit (40,53)	Belaria® fit (70)
Minimum flow rate	[m³/h]	6.5	10.4
Maximum flow rate	[m³/h]	18.0	23.0

Correction factors when using glycol

ETHYLENE GLYCOL percentage by weight %	5	10	15	20	25	30	35	40	45	50
Freezing point °C	-2	-3.9	-6.5	-8.9	-11.8	-15.6	-19	-23.4	-27.8	-32.7
Safety temperature	3	1	-1	-4	-6	-10	-14	-19	-23.8	-29.4
Correction factor for the refrigerating capacity/heat output of the unit	0.997	0.994	0.990	0.986	0.981	0.976	0.970	0.964	0.957	0.950
Correction factor for power consumption of the compressor	0.999	0.999	0.998	0.997	0.996	0.996	0.995	0.994	0.993	0.993
Correction factor for the pressure drop in the system	1.016	1.035	1.056	1.080	1.106	1.135	1.166	1.200	1.236	1.275
PROPYLENE GLYCOL percentage by weight %	5	10	15	20	25	30	35	40	45	50
Freezing point °C	-2	-3.9	-6.5	-8.9	-11.8	-15.6	-19	-23.4	-27.8	-32.7
Safety temperature	3	1	-1	-4	-6	-10	-14	-19	-23.8	-29.4
Correction factor for the refrigerating capacity/heat output of the unit	0.995	0.990	0.983	0.976	0.968	0.960	0.950	0.939	0.928	0.916
Correction factor for power consumption of the compressor	0.999	0.997	0.995	0.993	0.991	0.988	0.986	0.983	0.980	0.977
Correction factor for the pressure drop in the system	1.027	1.058	1.093	1.133	1.176	1.224	1.276	1.332	1.393	1.457

The specified correction factors refer to water-glycol mixtures that are used to prevent frost formation on the heat exchangers of the water circuit during the winter break.

For the exact specifications of the frost protection agent used, refer to the respective manufacturer's data sheet!

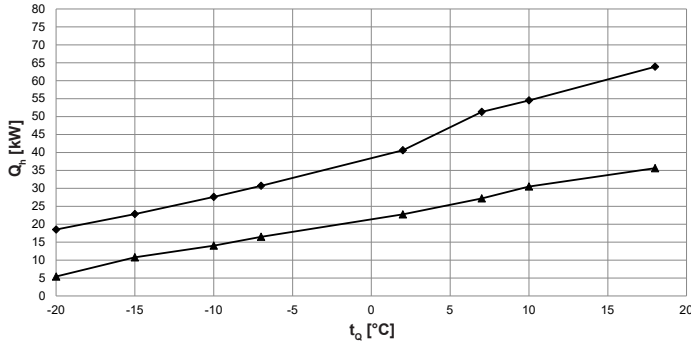
Performance data – heating

Maximum heat output allowing for defrosting losses

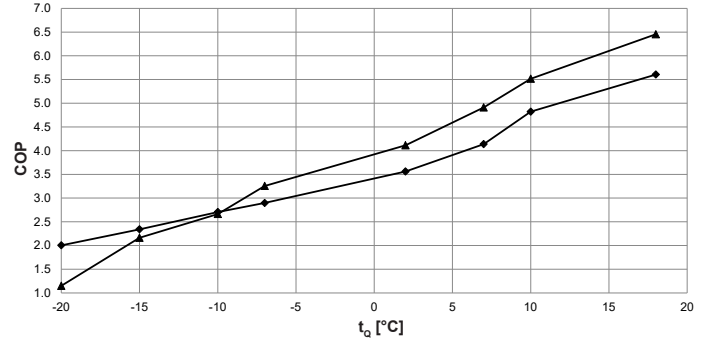
Data according to EN 14511:2018

Belaria® fit (40)

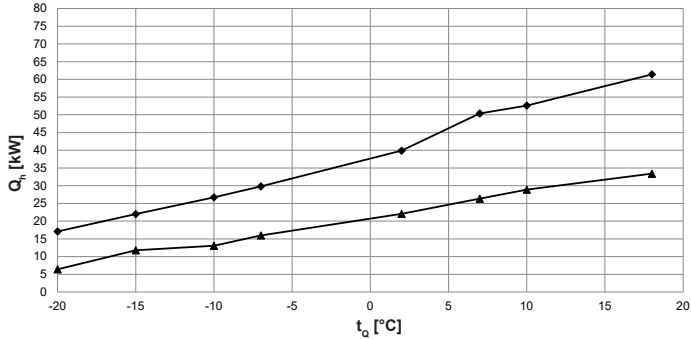
Heat output – t_{VL} 35 °C



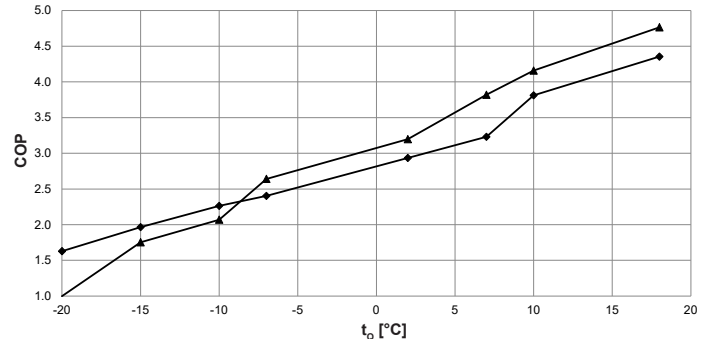
Coefficient of performance – t_{VL} 35 °C



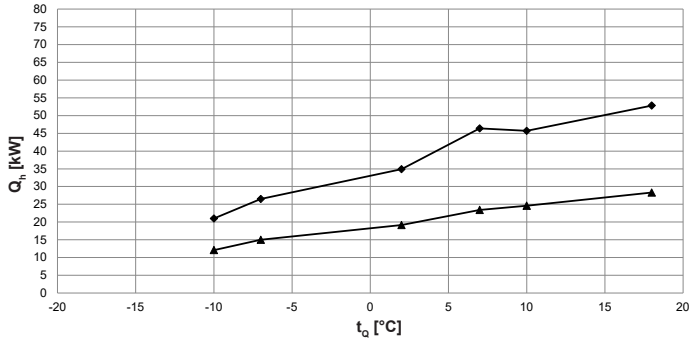
Heat output – t_{VL} 45 °C



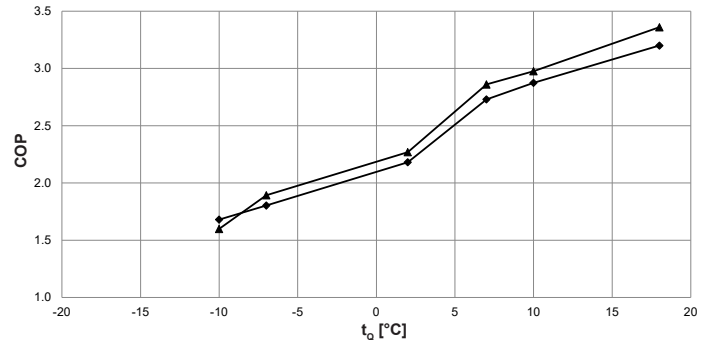
Coefficient of performance – t_{VL} 45 °C



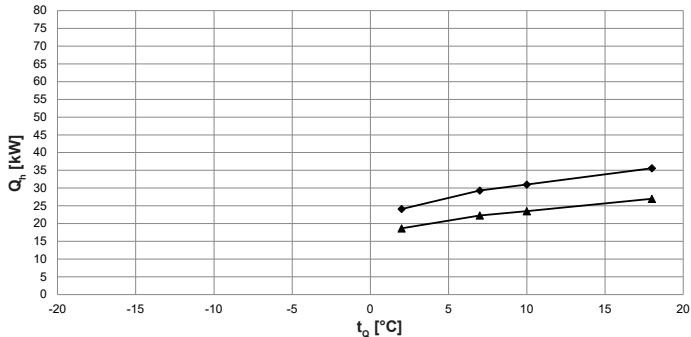
Heat output – t_{VL} 55 °C



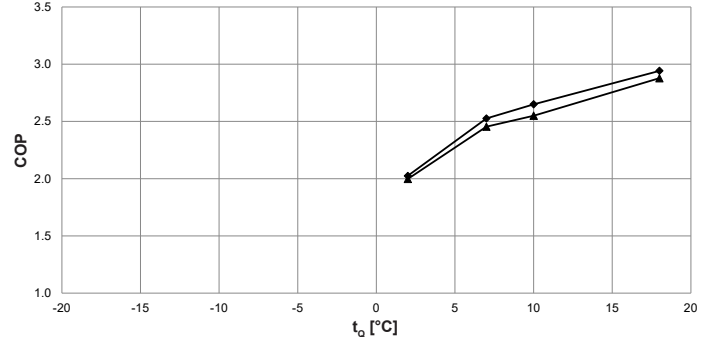
Coefficient of performance – t_{VL} 55 °C



Heat output – t_{VL} 60 °C



Coefficient of performance – t_{VL} 60 °C



t_{VL} = heating flow temperature (°C)

t_a = source temperature (°C)

Q_h = heat output at full load (kW), measured in accordance with standard EN 14511

COP = Coefficient of performance for the overall unit in accordance with standard EN 14511

◆ maximum output
▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

Flow temperature	°C	35	40	45	50	55	60
Heat output factor	-	0.87	0.83	0.83	0.80	0.80	0.60
Power consumption factor	-	0.88	0.84	0.84	0.77	0.77	0.60
COP factor	-	1.00	1.00	1.00	1.03	1.03	1.00

Performance data – heating

Maximum heat output allowing for defrosting losses

Data according to EN 14511:2018

Belaria® fit (40)

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
35	-20	18.5	9.2	2.0	5.4	4.7	1.1
	-15	22.8	9.7	2.3	10.7	5.0	2.2
	-10	27.6	10.2	2.7	14.0	5.3	2.7
	-7	30.7	10.6	2.9	16.5	5.1	3.3
	2	40.6	11.4	3.6	22.7	5.5	4.1
	7	51.3	12.4	4.1	27.2	5.5	4.9
	10	54.5	11.3	4.8	30.5	5.5	5.5
	18	63.9	11.4	5.6	35.6	5.5	6.5
40	-20	17.8	9.7	1.8	7.5	5.9	1.3
	-15	22.3	10.4	2.1	10.2	5.3	1.9
	-10	27.1	11.0	2.5	13.5	5.7	2.4
	-7	30.2	11.4	2.6	16.3	5.5	2.9
	2	39.9	12.4	3.2	22.2	6.2	3.6
	7	50.8	12.4	4.1	28.1	6.2	4.6
	10	53.5	12.5	4.3	29.6	6.2	4.8
	18	62.7	12.7	4.9	34.5	6.2	5.6
45	-20	17.1	10.5	1.6	6.4	6.4	1.0
	-15	22.0	11.2	2.0	11.8	6.7	1.8
	-10	26.7	11.8	2.3	13.1	6.3	2.1
	-7	29.8	12.4	2.4	16.0	6.0	2.6
	2	39.9	13.6	2.9	22.1	6.9	3.2
	7	50.4	15.6	3.2	26.4	6.9	3.8
	10	52.6	13.8	3.8	28.9	7.0	4.2
	18	61.4	14.1	4.4	33.4	7.0	4.8
50	-20	-	-	-	-	-	-
	-15	19.7	12.4	1.6	11.4	7.4	1.5
	-10	24.1	13.2	1.8	12.5	6.7	1.9
	-7	27.1	13.6	2.0	15.3	6.8	2.3
	2	35.6	14.7	2.4	19.6	7.6	2.6
	7	44.2	14.3	3.1	24.2	7.4	3.3
	10	46.8	14.5	3.2	25.5	7.4	3.4
	18	54.4	14.9	3.7	29.4	7.5	3.9
55	-20	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	21.0	12.5	1.7	12.1	7.6	1.6
	-7	26.5	14.7	1.8	15.0	7.9	1.9
	2	34.9	16.0	2.2	19.1	8.4	2.3
	7	46.4	17.0	2.7	23.4	8.2	2.9
	10	45.7	15.9	2.9	24.6	8.3	3.0
	18	52.8	16.5	3.2	28.3	8.4	3.4
60	-20	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	-	-	-	-	-	-
	-7	-	-	-	-	-	-
	2	24.1	11.9	2.0	18.7	9.3	2.0
	7	29.3	11.6	2.5	22.3	9.1	2.5
	10	31.0	11.7	2.6	23.5	9.2	2.6
	18	35.6	12.1	2.9	27.0	9.4	2.9

t_{VL} = heating flow temperature (°C)

t_Q = source temperature (°C)

Q_h = heat output at full load (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = Coefficient of performance for the overall unit in accordance with standard EN 14511

Output correction factors in Super Silent mode (whisper mode)

Flow temperature	°C	35	40	45	50	55	60
Heat output factor	-	0.87	0.83	0.83	0.80	0.80	0.60
Power consumption factor	-	0.88	0.84	0.84	0.77	0.77	0.60
COP factor	-	1.00	1.00	1.00	1.03	1.03	1.00

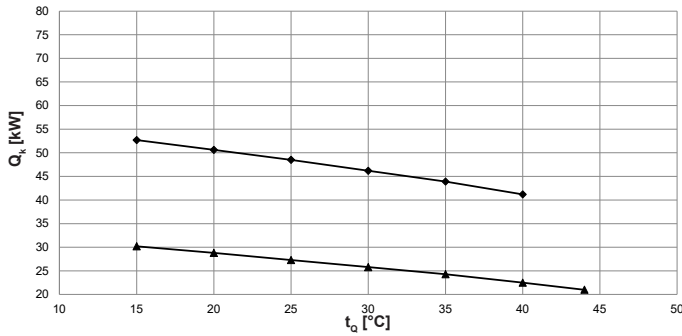
Performance data – cooling

Maximum cooling capacity

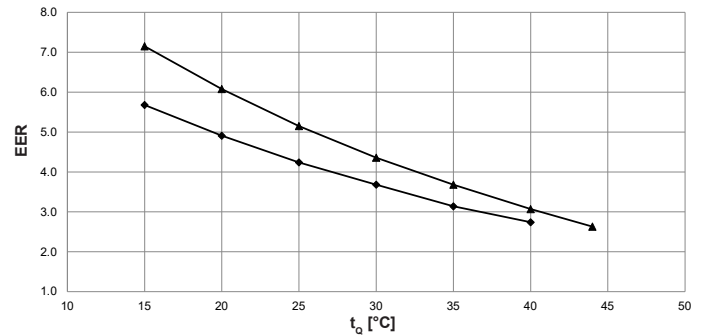
Data according to EN 14511:2018

Belaria® fit (40)

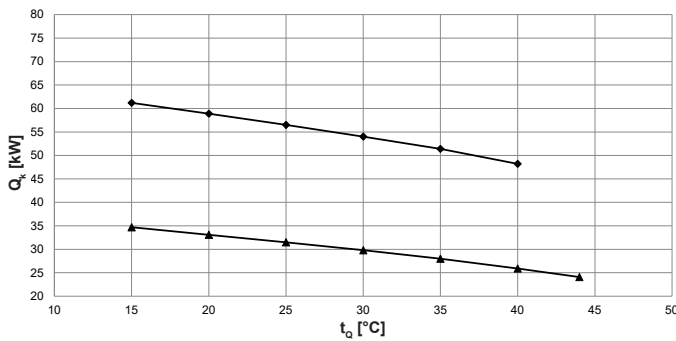
Cooling capacity – t_{VL} 7 °C



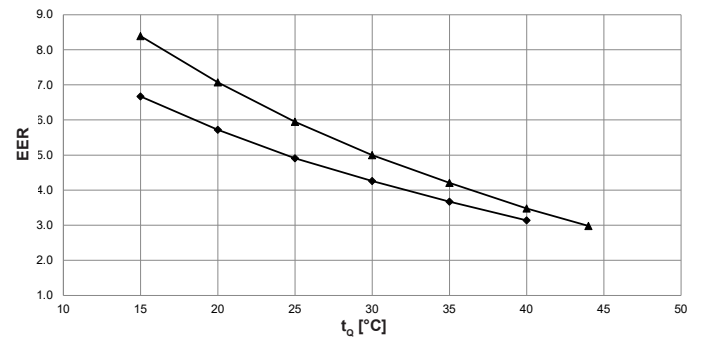
Energy efficiency ratio – t_{VL} 7 °C



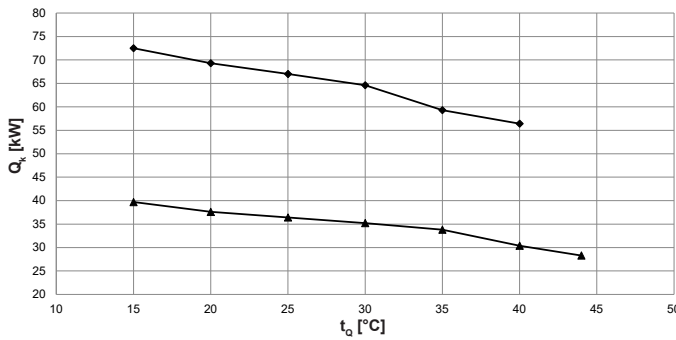
Cooling capacity – t_{VL} 12 °C



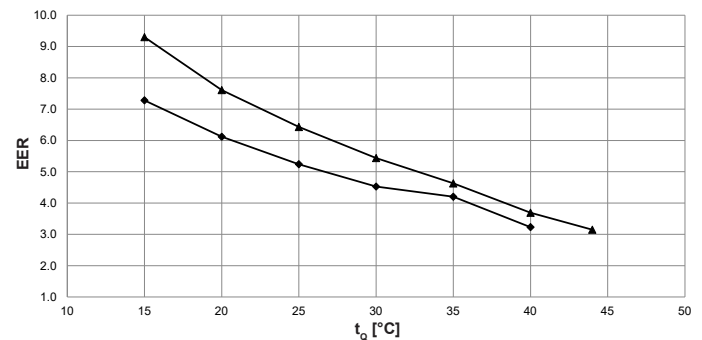
Energy efficiency ratio – t_{VL} 12 °C



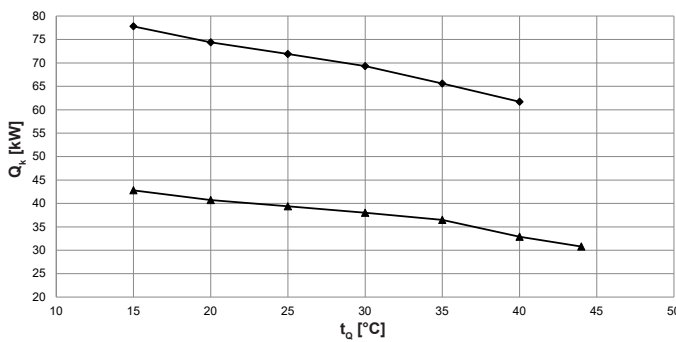
Cooling capacity – t_{VL} 18 °C



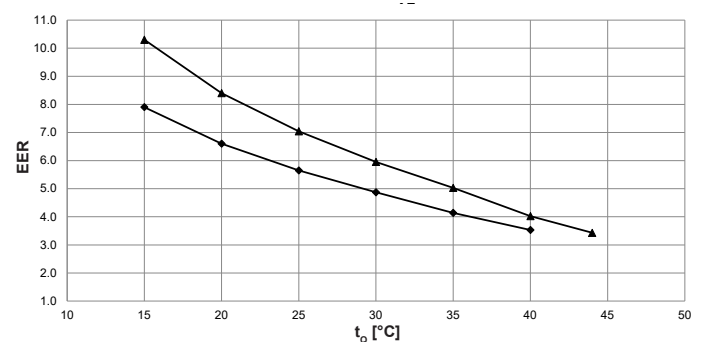
Energy efficiency ratio – t_{VL} 18 °C



Cooling capacity – t_{VL} 20 °C



Energy efficiency ratio – t_{VL} 20 °C



t_{VL} = cooling water flow temperature (°C)

t_o = source temperature (°C)

Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511

EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

◆ maximum output

▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

Cooling capacity factor - 0.87

Power consumption factor - 0.87

EER factor - 1.00

Performance data – cooling

Maximum cooling capacity

Data according to EN 14511:2018

Belaria® fit (40)

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_k kW	P kW	EER	Q_k kW	P kW	EER
7	15	52.7	9.3	5.7	30.2	4.2	7.2
	20	50.6	10.3	4.9	28.8	4.7	6.1
	25	48.5	11.4	4.2	27.3	5.3	5.2
	30	46.2	12.6	3.7	25.8	5.9	4.4
	35	43.9	14.0	3.1	24.3	6.6	3.7
	40	41.2	15.0	2.7	22.5	7.3	3.1
	44	-	-	-	21.0	8.0	2.6
10	15	57.8	9.2	6.3	32.9	4.2	7.9
	20	55.6	10.3	5.4	31.4	4.7	6.7
	25	53.3	11.5	4.6	29.8	5.3	5.6
	30	50.9	12.7	4.0	28.2	5.9	4.7
	35	48.4	13.9	3.5	26.5	6.6	4.0
	40	45.4	15.2	3.0	24.5	7.4	3.3
	44	-	-	-	22.9	8.1	2.8
12	15	61.2	9.2	6.7	34.7	4.1	8.4
	20	58.9	10.3	5.7	33.1	4.7	7.1
	25	56.5	11.5	4.9	31.5	5.3	6.0
	30	54.0	12.7	4.3	29.8	6.0	5.0
	35	51.4	14.0	3.7	28.0	6.7	4.2
	40	48.2	15.4	3.1	25.9	7.4	3.5
	44	-	-	-	24.1	8.1	3.0
15	15	68.2	10.1	6.8	36.5	4.4	8.3
	20	65.2	11.4	5.7	34.6	5.1	6.8
	25	62.1	12.8	4.9	32.5	5.8	5.7
	30	60.0	14.2	4.2	31.3	6.5	4.8
	35	57.7	15.8	3.7	30.3	7.4	4.1
	40	54.4	17.3	3.1	28.0	8.2	3.4
	44	-	-	-	26.2	9.0	2.9
18	15	72.5	10.0	7.3	39.7	4.3	9.3
	20	69.3	11.3	6.1	37.6	4.9	7.6
	25	67.0	12.8	5.2	36.4	5.7	6.4
	30	64.6	14.3	4.5	35.2	6.5	5.4
	35	59.3	14.1	4.2	33.8	7.3	4.6
	40	56.4	17.5	3.2	30.4	8.2	3.7
	44	-	-	-	28.3	9.0	3.2
20	15	77.8	9.8	7.9	42.8	4.2	10.3
	20	74.4	11.3	6.6	40.7	4.8	8.4
	25	71.9	12.7	5.7	39.4	5.6	7.0
	30	69.3	14.2	4.9	38.0	6.4	6.0
	35	65.6	15.8	4.1	36.5	7.3	5.0
	40	61.7	17.5	3.5	32.9	8.2	4.0
	44	-	-	-	30.8	9.0	3.4

t_{VL} = cooling water flow temperature (°C)

t_Q = source temperature (°C)

Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

Output correction factors in Super Silent mode (whisper mode)

Cooling capacity factor - 0.87

Power consumption factor - 0.87

EER factor - 1.00

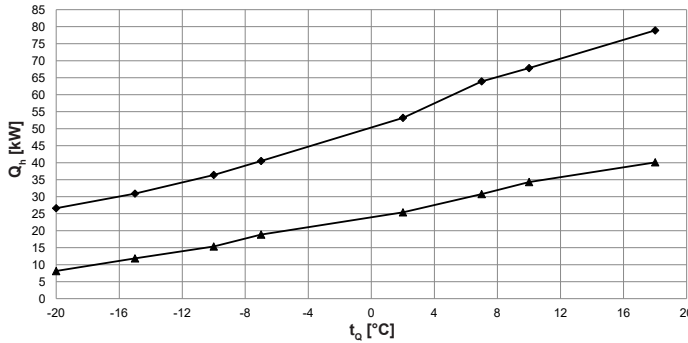
Performance data – heating

Maximum heat output allowing for defrosting losses

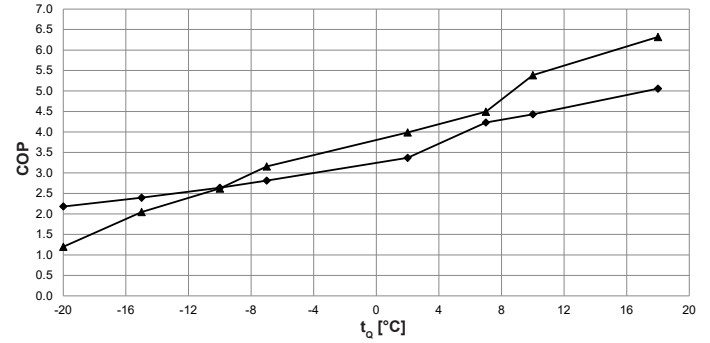
Data according to EN 14511:2018

Belaria® fit (53)

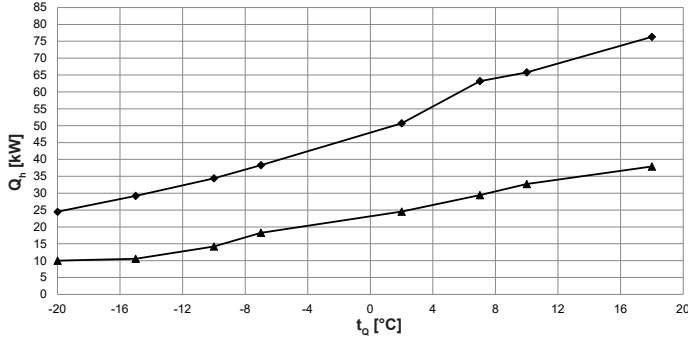
Heat output – t_{VL} 35 °C



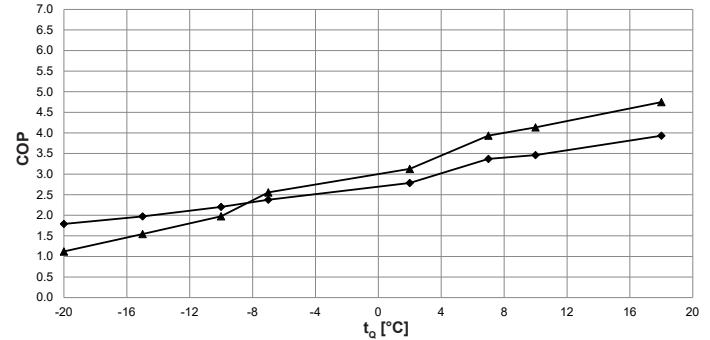
Coefficient of performance – t_{VL} 35 °C



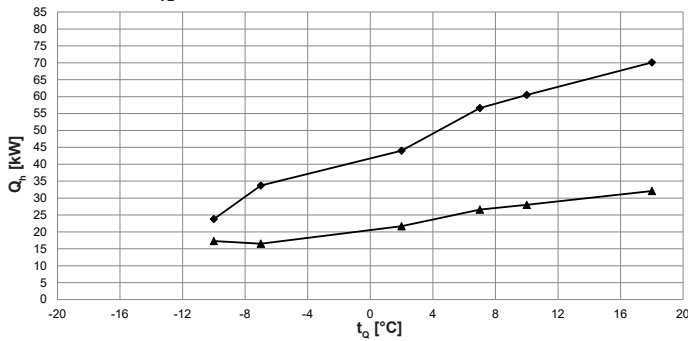
Heat output – t_{VL} 45 °C



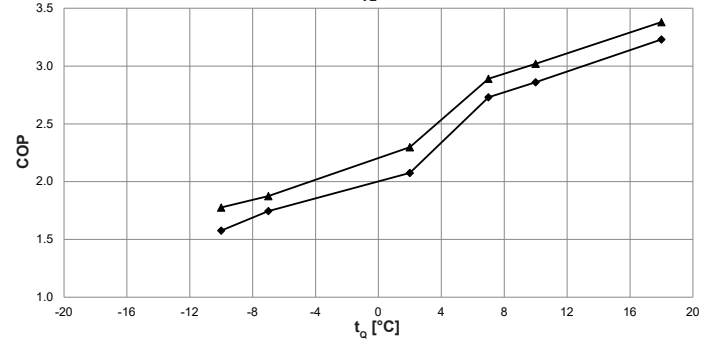
Coefficient of performance – t_{VL} 45 °C



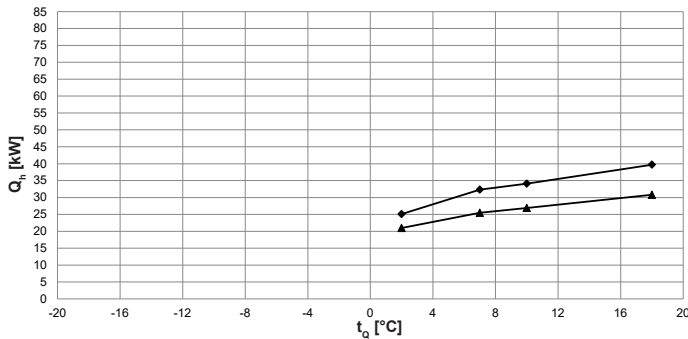
Heat output – t_{VL} 55 °C



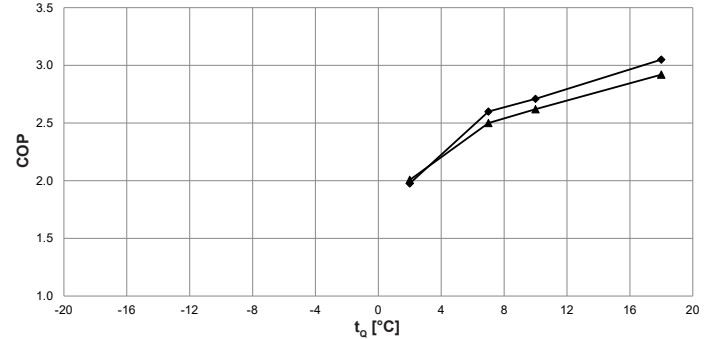
Coefficient of performance – t_{VL} 55 °C



Heat output – t_{VL} 60 °C



Coefficient of performance – t_{VL} 60 °C



t_{VL} = heating flow temperature (°C)

t_o = source temperature (°C)

Q_h = heat output at full load (kW), measured in accordance with standard EN 14511

COP = Coefficient of performance for the overall unit in accordance with standard EN 14511

◆ maximum output

▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

Flow temperature	°C	35	40	45	50	55	60
Heat output factor	-	0.87	0.79	0.79	0.80	0.80	0.82
Power consumption factor	-	0.80	0.74	0.74	0.80	0.80	0.80
COP factor	-	1.04	1.07	1.07	1.02	1.02	1.03

Performance data – heating

Maximum heat output allowing for defrosting losses

Data according to EN 14511:2018

Belaria® fit (53)

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
35	-20	26.6	12.2	2.2	8.1	6.8	1.2
	-15	30.9	12.9	2.4	11.9	5.8	2.0
	-10	36.4	13.8	2.6	15.3	5.9	2.6
	-7	40.5	14.4	2.8	18.9	6.0	3.2
	2	53.2	15.8	3.4	25.4	6.4	4.0
	7	63.9	15.1	4.2	30.8	6.8	4.5
	10	67.8	15.3	4.4	34.3	6.4	5.4
	18	78.9	15.6	5.1	40.1	6.3	6.3
40	-20	25.5	12.9	2.0	11.0	8.5	1.3
	-15	30.0	13.8	2.2	11.3	6.3	1.8
	-10	35.1	14.5	2.4	14.9	6.6	2.3
	-7	39.5	14.9	2.7	18.7	6.5	2.9
	2	51.7	16.6	3.1	25.0	7.0	3.5
	7	63.5	16.8	3.8	31.6	7.0	4.5
	10	66.8	17.0	3.9	33.5	7.1	4.7
	18	77.7	17.4	4.5	39.0	7.1	5.5
45	-20	24.5	13.7	1.8	10.0	8.9	1.1
	-15	29.2	14.8	2.0	10.6	6.8	1.5
	-10	34.4	15.6	2.2	14.2	7.2	2.0
	-7	38.3	16.1	2.4	18.3	7.1	2.6
	2	50.7	18.2	2.8	24.5	7.8	3.1
	7	63.2	18.7	3.4	29.4	7.8	3.9
	10	65.8	19.0	3.5	32.7	7.9	4.1
	18	76.3	19.4	3.9	37.9	8.0	4.7
50	-20	-	-	-	-	-	-
	-15	26.5	16.1	1.6	9.5	7.4	1.3
	-10	31.4	17.2	1.8	13.5	7.8	1.7
	-7	34.6	17.8	1.9	17.4	8.0	2.2
	2	44.9	19.4	2.3	22.2	8.6	2.6
	7	58.6	19.0	3.1	27.3	8.6	3.4
	10	61.8	19.3	3.2	28.9	8.4	3.5
	18	71.7	19.9	3.6	33.4	8.5	3.9
55	-20	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	23.8	15.1	1.6	17.3	9.7	1.8
	-7	33.7	19.3	1.7	16.5	8.8	1.9
	2	44.0	21.2	2.1	21.7	9.4	2.3
	7	56.6	20.7	2.7	26.6	9.2	2.9
	10	60.5	21.2	2.9	28.0	9.3	3.0
	18	70.1	21.7	3.2	32.1	9.5	3.4
60	-20	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	-	-	-	-	-	-
	-7	-	-	-	-	-	-
	2	25.1	12.7	2.0	21.0	10.5	2.0
	7	32.3	12.4	2.6	25.5	10.2	2.5
	10	34.1	12.6	2.7	26.9	10.3	2.6
	18	39.7	13.0	3.1	30.8	10.5	2.9

t_{VL} = heating flow temperature (°C)

t_Q = source temperature (°C)

Q_h = heat output at full load (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = Coefficient of performance for the overall unit in accordance with standard EN 14511

Output correction factors in Super Silent mode (whisper mode)

Flow temperature	°C	35	40	45	50	55	60
Heat output factor	-	0.87	0.79	0.79	0.80	0.80	0.82
Power consumption factor	-	0.80	0.74	0.74	0.80	0.80	0.80
COP factor	-	1.04	1.07	1.07	1.02	1.02	1.03

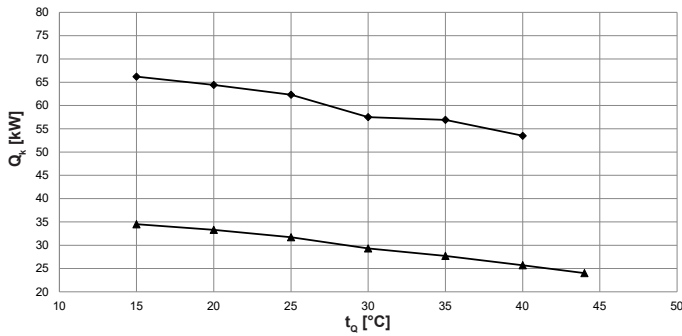
Performance data – cooling

Maximum cooling capacity

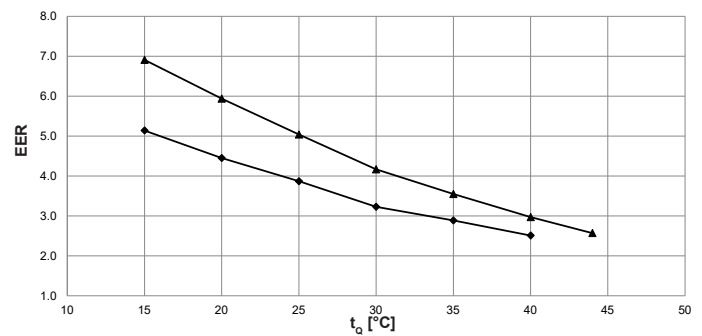
Data according to EN 14511:2018

Belaria® fit (53)

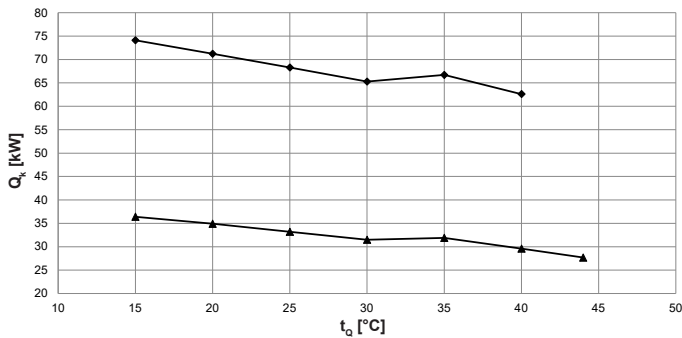
Cooling capacity – t_{VL} 7 °C



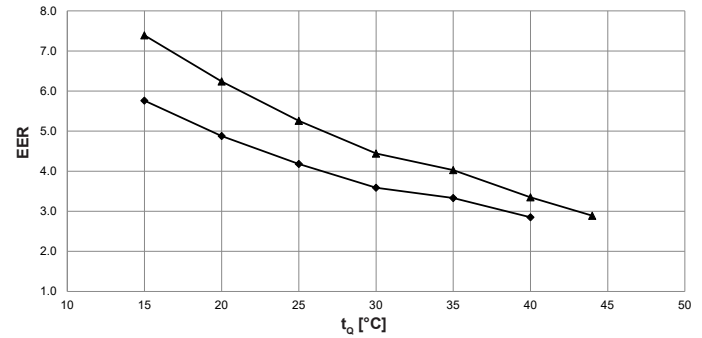
Energy efficiency ratio – t_{VL} 7 °C



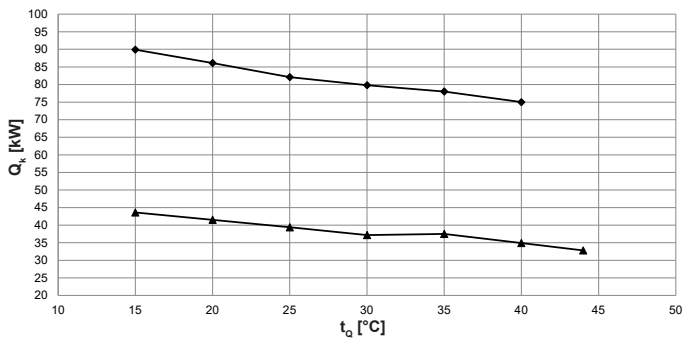
Cooling capacity – t_{VL} 12 °C



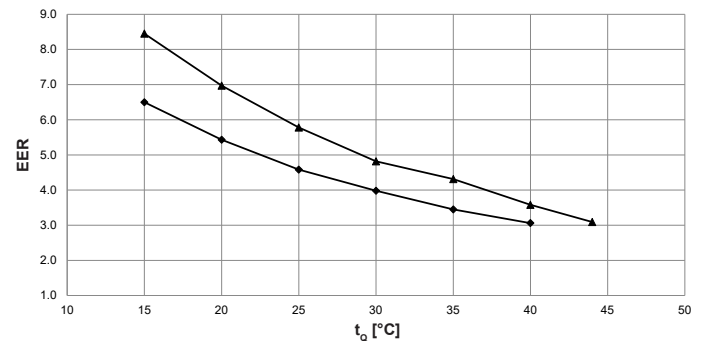
Energy efficiency ratio – t_{VL} 12 °C



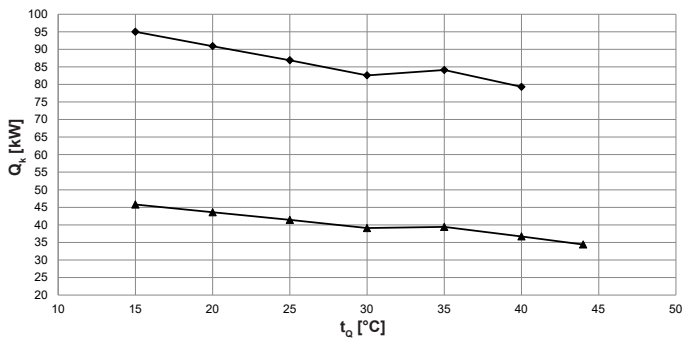
Cooling capacity – t_{VL} 18 °C



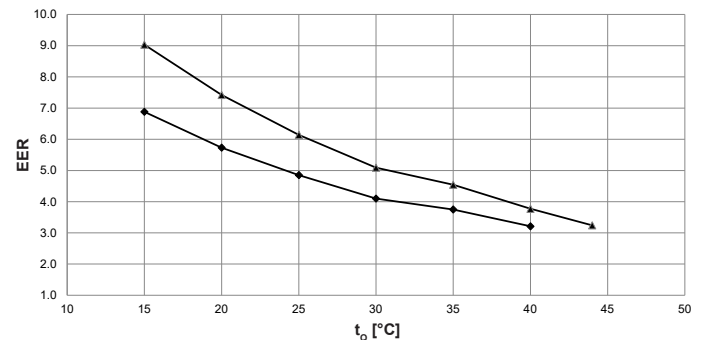
Energy efficiency ratio – t_{VL} 18 °C



Cooling capacity – t_{VL} 20 °C



Energy efficiency ratio – t_{VL} 20 °C



t_{VL} = cooling water flow temperature (°C)

t_o = source temperature (°C)

Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511

EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

◆ maximum output

▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

Cooling capacity factor - 0.83

Power consumption factor - 0.80

EER factor - 1.06

Performance data – cooling

Maximum cooling capacity

Data according to EN 14511:2018

Belaria® fit (53)

t_{VL} °C	t_o °C	Maximum output			Minimum output		
		Q_k kW	P kW	EER	Q_k kW	P kW	EER
7	15	66.2	12.9	5.1	34.5	5.0	6.9
	20	64.4	14.5	4.5	33.3	5.6	5.9
	25	62.3	16.1	3.9	31.7	6.3	5.0
	30	57.5	17.8	3.2	29.3	7.0	4.2
	35	56.9	19.7	2.9	27.7	7.8	3.6
	40	53.5	21.3	2.5	25.7	8.7	3.0
	44	-	-	-	24.0	9.3	2.6
10	15	70.0	12.9	5.4	34.6	5.0	7.0
	20	67.3	14.5	4.6	33.0	5.6	5.9
	25	64.4	16.3	4.0	31.5	6.3	5.0
	30	61.5	18.0	3.4	29.8	7.1	4.2
	35	62.9	19.8	3.2	30.3	7.9	3.8
	40	58.9	21.7	2.7	28.1	8.8	3.2
	44	-	-	-	26.3	9.5	2.8
12	15	74.1	12.9	5.8	36.4	4.9	7.4
	20	71.2	14.6	4.9	34.9	5.6	6.2
	25	68.3	16.3	4.2	33.2	6.3	5.3
	30	65.3	18.2	3.6	31.5	7.1	4.4
	35	66.7	20.0	3.3	31.9	7.9	4.0
	40	62.6	22.0	2.9	29.6	8.8	3.4
	44	-	-	-	27.7	9.6	2.9
15	15	82.5	13.9	6.0	40.3	5.0	8.1
	20	78.6	15.8	5.0	38.4	5.7	6.7
	25	75.3	17.8	4.2	36.4	6.5	5.6
	30	72.0	19.9	3.6	34.6	7.3	4.7
	35	73.7	22.1	3.3	35.0	8.2	4.3
	40	69.2	24.3	2.9	32.4	9.2	3.5
	44	-	-	-	30.3	10.2	3.0
18	15	89.9	13.8	6.5	43.6	5.2	8.5
	20	86.1	15.9	5.4	41.5	6.0	7.0
	25	82.1	17.9	4.6	39.4	6.8	5.8
	30	79.8	20.1	4.0	37.2	7.7	4.8
	35	78.0	22.6	3.5	37.5	8.7	4.3
	40	75.0	24.5	3.1	34.9	9.7	3.6
	44	-	-	-	32.8	10.6	3.1
20	15	95.0	13.8	6.9	45.8	5.1	9.0
	20	90.9	15.9	5.7	43.6	5.9	7.4
	25	86.9	17.9	4.9	41.4	6.7	6.1
	30	82.6	20.1	4.1	39.1	7.7	5.1
	35	84.1	22.4	3.8	39.4	8.7	4.5
	40	79.3	24.7	3.2	36.7	9.7	3.8
	44	-	-	-	34.4	10.6	3.2

t_{VL} = cooling water flow temperature (°C)

t_o = source temperature (°C)

Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

Output correction factors in Super Silent mode (whisper mode)

Cooling capacity factor - 0.83

Power consumption factor - 0.80

EER factor - 1.06

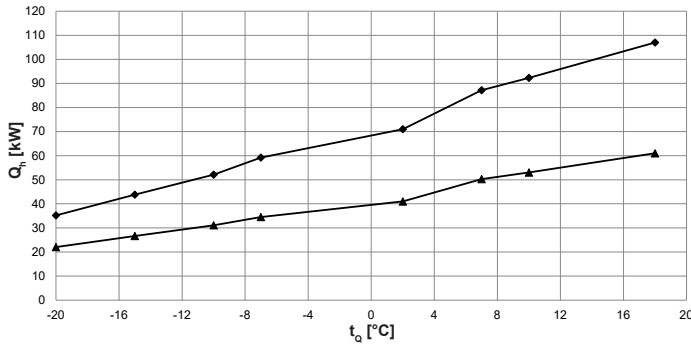
Performance data – heating

Maximum heat output allowing for defrosting losses

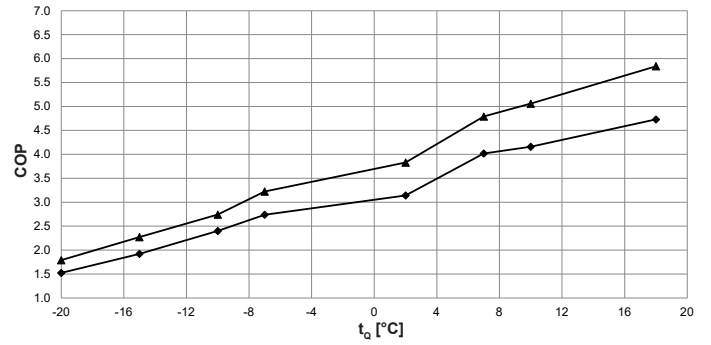
Data according to EN 14511:2018

Belaria® fit (70)

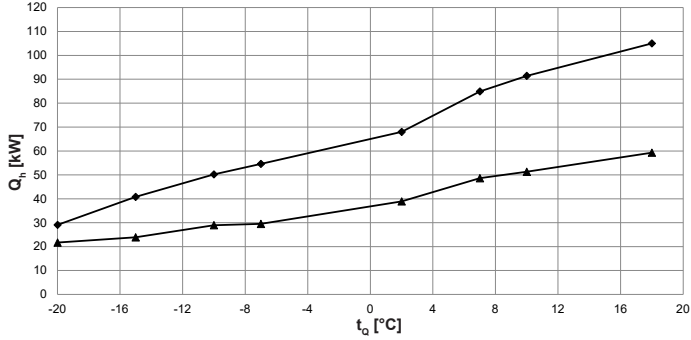
Heat output – t_{VL} 35 °C



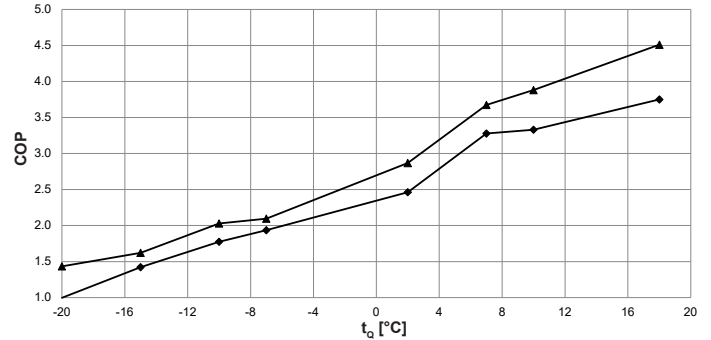
Coefficient of performance – t_{VL} 35 °C



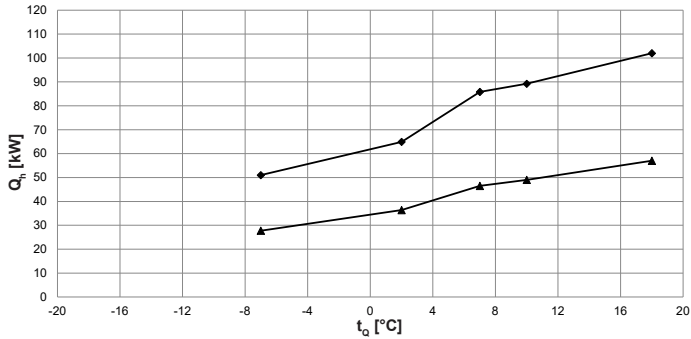
Heat output – t_{VL} 45 °C



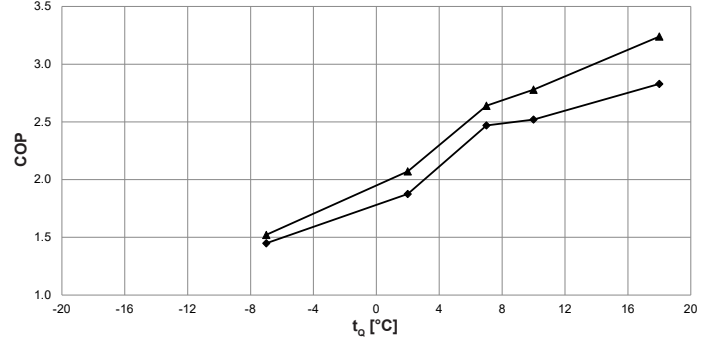
Coefficient of performance – t_{VL} 45 °C



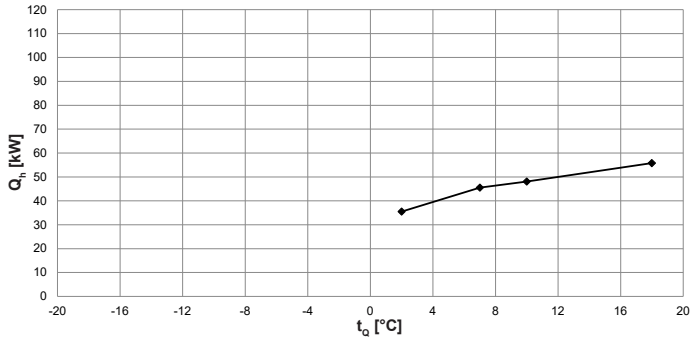
Heat output – t_{VL} 55 °C



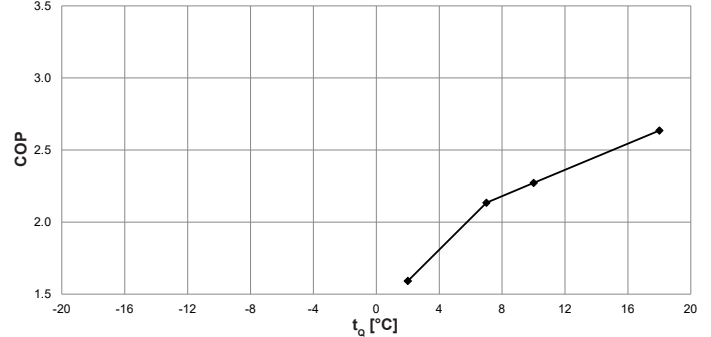
Coefficient of performance – t_{VL} 55 °C



Heat output – t_{VL} 60 °C



Coefficient of performance – t_{VL} 60 °C



t_{VL} = heating flow temperature (°C)

t_{q} = source temperature (°C)

Q_h = heat output at full load (kW), measured in accordance with standard EN 14511

COP = Coefficient of performance for the overall unit in accordance with standard EN 14511

◆ maximum output
▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

Flow temperature	°C	35	40	45	50	55	60
Heat output factor	-	0.83	0.82	0.81	0.80	0.80	0.80
Power consumption factor	-	0.83	0.72	0.72	0.74	0.74	0.74
COP factor	-	1.02	1.14	1.14	1.08	1.08	1.08

Performance data – heating

Maximum heat output allowing for defrosting losses

Data according to EN 14511:2018

Belaria® fit (70)

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
35	-20	35.2	23.1	1.5	22.0	12.3	1.8
	-15	43.8	22.8	1.9	26.6	11.7	2.3
	-10	52.1	21.7	2.4	31.1	11.3	2.7
	-7	59.2	21.6	2.7	34.5	10.7	3.2
	2	71.0	22.6	3.1	41.0	10.7	3.8
	7	87.2	21.7	4.0	50.3	10.5	4.8
	10	92.3	22.2	4.2	53.0	10.5	5.1
	18	107.0	22.6	4.7	61.0	10.4	5.8
40	-20	34.1	26.1	1.3	20.6	14.7	1.4
	-15	42.2	25.6	1.6	24.7	13.0	1.9
	-10	51.0	25.3	2.0	30.0	12.6	2.4
	-7	55.8	25.2	2.2	31.6	12.4	2.5
	2	69.7	24.8	2.8	40.3	12.0	3.4
	7	86.0	24.2	3.6	49.4	11.7	4.2
	10	91.8	24.6	3.7	52.0	11.7	4.5
	18	106.0	25.1	4.2	60.0	11.6	5.2
45	-20	29.1	29.2	1.0	21.7	15.1	1.4
	-15	40.8	28.7	1.4	23.9	14.7	1.6
	-10	50.2	28.3	1.8	29.0	14.3	2.0
	-7	54.6	28.2	1.9	29.5	14.1	2.1
	2	68.0	27.6	2.5	38.9	13.6	2.9
	7	84.9	25.9	3.3	48.6	13.2	3.7
	10	91.4	27.4	3.3	51.3	13.2	3.9
	18	105.0	28.0	3.8	59.3	13.1	4.5
50	-20	-	-	-	-	-	-
	-15	36.2	32.2	1.1	22.9	14.1	1.6
	-10	43.5	31.7	1.4	28.0	16.1	1.7
	-7	52.7	31.5	1.7	28.6	15.9	1.8
	2	66.3	30.9	2.1	37.6	15.4	2.4
	7	86.2	31.3	2.8	47.7	15.5	3.1
	10	90.2	31.5	2.9	50.3	15.5	3.2
	18	103.0	32.1	3.2	58.2	15.4	3.8
55	-20	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	-	-	-	-	-	-
	-7	51.0	35.2	1.4	27.7	18.2	1.5
	2	64.9	34.6	1.9	36.4	17.6	2.1
	7	85.8	34.7	2.5	46.5	17.6	2.6
	10	89.2	35.4	2.5	49.0	17.6	2.8
	18	102.0	36.0	2.8	57.0	17.6	3.2
60	-20	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	-	-	-	-	-	-
	-7	-	-	-	-	-	-
	2	35.5	22.3	1.6	-	-	-
	7	45.5	21.3	2.1	-	-	-
	10	48.1	21.2	2.3	-	-	-
	18	55.8	21.2	2.6	-	-	-

t_{VL} = heating flow temperature (°C)

t_Q = source temperature (°C)

Q_h = heat output at full load (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = Coefficient of performance for the overall unit in accordance with standard EN 14511

Output correction factors in Super Silent mode (whisper mode)

Flow temperature	°C	35	40	45	50	55	60
Heat output factor	-	0.83	0.82	0.81	0.80	0.80	0.80
Power consumption factor	-	0.83	0.72	0.72	0.74	0.74	0.74
COP factor	-	1.02	1.14	1.14	1.08	1.08	1.08

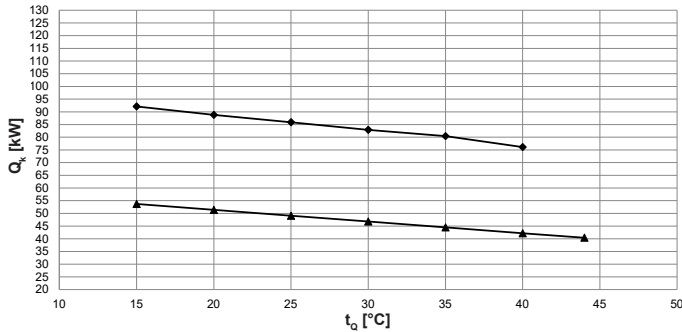
Performance data – cooling

Maximum cooling capacity

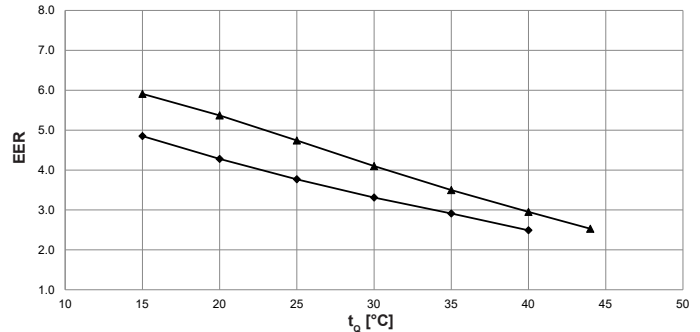
Data according to EN 14511:2018

Belaria® fit (70)

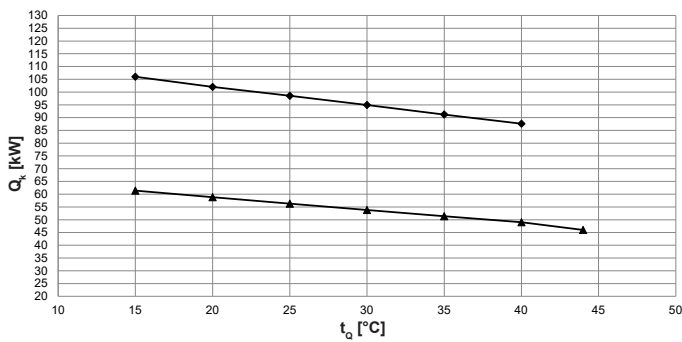
Cooling capacity – $t_{VL} 7\text{ °C}$



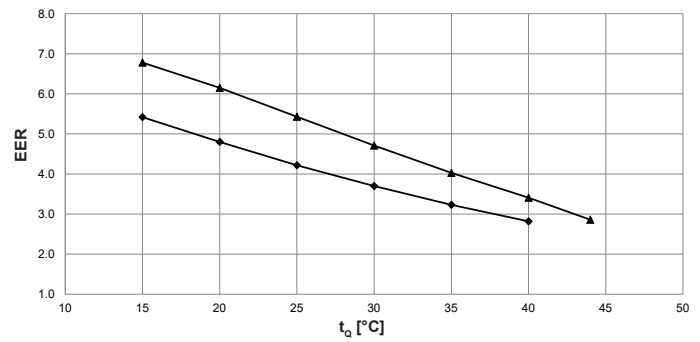
Energy efficiency ratio – $t_{VL} 7\text{ °C}$



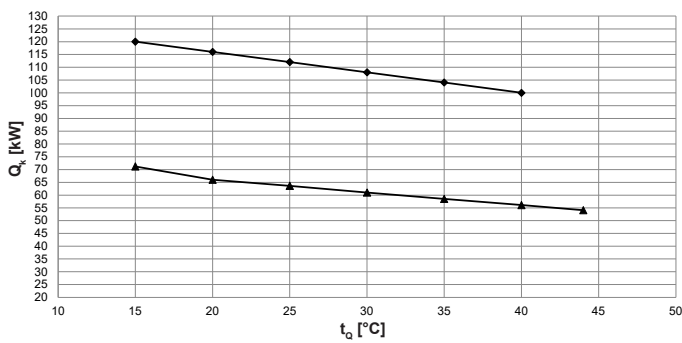
Cooling capacity – $t_{VL} 12\text{ °C}$



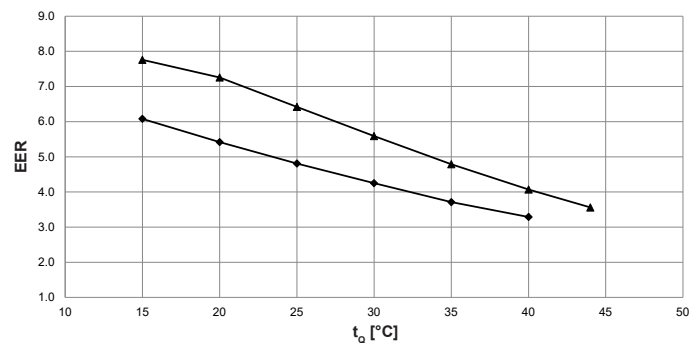
Energy efficiency ratio – $t_{VL} 12\text{ °C}$



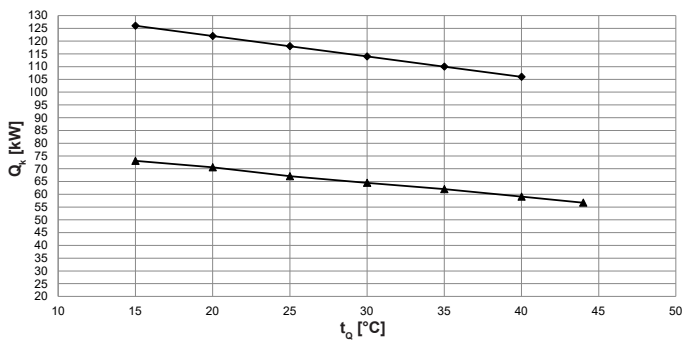
Cooling capacity – $t_{VL} 18\text{ °C}$



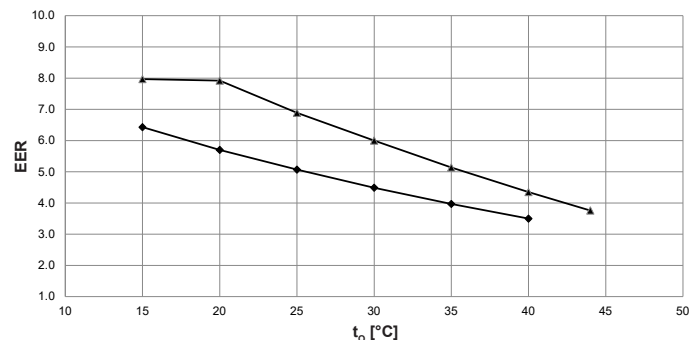
Energy efficiency ratio – $t_{VL} 18\text{ °C}$



Cooling capacity – $t_{VL} 20\text{ °C}$



Energy efficiency ratio – $t_{VL} 20\text{ °C}$



t_{VL} = cooling water flow temperature (°C)

t_o = source temperature (°C)

Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511

EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

◆ maximum output

▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

Cooling capacity factor - 0.80

Power consumption factor - 0.78

EER factor - 1.04

Performance data – cooling

Maximum cooling capacity

Data according to EN 14511:2018

Belaria® fit (70)

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_k kW	P kW	EER	Q_k kW	P kW	EER
7	15	92.1	19.0	4.9	53.7	9.1	5.9
	20	88.8	20.7	4.3	51.4	9.6	5.4
	25	85.9	22.8	3.8	49.1	10.4	4.7
	30	82.9	25.0	3.3	46.8	11.4	4.1
	35	80.4	27.6	2.9	44.5	12.7	3.5
	40	76.1	30.6	2.5	42.2	14.3	3.0
	44	47.0	18.6	2.5	40.4	16.0	2.5
10	15	100.0	19.3	5.2	58.2	9.1	6.4
	20	96.7	21.1	4.6	55.0	9.5	5.8
	25	93.1	23.1	4.0	7.0	1.4	5.1
	30	89.6	25.5	3.5	53.3	12.0	4.5
	35	86.1	28.0	3.1	50.9	13.4	3.8
	40	82.5	30.9	2.7	48.5	15.1	3.2
	44	51.5	19.3	2.7	46.1	16.6	2.8
12	15	106.0	19.6	5.4	61.4	9.1	6.8
	20	102.0	21.3	4.8	58.8	9.6	6.2
	25	98.5	23.3	4.2	56.3	10.4	5.4
	30	94.9	25.6	3.7	53.8	11.4	4.7
	35	91.2	28.2	3.2	51.4	12.8	4.0
	40	87.6	31.1	2.8	49.0	14.4	3.4
	44	54.7	18.7	2.9	46.0	16.1	2.9
15	15	110.0	19.3	5.7	64.2	9.1	7.0
	20	106.0	21.0	5.1	61.1	9.3	6.6
	25	103.0	23.1	4.5	58.6	10.1	5.8
	30	99.0	25.3	3.9	56.1	11.1	5.1
	35	95.3	27.7	3.4	53.7	12.4	4.3
	40	91.8	30.5	3.0	51.3	13.9	3.7
	44	56.1	18.3	3.1	48.2	15.8	3.1
18	15	120.0	19.7	6.1	71.2	9.2	7.8
	20	116.0	21.4	5.4	66.0	9.1	7.3
	25	112.0	23.3	4.8	63.6	9.9	6.4
	30	108.0	25.4	4.3	61.0	10.9	5.6
	35	104.0	28.0	3.7	58.5	12.2	4.8
	40	100.0	30.4	3.3	56.1	13.8	4.1
	44	62.2	18.0	3.5	54.1	15.2	3.6
20	15	126.0	19.6	6.4	73.1	9.2	8.0
	20	122.0	21.4	5.7	70.6	8.9	7.9
	25	118.0	23.3	5.1	67.1	9.7	6.9
	30	114.0	25.4	4.5	64.5	10.8	6.0
	35	110.0	27.7	4.0	62.0	12.1	5.1
	40	106.0	30.3	3.5	59.1	13.6	4.4
	44	64.5	17.9	3.6	56.7	15.1	3.8

t_{VL} = cooling water flow temperature (°C)
 t_Q = source temperature (°C)
 Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511
P = power consumption for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

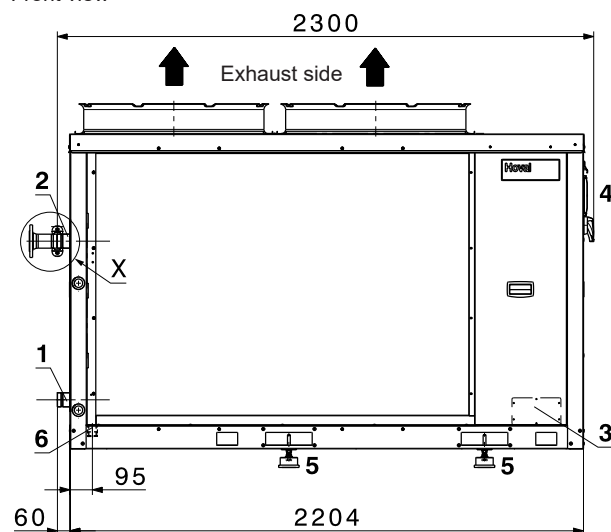
Output correction factors in Super Silent mode (whisper mode)

Cooling capacity factor - 0.80
Power consumption factor - 0.78
EER factor - 1.04

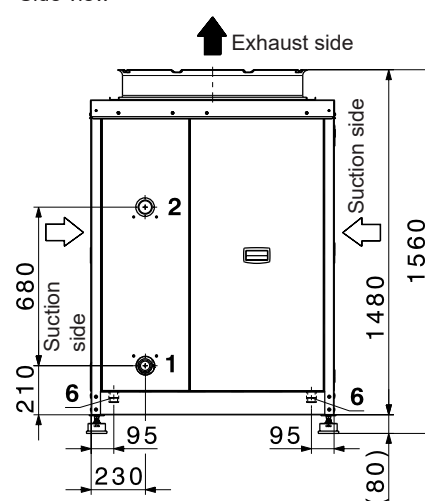
Belaria® fit (40,53)

(Dimensions in mm)

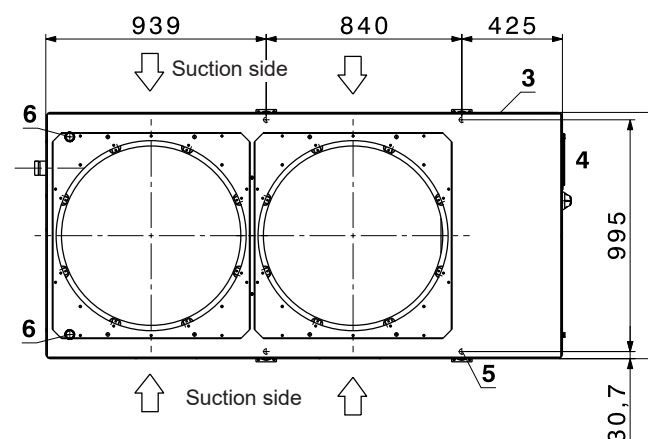
Front view



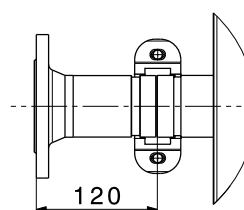
Side view



Rear



X (1:5)



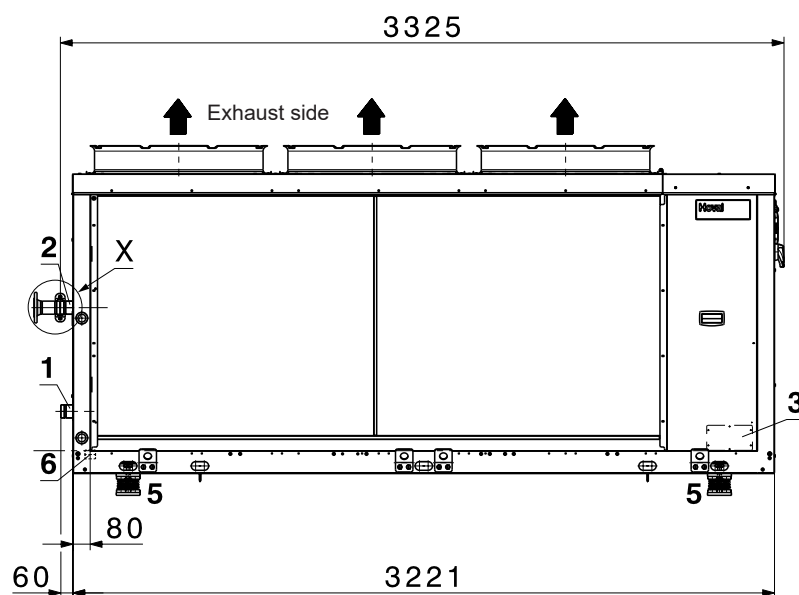
Optional accessory:
flange set Victaulic

- 1 Flow heating DN 50
- 2 Return heating DN 50
- 3 Electrical connection
- 4 Operator terminal bracket
- 5 Hole for attachment of the heat pump
- 6 Condensate drain DN 32

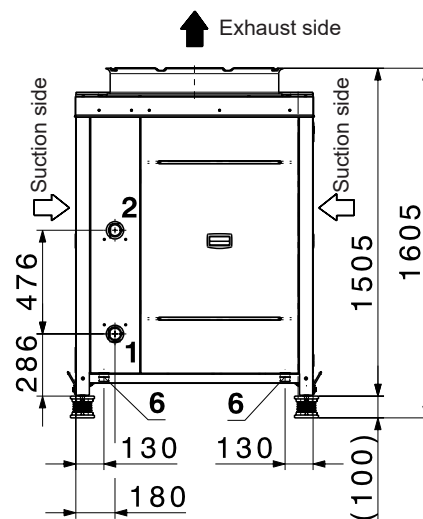
Belaria® fit (70)

(Dimensions in mm)

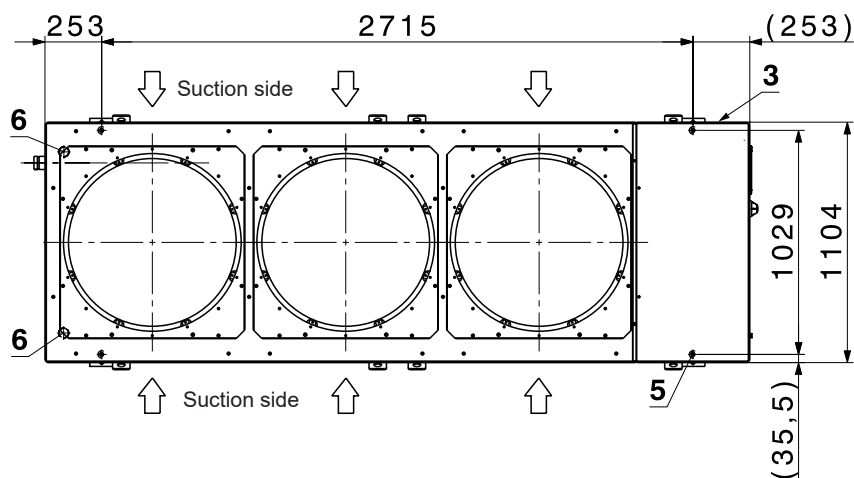
Front view



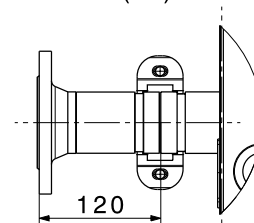
Side view



Rear



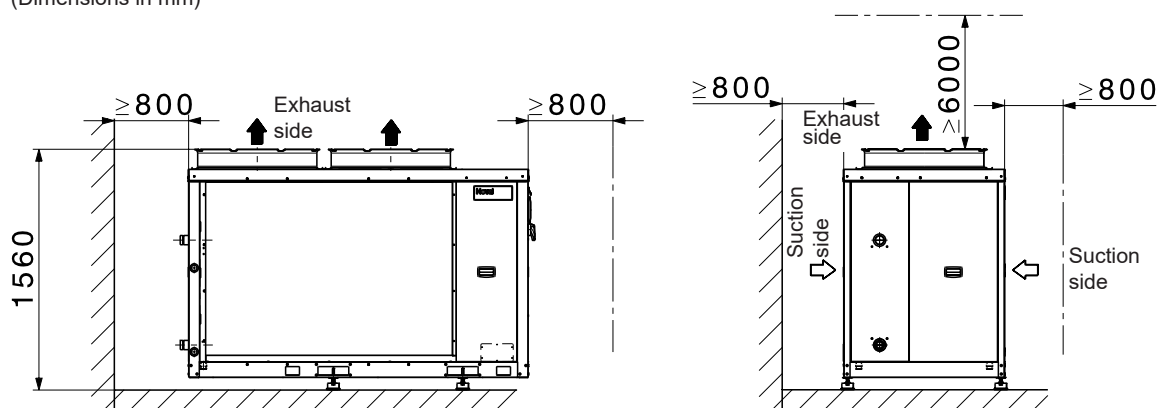
X (1:5)


Optional accessory:
flange set Victaulic

- 1 Flow heating DN 50
- 2 Return heating DN 50
- 3 Electrical connection
- 4 Operator terminal bracket
- 5 Hole for attachment of the heat pump
- 6 Condensate drain DN 32

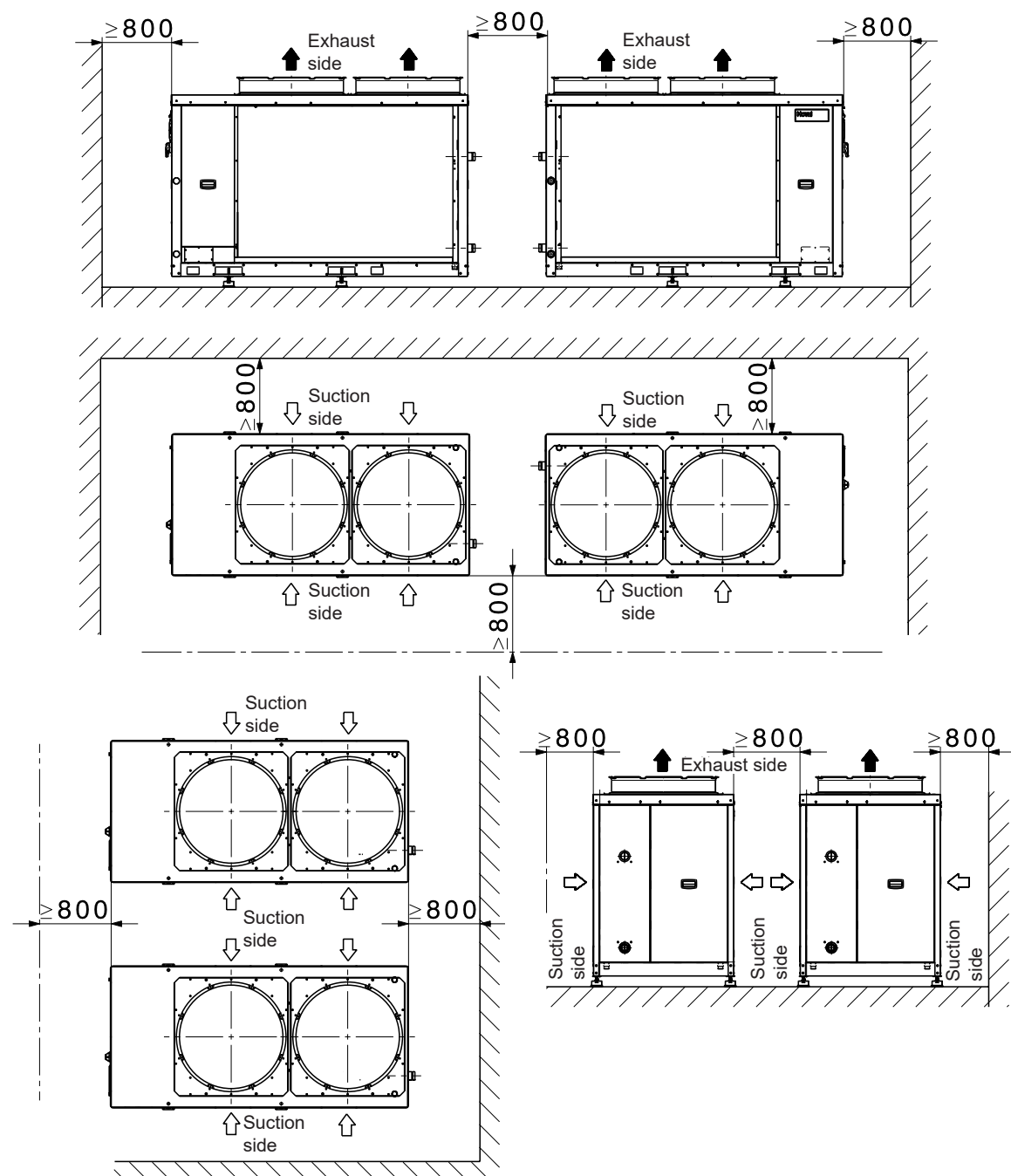
Space requirement Belaria® fit (40,53)

(Dimensions in mm)

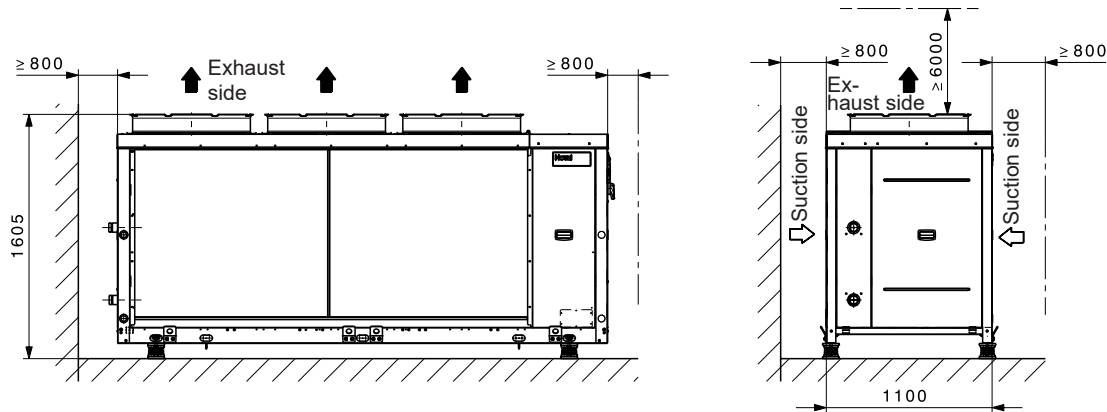


Minimum distances for cascade systems Belaria® fit (40,53)

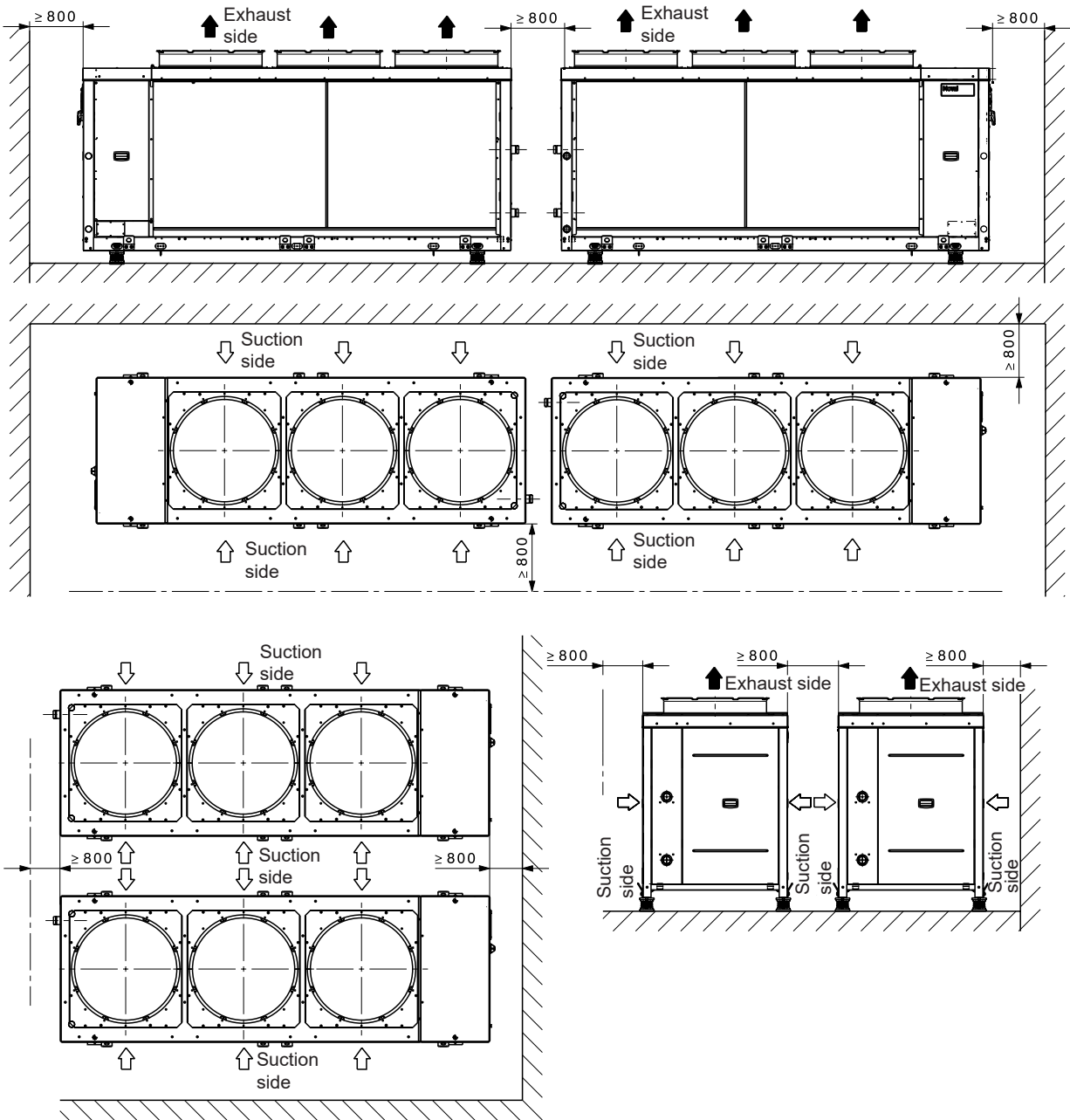
(Dimensions in mm)



Space requirement Belaria® fit (70)
(Dimensions in mm)



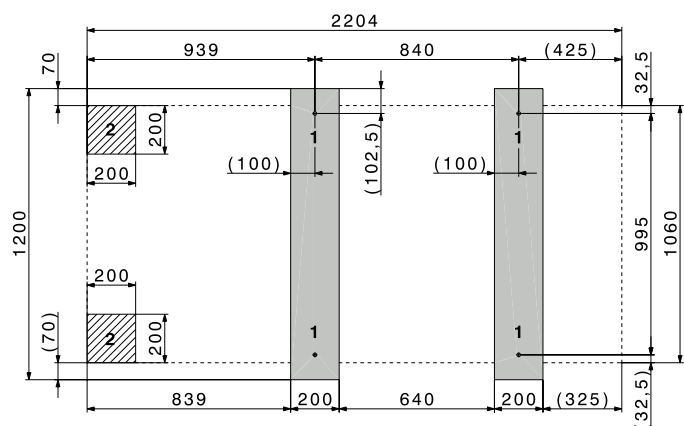
Minimum distances for cascade systems Belaria® fit (70)
(Dimensions in mm)



Base design Belaria® fit (40,53)

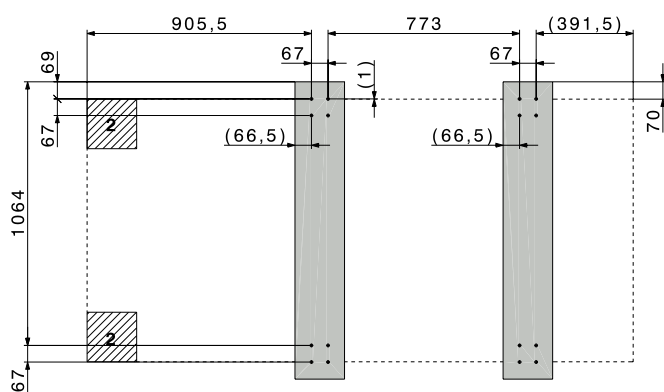
(Dimensions in mm)

Base plan feet

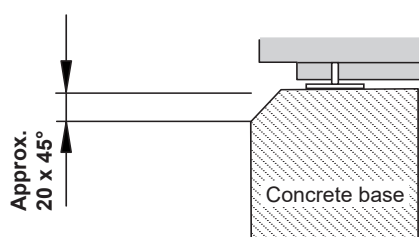


- 1 Hole for attachment of the heat pump M12
- 2 Condensate drain area

Base plan set of vibration-damping feet

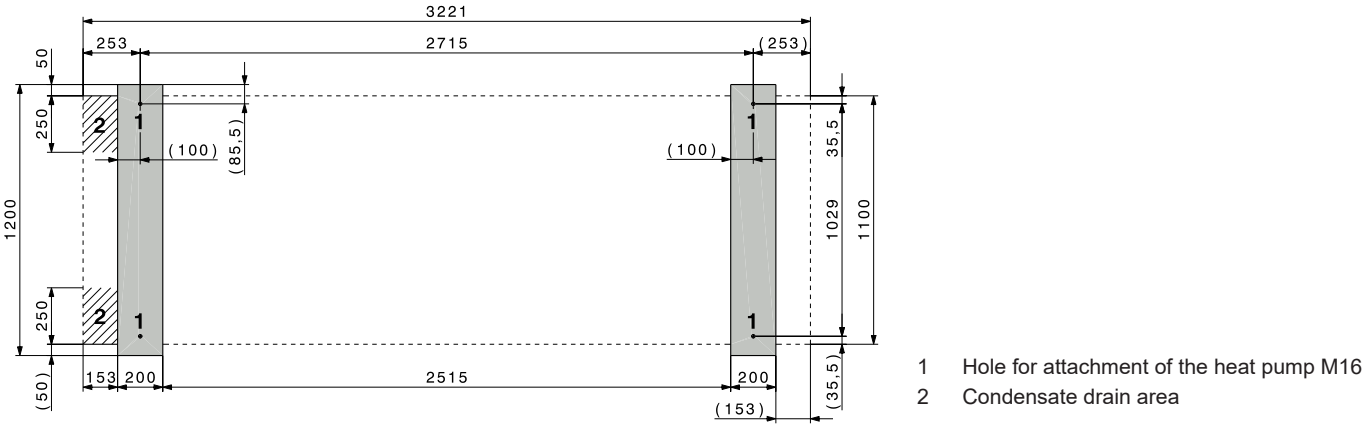


The concrete base must have a level surface the size of the Belaria® fit. The base should have chamfered edges.

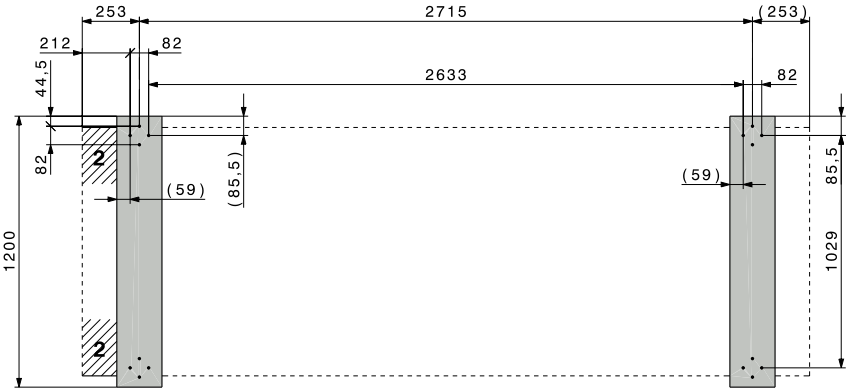


Base design Belaria® fit (70)
(Dimensions in mm)

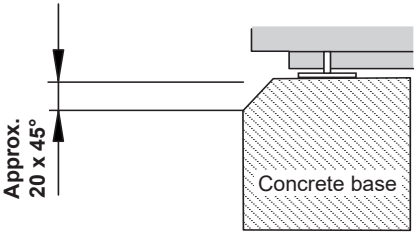
Base plan feet



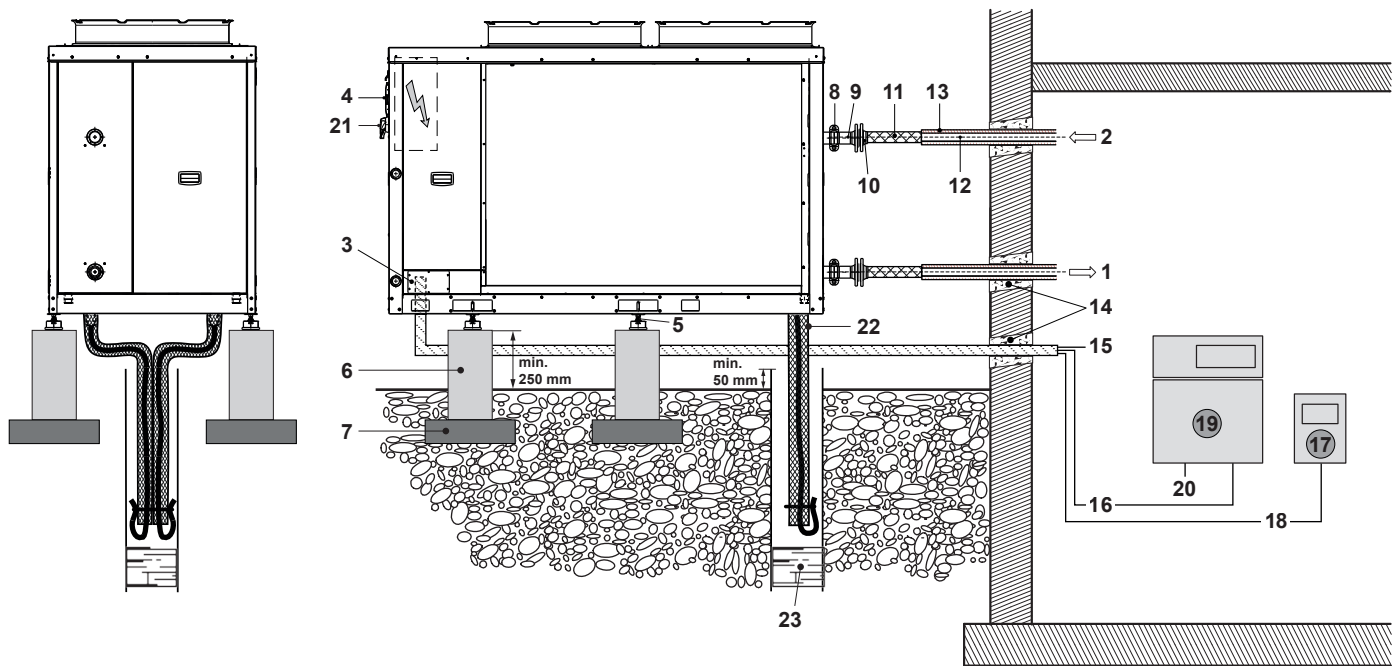
Base plan set of vibration-damping feet



The concrete base must have a level surface the size of the Belaria® fit. The base should have chamfered edges.



Configuration and connection diagram for the Belaria® fit



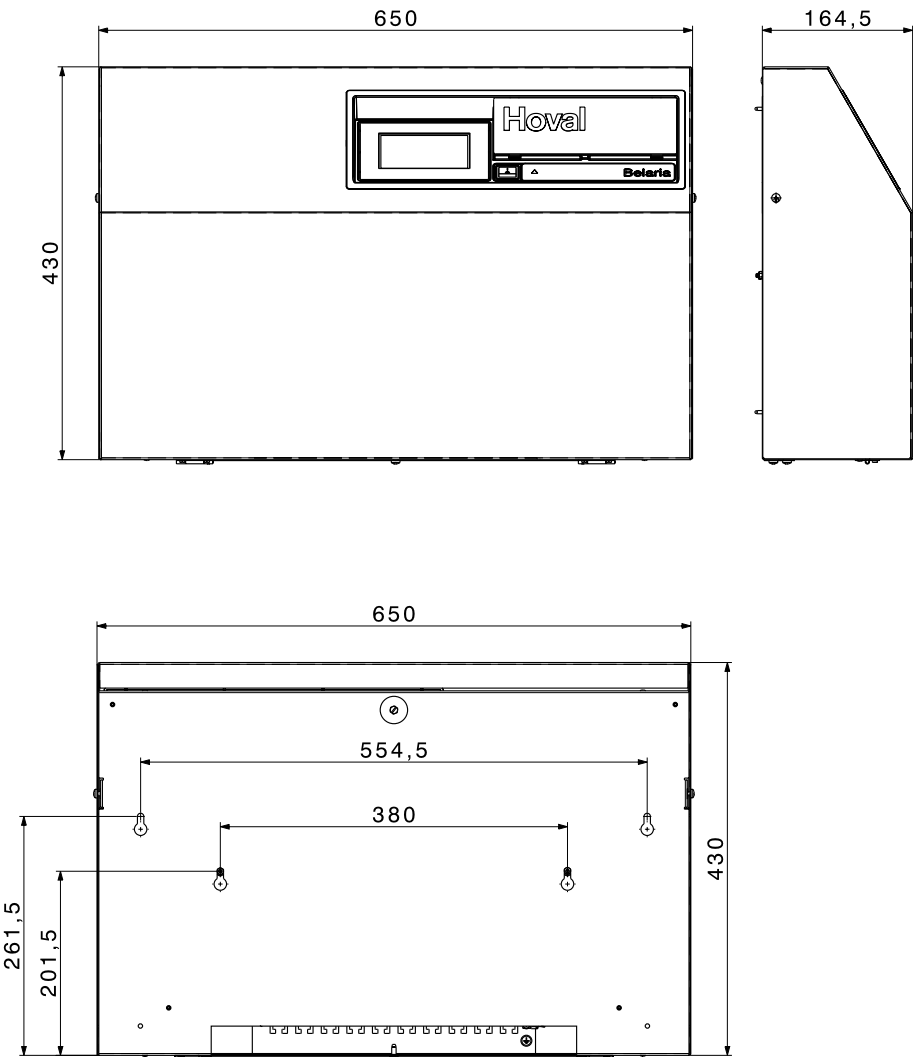
- | | | |
|----|--|--|
| 1 | Heating flow DN 50 | |
| 2 | Heating return DN 50 | |
| 3 | Electrical system feed-through | |
| 4 | Operator terminal bracket (installation possible on site) | |
| 5 | Vibration dampers (option) | |
| 6 | Concrete base (on site) | |
| 7 | Vibration decouplers (on site) | |
| 8 | Victaulic coupling (included in the scope of delivery) | |
| 9 | Victaulic connection pipe (included in the scope of delivery) | |
| 10 | Set of welded-on flanges (option) | |
| 11 | Vibration decouplers (option) | |
| 12 | Hydraulic line (on site) | |
| 13 | Insulation (on site) | |
| 14 | Feed-throughs (on site) | |
| 15 | Main current | 400 V/5-pin (configuration of cross-section on site) |
| 16 | Connection to heat pump | |
| | Request On/Off | 230 V/2-pin (see wiring diagram) |
| | Cooling mode On/Off | 230 V/2-pin (see wiring diagram) |
| | Alarm | 230 V/2-pin (see wiring diagram) |
| 17 | Operator terminal | |
| 18 | Connection of heat pump operator terminal (on-site) | |
| | line length < 40 m: 5 x 0.75 mm ² shielded | |
| | line length < 300 m: 3 x 0.75 mm ² shielded – mains adapter is also supplied) | |
| 19 | Electrical box (option) | |
| 20 | Control current | 230 V/13 A/3-pin (see wiring diagram) |
| 21 | Main switch | |
| 22 | Condensate drain DN 32 | |
| 23 | Seepage (duct/gravel layer) | |

The piping from the boiler room to the heat pump must be configured by the installer. Connecting pipes are not included.

Notice

If the operator terminal is installed at a distance of more than 40 metres from the heat pump, the power supply unit supplied must be used.

Electrical box for Belaria® fit
(Dimensions in mm)



Requirements and directives

The general requirements and directives listed in the chapter Engineering apply.

Set-up

- The Belaria® fit must be mounted outdoors. The installation location must be selected in accordance with the valid requirements and directives.
- Lines carrying water must be laid insulated and frost-proof.
- The installation location must be selected as close to the building as possible. Only short and simple routing of lines guarantees cost effectiveness and low heat losses.
- The installation location must be chosen in such a way that no noise pollution can occur (do not install near bedrooms, keep a distance from neighbours).
- There must be no building openings (windows, doors, shafts, ventilation openings or the like) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Make sure that the installation location is well ventilated.
- DO NOT install the unit in the following places or locations:
 - In a potentially explosive atmosphere.
 - In places where there is a risk of fire due to escaping flammable gases (e.g. thinner or petrol) or airborne carbon fibres or flammable dust particles.
 - In places where corrosive gases (example: sulphuric acid gas) are produced. Corrosion of copper pipes and solder joints can lead to leaks in the refrigerant circuit.
- Wall ducts into the building must be airtight.
- The heat pump must not be placed in or near floor recesses.
- The heat pump must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air outlet sides must not be narrowed or covered.
- The lateral air supply and the air outlet to the top must be without obstruction.
- It is imperative that the minimum distances are observed (see Dimensions/Space requirement).
- The intake air must be free of impurities such as sand and aggressive substances such as ammonia, sulphur, chlorine etc.
- The heat pump must be installed on a load-bearing fixed structure.
- If the heat pump is installed at wind-prone locations, the alignment of the heat pump must be selected in such a way that the expected wind direction is at right angles to the suction direction.
- If an alternative installation in areas subject to strong winds cannot be avoided, an additional wind shield in the form of a hedge, for example, should be installed.
- The heat pump must always be installed on a solid surface in a horizontal position. This can be achieved by means of concrete bases.
- The load-bearing capability must be adequate. The unit can be mounted with 4 vibration-damping adjustable feet.

- Air/water heat pumps generate condensate during operation. It must be ensured that the condensate produced can be absorbed to a sufficient extent by a gravel bed (see configuration and connection diagram).
- When air is discharged upwards, there is an increased frost hazard. Gutters, water pipes and water containers must not be situated in the immediate vicinity.
- The condensate drain must be discharged outside the building and must not be led into or through a building.
- To prevent damage caused by animals such as rodents or insects, all cable ducts must be properly sealed.
- The hydraulic lines from the heat pump can transmit structure-borne noise. Therefore, structure-borne noise decoupling should be provided, e.g. with compensators.

Flat roof installation

Flat roof installation of the Belaria® fit is possible under the following conditions:

- Strict compliance with safety measures regarding combustible refrigerants (see safety measures to be complied with).
- All standards concerning statics, wind load and access to roofs must be complied with.
- The heat pump must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.8 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.

Electrical connections

- The electrical connection must be carried out by a qualified technician and registered with the responsible energy supply company. The relevant electrical installation company is responsible for ensuring that electrical connection is carried out in accordance with standards and that safeguard measures are put in place.
- The mains voltage at the connection terminals of the heat pump must be 400 V or 230 V $\pm$ 10 %. The conductor cross-sections of the connection line must be checked by the electrical company carrying out the work.
- This fault-current circuit breaker must be of the all-current-sensitive type B ($I_{\Delta n} \geq 300$ mA). Country-specific requirements must be complied with. If the "fault-current circuit breaker" safeguard measure is implemented by the electrical company, a separate fault-current circuit breaker is recommended for the heat pumps. The specified RCCB types apply to the heat pump regardless of externally connected components (refer to assembly instructions, data sheets).

- Circuit breakers must be provided for the main circuit. The starting currents must be taken into account in the design.
- The electrical connection and feeder lines must be copper cables.
- Please refer to the wiring diagram for electrical details.
- The wall feedthrough should slope down from the inside to the outside.
- To avoid damage, the opening should be padded on the inside or, for example, lined with a PVC pipe.
- After installation, the wall opening must be sealed with a suitable sealing compound on site in compliance with fire protection regulations!
- The distance between the high and low voltage cables should be at least 50 mm.

Routing of the hydraulic connection lines

- If the hydraulic connection lines are laid in the ground, this must be done in a protective tube.
- Wall ducts must be sealed to the outside on site.
- After the hydraulic connection lines have been laid, they must be checked for damage and re-insulated. In case of cooling, condensate can form on the pipes.
- The hydraulic connection lines must be laid decoupled from the building and must never be laid flush-mounted.
- Shut-off valves must be installed on site in accordance with the corresponding hydraulic diagram. Opening the shut-off valves is only allowed immediately before commissioning!
- The danger of frost damage must be taken into account if there are prolonged power outages.
- False flow rates as a result of incorrect dimensions of the pipework, incorrect fittings or improper pump operation can cause damage to the heat pump.

Notice

If the main flow is interrupted during the utility lock, it is mandatory for the primary circuit to be implemented with a frost protection agent mixture.

Buffer storage tank

A buffer storage tank ensures optimal operating conditions for the heat pump:

- Hydraulic decoupling of the various volumetric flows from the heat pump and heat distribution system (heating)
- Absorbs the power reserves of the heat pump and reduces the switch-on frequency (cycling)
- Allows several heating circuits to be connected

The Hoval Belaria® fit air/water heat pump requires a buffer storage tank.

Minimum sizes of buffer storage tank

	EnerVal type
Belaria® fit (40)	2000
Belaria® fit (53)	2000
Belaria® fit (70)	1500 + 1500

The buffer storage tank must be made correspondingly larger in order to bridge periods when the electricity is switched off by the energy company, in particular in the case of radiator heating systems.

Further guidelines
see "Engineering"

Installation on heating side

- All pertinent laws, regulations and standards for heating house pipework and for heat pump systems must be complied with.
- A sludge separator must be installed in the heating flow and a filter ball valve in the heating return.
- The safety and expansion devices for closed heating systems must be provided in accordance with EN 12828.
- Dimensioning of the pipework must be done according to the required flow rates and given pressure drops.
- Ventilation must be provided at the highest points and drainage at the lowest points of the connection lines.
- To prevent energy losses, the connection lines must be insulated with suitable material.

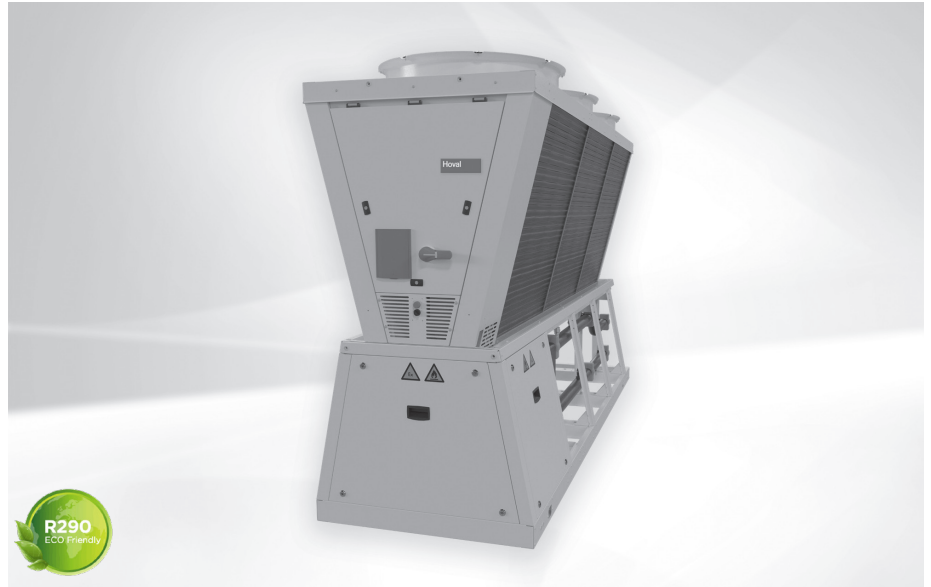
Transport and storage

- When removing the packaging, check the heat pump for damage. If the heat pump was damaged during transport or storage, contact Hoval customer service, a service partner or a licensed specialist immediately. They must carry out a leak test with a suitable leak detector. In the event of a leak, the heat pump must be repaired.
- Store the outdoor unit in a cool place without fire hazard and without direct exposure to heat sources. The ambient temperature must not exceed 43 °C.
- The same regulations apply for storage as for installation (no recesses, ventilation pipes, ignition sources in the storage area).
- The heat pump must not be stored in closed rooms, cellars or garages.
- The heat pump is only allowed to be stored outdoors.
- During transport, ensure sufficient ventilation in the closed vehicle, also when parking and stopping.
- Storage in passageways, escape routes or in front of entrances or exits is not permitted.
- Ignition sources such as naked flames, switched-on gas appliances, electric heaters, etc. must be kept away from the unit.
- Transport and storage only in upright position. Protect from mechanical damage and from falling over or falling down (make sure the load is secure).

Hoval Belaria® fit WLP(44, 74)

Air/water heat pump

- Modulating air/water heat pump in compact design for outdoor installation
- For heating and cooling in cascades up to 16 machines
- Refrigerant R290
- Output modulation 40-100 %
- Flow temperatures up to 75 °C
- Supporting frame structure with powder coating (RAL 9001)
- External panelling made from zinc-magnesium metal sheet RAL 9001 painted
- Finned coil evaporator made from copper pipes arranged in staggered rows and mechanically expanded to better adhere to the fins
- Acrylic coating of evaporator to protect the exchanger from environments containing airborne of salt and other moderately aggressive agents
- Protection of evaporator from accidental contact with objects or persons by grilles
- Collecting trays to drain condensate, made of steel with zinc-magnesium surface treatment, painted with polyester powder RAL 9001, equipped with electric heating elements and drain
- Axial helical fans with reinforced plastic profiled blades, direct coupled to an electronically controlled brush-less DC motor, IP 54 version
- Hermetically sealed scroll compressor with inverter control, motor protection device for overheating and overcurrent's
- Braze-welded AISI 316 stainless steel plate heat exchangers with low refrigerant charge and large exchange surface
- Refrigerant circuit box complete with:
 - Electronic expansion valve
 - 4-way cycle inversion valve
 - High pressure safety pressure switch
 - High- and low-pressure transducers
 - Safety thermostat against compressor overheating
 - Refrigeration circuit leak detector
 - Two leak sensors
- The sensor signals an alarm if the R290 (Propane) concentration exceeds 25% of the LFL (Lower flammable limit)
- ATEX exhaust fan
- Pre-ventilation selector switch. When the switch is activated, the exhaust fan switches on and cleaning the refrigerant circuit box from a potential explosive atmosphere
- Water circuit including
 - Safety valve 6 bar
 - Flow switch
 - Drain valve
 - Temperature sensors
 - Pressure relief valve
- Electrical box internally wired, ready for connection
 - Dry contacts for compressor status
 - Dry contact for summer / winter change
 - Dry contact for remote on-off control
 - SG Ready contact
 - EVU lock ready (remote on/off)
 - Serial port with Modbus (RS 485)
 - Set-point modification via 0-10V or 4...20mA signal
- Main switch



Model range
Hoval Belaria® fit WLP

Type	Max. flow			Heat output ¹⁾	Cooling capacity ¹⁾
				A2W35	A35W18
	35 °C	55 °C	°C	kW	kW
(44)	A++	A++	75	25.1 - 44.0	36.7 - 55.7
(74)	A+++	A++	75	34.5 - 74.0	49.3 - 86.2
	A+++ → D		A+++ → D		

1) Modulation range

Condensate drain

- It must be ensured that the condensate produced can be absorbed to a sufficient extent by a gravel bed (see configuration and connection diagram).

Hydraulic connections

- Heating connections with supplied Victaulic couplings

Electrical connections

- See installation instructions

TopTronic® E controller (option)

Operator terminal

- Operator terminal with graphical display and function keys
- Control and monitoring of the modulating heat pumps
- Setting the heating and cooling curves
- Selection of the operating mode: Standard, Silent and Super Silent
- Display of the current operating parameters
- The operator terminal can be installed in any room.
- Can also be used as thermostat
- Control also possible via Modbus
- Operation available in 16 languages
- Included in the scope of delivery of the Belaria® fit WLP



Refrigeration data

Belaria® fit WLP (44, 74)

Type		(44)	(74)
• Energy efficiency class of the compound system with control 35 °C (A+++ → D)		A++ / A++	A+++ / A++
• Energy efficiency class of the compound system with control 55 °C (A+++ → D)		A++ / A++	A+++ / A++
• Energy efficiency heating "moderate climate" 35/55 °C $\eta_{S,h}$ ¹⁾	%	169 / 133	179 / 141
• Seasonal coefficient of performance heating moderate climate 35/55 °C	SCOP	4.29 / 3.39	4.54 / 3.60
• Energy efficiency cooling $\eta_{S,c}$	%	186	209
• Seasonal energy efficiency cooling	SEER	4.73	5.30

Max. performance data heating and cooling in acc. with EN

• Heat output A2W35	kW	44.0	73.9
• Coefficient of performance A2W35	COP	3.4	3.4
• Heat output A-7W35	kW	42.0	60.7
• Coefficient of performance A-7W35	COP	2.6	2.6
• Cooling capacity A35W18	kW	55.7	86.2
• Energy efficiency ratio A35W18	EER	3.7	3.9
• Cooling capacity A35W7	kW	49.9	72.8
• Energy efficiency ratio A35W7	EER	2.6	3.7

Sound data according to EN ISO 9614-2

• Sound power level 'Standard'	dB(A)	77	79
• Sound power level 'Super Silent' ²⁾	dB(A)	69	69

Hydraulic data

• Maximum flow temperature	°C	75	75
• Nominal heating water quantity heating ΔT 5 K (A7W35)	m ³ /h	8.7	14.5
• Nominal heating water quantity heating ΔT 8 K (A7W35)	m ³ /h	5.4	9.1
• Nominal heating water quantity cooling ΔT 4 K (A35W7)	m ³ /h	10.8	18.1
• Nominal heating water quantity cooling ΔT 4 K (A35W18)	m ³ /h	12.0	18.6
• Max. operating pressure on the heating side	bar	10	10
• Flow/return connection	Victaulic	2"	2"
• Built-in fan		2 x axial	3 x axial
• Nominal air quantity	m ³ /h	38,000	53,000

Technical refrigeration data

• Refrigeration		R290	R290
• Refrigeration circuits		1	1
• Compressor stages		modulating	modulating
• Refrigerant filling quantity	kg	4.5	10.0
• Compressor oil type		DAHPNE HERMETIC OIL FW68S	
• Compressor oil filling quantity	l	3.3	6.6

Electrical data

• Connections	V/Hz	3~400/50	3~400/50
• F.L.A. - Full load current at max admissible conditions	A	53.3	65.8
• F.L.I. - Full load power input at max admissible conditions	kW	34.0	41.8
• M.I.C. Maximum inrush current	A	53.3	65.8
• Main current fuse	A	Country-specific regulations	

Dimensions/Weight

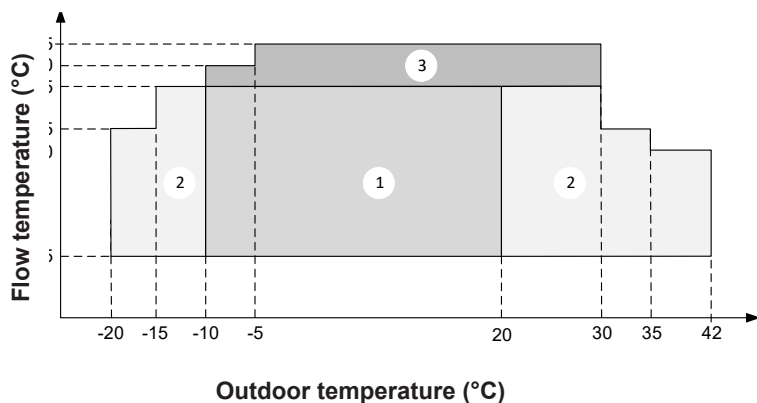
• Dimensions (H x B x T)	mm	2384 x 1094 x 2240	3402 x 1094 x 2240
• Weight	kg	737	1001

¹⁾ 2 % can be added for class II heat pump including control.

²⁾ Reduced heat outputs according to heating performance data

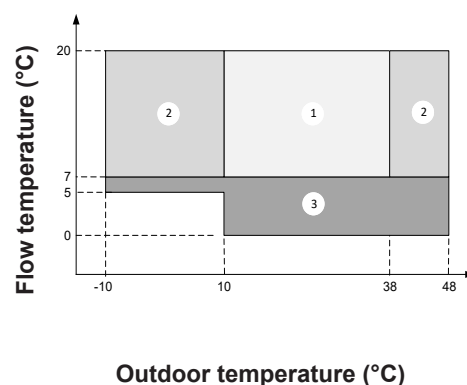
Application limits

Heating and hot water Belaria® fit WLP (44-74)



1. Normal operating range
2. Unit operating range with automatic staging of the compressor capacity
3. Unit operating range with automatic staging of the compressor capacity, sudden changes in water temperature not permitted

Cooling Belaria® fit WLP (44-74)



1. Normal operating range
2. Unit operating range with automatic staging of the compressor capacity
3. Unit operating range with low water temperature, where it's mandatory the use of ethylene or propylene glycol

Sound pressure level

Standard		Sound pressure level							Sound power level	
Type		frequency band [Hz]							level	level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
Belaria® fit WLP (44)	67	66	66	69	73	71	65	61	59	77
Belaria® fit WLP (74)	68	68	68	71	74	72	67	62	60	79

Super Silent (whisper mode)

Type		Sound pressure level							Sound power level	
		frequency band [Hz]							level	level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
Belaria® fit WLP (44)	62	54	58	62	63	59	55	57	51	69
Belaria® fit WLP (74)	63	55	59	62	64	59	56	58	50	69

The sound levels refer to the nominal conditions of the heat pumps.

The sound pressure level refers to a distance of 1 meter from the outer surface of the unit during operation in the open.

The noise levels are determined according to the tensiometric method (EN ISO 9614-2).

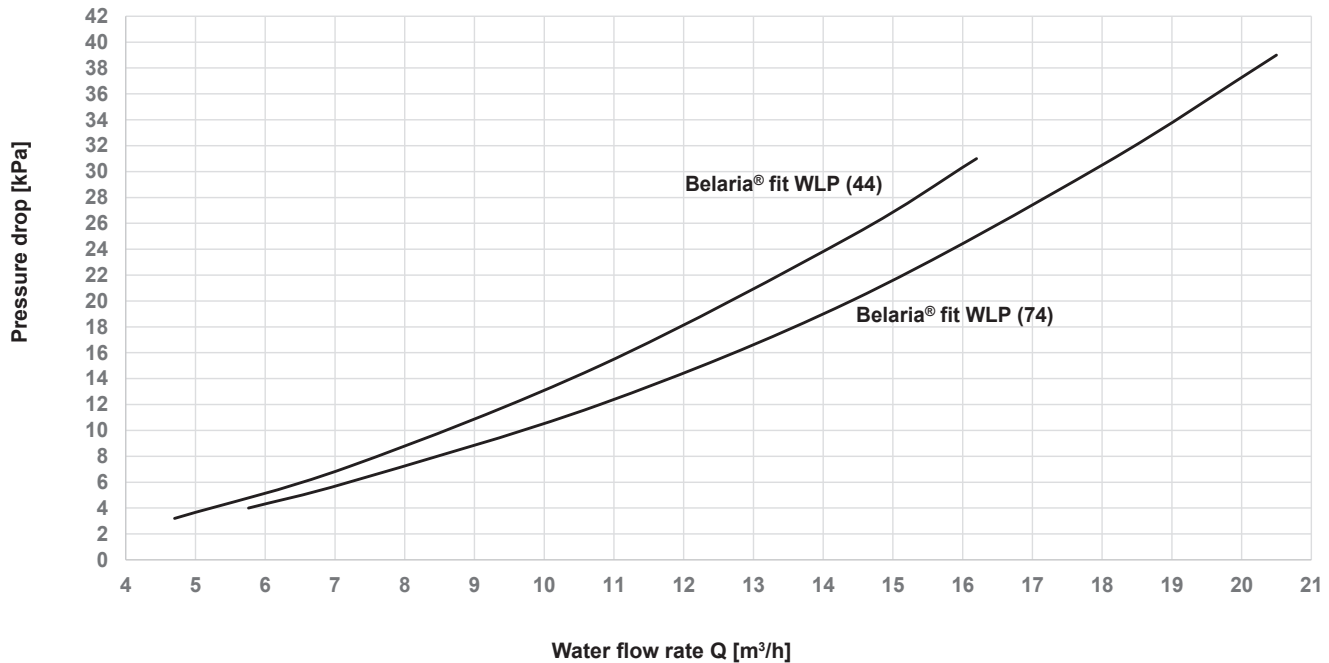
The data refers to the following conditions in heating mode:

- Water in the internal heat exchanger = 30/35 °C
- Ambient temperature 7 °C

The data refers to the following conditions in cooling mode:

- Water in the internal heat exchanger = 12/7 °C
- Ambient temperature 35 °C

Pressure drop of the internal heat exchanger



The water pressure drops are calculated assuming an average water temperature of 7 °C.

Permitted water flow rates

		Belaria® fit WLP (44)	Belaria® fit WLP (74)
Minimum flow rate	[m³/h]	5.4	6.5
Maximum flow rate	[m³/h]	18.0	22.7

Correction factors when using glycol

ETHYLENE GLYCOL percentage by weight %	5	10	15	20	25	30	35	40	45	50
Freezing point °C	-2	-3.9	-6.5	-8.9	-11.8	-15.6	-19	-23.4	-27.8	-32.7
Safety temperature	3	1	-1	-4	-6	-10	-14	-19	-23.8	-29.4
Heating/cooling correction factor	0.997	0.994	0.990	0.986	0.981	0.976	0.970	0.964	0.957	0.950
Correction factor power consumption	0.999	0.999	0.998	0.997	0.996	0.996	0.995	0.994	0.993	0.993
Correction factor for the pressure drop in the system	1.016	1.035	1.056	1.080	1.106	1.135	1.166	1.200	1.236	1.275
PROPYLENE GLYCOL percentage by weight %	5	10	15	20	25	30	35	40	45	50
Freezing point °C	-2	-3.9	-6.5	-8.9	-11.8	-15.6	-19	-23.4	-27.8	-32.7
Safety temperature	3	1	-1	-4	-6	-10	-14	-19	-23.8	-29.4
Heating/cooling correction factor	0.995	0.990	0.983	0.976	0.968	0.960	0.950	0.939	0.928	0.916
Correction factor power consumption	0.999	0.997	0.995	0.993	0.991	0.988	0.986	0.983	0.980	0.977
Correction factor for the pressure drop in the system	1.027	1.058	1.093	1.133	1.176	1.224	1.276	1.332	1.393	1.457

The specified correction factors refer to water-glycol mixtures that are used to prevent frost formation on the heat exchangers of the water circuit during the winter break.

For the exact specifications of the frost protection agent used, refer to the respective manufacturer's data sheet!

Performance data – heating

Heat output allowing for defrosting losses

Data according to EN 14511:2018

Belaria® fit WLP (44)

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
35	-20	19.2	8.4	2.29	14.1	6.2	2.26
	-15	24.9	10.1	2.47	15.9	6.3	2.52
	-10	38.7	15.7	2.46	18.2	6.4	2.84
	-7	42.0	16.0	2.63	19.7	6.5	3.04
	2	44.0	12.9	3.40	25.1	6.7	3.77
	7	50.3	13.2	3.80	28.7	6.8	4.25
	10	65.9	17.1	3.85	31.1	6.8	4.55
	18	72.9	17.4	4.19	35.8	6.9	5.20
45	-20	19.4	10.0	1.94	14.6	7.7	1.90
	-15	24.9	11.9	2.10	16.3	7.8	2.10
	-10	38.3	18.0	2.13	18.2	7.8	2.33
	-7	41.4	18.4	2.25	19.6	7.9	2.49
	2	52.2	19.2	2.72	24.5	8.0	3.06
	7	55.0	17.2	3.20	27.9	8.1	3.43
	10	63.7	19.8	3.22	30.1	8.2	3.67
	18	71.2	20.1	3.55	34.6	8.2	4.20
55	-20	19.6	12.0	1.64	15	9.4	1.60
	-15	24.8	14.1	1.76	16.8	9.5	1.77
	-10	30.7	16.5	1.86	18.4	9.6	1.92
	-7	32.9	16.8	1.96	19.5	9.7	2.02
	2	40.8	17.4	2.34	23.9	9.9	2.41
	7	47.3	17.6	2.68	26.9	10.0	2.70
	10	49.4	17.8	2.77	28.9	10.0	2.89
	18	55.4	18.0	3.07	33.2	10.0	3.31
60	-20	-	-	-	-	-	-
	-15	24.9	15.2	1.64	17.0	10.4	1.63
	-10	30.7	17.6	1.74	18.7	10.6	1.77
	-7	32.8	17.9	1.83	19.7	10.6	1.85
	2	40.3	18.7	2.16	23.8	10.9	2.19
	7	45.3	19.0	2.39	26.6	10.9	2.44
	10	48.7	19.1	2.55	28.5	10.9	2.61
	18	54.8	19.3	2.84	32.7	11.0	2.98
70	-20	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	27.8	17.8	1.56	19.1	12.6	1.51
	-7	29.6	18.2	1.63	20.1	12.7	1.58
	2	35.7	18.8	1.90	23.5	12.8	1.83
	7	39.8	19.0	2.09	26.1	12.9	2.02
	10	42.5	19.1	2.22	27.8	12.9	2.15
	18	47.4	19.3	2.45	31.8	13.0	2.44
75	-20	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	-	-	-	-	-	-
	-7	26.4	17.4	1.52	20.2	13.7	1.47
	2	31.4	17.7	1.77	23.5	14.0	1.68
	7	34.9	18.0	1.94	25.9	14.1	1.84
	10	37.2	18.1	2.05	27.5	14.1	1.95
	18	41.6	18.2	2.28	32.1	14.3	2.25

t_{VL} = heating flow temperature (°C)

t_Q = source temperature (°C)

Q_h = heat output at full load (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = COP = Coefficient of performance for the overall unit in accordance with standard EN 14511

Integrated heating capacities

External exchanger inlet air temperature °C -15...2

Heating capacity multiplication coefficient 0.93

The integrated heating capacity is the actual heating capacity, including the impact of any defrosting cycles.

This is obtained by multiplying the thermal capacity supplied Q_h by the coefficients in the table.

During prolonged heat pump operating mode with negative ambient temperature, it is important to encourage the evacuation of water produced by the defrosting cycles to avoid the build-up of ice near the unit's base.

Be careful to ensure that this does not constitute a danger to objects or people.

Performance data – cooling

Cooling capacity

Data according to EN 14511:2018

Belaria® fit WLP (44)

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_k kW	P kW	EER	Q_k kW	P kW	EER
5	15	61.1	15.6	3.91	28.9	5.3	5.44
	20	58.7	16.7	3.52	28.0	5.7	4.94
	25	56.9	17.8	3.19	27.0	6.1	4.43
	30	51.5	19.7	2.61	25.9	6.6	3.93
	35	49.3	21.1	2.34	24.8	7.2	3.46
	40	46.7	22.3	2.09	23.6	7.8	3.02
	44	39.4	18.3	2.15	22.7	8.4	2.70
	48	37.7	19.3	1.95	21.7	9.0	2.40
7	15	65.1	16.0	4.06	31.4	5.4	5.81
	20	62.9	17.1	3.68	30.4	5.7	5.29
	25	60.4	18.2	3.31	29.3	6.2	4.76
	30	56.5	20.1	2.81	28.2	6.7	4.23
	35	50.0	19.3	2.59	27.0	7.2	3.73
	40	50.5	22.9	2.21	25.7	7.9	3.26
	44	42.8	18.7	2.29	24.7	8.5	2.92
	48	41.0	19.7	2.08	23.6	9.1	2.60
12	15	76.0	17.2	4.42	36.3	5.6	6.51
	20	73.1	18.2	4.01	35.1	5.9	5.95
	25	70.0	19.3	3.63	33.9	6.3	5.37
	30	67.5	20.6	3.28	32.6	6.8	4.79
	35	61.2	22.8	2.69	31.2	7.4	4.23
	40	57.9	23.9	2.42	29.8	8.0	3.71
	44	49.4	19.4	2.54	28.6	8.6	3.33
	48	47.3	20.3	2.33	27.4	9.2	2.97
15	15	81.9	17.9	4.57	39.3	5.7	6.94
	20	78.8	18.9	4.17	38.1	6.0	6.35
	25	75.6	19.9	3.79	36.8	6.4	5.74
	30	72.2	21.0	3.43	35.4	6.9	5.13
	35	58.2	18.0	3.24	33.9	7.5	4.54
	40	62.5	24.6	2.54	32.4	8.1	3.99
	44	53.5	19.9	2.69	31.2	8.7	3.58
	48	51.3	20.8	2.47	26.9	8.4	3.20
18	15	87.9	18.6	4.72	43.3	9.7	4.47
	20	84.7	19.6	4.32	42.0	6.1	6.86
	25	81.6	20.7	3.95	40.6	6.5	6.22
	30	78.3	21.8	3.60	39.2	7.0	5.58
	35	55.7	15.1	3.68	36.7	7.6	4.85
	40	53.9	15.7	3.44	36.0	8.3	4.35
	44	51.9	16.4	3.16	34.6	8.8	3.91
	48	43.3	14.0	3.09	33.2	9.5	3.49
20	15	94.8	19.5	4.86	45.9	5.9	7.81
	20	91.3	20.4	4.48	44.5	6.2	7.18
	25	87.7	21.4	4.10	43.0	6.6	6.51
	30	83.9	22.4	3.74	41.4	7.1	5.84
	35	59.6	15.1	3.95	39.8	7.7	5.18
	40	50.7	12.9	3.93	38.1	8.4	4.56
	44	48.9	13.6	3.59	36.0	8.9	4.05
	48	41.0	11.7	3.49	35.2	9.6	3.67

 t_{VL} = cooling water flow temperature (°C)

 t_Q = source temperature (°C)

 Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

Output correction factors in Super Silent mode (whisper mode)

Cooling capacity factor - 0.75

Power consumption factor - 0.75

EER factor - 1.00

Performance data – heating

Heat output allowing for defrosting losses

Data according to EN 14511:2018

Belaria® fit WLP (74)

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
35	-20	27.0	11.9	2.26	18.6	8.2	2.28
	-15	36.0	14.6	2.47	21.5	8.2	2.63
	-10	56.2	23.3	2.41	24.7	8.1	3.05
	-7	60.7	23.4	2.59	26.9	8.1	3.33
	2	73.9	22.1	3.35	34.5	7.9	4.39
	7	84.2	22.3	3.77	39.9	7.7	5.15
	10	93.8	24.6	3.82	43.4	7.6	5.68
	18	107.0	24.8	4.31	51.9	7.4	6.97
45	-20	26.8	13.9	1.92	18.8	9.9	1.90
	-15	35.4	16.9	2.10	21.4	9.9	2.17
	-10	54.9	26.7	2.06	24.3	9.8	2.49
	-7	58.9	27.0	2.18	26.3	9.7	2.71
	2	75.5	28.2	2.68	33.2	9.4	3.52
	7	85.8	28.3	3.03	38.0	9.2	4.12
	10	90.0	28.5	3.16	41.3	9.1	4.53
	18	102.0	28.6	3.57	49.3	8.8	5.59
55	-20	26.9	16.3	1.65	18.9	12.0	1.58
	-15	34.7	19.5	1.78	21.4	11.9	1.80
	-10	49.8	28.1	1.77	24.0	11.8	2.03
	-7	53.2	28.4	1.87	25.8	11.7	2.20
	2	67.2	29.6	2.27	31.9	11.4	2.80
	7	76.5	29.8	2.57	36.2	11.2	3.24
	10	80.0	29.9	2.68	39.1	11.0	3.54
	18	91.6	29.8	3.07	46.4	10.7	4.32
60	-20	-	-	-	-	-	-
	-15	34.5	20.9	1.65	21.5	13.1	1.64
	-10	49.4	29.9	1.65	24.0	12.9	1.86
	-7	52.5	30.5	1.72	25.6	12.9	1.99
	2	65.8	31.6	2.08	31.4	12.5	2.51
	7	72.9	31.8	2.29	35.4	12.3	2.88
	10	78.4	31.9	2.46	38.2	12.2	3.14
	18	89.3	31.9	2.80	45.3	11.9	3.82
70	-20	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	38.2	24.8	1.54	23.9	15.5	1.54
	-7	40.7	25.1	1.62	25.5	15.4	1.66
	2	49.5	25.8	1.92	30.5	15.0	2.03
	7	56.1	25.7	2.18	34.0	14.8	2.29
	10	59.3	25.7	2.31	36.5	14.7	2.48
	18	68.2	25.4	2.69	43.0	14.4	2.98
75	-20	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	-	-	-	-	-	-
	-7	35.8	23.2	1.54	25.3	16.8	1.51
	2	42.6	23.5	1.81	30.2	16.5	1.83
	7	47.6	23.3	2.04	33.4	16.3	2.05
	10	51.4	23.2	2.22	35.7	16.2	2.20
	18	58.8	22.8	2.58	42.0	16.0	2.62

t_{VL} = heating flow temperature (°C)

t_Q = source temperature (°C)

Q_h = heat output at full load (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = COP = Coefficient of performance for the overall unit in accordance with standard EN 14511

Integrated heating capacities

External exchanger inlet air temperature °C -15...2

Heating capacity multiplication coefficient 0.93

The integrated heating capacity is the actual heating capacity, including the impact of any defrosting cycles.

This is obtained by multiplying the thermal capacity supplied Q_h by the coefficients in the table.

During prolonged heat pump operating mode with negative ambient temperature, it is important to encourage the evacuation of water produced by the defrosting cycles to avoid the build-up of ice near the unit's base.

Be careful to ensure that this does not constitute a danger to objects or people.

Performance data – cooling

Cooling capacity

Data according to EN 14511:2018

Belaria® fit WLP (74)

t_{VL} °C	t_o °C	Maximum output			Minimum output		
		Q_k kW	P kW	EER	Q_k kW	P kW	EER
5	15	81.3	20.2	4.03	37.5	6.0	6.27
	20	77.4	21.8	3.55	36.1	6.4	5.66
	25	73.4	23.5	3.13	34.5	6.8	5.04
	30	69.3	25.2	2.75	33.0	7.4	4.43
	35	65.2	27.1	2.41	31.4	8.1	3.86
	40	61.2	29.0	2.11	29.7	8.9	3.34
	44	55.6	28.1	1.98	28.3	9.6	2.96
	48	52.4	29.4	1.78	26.9	10.3	2.61
7	15	87.0	20.5	4.24	41.0	6.0	6.86
	20	83.0	22.1	3.75	39.5	6.4	6.22
	25	79.0	23.8	3.32	37.8	6.8	5.55
	30	74.8	25.5	2.93	36.1	7.4	4.90
	35	72.8	27.4	2.66	34.4	8.1	4.27
	40	66.6	29.3	2.27	32.5	8.8	3.70
	44	60.8	28.3	2.15	31.1	9.5	3.28
	48	57.6	29.8	1.93	29.6	10.2	2.89
12	15	103.0	21.7	4.75	47.9	6.0	8.03
	20	98.1	23.2	4.23	46.1	6.3	7.32
	25	93.2	24.8	3.76	44.2	6.7	6.56
	30	88.3	26.4	3.34	42.3	7.3	5.82
	35	83.3	28.2	2.95	40.3	7.9	5.09
	40	78.3	30.1	2.60	38.2	8.6	4.43
	44	71.5	28.8	2.48	36.6	9.3	3.93
	48	67.7	30.4	2.23	34.9	10.0	3.48
15	15	111.0	22.3	4.98	52.3	6.0	8.77
	20	106.0	23.8	4.46	50.3	6.3	8.03
	25	101.0	25.3	3.99	48.3	6.7	7.23
	30	96.0	27.0	3.55	46.2	7.2	6.42
	35	87.0	26.1	3.33	44.1	7.8	5.64
	40	85.4	30.5	2.80	41.9	8.5	4.91
	44	78.2	29.2	2.68	40.2	9.2	4.36
	48	74.1	30.6	2.42	38.3	9.9	3.86
18	15	120.0	23.1	5.20	56.7	5.9	9.53
	20	115.0	24.6	4.68	55.9	6.2	8.99
	25	110.0	26.1	4.21	53.8	6.6	8.13
	30	104.0	27.5	3.78	51.6	7.1	7.25
	35	86.2	21.9	3.94	49.3	7.7	6.39
	40	73.5	18.2	4.03	49.9	9.0	5.57
	44	70.6	19.2	3.67	45.0	9.1	4.96
	48	60.3	16.3	3.70	43.0	9.8	4.40
20	15	126.0	23.5	5.37	59.4	5.9	10.00
	20	121.0	25.0	4.84	59.6	6.2	9.61
	25	115.0	26.4	4.36	57.2	6.6	8.71
	30	110.0	28.1	3.92	54.9	7.1	7.77
	35	82.6	17.2	4.79	52.4	7.7	6.84
	40	69.8	14.6	4.79	49.9	8.4	5.97
	44	67.0	15.4	4.35	47.9	9.0	5.32
	48	56.0	13.0	4.31	45.9	9.7	4.72

 t_{VL} = cooling water flow temperature (°C)

 t_o = source temperature (°C)

 Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

Output correction factors in Super Silent mode (whisper mode)

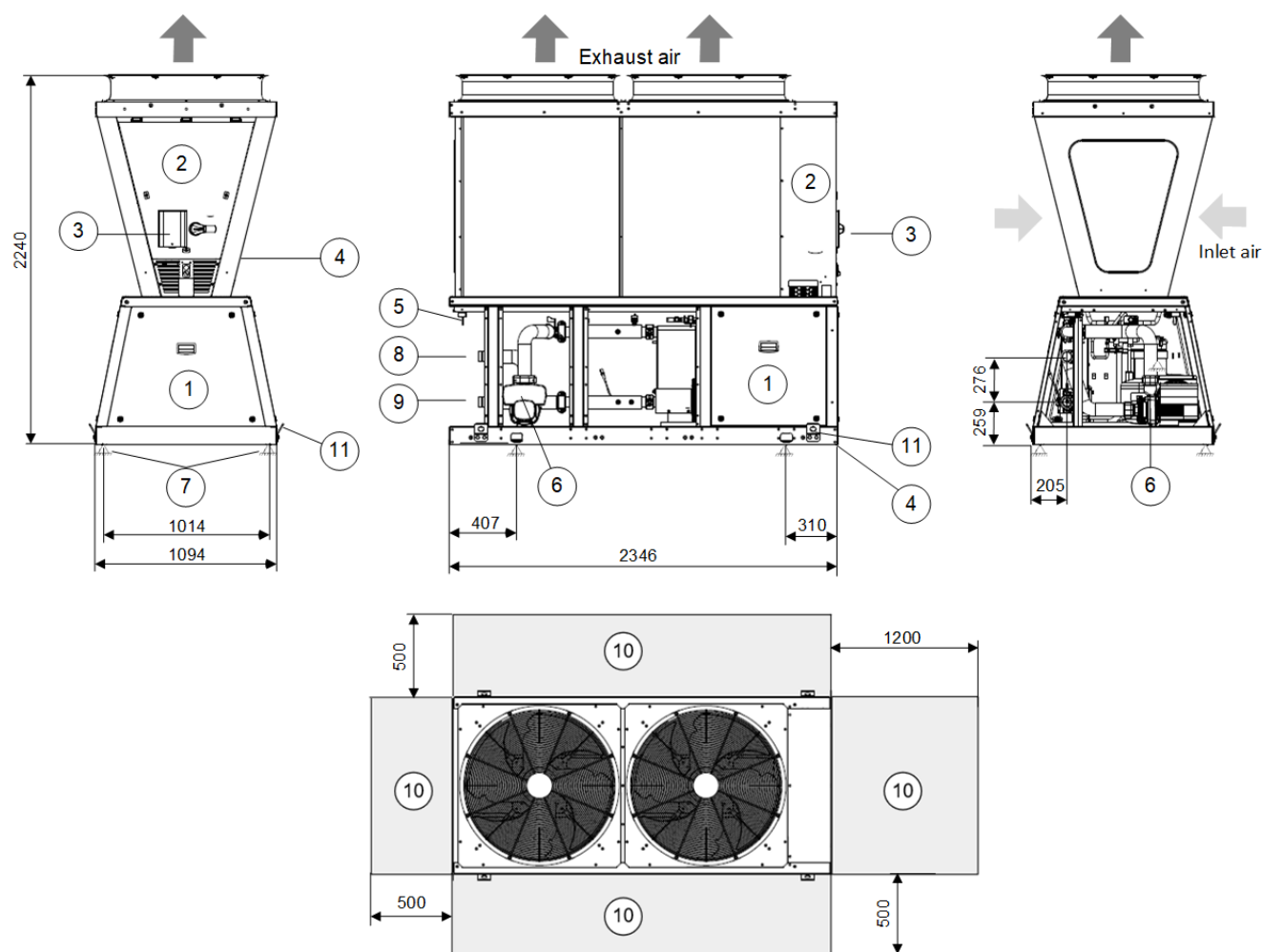
Cooling capacity factor - 0.75

Power consumption factor - 0.80

EER factor - 1.03

Belaria® fit WLP (44)

(Dimensions in mm)

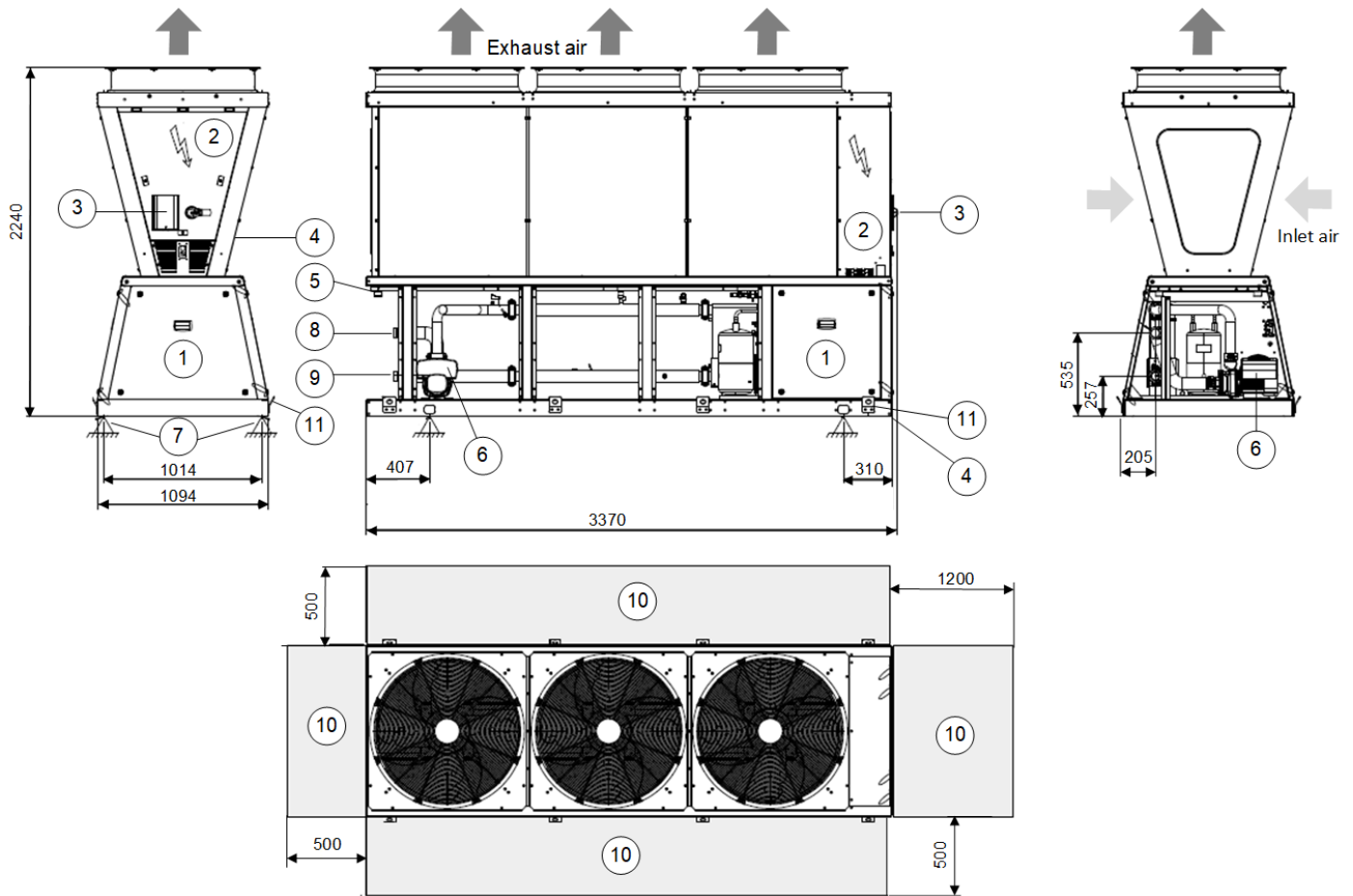


1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Condensate drain
6. Water pump (not in scope of supply)
7. Fixing point
8. Water inlet 2" Victaulic
9. Water outlet 2" Victaulic
10. Functional spaces
11. Lifting bracket (removable)

Length	mm	2384
Depth	mm	1094
Height	mm	2240
W1 Supporting point	kg	226
W2 Supporting point	kg	145
W3 Supporting point	kg	233
W4 Supporting point	kg	153
Operation weight	kg	757
Shipping weight	kg	737

Belaria® fit WLP (74)

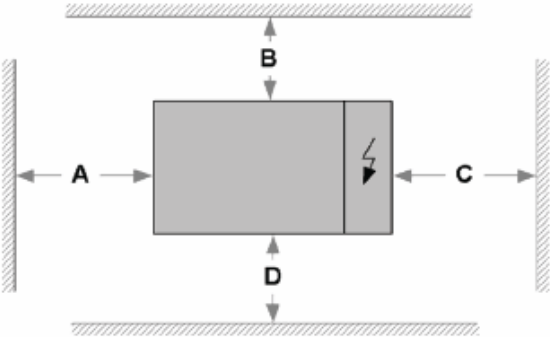
(Dimensions in mm)



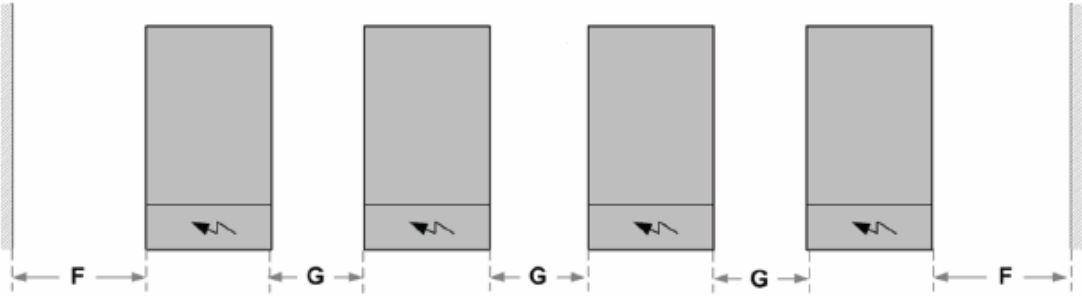
- 1 Compressor compartment
- 2 Electrical panel
- 3 Unit control keypad
- 4 Power input
- 5 Condensate drain
- 6 Water pump (not in scope of supply)
- 7 Fixing point
- 8 Water inlet 2" Victaulic
- 9 Water outlet 2" Victaulic
- 10 Functional spaces
- 11 Lifting Bracket (removable)

Length	mm	3402
Depth	mm	1094
Height	mm	2240
W1 Supporting point	kg	306
W2 Supporting point	kg	199
W3 Supporting point	kg	312
W4 Supporting point	kg	205
Operation weight	kg	1021
Shipping weight	kg	1001

Space requirement Belaria® fit WLP (44, 74)
(Dimensions in mm)



A = 500 mm
B = 500 mm
C = 1200 mm
D = 500 mm

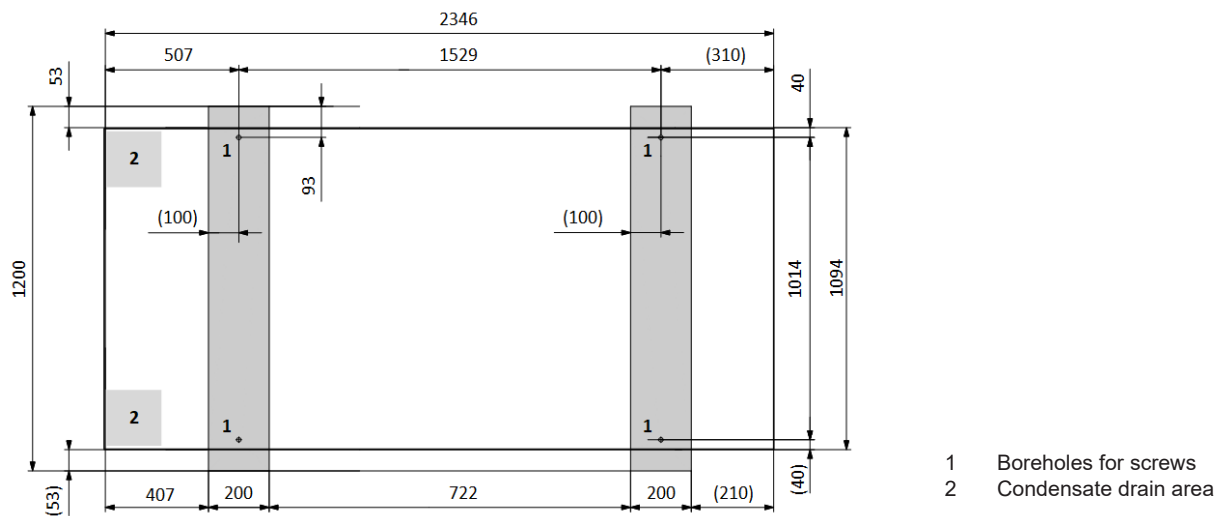


F = 500 mm
G = 500

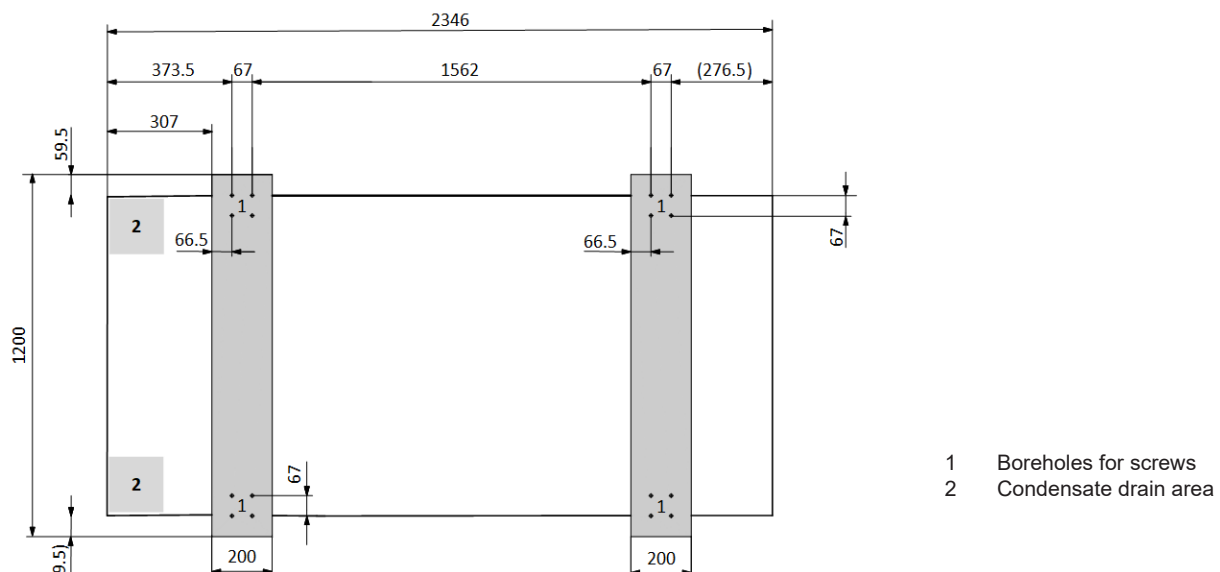
Base design Belaria® fit WLP (44)

(Dimensions in mm)

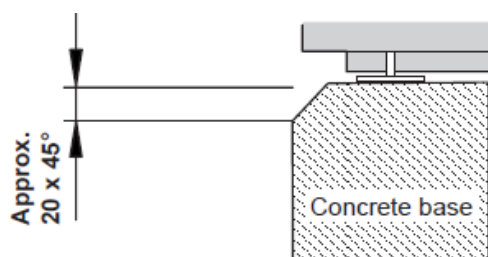
Base design for installations without vibration dampers



Base design for installations with vibration dampers



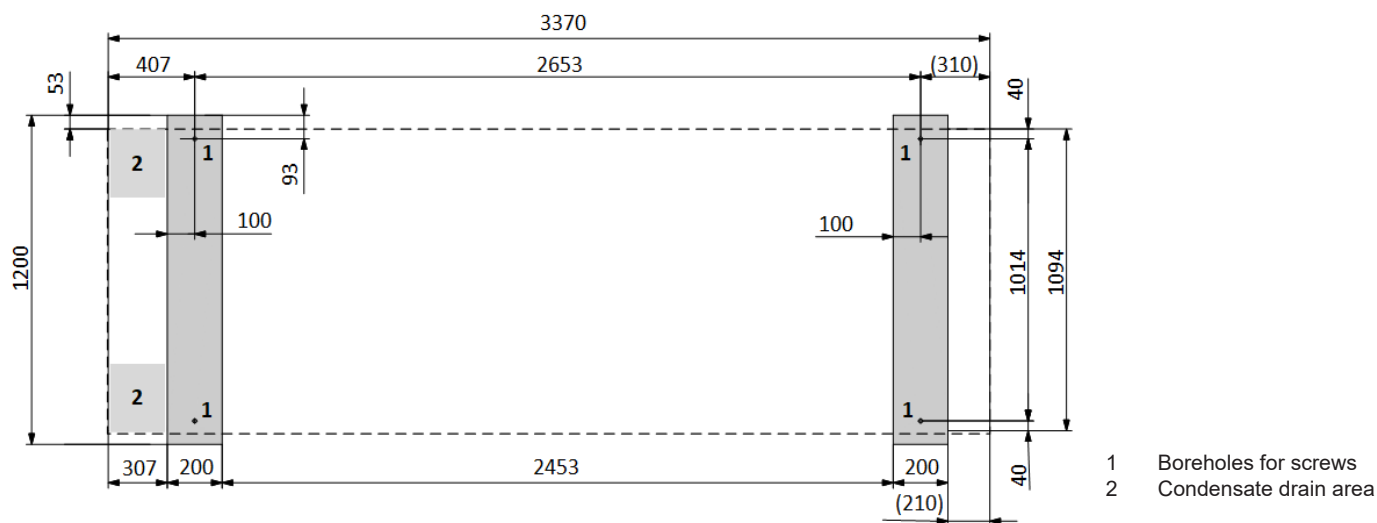
The concrete base must have a level surface the size of the Belaria® fit.
The base should have chamfered edges



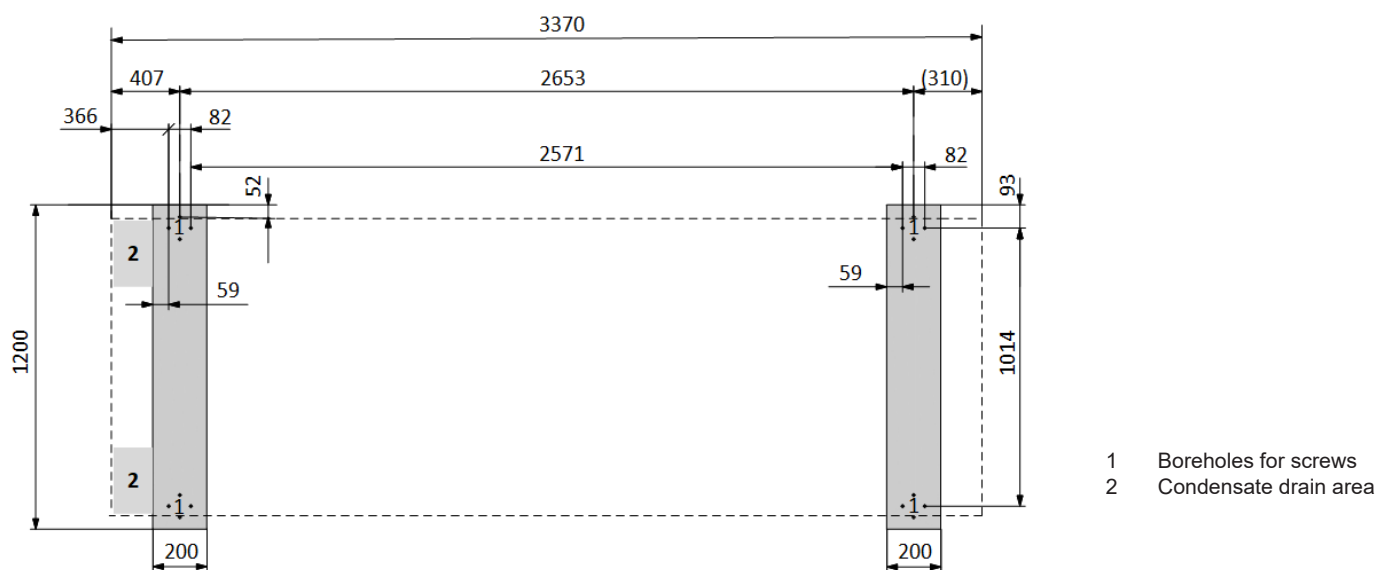
Base design Belaria® fit WLP (74)

(Dimensions in mm)

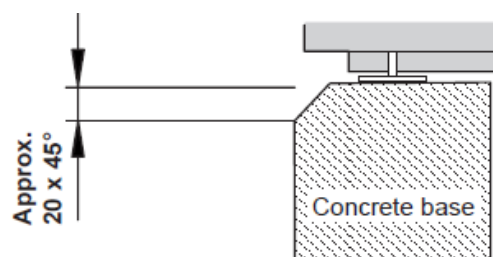
Base design for installations without vibration dampers



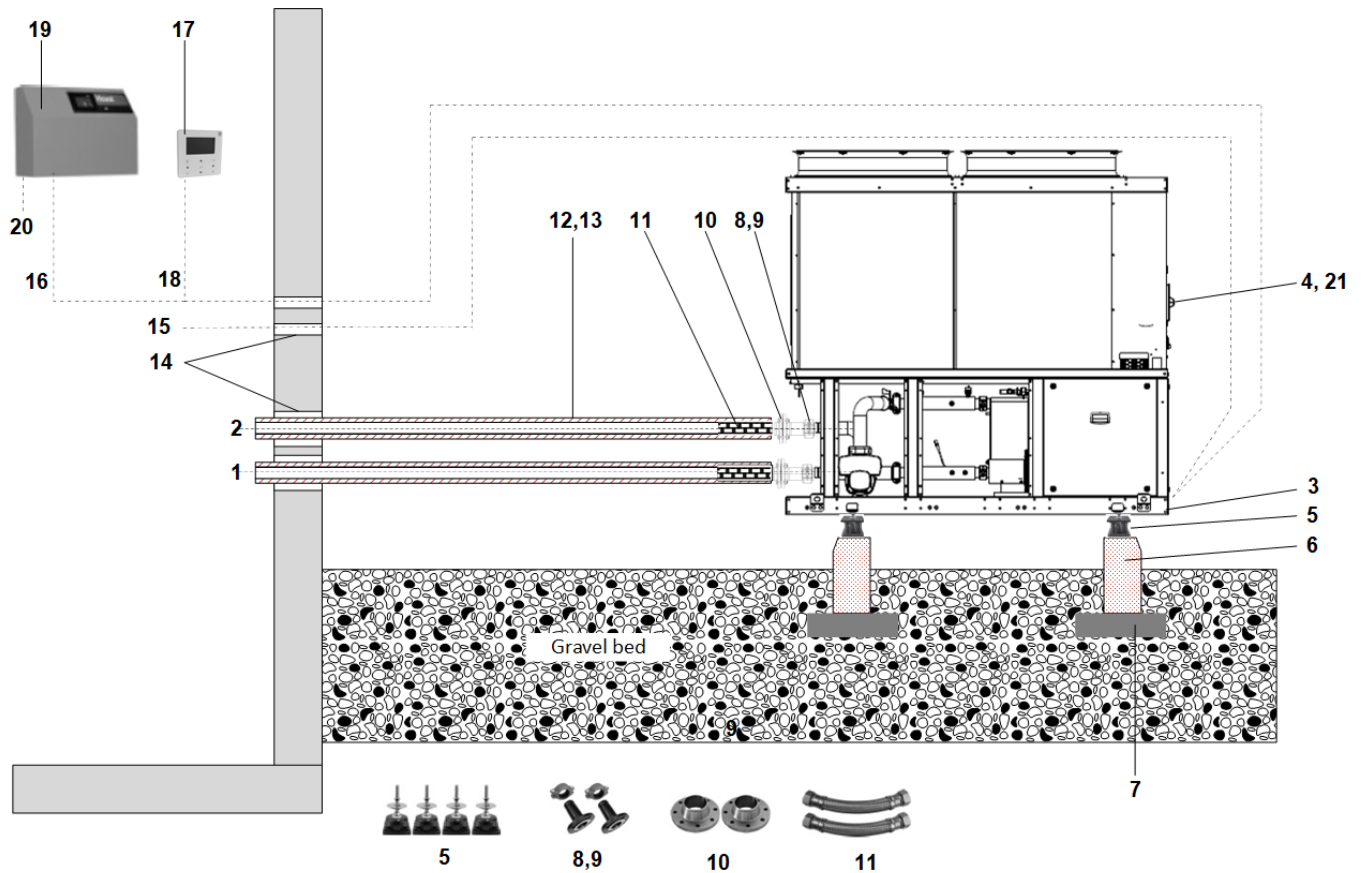
Base design for installations with vibration dampers



The concrete base must have a level surface the size of the Belaria® fit.
The base should have chamfered edges



Configuration and connection diagram for the Belaria® fit WLP (44, 74)



- | | | |
|----|---|--|
| 1 | Heating flow DN 50 | |
| 2 | Heating return DN 50 | |
| 3 | Electrical system feed-through | |
| 4 | Operator terminal bracket (installation possible on site) | |
| 5 | Vibration dampers (option) | |
| 6 | Concrete base (on site) | |
| 7 | Vibration decouplers (on site) | |
| 8 | Victaulic coupling (included in the scope of delivery) | |
| 9 | Victaulic connection pipe (included in the scope of delivery) | |
| 10 | Set of welded-on flanges (option) | |
| 11 | Vibration decouplers (option) | |
| 12 | Hydraulic line (on site) | |
| 13 | Insulation (on site) | |
| 14 | Feed-throughs (on site) | |
| 15 | Main current | 400 V/5-pin (configuration of cross-section on site) |
| 16 | Connection to heat pump | |
| | Request On/Off | 230 V/2-pin (see wiring diagram) |
| | Cooling mode On/Off | 230 V/2-pin (see wiring diagram) |
| | Alarm | 230 V/2-pin (see wiring diagram) |
| 17 | Operator terminal | |
| 18 | Connection of heat pump operator terminal (on-site) | |
| | line length < 40 m: 5 x 0.75 mm ² shielded | |
| | line length < 300 m: 3 x 0.75 mm ² shielded | |
| 19 | Electrical box | |
| 20 | Control current | 230 V/13 A/3-pin (see wiring diagram) |
| 21 | Main switch | |
| 22 | Condensate drain DN 32 | |

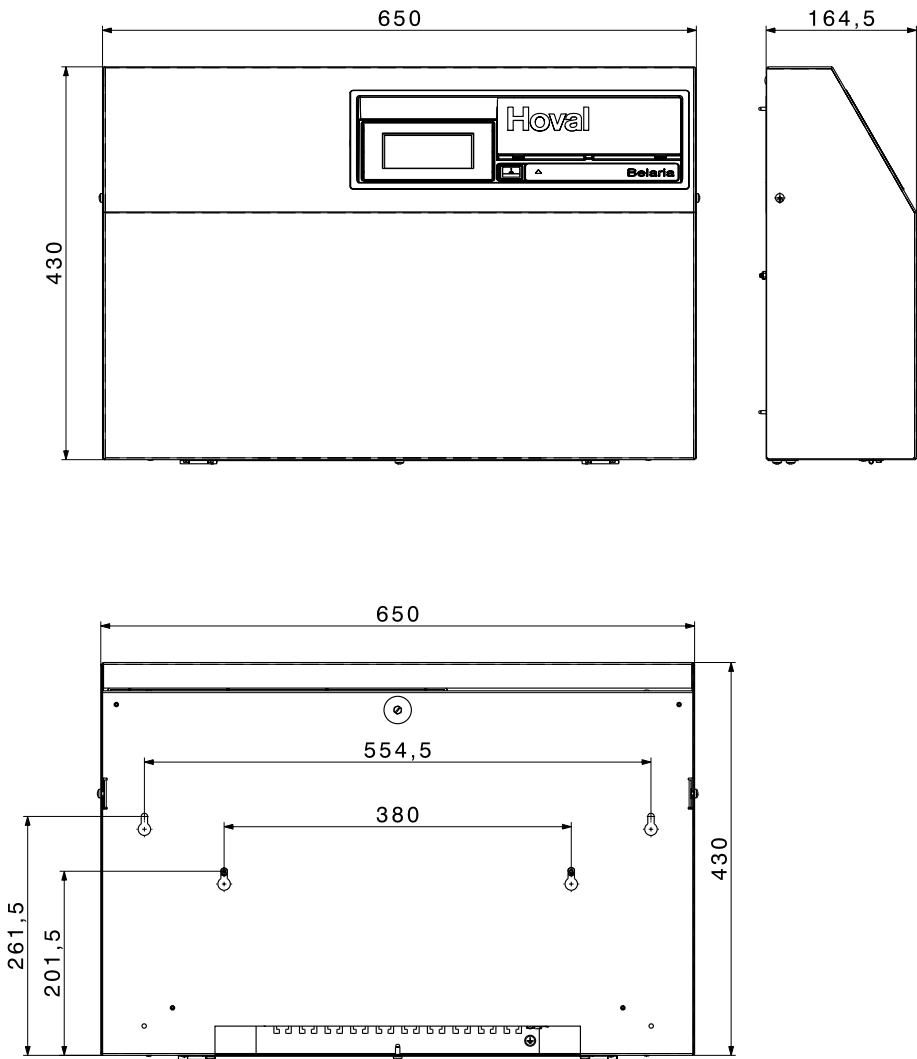
The piping from the boiler room to the heat pump must be configured by the installer. Connecting pipes are not included.

Notice

If the operator terminal is installed at a distance of more than 40 metres from the heat pump, the power supply unit supplied must be used.

Information on safety and installation, see manual 'Technical information, Installation instruction' (WLP-01-2025)

Electrical box for Belaria® fit WLP
(Dimensions in mm)



Belaria® fit WLH (113-220)

High-efficiency air-cooled heat pump certified by Eurovent, built according to ISO 9001 quality standards, for outdoor installation.

Compressor

Hermetic scroll compressors with vapour injection, controlled by an inverter, complete with motor protection against overheating, overcurrent and excessive discharge gas temperatures. Mounted on anti-vibration rubber pads and complete with oil charge. The compressors are equipped with a sound-absorbing cover, which reduces noise emissions and provides thermal insulation.

Structure

The load-bearing structure and base are made entirely of sturdy 1.2mm thick steel sheet, with hot-dip galvanising and polyester powder coating in RAL9001 for visible parts, which guarantees excellent mechanical characteristics and high resistance to corrosion over time.

Panelling

External panelling in 1.2mm thick steel sheet, with hot-dip galvanised surface treatment and polyester powder coating in RAL9001, which ensures superior corrosion resistance in outdoor installations and eliminates the need for periodic repainting. Easily removable panels to allow full access to internal components.

Internal heat exchanger

Direct expansion heat exchanger with brazed stainless steel plates (AISI 316), in a gasketless pack using copper as the brazing material, with low refrigerant content and high heat exchange surface area, complete with: 17 mm thick external anti-condensation thermal insulation in sintered expanded polypropylene; antifreeze resistance to protect the water side of the exchanger to prevent ice formation if the water temperature falls below a preset value.

Fan

Helical fans with profiled sickle-shaped blades in ABS resin ASG-20 with 20% glass fibre content, directly coupled to an electronically controlled motor (IP23), driven by brushless DC (BLDC) motor. The absence of brushes (brushless) and the special power supply increase both service life and efficiency. This reduces consumption by up to 50%. The fans are housed in aerodynamically shaped outlets to increase efficiency and minimise noise levels and are equipped with safety grilles. Both the fans and the grilles are designed using CFD technology. Supplied with variable speed control.

Refrigeration circuit

Two independent refrigeration circuits made of copper, brazed and assembled in the factory, complete with:

- Electronic expansion valve
- 4-way cycle reversal valve
- High pressure safety switch
- Low pressure safety switch
- Liquid receiver
- Oil separator
- Liquid separator
- Pressure transducer
- Safety thermostat against compressor discharge overheating
- Temperature sensors
- Low pressure safety valve



Models

Belaria® fit WLH size	Refrigerant	Max flow temperature °C	Heat output max A7W35 kW	Cooling capacity max A35W7 kW
(113) / CP (113)	R32	60	135	114
(140) / CP (140)	R32	60	163	136
(180) / CP (180)	R32	60	192	157
(220) / CP (220)	R32	60	240	208

- Economiser heat exchanger

Heat recovery

- Configuration that allows free hot water production during cooling operation
- Reduction in condensation temperature: under nominal conditions, cooling capacity increases by approximately 3.2% and the power absorbed by the compressors is reduced by 3.6%.

Electrical panel

The power section includes:

- Main disconnect switch
- General protection fuses
- Isolation transformer for the auxiliary circuit power supply
- Auxiliary component protection fuses
- AC filter on the power supply
- Power supply phase sequence protection
- Compressor overcurrent protection
- Compressor overload protection
- Malfunction protection sensor
- Phase monitor

The control section includes:

- Compressor protection and timing
- Relay for remote transmission of cumulative alarm signals
- Defrost cycle optimisation
- Condensation control
- Dry contact for remote on-off control
- Volt free contact for remote SUMMER/WINTER command

The control keypad includes:

- Interface terminal with graphic display
- Multifunction keys for ON/OFF control
- Heat, cool or auto operating mode
- Alarm display and reset
- Daily or weekly programming
- Power supply for remote control
- Serial port with Modbus output (RS 485) for remote communication

Hydraulic circuit

- Temperature sensors
- Drain valve
- Anti-freeze resistance to protect the water side heat exchanger and prevent ice formation if the water temperature drops below a preset value
- Water side differential pressure switch
- Vent valve

Test

Unit undergoes functional testing at the factory at the end of the production line and pressure testing of the refrigeration circuit pipes (with nitrogen and hydrogen) before shipping.

Features - Supply

- Refrigerant R-32
- Treated fluid consisting of water only
- Hydronic unit on the user side
- Inverter pumps **available only in CP version**
- Power supply voltage 400/3/50 without neutral
- Super-silent acoustic configuration
- Delivery of units with full refrigerant charge
- Exchanger approvals CE= PED - European testing
- Battery with hydrophilic aluminium fins
- High-efficiency DC fan
- Plate heat exchanger
- Electronic expansion valves
- Minimum outdoor air temperature down to -20°C
- Minimum outdoor air temperature with unit unit powered but not operating down to -20°C
- Minimum outdoor air temperature for storage down to -20°C
- Pump unit on the user side with 1 high head inverter pump **available only in CP version**
- Steel mesh filter on the water side
- Isolating switch on board unit
- Phase monitor
- RS485 serial port with Modbus protocol
- Anti-vibration mounts
- Hail protection grilles

Warranty - 24 months

Mandatory commissioning and scheduled maintenance by an authorised Hoval Service Centre.

Belaria® fit WLH (113-220)

Acoustic configuration Super-silent EN

Size		(113)	(140)	(180)	(220)
Heating					
• Heating capacity ⁸⁾	kW	130	170	210	268
• Compressor power input ⁸⁾	kW	39.2	50.9	61.5	82.1
• Total power input ²⁾	kW	42.8	54.6	67	87.5
• COP ⁸⁾	-	3.03	3.11	3.13	3.06
• Water flow rate (user side) ⁸⁾	l/s	6.3	8.2	10.1	12.9
• Internal exchanger pressure drop ⁸⁾	kPa	25.2	29.2	33.7	52.8
• Heating capacity EN14511:2018 ⁹⁾	kW	130	170	210	268
• Total power input EN 14511:2018 ⁹⁾	kW	43.2	55.1	67.7	88.7
• COP EN 14511:2018 ⁹⁾	-	3.01	3.09	3.1	3.02
• SCOP for average climate W35 ⁶⁾	-	4.12	4.07	4.15	4.11
• SCOP for average climate W55 ⁶⁾	-	2.88	2.88	2.87	2.93
Cooling					
• Cooling capacity ¹⁾	kW	114	136	157	208
• Compressor power input ¹⁾	kW	46.4	60.7	67.9	90.1
• Total power input ²⁾	kW	48.6	62.9	71.2	93.4
• Partial recovery heating capacity ³⁾	kW	38.5	47.3	54	71.6
• EER ¹⁾	-	2.35	2.16	2.21	2.23
• Water flow rate (user side) ¹⁾	l/s	5.4	6.5	7.5	9.9
• Internal exchanger pressure drop ¹⁾	kPa	19.3	18.9	19.2	32.2
• Cooling capacity EN 14511:2018 ⁴⁾	kW	114	136	157	208
• Total power input EN 14511:2018 ⁴⁾	-	48.9	63.2	71.5	94.1
• EER EN 14511:2018 ⁴⁾	-	2.33	2.15	2.2	2.21
• SEER ⁶⁾	-	4.4	4.31	4.34	4.3
• SEPR ⁷⁾	-	5.44	5.38	5.39	5.25
• Cooling capacity AHRI 550/590 ⁵⁾	kW	114	136	157	208
• Compressor power input AHRI 550/590 ⁵⁾	kW	48.6	62.9	71.2	93.4
• COPR ⁵⁾	-	2.35	2.16	2.21	2.23
• IPLV ⁵⁾	-	4.16	4.06	4.09	4.08

The Product complies with the European ErP (Energy Related Products) Directive, which includes Commission Delegated Regulation (EU) No. 2016/2281 Commission, also known as Ecodesign LOT21. It contains fluorinated greenhouse gases (GWP 675)

¹⁾ Data refers to the following conditions:

- Water temperature at the internal heat exchanger = 12/17 °C
- Air temperature entering the external heat exchanger = 35 °C
- Evaporator fouling factor = $0.44 \times 10^{(-4)} \text{ m}^2 \text{ K/W}$

²⁾ The Total Power Consumption does not take into account the portion relating to the pumps and necessary to overcome the pressure drops for the circulation of the solution inside the exchangers.

³⁾ Recovery exchanger water temperature = 40/45 °C

⁴⁾ Data calculated in accordance with Standard EN 14511:2018 referring to the following conditions:

- Water temperature at the internal exchanger = 12/17 °C
- Air temperature entering the external heat exchanger = 35 °C

⁵⁾ Data calculated in accordance with AHRI Standard 550/590 under the following conditions:

- Water temperature at the internal exchanger = 6.7 °C
- Water flow rate = 0.043 l/s per kW
- Inlet air temperature at external heat exchanger = 35 °C
- Evaporator fouling factor = $0.18 \times 10^{(-4)} \text{ m}^2 \text{ K/W}$

⁶⁾ Data calculated in accordance with EN 14825:2018

⁷⁾ Data calculated in accordance with EU Regulation 2016/2281

⁸⁾ Data referring to the following conditions:

- Internal heat exchanger water temperature = 40/45 °C
- Air temperature entering the external exchanger = 7 °C D.B. / 6 °C W.B.
- Evaporator fouling factor = $0.44 \times 10^{(-4)} \text{ m}^2 \text{ K/W}$

⁹⁾ Data calculated in accordance with EN 14511:2013 referring to the following conditions:

- Internal heat exchanger water temperature = 40/45 °C
- Air temperature entering the external exchanger = 7 °C D.B. / 6 °C W.B.

Belaria® fit WLH (113-220)

Construction features

Size		(113)	(140)	(180)	(220)
Compressor					
• Type of compressors		Rotary Inverter	Rotary inverter/ Scroll Inverter	Scroll Inverter	Scroll Inverter
• Refrigerant		R-32	R-32	R-32	R-32
• Number of compressors	Nr	4	4	4	4
• Rated power C1	HP	25	25	35	45
• Rated power C2	HP	25	35	35	45
• Capacity control steps Std				Stepless	
• Oil charge C1	l	4.6	4.6	6.2	7.2
• Oil charge C2	l	4.6	6.2	6.2	7.2
• Refrigerant charge C1	Kg	14.5	14.5	21	25.0
• Refrigerant charge C2	Kg.	14.5	16.5	21	25.0
• Refrigerant circuits	Nr	2	2	2	2
Internal exchanger					
• Type of internal exchanger ¹⁾				PHE	
• Number of internal exchangers	Nr	1	1	1	1
• Water content	l	10.5	13.2	15.4	15.4
• Minimum system water content	l	1050	1250	1450	1930
External exchanger					
• Type of external exchanger ²⁾				CCHY	
• Number of coils	Nr	2	2	2	2
External Section Fans					
• Type of fans ³⁾				AX	
• Number of fans	Nr	2	2	2	3
• Type of motor				Brushless DC	
• Standard air flow SC	l/s	16667	16667	25000	25000
• Standard air flow LN	l/s	15556	15556	23333	23333
• Standard air flow EN	l/s	14444	14444	21667	21667
Connections					
• Water fittings		2"1½	2"1½	3"	3"
Power supply					
• Standard power supply				400/3/50	
Electrical data					
• F.L.A. - Total	A	117	147.5	178	221.5
• F.L.I. - Total	kW	74.3	76.4	79.9	110
• M.I.C. - Value ⁴⁾	A	117	147.5	178	221.5

¹⁾ PHE= Plate heat exchanger

²⁾ CCHY = Copper/aluminium condensing coil with hydrophilic treatment

³⁾ AX = Axial fan

⁴⁾ M.I.C. = Maximum starting current of the unit. The M.I.C. is obtained by adding the maximum starting current of the largest compressor and the currents absorbed at the maximum permissible conditions (F.L.A.) of the remaining electrical components

Voltage imbalance between phases: max 2 %

Voltage variation: max +/- 10 %

The electrical data refer to the standard unit; depending on the accessories installed, the data may vary

Energy efficiency

SCOP up to 4.15 with low temperature water (LWT 35 °C).

SEER up to 4.40, making it extremely competitive even compared to cooling-only versions.

Capacity modulation from 20% to 100%.

Extended operating limits

Outdoor air temperature	max	min
Heating	44 °C	-20 °C
Domestic hot water production	44 °C	-20 °C
Cooling	48 °C	-15 °C

Outdoor air temperature	max	min
Heating	60 °C	25 °C
Domestic hot water production	60 °C	25 °C
Cooling	20 °C	0 °C

Options supplied with the unit

Serial communication module for Modbus TCP/IP, BACnet/IP, BACnet MS/TP supervisor.

Enables serial connection to supervision systems using Modbus TCP/IP, BACnet/IP, BACnet MS/TP as communication protocols. Allows access to the complete list of operating variables, commands and alarms. With this accessory, each unit can communicate with the main supervision systems. The device is installed and wired on board the machine.

Warnings

The configuration and management of the BACnet network are the responsibility of the customer.

The total length of each individual serial line must not exceed 1000 metres and the line must be connected in bus mode (input/output).

High static pressure inverter pump (Installed on all types with CP in the name)

Pumping group consisting of an electric pump, controlled by inverter to adapt to different conditions. The pump flow rate and head can be adapted to the system features by calibrating. The pump flowrate and head can be adapted by inverter. Three-phase electric motor with IP55 protection rating. Quick-release couplings with an insulated casing, safety valve, pressure gauges, system load safety pressure switch, stainless steel immersion antifreeze heaters fitted on the suction and supply lines.

Anti-hail protection grilles

The grilles protect the external coil from accidental contact with objects or persons and hail.

Drain pan

Drain pan with electric heater The drain pan made of steel AISI 316 allows the collection and discharge of the condensate.

Refrigerant leak detector

The leak detector device, in-built on the unit and positioned inside the compressor compartment.

Additional board

Additional board for advanced functions management. Multifunction board installed in the electrical panel of the unit for the advanced functions management.

Sound levels

Acoustic configuration Super-silent

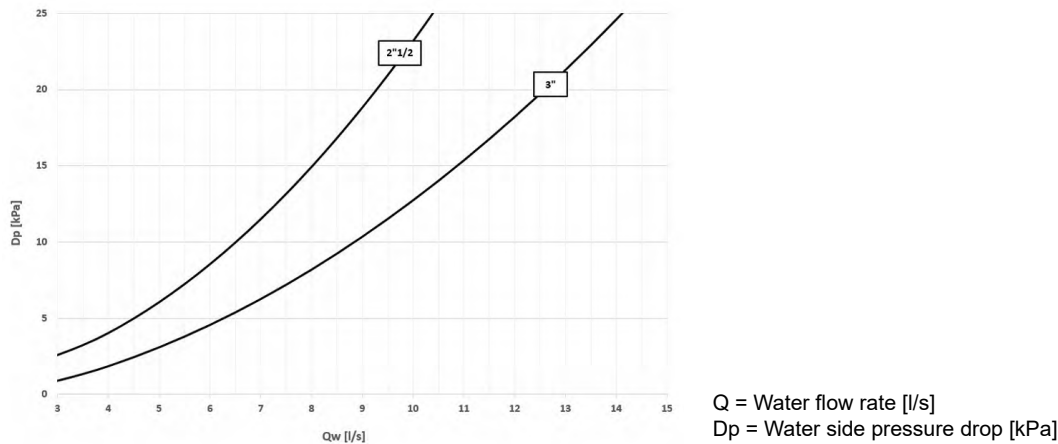
Size	Sound power level								Sound pressure level	Sound power level
	Octave band Hz								dB(A)	dB(A)
	63	125	250	500	1000	2000	4000	8000		
(113)	57	63	67	70	75	68	62	62	59	77
(140)	58	64	68	71	76	69	63	63	60	78
(180)	76	72	71	74	77	74	68	65	62	80
(220)	77	73	72	75	78	75	69	66	63	81

Sound levels refer to units at full load, under nominal test conditions. The sound pressure level is measured at a distance of 1 m from the external surface of the standard unit operating in an open field. Measurements are taken in accordance with UNI EN ISO 9614-2, in compliance with the requirements of EUROVENT 8/1 certification, which allows for a tolerance of 3 dB(A).
Data refer to the following conditions:
- Internal heat exchanger water temperature = 12/7 °C
- Air temperature entering the external exchanger = 35°C.

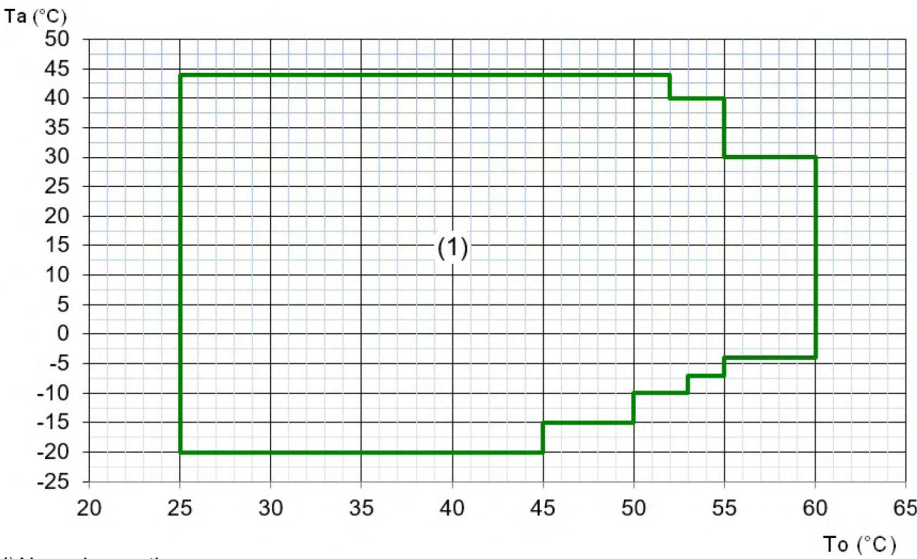
Steel mesh filter on the water side

The device prevents the heat exchanger from becoming dirty due to any impurities present in the hydraulic circuit. The mechanical filter stainless steel mesh filter must be positioned on the water inlet line. It can be easily removed for periodic maintenance and cleaning. The filter water connections are Victaulic 2" 1/2 for sizes 113 and 140 and 3" for sizes 180 and 220.

Filter pressure drop

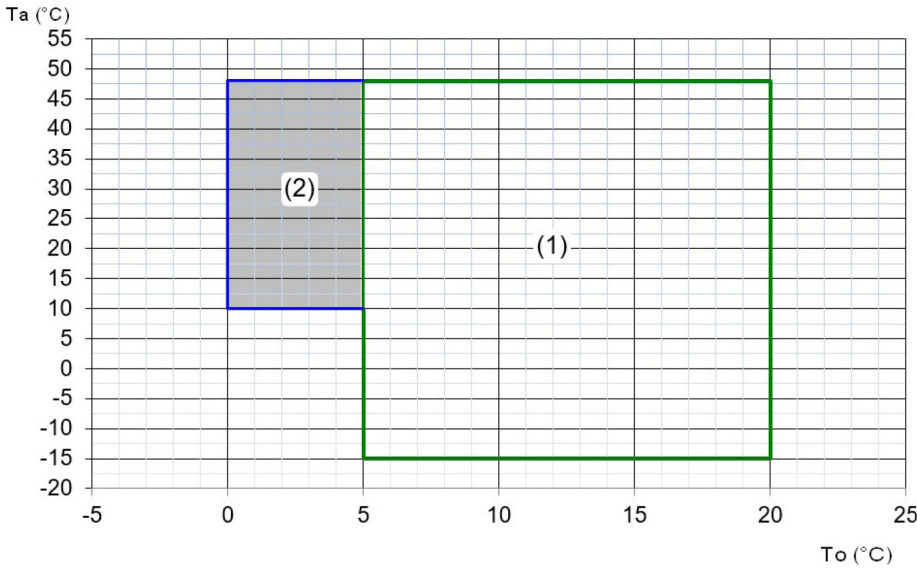


Fields of application
Heating



1) Normal operating range

Fields of application
Cooling



1) Normal operating range

2) Operating range where the use of glycol is mandatory, depending on the water outlet temperature from the heat exchanger on the use side

Correction factors for ethylene glycol use

% Ethylene glycol by weight		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
Freezing temperature	°C	-2	-3.9	-6.5	-8.9	-11.8	-15.6	-19	-23.4	-27.8	-32.7
Safety temperature	°C	3	1	-1	-4	-6	-10	-14	-19	-23.8	-29.4
Cooling capacity factor	Nr	0.997	0.994	0.99	0.986	0.981	0.976	0.97	0.964	0.957	0.95
Compressor power input factor	Nr	0.999	0.999	0.998	0.997	0.996	0.996	0.995	0.994	0.993	0.993
Internal exchanger pressure drop factor	Nr	1.016	1.035	1.056	1.08	1.106	1.135	1.166	1.2	1.236	1.275

Correction factors for propylene glycol use

% Propylene glycol by weight		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
Freezing temperature	°C	-2	-3.9	-6.5	-8.9	-11.8	-15.6	-19	-23.4	-27.8	-32.7
Safety temperature	°C	3	1	-1	-4	-6	-10	-14	-19	-23.8	-29.4
Cooling capacity factor	Nr	0.995	0.99	0.983	0.976	0.968	0.96	0.95	0.939	0.928	0.916
Compressor power input factor	Nr	0.999	0.997	0.995	0.993	0.991	0.988	0.986	0.983	0.98	0.977
Internal exchanger pressure drop factor	Nr	1.027	1.058	1.093	1.133	1.176	1.224	1.276	1.332	1.393	1.457

Scale correction factors

M2 °C/W	Internal heat exchanger (evaporator)	
	F1	FK1
0.44 x 10 (-4)	1.0	1.0
0.88 x 10 (-4)	0.97	0.99
1.76 x 10 (-4)	0.94	0.98

F1 = Cooling capacity correction factor
FK1 = Compressor power correction factor

Exchanger operating limits

		Internal heat exchanger	
		DPR	DPW
Plate heat exchanger	PED (CE)	4500	1000

DPr = Max. operating pressure on the refrigerant side in kPa
DPw = Max. operating pressure on the water side in kPa

Overload and control device calibrations

Refrigerant side		Open	Close	Value
High pressure safety pressure switch	kPa	4200	3200	-
Low pressure safety pressure switch	kPa	140	300	-
Gas-liquid separator safety valve	kPa	-	-	3000
Safety thermostat against compressor drain overheating	°C	75	115	-
Water side				
Antifreeze protection	°C	8	4	-
High pressure safety valve	kPa	-	-	1000

Performance data - Heating

Belaria® fit WLH (113-220)

Acoustic configuration Compressor soundproofing - Super-silent

Size		Leaving internal exchanger water temperature (°C)											
D.B./W.B.	Ta °C	35		40		45		50		55		60	
		kW	KWe_tot	kW	KWe_tot	kW	KWe_tot	kW	KWe_tot	kW	KWe_tot	kW	KWe_tot
(113)	-20 / -21	60.1	28	57.1	29.3	56.7	32	-	-	-	-	-	-
	-15 / -16	67.6	29.7	65.2	31.4	65.6	34.6	63.5	36.7	-	-	-	-
	-7 / -8	89.3	32.8	85.1	38	82.8	38.4	81.1	40.9	75.7	42.1	-	-
	-4 / -5	95	36.5	93	39.2	90.9	39.6	89.2	42.2	82.2	45.6	73.3	48.5
	2 / 1	113	37.8	111	40.8	108	41.5	106	44.5	89.1	48.5	87.4	51.4
	7 / 6	135	37.1	130	39.8	130	42.8	123	46.1	103	50.4	101	53.7
	12 / 11	151	37.3	149	40.7	143	44	141	47.5	118	52	115	55.5
	18 / 14	171	37.3	168	40.9	162	44.4	158	48.1	132	52.8	129	56.5
(140)	-20 / -21	77	38.8	77.4	42.8	81.6	49.2	-	-	-	-	-	-
	-15 / -16	89.3	40.3	89.7	44.3	94.2	50.6	81.3	55.1	-	-	-	-
	-7 / -8	111	40.6	111	45	116	52.2	99.7	56.7	99.7	58.9	-	-
	-4 / -5	121	41.4	120	45.6	126	52.8	108	57.3	108	61.3	108	68.1
	2 / 1	140	42.3	140	46.4	146	53.7	125	58.4	124	64.5	124	69.5
	7 / 6	163	43.5	159	48.4	170	54.6	141	59.4	140	65.6	139	70.7
	12 / 11	193	46.1	192	50.7	187	55.2	159	60.2	157	66.5	156	71.8
	18 / 14	217	46	215	50.7	209	55.3	177	60.4	175	66.7	173	72.1
(180)	-20 / -21	81.7	53.3	86.1	60.1	90.8	68	-	-	-	-	-	-
	-15 / -16	102	54	106	60.4	109	67.9	79.2	68.8	-	-	-	-
	-7 / -8	139	50.5	137	61.2	139	67.5	105	66.7	106	64.7	-	-
	-4 / -5	151	55.5	153	61.3	154	67.2	129	66.2	130	70.7	130	78.2
	2 / 1	181	55.8	182	61.2	182	66.9	149	65.8	149	71.5	149	77.4
	7 / 6	192	51.8	212	62.8	210	67	167	65.9	166	71.6	166	77.4
	12 / 11	240	57.9	238	63.3	239	70.3	187	66.2	186	71.8	184	77.6
	18 / 14	268	57.9	266	63.2	266	70.1	207	66	205	71.5	203	77.2
(220)	-20 / -21	126	64	132	71.4	137	77.8	-	-	-	-	-	-
	-15 / -16	145	66.3	149	72.2	153	78.5	119	76.5	-	-	-	-
	-7 / -8	168	70.6	170	73.3	172	79.3	146	77.2	147	83.9	-	-
	-4 / -5	190	68.2	191	73.9	193	79.8	176	77.6	178	83.4	179	89.5
	2 / 1	220	69.2	220	74.8	220	80.7	200	78.4	200	84.2	200	90.2
	7 / 6	240	65.2	284	77.3	268	87.5	224	79.2	223	85	222	91
	12 / 11	324	72.3	321	78.1	321	85.9	251	80.1	249	86	247	92.1
	18 / 14	364	72.5	360	78.5	360	86.4	280	80.7	277	86.7	275	92.9

kW = Heat capacity in kW

kWe_tot = Total power input in kW

Ta (°C) = Temperature of air entering the external exchanger

D.B. = Dry bulb

W.B. = Wet bulb

Integrated heating capacities

External exchanger inlet air temperature °C (D.B./W.B.)	-7 / -8	-5 / -6	0 / -1	2 / 1	Other
Heating capacity multiplication coefficient	0.90	0.89	0.88	0.90	1.00

The integrated heat output represents the effective heat output, including the effect of any defrost cycles.

It is obtained by multiplying the thermal potential value provided in kWt (shown in the heating performance tables) by the coefficients indicated in the table. During prolonged operation in heat pump mode with negative outside air temperatures, it is important to facilitate the evacuation of water produced by the defrost cycles to prevent ice accumulation near the base of the unit. Make sure that this does not pose a danger to people or property.

Performance data - Partial load heating

Belaria® fit WLH (113-220)

Acoustic configuration Compressor soundproofing - Super-silent

Size	Load	Entering external exchanger air temperature (°C)																	
		-20 / -21			-15 / -16			-10 / -11			-7 / -8			2 / 1			7 / 6		
		kW	KWe _{tot}	COP	kW	KWe _{tot}	COP	kW	KWe _{tot}	COP	kW	KWe _{tot}	COP	kW	KWe _{tot}	COP	kW	KWe _{tot}	COP
(113)	100	56.7	32	1.77	65.6	34.6	1.9	75.7	37	2.05	82.8	38.4	2.16	108	41.5	2.61	130	42.8	3.03
	75	37.1	21.7	1.71	45.5	23.3	1.96	54.5	24.7	2.21	60.4	25.6	2.36	80.8	28	2.88	93.9	28.9	3.24
	50	21.3	14.9	1.43	27.7	16	1.73	34.3	17.1	2.01	38.3	17.6	2.17	52.4	19.2	2.72	56	17.7	3.17
	Min.	7.29	5.19	1.41	9.65	5.57	1.73	12	5.91	2.04	13.5	6.09	2.21	18.3	6.57	2.79	21.2	6.76	3.13
(140)	100	81.6	49.2	1.66	94.2	50.6	1.86	107	51.5	2.08	116	52.2	2.22	146	53.7	2.72	170	54.6	3.11
	75	55.7	34.2	1.63	66.5	34.8	1.91	77.6	35.5	2.19	84.9	35.9	2.36	109	37.2	2.93	124	37.8	3.29
	50	34.9	24.4	1.43	42.2	24.5	1.73	49.8	24.7	2.02	54.6	24.8	2.2	70.7	25.7	2.75	74.3	23.3	3.18
	Min.	12.5	8.02	1.56	14.9	8.06	1.85	17.4	8.15	2.14	19.1	8.23	2.32	24.5	8.53	2.88	28	8.72	3.21
(180)	100	90.8	68	1.34	109	67.9	1.61	128	68.2	1.87	139	67.5	2.06	182	66.9	2.72	210	67	3.13
	75	64.5	40.9	1.58	77.5	40	1.94	90.2	39.3	2.29	98.4	39.3	2.51	130	39.7	3.27	150	43.4	3.45
	50	43.5	27.5	1.58	51.2	26.3	1.94	58.8	25.5	2.3	63.9	25.2	2.53	83.5	25.1	3.33	96	21.2	4.53
	Min.	18.5	12.4	1.49	21.4	11.9	1.81	24.4	11.5	2.12	26.2	11.4	2.31	33.8	11.2	3.01	38.7	9.43	4.1
(220)	100	137	77.8	1.76	153	78.5	1.95	167	79.2	2.11	172	79.3	2.16	220	80.7	2.72	268	87.5	3.06
	75	98.8	47	2.1	111	48.1	2.31	125	48.5	2.57	134	48.9	2.74	173	49.2	3.52	200	53.8	3.71
	50	59.1	31.5	1.87	68.5	32	2.14	78.5	32.5	2.41	85.1	32.8	2.59	112	33.7	3.31	129	28.6	4.5
	Min.	22.9	13.7	1.67	26.9	13.9	1.94	31	14	2.22	33.8	14	2.41	44.5	14.2	3.14	51.3	11.9	4.3

Load = Percentage of heat output relative to full load value

kW = Heat output in kW

KWe_{tot} = Total power input in kW

Internal heat exchanger water temperature= , outlet 45°C / inlet 40°C / Variable flow rate with external heat exchanger air temperature.

Performance data - Cooling

Belaria® fit WLH (113-220)

Acoustic configuration Super-silent

Size	To °C	Inlet air temperature at external heat exchanger (°C)											
		25		30		35		40		45		48	
		kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot
(113)	5	127	34	114	37	110	47.1	107	49.9	95	53.7	82.4	54.5
	6	134	34.3	118	37.5	114	48.6	114	50.5	98.7	54.4	85.6	55.1
	7	137	34.9	124	38.1	120	47.5	115	51.4	104	55.3	90.5	56.1
	10	140	32.9	133	36	130	44	121	48.7	112	52.5	96.6	53.3
	15	135	30.3	134	33.1	133	39.5	120	45	112	48.6	96.8	49.3
	18	132	28.5	135	31.3	135	36.5	119	42.5	113	45.9	96.9	46.6
	20	133	24.9	126	28.0	123	32.1	111	33.2	96.5	38.3	95.5	40.1
(140)	5	118	36.6	118	41.7	118	49.5	111	52.1	105	56.7	85.5	59.9
	6	123	36.9	124	42.1	127	56.2	116	52.6	109	57.2	88.7	60.3
	7	127	37.2	129	42.5	136	62.9	120	53	113	57.6	91.9	60.8
	10	133	37.7	133	43	137	58.6	126	53.7	119	58.4	97.4	61.6
	15	146	35.6	147	40.6	151	53.1	143	51.3	135	55.8	108	58.3
	18	151	33	153	37.7	157	46.7	152	48.1	144	52.4	113	54.1
	20	154	40.3	167	46	172	62.5	169	57.1	160	61.9	131	65.3
(180)	5	160	53.3	154	58.3	147	63.8	140	69.7	133	76.2	129	80.3
	6	166	53.7	159	58.7	152	67.5	145	70.2	138	76.6	133	80.7
	7	172	54.1	165	59.1	157	71.2	150	70.6	143	77	138	81.1
	10	180	54.7	173	59.7	165	65.2	158	71.2	150	77.6	146	81.7
	15	202	53.4	194	58.2	178	59.9	179	69.1	171	75.2	167	79.1
	18	213	51.6	206	56	182	53.9	191	66.3	183	72.1	178	75.8
	20	221	50.3	214	54.6	184	49.9	198	64.4	190	70	186	73.6
(220)	5	211	71.7	202	77.3	189	87.5	185	89.9	177	96.8	171	101
	6	218	72.3	209	77.9	199	90.4	192	90.6	183	97.6	177	102
	7	225	72.9	216	78.6	208	93.4	199	91.4	189	98.4	184	103
	10	239	74.1	230	79.8	214	90.3	210	92.6	199	100	193	104
	15	248	65.8	239	71.2	227	79.9	220	83.2	211	89.9	205	94.1
	18	248	56.8	240	61.6	231	68.4	222	72.7	212	78.9	207	82.8
	20	248	50.7	240	55.3	234	60.8	223	65.7	214	71.6	208	75.3

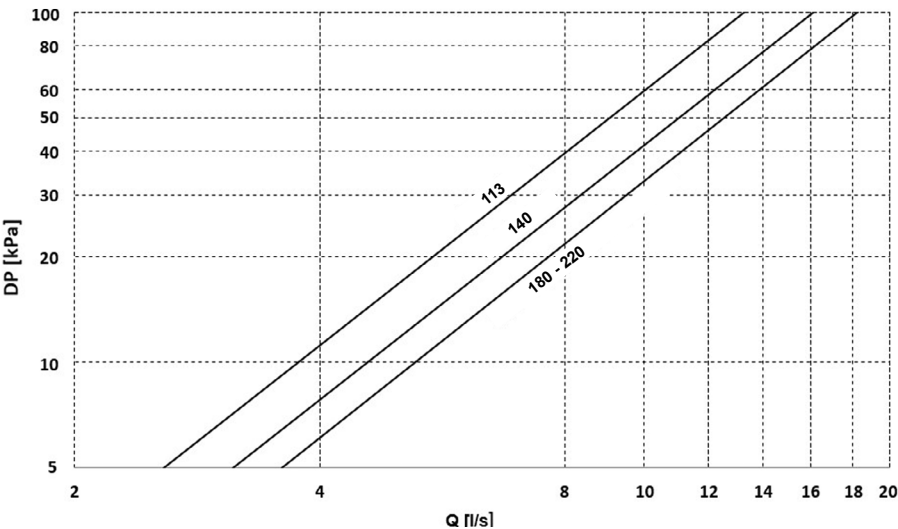
kW = Cooling output in kW

kWe_tot = Total power input in kW

To (°C) = Internal exchanger outlet water temperature

Performances in function of the inlet/outlet water temperature differential = 5°C

Plate exchangers pressure drop (EVPHE)



Pressure drops are calculated considering a water temperature of 7°C

Q = Water flow rate [l/s]
DP = Water side pressure drop [kPa]

The water flow rate can be calculated using the following formula

$Q \text{ [l/s]} = kW / (4,186 \times DT)$

kW = Cooling capacity in kW
DT = Temperature difference between inlet / outlet water

Permissible water flow rates

Minimum (Qmin) and maximum (Qmax) water flow rates allowed for the unit to work properly.

Size		(113)	(140)	(180)	(220)
Qmin	[l/s]	2.6	3.1	3.6	3.6
Qmax	[l/s]	13.3	16.2	18.3	18.3

Performance data - Partial load cooling

Belaria® fit WLH (113-220)

Acoustic configuration Super-silent

Size	Load	Entering external exchanger air temperature (°C)											
		35 °C			30 °C			25 °C			20 °C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
(113)	100	114	48.6	2.35	118	37.5	3.15	134	34.3	3.89	134	31.3	4.28
	75	84	29.9	2.81	84.4	24.2	3.49	85.7	22.2	3.87	88	19.6	4.49
	50	57.5	16.4	3.51	56.3	13.9	4.07	56.2	12	4.68	56.5	10.2	5.56
	Min.	20.4	6.47	3.15	21.7	6.19	3.5	23.3	5.42	4.29	23.4	4.62	5.07
(140)	100	136	62.9	2.16	129	42.5	3.04	127	37.2	3.41	126	31.7	3.98
	75	98.8	32.2	3.07	95.1	27.2	3.49	94.8	23.9	3.97	94.3	20.4	4.62
	50	66.5	19.4	3.43	64.4	16.2	3.99	64.7	13.9	4.66	64.9	11.7	5.52
	Min.	22.8	7.29	3.12	25.7	6.96	3.69	25.8	6.1	4.23	26	5.26	4.94
(180)	100	157	71.2	2.21	165	59.1	2.79	172	54.1	3.18	178	49.5	3.6
	75	121	41.3	2.93	127	37.6	3.37	132	34.3	3.85	137	31.5	4.35
	50	77.8	24.4	3.19	81.9	21.8	3.76	85.9	19.6	4.39	90	17.8	5.05
	Min.	27	8.08	3.34	28.6	7.26	3.95	30.3	6.62	4.58	31.9	6.14	5.2
(220)	100	208	93.4	2.23	216	78.6	2.75	225	72.9	3.08	233	67.7	3.44
	75	152	53.5	2.83	161	47.5	3.39	167	43.6	3.83	173	40.2	4.3
	50	95.1	29.5	3.22	99.4	26.3	3.78	104	23.5	4.41	108	21.1	5.1
	Min.	33.8	9.61	3.52	35.5	8.52	4.16	37.1	7.62	4.87	38.7	6.88	5.63

Load = Percentage of cooling capacity relative to full load value

kW = Cooling capacity in kW

kWe_tot = Total power input in kW

Internal heat exchanger water temperature = outlet 7°C / inlet 12°C / variable flow-rate with external exchanger air T.

Configurations

Permissible water flow rates

Minimum (Qmin) and maximum (Qmax) water flow rates allowed for correct operation of the unit.

Size		(113)	(140)	(180)	(220)
Qmin	[l/s]	2.5	3	3.4	4.4
Qmax	[l/s]	11.2	13.7	16.2	20.7

Hydronic unit accessories

Pump unit on the user side with 1 high-head inverter pump

Pump unit consisting of an electric pump regulated by an inverter to adapt to different operating conditions. Allows automatic reduction of the liquid flow rate in critical conditions, preventing blockages due to overload and consequent intervention by specialised technical personnel.

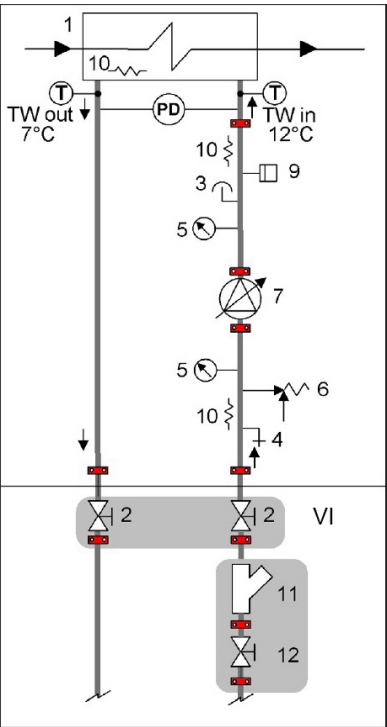
By adjusting the inverter, supplied as standard, the pump flow rates/heads can be adapted to the system characteristics. Centrifugal electric pump with cast iron pump body and stainless steel or cast iron impeller (depending on model).

Mechanical seal made of ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP55 protection rating. Complete with thermoformed insulating shell, quick couplings with insulating shell, safety valve, pressure gauges, system load safety pressure switch, stainless steel immersion-type anti-freeze heating elements located in the suction and delivery lines.

All water connections are Victaulic. Option supplied on board the unit..

CONNECTION DIAGRAM - Unit with 1 high-head inverter pump



- 1 - Internal heat exchanger
- 2 - Shut-off valve
- 3 - Vent valve
- 4 - Drain valve
- 5 - Pressure gauge
- 6 - Safety valve (6 Bar)
- 7 - Monobloc electric pump with high-efficiency impeller
- 9 - System load safety pressure switch (prevents the pumps from operating in the event of water failure)
- 10 - Anti-freeze heating element
- 11 - Steel mesh filter on the water side
- 12 - Shut-off valve with quick couplings

T - Temperature probe
PD - Differential pressure switch

TW in Chilled water inlet
TW out Chilled water outlet

The grey area indicates additional optional components.

Warnings

Provide hydraulic shut-off valves outside the unit to facilitate any extraordinary maintenance operations.

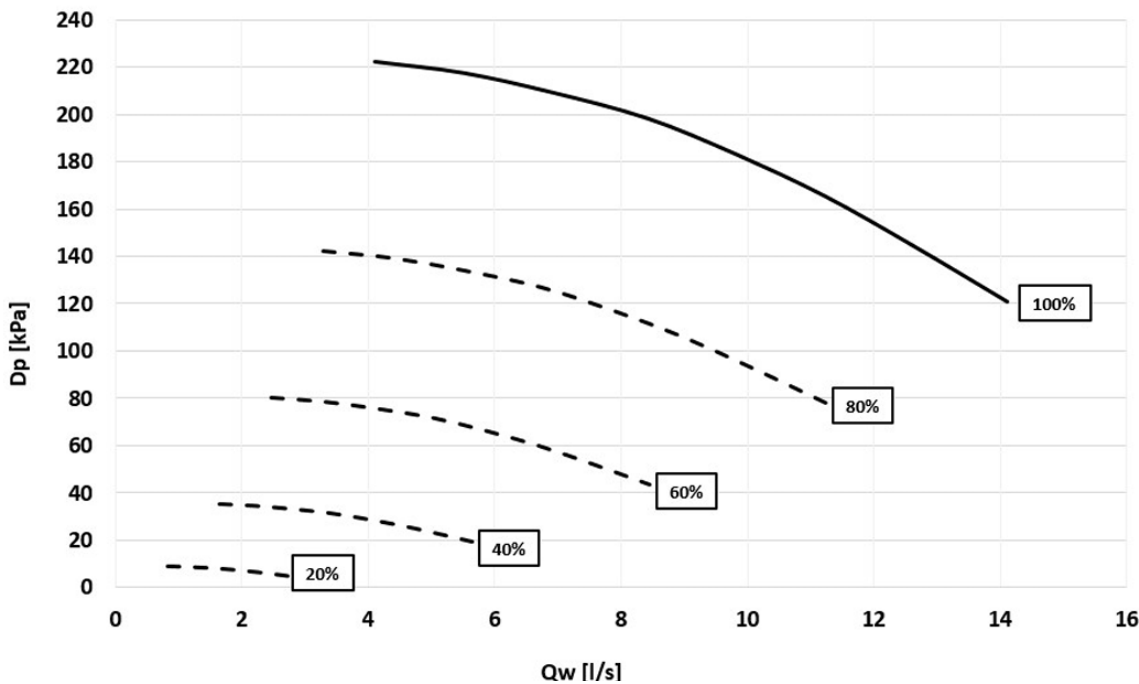
A non-return valve must be provided for each unit installed in parallel hydraulically and equipped with a pump unit installed on board (installation by the customer).

Electrical data Pump group

Pump	Nominal power [kW]	Rated absorbed current [A]
1PMVH (113-140)	3.0	6.33
1PMVH (180-220)	4.0	7.62

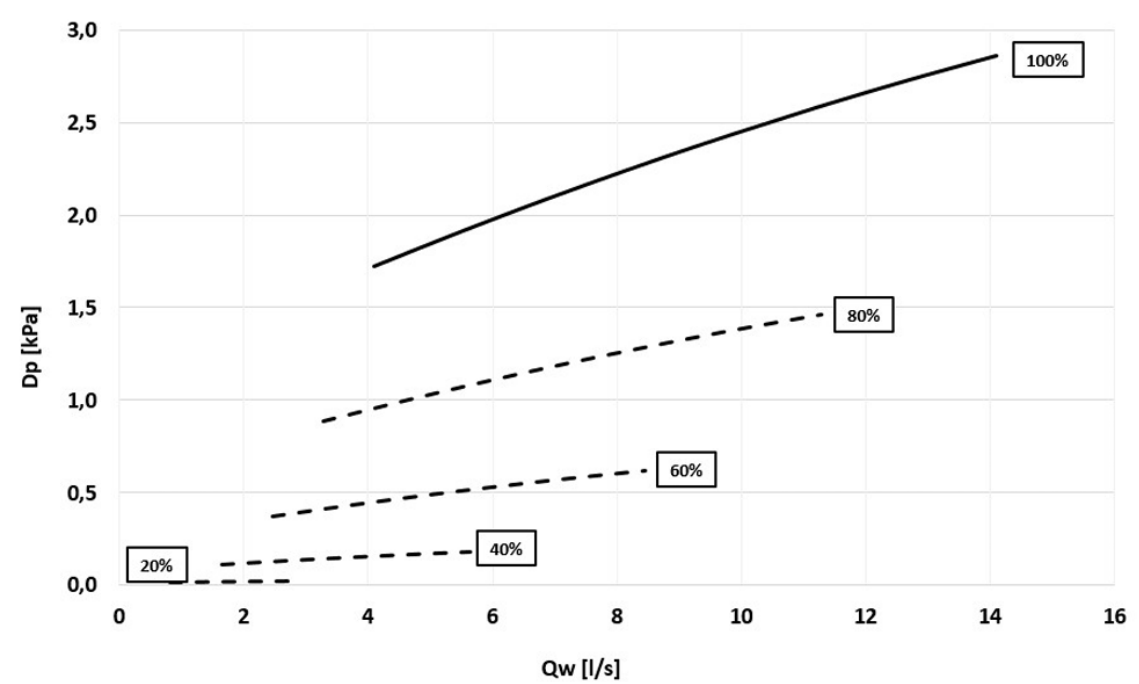
Pump group on the user side with 1 high-head inverter pump

Head - Size (113-140)



Dp = Pump head [kPa]
QW = Water flow rate [l/s]

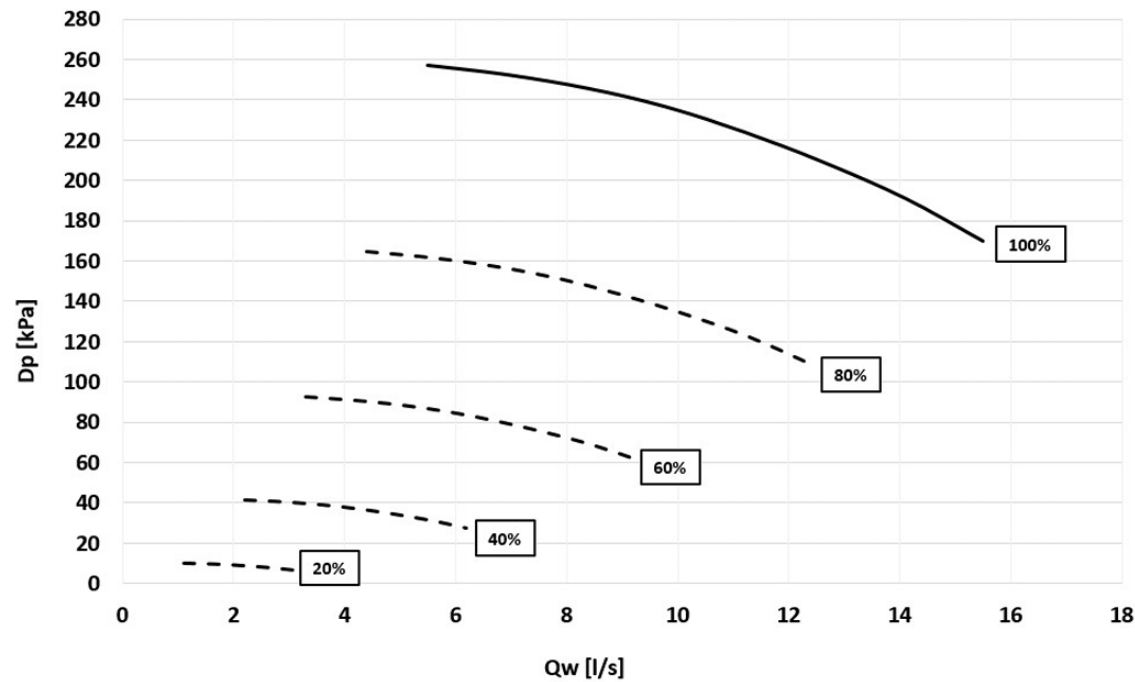
Power input - Size (113-140)



Pe = Power consumption [kW]
QW = Water flow rate [l/s]

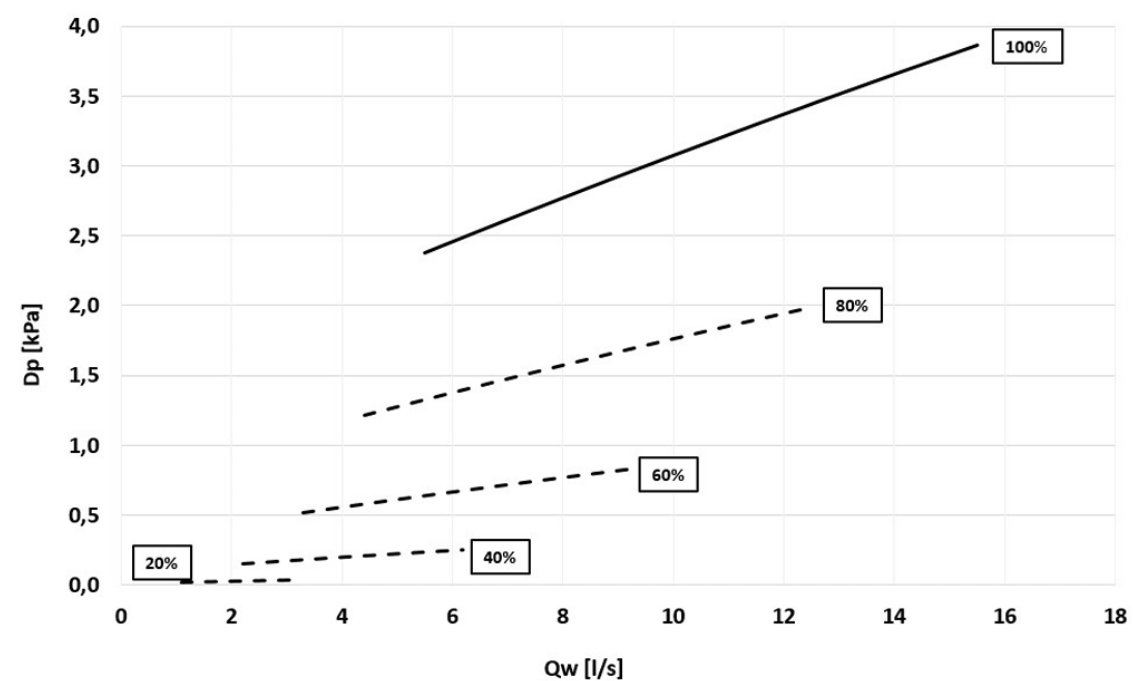
Pump group on the user side with 1 high-head inverter pump

Head - Size (180-220)



Dp = Pump head [kPa]
QW = Water flow rate [l/s]

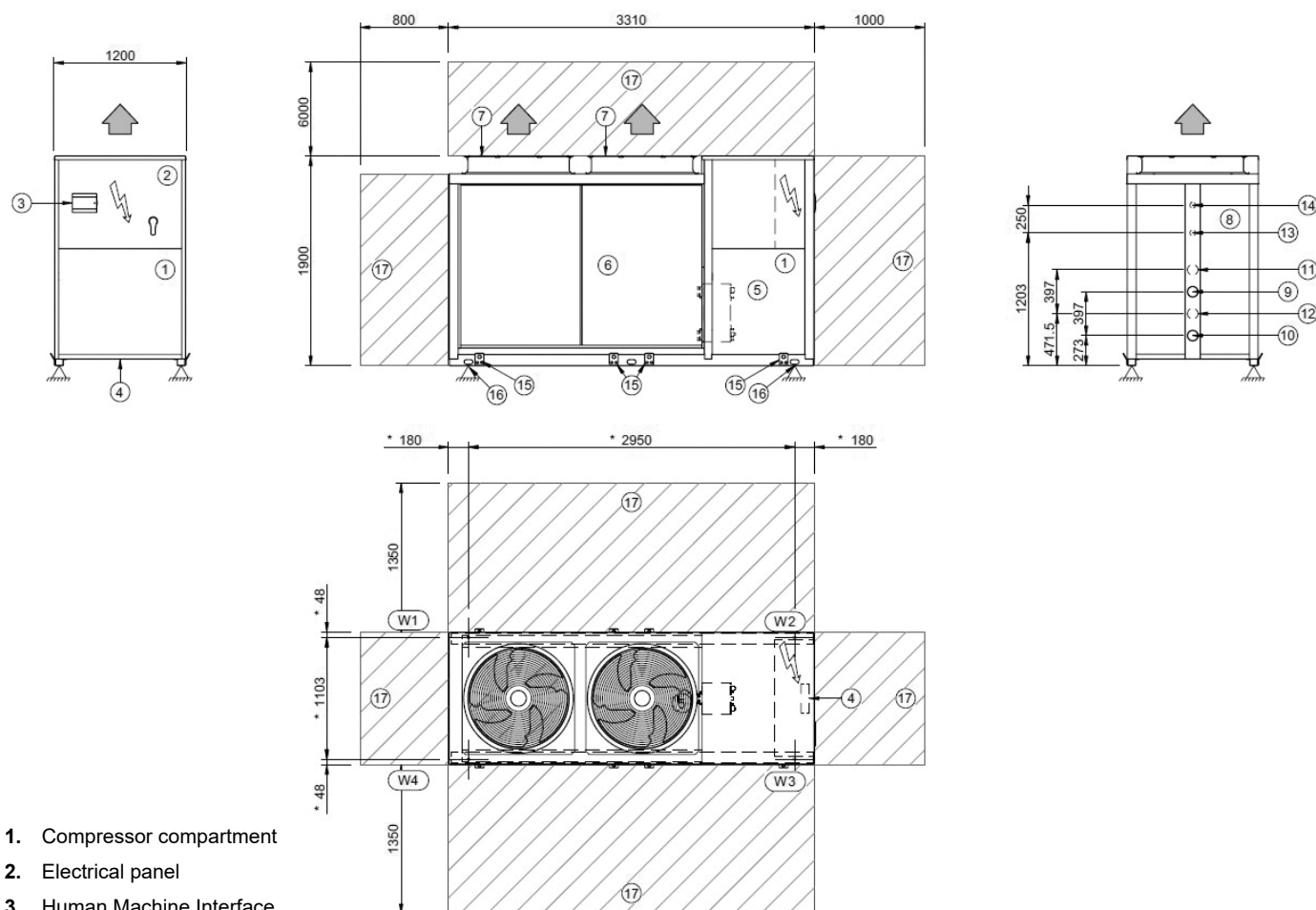
Power input - Size (180-220)



Pe = Power consumption [kW]
QW = Water flow rate [l/s]

Dimensions

Size (113-140)

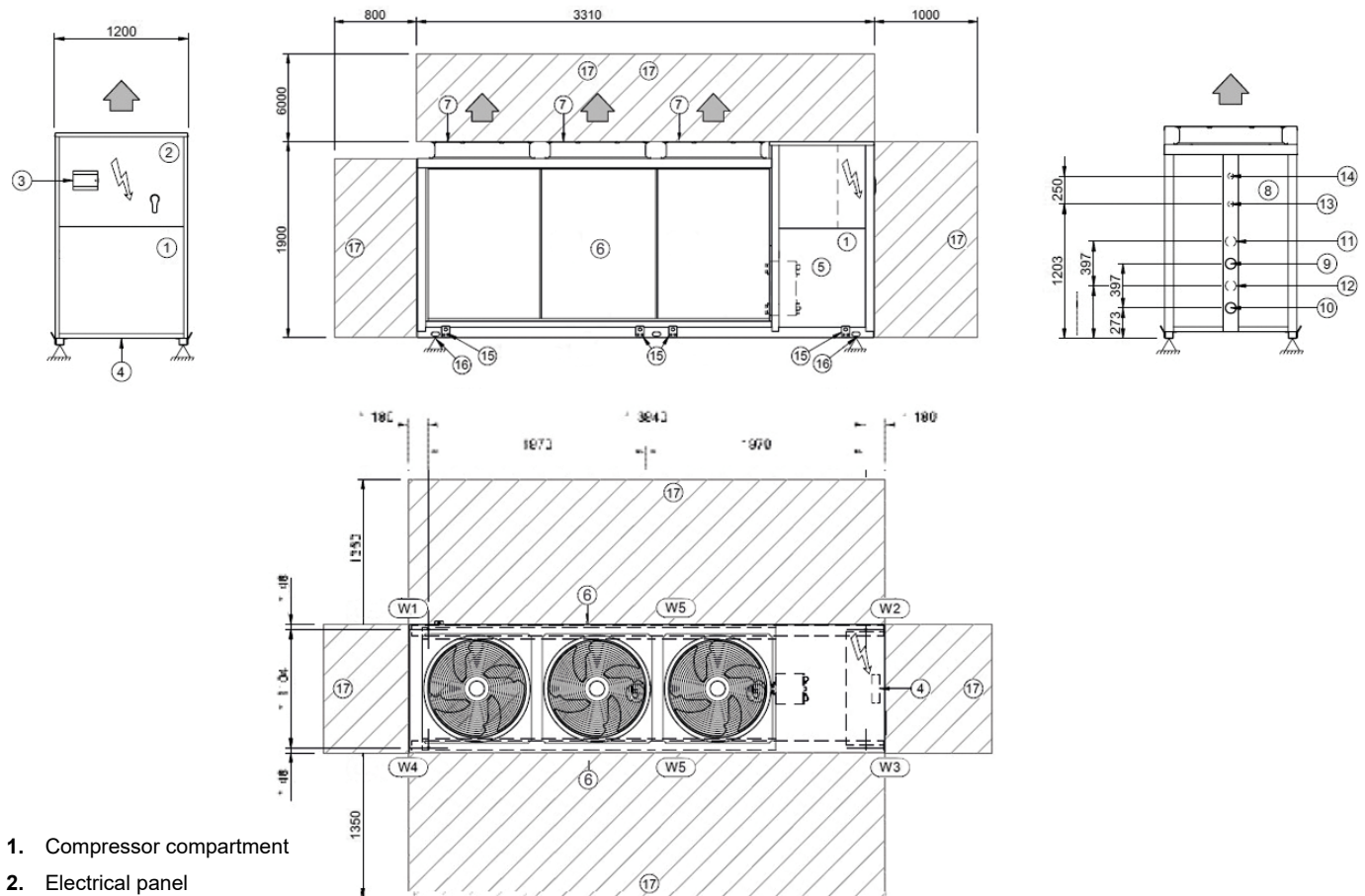


1. Compressor compartment
 2. Electrical panel
 3. Human Machine Interface
 4. Power input
 5. Internal exchanger
 6. External exchanger
 7. Fan
 8. Rear compartment
 9. Victaulic 2" ½ water inlet connection
 10. Victaulic 2" ½ water outlet connection
 11. Victaulic 2" ½ DHW water inlet connection
 12. Victaulic 2" ½ DHW water outlet connection
 13. Victaulic 1" 1/4 gas partial inlet recovery water connection
 14. Victaulic 1" 1/4 gas partial outlet recovery water connection
 15. Lifting bracket (removed)
 16. Support points
 17. Functional clearances
- * Position of antivibration mounts

Size		(113)	(140)
Length	mm	3310	3310
Depth	mm	1200	1200
Height	mm	1900	1900
W1 Support point	kg	171	168
W2 Support point	kg	312	323
W3 Support point	kg	312	341
W4 Support point	kg	171	177
Operating weight	kg	966	1009
Shipping weight	kg	952	994

Dimensions

Size (180-220)



1. Compressor compartment
 2. Electrical panel
 3. Human Machine Interface
 4. Power input
 5. Internal exchanger
 6. External exchanger
 7. Fan
 8. Rear compartment
 9. Victaulic 2" ½ water inlet connection
 10. Victaulic 2" ½ water outlet connection
 11. Victaulic 2" ½ DHW water inlet connection
 12. Victaulic 2" ½ DHW water outlet connection
 13. Victaulic 1" 1/4 gas partial inlet recovery water connection
 14. Victaulic 1" 1/4 gas partial outlet recovery water connection
 15. Lifting bracket (removed)
 16. Support points
 17. Functional clearances
- * Position of antivibration mounts

Size		(180)	(220)
Length	mm	4300	4300
Depth	mm	1200	1200
Height	mm	1900	1900
W1 Support point	kg	210	234
W2 Support point	kg	415	442
W3 Support point	kg	415	442
W4 Support point	kg	210	234
Operating weight	kg	1250	1352
Shipping weight	kg	1231	1334

Hoval Belaria® pro Modulating monoblock heat pump for heating and cooling.

Monoblock heat pump set up outdoors
consisting of outdoor unit and indoor unit.

Belaria® pro outdoor unit

- Compact floor-mounted air/water heat pump
- Elegant and extremely quiet outdoor unit
- Casing with sheet metal cladding, powder-coated, colour anthracite (DB703)
- Cooling unit with refrigerant R290
- Integrated components:
 - Speed-controlled scroll compressor
 - Straight louvre-type evaporator
 - Speed-controlled axial fan with FlowGrid (inlet grille)
 - Plate-type condenser made of stainless steel/copper
 - Built-in gas separator with safety valve 2.5 bar
 - Condensate drip tray incl. tray heating and condensate trace heater for channelling all the condensate in the outdoor unit, fixed installation, 1" connection
- With cooling function with corresponding hydraulics
- Hydraulic connections behind louvre grille
 - Heating connections 1½"
 - Filter ball valve installed in the heat pump return
- Electrical connections behind louvre grille
 - 400 V main power supply
 - 230 V control current, supplied from the indoor unit
 - Data cable for bus connection to the indoor unit
- With fitting accessories for fixing the outdoor unit on the ground

Belaria® pro indoor unit

- Compact wall-mounted indoor unit
- Casing made of structured EPP, colour black
- TopTronic® E control installed with TopTronic® E control module
- With WFA-200S automatic heat pump device
- Integrated components:
 - Speed-controlled high-efficiency pump
 - Flow sensor/heat meter
- Hydraulic connections at bottom
 - Heating connections 1¼" – reductions 1½" - 1¼" supplied
- Electrical connections introduced from bottom
- With fitting accessories for fixing the indoor unit to the wall
- Shut-off ball valves are included in the scope of delivery.

TopTronic® E controller

Control panel

- 4.3-inch colour touchscreen
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp
- Mains isolator



Model range

Belaria® pro
type

	Heat output ¹⁾		Cooling capacity ¹⁾		
	35 °C	55 °C	A-7W35 kW	A2W35 kW	A35W18 kW
(24)	 A+++ A+++ → D	 A+++ A+++ → D	11.9-22.1	11.8-24.0	13.0-20.9

A+++ → D A+++ → D

Energy efficiency class of the compound system with control.

¹⁾ Modulation range

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating states
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module heat generator TTE-WEZ

- Integrated control functions for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - Module expansion heating circuit or
 - Module expansion Universal or
 - Module expansion heat balancing
- Can be networked with up to 16 controller modules in total:
 - Heating circuit/DHW module
 - Solar module
 - Buffer module
 - Measuring module

Number of additional modules that can be installed in the heat generator:

- 1 module expansion and 1 controller module
or
- 2 controller modules

The supplementary plug set must be ordered in order to use expanded controller functions.

For further information about the TopTronic® E, see "Controls"

EnergyManager PV smart

Feature to increase self-generated power consumption in use with HovalConnect.

If a HovalConnect gateway is used together with the heat pump, the EnergyManager PV smart feature is available. This allows the heat pump to be operated preferentially at times of higher solar radiation. The feature uses online weather data on the current solar radiation for this purpose and can be adjusted by means of an associated threshold value. The self-consumption of electricity from an existing photovoltaic plant is thus increased and the purchase of grid electricity is reduced. This results in a lasting and significant cost-saving potential without further investment costs for the customer.

Delivery

- Outdoor and indoor unit delivered packaged separately
- Sensor kit included loose in the electrical box:
 - Outdoor sensor (AF)
 - Calorifier sensor (SF1/SF1.1)
 - Flow sensor (VF1)

On site

- Wall ducts for hydraulic connection lines
- Hydraulic connection lines from the outdoor unit to the inside of the building as far as the indoor unit
- Electrical connection line from the outdoor unit to the indoor unit
- Strip foundation, floor plate

Belaria® pro (24)

Type		pro (24)
• Energy efficiency class of the compound system with control ¹⁾ (A+++ → D)	35 °C/55 °C	A+++/A+++
• Room heating energy efficiency "moderate climate" 35 °C η _S	%	225
• Room heating energy efficiency "moderate climate" 55 °C η _S	%	165
• Seasonal coefficient of performance moderate climate 35 °C/55 °C	SCOP	5.7/4.2
• Seasonal coefficient of performance heating A35W18 ²⁾	SEER	5.6
• Seasonal coefficient of performance heating A35W7 ²⁾	SEER	3.2
Max./min. performance data heating and cooling in acc. with EN 14511		
• Max. heat output A2W35	kW	24.0
• Max. heat output A-7W35	kW	22.1
• Min. heat output A15W35	kW	12.6
• Max. cooling capacity A35W18	kW	20.9
• Max. cooling capacity A35W7	kW	19.1
• Min. cooling capacity A35W18	kW	13.0
Nominal output data heating in acc. with EN 14511		
• Nominal heat output A2W35	kW	14.5
• Coefficient of performance A2W35	COP	4.9
• Nominal heat output A7W35	kW	16.7
• Coefficient of performance A7W35	COP	5.7
• Nominal heat output A-7W35	kW	14.8
• Coefficient of performance A-7W35	COP	3.6
Nominal output data cooling in acc. with EN 14511		
• Nominal cooling capacity A35W18	kW	18.6
• Energy efficiency ratio A35W18	EER	4.5
• Nominal cooling capacity A35W7	kW	13.8
• Energy efficiency ratio A35W7	EER	3.4
Sound data		
• Max. sound power level outdoor unit, day operation	dB(A)	62
• Max. sound power level outdoor unit, night operation	dB(A)	52
• Sound power level EN 12102 outdoor unit ³⁾	dB(A)	56
• Sound pressure level 5 m ^{3), 4)}	dB(A)	37
• Sound pressure level 10 m ^{3), 4)}	dB(A)	31
Hydraulic data		
• Max. flow temperature	°C	70
• Max. flow rate heating side with A7W35, ΔT 6 K	m ³ /h	3.9
• Nominal flow rate heating side with A7W35, ΔT 5 K	m ³ /h	2.9
• Max. flow rate heating side cooling, ΔT 3 K	m ³ /h	5.5
• Pressure drop heating side at nominal flow	kPa	10
• Residual overpressure of heating pump at nominal flow	kPa	60
• Residual overpressure of heating pump at max. flow rate	kPa	35
• Max. operating pressure on the heating side ⁵⁾	bar	2.5
• Flow/return connection heating	G	1½"
• Nominal air volume outdoor unit (A7W35 and nominal rotation speed)	m ³ /h	6600
• Max. air volume outdoor unit (A7W35 and max. speed of rotation)	m ³ /h	8000
• Hydraulic connection line, max. length/dimension inside	m/DN	30/40

Type		pro (24)
Cooling technical data		
• Compressor		modulating
• Refrigerant		R290
• Refrigerant filling quantity	kg	4.4
• Compressor oil type		PZ46M
• Compressor oil filling quantity	l	0.9
Electrical data		
• Electrical connection of compressor	V/Hz	3~400/50
• Electrical connection of controller	V/Hz	1~230/50
• Electrical connection of electric heating element	V/Hz	-
• Max. heat pump operating current	A	19.5
• Max. compressor operating current	A	19.2
• Max. fan operating current	A	0.3
• Max. electric heating element operating current	A	-
• Max. output of electric heating element	kW	-
• Max. power consumption of heat pump	kW	11.9
• Max. fan power consumption	W	194
• Max. starting current heat pump I _A	A	19.2
• Power factor		0.88
• External protection main current	A	C/K 20
• External protection control current	A	B/Z 13
• External protection electric heating element	A	-
• Fault-current circuit breaker		RCCB type B, I _{Δn} ≥ 300 mA
• Recommended cable		Cu 5 x 4.0 mm ²
• Nominal electrical output with A-7W35	kW	4.1
• Maximum electrical output	kW	11.4
• Active power of heat pump	kW	10.5
• Max. operating voltage U _b	V	3~400
• Max. operating current I _b	A	19.5
• Max. inverter output current	A	24.0
• Pulse count		3
• Max. switching frequency per hour/day at t _n 0 °C	n	3/72
• Continuous load changes		No
• Starting up under load		No
• Feedback into the power system		No
• Power factor correction		No
• Starting up assistance		Output control
• Type of starting up assistance		Frequency converter
• Frequency converter		60-360 Hz (20-120 rps)
• Starting current/nominal current ratio		0.99
Dimensions/weight of outdoor unit		
• Dimensions (H x W x D)	mm	1461 x 1928 x 997
• Weight	kg	450
• Protection class		IP24
Dimensions/weight of indoor unit Belaria® pro		
• Dimensions (H x W x D)	mm	1005 x 550 x 280
• Weight	kg	28
• Protection class		IP20

¹⁾ Related to moderate climate

²⁾ EN 14825

³⁾ The sound values apply with a clean evaporator. These values are temporarily exceeded before defrosting.

⁴⁾ The sound pressure levels indicated apply if the outdoor unit is placed at a building façade. These values are reduced by 3 dB if the outdoor unit is free-standing. With installation in a corner, the sound pressure level increases by 3 dB.

⁵⁾ Maximum operating pressure of the system without isolating system 2.5 bar, because the outdoor unit is protected with 2.5 bar. Provide general protection of the system in the building with 3.0 bar.

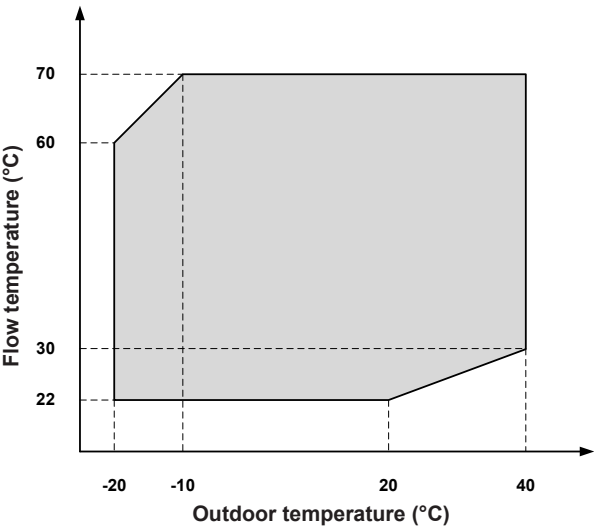
An isolating system must be provided for system pressures of 2.5 bar or more.

Using a fault-current circuit breaker RCCB type B, I_{Δn} ≥ 300 mA is recommended. Country-specific regulations must be observed.

Diagrams of areas of application

Heating and domestic hot water

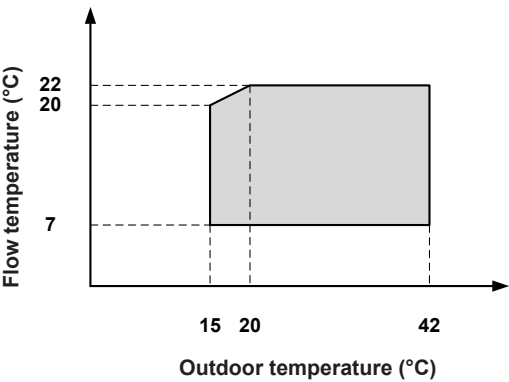
Belaria® pro (24)



Area of application of the heat pump for heating/domestic hot water

Cooling

Belaria® pro (24)



Area of application of the heat pump for cooling

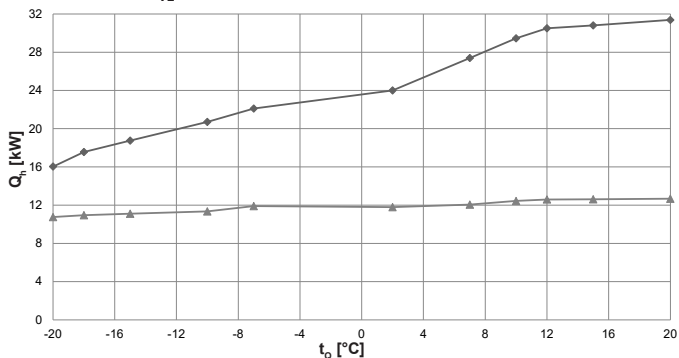
Performance data – heating

Maximum heat output allowing for defrosting losses

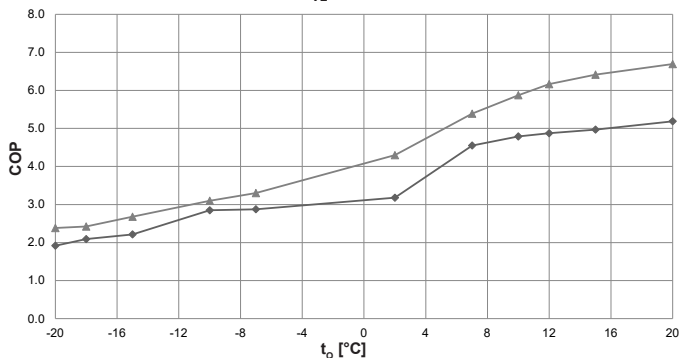
Belaria® pro (24)

Data according to EN 14511

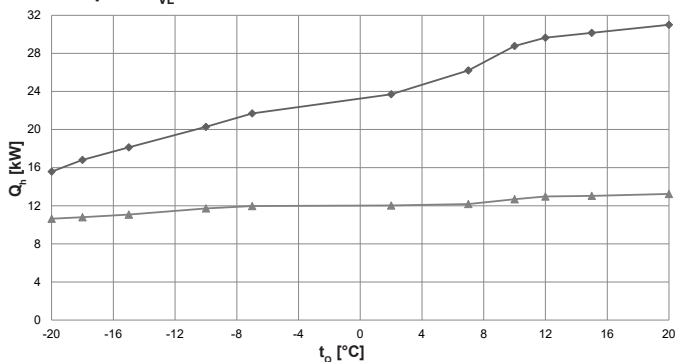
Heat output – $t_{VL} 35\text{ °C}$



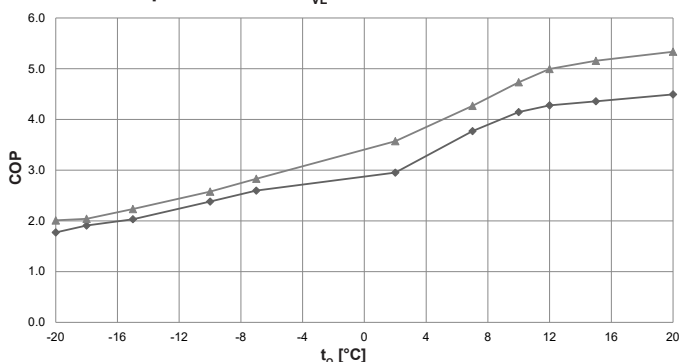
Coefficient of performance – $t_{VL} 35\text{ °C}$



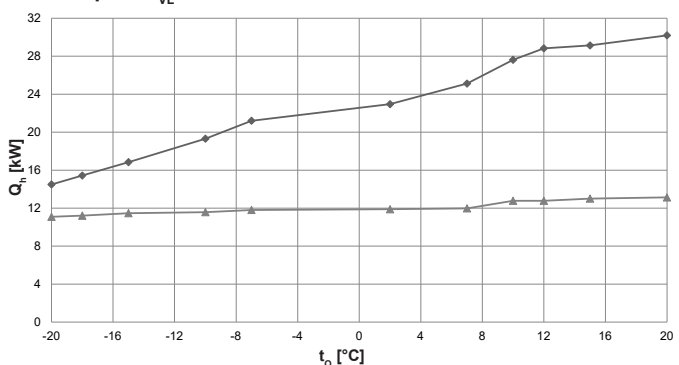
Heat output – $t_{VL} 45\text{ °C}$



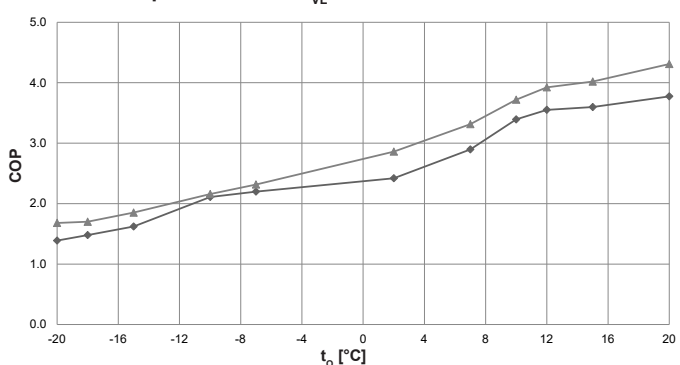
Coefficient of performance – $t_{VL} 45\text{ °C}$



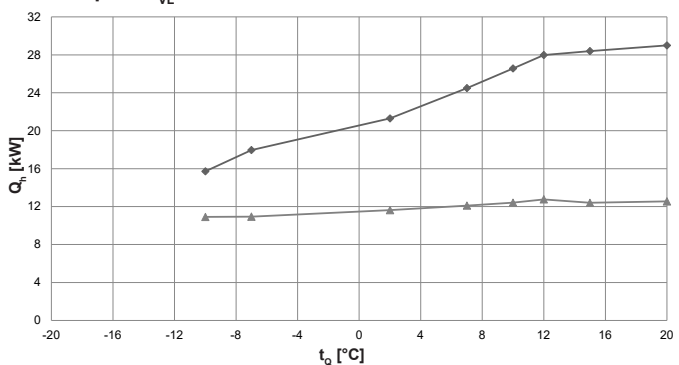
Heat output – $t_{VL} 55\text{ °C}$



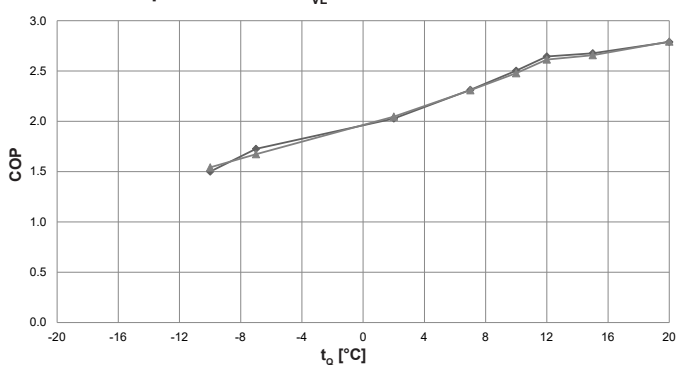
Coefficient of performance – $t_{VL} 55\text{ °C}$



Heat output – $t_{VL} 70\text{ °C}$



Coefficient of performance – $t_{VL} 70\text{ °C}$



t_{VL} = heating flow temperature (°C)

t_{o} = source temperature (°C)

Q_h = heat output (kW), measured in accordance with standard EN 14511

COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

◆ Maximum output

▲ Minimum output

Performance data – heating

Belaria® pro (24)

Data according to EN 14511

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
35	-20	16.0	8.4	1.9	10.8	4.5	2.4
	-18	17.6	8.4	2.1	10.9	4.5	2.4
	-15	18.8	8.5	2.2	11.1	4.1	2.7
	-10	20.7	7.3	2.9	11.4	3.7	3.1
	-7	22.1	7.7	2.9	11.9	3.6	3.3
	2	24.0	7.5	3.2	11.8	2.7	4.3
	7	27.4	6.0	4.6	12.1	2.2	5.4
	10	29.5	6.2	4.8	12.4	2.1	5.9
	12	30.5	6.3	4.9	12.6	2.0	6.2
	15	30.8	6.2	5.0	12.6	2.0	6.4
	20	31.4	6.1	5.2	12.7	1.9	6.7
45	-20	15.6	8.8	1.8	10.6	5.3	2.0
	-18	16.8	8.8	1.9	10.8	5.3	2.0
	-15	18.1	8.9	2.0	11.1	5.0	2.2
	-10	20.3	8.5	2.4	11.7	4.5	2.6
	-7	21.7	8.4	2.6	12.0	4.2	2.8
	2	23.7	8.0	3.0	12.0	3.4	3.6
	7	26.2	7.0	3.8	12.2	2.9	4.3
	10	28.8	6.9	4.1	12.7	2.7	4.7
	12	29.6	6.9	4.3	13.0	2.6	5.0
	15	30.2	6.9	4.4	13.0	2.5	5.2
	20	31.0	6.9	4.5	13.2	2.5	5.3
50	-20	15.0	9.7	1.5	11.5	5.8	2.0
	-18	16.1	9.6	1.7	11.6	5.8	2.0
	-15	17.5	9.7	1.8	10.9	5.4	2.0
	-10	19.8	8.8	2.2	11.2	5.0	2.3
	-7	21.7	9.1	2.4	11.5	4.6	2.5
	2	23.3	8.8	2.7	11.7	3.7	3.1
	7	25.7	7.8	3.3	12.0	3.2	3.7
	10	28.2	7.5	3.7	12.3	3.0	4.1
	12	29.2	7.5	3.9	12.4	2.9	4.3
	15	29.6	7.5	3.9	12.5	2.8	4.4
	20	30.6	7.5	4.1	12.6	2.8	4.5
55	-20	14.5	10.4	1.4	11.1	6.6	1.7
	-18	15.4	10.4	1.5	11.2	6.6	1.7
	-15	16.9	10.4	1.6	11.5	6.2	1.9
	-10	19.3	9.2	2.1	11.6	5.4	2.2
	-7	21.2	9.6	2.2	11.8	5.1	2.3
	2	23.0	9.5	2.4	11.9	4.2	2.9
	7	25.1	8.7	2.9	12.0	3.6	3.3
	10	27.6	8.1	3.4	12.8	3.4	3.7
	12	28.8	8.1	3.6	12.8	3.3	3.9
	15	29.1	8.1	3.6	13.0	3.2	4.0
	20	30.2	8.0	3.8	13.1	3.0	4.3

 t_{VL} = heating flow temperature (°C)

 t_Q = source temperature (°C)

 Q_h = heat output (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Further performance data – heating
see next page

Observe daily power interruptions!
see "Engineering heat pumps general"

Performance data – heating

Belaria® pro (24)

Data according to EN 14511

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
60	-20	14.0	11.4	1.2	10.8	7.1	1.5
	-18	14.8	11.4	1.3	10.9	7.1	1.5
	-15	16.2	11.1	1.5	11.2	6.7	1.7
	-10	18.8	10.4	1.8	11.5	6.0	1.9
	-7	20.7	10.2	2.0	11.6	5.6	2.1
	2	22.6	10.2	2.2	11.3	4.8	2.3
	7	24.6	9.5	2.6	12.1	4.2	2.9
	10	27.0	8.7	3.1	12.4	3.8	3.2
	12	28.4	8.7	3.3	12.8	3.8	3.4
	15	28.6	8.7	3.3	12.8	3.7	3.5
	20	29.7	8.5	3.5	12.9	3.5	3.7
	-20	-	-	-	-	-	-
70	-18	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	15.7	10.5	1.5	10.9	7.1	1.5
	-7	18.0	10.4	1.7	10.9	6.5	1.7
	2	21.3	10.5	2.0	11.6	5.7	2.0
	7	24.5	10.6	2.3	12.1	5.2	2.3
	10	26.6	10.6	2.5	12.4	5.0	2.5
	12	28.0	10.6	2.6	12.8	4.9	2.6
	15	28.4	10.6	2.7	12.4	4.7	2.7
	20	29.0	10.4	2.8	12.6	4.5	2.8

t_{VL} = heating flow temperature (°C)

t_Q = source temperature (°C)

Q_h = heat output (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Observe daily power interruptions!
see "Engineering heat pumps general"

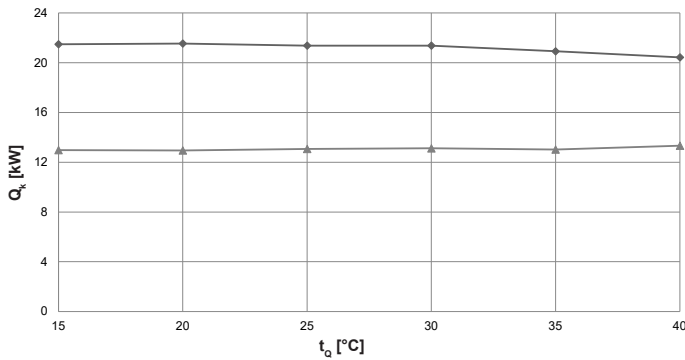
Performance data – cooling

Maximum cooling capacity

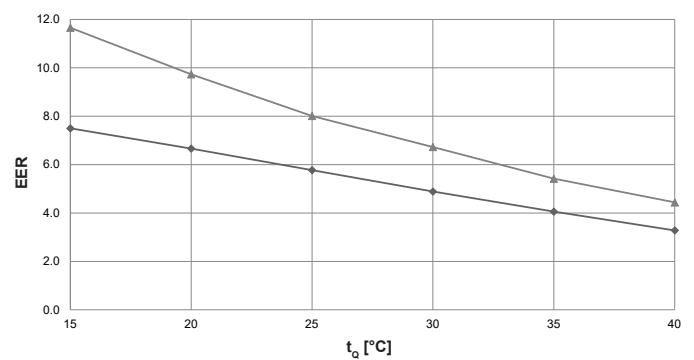
Belaria® pro (24)

Data according to EN 14511

Cooling capacity – $t_{VL} 18\text{ °C}$



Energy efficiency ratio – $t_{VL} 18\text{ °C}$



◆ Maximum output
▲ Minimum output

Belaria® pro (24)

Data according to EN 14511

t _{VL} °C	t _o °C	Maximum output			Minimum output		
		Q _k kW	P kW	EER	Q _k kW	P kW	EER
7	15	21.2	4.8	4.4	13.1	1.8	7.3
	20	21.5	6.0	3.6	13.3	2.3	5.8
	25	20.7	6.6	3.1	13.1	2.7	4.8
	30	20.1	7.0	2.9	12.9	3.7	3.5
	35	19.1	7.6	2.5	12.3	4.3	2.8
	40	16.7	7.7	2.2	11.4	5.4	2.1
12	15	21.6	3.8	5.8	13.0	1.4	9.0
	20	21.4	4.3	5.0	13.1	1.7	7.5
	25	21.5	5.0	4.3	13.3	2.2	6.2
	30	21.6	6.1	3.5	13.4	2.7	5.1
	35	21.0	7.2	2.9	13.3	3.2	4.2
	40	19.3	8.1	2.4	12.4	3.6	3.4
18	15	21.5	2.9	7.5	13.0	1.1	11.7
	20	21.5	3.2	6.7	13.0	1.3	9.7
	25	21.4	3.7	5.8	13.1	1.6	8.0
	30	21.4	4.4	4.9	13.1	2.0	6.7
	35	20.9	5.2	4.1	13.0	2.4	5.4
	40	20.4	6.2	3.3	13.3	3.0	4.4

t_{VL} = cooling water flow temperature (°C)

t_o = source temperature (°C)

Q_k = cooling capacity (kW), measured in accordance with standard EN 14511

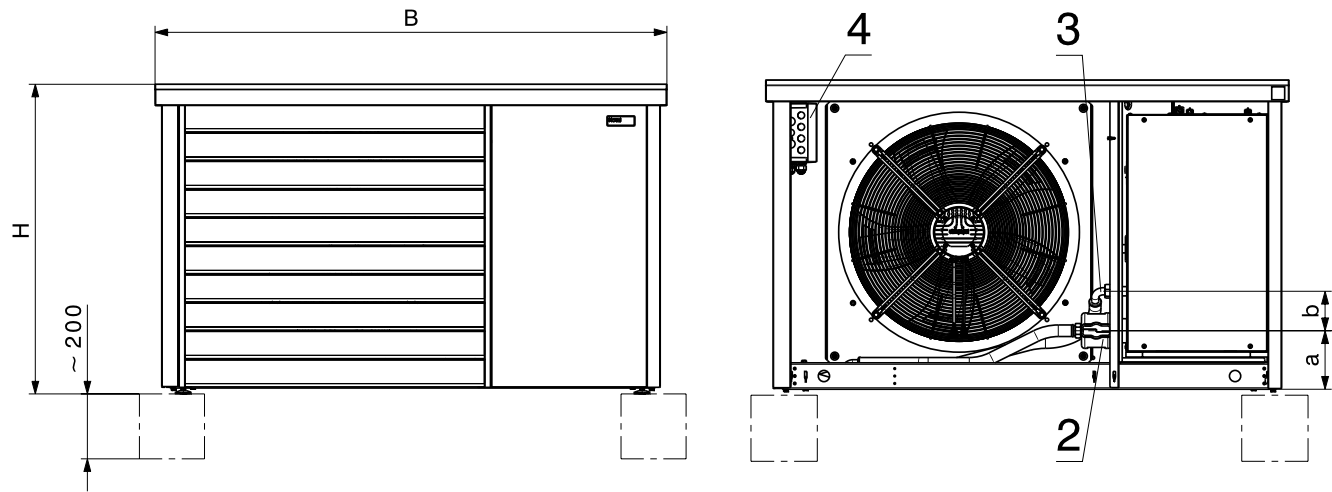
P = power consumption for the overall unit (kW)

EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

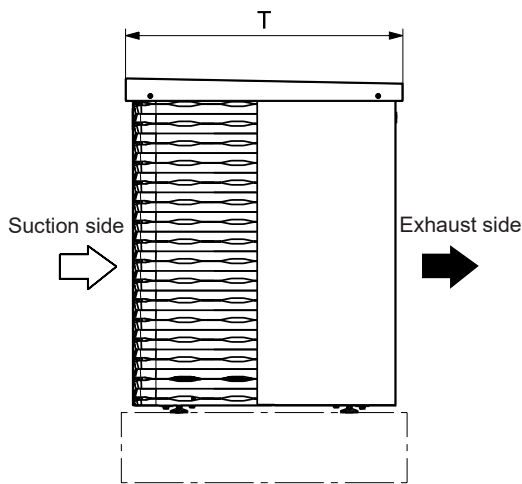
Observe daily power interruptions!
see "Engineering heat pumps general"

Belaria® pro (24)
Outdoor unit
(Dimensions in mm)

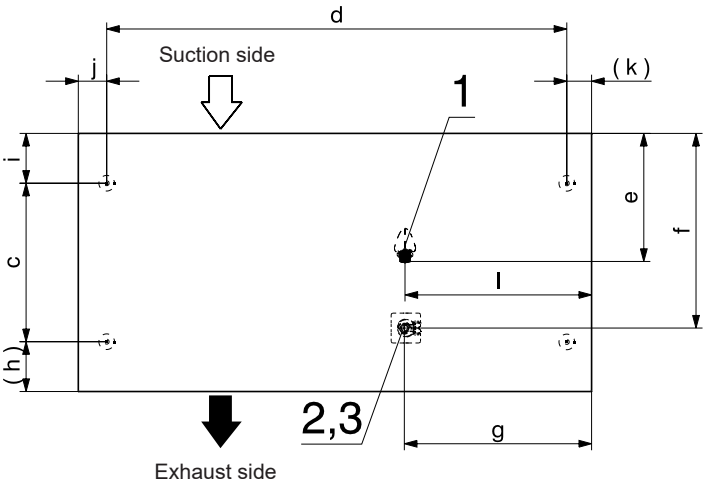
Front view



View from the left



View from top

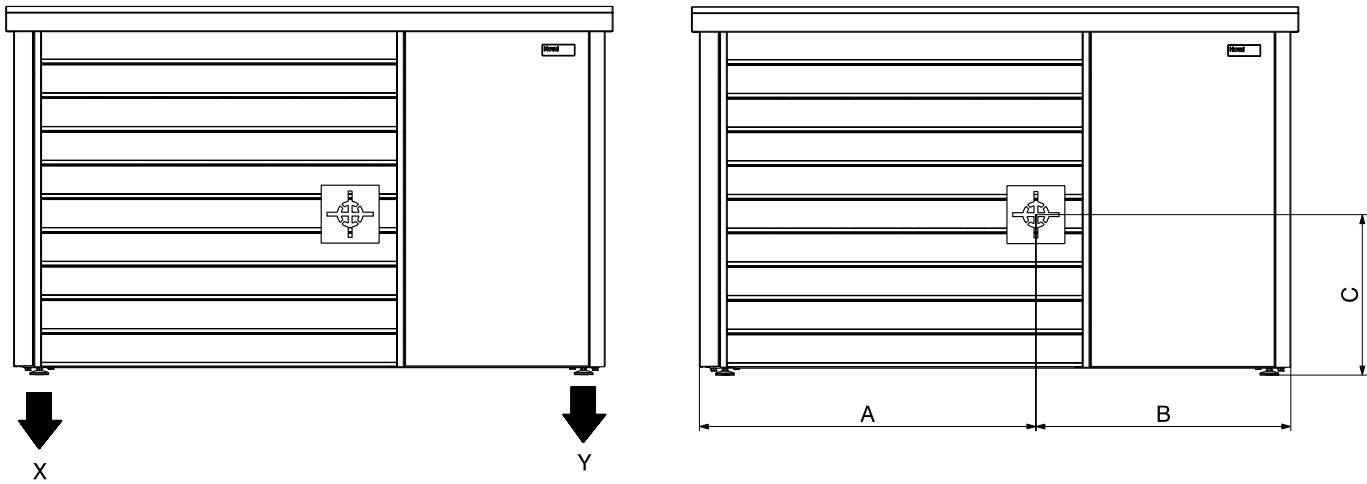


- 1 Condensate drain 1"
- 2 Connection hydraulic connection line return 1½" ext. thread
- 3 Connection hydraulic connection line flow 1½" ext. thread
- 4 Electrical connection

Type	H	B	T	a	b	c	d	e	f	g	h	i	j	k	l
Belaria® pro (24)	1461	1928	997	280	410	685	1750	380	800	740	150	160	100	80	590

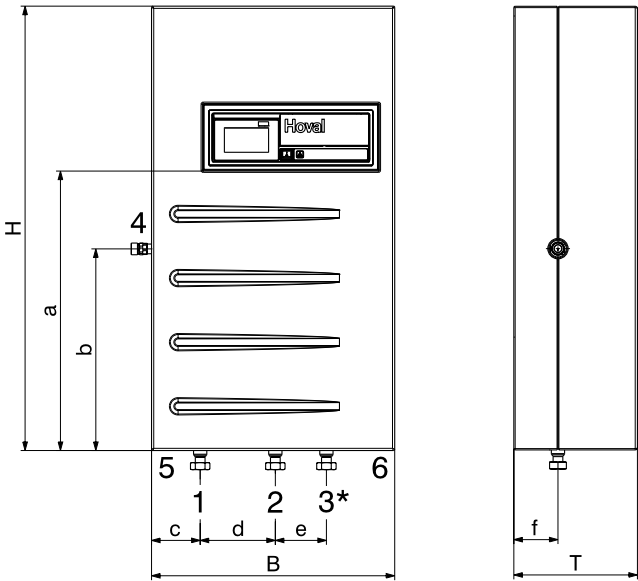
Belaria® pro (24)
Indoor unit
(Dimensions in mm)

Centre of gravity



Type	Position (mm)			Weight (kg)	
	A	B	C	X	Y
Belaria® pro (24)	1178	709	685	158	292

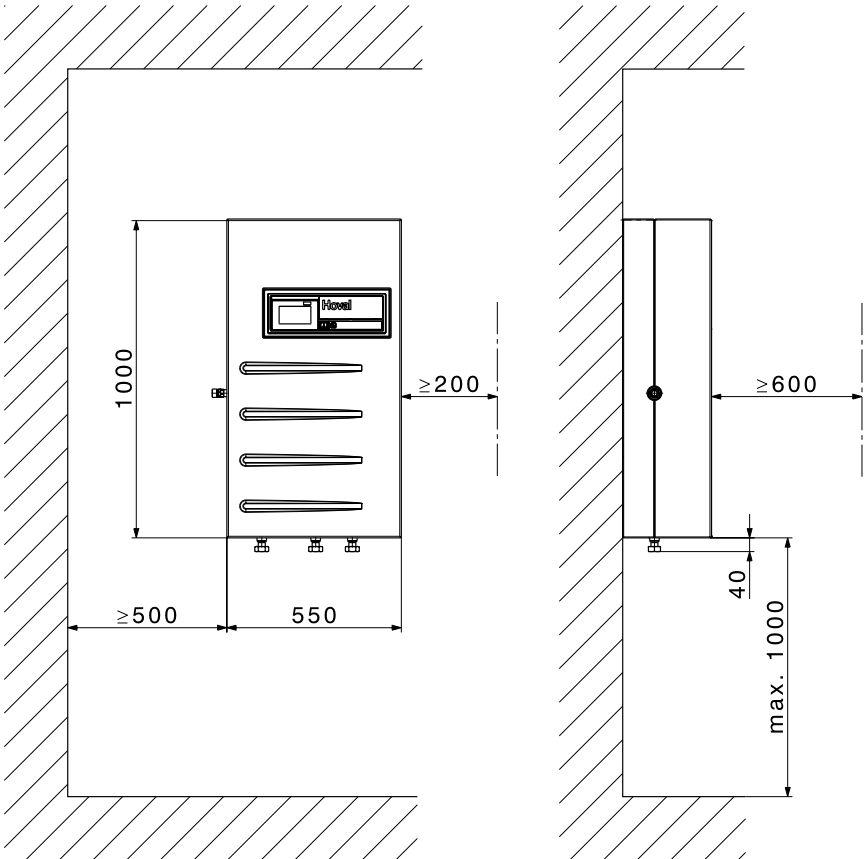
Belaria® pro (24)
Indoor unit
(Dimensions in mm)



- 1 Flow outdoor unit (return not guided through indoor unit) 1½" ext. th.
- 2 Flow heating 1½" ext. th.
- 3* No connection with Belaria® pro (24)
- 4 Safety assembly (accessories) ¾" ext. th.
- 5 Cable feed-in sensors, RS485
- 6 Cable feed-in control current

Type	H	B	T	a	b	c	d	e	f
Belaria® pro (24)	1005	550	280	630	455	110	170	115	100

Belaria® pro (24)
Indoor unit wall-mounted

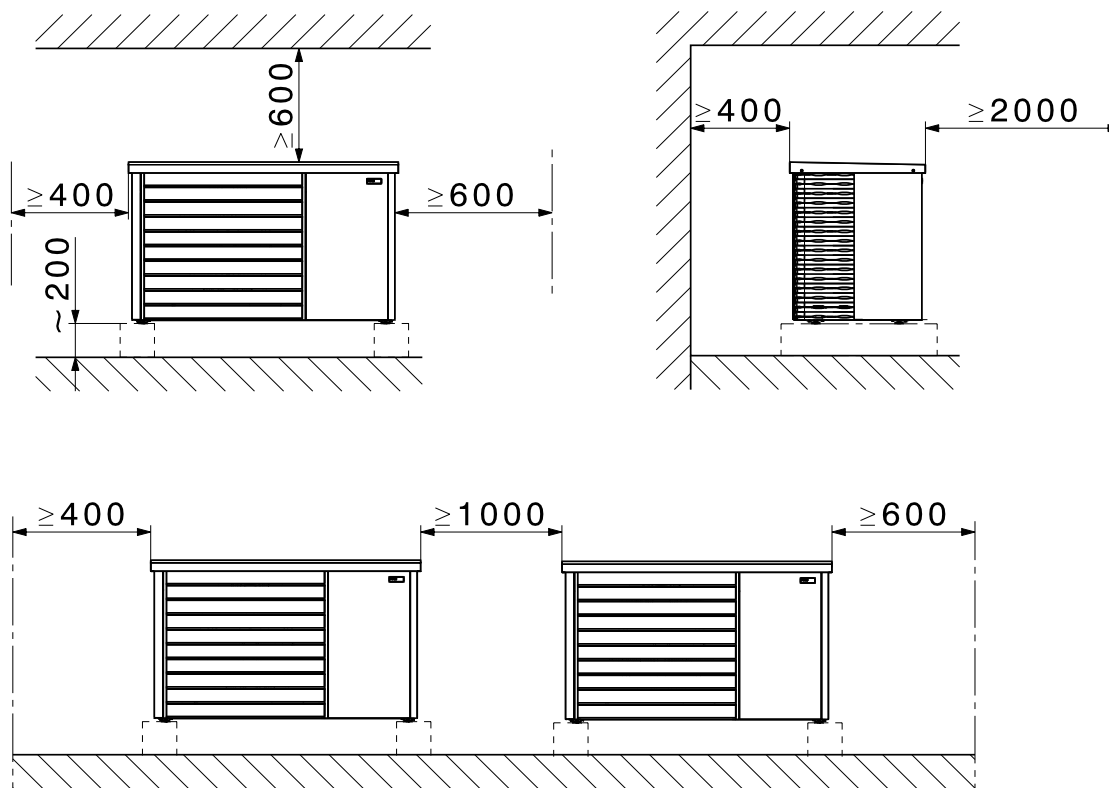


To ensure good operability and accessibility to the electrical/hydraulic connections, a clearance of max. 1000 mm must be provided from the ground to the lower edge of the indoor unit.

Space requirement

(Dimensions in mm)

Belaria® pro Outdoor unit

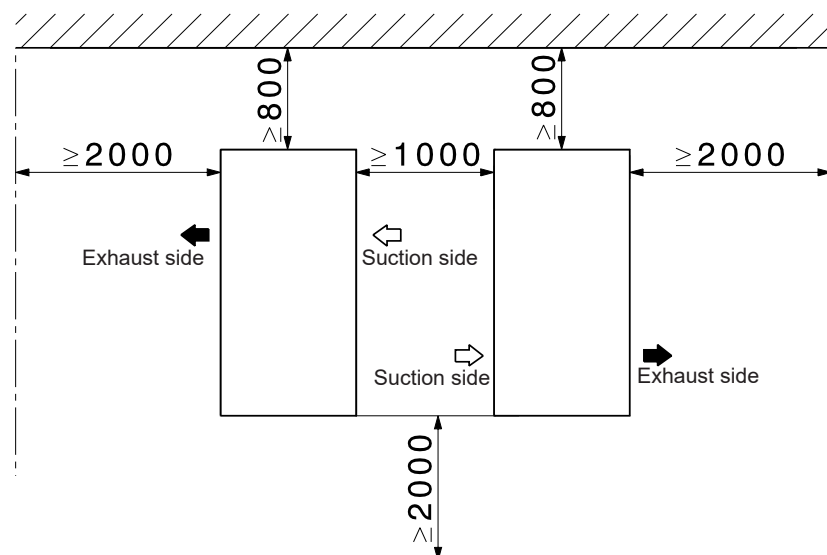


Any possible openings/recesses and ignition sources must be avoided within a radius of one meter around the outdoor unit.

In order to ensure accessibility during maintenance, a clearance of at least 600 mm upwards must be maintained. For any service work, the minimum clearances at the rear and sides of the heat pump must be observed.

Belaria® pro Outdoor unit

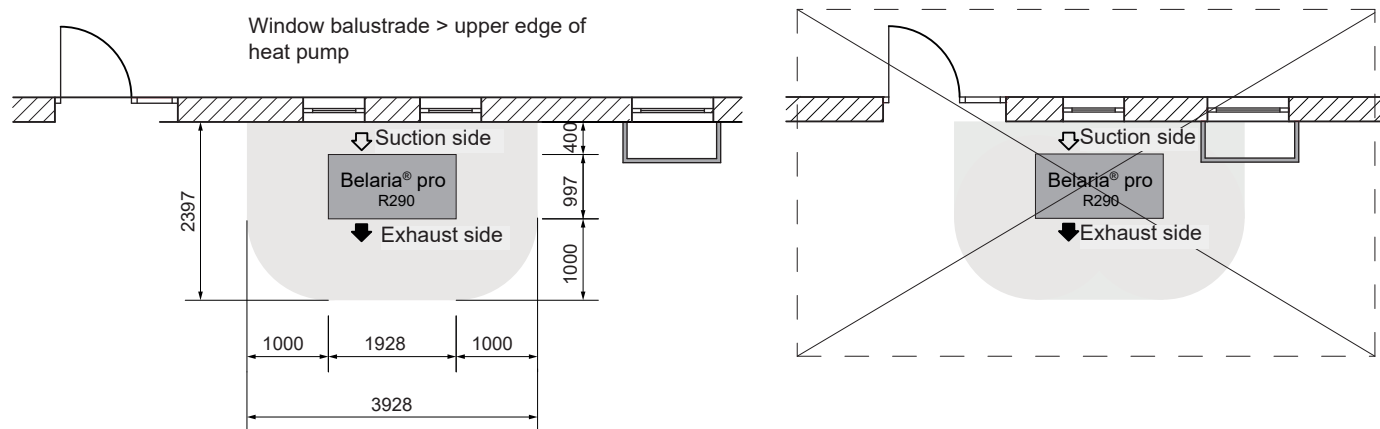
View from above



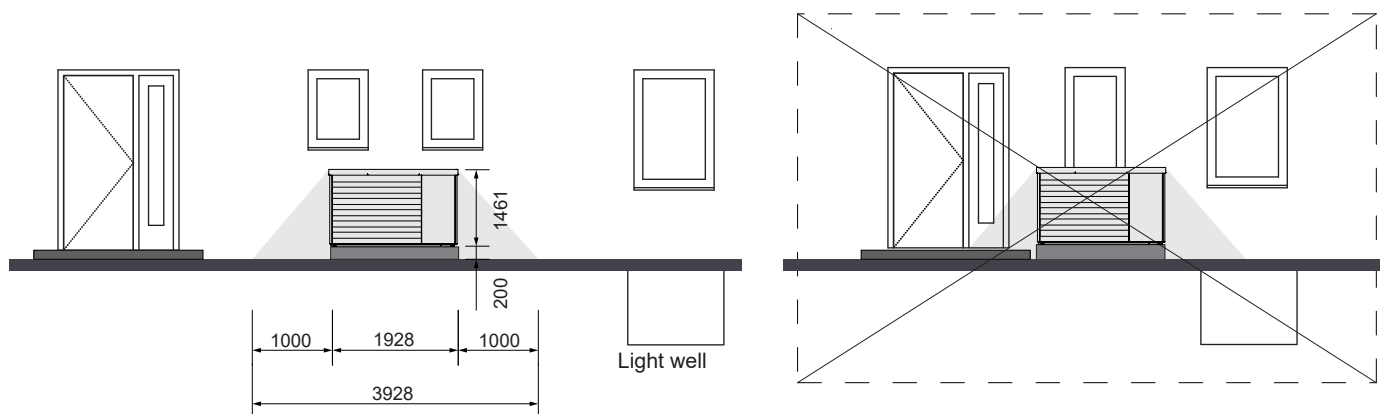
Presentation of protection areas

Belaria® pro with refrigerant R290
(Dimensions in mm)

Floor plan – protection area when installed in front of a wall

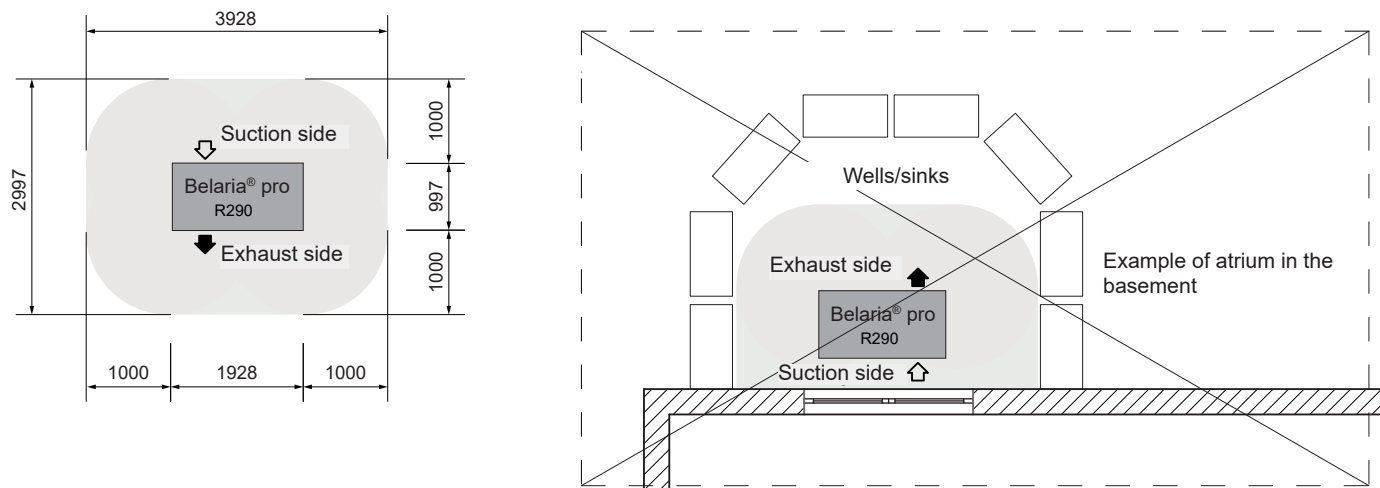


View – protection area when installed in front of a wall

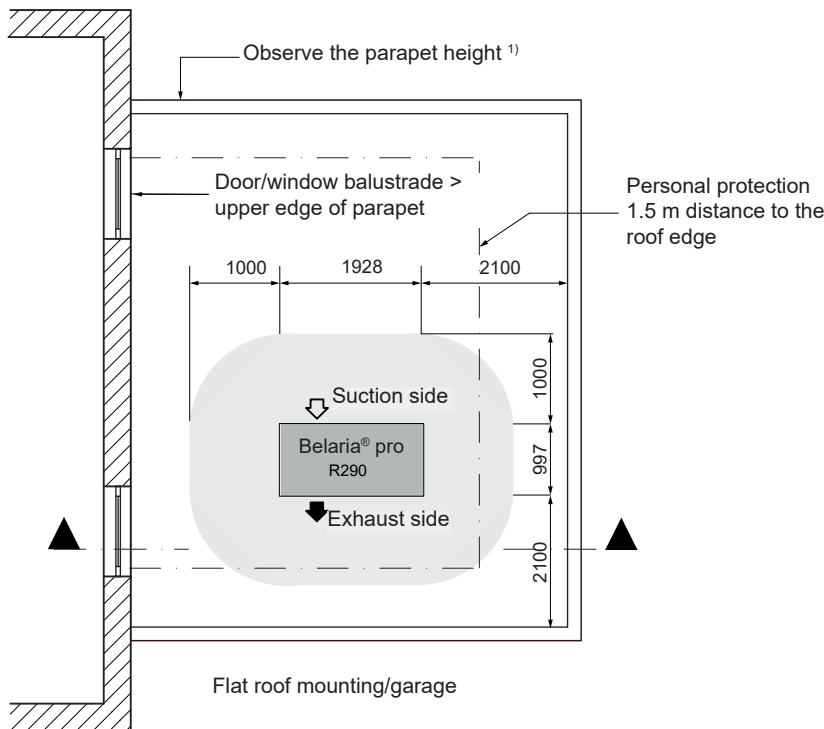


- The heat pump (outdoor unit) is only allowed to be placed outdoors and under no circumstances indoors.
- The outdoor unit is filled with the non-toxic, odourless and colourless but flammable refrigerant R290 (propane), which is heavier than air. If this occurs, there is a danger of fire/explosion. Therefore, all potential sources of ignition must be kept at least 1 m away in all directions. Smoking and the use of naked flames is prohibited in this area.
- Window balustrades must be higher than the upper edge of the outdoor unit in the protection area!
- The heat pump must be at least 1 m from the property boundary; observe building regulations!
- At the entrances to properties, it must be ensured that no vehicle can enter the protection area.
- To prevent the heat pump from being touched by vehicles, a collision guard must be installed if necessary. This must be located outside the protected area.

Floor plan – protection area when installed outdoors

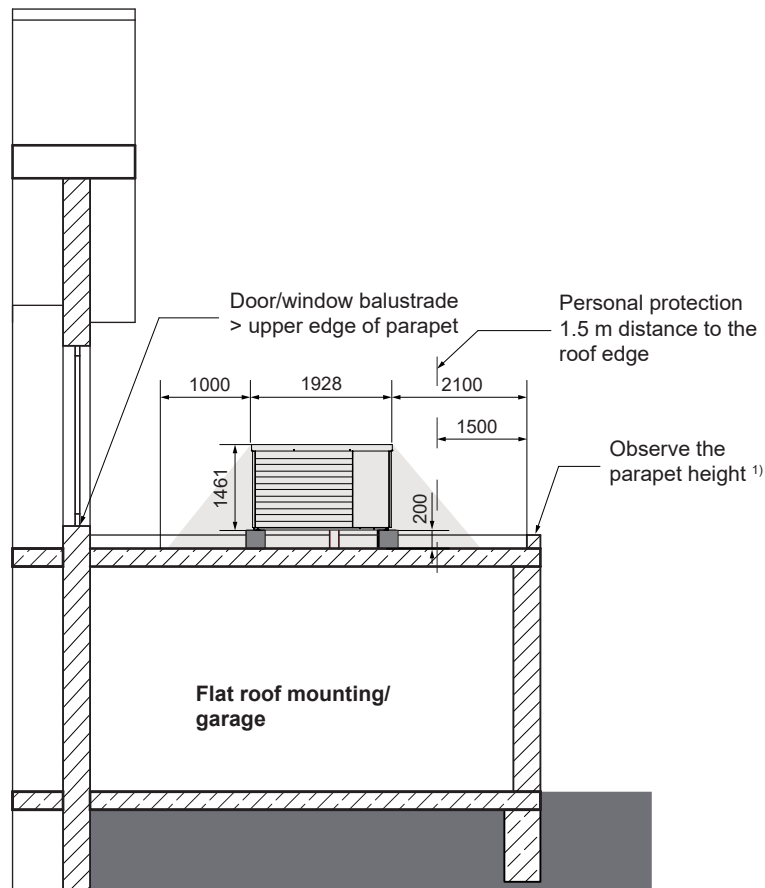


Floor plan flat roof – protection area



¹⁾ In case of flat roof installation, the parapet must not represent a potential sink in which refrigerant could accumulate.

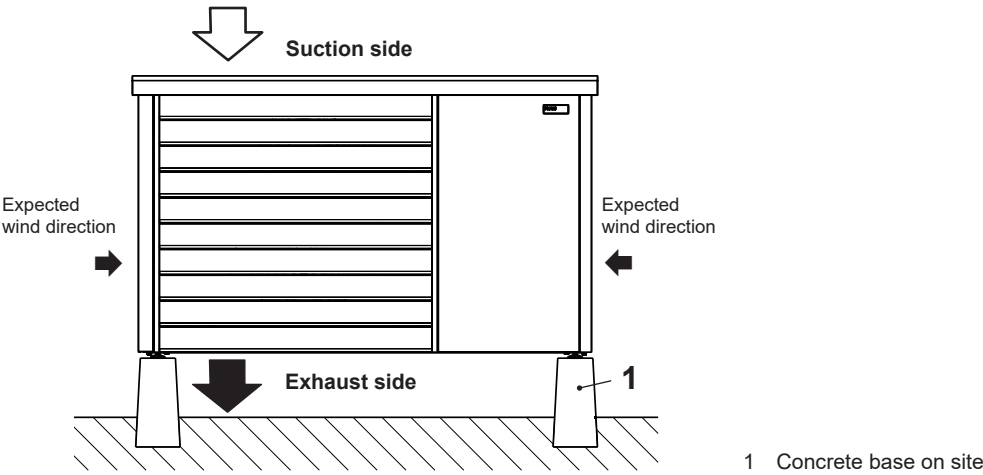
Section flat roof – protection area



- Strict compliance with safety measures regarding combustible refrigerants.
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.6 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.
- There must be no floor-to-ceiling doors/windows to the flat roof, or balustrade must be higher than the parapet.
- Protection areas around windows must be complied with.
- There must not be any pipe vents, skylights or the like on the flat roof within a radius of 1 m from the heat pump.
- If there is a risk of frost, a siphon must be installed in the shaft immediately before the condensate drain is introduced into the downpipe.
- Condensate drain into the sewage system via a frost-proof siphon or allow it to seep away freely.

Installation variants for Belaria® pro outdoor unit
(Dimensions in mm)

Firm base on site with strip foundation

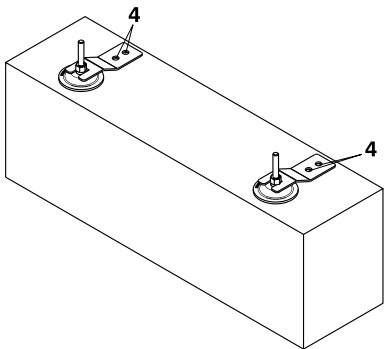
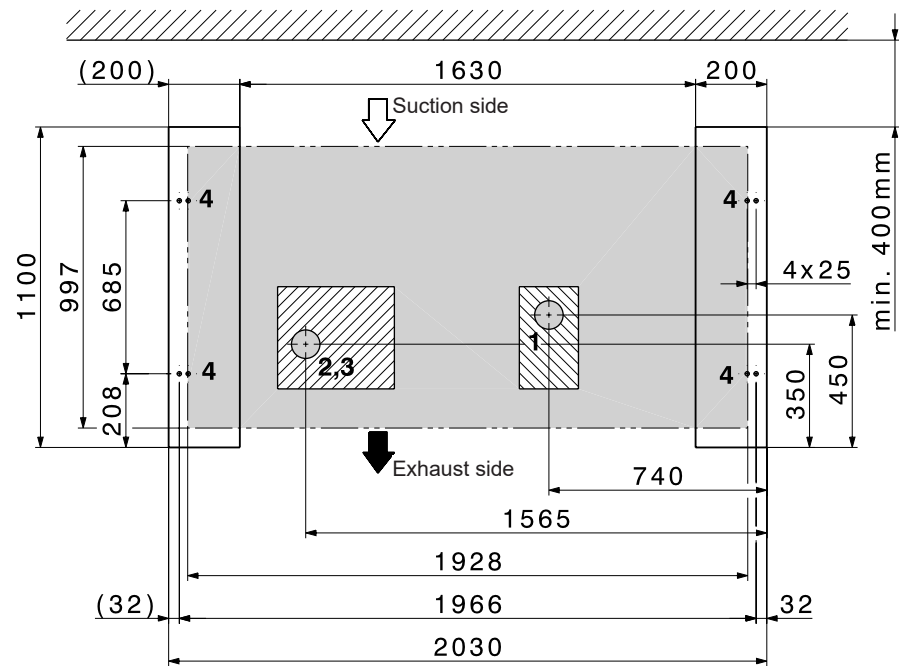


The base must not form a sink. A circumferential base is therefore not permitted.

Installation variants for Belaria® pro outdoor unit
(Dimensions in mm)

Strip foundation

Plan concrete base set
(view from above)



Attachment of the outdoor unit from the outside (laterally) using the supplied clamps. The clamps are visible. It is not necessary to remove the cladding sections.

- Possible area for empty tubes in the concrete base
- Possible area for condensate drain in the concrete base

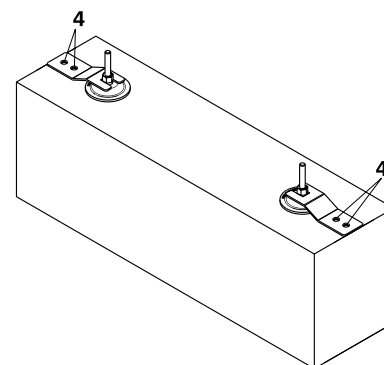
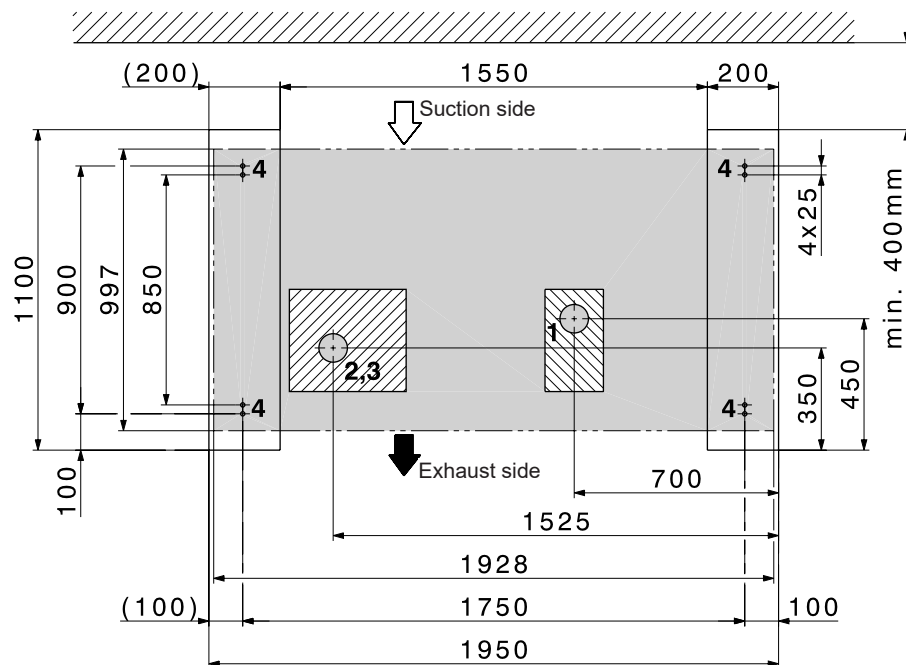
- 1 Condensate drain area
- 2 Area FL hydraulics RT hydraulics
- 3 Electrics area
- 4 Attachment points M8 Belaria® pro (dowels in scope of delivery)

Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

Strip foundation

Plan concrete base set
(view from above)



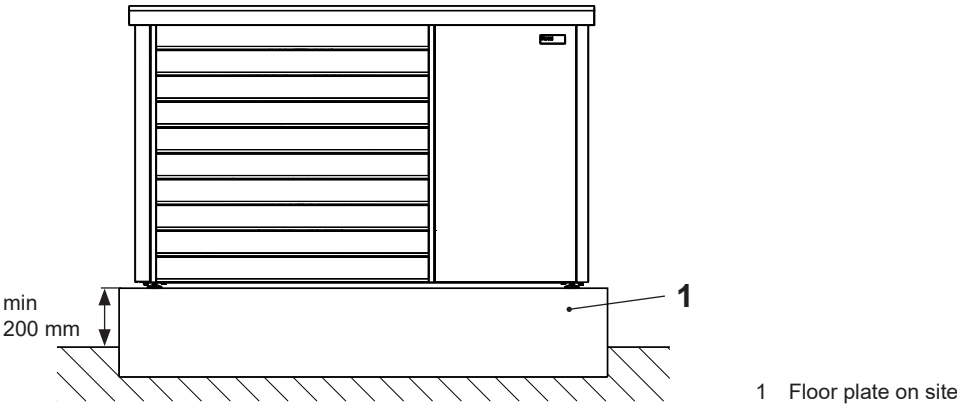
Attachment of the outdoor unit from the "inside/bottom" (grey area) of the heat pump using the supplied clamps. The clamps are not visible. It is necessary to remove the cladding sections.

-  Possible area for empty tubes in the concrete base
-  Possible area for condensate drain in the concrete base

- 1 Condensate drain area
- 2 Area Flow hydraulics
Return hydraulics
- 3 Electrics area
- 4 Attachment points M8 Belaria® pro (dowels in scope of delivery)

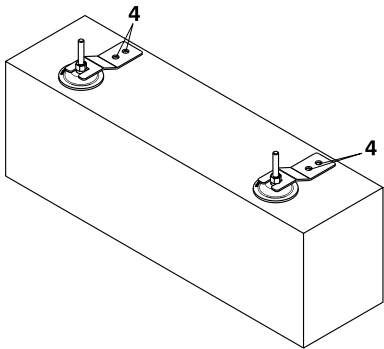
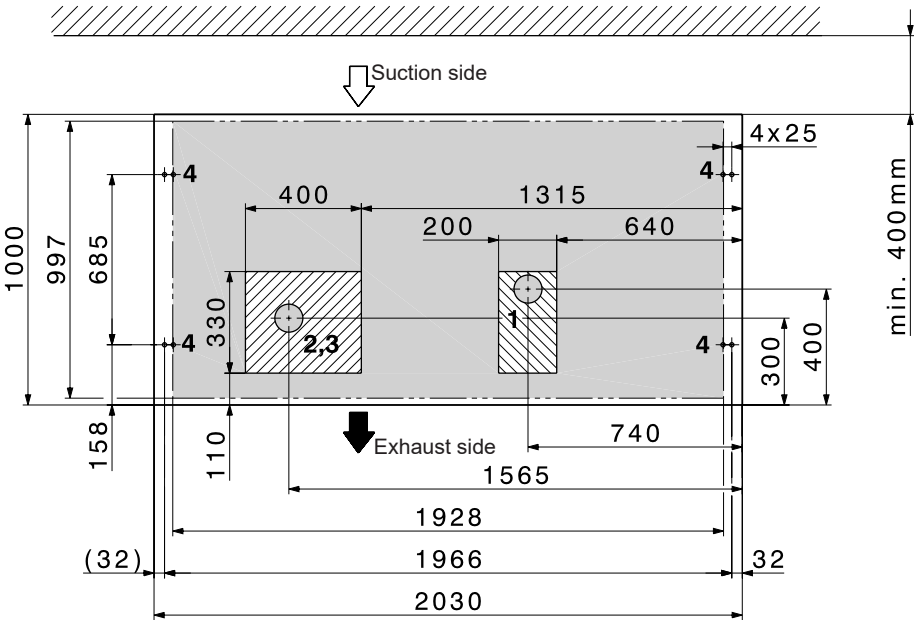
Installation variants for Belaria® pro outdoor unit
(Dimensions in mm)

Firm base on site with floor plate



The base must not form a sink. A circumferential base is therefore not permitted.

Floor plate
Plan
(view from above)



Attachment of the outdoor unit from the outside (laterally) using the supplied clamps. The clamps are visible. It is not necessary to remove the cladding sections.

- Possible area for empty tubes in the concrete base
- Possible area for condensate drain in the concrete base

- 1 Condensate drain area
- 2 Area FL hydraulics
RT hydraulics
- 3 Electrics area
- 4 Attachment points M8 Belaria® pro (dowels in scope of delivery)

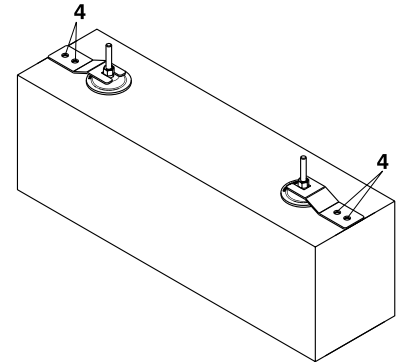
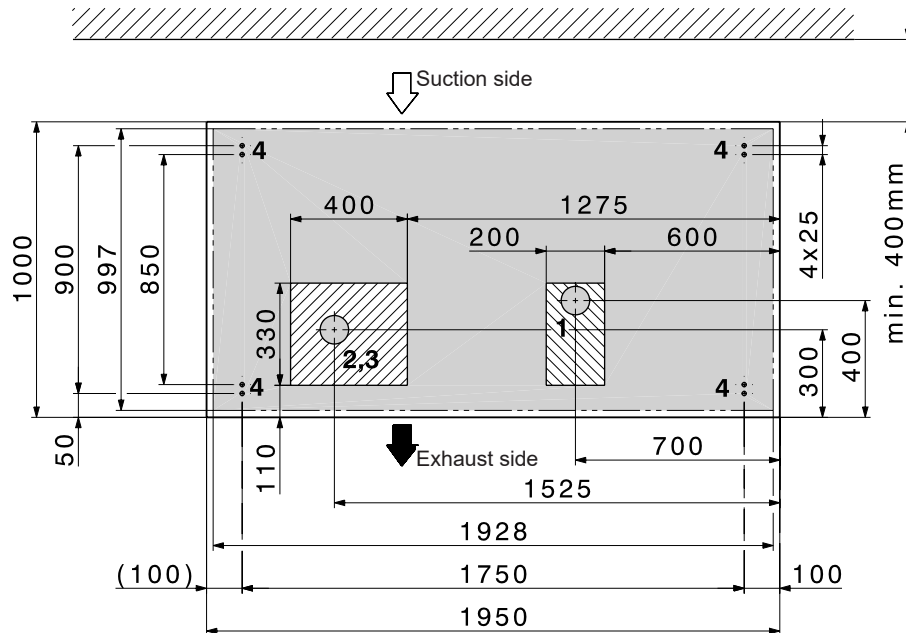
Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

Floor plate

Plan

(view from above)

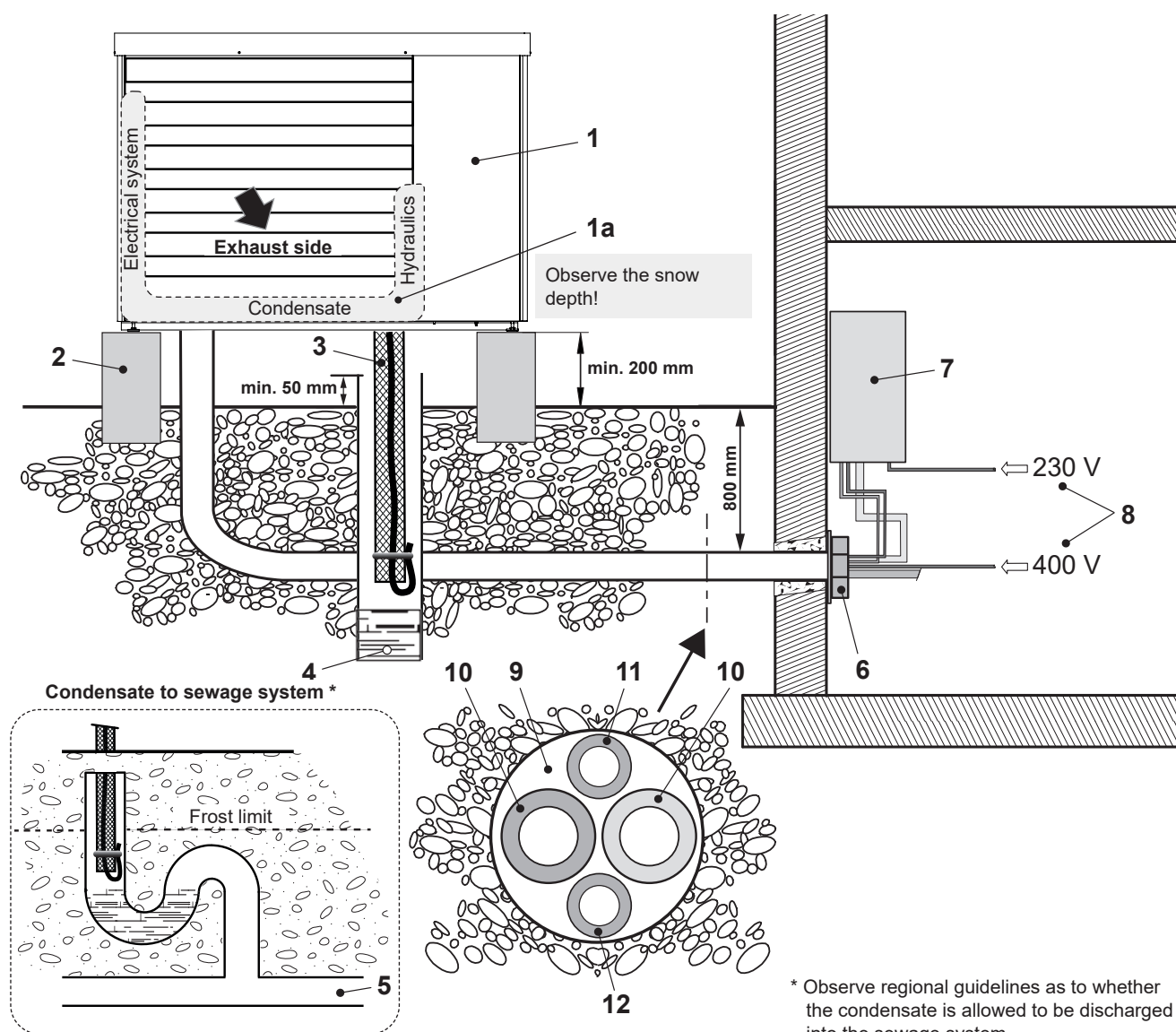


Attachment of the outdoor unit from the "inside/bottom" (grey area) of the heat pump using the supplied clamps. The clamps are not visible. It is necessary to remove the cladding sections.

-  Possible area for empty tubes in the concrete base
-  Possible area for condensate drain in the concrete base

- 1 Condensate drain area
- 2 Area FL hydraulics
RT hydraulics
- 3 Electrics area
- 4 Attachment points M8 Belaria® pro (dowels in scope of delivery)

Configuration and connection diagram Belaria® pro (24)



- 1 Outdoor unit
- 1 a Space for connection of hydraulics (FL + RT), condensate drain and electrics.
- 2 Concrete base
- 3 Condensate drain heat pump, drain pipe DN 100
- 4 Variant 1: Seepage (duct/gravel layer)
- 5 Variant 2: Discharging into the sewage system (penetration into the soil must be made leak-tight)
- 6 Wall lead-through (hydraulic and electrical connections)
- 7 Belaria® pro (24) indoor unit
- 8 Main current:
3 x 400 V/50 Hz
Control current:
1 x 230 V/50 Hz
Electric heating element main current:
3 x 400 V/50 Hz
Network cables (optional)
- 9 Empty tube for hydraulics and electrics
- 10 Connection line FL + RT
- 11 Empty tube for electrical connections for outdoor unit
Main current outdoor unit: 3 x 400 V/50 Hz
Control current outdoor unit: 1 x 230 V/50 Hz
- 12 Empty tube for data bus RS485

Requirements and directives

The general requirements and directives listed in the chapter Engineering apply.

Set-up

- The distance between the outdoor and indoor unit must be as short as possible. Only short and simple routing of lines guarantees cost effectiveness and low heat losses.
- The maximum permitted single cable length is 30 m between the outdoor unit, via the indoor unit and the buffer storage tank. This must not be exceeded. In general, the customer must assess whether the next larger pipe dimension is more suitable due to the pressure drop.
- There must be no building openings (windows, doors, shafts, ventilation openings, etc.) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Wall ducts into the building must be airtight.
- The outdoor unit must not be placed in or near floor recesses.
- The outdoor unit must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air outlet sides must not be narrowed or blocked. The air outlet side must be unobstructed (> 2 m).
- Due to efficient water heating, the line length with the Belaria® pro between the calorifier and the indoor unit is not allowed to be more than 10 m.
- When using glycol (antifreeze) – primary and/or secondary – a separating system must be used.
- Filling the entire system with glycol or a frost protection agent/water mixture is considered improper use and is not permitted. If this is nevertheless desired for frost protection reasons, the system must be designed with a system separation. Only environmental compatible frost protection agent is allowed to be used.

Outdoor unit

Important safety instruction

The heat pump (outdoor unit) is only allowed to be placed outdoors and under no circumstances indoors.

The outdoor unit is filled with the non-toxic, odourless and colourless but flammable refrigerant R290 (propane), which is heavier than air. If this occurs, there is a danger of fire/explosion. Therefore, all potential sources of ignition must be kept at least 1 m away in all directions. Smoking and the use of naked flames is prohibited in this area.

The outdoor unit is installed outdoors. The installation location must be selected carefully. It is essential that the following ancillary conditions are met:

- The maximum line length must not be exceeded.
- The connection lines must be laid insulated and frost-proof.

- The installation location must be chosen in such a way that no noise pollution can occur (do not install near bedrooms, keep a distance from neighbours), hedges and bushes can have a sound-absorbing effect.
- Unobstructed air inflow and outflow must be possible.
- It is imperative that the minimum distances are observed (see Dimensions/Space requirement).
- The intake air must be free of impurities such as sand and aggressive substances such as ammonia, sulphur, chlorine etc.
- The outdoor unit must be installed on a load-bearing fixed structure.
- If the unit is installed at wind-prone locations, the alignment of the heat pump must be selected in such a way that the expected wind direction is crossways to the suction direction of the outdoor unit.
- If an alternative installation in areas subject to strong winds cannot be avoided, an additional wind shield in the form of a hedge, for example, should be installed, or additional fastening should be provided for the outdoor unit.
- At exposed installation locations prone to wind load, e.g. on building roofs, the surface load on the upper horizontal cover surface of the heat pump caused by wind suction must not exceed a value of 2000 N/m². The heat pump casing might be damaged if this value is not complied with.
- The permitted surface load must be determined in accordance with the specifications of standard EN 1991-1-1. Compliance must be checked by a qualified specialist. A professional inspection of the actual conditions on site is mandatory and must be carried out by a qualified specialist.
- When planning and installing the heat pump in locations exposed to wind load, please contact your sales consultant in good time.
- Notice on installing the cover: If the cover of the heat pump has been removed, it must be properly reinstalled after the work has been completed. Make sure that the cover is fully connected to the heat pump using all the screw holes provided, to ensure stability and tightness.
- If the installation location is not protected against snowfall, it must be chosen in such a way that the evaporator remains free of snow.
- The outdoor unit must always be installed on a solid surface in a horizontal position. This can be achieved by means of concrete bases or a floor plate.
- The load-bearing capability must be adequate. The unit must be fixed with 4 M8 screws.
- Air heat pumps generate condensate during operation. This can amount to 10 litres per defrost cycle within 2 minutes for the outdoor unit of the Belaria® pro.
- The condensate drain must be frost-proof so that the condensate can flow away without problems even at outdoor temperatures below 0 °C.
- If the discharge is into the sewage system, a siphon must be provided and the duct lead-through into the ground must be sealed so that no refrigerant can enter the sewage system uncontrolled.
- If there is a risk of frost, a siphon must be installed in the shaft immediately before the condensate drain is introduced into the downpipe.
- The condensate drip tray included in the outdoor unit is already equipped with tray heating at the factory that thus prevents freezing.
- The condensate drain line is also secured with the preassembled heating tape.
- The air outlet has increased susceptibility to frost. Gutters, water pipes and water containers must not be situated right next to the outlet.
- If installed near the coast, the location must be at least 5 km from the coastline. If this safe distance is not complied with, increased corrosion can be expected. These cases are excluded from the warranty.
- To prevent damage caused by animals such as rodents or insects, all cable ducts must be properly sealed.
- The hydraulic lines from the heat pump can transmit structure-borne noise. Therefore, structure-borne noise decoupling should be provided, e.g. with sound-insulating hoses.

A strainer is located in the outdoor unit. At least one sludge and magnetite separator must be installed in the heating return.

Flat roof installation

Flat roof installation of the Belaria® pro is possible under the following conditions:

- Strict compliance with safety measures regarding flammable refrigerants (see below).
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.6 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.
- At exposed installation locations prone to wind load, e.g. on building roofs, the surface load on the upper horizontal cover surface of the heat pump caused by wind suction must not exceed a value of 2000 N/m². The heat pump casing might be damaged if this value is not complied with.
- The permitted surface load must be determined in accordance with the specifications of standard EN 1991-1-1. Compliance must be checked by a qualified specialist. A professional inspection of the actual conditions on site is mandatory and must be carried out by a qualified specialist.

- When planning and installing the heat pump in locations exposed to wind load, please contact your sales consultant in good time.
- Notice on installing the cover: If the cover of the heat pump has been removed, it must be properly reinstalled after the work has been completed. Make sure that the cover is fully connected to the heat pump using all the screw holes provided, to ensure stability and tightness..
- The heat pump contains electrically operated components and must be integrated in the structural lightning and surge protection for roof structures.

Safety measures to be complied with

- There must be no building openings (windows, doors, shafts, ventilation openings, etc.) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Wall ducts into the building must be airtight.
- The outdoor unit must not be placed in or near floor recesses.
- The outdoor unit must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air outlet sides must not be narrowed or blocked. The air outlet side must be unobstructed (> 2 m).
- The condensate is allowed to be directed into a shaft. A siphon must be installed upstream of the connection to the down-pipe. The siphon must be located inside the building.

Indoor unit

- The installation location must be selected in accordance with the valid requirements and directives.
- The indoor unit must be installed in a room protected against frost, by an approved specialist company. Room temperature must be between 5 °C and 25 °C.
- Installation in wet rooms, dusty rooms or rooms with a potentially explosive atmosphere is not permitted.
- To minimise vibration and noise inside the building, the inside of the heat pump should be isolated as well as possible from the building structure. The screed must be recessed around the indoor unit. For example, indoor units should never be installed on lightweight ceilings/floors.
- The connections for the heat pump or heating flow are located at the bottom of the Belaria® pro indoor unit.
- Due to the accessibility to the hydraulic system, the distances must be maintained on all sides (see Dimensions/Space requirements).

Electrical connections

- The electrical connection must be carried out by a qualified technician and registered with the responsible energy supply company. The relevant electrical installation company is responsible for ensuring that electrical connection is carried out in accordance with standards and that safeguard measures are put in place.
- The mains voltage at the connection terminals of the heat pump must be 400 V or 230 V $\pm$ 10 %. The connection lines specified in the technical data must be checked by the electrical company carrying out the work depending on the line length, the routing type and the type of line.
- A fault-current circuit breaker is recommended. Country-specific requirements must be complied with. If the "fault-current circuit breaker" safeguard measure is implemented by the electrical company, a separate fault-current circuit breaker is recommended for the heat pump.
- This fault-current circuit breaker must be of the all-current-sensitive type B ($I_{\Delta N} \geq 300$ mA). The specified RCCB types apply to the heat pump regardless of externally connected components (refer to assembly instructions, data sheets).
- Owing to the starting currents that occur, circuit breakers with a type "C" or "K" tripping characteristic are to be used for the main circuit.
- For the control circuit and additional electric heating (if present), circuit breakers with a type "B" or "Z" tripping characteristic are sufficient.
- The electrical connection and feeder lines must be copper cables.
- Please refer to the wiring diagrams for electrical details.
- The wall feedthrough should slope down from the inside to the outside.
- To avoid damage, the opening should be padded on the inside or, for example, lined with a PVC pipe.
- After installation, the wall opening must be sealed with a suitable sealing compound on site, observing the fire protection regulations.

Routing of the hydraulic connection lines

- If the hydraulic connection lines are laid in the ground, this must be done in a protective tube. For example, this can be a PVC pipe with a diameter of 150 mm.
- Wall ducts must be sealed to the outside on site.
- After the hydraulic connection lines have been laid, they must be checked for damage and re-insulated. In case of cooling, condensate can form on the pipes.
- The hydraulic connection lines must be laid decoupled from the building and must never be laid flush-mounted.

- Care must be taken to ensure that water pipes do not pass through the sleeping or living areas.
- Shut-off valves must be installed on site in accordance with the corresponding hydraulic diagram. The shut-off valves are not allowed to be opened until immediately before commissioning.
- The danger of frost damage must be taken into account if there are prolonged power outages.
- False flow rates as a result of incorrect dimensions of the pipework, incorrect fittings or improper pump operation can cause damage to the heat pump.

Room cooling

- Room cooling can be provided by fan convectors and is recommended. The connection lines for the fan convectors must have condensation-proof insulation. In addition, the condensate from the fan convectors must be drained off.
- If panel heating is used for room cooling, various criteria such as temperatures below the dewpoint or the temperature profiles must be allowed for, and can lead to costly consequential damage in the case of inadequate planning or incorrect use. We recommend that you consult Hoval.

Further guidelines
see "Engineering"

Connection on drinking water side

- The hydraulic connection is made according to the information in the corresponding diagrams from Hoval.
- According to the Drinking Water Regulation and DIN 50930-6, the domestic hot water storage tank is suitable for normal drinking water (pH value > 7.3).
- The connection piping can be made using galvanised pipes, stainless steel pipes, copper pipes or plastic pipes.
- The connections must be made pressure-tight.
- The safety devices tested for the components in accordance with DIN 1988 and DIN 4753 must be installed in the cold water pipe.
- The 10 bar operating pressure stated on the data plate is not allowed to be exceeded. Install a pressure reducing valve if necessary.
- A suitable water filter must be installed in the cold water pipe.
- A water softener must be installed if the water is hard.

Installation on heating side

- All pertinent laws, regulations and standards for heating house pipework and for heat pump systems must be complied with.
- A strainer is located in the outdoor unit. At least one sludge and magnetite separator must be installed in the heating return.
- The safety and expansion devices for closed heating systems must be provided in accordance with EN 12828.

- Dimensioning of the pipework must be done according to the required flow rates and given pressure drops.
- Ventilation possibilities must be provided at the highest points and drainage possibilities at the lowest points of the connection lines.
- To prevent energy losses, the connection lines must be insulated with suitable material in accordance with local regulations.
- To prevent damage during transport, the outdoor unit should be moved to its final installation location as far as possible in packed state on the wooden pallet with a forklift or lift truck.
- Transport by crane: The outdoor unit can be lifted by a crane and transported to the installation site. For this purpose, there are three crane hooks below the cover with openings for the passage of the transport straps.

Transport and storage

- When removing the packaging, check the outdoor unit for damage. If the outdoor unit was damaged during transport or storage, contact Hoval customer service, a service partner or a licensed specialist immediately. They must carry out a leak test with a suitable leak detector. In the event of a leak, the outdoor unit must be repaired.
- Store the outdoor unit in a cool place without fire hazard and without direct exposure to heat sources. The ambient temperature must not exceed 43 °C.
- The same regulations apply for storage as for installation (no recesses, ventilation pipes, ignition sources in the storage area).
- The outdoor unit must not be stored in closed rooms, cellars or garages.
- The outdoor unit is only allowed to be stored outdoors.
- During transport, ensure sufficient ventilation in the closed vehicle, also when parking and stopping.
- Storage in passageways, escape routes or in front of entrances or exits is not permitted.
- Ignition sources such as naked flames, switched-on gas appliances, electric heaters, etc. must be kept away from the unit.
- Transport and storage only in upright position. Protect from mechanical damage and from falling over or falling down (make sure the load is secure).

Prerequisites for commissioning

- Commissioning at cold outdoor temperatures is only possible if the system is pre-heated on site (e.g. with an electric bake-out device). During commissioning, the room temperature of the heated rooms must be at least 15 °C (compressor operation is not possible below this temperature, as there would be too little energy for defrosting). If a buffer storage tank is provided, its heating water temperature is not allowed to be less than 20 °C during commissioning.
- A heat pump should not be used for drying out of the building (screed heating), as this can significantly reduce the service life of the device. Alternatively, heating via a mobile heating station or E-set is a sensible option. This is particularly true for air/water heat pumps, since the heating output here is strongly dependent on the outdoor temperature and drying out of the building is not possible at temperatures below the frost line in the building carcass.

Looking for the appropriate hydraulic schematic?
Please contact your local Hoval partner.

Hoval Belaria® pro Modulating monoblock heat pump for heating and cooling.

Monoblock heat pump set up outdoors consisting of outdoor unit and electrical box.

Belaria® pro outdoor unit

- Compact floor-mounted air/water heat pump
- Elegant, extremely quiet and efficient outdoor unit
- Casing with sheet metal cladding, powder-coated, colour anthracite (DB703)
- Two completely separated cooling units with the refrigerant R290
- Integrated components:
 - 2 speed-controlled scroll compressors
 - 2 straight fin evaporators
 - 2 speed-controlled axial fans with FlowGrid (inlet grille)
 - 2 plate condensers made of stainless steel/copper
 - 2 built-in gas separators with safety valve 2.5 bar
 - 2 speed-controlled high-efficiency pumps
 - 2 flow rate sensors/heat meters
 - 2 condensate drip trays including tray heating and condensate heating tape for channelling all the condensate in the outdoor unit, fixed installation, 1" connection
- integrated vibration-damping feet for effective structure-borne noise decoupling
- With cooling function with corresponding hydraulics
- Hydraulic connections behind louvre grille
 - Heating connections 2"
 - Filter ball valve installed in the heat pump return
- Electrical connections behind louvre grille
 - 400 V main power supply
 - 230 V control current, supplied from the electrical box
 - Data cable for bus connection to the electrical box
- With support rail for fixing the outdoor unit on the ground

Belaria® pro electrical box

- Compact wall-mounted electrical box
- Casing with sheet metal cladding, powder-coated, flame red (RAL 3000)
- TopTronic® E control installed with TopTronic® E control module
- With 2 WFA-200S automatic heat pump devices
- Integrated control functions for
 - 2 heating/cooling circuits with mixer
 - 2 heating/cooling circuits without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management
- Optional installation control set (switching contactor) for activating an external electric heating element
- Electrical connections introduced from bottom
- With fitting accessories for fixing the electrical box to the wall (without screws)
- Maximum cascading: 4 Belaria® pro (40,50), since 2 TTE-WEZ are installed per unit



Model range

Belaria® pro
type

			Heat output ¹⁾		Cooling capacity ¹⁾
	35 °C	55 °C	A-7W35 kW	A2W35 kW	A35W18 kW
(40)			11.9-35.4	11.8-38.4	13.0-41.8
(50)			11.9-44.2	11.8-48.0	13.0-41.8

A+++ → D A+++ → D

Energy efficiency class of the compound system with control.

¹⁾ Modulation range

Delivery date: from August 2025

TopTronic® E controller

Control panel

- 4.3-inch colour touchscreen
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp
- Mains isolator

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating states
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module heat generator TTE-WEZ

- Integrated control functions for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water charging circuit
- Bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - Module expansion heating circuit or
 - Module expansion Universal or
 - Module expansion heat balancing
- Can be networked with up to 16 controller modules in total:
 - Heating circuit/DHW module
 - Solar module
 - Buffer module
 - Measuring module

Number of additional modules that can be installed in the heat generator:

- 1 module expansion and 1 controller module
or
- 2 controller modules

The supplementary plug set must be ordered in order to use expanded controller functions.

For further information about the TopTronic® E, see “Controls”

EnergyManager PV smart

Feature to increase self-generated power consumption in use with HovalConnect.

If a HovalConnect gateway is used together with the heat pump, the EnergyManager PV smart feature is available. This allows the heat pump to be operated preferentially at times of higher solar radiation. The feature uses online weather data on the current solar radiation for this purpose and can be adjusted by means of an associated threshold value. The self-consumption of electricity from an existing photovoltaic plant is thus increased and the purchase of grid electricity is reduced. This results in a lasting and significant cost-saving potential without further investment costs for the customer.

Delivery

- Outdoor unit and electrical box delivered packaged separately
- Sensor kit included loose in the electrical box:
 - Outdoor sensor (AF)
 - Calorifier sensor (SF1/SF1.1 and SF2/SF2.1)
 - Flow sensor (VF1)
 - Plant flow sensor heating (AVF H)
 - Plant flow sensor calorifier (AVF W)

On site

- Wall ducts for hydraulic connection lines
- Hydraulic connection lines from the outdoor unit to the inside of the building
- Electrical connection line from the outdoor unit to the electrical box
- Strip foundation, floor plate

Belaria® pro (40,50)

Type		(40)	(50)
• Energy efficiency class of the compound system with control ¹⁾ (A+++ → D)	35 °C/55 °C	A+++/A+++	A+++/A+++
• Room heating energy efficiency "moderate climate" 35 °C η _S	%	202	210
• Room heating energy efficiency "moderate climate" 55 °C η _S	%	155	163
• Seasonal coefficient of performance moderate climate 35 °C/55 °C	SCOP	5.1/3.9	5.3/4.1
• Seasonal energy efficiency ratio A35W18 ²⁾	SEER	5.7	5.7
• Seasonal energy efficiency ratio A35W7 ²⁾	SEER	3.3	3.3
Max./min. performance data heating and cooling in acc. with EN 14511			
• Max. heat output A2W35	kW	38.4	48.0
• Max. heat output A-7W35	kW	35.4	44.2
• Min. heat output A15W35	kW	12.6	12.6
• Max. cooling capacity A35W18	kW	41.8	41.8
• Max. cooling capacity A35W7	kW	38.2	38.2
• Min. cooling capacity A35W18	kW	13.0	13.0
Nominal output data heating in acc. with EN 14511			
• Nominal heat output A2W35	kW	22.6	28.2
• Coefficient of performance A2W35	COP	5.1	4.4
• Nominal heat output A7W35	kW	23.2	32.1
• Coefficient of performance A7W35	COP	5.7	5.3
• Nominal heat output A-7W35	kW	27.7	37.1
• Coefficient of performance A-7W35	COP	3.6	3.2
Nominal output data cooling in acc. with EN 14511			
• Nominal cooling capacity A35W18	kW	35.8	35.8
• Energy efficiency ratio A35W18	EER	4.1	4.1
• Nominal cooling capacity A35W7	kW	25.0	25.0
• Energy efficiency ratio A35W7	EER	3.0	3.0
Sound data			
• Max. sound power level outdoor unit, day operation	dB(A)	65	65
• Max. sound power level outdoor unit, night operation	dB(A)	59	59
• Sound power level EN 12102 outdoor unit ³⁾	dB(A)	55	56
• Sound pressure level 5 m ⁴⁾	dB(A)	36	37
• Sound pressure level 10 m ⁴⁾	dB(A)	30	31
Hydraulic data			
• Max. flow temperature	°C	70	70
• Max. flow rate heating side with A7W35, ΔT 6 K	m ³ /h	6.3	7.9
• Nominal flow rate heating side with A7W35, ΔT 5 K	m ³ /h	5.1	5.7
• Max. flow rate heating side cooling, ΔT 3 K	m ³ /h	9.0	11.3
• Pressure drop heating side at nominal flow	kPa	18	22
• Residual overpressure of heating pump at nominal flow	kPa	57	46
• Residual overpressure of heating pump at max. flow rate	kPa	40	37
• Max. operating pressure on the heating side ⁵⁾	bar	2.5	2.5
• Flow/return connection heating	G	2"	2"
• Nominal air volume outdoor unit (A7W35 and nominal rotation speed)	m ³ /h	2 x 6600	2 x 6600
• Max. air volume outdoor unit (A7W35 and max. rotation speed)	m ³ /h	2 x 8000	2 x 8000
• Hydraulic connection line, max. length/dimension inside	m/DN	30/50	30/50

Type		(40)	(50)
Cooling technical data			
• Compressor		modulating	modulating
• Refrigerant		R290	R290
• Refrigerant filling quantity	kg	Circuit 1 = 4.8 Circuit 2 = 4.9	Circuit 1 = 4.8 Circuit 2 = 4.9
• Compressor oil type		PZ46M	PZ46M
• Compressor oil filling quantity	l	0.9	0.9
Electrical data			
• Electrical connection compressor	V/Hz	3~400/50	3~400/50
• Control electrical connection	V/Hz	1~230/50	1~230/50
• Electrical connection electric heating element	V/Hz	-	-
• Max. heat pump operating current	A	39.2	39.2
• Max. compressor operating current	A	2 x 19.0	2 x 19.0
• Max. fan operating current	A	2 x 0.3	2 x 0.3
• Max. operating current electric heating element	A	-	-
• Max. heat pump power consumption	kW	16.8	24.0
• Max. fan power consumption	W	2 x 194	2 x 194
• Max. starting current heat pump I _A	A	19.0	19.0
• Output factor		0.88	0.88
• External protection main current	A	C/K 40	C/K 40
• External protection control current	A	B/Z 13	B/Z 13
• External protection electric heating element	A	-	-
• Fault-current circuit breaker		RCCB type B, IΔn ≥ 300 mA	
• Recommended cable		Cu 5 x 10.0 mm²	
• Nominal electrical output with A-7W35	kW	7.7	11.5
• Max. electrical output with A-20W60	kW	16.7	24.0
• Active power of heat pump	kW	15	21.1
• Max. operating voltage U _b	V	3~400	3~400
• Max. operating current I _b	A	38.6	38.6
• Max. inverter output current	A	2 x 24.0	2 x 24.0
• Pulse count		3	3
• Max. switching frequency per hour/day at t _n 0 °C	n	3/72	3/72
• Continuous load changes			No
• Starting up under load			No
• Feedback into the power system			No
• Power factor correction			No
• Starting up assistance		Output control	
• Type of starting up assistance		Frequency converter	
• Frequency converter		60-360 Hz (20-120 rps)	
• Starting current/nominal current ratio		0.49	
Dimensions/weight of outdoor unit			
• Dimensions (H x W x D)	mm	1514 x 3750 x 1005	
• Weight	kg	1000	1000
• Protection class		IP24	IP24
Dimensions/weight of electrical box			
• Dimensions (H x W x D)	mm	750 x 600 x 160	
• Weight	kg	25	25
• Protection class		IP20	IP20

¹⁾ Related to moderate climate.

²⁾ EN 14825

³⁾ The sound values apply when the evaporator is clean. These values are temporarily exceeded before defrosting.

⁴⁾ The sound pressure levels indicated apply if the outdoor unit is placed at a building façade. These values are reduced by 3 dB(A) if the outdoor unit is free-standing. With installation in a corner, the sound pressure level increases by 3 dB(A).

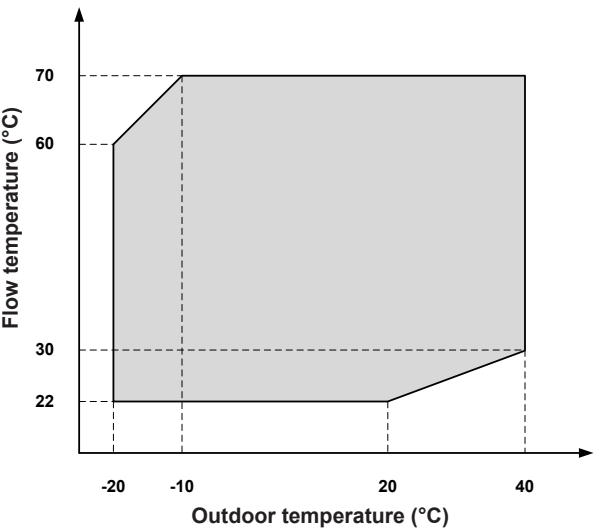
⁵⁾ Maximum operating pressure of the system without isolating system 2.5 bar, because the outdoor unit is protected with 2.5 bar. Provide general protection of the system in the building with 3.0 bar.
An isolating system must be provided for system pressures of 2.5 bar or more.

Using a fault-current circuit breaker RCCB type B, I_{Δn} ≥ 300 mA is recommended. Country-specific regulations must be observed.

Diagrams of areas of application

Heating and domestic hot water

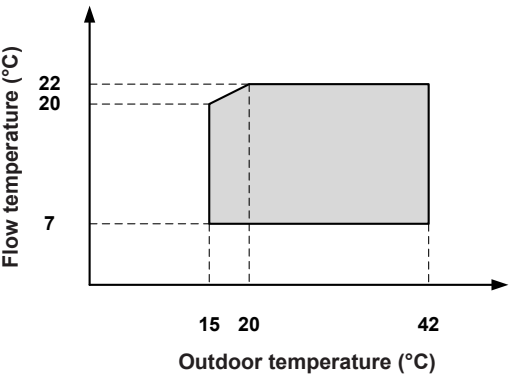
Belaria® pro (40,50)



Area of application of the heat pump for heating/domestic hot water

Cooling

Belaria® pro (40,50)



Area of application of the heat pump for cooling

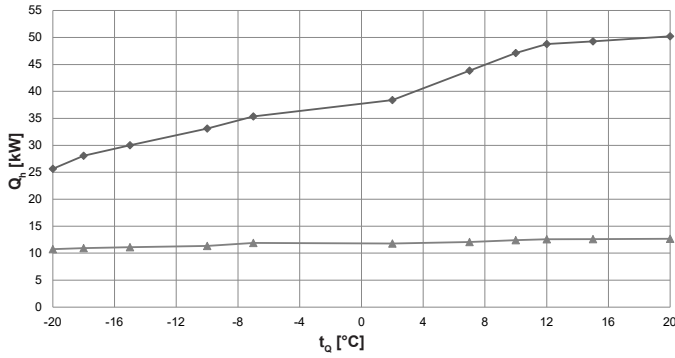
Performance data – heating

Maximum heat output allowing for defrosting losses

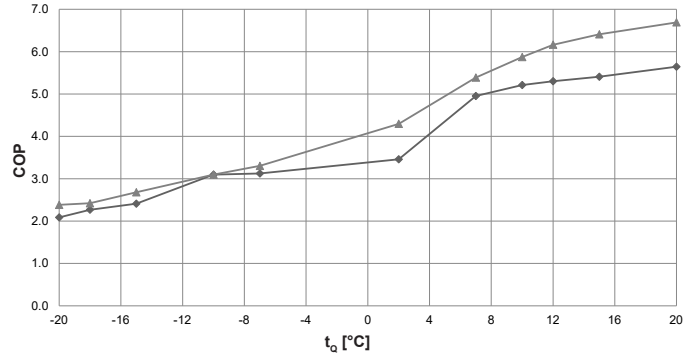
Belaria® pro (40)

Data according to EN 14511

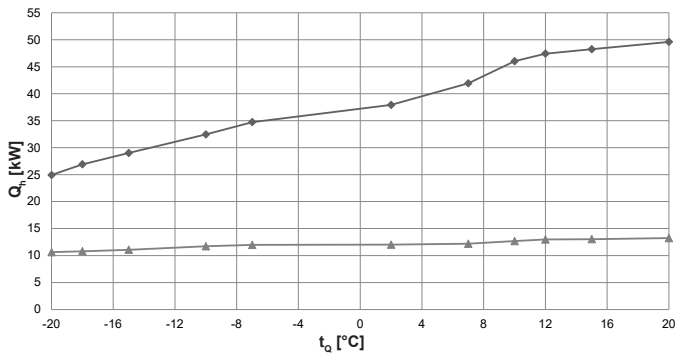
Heat output – t_{VL} 35 °C



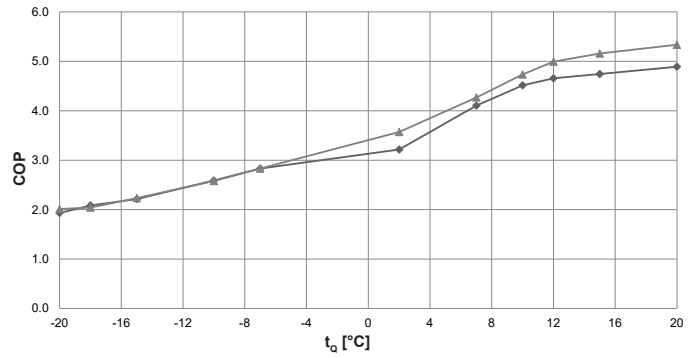
Coefficient of performance – t_{VL} 35 °C



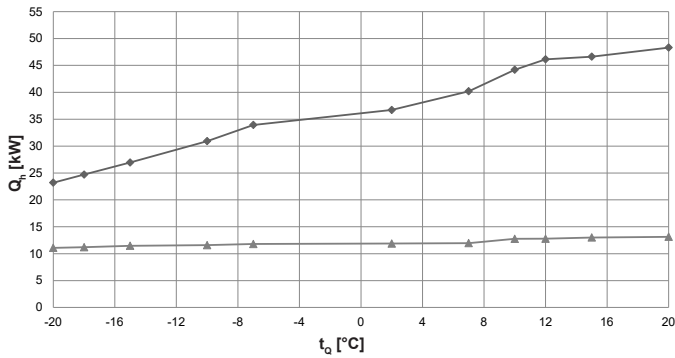
Heat output – t_{VL} 45 °C



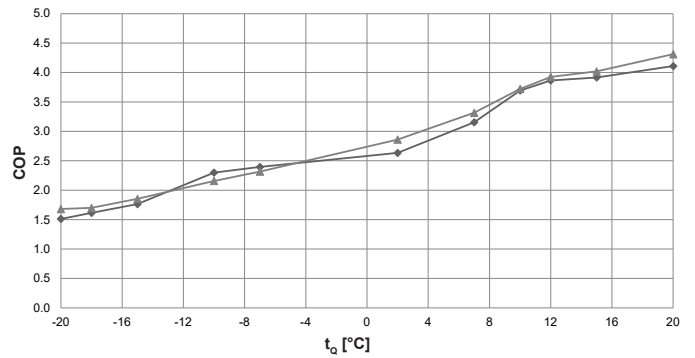
Coefficient of performance – t_{VL} 45 °C



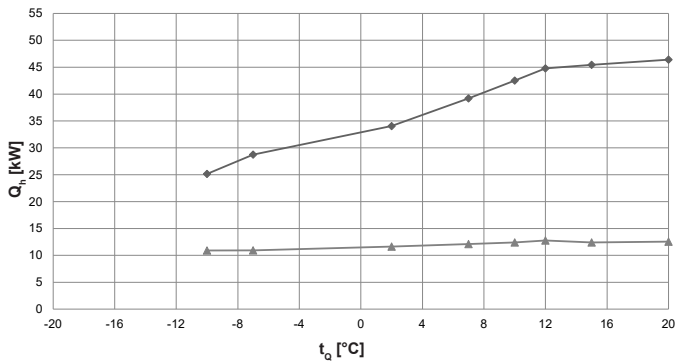
Heat output – t_{VL} 55 °C



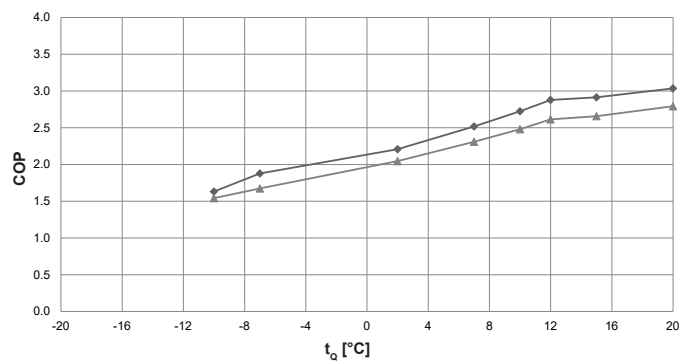
Coefficient of performance – t_{VL} 55 °C



Heat output – t_{VL} 70 °C



Coefficient of performance – t_{VL} 70 °C



t_{VL} = heating flow temperature (°C)

t_{q} = source temperature (°C)

Q_h = heat output (kW), measured in accordance with standard EN 14511

COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

◆ Maximum output

▲ Minimum output

Performance data – heating

Belaria® pro (40)

Data according to EN 14511

t_{VL} °C	t_o °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
35	-20	25.6	12.3	2.1	10.8	4.5	2.4
	-18	28.1	12.4	2.3	10.9	4.5	2.4
	-15	30.0	12.5	2.4	11.1	4.1	2.7
	-10	33.1	10.7	3.1	11.4	3.7	3.1
	-7	35.4	11.3	3.1	11.9	3.6	3.3
	2	38.4	11.1	3.5	11.8	2.7	4.3
	7	43.8	8.8	5.0	12.1	2.2	5.4
	10	47.1	9.0	5.2	12.4	2.1	5.9
	12	48.8	9.2	5.3	12.6	2.0	6.2
	15	49.3	9.1	5.4	12.6	2.0	6.4
	20	50.2	8.9	5.6	12.7	1.9	6.7
45	-20	24.9	12.9	1.9	10.6	5.3	2.0
	-18	26.9	12.9	2.1	10.8	5.3	2.0
	-15	29.0	13.1	2.2	11.1	5.0	2.2
	-10	32.4	12.5	2.6	11.7	4.5	2.6
	-7	34.7	12.3	2.8	12.0	4.2	2.8
	2	37.9	11.8	3.2	12.0	3.4	3.6
	7	41.9	10.2	4.1	12.2	2.9	4.3
	10	46.0	10.2	4.5	12.7	2.7	4.7
	12	47.4	10.2	4.7	13.0	2.6	5.0
	15	48.2	10.2	4.7	13.0	2.5	5.2
	20	49.6	10.1	4.9	13.2	2.5	5.3
50	-20	24.0	14.3	1.7	11.5	5.8	2.0
	-18	25.8	14.1	1.8	11.6	5.8	2.0
	-15	28.0	14.2	2.0	10.9	5.4	2.0
	-10	31.7	13.0	2.4	11.2	5.0	2.3
	-7	34.8	13.4	2.6	11.5	4.6	2.5
	2	37.3	12.9	2.9	11.7	3.7	3.1
	7	41.1	11.5	3.6	12.0	3.2	3.7
	10	45.1	11.1	4.1	12.3	3.0	4.1
	12	46.8	11.1	4.2	12.4	2.9	4.3
	15	47.4	11.0	4.3	12.5	2.8	4.4
	20	49.0	11.0	4.5	12.6	2.8	4.5
55	-20	23.2	15.3	1.5	11.1	6.6	1.7
	-18	24.7	15.3	1.6	11.2	6.6	1.7
	-15	27.0	15.3	1.8	11.5	6.2	1.9
	-10	30.9	13.5	2.3	11.6	5.4	2.2
	-7	33.9	14.2	2.4	11.8	5.1	2.3
	2	36.7	14.0	2.6	11.9	4.2	2.9
	7	40.2	12.7	3.2	12.0	3.6	3.3
	10	44.2	12.0	3.7	12.8	3.4	3.7
	12	46.1	11.9	3.9	12.8	3.3	3.9
	15	46.6	11.9	3.9	13.0	3.2	4.0
	20	48.3	11.8	4.1	13.1	3.0	4.3

 t_{VL} = heating flow temperature (°C)

 t_o = source temperature (°C)

 Q_h = heat output (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Further performance data – heating
see next page

Observe daily power interruptions!
see “Engineering heat pumps general”

Performance data – heating

Belaria® pro (40)

Data according to EN 14511

t_{VL} °C	t_Q °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
60	-20	22.3	16.7	1.3	10.8	7.1	1.5
	-18	23.6	16.8	1.4	10.9	7.1	1.5
	-15	25.9	16.4	1.6	11.2	6.7	1.7
	-10	30.1	15.3	2.0	11.5	6.0	1.9
	-7	33.1	15.0	2.2	11.6	5.6	2.1
	2	36.1	15.0	2.4	11.3	4.8	2.3
	7	39.3	14.0	2.8	12.1	4.2	2.9
	10	43.3	12.8	3.4	12.4	3.8	3.2
	12	45.5	12.8	3.6	12.8	3.8	3.4
	15	45.8	12.8	3.6	12.8	3.7	3.5
	20	47.5	12.5	3.8	12.9	3.5	3.7
70	-20	-	-	-	-	-	-
	-18	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	25.2	15.4	1.6	10.9	7.1	1.5
	-7	28.8	15.3	1.9	10.9	6.5	1.7
	2	34.1	15.4	2.2	11.6	5.7	2.0
	7	39.2	15.6	2.5	12.1	5.2	2.3
	10	42.5	15.6	2.7	12.4	5.0	2.5
	12	44.8	15.6	2.9	12.8	4.9	2.6
	15	45.4	15.6	2.9	12.4	4.7	2.7
	20	46.4	15.3	3.0	12.6	4.5	2.8

 t_{VL} = heating flow temperature (°C)

 t_Q = source temperature (°C)

 Q_h = heat output (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Observe daily power interruptions!
see "Engineering heat pumps general"

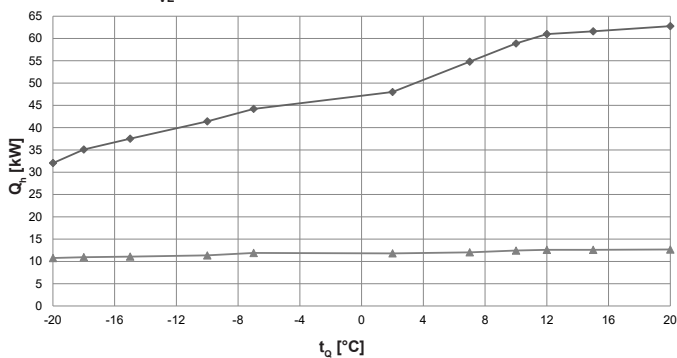
Performance data – heating

Maximum heat output allowing for defrosting losses

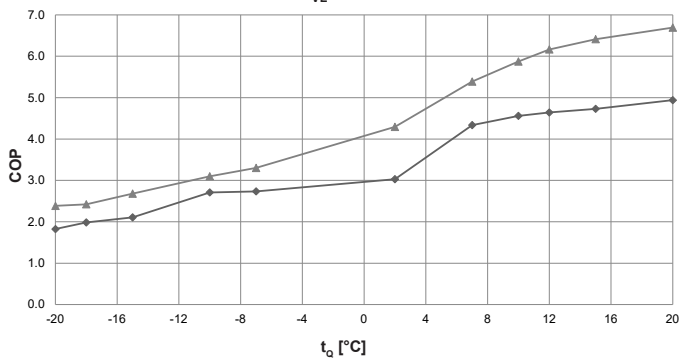
Belaria® pro (50)

Data according to EN 14511

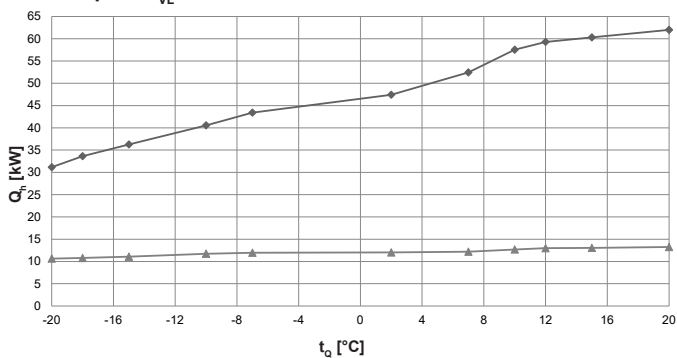
Heat output – $t_{VL} 35\text{ °C}$



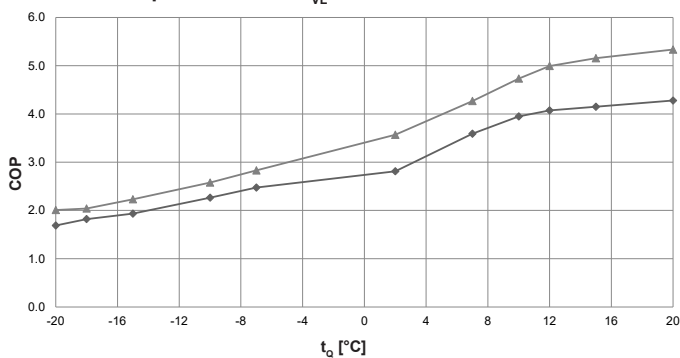
Coefficient of performance – $t_{VL} 35\text{ °C}$



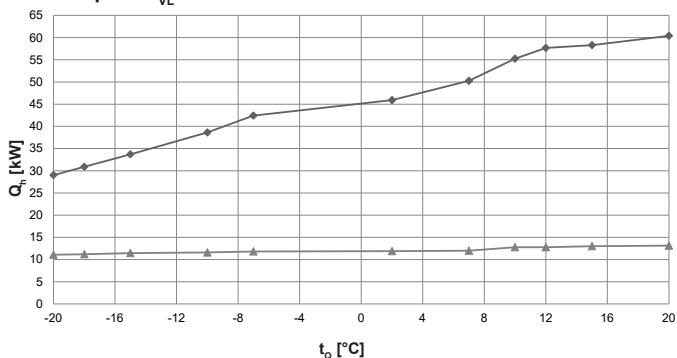
Heat output – $t_{VL} 45\text{ °C}$



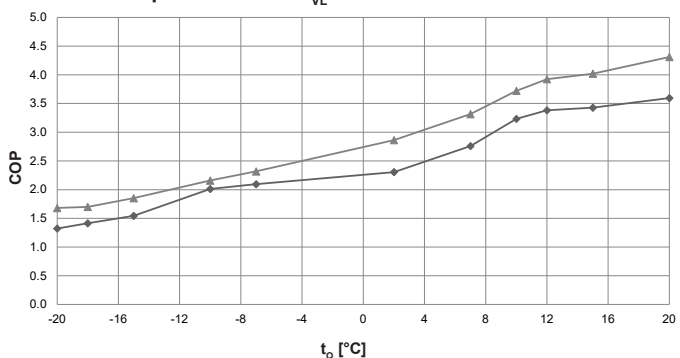
Coefficient of performance – $t_{VL} 45\text{ °C}$



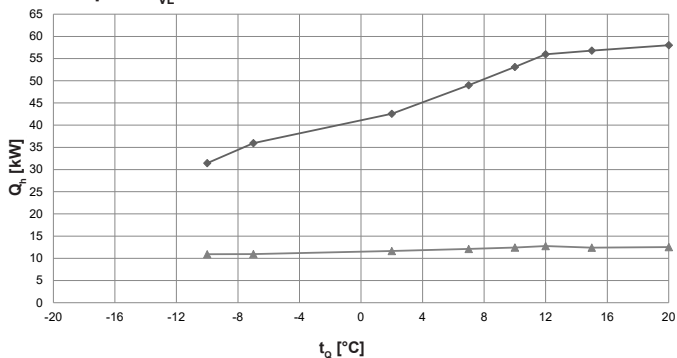
Heat output – $t_{VL} 55\text{ °C}$



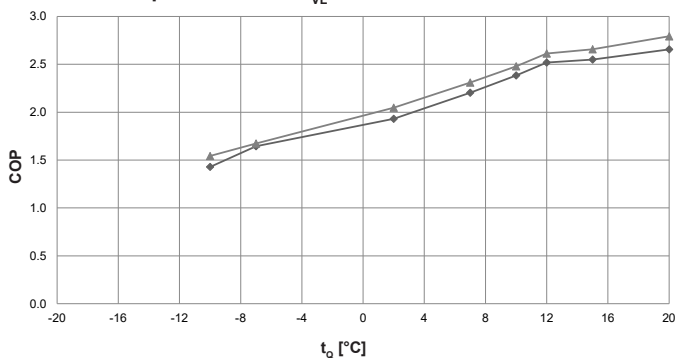
Coefficient of performance – $t_{VL} 55\text{ °C}$



Heat output – $t_{VL} 70\text{ °C}$



Coefficient of performance – $t_{VL} 70\text{ °C}$



t_{VL} = heating flow temperature (°C)

t_s = source temperature (°C)

Q_h = heat output (kW), measured in accordance with standard EN 14511

COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

◆ Maximum output

▲ Minimum output

Performance data – heating

Belaria® pro (50)

Data according to EN 14511

t_{VL} °C	t_a °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
35	-20	32.1	17.6	1.8	10.8	4.5	2.4
	-18	35.1	17.7	2.0	10.9	4.5	2.4
	-15	37.5	17.8	2.1	11.1	4.1	2.7
	-10	41.4	15.3	2.7	11.4	3.7	3.1
	-7	44.2	16.2	2.7	11.9	3.6	3.3
	2	48.0	15.8	3.0	11.8	2.7	4.3
	7	54.8	12.6	4.3	12.1	2.2	5.4
	10	58.9	12.9	4.6	12.4	2.1	5.9
	12	61.0	13.1	4.6	12.6	2.0	6.2
	15	61.6	13.0	4.7	12.6	2.0	6.4
	20	62.8	12.7	4.9	12.7	1.9	6.7
45	-20	31.2	18.5	1.7	10.6	5.3	2.0
	-18	33.6	18.5	1.8	10.8	5.3	2.0
	-15	36.3	18.8	1.9	11.1	5.0	2.2
	-10	40.6	17.9	2.3	11.7	4.5	2.6
	-7	43.4	17.5	2.5	12.0	4.2	2.8
	2	47.4	16.9	2.8	12.0	3.4	3.6
	7	52.4	14.6	3.6	12.2	2.9	4.3
	10	57.5	14.6	3.9	12.7	2.7	4.7
	12	59.3	14.6	4.1	13.0	2.6	5.0
	15	60.3	14.5	4.1	13.0	2.5	5.2
	20	62.0	14.5	4.3	13.2	2.5	5.3
50	-20	30.0	20.5	1.5	11.5	5.8	2.0
	-18	32.3	20.2	1.6	11.6	5.8	2.0
	-15	35.0	20.3	1.7	10.9	5.4	2.0
	-10	39.6	18.6	2.1	11.2	5.0	2.3
	-7	43.4	19.1	2.3	11.5	4.6	2.5
	2	46.7	18.4	2.5	11.7	3.7	3.1
	7	51.3	16.4	3.1	12.0	3.2	3.7
	10	56.4	15.8	3.6	12.3	3.0	4.1
	12	58.5	15.8	3.7	12.4	2.9	4.3
	15	59.3	15.8	3.8	12.5	2.8	4.4
	20	61.2	15.6	3.9	12.6	2.8	4.5
55	-20	29.0	21.9	1.3	11.1	6.6	1.7
	-18	30.9	21.8	1.4	11.2	6.6	1.7
	-15	33.7	21.8	1.5	11.5	6.2	1.9
	-10	38.6	19.2	2.0	11.6	5.4	2.2
	-7	42.4	20.2	2.1	11.8	5.1	2.3
	2	45.9	19.9	2.3	11.9	4.2	2.9
	7	50.2	18.2	2.8	12.0	3.6	3.3
	10	55.2	17.1	3.2	12.8	3.4	3.7
	12	57.7	17.1	3.4	12.8	3.3	3.9
	15	58.3	17.0	3.4	13.0	3.2	4.0
	20	60.4	16.8	3.6	13.1	3.0	4.3

 t_{VL} = heating flow temperature (°C)

 t_a = source temperature (°C)

 Q_h = heat output (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Further performance data – heating
see next page

Observe daily power interruptions!
see "Engineering heat pumps general"

Performance data – heating

Belaria® pro (50)

Data according to EN 14511

t_{VL} °C	t_a °C	Maximum output			Minimum output		
		Q_h kW	P kW	COP	Q_h kW	P kW	COP
60	-20	27.9	23.9	1.2	10.8	7.1	1.5
	-18	29.5	23.9	1.2	10.9	7.1	1.5
	-15	32.4	23.4	1.4	11.2	6.7	1.7
	-10	37.7	21.9	1.7	11.5	6.0	1.9
	-7	41.4	21.4	1.9	11.6	5.6	2.1
	2	45.2	21.5	2.1	11.3	4.8	2.3
	7	49.2	20.0	2.5	12.1	4.2	2.9
	10	54.1	18.4	2.9	12.4	3.8	3.2
	12	56.9	18.3	3.1	12.8	3.8	3.4
	15	57.3	18.2	3.1	12.8	3.7	3.5
	20	59.4	17.9	3.3	12.9	3.5	3.7
70	-20	-	-	-	-	-	-
	-18	-	-	-	-	-	-
	-15	-	-	-	-	-	-
	-10	31.4	22.0	1.4	10.9	7.1	1.5
	-7	35.9	21.9	1.6	10.9	6.5	1.7
	2	42.6	22.1	1.9	11.6	5.7	2.0
	7	49.0	22.2	2.2	12.1	5.2	2.3
	10	53.1	22.3	2.4	12.4	5.0	2.5
	12	56.0	22.2	2.5	12.8	4.9	2.6
	15	56.8	22.3	2.5	12.4	4.7	2.7
	20	58.0	21.8	2.7	12.6	4.5	2.8

t_{VL} = heating flow temperature (°C)

t_a = source temperature (°C)

Q_h = heat output (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Observe daily power interruptions!
see "Engineering heat pumps general"

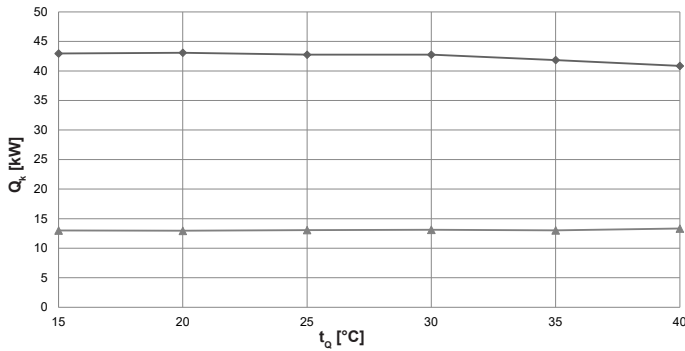
Performance data – cooling

Maximum cooling capacity

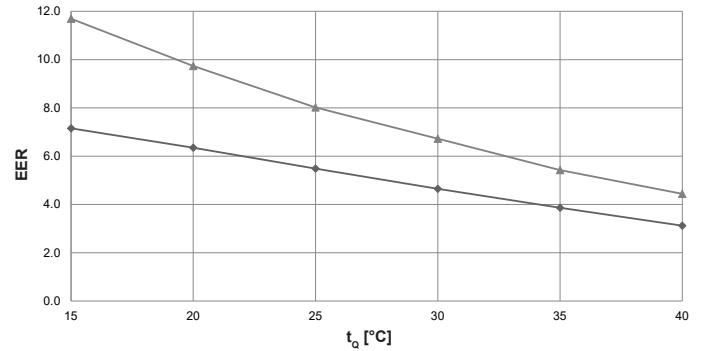
Belaria® pro (40)

Data according to EN 14511

Cooling capacity – $t_{VL} 18\text{ °C}$



Energy efficiency ratio – $t_{VL} 18\text{ °C}$



◆ Maximum output
▲ Minimum output

Belaria® pro (40)

Data according to EN 14511

t _{VL} °C	t _o °C	Maximum output			Minimum output		
		Q _k kW	P kW	EER	Q _k kW	P kW	EER
7	15	42.4	10.0	4.2	13.1	1.8	7.3
	20	43.0	12.6	3.4	13.3	2.3	5.8
	25	41.4	13.9	3.0	13.1	2.7	4.8
	30	40.2	14.7	2.7	12.9	3.7	3.5
	35	38.2	16.0	2.4	12.3	4.3	2.8
	40	33.3	16.2	2.1	11.4	5.4	2.1
12	15	43.2	7.9	5.5	13.0	1.4	9.0
	20	42.8	8.9	4.8	13.1	1.7	7.5
	25	42.9	10.5	4.1	13.3	2.2	6.2
	30	43.1	12.9	3.3	13.4	2.7	5.1
	35	42.0	15.2	2.8	13.3	3.2	4.2
	40	38.6	17.0	2.3	12.4	3.6	3.4
18	15	43.0	6.0	7.2	13.0	1.1	11.7
	20	43.1	6.8	6.4	13.0	1.3	9.7
	25	42.8	7.8	5.5	13.1	1.6	8.0
	30	42.8	9.2	4.6	13.1	2.0	6.7
	35	41.8	10.8	3.9	13.0	2.4	5.4
	40	40.9	13.1	3.1	13.3	3.0	4.4

t_{VL} = cooling water flow temperature (°C)

t_o = source temperature (°C)

Q_k = cooling capacity (kW), measured in accordance with standard EN 14511

P = power consumption for the overall unit (kW)

EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

Observe daily power interruptions!
see "Engineering heat pumps general"

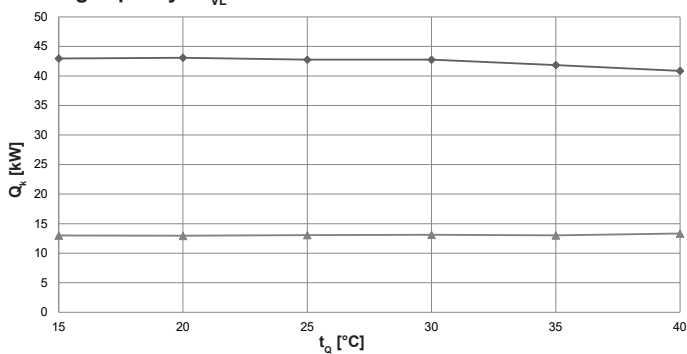
Performance data – cooling

Maximum cooling capacity

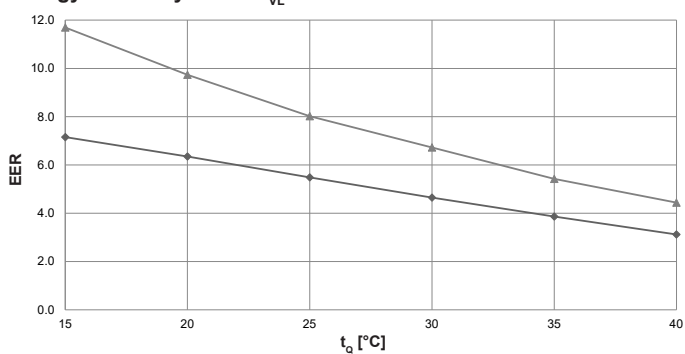
Belaria® pro (50)

Data according to EN 14511

Cooling capacity – $t_{VL} 18\text{ °C}$



Energy efficiency ratio – $t_{VL} 18\text{ °C}$



◆ Maximum output
▲ Minimum output

Belaria® pro (50)

Data according to EN 14511

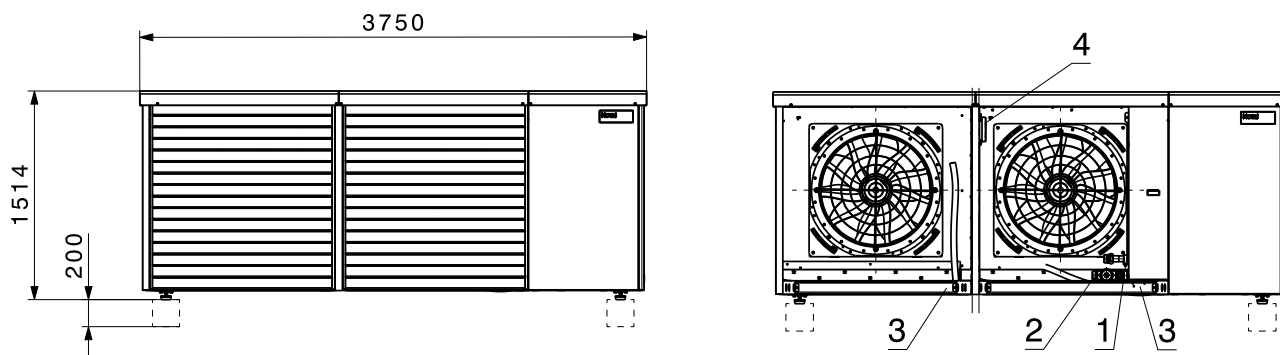
t_{VL} °C	t_o °C	Maximum output			Minimum output		
		Q_k kW	P kW	EER	Q_k kW	P kW	EER
7	15	42.4	10.0	4.2	13.1	1.8	7.3
	20	43.0	12.6	3.4	13.3	2.3	5.8
	25	41.4	13.9	3.0	13.1	2.7	4.8
	30	40.2	14.7	2.7	12.9	3.7	3.5
	35	38.2	16.0	2.4	12.3	4.3	2.8
	40	33.3	16.2	2.1	11.4	5.4	2.1
12	15	43.2	7.9	5.5	13.0	1.4	9.0
	20	42.8	8.9	4.8	13.1	1.7	7.5
	25	42.9	10.5	4.1	13.3	2.2	6.2
	30	43.1	12.9	3.3	13.4	2.7	5.1
	35	42.0	15.2	2.8	13.3	3.2	4.2
	40	38.6	17.0	2.3	12.4	3.6	3.4
18	15	43.0	6.0	7.2	13.0	1.1	11.7
	20	43.1	6.8	6.4	13.0	1.3	9.7
	25	42.8	7.8	5.5	13.1	1.6	8.0
	30	42.8	9.2	4.6	13.1	2.0	6.7
	35	41.8	10.8	3.9	13.0	2.4	5.4
	40	40.9	13.1	3.1	13.3	3.0	4.4

t_{VL} = cooling water flow temperature (°C)
 t_o = source temperature (°C)
 Q_k = cooling capacity (kW), measured in accordance with standard EN 14511
P = power consumption for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

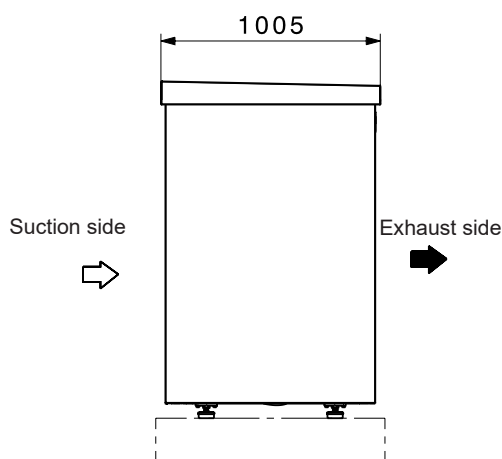
Observe daily power interruptions!
see "Engineering heat pumps general"

Belaria® pro Outdoor unit (Dimensions in mm)

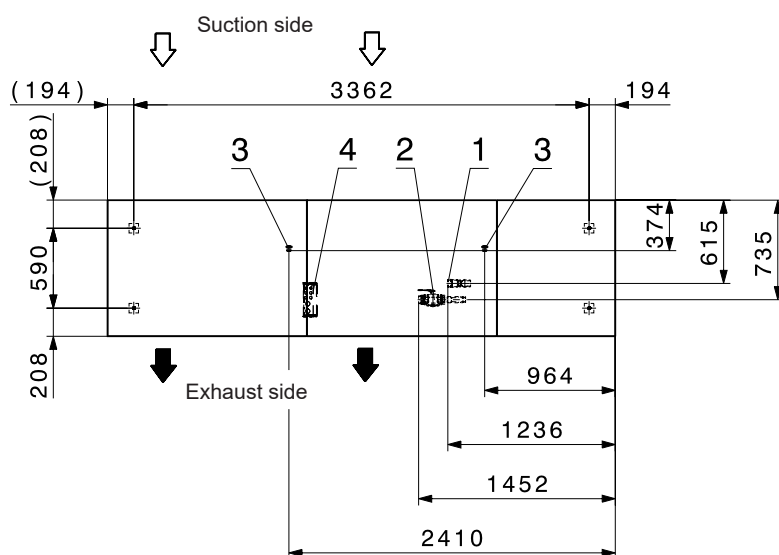
Front view



View from the left



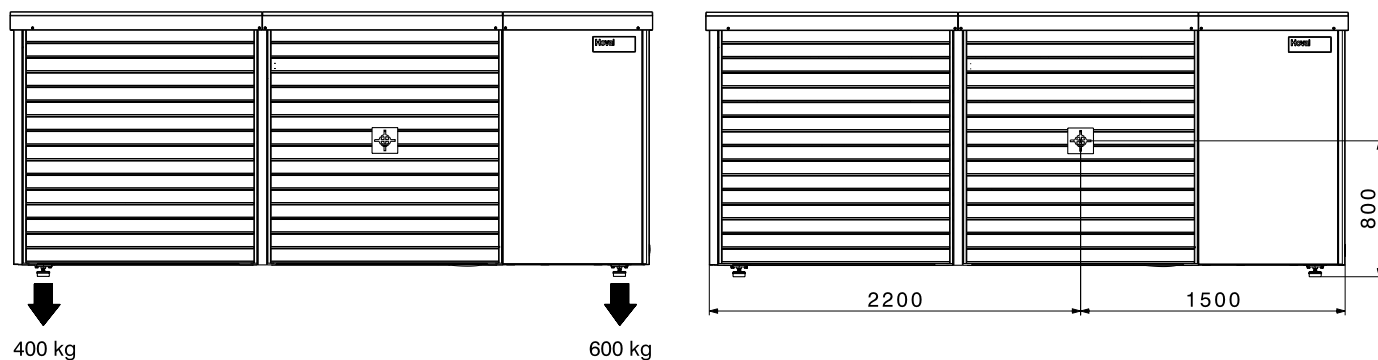
View from top



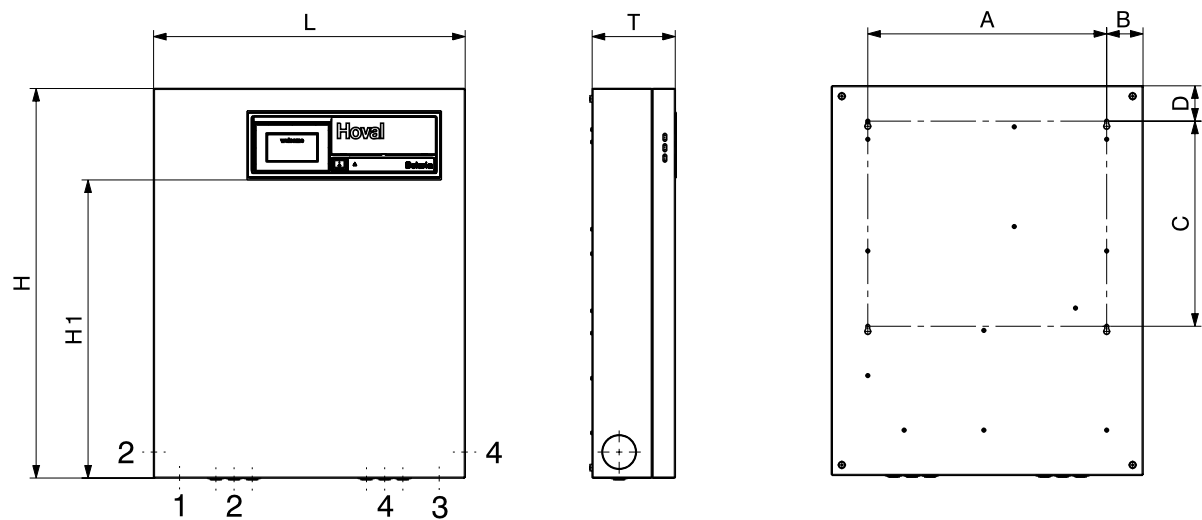
- 1 Connection hydraulic connection line flow
- 2 Connection hydraulic connection line return
- 3 Condensate drain 1 + 2
- 4 Electrical connection

- 2" ext. thread
- 2" ext. thread
- 1"

Centre of gravity



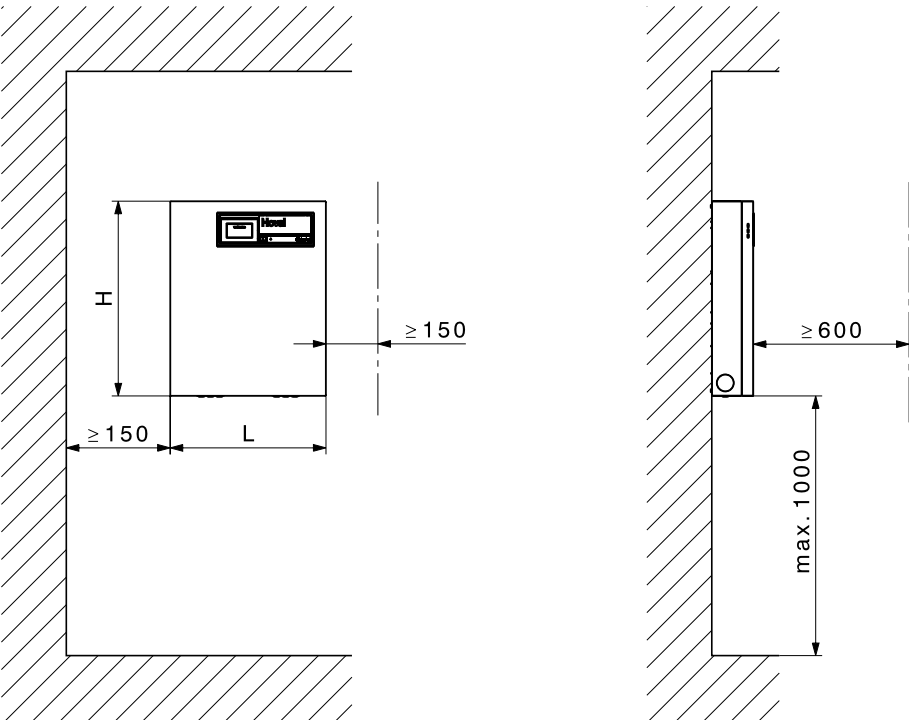
Belaria® pro (40,50)
 Electrical box
 (Dimensions in mm)



Type	L	H	H1	T	A	B	C	D
Belaria® pro (40,50)	600	750	574	160	460	70	395	70

- 1 Cable feed-in control current
- 2 Optional: Cable feed-in control current
- 3 Cable feed-in sensors, RS485
- 4 Optional: Cable feed-in sensors, RS485

Belaria® pro (40,50)
 Electrical box

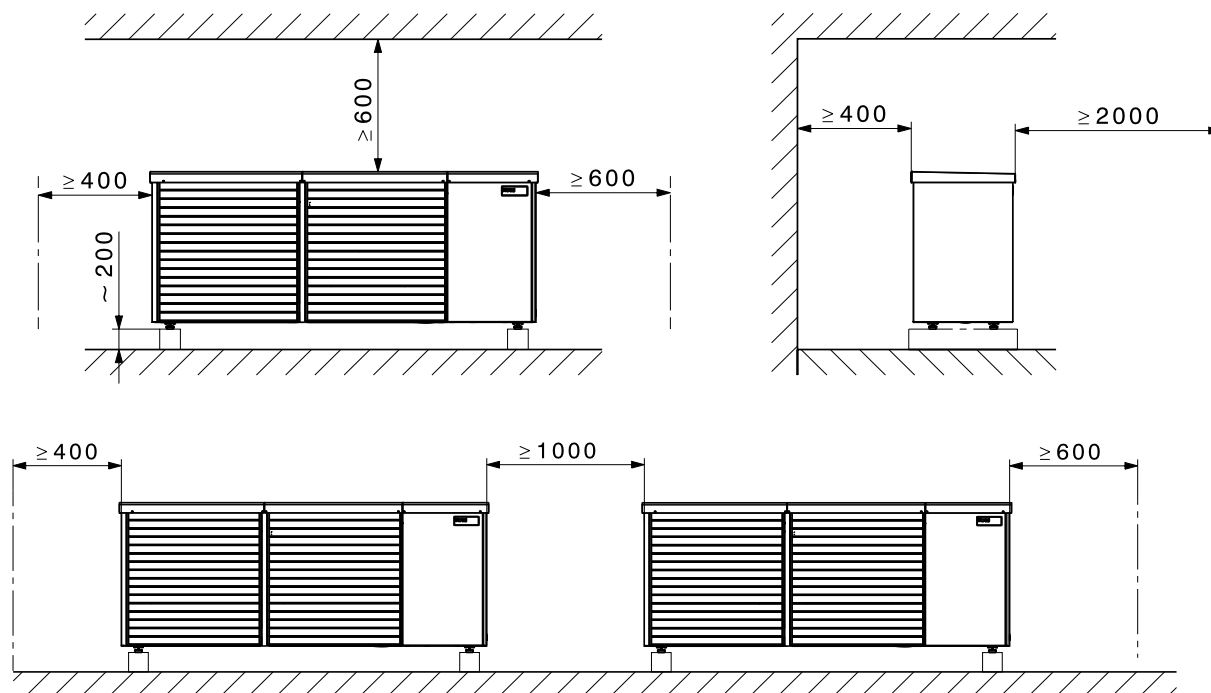


To ensure good operability and accessibility to the electrical/hydraulic connections, a clearance of max. 1000 mm must be provided from the ground to the lower edge of the electrical box.

Space requirement

(Dimensions in mm)

Belaria® pro Outdoor unit

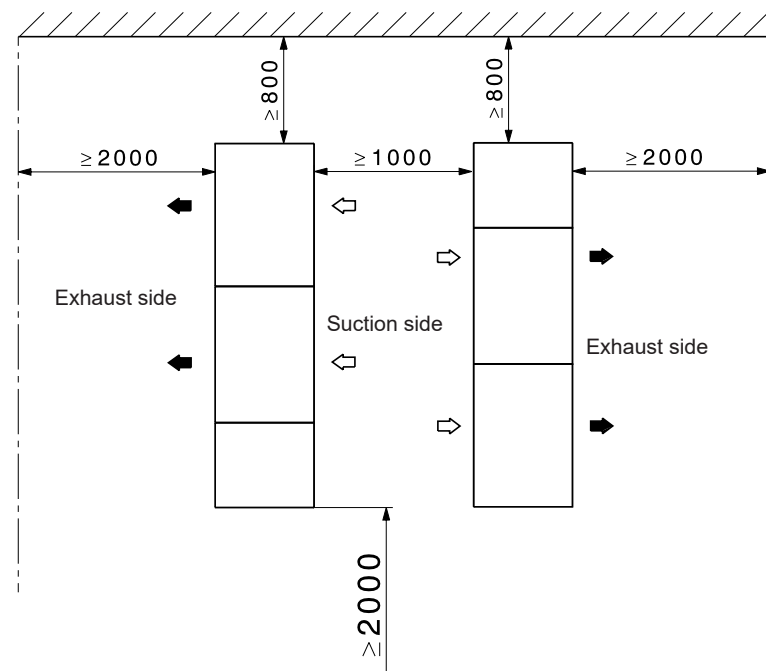


Any possible openings/recesses and ignition sources must be avoided within a radius of one meter around the outdoor unit.

In order to ensure accessibility during maintenance, a clearance of at least 600 mm upwards must be maintained. For any service work, the minimum clearances at the rear and sides of the heat pump must be observed.

Belaria® pro Outdoor unit

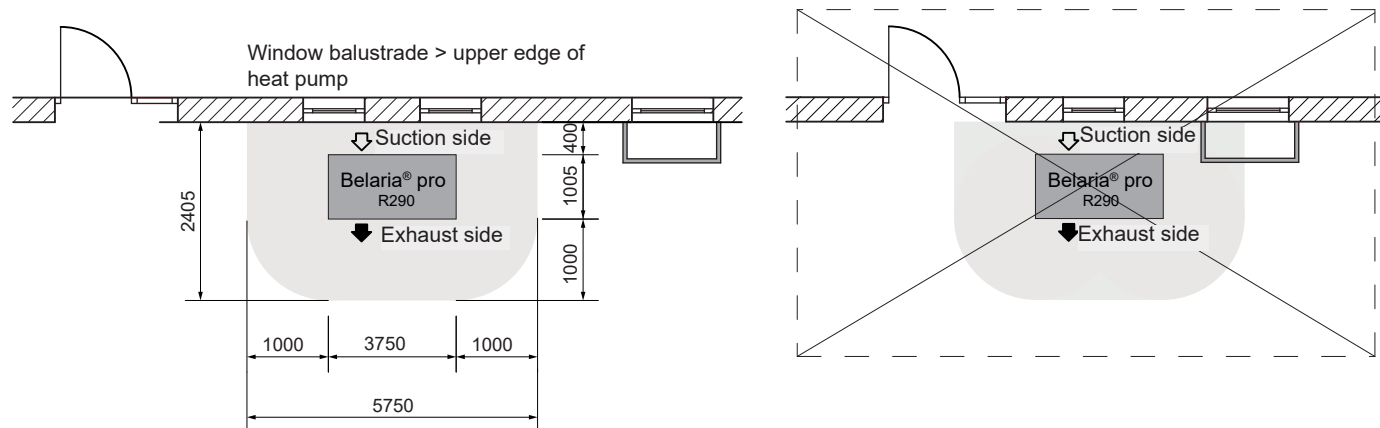
View from above



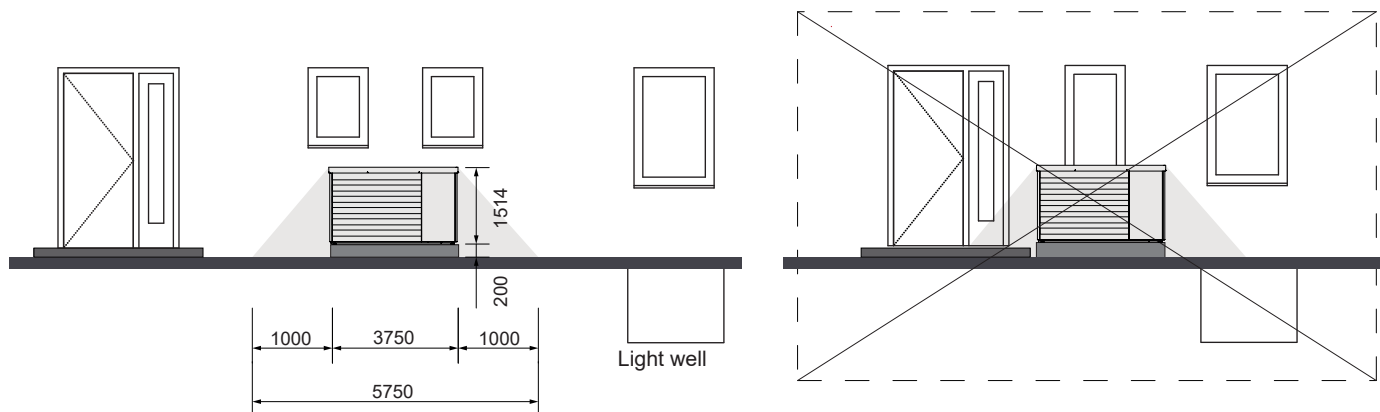
Presentation of protection areas

Belaria® pro (40,50) with refrigerant R290
(Dimensions in mm)

Floor plan – protection area when installed in front of a wall

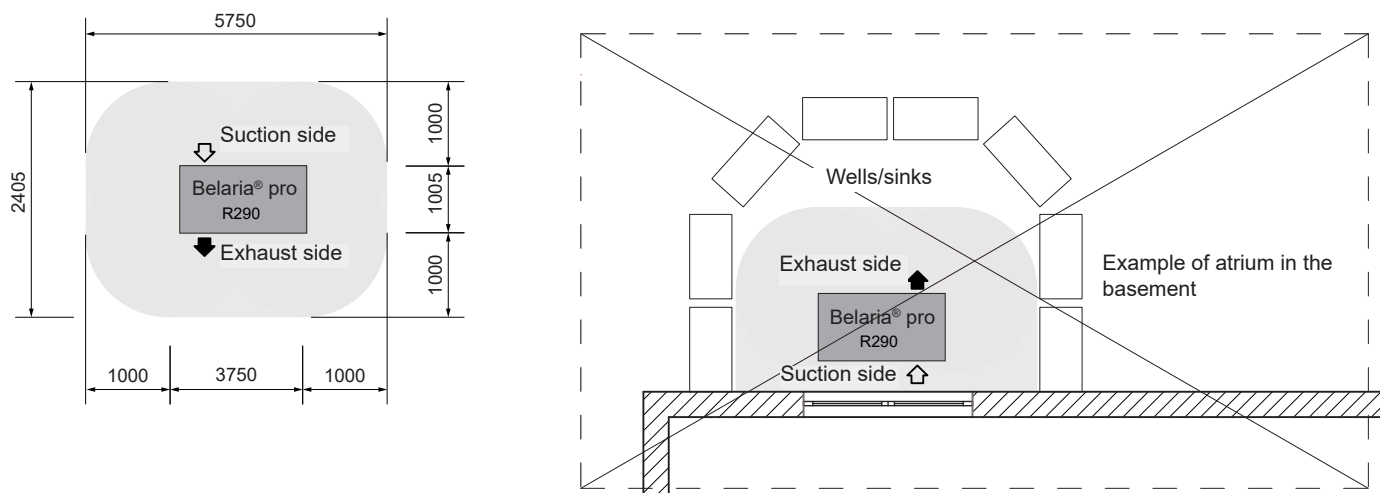


View – protection area when installed in front of a wall

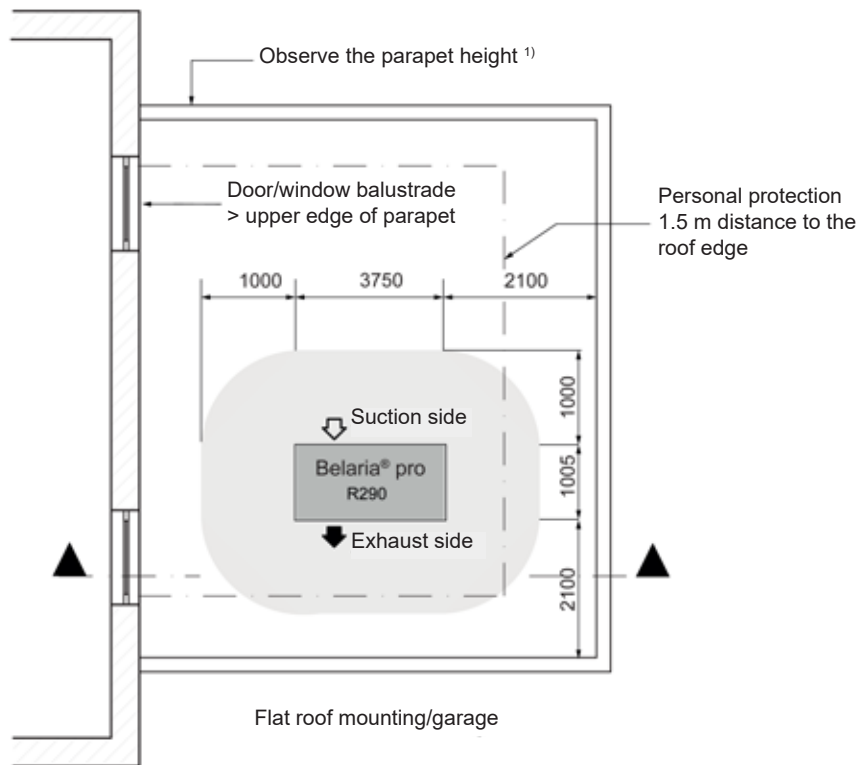


- The heat pump (outdoor unit) is only allowed to be placed outdoors and under no circumstances indoors.
- The outdoor unit is filled with the non-toxic, odourless and colourless but flammable refrigerant R290 (propane), which is heavier than air. If this occurs, there is a danger of fire/explosion. Therefore, all potential sources of ignition must be kept at least 1 m away in all directions. Smoking and the use of naked flames is prohibited in this area.
- Window balustrades must be higher than the upper edge of the outdoor unit in the protection area!
- The heat pump must be at least 1 m from the property boundary; observe building regulations!
- At the entrances to properties, it must be ensured that no vehicle can enter the protection area.
- To prevent the heat pump from being touched by vehicles, a collision guard must be installed if necessary. This must be located outside the protected area.

Floor plan – protection area when installed outdoors

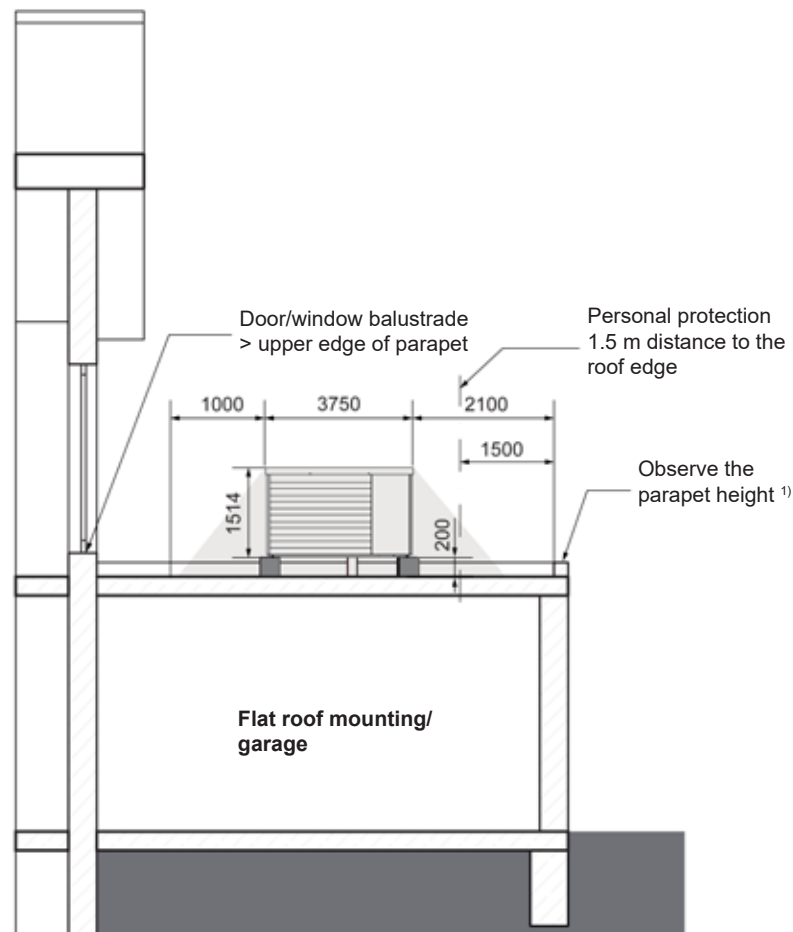


Floor plan flat roof – protection area



¹⁾ In case of flat roof installation, the parapet must not represent a potential sink in which refrigerant could accumulate. No ignitable mixture is allowed to form.

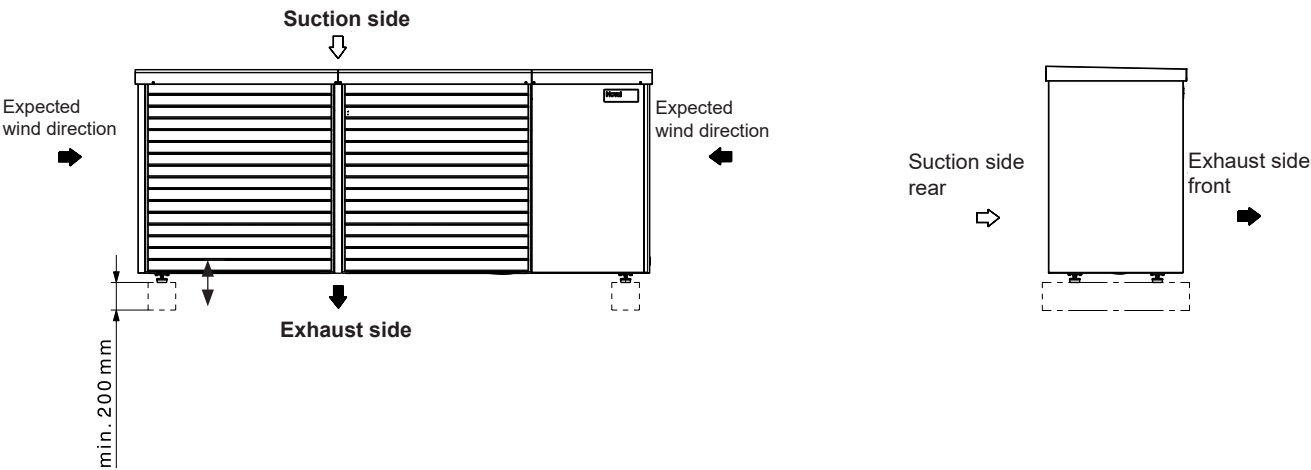
Section flat roof – protection area



- Strict compliance with safety measures regarding combustible refrigerants.
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.6 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.
- There must be no floor-to-ceiling doors/windows to the flat roof, or balustrade must be higher than the parapet.
- Protection areas around windows must be complied with.
- There must not be any pipe vents, skylights or the like on the flat roof within a radius of 1 m from the heat pump.
- If there is a risk of frost, a siphon must be installed in the shaft immediately before the condensate drain is introduced into the downpipe.
- Condensate drain into the sewage system via a frost-proof siphon or allow it to seep away freely.

Installation variants for Belaria® pro outdoor unit
(Dimensions in mm)

Firm concrete base (1) on site



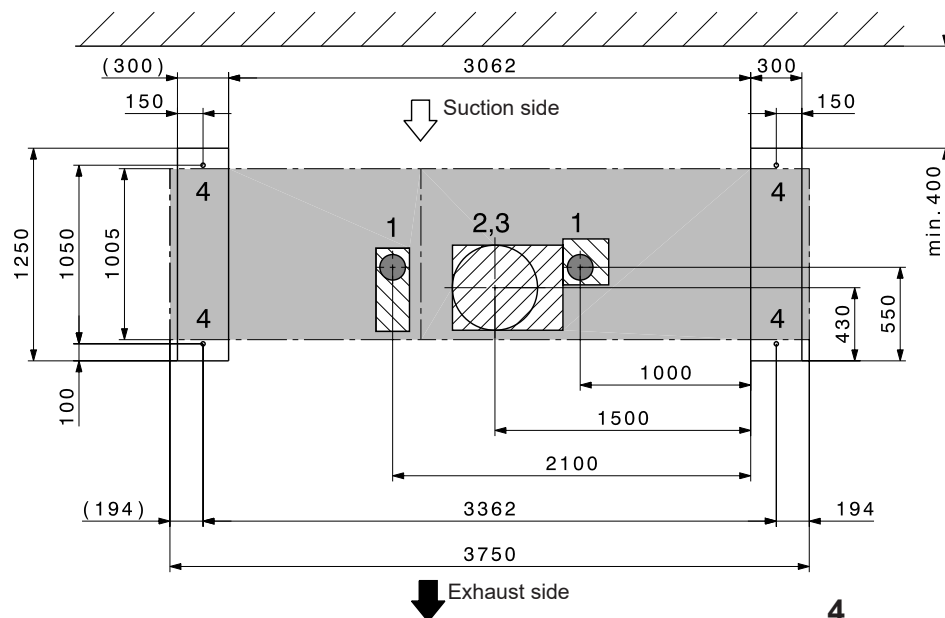
The base must not form a sink. A circumferential base is therefore not permitted.

Installation variants for Belaria® pro outdoor unit

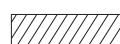
(Dimensions in mm)

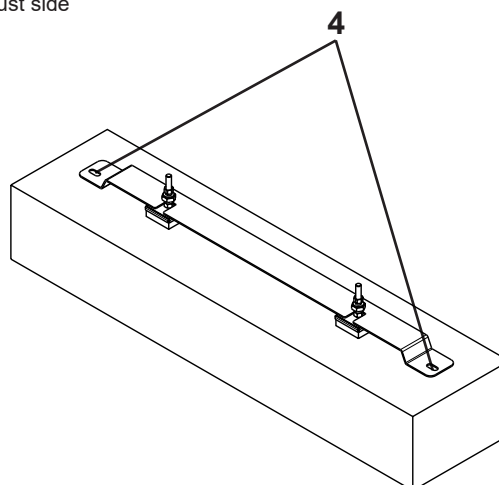
Strip foundation

Plan concrete base set
(view from above)

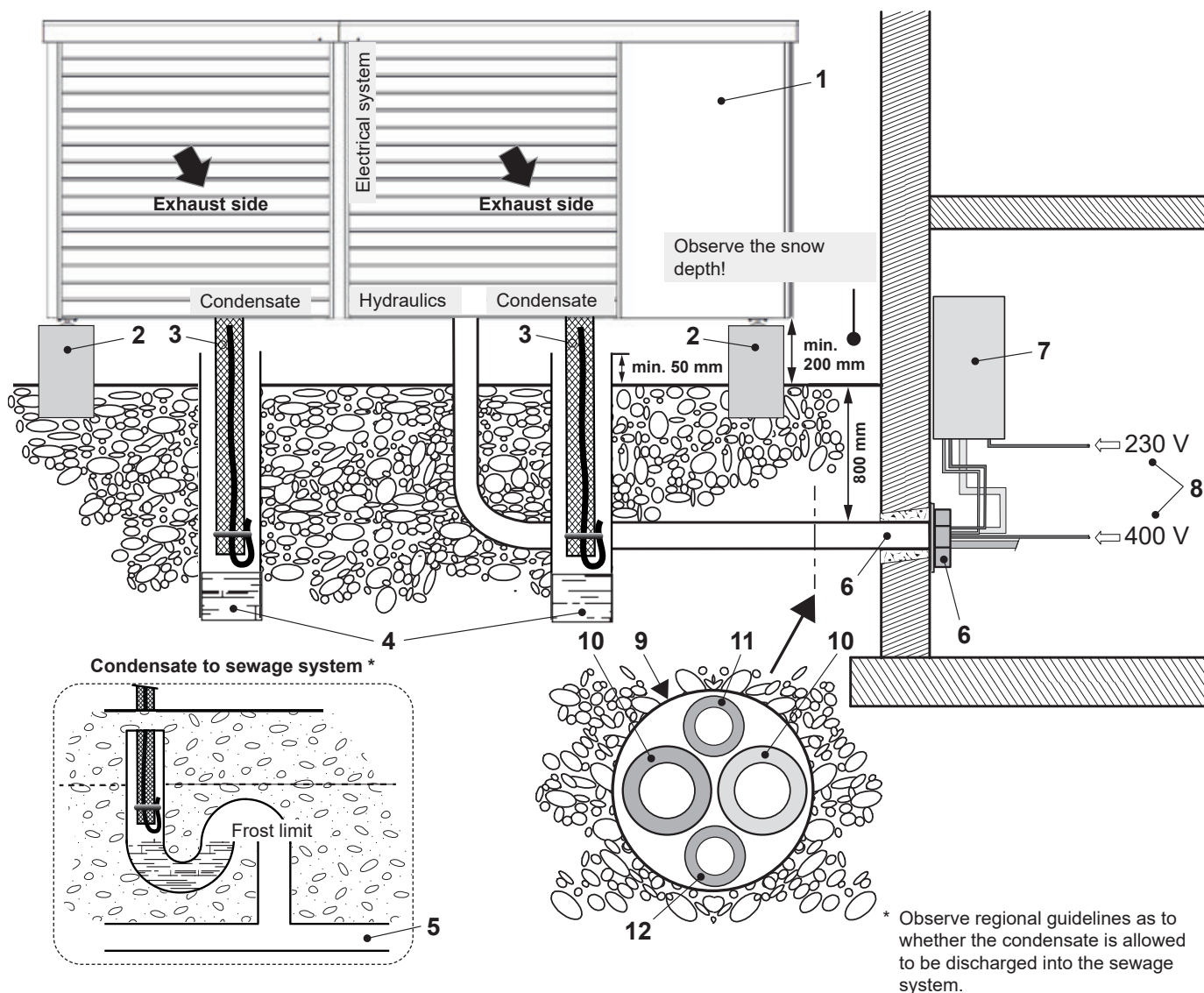


- 1 Condensate drain area
- 2 Area Flow hydraulics
Return hydraulics
- 3 Electrics area
- 4 Attachment points on the concrete base
(dowels included in scope of delivery)

-  Possible area for empty tubes in the concrete base
-  Possible area for condensate drain in the concrete base



Configuration and connection diagram Belaria® pro (40,50)



- | | | | | |
|---|--|----|--|-----------------|
| 1 | Outdoor unit | 8 | Main current: | 3 x 400 V/50 Hz |
| 2 | Concrete base | | Control current: | 1 x 230 V/50 Hz |
| 3 | Condensate drain Ø 28 mm | | Data bus RS485 | |
| 4 | Variant 1: Seepage (duct/gravel layer) | 9 | Empty tube for hydraulics and electrics | |
| 5 | Variant 2: Discharging into the sewage system
(penetration into the soil must be made leak-tight) | 10 | Connection line flow and return | |
| 6 | Wall lead-through
(hydraulic and electrical connections) | 11 | Empty tube for electrical connections for outdoor unit | |
| 7 | Electrical box | | Main current outdoor unit: | 3 x 400 V/50 Hz |
| | | | Control current outdoor unit: | 1 x 230 V/50 Hz |
| | | 12 | Empty tube for data bus RS485 | |

Requirements and directives

The general requirements and directives listed in the chapter Engineering apply.

Set-up

- The distance between the outdoor unit and the buffer storage tank must be as short as possible. Only short and simple routing of lines guarantees cost effectiveness and low heat losses.
- The maximum permitted single cable length is 30 m between the outdoor unit and the buffer storage tank. This must not be exceeded.
In general, the customer must assess whether the next larger pipe dimension is more suitable due to the pressure drop.
- There must be no building openings (windows, doors, shafts, ventilation openings, etc.) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Wall ducts into the building must be airtight.
- The outdoor unit must not be placed in or near floor recesses.
- The outdoor unit must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air outlet sides must not be narrowed or blocked. The air outlet side must be unobstructed (> 2 m).
- When using glycol (antifreeze) – primary and/or secondary – a separating system must be used.
- Filling the entire system with glycol or a frost protection agent/water mixture is considered improper use and is not permitted. If this is nevertheless desired for frost protection reasons, the system must be designed with a system separation. Only environmental compatible frost protection agent is allowed to be used.

Outdoor unit

Important safety instruction

The heat pump (outdoor unit) is only allowed to be placed outdoors and under no circumstances indoors.

The outdoor unit is filled with the non-toxic, odourless and colourless but flammable refrigerant R290 (propane), which is heavier than air. If this occurs, there is a danger of fire/explosion. Therefore, all potential sources of ignition must be kept at least 1 m away in all directions. Smoking and the use of naked flames is prohibited in this area.

The outdoor unit is installed outdoors. The installation location must be selected carefully. It is essential that the following ancillary conditions are met:

- The maximum line length must not be exceeded.
- The connection lines must be laid insulated and frost-proof.
- The installation location must be chosen in such a way that no noise pollution can occur (do not install near bedrooms, keep a distance from neighbours), hedges and bushes can have a sound-absorbing effect.
- Unobstructed air inflow and outflow must be possible.
- It is imperative that the minimum distances are observed (see Dimensions/Space requirement).
- The intake air must be free of impurities such as sand and aggressive substances such as ammonia, sulphur, chlorine etc.
- The outdoor unit must be installed on a load-bearing fixed structure.
- If the unit is installed at wind-prone locations, the alignment of the heat pump must be selected in such a way that the expected wind direction is crossways to the suction direction of the outdoor unit.
- If an alternative installation in areas subject to strong winds cannot be avoided, an additional wind shield in the form of a hedge, for example, should be installed, or additional fastening should be provided for the outdoor unit.
- At exposed installation locations prone to wind load, e.g. on building roofs, the surface load on the upper horizontal cover surface of the heat pump caused by wind suction must not exceed a value of 2000 N/m². The heat pump casing might be damaged if this value is not complied with.
- The permitted surface load must be determined in accordance with the specifications of standard EN 1991-1-1. Compliance must be checked by a qualified specialist. A professional inspection of the actual conditions on site is mandatory and must be carried out by a qualified specialist.
- When planning and installing the heat pump in locations exposed to wind load, please contact your sales consultant in good time.
- Notice on installing the cover: If the cover of the heat pump has been removed, it must be properly reinstalled after the work has been completed. Make sure that the cover is fully connected to the heat pump using all the screw holes provided, to ensure stability and tightness.
- If the installation location is not protected against snowfall, it must be chosen in such a way that the evaporator remains free of snow.
- The outdoor unit must always be installed on a solid surface in a horizontal position. This can be achieved by means of concrete bases or a floor plate.
- The load-bearing capability must be adequate. The unit must be fixed with 4 M12 screws.
- Air heat pumps generate condensate during operation. This can amount to 15 litres per evaporator unit per defrost cycle within 2 minutes for the outdoor unit of the Belaria® pro.
- The condensate drain must be frost-proof so that the condensate can flow away without problems even at outdoor temperatures below 0 °C.
- If the discharge is into the sewage system, a siphon must be provided and the duct lead-through into the ground must be sealed so that no refrigerant can enter the sewage system uncontrolled.
- If there is a risk of frost, a siphon must be installed in the shaft immediately before the condensate drain is introduced into the downpipe.
- The condensate drip trays integrated in the outdoor unit are already equipped with tray heating at the factory that thus prevents freezing.
- The condensate drain lines are also secured with the pre-installed heating tapes.
- The air outlet has increased susceptibility to frost. Gutters, water pipes and water containers must not be situated right next to the outlet.
- If installed near the coast, the location must be at least 5 km from the coastline. If this safe distance is not complied with, increased corrosion can be expected. These cases are excluded from the warranty.
- To prevent damage caused by animals such as rodents or insects, all cable ducts must be properly sealed.
- The hydraulic lines from the heat pump can transmit structure-borne noise. Therefore, structure-borne noise decoupling should be provided, e.g. with sound-insulating hoses.

A strainer is located in the outdoor unit. At least one sludge and magnetite separator must be installed in the heating return.

Flat roof installation

Flat roof installation of the Belaria® pro is possible under the following conditions:

- Strict compliance with safety measures regarding flammable refrigerants (see below).
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.6 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.
- At exposed installation locations prone to wind load, e.g. on building roofs, the surface load on the upper horizontal cover surface of the heat pump caused by wind suction must not exceed a value of 2000 N/m². The heat pump casing might be damaged if this value is not complied with.
- The permitted surface load must be determined in accordance with the specifications of standard EN 1991-1-1. Compliance must be checked by a qualified specialist. A professional inspection of the actual conditions on site is mandatory and must be carried out by a qualified specialist.
- When planning and installing the heat pump in locations exposed to wind load, please contact your sales consultant in good time.

- Notice on installing the cover: If the cover of the heat pump has been removed, it must be properly reinstalled after the work has been completed. Make sure that the cover is fully connected to the heat pump using all the screw holes provided, to ensure stability and tightness.
- The heat pump contains electrically operated components and must be integrated in the structural lightning and surge protection for roof structures.

Safety measures to be complied with

- There must be no building openings (windows, doors, shafts, ventilation openings, etc.) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Wall ducts into the building must be airtight.
- The outdoor unit must not be placed in or near floor recesses.
- The outdoor unit must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air outlet sides must not be narrowed or blocked. The air outlet side must be unobstructed (> 2 m).
- The condensate is allowed to be directed into a shaft. A siphon must be installed upstream of the connection to the down-pipe. The siphon must be located inside the building.

Electrical box

- The installation location must be selected in accordance with the valid requirements and directives.
- The electrical box must be installed in a room protected against frost, by an approved specialist company. Room temperature must be between 5 °C and 25 °C.
- Installation in wet rooms, dusty rooms or rooms with a potentially explosive atmosphere is not permitted.
- The electrical connections can be introduced from the bottom with the electrical box of the Belaria® pro.
- To ensure accessibility to the electrical box, the distances must be maintained on all sides (see Dimensions/Space requirement).

Electrical connections

- The electrical connection must be carried out by a qualified technician and registered with the responsible energy supply company. The relevant electrical installation company is responsible for ensuring that electrical connection is carried out in accordance with standards and that safeguard measures are put in place.
- The mains voltage at the connection terminals of the heat pump must be 400 V or 230 V ± 10 %. The connection lines specified in the technical data must be checked by the electrical company carrying out the work depending on the line length, the routing type and the type of line.

- A fault-current circuit breaker is recommended. Country-specific requirements must be complied with. If the "fault-current circuit breaker" safeguard measure is implemented by the electrical company, a separate fault-current circuit breaker is recommended for the heat pump.
- This fault-current circuit breaker must be of the all-current-sensitive type B ($I_{\Delta N} \geq 300$ mA). The specified RCCB types apply to the heat pump regardless of externally connected components (refer to assembly instructions, data sheets).
- Owing to the starting currents that occur, circuit breakers with a type "C" or "K" tripping characteristic are to be used for the main circuit.
- For the control circuit and additional electric heating (if present), circuit breakers with a type "B" or "Z" tripping characteristic are sufficient.
- The electrical connection and feeder lines must be copper cables.
- Please refer to the circuit diagrams for electrical details.
- The wall feedthrough should slope down from the inside to the outside.
- To avoid damage, the opening should be padded on the inside or, for example, lined with a PVC pipe.
- After installation, the wall opening must be sealed with a suitable sealing compound on site, observing the fire protection regulations.

Routing of the hydraulic connection lines

- If the hydraulic connection lines are laid in the ground, this must be done in a protective tube. For example, this can be a PVC pipe with a diameter of 350 mm.
- Wall ducts must be sealed to the outside on site.
- After the hydraulic connection lines have been laid, they must be checked for damage and re-insulated. In case of cooling, condensate can form on the pipes.
- The hydraulic connection lines must be laid decoupled from the building and must never be laid flush-mounted.
- Care must be taken to ensure that water pipes do not pass through the sleeping or living areas.
- Shut-off valves must be installed on site in accordance with the corresponding hydraulic diagram. The shut-off valves are not allowed to be opened until immediately before commissioning.
- The danger of frost damage must be taken into account if there are prolonged power outages.
- False flow rates as a result of incorrect dimensions of the pipework, incorrect fittings or improper pump operation can cause damage to the heat pump.

Room cooling

- Room cooling can be provided by fan convectors and is recommended. The connection lines for the fan convectors must have condensation-proof insulation. In addition, the condensate from the fan convectors must be drained off.
- If panel heating is used for room cooling, various criteria such as temperatures below the dewpoint or the temperature profiles must be allowed for, and can lead to costly consequential damage in the case of inadequate planning or incorrect use. We recommend that you consult Hoval.

Further guidelines see "Engineering"

Connection on drinking water side

- The hydraulic connection is made according to the information in the corresponding diagrams from Hoval.
- According to the Drinking Water Regulation and DIN 50930-6, the domestic hot water storage tank is suitable for normal drinking water (pH value > 7.3).
- The connection piping can be made using galvanised pipes, stainless steel pipes, copper pipes or plastic pipes.
- The connections must be made pressure-tight.
- The safety devices tested for the components in accordance with DIN 1988 and DIN 4753 must be installed in the cold water pipe.
- The 10 bar operating pressure stated on the data plate is not allowed to be exceeded. Install a pressure reducing valve if necessary.
- A suitable water filter must be installed in the cold water pipe.
- A water softener must be installed if the water is hard.

Installation on heating side

- All pertinent laws, regulations and standards for heating house pipework and for heat pump systems must be complied with.
- A strainer is located in the outdoor unit. At least one sludge and magnetite separator must be installed in the heating return.
- The safety and expansion devices for closed heating systems must be provided in accordance with EN 12828.
- Dimensioning of the pipework must be done according to the required flow rates and given pressure drops.
- Ventilation possibilities must be provided at the highest points and drainage possibilities at the lowest points of the connection lines.
- To prevent energy losses, the connection lines must be insulated with suitable material in accordance with local regulations.

Transport and storage

- When removing the packaging, check the outdoor unit for damage. If the outdoor unit was damaged during transport or storage, contact Hoval customer service, a service partner or a licensed specialist immediately. They must carry out a leak test with a suitable leak detector. In the event of a leak, the outdoor unit must be repaired.
- Store the outdoor unit in a cool place without fire hazard and without direct exposure to heat sources. The ambient temperature must not exceed 43 °C.
- The same regulations apply for storage as for installation (no recesses, ventilation pipes, ignition sources in the storage area).
- The outdoor unit must not be stored in closed rooms, cellars or garages.
- The outdoor unit is only allowed to be stored outdoors.
- During transport, ensure sufficient ventilation in the closed vehicle, also when parking and stopping.
- Storage in passageways, escape routes or in front of entrances or exits is not permitted.
- Ignition sources such as naked flames, switched-on gas appliances, electric heaters, etc. must be kept away from the unit.
- Transport and storage only in upright position. Protect from mechanical damage and from falling over or falling down (make sure the load is secure).
- To prevent damage during transport, the outdoor unit should be moved to its final installation location as far as possible in packed state on the wooden pallet with a forklift or lift truck.
- Transport by crane: The outdoor unit can be lifted by a crane and transported to the installation site. For this purpose, there are three crane hooks below the cover with openings for the passage of the transport straps.

Prerequisites for commissioning

- Commissioning at cold outdoor temperatures is only possible if the system is pre-heated on site (e.g. with an electric bake-out device). During commissioning, the room temperature of the heated rooms must be at least 15 °C (compressor operation is not possible below this temperature, as there would be too little energy for defrosting). If a buffer storage tank is provided, its heating water temperature is not allowed to be less than 20 °C during commissioning.
- A heat pump should not be used for drying out of the building (screed heating), as this can significantly reduce the service life of the device. Alternatively, heating via a mobile heating station or E-set is a sensible option. This is particularly true for air/water heat pumps, since the heating output here is strongly dependent on the outdoor temperature and drying out of the building is not possible at temperatures below the frost line in the building carcass.

Looking for the appropriate hydraulic schematic?
Please contact your local Hoval partner.

District Heating

Operational reliability for local and district heating networks

Systems in which heat is supplied from a central location and then distributed via local or district heating networks are being used more and more often in large residential, commercial, administrative and municipal buildings, as well as by other consumers with high heat demands.

Heat transfer stations play a crucial role in such systems, as efficient and reliable distributors of heat. Hoval heat transfer stations fulfil this task at the highest possible level, due to the materials used in them and their sophisticated yet compact design.

Hoval offers a range of heat transfer stations, covering different power outputs suitable for everything from single-family homes right up to large high-energy buildings.

Hoval's district heating portfolio includes:

- TransTherm® Pro S/RS
- TransTherm® Giro
- TransShare



Hoval TransTherm® pro S

District heating transfer station

- Indirect compact station for heat transfer and regulation of heating and hot water production systems.
- Standard design for heating water in accordance with DIN and AGFW directives.

District heating primary:

- Maximum pressure stage 16/25 bar
- Maximum operating temperature 110-150 °C
- Maximum flow rate 62 m³/h
- Connection at the top

Secondary heating:

- maximum operating pressure 3 bar
- Maximum operating temperature 110 °C
- Maximum flow rate 88 m³/h
- Connection at the top

Installed

District heating primary:

- 1 flow rate controller with motorised valve, actuator
- without emergency control function (110 °C) (types F and G, sequential circuit with 2 valves)
- with emergency control function (140, 150 °C) (types F and G, sequential circuit with 2 valves)

- 1 heat meter adapter
- 1 return temperature sensor
- 1 flow temperature sensor
- 2 thermometers
- 1 strainer
- 1 drain

Secondary heating:

- Stainless steel plate heat exchanger in soldered design
- Ball stop valves or shut-off dampers
- 1 Return temperature sensor
- 1 flow temperature sensor
- 1 safety temperature monitor (140, 150 °C)
- 2 thermometers
- 1 safety valve 3 bar (membrane-sv)
- 1 pressure gauge
- 1 strainer
- 1 drain
- 1 connection for diaphragm pressure expansion tank
- District heating station in fully welded and thermally insulated design (50 % thermally insulated, EPP), mounted vibration-free on a steel frame structure and provided with special corrosion protection
- Partial enclosure with powder-coated sheet steel, colour red (RAL 3011)
- Control panel integrated in partial enclosure with
 - TopTronic® E controller
 - Terminals for electrical power supply
 - Circuit breaker
 - Neutral conductor terminal block



TransTherm® pro S



TransTherm® pro RS

Series	Size	Hydraulics	Number of plates (heat exchanger)	Max. flow temperature °C	Nominal pressure bar	Heat output ¹⁾ kW
TransTherm® pro S type						
(A/H0/N36/T110/P16)	A	0	36	110	16	149
(A/H0/N36/T140/P16)	A	0	36	140	16	149
(A/H0/N36/T150/P25)	A	0	36	150	25	149
(B/H0/N50/T110/P16)	B	0	50	110	16	195
(B/H0/N50/T140/P16)	B	0	50	140	16	195
(B/H0/N50/T150/P25)	B	0	50	150	25	195
(C/H0/N60/T110/P16)	C	0	60	110	16	241
(C/H0/N60/T140/P16)	C	0	60	140	16	241
(C/H0/N60/T150/P25)	C	0	60	150	25	241
(D/H0/N100/T110/P16)	D	0	100	110	16	402
(D/H0/N100/T140/P16)	D	0	100	140	16	402
(D/H0/N100/T150/P25)	D	0	100	150	25	402

Series	Size	Hydraulics	Number of plates (heat exchanger)	Max. flow temperature °C	Nominal pressure bar	Heat output ¹⁾ kW
TransTherm® pro S type						
(E/H0/N140/T110/P16)	E	0	140	110	16	460
(E/H0/N140/T140/P16)	E	0	140	140	16	460
(E/H0/N140/T150/P25)	E	0	140	150	25	460
(F/H0/N200/T110/P16)	F	0	200	110	16	575
(F/H0/N200/T140/P16)	F	0	200	140	16	575
(F/H0/N200/T150/P25)	F	0	200	150	25	575
(G/H0/N180/T110/P16)	G	0	180	110	16	915
(G/H0/N180/T140/P16)	G	0	180	140	16	915
(G/H0/N180/T150/P25)	G	0	180	150	25	915
(H/H0/N200/T110/P16)	H	0	200	110	16	1417
(H/H0/N200/T140/P16)	H	0	200	140	16	1417
(H/H0/N200/T150/P25)	H	0	200	150	25	1417

Types F and G, sequential circuit with 2 valves

¹⁾ Reference temperature primary 90-52 °C/
secondary 70-50 °C

Hoval TransTherm® pro RS

- Design same as Hoval TransTherm® pro S but with completely removable sheet steel enclosure (housing type RS)
- For this version, it is necessary to order the standard Hoval TransTherm® pro S design and, in addition, the housing type RS.

TopTronic® E controller

TopTronic® E control panel

- Colour touchscreen 4.3 inch
- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module district heating com (TTE-FW com)

- Control functions integrated for
 - primary valve control
 - cascade management
 - 1 heating circuit with mixer
 - 1 heating circuit without mixer
 - 1 hot water charging circuit
 - various additional functions
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Complete plug set for DH module

Options for TopTronic® E controller

- Can be expanded by max. 5 module expansions:
 - module expansion heating circuit DH
 - module expansion hot water DH
 - module expansion universal DH
- Can be optionally expanded with various accessories:
 - Ethernet connection TTE-FW com
 - repeater TTE-FW com LON-Bus
 - router TTE-FW com Ethernet on LON-Bus
 - data socket 13-pin TTE-FW com LON-Bus and lighting protection
 - various software licences for HovalSupervisor
 - various services for HovalSupervisor
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module
 - e.g. max 45 mixer circuits

Number of modules that can be additionally installed in the control panel:

- 5 module expansions

Design on request

- Flow rate controller with motorised valve, actuator with emergency control function
- Supply of system components such as heat meter, heating armature group, calorifier, charging group etc.
- Hoval control system
- District heating station for direct connection

Delivery

- District heating transfer station already mounted on steel frame structure and ready for electrical connection.
 - TransTherm® pro S with partial enclosure
 - TransTherm® pro RS with complete enclosure

On site

- Installation of heat meter

District heating primary

TransTherm® pro S/RS	Connection size	ṽ max.	Nominal pressure max.	T-max.	Valve type	Valve nominal width	Valve	Closing pressure ¹⁾	Valve ṽ max.	Valve actuator
type	DN	m³/h	bar	°C	Danfoss	DN	kvs	bar		type
(A/H0/N36/T110/P16)	32	3.5	16	110	AVQM	25	8	12	3.5	AMV10
(A/H0/N36/T140/P16)	32	3.5	16	140	AVQM	25	8	12	3.5	AMV13
(A/H0/N36/T150/P25)	32	3.5	25	150	AVQM	25	8	20	3.5	AMV13
(B/H0/N50/T110/P16)	40	6.5	16	110	AVQM	32	12.5	20	8	AMV20
(B/H0/N50/T140/P16)	40	6.5	16	140	AVQM	32	12.5	20	8	AMV23
(B/H0/N50/T150/P25)	40	6.5	25	150	AVQM	32	12.5	20	8	AMV23
(C/H0/N60/T110/P16)	40	6.5	16	110	AVQM	32	12.5	20	8	AMV20
(C/H0/N60/T140/P16)	40	6.5	16	140	AVQM	32	12.5	20	8	AMV23
(C/H0/N60/T150/P25)	40	6.5	25	150	AVQM	32	12.5	20	8	AMV23
(D/H0/N100/T110/P16)	50	10	16	110	AVQM	40	16	20	10	AMV20
(D/H0/N100/T140/P16)	50	10	16	140	AVQM	40	16	20	10	AMV23
(D/H0/N100/T150/P25)	50	10	25	150	AVQM	40	16	20	10	AMV23
(E/H0/N140/T110/P16)	65	12	16	110	AVQM	50	20	20	12.5	AMV20
(E/H0/N140/T140/P16)	65	12	16	140	AVQM	50	20	20	12.5	AMV23
(E/H0/N140/T150/P25)	65	12	25	150	AVQM	50	20	20	12.5	AMV23
(F/H0/N200/T110/P16)	65	16	16	110	2 x AVQM	40	16	20	20	2 x AMV20
(F/H0/N200/T140/P16)	65	16	16	140	2 x AVQM	40	16	20	20	2 x AMV23
(F/H0/N200/T150/P25)	65	16	25	150	2 x AVQM	40	16	20	20	2 x AMV23
(G/H0/N180/T110/P16)	80	25	16	110	2 x AVQM	50	20	20	25	2 x AMV20
(G/H0/N180/T140/P16)	80	25	16	140	2 x AVQM	50	20	20	25	2 x AMV23
(G/H0/N180/T150/P25)	80	25	25	150	2 x AVQM	50	20	20	25	2 x AMV23
(H/H0/N200/T110/P16)	100	40	16	110	AFQM	80	80	16	40	AMV55
(H/H0/N200/T140/P16)	100	40	16	140	AFQM	80	80	20	40	AME659
(H/H0/N200/T150/P25)	100	40	25	150	AFQM	80	80	20	40	AME659

¹⁾ Actuator valve

Secondary heating

TransTherm® pro S/RS	Connection size	Maximum flow rate	Operating pressure max.	T-max.	Safety function
type	DN	m³/h	bar	°C	
(A/H0/N36/T110/P16)	40	6.5	3 ¹⁾	110	without
(A/H0/N36/T140/P16)	40	6.5	3 ¹⁾	110	STW
(A/H0/N36/T150/P25)	40	6.5	3 ¹⁾	110	STW
(B/H0/N50/T110/P16)	50	8.5	3 ¹⁾	110	without
(B/H0/N50/T140/P16)	50	8.5	3 ¹⁾	110	STW
(B/H0/N50/T150/P25)	50	8.5	3 ¹⁾	110	STW
(C/H0/N60/T110/P16)	50	10.5	3 ¹⁾	110	without
(C/H0/N60/T140/P16)	50	10.5	3 ¹⁾	110	STW
(C/H0/N60/T150/P25)	50	10.5	3 ¹⁾	110	STW
(D/H0/N100/T110/P16)	65	17.5	3 ¹⁾	110	without
(D/H0/N100/T140/P16)	65	17.5	3 ¹⁾	110	STW
(D/H0/N100/T150/P25)	65	17.5	3 ¹⁾	110	STW
(E/H0/N140/T110/P16)	80	25	3 ¹⁾	110	without
(E/H0/N140/T140/P16)	80	25	3 ¹⁾	110	STW
(E/H0/N140/T150/P25)	80	25	3 ¹⁾	110	STW
(F/H0/N200/T110/P16)	80	25	3 ¹⁾	110	without
(F/H0/N200/T140/P16)	80	25	3 ¹⁾	110	STW
(F/H0/N200/T150/P25)	80	25	3 ¹⁾	110	STW
(G/H0/N180/T110/P16)	100	40	3 ¹⁾	110	without
(G/H0/N180/T140/P16)	100	40	3 ¹⁾	110	STW
(G/H0/N180/T150/P25)	100	40	3 ¹⁾	110	STW
(H/H0/N200/T110/P16)	125	60	3 ¹⁾	110	without
(H/H0/N200/T140/P16)	125	60	3 ¹⁾	110	STW
(H/H0/N200/T150/P25)	125	60	3 ¹⁾	110	STW

¹⁾ STW = safety temperature monitor

Performance data

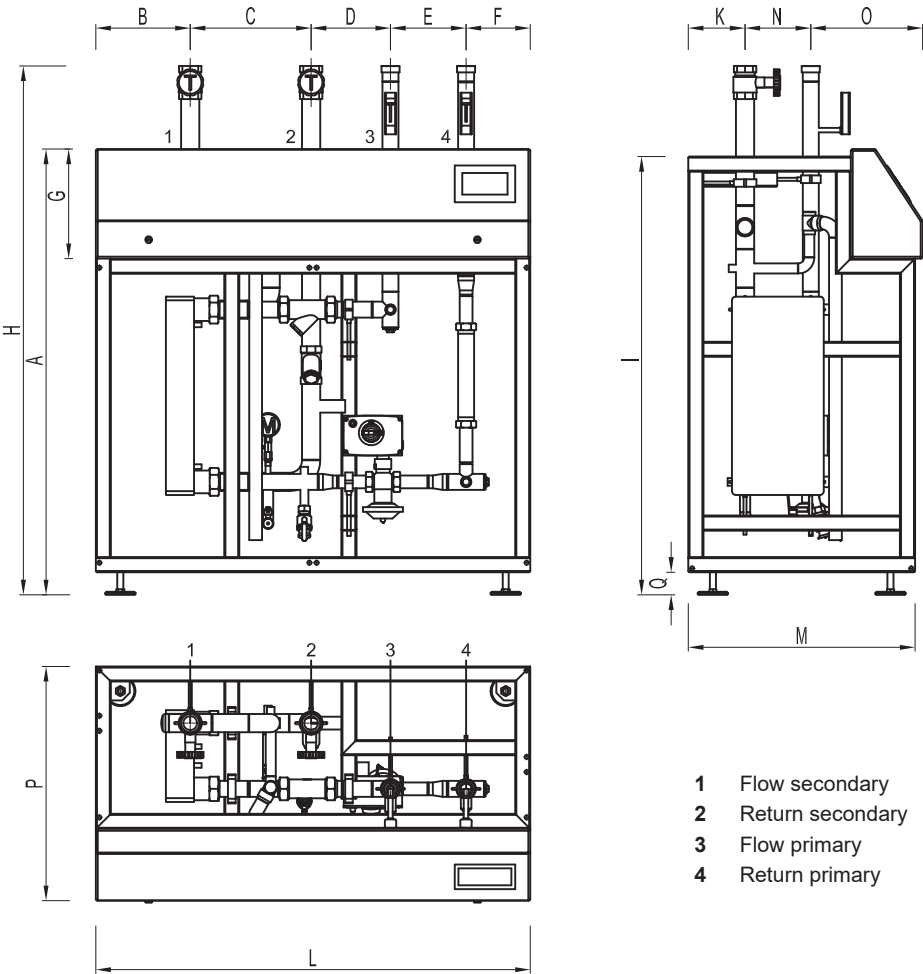
Trans Therm pro S/RS		District heating															
		70 °C								75 °C							
		(A/H0/N36..)	(B/H0/N50..)	(C/H0/N60..)	(D/H0/N100..)	(E/H0/N140..)	(F/H0/N200..)	(G/H0/N180..)	(H/H0/N200..)	(A/H0/N36..)	(B/H0/N50..)	(C/H0/N60..)	(D/H0/N100..)	(E/H0/N140..)	(F/H0/N200..)	(G/H0/N180..)	(H/H0/N200..)
Heating	secondary																
85/60 °C	T return primary °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ḃ primary m³/h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Q max. kW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ḃ secondary m³/h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80/60 °C	T return primary °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ḃ primary m³/h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Q max. kW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ḃ secondary m³/h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80/65 °C	T return primary °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ḃ primary m³/h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Q max. kW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ḃ secondary m³/h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75/50 °C	T return primary °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ḃ primary m³/h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Q max. kW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ḃ secondary m³/h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70/50 °C	T return primary °C	-	-	-	-	-	-	-	-	53	53	53	53	53	53	58	54
	Ḃ primary m³/h	-	-	-	-	-	-	-	-	3.5	6.5	6.5	10.0	12.1	16.0	25.0	40.0
	Q max. kW	-	-	-	-	-	-	-	-	87	161	161	248	298	397	469	941
	Ḃ secondary m³/h	-	-	-	-	-	-	-	-	3.7	7.0	7.0	10.8	12.9	17.2	20.5	41.2
70/55 °C	T return primary °C	-	-	-	-	-	-	-	-	57	57	57	57	57	57	60	57
	Ḃ primary m³/h	-	-	-	-	-	-	-	-	3.5	6.5	6.5	10.0	12.4	16.0	25.0	40.0
	Q max. kW	-	-	-	-	-	-	-	-	71	131	131	206	248	323	404	788
	Ḃ secondary m³/h	-	-	-	-	-	-	-	-	4.1	7.6	7.6	12.0	14.4	18.7	23.5	46.0
65/40 °C	T return primary °C	45	45	45	45	45	45	51	46	43	43	43	43	43	43	49	44
	Ḃ primary m³/h	3.5	6.5	6.5	10.0	12.0	16.0	25.0	40.0	3.5	6.6	6.6	10.0	12.2	16.0	25.0	40.0
	Q max. kW	99	184	184	288	346	454	523	1077	128	237	237	364	437	583	724	1396
	Ḃ secondary m³/h	3.4	6.3	6.3	10.0	12.0	15.7	18.2	37.5	4.4	8.2	8.2	12.6	15.1	20.2	25.2	48.7
60/40 °C	T return primary °C	42	42	43	43	43	43	47	42	42	42	42	42	42	42	46	42
	Ḃ primary m³/h	3.5	6.2	6.5	10.0	12.0	16.0	25.0	40.0	3.5	5.2	6.4	10.0	12.2	15.4	25.0	36.8
	Q max. kW	111	196	202	311	374	498	648	1228	133	196	242	381	457	576	816	1377
	Ḃ secondary m³/h	4.8	8.5	8.7	13.5	16.2	21.6	28.2	53.4	5.7	8.5	10.5	16.5	19.8	25.0	35.5	60.0
60/45 °C	T return primary °C	47	47	47	47	47	47	49	46	47	47	47	47	47	47	49	45
	Ḃ primary m³/h	3.5	5.6	6.5	10.0	12.0	16.0	25.0	39.0	3.5	4.6	5.7	9.5	10.8	13.6	25.0	31.3
	Q max. kW	93	147	172	265	318	424	573	1032	113	147	181	302	345	432	733	1032
	Ḃ secondary m³/h	5.3	8.5	9.9	15.3	18.4	24.5	33.3	60.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
55/30 °C	T return primary °C	33	33	33	33	33	33	38	33	32	32	32	32	32	32	37	32
	Ḃ primary m³/h	3.5	5.8	6.6	10.0	12.0	16.0	25.0	41.8	3.5	5.0	6.2	10.0	11.9	15.0	25.0	35.9
	Q max. kW	150	246	278	428	513	684	885	1726	172	246	303	492	578	722	1049	1726
	Ḃ secondary m³/h	5.1	8.5	9.6	14.8	17.7	23.6	30.7	60.0	5.9	8.5	10.5	17.0	20.0	25.0	36.4	60.0
50/30 °C	T return primary °C	32	32	32	32	32	32	36	31	32	32	32	32	32	32	34	31
	Ḃ primary m³/h	3.4	4.5	5.6	9.3	10.7	13.3	25.0	31.0	3.0	4.0	4.9	8.3	9.4	11.9	20.2	27.7
	Q max. kW	150	196	243	404	462	578	921	1382	150	196	243	404	462	578	921	1382
	Ḃ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
50/35 °C	T return primary °C	37	37	37	37	37	37	35	35	37	37	37	37	37	37	37	35
	Ḃ primary m³/h	3.0	3.9	4.8	8.0	9.2	11.5	23.7	26.0	2.6	3.4	4.2	7.0	8.0	10.1	16.2	23.1
	Q max. kW	112	147	182	303	346	433	921	1036	112	147	182	303	346	433	690	1036
	Ḃ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
45/30 °C	T return primary °C	32	32	32	32	32	32	32	30	32	32	32	32	32	32	32	30
	Ḃ primary m³/h	2.6	3.4	4.2	7.0	8.0	10.0	16.3	23.1	2.3	3.0	3.7	6.2	7.1	8.9	14.2	20.5
	Q max. kW	113	147	182	303	347	433	691	1037	113	147	182	303	347	433	691	1037
	Ḃ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
45/35 °C	T return primary °C	37	37	37	37	37	37	35	35	37	37	37	37	37	37	35	35
	Ḃ primary m³/h	2.0	2.6	3.2	5.3	6.1	7.6	11.9	17.4	1.7	2.2	2.8	4.6	5.3	6.7	10.3	15.2
	Q max. kW	75	98	121	202	231	288	460	691	75	98	121	202	231	288	460	691
	Ḃ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0

Trans Therm pro S/RS		District heating															
		80 °C								85 °C							
		(A/H0/N36..)	(B/H0/N50..)	(C/H0/N60..)	(D/H0/N100..)	(E/H0/N140..)	(F/H0/N200..)	(G/H0/N180..)	(H/H0/N200..)	(A/H0/N36..)	(B/H0/N50..)	(C/H0/N60..)	(D/H0/N100..)	(E/H0/N140..)	(F/H0/N200..)	(G/H0/N180..)	(H/H0/N200..)
Heating secondary																	
85/60 °C	T return primary °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ṡ primary m³/h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Q max. kW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ṡ secondary m³/h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80/60 °C	T return primary °C	-	-	-	-	-	-	-	-	64	64	64	64	64	64	68	67
	Ṡ primary m³/h	-	-	-	-	-	-	-	-	3.5	6.5	6.5	10.0	12.0	16.0	25.0	40.0
	Q max. kW	-	-	-	-	-	-	-	-	84	156	156	240	289	385	478	828
	Ṡ secondary m³/h	-	-	-	-	-	-	-	-	3.6	6.8	6.8	10.5	12.6	16.8	21.0	36.4
80/65 °C	T return primary °C	-	-	-	-	-	-	-	-	67	67	67	67	67	67	71	70
	Ṡ primary m³/h	-	-	-	-	-	-	-	-	3.5	6.5	6.5	10.0	12.0	16.0	25.0	40.0
	Q max. kW	-	-	-	-	-	-	-	-	72	134	134	206	247	329	410	705
	Ṡ secondary m³/h	-	-	-	-	-	-	-	-	4.2	7.8	7.8	12.0	14.4	19.2	24.1	41.4
75/50 °C	T return primary °C	55	55	55	55	55	55	61	60	53	53	53	53	53	53	59	58
	Ṡ primary m³/h	3.5	6.6	6.6	10.0	12.0	16.0	25.0	40.0	3.5	6.6	6.6	10.0	12.0	16.0	25.0	40.0
	Q max. kW	101	187	187	287	345	460	536	931	129	239	239	368	441	589	737	1258
	Ṡ secondary m³/h	3.5	6.5	6.5	10.0	12.0	16.0	18.8	32.6	4.4	8.3	8.3	12.8	15.3	20.4	25.8	44.1
70/50 °C	T return primary °C	52	52	53	53	53	53	57	56	52	52	52	52	52	52	56	55
	Ṡ primary m³/h	3.5	6.1	6.6	10.0	12.0	16.0	25.0	40.0	3.5	5.2	6.4	10.0	12.0	15.4	25.0	40.0
	Q max. kW	113	195	205	316	379	506	659	1118	133	195	241	379	455	575	825	1385
	Ṡ secondary m³/h	4.9	8.5	8.9	13.7	16.5	22.0	28.8	48.9	5.7	8.5	10.5	16.5	19.8	25.0	36.1	60.6
70/55 °C	T return primary °C	57	57	57	57	57	57	60	59	57	57	57	57	57	57	59	58
	Ṡ primary m³/h	3.5	5.6	6.5	10.0	12.0	16.0	25.0	40.0	3.5	4.6	5.7	9.5	10.8	13.6	23.0	34.1
	Q max. kW	92	146	171	264	317	422	580	978	112	146	181	301	344	430	685	1062
	Ṡ secondary m³/h	5.3	8.5	9.9	15.3	18.4	24.5	33.9	57.1	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0
65/40 °C	T return primary °C	43	43	43	43	43	43	49	47	42	42	42	42	42	42	48	46
	Ṡ primary m³/h	3.5	5.8	6.6	10.0	12.0	16.0	25.0	40.0	3.5	5.0	6.2	10.0	11.9	14.9	25.0	39.9
	Q max. kW	149	245	277	427	512	683	900	1519	174	245	303	496	577	721	1062	1777
	Ṡ secondary m³/h	5.1	8.5	9.6	14.8	17.7	23.6	31.4	53.0	6.0	8.5	10.5	17.2	20.0	25.0	37.1	62.0
60/40 °C	T return primary °C	42	42	42	42	42	42	46	43.7	42	42	42	42	42	42	45	43
	Ṡ primary m³/h	3.4	4.5	5.6	9.3	10.7	13.4	23.4	34.7	3.0	4.0	5.0	8.3	9.5	11.9	20.0	30.0
	Q max. kW	150	196	242	404	461	576	918	1423	150	196	242	404	461	576	918	1423
	Ṡ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0
60/45 °C	T return primary °C	47	47	47	47	47	47	48	47	47	47	47	47	47	47	48	47
	Ṡ primary m³/h	3.0	3.9	4.8	8.1	9.2	11.6	18.9	28.5	2.6	3.4	4.2	7.0	8.0	10.1	16.1	24.5
	Q max. kW	112	147	181	302	345	432	688	1066	112	147	181	302	345	432	688	1066
	Ṡ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0
55/30 °C	T return primary °C	32	32	32	32	32	32	37	31	32	32	32	32	32	32	35	31
	Ṡ primary m³/h	3.4	4.5	5.5	9.3	10.6	13.3	23.7	32.8	3.1	4.1	5.0	8.4	9.6	12.1	20.8	29.5
	Q max. kW	188	246	303	506	578	722	1151	1784	188	246	303	506	578	722	1151	1784
	Ṡ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0
50/30 °C	T return primary °C	32	32	32	32	32	32	33	30	32	32	32	32	32	32	35	30
	Ṡ primary m³/h	2.7	3.6	4.4	7.4	8.5	10.7	17.6	25.6	2.5	3.2	4.0	6.7	7.7	9.7	20.7	23.0
	Q max. kW	150	196	243	404	462	578	921	1428	150	196	243	404	462	578	1151	1428
	Ṡ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0
50/35 °C	T return primary °C	37	37	37	37	37	37	37	35	37	37	37	37	37	37	36	35
	Ṡ primary m³/h	2.3	3.0	3.7	6.2	7.1	8.9	14.2	21.1	2.0	2.7	3.3	5.6	6.4	8.0	12.6	19.0
	Q max. kW	112	147	182	303	346	433	690	1070	112	147	182	303	346	433	690	1070
	Ṡ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0
45/30 °C	T return primary °C	32	32	32	32	32	32	31	30	32	32	32	32	32	32	31	30
	Ṡ primary m³/h	2.0	2.7	3.3	5.5	6.3	8.0	12.6	19.1	1.8	2.4	3.0	5.0	5.8	7.3	11.4	17.4
	Q max. kW	113	147	182	303	347	433	691	1072	113	147	182	302	347	433	691	1072
	Ṡ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0
45/35 °C	T return primary °C	37	37	37	37	37	37	35	35	37	37	37	37	37	37	35	35
	Ṡ primary m³/h	1.5	2.0	2.4	4.1	4.7	5.9	9.1	14.0	1.3	1.8	2.2	3.7	4.2	5.3	8.2	12.6
	Q max. kW	75	98	121	202	231	288	460	714	75	98	121	202	231	288	460	714
	Ṡ secondary m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0

Trans Therm pro S/RS Heating secondary			District heating															
			90 °C								95 °C							
			(A/H0/N36..)	(B/H0/N50..)	(C/H0/N60..)	(D/H0/N100..)	(E/H0/N140..)	(F/H0/N200..)	(G/H0/N180..)	(H/H0/N200..)	(A/H0/N36..)	(B/H0/N50..)	(C/H0/N60..)	(D/H0/N100..)	(E/H0/N140..)	(F/H0/N200..)	(G/H0/N180..)	(H/H0/N200..)
85/60 °C	T return primary	°C	65	65	65	65	65	65	71	67	63	63	63	63	63	63	69	67
	Ṡ primary	m³/h	3.5	6.6	6.6	10.0	12.0	16.0	25.0	40.0	3.5	6.6	6.6	10.0	12.0	16.3	25.0	40.0
	Q max.	kW	100	186	186	286	344	458	546	950	128	238	238	367	440	587	746	1274
	Ṡ secondary	m³/h	3.5	6.5	6.5	10.0	12.0	16.0	19.2	33.4	4.4	8.3	8.3	12.8	15.3	20.4	26.2	44.8
80/60 °C	T return primary	°C	62	62	62	62	62	62	67	65	62	62	62	62	62	62	66	61
	Ṡ primary	m³/h	3.5	6.1	6.6	10.0	12.0	16.0	25.0	40.0	3.5	5.2	6.5	10.0	12.0	15.5	25.0	36.3
	Q max.	kW	112	195	208	321	385	513	667	1132	132	195	240	378	453	572	832	1366
	Ṡ secondary	m³/h	4.9	8.5	9.1	14.0	16.8	22.4	29.3	49.7	5.7	8.5	10.5	16.5	19.8	25.0	36.6	60.0
80/65 °C	T return primary	°C	67	67	67	67	67	67	71	68	67	67	67	67	67	67	69	65
	Ṡ primary	m³/h	3.5	5.6	6.6	10.0	12.0	16.0	25.0	40.0	3.5	4.6	5.7	9.0	10.9	13.7	22.7	31.1
	Q max.	kW	92	146	171	263	315	420	546	987	112	146	180	300	343	428	682	1023
	Ṡ secondary	m³/h	5.3	8.5	9.9	15.3	18.4	24.5	19.2	57.8	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
75/50 °C	T return primary	°C	52	52	52	52	52	52	58	56	52	52	52	52	52	52	57	51
	Ṡ primary	m³/h	3.5	5.7	6.6	10.0	12.0	16.0	25.0	40.0	3.5	5.0	6.2	10.0	11.9	14.9	25.0	35.4
	Q max.	kW	153	244	284	437	524	699	910	1537	173	244	302	494	575	718	1072	1713
	Ṡ secondary	m³/h	5.3	8.5	9.8	15.2	18.2	24.3	31.9	53.8	6.0	8.5	10.5	17.2	20.0	25.0	37.6	60.0
70/50 °C	T return primary	°C	52	52	52	52	52	52	55	54	52	52	52	52	52	52	54	50
	Ṡ primary	m³/h	3.5	4.5	5.6	9.4	10.7	13.5	23.1	34.3	3.1	4.0	5.0	8.3	9.5	11.9	19.8	27.6
	Q max.	kW	149	195	241	402	460	575	915	1417	149	195	241	402	460	575	915	1372
	Ṡ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
70/55 °C	T return primary	°C	57	57	57	57	57	57	58	57	57	57	57	57	57	57	57	55
	Ṡ primary	m³/h	3.0	3.9	4.8	8.1	9.2	11.6	18.8	28.3	2.6	3.4	4.2	7.0	8.0	10.1	16.0	23.0
	Q max.	kW	112	146	181	301	344	430	685	1062	112	146	181	301	344	430	685	1028
	Ṡ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
65/40 °C	T return primary	°C	42	42	42	42	42	42	47	45	42	42	42	42	42	42	46	41
	Ṡ primary	m³/h	3.4	4.5	5.6	9.3	10.6	13.4	23.3	34.7	3.1	4.1	5.1	8.5	9.7	12.1	20.5	28.4
	Q max.	kW	187	245	303	504	577	721	1146	1777	187	245	303	504	577	721	1146	1720
	Ṡ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
60/40 °C	T return primary	°C	42	42	42	42	42	42	44	43	42	42	42	42	42	42	43	40
	Ṡ primary	m³/h	2.7	3.6	4.4	7.4	8.5	10.7	17.5	26.5	2.5	3.3	4.0	6.8	7.7	9.7	15.7	22.5
	Q max.	kW	150	196	242	404	461	576	918	1423	150	196	242	404	461	576	918	1377
	Ṡ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
60/45 °C	T return primary	°C	47	47	47	47	47	47	47	46	47	47	47	47	47	47	47	45
	Ṡ primary	m³/h	2.3	3.0	3.7	6.2	7.1	8.9	14.1	21.6	2.0	2.7	3.3	5.6	6.4	8.0	12.6	18.4
	Q max.	kW	112	147	181	302	345	432	688	1066	112	147	181	302	345	432	688	1032
	Ṡ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
55/30 °C	T return primary	°C	32	32	32	32	32	32	34	31	32	32	32	32	32	32	34	30
	Ṡ primary	m³/h	2.8	3.7	4.6	7.7	8.8	11.1	18.6	26.9	2.6	3.4	4.3	7.1	8.2	10.2	16.8	24.0
	Q max.	kW	188	246	303	506	578	722	1151	1784	188	246	303	506	578	722	1151	1726
	Ṡ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
50/30 °C	T return primary	°C	32	32	32	32	32	32	32	30	32	32	32	32	32	32	32	30
	Ṡ primary	m³/h	2.3	3.0	3.7	6.2	7.1	8.9	14.3	21.3	2.1	2.7	3.4	5.7	6.5	8.2	13.1	19.0
	Q max.	kW	150	196	243	404	462	578	921	1428	150	196	243	404	462	578	921	1382
	Ṡ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
50/35 °C	T return primary	°C	37	37	37	37	37	37	36	35	37	37	37	37	37	37	35	30
	Ṡ primary	m³/h	1.8	2.4	3.0	5.0	5.8	7.3	11.4	17.3	1.7	2.2	2.8	4.6	5.3	6.7	10.4	19.0
	Q max.	kW	112	147	182	303	346	433	690	1070	112	147	182	303	346	433	690	1036
	Ṡ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
45/30 °C	T return primary	°C	32	32	32	32	32	32	30	30	32	32	32	32	32	32	30	30
	Ṡ primary	m³/h	1.7	2.2	2.7	4.6	5.3	6.7	10.4	16.0	1.6	2.0	2.5	4.3	4.9	6.2	9.6	14.2
	Q max.	kW	113	147	182	303	347	433	691	1072	113	147	182	303	347	433	691	1037
	Ṡ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0
45/35 °C	T return primary	°C	37	37	37	37	37	37	35	35	37	37	37	37	37	37	35	35
	Ṡ primary	m³/h	1.2	1.6	2.0	3.3	3.8	4.9	7.5	11.6	1.1	1.5	1.8	3.1	3.5	4.4	6.8	10.2
	Q max.	kW	75	98	121	202	231	288	460	714	75	98	121	202	231	288	460	691
	Ṡ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	62.0	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0

Trans Therm pro S/RS		District heating															
		110 °C								130 °C							
		(A/H0/N36..)	(B/H0/N50..)	(C/H0/N60..)	(D/H0/N100..)	(E/H0/N140..)	(F/H0/N200..)	(G/H0/N180..)	(H/H0/N200..)	(A/H0/N36..)	(B/H0/N50..)	(C/H0/N60..)	(D/H0/N100..)	(E/H0/N140..)	(F/H0/N200..)	(G/H0/N180..)	(H/H0/N200..)
85/60 °C	T return primary	°C	63	63	63	63	63	63	65	61	63	63	63	63	63	62	60
	Ṽ primary	m³/h	3.5	4.6	5.7	9.6	10.9	13.7	22.0	31.4	2.5	3.3	4.1	6.8	7.8	9.8	22.3
	Q max.	kW	186	243	301	501	573	716	1137	1706	186	243	301	501	573	716	1706
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
80/60 °C	T return primary	°C	62	62	62	62	62	62	62	60	62	62	62	62	62	61	60
	Ṽ primary	m³/h	2.7	3.6	4.5	7.5	8.5	10.7	17.3	24.7	2.0	2.6	3.2	5.3	6.1	7.7	17.8
	Q max.	kW	149	195	240	401	458	572	910	1366	149	195	240	401	458	572	1366
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
80/65 °C	T return primary	°C	67	67	67	67	67	67	66	65	67	67	67	67	67	65	65
	Ṽ primary	m³/h	2.3	3.0	3.7	6.2	7.1	9.0	14.0	20.3	1.6	2.1	2.6	4.3	4.9	6.2	14.3
	Q max.	kW	111	146	180	300	343	428	682	1023	111	146	180	300	343	428	1023
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
75/50 °C	T return primary	°C	52	52	52	52	52	52	53	50	52	52	52	52	52	51	50
	Ṽ primary	m³/h	2.9	3.8	4.6	7.8	8.9	11.2	18.3	26.0	2.1	2.8	3.5	5.9	6.7	8.4	19.6
	Q max.	kW	187	244	302	503	575	718	1142	1713	187	244	302	503	575	718	1713
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
70/50 °C	T return primary	°C	52	52	52	52	52	52	51	50	52	52	52	52	52	50	50
	Ṽ primary	m³/h	2.3	3.0	3.7	6.2	7.1	8.9	14.8	20.6	1.7	2.2	2.8	4.7	5.3	6.7	15.9
	Q max.	kW	149	195	241	402	460	575	914	1372	149	195	241	402	460	575	1372
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
70/55 °C	T return primary	°C	57	57	57	57	57	57	55	55	57	57	57	57	57	55	55
	Ṽ primary	m³/h	1.9	2.4	3.0	5.1	5.8	7.3	11.4	16.8	1.4	1.8	2.2	3.7	4.3	5.4	12.5
	Q max.	kW	112	146	181	301	344	430	685	1028	112	146	181	301	344	430	1028
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
65/40 °C	T return primary	°C	42	42	42	42	42	42	43	40	42	42	42	42	42	41	40
	Ṽ primary	m³/h	2.4	3.2	4.0	6.6	7.6	9.6	15.4	22.2	1.9	2.5	3.1	5.2	6.0	7.5	17.5
	Q max.	kW	187	245	303	504	577	721	1146	1720	187	245	303	504	577	721	1720
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
60/40 °C	T return primary	°C	42	42	42	42	42	42	41	40	42	42	42	42	42	40	40
	Ṽ primary	m³/h	1.9	2.6	3.2	5.3	6.1	7.7	12.0	17.7	1.5	2.0	2.5	4.2	4.8	6.0	14.0
	Q max.	kW	150	196	242	404	461	576	918	1377	150	196	242	404	461	576	1377
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
60/45 °C	T return primary	°C	47	47	47	47	47	47	45	45	47	47	47	47	47	45	45
	Ṽ primary	m³/h	1.6	2.1	2.5	4.3	4.9	6.2	9.6	14.3	1.2	1.6	2.0	3.3	3.8	4.8	11.1
	Q max.	kW	112	147	181	302	345	432	687	1032	112	147	181	302	345	432	1032
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
55/30 °C	T return primary	°C	32	32	32	32	32	32	32	30	32	32	32	32	32	31	30
	Ṽ primary	m³/h	2.1	2.8	3.5	5.8	6.6	8.4	13.4	19.5	1.7	2.3	2.8	4.7	5.4	6.8	15.8
	Q max.	kW	188	246	303	506	578	722	1151	1726	188	246	303	506	578	722	1726
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
50/30 °C	T return primary	°C	32	32	32	32	32	32	31	30	32	32	32	32	32	30	30
	Ṽ primary	m³/h	1.7	2.2	2.8	4.6	5.3	6.7	10.5	15.6	1.4	1.8	2.2	3.7	4.3	5.4	12.6
	Q max.	kW	150	196	243	404	462	578	921	1382	150	196	243	404	462	578	1382
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
50/35 °C	T return primary	°C	37	37	37	37	37	37	35	35	37	37	37	37	37	35	35
	Ṽ primary	m³/h	1.3	1.8	2.2	3.7	4.2	5.4	8.3	12.4	1.1	1.4	1.7	2.9	3.4	4.3	9.9
	Q max.	kW	112	147	182	303	346	433	690	1036	112	147	182	303	346	433	1036
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
45/30 °C	T return primary	°C	32	32	32	32	32	32	30	30	32	32	32	32	32	30	30
	Ṽ primary	m³/h	1.3	1.7	2.1	3.5	4.0	5.0	7.8	11.7	1.0	1.3	1.7	2.8	3.2	4.1	9.5
	Q max.	kW	113	147	182	303	347	433	691	1037	113	147	182	303	347	433	1037
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0
45/35 °C	T return primary	°C	37	37	37	37	37	37	35	35	37	37	37	37	37	35	35
	Ṽ primary	m³/h	0.9	1.2	1.5	2.5	2.8	3.6	5.5	8.3	0.6	0.9	1.1	1.4	2.1	2.7	6.6
	Q max.	kW	75	98	121	202	231	288	460	691	75	98	121	202	231	288	691
	Ṽ secondary	m³/h	6.5	8.5	10.5	17.5	20.0	25.0	40.0	60.0	6.5	8.5	10.5	17.5	20.0	25.0	60.0

TransTherm® pro S type (A-C)
(Dimensions in mm)



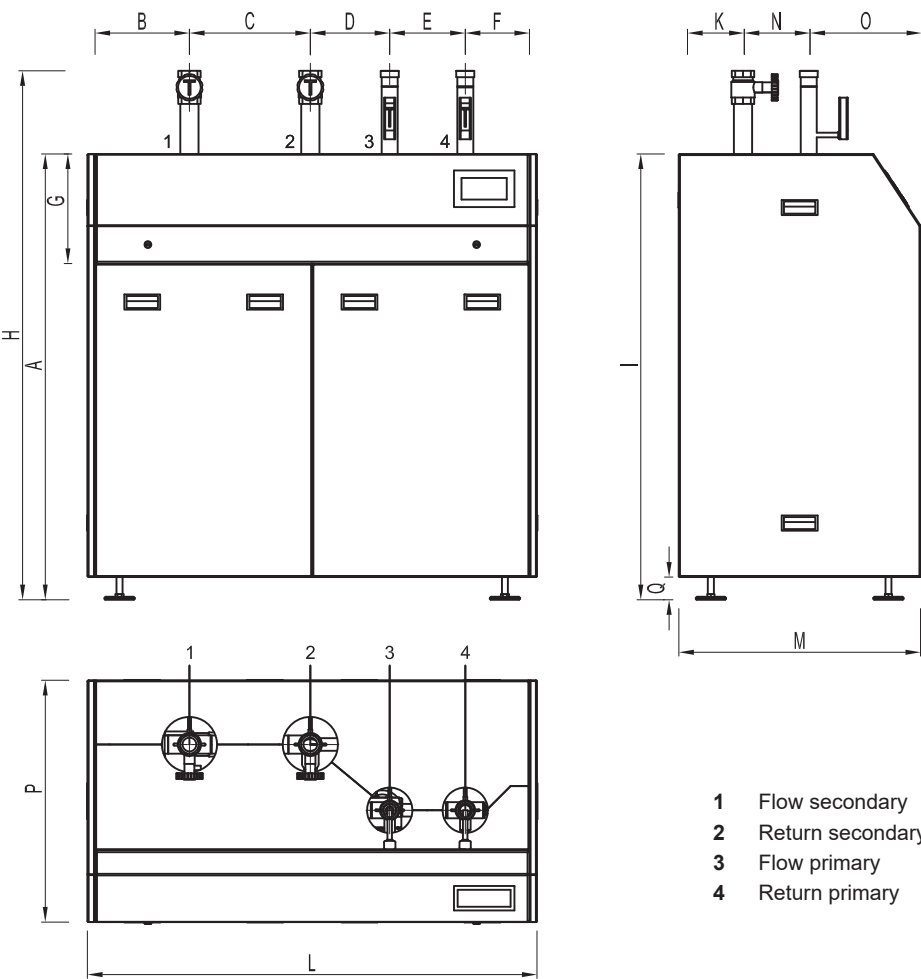
TransTherm® pro S	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q
(A-C)	1180	250	320	210	200	170	290	1400	1160	150	1150	620	174	296	620	60

Allocation of heat meters

TransTherm® pro S/RS	Heat meter qp	Installation length mm	Connection size inches
(A, B, C)	3.5	260	R 1¼"
(A, B, C)	6.0	260	R 1¼"

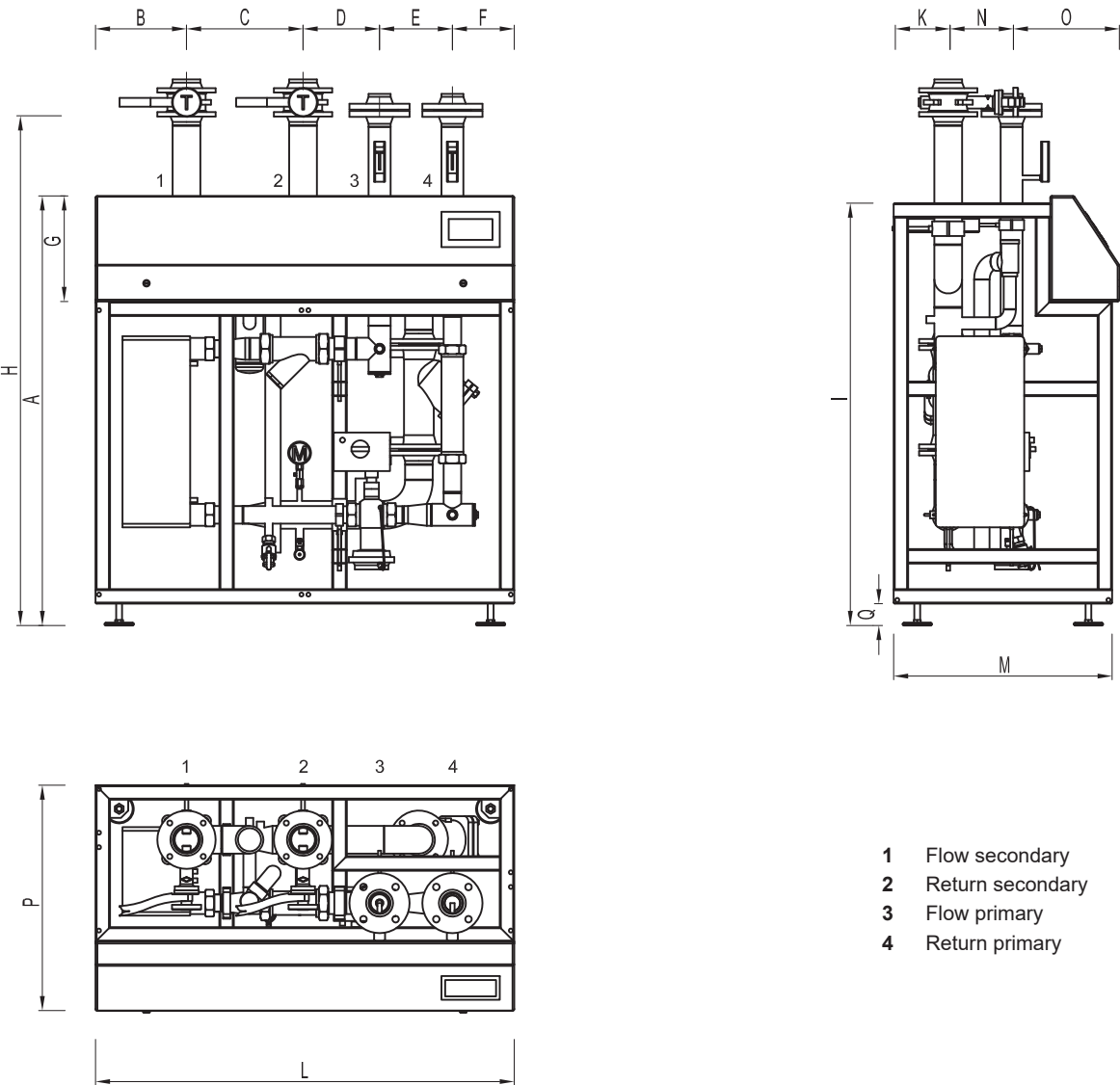
TransTherm® pro RS type (A-C)

(Dimensions in mm)



TransTherm® pro RS	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q
(A-C)	1180	270	320	210	200	190	290	1400	1180	170	1190	640	174	296	640	60

TransTherm® pro S type (D)
(Dimensions in mm)

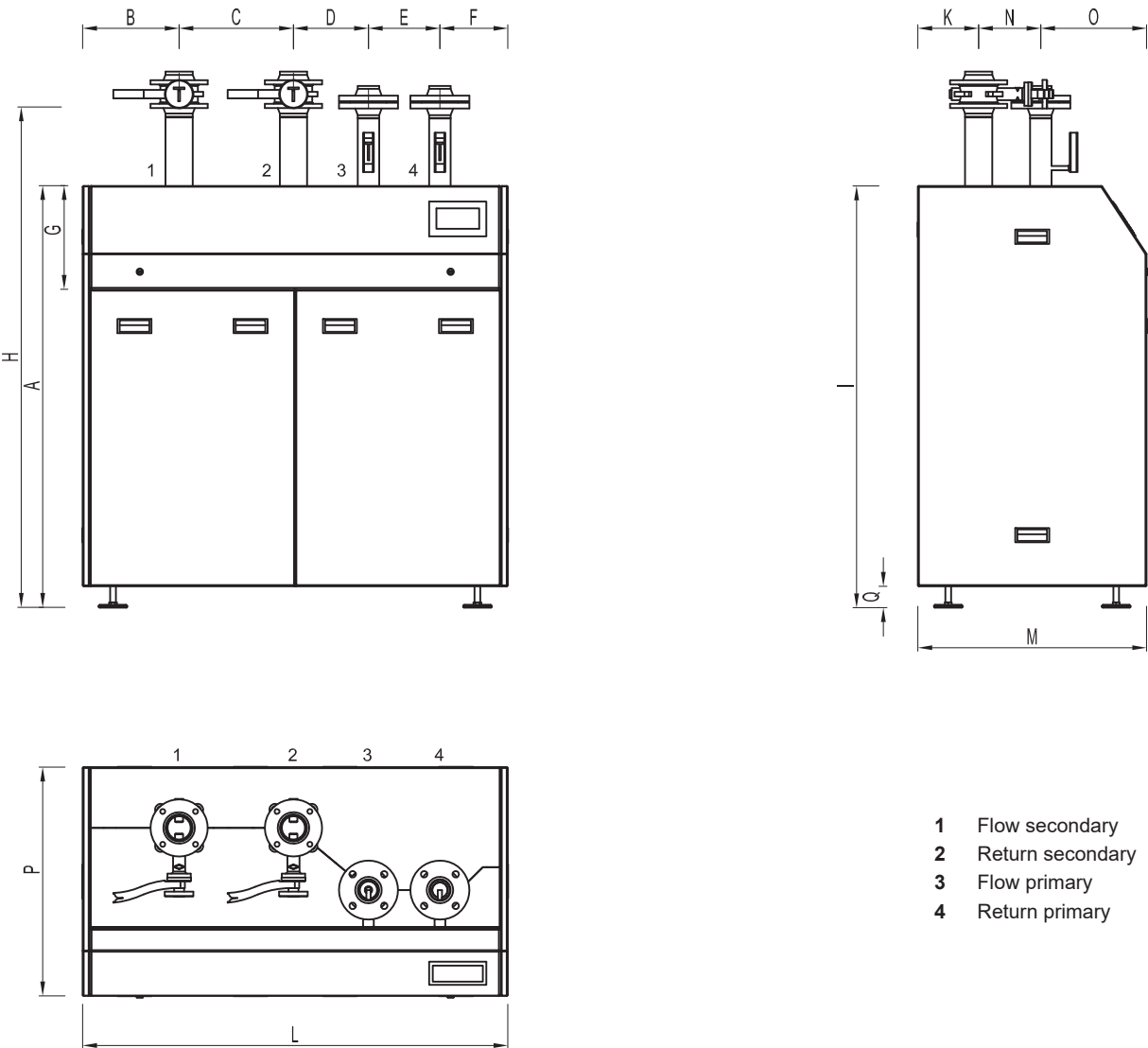


TransTherm® pro S	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q
(D)	1180	250	320	210	200	170	290	1500	1160	150	1150	620	174	296	620	60

Allocation of heat meters

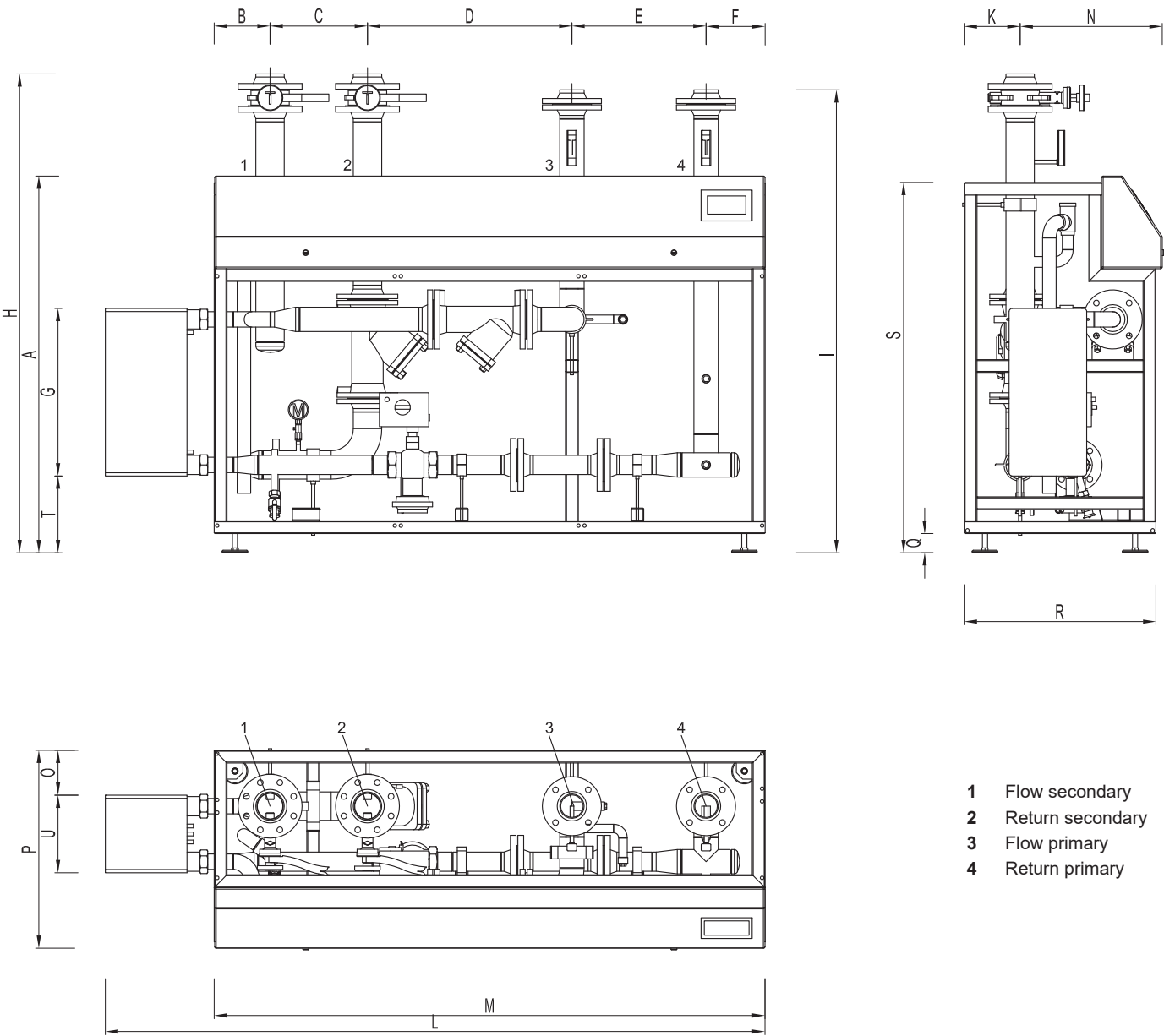
TransTherm® pro S/RS	Heat meter qp	Installation length mm	Connection size inches
(D)	10	300	R 2"

TransTherm® pro RS type (D)
(Dimensions in mm)



TransTherm® pro RS	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q
(D)	1180	270	320	210	200	190	290	1500	1180	170	1190	640	174	296	640	60

TransTherm® pro S type (E-G)
(Dimensions in mm)



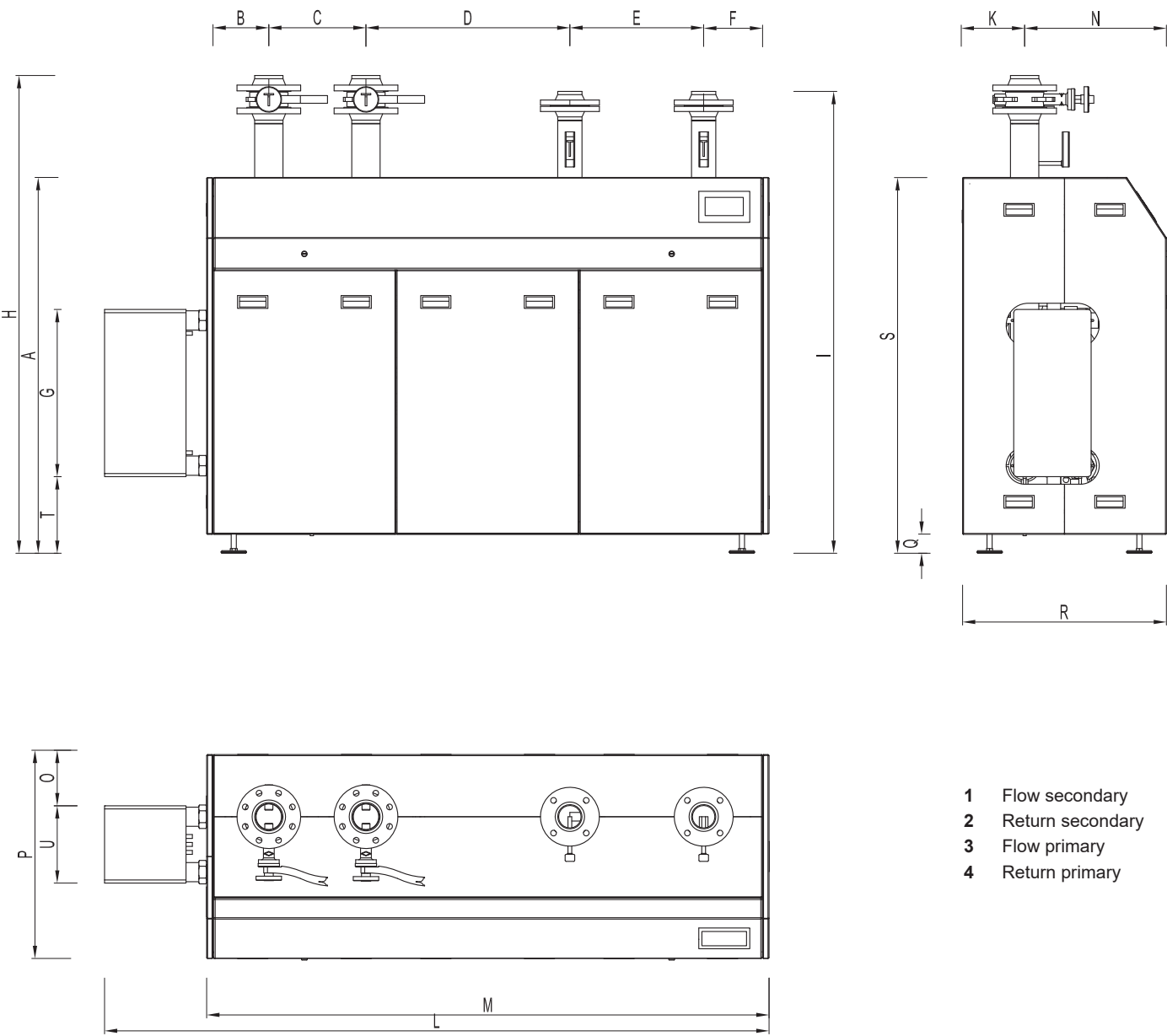
TransTherm® pro S	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T	U
(E)	1180	175	305	640	420	185	525	1500	1450	175	2066	1725	445	141	620	60	600	1160	241	243
(F)	1180	175	305	640	420	185	525	1500	1450	175	2275	1725	445	141	620	60	600	1160	241	243
(G)	1180	175	305	640	420	185	525	1500	1450	175	2320	1725	445	128	620	60	600	1160	241	243

Allocation of heat meters

TransTherm® pro S/RS	Heat meter qp	Installation length mm	Connection size inches
(E, F)	15	270	DN 50 FL
(G)	25	300	DN 65 FL
(H)	40	300	DN 80 FL

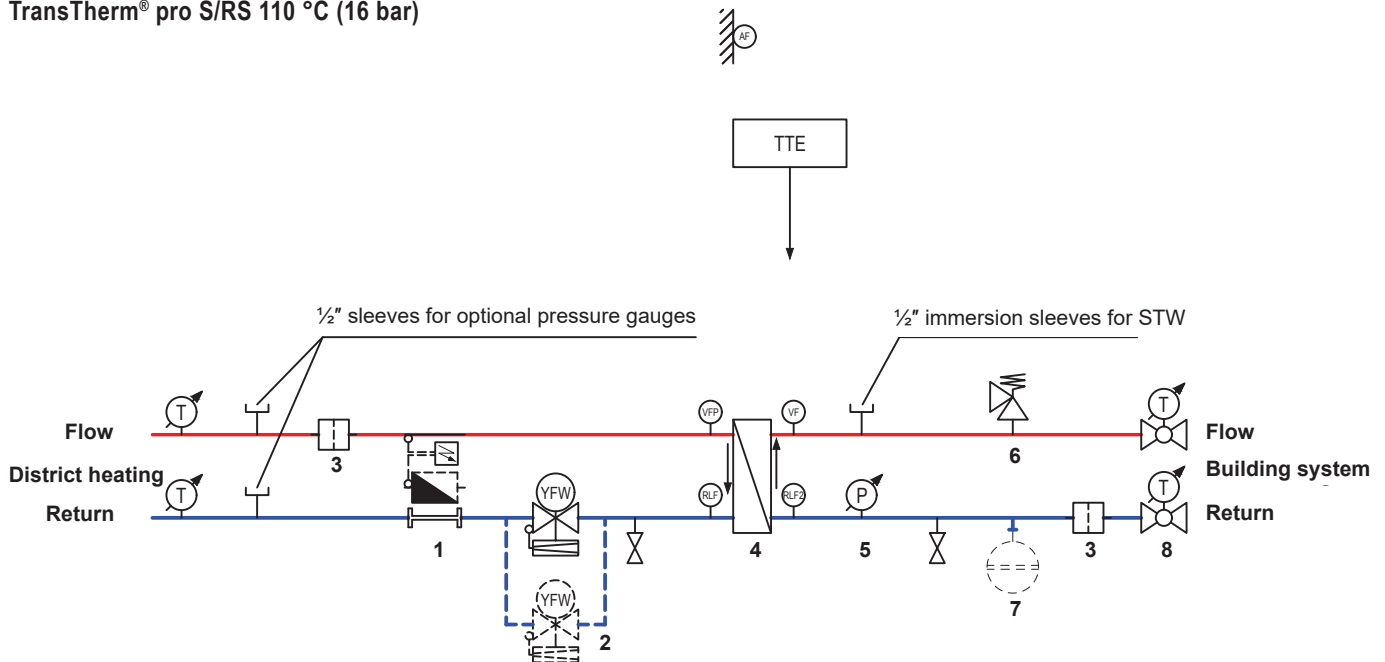
TransTherm® pro S type (H)
on request

TransTherm® pro RS type (E-G)
(Dimensions in mm)

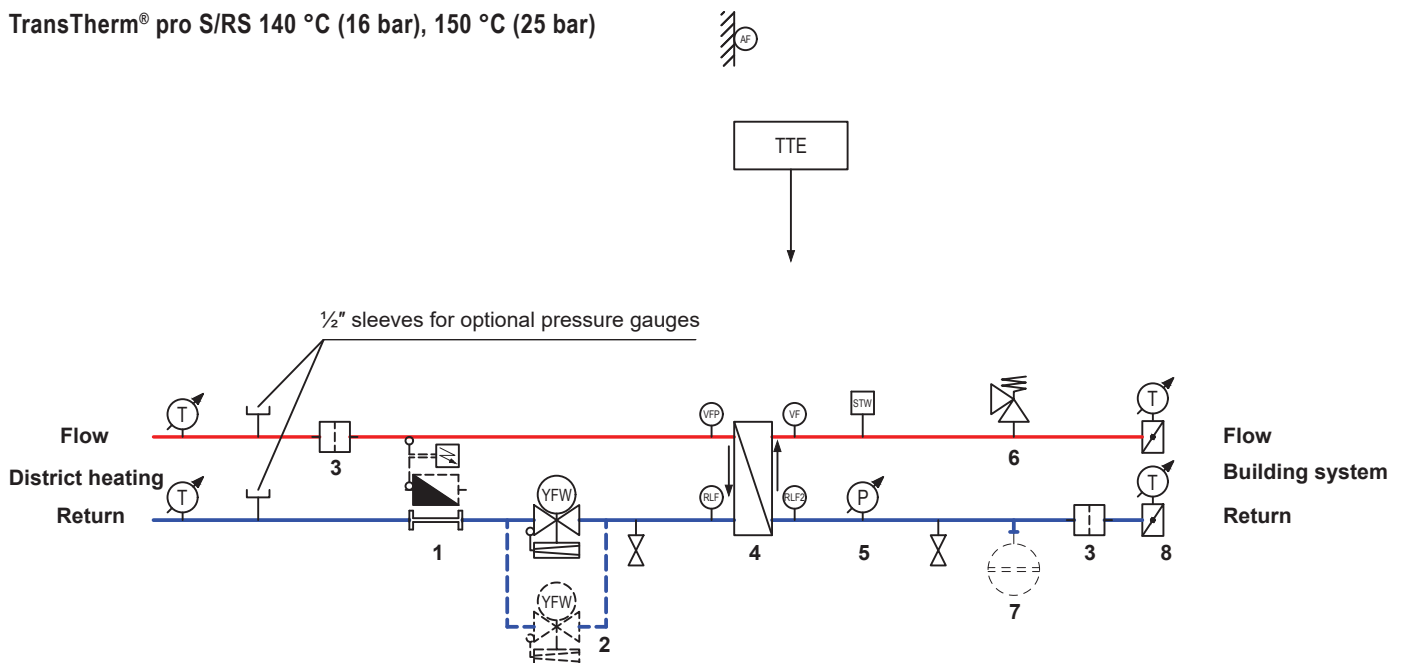


TransTherm® pro RS	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T	U
(E)	1180	195	305	640	420	205	525	1500	1450	195	2086	1765	445	161	640	60	640	1180	241	243
(F)	1180	195	305	640	420	205	525	1500	1450	195	2295	1765	445	161	640	60	640	1180	241	243
(G)	1180	195	305	640	420	205	525	1500	1450	195	2340	1765	445	148	640	60	640	1180	241	243

TransTherm® pro S/RS 110 °C (16 bar)



TransTherm® pro S/RS 140 °C (16 bar), 150 °C (25 bar)



- 1 Heat meter adapter (heat meter optional)
- 2 Flow rate controller with motorised control valve (for types F and G, sequential circuit with 2 valves)
- 3 Strainer
- 4 Heat exchanger
- 5 Pressure gauge
- 6 Safety valve
- 7 Diaphragm pressure expansion tank connection (diaphragm pressure expansion tank optionally)
- 8 Shut-off valve with thermometer

- RLF Return sensor
VF Flow sensor
AF Outdoor sensor

Notice:

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (diaphragm pressure expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

Hoval TransTherm® giro

District heating transfer station

- Indirect compact station for heat transfer and regulation of heating and hot water production systems.

- Standard design for heating water in accordance with DIN and AGFW directives.

District heating primary:

- maximum pressure stage 16/25 bar
- maximum operating temperature 110-150 °C
- maximum flow rate 4.5 m³/h
- connections - standard design left, conversion to the right on site.

Secondary heating:

- maximum operating pressure 3 bar
- maximum operating temperature 95 °C
- maximum flow rate 6.5 m³/h
- connection optional, top and/or bottom.

Option

- Special design for other requirements and district-heating-specific requirements on request.

- Installed:

District heating primary:

- 1 flow rate controller with motorised valve, actuator without emergency control function (110 °C) with emergency control function (140, 150 °C)
- 1 heat meter adapter
- 1 return temperature sensor
- 1 flow temperature sensor
- 1 strainer
- 1 drain

Secondary heating:

- stainless steel plate heat exchanger, copper-soldered design
- 1 return temperature sensor
- 1 flow temperature sensor
- 1 safety temperature monitor (140, 150 °C)
- 1 safety valve 3 bar
- 1 pressure gauge
- 1 strainer
- 1 drain
- 1 connection for diaphragm pressure expansion tank

- District heating station in fully welded and thermally insulated design (100 % thermally insulated), in powder-coated sheet aluminium casing, colour pure white (RAL 9010).
- TopTronic® E controller installed



Series	Hydraulics	Number of plates (heat exchanger)	Max. flow temperature	nominal pressure	Heat output ¹⁾						Hydraulics	Number of plates (heat exchanger)	Max. flow temperature	nominal pressure	Heat output ¹⁾	
TransTherm® giro type			°C	bar	kW	TransTherm® giro type			°C	bar	kW					
(H0/N10/T110/P16)	0	10	110	16	26	(H0/N60/T110/P16)	0	60	110	16	151					
(H0/N10/T140/P16)	0	10	140	16	26	(H0/N60/T140/P16)	0	60	140	16	151					
(H0/N10/T150/P25)	0	10	150	25	26	(H0/N60/T150/P25)	0	60	150	25	151					
(H0/N20/T110/P16)	0	20	110	16	64	(H0/N80/T110/P16)	0	80	110	16	189					
(H0/N20/T140/P16)	0	20	140	16	64	(H0/N80/T140/P16)	0	80	140	16	189					
(H0/N20/T150/P25)	0	20	150	25	64	(H0/N80/T150/P25)	0	80	150	25	189					
(H0/N40/T110/P16)	0	40	110	16	128	1) Reference temperature primary 90-53 °C/ secondary 75-50 °C										
(H0/N40/T140/P16)	0	40	140	16	128											
(H0/N40/T150/P25)	0	40	150	25	128											

TopTronic® E controller

TopTronic® E control panel

- Colour touchscreen 4.3 inch
- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module district heating com (TTE-FW com)

- Control functions integrated for
 - primary valve control
 - cascade management
 - 1 heating circuit with mixer
 - 1 heating circuit without mixer
 - 1 hot water charging circuit
 - various additional functions
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Complete plug set for DH module

Options for TopTronic® E controller

- Can be expanded by max. 5 module expansions:
 - module expansion heating circuit DH
 - module expansion hot water DH
 - module expansion universal DH
- Can be optionally expanded with various accessories:
 - Ethernet connection TTE-FW com
 - repeater TTE-FW com LON-Bus
 - router TTE-FW com Ethernet on LON-Bus
 - data socket 13-pin TTE-FW com LON-Bus and lightning protection
 - various software licences for HovalSupervisor
 - various services for HovalSupervisor
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module
 - e.g. max 45 mixer circuits

Number of modules that can be additionally installed in the control panel:

- 2 module expansions district heating and 1 Ethernet connection TTE-FW com
- Free space top-hat rail 310 mm

Design on request

- Flow rate controller with motorised valve, actuator with emergency control function
- Supply of system components such as heat meter, heating armature group, calorifier, charging group etc.
- Special design for requirements deviating from the standard or specific requirements for district heating networks.
- Hoval control system
- District heating station for direct heat transmission

Delivery

- District heating transfer station, fully cased and ready for electrical connection

On site

- Installation of heat meter

Further information about the TopTronic® E
see "Controls"

TransTherm® giro type	District heating primary						Secondary heating			
	Max. nominal pressure bar	T-max. °C	Valve kvs	Closing pressure ¹⁾ bar	Connection size inches	Vmax. m³/h	Operating pressure bar	T-max. °C	Connection size inches	Vmax. m³/h
(H0/N10/T110/P16)	16	110	1.6	4	G 1"	0.9	3	95	Rp 1"	1.3
(H0/N10/T140/P16)	16	140	1.6	14	G 1"	0.9	3	95	Rp 1"	1.3
(H0/N10/T150/P25)	25	150	1.6	20	G 1"	0.9	3	95	Rp 1"	1.3
(H0/N20/T110/P16)	16	110	2.5	4	G 1"	1.2	3	95	Rp 1"	2.4
(H0/N20/T140/P16)	16	140	2.5	14	G 1"	1.6	3	95	Rp 1"	2.4
(H0/N20/T150/P25)	25	150	2.5	20	G 1"	1.6	3	95	Rp 1"	2.4
(H0/N40/T110/P16)	16	110	4.0	14	G 1"	2.4	3	95	Rp 1"	4.5
(H0/N40/T140/P16)	16	140	4.0	14	G 1"	2.4	3	95	Rp 1"	4.5
(H0/N40/T150/P25)	25	150	4.0	20	G 1"	2.4	3	95	Rp 1"	4.5
(H0/N60/T110/P16)	16	110	6.3	14	G 1"	3.5	3	95	Rp 1"	6.5
(H0/N60/T140/P16)	16	140	6.3	14	G 1"	3.5	3	95	Rp 1"	6.5
(H0/N60/T150/P25)	25	150	6.3	20	G 1"	3.5	3	95	Rp 1"	6.5
(H0/N80/T110/P16)	16	110	8.0	14	G 1"	4.5	3	95	Rp 1"	6.5
(H0/N80/T140/P16)	16	140	8.0	14	G 1"	4.5	3	95	Rp 1"	6.5
(H0/N80/T150/P25)	25	150	8.0	20	G 1"	4.5	3	95	Rp 1"	6.5

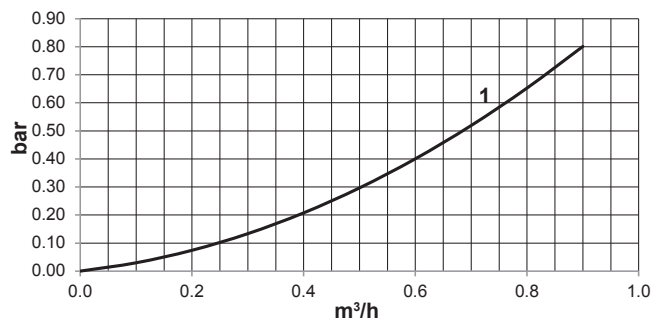
¹⁾ Actuator valve

Pressure drop diagrams

District heating primary

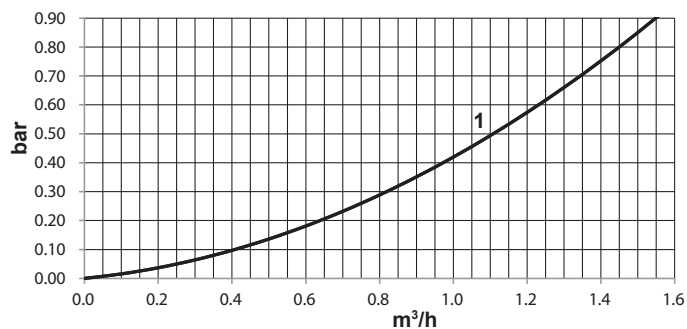
dp control valve with heat exchanger,
without heat meter.

TransTherm® giro (H0/N10)



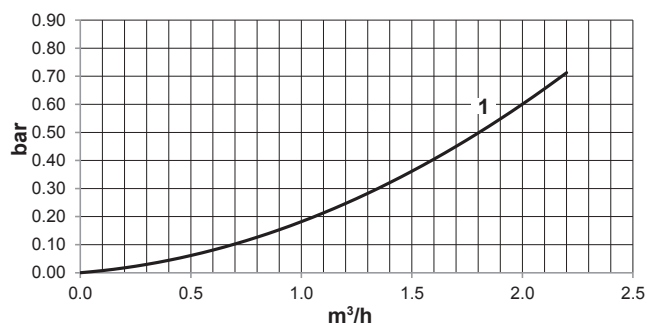
1 kvs 1.6 AVQM DN 15 PN 16(25) 150 °C 3/4"

TransTherm® giro (H0/N20)



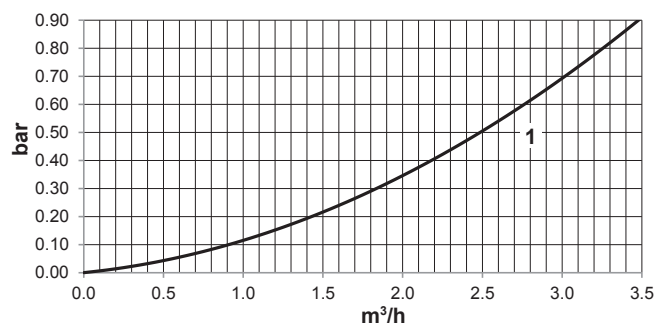
1 kvs 2.5 AVQM DN 15 PN 16(25) 150 °C 3/4"

TransTherm® giro (H0/N40)



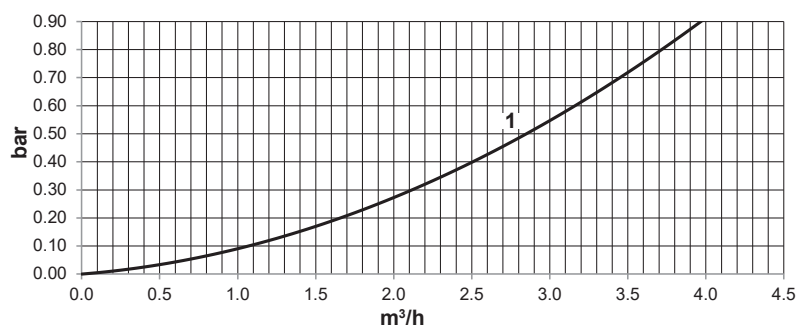
1 kvs 4.0 AVQM DN 15 PN 16(25) 150 °C 3/4"

TransTherm® giro (H0/N60)



1 kvs 6.3 AVQM DN 20 PN 16(25) 150 °C 1"

TransTherm® giro (H0/N80)

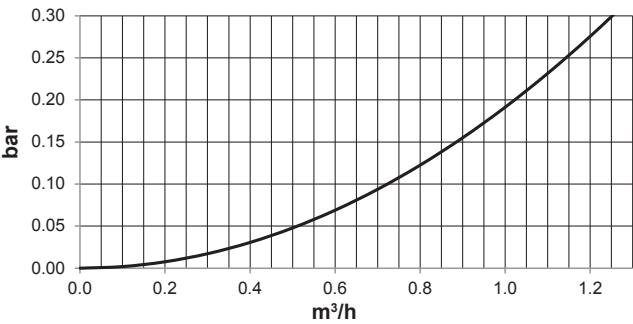


1 kvs 8.0 AVQM DN 20 PN 16(25) 150 °C 1"

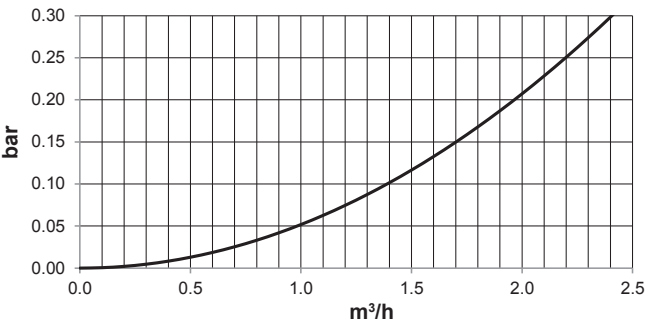
Pressure drop diagrams

Secondary building system
dp heat exchanger

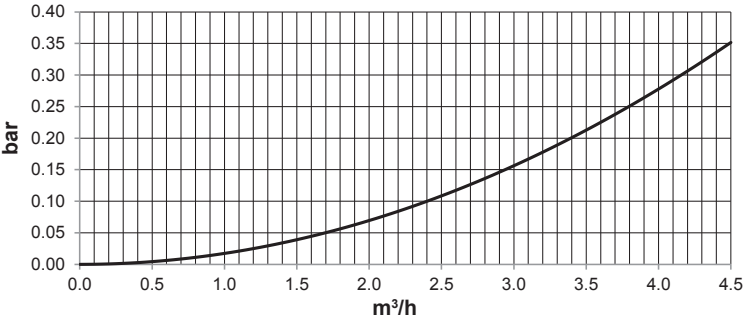
TransTherm® giro (H0/N10)



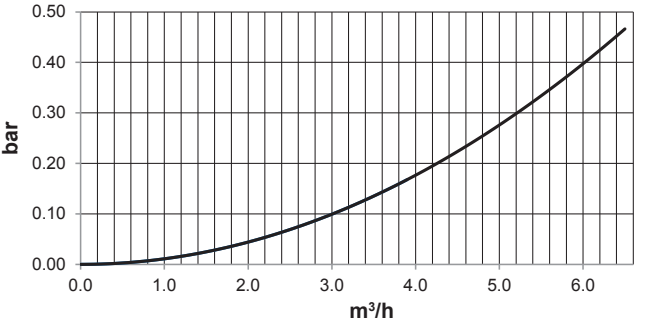
TransTherm® giro (H0/N20)



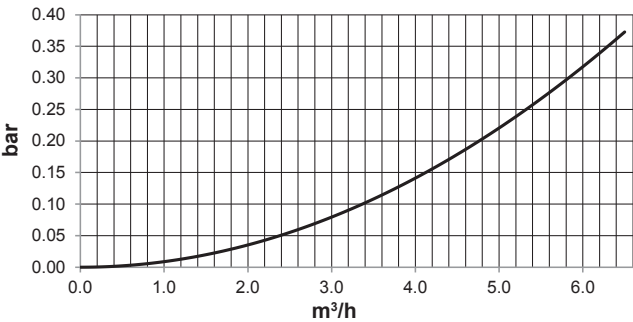
TransTherm® giro (H0/N40)



TransTherm® giro (H0/N60)



TransTherm® giro (H0/N80)



Performance data

TransTherm® giro (H0/N10-H0/N80)

- 2 outputs for house system
- Integrated control
 - primary: max. return temperature control
 - secondary: for 1 mixer circuit, 1 heating circuit without mixer, 1 hot water charging circuit

			District heating									
Secondary heating	TransTherm® giro		70 °C					75 °C				
			H0/N10	H0/N20	H0/N40	H0/N60	H0/N80	H0/N10	H0/N20	H0/N40	H0/N60	H0/N80
75/50 °C	T return primary	°C	-	-	-	-	-	-	-	-	-	-
	Ḃ primary	m³/h	-	-	-	-	-	-	-	-	-	-
	Q max.	kW	-	-	-	-	-	-	-	-	-	-
	Ḃ secondary	m³/h	-	-	-	-	-	-	-	-	-	-
70/50 °C	T return primary	°C	-	-	-	-	-	55	55	55	55	55
	Ḃ primary	m³/h	-	-	-	-	-	0.77	1.60	2.40	3.50	4.50
	Q max.	kW	-	-	-	-	-	18	37	56	81	105
	Ḃ secondary	m³/h	-	-	-	-	-	0.77	1.60	2.40	3.50	4.50
70/55 °C	T return primary	°C	-	-	-	-	-	60	60	60	60	60
	Ḃ primary	m³/h	-	-	-	-	-	0.92	1.60	2.40	3.50	4.50
	Q max.	kW	-	-	-	-	-	16	28	42	61	79
	Ḃ secondary	m³/h	-	-	-	-	-	0.92	1.60	2.40	3.50	4.50
65/40 °C	T return primary	°C	45	45	45	45	45	43	43	43	43	43
	Ḃ primary	m³/h	0.34	0.89	2.13	3.30	4.47	0.32	0.86	1.94	3.01	4.09
	Q max.	kW	10	26	62	96	130	12	32	72	112	152
	Ḃ secondary	m³/h	0.34	0.89	2.13	3.30	4.47	0.41	1.10	2.48	3.85	5.23
60/40 °C	T return primary	°C	43	43	43	43	43	43	43	43	43	43
	Ḃ primary	m³/h	0.57	1.40	2.40	3.50	4.50	0.70	1.45	2.40	3.50	4.06
	Q max.	kW	18	44	75	110	141	26	54	89	130	151
	Ḃ secondary	m³/h	0.77	1.89	3.24	4.73	6.08	1.12	2.32	3.84	5.60	6.50
60/45 °C	T return primary	°C	47	47	47	47	47	47	47	47	47	47
	Ḃ primary	m³/h	0.67	1.50	2.40	3.50	4.50	0.61	1.23	2.33	3.19	3.48
	Q max.	kW	18	40	64	94	113	20	40	76	104	113
	Ḃ secondary	m³/h	1.03	2.29	3.68	5.37	6.50	1.15	2.29	4.36	5.96	6.50
55/30 °C	T return primary	°C	33	33	33	33	33	33	33	33	33	33
	Ḃ primary	m³/h	0.42	1.07	2.42	3.50	4.50	0.57	1.35	2.40	3.52	3.87
	Q max.	kW	18	46	104	151	189	28	66	117	172	189
	Ḃ secondary	m³/h	0.62	1.58	3.58	5.18	6.50	0.96	2.27	4.03	5.92	6.50
50/30 °C	T return primary	°C	32	32	32	32	32	32	32	32	32	32
	Ḃ primary	m³/h	0.54	1.18	2.26	3.03	3.42	0.52	1.04	2.00	2.72	3.02
	Q max.	kW	24	52	100	134	151	26	52	100	136	151
	Ḃ secondary	m³/h	1.03	2.24	4.30	5.76	6.50	1.12	2.24	4.30	5.85	6.50
50/35 °C	T return primary	°C	36	36	36	36	36	36	36	36	36	36
	Ḃ primary	m³/h	0.51	1.01	1.87	2.58	2.87	0.44	0.88	1.63	2.25	2.50
	Q max.	kW	20	40	74	102	113	20	40	74	102	113
	Ḃ secondary	m³/h	1.15	2.29	4.24	5.85	6.50	1.15	2.29	4.24	5.85	6.50
45/30 °C	T return primary	°C	31	31	31	31	31	31	31	31	31	31
	Ḃ primary	m³/h	0.44	0.88	1.63	2.25	2.50	0.39	0.78	1.45	1.99	2.22
	Q max.	kW	20	40	74	102	113	20	40	74	102	113
	Ḃ secondary	m³/h	1.15	2.29	4.24	5.85	6.50	1.15	2.29	4.24	5.85	6.50
45/35 °C	T return primary	°C	36	36	36	36	36	36	36	36	36	36
	Ḃ primary	m³/h	0.30	0.66	1.26	1.72	1.91	0.26	0.57	1.10	1.50	1.67
	Q max.	kW	12	26	50	68	76	12	26	50	68	76
	Ḃ secondary	m³/h	1.03	2.24	4.30	5.85	6.50	1.03	2.24	4.30	5.85	6.50

TransTherm® giro (H0/N10-H0/N80)

- 2 outputs for house system

- Integrated control

primary: max. return temperature control

secondary: for 1 mixer circuit, 1 heating circuit without mixer, 1 hot water charging circuit

			District heating									
Secondary heating	TransTherm® giro		80 °C					90 °C				
			H0/N10	H0/N20	H0/N40	H0/N60	H0/N80	H0/N10	H0/N20	H0/N40	H0/N60	H0/N80
75/50 °C	T return primary	°C	55	55	55	55	55	53	53	53	53	53
	Ḃ primary	m³/h	0.41	1.10	2.41	3.50	4.50	0.60	1.49	2.98	3.50	4.50
	Q max.	kW	12	32	70	102	131	26	64	128	151	189
	Ḃ secondary	m³/h	0.41	1.10	2.41	3.50	4.50	0.89	2.20	4.40	5.18	6.50
70/50 °C	T return primary	°C	53	53	53	53	53	52	52	52	52	52
	Ḃ primary	m³/h	0.64	1.66	2.40	3.50	4.50	0.63	1.22	2.31	3.50	3.50
	Q max.	kW	20	52	75	110	141	28	54	102	151	151
	Ḃ secondary	m³/h	0.86	2.24	3.24	4.73	6.08	1.20	2.32	4.39	6.50	6.50
70/55 °C	T return primary	°C	58	58	58	58	58	57	57	57	57	57
	Ḃ primary	m³/h	0.78	1.56	2.97	3.50	4.50	0.52	1.04	1.98	2.71	2.96
	Q max.	kW	20	40	76	90	113	20	40	76	104	113
	Ḃ secondary	m³/h	1.15	2.29	4.36	5.13	6.50	1.15	2.29	4.36	5.96	6.50
65/40 °C	T return primary	°C	42	42	42	42	42	42	42	42	42	42
	Ḃ primary	m³/h	0.32	0.81	1.77	2.76	4.28	0.61	1.22	2.26	3.12	3.39
	Q max.	kW	14	36	78	122	189	34	68	126	174	189
	Ḃ secondary	m³/h	0.48	1.24	2.68	4.20	6.50	1.17	2.34	4.33	5.99	6.50
60/40 °C	T return primary	°C	42	42	42	42	42	42	42	42	42	42
	Ḃ primary	m³/h	0.59	1.22	2.26	3.12	3.42	0.47	0.97	1.79	2.47	2.71
	Q max.	kW	26	54	100	138	151	26	54	100	138	151
	Ḃ secondary	m³/h	1.12	2.32	4.30	5.93	6.50	1.12	2.32	4.30	5.93	6.50
60/45 °C	T return primary	°C	47	47	47	47	47	47	47	47	47	47
	Ḃ primary	m³/h	0.52	1.04	1.98	2.71	2.96	0.40	0.80	1.52	2.08	2.27
	Q max.	kW	20	40	76	104	113	20	40	76	104	113
	Ḃ secondary	m³/h	1.15	2.29	4.36	5.96	6.50	1.15	2.29	4.36	5.96	6.50
55/30 °C	T return primary	°C	33	33	33	33	33	32	32	32	32	32
	Ḃ primary	m³/h	0.62	1.21	2.27	3.15	3.46	0.50	0.98	1.84	2.55	2.80
	Q max.	kW	34	66	124	172	189	34	66	124	172	189
	Ḃ secondary	m³/h	1.17	2.27	4.27	5.92	6.50	1.17	2.27	4.27	5.92	6.50
50/30 °C	T return primary	°C	32	32	32	32	32	32	32	32	32	32
	Ḃ primary	m³/h	0.47	0.93	1.79	2.44	2.71	0.39	0.77	1.48	2.02	2.24
	Q max.	kW	26	52	100	136	151	26	52	100	136	151
	Ḃ secondary	m³/h	1.12	2.24	4.30	5.85	6.50	1.12	2.24	4.30	5.85	6.50
50/35 °C	T return primary	°C	36	36	36	36	36	36	36	36	36	36
	Ḃ primary	m³/h	0.39	0.78	1.45	1.99	2.22	0.32	0.64	1.18	1.62	1.81
	Q max.	kW	20	40	74	102	113	20	40	74	102	113
	Ḃ secondary	m³/h	1.15	2.29	4.24	5.85	6.50	1.15	2.29	4.24	5.85	6.50
45/30 °C	T return primary	°C	31	31	31	31	31	31	31	31	31	31
	Ḃ primary	m³/h	0.35	0.70	1.30	1.79	1.99	0.29	0.58	1.08	1.49	1.65
	Q max.	kW	20	40	74	102	113	20	40	74	102	113
	Ḃ secondary	m³/h	1.15	2.29	4.24	5.85	6.50	1.15	2.29	4.24	5.85	6.50
45/35 °C	T return primary	°C	36	36	36	36	36	36	36	36	36	36
	Ḃ primary	m³/h	0.23	0.51	0.98	1.33	1.48	0.19	0.41	0.80	1.08	1.20
	Q max.	kW	12	26	50	68	76	12	26	50	68	76
	Ḃ secondary	m³/h	1.03	2.24	4.30	5.85	6.50	1.03	2.24	4.30	5.85	6.50

TransTherm® giro (H0/N10-H0/N80)

- 2 outputs for house system

- Integrated control

primary: max. return temperature control

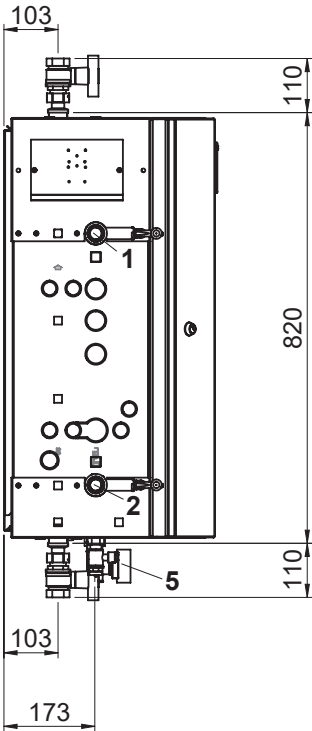
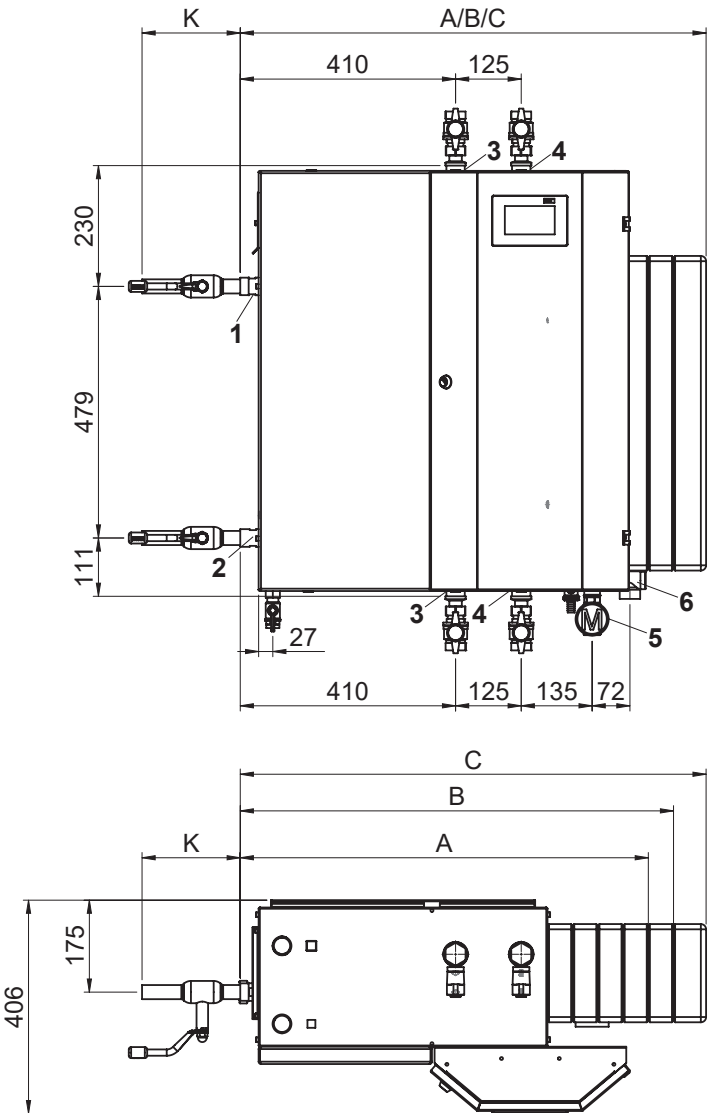
secondary: for 1 mixer circuit, 1 heating circuit without mixer, 1 hot water charging circuit

District heating

Secondary heating	TransTherm® giro		110 °C					130 °C				
			H0/N10	H0/N20	H0/N40	H0/N60	H0/N80	H0/N10	H0/N20	H0/N40	H0/N60	H0/N80
75/50 °C	T return primary	°C	52	52	52	52	52	52	52	52	52	52
	Ṡ primary	m³/h	0.50	1.01	1.90	2.58	2.80	0.37	0.75	1.41	1.92	2.08
	Q max.	kW	34	68	128	174	189	34	68	128	174	189
	Ṡ secondary	m³/h	1.17	2.34	4.40	5.99	6.50	1.17	2.34	4.40	5.99	6.50
70/50 °C	T return primary	°C	52	52	52	52	52	52	52	52	52	52
	Ṡ primary	m³/h	0.42	0.80	1.51	2.24	2.24	0.31	0.60	1.12	1.67	1.67
	Q max.	kW	28	54	102	151	151	28	54	102	151	151
	Ṡ secondary	m³/h	1.20	2.32	4.39	6.50	6.50	1.20	2.32	4.39	6.50	6.50
70/55 °C	T return primary	°C	57	57	57	57	57	57	57	57	57	57
	Ṡ primary	m³/h	0.32	0.65	1.23	1.69	1.84	0.24	0.47	0.90	1.23	1.34
	Q max.	kW	20	40	76	104	113	20	40	76	104	113
	Ṡ secondary	m³/h	1.15	2.29	4.36	5.96	6.50	1.15	2.29	4.36	5.96	6.50
65/40 °C	T return primary	°C	42	42	42	42	42	42	42	42	42	42
	Ṡ primary	m³/h	0.43	0.86	1.59	2.20	2.39	0.33	0.66	1.23	1.70	1.85
	Q max.	kW	34	68	126	174	189	34	68	126	174	189
	Ṡ secondary	m³/h	1.17	2.34	4.33	5.99	6.50	1.17	2.34	4.33	5.99	6.50
60/40 °C	T return primary	°C	42	42	42	42	42	42	42	42	42	42
	Ṡ primary	m³/h	0.33	0.68	1.26	1.75	1.91	0.25	0.53	0.98	1.35	1.48
	Q max.	kW	26	54	100	138	151	26	54	100	138	151
	Ṡ secondary	m³/h	1.12	2.32	4.30	5.93	6.50	1.12	2.32	4.30	5.93	6.50
60/45 °C	T return primary	°C	47	47	47	47	47	47	47	47	47	47
	Ṡ primary	m³/h	0.27	0.55	1.04	1.42	1.55	0.21	0.41	0.79	1.08	1.17
	Q max.	kW	20	40	76	104	113	20	40	76	104	113
	Ṡ secondary	m³/h	1.15	2.29	4.36	5.96	6.50	1.15	2.29	4.36	5.96	6.50
55/30 °C	T return primary	°C	32	32	32	32	32	32	32	32	32	32
	Ṡ primary	m³/h	0.37	0.73	1.37	1.90	2.08	0.30	0.58	1.09	1.51	1.66
	Q max.	kW	34	66	124	172	189	34	66	124	172	189
	Ṡ secondary	m³/h	1.17	2.27	4.27	5.92	6.50	1.17	2.27	4.27	5.92	6.50
50/30 °C	T return primary	°C	32	32	32	32	32	32	32	32	32	32
	Ṡ primary	m³/h	0.29	0.57	1.10	1.50	1.67	0.23	0.46	0.88	1.19	1.33
	Q max.	kW	26	52	100	136	151	26	52	100	136	151
	Ṡ secondary	m³/h	1.12	2.24	4.30	5.85	6.50	1.12	2.24	4.30	5.85	6.50
50/35 °C	T return primary	°C	36	36	36	36	36	36	36	36	36	36
	Ṡ primary	m³/h	0.23	0.46	0.86	1.19	1.32	0.18	0.37	0.68	0.93	1.04
	Q max.	kW	20	40	74	102	113	20	40	74	102	113
	Ṡ secondary	m³/h	1.15	2.29	4.24	5.85	6.50	1.15	2.29	4.24	5.85	6.50
45/30 °C	T return primary	°C	31	31	31	31	31	31	31	31	31	31
	Ṡ primary	m³/h	0.22	0.44	0.81	1.11	1.23	0.17	0.35	0.64	0.89	0.99
	Q max.	kW	20	40	74	102	113	20	40	74	102	113
	Ṡ secondary	m³/h	1.15	2.29	4.24	5.85	6.50	1.15	2.29	4.24	5.85	6.50
45/35 °C	T return primary	°C	36	36	36	36	37	36	36	36	36	36
	Ṡ primary	m³/h	0.14	0.30	0.58	0.79	0.89	0.11	0.24	0.46	0.62	0.69
	Q max.	kW	12	26	50	68	76	12	26	50	68	76
	Ṡ secondary	m³/h	1.03	2.24	4.30	5.85	6.50	1.03	2.24	4.30	5.85	6.50

TransTherm® giro (H0/N10-H0/N80)
(Dimensions in mm)

District heating connection on the left - view of exterior



TransTherm® giro type	Designation	without option (ball valve) mm
(H0/N10,H0/N20)	A	791
(H0/N40)	B	839
(H0/N60,H0/N80)	C	887

Ball valve option	Size	Connection size inches	K mm
	DN 20	3/4"	85
	DN 25	1"	110
	DN 32	1 1/4"	115
	DN 20	3/4"	180
	DN 25	1"	195
	DN 32	1 1/4"	235

- 1 Flow primary R 1"
- 2 Return primary R 1"
- 3 Flow secondary Rp 1"
- 4 Return secondary Rp 1"
- 5 Diaphragm pressure expansion tank connection (ball valves/pressure gauge options) Rp 1/2"
- 6 Safety valve 1/2"

Adapters for heat meter:

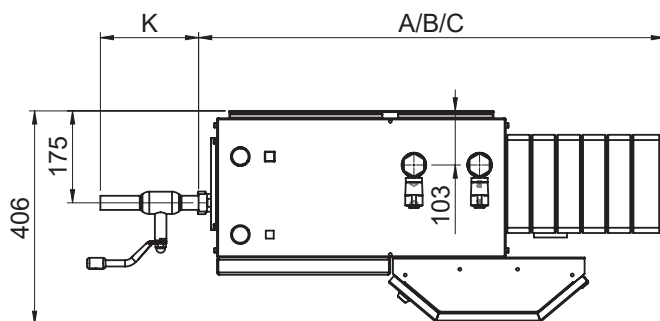
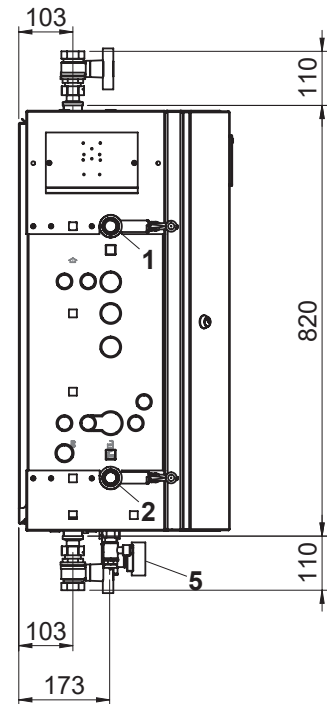
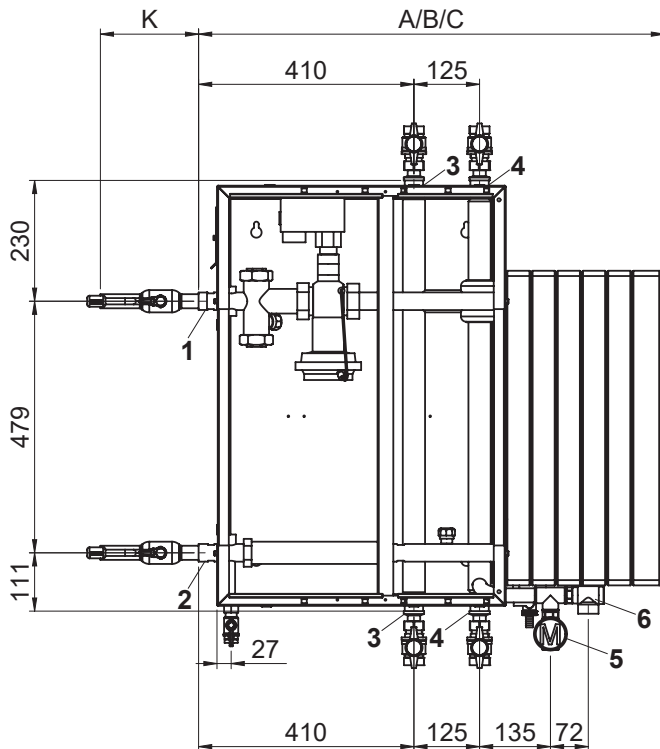
PN 16	
(H0/N10,H0/N20)	R 3/4", 110 mm
(H0/N40,H0/N60)	R 1", 130 mm
(H0/N80)	R 1 1/4", 260 mm
PN 25	
(H0/N10-H0/N60)	R 1", 190 mm
(H0/N80)	R 1 1/4", 260 mm

Sensor dimensions
1 x M10 x 1 (27.5-38 mm)
1 x 1/4" for immersion sleeve
(length without add-on 35 mm)

TransTherm® giro (H0/N10-H0/N80)

(Dimensions in mm)

District heating connection on the left - view of interior



TransTherm® giro type	Designation	without option (ball valve) mm
(H0/N10,H0/N20)	A	791
(H0/N40)	B	839
(H0/N60,H0/N80)	C	887

Ball valve option	Size	Connection size inches	K mm
	DN 20	3/4"	85
	DN 25	1"	110
	DN 32	1 1/4"	115
	DN 20	3/4"	180
	DN 25	1"	195
	DN 32	1 1/4"	235

- 1 Flow primary R 1"
- 2 Return primary R 1"
- 3 Flow secondary Rp 1"
- 4 Return secondary Rp 1"
- 5 Diaphragm pressure expansion tank connection Rp 1/2"
(ball valves/pressure gauge options)
- 6 Safety valve 1/2"

Adapters for heat meter:

PN 16

- (H0/N10,H0/N20) R 3/4", 110 mm
- (H0/N40,H0/N60) R 1", 130 mm
- (H0/N80) R 1 1/4", 260 mm

PN 25

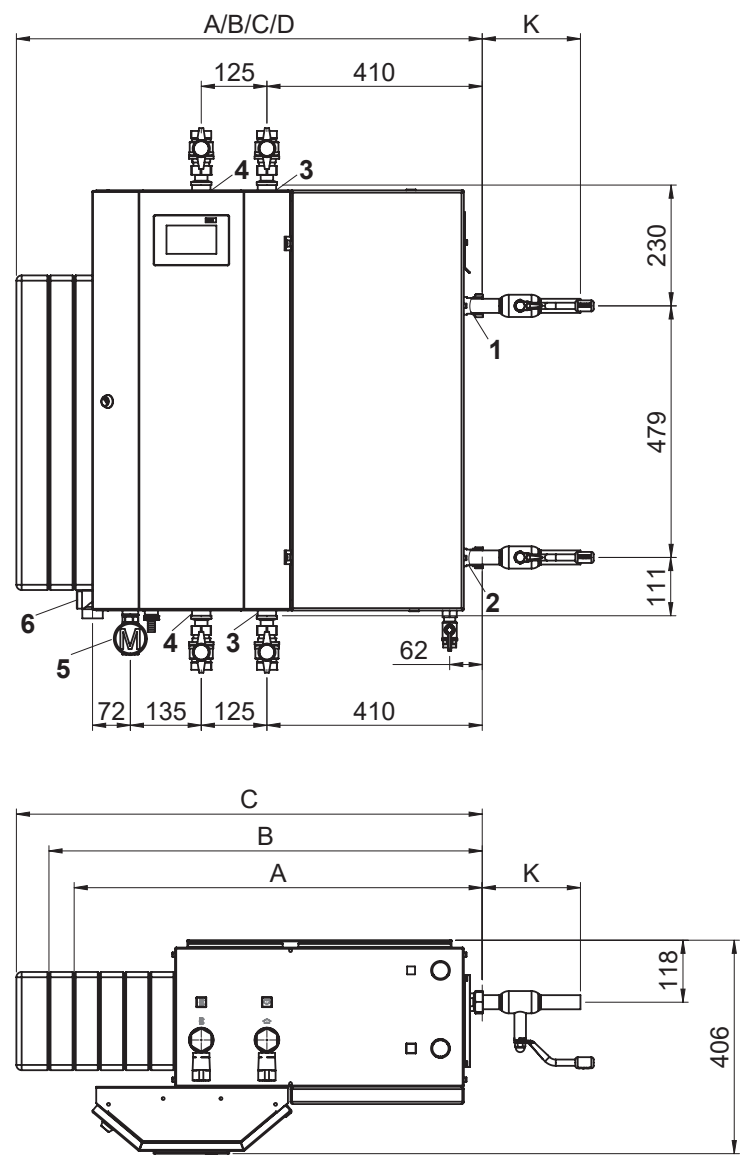
- (H0/N10-H0/N60) R 1", 190 mm
- (H0/N80) R 1 1/4", 260 mm

Sensor dimensions

- 1 x M10 x 1 (27.5-38 mm)
- 1 x 1/4" for immersion sleeve
(length without add-on 35 mm)

TransTherm® giro (H0/N10-H0/N80)
 (Dimensions in mm)

District heating connection on the right - view of exterior
 For this connection type, the casing must be turned through 180° on site.



TransTherm® giro type	Designation	without option (ball valve) mm
(H0/N10,H0/N20)	A	791
(H0/N40)	B	839
(H0/N60,H0/N80)	C	887

Ball valve option	Size	Connection size inches	K mm
	DN 20	3/4"	85
	DN 25	1"	110
	DN 32	1 1/4"	115
	DN 20	3/4"	180
	DN 25	1"	195
	DN 32	1 1/4"	235

- 1 Flow primary R 1"
- 2 Return primary R 1"
- 3 Flow secondary Rp 1"
- 4 Return secondary Rp 1"
- 5 Diaphragm pressure expansion tank connection (ball valves/pressure gauge options) Rp 1/2"
- 6 Safety valve 1/2"

Adapters for heat meter:
PN 16

- (H0/N10,H0/N20) R 3/4", 110 mm
- (H0/N40,H0/N60) R 1", 130 mm
- (H0/N80) R 1 1/4", 260 mm

PN 25

- (H0/N10-H0/N60) R 1", 190 mm
- (H0/N80) R 1 1/4", 260 mm

Sensor dimensions

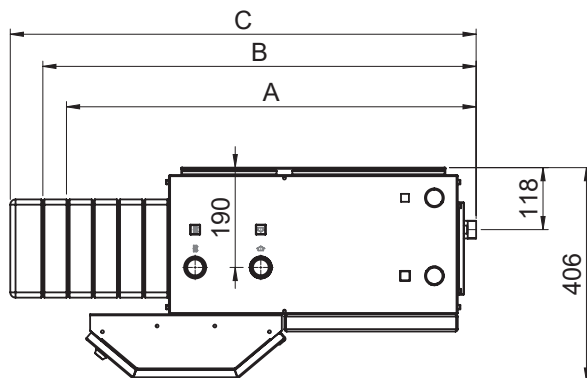
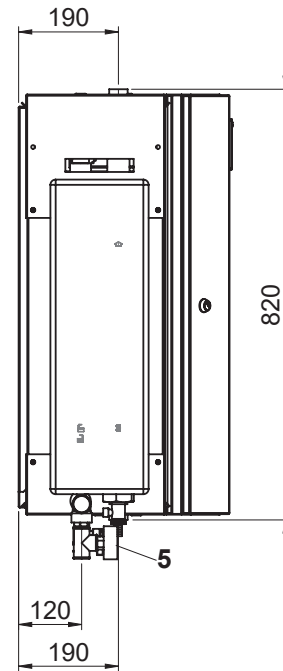
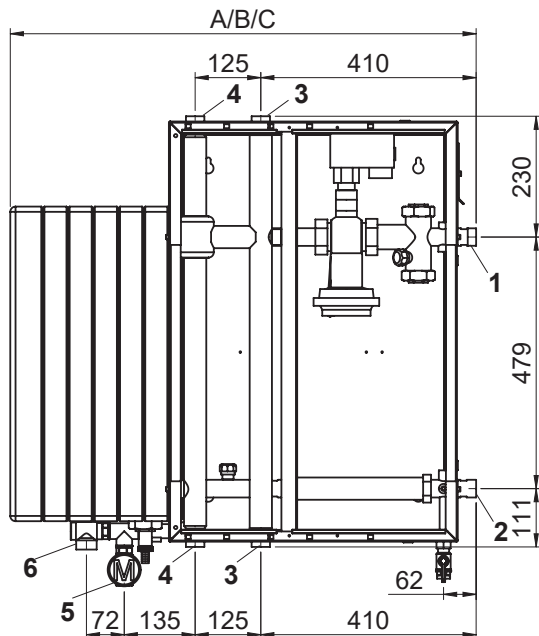
- 1 x M10 x 1 (27.5-38 mm)
- 1 x 1/4" for immersion sleeve (length without add-on 35 mm)

TransTherm® giro (H0/N10-H0/N80)

(Dimensions in mm)

District heating connection on the right - view of interior

For this connection type, the casing must be turned through 180° on site.



TransTherm® giro type	Designation	without option (ball valve) mm
(H0/N10,H0/N20)	A	791
(H0/N40)	B	839
(H0/N60,H0/N80)	C	887

Ball valve option	Size	Connection size inches	K mm
	DN 20	3/4"	85
	DN 25	1"	110
	DN 32	1 1/4"	115
	DN 20	3/4"	180
	DN 25	1"	195
	DN 32	1 1/4"	235

- 1 Flow primary R 1"
- 2 Return primary R 1"
- 3 Flow secondary Rp 1"
- 4 Return secondary Rp 1"
- 5 Diaphragm pressure expansion tank connection (ball valves/pressure gauge options) Rp 1/2"
- 6 Safety valve 1/2"

Adapters for heat meter:

PN 16

- (H0/N10,H0/N20) R 3/4", 110 mm
- (H0/N40,H0/N60) R 1", 130 mm
- (H0/N80) R 1 1/4", 260 mm

PN 25

- (H0/N10-H0/N60) R 1", 190 mm
- (H0/N80) R 1 1/4", 260 mm

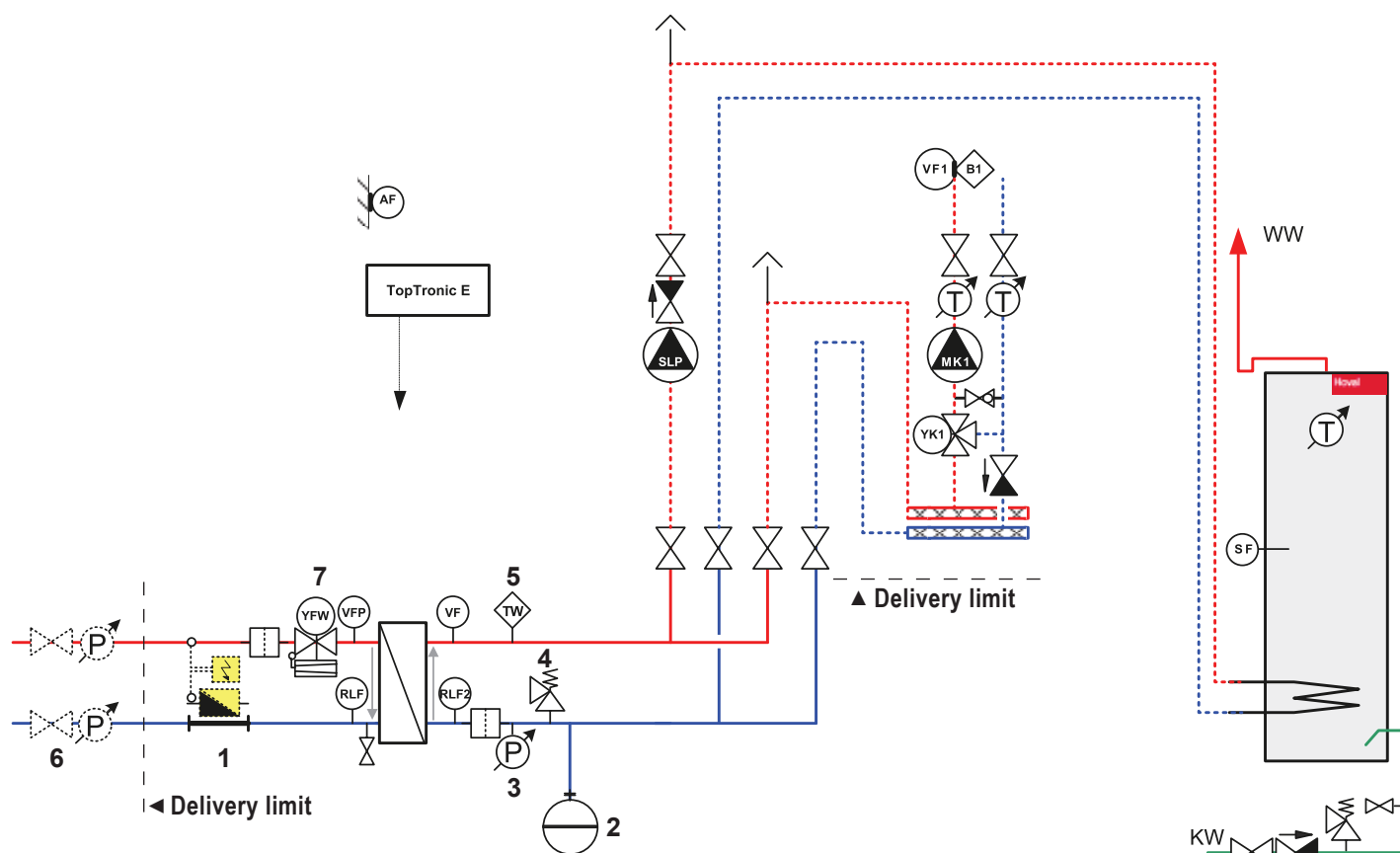
Sensor dimensions

- 1 x M10 x 1 (27.5-38 mm)
- 1 x 1/4" for immersion sleeve (length without add-on 35 mm)

TransTherm® giro (H0/N10-H0/N80)

- District heating station with
- 1 heating circuit with mixer
- hot water production

Hydraulic schematic BGAE010



Notice

- The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety valve (diaphragm pressure expansion tank, safety valve, etc.) are to safe against unintended closing!
- Mount bags to prevent single pipe gravity circulation!

- 1 Heat meter adapter (heat meter optional)
- 2 Diaphragm pressure expansion tank (option)
- 3 Pressure gauge
- 4 Safety valve
- 5 Temperature monitor
Standard on design
140/150 °C, 16/25 bar
Optional on design
110 °C/16 bar
- 6 Shut-off valve (option)
- 7 Flow rate controller with motorised control valve

- RLF** Return sensor
RLF2 Return sensor (secondary)
VFP Flow sensor (primary)
VF Flow sensor (secondary)
AF Outdoor sensor
SF Calorifier sensor
TW Temperature monitor

Hoval TransShare

- Flexible heating distributor in a fully welded configuration, mounted without vibration on a stand frame.
- The type of connection to the heat generator can be freely selected prior to production and is either on the left or right facing up.
- The heating distributor design can include a controller and an electric control panel. The TopTronic® E controller and all electrical field devices (drive and sensor) are then wired and ready to connect.
- For cold applications below the dew point, we offer the TransShare cold distributor with the appropriate valves, double corrosion protection coating and optional cold insulation.
- The system is designed and manufactured in line with the generally recognised codes of practice and is certified according to ISO 9001.
- Various hydraulic variants are possible, e.g.:
 - with domestic water heating in the buffer storage principle
 - set-up with several mixers and/or direct heating circuits
 - set-up with two return flow collectors (high temperature and low temperature)
- Setting up with two return collectors is to be recommended if there is a high or medium-temperature heating circuit and a low-temperature heating circuit. The lower return temperature leads to higher efficiency levels in condensing boilers and a greater heat energy content in the buffer storage tank. Planning of the TransShare heating distributor is always carried out in relation to the building, and is adapted to the corresponding output values, temperatures and flow rates.
- Complete preassembly shortens installation times and minimises the amount of work involved.
- Thermal insulation in EPP or mineral wool with galvanised sheet steel.
- 3D CAD drawing on request



TransShare with thermal insulation made of mineral wool and jacket made of galvanised sheet steel

Nominal pressures up to PN 10 and maximum temperatures up to 110 °C are possible



TransShare with EPP thermal insulation

Further information and prices
on request

TransShare heating circuit distributor

	Flow rate	Distributor	max. output at				
	V [m³/h]	DN	ΔT 15 K [kW]	ΔT 20 K [kW]	ΔT 25 K [kW]	ΔT 30 K [kW]	ΔT 40 K [kW]
Freely configured	1.49	25	25.8	34.5	43.1	51.7	68.9
	2.54	32	44.0	58.7	73.4	88.1	117.5
	3.41	40	59.1	78.8	98.6	118.3	157.7
	5.46	50	94.7	126.2	157.8	189.4	252.5
	9.08	65	157.5	209.9	262.4	314.9	419.9
	12.51	80	216.9	289.2	361.6	433.9	578.5
Standard design configuration	21.08	100	365.5	487.4	609.2	731.1	974.8
Freely configured	31.88	125	552.8	737.1	921.4	1105.7	1474.2
Standard design configuration	46.64	150	808.8	1078.4	1348.0	1617.6	2156.8
Freely configured	78.37	200	1359.0	1812.0	2265.0	2718.0	3624.0
	124.62	250	2161.0	2881.4	3601.7	4322.1	5762.8
	176.27	300	3056.7	4075.6	5094.5	6113.4	8151.2
	214.21	350	3714.6	4952.8	6191.0	7429.2	9905.7
	277.82	400	4817.7	6423.6	8029.5	9635.4	12847.2

Flow rate – nominal diameter – ΔT output at max. 0.65 m/s

TransShare heating circuits

	Flow rate	HC	max. output at				
	V [m³/h]	DN	ΔT 7 K [kW]	ΔT 10 K [kW]	ΔT 15 K [kW]	ΔT 20 K [kW]	ΔT 25 K [kW]
Standard design configuration	1.35	20	10.9	15.6	23.4	31.2	39.0
	2.63	25	21.0	30.0	46.0	61.0	76.0
	5.09	32	41.0	59.0	88.0	118.0	147.0
	6.83	40	55.0	79.0	118.0	158.0	197.0
	10.92	50	88.0	126.0	189.0	252.0	316.0
Freely configured	18.17	65	147.0	210.0	315.0	420.0	525.0
	25.02	80	202.0	289.0	434.0	578.0	723.0
	42.16	100	341.0	487.0	731.0	975.0	1218.0
	63.75	125	516.0	737.0	1105.0	1474.0	1842.0
	93.28	150	755.0	1078.0	1618.0	2157.0	2696.0
	153.74	200	1244.0	1777.0	2666.0	3555.0	4443.0
	249.24	250	2017.0	2811.0	4322.0	5763.0	7203.0

Flow rate – nominal diameter – ΔT output at max. 1.3 m/s

VERSIONS
 of the heating circuits in standard design

Direct charging heating circuit	Direct heating circuit	Mixer heating circuit	Mixer heating circuit dB (with direct admixture)
			
All heating circuits shown in standard design Premium .			

Equipment of the heating circuits, taking the example of a mixer heating circuit

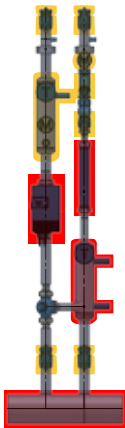
Basis	Comfort	Premium
		
• Three-way valve • Pump • 2 shut-off valves • 2 thermometers • Non-return valve • Strainer	• Three-way valve • Pump • 4 shut-off valves • 2 thermometers (Ø 63 mm) • Non-return valve • Strainer • 2 pressure gauges (Ø 63 mm) • Fill and drain valve	• Three-way valve • Pump • 3 shut-off valves • 2 thermometers (Ø 100 mm) • Non-return valve • Strainer • 2 pressure gauges (Ø 100 mm) • Fill and drain valve • Heat meter adapter • Flow rate limiter

Standard design for
 DN 25 | DN 32 | DN 40 | DN 50

Free configuration also for:
 DN 25 | DN 32 | DN 40 | DN 50
 and > DN 50 | ...

The planning according to the plant
 of the selected standard design

Premium	
Standard • Shut-off valves • Thermometer • Non-return valve • Flow rate limiter • Fill and drain valve • Strainer	Planned (according to system data) • Pump • Three-way valve with drive • Heat meter adapter • Thermal insulation* - Insulation EPP 50 % - Insulation EPP 100 % • TopTronic® E, TopTronic® E-FW incl. sensors, wiring and control panel* • Power supply • Distributor/collector * not illustrated



Domestic Hot Water

Storage tank systems ideal for commercial use

Water is hugely versatile. It provides a whole host of options for everyday use – whether as an essential, valuable resource in kitchens or in daily use in sanitary rooms and building technology due to its ability to be stored and transferred.

In all applications in which water comes into direct contact with the body, it must be supplied in the optimum quality and in sufficient quantities in line with stringent hygiene standards. These domestic hot water systems are subject to strict standards regarding planning, design and operation so as to ensure the reliable and hygienic supply of domestic water at the right temperature.

However, if the water is to be used as a storage medium to retain energy obtained from valuable resources or to hold surplus energy, this is where system requirements come to the fore. The buffer storage tanks required decouple energy generation and energy consumption in the heating system to achieve the greatest possible system efficiency. With this technical trick, it is possible to make use of the sun's energy even during the night, for example.

Hoval's domestic hot water portfolio includes:

- **CombiVal**
- **MultiVal**
- **TransTherm® Aqua L/F**
- **EnerVal / EnerVal G / EnerVal G Cool**



Hoval calorifier
CombiVal CR (200-1000)

- Calorifier made of stainless steel
- Flat section coil made of stainless steel, built in
- Thermal insulation made of polyester fleece with patented aluminium sealing bracket. Outer jacket made of polypropylene, red coloured
- (200) 1-part
- (300-800) 2-part
- (1000) 3-part
- CombiVal CR (200-500)
1 ½" sleeve for the mounting of a screw-in electric heating element, sensor terminal bar
- CombiVal CR (800,1000)
Flange above as additional cleaning flange (SVGW regulation) or for the installation of a flange-mounted electric heating element.
- Flange below as cleaning flange or for installation of a flange-mounted electric heating element
- With thermometer
- Two terminal strips for contact sensors
- Observe limit values for chloride content in domestic water – see "Engineering".
- Connection cable for equipotential bonding, permanently mounted

Delivery

- Calorifier and thermal insulation completely installed (can be removed for installation)

On request

- Electric heating element
- Electric heating element for flange above
- Flange cover with sleeve for flange below for the installation of a screw-in electric heating element
- Correx® impressed current anode set



Range
CombiVal
type

CR	(200)	B
CR	(300)	B
CR	(500)	
CR	(800)	
CR	(1000)	

A⁺ → F

CombiVal CR (200-1000)

Type		(200)	(300)	(500)	(800)	(1000)
• Volume	l	218	316	544	818	1042
• Max. operating/test pressure SVGW	bar	6/12	6/12	6/12	6/12	6/12
• Max. operating temperature	°C	95	95	95	95	95
• Thermal insulation polyester fleece	mm	120	120	120	100	100
• Thermal insulation λ	W/mK	0.035	0.035	0.035	0.035	0.035
• Fire protection class		B2	B2	B2	B2	B2
• Heat loss at 65 °C	W	56	67	80	136	142
• Transport weight	kg	95	108	129	191	205
• U value	W/m ² K	0.315	0.472	0.423	0.483	0.459
Heating coil (built in)						
• Heating surface	m ²	1.28	1.28	1.70	2.63	2.63
• Heating water	l	4.1	4.1	5.1	7.4	7.4
• Flow resistance ¹⁾ water	z value	11.65	11.65	15.50	24.00	24.00
• Flow resistance ¹⁾ water/glycol 50 %	z value	15.73	15.73	20.93	32.40	32.40
• Max. operating/test pressure SVGW	bar	3/6	3/6	3/6	3/6	3/6
• Max. operating temperature	°C	95	95	95	95	95
• Dimensions	see table of dimensions					

¹⁾ Flow resistance heating coil in mbar = flow rate (m³/h)² x z (1 mbar = 0.1 kPa)

Performance figure

Selection of the storage tank type
at a hot water temperature of 45 °C

Reading example
see engineering

	Comfort ¹⁾			Standard ²⁾		
T >	60 °C	70 °C	80 °C	60 °C	70 °C	80 °C
NL v						
1						
2						
3						
4				200		
5	200					
6					200	
7		200				
8				300		
9	300					200
10			200			
11		300				
12					300	
13						
14			300			
15						
16	500					
17						300
18						
19				500		
20		500				
21						
22						
23						
24						
25					500	
26						
27			500			
28						
29						
30	800					
31						
32	1000					
33						
34						500
35						
36						
37						
38		800		800		
39						
40						
41				1000		
42		1000				
43						
44						
45						
46						
47						
48						
49					800	
50						

	Comfort ¹⁾			Standard ²⁾		
T >	60 °C	70 °C	80 °C	60 °C	70 °C	80 °C
NL v						
51						
52			800			
53						
54						
55					1000	
56						
57			1000			
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						800
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100						
> 100						

T = Heating flow

NL = Performance figure

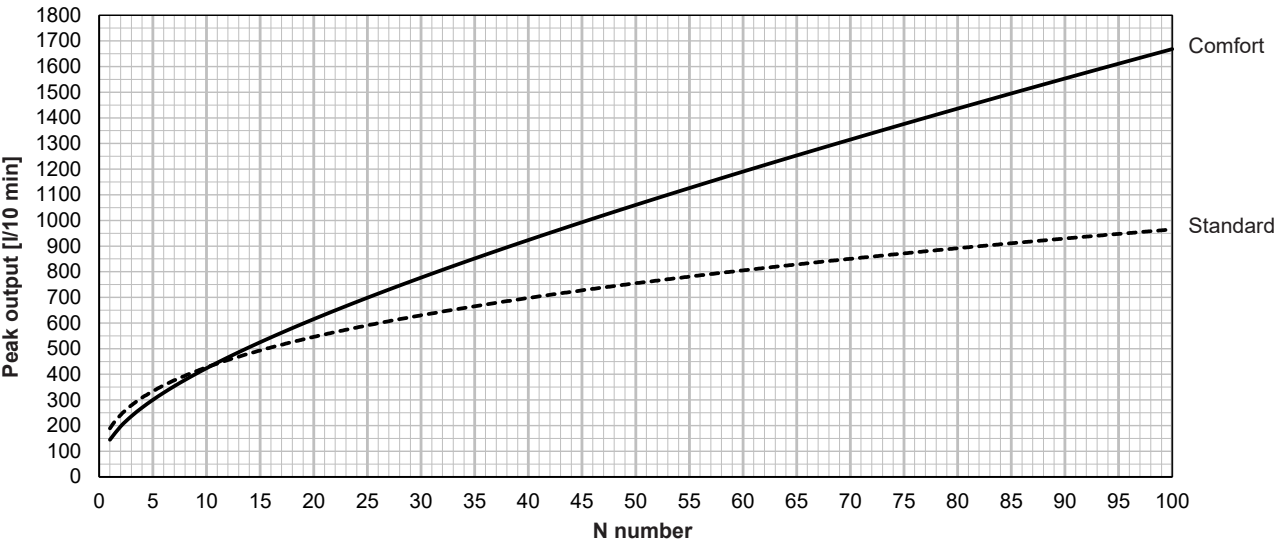
Performance figure NL acc. to DIN 4708 = number of flats which can be supplied with domestic hot water when the calorifier is heated and permanently reheated with the heat generator (standard flat: 1 bathroom – 4 rooms – 3.5 persons)

¹⁾ Calculation with simultaneity factor according to DIN 4708 (preferred for Switzerland)

²⁾ Calculation with simultaneity factor according to Dresden Technical University

10 min peak output/N number with domestic hot water 45 °C
according to DIN 4708 (Comfort) and Dresden Technical University (Standard)

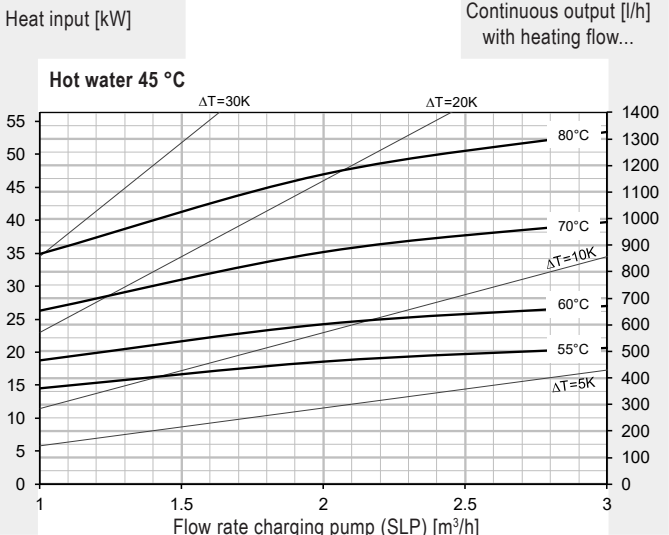
Reading example
see Engineering



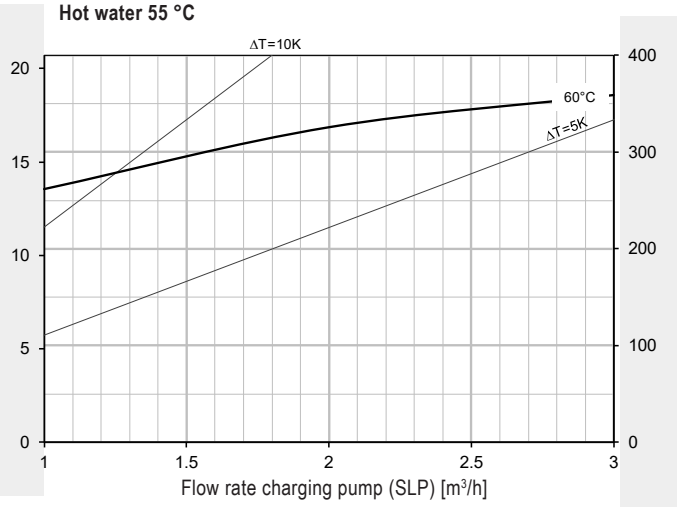
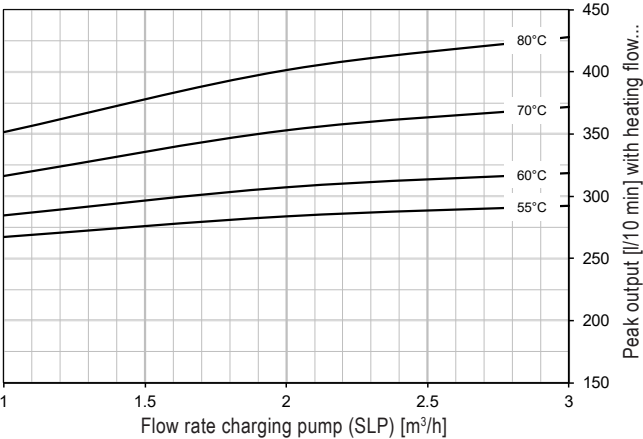
CombiVal CR (200)

Hot water output
Continuous output

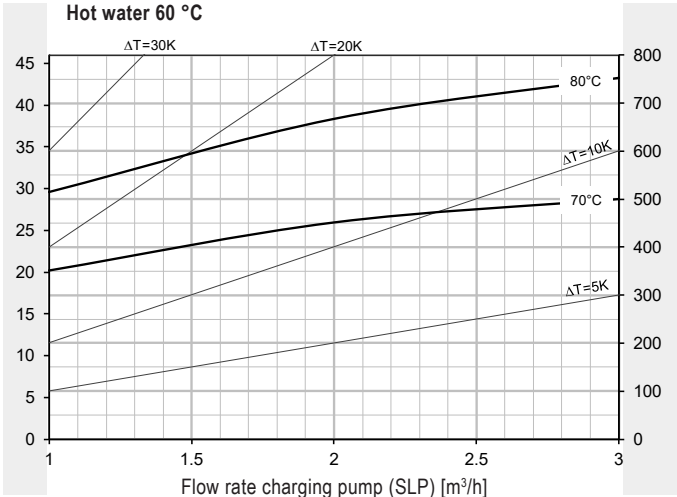
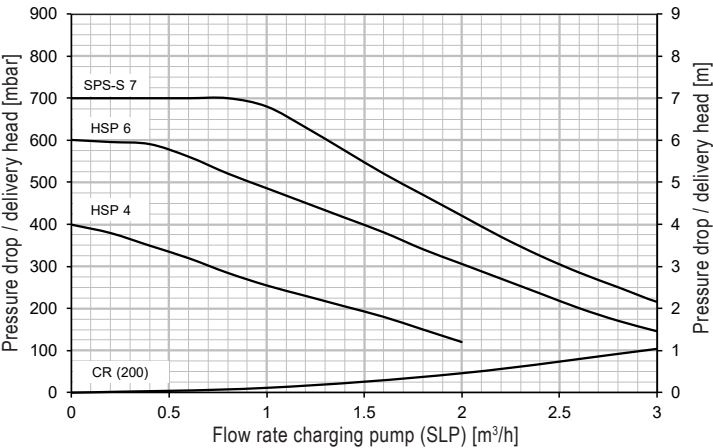
Reading example
see engineering



10 min peak output – hot water 45 °C *



Pressure drop heating coil – delivery head charging pump

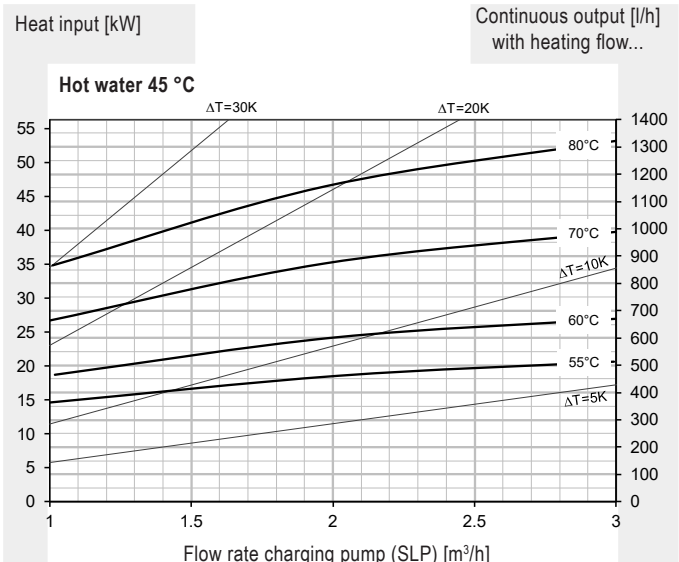


* Calorifier heated to 60 °C

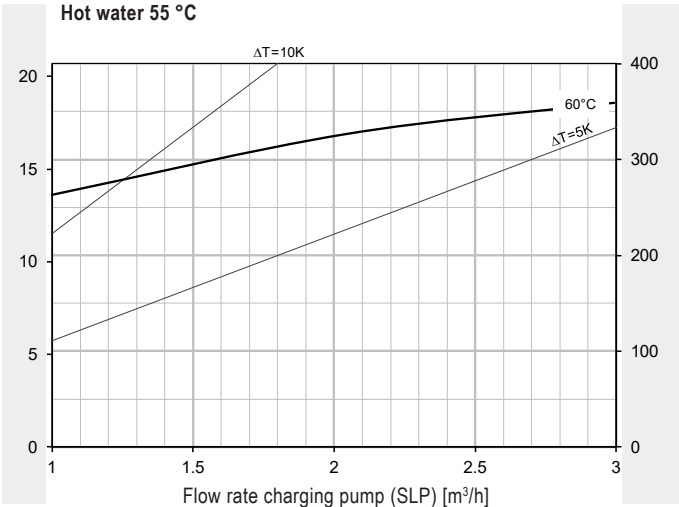
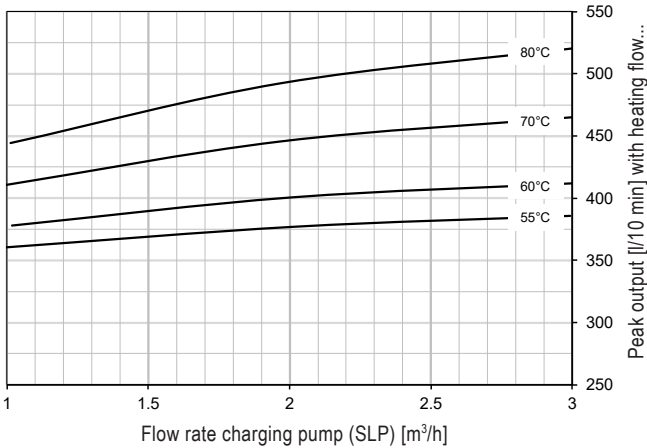
CombiVal CR (300)

Hot water output
Continuous output

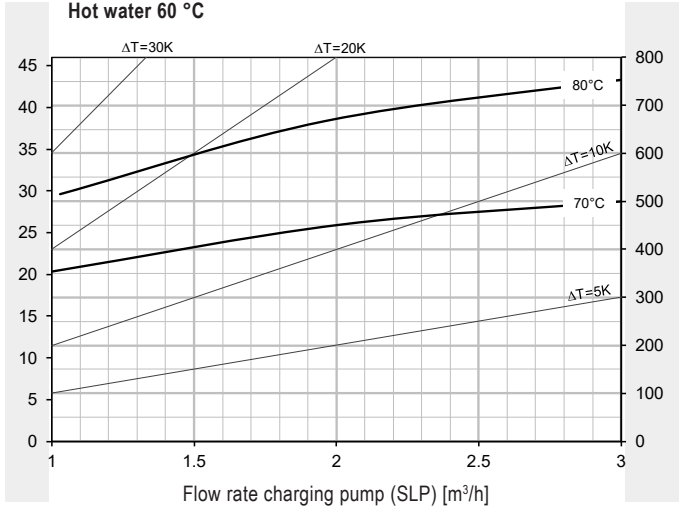
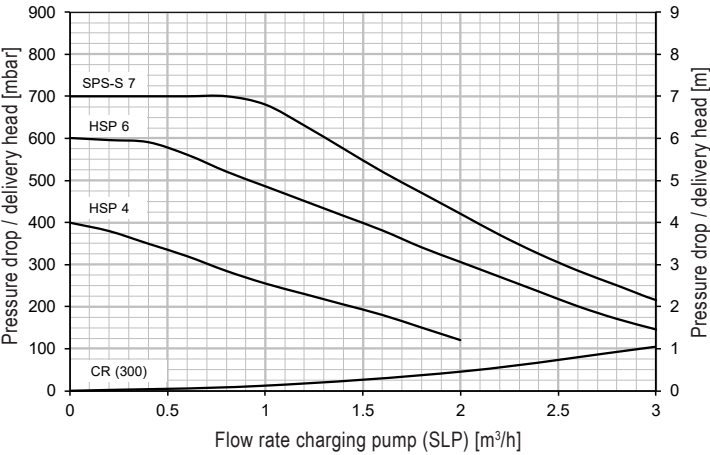
Reading example
see engineering



10 min peak output – hot water 45 °C *



Pressure drop heating coil – delivery head charging pump

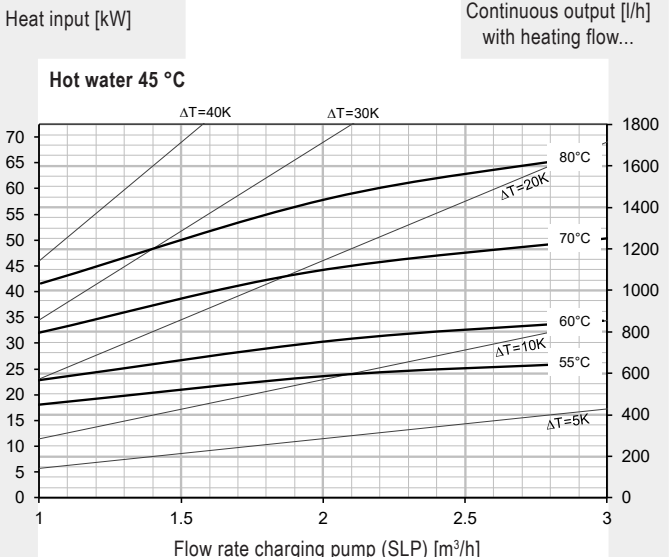


* Calorifier heated to 60 °C

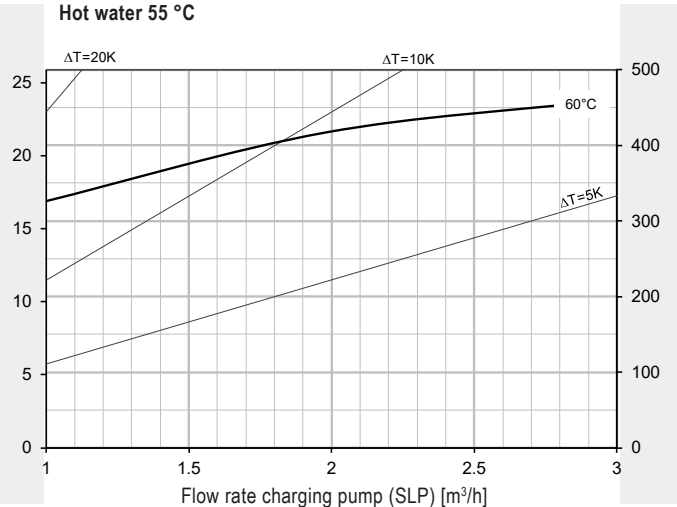
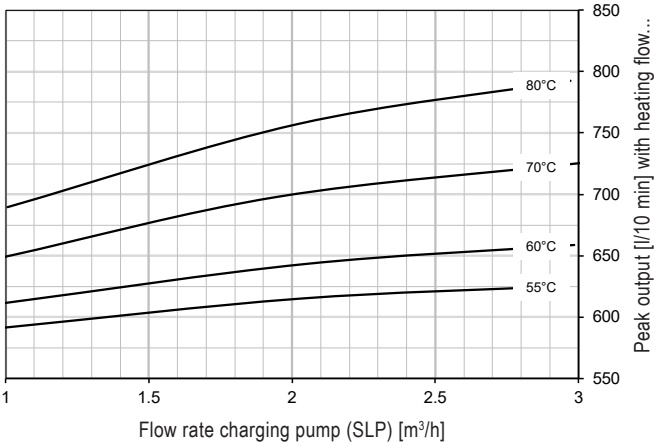
CombiVal CR (500)

Hot water output
Continuous output

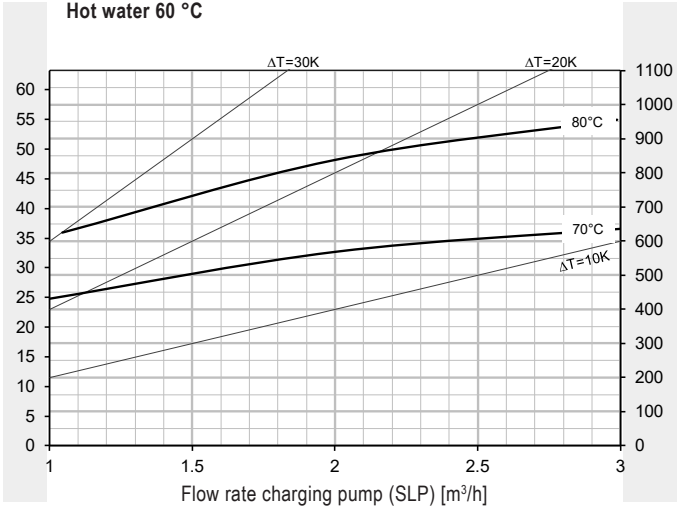
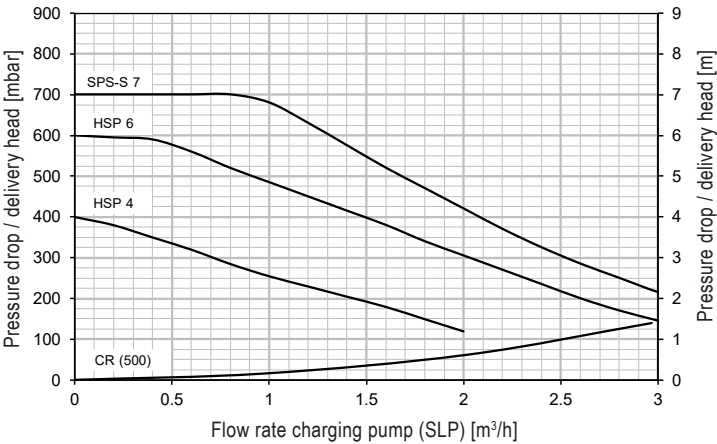
Reading example
see engineering



10 min peak output – hot water 45 °C *



Pressure drop heating coil – delivery head charging pump

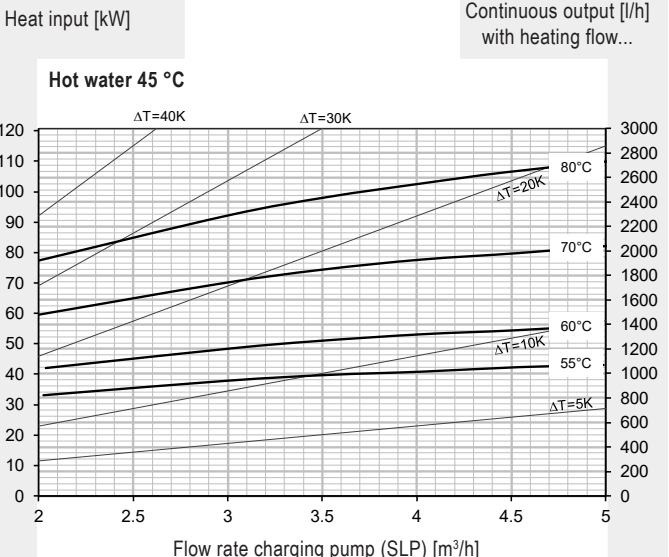


* Calorifier heated to 60 °C

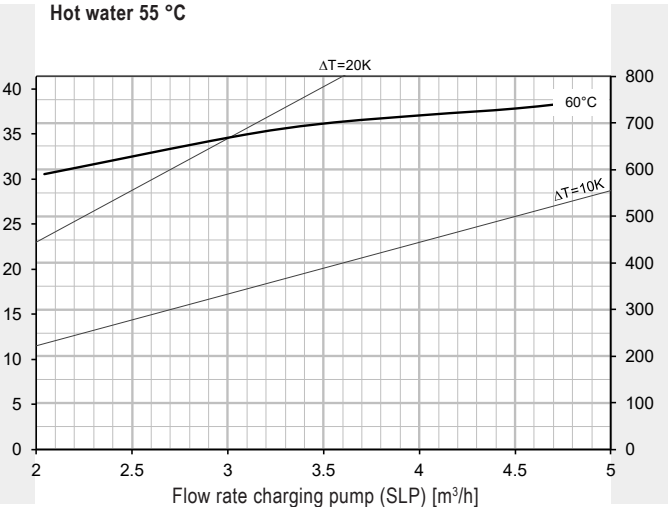
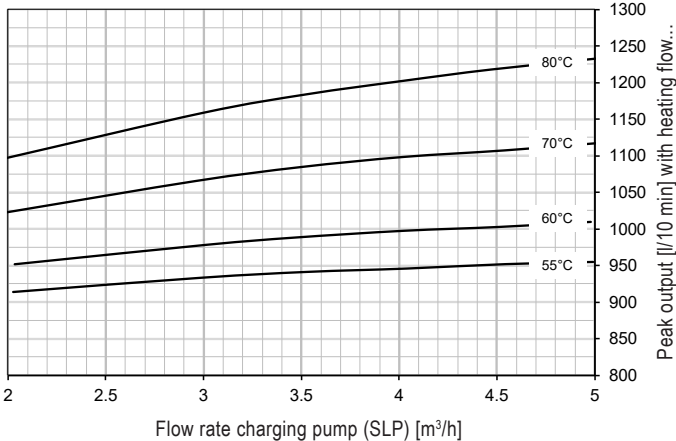
CombiVal CR (800)

Hot water output
Continuous output

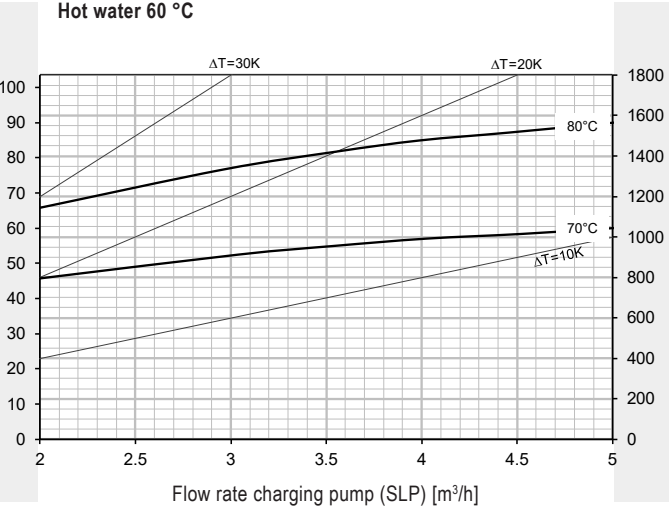
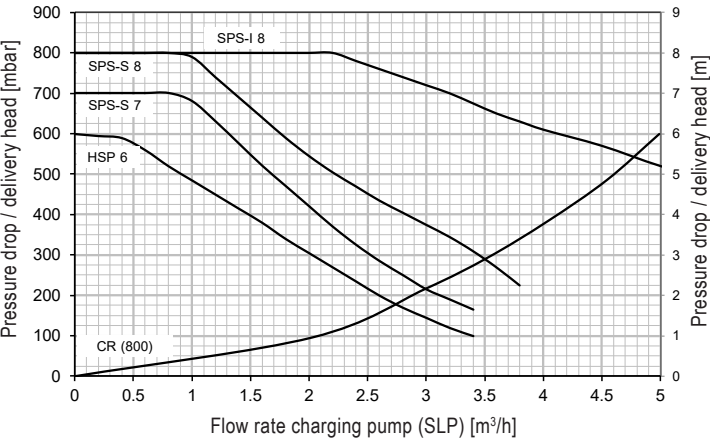
Reading example
see engineering



10 min peak output – hot water 45 °C *



Pressure drop heating coil – delivery head charging pump

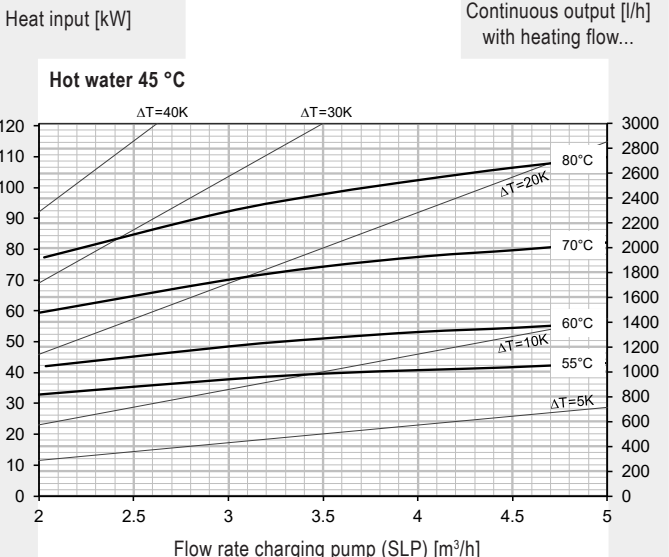


* Calorifier heated to 60 °C

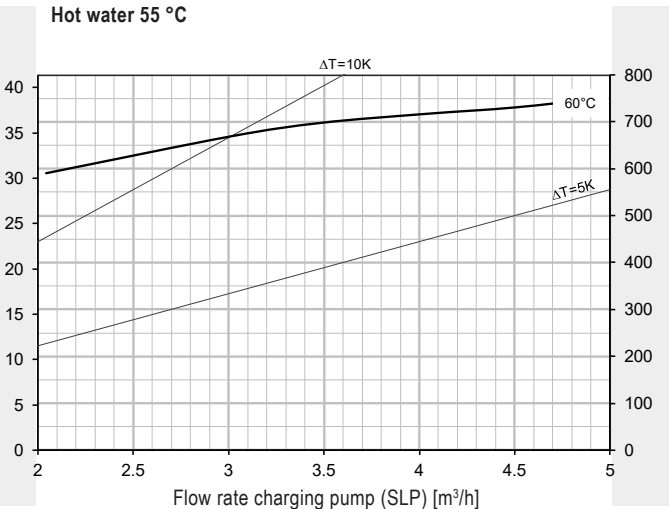
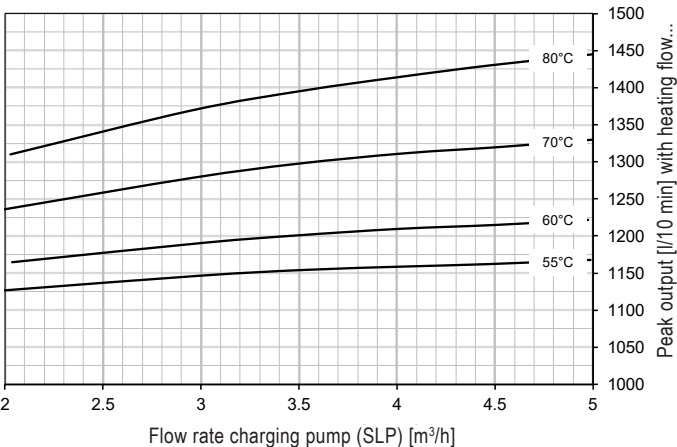
CombiVal CR (1000)

Hot water output
Continuous output

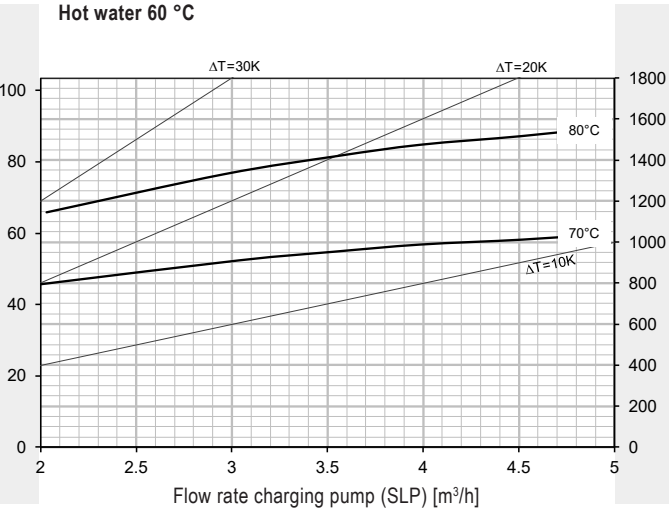
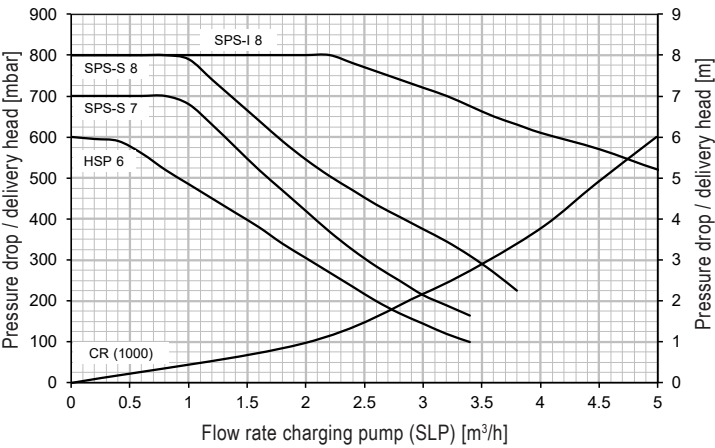
Reading example
see engineering



10 min peak output – hot water 45 °C *

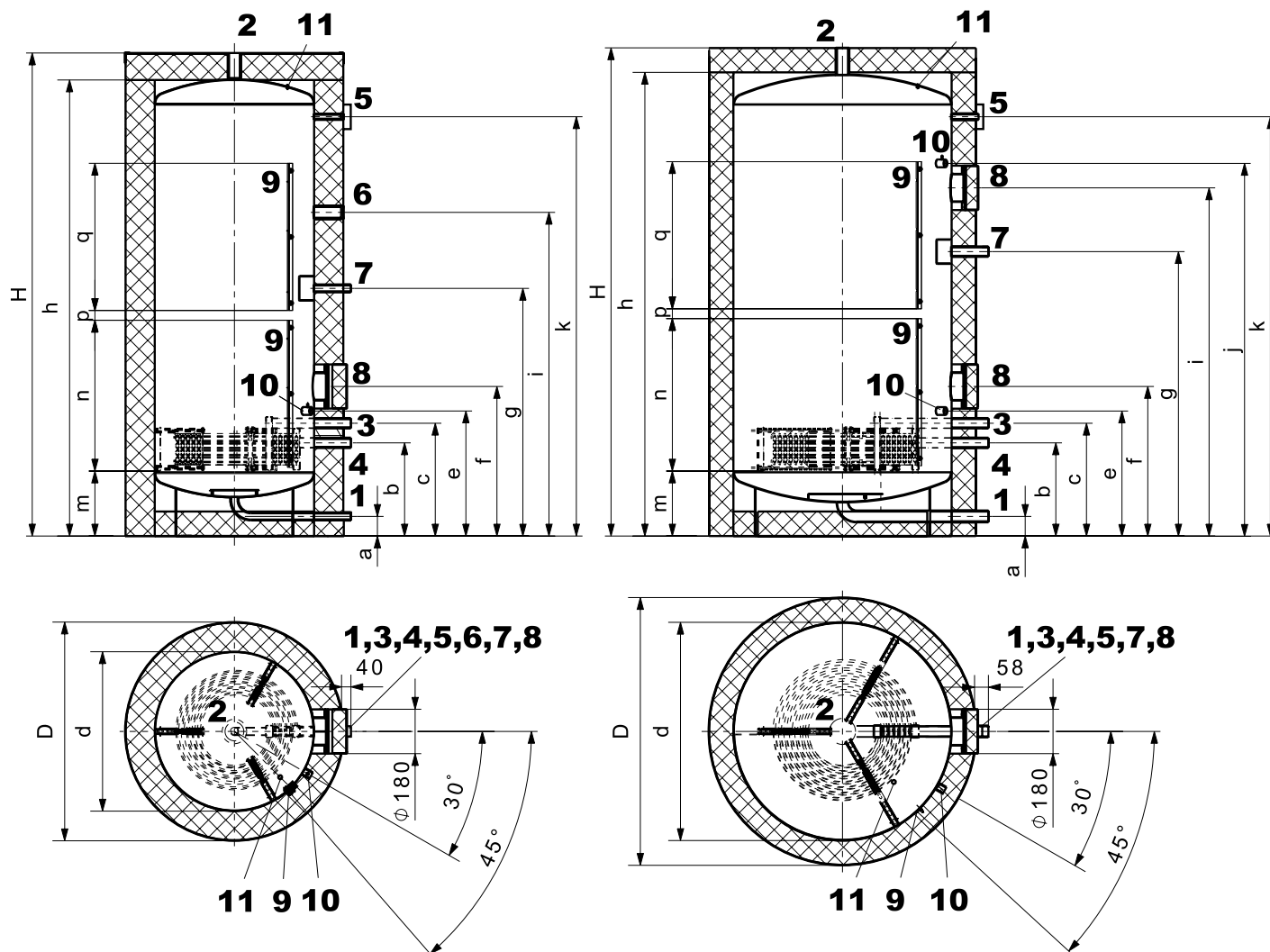


Pressure drop heating coil – delivery head charging pump



* Calorifier heated to 60 °C

CombiVal CR (200-500)
(Dimensions in mm)

CombiVal CR (800,1000)


- | | | | | |
|---|-----------------|-------------|---|---------------------|
| 1 Cold water | type (200-500) | G 1" (ET) | 8 Hand-hole flange (flange-mounted electric heating element) Ø 180/110 mm, pitch circle Ø 150 mm, 8 x M10 | |
| 2 Hot water | type (800,1000) | G 1½" (ET) | 9 Sensor terminal bar 600 x 30 mm | type (200) 1 x |
| 3 Flow heating | | Rp 1½" (IT) | | type (300-1000) 2 x |
| 4 Return heating | | G 1¼" (ET) | 10 Sleeve with grounding bolt for impressed current | Rp ¾" (IT) 1 x |
| 5 Sleeve with mounted immersion sleeve and thermometer (immersion sleeve: L = 200 mm, inner Ø = 8 mm) | | G 1¼" (ET) | anode (perforated thermal insulation) | type (200-800) 1 x |
| 6 Connection for screw-in electric heating element | | Rp ½" (IT) | | type (1000) 2 x |
| 7 Circulation | type (200-500) | Rp 1½" (IT) | Attention: observe the installation length | |
| | type (800,1000) | G 1" (ET) | 11 Equipotential bonding | |
| | | G 1¼" (ET) | | |

Deviations possible as a result of manufacturing tolerances.
Dimensions ± 10 mm

CombiVal CR

type	D	d	H	a	b	c	e	f	g	i	j	k	m	n	p	q	Tilting dimension
(200)	790	550	1213	80	380	460	510	610	760	860	-	980	310	540	-	-	1448
(300)	740	500	1949	80	380	460	510	610	1010	1320	-	1710	310	540	100	540	2085
(500)	890	650	1970	80	380	460	510	610	1010	1320	-	1710	310	540	100	540	2162
(800)	990	790	1991	80	380	460	510	610	1160	1420	-	1710	310	540	100	540	2224
(1000)	1090	890	1991	80	380	460	510	610	1160	1420	1520	1710	310	540	100	540	2270

Hoval Calorifier
CombiVal CSR (300-1000)

- Calorifier made of stainless steel
- Thermal insulation made of polyester fleece with patented aluminium sealing bracket. Outer jacket made of polypropylene, red coloured
 - (300-800) 2-part
 - (1000) 3-part
- CSR (300-500): 2 flat section coils with large heating surface made of stainless steel, built in for use with heat pumps or condensing boilers
- CSR (300-500)
 - 1 ½" sleeve for the installation of a screw-in electric heating element, sensor terminal bar
- CSR (800-1000)
 - 2 flat section coils of stainless steel, built in for use with heat pumps or condensing boilers
- Flange above as additional cleaning flange (Swiss SVGW regulation) or for the installation of a flange-mounted electric heating element
- Flange below as cleaning flange or for the installation as flange-mounted electric heating element
- Connection cable for equipotential bonding, permanently mounted
- Distributor bar for parallel connection of the coils
- With thermometer
- Two terminal bars for contact sensor
- Observe limit values for chloride content in domestic water – see "Engineering".

Delivery

- Calorifier and thermal insulation completely installed (can be removed for installation)
- Distributor bar delivered in separate packaging

On request

- Flange cover with 1½" sleeve for the installation of the electric heating element
- Screw-in electric heating element
- Flange-mounted electric heating element for flange above
- Correx® impressed current anode set

Hoval Calorifier
CombiVal CSR (1250-2000)

- Calorifier made of stainless steel
- Thermal insulation made of polyester fleece with patented aluminium sealing bracket. Outer jacket made of polypropylene, red coloured
 - (1250-2000) 3-part
- Flange below as cleaning flange or for the installation of a flange-mounted electric heating element
- Flange above as additional cleaning flange (Swiss SVGW regulation) or for the installation of a flange-mounted electric heating element
- With 2 flat section coils made of stainless steel, built-in for use with heat pumps or condensing boilers
- With thermometer
- Two terminal bars for contact sensor



Range

CombiVal
type

CSR	(300)	B
CSR	(400)	B
CSR	(500)	
CSR	(800)	
CSR	(1000)	
CSR	(1250)	
CSR	(1500)	
CSR	(2000)	

A+ → F

- Connection cable for equipotential bonding, permanently mounted
- Distributor bar for parallel connection of the coils
- Observe limit values for chloride content in domestic water – see "Engineering".

Delivery

- Calorifier, thermal insulation and distributor bar delivered in separate packaging

On request

- Flange cover with 1½" sleeve for the installation of the electric heating element
- Screw-in electric heating element
- Flange-mounted electric heating element for flange above
- Correx® impressed current anode set

On site

- Installation of the thermal insulation, distributor bar

CombiVal CSR (300-2000)

Type		(300)	(400)	(500)	(800)	(1000)	(1250)	(1500)	(2000)
• Volume	l	316	439	544	818	1042	1189	1625	1958
• Max. operating/test pressure SVGW	bar	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12
• Max. operating temperature	°C	95	95	95	95	95	95	95	95
• Thermal insulation polyester fleece	mm	120	120	120	100	100	120	120	120
• Thermal insulation λ	W/mK	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
• Fire protection class	B2	B2	B2	B2	B2	B2	B2	B2	B2
• Heat loss at 65 °C	W	67	72	80	136	142	154	176	180
• Transport weight	kg	122	140	161	224	268	314	431	468
• U value	W/m ² K	0.272	0.259	0.259	0.387	0.36	0.346	0.338	0.338
Heating coil (built in)									
• Heating surface	m ²	2.56	3.4	5.26	6.3	10	10	11.3	12.7
• Heating water	l	7.2	9.3	13.8	16.3	25.3	25.3	28.4	31.8
• Flow resistance ¹⁾ water	z value	1.88	2.48	3.84	4.61	7.24	7.24	8.24	9.28
• Flow resistance ¹⁾ water/glycol 50 %	z value	2.54	3.35	5.18	6.22	9.37	9.37	11.12	12.53
• Max. operating/test pressure SVGW	bar	3/6	3/6	3/6	3/6	3/6	3/6	3/6	3/6
• Max. operating temperature	°C	95	95	95	95	95	95	95	95
• Dimensions	see table of dimensions								

¹⁾ Flow resistance heating coil in mbar = flow rate (m³/h)² x z (1 mbar = 0.1 kPa)

Performance figure

Selection of the storage tank type
at a hot water temperature of 45 °C

Reading example
see engineering

	Comfort ¹⁾			Standard ²⁾		
T >	60 °C	70 °C	80 °C	60 °C	70 °C	80 °C
NL v						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12	300					
13				300		
14						
15						
16						
17		300				
18						
19						
20						
21	400				300	
22			300			
23						
24						
25						
26				400		
27		400				
28						
29						
30						
31						
32						300
33	500					
34			400			
35						
36						
37						
38				500	400	
39						
40						
41		500				
42						
43						
44						
45						
46						
47						
48						
49	800					
50						

	Comfort ¹⁾			Standard ²⁾		
T >	60 °C	70 °C	80 °C	60 °C	70 °C	80 °C
NL v						
51			500			
52						
53						400
54						
55						
56					500	
57						
58						
59						
60						
61						
62						
63						
64				800		
65						
66						
67						
68						
69						
70		800				
71	1000					
72						
73						
74						
75						
76	1250					500
77						
78						
79						
80						
81						
82						
83						
84						
85						
86						
87						
88						
89						
90						
91						
92					800	
93						
94	1500			1000		
95						
96						
97						
98			800			
99						
100						
> 100	2000	1000	1000	1250	1000	800
		1250	1250	1500	1250	1000
		1500	1500	2000	1500	1250
		2000	2000		2000	1500
						2000

T = Heating flow

NL = Performance figure

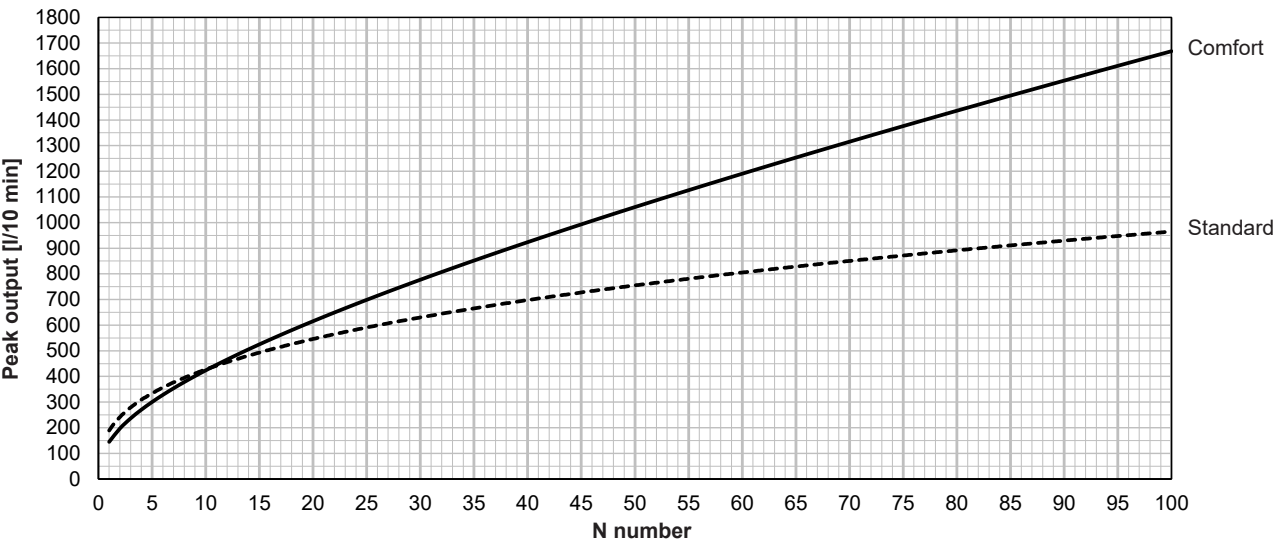
Performance figure NL acc. to DIN 4708 = number of flats which can be supplied with domestic hot water when the calorifier is heated and permanently reheated with the heat generator (standard flat: 1 bathroom – 4 rooms – 3.5 persons)

¹⁾ Calculation with simultaneity factor according to DIN 4708 (preferred for Switzerland)

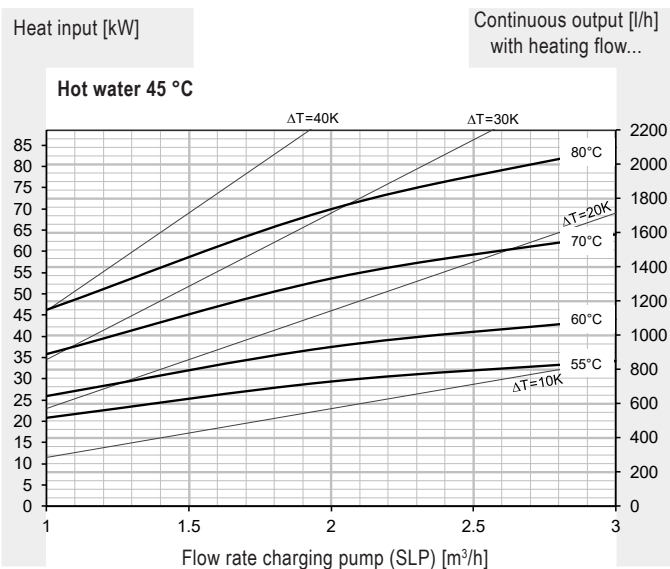
²⁾ Calculation with simultaneity factor according to Dresden Technical University

10 min peak output/N number with domestic hot water 45 °C
according to DIN 4708 (Comfort) and Dresden Technical University (Standard)

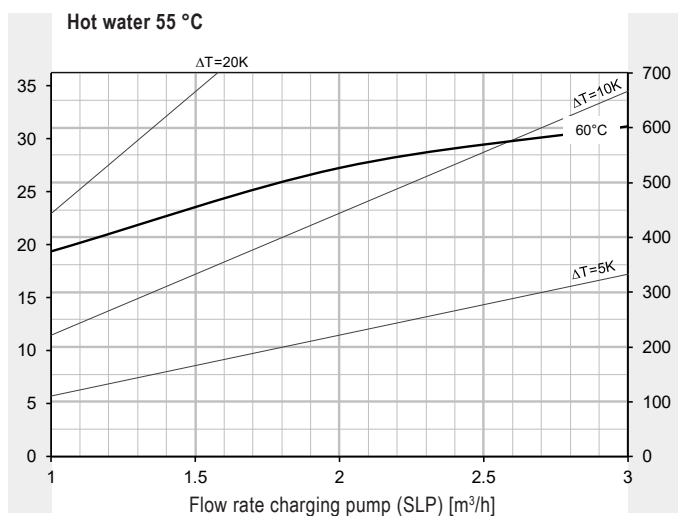
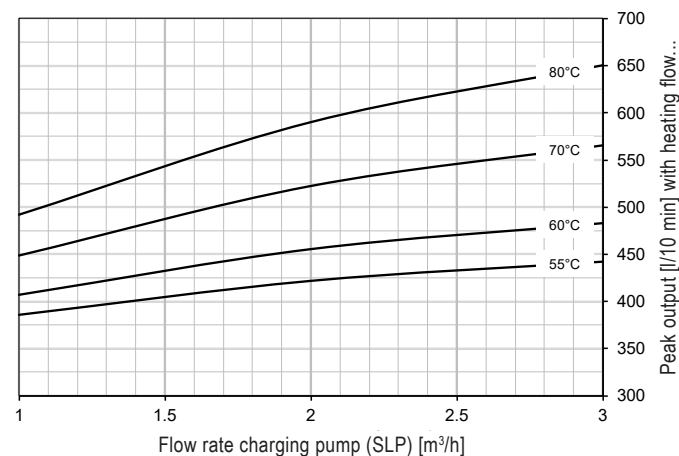
Reading example
see Engineering



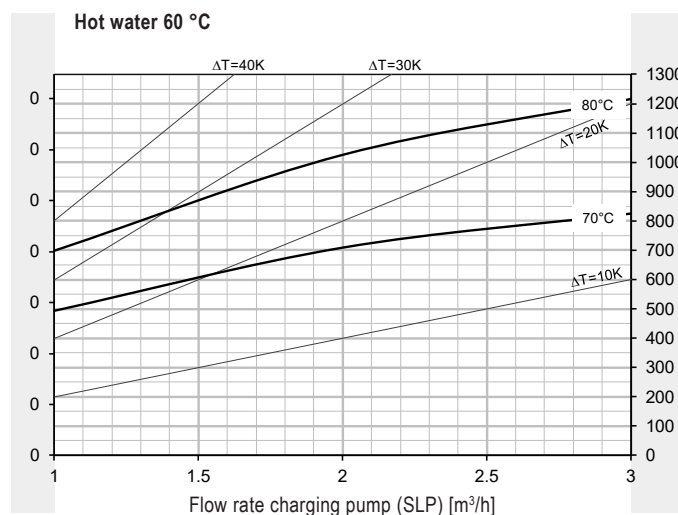
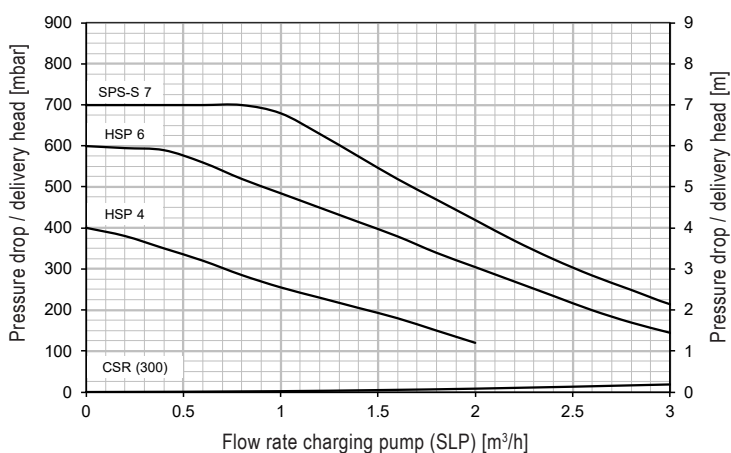
CombiVal CSR (300)

Hot water output
Continuous outputReading example
see engineering

10 min peak output – hot water 45 °C *



Pressure drop heating coil – delivery head charging pump

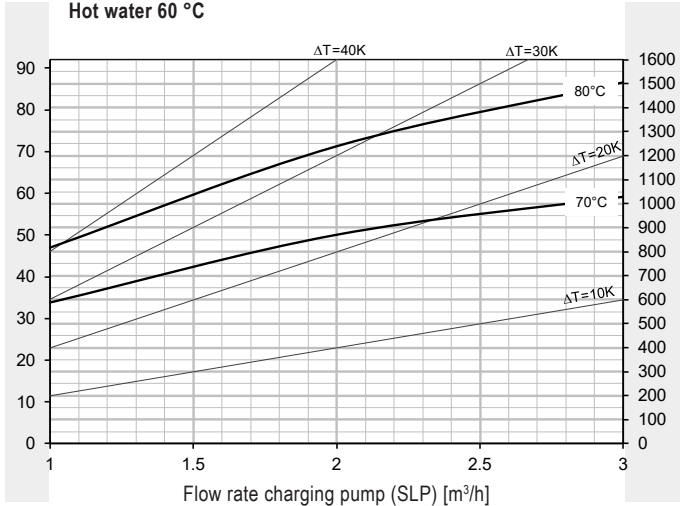
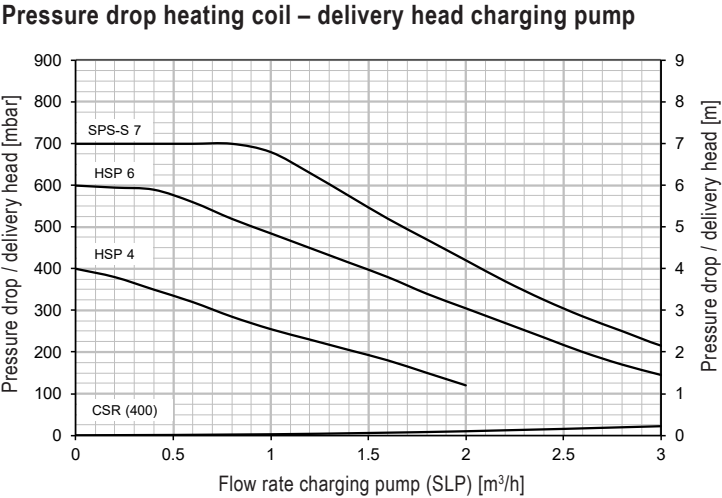
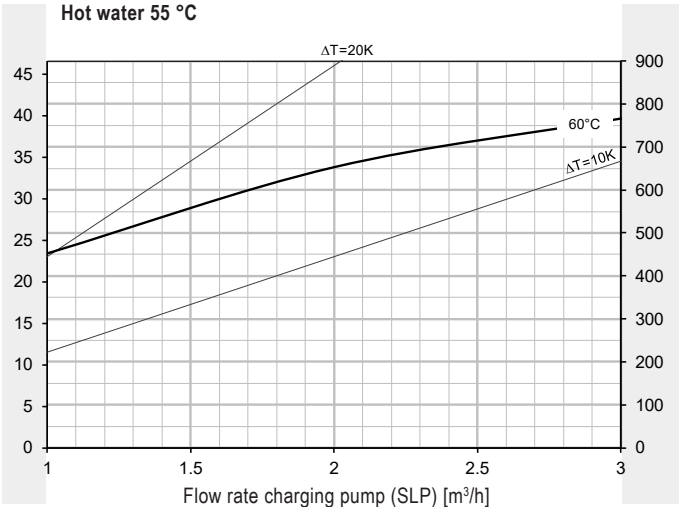
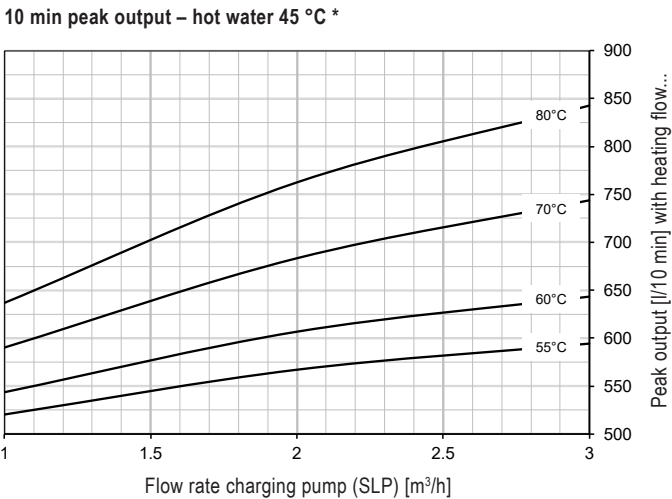
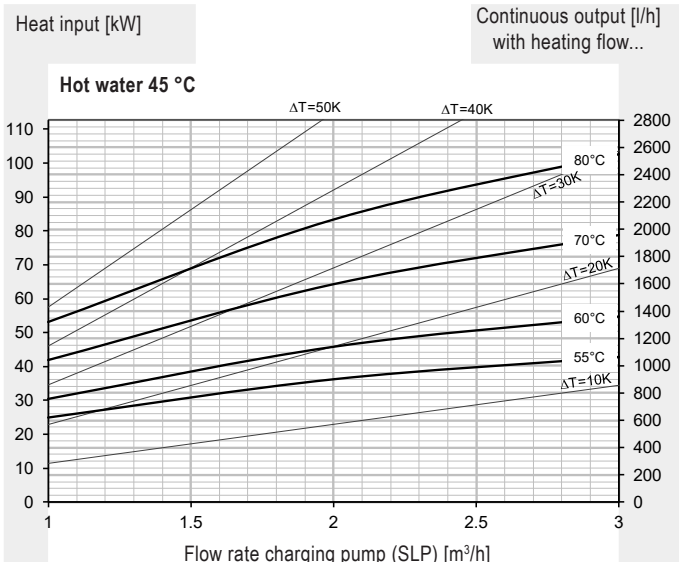


* Calorifier heated to 60 °C

CombiVal CSR (400)

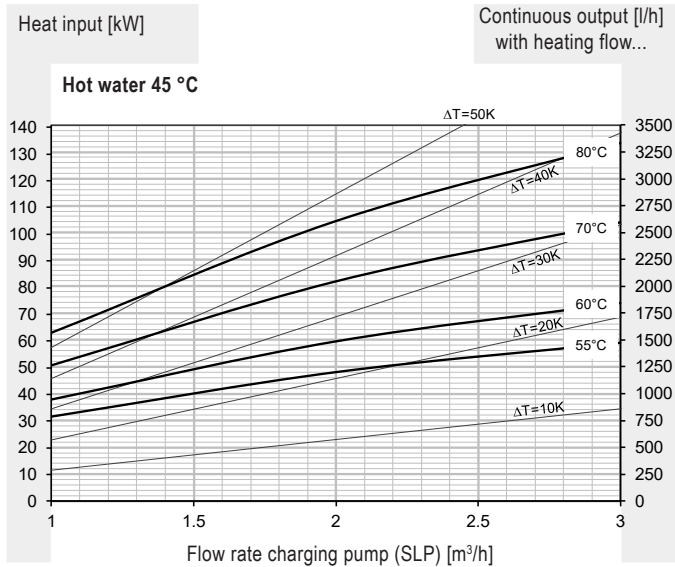
Hot water output
Continuous output

Reading example
see engineering

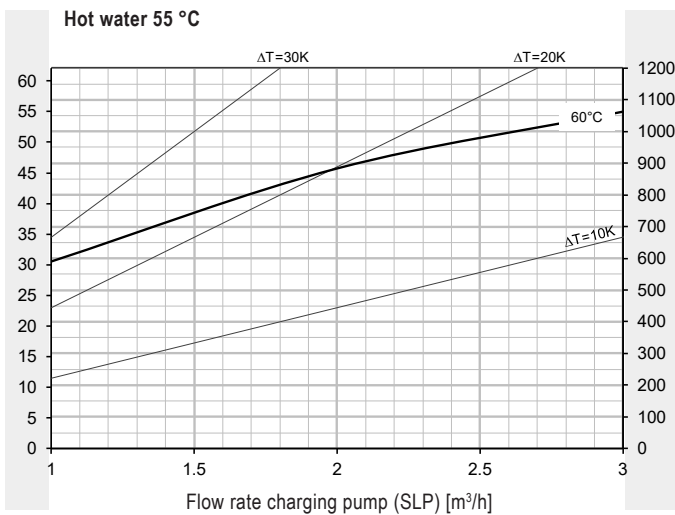
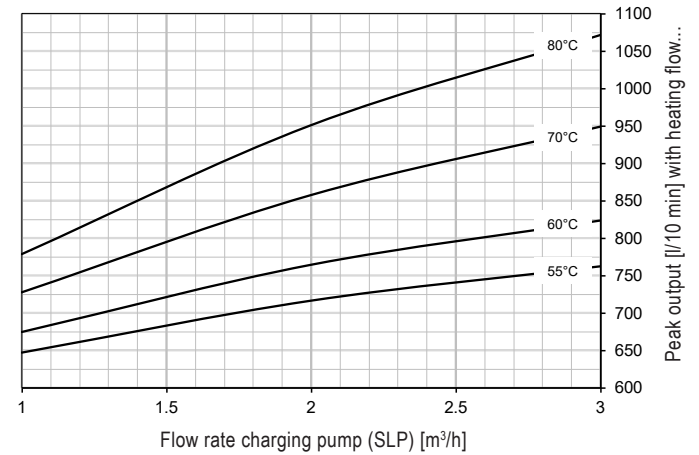


* Calorifier heated to 60 °C

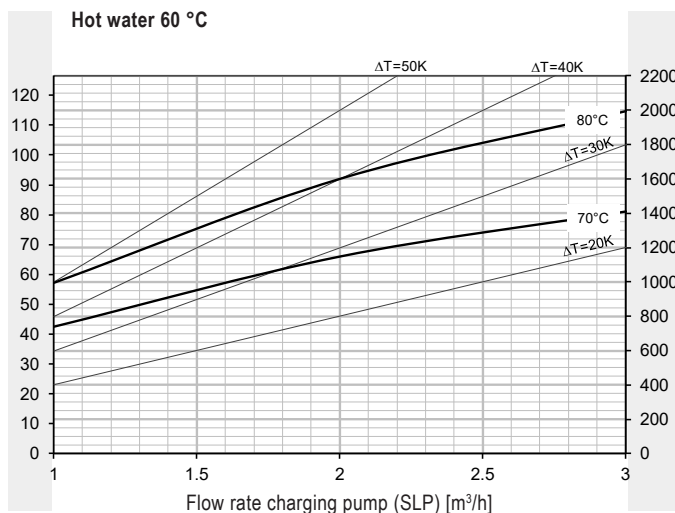
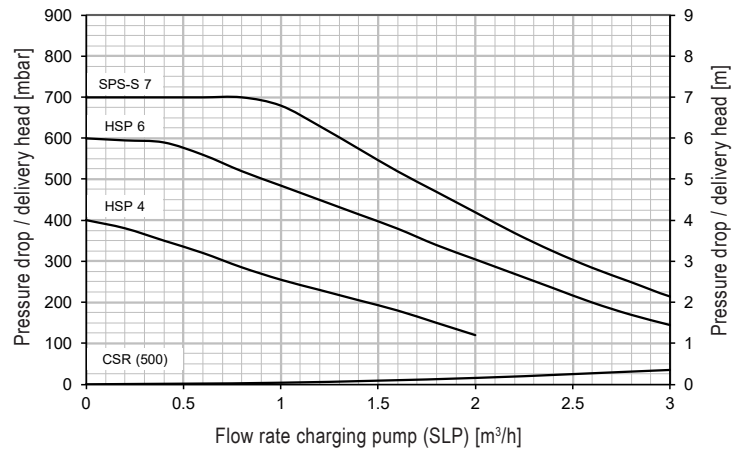
CombiVal CSR (500)

Hot water output
Continuous outputReading example
see engineering

10 min peak output – hot water 45 °C *



Pressure drop heating coil – delivery head charging pump

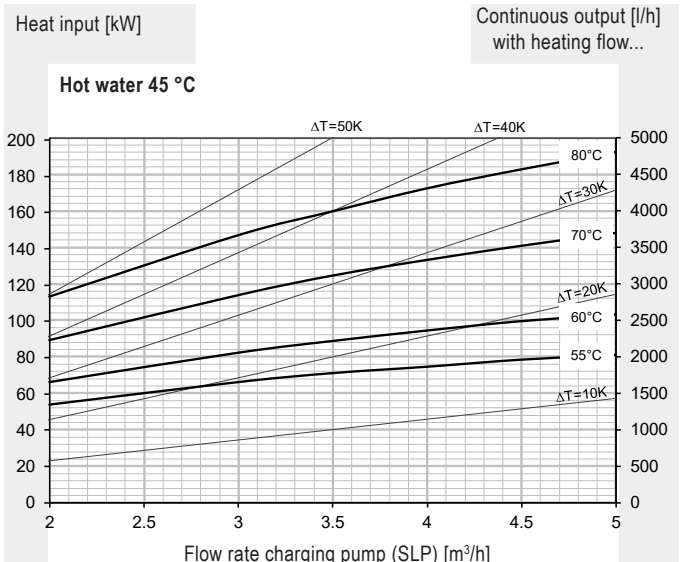


* Calorifier heated to 60 °C

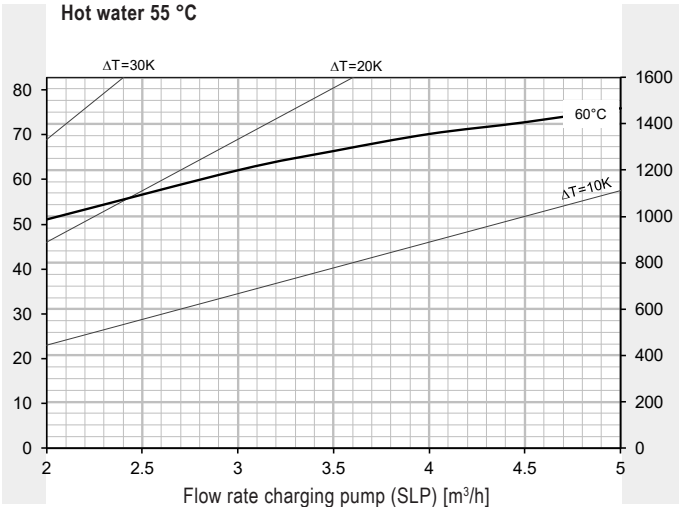
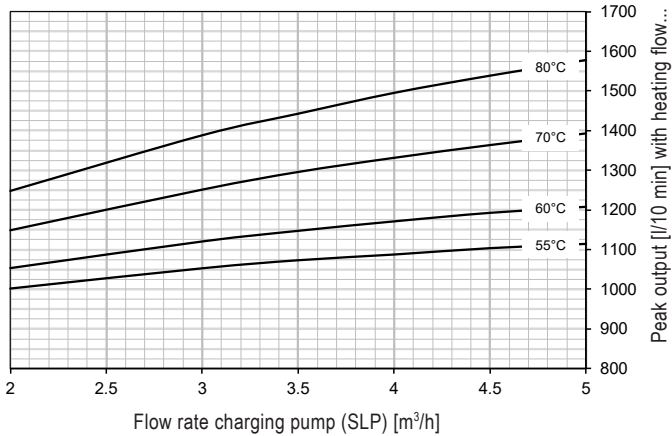
CombiVal CSR (800)

Hot water output
Continuous output

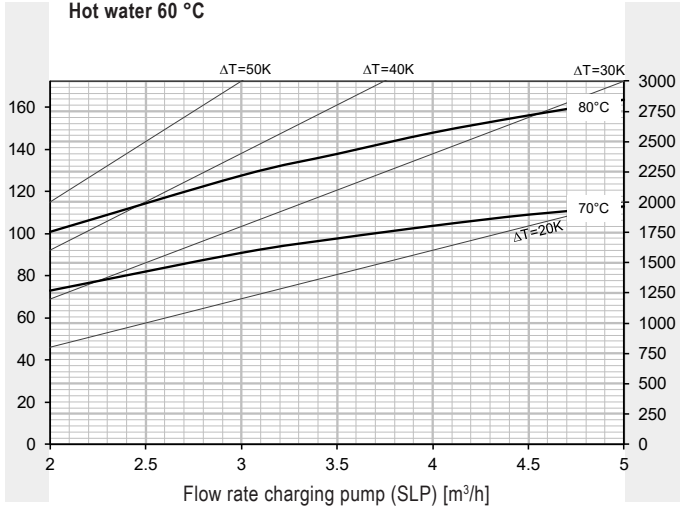
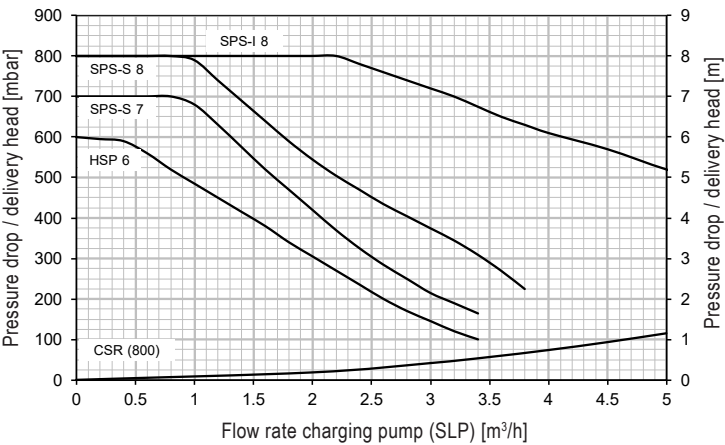
Reading example
see engineering



10 min peak output – hot water 45 °C *

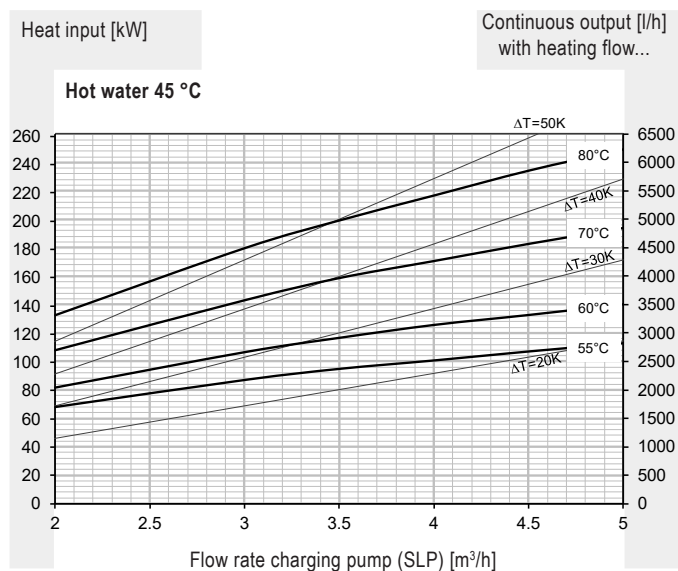


Pressure drop heating coil – delivery head charging pump

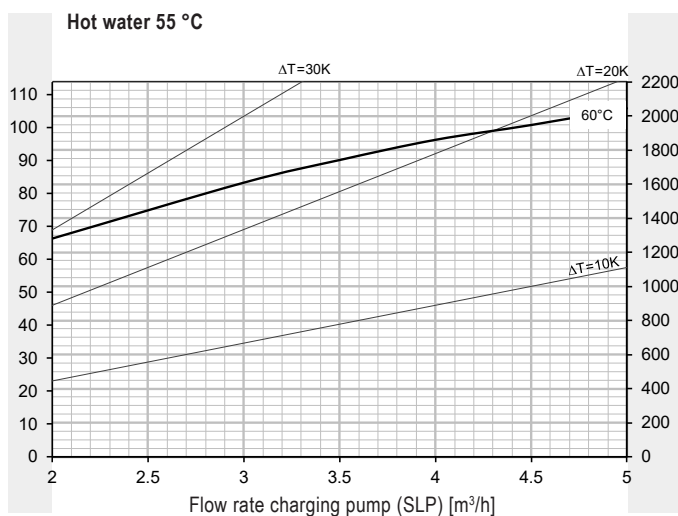
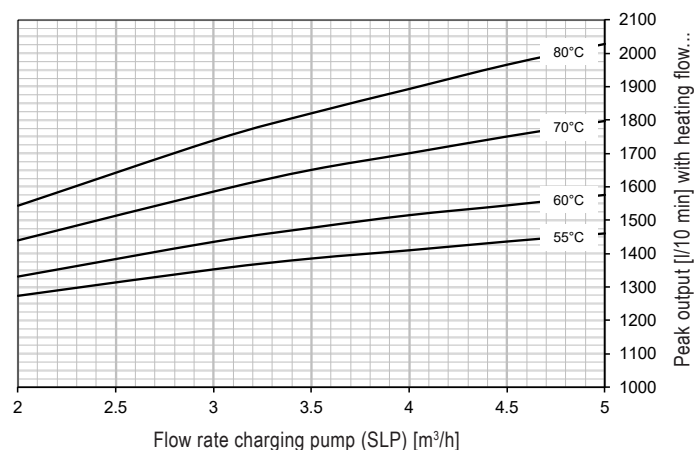


* Calorifier heated to 60 °C

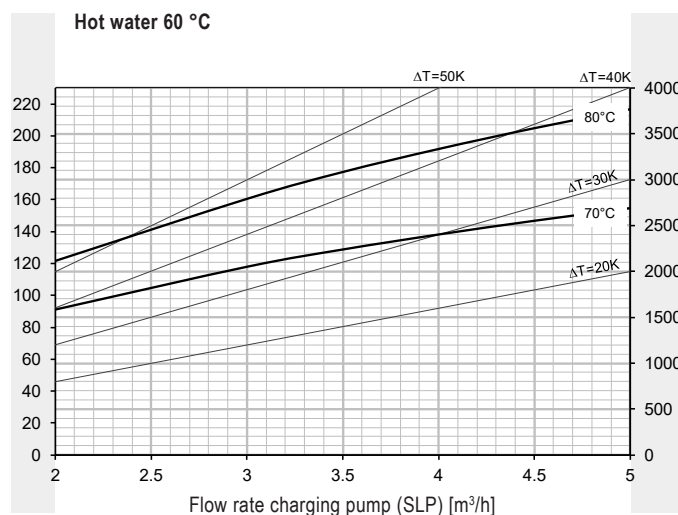
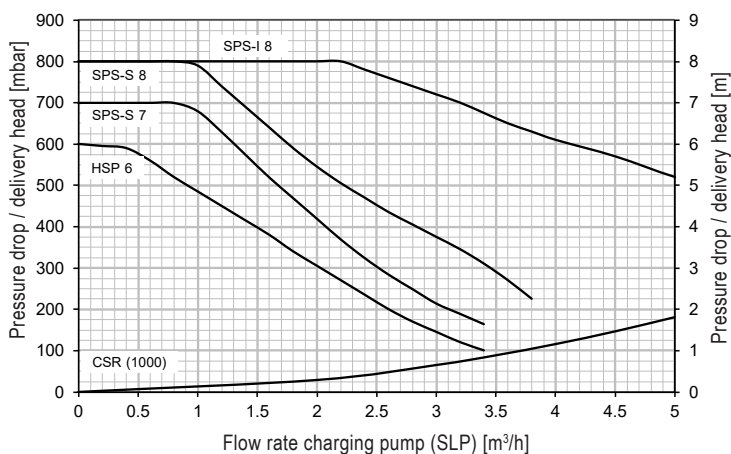
CombiVal CSR (1000)

Hot water output
Continuous outputReading example
see engineering

10 min peak output – hot water 45 °C *



Pressure drop heating coil – delivery head charging pump

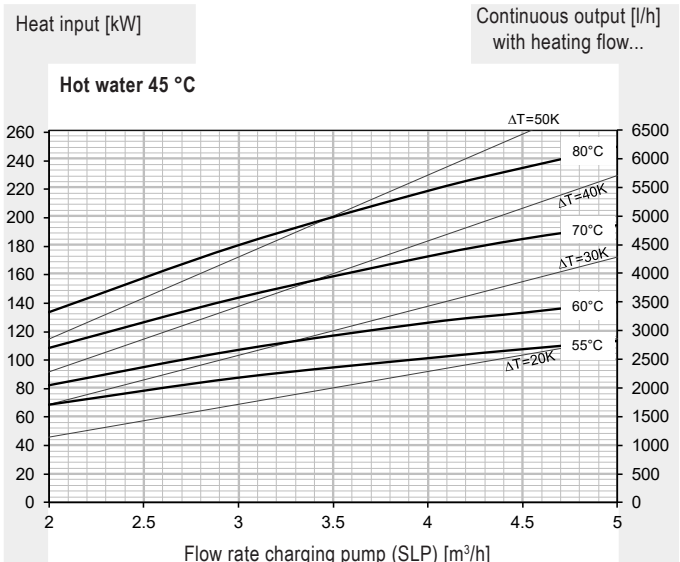


* Calorifier heated to 60 °C

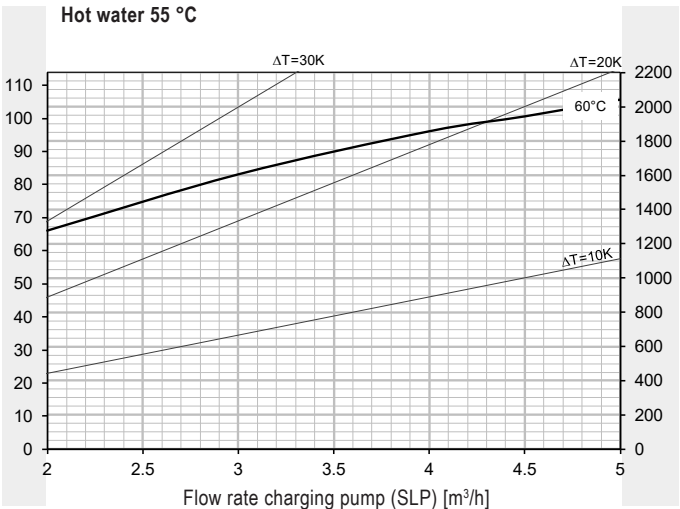
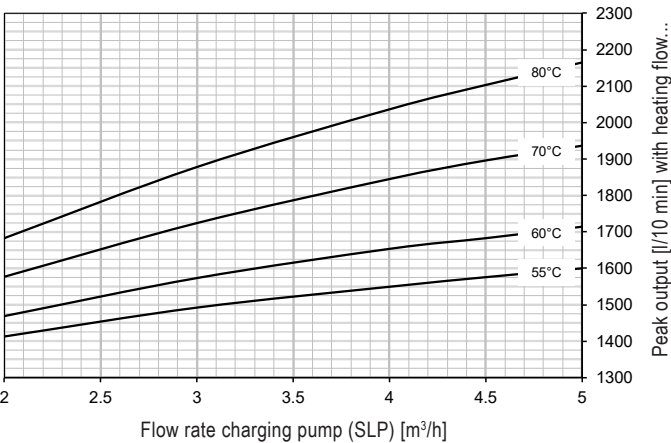
CombiVal CSR (1250)

Hot water output
Continuous output

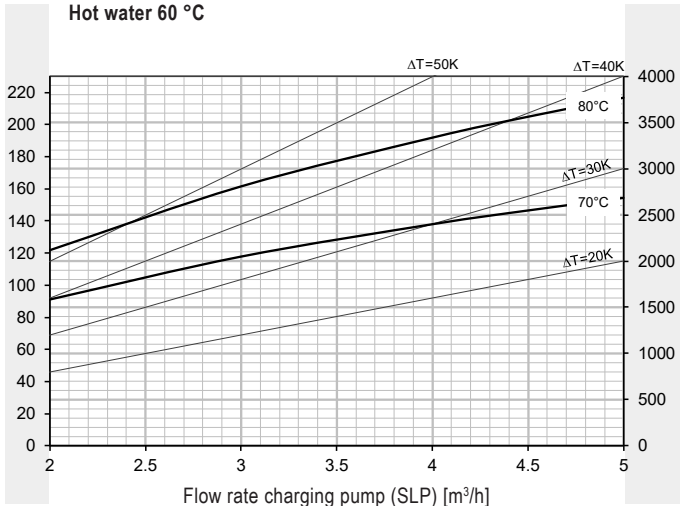
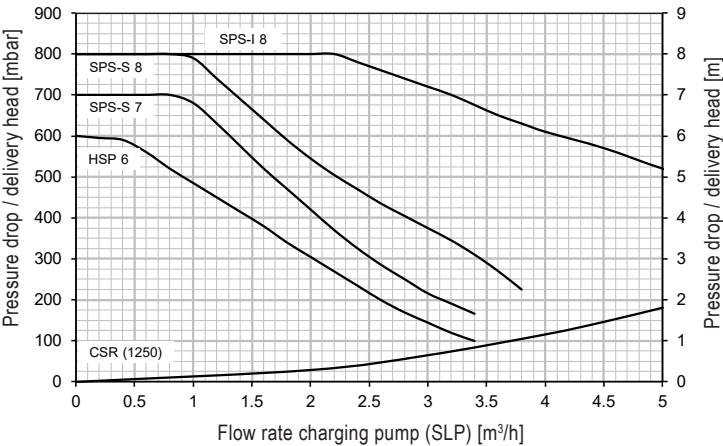
Reading example
see engineering



10 min peak output – hot water 45 °C *

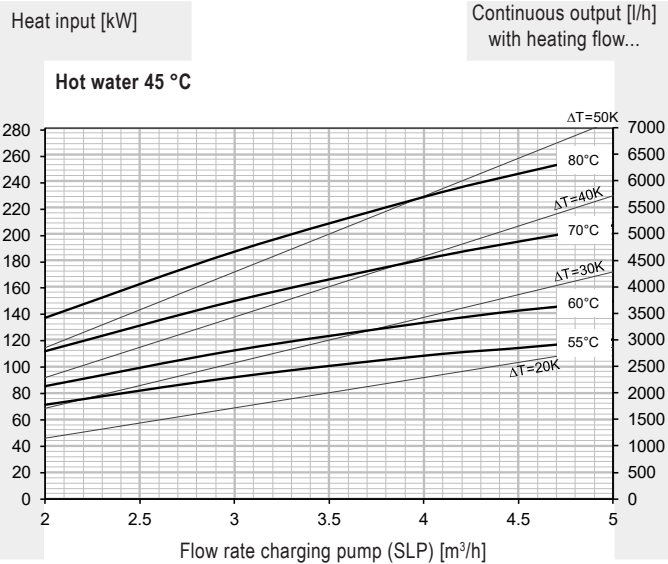


Pressure drop heating coil – delivery head charging pump

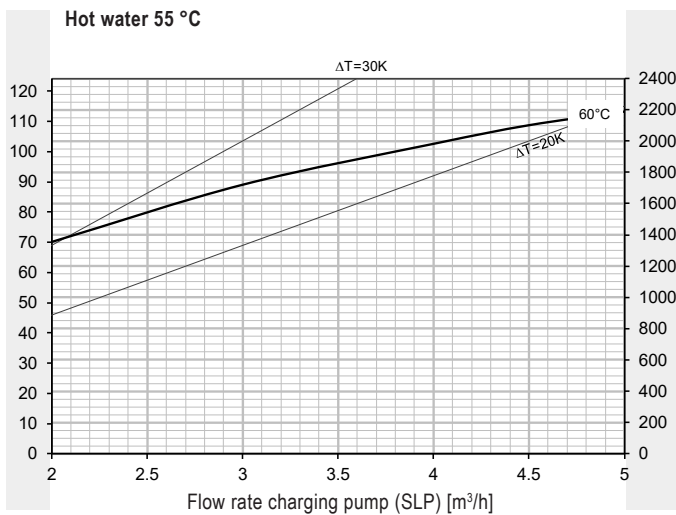
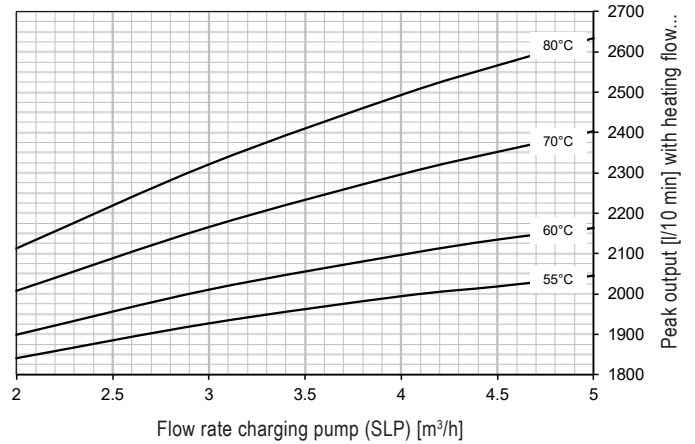


* Calorifier heated to 60 °C

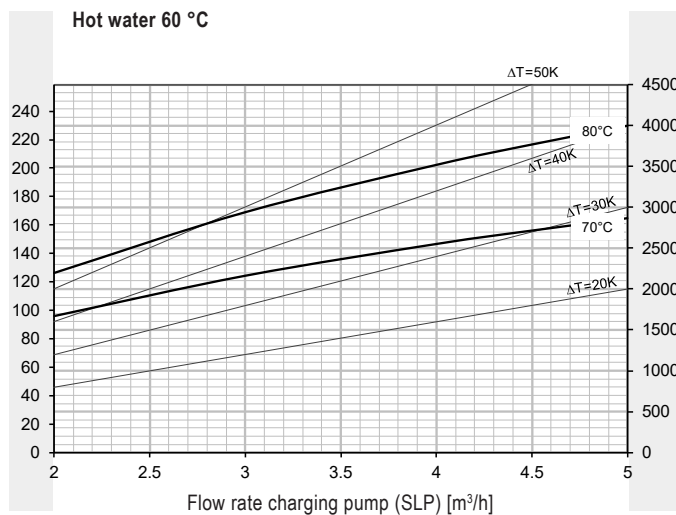
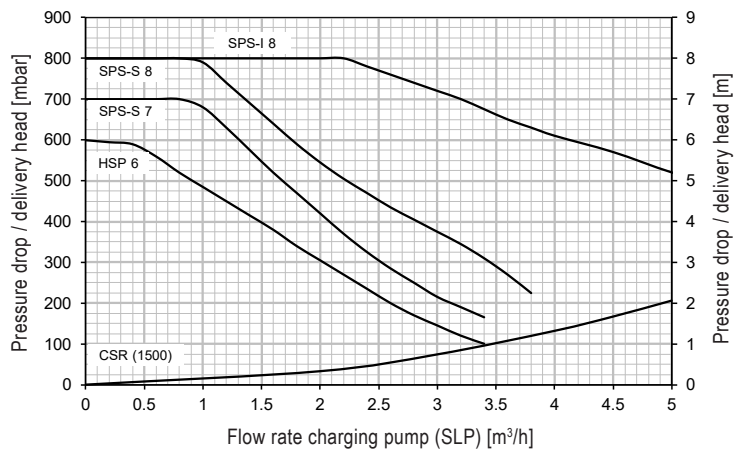
CombiVal CSR (1500)

Hot water output
Continuous outputReading example
see engineering

10 min peak output – hot water 45 °C *



Pressure drop heating coil – delivery head charging pump

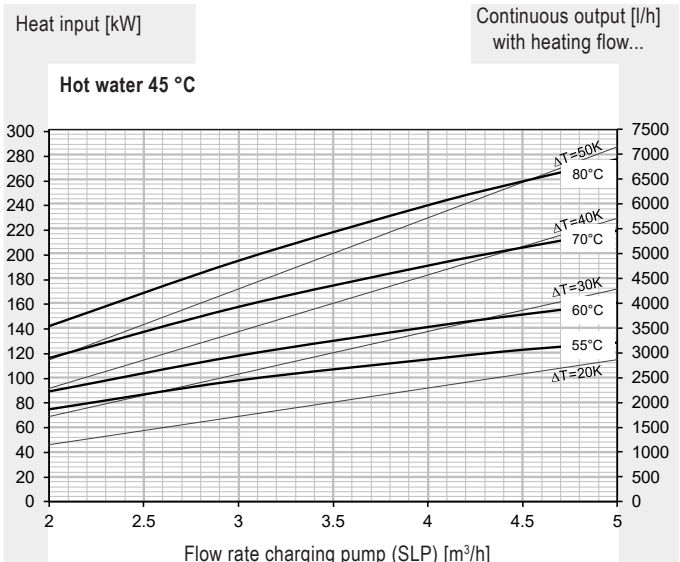


* Calorifier heated to 60 °C

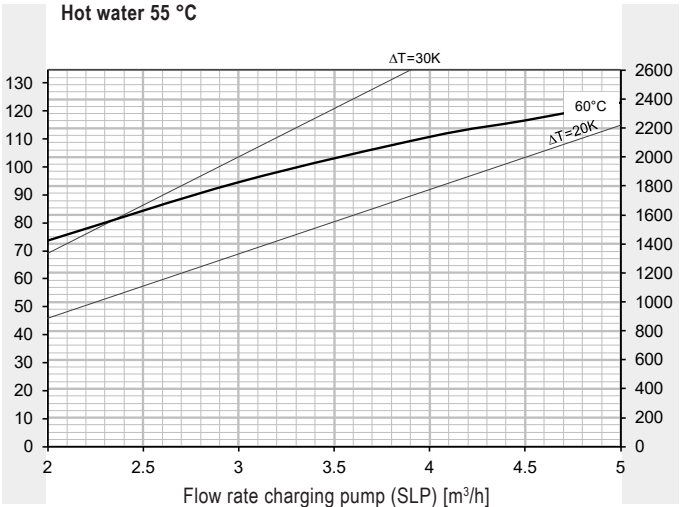
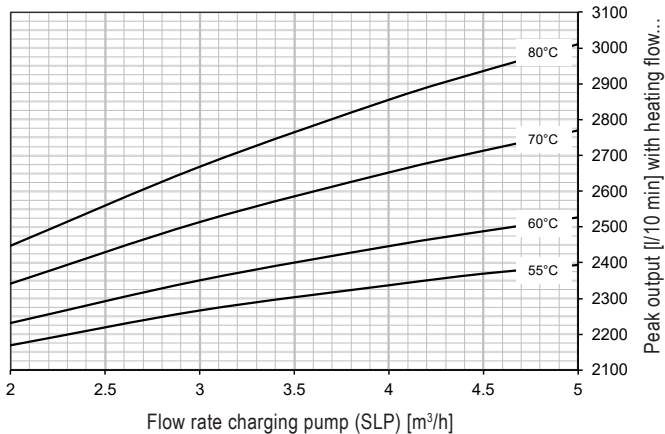
CombiVal CSR (2000)

Hot water output
Continuous output

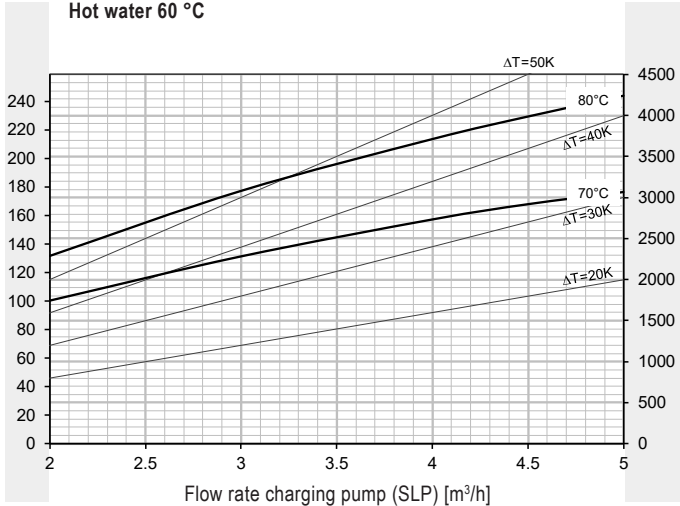
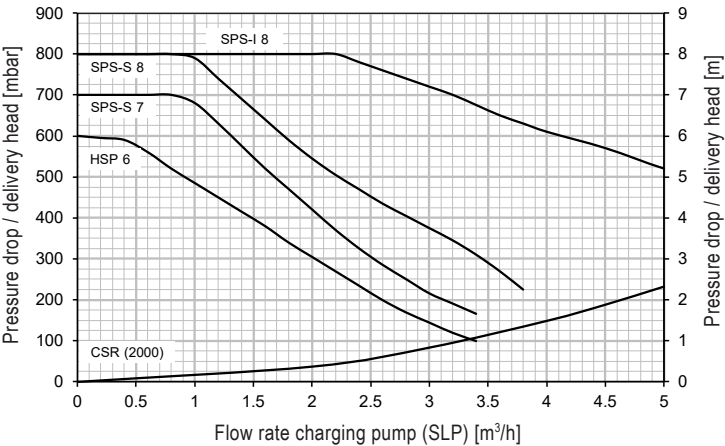
Reading example
see engineering



10 min peak output – hot water 45 °C *

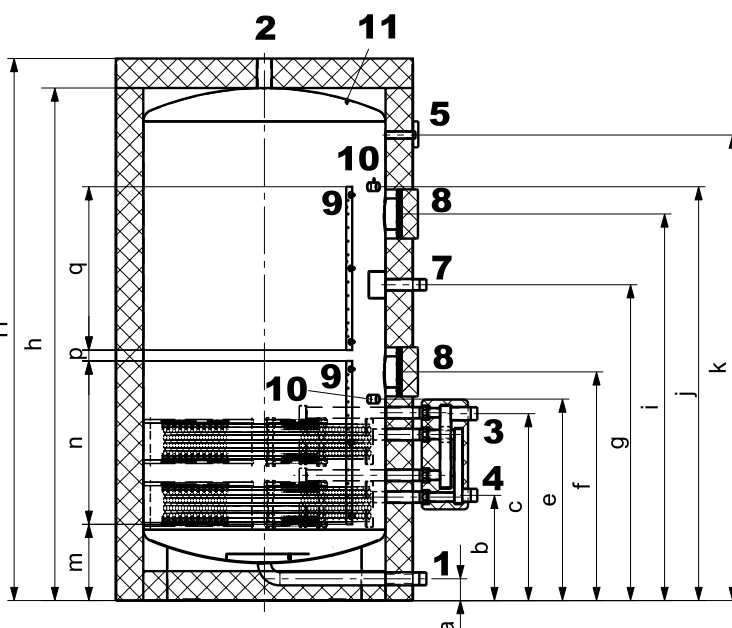
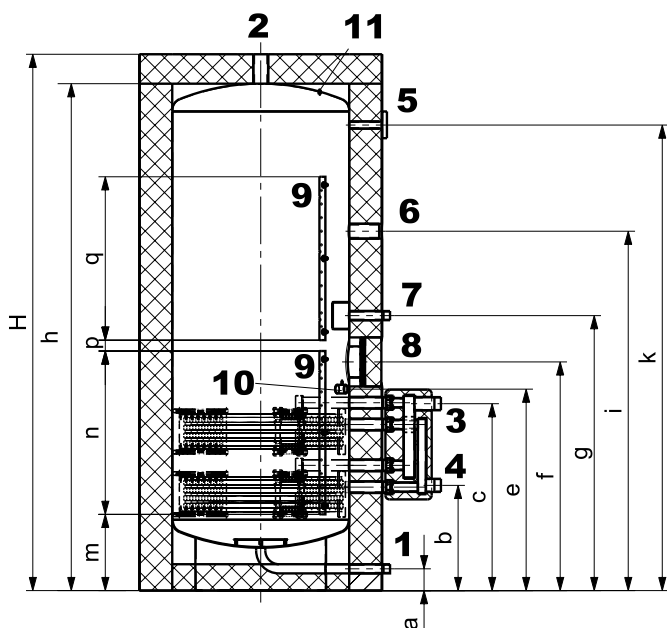


Pressure drop heating coil – delivery head charging pump



* Calorifier heated to 60 °C

CombiVal CSR (300-500)
 (Dimensions in mm)

CombiVal CSR (800-2000)


- | | | | |
|--|------------------|-------------|---|
| 1 Cold water | type (300-500) | G 1" (ET) | 8 Hand-hole flange (flange-mounted electric heating element) |
| 2 Hot water | type (800-2000) | G 1½" (ET) | Ø 180/110 mm, pitch circle Ø 150 mm, 8 x M10 |
| 3 Flow heating | | Rp 1½" (IT) | 9 Sensor terminal bar 600 x 30 mm |
| 4 Return heating | | R 1½" (ET) | 10 Sleeve with grounding bolt for impressed current anode (perforated thermal insulation) |
| 5 Sleeve with mounted immersion sleeve and thermometer (immersion sleeve: L = 200, inner Ø = 8 mm) | | Rp ½" (IT) | type (300-800) 1 x |
| 6 Connection for screw-in electric heating element | | Rp 1½" (IT) | type (1000-2000) 2 x |
| 7 Circulation | type (300-500) | G 1" (ET) | Attention: observe the installation length |
| | type (800-1250) | G 1¼" (ET) | 11 Equipotential bonding |
| | type (1500,2000) | G 1½" (ET) | |

Deviations possible as a result of manufacturing tolerances.
 Dimensions ± 10 mm

CombiVal type CSR	D	d	H	a	b	c	e	f	g	i	j	k	m	n	p	q	Tilting dimension
(300)	740	500	1949	80	380	690	740	840	1010	1320	-	1710	310	540	100	540	2085
(400)	840	600	1885	80	380	690	740	840	1010	1320	-	1630	310	540	100	540	2064
(500)	890	650	1970	80	380	690	740	840	1010	1320	-	1710	310	540	100	540	2162
(800)	990	790	1991	80	380	690	740	840	1160	1420	-	1710	310	540	100	540	2224
(1000)	1090	890	1991	80	380	690	740	840	1160	1420	1520	1710	310	540	100	540	2270
(1250)	1190	950	1997	80	380	690	740	840	1160	1420	1520	1710	310	540	100	540	2325
(1500)	1340	1100	2012	80	380	690	740	840	1160	1420	1520	1710	310	540	100	540	2417
(2000)	1440	1200	2046	80	380	690	740	840	1160	1420	1520	1710	310	540	100	540	2502

HoVal calorifier
MultiVal CRR (500-1000)

- Calorifier made of stainless steel
- Thermal insulation made of polyester fleece with patented aluminium sealing bracket. Outer casing made of polypropylene, red coloured
 - (500,800) 2-part
 - (1000) 3-part
- MultiVal CRR (500)
1½" sleeve for the installation of a screw-in electric heating element
- MultiVal CRR (800,1000)
Flange above as additional cleaning flange (Swiss SVGW regulation) or for the installation of a flange-mounted electric heating element
- Flange below as cleaning flange or for installation of a flange-mounted electric heating element
- With thermometer
- With immersion sleeve
- Two terminal strips for contact sensors
- 2 flat section coils made of stainless steel, built in
 - below for the alternative use as flat register at (800,1000)
 - above for supplemental heating with oil, gas or wood boiler
- Connection cable for equipotential bonding, permanently mounted
- Observe limit values for chloride content in domestic water - see "Engineering".

Delivery

- Calorifier and thermal insulation completely installed (can be removed for installation)

On request

- Screw-in electric heating element
- Flange-mounted electric heating element for upper flange
- Flange cover with sleeve to the lower flange for the installation of a screw-in electric heating element
- Correx® impressed current anode set

Screw-in electric heating element
Type EP 2.5 to EP 5

- Made of Incoloy® alloy 825
- Heat input 2.35 to 4.9 kW
- Incl. temperature control and safety temperature limiter
- Connection:
 - EP 2.5: 3 x 400 V (1 x 230 V)
 - EP 3.5 and EP 5: 3 x 400 V
- Not suitable for exclusively electric heating

Delivery

- Delivered separately packed

On site

- Installation of the electric heating element



Range

MultiVal
type

CRR	(500)
CRR	(800)
CRR	(1000)

Flange-mounted electric heating elements

Type EFHK-C 4 to EFHK-C 9

- Made of Incoloy® alloy 825
- Heat output 4.0 to 9.0 kW, according to the regulation of the current supplier
- With temperature regulation and safety temperature limiter
- Connection 3 x 400 V
- Not suitable for exclusively electric heating

Delivery

- Delivered separately packed

On site

Mounting of thermal insulation

Calorifier



MultiVal CRR (500-1000)

With integrated flat section coils made of stainless steel.

MultiVal CRR type	Volume dm³	Heating surface	
		top m²	bottom m²
(500)	544	1.28	1.70
(800)	818	1.28	2.63
(1000)	1042	1.28	2.63

Notice

The connections must only be designed in stainless steel; if not, suitable isolating or bridging connectors (or MEPLA pipe transition pieces) must be used.
When using insulating or bridging connectors (galvanic isolation), the earth cable attached to the calorifier must not be connected. When using galvanised circulation pipes, a backwash filter must be installed.

Electric heating elements

see chapter “Electric heating elements”

Part No.

7014 794
7014 795
7014 796

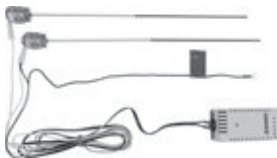
Accessories



Kit Correx® impressed current anode
UP1.9-924-L395/1

for long-term corrosion protection for installation in the stainless steel calorifier
with reduction R 1½" - Rp ¾"
Installation length: 395 mm
Connection cable length: 1 x 3500 mm
1 Correx® impressed current anode (up to 800 l)

6031 813



Kit Correx® impressed current anode
UP1.9-924-L395/2

for long-term corrosion protection for installation in the stainless steel calorifier
Installation length: 395 mm
Connection cable length: 2 x 2000 mm
2 Correx® impressed current anodes (from 1000 l)

6052 439

MultiVal CRR (500-1000)

Type		(500)	(800)	(1000)
• Volume	l	544	818	1042
• Max. operating/test pressure SVGW	bar	6/12	6/12	6/12
• Max. operating temperature	°C	95	95	95
• Thermal insulation polyester fleece	mm	120	100	100
• Thermal insulation λ	W/mK	0.035	0.035	0.035
• Fire protection class		B2	B2	B2
• Heat loss at 65 °C	W	80	136	142
• Transport weight	kg	145	205	219
• U value	W/m ² K	0.259	0.437	0.360
Heating coil bottom (built in)		flat section coil for solar use		
• Heating surface	m ²	1.70	2.63	2.63
• Heating water	l	5.10	7.40	7.40
• Flow resistance ¹⁾ water	z value	15.50	24.00	24.00
• Flow resistance ¹⁾ water/glycol 50 %	z value	20.93	32.40	32.40
• Max. operating/test pressure SVGW	bar	3/6	3/6	3/6
• Max. operating temperature	°C	95	95	95
• For flat collectors up to ²⁾	m ²	8	12	16
Heating coil top (built in)		flat section coil for supplemental heating		
• Heating surface	m ²	1.28	1.28	1.28
• Heating water	l	4.10	4.10	4.10
• Flow resistance ¹⁾ water	z value	11.65	11.65	11.65
• Max. operating/test pressure SVGW	bar	3/6	3/6	3/6
• Max. operating temperature	°C	95	95	95
• Dimensions	see table of dimensions			

¹⁾ Flow resistance heating coil in mbar = flow rate (m³/h)² x z (1 mbar = 0.1 kPa)

²⁾ Collector surface, related to the heat exchanger heating surface only

Performance figure

Selection of the storage tank type
at a hot water temperature of 45 °C

Reading example
see engineering

T >	Comfort ¹⁾			Standard ²⁾		
	60 °C	70 °C	80 °C	60 °C	70 °C	80 °C
NL v						
1						
2						
3						
4						
5						
6						
7				500		
8	500					
9						
10		500			500	
11						
12						
13	800		500			
14	1000					500
15				800		
16		800				
17				1000		
18		1000				
19					800	
20						
21						
22			800		1000	
23						
24			1000			
25						
26						
27						
28						800
29						
30						1000
31						
32						
33						
34						
35						
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40						
41						
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43						
44						
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46						
47						
48						
49						
50						

T >	Comfort ¹⁾			Standard ²⁾		
	60 °C	70 °C	80 °C	60 °C	70 °C	80 °C
NL v						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
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96						
97						
98						
99						
100						
> 100						

T = heating flow

NL = performance figure

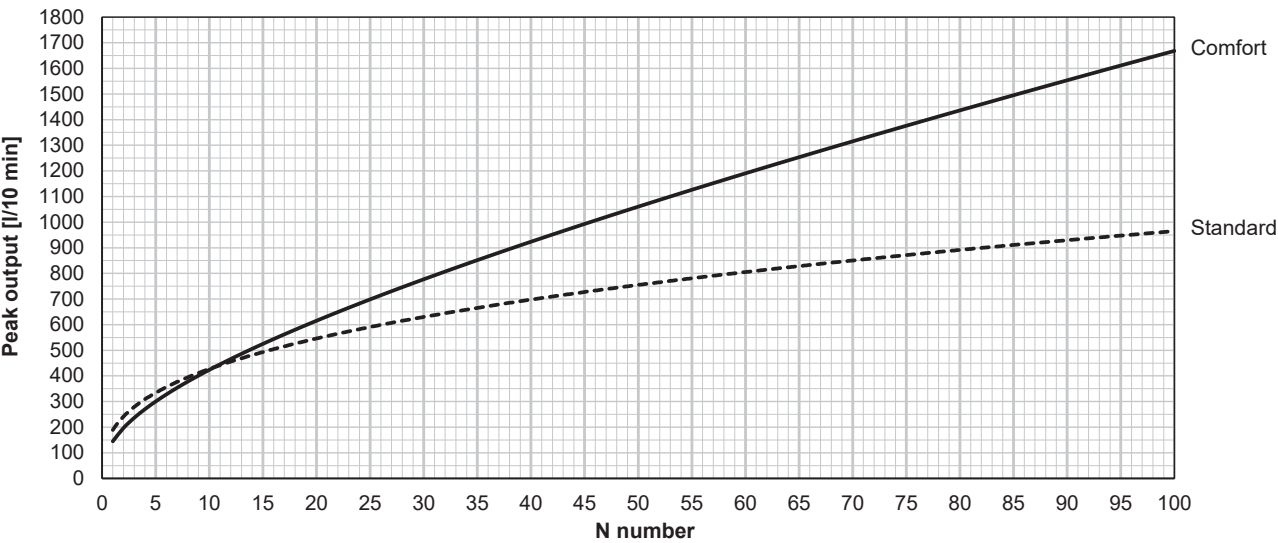
and permanently reheated with the heat generator (standard flat: 1 bathroom - 4 rooms - 3.5 persons)

¹⁾ Calculation with simultaneity factor according to DIN 4708 (preferred for Switzerland)

²⁾ Calculation with simultaneity factor according to Dresden Technical University

10 min peak output/N number with domestic hot water 45 °C
according to DIN 4708 (Comfort) and Dresden Technical University (Standard)

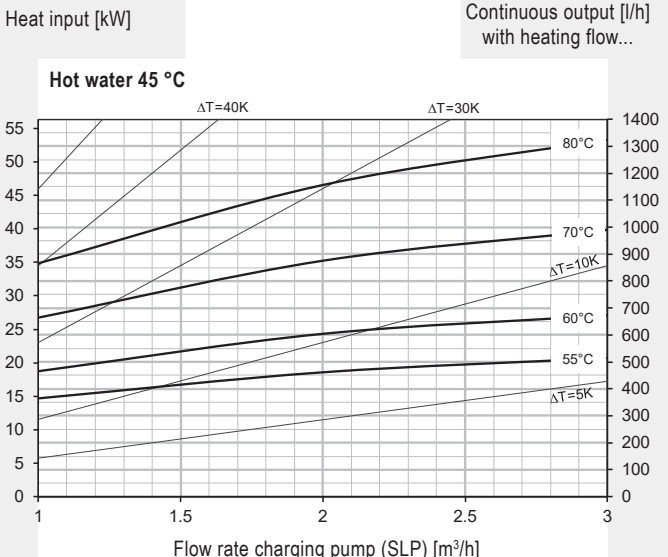
Reading example
see Engineering



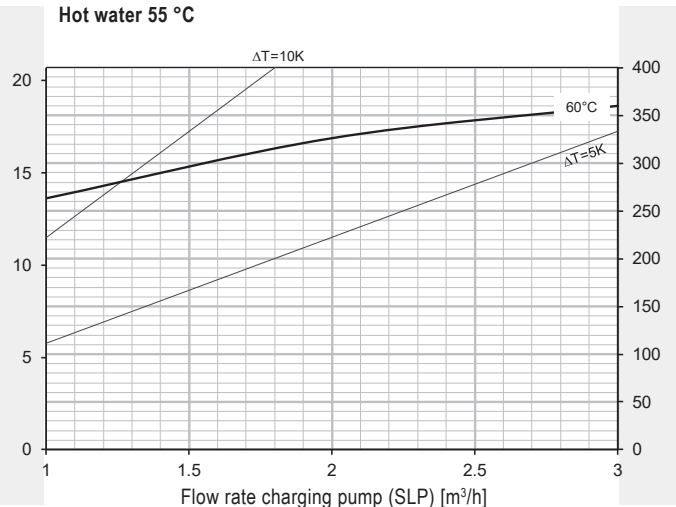
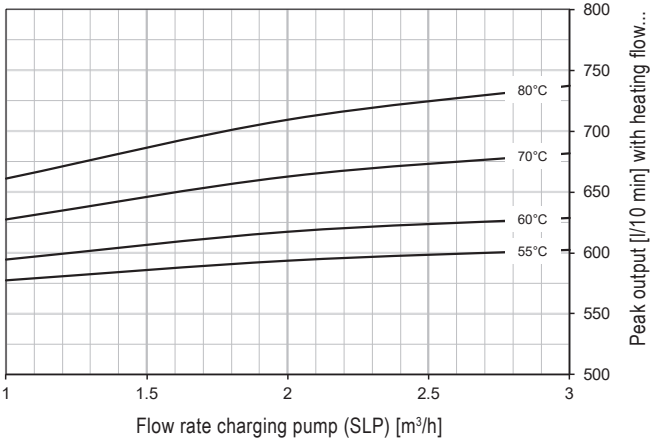
MultiVal CRR (500)

Hot water output
Continuous output

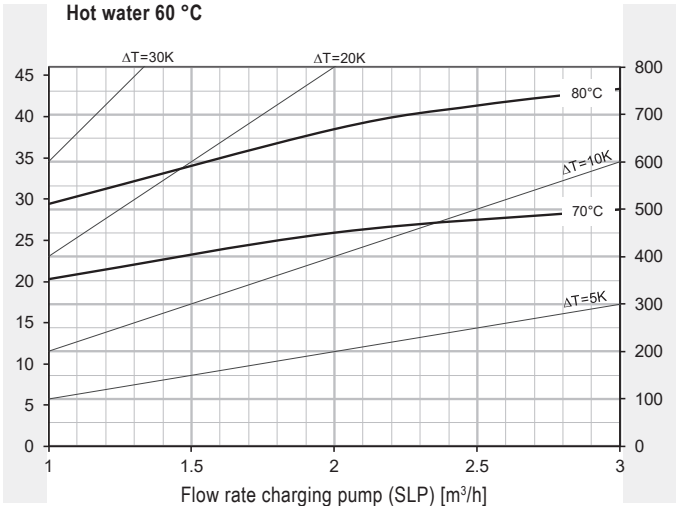
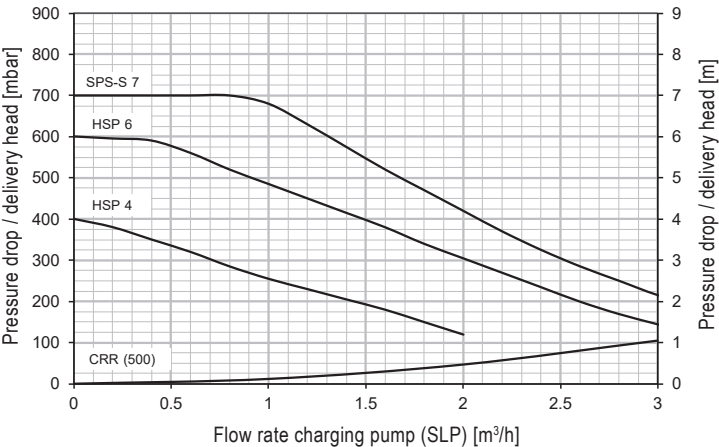
Reading example
see engineering



10 min peak output - hot water 45 °C *



Pressure drop heating coil - delivery head charging pump

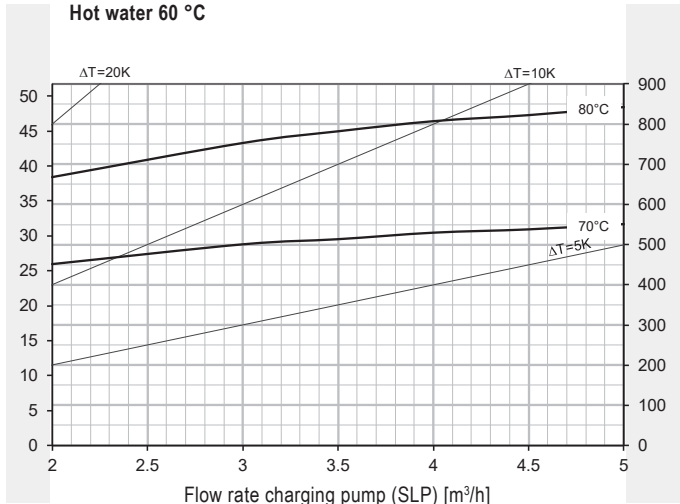
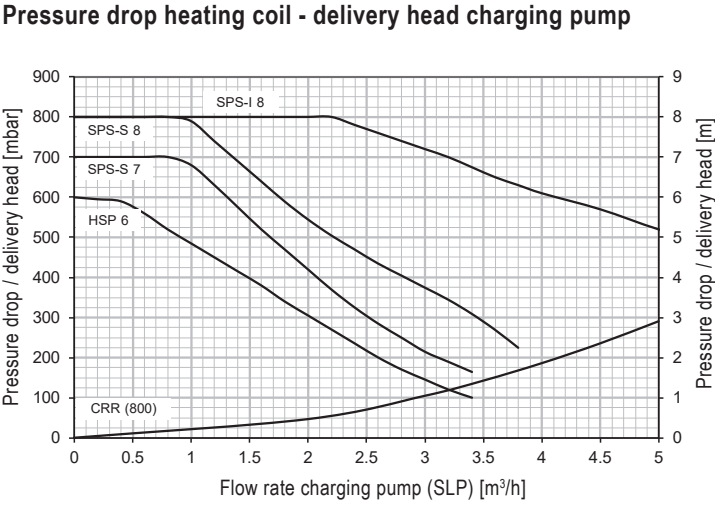
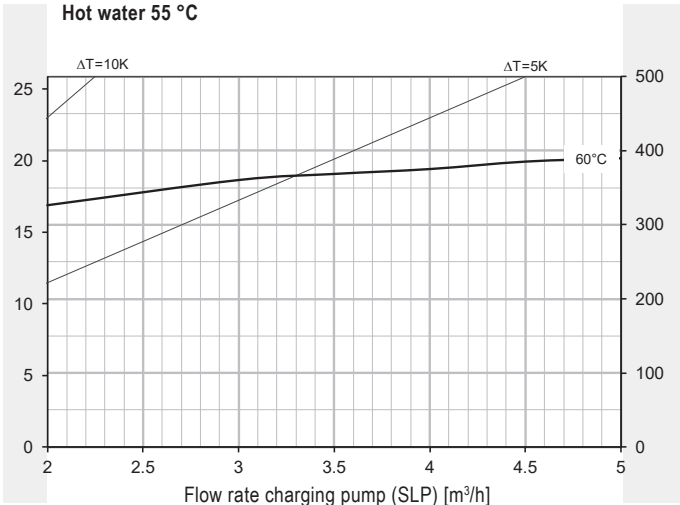
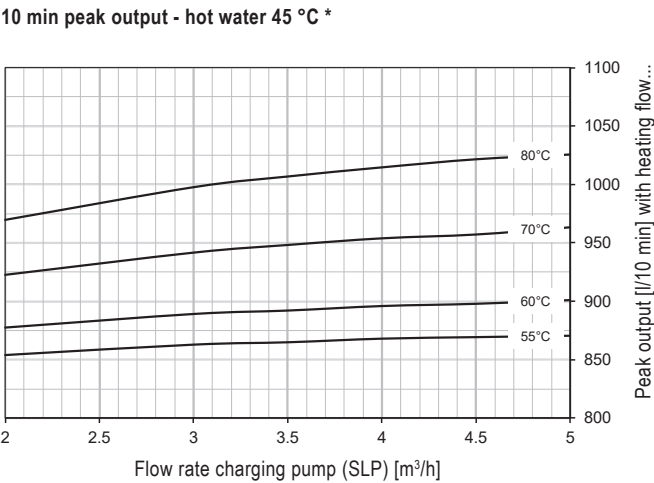
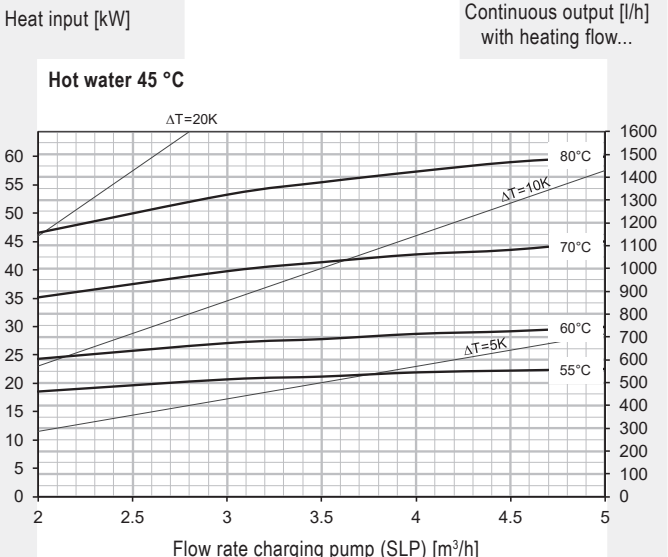


* Calorifier heated to 60 °C

MultiVal CRR (800)

Hot water output
Continuous output

Reading example
see engineering

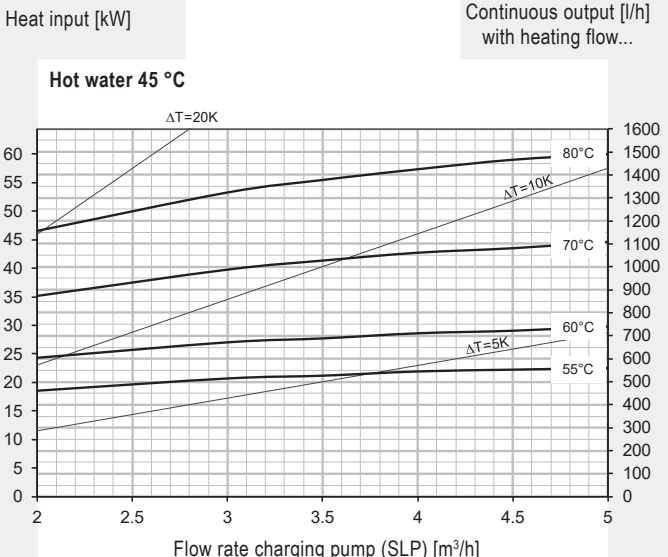


* Calorifier heated to 60 °C

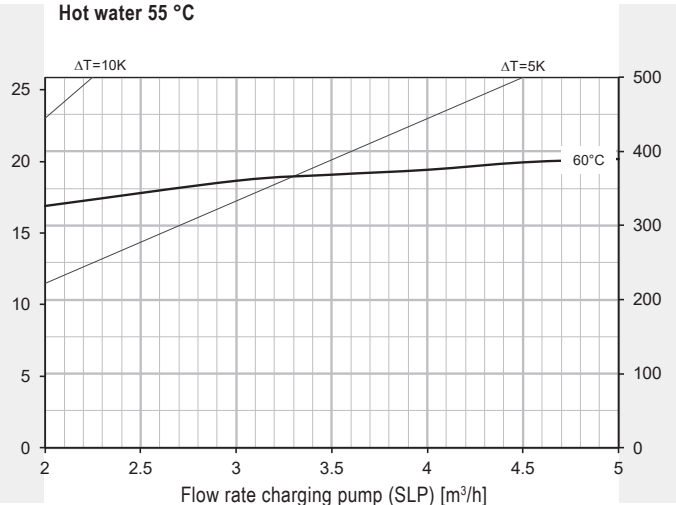
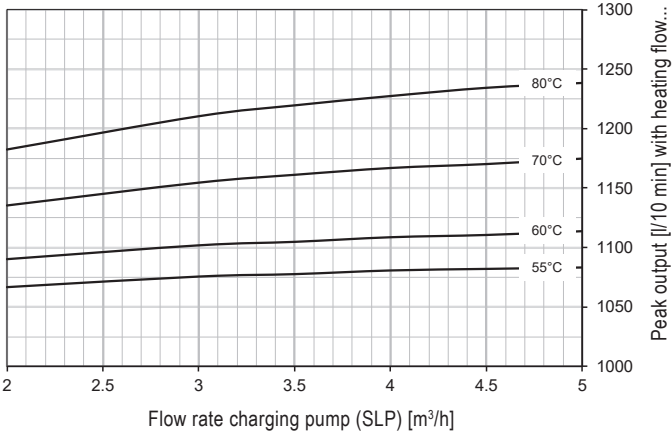
MultiVal CRR (1000)

Hot water output
Continuous output

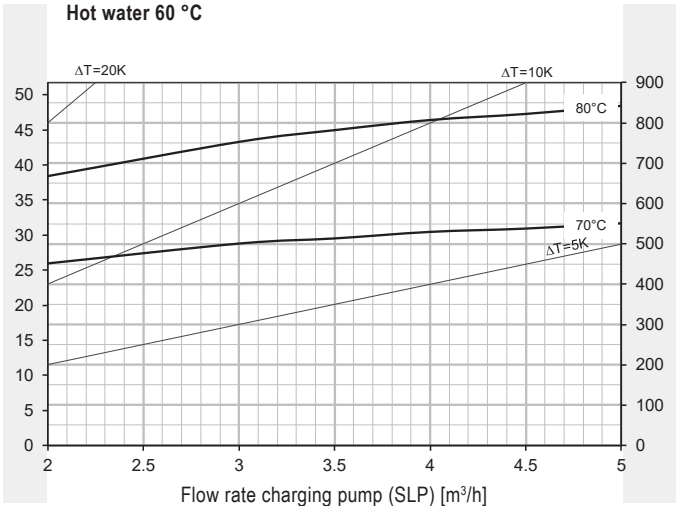
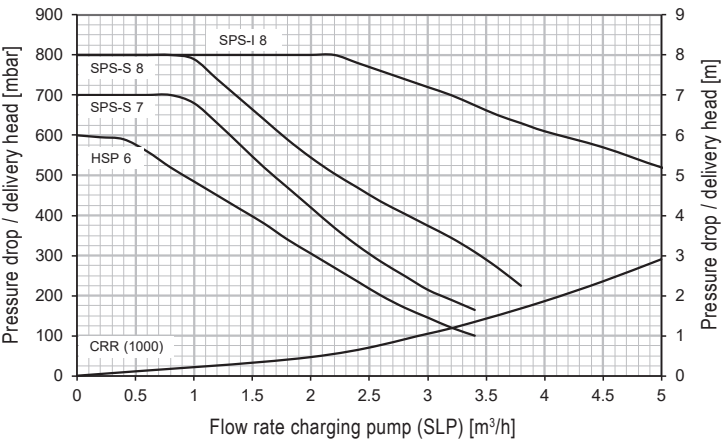
Reading example
see engineering



10 min peak output - hot water 45 °C *



Pressure drop heating coil - delivery head charging pump

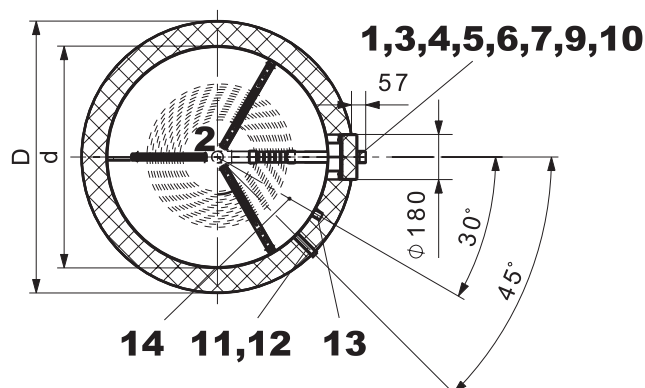
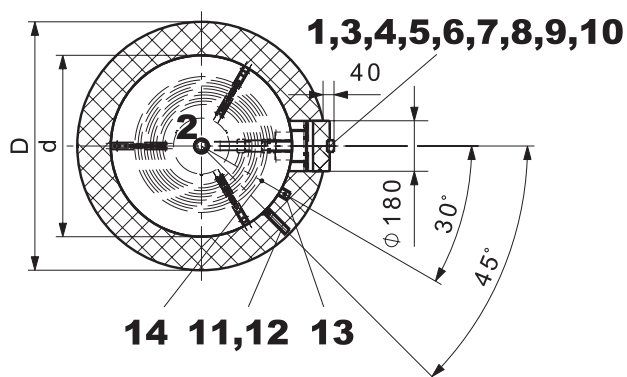
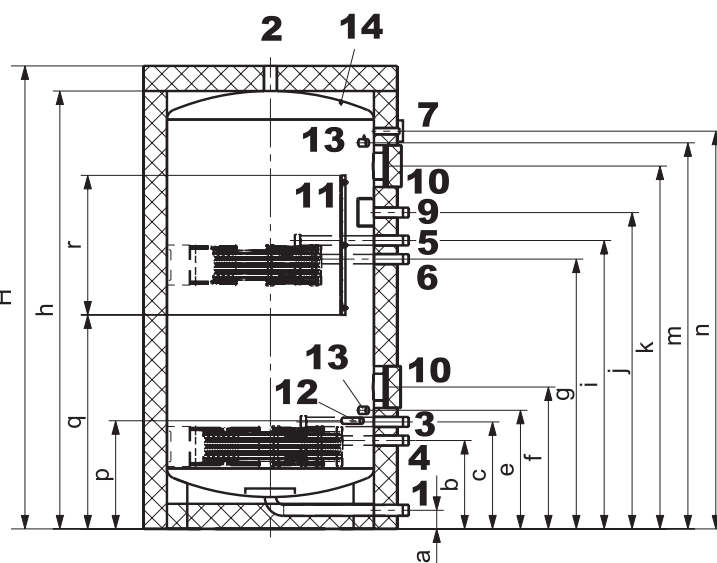
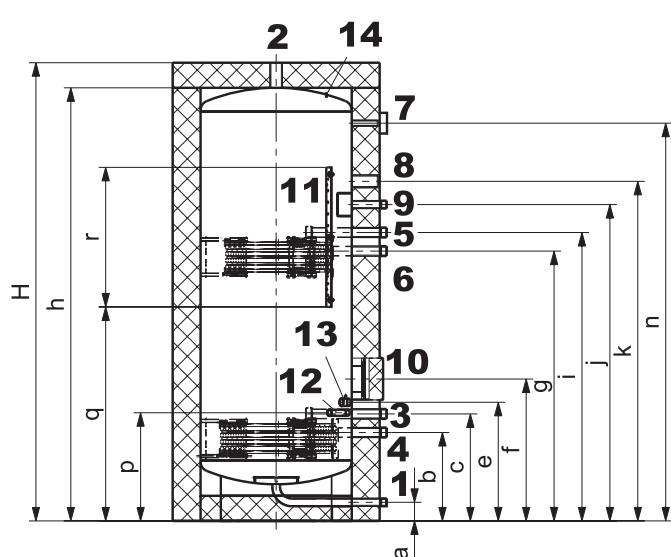


* Calorifier heated to 60 °C

MultiVal CRR (500)

(Dimensions in mm)

MultiVal CRR (800,1000)



- | | | |
|--|---|-------------|
| 1 Cold water | type (500) | G 1" (ET) |
| | type (800,1000) | G 1½" (ET) |
| 2 Hot water | | Rp 1½" (IT) |
| 3 Flow solar circuit | | G 1¼" (ET) |
| 4 Return solar circuit | | G 1¼" (ET) |
| 5 Flow re-heating | | G 1¼" (ET) |
| 6 Return re-heating | | G 1¼" (ET) |
| 7 Sleeve with mounted immersion sleeve and thermometer | | Rp ½" (IT) |
| | (immersion sleeve: L = 200, inner Ø = 8 mm) | |
| 8 Connection for screw-in electric heating element | | Rp 1½" (IT) |
| 9 Circulation | type (500) | G 1" (ET) |
| | type (800,1000) | G 1¼" (ET) |

- | | |
|---|---|
| 10 Hand-hole flange (flange-mounted electric heating element) | |
| Ø 180/110 mm, pitch circle Ø 150 mm, 8 x M10 | |
| 11 Sensor terminal bar 600 x 30 mm | |
| 12 Sleeve with mounted immersion sleeve for sensor, thermostat | Rp ½" (IT) |
| | (immersion sleeve: L = 200, inner Ø = 8 mm) |
| 13 Sleeve with grounding bolt for impressed current anode (perforated thermal insulation) | Rp ¾" (IT) |
| | type (500) 1 x |
| | type (1000) 2 x |
| Attention: observe the installation length | |
| 14 Equipotential bonding | |

Deviations possible as a result of manufacturing tolerances.
Dimensions +/- 10 mm

MultiVal type	D	d	H	h	a	b	c	e	f	g	i	j	k	m	n	p	q	r	Tilting dimension
CRR (500)	890	650	1970	1862	80	380	460	510	610	1160	1240	1360	1460	-	1710	465	950	540	2162
CRR (800)	990	790	1991	1883	80	380	460	510	610	1160	1240	1360	1560	-	1710	465	950	540	2224
CRR (1000)	1090	890	1991	1883	80	380	460	510	610	1160	1240	1360	1560	1660	1710	465	950	540	2270

Calorifier charging system

Calorifier charging system

Consisting of:

- calorifier charging module TransTherm® aqua L
TransTherm® aqua L-FW (for indirect connection to the (district) heating network)
- hot water charging tank CombiVal E or CombiVal C (optional)

Calorifier charging module

TransTherm® aqua L

- Fully assembled station with plate heat exchanger for the provision of domestic hot water using the tank storage principle
- Intended for wall installation
- The primary side (heating side) contains the three-way valve, high-efficiency pump, air-bleeding, contact sensor and the filling and drain valve, line balancing valve. These components ensure a constant flow temperature at the plate heat exchanger. Pipes made from steel
- The secondary side (DHW side) contains the safety valve (10 bar), non-return valve, filling/drain valves and balancing valve. A flow sensor ensures the correct charging temperature for the hot process water storage tank. Pipes made from stainless steel
- Stainless steel plate heat exchanger 1.4404, copper-soldered or copper-free
- EPP insulation, 30 mm, for the heat exchanger
- Switch-on and switch-off of the charging pump is regulated via two sensors (included in the scope of delivery) in the storage tank.
- Mount tank sensor on the tank on site and connect it to the controller
- T-piece with dummy plug for on-site connection of the circulation group. Connect the pump to the controller on site.
- TopTronic® E control with integrated thermal disinfection of the DHW storage tank (anti-legionella circuit)

Calorifier charging module

TransTherm® aqua L-FW

- Fully assembled station with plate heat exchanger for the provision of domestic hot water using the tank storage principle
- Intended for wall installation
- The primary side (heating side) includes a flow rate controller with through valve and safety function, ventilation, sensor and fill/drain valve. These components ensure a constant flow temperature at the plate heat exchanger. Pipes made from steel
- The secondary side (DHW side) contains the safety valve (10 bar), non-return valve, filling/drain valves and balancing valve. A flow sensor ensures the correct charging temperature for the hot process water storage tank. Pipes made from stainless steel
- Stainless steel plate heat exchanger 1.4404, copper-soldered or copper-free
- EPP insulation, 30 mm, for the heat exchanger
- Switch-on and switch-off of the charging pump is regulated via two sensors (included in the scope of delivery) in the storage tank.
- Mount tank sensor on the tank on site and connect it to the controller



Range

Calorifier charging module

TransTherm® aqua L type	Output kW
(1-10)	50
(1-16)	90
(1-20)	115
(1-30)	175
(1-40)	230
(1-50)	275

Calorifier charging module

TransTherm® aqua L-FW type	Output kW
(2-10)	50
(2-16)	90
(2-20)	115
(2-30)	175
(2-40)	230
(2-50)	275



Range

Hot water charging tank

CombiVal E	Content l	CombiVal C	Content l
(300)	B 301	(200)	B 212
(500)	B 475	(300)	B 289
(800)	747	(400)	B 411
(1000)	968	(500)	B 490
(1500)	1472	(750)	756
(2000)	2000	(1000)	990
		(1500)	1415
		(2000)	1975
		(2500)	2450

A* → F

A* → F

- T-piece with dummy plug for on-site connection of the circulation group. Connect the pump to the controller on site.
- TopTronic® E control with integrated thermal disinfection of the DHW storage tank (anti-legionella circuit)

Delivery

- The storage tank required is not included in the scope of delivery

On site

- Installation of a circulation unit; the necessary connection is provided.
- Electrical connection of the controller

Heating network

- Nominal pressure: 16 bar
- Maximum pressure: 13 bar
- Min. differential pressure: 0.6 bar
- Max. differential pressure: 12 bar
- Operating temperature: 70 ... 110 °C
- Maximum temperature: 120 °C

Suitable hot water charging tanks

see next page

TopTronic® E controller

TopTronic® E basic module district heating/fresh water

- Control unit for controlling district heating transfer stations in non-communicative networks and the corresponding consumers with integrated control functions for
 - primary valve control
 - cascade management
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water charging circuit
 - various additional functions
- Various functions for hot water:
 - selection of different basic programs (week programs, economy mode, holiday until, etc.)
 - various operating modes (e.g. accumulator priority or parallel mode)
 - buffer storage circuit on the primary or secondary side
 - adjustable loading criteria (e.g. adjustable loading times, undershooting the minimum nominal value, etc.)
 - adjustable switch-off criteria (e.g. achieving the setpoint valve, achieving the lower sensor setpoint value, etc.)
 - adjustable loading block (if the loading flow temperature is too low, the setpoint temperature is not reached, differential temperature-dependent solar circuit control)

Calorifier charging system

- Definable switching times for recirculation pump control
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Complete plug set for DH module
- RPM-regulated pumps

No further module expansions or controller modules can be installed in the control panel!

Option

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating states
- Configurable start screen
- Operating mode selection
- Configurable day and week programs
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

Notice

The TopTronic® E control module for operating the basic module district heating/fresh water must be ordered separately!

Further information about the TopTronic® E see "Controls"

Delivery

- All armatures required for operation, such as flow balancing and shut-off valves, backflow preventer, air-bleeding and drain valve are fitted.

Caution

As a result of thermal disinfection of the domestic hot water for legionella protection, increased water temperatures (at least 65 ... 70 °C) occur. Depending on the water quality, this may result in increased calcification at the installed armatures and heat exchangers and also brings the risk of scalding at the tapping points. Corresponding protective measures must be implemented on site.

CombiVal C (200-2500)

- Charging tank made from stainless steel (without built-in heating coil) for combination with calorifier charging module TransTherm® aqua L
- (200-1000) with one flange (1500-2000) with two flanges (2500) with one manhole in each case with installed dummy flange plate for maintenance or, for types (200-2000), installation of a flange-mounted electric heating element
- Thermal insulation: Neodul® insulation (EPS rigid foam outside and 20 mm polyester fibre fleece inside) with zip, outer jacket made of polypropylene, colour red (200-1000) 2-piece (1500) 3-piece (2000-2500) 4-piece
- Thermometer incl. immersion sleeve loose (packed with the product)
- Sensor terminal bar
- Observe limit values for chloride content in domestic water – see "Engineering".

Delivery

- (200-1000) with thermal insulation completely installed (can be removed for bringing in)
- (1500-2500) thermal insulation separately packed

Design on request

- (200-2000) Flange-mounted electric heating element

On site

- Installation of immersion sleeve for thermometer
- (1500-2500) Installation of the thermal insulation and attaching the protection rosettes

CombiVal E (300-2000)

- Charging tank made of steel, enamelled inside (without built-in heating coil) for combination with calorifier charging module TransTherm® aqua L
- (300-1000) with one flange (1500,2000) with two flanges in each case with installed dummy flange plate for maintenance or installation of a flange-mounted electric heating element
- (300-1000) one built-in magnesium protection anode (1500,2000) two built-in magnesium protection anodes
- Thermal insulation made of
 - (300,500) polyurethane rigid foam, directly foamed, with dismantable foil jacket, 1-part, red coloured
 - (800-2000) polyester fleece with foil jacket, completely removable, red coloured (800-1500) 2-part (2000) 3-part
- With thermometer
- (300,500) sensor channel (800-2000) two terminal bars for contact sensor

Delivery

- (300,500) with foil jacket completely installed
- (800-2000) with thermal insulation completely installed (removable)

Design on request

- Flange-mounted electric heating element

On site

- Installation of the thermometer
- Attachment of the glue-on protection rosettes to the thermal insulation

Water quality

see end of this brochure

Calorifier charging module



TransTherm® aqua L
Fully assembled station with plate heat exchanger for the provision of domestic hot water using the storage tank charging principle and built-in Hoval TopTronic® E control
The required storage tank is not supplied.

TransTherm® aqua L	Output kW
(1-10)	50
(1-16)	90
(1-20)	115
(1-30)	175
(1-40)	230
(1-50)	275

Part No.

8005 864
8005 865
8005 866
8005 867
8005 868
8005 869

Version with copper-free heat exchanger

TransTherm® aqua L
with copper-free heat exchanger

TransTherm® aqua L	Output kW
(1-10)	50
(1-16)	90
(1-20)	115
(1-30)	175
(1-40)	230
(1-50)	275

8006 491
8006 492
8006 493
8006 494
8006 495
8006 496

Hot water charging tank



CombiVal E
Enamelled charging tank
(without heating coil)
CombiVal E (300-1000) with one flange
CombiVal E (1500,2000) with two flanges
- (300,500) thermal insulation mounted with foil jacket
- (800-2000) Thermal insulation completely installed (removable)

CombiVal type	Content l
E (300)	301
E (500)	475
E (800)	747
E (1000)	968
E (1500)	1472
E (2000)	2000



CombiVal C
Stainless steel charging tank
(without heating coil)
CombiVal C (200-1000) with one flange
CombiVal C (1500-2000) with two flanges
CombiVal C (2500) with one manhole thermal insulation
- (200-1000) completely installed (removable)
- (1500-2000) separately packed

CombiVal type	Content l
C (200)	212
C (300)	289
C (400)	411
C (500)	490
C (750)	756
C (1000)	990
C (1500)	1415
C (2000)	1975
C (2500)	2450

Energy efficiency class
see "Description"

Electric heating elements
see chapter "Electric heating elements"

Part No.

6044 187
6044 188
6044 189
6044 190
6044 191
6044 192

6049 693
6049 694
6049 695
6049 696
6049 697
6049 698
6049 699
6049 700
6049 701

Performance data

TransTherm® aqua L (1-10 to 1-50) / TransTherm® aqua L-FW (2-10 to 2-50)

		Flow temperature heating water											
Domestic water secondary	TransTherm® aqua L TransTherm® aqua L-FW	55 °C (1-...)						60 °C (1-...)					
		(10)	(16)	(20)	(30)	(40)	(50)	(10)	(16)	(20)	(30)	(40)	(50)
60/5 °C	T return primary °C	-	-	-	-	-	-	-	-	-	-	-	-
	Ṁ primary m³/h	-	-	-	-	-	-	-	-	-	-	-	-
	Q max. kW	-	-	-	-	-	-	-	-	-	-	-	-
	Ṁ secondary m³/h	-	-	-	-	-	-	-	-	-	-	-	-
60/10 °C	T return primary °C	-	-	-	-	-	-	-	-	-	-	-	-
	Ṁ primary m³/h	-	-	-	-	-	-	-	-	-	-	-	-
	Q max. kW	-	-	-	-	-	-	-	-	-	-	-	-
	Ṁ secondary m³/h	-	-	-	-	-	-	-	-	-	-	-	-
60/15 °C	T return primary °C	-	-	-	-	-	-	-	-	-	-	-	-
	Ṁ primary m³/h	-	-	-	-	-	-	-	-	-	-	-	-
	Q max. kW	-	-	-	-	-	-	-	-	-	-	-	-
	Ṁ secondary m³/h	-	-	-	-	-	-	-	-	-	-	-	-
60/20 °C	T return primary °C	-	-	-	-	-	-	-	-	-	-	-	-
	Ṁ primary m³/h	-	-	-	-	-	-	-	-	-	-	-	-
	Q max. kW	-	-	-	-	-	-	-	-	-	-	-	-
	Ṁ secondary m³/h	-	-	-	-	-	-	-	-	-	-	-	-
55/5 °C	T return primary °C	-	-	-	-	-	-	30	30	30	30	30	30
	Ṁ primary m³/h	-	-	-	-	-	-	1.25	2.04	2.51	3.71	4.76	5.66
	Q max. kW	-	-	-	-	-	-	43	70	86	127	163	194
	Ṁ secondary m³/h	-	-	-	-	-	-	0.74	1.2	1.48	2.18	2.8	3.33
55/10 °C	T return primary °C	-	-	-	-	-	-	30	30	30	30	30	30
	Ṁ primary m³/h	-	-	-	-	-	-	1.11	2.04	2.51	3.71	4.76	5.63
	Q max. kW	-	-	-	-	-	-	38	70	86	127	163	193
	Ṁ secondary m³/h	-	-	-	-	-	-	0.73	1.34	1.64	2.43	3.12	3.69
55/15 °C	T return primary °C	-	-	-	-	-	-	30	30	30	30	30	30
	Ṁ primary m³/h	-	-	-	-	-	-	0.76	1.46	1.95	3.06	4.23	5.4
	Q max. kW	-	-	-	-	-	-	26	50	67	105	145	185
	Ṁ secondary m³/h	-	-	-	-	-	-	0.56	1.08	1.44	2.26	3.12	3.98
55/20 °C	T return primary °C	-	-	-	-	-	-	30	30	30	30	30	30
	Ṁ primary m³/h	-	-	-	-	-	-	0.47	0.9	1.17	1.9	2.63	3.36
	Q max. kW	-	-	-	-	-	-	16	31	40	65	90	115
	Ṁ secondary m³/h	-	-	-	-	-	-	0.39	0.76	0.99	1.6	2.22	2.83
50/5 °C	T return primary °C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṁ primary m³/h	1.29	2.03	2.51	3.67	4.72	5.66	1.28	2.04	2.51	3.71	4.76	5.63
	Q max. kW	37	58	72	105	135	162	44	70	86	127	163	193
	Ṁ secondary m³/h	0.71	1.11	1.37	2	2.58	3.09	0.84	1.34	1.64	2.43	3.12	3.69
50/10 °C	T return primary °C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṁ primary m³/h	1.29	2.03	2.51	3.67	4.72	5.66	1.28	2.04	2.51	3.73	4.81	5.69
	Q max. kW	38	58	72	105	135	162	44	70	86	128	165	195
	Ṁ secondary m³/h	0.82	1.25	1.77	2.26	2.9	3.48	0.95	1.51	1.85	2.75	3.55	4.19
50/15 °C	T return primary °C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṁ primary m³/h	1.29	2.03	2.51	3.67	4.72	5.66	1.11	1.95	2.48	3.76	4.76	5.69
	Q max. kW	37	58	72	105	135	162	38	67	85	129	163	195
	Ṁ secondary m³/h	0.91	1.43	1.77	2.58	3.32	3.99	0.94	1.65	2.09	3.18	4.01	4.8
50/20 °C	T return primary °C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṁ primary m³/h	1.15	2.03	2.55	3.7	4.75	5.69	0.96	1.69	2.13	3.24	3.63	5.16
	Q max. kW	33	58	73	106	136	163	33	58	73	111	145	177
	Ṁ secondary m³/h	0.95	1.67	2.1	3.05	3.91	4.69	0.95	1.67	2.1	3.19	4.17	5.09

T return primary °C Return temperature primary
 Ṁ primary m³/h Flow rate primary
 Q max. kW Output
 Ṁ secondary m³/h Flow rate secondary

The specified technical data relate to the full load of the module in each case.

Performance data

TransTherm® aqua L (1-10 to 1-50) / TransTherm® aqua L-FW (2-10 to 2-50)

Flow temperature heating water

Domestic water secondary	TransTherm® aqua L TransTherm® aqua L-FW		65 °C (1-...)						70 °C (1-...)					
			(10)	(16)	(20)	(30)	(40)	(50)	(10)	(16)	(20)	(30)	(40)	(50)
60/5 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	1.08	1.88	2.5	3.73	4.84	5.77	1.32	2.09	2.59	3.76	4.82	5.72
	Q max.	kW	43	75	100	149	193	230	60	95	118	171	219	260
	Ṽ secondary	m³/h	0.67	1.17	1.55	2.33	3.01	3.59	0.94	1.48	1.84	2.67	3.42	4.06
60/10 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	0.8	1.5	2.01	3.16	4.34	5.39	1.08	1.94	2.48	3.77	4.95	5.92
	Q max.	kW	32	60	80	126	173	215	50	90	115	175	230	275
	Ṽ secondary	m³/h	0.55	1.03	1.38	2.17	2.98	3.7	0.86	1.54	1.98	3.01	3.95	4.73
60/15 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	0.55	1.05	1.38	2.13	3.08	3.96	0.97	1.8	2.37	3.73	4.84	5.72
	Q max.	kW	22	42	55	85	123	158	44	82	108	170	220	260
	Ṽ secondary	m³/h	0.42	0.8	1.05	1.63	2.35	3.02	0.84	1.57	2.08	3.24	4.21	4.98
60/20 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	0.3	0.6	0.8	1.28	1.75	2.33	0.62	1.14	2.05	2.4	3.43	4.22
	Q max.	kW	12	24	32	51	70	93	28	52	68	109	156	192
	Ṽ secondary	m³/h	0.26	0.52	0.69	1.1	1.51	2	0.6	1.12	1.47	2.36	3.36	4.14
55/5 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	0.8	1.5	2.01	3.16	4.34	5.39	1.08	2.09	2.53	3.74	4.84	5.76
	Q max.	kW	32	60	80	126	173	215	50	95	115	170	220	262
	Ṽ secondary	m³/h	0.55	1.03	1.38	2.17	2.98	3.7	0.86	1.63	1.97	2.92	3.78	4.5
55/10 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	1.3	2.06	2.53	3.71	4.81	5.64	1.08	1.87	2.42	3.74	4.84	5.72
	Q max.	kW	52	82	101	148	192	225	49	85	110	170	220	260
	Ṽ secondary	m³/h	0.99	1.57	1.93	2.83	3.67	4.3	0.94	1.62	2.1	3.24	4.21	4.98
55/15 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	0.97	1.65	2.11	3.71	4.81	5.64	1.1	1.88	2.41	3.74	4.22	5.1
	Q max.	kW	44	75	96	148	192	225	44	75	96	148	192	232
	Ṽ secondary	m³/h	0.95	1.61	2.07	3.19	4.13	4.84	0.94	1.62	2.1	3.19	4.21	5
55/20 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	0.95	1.68	2.13	3.23	4.24	5.14	0.84	1.47	1.87	2.84	3.72	4.51
	Q max.	kW	38	67	85	129	169	205	38	67	85	129	169	205
	Ṽ secondary	m³/h	0.94	1.65	2.09	3.18	4.16	5.05	0.94	1.65	2.09	3.18	4.16	5.05
50/5 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	1.25	2.06	2.53	3.71	4.81	5.64	1.08	1.87	2.42	3.56	4.84	5.72
	Q max.	kW	50	82	101	148	192	225	49	85	110	162	220	260
	Ṽ secondary	m³/h	0.95	1.57	1.93	2.83	3.67	4.3	0.94	1.62	2.1	3.09	4.21	4.98
50/10 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	1.1	1.88	2.41	3.71	4.81	5.64	0.97	1.65	2.11	3.25	4.22	5.1
	Q max.	kW	44	75	96	148	192	225	44	75	96	148	192	232
	Ṽ secondary	m³/h	0.95	1.61	2.07	3.19	4.13	4.84	0.95	1.61	2.07	3.19	4.13	5
50/15 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	0.95	1.68	2.13	3.23	4.24	5.14	0.84	1.47	1.87	2.84	3.72	4.51
	Q max.	kW	38	67	85	129	169	205	38	67	85	129	169	205
	Ṽ secondary	m³/h	0.94	1.65	2.09	3.18	4.16	5.05	0.94	1.65	2.09	3.18	4.16	5.05
50/20 °C	T return primary	°C	30	30	30	30	30	30	30	30	30	30	30	30
	Ṽ primary	m³/h	0.83	1.45	1.81	2.44	3.63	4.44	0.73	1.28	1.61	2.44	3.19	3.89
	Q max.	kW	33	58	73	111	145	177	33	58	73	111	145	177
	Ṽ secondary	m³/h	0.95	1.67	2.1	3.19	4.17	5.09	0.95	1.67	2.1	3.19	4.17	5.09

T return primary °C Return temperature primary

Ṽ primary m³/h Flow rate primary

Q max. kW Output

Ṽ secondary m³/h Flow rate secondary

The specified technical data relate to the full load of the module in each case.

Performance data

TransTherm® aqua L (1-10 to 1-50) / TransTherm® aqua L-FW (2-10 to 2-50)

Temperature primary 70 °C flow/30 °C return

Domestic water heating

	TransTherm® aqua L TransTherm® aqua L-FW	Cold water 10 °C Domestic water 60 °C					
		(10)	(16)	(20)	(30)	(40)	(50)
	kW	50	90	115	175	230	275
	m³/h	0.86	1.54	1.97	3.00	3.94	4.71
	l/min	14.3	25.7	32.9	50.0	65.7	78.6
	l/s	0.2	0.4	0.5	0.8	1.1	1.3

Tank size

I								
200	Ṽs	I/10 min	343	457	529	-	-	-
	Hourly output	l/h at 60 °C	1057	1743	2171	-	-	-
	NL index		13	22	29	-	-	-
300	Ṽs	I/10 min	443	557	629	800	-	-
	Hourly output	l/h at 60 °C	1157	1843	2271	3300	-	-
	NL index		21	31	39	57	-	-
400	Ṽs	I/10 min	543	657	729	900	-	-
	Hourly output	l/h at 60 °C	1257	1943	2371	3400	-	-
	NL index		23	41	49	69	-	-
500	Ṽs	I/10 min	643	757	829	1000	1157	-
	Hourly output	l/h at 60 °C	1357	2043	2471	3500	4443	-
	NL index		25	44	56	80	100	-
800	Ṽs	I/10 min	943	1057	1129	1300	1457	-
	Hourly output	l/h at 60 °C	1657	2343	2771	3800	4743	-
	NL index		33	52	64	94	123	-
1000	Ṽs	I/10 min	1143	1257	1329	1500	1657	1786
	Hourly output	l/h at 60 °C	1857	2543	2971	4000	4943	5714
	NL index		38	57	69	100	128	152
1500	Ṽs	I/10 min	-	1757	1829	2000	2157	2286
	Hourly output	l/h at 60 °C	-	3043	3471	4500	5443	6214
	NL index		-	71	83	114	143	167
2000	Ṽs	I/10 min	-	2257	2329	2500	2657	2786
	Hourly output	l/h at 60 °C	-	3543	3971	5000	5943	6714
	NL index		-	84	97	128	158	182
2500	Ṽs	I/10 min	-	2757	2829	3000	3157	3286
	Hourly output	l/h at 60 °C	-	4043	4471	5500	6443	7214
	NL index		-	99	115	144	174	198

Ṽs I/10 min 10 minutes peak flow rate at 60 °C
NL index Performance figure in accordance with DIN 4708 = number of flats which can be supplied with domestic hot water when the calorifier is heated and permanently reheated with the heat generator
(standard flat: 1 bath – 4 rooms – 3.5 persons)

Performance data

TransTherm® aqua L (1-10 to 1-50) / TransTherm® aqua L-FW (2-10 to 2-50)

Tapping point (mixing temperature)

			Cold water 10 °C Domestic water 45 °C					
TransTherm® aqua L			(10)	(16)	(20)	(30)	(40)	(50)
TransTherm® aqua L-FW			(10)	(16)	(20)	(30)	(40)	(50)
kW			50	90	115	175	230	275
m³/h			1.22	2.20	2.82	4.29	5.63	6.73
l/min			20.4	36.7	46.9	71.4	93.9	112.2
l/s			0.3	0.6	0.8	1.2	1.6	1.9
Tank size								
l								
200	Ṽs	I/10 min	490	653	755	-	-	-
	Hourly output	l/h at 45 °C	1510	2490	3102	-	-	-
	NL index		13	22	29	-	-	-
300	Ṽs	I/10 min	633	796	898	1143	-	-
	Hourly output	l/h at 45 °C	1653	2633	3245	4714	-	-
	NL index		21	31	39	57	-	-
400	Ṽs	I/10 min	776	939	1041	1286	-	-
	Hourly output	l/h at 45 °C	1796	2776	3388	4857	-	-
	NL index		23	41	49	69	-	-
500	Ṽs	I/10 min	918	1082	1184	1429	1653	-
	Hourly output	l/h at 45 °C	1939	2918	3531	5000	6347	-
	NL index		25	44	56	80	100	-
800	Ṽs	I/10 min	1347	1510	1612	1857	2082	-
	Hourly output	l/h at 45 °C	2367	3347	3959	5429	6776	-
	NL index		33	52	64	94	123	-
1000	Ṽs	I/10 min	1633	1796	1898	2143	2367	2551
	Hourly output	l/h at 45 °C	2653	3633	4245	5714	7061	8163
	NL index		38	57	69	100	128	152
1500	Ṽs	I/10 min	-	2510	2612	2857	3082	3265
	Hourly output	l/h at 45 °C	-	4347	4959	6429	7776	8878
	NL index		-	71	83	114	143	167
2000	Ṽs	I/10 min	-	3224	3327	3571	3796	3980
	Hourly output	l/h at 45 °C	-	5061	5673	7143	8490	9592
	NL index		-	84	97	128	158	182
2500	Ṽs	I/10 min	-	3939	4041	4286	4510	4694
	Hourly output	l/h at 45 °C	-	5776	6388	7857	9204	10306
	NL index		-	99	115	144	174	198

Ṽs I/10 min 10 minutes peak flow rate at 45 °C
NL index Performance figure in accordance with DIN 4708 = number of flats which can be supplied with domestic hot water when the calorifier is heated and permanently reheated with the heat generator
(standard flat: 1 bath – 4 rooms – 3.5 persons)

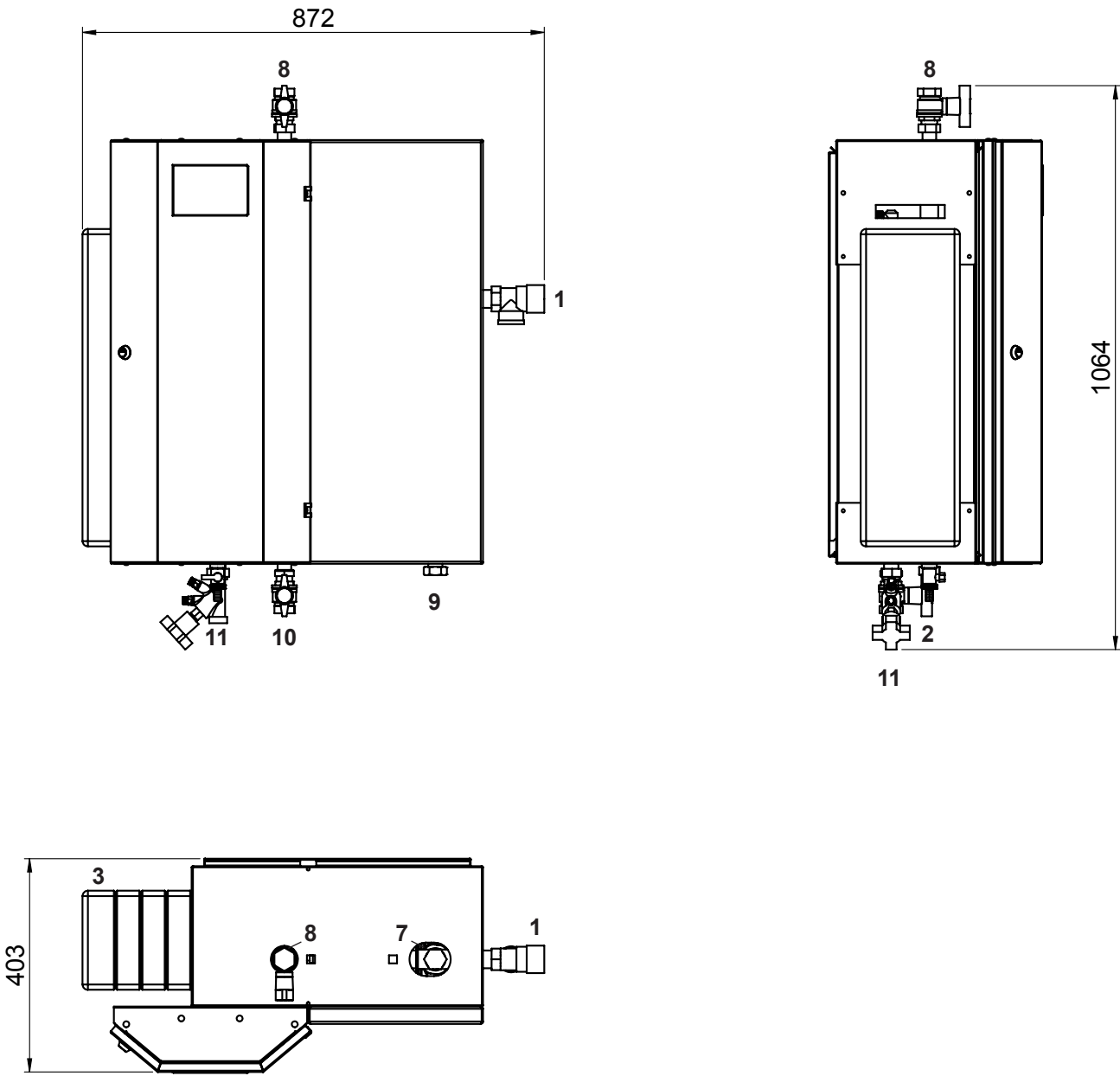
Hot water charging tank CombiVal E (300-2000)

Type		(300)	(500)	(800)	(1000)	(1500)	(2000)
• Volume	l	301	475	747	968	1472	2000
• Max. operating/test pressure SVGW	bar	6/12	6/12	6/12	6/12	6/12	6/12
• Max. operating/test pressure DVGW	bar	10/13	10/13	10/13	10/13	10/13	10/13
• Max. operating temperature	°C	95	95	95	95	95	95
• Thermal insulation PU hard foam, foam-lined	mm	75	75	-	-	-	-
• Thermal insulation polyester fleece	mm	-	-	100	100	120	120
• Thermal insulation λ	W/mK	0.027	0.027	0.040	0.040	0.040	0.040
• Fire protection class		B2	B2	B2	B2	B2	B2
• Heat loss at 65 °C	W	58	75	128	139	170	190
• Transport weight	kg	97	126	205	264	400	600
• U value	W/m ² K	0.290	0.303	0.381	0.362	0.339	0.325

Hot water charging tank CombiVal C (200-2500)

Type		(200)	(300)	(400)	(500)	(750)	(1000)	(1500)	(2000)	(2500)
• Volume	l	212	289	411	490	756	990	1415	1975	2450
• Max. operating/test pressure SVGW	bar	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12	6/12
• Max. operating temperature	°C	95	95	95	95	95	95	95	95	95
• Thermal insulation	Neodul® insulation (EPS rigid foam outside and polyester fibre fleece inside)									
	mm	100	100	100	100	100	100	120	120	120
• Thermal insulation λ	W/mK	0.0316	0.0316	0.0316	0.0316	0.0316	0.0316	0.0316	0.0316	0.0316
• Fire protection class		B2	B2	B2	B2	B2	B2	B2	B2	B2
• Heat loss at 65 °C	W	62	68	77	82	120	140	162	180	206
• Transport weight	kg	55	70	83	85	119	150	215	265	445
• U value	W/m ² K	0.329	0.329	0.329	0.329	0.329	0.329	0.273	0.273	0.273

Charging module TransTherm® aqua L (1-10)
(Dimensions in mm)



- 1 Safety valve
Hot water 10 bar
- 2 Filling/drain valve
- 3 Heat exchanger

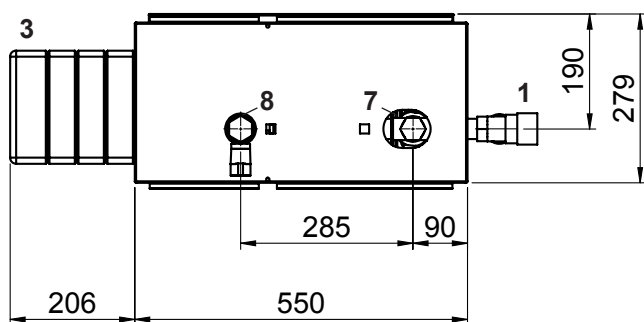
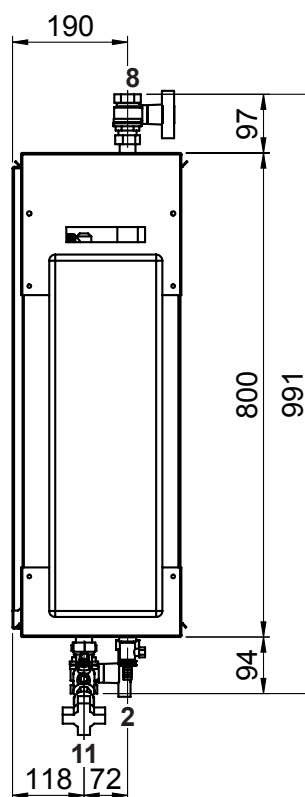
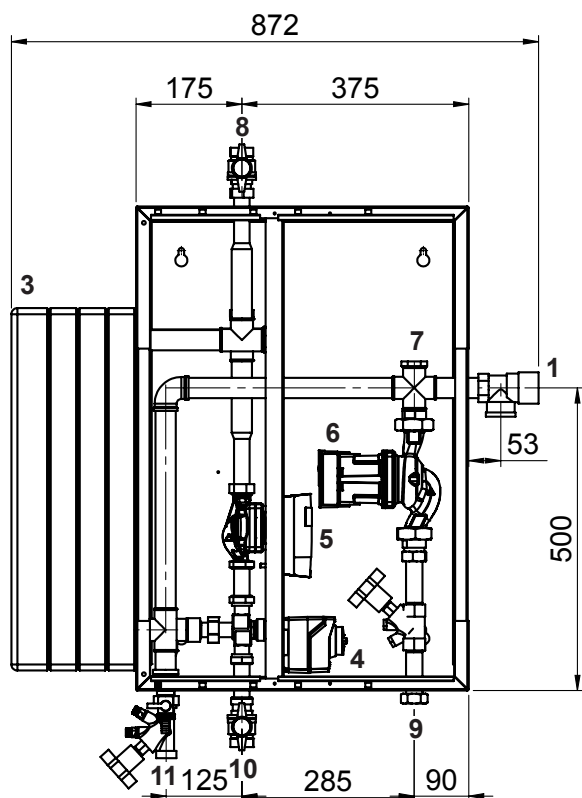
	(1-10)
7 Circulation ¹⁾	DN 25, Rp 1" (20, Rp ¾") (IT)
8 Hot water	DN 25, Rp 1" (IT)
9 Cold water	DN 20, Gp 1" (IT)
10 Flow heating water	DN 25, Rp 1" (IT)
11 Return heating water	DN 25, Gp 1" (IT)

¹⁾ Optional, connection and installation on site
Gp = straight internal thread

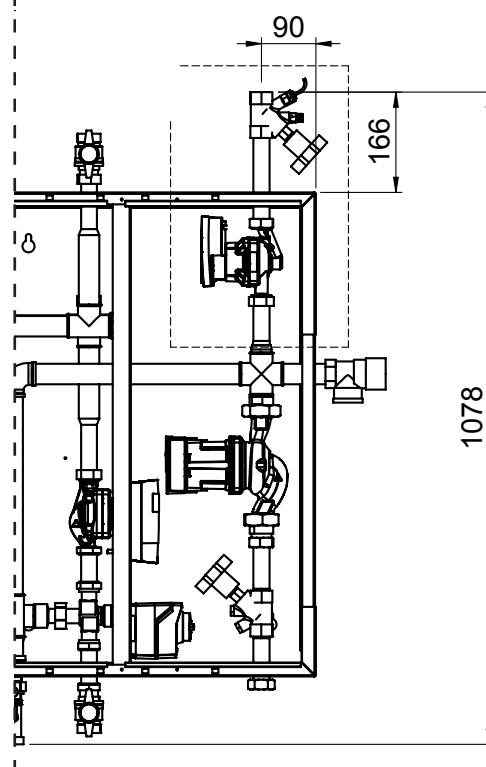
TransTherm® aqua L	Weight in kg
(1-10)	56

Charging module TransTherm® aqua L (1-10)

(Dimensions in mm)



Version incl. circulation set



- 1 Safety valve
Hot water 10 bar
- 2 Filling/drain valve
- 3 Heat exchanger
- 4 Primary three-way valve
- 5 Primary circulating pump
- 6 Secondary circulating pump

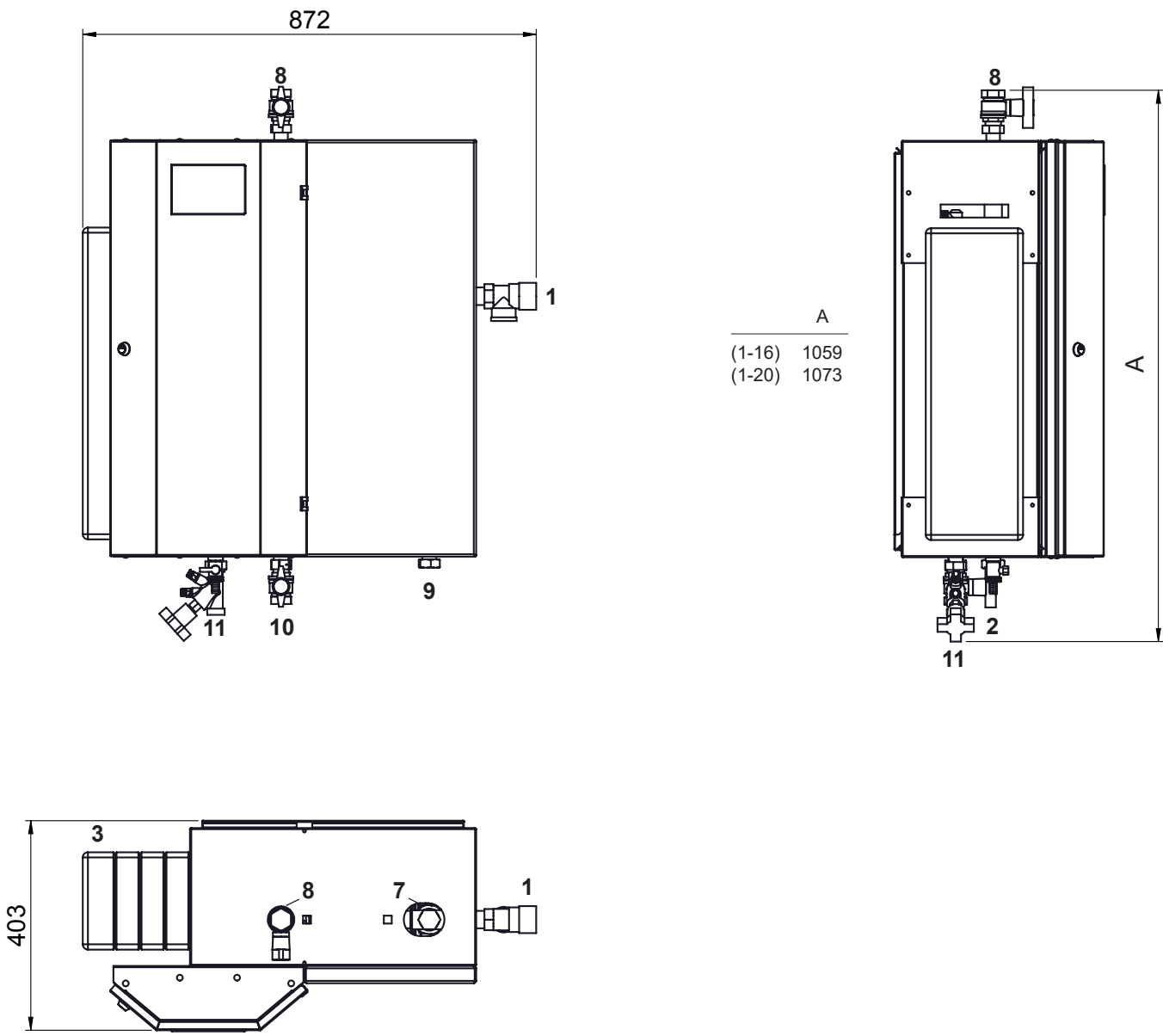
(1-10)

- | | |
|-----------------------------|-------------------------------|
| 7 Circulation ¹⁾ | DN 25, Rp 1" (20, Rp ¾") (IT) |
| 8 Hot water | DN 25, Rp 1" (IT) |
| 9 Cold water | DN 20, Gp 1" (IT) |
| 10 Flow heating water | DN 25, Rp 1" (IT) |
| 11 Return heating water | DN 25, Gp 1" (IT) |

¹⁾ Optional, connection and installation on site

Gp = straight internal thread

Charging module TransTherm® aqua L (1-16, 1-20)
(Dimensions in mm)



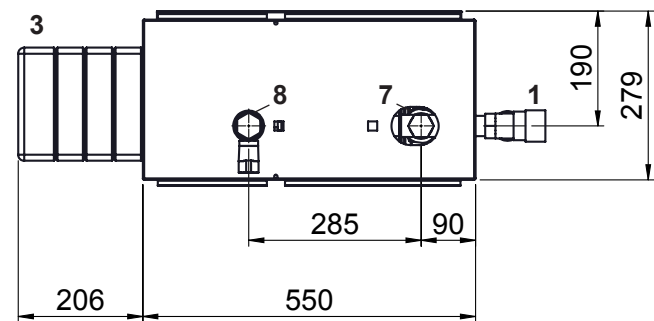
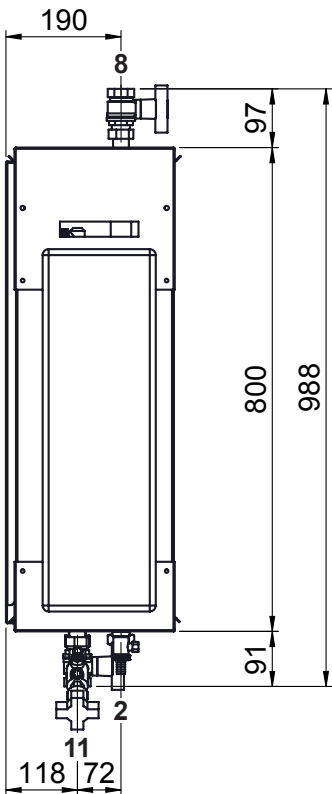
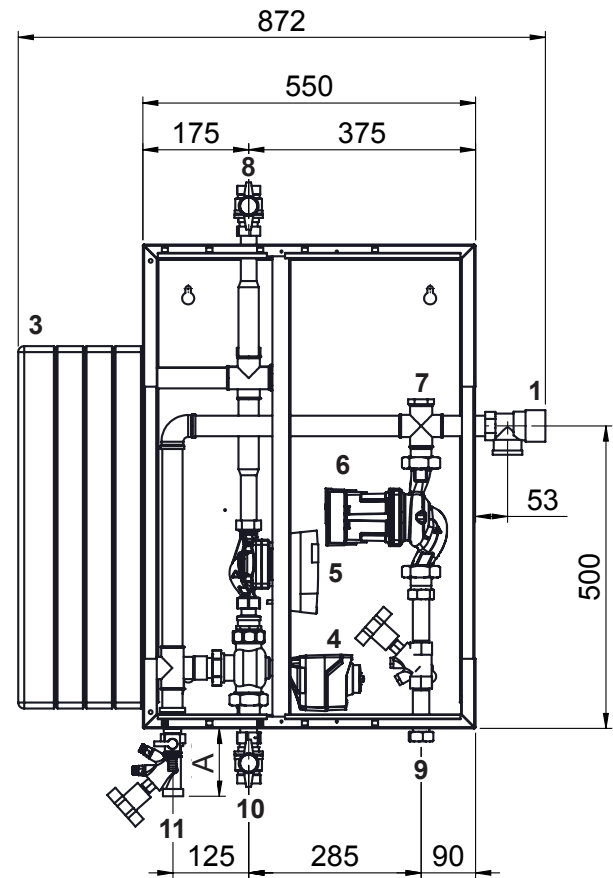
- 1 Safety valve
Hot water 10 bar
- 2 Filling/drain valve
- 3 Heat exchanger

	(1-16) (1-20)
7 Circulation ¹⁾	DN 25, Rp 1" (20, Rp ¾") (IT)
8 Hot water	DN 25, Rp 1" (IT)
9 Cold water	DN 20, Gp 1" (IT)
10 Flow heating water	DN 25, Rp 1" (IT)
11 Return heating water	DN 25, Gp 1" (IT)

¹⁾ Optional, connection and installation on site
Gp = straight internal thread

TransTherm® aqua L	Weight in kg
(1-16)	58
(1-20)	60

Charging module TransTherm® aqua L (1-16, 1-20)
(Dimensions in mm)



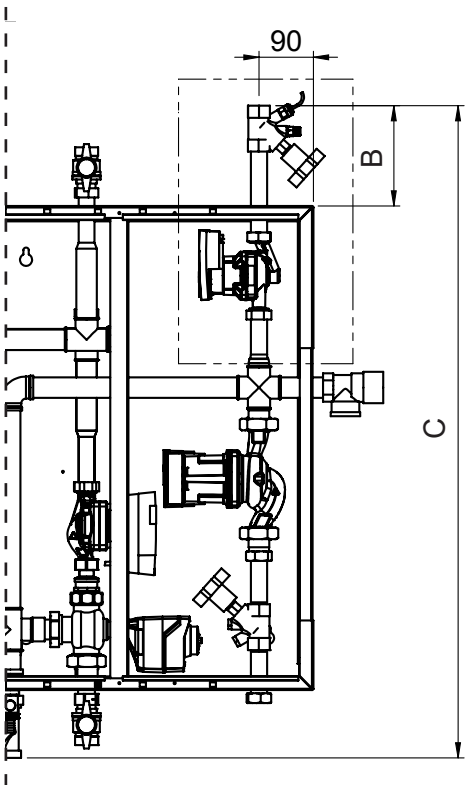
- 1 Safety valve
Hot water 10 bar
- 2 Filling/drain valve
- 3 Heat exchanger
- 4 Three-way valve primary
- 5 Primary circulating pump
- 6 Secondary circulating pump

	A	B	C
(1-16)	112	166	1078
(1-20)	128	193	1121

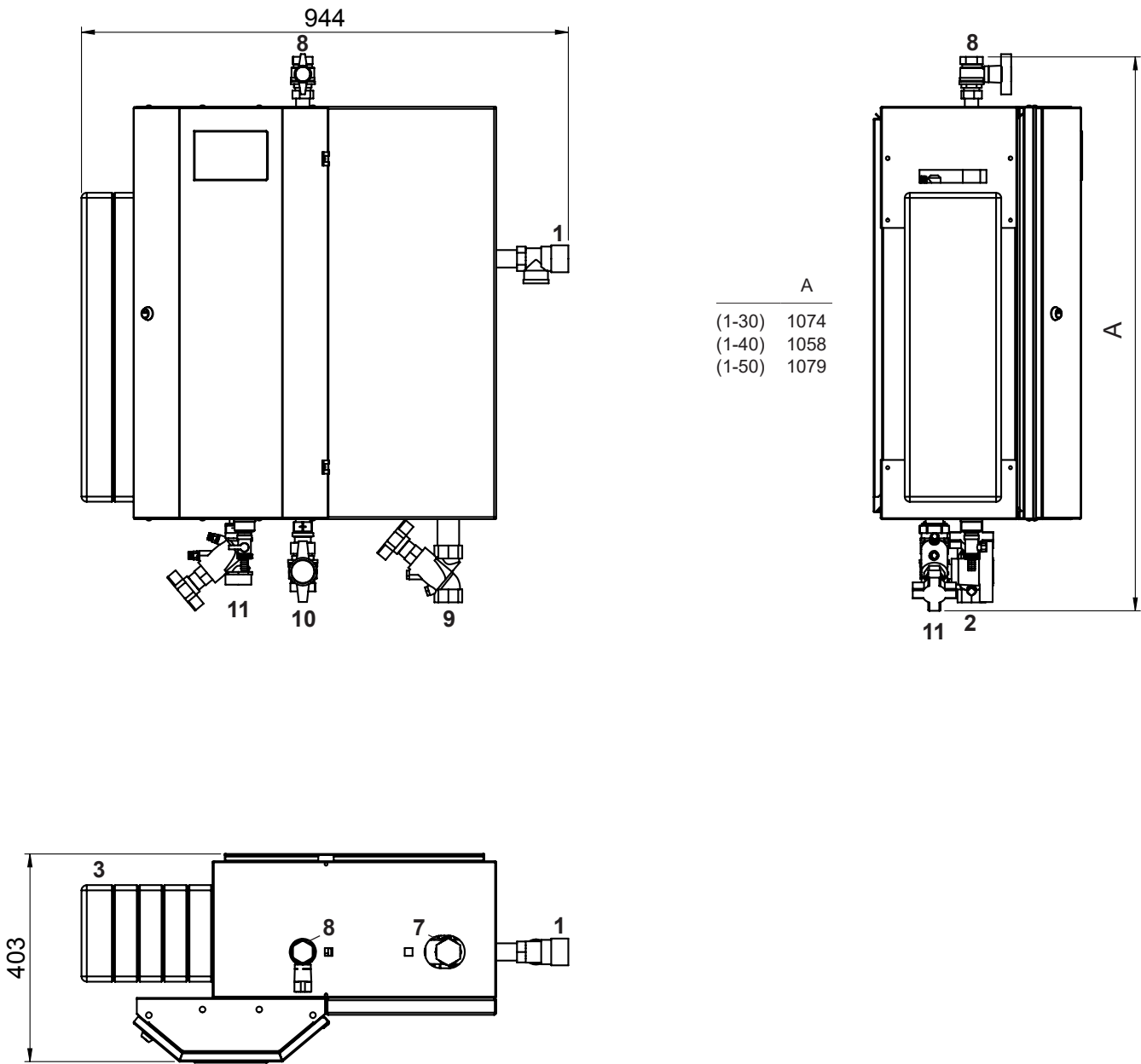
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|-----------------------------|---------------------------------|--------|
| | (1-16) | (1-20) |
| 7 Circulation ¹⁾ | DN 25, Rp 1" (20, Rp 3/4") (IT) | |
| 8 Hot water | DN 25, Rp 1" (IT) | |
| 9 Cold water | DN 20, Gp 1" (IT) | |
| 10 Flow heating water | DN 25, Rp 1" (IT) | |
| 11 Return heating water | DN 25, Gp 1" (IT) | |

¹⁾ Optional, connection and installation on site
Gp = straight internal thread

Version incl. circulation set



Charging module TransTherm® aqua L (1-30 to 1-50)
(Dimensions in mm)



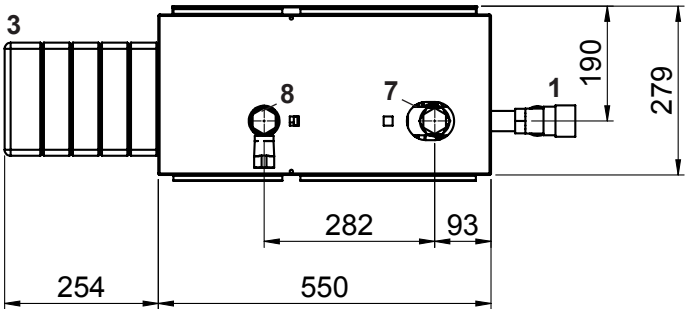
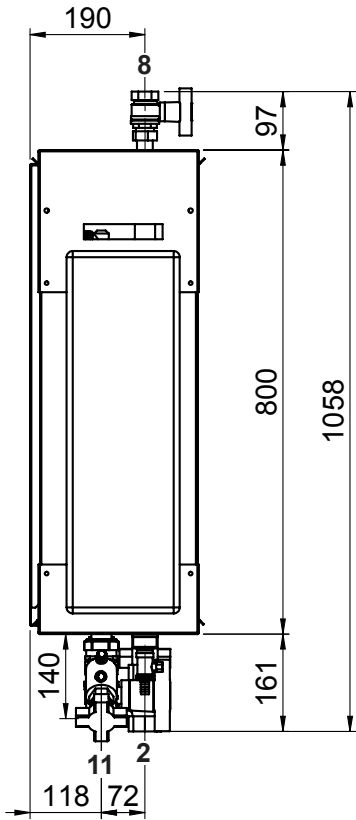
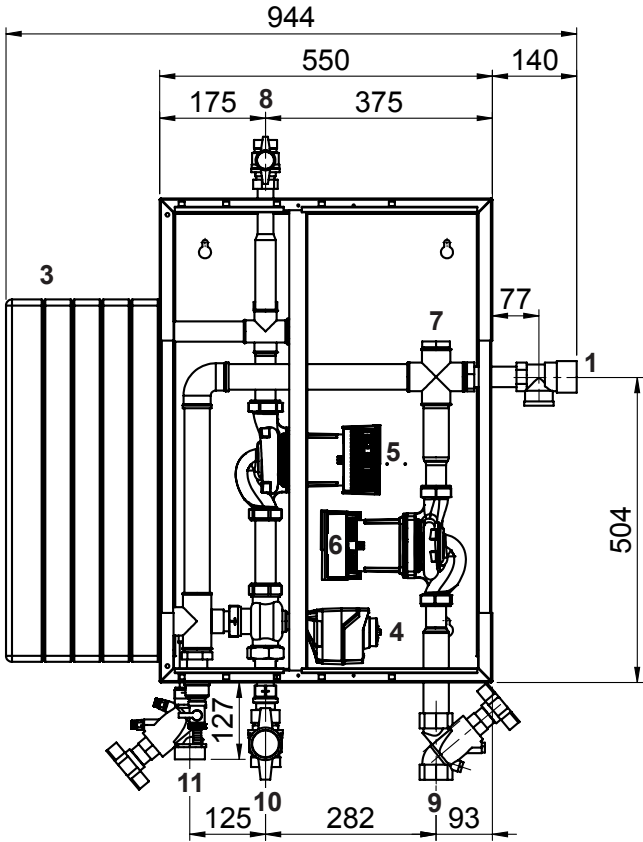
- 1 Safety valve
Hot water 10 bar
- 2 Filling/drain valve
- 3 Heat exchanger

	(1-30)	(1-40)	(1-50)
7	Circulation ¹⁾	DN 32, Rp 1 1/4" (25, Rp 1") (20, Rp 3/4") (IT)	
8	Hot water	DN 32, Rp 1 1/4" (IT)	
9	Cold water	DN 32, Rp 1 1/4" (IT)	
10	Flow heating water	DN 32, Rp 1 1/4" (IT)	
11	Return heating water	DN 32, Gp 1 1/2" (IT)	

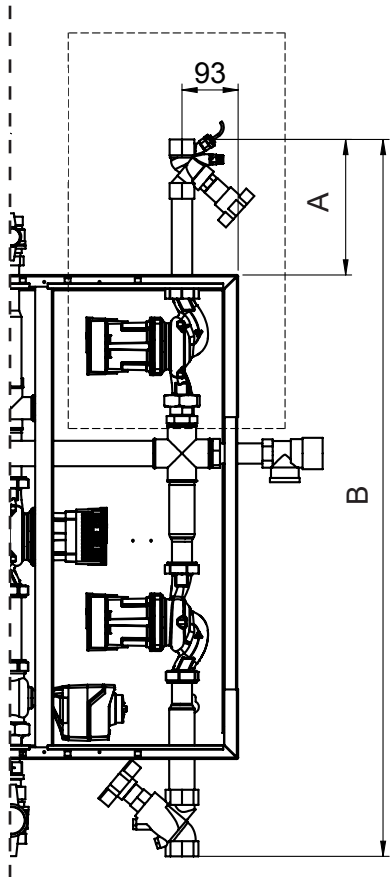
¹⁾ Optional, connection and installation on site
Gp = straight internal thread

TransTherm® aqua L	Weight in kg
(1-30)	66
(1-40)	68
(1-50)	70

Charging module TransTherm® aqua L (1-30 to 1-50)
(Dimensions in mm)



Version incl. circulation set



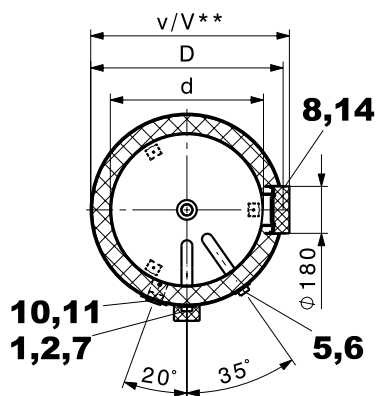
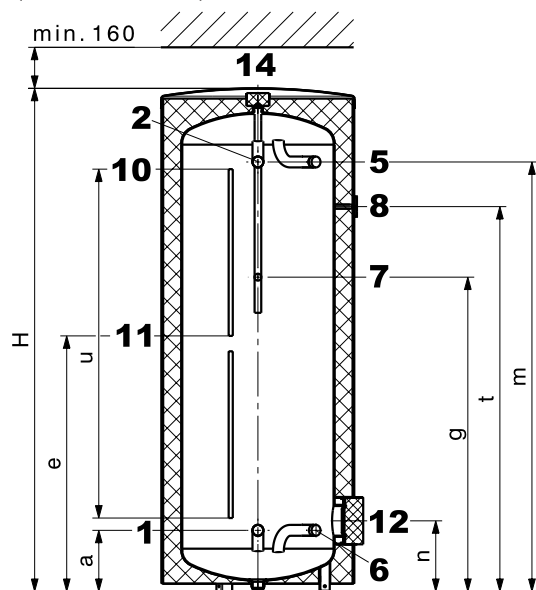
	A	B
(1-30)	224	1185
(1-40)	221	1182
(1-50)	219	1180

- | | | |
|----|----------------------------|--|
| 1 | Safety valve | |
| | Hot water 10 bar | |
| 2 | Filling/drain valve | |
| 3 | Heat exchanger | |
| 4 | Primary three-way valve | |
| 5 | Primary circulating pump | |
| 6 | Secondary circulating pump | |
| | | (1-30) (1-40) (1-50) |
| 7 | Circulation ¹⁾ | DN 32, Rp 1¼" (25, Rp 1") (20, Rp ¾") (IT) |
| 8 | Hot water | DN 32, Rp 1¼" (IT) |
| 9 | Cold water | DN 32, Rp 1¼" (IT) |
| 10 | Flow heating water | DN 32, Rp 1¼" (IT) |
| 11 | Return heating water | DN 32, Gp 1½" (IT) |

¹⁾ Optional, connection and installation on site
Gp = straight internal thread

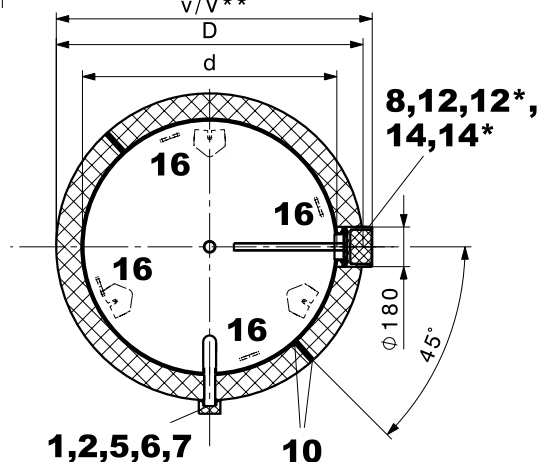
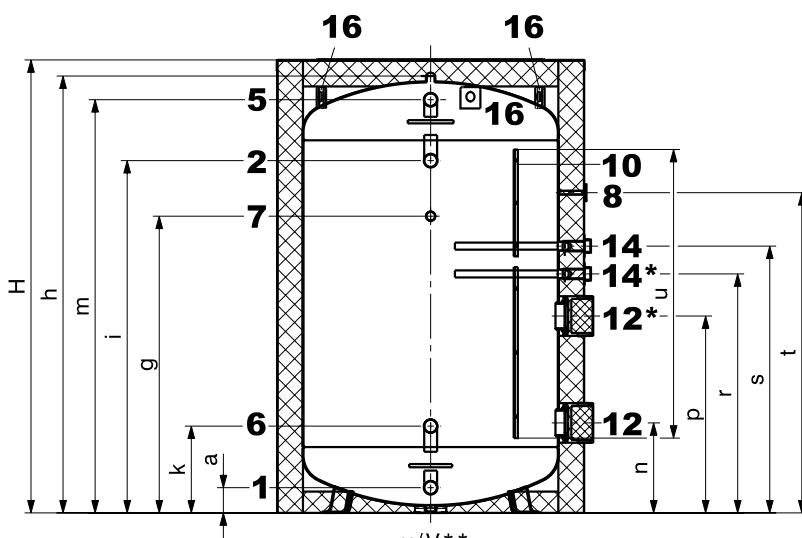
CombiVal E (300,500)

(Dimensions in mm)



- | | | |
|------------------------------------|-----------------|---------------|
| 1 Cold water | type (300,500) | G 1 1/4" (ET) |
| 2 Domestic hot water | type (800-2000) | G 2" (ET) |
| | type (300,500) | G 1 1/4" (ET) |
| 5 Charging flow – hot | type (800-2000) | G 2" (ET) |
| | type (300,500) | G 1 1/4" (ET) |
| 6 Charging return – cold | type (800-2000) | G 2" (ET) |
| | type (300,500) | G 1 1/4" (ET) |
| 7 Circulation | type (800-2000) | G 3/4" (ET) |
| (removable insulated cap Ø 100 mm) | type (300,500) | G 1 1/4" (ET) |

Deviations possible as a result of manufacturing tolerances.
Dimensions ± 10 mm

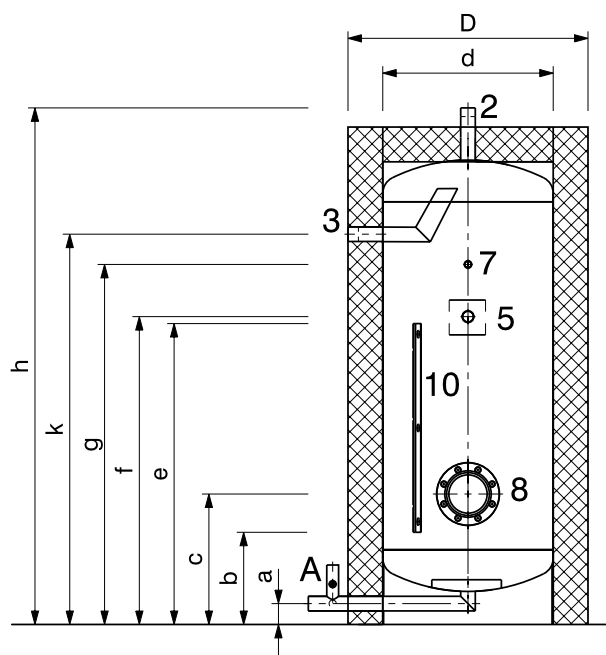
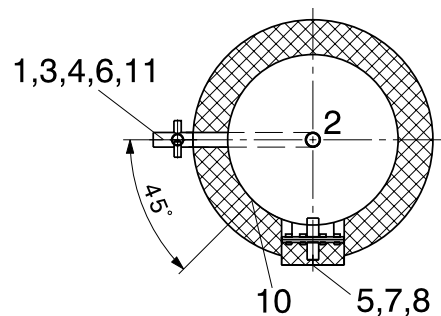
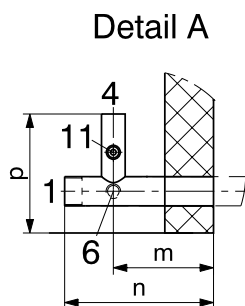
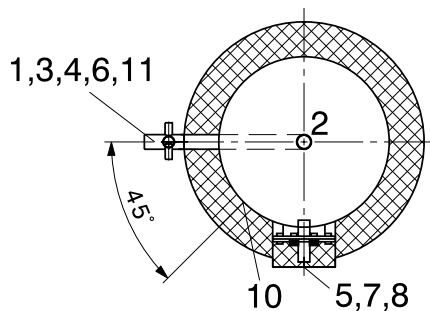
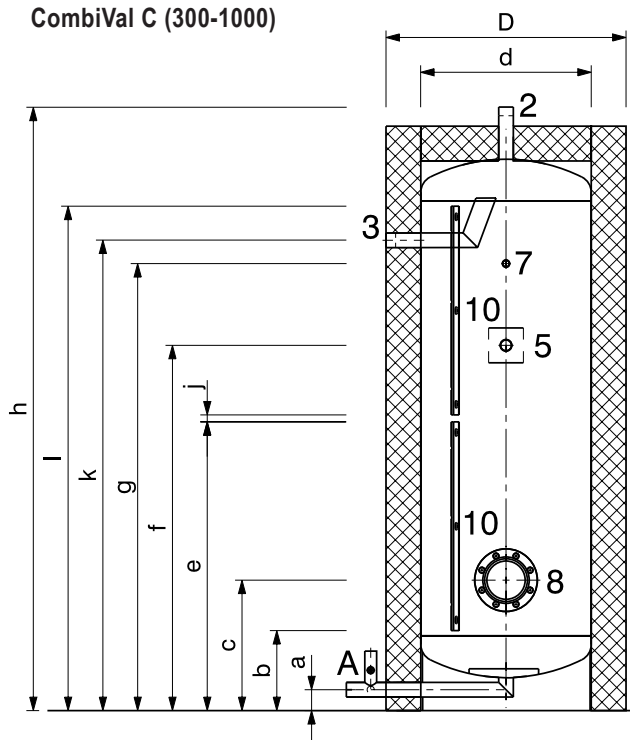
CombiVal E (800-2000)


- | | |
|---|--------------------------------|
| 8 Thermometer | |
| 10 Sensor channel, inner Ø 11 mm | type (300,500) |
| Sensor terminal strip (zip fastener) | type (800-2000) |
| 11 Removable cap (Ø 60 mm) | type (300,500) |
| for positioning the sensor in the sensor channel | |
| 12 Hand-hole flange (flange-mounted electric heating element) | |
| Ø 180/120 mm, pitch circle 150 mm, 8 x M10 | |
| 12* Attention: | |
| type (800,1000) does not have a second flange | |
| 14 Anode sleeve | type (300,500) G 1" (IT) |
| | type (800-2000) G 1 1/4" (IT) |
| 14* Anode sleeve | type (1500,2000) G 1 1/4" (IT) |
| Screw connection uninsulated | |
| 16 Transport strap | type (800-2000) |

CombiVal E

type	D	d	H	h	a	k	e	g	m	n	p	r	s	t	u	v	V**	Tilting dimension
(300)	650	500	1850	-	235	-	945	1160	1584	325	-	-	-	1505	1360	745	785	1961
(500)	750	597	1960	-	238	-	996	1225	1674	275	-	-	-	1500	1360	745	785	2082
(800)	950	750	2030	1938	101	347	-	1150	1893	352	-	-	1336	1505	1400	975	1020	1960
(1000)	1050	850	2060	1968	100	355	-	1158	1910	360	-	-	1331	1500	1400	1075	1120	2000
(1500)	1240	1000	2240	2133	105	375	-	1357	2049	390	890	1167	1521	1657	1450	1265	1310	2370
(2000)	1440	1200	2150	2044	118	406	-	1388	1933	421	921	1118	1248	1498	1350	1465	1510	2350

** When using a flange-mounted electric heating element

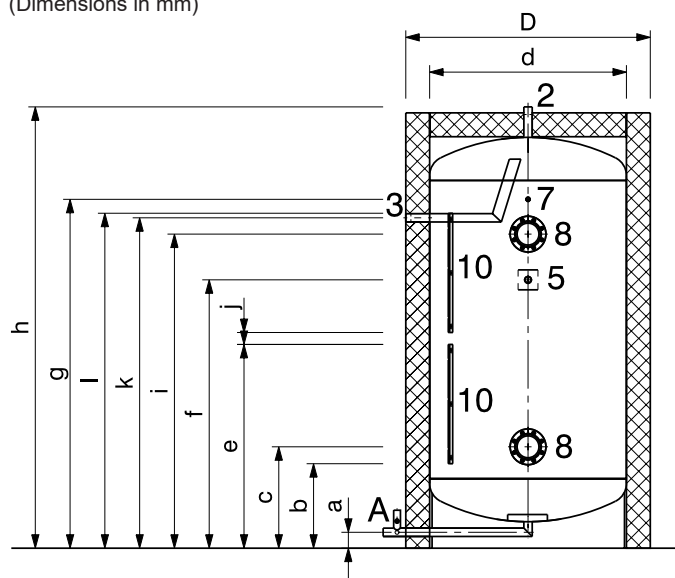
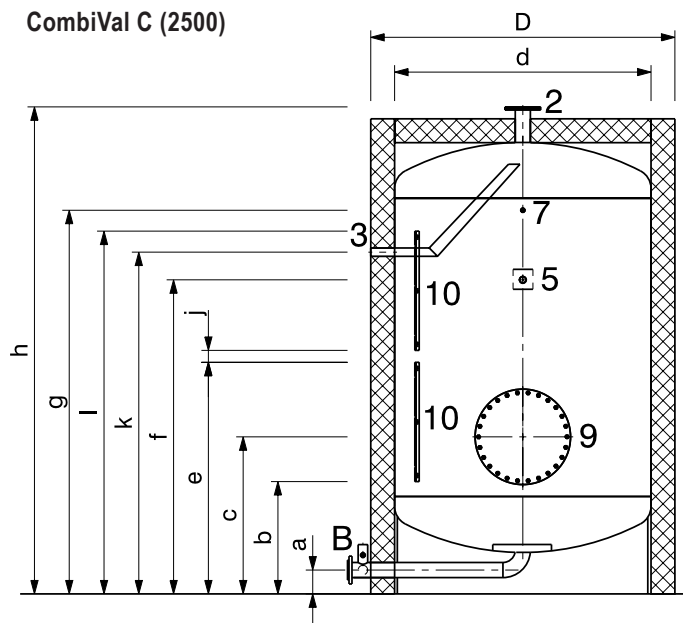
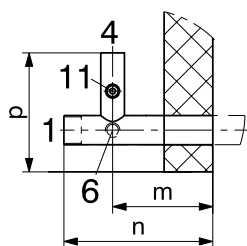
CombiVal C (200)
(Dimensions in mm)

CombiVal C (300-1000)


1	Cold water with baffle plate	type (200,300) type (400,500) type (750,1000)	Rp 1 1/4" (IT) Rp 1 1/2" (IT) Rp 2" (IT)
2	Hot water	type (200,300) type (400,500) type (750,1000)	Rp 1 1/4" (IT) Rp 1 1/2" (IT) Rp 2" (IT)
3	Charging flow – hot	type (200-500) type (750,1000)	Rp 1" (IT) Rp 1 1/4" (IT)
4	Charging return – cold	type (200-500) type (750,1000)	Rp 1" (IT) Rp 1 1/4" (IT)
5	Circulation with baffle plate	type (200-500) type (750,1000)	Rp 1" (IT) Rp 1 1/4" (IT)
6	Drain	type (200-500) type (750,1000)	Rp 1/2" (IT) Rp 3/4" (IT)

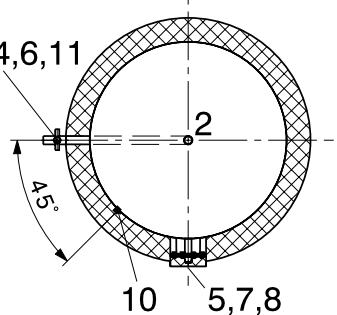
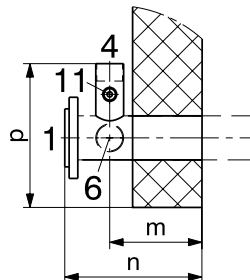
7	Sleeve (Rp 1/2" (IT)) for mountable immersion sleeve and thermometer (L = 100 mm, inner Ø = 8 mm)
8	Hand-hole flange (17.7 Nm) Ø 180/120 mm, pitch circle 150 mm, 8 x M10 or optional: - flange-mounted electric heating element or - impressed current anode set with flange cover, 180 – 1 1/2" (IT)
10	Sensor terminal bar 600 x 30 mm 1 x type (200), 2 x type (300-1000)
11	Immersion sleeve M16 x 1.5 for sensor/thermostat

Deviations possible as a result of manufacturing tolerances.
Dimensions ± 10 mm

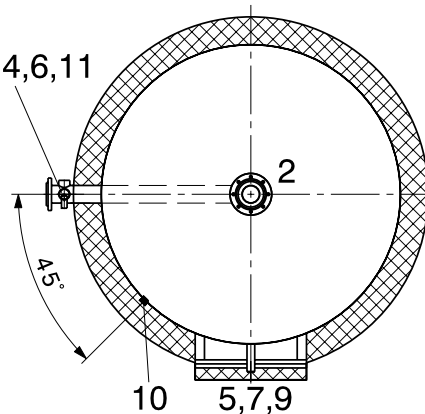
CombiVal C type	a	b	c	d	D	e	f	g	h	j	k	l	m	n	p	Tilting dimension
(200)	60	240	375	490	690	840	885	1035	1485	-	1125	-	130	190	174	1515
(300)	60	240	375	490	690	840	1050	1285	1735	20	1355	1460	135	205	174	1765
(400)	70	285	420	590	790	885	1095	1330	1745	20	1365	1505	135	205	184	1780
(500)	80	295	430	640	840	895	1105	1340	1765	20	1375	1515	130	190	194	1805
(750)	80	335	470	740	940	935	1310	1590	2085	60	1665	1595	135	205	194	2130
(1000)	80	365	500	890	1090	965	1215	1495	1890	20	1384	1585	135	205	203	1950

CombiVal C (1500,2000)
(Dimensions in mm)

CombiVal C (2500)

Detail A


1,3,4,6,11


Detail B


1,3,4,6,11



- | | | | |
|---|---|------------------|----------------|
| 1 | Cold water with baffle plate | type (1500,2000) | Rp 2" (IT) |
| | | type (2500) | DN 65/PN 10 |
| 2 | Hot water | type (1500,2000) | Rp 2" (IT) |
| | | type (2500) | DN 65/PN 10 |
| 3 | Charging flow – hot | type (1500-2000) | Rp 1 1/2" (IT) |
| 4 | Charging return – cold | type (1500-2000) | Rp 1 1/2" (IT) |
| 5 | Circulation with baffle plate | type (1500-2000) | Rp 1 1/2" (IT) |
| 6 | Drain | type (1500-2000) | Rp 3/4" (IT) |
| 7 | Sleeve (Rp 1/2" (IT)) for mountable immersion sleeve and thermometer (L = 100 mm, inner Ø = 8 mm) | | |
| 8 | Hand-hole flange (17.7 Nm)
Ø 180/120 mm, pitch circle 150 mm, 8 x M10 or optional:
- flange-mounted electric heating element or
- impressed current anode set with flange cover, 180 – 1 1/2" (IT) | | |

- | | |
|----|---|
| 9 | Manhole flange (40 Nm)
Ø 400/480 mm, pitch circle 445 mm, 26 x M14 or optional
Flange adapter:
- for electric heating element or
- for impressed current anode set with flange cover, 180 – 1 1/2" (IT) |
| 10 | Sensor terminal bar 600 x 30 mm
2 x type (1500-2500) |
| 11 | Immersion sleeve M16 x 1.5 for sensor/thermostat |

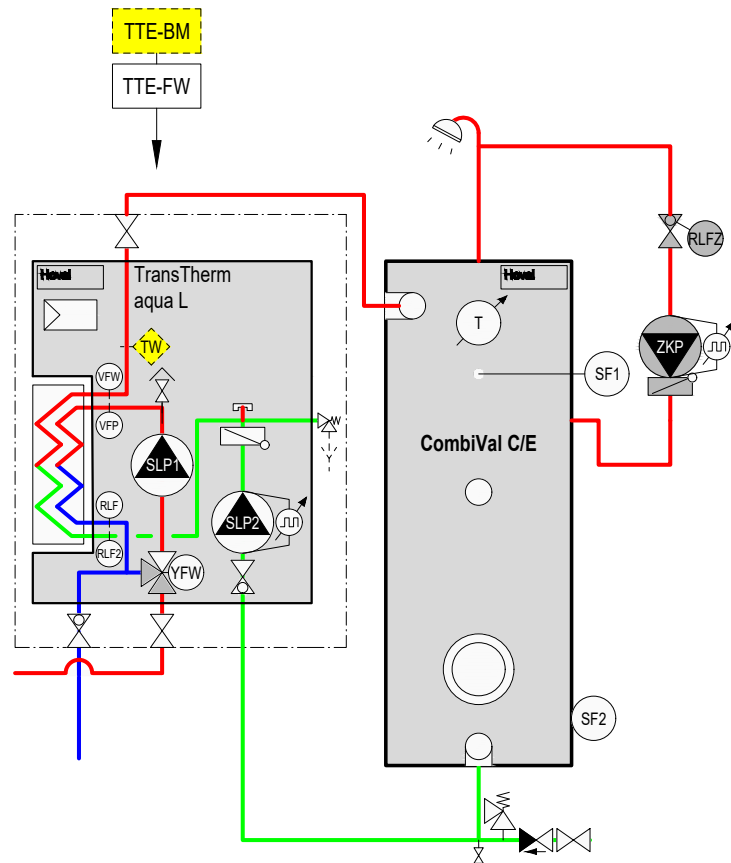
Deviations possible as a result of manufacturing tolerances.
Dimensions ± 10 mm

CombiVal C type	a	b	c	d	D	e	f	g	h	i	j	k	m	n	p	Tilting dimension
(1500)	80	375	510	990	1230	975	1350	1755	2220	1580	60	1674	165	235	203	2300
(2000)	80	405	530	1090	1330	1005	1580	2035	2525	1860	165	1909	165	235	203	2610
(2500)	120	515	790	1290	1530	1115	1580	1930	2450	-	60	1719	165	250	243	2570

Water heating

TransTherm® aqua L

- Circulation via storage tank
- Storage tank charging system



TTE-FW	Basic module district heating/fresh water
TW	Flow temperature monitor (if required)
VFP	Primary flow sensor
VFW	Flow sensor domestic hot water
RLF	Primary return sensor
RLF2	Return sensor domestic cold water
SF1	Calorifier sensor 1
SF2	Calorifier sensor 2
RLFZ	Circulation sensor
SLP1	Calorifier charging pump primary
SLP2	Calorifier charging pump secondary
YFW	Three-way valve with actuator
ZKP	Recirculation pump

Option

BM	TopTronic® E control module
----	-----------------------------

Notice

A safety valve (6 bar) must be installed in the cold water line. The loading module is already protected with a safety valve (10 bar).

**Buffer storage tank
EnerVal (100-300)**

- Steel buffer storage tank for the hydraulic integration of energy generators
- Thermal insulation made of polyurethane hard foam, foamed on the storage
- Removable foil jacket in red
- (100): 2 connection sleeves Rp 1 ½", 2 connection nozzles R 1"
- (200): 5 connection sleeves Rp 1 ½"
- (300): 8 connection sleeves Rp 1 ½"
- 1 sleeve Rp ½" with thermometer and immersion sleeve mounted
- 2 sensor channels

Delivery

- Buffer storage tank with foil jacket completely installed and packed



**Buffer storage tank
EnerVal (500)**

- Steel buffer storage tank for the hydraulic integration of energy generators
- Thermal insulation made of polyurethane hard foam, foamed on the calorifier
- Removable foil jacket in red
- 8 connection sleeves Rp 1 ½"
- 1 sleeve Rp 1 ½" for screw-in electrical heating inset
- 1 sleeve Rp ½" with thermometer and immersion sleeve mounted
- 2 sensor channels

Delivery

- Buffer storage tank with foil jacket completely installed and packed

Range EnerVal		Nominal content l	Operating pressure bar
type			
(100)	A	117	3
(200)	B	222	3
(300)	B	283	3
(500)	B	473	3
(800)		785	3
(1000)		918	3
(1500)		1425	3
(2000)		2019	3

A* → F

**Buffer storage tank
EnerVal (800-2000)**

- Steel buffer storage tank for the hydraulic integration of energy generators
- Thermal insulation made of polyester fleece with foil jacket, colour red
- 10 connection sleeves G 2" (IT)
- 2 sleeves G 1 ½" (IT) for screw-in electric heating element
- 3 sleeves G ½" (IT) for sensor/thermometer
- Terminal strips for contact sensors
- 1 sleeve G 1" (IT) for circulation lance only with EnerVal (800,1000)
- 1 sleeve G 1" (IT) for ventilation
- Perforated separating plate in the central area for separation of the temperature zones
- Flow diversions permanently installed
- 13 insulated cover caps made of EPP hard foam, 2-piece (can be broken out)

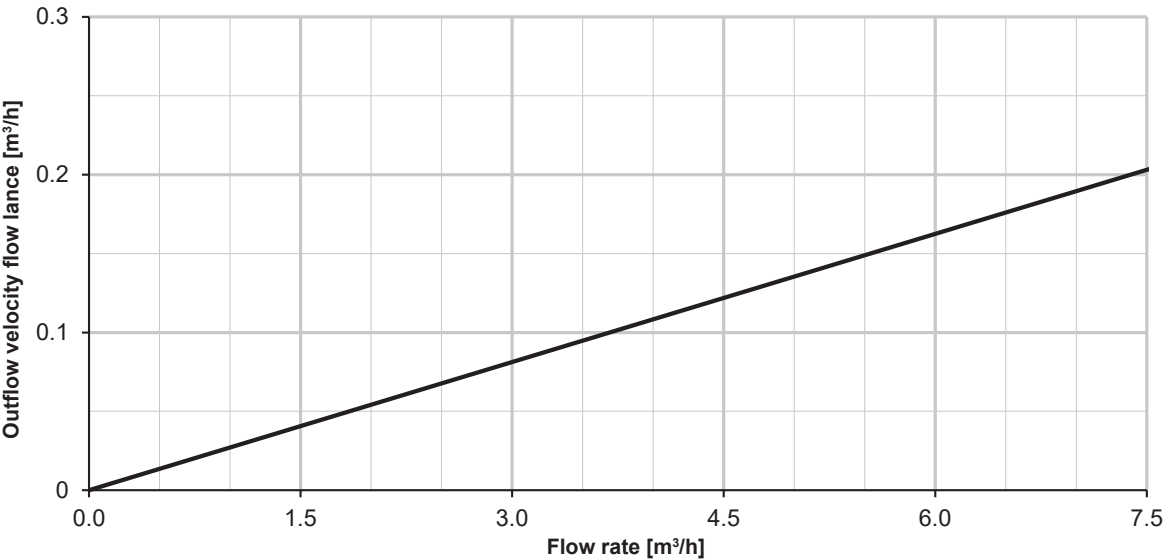
Delivery

- Buffer storage tank with foil jacket completely installed and packed
- Insulated cover caps already installed (can be removed and broken out)

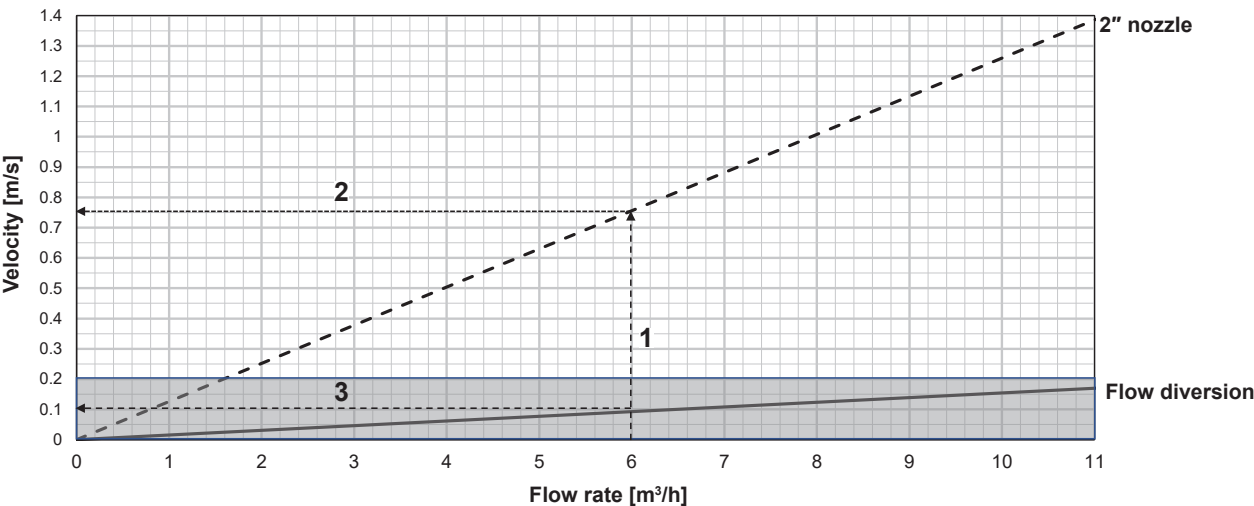
EnerVal (100-2000)

Type		(100)	(200)	(300)	(500)	(800)	(1000)	(1500)	(2000)
• Volume	litres	117	222	283	473	785	918	1425	2019
• Max. operating/test pressure	bar	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
• Min. operating temperature	°C	5	5	5	5	20	20	20	20
• Max. operating temperature	°C	95	95	95	95	95	95	95	95
• Thermal insulation PU rigid foam, foam-lined	mm	50	50	75	75	-	-	-	-
• Thermal insulation polyester fleece	mm	-	-	-	-	150	150	150	150
• Thermal insulation λ	W/mK	0.027	0.027	0.027	0.027	0.04	0.04	0.04	0.04
• Fire protection class		B2	B2	B2	B2	B2	B2	B2	B2
• Heat loss at 65 °C	W	35	53	51	72	119	130	153	185
• Transport weight	kg	41	59	79	111	170	187	265	540
• U value	W/m ² K	0.359	0.359	0.279	0.296	0.315	0.308	0.299	0.302
• Dimensions	see table of dimensions								

Outflow velocity flow lance DN 40
EnerVal (200-500)

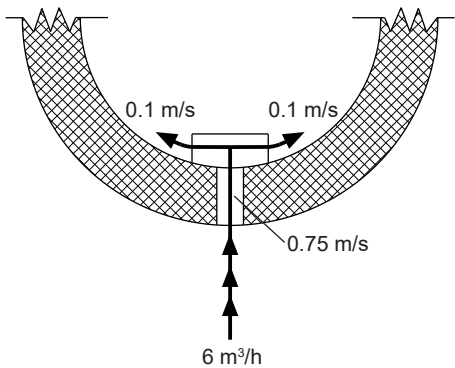


Velocity in the connection nozzles and inflow velocity with flow deflection
EnerVal (800-2000)



- 1 = flow rate
- 2 = velocity in the connection nozzles
- 3 = inflow velocity with flow deflection in the EnerVal

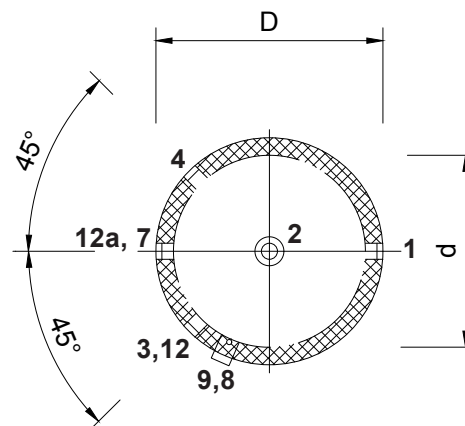
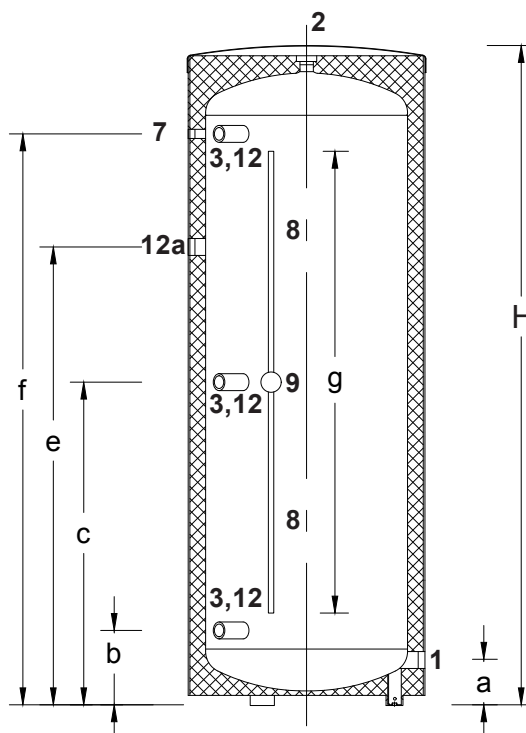
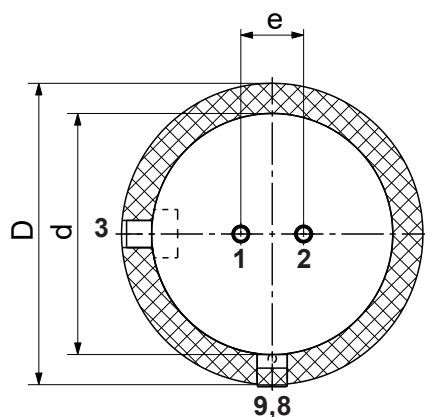
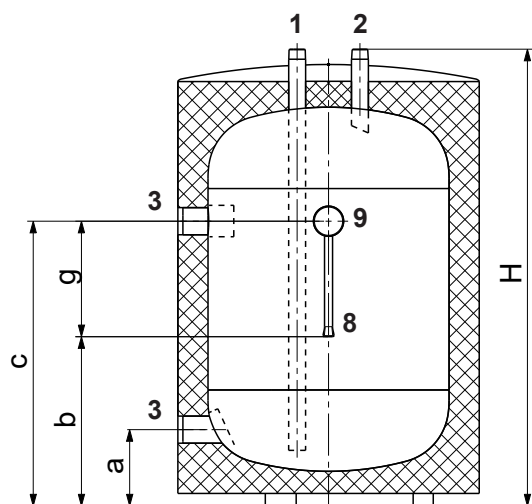
Example of inlet velocity distribution by flow diversions EnerVal (800-2000)



EnerVal (100)

(Dimensions in mm)

EnerVal (200-500)



Type (100) Type (200-500)

R 1" (ET) G 1½" (IT)

R 1" (ET) G 1½" (IT)

G 1½" (IT) G 1½" (IT)

G 1½" (IT)

G 1½" (IT)

G 1½" (IT)

- 1 Heating connection return discharge
- 2 Heating connection flow discharge
- 3 Heat generator connection flow/return
- 4 Heat generator connection flow/return 3 x, only with EnerVal (300,500)
- 7 Sleeve with mounted immersion sleeve and thermometer
- 8 Sensor channel inner Ø 11 mm
- 9 Removable cap (60 mm) for positioning the sensor in the sensor channel
- 12 Connection for screw-in electric heating element
(Positioning depends on the system, see hydraulic schematics of the heat generator)
- 12a Additional connection for screw-in electric heating element, only for EnerVal (500)

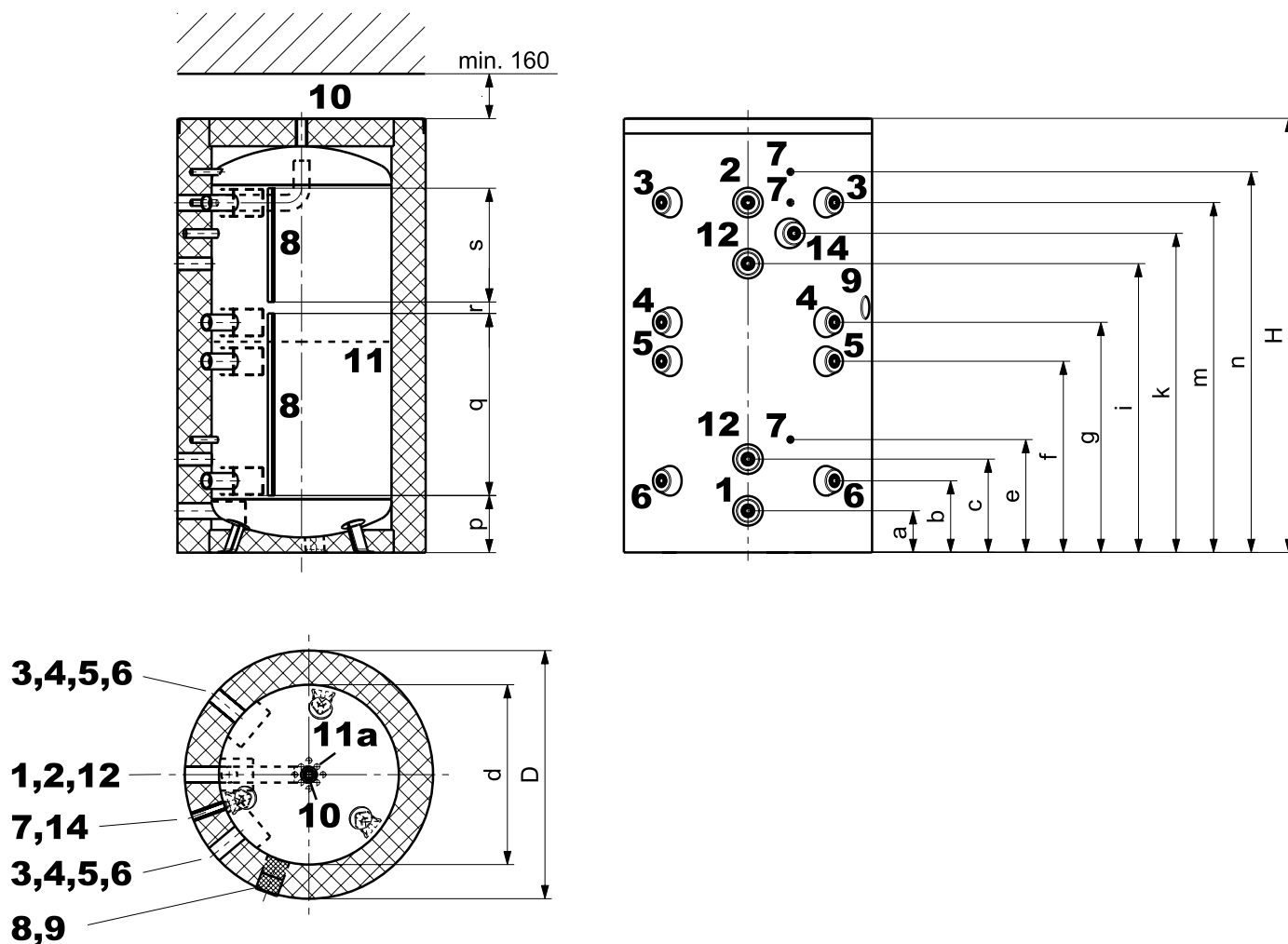
1 + 2 For EnerVal (100), suitable for direct installation of an armature group LG/HA 25-2 and 32-2

EnerVal type	D	d	H	a	b	c	e	f	g	Tilting dimension
(100)	600	480	910	152	337	567	125	-	230	985
(200)	600	480	1440	152	300	720	-	1140	860	1560
(300)	650	480	1780	152	300	890	-	1479	1285	1895
(500)	750	597	1921	127	220	946	1400	1670	1360	2025

Deviations possible as a result of manufacturing tolerances.
Dimensions ± 10 mm

EnerVal (800-2000)

(Dimensions in mm)



- | | | | |
|-----|--|--|---------------|
| 1 | Heating connection | return discharge (inflow restrictor) | G 2" (IT) |
| 2 | Heating connection | flow discharge (single-layer elbow pipe) | G 2" (IT) |
| 3 | Heat generator connection | flow top (inflow restrictor) | G 2" (IT) |
| 4 | Heat generator connection | return top (inflow restrictor) | G 2" (IT) |
| 5 | Heat generator connection | flow bottom (inflow restrictor) | G 2" (IT) |
| 6 | Heat generator connection | return bottom (inflow restrictor) | G 2" (IT) |
| 7 | Sleeve for immersion sleeve, thermostat or thermometer | | G 1/2" (IT) |
| 8 | Sensor terminal strip | | 2 x |
| 9 | Removable cap (100 mm) for positioning the sensor | | |
| 10 | Possible air vent | | G 1" (IT) |
| 11 | Separating plate | | |
| 11a | Holes in the separating plate | | 12 x |
| 12 | Connection for electric heating element | | G 1 1/2" (IT) |
| 14 | Connection for circulation lance, attention: only for type (800,1000) | | G 1" (IT) |

Deviations possible as a result of manufacturing tolerances.
Dimensions ± 10 mm

EnerVal type	D	d	H	a	b	c	e	f	g	i	k	m	n	p	q	r	s	Tilting dimension
(800)	1090	790	1907	183	315	410	496	840	1011	1269	1402	1537	1672	251	800	50	500	1945
(1000)	1090	790	2197	183	369	468	569	970	1171	1472	1596	1759	1942	370	800	100	500	2230
(1500)	1300	1000	2135	220	368	451	549	941	1137	1431	-	1699	1839	339	800	100	500	2179
(2000)	1500	1200	2145	220	382	430	529	928	1127	1425	-	1672	1839	350	800	80	500	2210

**Buffer storage tank
EnerVal G (800,1000)**

- Steel buffer storage tank for the hydraulic integration of energy generators
- Thermal insulation made of polyester fibre with foil jacket, colour red
- 8 connection flanges DN 65 (PN 6)
- 2 connection flanges DN 80 (PN 6)
- 2 flanges outside Ø 180 mm for flange-mounted electric heating element
- 3 sleeves G ½" (IT) for sensor/thermometer
- Terminal strips for contact sensors
- 1 sleeve G 1" (IT) for circulation lance
- 1 sleeve G 1" (IT) for ventilation
- Perforated separating plate in the central area for separation of the temperature zones
- Flow diversions permanently installed
- 12 insulated flange hoods
- 1 insulated cover cap made of EPP hard foam, 2-piece (can be broken out)

Delivery

- Buffer storage tank mounted and packed with foil jacket (can be removed for installation)
- Insulated flange hoods and cover cap already mounted (removable)



Range		
EnerVal G type	Nominal content l	Operating pressure bar
(800)	783	6
(1000)	925	6
(1500)	1395	6
(2500)	2360	6
(4000)	3907	6
(6000)	5815	6

**Buffer storage tank
EnerVal G (1500,2500)**

- Steel buffer storage tank for the hydraulic integration of energy generators
- Thermal insulation made of polyester fibre with foil jacket, colour red
- 8 connection flanges DN 80 (PN 6)
- 2 connection flanges DN 100 (PN 6)
- 2 flanges outside Ø 257 mm for flange-mounted electric heating element
- 3 sleeves G ½" (IT) for sensor/thermometer
- Terminal strips for contact sensors
- 1 sleeve G 1" (IT) for ventilation
- Perforated separating plate in the central area for separation of the temperature zones
- Flow diversions permanently installed
- 12 insulated flange hoods

Delivery

- Buffer storage tank (1500) mounted and packed with foil jacket (can be removed for installation)
- Buffer storage tank (2500) thermal insulation separate
- Insulated flange hoods already mounted (removable)

**Buffer storage tank
EnerVal G (4000,6000)**

- Steel buffer storage tank for the hydraulic integration of energy generators
- Without thermal insulation (on-site)
- 8 connection flanges DN 100 (PN 6)
- 2 connection flanges DN 125 (PN 6)
- 2 flanges outside Ø 257 mm for flange-mounted electric heating element
- 3 sleeves G ½" (IT) for sensor/thermometer
- Terminal strips for contact sensors
- 1 sleeve G 1" (IT) for ventilation
- Perforated separating plate in the central area for separation of the temperature zones
- Flow diversions permanently installed

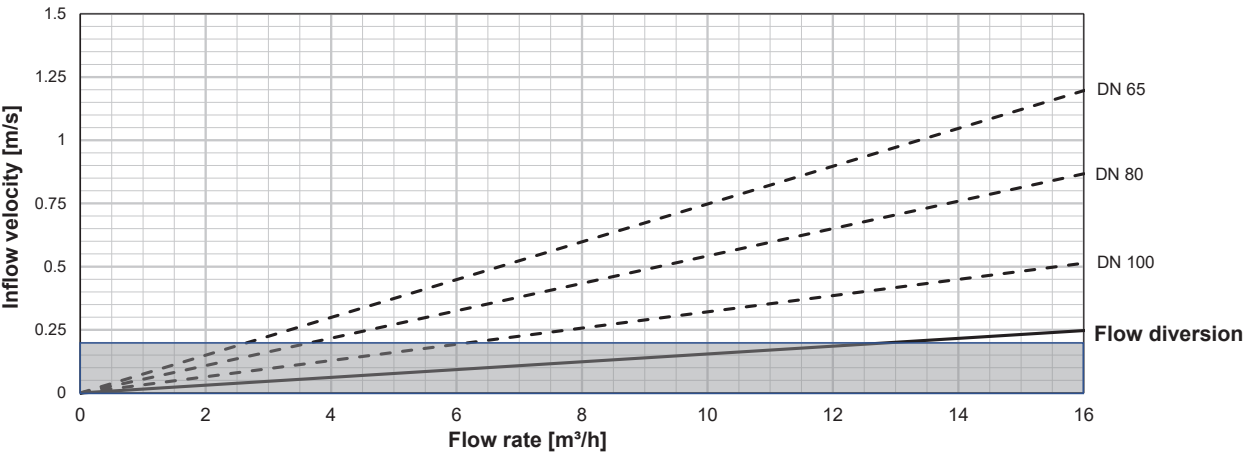
Delivery

- Buffer storage tank raw packed
- Thermal insulation to be provided on site

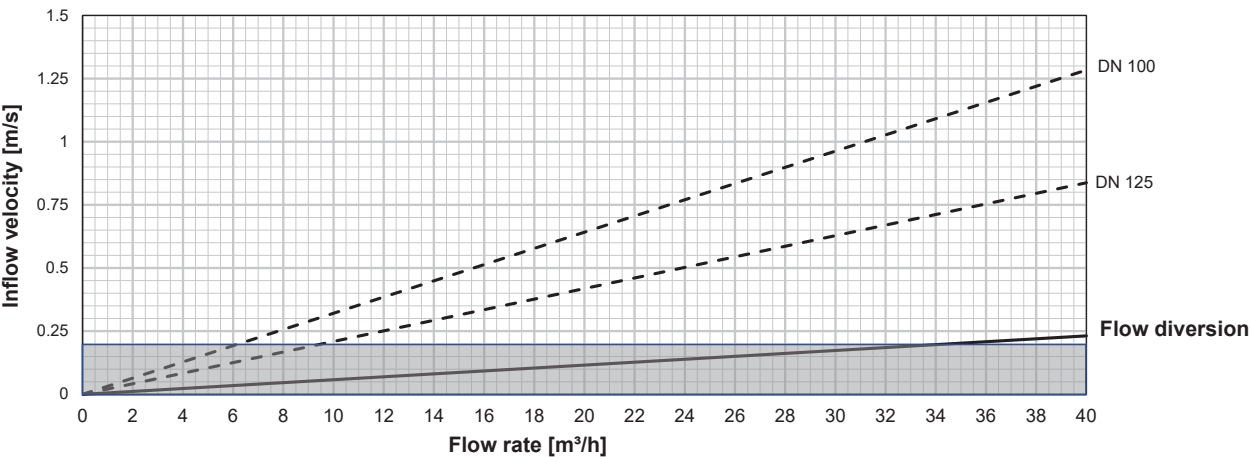
EnerVal G (800-6000)

Type		(800)	(1000)	(1500)	(2500)	(4000)	(6000)
• Volume	l	783	925	1395	2360	3907	5815
• Max. operating/test pressure	bar	6/8	6/8	6/8	6/8	6/8	6/8
• Min. operating temperature	°C	20	20	20	20	20	20
• Max. operating temperature	°C	95	95	95	95	95	95
• Thermal insulation made from polyester fleece	mm	150	150	150	150	-	-
• Thermal insulation λ	W/mK	0.04	0.04	0.04	0.04	-	-
• Fire protection class		B2	B2	B2	B2	-	-
• Heat loss at 65 °C	W	114	129	152	203	-	-
• Transport weight	kg	220	250	375	775	1275	1695
• U value	W/m ² K	0.302	0.305	0.295	0.295	-	-
• Dimensions	see dimensional drawing						

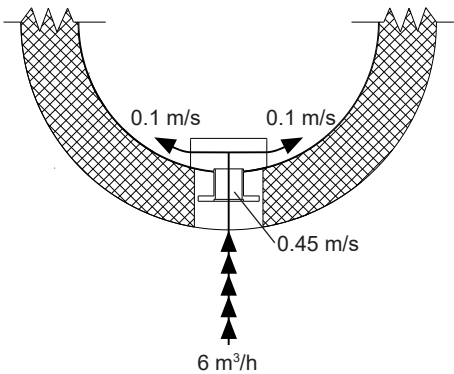
Velocity in the connection nozzles and inflow velocity with flow deflection in the EnerVal G (800-2500)



EnerVal G (4000,6000)

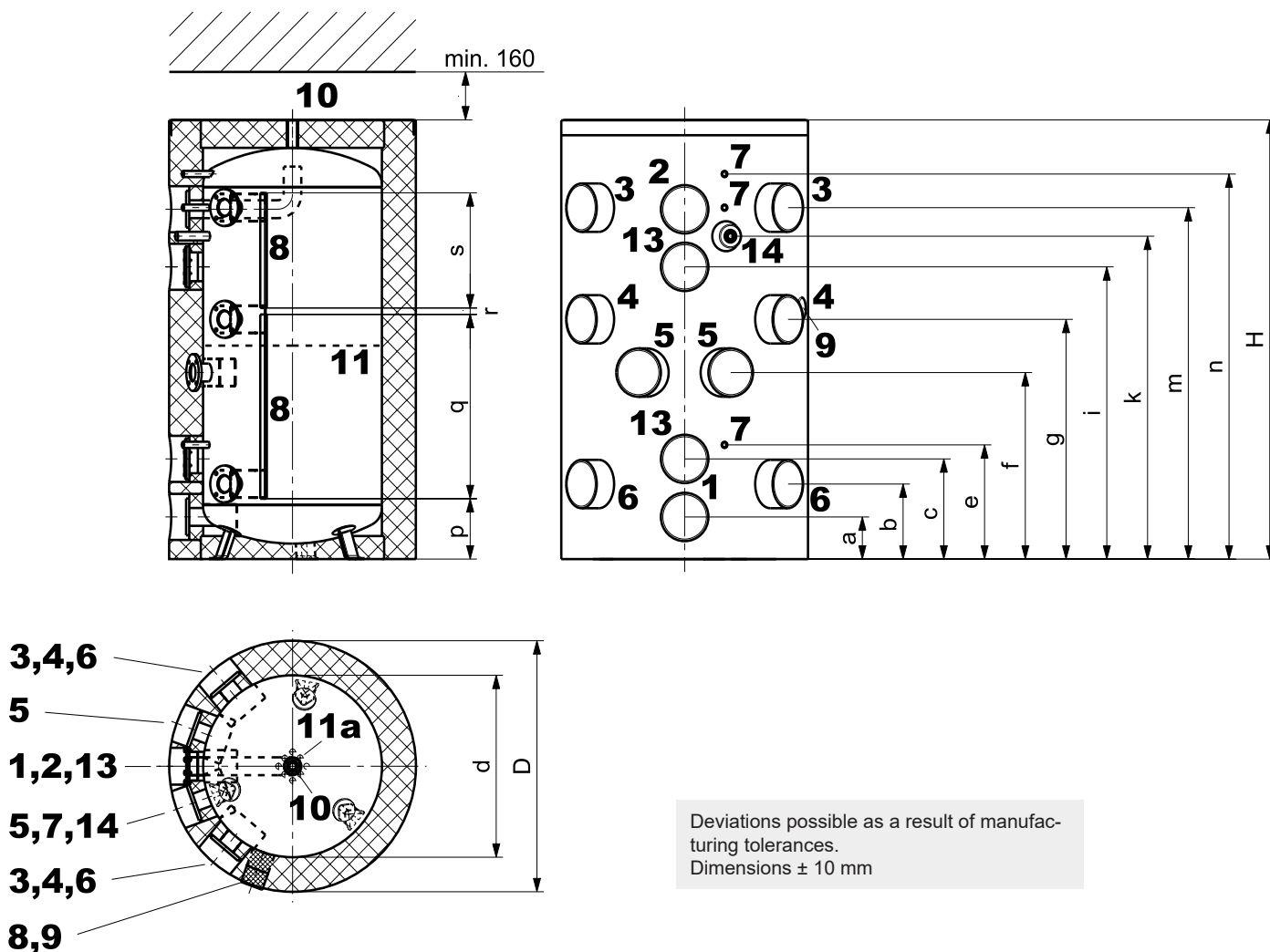


Example of inlet velocity distribution by flow diversions EnerVal G (800-6000)



EnerVal G (800-2500)

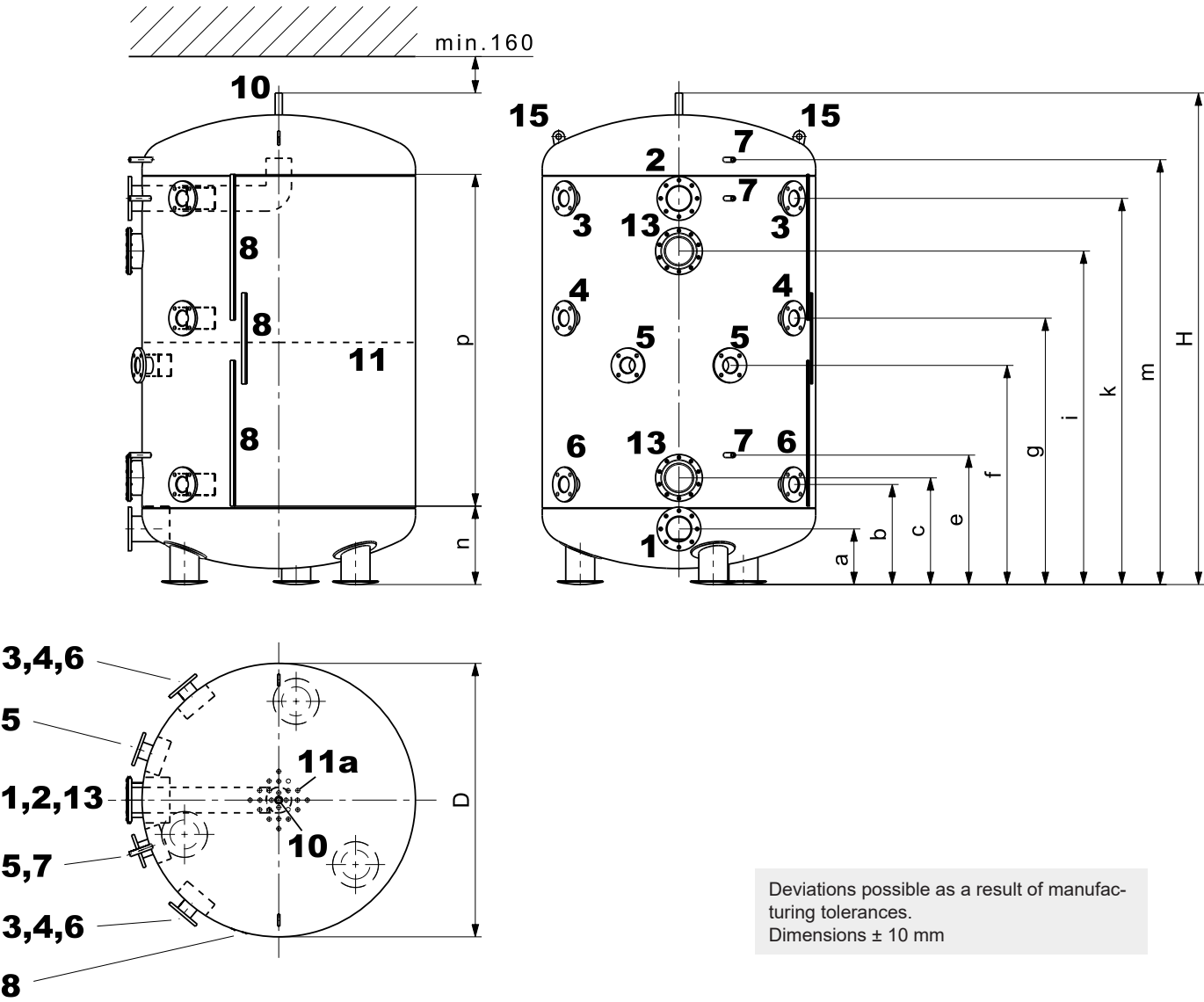
(Dimensions in mm)



			Type (800,1000)	pitch circle Ø	Type (1500,2500)	pitch circle Ø
1	Heating connection	return discharge (inflow restrictor)	DN 80, 4 x M16*, PN 6,	150 mm	DN 100, 4 x M16*, PN 6,	170 mm
2	Heating connection	flow discharge (single-layer elbow pipe)	DN 80, 4 x M16*, PN 6,	150 mm	DN 100, 4 x M16*, PN 6,	170 mm
3	Heat generator connection	flow top (inflow restrictor)	DN 65, 4 x M12*, PN 6,	130 mm	DN 80, 4 x M16*, PN 6,	150 mm
4	Heat generator connection	return top (inflow restrictor)	DN 65, 4 x M12*, PN 6,	130 mm	DN 80, 4 x M16*, PN 6,	150 mm
5	Heat generator connection	flow bottom (inflow restrictor)	DN 65, 4 x M12*, PN 6,	130 mm	DN 80, 4 x M16*, PN 6,	150 mm
6	Heat generator connection	return bottom (inflow restrictor)	DN 65, 4 x M12*, PN 6,	130 mm	DN 80, 4 x M16*, PN 6,	150 mm
7	Sleeve for immersion sleeve, thermostat or thermometer		G ½" (IT)		G ½" (IT)	
8	2 sensor terminal strips					
9	Removable cap (100 mm) for positioning the sensor					
10	Possible air vent		G 1" (IT)		G 1" (IT)	
11	Separating plate					
11a	Holes in the separating plate		12 x		12 x	
13	Hand-hole flange (flange-mounted electric heating element)					
	(800,1000) outside Ø 180 mm, pitch circle Ø 150 mm, 8 x M10					
	(1500,2500) outside Ø 257 mm, pitch circle Ø 225 mm, 10 x M10					
14	Connection for circulation lance, attention: only for type (800,1000)		G 1" (IT)		-	
*	The screw holes have threads					
**	Dimension for transport into building 823 mm (due to flanges position 3,4,6)					

EnerVal G type	D	d	H	a	b	c	e	f	g	i	k	m	n	p	q	r	s	Tilting measure
(800)	1090	790**	1907	183	326	435	496	810	1041	1269	1402	1526	1672	262	800	28	500	1945
(1000)	1090	790**	2197	183	369	468	569	955	1186	1472	1596	1759	1942	370	800	100	500	2230
(1500)	1300	1000	2135	180	358	489	529	894	1144	1360	-	1679	1819	319	800	100	500	2154
(2500)	1500	1200	2500	250	435	560	645	1100	1352	1670	-	2003	2211	400	800	100	800	2567

EnerVal G (4000,6000)
(Dimensions in mm)



- 1 Heating connection return discharge (inflow restrictor)
- 2 Heating connection flow discharge (single-layer elbow pipe)
- 3 Heat generator connection flow top (inflow restrictor)
- 4 Heat generator connection return top (inflow restrictor)
- 5 Heat generator connection flow bottom (inflow restrictor)
- 6 Heat generator connection return bottom (inflow restrictor)
- 7 Sleeve for immersion sleeve, thermostat or thermometer
- 8 3 sensor terminal strips
- 10 Possible air vent
- 11 Separating plate
- 11a Holes in the separating plate
- 13 Hand-hole flange (flange-mounted electric heating element)
Outside Ø 257 mm, pitch circle Ø 225 mm, 10 x M10
- 15 Transport strap

* The screw holes have threads

Type (4000,6000)	pitch circle Ø
DN 125, 8 x M16*, PN 6,	200 mm
DN 125, 8 x M16*, PN 6,	200 mm
DN 100, 4 x M16*, PN 6,	170 mm
DN 100, 4 x M16*, PN 6,	170 mm
DN 100, 4 x M16*, PN 6,	170 mm
DN 100, 4 x M16*, PN 6,	170 mm
DN 100, 4 x M16*, PN 6,	170 mm
G ½" (IT)	
G 1" (IT)	
24 x	

EnerVal G type	D	H	a	b	c	e	f	g	i	k	m	n	p	Tilting measure
(4000)	1500	2696	305	549	585	710	1202	1461	1829	2118	2330	430	1820	2773
(6000)	1500	3802	302	625	805	985	1704	2064	2603	3142	3442	550	2700	3858

**Buffer storage tank – cold storage tank
EnerVal G cool (800,1000)**

- Steel buffer storage tank for the hydraulic integration of energy generators, coating with water-based paint
- Cold insulation made of synthetic rubber (19 mm), glued on diffusion-proof, with outer plastic jacket (red)
- 8 connection flanges DN 65 (PN 16)
- 2 connection flanges DN 80 (PN 16)
- 1 sleeve G 1½" (IT) for electric heating element
- 5 sleeves G ½" (IT) for sensor/thermometer
- 1 sleeve G 1" (IT) for circulation lance
- 1 sleeve G 1" (IT) for ventilation
- Perforated separating plate in the central area for separation of the temperature zones
- Flow diversions permanently installed

Delivery

- Cold storage tank mounted with cold insulation (glued on diffusion-proof)



**Buffer storage tank – cold storage tank
EnerVal G cool (1500,2500)**

- Steel buffer storage tank for the hydraulic integration of energy generators, coating with water-based paint
- Cold insulation made of synthetic rubber (19 mm), glued on diffusion-proof, with outer plastic jacket (red)
- 8 connection flanges DN 80 (PN 16)
- 2 connection flanges DN 100 (PN 16)
- 1 sleeve G 1½" (IT) for electric heating element
- 5 sleeves G ½" (IT) for sensor/thermometer
- 1 sleeve G 1" (IT) for ventilation
- Perforated separating plate in the central area for separation of the temperature zones
- Flow diversions permanently installed

Delivery

- Cold storage tank mounted with cold insulation (glued on diffusion-proof)

Range		
EnerVal G cool	Nominal content l	Operating pressure bar
type		
(800)	793	6
(1000)	889	6
(1500)	1440	6
(2500)	2518	6
(4000)	4035	6
(6000)	5849	6

**Buffer storage tank – cold storage tank
EnerVal G cool (4000,6000)**

- Steel buffer storage tank for the hydraulic integration of energy generators, coating with water-based paint
- Cold insulation made of synthetic rubber (19 mm), glued on diffusion-proof, with outer plastic jacket (red)
- 8 connection flanges DN 100 (PN 16)
- 2 connection flanges DN 125 (PN 16)
- 1 sleeve G 1½" (IT) for electric heating element
- 5 sleeves G ½" (IT) for sensor/thermometer
- 1 sleeve G 1" (IT) for ventilation
- Perforated separating plate in the central area for separation of the temperature zones
- Flow diversions permanently installed

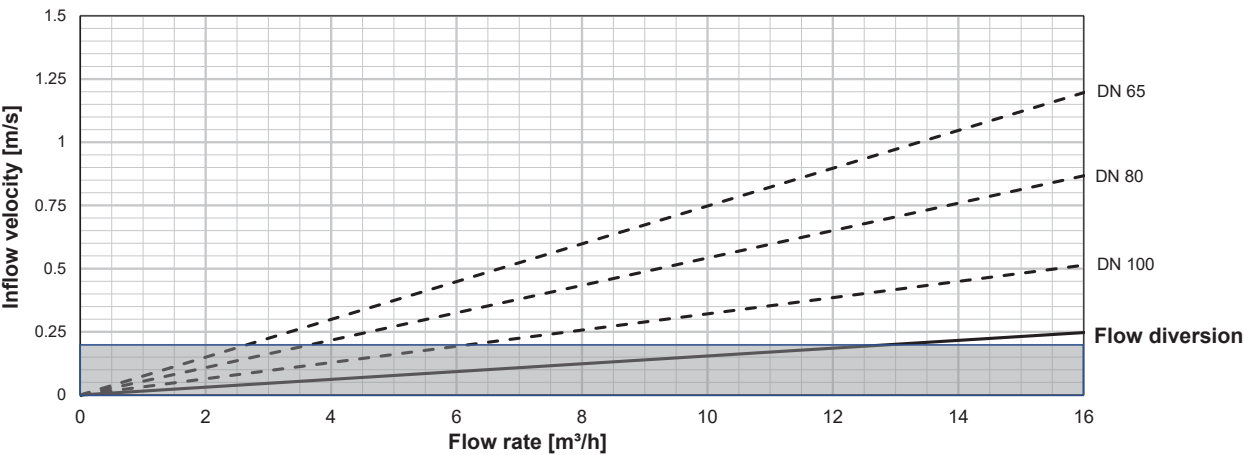
Delivery

- Cold storage tank mounted with cold insulation (glued on diffusion-proof)

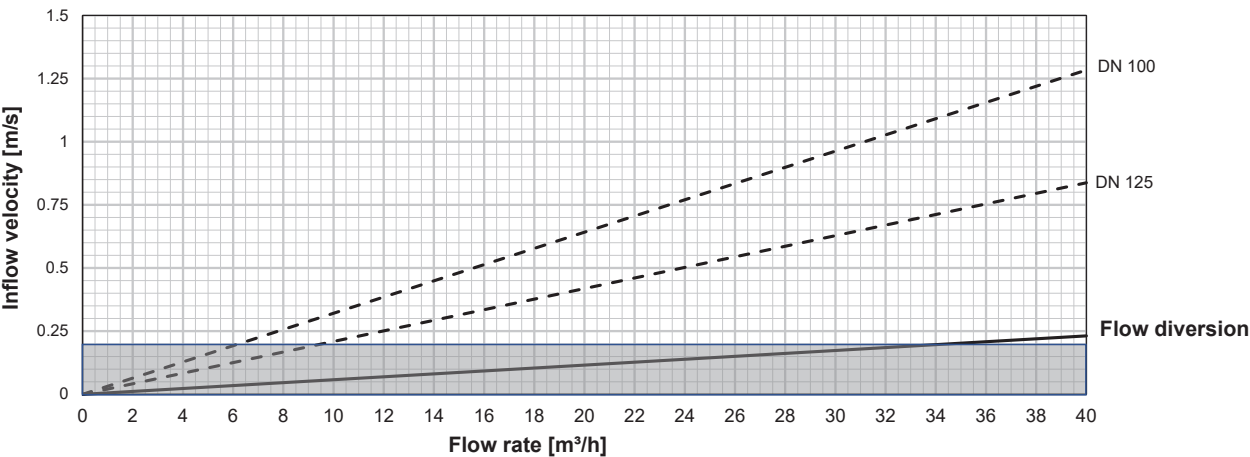
EnerVal G cool (800-6000)

Type		(800)	(1000)	(1500)	(2500)	(4000)	(6000)
• Volume	l	793	889	1440	2518	4035	5849
• Max. operating/test pressure	bar	6/8	6/8	6/8	6/8	6/8	6/8
• Min. operating temperature	°C	5	5	5	5	5	5
• Max. operating temperature	°C	85	85	85	85	85	85
• Cold insulation synthetic rubber	mm	19	19	19	19	19	19
• Cold insulation λ 0 °C	W/mK	0.033	0.033	0.033	0.033	0.033	0.033
• Cold insulation λ 40 °C	W/mK	0.037	0.037	0.037	0.037	0.037	0.037
• Fire protection class		B-s3,d0	B-s3,d0	B-s3,d0	B-s3,d0	B-s3,d0	B-s3,d0
• Transport weight	kg	171	189	306	468	694	902
• Water vapour diffusion resistance μ		≥ 7000	≥ 7000	≥ 7000	≥ 7000	≥ 7000	≥ 7000
• Dimensions	see dimensional drawing						

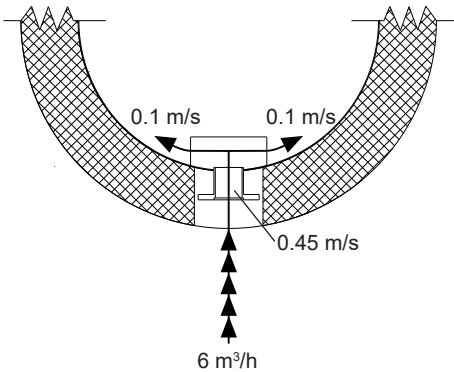
Velocity into the connection nozzle and inflow velocity with flow diversion
EnerVal G cool (800-2500)



EnerVal G cool (4000,6000)



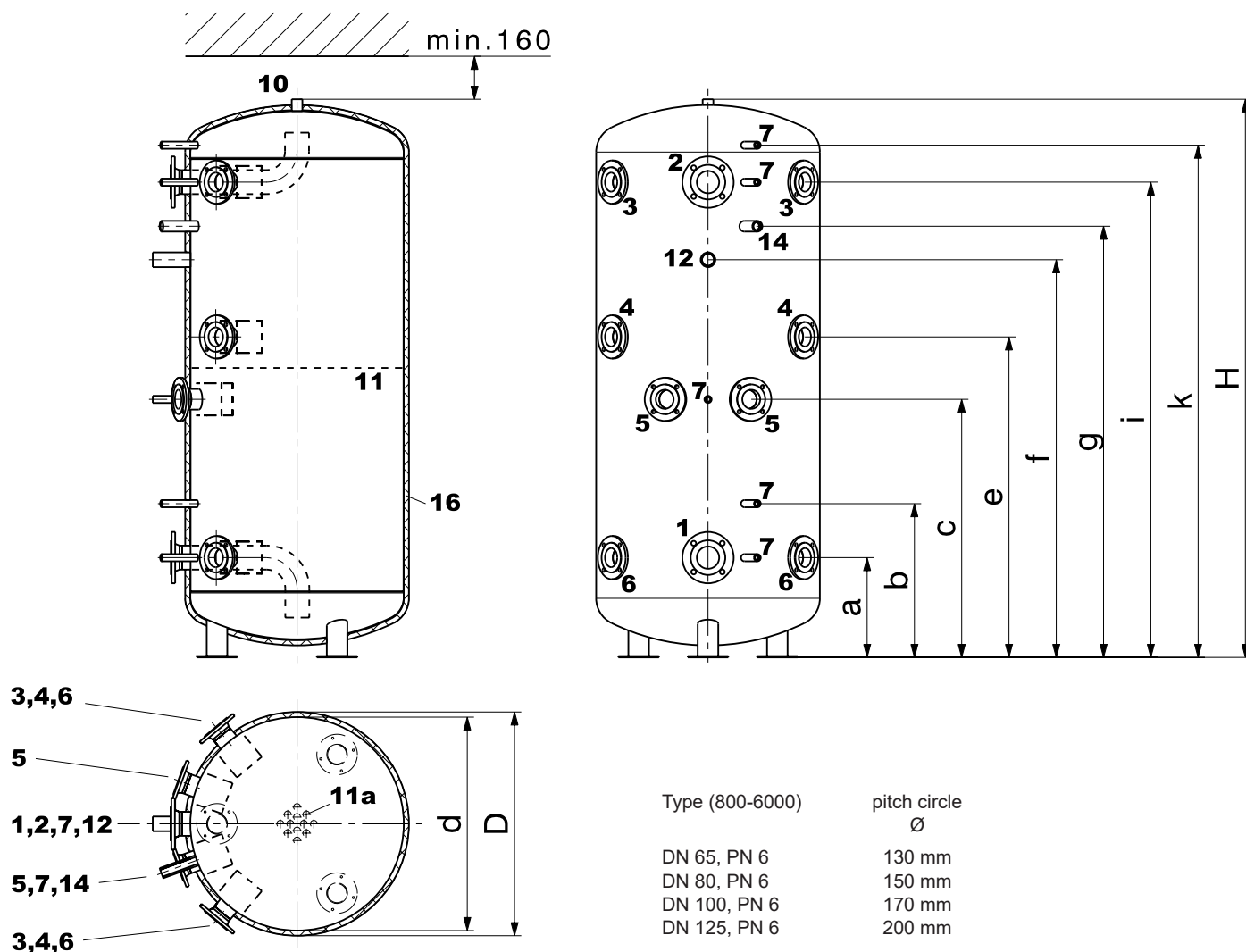
Example of inlet velocity distribution by flow diversions EnerVal G cool (800,1000)



EnerVal G cool (800-6000)

Dimensions incl. cold insulation (series)
(Dimensions in mm)

Deviations possible as a result of manufacturing tolerances.
Dimensions ± 10 mm



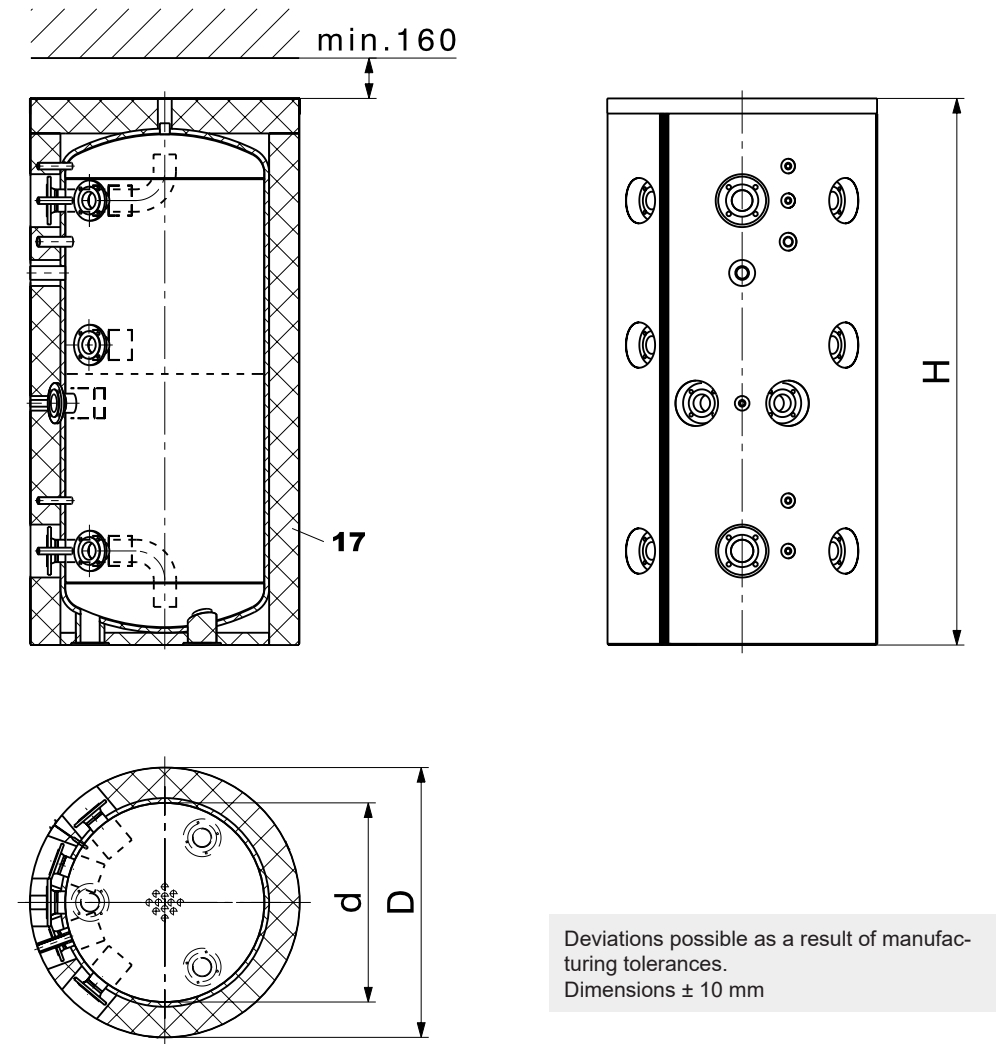
- | | | |
|-----|--|-----------------------------------|
| 1 | Cooling connection | flow discharge (bend pipe) |
| 2 | Cooling connection | return discharge (bend pipe) |
| 3 | Cold generator connection | return top (inflow restrictor) |
| 4 | Cold generator connection | flow top (inflow restrictor) |
| 5 | Cold generator connection | return bottom (inflow restrictor) |
| 6 | Cold generator connection | flow bottom (inflow restrictor) |
| 7 | Sleeve for immersion sleeve, thermostat or thermometer | |
| 10 | Possible air vent | |
| 11 | Separating plate | |
| 11a | Holes in the separating plate | |
| 12 | Connection for electric heating element | |
| 14 | Connection for circulation lance, attention: only for type (800,1000) | |
| 16 | Cold insulation, thickness 19 mm | |
| * | The screw holes have threads | |
| ** | Dimension for transport into building = D | |

Type (800,1000)	Type (1500,2500)	Type (4000,6000)
DN 80, 4 x M16*	DN 100, 4 x M16*	DN 125, 8 x M16*
DN 80, 4 x M16*	DN 100, 4 x M16*	DN 125, 8 x M16*
DN 65, 4 x M12*	DN 80, 4 x M16*	DN 100, 4 x M16*
DN 65, 4 x M12*	DN 80, 4 x M16*	DN 100, 4 x M16*
DN 65, 4 x M12*	DN 80, 4 x M16*	DN 100, 4 x M16*
DN 65, 4 x M12*	DN 80, 4 x M16*	DN 100, 4 x M16*
G 1/2" (IT)	G 1/2" (IG)	G 1/2" (IT)
G 1" (IT)	G 1" (IG)	G 1" (IT)
12 x	12 x	24 x
G 1 1/2" (IT)	G 1 1/2" (IT)	G 1 1/2" (IT)
G 1" (IT)		

EnerVal G cool

type	D**	d	H	a	b	c	e	f	g	i	k	Tilting measure
(800)	828	790	1866	327	496	810	1041	1269	1402	1527	1684	1882
(1000)	828	790	2066	369	569	955	1186	1472	1596	1759	1894	2080
(1500)	1028	990	2140	378	549	914	1164	1380	-	1699	1916	2158
(2500)	1288	1250	2448	435	645	1050	1302	1595	-	1903	2211	2475
(4000)	1438	1400	2975	485	780	1386	1638	2227	-	2535	2735	2999
(6000)	1638	1600	3303	523	840	1473	1873	2523	-	2823	3023	3342

EnerVal G cool (800-6000)
Dimensions with thermal insulation (optional)
(Dimensions in mm)



17	Thermal insulation, thickness (in addition to the 19 mm cold insulation)	Type (800,1000)	Type (1500,2500)	Type (4000,6000)
		120 mm	140 mm	140 mm

EnerVal G cool type	D	d	H
(800)	1068	790	1961
(1000)	1068	790	2161
(1500)	1308	990	2255
(2500)	1568	1250	2563
(4000)	1718	1400	3090
(6000)	1918	1600	3418

Condensing Boilers

Operational reliability for local and district heating networks

Hoval's gas and oil condensing boilers offer a highly efficient and cost-effective heating solution for a wide range of applications. Thanks to state-of-the-art condensing technology, these systems maximise energy use by recovering heat from exhaust gases, reducing waste and lowering energy costs.

Our floor-mounted gas condensing boilers stand out for their reliability, power, and compact design, making them ideal for both new installations and retrofit projects. The integrated heat exchangers ensure long-lasting, economical operation, while Hoval's advanced technology prepares your system for the future—our gas boilers are already configured to run on 100% biomethane (green gas) and hydrogen blends, supporting a more sustainable heating approach.

For buildings that rely on oil heating, Hoval's UltraOil® condensing boiler provides an exceptionally high level of efficiency. By utilizing condensing technology, UltraOil® recovers heat from exhaust gases, ensuring minimal fuel consumption and reduced emissions. This makes it a sustainable and future-proof choice for sites where oil remains the preferred energy source.

With a wide range of output options and flexible system combinations, Hoval gas and oil condensing boilers deliver powerful, economical, and future-ready heating for commercial and industrial applications.

Hoval's condensing boiler portfolio includes:

- TopGas® Max
- UltraGas® 2
- UltraOil



Hoval TopGas® max (50-150)

Wall-hanging gas condensing boiler

- With condensing boiler technology
- For the combustion of:
 - natural gas E
 - natural gas E with a hydrogen content (H₂) of up to 20 % by vol.
 - propane according to DIN 51622
 - biomethane according to EN 16723
- Heat exchanger made of stainless steel
- Built-in:
 - water pressure guard for water shortage protection
 - flue gas temperature sensor with flue gas limiter function
 - automatic quick aspirator
- Integrated backflow check valve on the combustion air side
- Pre-mixing surface burner made of stainless steel
 - Modulating with gas/air group control
 - Automatic ignition
 - Ionisation guard
- Minimum water flow necessary (see technical data)
- Wall-hanging gas condensing boiler fully clad with coated white steel plates

Basic boiler control panel

- Automatic function device with monitoring unit
- Modulating burner control
- Operation and fault indication

Option

- Propane
- Free-standing calorifier

Delivery

- Wall-hanging gas condensing boiler fully clad with fastening material for wall installation

TopGas® max M

with integrated automatic function device LMS14 including control panel

Control panel

- Digital screen display
- Pushbuttons and rotary knob for operation
- Fault signalling lamp
- Information display

Control functions

- Control functions integrated for
 - 1 heating/cooling circuit without mixer
 - 1 hot water charging circuit

Operating mode selection

- Heating curve setting
- Hot water temperature setting
- Day programs/week programs
- Frost protection function
- Display of fault messages
- Error acknowledgement key
- Chimney sweep function key (safety temperature limiter test)



Model range

TopGas® max type Nominal heat output 50/30 °C kW

(50)	A	9.1-49.9
(65)	A	14.9-69.9
(100)		22.3-102.0
(125)		26.3-125.3
(150)		29.8-150.4

A*** → D

Energy efficiency class of the compound system with control

Options for controller

- Can be expanded with:
 - Room control unit
 - Cascade module
- Can be networked with up to 8 automatic function devices in total

Delivery

- Heating controller set separately packed, mounting on site

TopGas® max C

without control panel with integrated cascade module

For TopGas® max C (cascade) in combination with the TopGas® max M

Up to 7 TopGas® max C can be networked with the LMS14 of the TopGas® max M.

Delivery

Cascade module separately packed, installation on-site

Notice

Observe the notices on water quality, see "Engineering"!

Modbus connection

to TopTronic® E

For controlling the TopGas® max M by the TopTronic® E using a temperature signal. Various data points are transferred from the LMS14 automatic function device to the TopTronic® E (Modbus module see Accessories).

BMS connection 0-10 V (building management system)

For control of the TopGas® max as part of a building management system

Temperature or performance control

external with 0-10 V

Integrated in the boiler

TopGas® max (50-150)

Type		(50)	(65)	(100)	(125)	(150)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	7.8-45.9	13.0-66.4	19.4-94.1	22.5-113.9	25.8-138.3
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	9.1-49.9	14.9-69.9	22.3-102.0	26.3-125.3	29.8-150.4
• Nominal heat output at 80/60 °C, propane ²⁾	kW	7.8-45.3	13.0-66.2	19.4-94.1	22.5-113.9	25.7-138.3
• Nominal heat output at 50/30 °C, propane ²⁾	kW	9.1-49.9	14.9-69.9	22.3-102.0	26.3-125.3	29.8-150.4
• Nominal heat input with natural gas ³⁾	kW	8.2-47.1	13.5-68.1	20.1-96.7	24.2-116	26.6-140.8
• Nominal heat input with propane ²⁾	kW	8.5-47.1	14.7-68.1	20.4-96.7	31.2-116	27.7-140.8
• Operating pressure heating min./max. (PMS)	bar	0.8-3	0.8-4.5	0.8-6	0.8-6	0.8-6
• Operating temperature max. (T _{max})	°C	90	90	90	90	90
• Boiler water content (V _(H₂O))	l	3.0	4.5	6.5	8	9.5
• Flow resistance boiler	z value	see diagram				
• Minimum circulation water quantity	l/h	2000	2800	4100	5200	5900
• Boiler weight (without water content, incl. cladding)	kg	42	53	66	74	89
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	97.6/87.9	97.6/87.9	98.2/88.5	98.2/88.5	98.2/88.5
• Boiler efficiency at 30 % partial load (EN 15502) (NCV/GCV) ⁴⁾	%	107.9/97.2	108.2/97.5	108.1/97.4	107.8/97.1	107.9/97.2
• Room heating energy efficiency (A+++ → D)	class	A	A			
- without control	η _s	92	92	92	92	92
- with control	η _s	94	94	94	94	94
- with control and room sensor	η _s	96	96	96	96	96
- annual energy consumption	Q _{HE}	83	124	177	213	257
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	37.8	28.1	26.4	42.9	34.1
• O ₂ content in flue gas at min./max. nominal heat output	%	5.6/4.8	5.6/4.8	5.6/4.6	5.3/4.2	5.3/4.2
• Heat loss in standby mode	Watt	350	356	362	368	374
• Dimensions	see table of dimensions					
• Gas flow pressure min./max.						
- Natural gas E/LL	mbar	18-50	18-50	18-50	18-50	18-50
- Propane	mbar	37-50	37-50	37-50	37-50	37-50
• Gas connection values at 15 °C/1013 mbar:						
- Natural gas E – (W _o = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	0.8-4.9	1.4-7.0	2.1-10.0	2.5-12.0	2.7-14.5
- Natural gas LL (G25) – (W _o = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	1.0-5.8	1.7-8.4	2.5-11.9	3.0-14.3	3.3-17.3
- Propane (G31) – NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	0.3-1.9	0.6-2.8	0.8-4.0	1.3-4.8	1.1-5.8
• Operating voltage	V/Hz	230/50	230/50	230/50	230/50	230/50
• Min./max. electrical power consumption (incl. pump)	Watt	16/75	22/115	33/139	35/226	27/297
• Stand-by	Watt	4	4	4	3	4
• Type of protection	IP	X4D	X4D	X4D	X4D	X4D
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40	5-40
• Sound power level						
- Heating noise (EN 15036 Part 1) (room air dependent)	dB(A)	53	53	53	51	51
• Condensate quantity (natural gas) at 50/30 °C	l/h	4.5	6.6	9.3	11.2	13.6
• pH value of the condensate		4-6	4-6	4-6	4-6	4-6
• Construction type	B23P, C13(x), C33(x), C43(x), C53(x), C63(x), C83(x), C93(x)					
• Flue gas system						
- Temperature class		T120	T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input	dry kg/h	73	101	150	182	208
- Flue gas mass flow at min. nominal heat input	dry kg/h	12	20	30	35	40
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	82.2	75.8	76.3	76.7	73.0
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	69.9	60.9	60.4	59.9	59.7
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	41.0	35.5	34.6	32.5	30.6
- Max. permissible temperature of the combustion air	°C	105	105	105	105	105
- Flow rate combustion air	Nm ³ /h	60	83	117	141	171
- Maximum supply pressure for combustion air supply and flue gas line	Pa	50	100	100	150	200
- Maximum draught/depression at flue gas outlet	Pa	-50	-50	-50	-50	-50

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

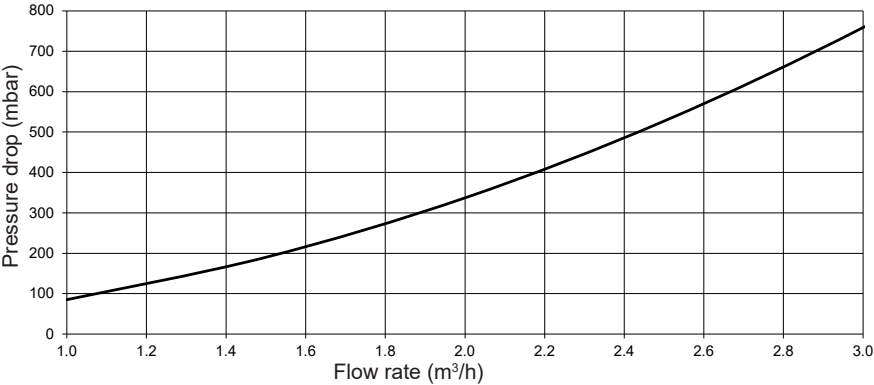
²⁾ Data related to NCV. The TopGas® max is also suitable for propane/butane (liquid gas) mixtures.

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

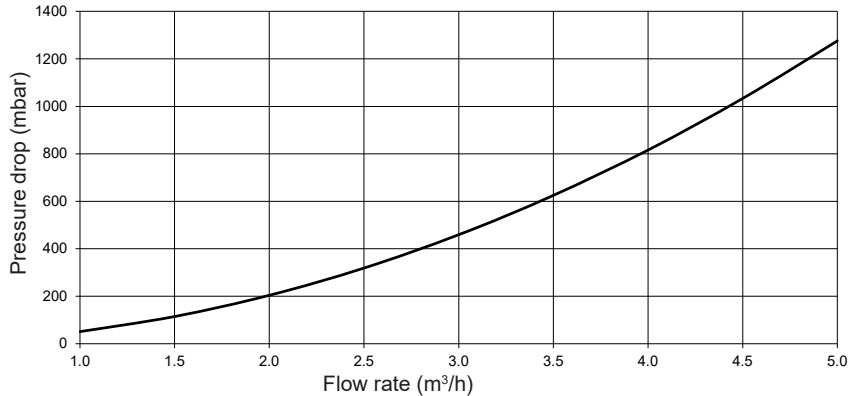
⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Flow resistance on the heating water side

TopGas® max (50)

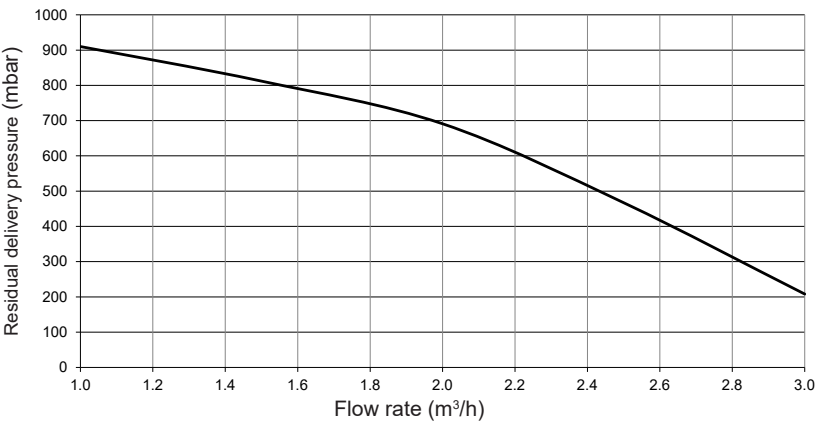


TopGas® max (65)



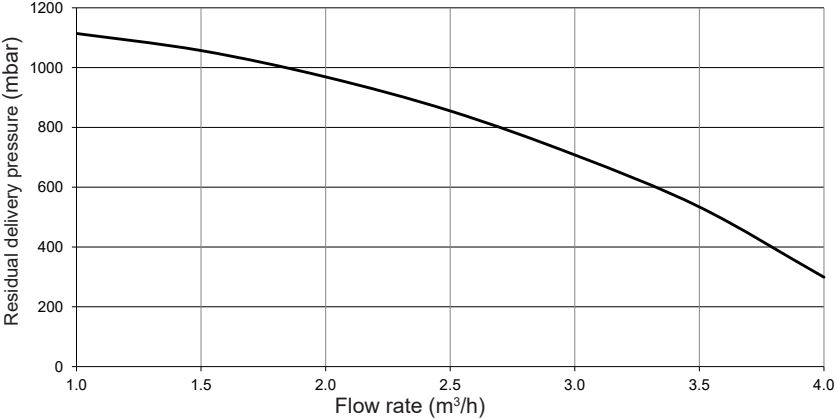
Maximum residual delivery pressure of heating pump with connection set AS32-TG max SPS-I 10

TopGas® max (50)

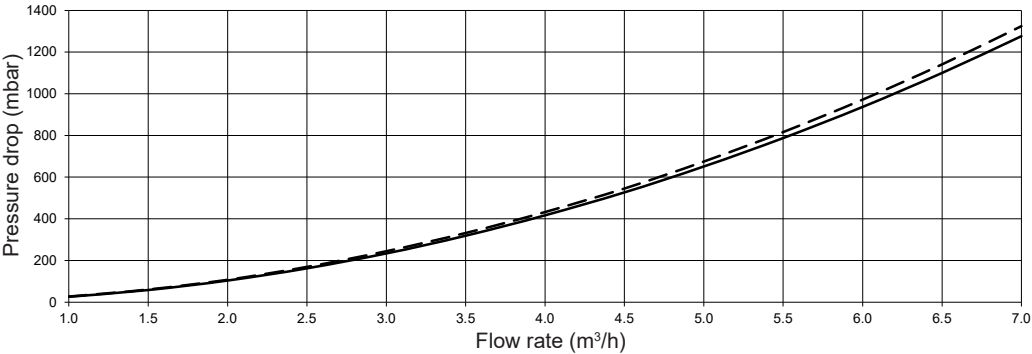


Maximum residual delivery pressure of heating pump with connection set AS32-TG max SPS-I 12

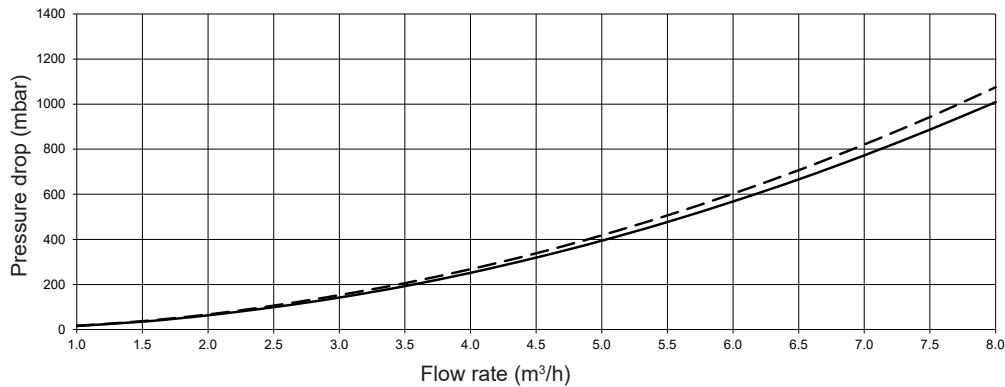
TopGas® max (65)



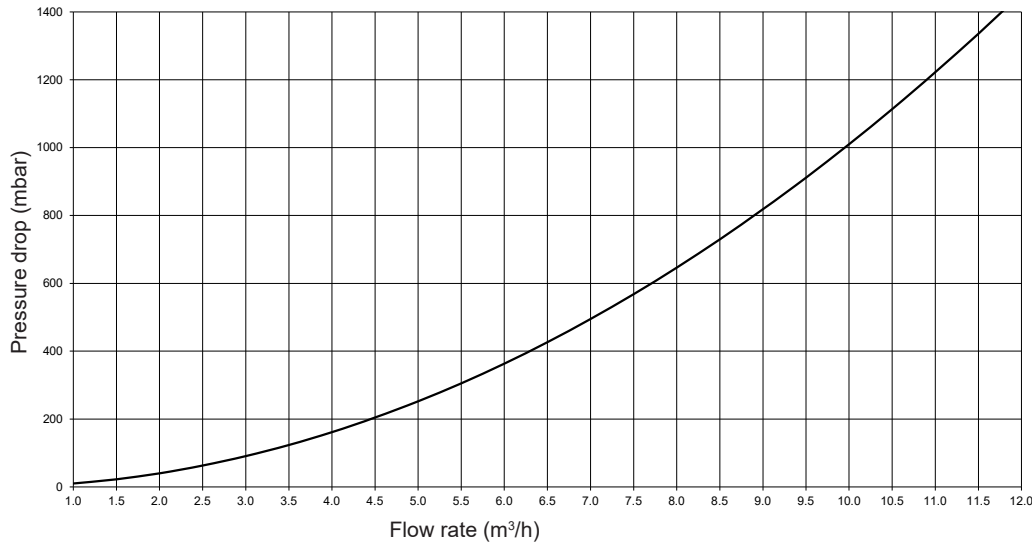
Flow resistance on the heating water side
TopGas® max (100)



TopGas® max (125)

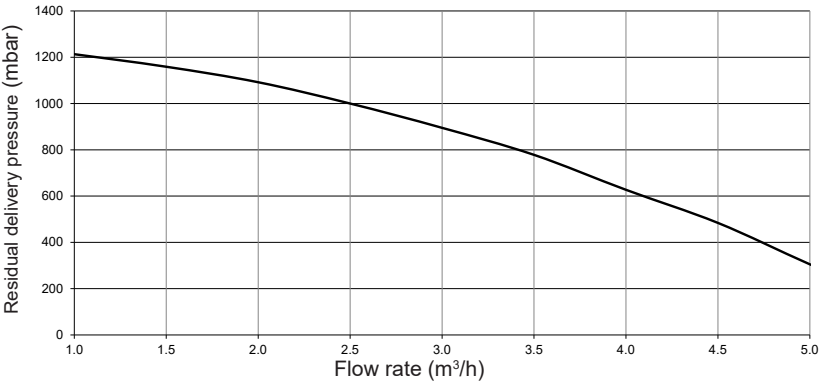


TopGas® max (150)

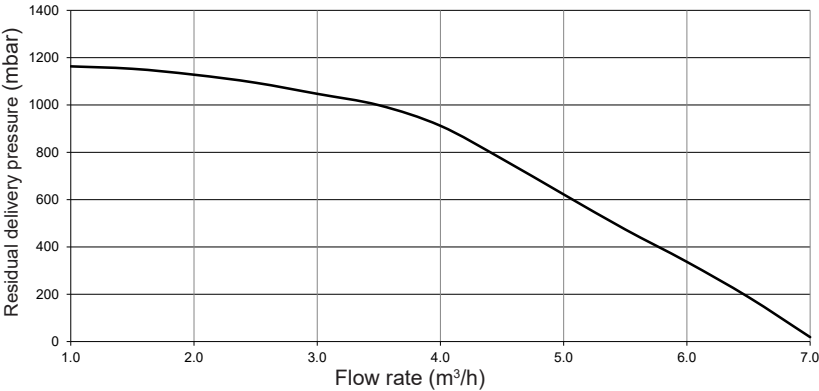


Maximum residual delivery pressure of heating pump with connection set AS40-TG max SPS-I 12

TopGas® max (100)

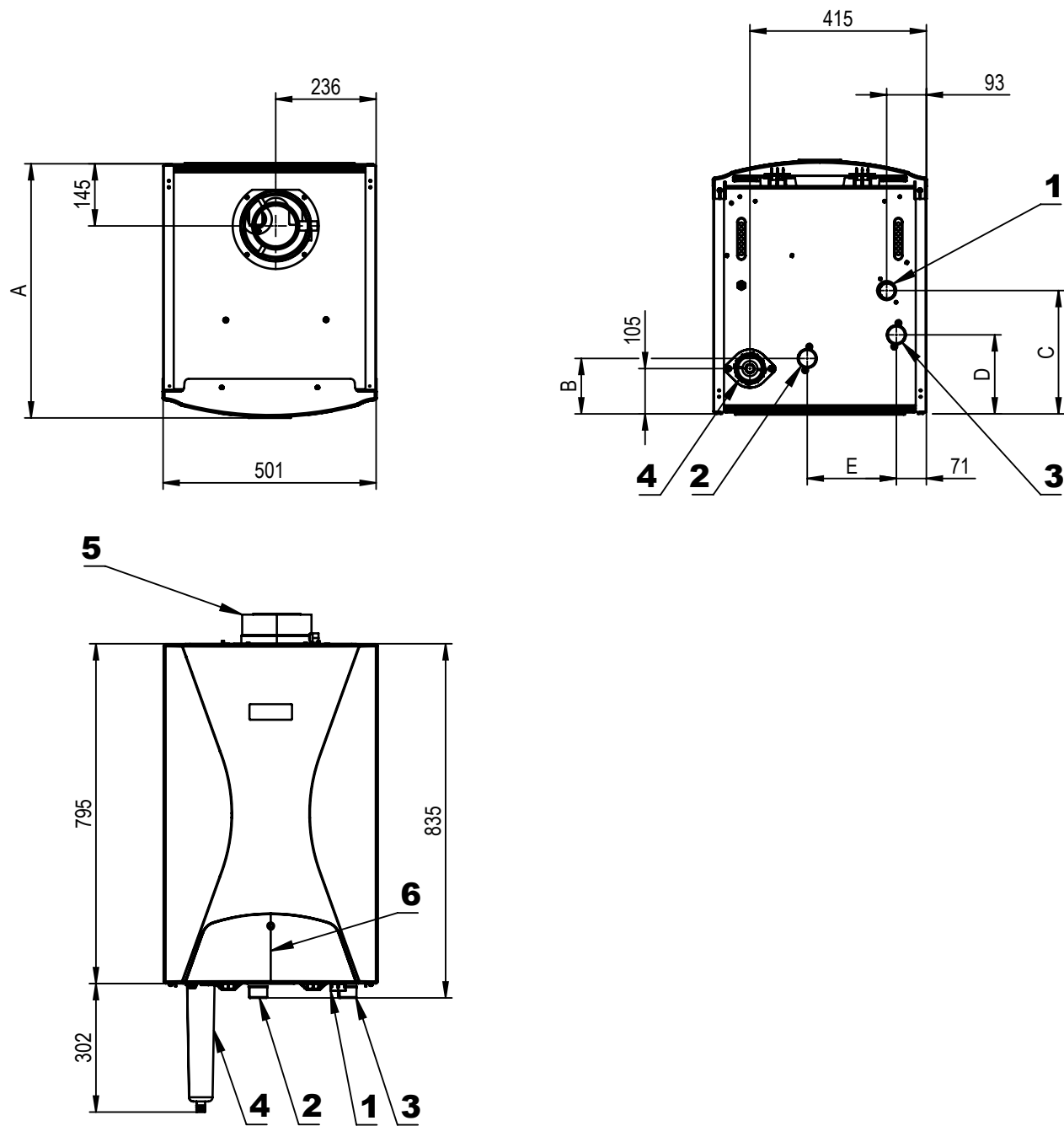


TopGas® max (125)



TopGas® max (100-150)
(Dimensions in mm)

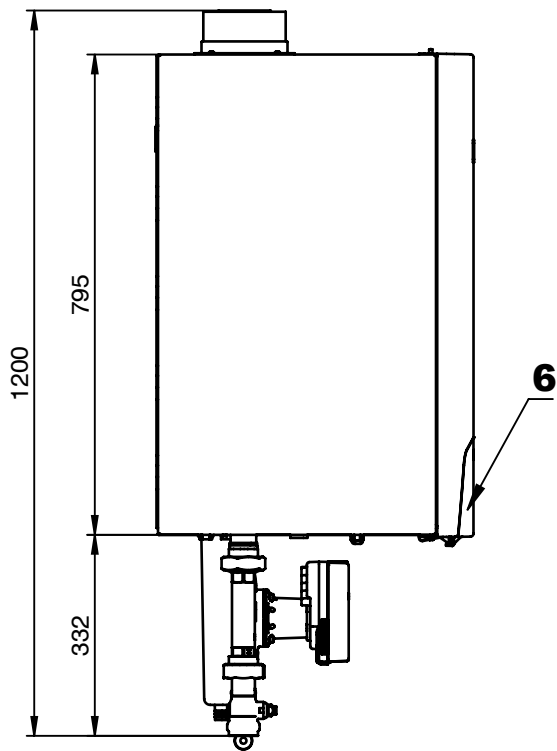
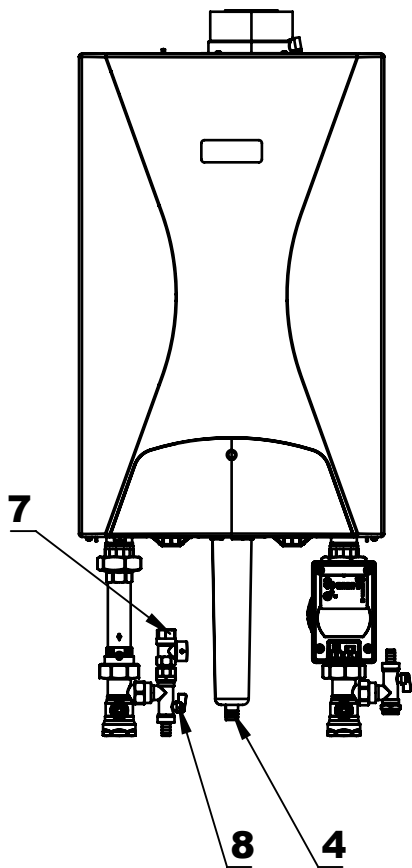
(Dimensions in mm)



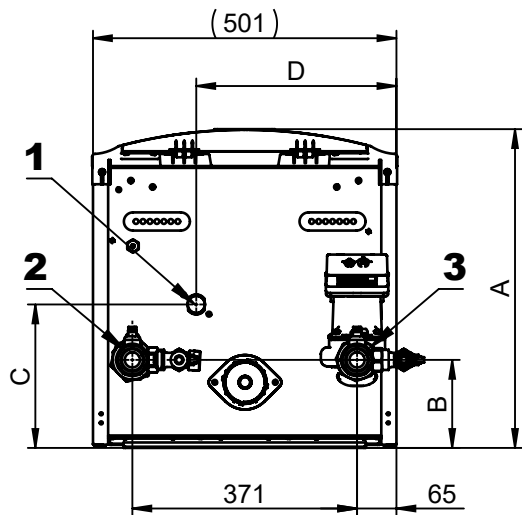
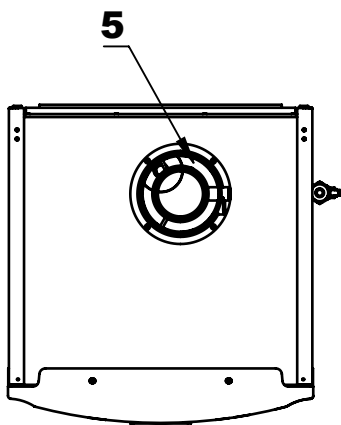
TopGas® max type	A	B	C	D	E
(100)	590	130	290	185	209
(125)	660	130	365	185	209
(150)	730	210	437	210	199

- | | | |
|---|------------------------------------|------------|
| 1 | Gas connection | 1" |
| 2 | Flow heating | 1¼" |
| 3 | Return heating | 1¼" |
| 4 | Condensate drain | |
| 5 | Flue gas/combustion air connection | 100/150 mm |
| 6 | Cover control panel | |

TopGas® max (50,65) with connection set DN 32
(Dimensions in mm)



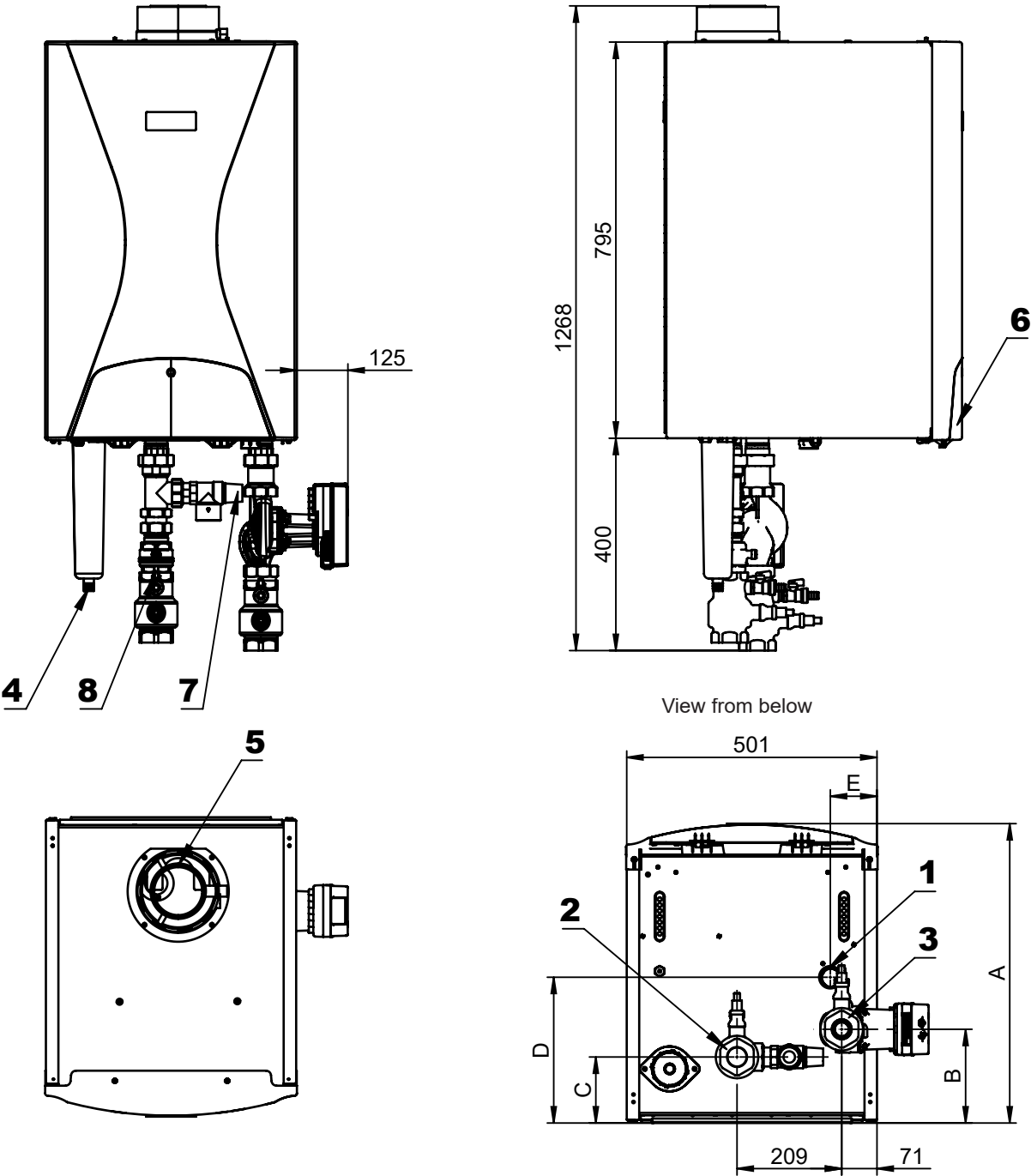
View from below



TopGas® max type	A	B	C	D
(50) with AS32-TG max SPS-I 10	525	143	235	330
(65) with AS32-TG max SPS-I 12	590	105	260	445

- 1 Gas connection 3/4"
- 2 Flow heating 1 1/4"
- 3 Return heating 1 1/4"
- 4 Condensate drain 40
- 5 LAS flue gas/combustion air connection 80/125 mm
- 6 Cover control panel
- 7 Safety valve
- 8 KFE ball valve

TopGas® max (100,125) with connection set DN 40
(Dimensions in mm)



TopGas® max type	A	B	C	D	E
(100) with AS40-TG max SPS-I 12	590	185	130	290	93
(125) with AS40-TG max SPS-I 12	660	185	130	365	93

- 1 Gas connection 1"
- 2 Flow heating 1¼" (AS 1½")
- 3 Return heating 1¼" (AS 1½")
- 4 Condensate drain 40
- 5 LAS flue gas/combustion air connection 100/150 mm
- 6 Cover control panel
- 7 Safety valve
- 8 KFE ball valve

Standards and guidelines

The official regulations for installation and operation must be observed. In particular, these are the country-specific standards (e.g. EN standard, DIN standards, etc.) as well as the corresponding regional regulations.

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- DVGW directives
- DIN EN 12828
- Safety-relevant requirements
- DIN EN 12831 Heaters
- Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- EN 14868 "Protection of metallic materials against corrosion"
- VDE 0100 supplement 2

Water quality in heating systems

Filling and replacement water, heating water

The following applies:

- VDI 2035
- In addition, the EN 14868 standard must be applied, **as well as the manufacturer-specific specifications**

Manufacturer-specific specifications

Filling and replacement water

The filling and replacement water must be fully demineralised.

Heating water

- In the case of full demineralisation of the filling and replacement water, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.
- pH value of the heating water for systems with aluminium alloy as water-side material 8.0 to 8.5 (measurement 10 weeks after commissioning at the earliest)
- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

Additional notices

- Hoval boilers and calorifiers are suitable for heating systems without significant oxygen intake. (System type I according to EN 14868).
- The following systems must be equipped with **separate circuits**:
 - Systems operated with softened water.
 - Plants with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up).
- In the case of bivalent heating systems, the values of the heat generator with the strictest requirement for water quality must be complied with.
- If only the boiler is replaced in an existing plant, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The boiler must not be filled until the heating system has been flushed.

Frost protection agent

see separate engineering sheet "Use of frost protection agent".

Heating room

Boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. wash-, dryer-, work room, hairdressers and so on).

Halogen compounds can be caused by cleaning and degreasing solutions, dissolvents, glue and bleaching lyes.

Combustion air supply

The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. For direct combustion air supply (LAS system), use the separator C80/125 -> E80 PP or C100/150 -> E100 PP.

The minimum free cross-section for the combustion air can be assumed simplified as follows:

- *Room air-independent operation with separate combustion air pipe to the boiler:*
0.8 cm² per 1 kW of output. The pressure drop in the combustion air pipe must be considered for the calculation of the flue gas system.
- *Room air-dependent operation:*
Minimum free cross-section of the opening into the open: 150 cm² or twice 75 cm² and additionally 2 cm² necessary for each kW of output over 50 kW for vent in to the open.

Gas connection

Commissioning

- Initial commissioning is only allowed to be carried out by a qualified installer.
- Burner setting values according to the installation instructions.

Manual gas shut-off valve and gas filter

Immediately in front of the boiler a manual gas shut-off device (valve) must be installed according to relevant regulations. Should the local regulations or conditions demand this, an approved gas filter must be installed in the gas supply pipe between the gas tap and the boiler in order to prevent malfunction due to foreign particles being carried along with the gas.

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.

Gas pressure natural gas:

- Necessary gas flow pressure at the boiler inlet:
natural gas min. 18 mbar, max. 50 mbar

Propane gas pressure:

- For propane, a gas pressure regulator must be provided on site for reducing the pilot pressure on the boiler
- Required gas flow pressure at the boiler entry:
propane min. 37 mbar, max. 50 mbar

Gas pressure regulator

- The installation of a gas pressure regulator is only necessary if the gas flow pressure in the gas network exceeds the maximum permissible gas flow pressure of the TopGas® max or if there are considerable fluctuations in the gas flow pressure.
- Pressure fluctuations in the gas network must be prevented by suitable measures (e.g. gas storage tanks or pressure regulators). The local conditions must be checked in each individual case.

Sludge separator

The installation of a sludge separator with magnetic ring is mandatory in the gas boiler return.

Minimum heating water circulation quantity

- Depending on the boiler type, different minimum circulating water quantities are required through the boiler. For details, see the corresponding data sheets.
- During burner operation, the circulating pump must be constantly in operation and the minimum heating water circulation quantity must be guaranteed.
- After each burner switch-off, the circulating pump must be in operation for at least 2 minutes (is guaranteed by the boiler controller).

Heating boiler in the attic

A water pressure guard is built in in the boiler, which automatically turns the gas burner off in case of water shortage. Notice: Mount the diaphragm pressure expansion tank in the heating flow and the pump in the heating return. See also paragraph "diaphragm pressure expansion tank"!

Condensate drainage

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority or sewer operator.
- The condensate from the flue gas line can be discharged via the boiler. A condensate trap is no longer needed in the flue gas system.
- The condensate must be conducted openly (funnel) into the sewage system.

- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from glass
 - pipes made from stainless steel
 - pipes made from plastic: PVC, PE, PP, ABS and UP

Diaphragm pressure expansion tank

- An adequately dimensioned diaphragm pressure expansion tank must be provided.
- The minimum inlet pressure in the diaphragm pressure expansion tank must be 1.2 bar and the minimum operating pressure in the boiler must be 1.5 bar.
- The pump must be connected in the heating return and the diaphragm pressure expansion tank must be connected on the pump suction side.
- If the aforementioned minimum operating pressure in the boiler of 1.5 bar cannot be maintained (e.g. roof heating centres), the diaphragm pressure expansion tank must be installed in the heating flow.
- Starting from 70 °C an additional intermediate tank is necessary.

Flue gas system

- The flue gas must be routed through a tested and approved flue gas line.
- Flue gas lines must be gas-, condensate- and over pressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.
- A flue gas temperature limiter is integrated into the boiler.

Allocation of gas filters for TopGas® max (50-150)

TopGas® max	Gas throughput natural gas E	Gas filter type	Dimension	Pressure drop gas filter (with clean filter) mbar
type	m³/h			
(50)	4.9	70612/6B	Rp ¾"	0.15
(65)	7.0	70612/6B	Rp ¾"	0.30
(100)	10.0	70602/6B	Rp 1"	0.15
(125)	12.0	70602/6B	Rp 1"	0.23
(150)	14.5	70602/6B	Rp 1"	0.30

It is essential to set the dimensions of the gas line!

Table "Standard values for flue gas line dimensions"

Boiler		Smooth-walled flue gas line	Number of bends 90° (flue gas + combustion air)			
TopGas® max	Internal Ø flue gas outlet	Designation	Total pipe length in m (flue gas + combustion air)			
type	mm	DN	1	2	3	4
(50)	80	100	30	30	30	13
(65)	80	100	30	30	30	17
(100)	100	130	30	30	30	30
(125)	100	130	30	30	30	30
(150)	100	130	30	30	30	30

Notice: A T-piece on the boiler connection fitting has already been taken into account for the flue gas line dimensioning. The values in the table "Standard values for flue gas line dimensions" are standard values for reference.

An exact calculation for the flue gas line must be made on site.

For chimney systems above 25 m effective height, negative pressure in the chimney is to be expected in some operating conditions. Therefore, we recommend an individual design of the chimney system and checking the individual pressure conditions.

Hoval UltraGas® (15-100)

Gas condensing boiler

- Steel boiler with condensation technology
- For the combustion of:
 - natural gas E
 - natural gas E with a hydrogen content (H₂) of up to 20 % by vol.
 - propane according to DIN 51622
 - biomethane according to EN 16723
- Combustion chamber made of stainless steel
- Maximal flue gas condensation through downstream heating surface made of **aluFer®** stainless steel bounded pipe; heating gas side: aluminium water side: stainless steel
- Thermal insulation with mineral wool mat
- Water pressure sensor (minimum and maximum pressure limiter integrated)
- Flue gas temperature sensor with flue gas limiter function
- Pre-mix burner
 - with blower and venturi
 - modulating operation
 - ionisation guard
 - gas pressure monitor
- Gas boiler fully clad with steel plate, red powder-coated
- Heating connections to left and right for:
 - heating flow
 - high temperature return
 - low temperature return
- **UltraGas® (15-50):**
Flue gas connection backwards to the top
- **UltraGas® (70,100):**
concentric supply air/flue gas connection, vertically upwards, horizontally to rear as option, see accessories and dimension sheet
- TopTronic® E controller installed
- Possibility of connecting an external gas solenoid valve with error output

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with online HovalConnect)
- Adaptation of the heating strategy based on the weather forecast (with online HovalConnect)



Model range

UltraGas® type		Nominal heat output 50/30 °C kW
(15)	A ➔	3.0-15.2
(20)	A ➔	4.0-20.2
(27)	A ➔	5.0-26.9
(35)	A ➔	5.8-34.3
(50)	A ➔	8.0-48.8
(70)	A ➔	13.5-69.0
(100)		20.9-99.0

A*** → D

Energy efficiency class of the compound system with control.

TopTronic® E basic module heat generator TTE-WEZ

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water charging circuit
- bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat balancing or
 - module expansion Universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the heat generator:

- 1 module expansion and 1 controller module or
- 2 controller modules

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E
see "Controls"

Optional

- For propane
- Free-standing calorifier see Calorifiers
- Flue gas systems

Delivery

- Floor-standing gas condensing boiler fully clad

Hoval UltraGas® (15-27)

Type		(15)	(20)	(27)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	3.0-14.3	3.8-18.7	4.5-25.0
• Nominal heat output at 50/30 °C, natural gas ^{1), 2)}	kW	3.0-15.2	4.0-20.2	5.0-26.9
• Nominal heat output at 80/60 °C, propane ³⁾	kW	4.5-13.8	4.9-18.6	6.6-24.3
• Nominal heat output at 50/30 °C, propane ²⁾	kW	4.8-15.3	5.2-20.7	7.3-27.0
• Nominal heat input with natural gas ⁴⁾	kW	2.9-14.5	3.8-18.9	4.7-25.4
• Nominal heat input with propane ³⁾	kW	4.7-14.3	5.1-19.3	6.8-25.2
• Operating pressure heating min./max. (PMS)	bar	1/3	1/3	1/3
• Operating temperature max. (T _{max})	°C	85	85	85
• Boiler water content (V _(H₂O))	l	57	55	51
• Flow resistance boiler ⁵⁾	z value	3.5	3.5	3.5
• Minimum circulation water quantity	l/h	-	-	-
• Boiler weight (without water content, incl. cladding)	kg	176	179	186
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	97.5/87.8	97.0/88.1	97.9/88.2
• Boiler efficiency at 30 % partial load operation (NCV/GCV)	%	107.9/97.2	108.0/97.3	108.0/97.3
• Room heating energy efficiency				
- without control	ηs	%	92	92
- with control	ηs	%	94	94
- with control and room sensor	ηs	%	96	96
• NOx class (EN 15502)		-	-	-
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx	mg/kWh	33	32
• O ₂ -content in flue gas at min./max. nominal heat output	%	5.5/5.1	5.5/5.1	5.5/5.1
• Heat loss in standby mode	Watt	160	160	160
Dimensions		see table of dimensions		
• Gas flow pressure min./max.				
- Natural gas E/LL	mbar	17.4-50	17.4-50	17.4-50
- Propane	mbar	37-50	37-50	37-50
• Gas connection values at 15 °C/1013 mbar:				
- Natural gas E – (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	0.29-1.45	0.38-1.90	0.47-2.55
- Natural gas LL – (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	0.34-1.69	0.44-2.21	0.55-2.96
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	0.18-0.55	0.20-0.75	0.26-0.97
• Operating voltage	V/Hz	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	20/44	22/62	20/56
• Stand-by	Watt	9	9	9
• Type of protection	IP	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40
• Sound power level				
- Heating noise (EN 15036 Part 1) (room air dependent)	dB(A)	57	62	66
- Flue gas noise radiated from the mouth (DIN 45635 Part 47) (room air dependent/independent of room air)	dB(A)	43	49	55
- Sound pressure level heating noise (depending on installation conditions) ⁶⁾	dB(A)	50	56	59
• Condensate quantity (natural gas) at 40/30 °C	l/h	1.3	1.8	2.4
• pH value of the condensate	approx.	4.2	4.2	4.2
• Construction type		B23, B23P, C53, C63		
• Flue gas system				
- Temperature class		T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	23	31	42
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	4.7	6	7.1
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	62	63	64
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	45	45	45
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	31	31	31
- Max. permissible temperature of the combustion air	°C	50	50	50
- Flow rate combustion air	Nm ³ /h	17	23	31
- Maximum supply pressure for combustion air supply and flue gas line	Pa	100	100	100
- Maximum draught/depression at flue gas outlet	Pa	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100, an output reduction of up to 7 % is possible.

²⁾ Factory measurements

³⁾ Data related to NCV.

⁴⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible (readjustment might be necessary).

⁵⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z; resp. see diagrams

⁶⁾ Compare notice at "Engineering".

Hoval UltraGas® (35-100)

Type		(35)	(50)	(70)	(100)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	5.2-33.0	7.5-46.0	12.1-64.5	19.0-92.0
• Nominal heat output at 50/30 °C, natural gas ^{1), 2)}	kW	5.8-34.3	8.0-48.8	13.5-69.0	20.9-99.0
• Nominal heat output at 80/60 °C, propane ³⁾	kW	6.9-32.2	9.9-45.5	15.4-63.3	23.0-92.0
• Nominal heat output at 50/30 °C, propane ²⁾	kW	7.6-34.3	10.9-49.9	17.1-69.0	25.0-99.0
• Nominal heat input with natural gas ⁴⁾	kW	5.4-33.3	7.7-46.9	12.5-65.5	19.6-94.1
• Nominal heat input with propane ³⁾	kW	7.2-33.4	10.2-47.2	16.0-65.5	23.8-94.1
• Operating pressure heating min./max. (PMS)	bar	1/3	1/3	1/4	1/4
• Operating temperature max. (T _{max})	°C	85	85	85	85
• Boiler water content (V _(H2O))	l	81	75	157	144
• Flow resistance boiler ⁵⁾	z value	1.1	1.1	1.5	1.5
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water content, incl. cladding)	kg	205	217	302	331
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV)	%	97.9/88.2	98.0/88.3	98.0/88.3	97.6/87.9
• Boiler efficiency at 30 % partial load operation (NCV/GCV)	%	108.1/97.4	108.1/97.4	108.1/97.4	108.1/97.4
• Room heating energy efficiency					
- without control	ηs	%	92	92	92
- with control	ηs	%	94	94	94
- with control and room sensor	ηs	%	96	96	96
• NOx class (EN 15502)		-	-	-	-
• Nitrogen oxide emissions (EN 15502) (GCV) NOx	mg/kWh	26	28	28	29
• O ₂ -content in flue gas at min./max. nominal heat output	%	5.5/5.1	5.5/5.1	5.5/5.1	5.5/5.1
• Heat loss in standby mode	Watt	220	220	290	290
Dimensions		see table of dimensions			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-50	17.4-50	17.4-50	17.4-50
- Propane	mbar	37-50	37-50	37-50	37-50
• Gas connection values at 15 °C/1013 mbar:					
- Natural gas E – (Wo = 15.0 kWh/m ³) NCV = 9.97 kWh/m ³	m ³ /h	0.54-3.34	0.77-4.70	1.25-6.57	1.97-9.44
- Natural gas LL – (Wo = 12.4 kWh/m ³) NCV = 8.57 kWh/m ³	m ³ /h	0.63-3.89	0.90-5.47	1.46-7.64	2.29-10.98
- Propane (NCV = 25.9 kWh/m ³)	m ³ /h	0.28-1.29	0.39-1.82	0.62-2.53	0.92-3.63
• Operating voltage	V/Hz	230/50	230/50	230/50	230/50
• Electrical power consumption min./max.	Watt	24/95	26/119	25/91	21/230
• Stand-by	Watt	9	9	9	9
• Type of protection	IP	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 Part 1) (room air dependent)	dB(A)	62	60	64	67
- Flue gas noise radiated from the mouth (DIN 45635 Part 47) (room air dependent/independent of room air)	dB(A)	55	58	55	59
- Sound pressure level heating noise (depending on installation conditions) ⁶⁾	dB(A)	55	53	57	59
• Condensate quantity (natural gas) at 40/30 °C	l/h	3.1	4.4	6.2	8.9
• pH value of the condensate	approx.	4.2	4.2	4.2	4.2
• Construction type		B23, B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	55	78	109	157
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	8.1	11.6	18.8	29.5
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	65	68	63	65
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	46	46	43	44
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	31	31	31	32
- Max. permissible temperature of the combustion air	°C	50	50	50	50
- Flow rate combustion air	Nm ³ /h	41	58	81	117
- Maximum supply pressure for combustion air supply and flue gas line	Pa	120	120	130	130
- Maximum draught/depression at flue gas outlet	Pa	-30	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100, an output reduction of up to 7 % is possible.

²⁾ Factory measurements

³⁾ Data related to NCV.

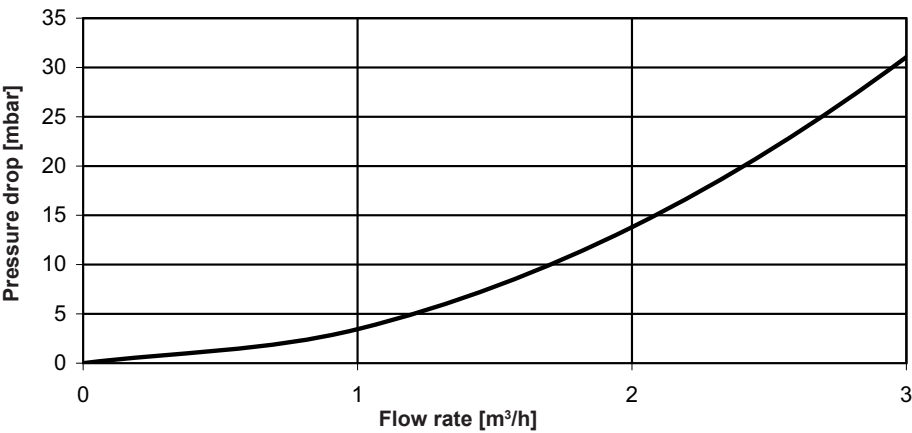
⁴⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible (readjustment might be necessary).

⁵⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z; resp. see diagrams

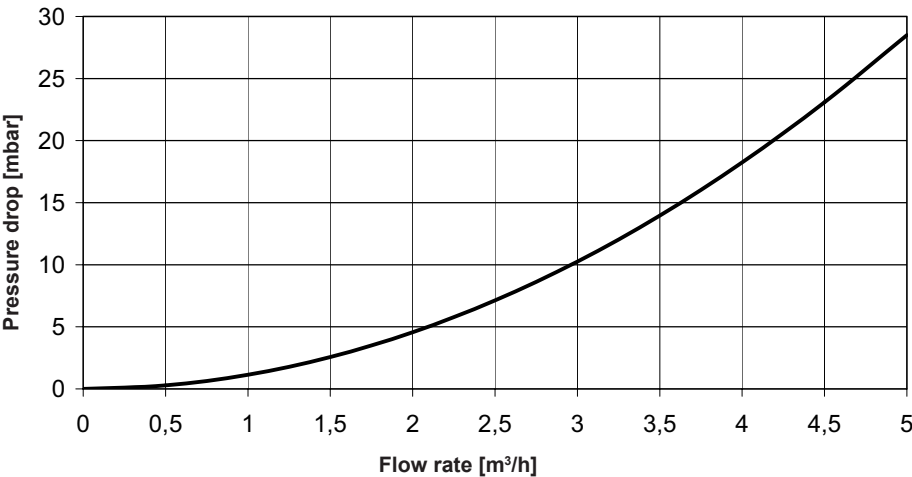
⁶⁾ Compare notice at "Engineering".

Flow resistance on the heating water side

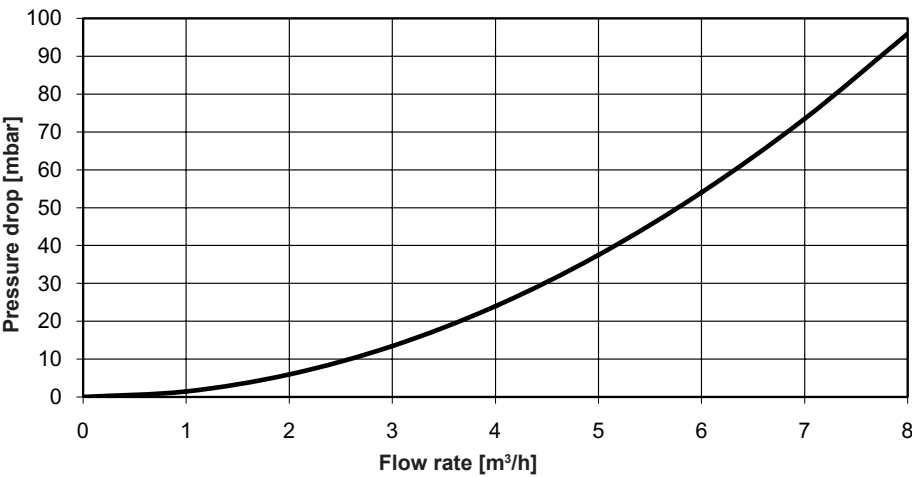
UltraGas® (15-27)



UltraGas® (35,50)



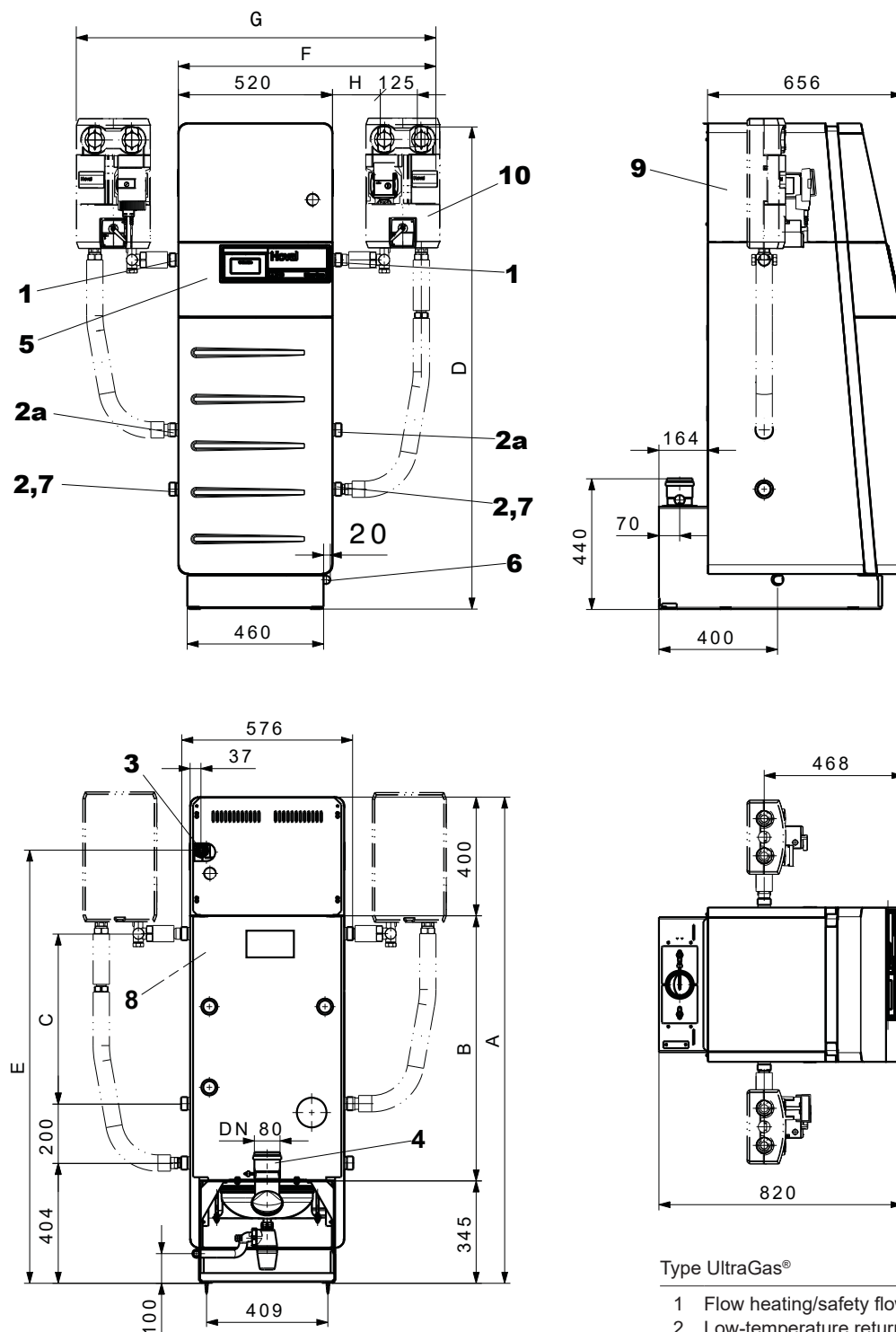
UltraGas® (70,100)



UltraGas® (15-27) with connection set AS25-S/NT/HT and armature group HA25

UltraGas® (35,50) with connection set AS32-S/NT/HT and armature group HA32

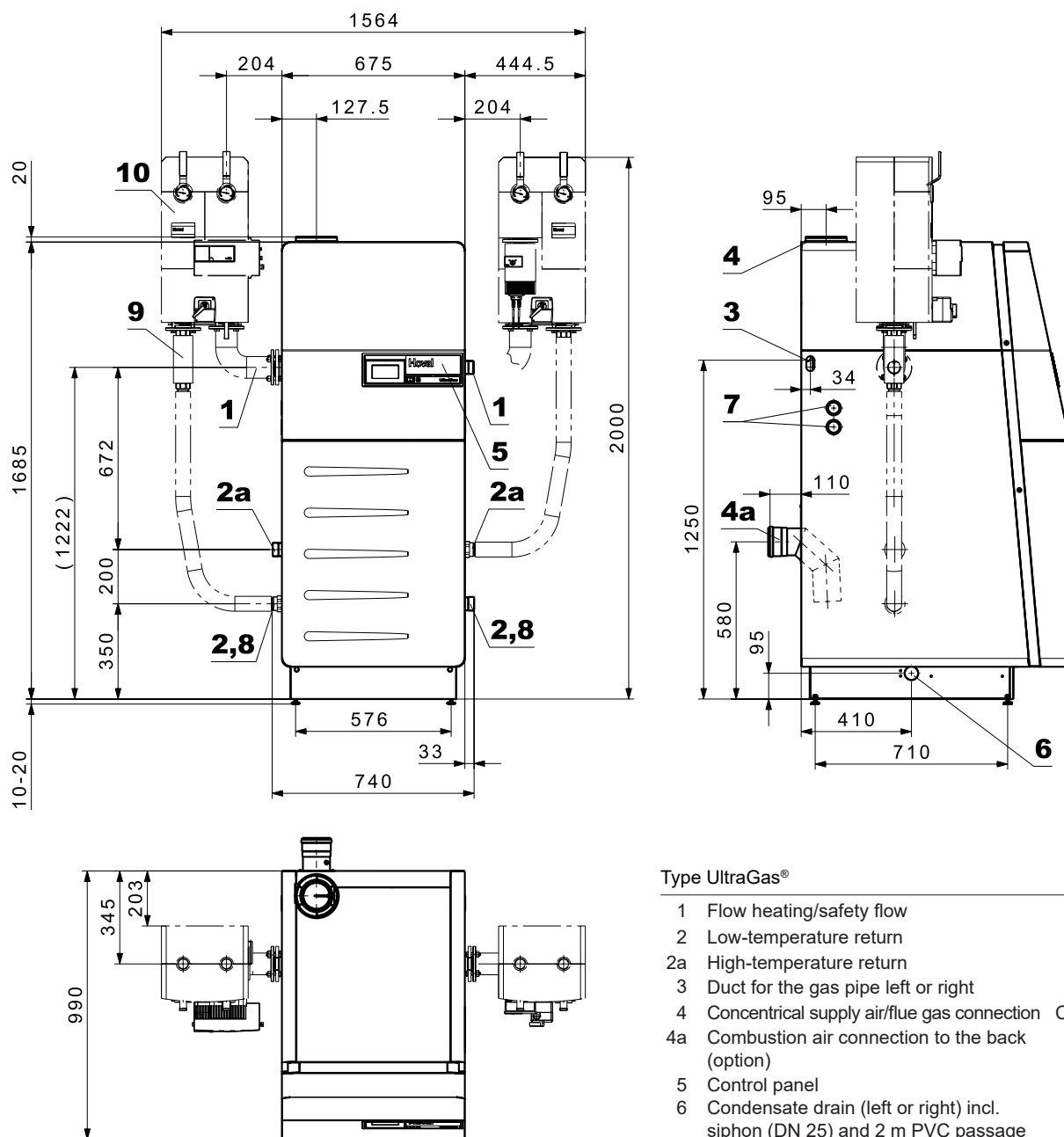
(Dimensions in mm)



Type	A	B	C	D	E	F	G	H
UltraGas® (15-27)	1400	655	333	1330	1220	852	1184	144
UltraGas® (35,50)	1640	895	573	1620	1460	930	1340	222

Type UltraGas®	(15-27)	(35,50)
1 Flow heating/safety flow	R 1"	R 1 1/4"
2 Low-temperature return	R 1"	R 1 1/4"
2a High-temperature return	R 1"	R 1 1/4"
3 Gas connection	Rp 3/4"	Rp 3/4"
4 Flue gas outlet	DN 80	DN 80
5 Control panel		
6 Condensate drain (left or right) incl. siphon (DN 25) and 2 m PVC passage tube inner Ø 19 x 4 mm		
7 Drain		
8 Electric cable entry point		
9 Sound attenuation cowl		
10 Heating armature group or charging group (option)		

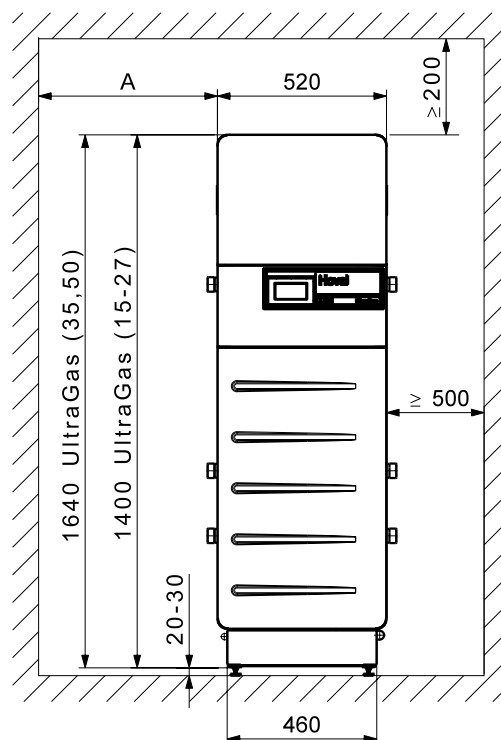
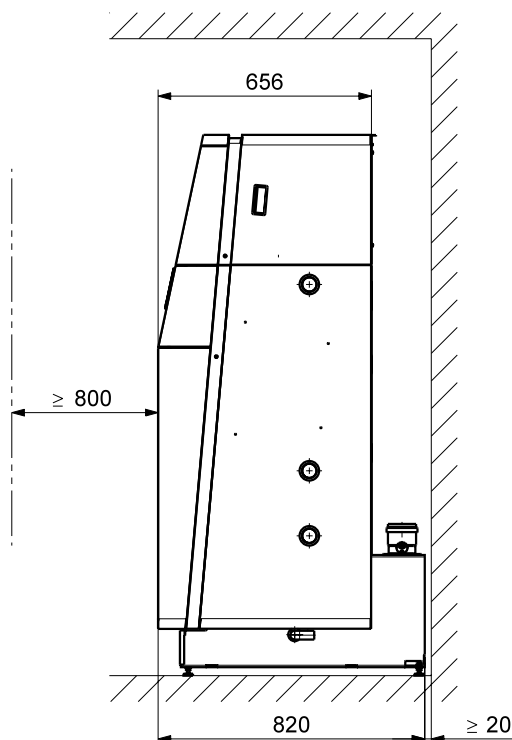
Hoval UltraGas® (70,100) with connection set AS40-S/NT/HT and armature group HA40
(Dimensions in mm)



Type	UltraGas®	(70)	(100)
1	Flow heating/safety flow	R 1½"	R 1½"
2	Low-temperature return	R 1½"	R 1½"
2a	High-temperature return	R 1½"	R 1½"
3	Duct for the gas pipe left or right	R ¾"	R ¾"
4	Concentrical supply air/flue gas connection	C100/150	C100/150
4a	Combustion air connection to the back (option)	E 100	E 100
5	Control panel		
6	Condensate drain (left or right) incl. siphon (DN 25) and 2 m PVC passage tube inner Ø 19 x 4 mm		
7	Electrical connection left or right		
8	Drain		
9	Connection set (option)		
10	Heating armature group or charging group (option)		

Space requirement (Dimensions in mm)

UltraGas® (15-50)



Door of the boiler inclusive burner swivelling to the top and to the left or to the front.

A = minimal 150 mm *

Burner service position in the front – boiler cleaning from the right

A = optimal 300 mm *

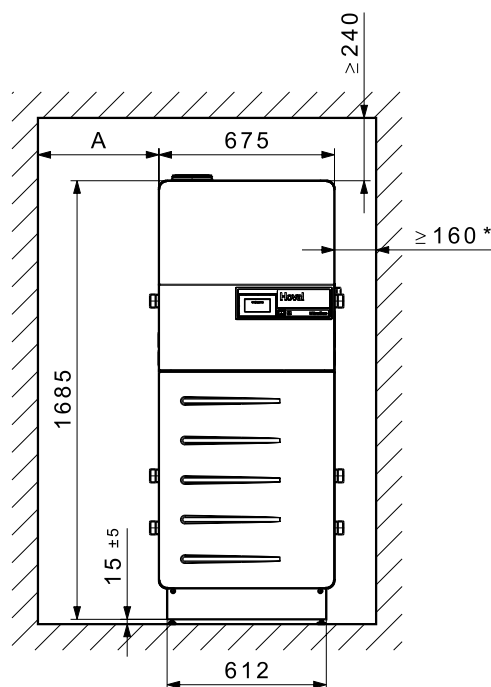
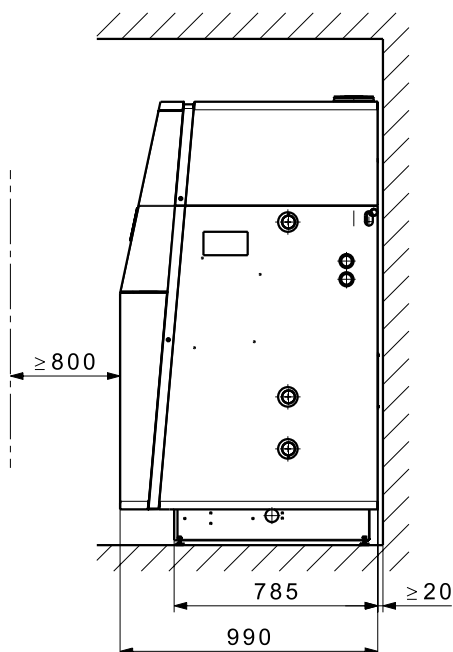
Burner service position left – boiler cleaning from the front

Boiler can be placed with the right side directly against the wall however, a minimum gap of 160 mm is required.

* without armature group,
500 mm with armature group

- The cleaning opening must be well accessible.
- Boiler rear side must be accessible.

UltraGas® (70,100)



Door of the boiler inclusive burner swivelling to the top and to the left or to the front.

A = minimal 150 mm *

Burner service position in the front – boiler cleaning from the right

A = optimal 300 mm *

Burner service position left – boiler cleaning from the front

* without armature group,
500 mm with armature group

Standards and guidelines

The official regulations for installation and operation must be observed. In particular, these are the country-specific standards (e.g. EN standard, DIN standards, etc.) as well as the corresponding regional regulations.

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- DVGW directives
- DIN EN 12828
- Safety-relevant requirements
- DIN EN 12831 Heaters
- Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- EN 14868 "Protection of metallic materials against corrosion"
- VDE 0100 supplement 2

Water quality in heating systems Filling and replacement water, heating water

The following applies:

- VDI 2035
- In addition, the EN 14868 standard must be applied, **as well as the manufacturer-specific specifications**

Manufacturer-specific specifications

Filling and replacement water

The filling and replacement water can be both fully demineralised and also merely softened.

Heating water

- In the case of **full demineralisation of the filling and replacement water**, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.
- In the case of **softening the filling and replacement water**, the following conditions must be complied with:
 - Electrical conductivity of the heating water for operation with water containing salts: > 100 µS/cm to ≤ 1500 µS/cm
 - pH value of the heating water for systems without aluminium alloy as water-side material 8.2 to 10.0 (measurement 10 weeks after commissioning at the earliest)

- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

Additional notices

- Hoval boilers and calorifiers are suitable for heating systems without significant oxygen intake. (System type I according to EN 14868).
- Plants with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up) must be equipped with a system separation.
- In the case of bivalent heating systems, the values of the heat generator with the strictest requirement for water quality must be complied with.
- If only the boiler is replaced in an existing plant, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The boiler must not be filled until the heating system has been flushed.

Frost protection agent

- see separate engineering sheet "Use of frost protection agent".

Heating room

- Boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. wash-, dryer-, work room, hairdressers and so on).
- Halogen compounds can be caused by cleaning and degreasing solutions, disinfectants, glue and bleaching lyes.

Combustion air supply

The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. The connection for direct combustion air supply must be used for direct combustion air supply to the boiler (LAS system). It is very important to ensure that the combustion air is free from halogen compounds. These are present, for example, in spray cans, varnishes, glues, solvents and cleansing agents.

The minimum free cross-section for the combustion air can be assumed simplified as follows:

- **Room air-independent operation with separate combustion air pipe to the boiler:** 0.8 cm² per 1 kW of output. The pressure drop in the combustion air pipe must be considered for the calculation of the flue gas system.
- In the UltraGas®, ventilation of the installation or boiler room must be guaranteed for operation independent from the room air.
- **Room air-dependent operation:** Minimum free cross-section of the opening into the open: 150 cm² or twice 75 cm² and additionally 2 cm² necessary for each kW of output over 50 kW for vent into the open.

Gas connection

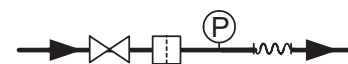
Commissioning

- Initial commissioning must be performed by a specialist technician from Hoval or a gas specialist technician.
- Burner setting values according to the installation instructions.

Manual gas shut-off valve and gas filter

Immediately in front of the boiler a manual gas shut-off device (valve) must be installed according to relevant regulations. Should the local regulations or conditions demand this, an approved gas filter must be installed in the gas supply pipe between the gas tap (thermally releasing) and the boiler in order to prevent malfunction due to foreign particles being carried along with the gas.

Construction of a recommended gas connection



Legend:

manual gas shut-off valve

gas hose/compensator

gas filter

pressure gauge with test burner and push-button valve

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.

Gas pressure natural gas

- Necessary flow pressure at the boiler inlet: UltraGas® (15-100) min. 17.4 mbar, max. 50 mbar

Gas pressure propane

- A gas pressure controller to reduce the boiler inlet pressure must be installed on-site for propane.
- Necessary gas flow pressure at the boiler inlet: UltraGas® (15-100)
min. 37 mbar, max. 50 mbar

Gas pressure regulator

- The installation of a gas pressure regulator is only necessary if the gas flow pressure in the gas network exceeds the maximum permissible gas flow pressure of the UltraGas® or if there are considerable fluctuations in the gas flow pressure.
- Pressure fluctuations in the gas network must be prevented by suitable measures (e.g. gas storage tanks or pressure regulators). The local conditions must be checked in each individual case.

Closed heating system

The boiler is only approved for use in closed heating systems.

Minimum circulation water quantity

No minimum water circulation volume is required.

Calorifier connection

If a calorifier is connected, all heating groups must be provided with a mixer.

Boiler base

The boiler should be placed on a sufficiently high base (boiler base see accessories) to protect it against floor humidity and for the siphon for condensate drain.

Installation instructions

Please observe the installation instructions supplied with every boiler.

Space requirements

See "Dimensions"

Heating boiler in the attic

- If the gas boiler is positioned on the top floor, the installation of a low water protection, which automatically turns the gas burner off in case of water shortage, is recommended.

Condensate drain

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority or sewer operator.
- The condensate from the flue gas line can be discharged via the boiler. A condensate trap is no longer needed in the flue gas system.
- The condensate must be conducted openly (funnel) into the sewage system.
- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from glass
 - pipes made from stainless steel
 - pipes made from plastic: PVC, PE, PP, ABS and UP
- A siphon must be installed at the condensate outlet on the gas boiler (included in the boiler scope of delivery).

Diaphragm pressure expansion tank

- An adequately dimensioned diaphragm pressure expansion tank must be provided.
- The diaphragm pressure expansion tank has to be installed in principle at the heating return.
- Starting from 70 °C an intermediate tank is necessary.

Safety valve

- At the heating flow a safety valve must be installed. An automatic exhaustor is built in the boiler.

Noise damping

The following measures are possible for sound insulation:

- Make boiler room walls, ceiling and floor as solid as possible.
- If there are living areas above or below the boiler room, connect pipes flexibly using expansion joints.
- Connect circulating pumps to the piping network using expansion joints

Noise level

- The acoustic **power** level value is independent on the local and spacial circumstances.
- The acoustic **pressure** level is dependent on the installation conditions and can for instance be 5 to 10 dB(A) lower than the acoustic **power** level at a distance of 1 m.

Recommendation:

If the air inlet at the facade is near a noise sensitive place (window of bedroom, terrace etc.), we recommend to use a sound absorber at the direct combustion air inlet.

Flue gas system

- Gas boilers must be connected to a certified and approved flue gas system such as flue gas lines.
- Flue gas lines must be gas-, condensate- and over pressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.
- A flue gas temperature limiter is integrated into the boiler.

Allocation of gas filters for UltraGas® (15-100)

UltraGas® type	Gas throughput natural gas E m³/h	Gas filter type	Dimension	Pressure drop gas filter (with clean filter) mbar
(15)	1.5	70612/6B	Rp ¾"	0.10
(20)	1.9	70612/6B	Rp ¾"	0.10
(27)	2.6	70612/6B	Rp ¾"	0.10
(35)	3.3	70612/6B	Rp ¾"	0.10
(50)	4.7	70612/6B	Rp ¾"	0.13
(70)	6.6	70602/6B	Rp 1"	0.10
(100)	9.5	70602/6B	Rp 1"	0.14

It is essential to set the dimensions of the gas line!

Looking for the appropriate hydraulic schematic?
Please contact your local Hoval partner.

Hoval UltraGas® 2 (125-1550)

Floor-standing gas condensing boiler

- Floor-standing gas condensing boiler
- For the combustion of:
 - natural gas E
 - natural gas E with a hydrogen content (H₂) of up to 20 % by vol.
 - propane according to DIN 51622
 - biomethane according to EN 16723
- Combustion chamber made of stainless steel
- Maximum flue gas condensation by secondary heating surfaces made of **TurboFer®** hybrid stainless steel composite pipes; heating gas side: stainless steel/aluminium water side: stainless steel
- Thermal insulation with mineral wool mat
- Water pressure sensor:
 - Fulfills the function of a minimum and maximum pressure limiter
 - Replacement for the low water level protection
- Flue gas temperature sensor with flue gas limiter function
- Pre-mix burner
 - with fan and venturi
 - modulating operation
 - automatic ignition
 - ionisation guard
 - gas pressure monitor
- Gas boiler fully clad with steel plates, red powder-coated
- Heating connections backwards incl. counter flange, screws and seals for:
 - heating flow
 - high temperature return
 - low temperature return
- **UltraGas® 2 (300-1550):** with integrated gas pipe compensator
- TopTronic® E controller installed
- Possibility of connecting an external gas solenoid valve with error output

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module heat generator TTE-WEZ

- Control functions integrated for
 - 1 heating circuit with mixer
 - 1 heating circuit without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management



Model range

UltraGas® 2 type	Nominal heat output at 50/30 °C kW
(125)	25-126
(150)	35-151
(190)	38-191
(230)	51-233
(300)	58-299
(350)	70-352
(400)	69-399
(450)	77-451
(500)	77-491
(620)	136-622
(700)	146-703
(800)	166-804
(1000)	205-999
(1100)	229-1112
(1300)	269-1320
(1550)	324-1550
H (700)	146-703
H (1100)	229-1112
H (1550)	324-1550

- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat balancing or
 - module expansion Universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the heat generator:

- **UltraGas® 2 (125-230)**
 - 1 module expansion and 1 controller module
- **or**
- 2 controller modules

UltraGas® 2 (300-500):

- 3 controller modules/module expansions

UltraGas® 2 (620-1550):

- 4 controller modules/module expansions

Notice

Max. 1 module expansion can be connected to the basic module heat generator TTE-WEZ!

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E see "Controls"

Optional

- With or without neutralisation
- Free-standing calorifier see Calorifiers

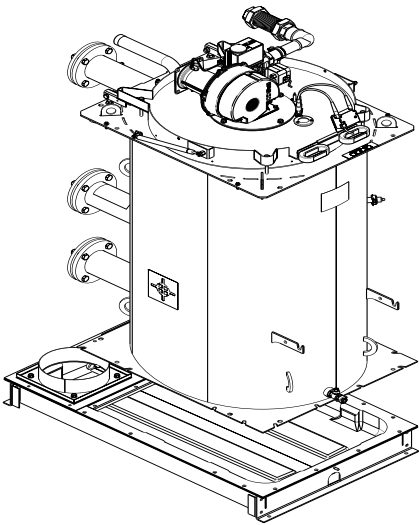
Delivery

- Boiler, cladding and thermal insulation separately packed and delivered

On-site

- Mounting of cladding, thermal insulation and boiler controller
- Mounting of boiler feet

Floor-standing gas condensing boiler
(multi-part installation)



Hoval UltraGas® 2 (125-1550)
(multi-part installation)

Floor-standing gas condensing boiler
with built-in Hoval TopTronic® E control for
multi-part installation.
Assembled on-site by the installer.

UltraGas® 2 type	Nominal heat output 50/30 °C kW	Operating pressure bar
(125)	25-126	6
(150)	35-151	6
(190)	38-191	6
(230)	51-233	6
(300)	58-299	6
(350)	70-352	6
(400)	69-399	6
(450)	77-451	6
(500)	77-491	6
(620)	136-622	6
(700)	146-703	6
(800)	166-804	6
(1000)	205-999	6
(1100)	229-1112	6
(1300)	269-1320	6
(1550)	324-1550	6

¹ kW = modulation range

Part No.

7018 909
7018 910
7018 929
7018 930
7018 816
7018 817
7018 818
7019 124
7018 849
7018 864
7018 865
7018 854
7018 855
7018 856
7018 899
7018 900

Floor-standing gas condensing boiler
(high-pressure design)

Delivery time approx. 8 weeks

Hoval UltraGas® 2 H (700-1550)
(high-pressure design)

Floor-standing gas condensing boiler in
high-pressure design
(operating pressure 10 bar)

UltraGas® 2 type	Nominal heat output 50/30 °C kW	Operating pressure bar
H (700)	146-703	10
H (1100)	229-1112	10
H (1550)	324-1550	10

¹ kW = modulation range

7019 065
7018 776
7018 777

Propane version

on request



System flow sensor
for UltraGas® 2 for installation in the
flow connector sleeve Rp 1/4",
for regulating the flow temperature.
Consisting of temperature sensor and
connection cable

6053 398

Installation of the system flow sensor is
recommended for optimal control of the flow
temperature.

Hoval UltraGas® 2 (125-230)

Type		(125)	(150)	(190)	(230)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	21-114	33-139	35-177	47-218
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	25-126	35-151	38-191	51-233
• Nominal heat output at 80/60 °C, propane ²⁾	kW	32-113	43-138	52-175	66-217
• Nominal heat output at 50/30 °C, propane ²⁾	kW	35-126	48-151	59-191	73-233
• Nominal heat input with natural gas ³⁾	kW	23-116	32-142	35-179	47-223
• Nominal heat input with propane ²⁾	kW	33-116	44-142	54-179	68-223
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H2O))	l	207	195	276	265
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	390	400	485	505
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	98.6/88.9	97.6/88.1	98.5/88.7	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV) ⁴⁾	%	108.7/98.1	108.7/98.1	109.0/98.2	108.4/97.8
• Room heating energy efficiency					
- without control	η _s %	93	93	93	93
- with control	η _s %	95	95	95	95
- with control and room sensor	η _s %	97	97	97	97
- annual energy consumption	Q _{HE} GJ	209	265	326	412
• NOx class (EN 15502)		-	-	-	-
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	25	28	33	37
• Carbon monoxide emissions at 50/30 °C (related to 3 % of O ₂)	CO mg/Nm ³	31	21	25	13
• O ₂ content in flue gas min./max. output	%	5.9/5.6	5.5/6.0	5.9/6.0	6.0/5.9
• Heat loss in standby mode (EN 15502) (50°C)	Watt	260	260	320	320
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80
- Propane	mbar	37-57	37-57	37-57	37-57
• Gas inlet pressure max. (idle pressure)	mbar	80	80	80	80
• Gas connection values at 15 °C/1013 mbar:					
- Natural gas E – (W _o = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	2.4-12.0	3.3-14.6	3.6-18.5	4.8-23.0
- Natural gas LL (G25) – (W _o = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	2.8-14.3	3.9-17.5	4.3-22.0	5.8-27.4
- Propane (G31) NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	1.4-4.8	1.8-5.8	2.2-7.3	2.8-9.1
• Operating voltage (50/60 Hz)	V	1 x 230	1 x 230	1 x 230	1 x 230
• Electrical power consumption min./max.	Watt	41/140	43/225	38/151	49/228
• Standby	Watt	7	8	8	8
• Type of protection	IP	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	64	69	63	66
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	69	70	66	68
- Sound pressure level heating noise (reference value depending on installation conditions)	dB(A)	54	59	53	56
• Condensate quantity (natural gas) at 50/30 °C	l/h	11	12	15	20
• pH value of the condensate (approx.)	pH	4.2	4.2	4.2	4.2
• Construction		B23, B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	188	226	283	344
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	37	51	55	63
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	64	65	68	69
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	43	45	46	47
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	29	28	29	29
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Combustion air flow rate	Nm ³ /h	154	180	232	280
- Maximum supply pressure for combustion air supply and flue gas line	Pa	120	120	130	130
- Maximum draught/underpressure at flue gas outlet	Pa	-30	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

²⁾ Data related to NCV, conditional data

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Hoval UltraGas® 2 (300-450)

Type		(300)	(350)	(400)	(450)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	54-274	67-315	62-362	73-415
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	58-299	70-352	69-399	77-451
• Nominal heat output at 80/60 °C, propane ²⁾	kW	83-274	94-311	109-361	124-408
• Nominal heat output at 50/30 °C, propane ²⁾	kW	93-299	109-352	123-399	138-451
• Nominal heat input with natural gas ³⁾	kW	54-282	64-331	62-374	71-427
• Nominal heat input with propane ²⁾	kW	87-282	102-331	114-374	130-427
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H2O))	l	472	452	432	412
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	730	765	800	830
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	98.2/88.5	98.2/88.5	98.2/88.5	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV) ⁴⁾	%	109.2/98.4	108.9/98.1	109.0/98.2	108.9/98.1
• Room heating energy efficiency					
- without control	ηs %	94	93	93	-
- with control	ηs %	96	95	95	-
- with control and room sensor	ηs %	98	97	97	-
- annual energy consumption	Q _{HE} GJ	505	590	653	-
• NOx class (EN 15502)		-	-	-	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	39	45	39	45
• Carbon monoxide emissions at 50/30 °C (related to 3 % of O ₂)	CO mg/Nm ³	18	26	23	30
• O ₂ content in flue gas min./max. output	%	5.5/5.8	5.7/5.7	5.9/5.9	6.0/5.6
• Heat loss in standby mode (EN 15502) (50°C)	Watt	430	430	430	430
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80
- Propane	mbar	37-57	37-57	37-57	37-57
• Gas inlet pressure max. (idle pressure)	mbar	80	80	80	80
• Gas connection values at 15 °C/1013 mbar:					
- Natural gas E – (Wo = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	5.6-29.1	6.6-34.1	6.4-38.6	7.3-44.0
- Natural gas LL (G25) – (Wo = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	6.6-34.7	7.9-40.7	7.6-46.0	8.7-52.5
- Propane (G31) NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	3.6-11.6	4.2-13.6	4.7-15.3	5.3-17.5
• Operating voltage (50/60 Hz)	V	1 x 230	1 x 230	1 x 230	1 x 230
• Electrical power consumption min./max.	Watt	51/365	55/350	56/518	56/590
• Standby	Watt	5	5	5	5
• Type of protection	IP	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	73	70	73	74
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	71	72	73	74
- Sound pressure level heating noise (reference value depending on installation conditions)	dB(A)	63	60	63	64
• Condensate quantity (natural gas) at 50/30 °C	l/h	22	25	28	29
• pH value of the condensate (approx.)	pH	4.2	4.2	4.2	4.2
• Construction		B23, B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	445	522	591	674
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	85	101	98	112
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	64	65	66	67
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	43	44	48	47
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	29	29	29	29
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Combustion air flow rate	Nm ³ /h	364	428	483	552
- Maximum supply pressure for combustion air supply and flue gas line	Pa	130	130	130	130
- Maximum draught/underpressure at flue gas outlet	Pa	-30	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

²⁾ Data related to NCV, conditional data

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Hoval UltraGas® 2 (500-800)

Type		(500)	(620)	(700)	(800)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	71-449	125-580	132-653	150-743
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	77-491	136-622	146-703	166-804
• Nominal heat output at 80/60 °C, propane ²⁾	kW	133-441	173-569	193-643	233-744
• Nominal heat output at 50/30 °C, propane ²⁾	kW	147-491	184-622	208-703	254-804
• Nominal heat input with natural gas ³⁾	kW	71-463	124-591	134-668	151-759
• Nominal heat input with propane ²⁾	kW	140-463	179-591	201-668	236-759
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H2O))	l	408	536	509	831
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	855	1090	1135	1435
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	98.2/88.5	98.2/88.5	98.2/88.5	98.3/88.6
• Boiler efficiency at 30 % partial load (NCV/GCV) ⁴⁾	%	109.0/98.2	109.0/98.2	108.9/98.1	109.1/98.3
• Room heating energy efficiency					
- without control	η _s %	-	-	-	-
- with control	η _s %	-	-	-	-
- with control and room sensor	η _s %	-	-	-	-
- annual energy consumption	Q _{HE} GJ	-	-	-	-
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	50	33	40	36
• Carbon monoxide emissions at 50/30 °C (related to 3 % of O ₂)	CO mg/Nm ³	46	24	26	23
• O ₂ content in flue gas min./max. output	%	5.5/5.8	5.9/6.0	6.0/5.7	6.0/5.8
• Heat loss in standby mode (EN 15502) (50°C)	Watt	430	540	540	600
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-300
- Propane	mbar	37-57	37-57	37-57	37-57
• Gas inlet pressure max. (idle pressure)	mbar	80	80	80	300
• Gas connection values at 15 °C/1013 mbar:					
- Natural gas E – (W _o = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	7.3-47.7	12.8-60.9	13.8-68.9	15.6-78.2
- Natural gas LL (G25) – (W _o = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	8.7-56.9	15.3-72.7	16.5-82.2	18.6-93.4
- Propane (G31) NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	5.7-19.0	7.3-24.2	8.2-27.4	9.7-31.1
• Operating voltage (50/60 Hz)	V	1 x 230	1 x 230	1 x 230	1 x 230
• Electrical power consumption min./max.	Watt	57/716	63/831	67/1060	94/1012
• Standby	Watt	5	5	5	7
• Type of protection	IP	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	78	75	76	78
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	77	72	71	-
- Sound pressure level heating noise (reference value depending on installation conditions)	dB(A)	68	65	66	68
• Condensate quantity (natural gas) at 50/30 °C	l/h	37	51	48	57
• pH value of the condensate (approx.)	pH	4.2	4.2	4.2	4.2
• Construction		B23, B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	736	933	1055	1198
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	112	196	211	238
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	66	68	69	66
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	44	47	49	44
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	28	28	29	28
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Combustion air flow rate	Nm ³ /h	602	764	863	981
- Maximum supply pressure for combustion air supply and flue gas line	Pa	130	130	130	130
- Maximum draught/underpressure at flue gas outlet	Pa	-30	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

²⁾ Data related to NCV, conditional data

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Hoval UltraGas® 2 (1000-1550)

Type		(1000)	(1100)	(1300)	(1550)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	185-926	203-1038	241-1230	297-1447
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	205-999	229-1112	269-1320	324-1550
• Nominal heat output at 80/60 °C, propane ²⁾	kW	262-926	299-1033	362-1227	427-1439
• Nominal heat output at 50/30 °C, propane ²⁾	kW	282-999	316-1112	385-1320	453-1550
• Nominal heat input with natural gas ³⁾	kW	187-943	206-1057	247-1251	297-1469
• Nominal heat input with propane ²⁾	kW	265-943	306-1057	371-1251	437-1469
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H2O))	l	756	718	1211	1118
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	1580	1635	2280	2445
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	98.2/88.5	98.2/88.5	98.2/88.5	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV) ⁴⁾	%	109.0/98.2	108.6/97.8	108.7/97.9	108.5/97.7
• Room heating energy efficiency					
- without control	η _s %	-	-	-	-
- with control	η _s %	-	-	-	-
- with control and room sensor	η _s %	-	-	-	-
- annual energy consumption	Q _{HE} GJ	-	-	-	-
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	36	41	37	35
• Carbon monoxide emissions at 50/30 °C (related to 3 % of O ₂)	CO mg/Nm ³	25	26	23	23
• O ₂ content in flue gas min./max. output	%	6.0/5.9	6.0/5.9	6.0/5.9	6.0/6.0
• Heat loss in standby mode (EN 15502) (50°C)	Watt	600	600	740	740
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-300	17.4-300	17.4-300	17.4-300
- Propane	mbar	37-57	37-57	37-57	37-57
• Gas inlet pressure max. (idle pressure)	mbar	300	300	300	300
• Gas connection values at 15 °C/1013 mbar:					
- Natural gas E – (W _o = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	19.3-97.2	21.2-109.0	25.5-129.0	30.6-151.4
- Natural gas LL (G25) – (W _o = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	23.0-116.0	25.3-130.0	30.4-153.9	36.5-180.7
- Propane (G31) NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	10.9-38.6	12.5-43.3	15.2-51.3	17.9-60.2
• Operating voltage (50/60 Hz)	V	1 x 230 3 x 400	1 x 230 3 x 400	1 x 230 3 x 400	1 x 230 3 x 400
• Electrical power consumption min./max.	Watt	203-1873	203-1933	271/4111	301/4141
• Standby	Watt	7	7	5	7
• Type of protection	IP	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	83	82	86	85
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	-	-	-	-
- Sound pressure level heating noise (reference value depending on installation conditions)	dB(A)	73	72	74	76
• Condensate quantity (natural gas) at 50/30 °C	l/h	68	72	100	138
• pH value of the condensate (approx.)	pH	4.2	4.2	4.2	4.2
• Construction		B23, B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	1488	1669	1975	2230
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	295	325	390	450
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	69	70	66	68
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	47	49	45	46
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	28	29	29	28
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Combustion air flow rate	Nm ³ /h	1219	1366	1617	1830
- Maximum supply pressure for combustion air supply and flue gas line	Pa	130	130	130	130
- Maximum draught/underpressure at flue gas outlet	Pa	-30	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

²⁾ Data related to NCV, conditional data

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Hoval UltraGas® 2 H (700-1550)

Type		H (700)	H (1100)	H (1550)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	132-653	203-1038	297-1447
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	146-703	229-1112	324-1550
• Nominal heat output at 80/60 °C, propane ²⁾	kW	193-643	299-1033	427-1439
• Nominal heat output at 50/30 °C, propane ²⁾	kW	208-703	316-1112	453-1550
• Nominal heat input with natural gas ³⁾	kW	134-668	206-1057	297-1469
• Nominal heat input with propane ²⁾	kW	201-668	306-1057	437-1469
• Operating pressure heating min./max. (PMS)	bar	1/10	1/10	1/10
• Operating temperature max. (T _{max})	°C	95	95	95
• Boiler water content (V _(H2O))	l	509	709	1118
• Flow resistance boiler		see diagram		
• Minimum circulation water quantity	l/h	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	1170	1735	2550
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	98.2/88.5	98.2/88.5	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV) ⁴⁾	%	108.9/98.1	108.6/97.8	108.5/97.7
• Room heating energy efficiency				
- without control	η _s %	-	-	-
- with control	η _s %	-	-	-
- with control and room sensor	η _s %	-	-	-
- annual energy consumption	Q _{HE} GJ	-	-	-
• NOx class (EN 15502)		6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	40	41	35
• Carbon monoxide emissions at 50/30 °C (related to 3 % of O ₂)	CO mg/Nm ³	26	26	23
• O ₂ content in flue gas min./max. output	%	6.0/5.7	6.0/5.9	6.0/6.0
• Heat loss in standby mode (EN 15502) (50°C)	Watt	540	600	740
• Dimensions		see dimensional drawing		
• Gas flow pressure min./max.				
- Natural gas E/LL	mbar	17.4-80	17.4-300	17.4-300
- Propane	mbar	37-57	37-57	37-57
• Gas inlet pressure max. (idle pressure)	mbar	80	300	300
• Gas connection values at 15 °C/1013 mbar:				
- Natural gas E – (W _o = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	13.8-68.9	21.2-109.0	30.6-151.4
- Natural gas LL (G25) – (W _o = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	16.5-82.2	25.3-130.0	36.5-180.7
- Propane (G31) NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	8.2-27.4	12.5-43.3	17.9-60.2
• Operating voltage (50/60 Hz)	V	1 x 230	1 x 230 3 x 400	1 x 230 3 x 400
• Electrical power consumption min./max.	Watt	67/1060	203/1933	301/4141
• Standby	Watt	5	7	7
• Type of protection	IP	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40
• Sound power level				
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	76	82	85
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	71	-	-
- Sound pressure level heating noise (reference value depending on installation conditions)	dB(A)	66	72	76
• Condensate quantity (natural gas) at 50/30 °C	l/h	48	72	138
• pH value of the condensate (approx.)	pH	4.2	4.2	4.2
• Construction		B23, B23P, C53, C63		
• Flue gas system				
- Temperature class		T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	1055	1669	2230
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	211	325	450
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	69	70	68
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	49	49	46
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	29	29	28
- Max. permissible temperature of the combustion air	°C	48	48	48
- Combustion air flow rate	Nm ³ /h	863	1366	1830
- Maximum supply pressure for combustion air supply and flue gas line	Pa	130	130	130
- Maximum draught/underpressure at flue gas outlet	Pa	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

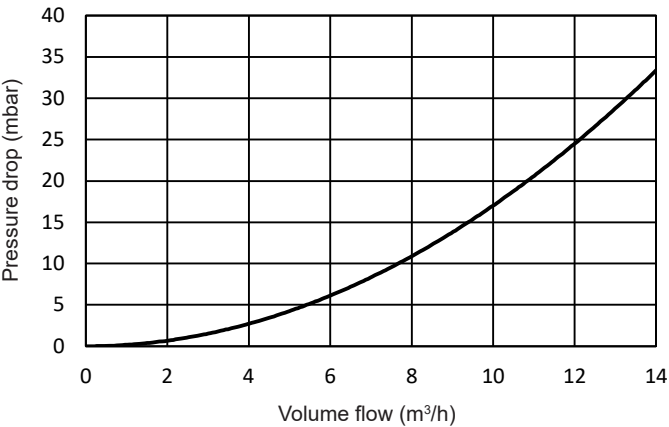
²⁾ Data related to NCV, conditional data

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

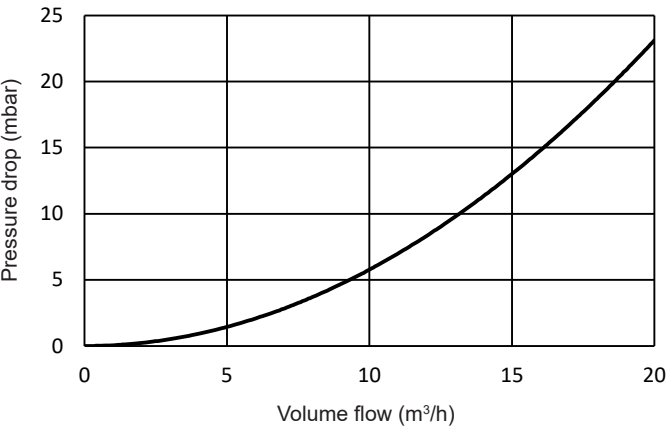
⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Flow resistance on the heating water side

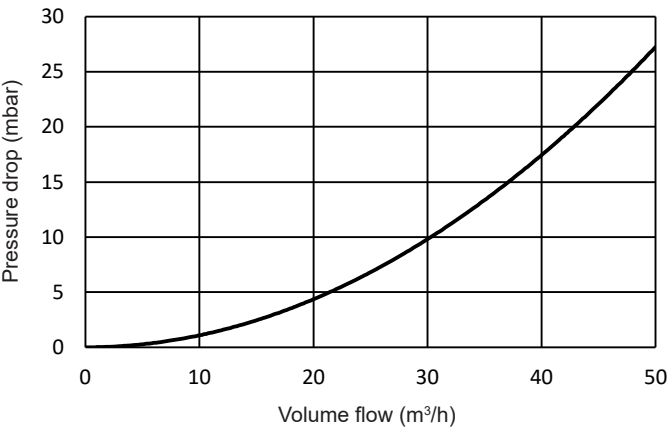
UltraGas® 2 (125,150)



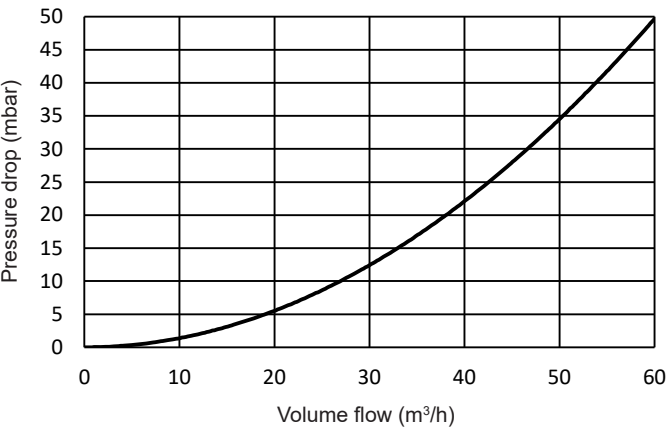
UltraGas® 2 (190,230)



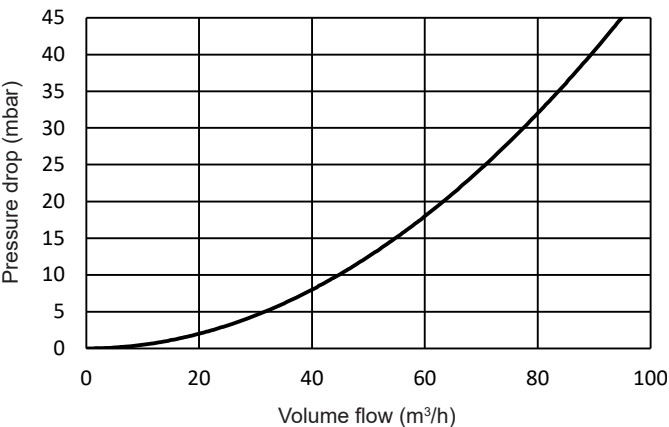
UltraGas® 2 (300-500)



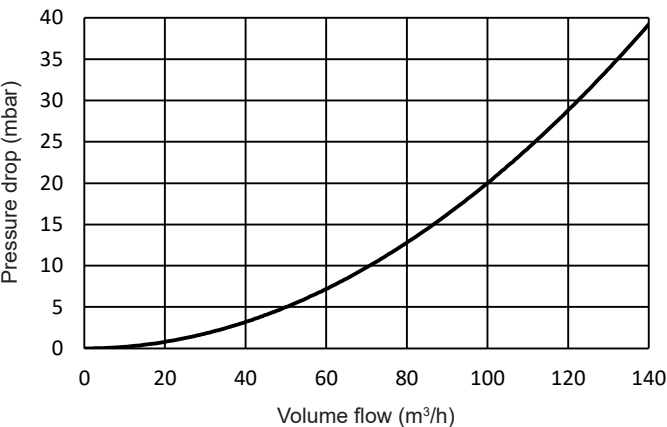
UltraGas® 2 (620,700)



UltraGas® 2 (800-1100)

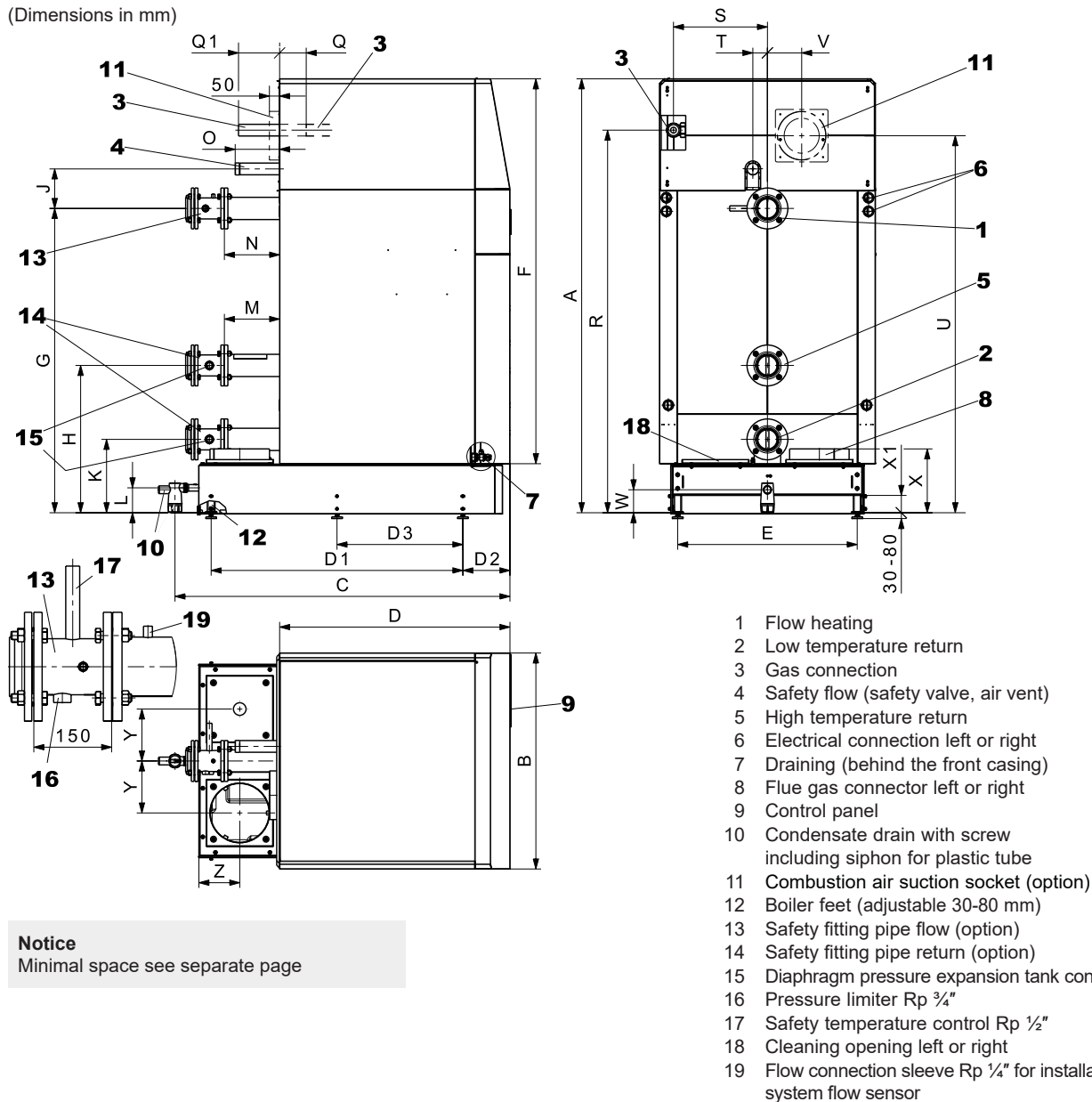


UltraGas® 2 (1300,1550)



UltraGas® 2 (125-1550)

(Dimensions in mm)



Notice

Minimal space see separate page

Type	A	B	C	D	D1	D2	D3	E	F	G	H	J	K	L	M	N	O	Q	Q1	R
(125,150)	1923	720	1182	799	754	242	-	533	1681	1479	714	122	334	134	207	207	65	192	-	1725
(190,230)	1968	820	1256	895	854	242	-	633	1726	1517	717	145	337	134	204	204	69	226	-	1778
(300-500)	1923	930	1632	1165	1204	242	-	743	1683	1447	745	169	365	131	285	285	189	-	190	1735
(620,700)	2234	1110	1722	1184	1294	242	-	923	1982	1564	757	203	377	128	286	286	225	0	0	1966
(800-1100)	2255	1290	1822	1364	1480	242	-	1103	1987	1573	788	215	408	128	378	378	225	58	-	1959
(1300,1550)	2395	1560	2200	1640	1790	250	895	1363	2103	1600	822	238	442	138	420	420	218	22	-	2064
H (700)	2234	1110	1722	1184	1294	242	-	923	1982	1564	757	203	377	128	286	286	225	0	0	1966
H (1100)	2255	1290	1822	1364	1480	242	-	1103	1987	1573	788	215	408	128	378	378	225	58	-	1959
H (1550)	2395	1560	2200	1640	1790	250	895	1363	2103	1600	822	238	442	138	390	390	218	22	-	2064

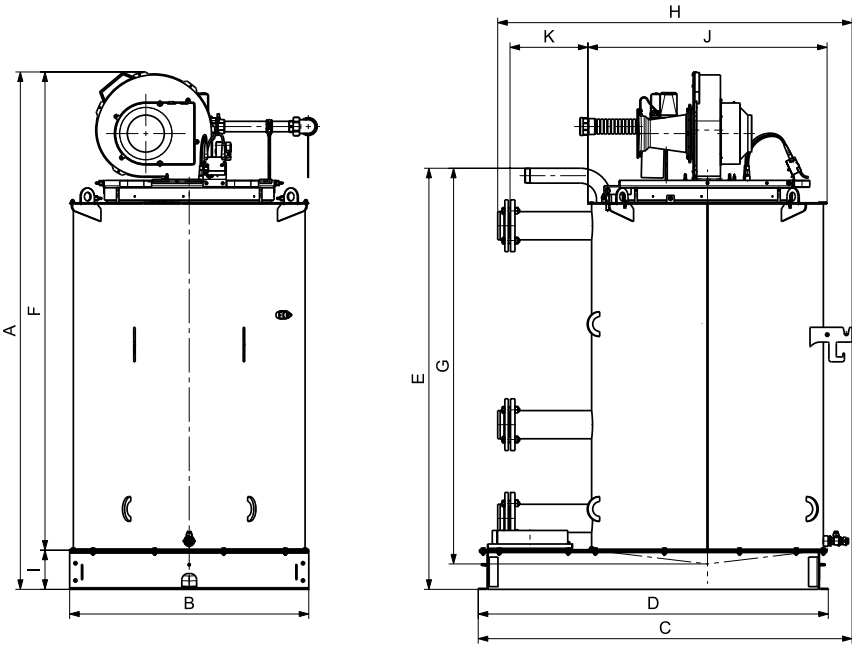
Type	S	T	U	V	W	X	X1	Y	Z	1,2,5 *	3	4	8	10	11
(125,150)	318	40	1725	101	124	319	99	157	139	DN 65 / PN 6 / 4-hole	Rp 1"	R 1"	Ø 155/159	DN 40	Ø 122/125
(190,230)	371	50	1778	101	124	319	99	195	139	DN 65 / PN 6 / 4-hole	Rp 1 1/2"	R 1 1/4"	Ø 155/159	DN 40	Ø 197/200
(300-500)	389	40	1736	101	121	316	96	217	184	DN 100 / PN 6 / 4-hole	Rp 1 1/2"	R 1 1/2"	Ø 252/256	DN 40	Ø 197/200
(620,700)	483	75	1938	176	118	328	89	267	211	DN 100 / PN 6 / 4-hole	Rp 2"	R 2"	Ø 302/306	DN 40	Ø 247/250
(800-1100)	572	100	1959	176	118	374	89	357	219	DN 125 / PN 6 / 8-hole	Rp 2"	R 2"	Ø 302/306	DN 40	Ø 247/250
(1300,1550)	621	100	2064	190	128	398	89	455	244	DN 150 / PN 6 / 8-hole	Rp 2"	R 2"	Ø 402/406	DN 40	Ø 247/250
H (700)	483	75	1938	176	118	328	89	267	211	DN 100 / PN 16 / 8-hole	Rp 2"	R 2"	Ø 302/306	DN 40	Ø 247/250
H (1100)	572	100	1959	176	118	374	89	357	219	DN 125 / PN 16 / 8-hole	Rp 2"	R 2"	Ø 302/306	DN 40	Ø 247/250
H (1550)	621	100	2064	190	128	398	89	455	244	DN 150 / PN 16 / 8-hole	Rp 2"	R 2"	Ø 402/406	DN 40	Ø 247/250

* DN = nominal diameter, PN = nominal pressure

Installation dimensions

Boiler without cladding and thermal insulation
(Dimensions in mm)

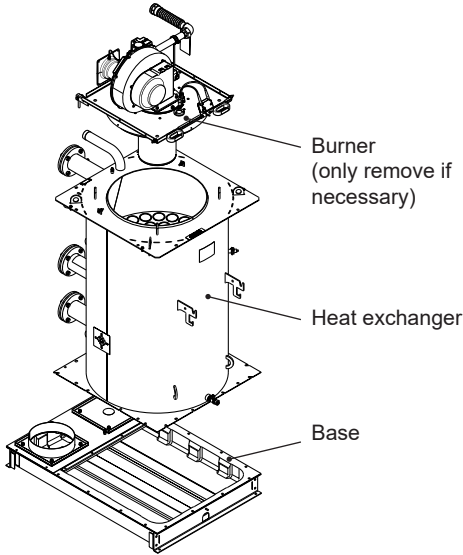
UltraGas® 2 (125-1550)



UltraGas® 2 type	A	B	C	D	E	Dimensions for multi-part installation					
						F	G	H	I	J	K
(125,150)	1765	580	957	880	1519	1625	1421	946	140	580	242
(190,230)	1818	680	1054	980	1583	1678	1484	1037	140	680	236
(300-500)	1777	790	1400	1330	1544	1637	1451	1391	140	950	316
(620,700)	2099	970	1516	1420	1708	1940	1605	1437	159	970	316
(800-1100)	2120	1150	1712	1606	1729	1945	1625	1722	175	1150	408
(1300,1550)	2255	1410	2032	1916	1779	2056	1671	2042	199	1410	458

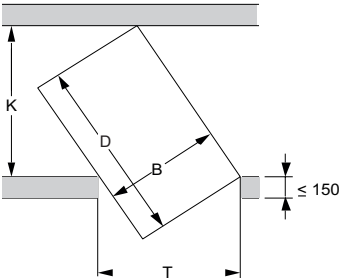
Weights for multi-part installation UltraGas® 2

UltraGas® 2 type	Base kg	Heat exchanger kg	Burner kg
(125)	34	207	29
(150)	34	220	29
(190)	42	272	39
(230)	42	293	39
(300)	60	455	60
(350)	60	486	60
(400)	60	520	60
(450)	60	554	60
(500)	60	576	60
(620)	86	729	80
(700)	86	777	80
(800)	104	1017	93
(1000)	104	1154	100
(1100)	104	1208	100
(1300)	155	1683	160
(1550)	155	1847	160



Required minimum width of door and corridor for boiler installation

The following values are the calculated minimum values (dimensions in mm)



$$K = \frac{B}{T} \times D$$

$$T = \frac{B}{K} \times D$$

B = boiler width
D = max. boiler length
T = door width
K = corridor width

Calculation example for the necessary corridor width

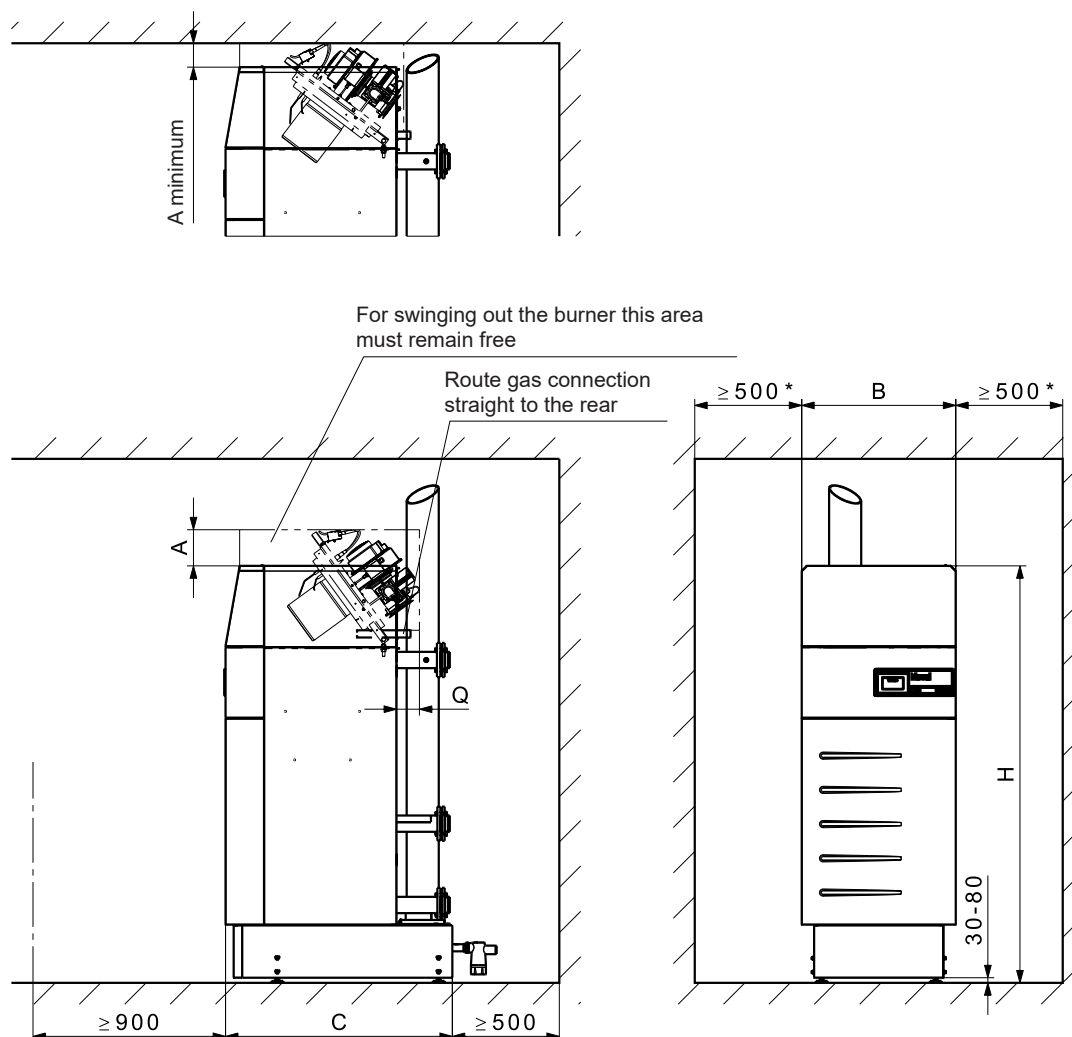
Door width T = 800

UltraGas® 2 (500) $K = \frac{790}{800} \times 1330 = \text{corridor width} \geq 1314$

Space requirements

(Dimensions in mm)

UltraGas® 2 (125-1550)



UltraGas® 2

type	A ¹⁾	A minimum ²⁾	B	C	H ³⁾	H minimum ⁴⁾	Q
(125,150)	169	106	720	1060	1953	1934	125
(190,230)	155	71	820	1160	1998	1979	2
(300-500)	513	156	930	1510	1953	1937	60
(620,700)	121	121	1110	1600	2264	2255	155
(800-1100)	280	195	1290	1786	2285	2276	119
(1300,1550)	291	154	1560	2104	2425	2416	163
H (700)	121	121	1110	1600	2264	2255	155
H (1100)	280	195	1290	1786	2285	2276	119
H (1550)	291	154	1560	2104	2425	2416	163

¹⁾ If room height is too small: Reduction of dimension possible (see A minimum).

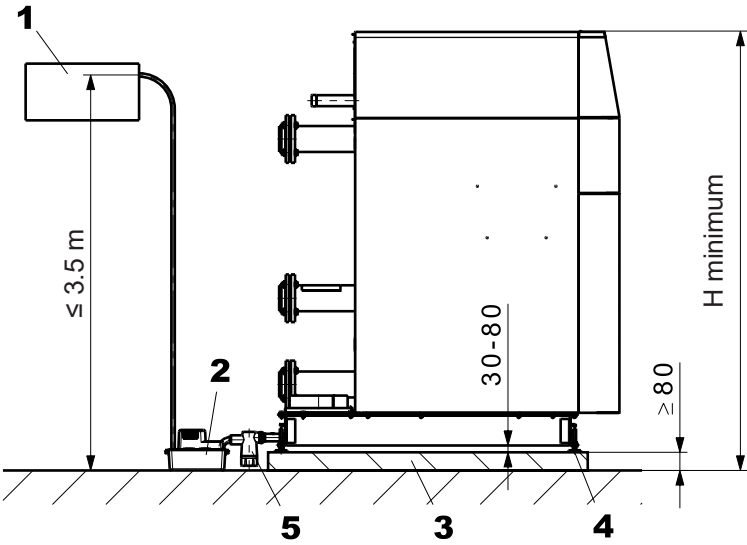
²⁾ **Attention!** With A minimum the burner can not be swung out completely anymore!
Cleaning with UltraGas® 2 (125-230) and UltraGas® 2 (620-1550) still possible

³⁾ Height value assumes adjustable feet are set to 30 mm

⁴⁾ The base plates cannot be installed without feet and the installer will have to fit a siphon with min. 70 mm barrier height. For details see next page.

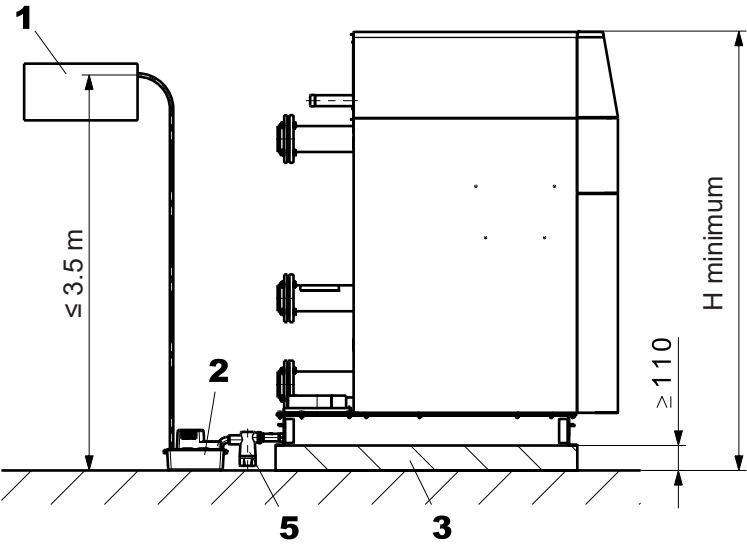
- The heat generator can be placed with one side directly on the wall. However, to protect heat-sensitive walls against damage, a distance of at least 150 mm from the wall must be provided.
- The cleaning opening must be easily accessible. As a result, a minimum distance of 500 mm must be maintained on the cleaning opening side.

UltraGas® 2 (125-1550) with masonry base and adjustable feet
(Dimensions in mm)



UltraGas® 2 type	H minimum ¹⁾
(125,150)	1934
(190,230)	1979
(300-500)	1937
(620,700)	2255
(800-1100)	2276
(1300,1550)	2416
H (700)	2255
H (1100)	2276
H (1550)	2416

UltraGas® 2 (125-1550) with masonry base without adjustable feet



UltraGas® 2 type	H minimum ¹⁾
(125,150)	1934
(190,230)	1979
(300-500)	1937
(620,700)	2255
(800-1100)	2276
(1300,1550)	2416
H (700)	2255
H (1100)	2276
H (1550)	2416

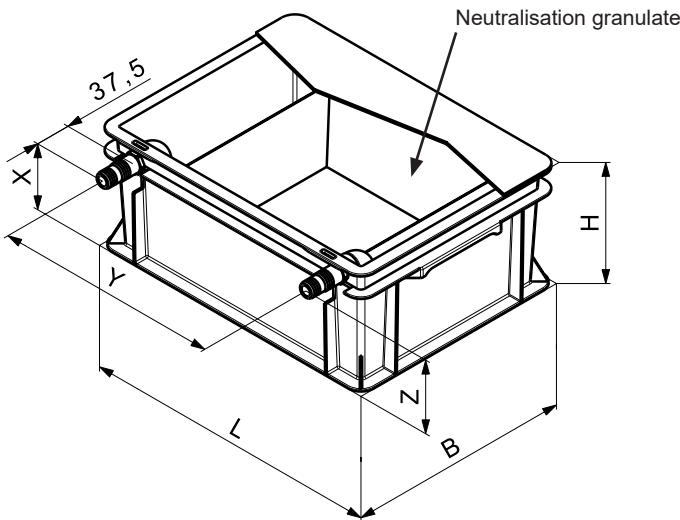
- 1 Neutralisation unit (option)
- 2 Condensate pump (option)
- 3 Masonry base
- 4 Feet adjustable up to 30-80 mm
- 5 Siphon ²⁾

¹⁾ Height value assumes adjustable feet are set to 30 mm
²⁾ **Caution!** The installer will have to fit a siphon with min. 70 mm barrier height.

Notice

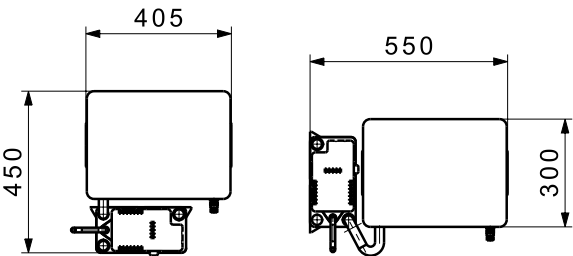
- The steps of the climbing aid provided must be horizontal. Adapt the climbing aid if necessary.
- Base plates and feeds will not be re-funded!
- With H minimum, cleaning the siphon is more difficult.

Neutralisation unit HNB-0400 to HNB-1600
(Dimensions in mm)

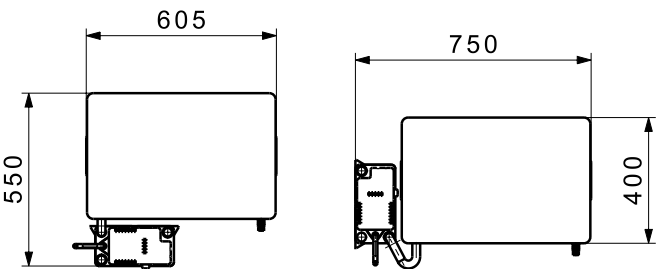


	HNB-0400,-0800	HNB-1200,-1600
Dimensions (L x W x H)	405 x 300 x 180 mm	605 x 400 x 180 mm
Inlet height (Z)	128 mm	
Drain height (X)	118 mm	
Distance between the connections (Y)	approx. 350 mm	approx. 550 mm

Neutralisation unit HNB-0400,-0800 and condensate pump
(Dimensions in mm)



Neutralisation unit HNB-1200,-1600 and condensate pump
(Dimensions in mm)



Standards and guidelines

The official regulations for installation and operation must be observed. In particular, these are the country-specific standards (e.g. EN standard, DIN standards, etc.) as well as the corresponding regional regulations.

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- DVGW directives
- DIN EN 12828
Safety-relevant requirements
- DIN EN 12831 Heaters
Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- EN 14868 "Protection of metallic materials against corrosion"
- VDE 0100 supplement 2

Water quality in heating systems

Filling and replacement water, heating water

The following applies:

- VDI 2035
- In addition, the EN 14868 standard must be applied, **as well as the manufacturer-specific specifications**

Manufacturer-specific specifications

Filling and replacement water

The filling and replacement water can be both fully demineralised and also merely softened.

Heating water

- In the case of **full demineralisation of the filling and replacement water**, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.
- In the case of **softening the filling and replacement water**, the following conditions must be complied with:

The quality of the heating water must be checked and documented periodically:

- For an installed heat output above 100 kW up to and including 1000 kW, an annual check of the heating water is required.
- For an installed heat output above 1000 kW, a check of the heating water is required twice a year.

The following standard values for the heating water must be measured and adhered to:

- Electrical conductivity of the heating water for operation with water containing salts: > 100 µS/cm to ≤ 1500 µS/cm
- pH value of the heating water for systems without aluminium alloy as water-side material 8.2 to 10.0 (measurement 10 weeks after commissioning at the earliest)
- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

Additional notices

- Hoval boilers and calorifiers are suitable for heating systems without significant oxygen intake. (System type I according to EN 14868).
- Plants with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up) must be equipped with a system separation.
- In the case of bivalent heating systems, the values of the heat generator with the strictest requirement for water quality must be complied with.
- If only the boiler is replaced in an existing plant, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The boiler must not be filled until the heating system has been flushed.

Frost protection agent

see separate engineering sheet
"Use of frost protection agent".

Heating room

- Boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. laundrettes, hairdressers).
- Halogen compounds can be caused by cleaning and degreasing solutions, solvents, glue and bleaching lyes. Pay attention to the Procal leaflet, corrosion through Halogen compounds.

Combustion air supply

The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. For direct combustion air to boiler (LAS system) mount the connection for direct combustion air inlet. It is very important to ensure that the combustion air is free from halogen compounds. These are present, for example, in spray cans, varnishes, glues, solvents and cleansing agents.

The minimum free cross-section for the combustion air can be assumed simplified as follows:

- **Room air-independent operation with separate combustion air pipe to the boiler:** 0.8 cm² per 1 kW of output. The pressure drop in the combustion air pipe must be considered for the calculation of the flue gas system.
- In the UltraGas® 2, ventilation of the installation or boiler room must be guaranteed for operation independent from the room air.
- **Room air-dependent operation:** Minimum free cross-section of the opening into the open: 150 cm² or twice 75 cm² and additionally 2 cm² necessary for each kW of output over 50 kW for vent into the open.

Gas connection

Commissioning

- Initial commissioning must be performed by a specialist technician from Hoval or a gas specialist technician.
- Burner setting values according to the installation instructions.

Manual gas shut-off valve and gas filter

Immediately in front of the boiler a manual gas shut-off device (valve) must be installed according to relevant regulations.

In the UltraGas® 2 (400-1550) type, an external gas filter must be installed in the gas supply line.
Make sure that the gas line from the external gas filter to the gas connection of the boiler is cleaned.
For the UltraGas® (125-350) types, it is necessary to comply with the local regulations concerning the need for a gas filter.

Construction of a recommended gas connection



Legend:

- manual gas shut-off valve
- gas hose/compensator
- gas filter
- pressure gauge with test burner and push-button valve

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.

Gas pressure natural gas

Necessary gas flow pressure at the boiler inlet:
UltraGas® 2 (125-700) min. 17.4 mbar, max. 80 mbar
UltraGas® 2 (800-1550) min. 17.4 mbar, max. 300 mbar

Gas pressure propane

- A gas pressure controller to reduce the boiler inlet pressure must be installed on-site for propane.
- Necessary gas flow pressure at the boiler inlet: UltraGas® 2 (125-1550) min. 37 mbar, max. 50 mbar

Gas pressure regulator

- The installation of a gas pressure regulator is only necessary if the gas flow pressure in the gas network exceeds the maximum permissible gas flow pressure of the UltraGas® 2 or if there are considerable fluctuations in the gas flow pressure.
- Pressure fluctuations in the gas network must be prevented by suitable measures (e.g. gas storage tanks or pressure regulators). The local conditions must be checked in each individual case.

Closed heating system

The boiler is only approved for use in closed heating systems.

Minimum circulation water quantity

No minimum water circulation volume is required.

Calorifier connection

If a calorifier is connected, all heating groups must be provided with a mixer.

Installation instructions

Please observe the installation instructions supplied with every boiler.

Space requirements

See "Dimensions" for information

Pump follow-on

For operating temperatures of the boiler above 85 °C, after each burner switch-off, the circulating pump must be in operation for at least 2 minutes (the pump after-run is included in the boiler controller with TopTronic® E control).

Heating boiler in the attic

If the gas boiler is positioned on the top floor, the installation of a low water protection, which automatically turns the gas burner off in case of water shortage, is recommended.

Condensate drain

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority or sewer operator.
- The condensate from the flue gas line can be discharged via the boiler. A condensate trap is no longer needed in the flue gas system.
- The condensate must be conducted openly (funnel) into the sewage system.
- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from glass
 - pipes made from stainless steel
 - pipes made from plastic: PVC, PE, PP, ABS and UP
- A siphon must be installed at the condensate outlet on the gas boiler (included in the boiler scope of delivery).

Diaphragm pressure expansion tank

- An adequately dimensioned diaphragm pressure expansion tank must be provided.
- The diaphragm pressure expansion tank has to be installed in principle at the heating return, or at the safety flow.
- Starting from 70 °C an intermediate tank is necessary.

Safety valve

- At the safety flow a safety valve and an automatic exhauster must be installed.

Noise damping

The following measures are possible for sound insulation:

- Make boiler room walls, ceiling and floor as solid as possible.
- If there are living areas above or below the boiler room, connect pipes flexibly using expansion joints.
- Connect circulating pumps to the piping network using expansion joints

Noise level

- The acoustic **power** level value is dependent on the local and spacial circumstances.
- The acoustic **pressure** level is dependent on the installation conditions and can for instance be 5 to 10 dB(A) lower than the acoustic **power** level at a distance of 1 m.

Recommendation:

If the combustion air intake opening is located on the house facade near a noise-sensitive place (window of bedroom, garden terrace, etc.), we recommend using a silencer in the combustion air duct.

Allocation of gas filters for UltraGas® 2

UltraGas® 2 type	Gas throughput m³/h	Gas filter type	Dimension	Pressure drop gas filter (with clean filter) mbar
(125)	11.9	70602/6B	Rp 1"	0.2
(150)	14.2	70602/6B	Rp 1"	0.3
(190)	18.0	70603/6B	Rp 1½"	0.2
(230)	22.4	70603/6B	Rp 1½"	0.2
(300)	29.2	70603/6B	Rp 1½"	0.3
(350)	33.9	70603/6B	Rp 1½"	0.4
(400)	38.6	70603/6B	Rp 1½"	0.6
(450)	44.0	70603/6B	Rp 1½"	0.7
(500)	46.4	70631/6B	Rp 2"	0.5
(620)	59.3	70631/6B	Rp 2"	0.7
(700)	67.0	70631/6B	Rp 2"	0.8
(800)	76.1	70631/6B	Rp 2"	0.9
(1000)	94.6	70631/6B	Rp 2"	1.4
(1100)	106.0	70631/6B	Rp 2"	1.6
(1300)	125.5	70610F/6B	DN 65	1.5
(1550)	147.3	70610F/6B	DN 65	2.1

Flue gas system

- Gas boilers must be connected to a flue gas system (chimney or flue gas lines).
- Flue gas lines must be gas tight and leak tight against condensate and over pressure.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. Temperature class T120.
- A flue gas temperature limiter is built in the boiler.

Standard values for

flue gas line dimensions

Standard values for the flue gas line dimensions can be found in the following table.

Table with bases for calculation

- Calculation based on max. 1000 m above sea level.
- Installation room with supply air opening (room air dependent operation)
- An individual calculation must be carried out for room air-independent operation (accessories as option) or a combustion air supply via a duct.
- Connecting line was calculated with max. 5 m.

- The first 2 m of the flue gas line must be configured with the same dimension as the flue gas connector, after which the size of the flue gas system can be selected according to the table below.

Table "Standard values for flue gas line dimensions"

Boiler		Flue gas line (smooth walled)	Number of elbows 90° (flue gas + combustion air)			
UltraGas® 2	Internal Ø flue gas outlet	Designation	Total pipe length in m (flue gas + combustion air)			
type	mm	DN	1	2	3	4
(125)	155	130	24	23	22	21
(150)	155		18	17	16	15
(125)	155	150	47	47	46	45
(150)	155		45	45	45	44
(190)	155		43	42	40	38
(230)	155		20	20	19	18
(230)	155	175	44	43	43	42
(230)	155	200	45	44	43	43
(300)	252		45	44	43	43
(350)	252		44	43	43	42
(400)	252	250	44	43	42	41
(450)	252		50	50	50	50
(500)	252		50	50	50	50
(620)	302		43	42	41	40
(700)	302		42	41	40	39
(800)	302	300	45	44	43	43
(1000)	302		44	43	43	42
(1100)	302	350	47	46	45	44
(1300)	402		46	45	44	43
(1550)	402		45	44	43	43
H (700)	302	250	42	41	40	39
H (1100)	302	350	47	46	45	44
H (1550)	402		45	44	43	43

Notice: The values in the table "Standard values for flue gas line dimensions" are standard values for reference.

An exact calculation for the flue gas duct must be made on-site.

For chimney systems above 25 m effective height, negative pressure in the chimney is to be expected in some operating conditions. Therefore, we recommend an individual design of the chimney system and checking the individual pressure conditions.

Looking for the appropriate hydraulic schematic?
Please contact your local Hoval partner.

Hoval UltraGas® 2 D (250-3100)

Gas boiler

- Double boiler made of steel with condensing technology consisting of 2 individual boilers of 125, 150, 190, 230, 300, 350, 400, 450, 500, 620, 700, 800, 1000, 1100, 1300 or 1550 kW
- For the combustion of:
 - natural gas E
 - natural gas E with a hydrogen content (H₂) of up to 20 % by vol.
 - propane according to DIN 51622
 - biomethane according to EN 16723
- Combustion chamber made of stainless steel
- Maximum flue gas condensation by secondary heating surfaces made of **TurboFer®** hybrid stainless steel composite pipes; heating gas side: stainless steel/aluminium water side: stainless steel
- Thermal insulation with mineral wool mat
- Water pressure sensor:
 - Fulfills the function of a minimum and maximum pressure limiter
 - Replacement for the low water level protection
- Flue gas temperature sensor with flue gas limiter function
- Pre-mix burner
 - with fan and venturi
 - modulating operation
 - automatic ignition
 - ionisation guard
 - gas pressure monitor
- Gas boiler fully clad with steel plates, red powder-coated
- Flue gas overpressure set consisting of motorised air intake suction flap (connection for direct combustion air supply without accessories possible) and flue gas collector.
- Heating connections backwards incl. counter flange, screws and seals for:
 - heating flow
 - high temperature return
 - low temperature return
- **UltraGas® 2 D (600-3100):** with integrated gas pipe compensator
- Each individual boiler has a Hoval TopTronic® E control built in
- Possibility of connecting an external gas solenoid valve with error output



Model range

UltraGas® 2 type	Nominal heat output at 50/30 °C kW
D (250)	25-252
D (300)	35-302
D (380)	38-382
D (460)	51-466
D (600)	58-598
D (700)	70-704
D (800)	69-798
D (900)	77-902
D (1000)	77-982
D (1240)	136-1244
D (1400)	146-1406
D (1600)	166-1608
D (2000)	205-1998
D (2200)	229-2224
D (2600)	269-2640
D (3100)	324-3100
DH (1400)	146-1406
DH (2200)	229-2224
DH (3100)	324-3100

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module heat generator TTE-WEZ

- Control functions integrated for
 - 1 heating circuit with mixer
 - 1 heating circuit without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat balancing or
 - module expansion Universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the heat generator (per single boiler):

UltraGas® 2 (125-230)

- 1 module expansion and 1 controller module or
- 2 controller modules

UltraGas® 2 (300-500):

- 3 controller modules/module expansions

UltraGas® 2 (620-1550):

- 4 controller modules/module expansions

Notice

Max. 1 module expansion can be connected to the basic module heat generator TTE-WEZ!

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E
see "Controls"

Optional

- Free-standing calorifier see "Calorifiers"
- Additional control for more heating circuits
- Hydraulic connection

Delivery

- 2 gas boilers, cladding with thermal insulation, 2 TopTronic® E controls, flue gas collector and combustion air connection delivered separately packed

On site

- Mounting of cladding, thermal insulations and boiler controller
- Mounting of boiler feet
- Mounting of the flue gas connection line and flue gas overpressure set (two motorised combustion air dampers and a flue gas collector)
- Bus cable for connecting the two boiler controllers of the double boiler on site (not included in scope of delivery)

Notice

For the version with common flue gas line with overpressure, the flue gas excess pressure set must be imperatively mounted.

Hoval UltraGas® 2 D (250-460)

Type		D (250)	D (300)	D (380)	D (460)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	21-228	33-278	35-354	47-436
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	25-252	35-302	38-382	51-466
• Nominal heat output at 80/60 °C, propane ²⁾	kW	32-226	43-276	52-351	66-434
• Nominal heat output at 50/30 °C, propane ²⁾	kW	35-252	48-302	59-382	73-466
• Nominal heat input with natural gas ³⁾	kW	23-232	32-284	35-358	47-446
• Nominal heat input with propane ²⁾	kW	33-232	44-284	54-358	68-446
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H2O))	l	2 x 207	2 x 195	2 x 276	2 x 265
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	2 x 390	2 x 400	2 x 485	2 x 505
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	98.6/88.9	97.6/88.1	98.5/88.7	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV) ⁴⁾	%	108.7/98.1	108.7/98.1	109.0/98.2	108.4/97.8
• Room heating energy efficiency					
- without control	η _s %	93	93	93	93
- with control	η _s %	95	95	95	95
- with control and room sensor	η _s %	97	97	97	97
- annual energy consumption	Q _{HE} GJ	386	479	598	751
• NOx class (EN 15502)		-	-	-	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	25	28	33	37
• Carbon monoxide emissions at 50/30 °C (related to 3 % of O ₂)	CO mg/Nm ³	31	21	25	13
• O ₂ content in flue gas min./max. output	%	5.9/5.6	5.5/6.0	5.9/6.0	6.0/5.9
• Heat loss in standby mode (EN 15502) (50°C)	Watt	520	520	640	640
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80
- Propane	mbar	37-57	37-57	37-57	37-57
• Gas inlet pressure max. (idle pressure)	mbar	80	80	80	80
• Gas connection values at 15 °C/1013 mbar:					
- Natural gas E – (Wo = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	2.4-23.9	3.3-29.3	3.6-36.9	4.8-46.0
- Natural gas LL (G25) – (Wo = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	2.8-28.5	3.9-34.9	4.3-44.0	5.8-54.9
- Propane (G31) NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	1.4-9.5	1.8-11.6	2.2-14.7	2.8-18.3
• Operating voltage (50/60 Hz)	V	1 x 230	1 x 230	1 x 230	1 x 230
• Electrical power consumption min./max.	Watt	41/280	43/450	38/302	49/456
• Standby	Watt	7	8	8	8
• Type of protection	IP	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	76	81	67	70
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	-	-	-	-
• Condensate quantity (natural gas) at 50/30 °C	l/h	22	24	30	40
• pH value of the condensate (approx.)	pH	4.2	4.2	4.2	4.2
• Construction		B23, B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	376	452	566	688
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	37	51	55	63
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	64	65	68	69
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	43	45	46	47
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	29	28	29	29
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Combustion air flow rate	Nm ³ /h	308	360	464	560
- Maximum supply pressure for combustion air supply and flue gas line	Pa	60	60	60	60
- Maximum draught/underpressure at flue gas outlet	Pa	-30	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

²⁾ Data related to NCV, conditional data

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Hoval UltraGas® 2 D (600-1000)

Type		D (600)	D (700)	D (800)	D (900)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	54-548	67-630	62-724	73-830
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	58-598	70-704	69-798	77-902
• Nominal heat output at 80/60 °C, propane ²⁾	kW	83-548	94-622	109-722	124-816
• Nominal heat output at 50/30 °C, propane ²⁾	kW	93-598	109-704	123-798	138-902
• Nominal heat input with natural gas ³⁾	kW	54-564	64-662	62-748	71-854
• Nominal heat input with propane ²⁾	kW	87-564	102-662	114-748	130-854
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H2O))	l	2 x 472	2 x 452	2 x 432	2 x 412
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	2 x 730	2 x 765	2 x 800	2 x 830
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	98.2/88.5	98.2/88.5	98.2/88.5	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV) ⁴⁾	%	109.2/98.4	108.9/98.1	109.0/98.2	108.9/98.1
• Room heating energy efficiency					
- without control	ηs %	94	93	93	-
- with control	ηs %	96	95	95	-
- with control and room sensor	ηs %	98	97	97	-
- annual energy consumption	Q _{HE} GJ	926	1076	1212	-
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	39	45	39	45
• Carbon monoxide emissions at 50/30 °C (related to 3 % of O ₂)	CO mg/Nm ³	18	26	23	30
• O ₂ content in flue gas min./max. output	%	5.5/5.8	5.7/5.7	5.9/5.9	6.0/5.6
• Heat loss in standby mode (EN 15502) (50°C)	Watt	860	860	860	860
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-80
- Propane	mbar	37-57	37-57	37-57	37-57
• Gas inlet pressure max. (idle pressure)	mbar	80	80	80	80
• Gas connection values at 15 °C/1013 mbar:					
- Natural gas E – (W _o = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	5.6-58.1	6.6-68.2	6.4-77.1	7.3-88.0
- Natural gas LL (G25) – (W _o = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	6.6-69.4	7.9-81.4	7.6-92.0	8.7-105.0
- Propane (G31) NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	3.6-23.1	4.2-27.1	4.7-30.7	5.3-35.0
• Operating voltage (50/60 Hz)	V	1 x 230	1 x 230	1 x 230	1 x 230
• Electrical power consumption min./max.	Watt	51/730	55/700	56/1036	56/1180
• Standby	Watt	5	5	5	5
• Type of protection	IP	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	76	73	76	77
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	-	-	-	-
• Condensate quantity (natural gas) at 50/30 °C	l/h	44	50	56	58
• pH value of the condensate (approx.)	pH	4.2	4.2	4.2	4.2
• Construction		B23, B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	890	1044	1182	1348
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	85	101	98	112
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	64	65	66	67
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	43	44	48	47
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	29	29	29	29
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Combustion air flow rate	Nm ³ /h	728	856	966	1104
- Maximum supply pressure for combustion air supply and flue gas line	Pa	60	60	60	60
- Maximum draught/underpressure at flue gas outlet	Pa	-30	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

²⁾ Data related to NCV, conditional data

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Hoval UltraGas® 2 D (1000-1600)

Type		D (1000)	D (1240)	D (1400)	D (1600)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	71-898	125-1160	132-1306	150-1486
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	77-982	136-1244	146-1406	166-1608
• Nominal heat output at 80/60 °C, propane ²⁾	kW	133-882	173-1139	193-1286	233-1488
• Nominal heat output at 50/30 °C, propane ²⁾	kW	147-982	184-1244	208-1406	254-1610
• Nominal heat input with natural gas ³⁾	kW	71-926	124-1182	134-1336	151-1518
• Nominal heat input with propane ²⁾	kW	140-926	179-1182	201-1336	236-1518
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H₂O))	l	2 x 408	2 x 536	2 x 509	2 x 831
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	2 x 855	2 x 1090	2 x 1135	2 x 1435
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	98.2/88.5	98.2/88.5	98.2/88.5	98.3/88.6
• Boiler efficiency at 30 % partial load (NCV/GCV) ⁴⁾	%	109.0/98.2	109.0/98.2	108.9/98.1	109.1/98.3
• Room heating energy efficiency					
- without control	η _s %	-	-	-	-
- with control	η _s %	-	-	-	-
- with control and room sensor	η _s %	-	-	-	-
- annual energy consumption	Q _{HE} GJ	-	-	-	-
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	50	33	40	36
• Carbon monoxide emissions at 50/30 °C (related to 3 % of O ₂)	CO mg/Nm ³	46	24	26	23
• O ₂ content in flue gas min./max. output	%	5.5/5.8	5.9/6.0	6.0/5.7	6.0/5.8
• Heat loss in standby mode (EN 15502) (50°C)	Watt	860	1080	1080	1200
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-80	17.4-80	17.4-80	17.4-300
- Propane	mbar	37-57	37-57	37-57	37-57
• Gas inlet pressure max. (idle pressure)	mbar	80	80	80	300
• Gas connection values at 15 °C/1013 mbar:					
- Natural gas E – (Wo = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	7.3-95.5	12.8-121.9	13.8-137.7	15.6-156.5
- Natural gas LL (G25) – (Wo = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	8.7-113.9	15.3-145.4	16.5-164.3	18.6-186.7
- Propane (G31) NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	5.7-38.0	7.3-48.4	8.2-54.8	9.7-62.2
• Operating voltage (50/60 Hz)	V	1 x 230	1 x 230	1 x 230	1 x 230
• Electrical power consumption min./max.	Watt	57/1432	63/1662	67/2120	94/2024
• Standby	Watt	5	5	5	7
• Type of protection	IP	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	81	78	79	81
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	-	72	71	-
• Condensate quantity (natural gas) at 50/30 °C	l/h	74	102	96	114
• pH value of the condensate (approx.)	pH	4.2	4.2	4.2	4.2
• Construction		B23, B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	1472	1866	2110	2396
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	112	196	211	238
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	66	68	69	66
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	44	47	49	44
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	28	28	29	28
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Combustion air flow rate	Nm ³ /h	1204	1528	1726	1962
- Maximum supply pressure for combustion air supply and flue gas line	Pa	60	60	60	60
- Maximum draught/underpressure at flue gas outlet	Pa	-30	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

²⁾ Data related to NCV, conditional data

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Hoval UltraGas® 2 D (2000-3100)

Type		D (2000)	D (2200)	D (2600)	D (3100)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	185-1852	203-2076	241-2460	297-2894
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	205-1998	229-2224	269-2640	324-3100
• Nominal heat output at 80/60 °C, propane ²⁾	kW	262-1852	299-2067	362-2455	427-2877
• Nominal heat output at 50/30 °C, propane ²⁾	kW	282-1998	316-2224	385-2640	453-3100
• Nominal heat input with natural gas ³⁾	kW	187-1886	206-2114	247-2502	297-2938
• Nominal heat input with propane ²⁾	kW	265-1886	306-2114	371-2502	437-2938
• Operating pressure heating min./max. (PMS)	bar	1/6	1/6	1/6	1/6
• Operating temperature max. (T _{max})	°C	95	95	95	95
• Boiler water content (V _(H₂O))	l	2 x 756	2 x 718	2 x 1211	2 x 1118
• Flow resistance boiler		see diagram			
• Minimum circulation water quantity	l/h	-	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	2 x 1580	2 x 1635	2 x 2280	2 x 2445
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	98.2/88.5	98.2/88.5	98.2/88.5	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV) ⁴⁾	%	109.0/98.2	108.6/97.8	108.7/97.9	108.5/97.7
• Room heating energy efficiency					
- without control	ηs %	-	-	-	-
- with control	ηs %	-	-	-	-
- with control and room sensor	ηs %	-	-	-	-
- annual energy consumption	Q _{HE} GJ	-	-	-	-
• NOx class (EN 15502)		6	6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	36	41	37	35
• Carbon monoxide emissions at 50/30 °C (related to 3 % of O ₂)	CO mg/Nm ³	25	26	23	23
• O ₂ content in flue gas min./max. output	%	6.0/5.9	6.0/5.9	6.0/5.9	6.0/6.0
• Heat loss in standby mode (EN 15502) (50°C)	Watt	1200	1200	1480	1480
• Dimensions		see dimensional drawing			
• Gas flow pressure min./max.					
- Natural gas E/LL	mbar	17.4-300	17.4-300	17.4-300	17.4-300
- Propane	mbar	37-57	37-57	37-57	37-57
• Gas inlet pressure max. (idle pressure)	mbar	300	300	300	300
• Gas connection values at 15 °C/1013 mbar:					
- Natural gas E – (W _o = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	19.3-194.4	21.2-217.9	25.5-257.9	30.6-302.9
- Natural gas LL (G25) – (W _o = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	23.0-232.0	25.3-260.0	30.4-307.7	36.5-361.4
- Propane (G31) NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	10.9-77.3	12.6-86.6	15.2-102.5	17.9-120.4
• Operating voltage (50/60 Hz)	V	1 x 230 3 x 400	1 x 230 3 x 400	1 x 230 3 x 400	1 x 230 3 x 400
• Electrical power consumption min./max.	Watt	203/3746	203/3866	271/8222	301/8282
• Standby	Watt	7	7	5	7
• Type of protection	IP	20	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40	5-40
• Sound power level					
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	86	85	89	88
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	-	-	-	-
• Condensate quantity (natural gas) at 50/30 °C	l/h	136	144	200	276
• pH value of the condensate (approx.)	pH	4.2	4.2	4.2	4.2
• Construction		B23, B23P, C53, C63			
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)	kg/h	2976	3338	3950	4460
- Flue gas mass flow at min. nominal heat input (dry)	kg/h	295	325	390	450
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	69	70	66	68
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	47	49	45	46
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	28	29	29	28
- Max. permissible temperature of the combustion air	°C	48	48	48	48
- Combustion air flow rate	Nm ³ /h	2438	2732	3234	3660
- Maximum supply pressure for combustion air supply and flue gas line	Pa	60	60	60	60
- Maximum draught/underpressure at flue gas outlet	Pa	-30	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

²⁾ Data related to NCV, conditional data

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Hoval UltraGas® 2 DH (1400-3100)

Type		DH (1400)	DH (2200)	DH (3100)
• Nominal heat output at 80/60 °C, natural gas ¹⁾	kW	132-1306	203-2076	297-2894
• Nominal heat output at 50/30 °C, natural gas ¹⁾	kW	146-1406	229-2224	324-3100
• Nominal heat output at 80/60 °C, propane ²⁾	kW	193-1286	299-2067	427-2877
• Nominal heat output at 50/30 °C, propane ²⁾	kW	208-1406	316-2224	453-3100
• Nominal heat input with natural gas ³⁾	kW	134-1336	206-2114	297-2938
• Nominal heat input with propane ²⁾	kW	201-1336	306-2114	437-2938
• Operating pressure heating min./max. (PMS)	bar	1/10	1/10	1/10
• Operating temperature max. (T _{max})	°C	95	95	95
• Boiler water content (V _(H2O))	l	2 x 509	2 x 709	2 x 1118
• Flow resistance boiler		see diagram		
• Minimum circulation water quantity	l/h	-	-	-
• Boiler weight (without water capacity, incl. cladding)	kg	2 x 1170	2 x 1735	2 x 2550
• Boiler efficiency at 80/60 °C in full-load operation (NCV/GCV) ⁴⁾	%	98.2/88.5	98.2/88.5	98.2/88.5
• Boiler efficiency at 30 % partial load (NCV/GCV) ⁴⁾		108.9/98.1	108.6/97.8	108.5/97.7
• Room heating energy efficiency				
- without control	ηs %	-	-	-
- with control	ηs %	-	-	-
- with control and room sensor	ηs %	-	-	-
- annual energy consumption	Q _{HE} GJ	-	-	-
• NOx class (EN 15502)		6	6	6
• Nitrogen oxide emissions (EN 15502) (GCV)	NOx mg/kWh	40	41	35
• Carbon monoxide emissions at 50/30 °C (related to 3 % of O ₂)	CO mg/Nm ³	26	26	23
• O ₂ content in flue gas min./max. output	%	6.0/5.7	6.0/5.9	6.0/6.0
• Heat loss in standby mode (EN 15502) (50°C)	Watt	1080	1200	1480
• Dimensions		see dimensional drawing		
• Gas flow pressure min./max.				
- Natural gas E/LL	mbar	17.4-80	17.4-300	17.4-300
- Propane	mbar	37-57	37-57	37-57
• Gas inlet pressure max. (idle pressure)	mbar	80	300	300
• Gas connection values at 15 °C/1013 mbar:				
- Natural gas E – (Wo = 15.0 kWh/m ³) NCV = 9.7 kWh/m ³	m ³ /h	13.8-137.7	21.2-217.9	30.6-302.9
- Natural gas LL (G25) – (Wo = 12.4 kWh/m ³) NCV = 8.13 kWh/m ³	m ³ /h	16.5-164.3	25.3-260.0	36.5-361.4
- Propane (G31) NCV = 24.4 kWh/m ³ ²⁾	m ³ /h	8.2-54.8	12.6-86.6	17.9-120.4
• Operating voltage (50/60 Hz)	V	1 x 230	1 x 230 3 x 400	1 x 230 3 x 400
• Electrical power consumption min./max.	Watt	67/2120	203/3866	301/8282
• Standby	Watt	5	7	7
• Type of protection	IP	20	20	20
• Permitted ambient temperature during operation	°C	5-40	5-40	5-40
• Sound power level				
- Heating noise (EN 15036 part 1) (room air dependent)	dB(A)	79	85	88
- Flue gas noise radiated from the mouth (DIN 45635 part 47) (room air dependent/independent of room air)	dB(A)	71	-	-
• Condensate quantity (natural gas) at 50/30 °C	l/h	96	144	276
• pH value of the condensate (approx.)	pH	4.2	4.2	4.2
• Construction		B23, B23P, C53, C63		
• Flue gas system				
- Temperature class		T120	T120	T120
- Flue gas mass flow at max. nominal heat input (dry)		2110	3338	4460
- Flue gas mass flow at min. nominal heat input (dry)		211	325	450
- Flue gas temperature at max. nominal heat output and 80/60 °C	°C	69	70	68
- Flue gas temperature at max. nominal heat output and 50/30 °C	°C	49	49	46
- Flue gas temperature at min. nominal heat output and 50/30 °C	°C	29	29	28
- Max. permissible temperature of the combustion air	°C	48	48	48
- Combustion air flow rate	Nm ³ /h	1726	2732	3660
- Maximum supply pressure for combustion air supply and flue gas line	Pa	60	60	60
- Maximum draught/underpressure at flue gas outlet	Pa	-30	-30	-30

¹⁾ In relation to natural gas G20 (100 % methane). With a hydrogen content (H₂) of up to 20 % by vol. in accordance with DVGW ZP3100 (D), an output reduction of up to 7 % is possible.

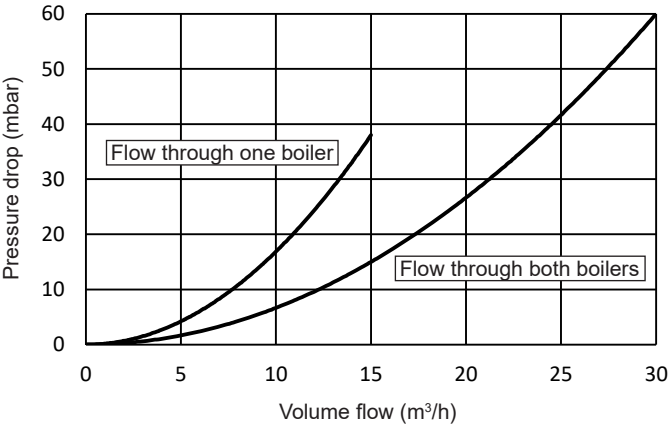
²⁾ Data related to NCV, conditional data

³⁾ Data related to NCV. The boiler series is tested for EE/H setting. With a factory setting to a Wobbe value of 15.0 kWh/m³, operation in the Wobbe value range from 12.0 to 15.7 kWh/m³ is possible without resetting.

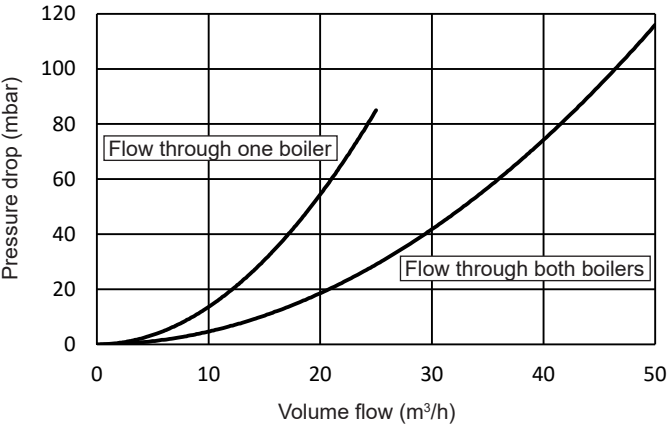
⁴⁾ Conversion acc. to EN 15502-1, Appendix J

Flow resistance on the heating water side

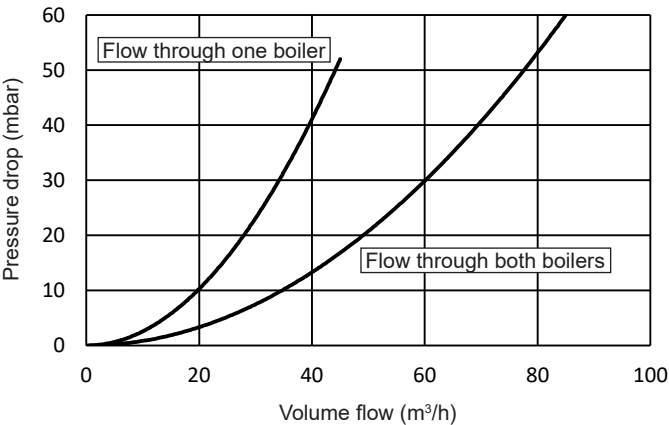
UltraGas® 2 D (250,300)



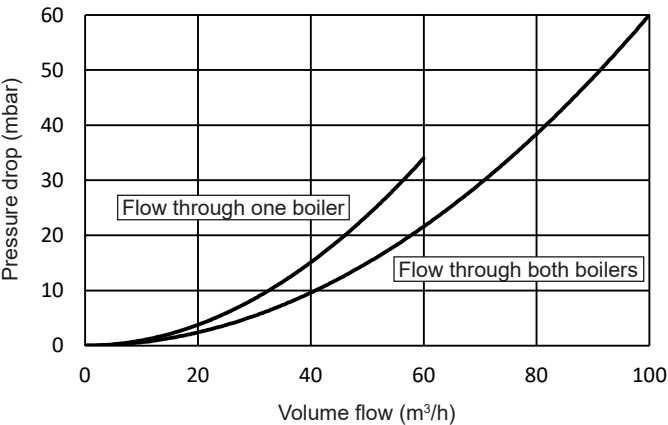
UltraGas® 2 D (380,460)



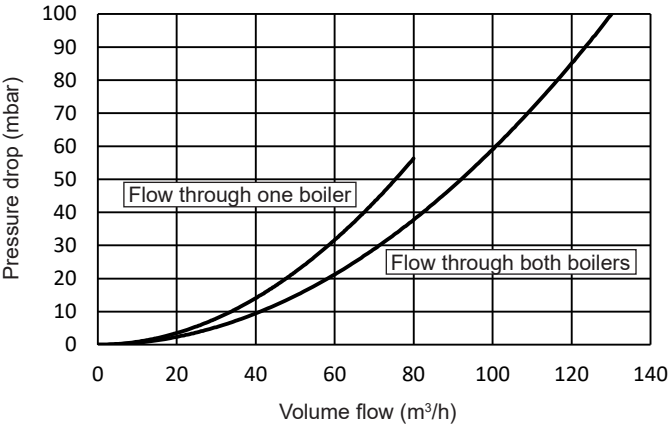
UltraGas® 2 D (600-1000)



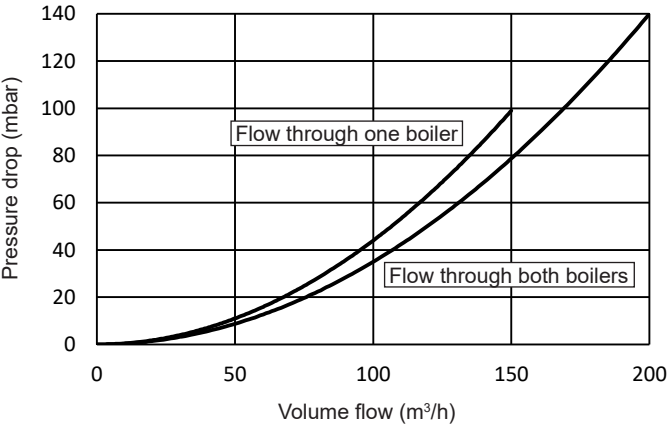
UltraGas® 2 D (1240,1400)



UltraGas® 2 D (1600-2200)

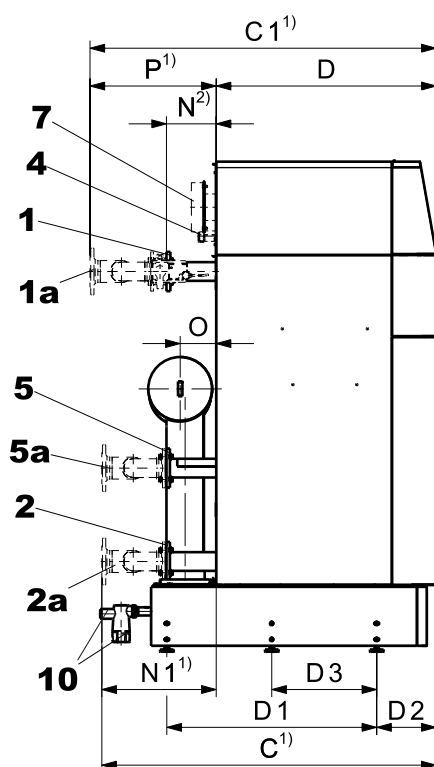


UltraGas® 2 D (2600,3100)

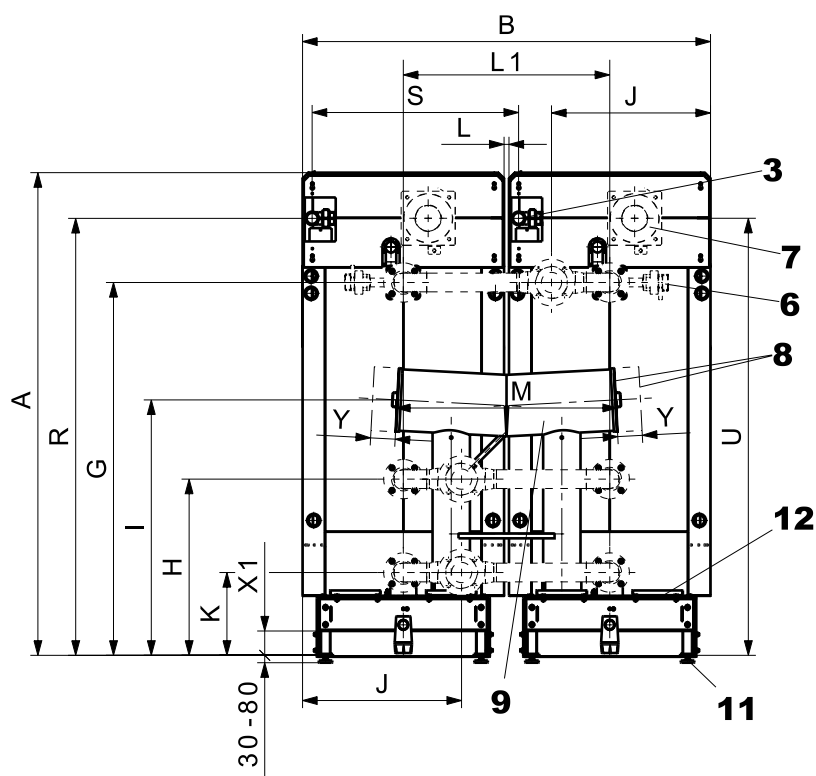


UltraGas® 2 D (250-3100)

(Dimensions in mm)



- 1 Flow heating
- 1a Hydraulic connection flow (option)²⁾
- 2 Low-temperature return
- 2a Hydraulic connection low-temperature return (option)²⁾
- 3 Gas connection
- 4 Safety flow (safety valve, air vent)
- 5 High-temperature return
- 5a Hydraulic connection high-temperature return (option)²⁾
- 6 Hydraulic shut-off valve (option)
- 7 Combustion air intake connector (option)
- 8 Flue gas outlet connection left or right
- 9 Flue gas collector
- 10 Condensate drain with siphon and screw connection for plastic pipe



- 11 Boiler feet (adjustable 30-80 mm)
- 12 Cleaning opening

Notice

For subsequent technical details, see single boiler UltraGas® 2 (125-1550):

- Detailed dimensions and dimensions for multi-part installation
- Mounting position of system flow sensor
- Safety fitting pipe flow/return for mounting the protection set and diaphragm pressure expansion tank

Type	A	B	C ¹⁾	C ^{1 1)}	D	D1	D2	D3	G	H	I	J	K	L	L1	M	N ²⁾	N ^{1 1)}	O	P ¹⁾	R	S	U	X1	Y
D (250,300)	1923	1560	1269	1317	799	754	242	-	1479	714	1116	597	334	120	840	902	207	470	142	518	1725	840	1725	99	-
D (380,460)	1968	1660	1363	1411	895	854	242	-	1517	717	1116	647	337	20	840	902	204	468	147	516	1778	840	1778	99	-
D (600-1000)	1923	1880	1807	1864	1165	1204	242	-	1447	745	1143	814	365	20	950	930	285	642	176	699	1735	950	1736	96	-
D (1240,1400)	2234	2240	1827	1884	1184	1294	242	-	1564	757	1195	904	377	20	1130	1019	286	643	205	700	1966	1130	1938	89	-
D (1600-2200)	2255	2600	2158	2218	1364	1480	242	-	1573	788	1280	1054	408	20	1310	1018	378	794	228	854	1959	1310	1959	89	-
D (2600,3100)	2395	3150	2571	2631	1640	1790	250	895	1600	822	1231	1339	442	30	1590	1322	420	931	240	991	2064	1590	2064	89	495
DH (1400)	2234	2240	1827	1884	1184	1294	242	-	1564	757	1195	904	377	20	1130	1019	286	643	205	700	1966	1130	1938	89	-
DH (2200)	2255	2600	-	-	1364	1480	242	-	1573	788	1280	1054	408	20	1310	1018	378	-	228	-	1959	1310	1959	89	-
DH (3100)	2395	3150	-	-	1640	1790	250	895	1600	822	1231	1339	442	30	1590	1322	390	-	240	-	2064	1590	2064	89	495

Type	1,2,5 ³⁾	1a,2a,5a ^{2), 3)}	3	4	7	8	10
D (250,300)	DN 65 / PN 6 / 4-hole	DN 80 / PN 6 / 4-hole	Rp 1"	R 1"	Ø 122/125	Ø 254/256	DN 40
D (380,460)	DN 65 / PN 6 / 4-hole	DN 80 / PN 6 / 4-hole	Rp 1½"	R 1¼"	Ø 197/200	Ø 254/256	DN 40
D (600-1000)	DN 100 / PN 6 / 4-hole	DN 125 / PN 6 / 8-hole	Rp 1½"	R 1½"	Ø 197/200	Ø 306/308	DN 40
D (1240,1400)	DN 100 / PN 6 / 4-hole	DN 125 / PN 6 / 8-hole	Rp 2"	R 2"	Ø 247/250	Ø 356/358	DN 40
D (1600-2200)	DN 125 / PN 6 / 8-hole	DN 150 / PN 6 / 8-hole	Rp 2"	R 2"	Ø 247/250	Ø 402/404	DN 40
D (2600,3100)	DN 150 / PN 6 / 8-hole	DN 200 / PN 6 / 8-hole	Rp 2"	R 2"	Ø 247/250	Ø 504/506	DN 40
DH (1400)	DN 100 / PN 16 / 4-hole	-	Rp 2"	R 2"	Ø 247/250	Ø 356/358	DN 40
DH (2200)	DN 125 / PN 16 / 8-hole	-	Rp 2"	R 2"	Ø 247/250	Ø 402/404	DN 40
DH (3100)	DN 150 / PN 16 / 8-hole	-	Rp 2"	R 2"	Ø 247/250	Ø 504/506	DN 40

¹⁾ UltraGas® 2 D: dimensions incl. hydraulic connections and hydraulic butterfly valves

²⁾ UltraGas® 2 D and UltraGas® 2 DH: dimensions without hydraulic connection and hydraulic butterfly valve

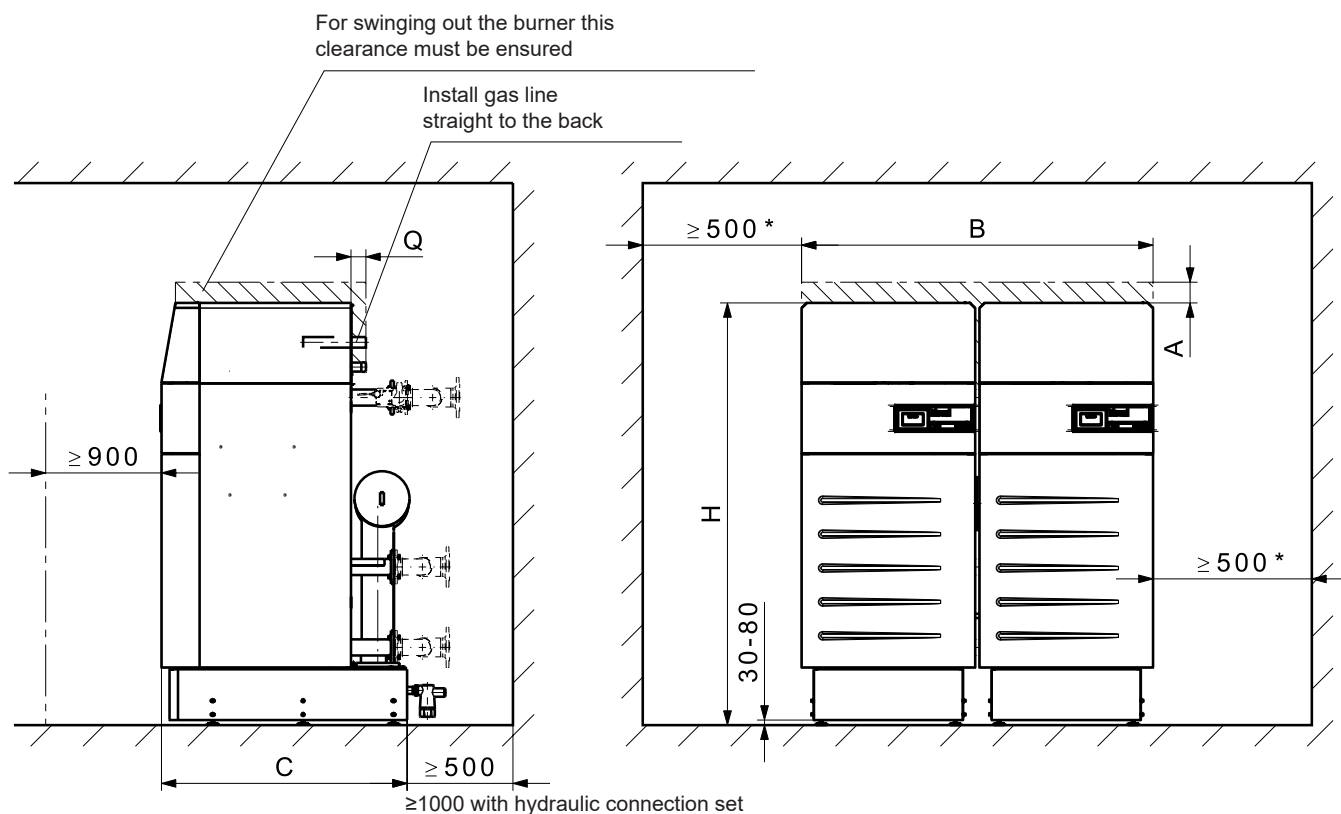
No hydraulic connections of the double boilers are available for UltraGas® 2 DH.

³⁾ DN = nominal diameter, PN = nominal pressure

Space requirements

UltraGas® 2 D (250-3100)

(Dimensions in mm)



UltraGas® 2 type	A ¹⁾	A minimum ²⁾	B	C	H ³⁾	H minimum ⁴⁾	Q
D (250,300)	169	106	1560	1060	1953	1934	125
D (380,460)	155	71	1660	1160	1998	1979	2
D (600-1000)	513	156	1880	1510	1953	1937	60
D (1240,1400)	121	121	2240	1600	2264	2255	155
D (1600-2200)	280	195	2600	1786	2285	2276	119
D (2600,3100)	291	154	3150	2104	2425	2416	163
DH (1400)	121	121	2240	1600	2264	2255	155
DH (2200)	280	195	2600	1786	2285	2276	119
DH (3100)	291	154	3150	2104	2425	2416	163

¹⁾ If room height is too small: Reduction of dimension possible (see A minimum).

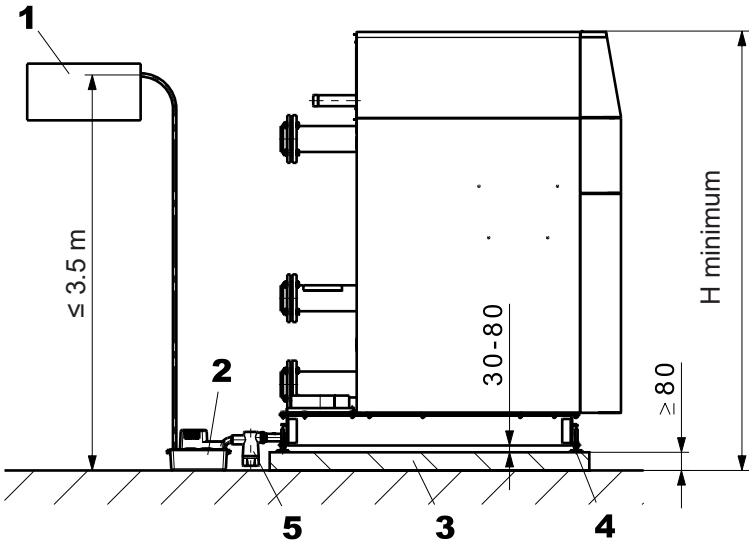
²⁾ **Attention!** With A minimum the burner can not be swung out completely anymore!
Cleaning with UltraGas® 2 D (250-460) and UltraGas® 2 D (1240-3100) still possible

³⁾ Height value assumes adjustable feet are set to 30 mm

⁴⁾ The base plates cannot be installed without feet and the installer will have to fit a siphon with min. 70 mm barrier height. For details see next page.

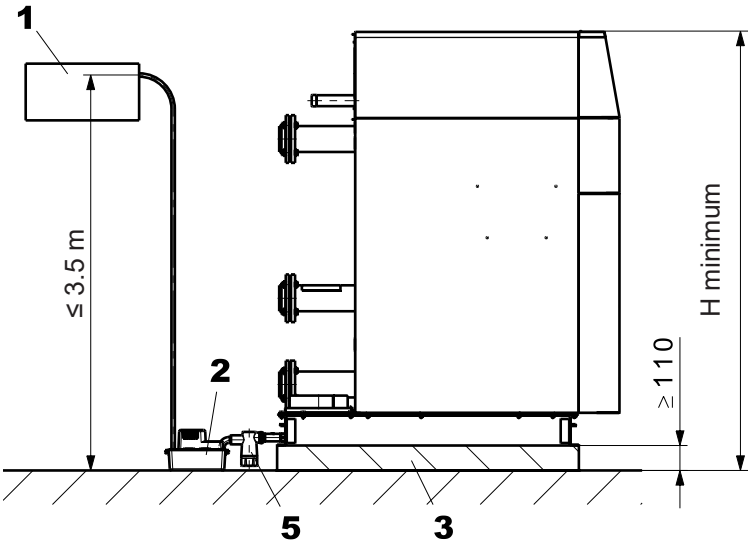
- The heat generator can be placed with one side directly on the wall. However, to protect heat-sensitive walls against damage, a distance of at least 150 mm from the wall must be provided.
- The cleaning opening must be easily accessible. As a result, a minimum distance of 500 mm must be maintained on the cleaning opening side.

UltraGas® 2 (250-3100) with masonry base and adjustable feet
(Dimensions in mm)



UltraGas® 2 type	H minimum ¹⁾
D (250,300)	1934
D (380,460)	1979
D (600-1000)	1937
D (1240,1400)	2255
D (1600-2200)	2276
D (2600,3100)	2416
DH (1400)	2255
DH (2200)	2276
DH (3100)	2416

UltraGas® 2 (250-3100) with masonry base without adjustable feet



UltraGas® 2 type	H minimum ¹⁾
D (250,300)	1934
D (380,460)	1979
D (600-1000)	1937
D (1240-1400)	2255
D (1600-2200)	2276
D (2600,3100)	2416
DH (1400)	2255
DH (2200)	2276
DH (3100)	2416

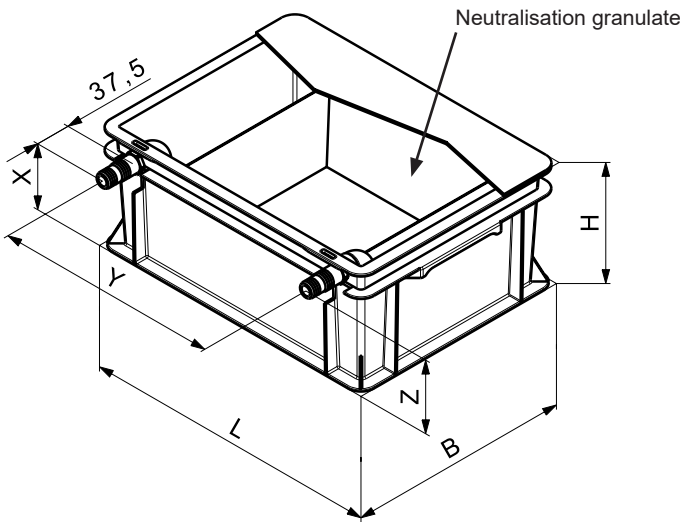
- 1 Neutralisation unit (option)
- 2 Condensate pump (option)
- 3 Masonry base
- 4 Feet adjustable up to 30-80 mm
- 5 Siphon ²⁾

¹⁾ Height value assumes adjustable feet are set to 30 mm
²⁾ **Caution!** The installer will have to fit a siphon with min. 70 mm barrier height.

Notice

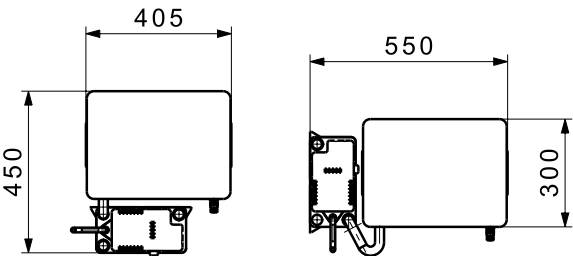
- The steps of the climbing aid provided must be horizontal. Adapt the climbing aid if necessary.
- Base plates and feeds will not be re-funded!
- With H minimum, cleaning the siphon is more difficult.

Neutralisation unit HNB-0400 to HNB-1600
(Dimensions in mm)

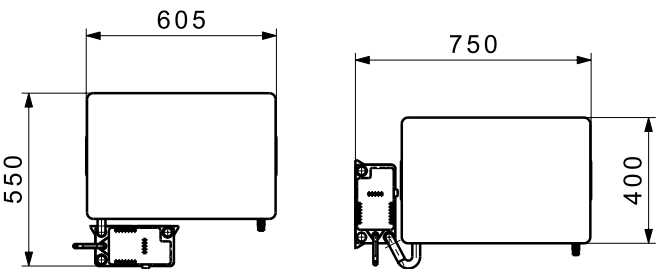


	HNB-0400,-0800	HNB-1200,-1600
Dimensions (L x W x H)	405 x 300 x 180 mm	605 x 400 x 180 mm
Inlet height (Z)	128 mm	
Drain height (X)	118 mm	
Distance between the connections (Y)	approx. 350 mm	approx. 550 mm

Neutralisation unit HNB-0400,-0800 and condensate pump
(Dimensions in mm)



Neutralisation unit HNB-1200,-1600 and condensate pump
(Dimensions in mm)



Standards and guidelines

The official regulations for installation and operation must be observed. In particular, these are the country-specific standards (e.g. EN standard, DIN standards, etc.) as well as the corresponding regional regulations.

The following standards and guidelines must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- DVGW directives
- DIN EN 12828
- Safety-relevant requirements
- DIN EN 12831 Heaters
- Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- EN 14868 "Protection of metallic materials against corrosion"
- VDE 0100 supplement 2

Water quality in heating systems

Filling and replacement water, heating water

The following applies:

- VDI 2035
- In addition, the EN 14868 standard must be applied, **as well as the manufacturer-specific specifications**

Manufacturer-specific specifications

Filling and replacement water

The filling and replacement water can be both fully demineralised and also merely softened.

Heating water

- In the case of **full demineralisation of the filling and replacement water**, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.
- In the case of **softening the filling and replacement water**, the following conditions must be complied with:
The quality of the heating water must be checked and documented periodically:
 - For an installed heat output above 100 kW up to and including 1000 kW, an annual check of the heating water is required.
 - For an installed heat output above 1000 kW, an check of the heating water is required twice a year.The following standard values for the heating water must be measured and adhered to:
 - Electrical conductivity of the heating water for operation with water containing salts: > 100 µS/cm to ≤ 1500 µS/cm
 - pH value of the heating water for systems without aluminium alloy as water-side material 8.2 to 10.0 (measurement 10 weeks after commissioning at the earliest)
- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

Additional notices

- Hoval boilers and calorifiers are suitable for heating systems without significant oxygen intake. (System type I according to EN 14868).
- Plants with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up) must be equipped with a system separation.
- In the case of bivalent heating systems, the values of the heat generator with the strictest requirement for water quality must be complied with.
- If only the boiler is replaced in an existing plant, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The boiler must not be filled until the heating system has been flushed.

Frost protection agent

see separate engineering sheet
"Use of frost protection agent".

Heating room

- Boilers cannot be positioned in rooms in which halogen compounds can occur and into which combustion air can enter (e.g. laundrettes, hairdressers).
- Halogen compounds can be caused by cleaning and degreasing solutions, solvents, glue and bleaching lyes. Pay attention to the Procal leaflet, corrosion through halogen compounds.

Combustion air supply

The supply of combustion air must be guaranteed. There must be no possibility to close the air supply opening. For direct combustion air to boiler mount the connection for direct combustion air inlet. It is very important to ensure that the combustion air is free from halogen compounds. These are present, for example, in spray cans, varnishes, glues, solvents and cleansing agents.

For the version with common flue gas line with overpressure, the flue gas excess pressure set must be imperatively mounted!

The minimum free cross-section for the combustion air can be assumed simplified as follows:

- **Room air-independent operation with separate combustion air pipe to the boiler:**
0.8 cm² per 1 kW of output. The pressure drop in the combustion air pipe must be considered for the calculation of the flue gas system.
- In the UltraGas® 2, ventilation of the installation or boiler room must be guaranteed for operation independent from the room air.
- **Room air-dependent operation:**
Minimum free cross-section of the opening into the open: 150 cm² or twice 75 cm² and additionally 2 cm² necessary for each kW of output over 50 kW for vent into the open.

Gas connection Commissioning

- Initial commissioning must be performed by a specialist technician from Hoval or a gas specialist technician.
- Burner setting values according to the installation instructions.

Manual gas shut-off tap and gas filter

Immediately in front of the boiler a manual gas shut-off device (tap) must be installed according to relevant regulations.

In the UltraGas® 2 (400-1550) type, an external gas filter must be installed in the gas supply line.
Make sure that the gas line from the external gas filter to the gas connection of the boiler is cleaned.
For the UltraGas® 2 (125-350) types, it is necessary to comply with the local regulations concerning the need for a gas filter.

Construction of a recommended gas connection



Legend:

- manual gas shut-off valve
- gas hose/compensator
- gas filter
- pressure gauge with test burner and push-button valve

Type of gas

- The boiler is only to be operated with the type of gas stated on the rating plate.

Gas pressure natural gas

Necessary gas flow pressure at the boiler inlet:
UltraGas® 2 D (250-1400) min. 17.4 mbar, max. 80 mbar
UltraGas® 2 D (1600-3100) min. 17.4 mbar, max. 300 mbar

Gas pressure propane

- A gas pressure controller to reduce the boiler inlet pressure must be installed on-site for propane.

- Necessary gas flow pressure at the boiler inlet: UltraGas® 2 (125-1550)
min. 37 mbar, max. 50 mbar

Gas pressure regulator

- The installation of a gas pressure regulator is only necessary if the gas flow pressure in the gas network exceeds the maximum permissible gas flow pressure of the UltraGas® 2 D or if there are considerable fluctuations in the gas flow pressure.
- Pressure fluctuations in the gas network must be prevented by suitable measures (e.g. gas storage tanks or pressure regulators). The local conditions must be checked in each individual case.

Closed heating system

The boiler is only approved for use in closed heating systems.

Minimum circulation water quantity

No minimum water circulation volume is required.

Calorifier connection

If a calorifier is connected, all heating groups must be provided with a mixer.

Installation instructions

Please observe the installation instructions supplied with every boiler.

Space requirements

See "Dimensions" for information

Pump follow-on

For operating temperatures of the boiler above 85 °C, after each burner switch-off, the circulating pump must be in operation for at least 2 minutes (the pump after-run is included in the boiler controller with TopTronic® E control).

Heating boiler in the attic

If the gas boiler is positioned on the top floor, the installation of a low water protection, which automatically turns the gas burner off in case of water shortage, is recommended.

Condensate drain

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority or sewer operator.
- The condensate from the flue gas system can be discharged through the boiler. A condensate trap is not needed anymore with the flue gas system.
- The condensate must be conducted openly (funnel) into the sewage system.
- Suitable materials for condensate drain:
 - stoneware pipes
 - pipes made from glass
 - pipes made from stainless steel
 - pipes made from plastic: PVC, PE, PP, ABS and UP
- A siphon must be installed at the condensate outlet on the gas boiler (included in the boiler scope of delivery).

Diaphragm pressure expansion tank

- An adequately dimensioned diaphragm pressure expansion tank must be provided.
- The diaphragm pressure expansion tank has to be installed in principle at the heating return, or at the safety flow.
- Starting from 70 °C an intermediate tank is necessary.

Safety valve

- At the safety flow a safety valve and an automatic exhauster must be installed.

Noise damping

The following measures are possible for sound insulation:

- Make boiler room walls, ceiling and floor as solid as possible.
- If there are living areas above or below the boiler room, connect pipes flexibly using expansion joints.
- Connect circulating pumps to the piping network using expansion joints

Noise level

- The acoustic power level value is dependent on the local and spacial circumstances.
- The acoustic pressure level is dependent on the installation conditions and can for instance be 5 to 10 dB(A) lower than the acoustic power level at a distance of 1 m.

Recommendation:

If the combustion air intake opening is located on the house facade near a noise-sensitive place (window of bedroom, garden terrace, etc.), we recommend using a silencer in the combustion air duct.

Flue gas system

- Gas boilers must be connected to a certified and approved flue gas system such as flue gas lines.
- Flue gas lines must be gas-, condensate- and over pressure-tight.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas system must be connected with an angle, so that the resulting condensate of the flue gas system can flow back to the boiler and can be neutralised there before discharging into the canalisation.
- Gas boilers with condensation heat utilisation are to be connected to a flue gas line min. temperature class T120.
- A flue gas temperature limiter is integrated into the boiler.

Allocation of gas filters for UltraGas® 2

UltraGas® 2	Gas throughput	Gas filter type	Dimension	Pressure drop gas filter (with clean filter) mbar
type	m³/h			
(125)	11.9	70602/6B	Rp 1"	0.2
(150)	14.2	70602/6B	Rp 1"	0.3
(190)	18.0	70603/6B	Rp 1½"	0.2
(230)	22.4	70603/6B	Rp 1½"	0.2
(300)	29.2	70603/6B	Rp 1½"	0.3
(350)	33.9	70603/6B	Rp 1½"	0.4
(400)	38.6	70603/6B	Rp 1½"	0.6
(450)	44.0	70603/6B	Rp 1½"	0.7
(500)	46.4	70631/6B	Rp 2"	0.5
(620)	59.3	70631/6B	Rp 2"	0.7
(700)	67.0	70631/6B	Rp 2"	0.8
(800)	76.1	70631/6B	Rp 2"	0.9
(1000)	94.6	70631/6B	Rp 2"	1.4
(1100)	106.0	70631/6B	Rp 2"	1.6
(1300)	125.5	70610F/6B	DN 65	1.5
(1550)	147.3	70610F/6B	DN 65	2.1

Standard values for flue gas line dimensions

Standard values for the flue gas line dimensions can be found in the following table.

Table with bases for calculation

- Calculation based on max. 1000 m above sea level.
- Installation room with supply air opening (room air dependent operation)

- An individual calculation must be carried out for room air-independent operation (accessories as option) or a combustion air supply via a duct.
- Connecting line was calculated with max. 5 m.
- Flue gas overpressure set: Mandatory, included in the scope of delivery!

- The first 2 m of the flue gas line must be configured with the same dimension as the flue gas connector, after which the size of the flue gas system can be selected according to the table below.

Table "Standard values for flue gas line dimensions"

Boiler		Flue gas line (smooth walled)	Number of elbows 90° (flue gas + combustion air)			
UltraGas® 2 type	Internal Ø flue gas outlet mm	Designation DN	Total pipe length in m (flue gas + combustion air)			
			1	2	3	4
D (250)	254	200	45	44	43	43
D (300)	254		44	43	43	42
D (380)	254	225	46	45	44	43
D (460)	254	250	47	46	45	44
D (600)	306	300	48	47	46	45
D (700)	306		47	46	45	44
D (800)	306		46	45	44	43
D (900)	306	350	50	50	50	50
D (1000)	306		48	48	47	46
D (1240)	356		47	46	45	44
D (1400)	356	400	48	47	46	45
D (1600)	402		46	45	44	43
D (2000)	402	450	47	46	45	44
D (2200)	402	500	46	45	44	43
D (2600)	504		48	48	47	46
D (3100)	504		48	47	46	45
DH (1400)	356	400	48	47	46	45
DH (2200)	402	500	46	45	44	43
DH (3100)	504		48	47	46	45

Notice: The values in the table "Standard values for flue gas line dimensions" are standard values for reference.

An exact calculation for the flue gas duct must be made on-site.

For chimney systems above 25 m effective height, negative pressure in the chimney is to be expected in some operating conditions.

Therefore, we recommend an individual design of the chimney system and checking the individual pressure conditions.

Looking for the appropriate hydraulic schematic?
Please contact your local Hoval partner.

Hoval UltraOil® (16-80)

Oil-fired condensing boiler for ecological heating oil EL low-sulphur

Boiler

- Oil condensing boiler according to EN 303 part 1 and 2; EN 15034 and EN 15035 (only for UltraOil® (16-50))
- For the combustion of:
 - heating oil EL sulphur-free according to ÖNORM C1109 with sulphur content < 10 ppm
 - heating oil EL low-sulphur according to DIN 51603-1 with sulphur content < 50 ppm
 - paraffinic fuels (HVO, XTL) according to DIN EN 51603-8
 - admixing up to 15 % FAME is possible according to DIN 51603-6
- Boiler made of steel with condensation design
- Components that come into contact with flue gas and condensate are made from high-alloyed stainless steel
- Maximum flue gas condensation by heating surfaces made of **aluFer®** composite pipe and 2-stage operation
Flue gas side: aluminium
Water side: stainless steel
- No lower delimitation of the boiler water temperature and the boiler return temperature
- No minimal water circulation necessary
- Boiler door
 - UltraOil® (16-50): top, to the left
 - UltraOil® (65,80): top, backwards
- Thermal insulation at the boiler body: 80 mm mineral wool mat and glass fabric
- UltraOil® (16-50): Boiler completely cased with steel plate, red powder coated
- UltraOil® (65,80): casing made of steel sheet, red powder coated, delivered separately packed
- Flue outlet
 - UltraOil® (16-35,65,80) backwards to the top
 - UltraOil® (50) to the top
- Flue gas sound absorber:
 - UltraOil® (50) integrated
 - UltraOil® (16-35,65,80) see Accessories
- Heating connections for:
 - flow
 - return - high temperature
 - return - low temperature
- UltraOil® (16-50) on the left and right side
- UltraOil® (65,80) backwards
- Sound absorbing/thermal insulation hood
- Flue gas temperature monitoring
 - UltraOil® (16-50): integrated
 - UltraOil® (65,80): included in the scope of delivery
- Cleaning scraper included in the scope of delivery
- TopTronic® E controller installed

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp



UltraOil® (16-50)

Model range

UltraOil®		Max. - min. output 40/30 °C kW
type		
(16)	A	12-16
(20)	A	14-20
(25)	A	16-25
(35)	A	22-35
(50) ¹⁾	A	30-50
(65) ¹⁾	A	41-65
(80)		52-80

¹⁾ incl. room control module (room sensor) **A***

Energy efficiency class of the compound system with control

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)



UltraOil® (65,80)

TopTronic® E basic module heat generator TTE-WEZ

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat balancing or
 - module expansion Universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the heat generator:

- 1 module expansion and 1 controller module
- or**
- 2 controller modules

The supplementary plug set must be ordered in order to use expanded controller functions.

Oil automatic function device OFA

- Control function integrated for
 - flue gas sensor for safety shut-off
 - 0-10 V output for connecting a modulating main pump (incl. ΔT control with low consumption)
 - Standard plug connection for 2-stage burner 1 x 230 V
 - Variable input for plant-specific functions (heat generator block, return sensor, info sensor etc.)
 - Variable output for plant-specific functions (thermostat function, operating message, etc.)

Further information about the TopTronic® E
see "Controls"

Oil burner to UltraOil® (16-80)

- Fully automatic 2-stage pressure jet burner (blue flame burner)
- With motorised air damper
- With oil pre-heating
- Oil burner tested by Hoval for ≤ 1000 m above sea level. 1.2 % output reduction per 100 m higher level

Heating armature groups and wall distributors
see "Various system components"

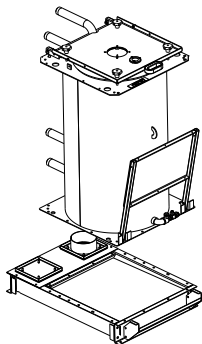
Optional

- Free-standing calorifiers,
see Calorifiers
- Flue gas systems
- Version with/without neutralisation

Delivery

- UltraOil® (16-50): boiler incl. TopTronic® E control, control panel and sound attenuation cowl completely cased. Oil burner is delivered separately packed.
- UltraOil® (65,80): boiler incl. TopTronic® E control, control panel, casing with thermal insulation and oil burner are delivered separately packed.

Oil condensing boiler
(multi-part delivery)



Hoval UltraOil®
(multi-part delivery)

Oil condensing boiler with built-in Hoval TopTronic® E control for **multi-part delivery**. The flue gas collector is loosely screwed onto the boiler and can be removed on site to facilitate installation. Assembled on-site by the installer.

UltraOil® type		Max. - min. output 40/30 °C kW
(65) ¹⁾	A	41-65
(80)		52-80

¹⁾ incl. room control module (room sensor) **A+**

Energy efficiency class of the
compound system with control

Part No.

7016 804
7016 805

UltraOil® (16-25)

Type		(16)	(20)	(25)
• Nominal output 80/60 °C	kW	15	19	24
• Nominal output 40/30 °C	kW	16	20	25
• Max. - min. output 80/60 °C	kW	11-15	14-19	15-24
• Max. - min. output 40/30 °C	kW	12-16	14-20	16-25
• Heat input	kW	11.3-15.5	13.8-19.5	15.4-24.5
• Dimensions		see Dimensions		
• Boiler operating temperature max.	°C	90	90	90
• Boiler operating temperature min.			no min. limit	
• Return flow temperature min.			no min. limit	
• Flue gas temperature min. at the boiler			no min. limit	
• Safety temperature limiter setting (water side)	°C	110	110	110
• Operating pressure	bar	3	3	3
• Boiler efficiency at 80/60 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	98.3/92.7	98.5/92.9	98.2/92.6
• Boiler efficiency at 40/30 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	103.5/97.6	103.9/98.0	103.8/97.9
• Boiler efficiency at 30 % partial load (EN 303) (net calorific value NCV/gross calorific value GCV)	%	103.9/98.0	104.2/98.3	104.1/98.2
• Stand-by deficiency qB at 70 °C	Watt	220	230	240
• Energy efficiency class				
- without control	ηs	%	92	92
- with control	ηs	%	94	94
- with control and room sensor	ηs	%	96	96
• Combustion gas resistance, 12.5 % CO ₂ , 500 m above sea, level (tolerance +/- 20 %)	mbar	0.30	0.29	0.29
• Flow resistance boiler ¹⁾	z-value	3.5	3.5	3.5
• Water resistance at 10 K	mbar	6.6	10.6	16.6
• Water resistance at 20 K	mbar	1.7	2.6	4.2
• Water flow volume at 10 K	m ³ /h	1.38	1.74	2.18
• Water flow volume at 20 K	m ³ /h	0.69	0.87	1.09
• Boiler water capacity	litres	66	63	68
• Boiler gas volume	m ³	0.034	0.035	0.046
• Insulation thickness boiler body	mm	80	80	80
• Weight (incl. casing, burner)	kg	140	145	157
• Weight of transport	kg	134	139	151
• Electrical power consumption min./max.	Watt	55/125	62/147	69/175
• Standby	Watt	6	6	6
• Type of protection ²⁾	IP	20	20	20
Acoustic power level incl. sound attenuation cowl				
• Ambient air dependent				
- Heating noise (EN 15036 part 1)	dB(A)	61	62	66
• Ambient air independent				
- Heating noise (EN 15036 part 1)	dB(A)	53	54	57
- Aspiration noise is radiated from the mouth (DIN 45835)	dB(A)	60	62	66
- Aspiration / exhaust noise - LAS - is radiated from the mouth (DIN 45835) ³⁾	dB(A)	70	73	77
• Ambient air dependent and ambient air independent				
- Exhaust noise in the pipe (EN 15036 part 2) ³⁾	dB(A)	83	86	88
- Flue gas noise radiated from the mouth (DIN 45635 Part 47) ³⁾	dB(A)	69	71	75
• Condensate rate (heating oil EL) at 40/30 °C	l/h	1.07	1.31	1.65
• pH-value of the condensate	approx.	3.2	3.2	3.2
• Construction type		B23, C53, C63		
• Flue gas system				
- Temperature class		T120	T120	T120
- Flue gas mass flow at nominal output 12.5 % CO ₂ heating oil EL	kg/h	24	31	38
- Flue gas temperature at nominal output 80/60 °C	°C	75	75	75
- Maximum supply pressure for supply air and flue gas line	Pa	50	50	50
- Maximum draught/underpressure at flue gas outlet	Pa	-20	-20	-20
• Combustion chamber dimensions Ø inside x length	mm	294 x 403	294 x 403	294 x 543
• Combustion chamber volume	m ³	0.027	0.027	0.037

¹⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z

²⁾ Indication relates to protection against contact with dangerous components

³⁾ UltraOil® (50): Sound absorber integrated

UltraOil® (16-35,65,80): Data without sound absorber. Reduction by installation of a sound absorber possible.

UltraOil® (35-80)

Type		(35)	(50)	(65)	(80)
• Nominal output 80/60 °C	kW	33	48	62	77
• Nominal output 40/30 °C	kW	35	50	65	80
• Max. - min. output 80/60 °C	kW	21-33	28-48	38-62	48-77
• Max. - min. output 40/30 °C	kW	22-35	30-50	41-65	52-80
• Heat input	kW	20.9-33.8	28.4-48.4	39-63	50-78
• Dimensions		see Dimensions			
• Boiler operating temperature max.	°C	90	90	90	90
• Boiler operating temperature min.			no min. limit		
• Return flow temperature min.			no min. limit		
• Flue gas temperature min. at the boiler			no min. limit		
• Safety temperature limiter setting (water side)	°C	110	110	110	110
• Operating pressure	bar	3	3	3	3
• Boiler efficiency at 80/60 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	98.5/92.9	98.7/93.1	98.5/92.9	98.4/92.6
• Boiler efficiency at 40/30 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	103.6/97.7	103.5/97.6	103.5/97.6	103.2/97.4
• Boiler efficiency at 30 % partial load (EN 303) (net calorific value NCV/gross calorific value GCV)	%	104.2/98.3	104.7/98.8	104.5/98.6	104.2/98.3
• Stand-by deficiency qB at 70 °C	Watt	250	290	480	480
• Energy efficiency class					
- without control	ηs %	92	94	94	94
- with control	ηs %	94	96	96	96
- with control and room sensor	ηs %	96	98	98	98
• Combustion gas resistance, 12.5 % CO ₂ , 500 m above sea, level (tolerance +/- 20 %)	mbar	0.30	0.75	0.18	0.26
• Flow resistance boiler ¹⁾	z-value	3.4	1.5	1.5	1.5
• Water resistance at 10 K	mbar	30.6	27.7	46.9	71.4
• Water resistance at 20 K	mbar	7.7	6.9	11.7	17.9
• Water flow volume at 10 K	m ³ /h	3.0	4.29	5.6	6.9
• Water flow volume at 20 K	m ³ /h	1.50	2.15	2.80	3.45
• Boiler water capacity	litres	65	115	135	135
• Boiler gas volume	m ³	0.076	0.13	0.18	0.18
• Insulation thickness boiler body	mm	80	50	80	80
• Weight (incl. casing, burner)	kg	164	276	360	360
• Weight of transport	kg	158	261	317	317
• Electrical power consumption min./max.	Watt	80/215	99/253	109/262	123/262
• Standby	Watt	6	6	6	6
• Type of protection ²⁾	IP	20	20	20	20
Acoustic power level incl. sound attenuation cowl					
• Ambient air dependent					
- Heating noise (EN 15036 part 1)	dB(A)	63	71	69	65
• Ambient air independent					
- Heating noise (EN 15036 part 1)	dB(A)	60	67	-	-
- Aspiration noise is radiated from the mouth (DIN 45835)	dB(A)	62	66	-	-
- Aspiration / exhaust noise - LAS - is radiated from the mouth (DIN 45835) ³⁾	dB(A)	79	-	-	-
• Ambient air dependent and ambient air independent					
- Exhaust noise in the pipe (EN 15036 part 2) ³⁾	dB(A)	93	85	91	95
- Flue gas noise radiated from the mouth (DIN 45635 Part 47) ³⁾	dB(A)	76	68	75	76
• Condensate rate (heating oil EL) at 40/30 °C	l/h	2.28	3.52	4.0	5.0
• pH-value of the condensate	approx.	3.2	3.2	3.2	3.2
• Construction type		C53, C63		B23	
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at nominal output 12.5 % CO ₂ heating oil EL	kg/h	53	76	102	126
- Flue gas temperature at nominal output 80/60 °C	°C	75	75	73	75
- Maximum supply pressure for supply air and flue gas line	Pa	40	50	50	50
- Maximum draught/underpressure at flue gas outlet	Pa	-20	-20	-20	-20
• Combustion chamber dimensions Ø inside x length	mm	294 x 543	425 x 551	524 x 600	524 x 600
• Combustion chamber volume	m ³	0.037	0.0781	0.129	0.129

¹⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z

²⁾ Indication relates to protection against contact with dangerous components

³⁾ UltraOil® (50): Sound absorber integrated

UltraOil® (16-35,65,80): Data without sound absorber. Reduction by installation of a sound absorber possible.

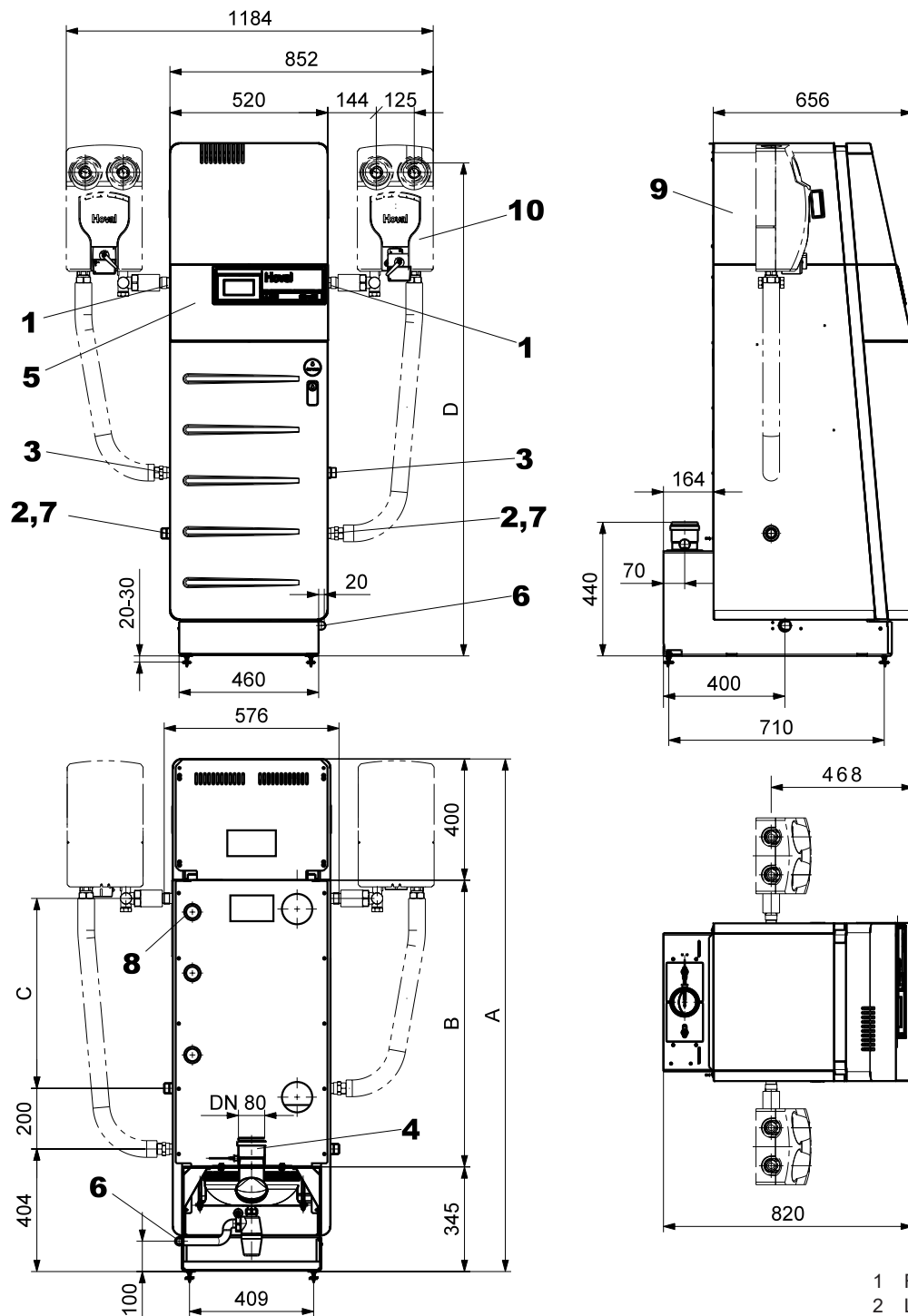
Oil burner		for UltraOil®	(16)	(20)	(25)	(35)	(50)	(65)	(80)
• Oil burner	type	Blue flame burner		Blue flame burner	Blue flame burner	Blue flame burner	Blue flame burner	Blue flame burner	Blue flame burner
• Operating mode		1st/2nd stage		1st/2nd stage	1st/2nd stage	1st/2nd stage	1st/2nd stage	1st/2nd stage	1st/2nd stage
• Oil flow rate	kg/h	0.95 1.34	1.16 1.64	1.3 2.07	1.76 2.85	2.38 4.06	3.6 5.3	5.0 6.5	

Flue gas silencer

for UltraOil® type	Connection on both sides	Overall length mm	Outer diameter mm	Attenuation dB (A)	Resistance Pa	Output kW
(16-25)	E80	810	160	11	12	25
(35)	E100	810	180	13	10	35
(50)			integrated			
(65)	E150	910	200	8	20	65
(80)	E150	910	200	8	30	80

UltraOil® (16-35)

(Dimensions in mm)



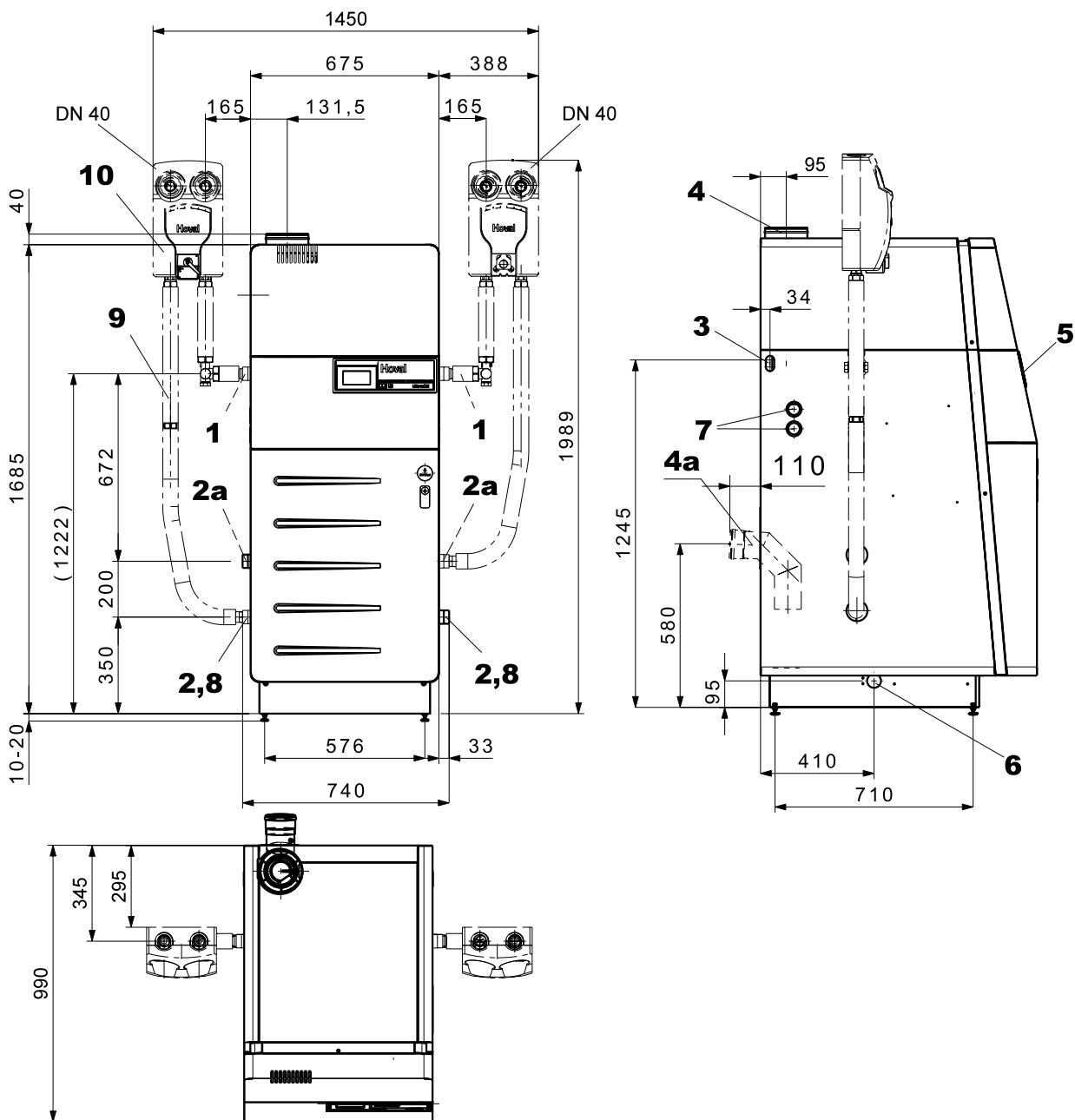
- 1 Flow heating/safety flow R 1"
- 2 Low-temperature return R 1"
- 3 High-temperature return R 1"
- 4 Flue gas outlet DN 80
- 5 Control panel
- 6 Condensate drain (left or right)
incl. siphon (DN 25) and 2 m PVC
passage tube Ø inside 19 x 4 mm
- 7 Drain
- 8 Electric cable entry point
- 9 Sound attenuation cowl
- 10 Heating armature group
or charging group (option)

Type	A	B	C	D
UltraOil® (16,20)	1550	805	486	1485
UltraOil® (25,35)	1690	945	626	1625

Space requirements
see separate page

UltraOil® (50)

(Dimensions in mm)

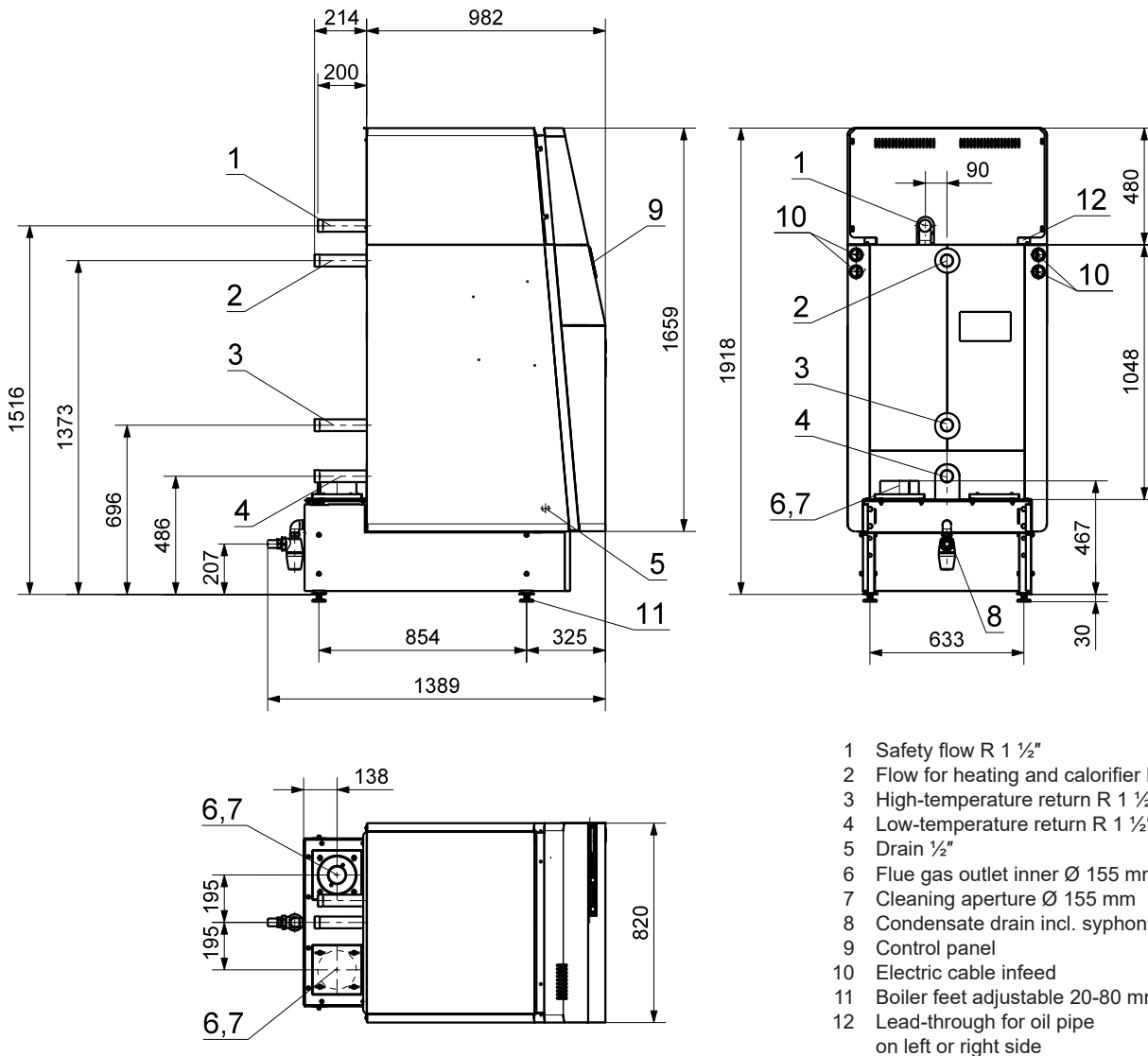


- 1 Flow heating/safety flow R 1 ½"
- 2 Low-temperature return R 1 ½"
- 2a High-temperature return R 1 ½"
- 3 Lead-through for oil pipe on left or right side
- 4 Concentric supply air/ flue gas connection C100/150
- 4a Flue gas connection at the back (option)
- 5 Control panel
- 6 Condensate drain (left or right)
incl. syphon (DN 25) and 2 m PVC
passage tube Ø inside 19 x 4 mm
- 7 Electrical connection on
the left or right hand side
- 8 Drain
- 9 Connection set (option)
- 10 Heating armature group
or charging group (option)

Space requirements
see separate page

UltraOil® (65,80)

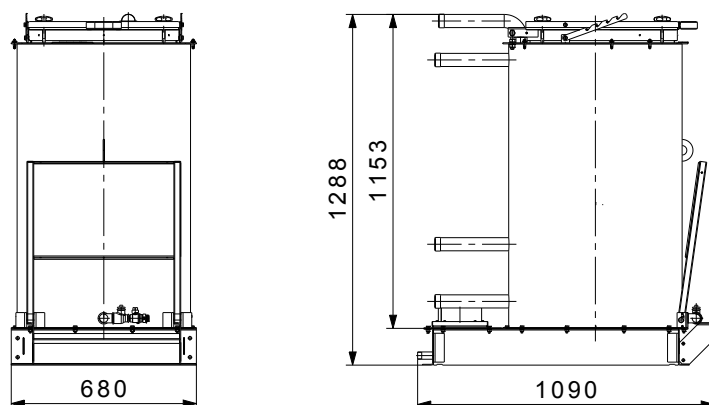
(Dimensions in mm)



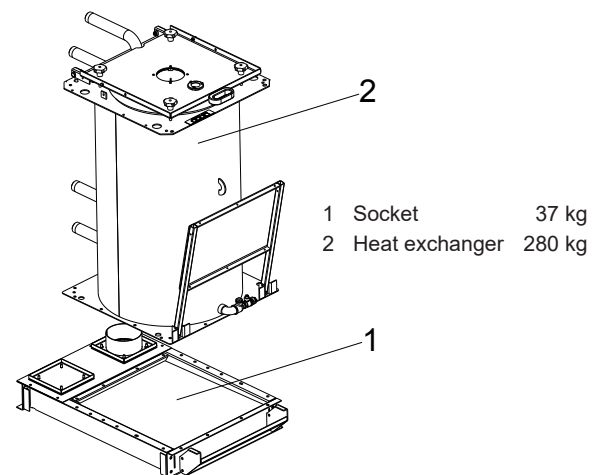
Space requirements
see separate page

Overall unit dimensions UltraOil® (65,80)

(Dimensions in mm)



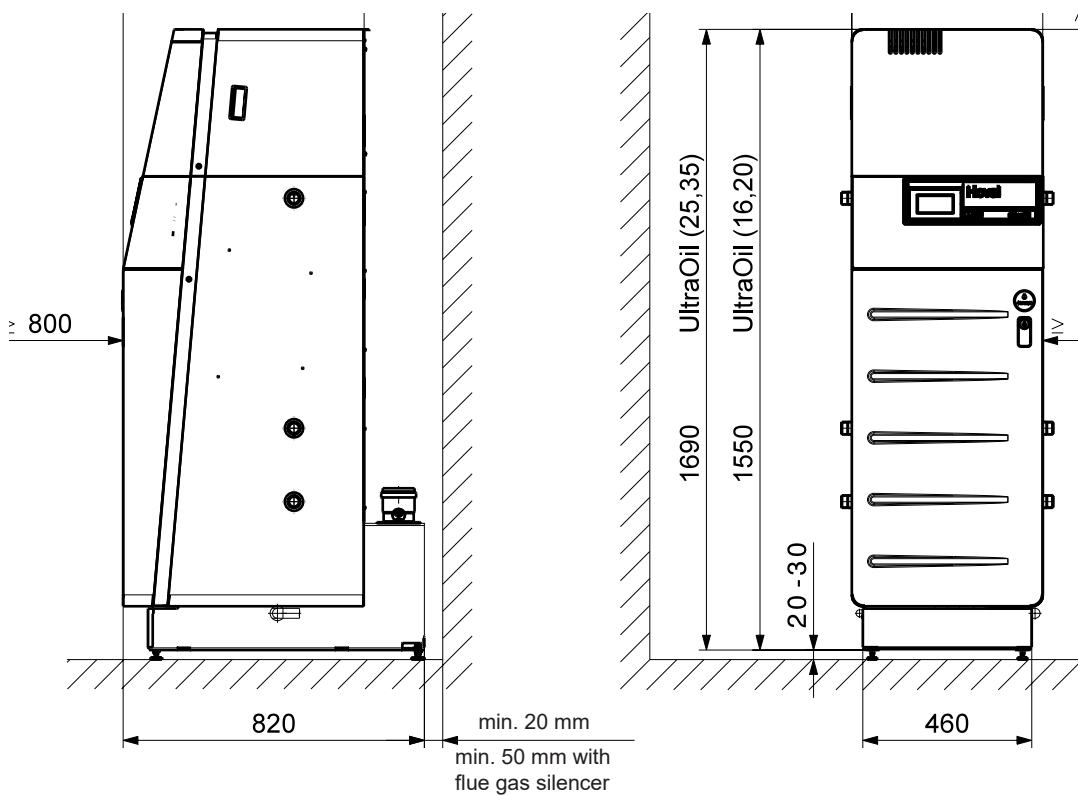
Weights for multi-part installation UltraOil® (65,80)



Space requirements

(Dimensions in mm)

UltraOil® 1 35



Boiler door incl. burner swivels upwards and to the left or to the front

A = minimum 150 mm *

- Burner service position in the front - boiler cleaning from the right

A = optimum 300 mm *

- Burner service position left - boiler cleaning from the front
- A minimum gap of 160 mm is required to the right of the boiler

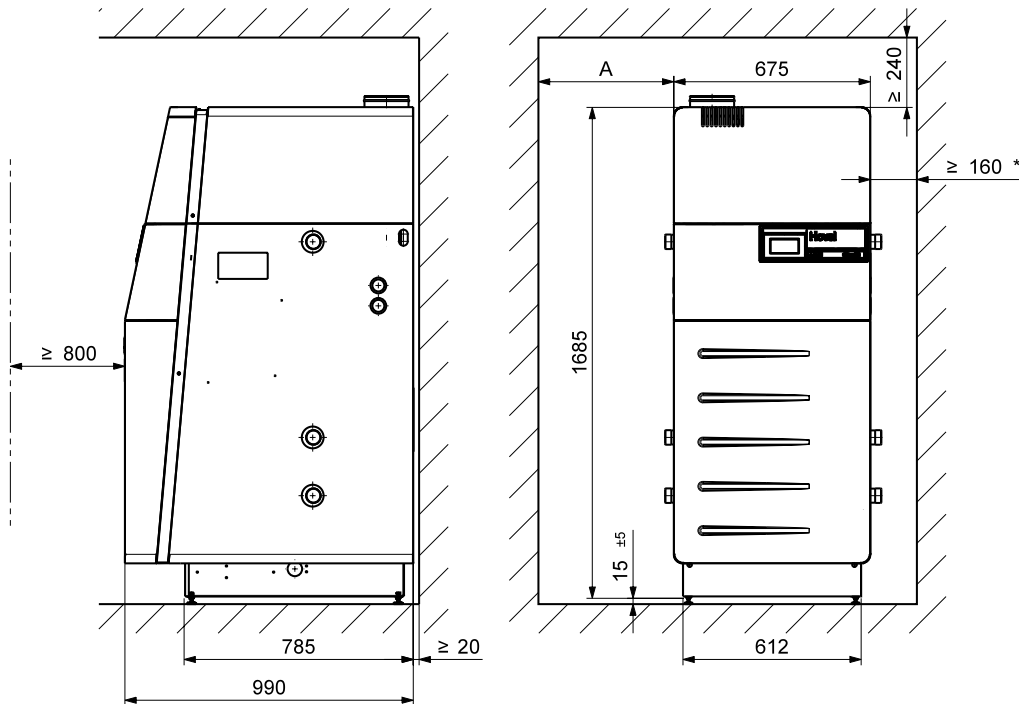
* without armature group
500 mm with armature group

- The cleaning aperture must be easily accessible.
- Boiler rear side must be accessible.

Space requirements

(Dimensions in mm)

UltraOil® 50



Boiler door incl. burner swivels upwards and to the left or to the front

A = minimum 150 mm *

- Burner service position in the front - boiler cleaning from the right

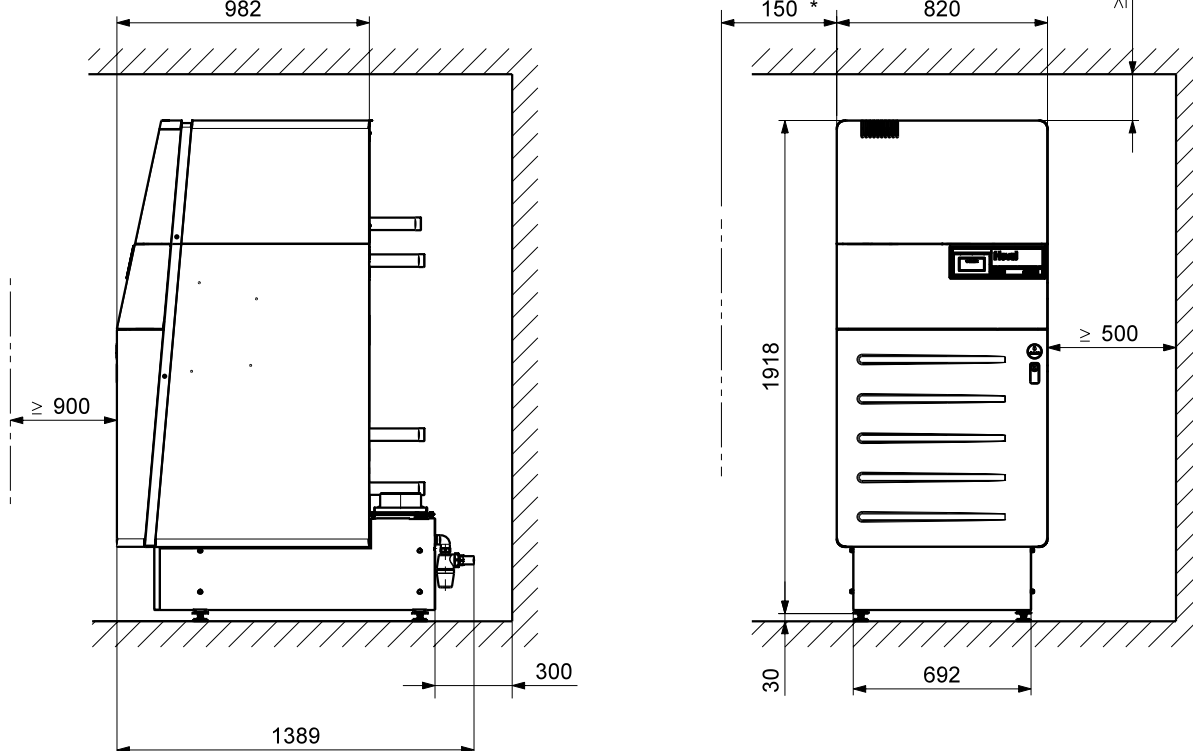
A = optimum 300 mm *

- Burner service position left - boiler cleaning from the front

* without armature group

500 mm with armature group

UltraOil® 500



- It must be possible to swing open the hinged door of the boiler with the burner upward and rearward.

- Boiler rear side must be accessible.

* The cleaning aperture must be easily accessible. As a result, a minimum distance of 500 mm must be maintained on the cleaning opening side.

Neutralisation setup for UltraOil® (16-80)

(Dimensions in mm)

Neutralisation box type KB 23

Use

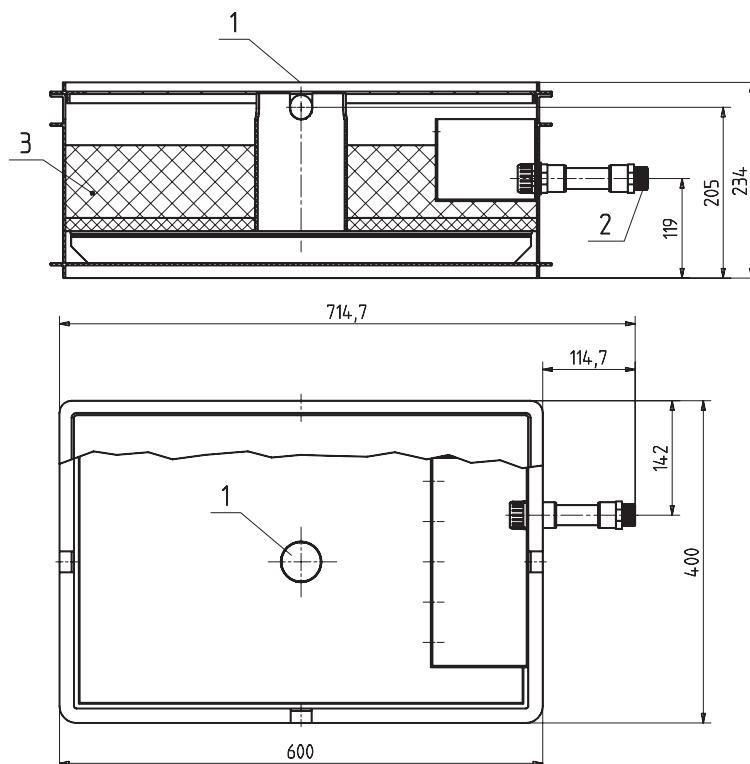
- Condensate discharge into lower drainage duct
- With condensate neutralisation
- Placed under or next to the boiler

Design

- Collecting tank with neutralisation unit
- 12 kg neutralisation granulate
- Connection line from boiler (siphon) to neutralisation box, if the installation location is underneath the boiler

On-site:

- With installation next to the boiler, connection lines from boiler (siphon) to the neutralisation box
- Discharge line from the neutralisation box



- 1 Condensate inlet from the boiler
- 2 Exit R 3/4"
- 3 Condensate tank with 12 kg granulate

Neutralisation box with pump type KB 24

Use:

- Condensate discharge into higher drainage duct
- With condensate pump, delivery head 3.5 m
- With condensate neutralisation, 12 kg granulate
- Placed under or next to the boiler.

Design

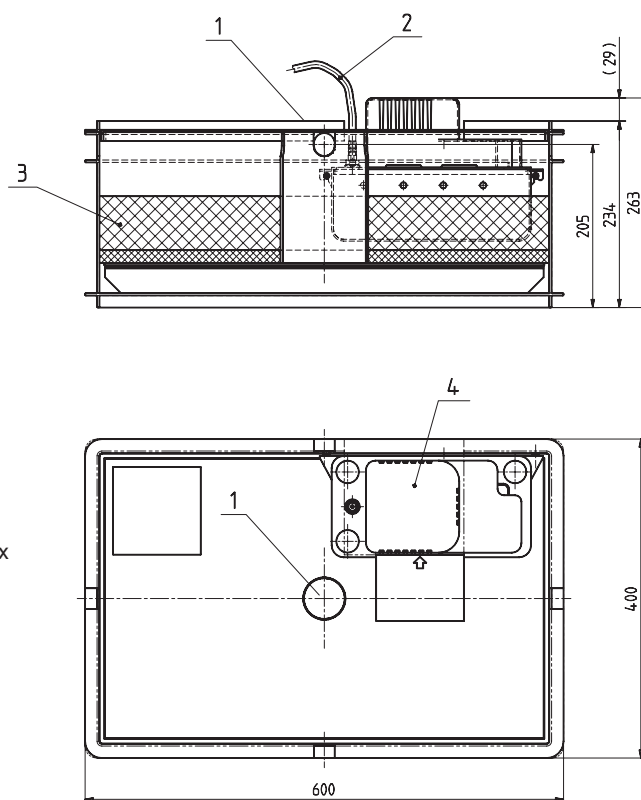
- Collecting tank with feed pump and neutralisation unit
- 12 kg neutralisation granulate
- Delivery head of the pump max. 3.5 m (2 dm³/min.)
- Silicone hose Ø 9/13 mm, length 4 m
- Electrical cable length 1.5 m with plug for connecting to boiler electrical panel if installation location is below boiler
- Plastic connection line Ø 25 mm, from boiler (siphon) to neutralisation box, if the installation location is underneath the boiler.

On-site:

- Discharge duct, if silicone hose too short.

For installation next to the boiler:

- Connection lines from boiler (siphon) to the neutralisation box
- Electrical connection from feed pump to electrical panel if supplied cable is too short.



- 1 Condensate inlet from the boiler
- 2 Outlet from pump, silicone hose Ø 9/13 mm, length 4 m
- 3 Condensate tank with 12 kg granulate (KB 24)
- 4 Condensate pump

Condensate box with pump type KB 22

Use:

- Condensate discharge into higher drainage duct
- With condensate pump, delivery height 3.5 m
- Placed under or next to the boiler.

Design

Design as for KB 24, but **without** neutralisation granulate.

Standards and guidelines

The official regulations for installation and operation must be observed. In particular, these are the country-specific standards (e.g. EN standard, DIN standards, ...) as well as the corresponding regional regulations.

The following requirements and directives must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- DIN EN 12828
Safety-relevant requirements
- DIN EN 12831 Heaters
Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- EN 14868 "Protection of metallic materials against corrosion"
- VDE 0100 supplement 2

Water quality in heating systems Filling and replacement water, heating water

The following applies:

- VDI 2035
- In addition, the EN 14868 standard must be applied, **as well as the manufacturer specifications**

Manufacturer specifications

Filling and replacement water

The filling and replacement water can be both fully demineralised and also merely softened.

Heating water

- In the case of **full demineralisation of the filling and replacement water**, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.
- In the case of **softening the filling and replacement water**, the following conditions must be complied with:
 - Electrical conductivity of the heating water for operation with water containing salts: > 100 µS/cm to ≤ 1500 µS/cm
 - pH value of the heating water for systems without aluminium alloy as water-side material 8.2 to 10.0 (measurement 10 weeks after commissioning at the earliest)
- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

Additional notices

- Hoval boilers and calorifiers are suitable for heating systems without significant oxygen intake. (System type I according to EN 14868).
- Systems with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up) must be equipped with a system separation.
- If only the boiler is replaced in an existing system, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The boiler must not be filled until the heating system has been flushed.

Frost protection agent

The planning sheet "Use of frost protection agent" is available from your Hoval contact person.

Combustion air

The combustion air supply must be guaranteed. Ensure that the air intake can not be closed or blocked. The connection for direct combustion air supply must be used for direct combustion air supply to the boiler (LAS system). It is very important to ensure that the combustion air is free from halogen compounds. These are present, for example, in spray cans, varnishes, glues, solvents and cleansing agents.

Room air-independent operation with separate combustion air duct to the boiler:

- 0.8 cm² per 1 kW boiler capacity. The pressure drop in the combustion air duct must be taken into account when sizing the flue gas system.
- In the UltraOil®, ventilation of the installation room must be guaranteed for operation independent from the room air.

Ambient air dependent operation:

- Minimum free cross-section for the air opening can be assumed as follows by way of simplification. Nominal heat output is the determining factor!
- A minimum free cross-section of once 150 cm² or twice 75 cm² and an additional 2 cm² for each kW boiler capacity in excess of 50 kW is required for the air opening into the outside air.

Oil burner mounting

- The standard burner plug connection must be positioned in the opposite direction to the swivelling direction of the boiler door.
- The space between the combustion pipe and the boiler door must be filled with the insulation material supplied.

Electric connection of the burner

- Mains connection 1 x 230 V, 50 Hz, 10 A
- The burner must be connected to the standard plug connection of the boiler.
- The burner cable must be shortened so that the plug-in connection has to be parted to swing out the burner.

Sound absorption

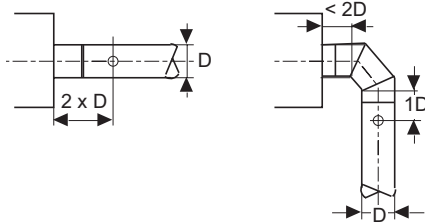
Sound absorption is possible through the following steps:

- Make boiler room walls, ceiling and floor as thick as possible, install a silencer in the intake air opening, provide carriers and brackets for the pipes with noise insulation.
- If there are living areas above or below the boiler room, install rubber vibration dampers under the base rails of the boiler.
- Connect circulating pumps to the piping network using expansion joints.
- To dampen the flame noise in the chimney, silencers can be installed in the connection tube (possibly leave space for later installation).

Flue gas system

- The flue gas system must be made by an examined and certified flue gas line.
- The flue gas line must be certified gas-tight, humidity-insensitively, corrosion and acid-proof as well as for flue gas temperatures up to 120 °C.
- The flue gas system must be suitable for the operation with over-pressure.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas line is to be laid with upward gradient, so that the resulting condensate of the flue gas system flows back into the boiler so that before deriving into drains it can be neutralised.
- When using flue gas lines made from plastic, a flue gas safety temperature limiter is prescribed.
Built in the UltraOil® (16-80) already.
- In the connection pipe has to be integrated a closable flue gas measurement nozzle with circular inner diameter of 10-21 mm.
The socket has to be led over the thermal insulation.

Dimensioning flue gas line



Sound power

The sound power level is independent of local and spatial influences.

The sound **pressure** level depends on installation conditions and can, for example, be 10 to 15 dB(A) lower than the sound **power** level at a distance of 1 m.

Recommendation:

If the air inlet at the facade is near a noise sensitive place (window of bedroom, terrace etc.), we recommend to use a sound absorber at the direct combustion air inlet.

Condensate drain

A boiler base is integrated in the UltraOil® for condensate collection and drainage.

- in accordance with local regulations.
- The condensate discharge must be carried out without backpressure and via siphon (already installed in the UltraOil®).
- The boiler can additionally be placed on a special boiler base.
- This achieves a condensate discharge height of 280 mm.
- Suitable materials for condensate drain:
 - Stoneware pipes
 - Pipes made from PVC
 - Pipes made from polyethylene (PE)
 - Pipes made from ABS or ASA
- The commercial system operator must inform the sewer operator if the exhaust gas condensate is discharged into the sewer system.

Installation instructions

Please observe the installation instructions supplied with every boiler.

Heating system renovation notice

If an existing oil heating installation is replaced by Hoval UltraOil®, the following instructions regarding the oil tank and its refilling must be observed:

- The Hoval UltraOil® is only allowed to be operated with heating oil EL low-sulphur with sulphur content < 50 ppm (< 0.005 %).
- It is recommended for the oil tank to be cleaned before refilling it.
- A residual amount of heating oil EL in the oil tank may be mixed with heating oil EL low-sulphur, provided that the residual amount does not exceed the following values of the total content.
 - Residual quantity of heating oil EL (sulphur content: 2000 ppm or 0.2 %) max. 3 % of tank volume
 - Residual quantity of heating oil EL (sulphur content: 1000 ppm or 0.1 %) max. 5 % of tank volume
 - Residual quantity of ecological heating oil EL (sulphur content: 500 ppm or 0.05 %) max. 10 % of tank volume
- In order to reach the permissible mixture ratio with heating oil EL low-sulphur taking account of the residual amount of heating oil in the oil tank, a 100 % tank filling is necessary.

Special project planning notices for heating systems with heating oil EL A Bio15

Heating oil EL A Bio15 is composed of heating oil EL low-sulphur with the addition of max. 15 % FAME.

il lters

Only oil filters suitable for ecological heating oil are allowed to be used. Filter elements made from copper, brass or plastics not compatible with ecological heating oil are not suitable. See accessories in the price section for suitable oil filters.

Maintenance

It is essential for the filter to be renewed after the first heating season.

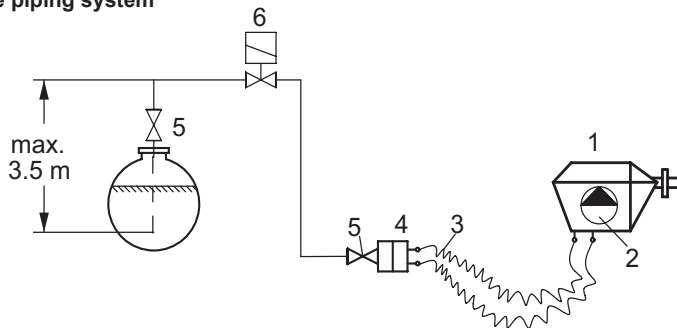
Oil line installation

- The Hoval UltraOil® is only allowed to be connected to 1-section oil lines. Max. suction height without intermediate pump 3.5 m, maximum line length 30 m.
- The lines must be positioned so that the boiler door can still be fully opened.
- A shut-off element must be installed before the flexible oil lines at the end of the rigid oil line (already installed in the "TOC Duo").
- An automatic heating oil fan is recommended in front of the burner to ensure trouble-free operation.

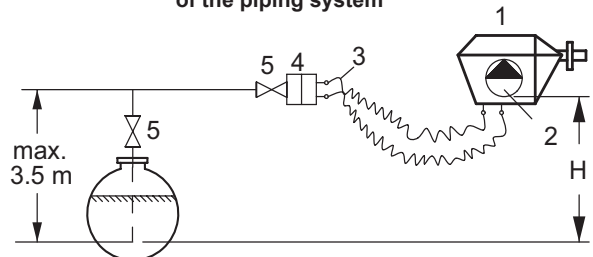
- One pipe heating oil filter**
In front of the burner, a one pipe heating oil filter with return flow supply and an insert for the UltraOil® (16-80) with a mesh width of 50-75 µm (e.g. sintered plastic) must be used at the level of the oil pump.
- Automatic heating oil deaerator with integrate filter**
When connecting an automatic heating oil deaerator with filter in front of the burner, the deaerator must be fitted approx. 100 mm above the oil pump. The use of these filters should comply with the specifications as for one pipe heating oil filters.
- The highest point of the piping should be max. 3.5 m above the tank suction pipe.
- Product pipelines must be installed in such a way that no liquid can emerge independently (rise) from the tank.

- If the highest point of the oil level in the oil tank is higher than the lowest point in the removal line, it is necessary to install a solenoid valve at the highest point in the oil line as close as possible to the oil tank.
- In the case of systems with several oil-fired boilers, the oil supply to the boilers must be ensured in all operating states, e.g. provide an independent connection line to the oil tank for each boiler.

Max. oil level higher than the lowest point of the piping system



Max. oil level lower than the lowest point of the piping system



- Hoval-burner for 1-line connection with return flow
- Oil pump
- Oil hoses on the burner

- Fine filter with return feed.
Filter element with cellulose, fineness 20 µm for heating oil EL low-sulphur with up to 15 % FAME, output 10 to 30 kW.
Sintered plastic insert 25-75 µm for heating oil EL low-sulphur 10 to 40 kW. > 40 kW with nickel strainer insert 100-150 µm..

- Shut-off valve
 - Solenoid valve
- H = Suction height [m]

One pipe oil lines

Line diameter Ø inside 4 mm,
max. permissible line length in m

Suction height H in m	UltraOil®						
	(16)	(20)	(25)	(35)	(50)	(65)	(80)
0	30	30	30	30	20	14	12
1	30	30	30	23	15	11	9
2	30	29	23	16	10	8	6
3	20	16	13	9	6	-	-

This line sizing table provides indicative values for:

Low-sulphur heating oil EL or low-sulphur mixed heating oil EL with max. 15 % FAME (heating oil) content, oil temperature > 10 °C (indoor tank) up to 700 m above sea level, 1 filter, 1 valve, 6 elbows 90° (40 mbar).

For the project planning and sizing of suction installations for heating oil extra light and pipes made of copper or plastic pipes, please refer to the relevant literature; this also contains conversion calculations for oil temperature, viscosity, additional resistance values, influence of altitude above 700 m above sea level, etc.

Pipe systems that are oversized can lead to operational disturbance!

For this reason, in case of boiler exchange the pipe dimensioning table must be observed!

Diaphragm pressure expansion tank

- Ideally, the diaphragm pressure expansion tank should be connected to the heating system as described in our example applications, with a removable or sealable actuation device. This means that it is not necessary to drain the entire system in order to carry out work on the diaphragm pressure expansion tank.

Safety valve

- A safety valve and an automatic air vent must be installed in the safety flow

Looking for the appropriate hydraulic schematic?
Please contact your local Hoval partner.

Hoval UltraOil® (110-300) Oil-fired condensing boiler for ecological heating oil EL low-sulphur

Boiler

- Oil condensing boiler according to EN 303 part 1 and 2 and EN 15034
- For the combustion of:
 - heating oil EL sulphur-free according to ÖNORM C1109 with sulphur content < 10 ppm
 - heating oil EL low-sulphur according to DIN 51603-1 with sulphur content < 50 ppm
 - paraffinic fuels (HVO, XtL) according to DIN EN 51603-8
- Boiler made of steel with condensation design
- Components that come into contact with flue gas and condensate are made from high-alloyed stainless steel
- Maximum flue gas condensation by heating surfaces made of aluFer® composite pipe; Flue gas side: aluminium Water side: stainless steel
- No lower delimitation of the boiler water temperature and the boiler return temperature
- No minimal water circulation necessary
- Boiler door swivelling to the front right, swivelling to the left by conversion on the system
- Thermal insulation at the boiler body: 80 mm mineral wool mat and glass fabric
- Casing made of steel sheet, red powder coated, delivered separately packed
- Flue outlet backwards
- Heating connections at top incl. counterflange, bolts and seals for:
 - flow
 - return - high temperature
 - return - low temperature
- Sound absorbing/thermal insulation hood
- Water pressure sensor:
 - Fulfils the function of a minimum and maximum pressure limiter
 - Replacement for the water shortage protection
- Flue gas temperature monitoring (installation on site)
- Cleaning set comprising scraper and implement holder (included in the scope of delivery)
- TopTronic® E controller installed

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management



Model range

UltraOil®	Max. - min. output 40/30 °C kW
(110)	83-110
(130)	104-130
(160)	119-160
(200)	155-200
(250)	189-250
(300)	227-300

- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module heat generator TTE-WEZ

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat balancing or
 - module expansion Universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the heat generator:

- 1 module expansion and 2 controller modules **or**
- 1 controller module and 2 module expansions **or**
- 3 controller modules

The supplementary plug set must be ordered in order to use expanded controller functions.

Oil automatic function device OFA

- Control function integrated for
 - flue gas sensor for safety shut-off
 - 0-10 V output for connecting a modulating main pump (incl. ΔT control with low consumption)
 - Standard plug connection for 2-stage burner 1 x 230 V
 - Variable input for plant-specific functions (heat generator block, return sensor, info sensor etc.)
 - Variable output for plant-specific functions (thermostat function, operating message, etc.)

Further information about the TopTronic® E
see "Controls"

Oil burner to UltraOil® (110-300)

- Fully automatic 2-stage pressure atomizer burner (blue burner)
- Air termination flap
- Fan follow-on time
- Completely wired up with 7+4-pin standard plug connection 1 x 230 V
- The oil burner is checked at the factory according to factory setting ≤ 1000 m above sea level. Higher altitudes result in a power reduction of 1.2 % per 100 m

Optional

- Free-standing calorifier, see Calorifiers
- Flue gas systems
- Installation transport set for conditions of restricted access

Delivery

- Boiler, casing with thermal insulation, oil burner and TopTronic® E controller are separately packed and delivered.

On site

- Installation of thermal insulation, casing, control panel and burner

**Heating armature groups
and wall distributors**

see "Various system components"

UltraOil® (110-160)

Type		(110)	(130)	(160)
• Nominal output 80/60 °C	kW	105	124	152
• Nominal output 40/30 °C	kW	110	130	160
• Max. - min. output 80/60 °C	kW	78-105	99-124	114-152
• Max. - min. output 40/30 °C	kW	83-110	104-130	119-160
• Heat input	kW	80-106	100-125	115-154
• Dimensions		see Dimensions		
• Boiler operating temperature max.	°C	90	90	90
• Boiler operating temperature min.			no min. limit	
• Return flow temperature min.			no min. limit	
• Flue gas temperature min. at the boiler			no min. limit	
• Safety temperature limiter setting (water side)	°C	110	110	110
• Operating pressure	bar	5	5	5
• Boiler efficiency at 80/60 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	99.1/93.5	99.0/93.4	98.7/93.1
• Boiler efficiency at 40/30 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	104.1/98.2	104.1/98.2	103.9/98.0
• Boiler efficiency at 30 % partial load (EN 303) (net calorific value NCV/gross calorific value GCV)	%	105.0/99.1	104.8/98.9	104.5/98.6
• Stand-by deficiency qB at 70 °C	Watt	500	500	500
• Combustion gas resistance, 12.5 % CO ₂ , 500 m above sea, level (tolerance +/- 20 %)	mbar	0.24	0.34	0.45
• Flow resistance boiler ¹⁾	z-value	0.1	0.1	0.1
• Water resistance at 10 K	mbar	8.9	12.4	18.8
• Water resistance at 20 K	mbar	2.2	3.1	4.7
• Water flow volume at 10 K	m ³ /h	9.4	11.1	13.7
• Water flow volume at 20 K	m ³ /h	4.7	5.6	6.9
• Boiler water capacity	litres	340.00	340.00	340.00
• Boiler gas volume	m ³	0.247	0.247	0.247
• Insulation thickness boiler body	mm	80	80	80
• Weight (incl. casing, burner)	kg	420	420	420
• Weight of transport	kg	370	370	370
• Electrical power consumption min./max.	Watt	140/360	152/550	167/550
• Standby	Watt	6	6	6
Acoustic power level incl. sound attenuation cowl				
• Ambient air dependent				
- Heating noise (EN 15036 part 1) ²⁾	dB(A)	65	67	67
• Ambient air dependent				
- Exhaust noise in the pipe (EN 15036 part 2) ²⁾	dB(A)	86	89	92
- Flue gas noise radiated from the mouth (DIN 45635 Part 47)	dB(A)	75	76	78
• Condensate rate (heating oil EL) at 40/30 °C	l/h	7.8	8.7	10.8
• pH-value of the condensate	approx.	3.2	3.2	3.2
• Construction type		B23	B23	B23
• Flue gas system				
- Temperature class		T120	T120	T120
- Flue gas mass flow at nominal output 12.5 % CO ₂ heating oil EL	kg/h	163.6	193.0	252.0
- Flue gas temperature at nominal output 80/60 °C	°C	68	70	75
- Maximum supply pressure for supply air and flue gas line	Pa	80	80	80
- Maximum draught/underpressure at flue gas outlet	Pa	-20	-20	-20
• Combustion chamber dimensions Ø inside x length	mm	524 x 800	524 x 800	524 x 800
• Combustion chamber volume	m ³	0.172	0.172	0.172

¹⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z

UltraOil® (110-160)

Type		(110)	(130)	(160)
• Nominal output 80/60 °C	kW	105	124	152
• Nominal output 40/30 °C	kW	110	130	160
• Max. - min. output 80/60 °C	kW	78-105	99-124	114-152
• Max. - min. output 40/30 °C	kW	83-110	104-130	119-160
• Heat input	kW	80-106	100-125	115-154
• Dimensions		see Dimensions		
• Boiler operating temperature max.	°C	90	90	90
• Boiler operating temperature min.			no min. limit	
• Return flow temperature min.			no min. limit	
• Flue gas temperature min. at the boiler			no min. limit	
• Safety temperature limiter setting (water side)	°C	110	110	110
• Operating pressure	bar	5	5	5
• Boiler efficiency at 80/60 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	99.1/93.5	99.0/93.4	98.7/93.1
• Boiler efficiency at 40/30 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	104.1/98.2	104.1/98.2	103.9/98.0
• Boiler efficiency at 30 % partial load (EN 303) (net calorific value NCV/gross calorific value GCV)	%	105.0/99.1	104.8/98.9	104.5/98.6
• Stand-by deficiency qB at 70 °C	Watt	500	500	500
• Combustion gas resistance, 12.5 % CO ₂ , 500 m above sea, level (tolerance +/- 20 %)	mbar	0.24	0.34	0.45
• Flow resistance boiler ¹⁾	z-value	0.1	0.1	0.1
• Water resistance at 10 K	mbar	8.9	12.4	18.8
• Water resistance at 20 K	mbar	2.2	3.1	4.7
• Water flow volume at 10 K	m ³ /h	9.4	11.1	13.7
• Water flow volume at 20 K	m ³ /h	4.7	5.6	6.9
• Boiler water capacity	litres	340.00	340.00	340.00
• Boiler gas volume	m ³	0.247	0.247	0.247
• Insulation thickness boiler body	mm	80	80	80
• Weight (incl. casing, burner)	kg	420	420	420
• Weight of transport	kg	370	370	370
• Electrical power consumption min./max.	Watt	140/360	152/550	167/550
• Standby	Watt	6	6	6
Acoustic power level incl. sound attenuation cowl				
• Ambient air dependent				
- Heating noise (EN 15036 part 1) ²⁾	dB(A)	65	67	67
• Ambient air dependent				
- Exhaust noise in the pipe (EN 15036 part 2) ²⁾	dB(A)	86	89	92
- Flue gas noise radiated from the mouth (DIN 45635 Part 47)	dB(A)	75	76	78
• Condensate rate (heating oil EL) at 40/30 °C	l/h	7.8	8.7	10.8
• pH-value of the condensate	approx.	3.2	3.2	3.2
• Construction type		B23	B23	B23
• Flue gas system				
- Temperature class		T120	T120	T120
- Flue gas mass flow at nominal output 12.5 % CO ₂ heating oil EL	kg/h	163.6	193.0	252.0
- Flue gas temperature at nominal output 80/60 °C	°C	68	70	75
- Maximum supply pressure for supply air and flue gas line	Pa	80	80	80
- Maximum draught/underpressure at flue gas outlet	Pa	-20	-20	-20
• Combustion chamber dimensions Ø inside x length	mm	524 x 800	524 x 800	524 x 800
• Combustion chamber volume	m ³	0.172	0.172	0.172

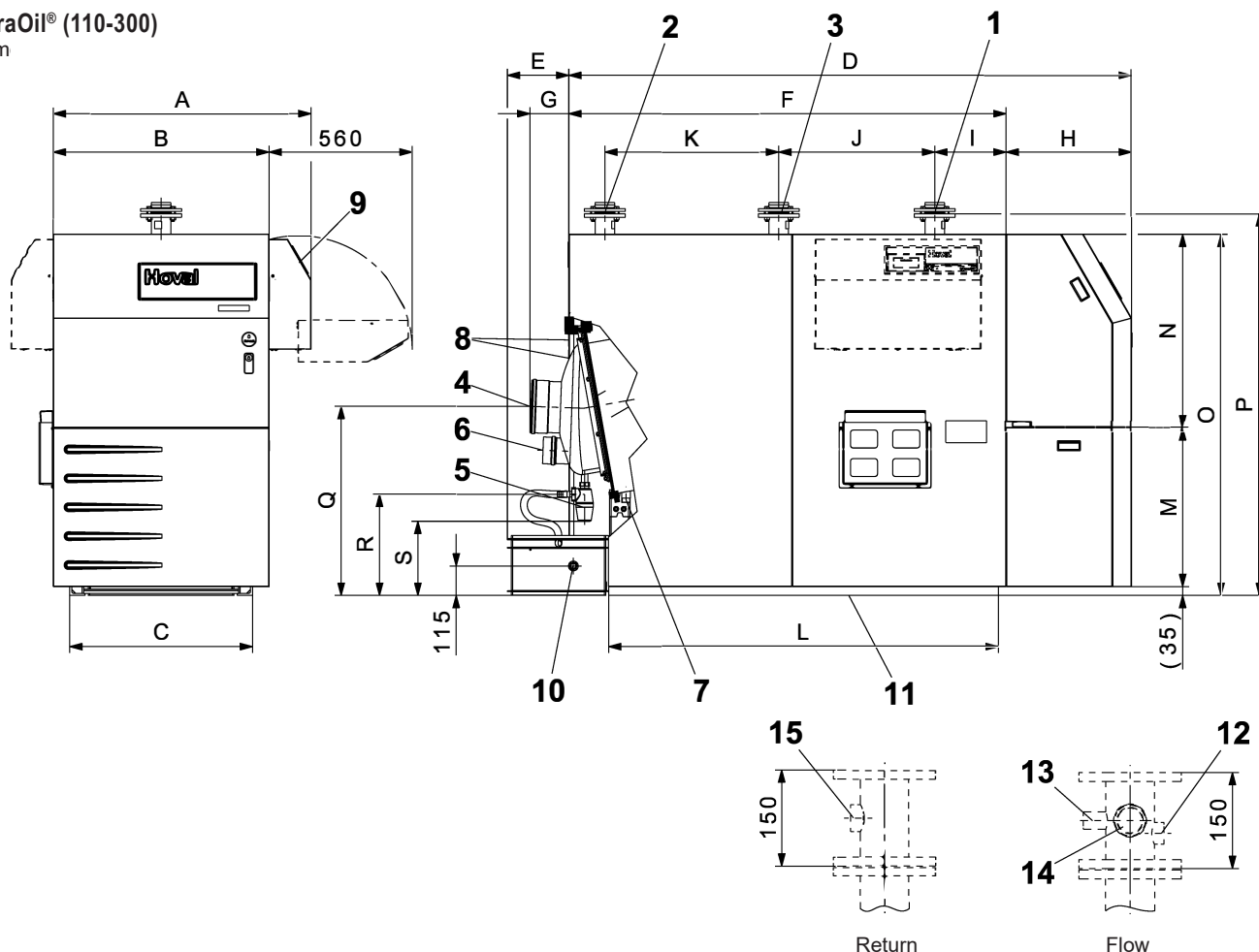
¹⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z

UltraOil® (200-300)

Type		(200)	(250)	(300)
• Nominal output 80/60 °C	kW	190	238	286
• Nominal output 40/30 °C	kW	200	250	300
• Max. - min. output 80/60 °C	kW	147-190	180-238	215-286
• Max. - min. output 40/30 °C	kW	155-200	189-250	227-300
• Heat input	kW	150-194	182-241	218-290
• Dimensions		see Dimensions		
• Boiler operating temperature max.	°C	90	90	90
• Boiler operating temperature min.			no min. limit	
• Return flow temperature min.			no min. limit	
• Flue gas temperature min. at the boiler			no min. limit	
• Safety temperature limiter setting (water side)	°C	110	110	110
• Operating pressure	bar	5	5	5
• Boiler efficiency at 80/60 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	98.2/92.6	99.0/93.4	98.8/93.2
• Boiler efficiency at 40/30 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	103.4/97.5	104.1/98.2	103.9/98.0
• Boiler efficiency at 30 % partial load (EN 303) (net calorific value NCV/gross calorific value GCV)	%	104.0/98.1	104.9/99.0	104.6/98.7
• Stand-by deficiency qB at 70 °C	Watt	520	600	600
• Combustion gas resistance, 12.5 % CO ₂ , 500 m above sea, level (tolerance +/- 20 %)	mbar	0.67	0.50	0.80
• Flow resistance boiler ¹⁾	z-value	0.1	0.1	0.1
• Water resistance at 10 K	mbar	29.4	46.1	66.3
• Water resistance at 20 K	mbar	7.3	11.5	16.6
• Water flow volume at 10 K	m ³ /h	17.1	21.5	25.8
• Water flow volume at 20 K	m ³ /h	8.6	10.7	12.9
• Boiler water capacity	litres	360	295	295
• Boiler gas volume	m ³	0.290	0.440	0.440
• Insulation thickness boiler body	mm	80	80	80
• Weight (incl. casing, burner)	kg	450	634	634
• Weight of transport	kg	390	534	534
• Electrical power consumption min./max.	Watt	186/500	207/830	226/830
• Standby	Watt	6	6	6
Acoustic power level incl. sound attenuation cowl				
• Ambient air dependent				
- Heating noise (EN 15036 part 1) ²⁾	dB(A)	67	74	75
• Ambient air dependent				
- Exhaust noise in the pipe (EN 15036 part 2) ²⁾	dB(A)	93	87	89
- Flue gas noise radiated from the mouth (DIN 45635 Part 47)	dB(A)	82	75	79
• Condensate rate (heating oil EL) at 40/30 °C	l/h	13.5	16.8	20.2
• pH-value of the condensate	approx.	3.2	3.2	3.2
• Construction type		B23	B23	B23
• Flue gas system				
- Temperature class		T120	T120	T120
- Flue gas mass flow at nominal output 12.5 % CO ₂ heating oil EL	kg/h	315	394	473
- Flue gas temperature at nominal output 80/60 °C	°C	80	67	71
- Maximum supply pressure for supply air and flue gas line	Pa	50	50	50
- Maximum draught/underpressure at flue gas outlet	Pa	-20	-20	-20
• Combustion chamber dimensions Ø inside x length	mm	524 x 1000	624 x 1100	624 x 1100
• Combustion chamber volume	m ³	0.215	0.336	0.336

¹⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z

UltraOil® (110-300) (Dim)



UltraOil® (110-200) UltraOil® (250,300)

- 1 Flow heating/safety flow
- 2 Low temperature return
- 3 High temperature return
- 4 Flue gas outlet (plastic)
- 5 Siphon and 2 m PVC passage
- 6 Cleaning aperture
- 7 Drain
- 8 Electrical connection, optionally left or right
- 9 Boiler controller, optionally left or right
- 10 Condensate drain, optionally left or right
- 11 Base rail
- 12 Maximum pressure limiter
- 13 Safety temperature limiter
- 14 Safety valve connection
- 15 Connection for diaphragm pressure expansion tank

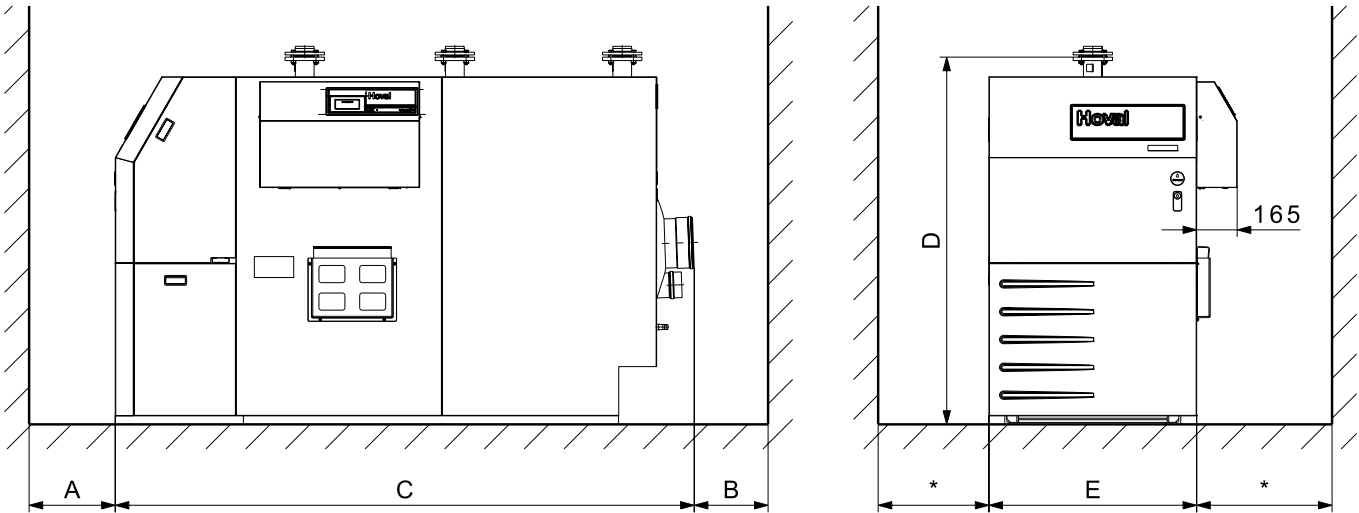
DN 65/PN 6	DN 65/PN 6
DN 65/PN 6	DN 65/PN 6
DN 65/PN 6	DN 65/PN 6
Ø 200/206	Ø252/258
DN 25	DN 25
D19x3	D19x3
D100	D100
R 1"	R 1"
R ¾"	R ¾"
Rp ¾"	Rp ¾"
Rp ½"	Rp ½"
Rp 1 ¼"	Rp 1 ¼"
Rp 1"	Rp 1"

	A	B	C	D	E	F	G	H	I	J
UltraOil® (110-160)	1009	844	715	2200	243	1710	153	490	280	610
UltraOil® (200)	1009	844	715	2408	238	1918	137	490	277	800
UltraOil® (250,300)	1064	899	770	2706	228	2018	135	690	292	888
	K	L	M	N	O	P	Q	R	S	
UltraOil® (110-160)	680	1524	619	756	1412	1492	740	395	290	
UltraOil® (200)	690	1722	619	756	1412	1492	701	356	251	
UltraOil® (250,300)	690	1820	650	797	1483	1602	710	335	230	

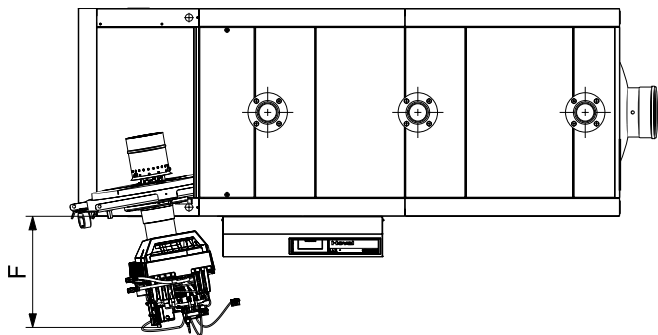
Space requirements

for fitting the side casing 400 mm.
The boiler can then be pushed to a position 100 mm away from the wall.
Allow space for vibration absorber if necessary (see Accessories).

UltraOil® (110-300)
(Dimensions in mm)

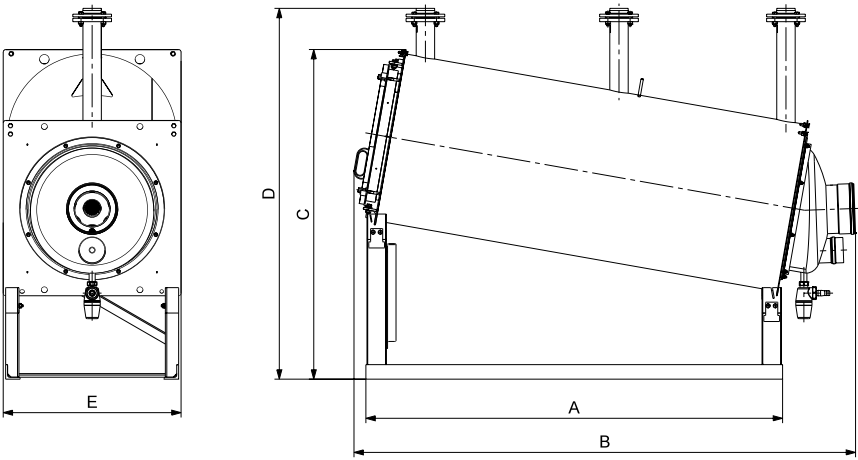


* Important: there must be 700 mm space on the left or right of the boiler so that the boiler door can be swivelled out with the burner.



Type	A	B	C	D	E	F
UltraOil® (110-160)	560	360	2353	1492	845	450
UltraOil® (200)	560	360	2545	1492	845	450
UltraOil® (250,300)	700	480	2841	1602	900	550

Dimensions without thermal insulation and casing
(Dimensions in mm)



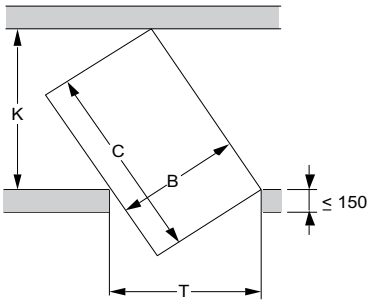
	A	B	C	D	E
UltraOil® (110-160)	1524	1882	1362	1533	735
UltraOil® (200)	1722	2073	1362	1533	735
UltraOil® (250,300)	1820	2174	1434	1642	790

Required minimum width of door and corridor for bringing in the boiler
The following values are the calculated minimum values

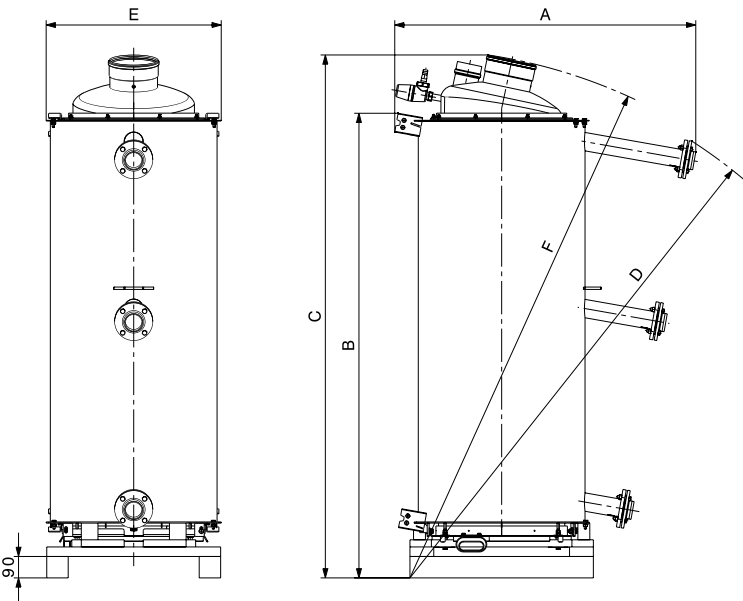
$$K = \frac{B}{T} \times L$$

$$T = \frac{B}{K} \times L$$

- T Door width
- K Corridor width
- B Boiler width
- L Maximum boiler length



Vertical installation in case of space problems
Dimensions without thermal insulation and casing
(Dimensions in mm)



	A	B	C	D	E	F
UltraOil® (110-160)	1230	1751	2000	2002	735	2027
UltraOil® (200)	1264	1951	2195	2182	735	2220
UltraOil® (250,300)	1372	2050	2299	2304	790	2317

Neutralisation setup for UltraOil® (110-300)

(Dimensions in mm)

Neutralisation box type KB 23

Use

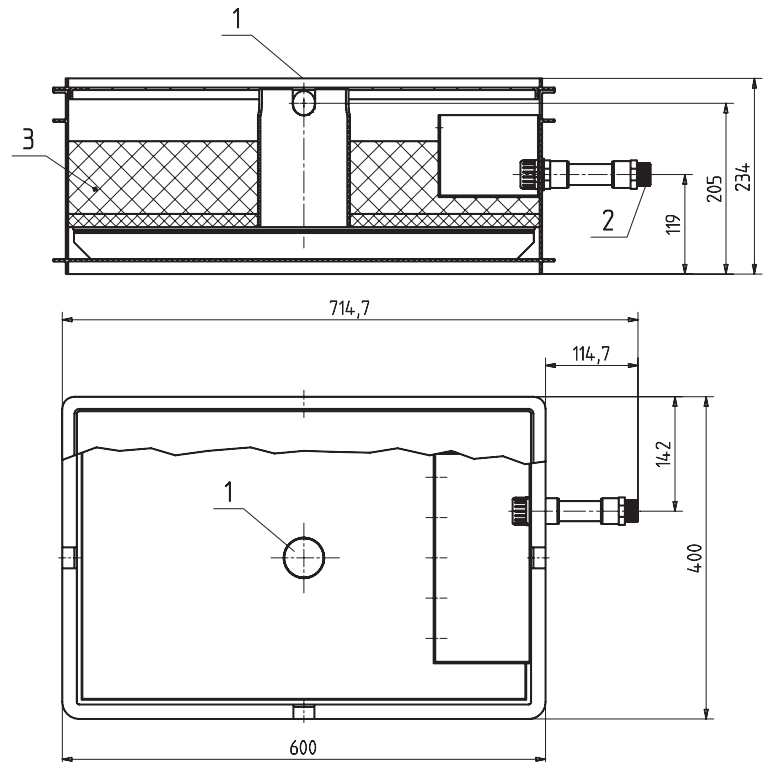
- Condensate discharge into lower drainage duct
- With condensate neutralisation
- Placed under or next to the boiler

Design

- Collecting tank with neutralisation unit
- 12 kg neutralisation granulate
- Connection line from boiler (siphon) to neutralisation box, if the installation location is underneath the boiler

On-site:

- With installation next to the boiler, connection lines from boiler (siphon) to the neutralisation box
- Discharge line from the neutralisation box



- 1 Condensate inlet from the boiler
- 2 Exit R 3/4"
- 3 Condensate tank with 12 kg granulate

Neutralisation box with pump type KB 24

Use:

- Condensate discharge into higher drainage duct
- With condensate pump, delivery head 3.5 m
- With condensate neutralisation, 12 kg granulate
- Placed under or next to the boiler.

Design

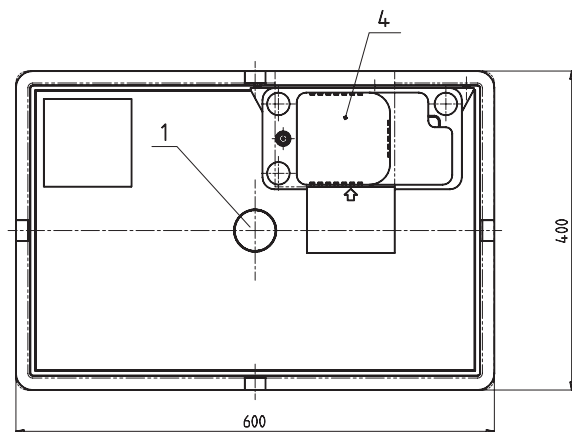
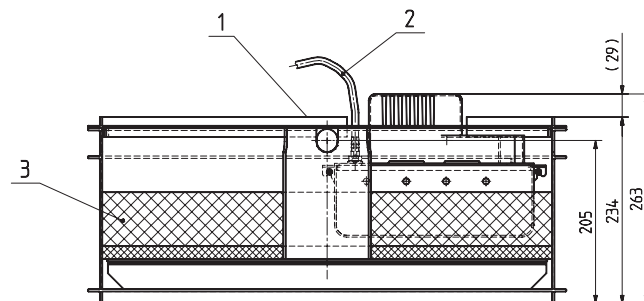
- Collecting tank with feed pump and neutralisation unit
- 12 kg neutralisation granulate
- Delivery head of the pump max. 3.5 m (2 dm³/min.)
- Silicone hose Ø 9/13 mm, length 4 m
- Electrical cable length 1.5 m with plug for connecting to boiler electrical panel if installation location is below boiler
- Plastic connection line Ø 25 mm, from boiler (siphon) to neutralisation box, if the installation location is underneath the boiler.

On-site:

- Discharge duct, if silicone hose too short.

For installation next to the boiler:

- Connection lines from boiler (siphon) to the neutralisation box
- Electrical connection from feed pump to electrical panel if supplied cable is too short.



- 1 Condensate inlet from the boiler
- 2 Outlet from pump, silicone hose Ø 9/13 mm, length 4 m
- 3 Condensate tank with 12 kg granulate (KB 24)
- 4 Condensate pump

Condensate box with pump type KB 22

Use:

- Condensate discharge into higher drainage duct
- With condensate pump, delivery height 3.5 m
- Placed under or next to the boiler.

Design

Design as for KB 24, but **without** neutralisation granulate.

Standards and guidelines

The official regulations for installation and operation must be observed. In particular, these are the country-specific standards (e.g. EN standard, DIN standards, ...) as well as the corresponding regional regulations.

The following requirements and directives must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- DIN EN 12828
Safety-relevant requirements
- DIN EN 12831 Heaters
Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- EN 14868 "Protection of metallic materials against corrosion"
- VDE 0100 supplement 2

Water quality in heating systems

Filling an replacement water heating water

The following applies:

- VDI 2035
- In addition, the EN 14868 standard must be applied, **as well as the manufacturer specifications**

Manufacturer specifications

Filling and replacement water

The filling and replacement water can be both fully demineralised and also merely softened.

Heating water

- In the case of **full demineralisation of the filling an replacement water**, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.
- In the case of **softening the filling an replacement water**, the following conditions must be complied with:
 - For an installed heat output above 100 kW up to and including 1000 kW, an annual check of the heating water is required.The following standard values for the heating water must be measured and adhered to:
 - Electrical conductivity of the heating water for operation with water containing salts:
> 100 µS/cm to ≤ 1500 µS/cm
 - pH value of the heating water for systems without aluminium alloy as water-side material 8.2 to 10.0 (measurement 10 weeks after commissioning at the earliest)
- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

Additional notices

- Hoval boilers and calorifiers are suitable for heating systems without significant oxygen intake. (System type I according to EN 14868).
- Systems with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up) must be equipped with a system separation.
- If only the boiler is replaced in an existing system, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The boiler must not be filled until the heating system has been flushed.

Frost protection agent

The planning sheet "Use of frost protection agent" is available from your Hoval contact person.

Combustion air

The combustion air supply must be guaranteed. Ensure that the air intake can not be closed or blocked. It is very important to ensure that the combustion air is free from halogen compounds. These are present, for example, in spray cans, varnishes, glues, solvents and cleansing agents.

Ambient air dependent operation:

- Minimum free cross-section for the air opening can be assumed as follows by way of simplification. Nominal heat output is the determining factor!
- A minimum free cross-section of once 150 cm² or twice 75 cm² and an additional 2 cm² for each kW boiler capacity in excess of 50 kW is required for the air opening into the outside air.

Oil burner mounting

- The standard burner plug connection must be positioned in the opposite direction to the swivelling direction of the boiler door.
- The space between the combustion pipe and the boiler door must be filled with the insulation material supplied.

Electric connection of the burner

- Mains connection 1 x 230 V, 50 Hz, 10 A
- The burner must be connected to the standard plug connection of the boiler.
- The burner cable must be shortened so that the plug-in connection has to be parted to swing out the burner.

Sound absorption

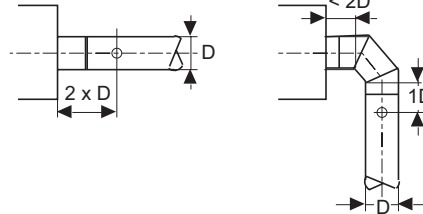
Sound absorption is possible through the following steps:

- Make boiler room walls, ceiling and floor as thick as possible, install a silencer in the intake air opening, provide carriers and brackets for the pipes with noise insulation.
- If there are living areas above or below the boiler room, install rubber vibration dampers under the base rails of the boiler.
- Connect circulating pumps to the piping network using expansion joints.
- To dampen the flame noise in the chimney, silencers can be installed in the connection tube (possibly leave space for later installation).

Flue gas system

- The flue gas system must be made by an examined and certified flue gas line.
- The flue gas line must be certified gas-tight, humidity-insensitively, corrosion and acid-proof as well as for flue gas temperatures up to 120 °C.
- The flue gas system must be suitable for the operation with over-pressure.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas line is to be laid with upward gradient, so that the resulting condensate of the flue gas system flows back into the boiler so that before deriving into drains it can be neutralised.
- When using flue gas lines made of plastic a flue gas safety temperature limiter must be inserted (included in the boiler scope of delivery).

- In the connection pipe has to be integrated a closable flue gas measurement nozzle with circular inner diameter of 10-21 mm. The socket has to be led over the thermal insulation.



Connecting pipes

Horizontal connecting pipes must be installed with an inclination of at least 50 mm per metre of their length installed in the direction of the boiler to allow free return of condensation water towards the boiler. The whole flue gas system must be installed so that condensate can never collect at any point.

Maximum flue gas pipe lengths according to examples Chimney connection and flue gas pipe in chimney stack

Flue gas pipe dimensions

Boiler		Smooth-walled flue gas line	90° bends ¹⁾			
UltraOil®	Flue gas dim.		flue gas	supply air	Total pipe length in m (flue gas + supply air)	
type	int.	Designation	1	2	3	4 ²⁾
(110)	200	130 ³⁾	22	21	19	18
(110)	200	150 ³⁾	40	40	40	40
(130)	200		30	30	30	30
(160)	200		23	21	19	17
(110)	200	200 ⁴⁾	50	50	50	50
(130)	200		50	50	50	50
(160)	200		50	50	50	50
(200)	200		38	36	34	32
(250)	250	250	50	50	50	-
(300)	250	250	50	50	50	-

¹⁾ Two 45° bends should be used instead of a 90° bend

²⁾ If there are 4 bends or more, the delivery pressure for the supply air/flue gas line must be reduced by 30 % for the calculation and an exact design of the flue gas line is necessary.

³⁾ Flue gas pipe systems DN 130, DN 150:

A 90° bend or a reduction is not permitted directly after the flue gas connection of the boiler.

From the flue gas connection to the first bend or reduction, the flue gas pipe must be configured in the same dimension as the flue gas connection over a length of at least 0.5 m.

⁴⁾ Flue gas pipe system DN 200:

The vertical length of the flue gas pipe system DN 200 must not exceed 25 m due to the weight load on the support arch.

Notices

- The data contained in the table represents guide values at maximum output. An exact calculation for the flue gas line must be made on site.
- The diameters given in the dimensioning tables must not be undershot.

Sound power

The sound power level is independent of local and spatial influences.

The sound **pressure** level depends on installation conditions and can, for example, be 10 to 15 dB(A) lower than the sound **power** level at a distance of 1 m.

Recommendation:

If the air inlet at the facade is near a noise sensitive place (window of bedroom, terrace etc.), we recommend to use a sound absorber at the direct combustion air inlet.

Condensate drain

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority.
- The condensate from the flue gas system can be discharged via the boiler. A condensate trap is no longer needed in the flue gas duct system.
- A siphon must be installed on the condensate drain of the oil-fired condensing boiler (included in the boiler scope of delivery).
- Suitable materials for condensate drain:
 - Stoneware pipes
 - Pipes made from PVC
 - Pipes made from polyethylene (PE)
 - Pipes made from ABS or ASA
- The commercial system operator must inform the sewer operator if the exhaust gas condensate is discharged into the sewer system.

Installation instructions

Please observe the installation instructions supplied with every boiler.

Heating system renovation notice

If an existing oil heating installation is replaced by Hoval UltraOil®, the following instructions regarding the oil tank and its refilling must be observed:

- The Hoval UltraOil® is only allowed to be operated with heating oil EL low-sulphur with sulphur content < 50 ppm (< 0.005 %).

- It is recommended to clean the oil tank before refilling it.
- A residual amount of heating oil EL in the oil tank may be mixed with heating oil EL low-sulphur, provided that the residual amount does not exceed the following values of the total content.
 - Residual quantity of heating oil EL (sulphur content: 2000 ppm or 0.2 %) max. 3 % of tank volume
 - Residual amount heating oil EL (sulphur content: 1000 ppm or 0.1 %) max. 5 % of tank volume
 - Residual amount heating oil EL (sulphur content: 500 ppm or 0.05 %) max. 10 % of tank volume
- In order to reach the permissible mixture ratio with heating oil EL low-sulphur taking account of the residual amount of heating oil in the oil tank, a 100 % tank filling is necessary.

Oil line installation

- The Hoval UltraOil® is only allowed to be connected to 1-section oil lines. Max. suction height without intermediate pump 3.5 m, maximum line length 30 m.
- The lines must be positioned so that the boiler door can still be fully opened.
- A shut-off element must be installed before the flexible oil lines at the end of the rigid oil line (already installed in the "Oventrop filter").
- A single line fine filter with return feed must be installed before the burner (e.g. "Oventrop" type).
- The highest point on the oil line is allowed to be max. 3.5 m above the tank suction line.
- Product pipelines must be installed in such a way that no liquid can emerge independently (rise) from the container.
- If the highest point of the oil level in the oil tank is higher than the lowest point in the removal line, it is necessary to install a solenoid valve at the highest point in the oil line as close as possible to the oil tank.
- In the case of systems with several oil-fired boilers, the oil supply to the boilers must be ensured in all operating states, e.g. provide an independent connection line to the oil tank for each boiler.

One pipe oil lines

Line diameter Ø inside 6 mm, max. permissible line length in m

Suction height H in m	UltraOil®					
	(110)	(130)	(160)	(200)	(250)	(300)
0	30	30	30	26	21	17
1	30	30	26	20	15	12
2	28	25	18	14	10	8

This line sizing table provides indicative values for:

Low-sulphur heating oil EL or low-sulphur mixed heating oil EL with max. 15 % FAME (ecological heating oil) content, oil temperature > 10 °C (indoor tank) up to 700 m above sea level, 1 filter, 1 valve, 6 elbows 90° (40 mbar).

Pipe systems that are oversized can lead to operational disturbance!

For this reason, in case of boiler exchange the pipe dimensioning table must be observed!

Diaphragm pressure expansion tank

- Ideally, the diaphragm pressure expansion tank should be connected to the heating system as described in our example applications, with a removable or sealable actuation device. This means that it is not necessary to drain the entire system in order to carry out work on the diaphragm pressure expansion tank.

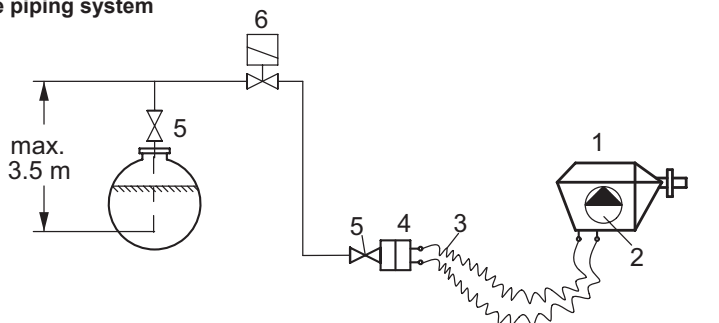
Safety valve

- A safety valve and an automatic air vent must be installed in the safety flow.

Systems with one return

- In systems with one return, the return must always be connected to the low-temperature return of the boiler. An air vent must be fitted on the high-temperature return.

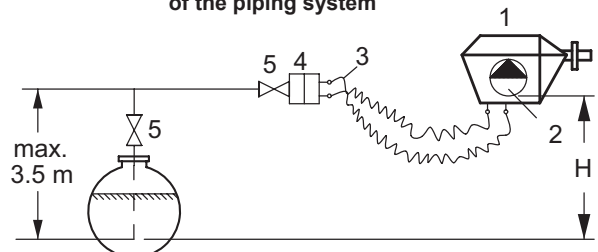
Max. oil level higher than the lowest point of the piping system



- Hoval-burner for 1-line connection with return flow
- Oil pump

- Oil hoses on the burner
- Fine filter with return feed with sintered plastic insert 50-75 µm

Max. oil level lower than the lowest point of the piping system



- Shut-off valve
- Solenoid valve
- H = Suction height [m]

Looking for the appropriate hydraulic schematic?
Please contact your local Hoval partner.

Hoval UltraOil® (320D-600D)

Oil-fired condensing boiler for ecological heating oil EL low-sulphur

Boiler

- Oil condensing boiler according to EN 303 part 1 and 2 and EN 15034. Double boiler consisting of two single boilers (UltraOil® 160, 200, 250, 300 kW)
- For the combustion of:
 - heating oil EL sulphur-free according to ÖNORM C1109 with sulphur content < 10 ppm
 - heating oil EL low-sulphur according to DIN 51603-1 with sulphur content < 50 ppm
 - paraffinic fuels (HVO, XtL) according to DIN EN 51603-8
- Boiler made of steel with condensation design
- Components that come into contact with flue gas and condensate are made from high-alloyed stainless steel

Maximum flue gas condensation by heating surfaces made of aluFer® composite pipe;
Flue gas side: aluminium
Water side: stainless steel
- No lower delimitation of the boiler water temperature and the boiler return temperature
- No minimal water circulation necessary
- Boiler door swivelling to the front right, swivelling to the left by conversion on the system
- Insulation at the boiler body: 80 mm mineral wool mat and glass fabric
- Casing made of steel sheet, red powder coated, delivered separately packed
- Flue outlet at the back upwards
- Heating connections at top incl. counterflange, bolts and seals for:
 - flow
 - return - high temperature
 - return - low temperature
- Sound absorbing/thermal insulation hood
- Water pressure sensor:
 - Fulfills the function of a minimum and maximum pressure limiter
 - Replacement for the water shortage
- Flue gas temperature monitoring (installation on site)
- Cleaning set comprising scraper and implement holder (included in the scope of delivery)
- Each individual boiler is supplied with a Hoval TopTronic® E control

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function



Model range

UltraOil®	Max. - min. output 40/30 °C
type	kW
(320D)	119-320
(400D)	155-400
(500D)	189-500
(600D)	227-600

- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module heat generator TTE-WEZ

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat balancing or
 - module expansion Universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the heat generator (per single boiler):

- 1 module expansion and 2 controller modules
- or
- 1 controller module and 2 module expansions
- or
- 3 controller modules

The supplementary plug set must be ordered in order to use expanded controller functions.

Oil automatic function device OFA

- Control function integrated for
 - flue gas sensor for safety shut-off
 - 0-10 V output for connecting a modulating main pump (incl. ΔT control with low consumption)
 - Standard plug connection for 2-stage burner 1 x 230 V
 - Variable input for plant-specific functions (heat generator block, return sensor, info sensor etc.)
 - Variable output for plant-specific functions (thermostat function, operating message, etc.)

Further information about the TopTronic® E
see "Controls"

Oil burner

- Fully automatic 2-stage pressure atomizer burner (blue burner)
- Air termination flap
- Fan follow-on time
- Completely wired up with 7+4-pin standard plug connection 1 x 230 V
- The oil burner is checked at the factory according to factory setting ≤ 1000 m above sea level. Higher altitudes result in a power reduction of 1.2 % per 100 m

Optional

- Free-standing calorifier, see Calorifiers
- Flue gas systems
- Installation transport set for conditions of restricted access

Delivery

- 2 boilers, casing with thermal insulation, front casing panel, oil burner and 2 TopTronic® E controls are delivered separately packed.

On site

- Installation of thermal insulation, casing, boiler control panel
- Installation of the flue gas connection line with the flue gas flap
- Installation of the hydraulic connection set (option)

Heating armature groups and wall distributors

see "Various system components"

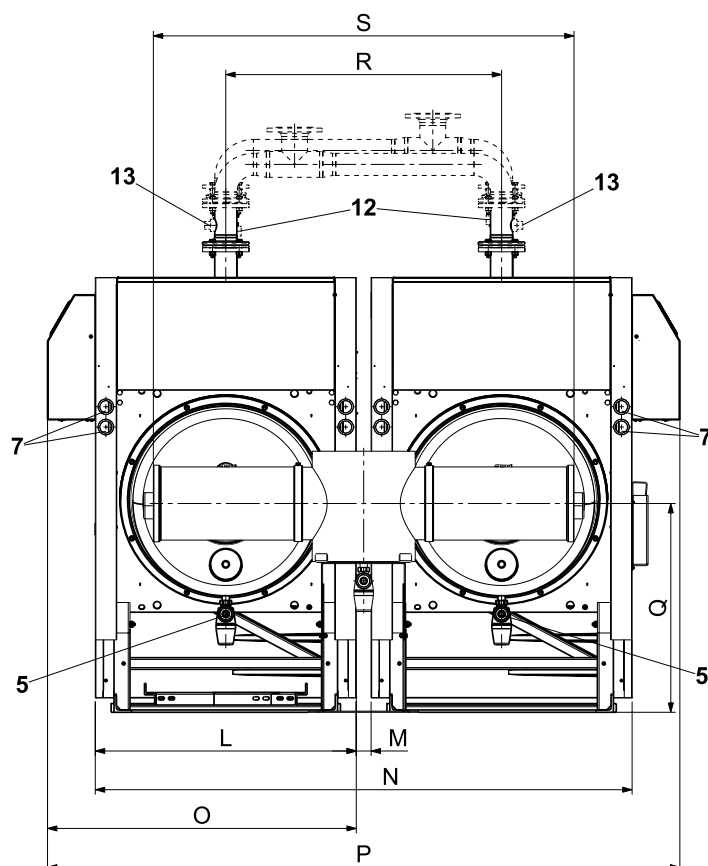
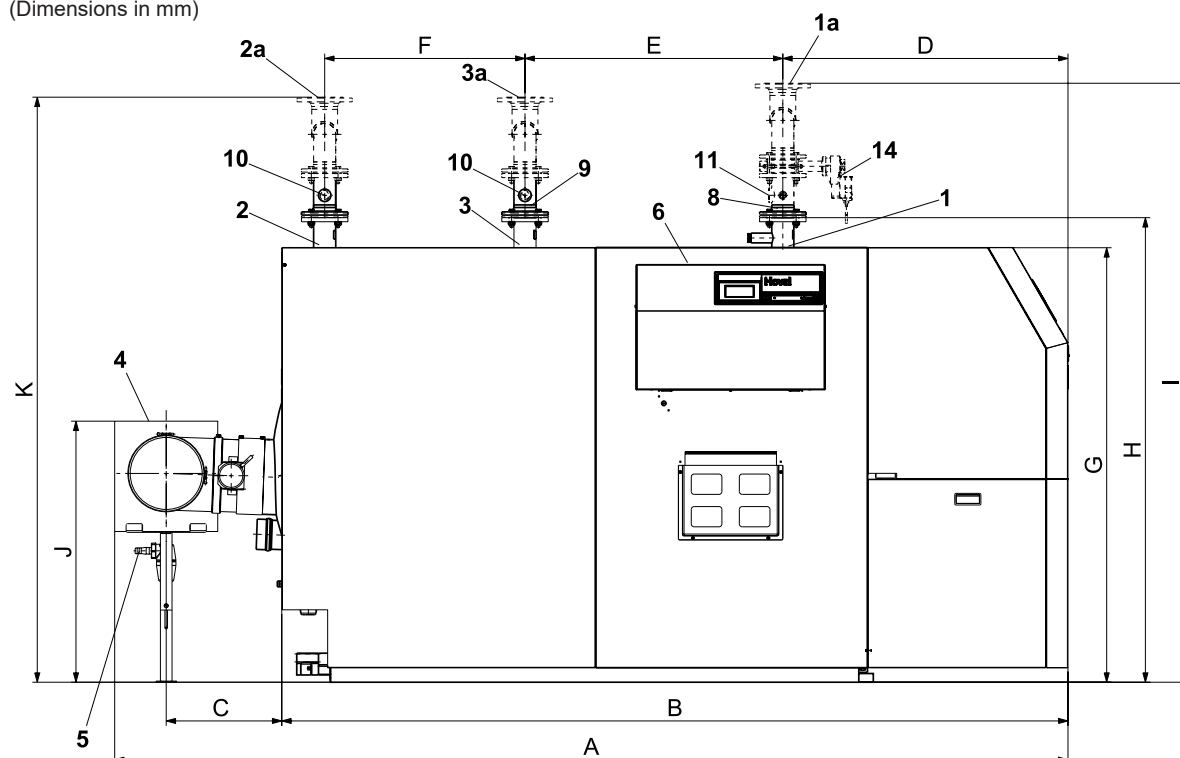
UltraOil® (320D-600D)

Type		(320D)	(400D)	(500D)	(600D)
• Nominal output 80/60 °C	kW	304	380	476	572
• Nominal output 40/30 °C	kW	320	400	500	600
• Max. - min. output 80/60 °C	kW	114-304	147-380	180-476	215-572
• Max. - min. output 40/30 °C	kW	119-320	155-400	189-500	227-600
• Heat input	kW	115-309	150-388	182-482	218-580
• Dimensions		see Dimensions			
• Boiler operating temperature max.	°C	90	90	90	90
• Boiler operating temperature min.			no min. limit		
• Return flow temperature min.			no min. limit		
• Flue gas temperature min. at the boiler			no min. limit		
• Safety temperature limiter setting (water side)	°C	110	110	110	110
• Operating pressure	bar	5	5	5	5
• Boiler efficiency at 80/60 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	98.7/93.1	98.2/92.6	99.0/93.4	98.6/93.0
• Boiler efficiency at 40/30 °C in full-load operation (net calorific value NCV/gross calorific value GCV)	%	103.9/98.0	103.4/97.5	104.1/98.2	103.9/98.0
• Boiler efficiency at 30 % partial load (EN 303) (net calorific value NCV/gross calorific value GCV)	%	104.5/98.6	104.0/98.1	104.9/99.0	104.6/98.7
• Stand-by deficiency qB at 70 °C	Watt	1000	1040	1200	1200
• Combustion gas resistance, 12.5 % CO ₂ , 500 m above sea, level (tolerance +/- 20 %)	mbar	0.45	0.67	0.49	1
• Flow resistance boiler ¹⁾	z-value	0.1	0.1	0.1	0
• Water resistance at 10 K	mbar	75.2	117.6	183.7	265
• Water resistance at 20 K	mbar	18.8	29.4	45.9	66
• Water flow volume at 10 K	m ³ /h	27.4	34.3	42.9	51
• Water flow volume at 20 K	m ³ /h	13.7	17.1	21.4	26
• Boiler water capacity	litres	680	720	590	590
• Boiler gas volume	m ³	0.347	0.290	0.440	0
• Insulation thickness boiler body	mm	80	80	80	80
• Weight (incl. casing, burner)	kg	840	900	1268	1268
• Weight of transport	kg	740	780	1068	1068
• Electrical power consumption min./max.	Watt	233/740	260/1100	289/1660	315/1660
• Standby	Watt	6	6	6	6
Acoustic power level incl. sound attenuation cowl					
• Ambient air dependent					
- Heating noise (EN 15036 part 1) ²⁾	dB(A)	72	73	79	78
• Ambient air dependent					
- Exhaust noise in the pipe (EN 15036 part 2) ²⁾	dB(A)	90	90	89	88
- Flue gas noise radiated from the mouth (DIN 45635 Part 47)	dB(A)	-	-	-	-
• Condensate rate (heating oil EL) at 40/30 °C	l/h	21.6	27.0	20.2	20
• pH-value of the condensate	approx.	3.2	3.2	3.2	3
• Construction type		B23	B23	B23	B23
• Flue gas system					
- Temperature class		T120	T120	T120	T120
- Flue gas mass flow at nominal output 12.5 % CO ₂ heating oil EL	kg/h	504	730	784	945
- Flue gas temperature at nominal output 80/60 °C	°C	75	80	67	70
- Maximum supply pressure for supply air and flue gas line	Pa	40	25	25	25
- Maximum draught/underpressure at flue gas outlet	Pa	-20	-20	-20	-20
• Combustion chamber dimensions Ø inside x length	mm	524 x 800	524 x 1000	624 x 1100	624 x 1100
• Combustion chamber volume	m ³	0.173	0.216	0.336	0

¹⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z

²⁾ Acoustic values with nominal output of both boilers

UltraOil® (320D-600D) (Dimensions in mm)

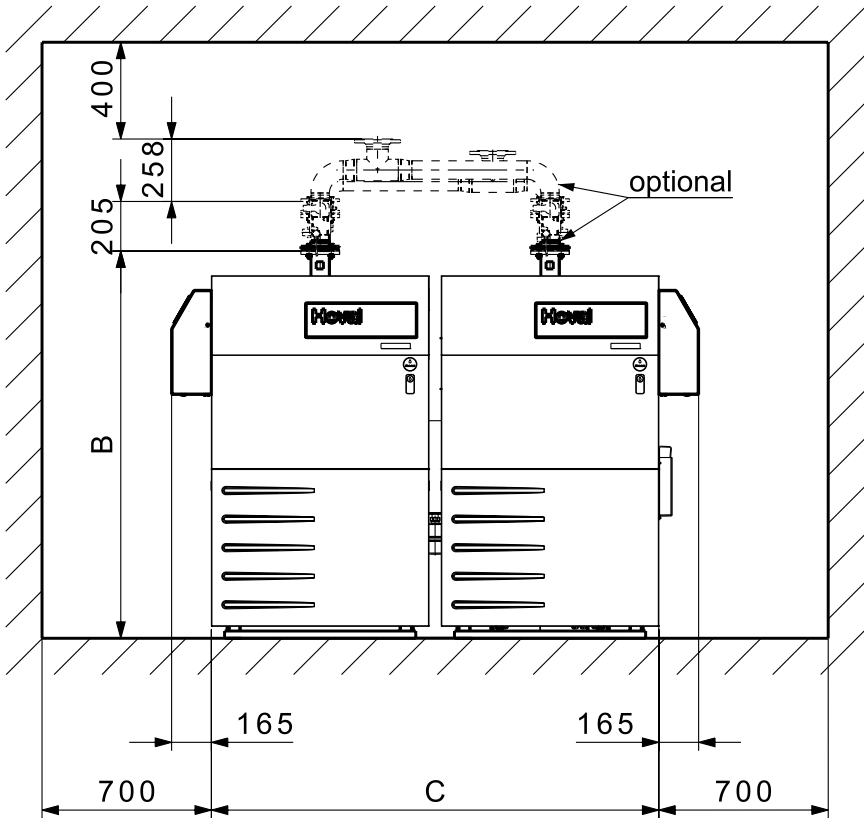
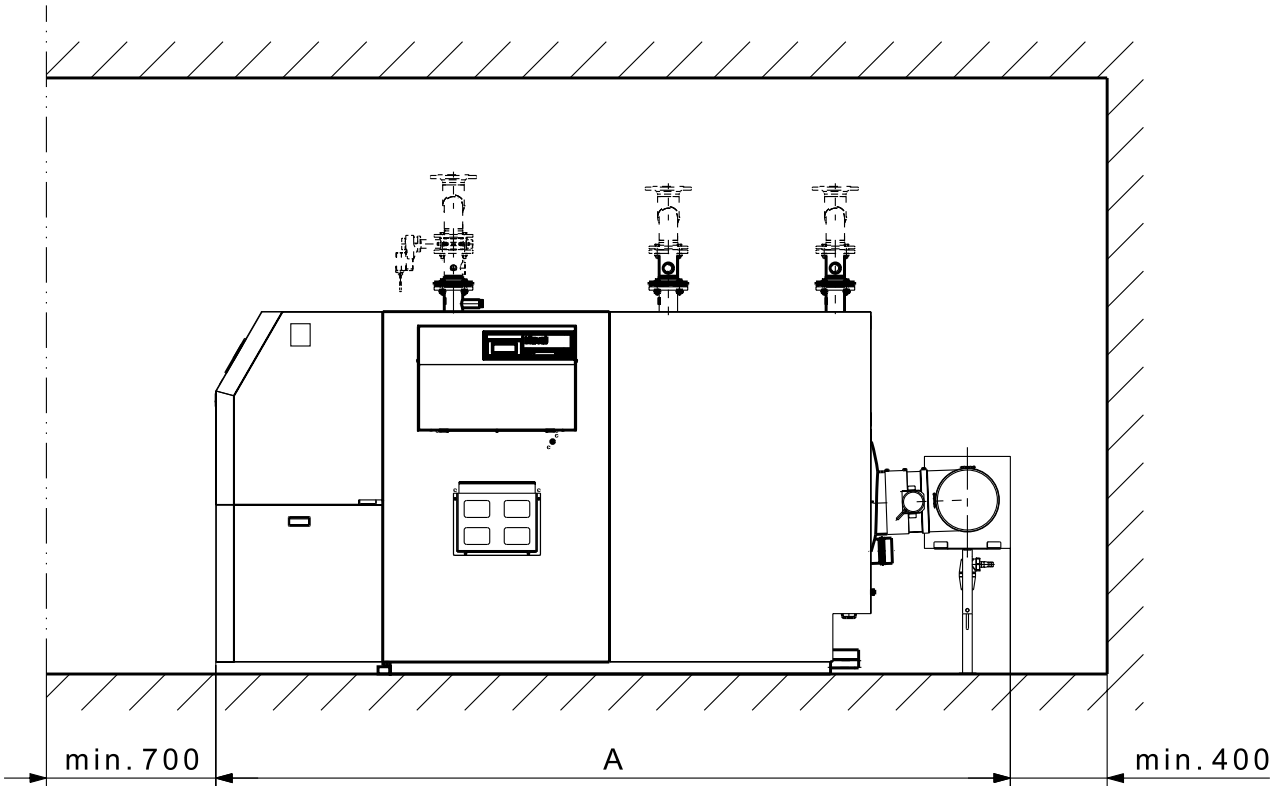


- | | | |
|----|--|------------|
| 1 | Flow/safety flow | DN 65/PN 6 |
| 1a | Flow connection set (option) | DN 80/PN 6 |
| 2 | Low-temperature return | DN 65/PN 6 |
| 2a | Low-temperature return connection set (option) | DN 80/PN 6 |
| 3 | High-temperature return | DN 65/PN 6 |
| 3a | High-temperature return connection set (option) | DN 80/PN 6 |
| 4 | Flue gas outlet (320D,400D) | Ø 305/315 |
| 4 | Flue gas outlet (500D,600D) | Ø 350/352 |
| 5 | Condensate drain/siphon | DN 25 |
| 6 | Control panel | |
| 7 | Electrical connection on the left or right hand side | |
| 8 | Fitting pipe flow (option) | |
| 9 | Fitting pipe return (option) | |
| 10 | Connection for diaphragm pressure expansion tank | Rp 1" |
| 11 | Safety valve connection | Rp 1 1/4" |
| 12 | Maximum pressure limiter | Rp 3/4" |
| 13 | Safety temperature limiter | Rp 1/2" |
| 14 | Motor shut-off flap valve | |

UltraOil® type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
(320D)	2709	2200	252	770	610	680	1412	1492	1955	889	1907	844	106	1794	1009	2123	709	950	1305
(400D)	2901	2408	236	767	800	690	1412	1492	1955	889	1907	844	106	1794	1009	2123	709	950	1305
(500D,600D)	3284	2708	398	982	888	690	1483	1600	2063	899	2015	899	51	1849	1064	2278	719	950	1449

Space requirements
(Dimensions in mm)

UltraOil® (320D-600D)



UltraOil® type	A	B	C
(320D)	2709	1492	1794
(400D)	2901	1492	1794
(500D,600D)	3284	1600	1849

Detailed dimensions and dimensions for installation
see single boiler UltraOil® (160-300)

Dimensions neutralisation unit
see single boiler UltraOil® (160-300)

Standards and guidelines

The official regulations for installation and operation must be observed. In particular, these are the country-specific standards (e.g. EN standard, DIN standards, ...) as well as the corresponding regional regulations.

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- Hoval technical information and installation instructions
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- VDE 0100 supplement 2

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- In the case of **full demineralisation of the filling and replacement water**, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.
- In the case of **softening the filling and replacement water**, the following conditions must be complied with:
 - For an installed heat output above 100 kW up to and including 1000 kW, an annual check of the heating water is required.

The following standard values for the heating water must be measured and adhered to:

 - Electrical conductivity of the heating water for operation with water containing salts: > 100 µS/cm to ≤ 1500 µS/cm
 - pH value of the heating water for systems without aluminium alloy as water-side material 8.2 to 10.0 (measurement 10 weeks after commissioning at the earliest)
- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

Additional notices

- Hoval boilers and calorifiers are suitable for heating systems without significant oxygen intake. (System type I according to EN 14868).
- Systems with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up) must be equipped with a system separation.
- If only the boiler is replaced in an existing system, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The boiler must not be filled until the heating system has been flushed.

Frost protection agent

The planning sheet "Use of frost protection agent" is available from your Hoval contact person.

Combustion air

The combustion air supply must be guaranteed. Ensure that the air intake can not be closed or blocked. It is very important to ensure that the combustion air is free from halogen compounds. These are present, for example, in spray cans, varnishes, glues, solvents and cleansing agents.

Ambient air dependent operation:

- Minimum free cross-section for the air opening can be assumed as follows by way of simplification. Nominal heat output is the determining factor!
- A minimum free cross-section of once 150 cm² or twice 75 cm² and an additional 2 cm² for each kW boiler capacity in excess of 50 kW is required for the air opening into the outside air.

Oil burner mounting

- The standard burner plug connection must be positioned in the opposite direction to the swivelling direction of the boiler door.
- The space between the combustion pipe and the boiler door must be filled with the insulation material supplied.

Electric connection of the burner

- Mains connection 1 x 230 V, 50 Hz, 10 A
- The burner must be connected to the standard plug connection of the boiler.
- The burner cable must be shortened so that the plug-in connection has to be parted to swing out the burner.

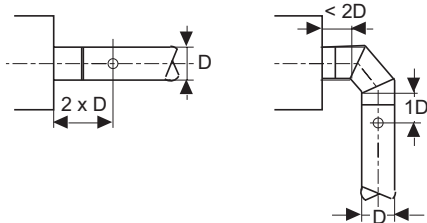
Sound absorption

Sound absorption is possible through the following steps:

- Make boiler room walls, ceiling and floor as thick as possible, install a silencer in the intake air opening, provide carriers and brackets for the pipes with noise insulation.
- If there are living areas above or below the boiler room, install rubber vibration dampers under the base rails of the boiler.
- Connect circulating pumps to the piping network using expansion joints.
- To dampen the flame noise in the chimney, silencers can be installed in the connection tube (possibly leave space for later installation).

Flue gas system

- The flue gas system must be made by an examined and certified flue gas line.
- The flue gas line must be certified gas-tight, humidity-insensitively, corrosion and acid-proof as well as for flue gas temperatures up to 120 °C.
- The flue gas system must be suitable for the operation with over-pressure.
- The flue gas lines must be secured against unwanted loosening of the plug connections.
- The flue gas line is to be laid with upward gradient, so that the resulting condensate of the flue gas system flows back into the boiler so that before deriving into drains it can be neutralised.
- When using flue gas lines made of plastic a flue gas safety temperature limiter must be inserted (included in the boiler scope of delivery).
- In the connection pipe has to be integrated a closable flue gas measurement nozzle with circular inner diameter of 10-21 mm. The socket has to be led over the thermal insulation.



Flue gas pipe dimensions

Table with bases for calculation

- Calculation based on max. 1000 m above sea level.

- The first 2 m of the flue gas line must be configured with the same dimension as the flue gas connector, after which the size of the flue gas system can be selected according to the table below.

Connecting pipes

Horizontal connecting pipes must be installed with an inclination of at least 50 mm per metre of their length installed in the direction of the boiler to allow free return of condensation water towards the boiler. The whole flue gas system must be installed so that condensate can never collect at any point.

Boiler UltraOil® type	Flue gas dim. int.	Smooth-walled flue gas line Designation DN	90° bends ¹⁾ flue gas supply air		
			Total pipe length in m (flue gas + supply air)		
			1	2	3
(320D)	305	300	50	50	50
(400D)	305	300	50	50	50
(500D)	350	350	50	50	50
(600D)	350	350	50	50	50

¹⁾ Two 45° bends should be used instead of a 90° bend

Notice: The data contained in the table "flue gas line dimensions" represents guide values.
An exact calculation for the flue gas line must be made on site.

With total pipe lengths exceeding 50 m, a separate calculation is necessary.

Sound power

The sound power level is independent of local and spatial influences.

The sound **pressure** level depends on installation conditions and can, for example, be 10 to 15 dB(A) lower than the sound **power** level at a distance of 1 m.

Recommendation:

If the air inlet at the facade is near a noise sensitive place (window of bedroom, terrace etc.), we recommend to use a sound absorber at the direct combustion air inlet.

Condensate drain

- A permit for discharge of the flue gas condensate into the sewage system must be obtained from the relevant authority.
- The condensate from the flue gas system can be discharged via the boiler. A condensate trap is no longer needed in the flue gas duct system.
- A siphon must be installed on the condensate drain of the oil-fired condensing boiler (included in the boiler scope of delivery).
- Suitable materials for condensate drain:
 - Stoneware pipes
 - Pipes made from PVC
 - Pipes made from polyethylene (PE)
 - Pipes made from ABS or ASA
- The commercial system operator must inform the sewer operator if the exhaust gas condensate is discharged into the sewer system.

Installation instructions

Please observe the installation instructions supplied with every boiler.

Heating system renovation notice

If an existing oil heating installation is replaced by Hoval UltraOil®, the following instructions regarding the oil tank and its refilling must be observed:

- The Hoval UltraOil® is only allowed to be operated with heating oil EL low-sulphur with sulphur content < 50 ppm (< 0.005 %).
- It is recommended to clean the oil tank before refilling it.

- A residual amount of heating oil EL in the oil tank may be mixed with heating oil EL low-sulphur, provided that the residual amount does not exceed the following values of the total content.
- Residual quantity of heating oil EL (sulphur content: 2000 ppm or 0.2 %) max. 3 % of tank volume
Residual amount heating oil EL (sulphur content: 1000 ppm or 0.1 %) max. 5 % of tank volume
Residual amount heating oil EL (sulphur content: 500 ppm or 0.05 %) max. 10 % of tank volume
- In order to reach the permissible mixture ratio with heating oil EL low-sulphur taking account of the residual amount of heating oil in the oil tank, a 100 % tank filling is necessary.

Oil line installation

- The Hoval UltraOil® is only allowed to be connected to 1-section oil lines. Max. suction height without intermediate pump 3.5 m, maximum line length 30 m.
- The lines must be positioned so that the boiler door can still be fully opened.
- A shut-off element must be installed before the flexible oil lines at the end of the rigid oil line (already installed in the "Oventrop filter").
- A single line fine filter with return feed must be installed before the burner (e.g. "Oventrop" type).
- The highest point on the oil line is allowed to be max. 3.5 m above the tank suction line.
- Product pipelines must be installed in such a way that no liquid can emerge independently (rise) from the container.
- If the highest point of the oil level in the oil tank is higher than the lowest point in the removal line, it is necessary to install a solenoid valve at the highest point in the oil line as close as possible to the oil tank.
- In the case of systems with several oil-fired boilers, the oil supply to the boilers must be ensured in all operating states, e.g. provide an independent connection line to the oil tank for each boiler.

One pipe oil lines

Line diameter Ø inside 6 mm,
max. permissible line length in m

Suction height H in m	UltraOil® (110)	(130)	(160)	(200)	(250)	(300)
0	30	30	30	26	21	17
1	30	30	26	20	15	12
2	28	25	18	14	10	8

This line sizing table provides indicative values for:

Low-sulphur heating oil EL or low-sulphur mixed heating oil EL with max. 15 % FAME (ecological heating oil) content, oil temperature > 10 °C (indoor tank) up to 700 m above sea level, 1 filter, 1 valve, 6 elbows 90° (40 mbar).

Pipe systems that are oversized can lead to operational disturbance!

For this reason, in case of boiler exchange the pipe dimensioning table must be observed!

Diaphragm pressure expansion tank

- Ideally, the diaphragm pressure expansion tank should be connected to the heating system as described in our example applications, with a removable or sealable actuation device. This means that it is not necessary to drain the entire system in order to carry out work on the diaphragm pressure expansion tank.

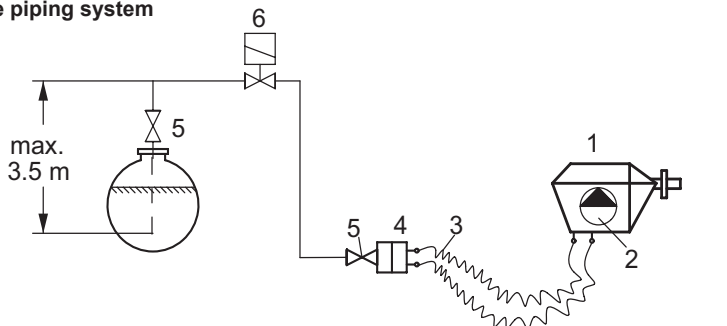
Safety valve

- A safety valve and an automatic air vent must be installed in the safety flow.

Systems with one return

- In systems with one return, the return must always be connected to the low-temperature return of the boiler. An air vent must be fitted on the high-temperature return.

Max. oil level higher than the lowest point of the piping system

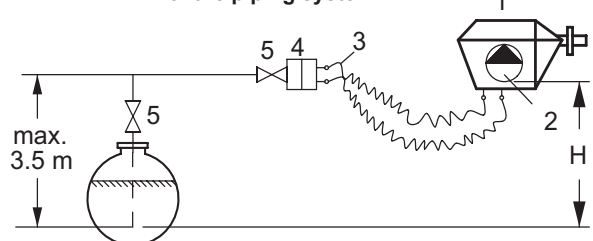


- Hoval-burner for 1-line connection with return flow
- Oil pump

- Oil hoses on the burner
- Fine filter with return feed with nickel strainer insert 100-150 µm

- Shut-off valve
 - Solenoid valve
- H = Suction height [m]

Max. oil level lower than the lowest point of the piping system



Looking for the appropriate hydraulic schematic?
Please contact your local Hoval partner.

High Efficiency Boilers

High fire efficiency and low Nox emissions

Hoval's Max-3 plus boiler is a powerful and efficient solution for medium to large commercial buildings, industrial applications, and district heating networks. With a thermal output range of 420–2700kW, this three-pass boiler delivers outstanding performance while keeping operating costs low. The advanced design maximizes heat transfer and ensures a full-load boiler efficiency of over 95%, making it an economical and environmentally friendly choice for heating, hot water generation, and process heat.

Designed for use with gas, oil, or dual-fuel burners, the Max-3 plus offers versatility and compliance with Low NOx regulations. The dimpled tubes and additional retarders enhance heat exchange efficiency, while the robust

construction supports maximum operating temperatures of 105°C and working pressures of up to 6 bar. Whether for new-build projects or system upgrades, this boiler is engineered for durability, reliability, and seamless integration with modern heating controls.

Ideal for office buildings, commercial and industrial facilities, and local heating networks, the Max-3 plus provides a future-proof heating solution. Its combination of high efficiency, reduced emissions, and flexible fuel compatibility makes it an excellent investment for businesses looking to optimise energy use while meeting sustainability goals.



Hoval Max-3
Oil/gas boiler

Boiler

- 3-pass steel boiler according to EN 303 part 1 and 2 and EN 304 for firing of Diesel oil, oil L and gas.
- Max-3 (420-1250) complies with the Pressure Equipment Directive 2014/68/CE
- Boiler completely welded
- For LowNOx burner with intern flue gas recirculation
- Insulation at the boiler body 80 mm mineral wool mat
- Boiler completely clad with steel plate, red powder coated
- Flue gas outlet to the rear
- Heating flow connection to the top, heating return connections to the rear, incl. counter flanges, screws and seals

Optional

- Boiler control panel with boiler controller and heating control in various versions
 - Boiler controller
 - with TopTronic® E control
 - with thermostat T 2.2
 - with thermostat T 0.2
- Free-standing calorifier see Calorifiers
- Boiler door swivels to the left

Delivery

- Boiler, thermal insulation and casing delivered separately packed

On site

- Mounting of insulation and casing



Model range	
Max-3	Max. - min. output kW
type	
(420)	200-500
(530)	220-610
(620)	240-720
(750)	280-870
(1000)	350-1150
(1250)	480-1350
(1500)	640-1750
(1800)	750-2150
(2200)	920-2500
(2700)	1030-3000

Boiler controller with TopTronic® E/E13.4 control

- Maximum operating temperature 90 °C

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module heat generator TTE-WEZ

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

The supplementary plug set must be ordered in order to use expanded controller functions.

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat balancing or
 - module expansion Universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the electrical box:

- 1 module expansion and 2 controller modules **or**
- 1 controller module and 2 module expansions **or**
- 3 controller modules

Notice

Max. 1 module expansion can be connected to the basic module heat generator TTE-WEZ!

Further information about the TopTronic® E see "Controls"

Oil automatic function device OFA

- Control function integrated for
 - flue gas sensor for safety shut-off
 - 0-10 V output for connecting a modulating main pump (incl. ΔT control with low consumption)
 - Standard plug connection for 2-stage burner 1 x 230 V
 - Variable input for plant-specific functions (heat generator block, return sensor, info sensor etc.)
 - Variable output for plant-specific functions (thermostat function, operating message, etc.)

Delivery

- Boiler controller separately delivered

On site

- Mounting of the boiler controller at the boiler left or right side

Boiler controller with TopTronic® E/E13.5 control

- Maximum operating temperature 105 °C

- Configuration as TopTronic® E/E13.4 but: safety temperature limiter 120 °C

Delivery

- Boiler controller separately delivered

On site

- Mounting of the boiler controller at the boiler left or right side

Control panel with thermostat T 2.2

- Maximum operating temperature 90 °C

- For systems without TopTronic® E control
- For direct 2-stage burner control, requirement starting from external calorifier or heater instruction is possible.
- Main switch "I/O"
- Safety temperature limiter 110 °C
- Selector switch burner load
- Switch summer/winter
- 3 boiler temperature regulators 30-90 °C
 - temperature regulator for base load heating
 - temperature regulator for full load heating
 - temperature regulator for calorifier
- Boiler and burner breakdown lamp
- Plug connection for burner (with cable and plug)

Optional

- 2 running time meters integrated
- 2 burner running time meters and pulse counters integrated
- Flue gas thermometer, 4.5 m capillary tube

Delivery

- Boiler controller separately delivered

On site

- Mounting of the boiler controller at the boiler left or right side

Control panel with thermostat T 0.2

- Maximum operating temperature 105 °C

- For external control
- For systems without TopTronic® E control
- For special control function

- Main switch "I/O"
- Safety temperature limiter 120 °C
- 3 boiler temperature regulators 50 ... 105 °C
 - temperature regulator for base load heating
 - temperature regulator for full load heating
 - temperature regulator for calorifier
- without burner plug connection

Optional

- 2 running time meters integrated
- 2 burner running time meters and pulse counters integrated
- Flue gas thermometer, 4.5 m capillary tube
- Safety temperature limiter 130 °C

Delivery

- Boiler controller separately delivered

On site

- Mounting of the boiler controller at the boiler left or right side

Oil/gas boiler



Hoval Max-3 (420-2700)
3-pass boiler made of steel for oil/gas
LowNOx firing, without control panel.
For operating temperature up to 105 °C

Execution: complete delivery
Boiler, thermal insulation and casing
delivered separately packed.

Max-3 type	Max. - min. output kW	Operating pressure bar
(420)	200-500	6
(530)	220-610	6
(620)	240-720	6
(750)	280-870	6
(1000)	350-1150	6
(1250)	480-1350	6
(1500)	640-1750	6
(1800)	750-2150	6
(2200)	920-2500	6
(2700)	1030-3000	6

Permission Boiler
CE product ID No. CE-0085BL0015
according to Directive on appliances burning
gaseous fuels 90/396/EG

Pressure Equipment Directive 2014/68/CE

Part No.

7013 765
7013 766
7013 773
7013 774
7013 781
7013 782
7013 536
7013 537
7013 538
7013 620

Max-3 (420-1250)

Type		(420)	(530)	(620)	(750)	(1000)	(1250)
• Nominal output at 80/60 °C	kW	500	610	720	870	1150	1350
• Max. - min. output (Heating oil EL, variant 1 and natural gas H, variant 1)	kW	320-500	350-610	450-720	520-870	680-1150	850-1350
• Max. - min. output (natural gas H, variant 2)	kW	200-500	220-610	240-720	280-870	350-1150	480-1350
• Burner input max.	kW	539	662	781	944	1247	1459
• Dimensions		see Dimensions					
• Boiler operating temperature max. ¹⁾	°C	90	90	90	90	90	90
• Boiler operating temperature min.		see table operating conditions (below)					
• Return flow temperature min.		see table operating conditions (below)					
• Flue gas temperature min. at the boiler		see table operating conditions (below)					
• Safety temperature limiter setting (water side) ²⁾	°C	110	110	110	110	110	110
• Operating pressure	bar	6	6	6	6	6	6
• Boiler efficiency at 80/60 °C in full-load operation (related to net calorific value NCV/gross calorific value GCV, heating oil EL)	%	92.7/87.5	92.4/87.2	92.4/87.2	92.5/87.3	92.5/87.3	92.5/87.3
• Boiler efficiency at 30 % partial load (EN 303) (related to net calorific value NCV/gross calorific value GCV, heating oil EL)	%	95.2/89.8	95.3/89.9	94.9/89.5	95.2/89.8	95.3/89.9	95.2/89.8
• Nominal efficiency at 75/60 °C (DIN 4702-8) (related to net calorific value NCV/gross calorific value GCV, heating oil EL)	%	94.8/89.5	94.7/89.4	94.3/89.0	94.8/89.4	94.9/89.5	94.8/89.4
• Stand-by loss qB at 70 °C	Watt	1000	1035	1120	1180	1250	1380
• Flue gas resistance at nominal output 180 °C flue gas temperature, 12.5 % CO ₂ , 500 m over sea level (tolerance ± 20 %)	mbar	4.9	5.7	5.2	6.5	7.4	8.0
• Flue gas mass flow at nominal output 12.5 % CO ₂ heating oil	kg/h	850	1037	1224	1479	1955	2295
• Flow resistance boiler ³⁾	z-value	0.022	0.022	0.008	0.008	0.003	0.003
• Water flow resistance at 10 K	mbar	40.4	60.1	30.5	44.5	29.1	40.2
• Water flow resistance at 20 K	mbar	10.1	15.1	7.6	11.1	7.3	10
• Water flow volume at 10 K	m ³ /h	42.8	52.2	61.7	74.5	98.5	115.7
• Water flow volume at 20 K	m ³ /h	21.4	26.1	30.8	37.2	49.2	57.9
• Boiler water content	litres	552	520	969	938	1528	1478
• Boiler gas volume	m ³	0.583	0.602	0.846	0.872	1.35	1.39
• Insulation thickness boiler body	mm	80	80	80	80	80	80
• Weight (incl. casing)	kg	1309	1327	1752	1808	2500	2600
• Weight (without casing)	kg	1186	1204	1598	1654	2360	2460
• Maximum draught/underpressure at flue gas outlet	Pa	-50	-50	-50	-50	-50	-50
• Combustion chamber dimension Ø inside x length	mm	606x1624	606x1624	684x1899	684x1899	782x2182	782x2182
• Combustion chamber volume	m ³	0.466	0.466	0.669	0.669	1.047	1.047

¹⁾ Limited by the boiler controller E13.4 TopTronic® E and T 2.2 to 90 °C or by E13.5 TopTronic® E and T 0.2 to 105 °C.

²⁾ Max. safety temperature for boiler controller E13.4 TopTronic® E and T 2.2: 110 °C or E13.5 TopTronic® E and T 0.2: 120 °C.

³⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z

Possible operating conditions:

Fuel		Heating oil EL		Natural gas H, low-sulphur heating oil EL		Heating oil L
		Variant 1	Variant 2	Variant 1	Variant 2	
Min. flue gas temperature	°C	130	110	130	100	130
Min. boiler temperature	°C	60	65	65	75	65
Min. return temperature	°C	50	55	55	65	55
Return temperature control		yes	yes	yes	yes	yes

Max-3 (1500-2700)

Type		(1500)	(1800)	(2200)	(2700)
• Nominal output at 80/60 °C	kW	1750	2150	2500	3000
• Max. - min. output (Heating oil EL, variant 1 and natural gas H, variant 1)	kW	1050-1750	1250-2150	1500-2500	1780-3000
• Max. - min. output (natural gas H, variant 2)	kW	640-1750	750-2150	920-2500	1030-3000
• Burner input max.	kW	1894	2324	2702	3243
• Dimensions		see Dimensions			
• Boiler operating temperature max. ¹⁾	°C	90	90	90	90
• Boiler operating temperature min.		see table operating conditions (below)			
• Return flow temperature min.		see table operating conditions (below)			
• Flue gas temperature min. at the boiler		see table operating conditions (below)			
• Safety temperature limiter setting (water side) ²⁾	°C	110	110	110	110
• Operating pressure	bar	6	6	6	6
• Boiler efficiency at 80/60 °C in full-load operation (related to net calorific value NCV/gross calorific value GCV, heating oil EL)	%	92.4/87.2	92.5/87.3	92.5/87.3	92.5/87.3
• Boiler efficiency at 30 % partial load (EN 303) (related to net calorific value NCV/gross calorific value GCV, heating oil EL)	%	95.2/89.8	95.3/89.2	95.2/89.2	95.2/89.2
• Nominal efficiency at 75/60 °C (DIN 4702-8) (related to net calorific value NCV/gross calorific value GCV, heating oil EL)	%	94.8/89.4	94.9/89.5	94.9/89.5	95/89.5
• Stand-by loss qB at 70 °C	Watt	1850	1950	2100	2300
• Flue gas resistance at nominal output 180 °C flue gas temperature, 12.5 % CO ₂ , 500 m over sea level (tolerance ± 20 %)	mbar	7.0	8.8	9.1	8.0
• Flue gas mass flow at nominal output 12.5 % CO ₂ heating oil	kg/h	3031	3723	4329	5195
• Flow resistance boiler ³⁾	z-value	0.022	0.022	0.002	0.001
• Water flow resistance at 10 K	mbar	45.0	67.9	91.8	132.2
• Water flow resistance at 20 K	mbar	11.3	17	23	33.1
• Water flow volume at 10 K	m ³ /h	150	184.3	214.3	257.1
• Water flow volume at 20 K	m ³ /h	75	92.1	107.1	128.6
• Boiler water content	litres	2343	2750	3050	3550
• Boiler gas volume	m ³	1.956	2.51	2.761	3.037
• Insulation thickness boiler body	mm	80	80	80	80
• Weight (incl. casing)	kg	3700	4900	5170	5750
• Weight (without casing)	kg	3400	4600	4800	5350
• Maximum draught/underpressure at flue gas outlet	Pa	-50	-50	-50	-50
• Combustion chamber dimension Ø inside x length	mm	880x2417	976x2605	976x2905	976x3233
• Combustion chamber volume	m ³	1.58	2.07	2.3	2.41

¹⁾ Limited by the boiler controller E13.4 TopTronic® E and T 2.2 to 90 °C or by E13.5 TopTronic® E and T 0.2 to 105 °C.

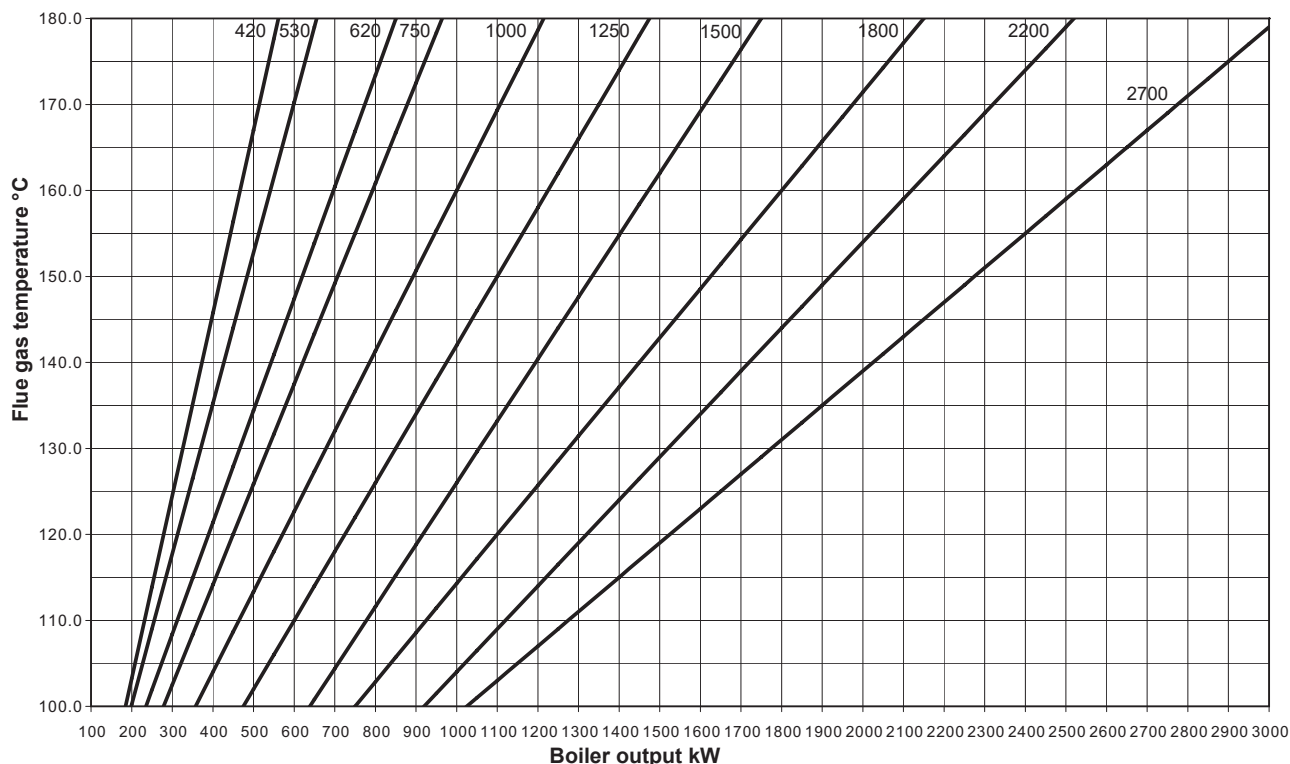
²⁾ Max. safety temperature for boiler controller E13.4 TopTronic® E and T 2.2: 110 °C or E13.5 TopTronic® E and T 0.2: 120 °C.

³⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z

Possible operating conditions:

Fuel		Heating oil EL		Natural gas H, low-sulphur heating oil EL		Heating oil L
		Variant 1	Variant 2	Variant 1	Variant 2	
Min. flue gas temperature	°C	130	110	130	100	130
Min. boiler temperature	°C	60	65	65	75	65
Min. return temperature	°C	50	55	55	65	55
Return temperature control		yes	yes	yes	yes	yes

Flue gas output diagram



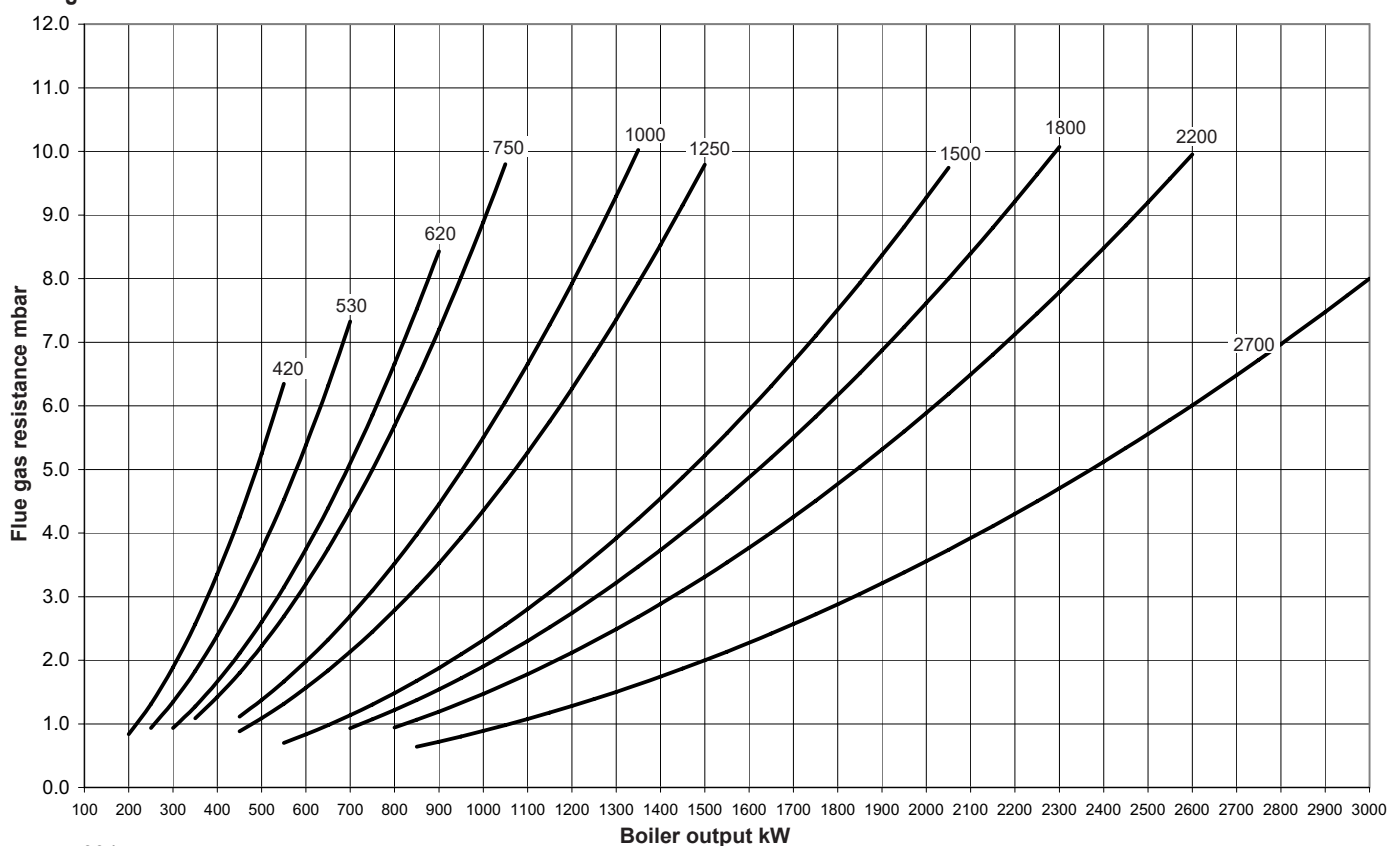
kW = boiler output

°C = flue gas temperature on a clean surface,
flow temperature 80 °C, return temperature
60 °C (in accordance with DIN 4702).

- Operation with heating oil EL,
natural gas
 $\lambda = 1.22$ with max. burner output
(CO₂ heating oil EL = 12.5 %,
CO₂ natural gas = 9.8 %)

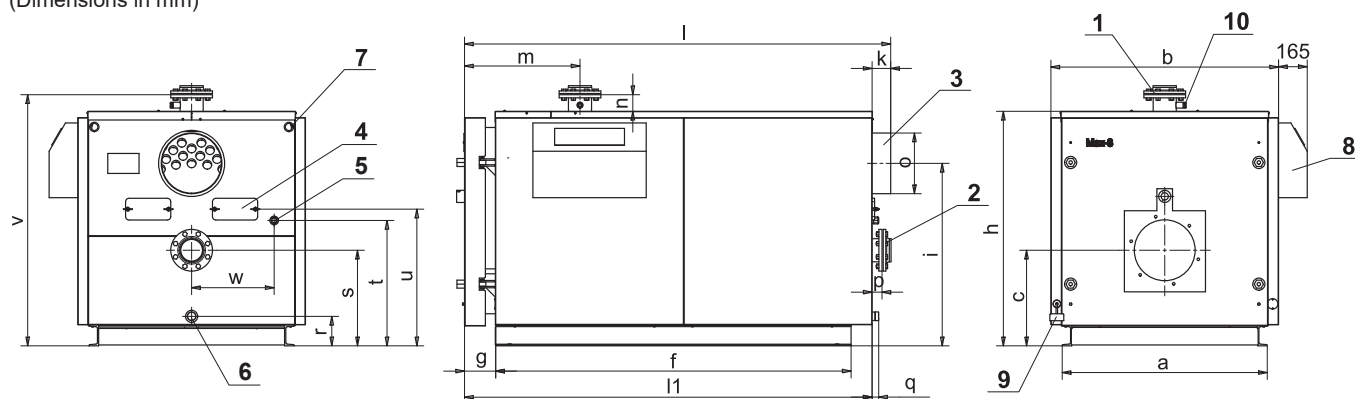
- A reduction of the boiler water temperature
to 10 K causes a reduction of the flue gas
temperature of approx. 6-8 K.
- A modification of the CO₂ concentration of
+ 1 % causes a modification of the flue gas
temperature of approx. - 8 K.
- A modification of the CO₂ concentration of
- 1 % causes a modification of the flue gas
temperature of approx. + 8 K.

Flue gas resistor



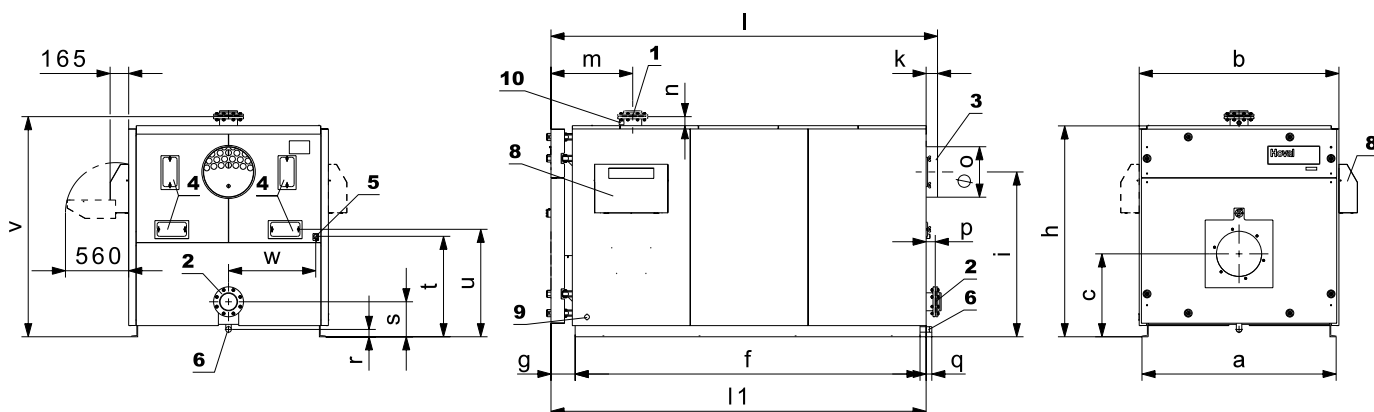
Max-3 (420-1250)

(Dimensions in mm)



Max-3 (1500-2700)

(Dimensions in mm)



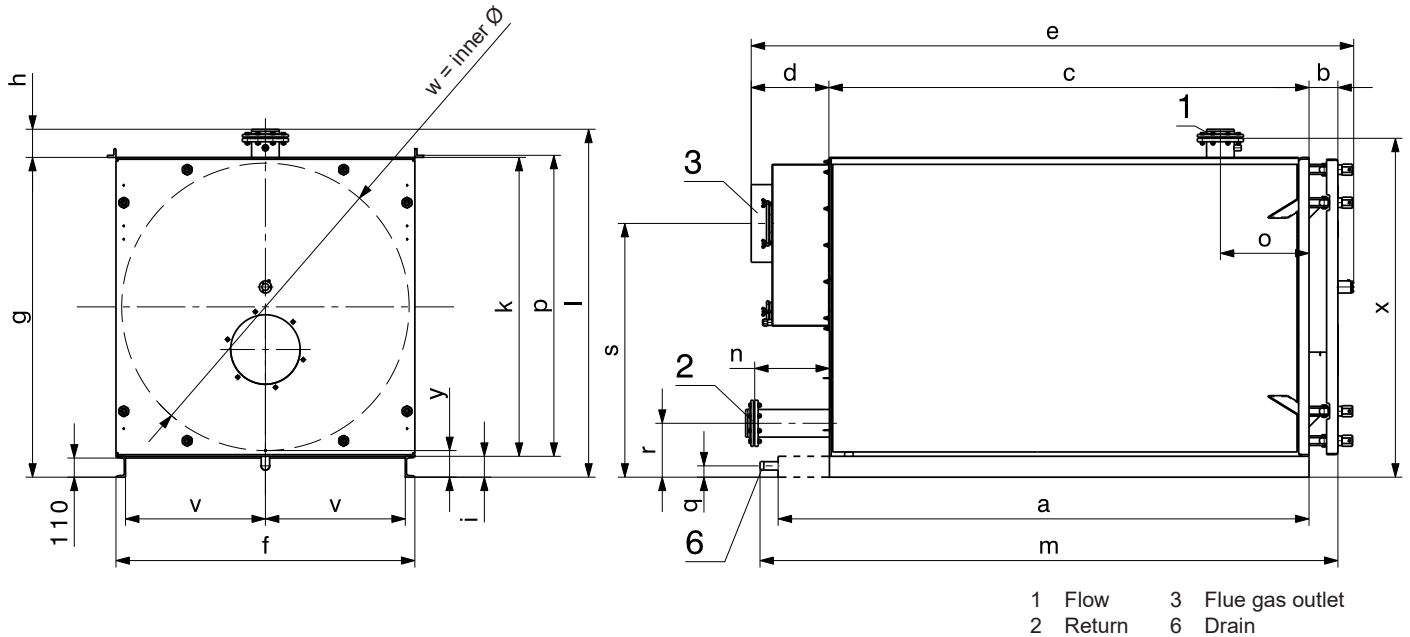
1	Flow	(420,530) (620,750) (1000,1250) (1500-2200) (2700)	DN 100, PN 6 DN 125, PN 6 DN 150, PN 6 DN 150, PN 6 DN 200, PN 6	2	Return	(420,530) (620,750) (1000,1250) (1500-2200) (2700)	DN 100, PN 6 DN 125, PN 6 DN 150, PN 6 DN 150, PN 6 DN 200, PN 6	5	Flue gas collector cleaning opening R 1"
				3	Flue gas outlet			6	Drain R 1½"
				4	Cleaning opening			7	Cable routing
								8	Control panel
								9	Electrical connection
								10	Bushing Rp ¾" with immersion sleeve for boiler temperature sensor

Max-3 type	a	b	c	f	g	h	i	k	l	l1	m	n	Øo	p	q	r
(420,530)	1060	1190	515	1770	181	1230	950	104	2178	2074	641	100	299	54	34	175
(620,750)	1180	1310	550	2045	181	1350	1050	105	2452	2347	666	95	349	55	35	170
(1000,1250)	1370	1500	635	2330	181	1550	1250	107	2739	2632	681	111	349	77	37	175
(1500)	1560	1610	665	2685	212	1710	1350	103	3040	2940	722	80	447	83	34	65
(1800)	1720	1770	735	3055	214	1870	1460	103	3424	3320	724	80	447	83	52	65
(2200)	1720	1770	735	3355	214	1870	1460	101	3724	3625	724	80	447	81	50	65
(2700)	1750	1800	755	3700	212	1900	1410	82	4032	3950	722	80	647	82	51	65

Max-3 type	s	t	u	v	w	x
(420,530)	350	595	660	1330	450	-
(620,750)	550	722	786	1445	475	-
(1000,1250)	415	620	685	1660	590	-
(1500)	310	777	842	1790	695	1850
(1800)	310	890	952	1950	773	2040
(2200)	310	890	952	1950	773	2340
(2700)	370	917	982	1980	790	2670

Dimensions without insulation and casing

Boiler incl. hinged flange, connector and flue gas collector.
(Dimensions in mm)



Max-3 type	a ¹⁾	b	c	d	e	f	g	h	i	k	l	m	n	o	p
(420,530)	1920	150	1770	277	2222	1060	1180	196	120	1060	1376	2077	175	460	1072
(620,750)	2195	150	2045	228	2498	1180	1300	196	120	1180	1496	2353	172	485	1192
(1000,1250)	2480	150	2330	228	2783	1370	1500	187	120	1380	1660	2638	198	500	1392
(1500)	2685	164	2568	260	3078	1560	1680	162	120	1560	1842	2923	240	510	-
(1800)	3055	166	2760	450	3467	1720	1840	162	120	1720	2002	3325	430	510	-
(2200)	3355	166	3060	450	3767	1720	1840	162	120	1720	2002	3625	430	510	-
(2700)	3700	164	3390	430	4075	1750	1870	169	120	1750	2039	3953	430	510	-

Max-3 type	q	r	s	v	w	x	y
(420,530)	175	350	950	475	990	-	-
(620,750)	170	550	1050	535	1110	-	-
(1000,1250)	175	415	1250	630	1298	-	-
(1500)	65	310	1350	725	1494	1790	153
(1800)	65	310	1460	805	1654	1950	153
(2200)	65	310	1460	805	1654	1950	153
(2700)	65	370	1410	820	1684	1980	153

¹⁾ Max-3 (1500-2700): socket protrudes

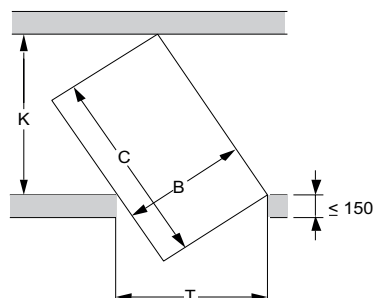
Required min. width of door and corridor to bring in the boiler

The stated measurements are minimal dimensions

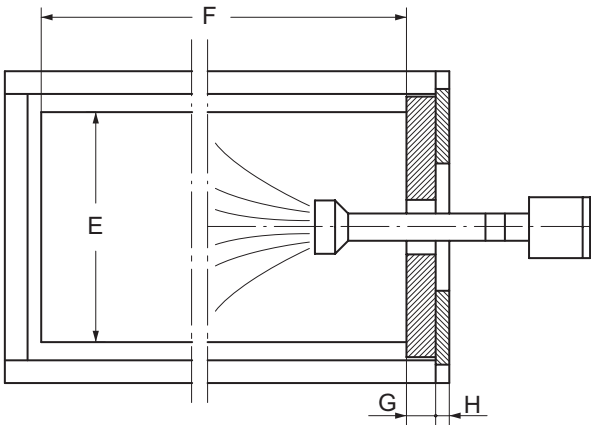
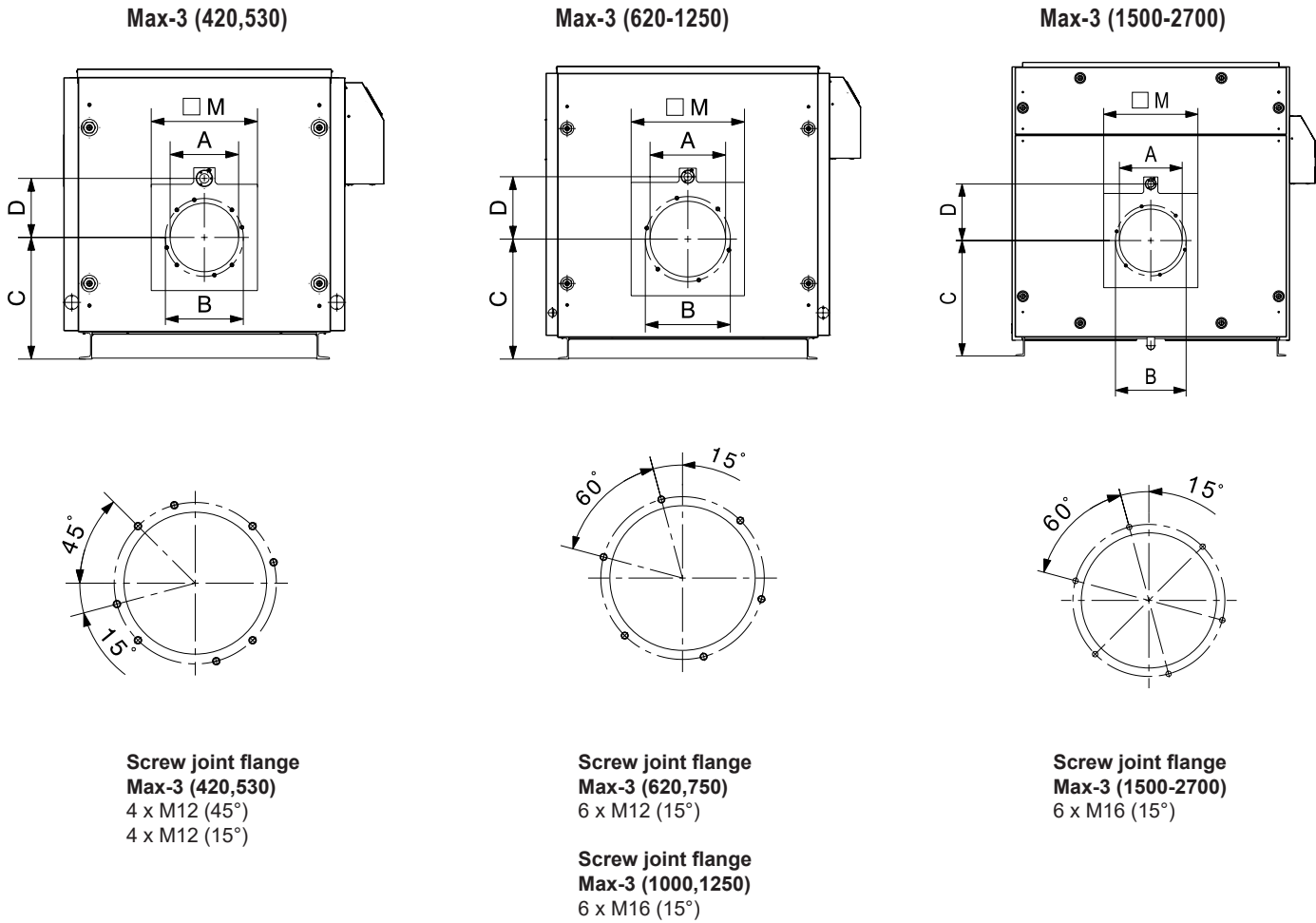
$$K = \frac{B}{T} \times L$$

$$T = \frac{B}{K} \times L$$

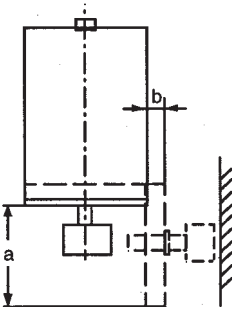
T Door width
K Corridor width
B Boiler width
L Max. boiler length



Furnace dimensions



Swinging out of boiler door
Boiler door is swivelling to the right or left
(Dimensions in mm)



Dimensions
(Dimensions in mm)

Max-3 type	A	B	C	D	E	F	G	H	M
(420,530)	290	330	515	250	606	1624	163	30	450
(620,750)	350	400	550	310	684	1899	163	30	600
(1000,1250)	400	450	635	330	782	2182	163	30	600
(1500)	400	450	665	360	880	2417	170	30	600
(1800)	400	450	735	360	976	2605	170	30	600
(2200)	400	450	735	360	976	2905	170	30	600
(2700)	400	450	755	360	976	3233	170	30	600

Max-3 type	a	b
(420,530)	1060	150
(620,750)	1180	150
(1000,1250)	1370	150
(1500)	1520	175
(1800,2200)	1680	175
(2700)	1700	175

Standards and guidelines

The official regulations for installation and operation must be observed. In particular, these are the country-specific standards (e.g. EN standard, DIN standards etc.) as well as the corresponding regional regulations.

The following requirements and directives must be complied with:

- Hoval technical information and installation instructions
- Hydraulic and technical control regulations of Hoval
- DIN EN 12828
Safety-relevant requirements
- DIN EN 12831 Heaters
Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- EN 14868 Protection of metallic materials against corrosion
- VDE 0100 supplement 2

Water quality in heating systems

Filling and replacement water, heating water

The following applies:

- VDI 2035
- In addition, the EN 14868 standard must be applied, **as well as the manufacturer-specific specifications**

Manufacturer-specific specifications

Filling and replacement water

The filling and replacement water can be both fully demineralised and also merely softened.

Heating water

- In the case of **full demineralisation of the filling and replacement water**, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.

- In the case of **softening the filling and replacement water**, the following conditions must be complied with:
The quality of the heating water must be checked and documented periodically:
 - For an installed heat output above 100 kW up to and including 1000 kW, an annual check of the heating water is required.
 - For an installed heat output above 1000 kW, an check of the heating water is required twice a year.
 The following standard values for the heating water must be measured and adhered to:
 - Electrical conductivity of the heating water for operation with water containing salts: > 100 µS/cm to ≤ 1500 µS/cm
 - pH value of the heating water for systems without aluminium alloy as water-side material 8.2 to 10.0 (measurement 10 weeks after commissioning at the earliest)
- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

Additional notices

- Hoval boilers and calorifiers are suitable for heating systems without significant oxygen intake (system type I according to EN 14868).
- Systems with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up) must be equipped with a system separation.
- If only the boiler is replaced in an existing system, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The boiler must not be filled until the heating system has been flushed.

Frost protection agent

The planning sheet "Use of frost protection agent" is available from your Hoval contact person.

Combustion air supply

The combustion air supply must be warranted. The air opening must not be lockable. It is very important to ensure that the combustion air is free from halogen compounds. These are present, for example, in spray cans, varnishes, glues, solvents and cleansing agents.

Room air dependent operation:

- Minimum free cross-section for the air opening can be assumed as follows by way of simplification. Nominal heat output is the determining factor!
- A minimum free cross-section of once 150 cm² or twice 75 cm² and an additional 2 cm² for each kW boiler capacity in excess of 50 kW is required for the air opening into the outside air.

Burner installation

- If the weight of the burner (including attachments) of gas and dual-fuel burners is more than 90 kg and the distance of the centre of gravity of the burner to the boiler door is greater than 60 cm, support the burner casing weight directly with a strut to the boiler room floor.
- Depending on the size of the burner flange, an intermediate flange may be required to attach the burner. The intermediate flange including screws and seal must be supplied by the burner company.
- The lines must be positioned so that the boiler door can still be fully opened.
- To allow the boiler door to be swung out 90° to the left or right, the connections must be flexible and routed to the burner in a sufficiently large loop.
- In systems with ThermoCondensor, the burner must additionally absorb the resistance of the heat exchanger.

The space between the burner pipe and the hinged flange is to be insulated. A line must be routed from the burner to the sight glass to carry cooling air, in order to cool the boiler sight glass and keep it clean (delivery by the burner company).

Electric connection of the burner

- Control voltage 1 x 230 V
- Burner motor 1 x 230 V / 3 x 400 V.
- The burner must be connected to the burner connection plug of the boiler.
- For safety reasons the electrical cable of the burner must be that short that the plug must be removed when swivelling boiler door.

Sound absorbing

Sound absorption is possible through the following steps:

- Heating room walls, ceiling and floor should be very solidly built, a sound insulation should be mounted into the air inlet. Pipe holders and support should be protected by means of anti-vibration sleeves.
- Install sound attenuation cowl for burner.
- If living rooms are located above or under the boiler room, vibration absorbers have to be mounted to the boiler base. Pipes and flue gas tube must be connected flexibly with compensators.
- Connect circulating pumps to the piping network using expansion joints.
- For damping of flame noise it is possible to install a silencer into the flue gas tube (space should be foreseen for later installation).

Measures for sound reduction

Make sure right from the planning phase that bedrooms are not situated in the immediate vicinity of the sound source (heating room, chimney).

A reduction of the radiated burner air sound level in the heating room (reduction of the burner noises) of up to approx. 12 dB can be achieved encapsulating the burner (sound attenuation cowl).

A significant part of the noise development in the combustion chamber and in the secondary heating surfaces is radiated as airborne noise via the flue gas line.

In addition, depending on dimensioning of the chimney and intersection, resonance effects caused by the vibration of the combustion noises (amplification) can occur.

These noises can be reduced on the one hand by measures on the burner side, such as modification of the flame geometry, the atomisation characteristic or the fuel throughput.

On the other hand, flue gas silencers achieve an important noise reduction.

These silencers must usually be adapted to low frequencies of 60-250 Hz.

Flue gas silencers work based on the principle of sound absorption.

The kinetic energy of the flue gases is consumed due to friction, which means a draughting requirement increase in the flue gas line is necessary. This must be taken into account when dimensioning the burner.

The connection piece from the boiler to the flue gas silencer must be gas-tight as the draught and pressure zero points lie behind the flue gas silencer.

The space required of approx. 1 m for retrofitting of a flue gas silencer should be provided during planning.

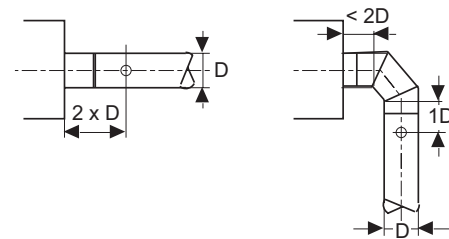
Note also that secondary air devices are installed only behind a flue gas silencer.

Installation instructions

Please observe the installation instructions supplied with every boiler.

Chimney/flue gas system**Flue gas line**

- The flue gas tube between boiler and chimney must be connected with an angle 30-45° to the chimney.



- If the flue gas tube is longer than 1 m, it must be insulated.
- The flue gas tube must be designed that no condensate water can get into the boiler.
- A closeable flue gas measuring socket with an inner diameter of 10-21 mm must be foreseen. The socket has to be led over the thermal insulation.

Chimney

- The flue gas system must be humidity-insensitive and acid-proof and admitted for flue gas temperatures up to > 160 °C.
- For existing chimney installation the restoration must be carried out according to the instructions of the chimney constructor.
- Calculation of the profile of the chimney according to DIN 4705.
- It is recommendable to use a secondary air valve for chimney draft limiting.

Flue gas temperature and power ranges

In order to achieve a good combustion quality (optimum flame burnout), the outputs must not be less than the specified minimum values.

For new systems, acid-resistant chimneys must be provided or the flue gas temperature must be set correspondingly higher (min. 160 °C).

The minimum flue gas temperature must be coordinated with the chimney conditions, otherwise the formation of sulphuric acid can lead to soot buildup in the chimney.

Diaphragm pressure expansion tank

- Ideally, the diaphragm pressure expansion tank should be connected to the heating system as described in our example applications, with a removable or sealable actuation device. This means that it is not necessary to drain the entire system in order to carry out work on the diaphragm pressure expansion tank.

Safety valve

- A safety valve and an automatic air vent must be installed in the safety flow.

Hoval Max-3 plus
Oil/gas boiler

Boiler

- High-efficiency 3-pass boiler according to EN 14394 for firing of heating oil EL and gas
- Max-3 plus (420-2700) complies with the Pressure Equipment Directive 2014/68/CE.
- Boiler completely welded
- For LowNOx burner with intern flue gas recirculation
- Insulation at the boiler body 80 mm mineral wool mat
- Boiler completely clad with steel plate, red powder coated
- Flue gas outlet to the rear
- Heating flow connection to the top, heating return connections to the rear, incl. counter flanges, screws and seals

Optional

- Boiler control panel with boiler controller and heating control in various versions
 - Boiler controller
 - with TopTronic® E control
 - with thermostat T 2.2
 - with thermostat T 0.2
- Free-standing calorifier see Calorifiers
- Boiler door swivels to the left.

Delivery

- Boiler, thermal insulation and casing delivered separately packed

On site

- Mounting of insulation and casing



Model range

Max-3 plus Max. - min.

type	output kW
(420)	200-420
(530)	220-530
(620)	240-620
(750)	280-750
(1000)	350-1000
(1250)	480-1250
(1500)	650-1500
(1800)	750-1800
(2200)	920-2200
(2700)	1030-2700

Boiler controller with TopTronic® E/E13.4 control

- Maximum operating temperature 90 °C

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with HovalConnect option)
- Adaptation of the heating strategy based on the weather forecast (with HovalConnect option)

TopTronic® E basic module heat generator TTE-WEZ

- Control functions integrated for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 hot water charging circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

The supplementary plug set must be ordered in order to use expanded controller functions.

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat balancing or
 - module expansion Universal
- Can be networked with a total of up to 16 controller modules:
 - heating circuit/hot water module
 - solar module
 - buffer module
 - measuring module

Number of modules that can be additionally installed in the electrical box:

- 1 module expansion and 2 controller modules **or**
- 1 controller module and 2 module expansions **or**
- 3 controller modules

Notice

Max. 1 module expansion can be connected to the basic module heat generator TTE-WEZ!

Further information about the TopTronic® E see "Controls"

Oil automatic function device OFA

- Control function integrated for
 - flue gas sensor for safety shut-off
 - 0-10 V output for connecting a modulating main pump (incl. ΔT control with low consumption)
 - Standard plug connection for 2-stage burner 1 x 230 V
 - Variable input for plant-specific functions (heat generator block, return sensor, info sensor etc.)
 - Variable output for plant-specific functions (thermostat function, operating message, etc.)

Delivery

- Boiler controller separately delivered

On site

- Mounting of the boiler controller at the boiler left or right side

Boiler controller with TopTronic® E/E13.5 control

- Maximum operating temperature 105 °C

- Configuration as TopTronic® E/E13.4 but: safety temperature limiter 120 °C

Delivery

- Boiler controller separately delivered

On site

- Mounting of the boiler controller at the boiler left or right side

Control panel with thermostat T 2.2

- Maximum operating temperature 90 °C

- For systems without TopTronic® E control
- For direct 2-stage burner control, requirement starting from external calorifier or heater instruction is possible.
- Main switch "I/O"
- Safety temperature limiter 110 °C
- Selector switch burner load
- Switch summer/winter
- 3 boiler temperature regulators 30-90 °C
 - temperature regulator for base load heating
 - temperature regulator for full load heating
 - temperature regulator for calorifier
- Boiler and burner breakdown lamp
- Plug connection for burner (with cable and plug)

Optional

- 2 running time meters integrated
- 2 burner running time meters and pulse counters integrated
- Flue gas thermometer, 4.5 m capillary tube

Delivery

- Boiler controller separately delivered

On site

- Mounting of the boiler controller at the boiler left or right side

Control panel with thermostat T 0.2

- Maximum operating temperature 105 °C

- For external control
- For systems without TopTronic® E control
- For special control function
- Main switch "I/O"
- Safety temperature limiter 120 °C
- 3 boiler temperature regulators 50-105 °C
 - temperature regulator for base load heating
 - temperature regulator for full load heating
 - temperature regulator for calorifier
- Without burner plug connection

Optional

- 2 running time meters integrated
- 2 burner running time meters and pulse counters integrated
- Flue gas thermometer, 4.5 m capillary tube
- Safety temperature limiter 130 °C

Delivery

- Boiler controller separately delivered

On site

- Mounting of the boiler controller at the boiler left or right side

Oil/gas boiler



Permission Boiler
Directive on appliances burning
gaseous fuels 90/396/EG
Max-3 plus (420-2700):
CE product ID No. CE-0085BL0015
Pressure Equipment Directive 2014/68/CE

Hoval Max-3 plus (420-2700)
High-efficiency 3-pass boiler made of steel for oil/gas LowNOx firing, without control panel.
For operating temperature up to 105 °C

Execution: complete delivery
Boiler, thermal insulation and casing
delivered separately packed.

Max-3 plus type	Max. - min. output kW	Operating pressure bar
(420)	200-420	6
(530)	220-530	6
(620)	240-620	6
(750)	280-750	6
(1000)	350-1000	6
(1250)	480-1250	6
(1500)	650-1500	6
(1800)	750-1800	6
(2200)	920-2200	6
(2700)	1030-2700	6

7013 783
7013 784
7013 785
7013 786
7013 787
7013 788
7013 626
7013 627
7013 628
7013 659

The minimum boiler operating temperature and the minimum boiler return temperature must imperatively be observed (see technical data).
A constant return temperature control must be provided!

The condensate trap must imperatively be mounted on the flue gas outlet of the boiler!

Part No.

Max-3 plus (420-1250)

Type		(420)	(530)	(620)	(750)	(1000)	(1250)
• Nominal output at 80/60 °C	kW	420	530	620	750	1000	1250
• Range of output at 80/60 °C	kW	147-420	185-530	217-620	263-750	350-1000	437-1250
• Burner input max.	kW	441	557	651	788	1050	1313
• Boiler operating temperature max. ¹⁾	°C	90	90	90	90	90	90
• Boiler operating temperature min.	°C	see table operating conditions (below)					
• Return flow temperature min.	°C	see table operating conditions (below)					
• Safety temperature limiter setting (water side) ²⁾	°C	110	110	110	110	110	110
• Operating pressure	bar	6	6	6	6	6	6
• Boiler efficiency at 80/60 °C in full-load operation (related to net calorific value NCV / gross calorific value GCV, heating oil EL)	%	95.2/89.8	95.2/89.8	95.2/89.8	95.2/89.8	95.2/89.8	95.2/89.8
• Boiler efficiency at 30 % partial load (EN 303) (related to net calorific value NCV / gross calorific value GCV, heating oil EL)	%	97.1/91.6	97.1/91.6	97.1/91.6	97.1/91.6	97.1/91.6	97.1/91.6
• Nominal efficiency at 75/60 °C (DIN 4702-8) (related to net calorific value NCV / gross calorific value GCV, heating oil EL)	%	97.0/91.5	97.0/91.5	97.0/91.5	97.0/91.5	97.0/91.5	97.0/91.5
• Stand-by loss qB at 70 °C	Watt	1000	1035	1120	1180	1250	1380
• Flue gas resistance at nominal output natural gas: 10.8 % CO ₂ , 500 m over sea level (tolerance ± 20 %)	mbar	6.5	8.0	8.2	9.5	10.0	12.0
• Flue gas mass flow at nominal output natural gas: 10.8 % CO ₂	kg/h	680	859	1004	1215	1619	2025
• Flow resistance boiler ³⁾	z-value	0.022	0.022	0.008	0.008	0.003	0.003
• Water flow resistance at 10 K	mbar	28.70	45.70	22.74	33.28	22.18	34.66
• Water flow resistance at 20 K	mbar	7.17	11.42	5.68	8.32	5.54	8.66
• Water flow volume at 10 K	m ³ /h	36.12	45.58	53.32	64.50	86.00	107.50
• Water flow volume at 20 K	m ³ /h	18.06	22.79	26.66	32.25	43.00	53.75
• Boiler water content	litres	552	520	969	938	1528	1478
• Boiler gas volume	m ³	0.583	0.602	0.846	0.872	1.350	1.390
• Insulation thickness boiler body	mm	80	80	80	80	80	80
• Weight (incl. casing)	kg	1111	1171	1795	1831	2535	2643
• Weight (without casing)	kg	943	1000	1590	1620	2360	2460
• Combustion chamber dimension Ø inside x length	mm	606/1624	606/1624	684/1899	684/1899	782/2182	782/2182
• Combustion chamber volume	m ³	0.466	0.466	0.669	0.669	1.047	1.047
• Dimensions		see Dimensions					
• Draught/underpressure at flue gas outlet max.	Pa	-50	-50	-50	-50	-50	-50

¹⁾ Limited by the boiler controller E13.4 TopTronic® E and T 2.2 to 90 °C or by E13.5 TopTronic® E and T 0.2 to 105 °C.

²⁾ Max. safety temperature for boiler controller E13.4 TopTronic® E and T 2.2: 110 °C or E13.5 TopTronic® E and T 0.2: 120 °C.

³⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z

Possible operating conditions

Fuel		Heating oil EL	Natural gas H
Min. boiler temperature	°C	65	75
Min. return temperature	°C	55	65
Return temperature control		yes	yes

Max-3 plus (1500-2700)

Type		(1500)	(1800)	(2200)	(2700)
• Nominal output at 80/60 °C	kW	1500	1800	2200	2700
• Range of output at 80/60 °C	kW	525-1500	630-1800	770-2200	945-2700
• Burner input max.	kW	1575	1890	2310	2835
• Boiler operating temperature max. ¹⁾	°C	90	90	90	90
• Boiler operating temperature min.	°C	see table operating conditions (below)			
• Return flow temperature min.	°C	see table operating conditions (below)			
• Safety temperature limiter setting (water side) ²⁾	°C	110	110	110	110
• Operating pressure	bar	6	6	6	6
• Boiler efficiency at 80/60 °C in full-load operation (related to net calorific value NCV / gross calorific value GCV, heating oil EL)	%	95.2/89.8	95.2/89.8	95.2/89.8	95.2/89.8
• Boiler efficiency at 30 % partial load (EN 303) (related to net calorific value NCV / gross calorific value GCV, heating oil EL)	%	97.1/91.6	97.1/91.6	97.1/91.6	97.1/91.6
• Nominal efficiency at 75/60 °C (DIN 4702-8) (related to net calorific value NCV / gross calorific value GCV, heating oil EL)	%	97.0/91.5	97.0/91.5	97.0/91.5	97.0/91.5
• Stand-by loss qB at 70 °C	Watt	1850	1950	2100	2300
• Flue gas resistance at nominal output natural gas: 10.8 % CO ₂ , 500 m over sea level (tolerance ± 20 %)	mbar	10.0	12.0	13.0	13.0
• Flue gas mass flow at nominal output natural gas: 10.8 % CO ₂	kg/h	2429	2916	3564	4374
• Flow resistance boiler ³⁾	z-value	0.002	0.002	0.002	0.001
• Water flow resistance at 10 K	mbar	33.1	47.6	71.1	53.6
• Water flow resistance at 20 K	mbar	8.3	11.9	17.8	13.4
• Water flow volume at 10 K	m³/h	128.6	154.3	188.6	231.5
• Water flow volume at 20 K	m³/h	64.3	77.4	94.3	115.7
• Boiler water content	litres	2343	2750	3050	3550
• Boiler gas volume	m³	1.956	2.510	2.761	3.037
• Insulation thickness boiler body	mm	80	80	80	80
• Weight (incl. casing)	kg	3748	4955	5230	5810
• Weight (without casing)	kg	3400	4600	4800	5350
• Combustion chamber dimension Ø inside x length	mm	880/2415	980/2595	980/2895	980/3200
• Combustion chamber volume	m³	1.58	2.07	2.30	2.41
• Dimensions	see Dimensions				
• Draught/underpressure at flue gas outlet max.	Pa	-50	-50	-50	-50

¹⁾ Limited by the boiler controller E13.4 TopTronic® E and T 2.2 to 90 °C or by E13.5 TopTronic® E and T 0.2 to 105 °C.

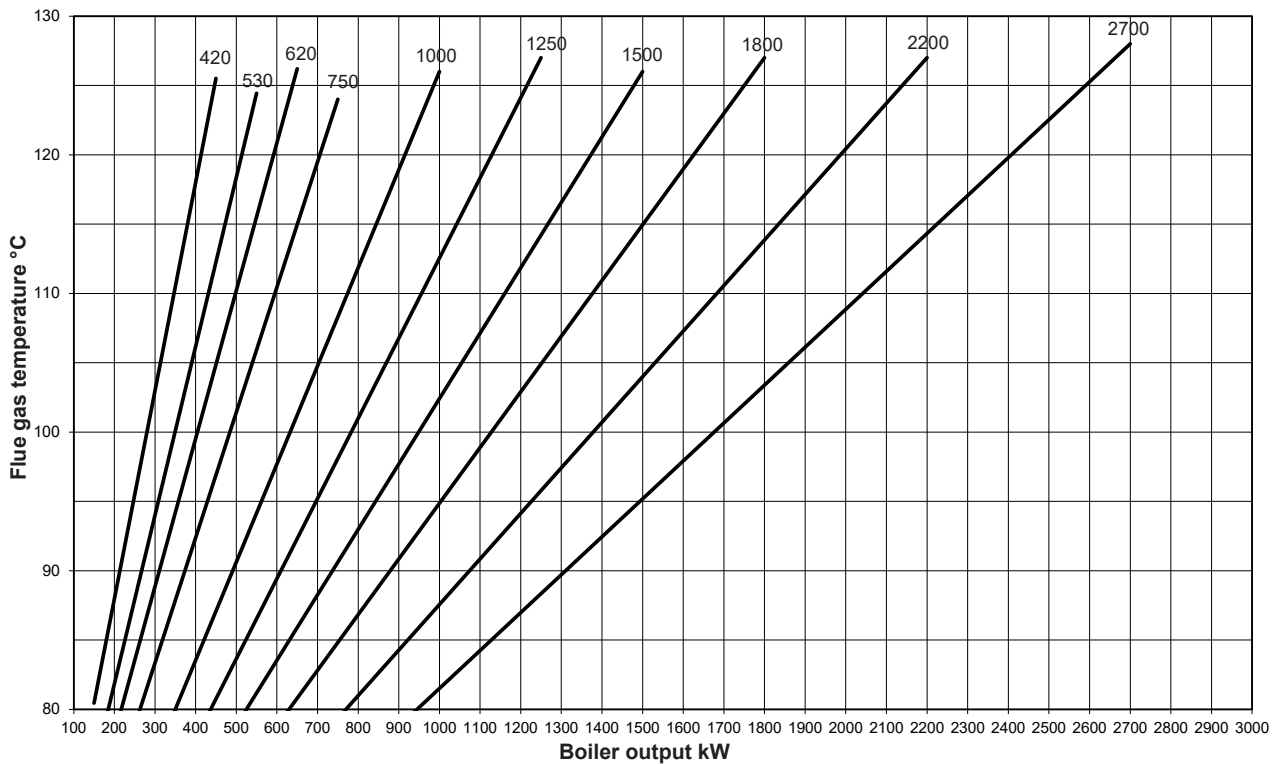
²⁾ Max. safety temperature for boiler controller E13.4 TopTronic® E and T 2.2: 110 °C or E13.5 TopTronic® E and T 0.2: 120 °C.

³⁾ Flow resistance boiler in mbar = flow rate (m³/h)² x z

Possible operating conditions

Fuel		Heating oil EL	Natural gas H, low-sulphur heating oil EL
Min. boiler temperature	°C	65	75
Min. return temperature	°C	55	65
Return temperature control		yes	yes

Flue gas output diagram



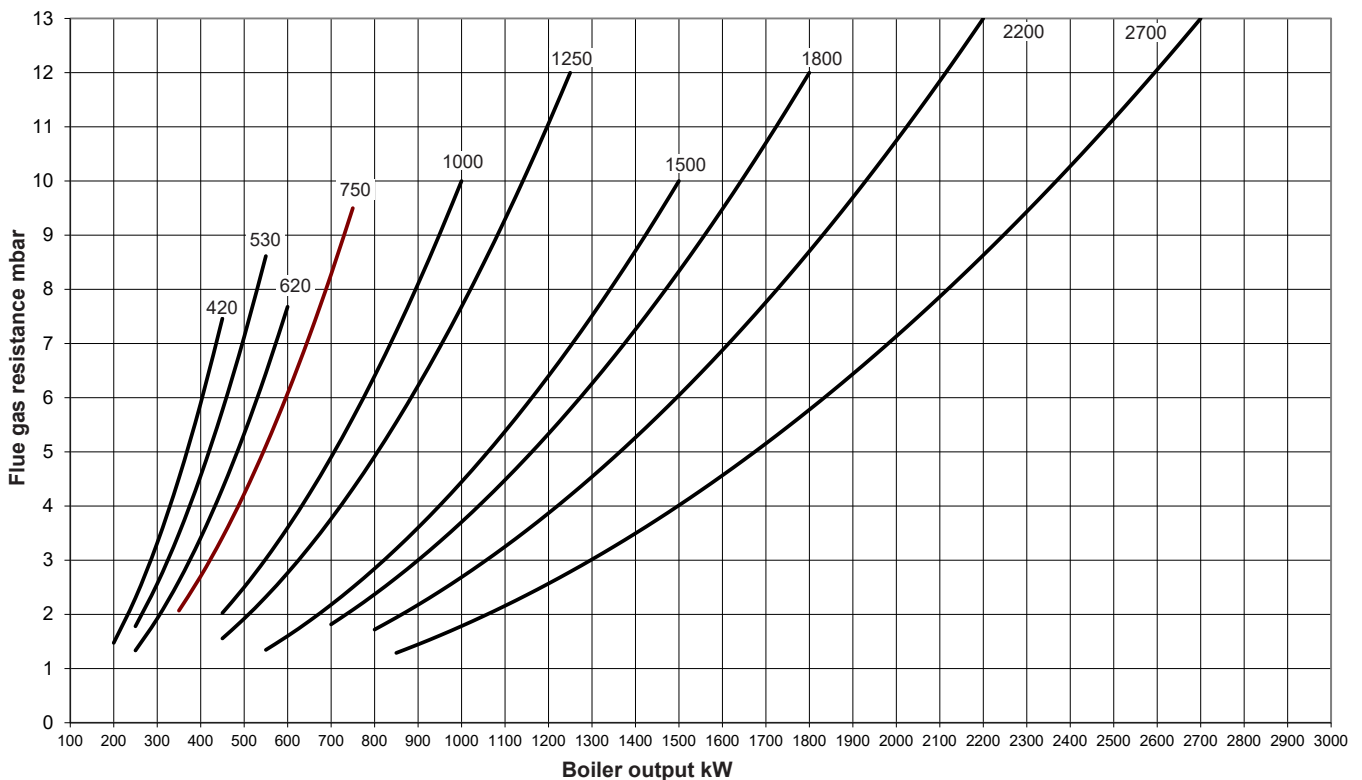
kW = boiler output

°C = flue gas temperature on a clean surface,
flow temperature 80 °C, return temperature
60 °C (in accordance with DIN 4702).

- Operation with heating oil EL,
natural gas
 $\lambda = 1.22$ with max. burner output
(CO₂ heating oil EL = 12.5 %,
CO₂ natural gas = 9.8 %)

- A reduction of the boiler water temperature of 10 K causes a reduction of the flue gas temperature of approx. 6-8 K.
- A modification of the CO₂ concentration of + 1 % causes a modification of the flue gas temperature of approx. - 8 K.
- A modification of the CO₂ concentration of - 1 % causes a modification of the flue gas temperature of approx. + 8 K.

Flue gas resistor

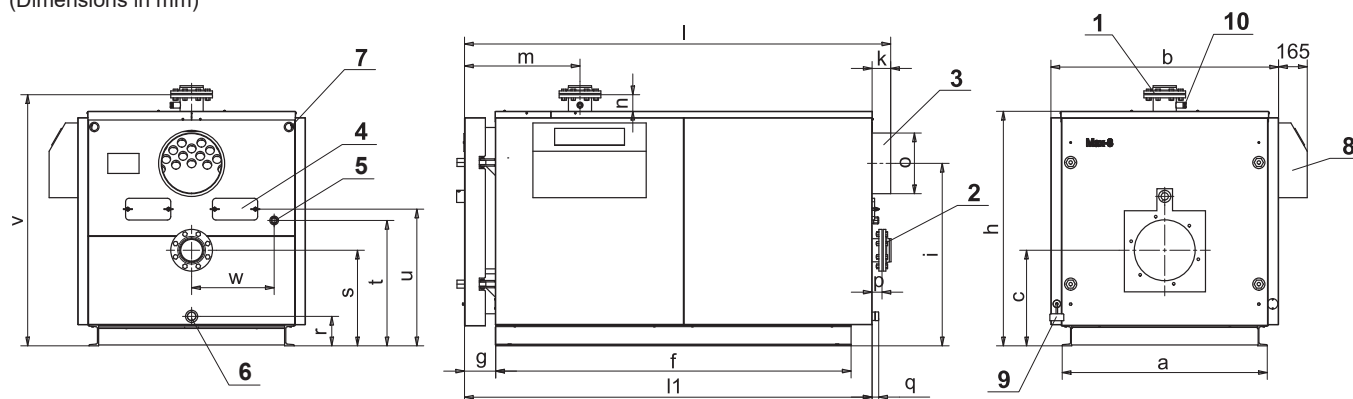


kW = boiler output

mbar = flue gas resistance $\lambda = 1.11$ (natural gas: CO₂ = 10.8 %) 500 above sea level (tolerance: ± 20 %)

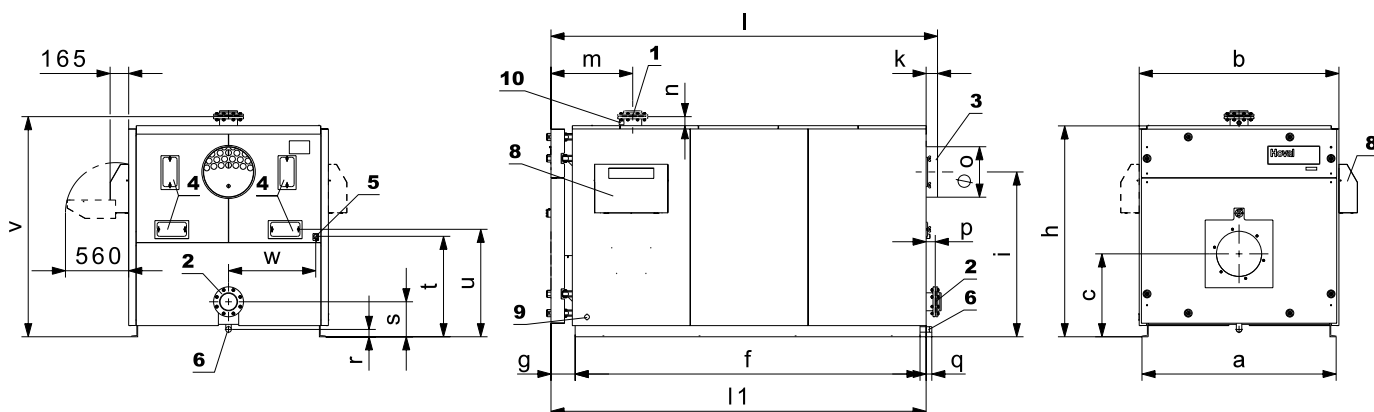
Max-3 plus (420-1250)

(Dimensions in mm)



Max-3 plus (1500-2700)

(Dimensions in mm)



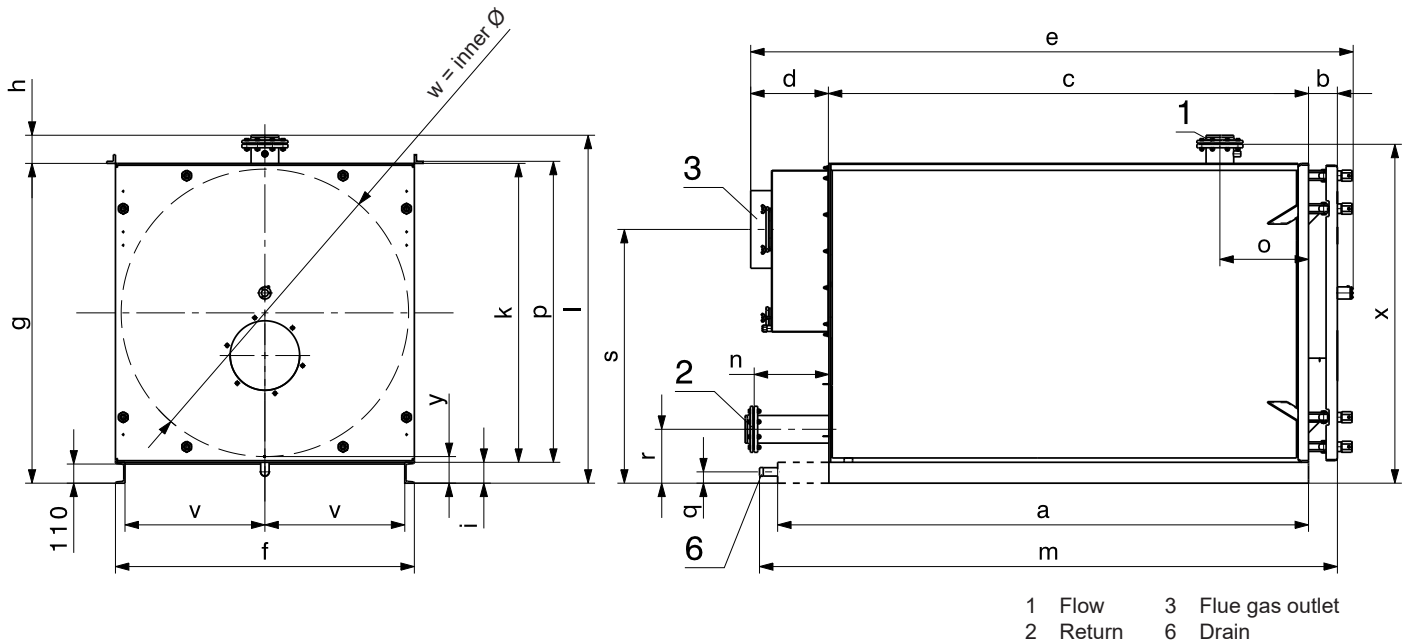
1	Flow	(420,530) (620,750) (1000,1250) (1500-2200) (2700)	DN 100, PN 6 DN 125, PN 6 DN 150, PN 6 DN 150, PN 6 DN 200, PN 6	2	Return	(420,530) (620,750) (1000,1250) (1500-2200) (2700)	DN 100, PN 6 DN 125, PN 6 DN 150, PN 6 DN 150, PN 6 DN 200, PN 6	5	Flue gas collector cleaning opening R 1"
				3	Flue gas outlet			6	Drain R 1½"
				4	Cleaning opening			7	Cable routing
								8	Control panel
								9	Electrical connection
								10	Bushing Rp ¾" with immersion sleeve for boiler temperature sensor

Max-3 plus type	a	b	c	f	g	h	i	k	l	l1	m	n	Ø o	p	q	r
(420,530)	1060	1190	515	1770	181	1230	950	104	2178	2074	641	100	299	54	34	175
(620,750)	1180	1310	550	2045	181	1350	1050	105	2452	2347	666	95	349	55	35	170
(1000,1250)	1370	1500	635	2330	181	1550	1250	107	2739	2632	681	111	349	77	37	175
(1500)	1560	1610	665	2685	212	1710	1350	103	3040	2940	722	80	447	83	34	65
(1800)	1720	1770	735	3055	214	1870	1460	103	3424	3320	724	80	447	83	52	65
(2200)	1720	1770	735	3355	214	1870	1460	101	3724	3625	724	80	447	81	50	65
(2700)	1750	1800	755	3700	212	1900	1410	82	4032	3950	722	80	647	82	51	65

Max-3 plus type	s	t	u	v	w	x
(420,530)	350	595	660	1330	450	-
(620,750)	550	722	786	1445	475	-
(1000,1250)	415	620	685	1660	590	-
(1500)	310	777	842	1790	695	1850
(1800)	310	890	952	1950	773	2040
(2200)	310	890	952	1950	773	2340
(2700)	370	917	982	1980	790	2670

Dimensions without insulation and casing

Boiler incl. hinged flange, connector and flue gas collector.
(Dimensions in mm)



Max-3 plus
type

	a ¹⁾	b	c	d	e	f	g	h	i	k	l	m	n	o	p
(420,530)	1920	150	1770	277	2222	1060	1180	196	120	1060	1376	2077	175	460	1072
(620,750)	2195	150	2045	228	2498	1180	1300	196	120	1180	1496	2353	172	485	1192
(1000,1250)	2480	150	2330	228	2783	1370	1500	187	120	1380	1660	2638	198	500	1392
(1500)	2685	164	2568	260	3078	1560	1680	162	120	1560	1842	2923	240	510	-
(1800)	3055	166	2760	450	3467	1720	1840	162	120	1720	2002	3325	430	510	-
(2200)	3355	166	3060	450	3767	1720	1840	162	120	1720	2002	3625	430	510	-
(2700)	3700	164	3390	430	4075	1750	1870	169	120	1750	2039	3953	430	510	-

Max-3 plus
type

	q	r	s	v	w	x	y
(420,530)	175	350	950	475	990	-	-
(620,750)	170	550	1050	535	1110	-	-
(1000,1250)	175	415	1250	630	1298	-	-
(1500)	65	310	1350	725	1494	1790	153
(1800)	65	310	1460	805	1654	1950	153
(2200)	65	310	1460	805	1654	1950	153
(2700)	65	370	1410	820	1684	1980	153

¹⁾ Max-3 plus (1500-2700) socket protrudes

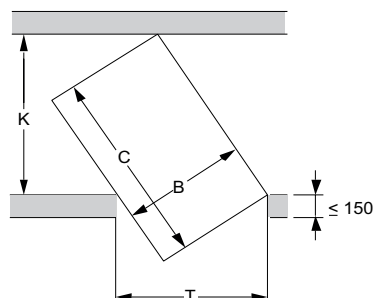
Required min. width of door and corridor to bring in the boiler

The stated measurements are minimal dimensions

$$K = \frac{B}{T} \times L$$

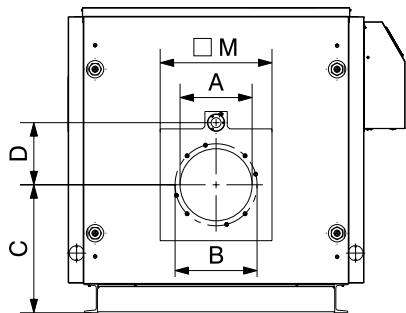
$$T = \frac{B}{K} \times L$$

T Door width
K Corridor width
B Boiler width
L Max. boiler length

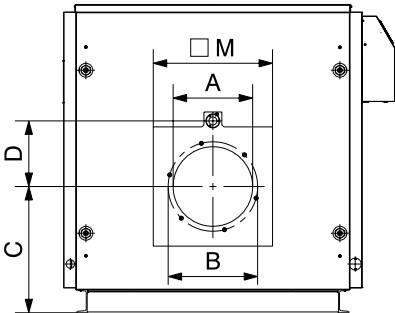


Furnace dimensions

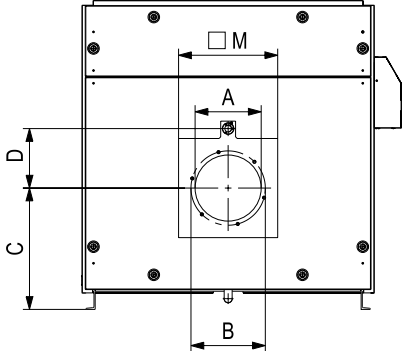
Max-3 plus (420,530)



Max-3 plus (620-1250)



Max-3 plus (1500-2700)

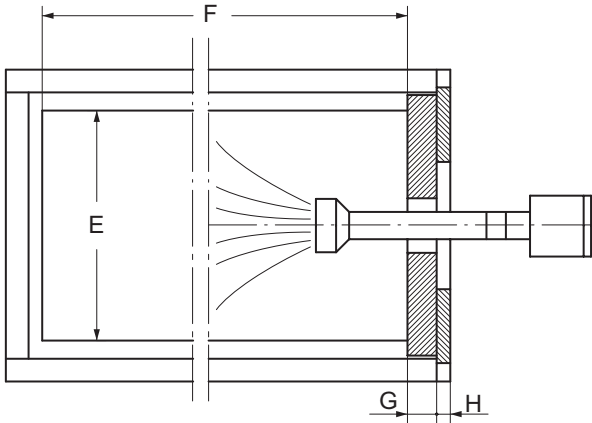


Screw joint flange
 Max-3 plus (420,530)
 4 x M12 (45°)
 4 x M12 (15°)

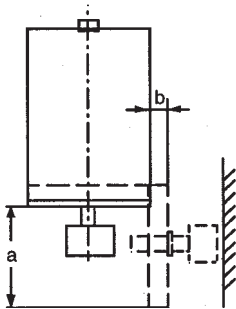
Screw joint flange
 Max-3 plus (620,750)
 6 x M12 (15°)

 Screw joint flange
 Max-3 plus (1000,1250)
 6 x M16 (15°)

Screw joint flange
 Max-3 plus (1500-2700)
 6 x M16 (15°)



Swinging out of boiler door
 Boiler door is swivelling to the right or left
 (Dimensions in mm)



Dimensions
 (Dimensions in mm)

Max-3 plus type	A	B	C	D	E	F	G	H	M
(420,530)	290	330	515	250	606	1624	163	30	450
(620,750)	350	400	550	310	684	1899	163	30	600
(1000,1250)	400	450	635	330	782	2182	163	30	600
(1500)	400	450	665	360	880	2417	170	30	600
(1800)	400	450	735	360	976	2605	170	30	600
(2200)	400	450	735	360	976	2905	170	30	600
(2700)	400	450	755	360	976	3233	170	30	600

Max-3 plus type	a	b
(420,530)	1060	150
(620,750)	1180	150
(1000,1250)	1370	150
(1500)	1520	175
(1800,2200)	1680	175
(2700)	1700	175

Standards and guidelines

The official regulations for installation and operation must be observed. In particular, these are the country-specific standards (e.g. EN standard, DIN standards etc.) as well as the corresponding regional regulations.

The following requirements and directives must be complied with:

- Hoval technical information and installation instructions
- hydraulic and technical control regulations of Hoval
- DIN EN 12828
Safety-relevant requirements
- DIN EN 12831 Heaters
Rules for the calculation of the heat requirements of buildings
- VDI 2035 Protection against damage by corrosion and boiler scale formation in heating and service water installations
- EN 14868 Protection of metallic materials against corrosion
- VDE 0100 supplement 2

Water quality in heating systems

Filling and replacement water, heating water

The following applies:

- VDI 2035
- In addition, the EN 14868 standard must be applied, **as well as the manufacturer-specific specifications**

Manufacturer-specific specifications

Filling and replacement water

The filling and replacement water can be both fully demineralised and also merely softened.

Heating water

- In the case of full **demineralisation of the filling and replacement water**, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.
- In the case of **softening the filling and replacement water**, the following conditions must be complied with:
The quality of the heating water must be checked and documented periodically:
 - For an installed heat output above 100 kW up to and including 1000 kW, an annual check of the heating water is required.
 - For an installed heat output above 1000 kW, an check of the heating water is required twice a year.
 The following standard values for the heating water must be measured and adhered to:
 - Electrical conductivity of the heating water for operation with water containing salts: > 100 µS/cm to ≤ 1500 µS/cm
 - pH value of the heating water for systems without aluminium alloy as water-side material 8.2 to 10.0 (measurement 10 weeks after commissioning at the earliest)
- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

Additional notices

- Hoval boilers and calorifiers are suitable for heating systems without significant oxygen intake (system type I according to EN 14868).
- Systems with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up) must be equipped with a system separation.
- If only the boiler is replaced in an existing system, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The boiler must not be filled until the heating system has been flushed.

Frost protection agent

The planning sheet "Use of frost protection agent" is available from your Hoval contact person.

Combustion air supply

The combustion air supply must be warranted. The air opening must not be lockable. It is very important to ensure that the combustion air is free from halogen compounds. These are present, for example, in spray cans, varnishes, glues, solvents and cleansing agents.

Room air dependent operation:

- Minimum free cross-section for the air opening can be assumed as follows by way of simplification. Nominal heat output is the determining factor!
- A minimum free cross-section of once 150 cm² or twice 75 cm² and an additional 2 cm² for each kW boiler capacity in excess of 50 kW is required for the air opening into the outside air.

Burner installation

- If the weight of the burner (including attachments) of gas and dual-fuel burners is more than 90 kg and the distance of the centre of gravity of the burner to the boiler door is greater than 60 cm, support the burner casing weight directly with a strut to the boiler room floor.
- Depending on the size of the burner flange, an intermediate flange may be required to attach the burner. The intermediate flange including screws and seal must be supplied by the burner company.
- The lines must be positioned so that the boiler door can still be fully opened.
- To allow the boiler door to be swung out 90° to the left or right, the connections must be flexible and routed to the burner in a sufficiently large loop
- In systems with ThermoCondensor, the burner must additionally absorb the resistance of the heat exchanger

The space between the burner pipe and the hinged flange is to be insulated. A line must be routed from the burner to the sight glass to carry cooling air, in order to cool the boiler sight glass and keep it clean (delivery by the burner company).

Electric connection of the burner

- Control voltage 1 x 230 V
- Burner motor 1 x 230 V / 3 x 400 V
- The burner must be connected to the burner connection plug of the boiler.
- For safety reasons the electrical cable of the burner must be that short that the plug must be removed when swivelling boiler door.

Sound absorbing

Sound absorption is possible through the following steps:

- Heating room walls, ceiling and floor should be very solidly built, a sound insulation should be mounted into the air inlet. Pipe holders and support should be protected by means of anti-vibration sleeves.
- Install sound attenuation cowl for burner.
- If living rooms are located above or under the boiler room, vibration absorbers have to be mounted to the boiler base. Pipes and flue gas tube must be connected flexibly with compensators.
- Connect circulating pumps to the piping network using expansion joints.
- For damping of flame noise it is possible to install a silencer into the flue gas tube (space should be foreseen for later installation).

Measures for sound reduction

Make sure right from the planning phase that bedrooms are not situated in the immediate vicinity of the sound source (heating room, chimney).

A reduction of the radiated burner air sound level in the heating room (reduction of the burner noises) of up to approx. 12 dB can be achieved encapsulating the burner (sound attenuation cowl).

A significant part of the noise development in the combustion chamber and in the secondary heating surfaces is radiated as airborne noise via the flue gas line.

In addition, depending on dimensioning of the chimney and intersection, resonance effects caused by the vibration of the combustion noises (amplification) can occur.

These noises can be reduced on the one hand by measures on the burner side, such as modification of the flame geometry, the atomisation characteristic or the fuel throughput.

On the other hand, flue gas silencers achieve an important noise reduction.

These silencers must usually be adapted to low frequencies of 60-250 Hz.

Flue gas silencers work based on the principle of sound absorption.

The kinetic energy of the flue gases is consumed due to friction, which means a draughting requirement increase in the flue gas line is necessary. This must be taken into account when dimensioning the burner.

The connection piece from the boiler to the flue gas silencer must be gas-tight as the draught and pressure zero points lie behind the flue gas silencer.

The space required of approx. 1 m for retrofitting of a flue gas silencer should be provided during planning.

Note also that secondary air devices are installed only behind a flue gas silencer.

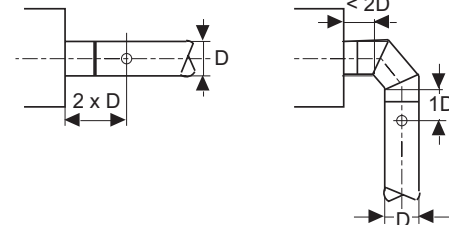
Installation instructions

Please observe the installation instructions supplied with every boiler.

Chimney/flue gas system

Flue gas line

- The flue gas tube between boiler and chimney must be connected with an angle 30-45° to the chimney.



- If the flue gas tube is longer than 1 m, it must be insulated.
- The flue gas tube must be designed that no condensate water can get into the boiler.
- A closeable flue gas measuring socket with an inner diameter of 10-21 mm must be foreseen. The socket has to be led over the thermal insulation.

Chimney

- The flue gas system must be humidity-insensitive and acid-proof and admitted for flue gas temperatures up to > 160 °C.
- For existing chimney installation the restoration must be carried out according to the instructions of the chimney constructor.
- Calculation of the profile of the chimney according to DIN 4705.
- It is recommendable to use a secondary air valve for chimney draft limiting.

Flue gas temperature and power ranges

In order to achieve a good combustion quality (optimum flame burnout), the outputs must not be less than the specified minimum values.

For new systems, acid-resistant chimneys must be provided or the flue gas temperature must be set correspondingly higher (min. 160 °C).

The minimum flue gas temperature must be coordinated with the chimney conditions, otherwise the formation of sulphuric acid can lead to soot buildup in the chimney.

Diaphragm pressure expansion tank

- Ideally, the diaphragm pressure expansion tank should be connected to the heating system as described in our example applications, with a removable or sealable actuation device. This means that it is not necessary to drain the entire system in order to carry out work on the diaphragm pressure expansion tank.

Safety valve

- A safety valve and an automatic air vent must be installed in the safety flow.

Hoval – heating and climate technology for industrial, commercial and leisure applications.

With over 75 years' experience, Hoval is one of the leading international companies for indoor climate systems. For our customers, we develop modern, decentralised heating, cooling and ventilation solutions for large halls for a diverse range of applications.

From workshops, production halls and logistics centres to aircraft hangars, shopping centres and swimming pools – our experts can design indoor climate systems tailored to your individual requirements.

And the best part: the flexibility of our systems means they can easily be adapted to meet your changing needs in the future, giving you excellent long-term results.

As a specialist in universal systems for heating, cooling and ventilation, we assist our customers at every stage of the system lifecycle at their facility – from planning and operation right through to modernisation. In doing so, we help our customers to benefit from energy-efficient solutions and first-class air quality both today and tomorrow.



The perfect climate in every hall.

The perfect climate and pleasant, performance-enhancing conditions for both work and well-being in halls for industrial, commercial and leisure applications. The new generation of decentralised indoor climate systems from Hoval makes it all possible.

The modular ventilation, heating and cooling systems consist of units distributed within the hall space with demand-driven control. Installed in a select number of specific locations, these systems ensure optimum climate conditions throughout the entire hall, even where different requirements are involved. The supply and extract air handling units, supply air units and recirculation units are equipped with optimised air distribution and, if desired, their own heat and cold generation system.

Hoval indoor climate systems overcome any challenge

- Decentralised and modular
- Efficient and economical
- Clean and ecological
- Competent and reliable

A single system – the interplay of perfectly matched products

- **RoofVent®**
Supply and extract air handling units for ventilating, heating and cooling high spaces with energy recovery.
Additional variants:
 - with heat pump for decentralised heating and cooling
 - with gas condensing boiler for decentralised heating
- **TopVent®**
Recirculation and supply air units for cost-effective heating and cooling of high spaces with recirculated or mixed air
Additional variants:
 - as roof units for more space and undisturbed operation in the hall
 - with heat pump for decentralised heating and cooling
 - with gas condensing boiler for decentralised heating
- **ProcessVent**
compact units for ventilating, heating and cooling production halls with highly efficient energy recovery from process air



Decentralised and modular.

We design our Hoval indoor climate systems as technically autonomous and energy-independent individual solutions.

Quick and easy to plan, our systems can be perfectly integrated into virtually any environment without the need for structural measures.

And if things change in the future, our solutions simply develop along with your plans. Whether converting or expanding, the modular structure of the Hoval systems allows you to adapt to new challenges with minimal expense and low investment costs.

Maximum practicality and perfectly matched – we tailor your indoor climate system to your exact specifications

- Efficient air distribution with the integrated Air-Injector – reduced heat loss and no pressure drops in ducts
- Huge choice of units and specific designs for every application
- Completely preassembled, ready-to-connect systems for hassle-free installation, quick start-up and easy maintenance
- Compatible, open-interface components for easy connectivity to external connections and perfect integration with the building management system



Efficient and economical.



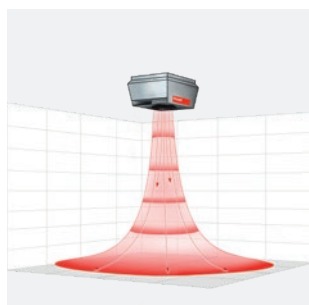
Hoval indoor climate systems are an easy and efficient solution. The patented Hoval Air-Injector air supply and distribution system helps reduce temperature stratification in the halls. The difference between the room temperature under the roof and the outside temperature remains small and only a minimal amount of energy is lost through the roof.

The Air-Injector's powerful, efficient air distribution allows the components to cover a large operating area, meaning that only a relatively low air flow rate is required. Not only does this save on investment costs, but also on drive energy and running costs too. Potential energy savings for specific applications can quickly and easily be calculated using the Hoval calculation tool.

The ready-to-connect, pre-installed units with integrated measurement, control and regulation components also ensure cost-effective, quick and smooth system planning, installation and start-up of the systems.

Efficient indoor climate systems are good for the environment – and your finances

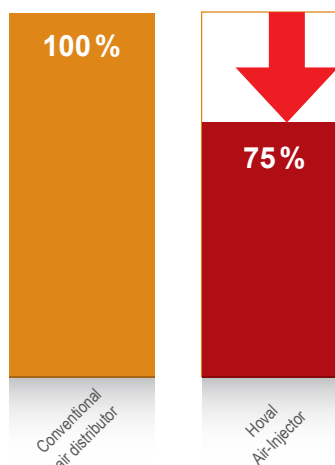
- Ideal air supply and distribution for minimum energy loss and maximum comfort
- Connection of recirculation units optimised according to requirements
- “Air-Quality” operating mode for ventilation according to requirements
- Economical night cooling with temporarily adapted reduced air volume
- 24/7 cooling and overheating protection
- Hoval energy recovery – offering superior performance and even higher energy efficiency



Heating operation: The supply air is warmer and thus lighter than the room air. The vertical inflow of air ensures that the heat reaches the areas where it is needed.



Cooling operation: The inflowing air is colder than the room air and sinks. To avoid draughts, it is injected horizontally.



Compared to other systems, they often require far lower air flow rates to achieve the required and desired conditions.

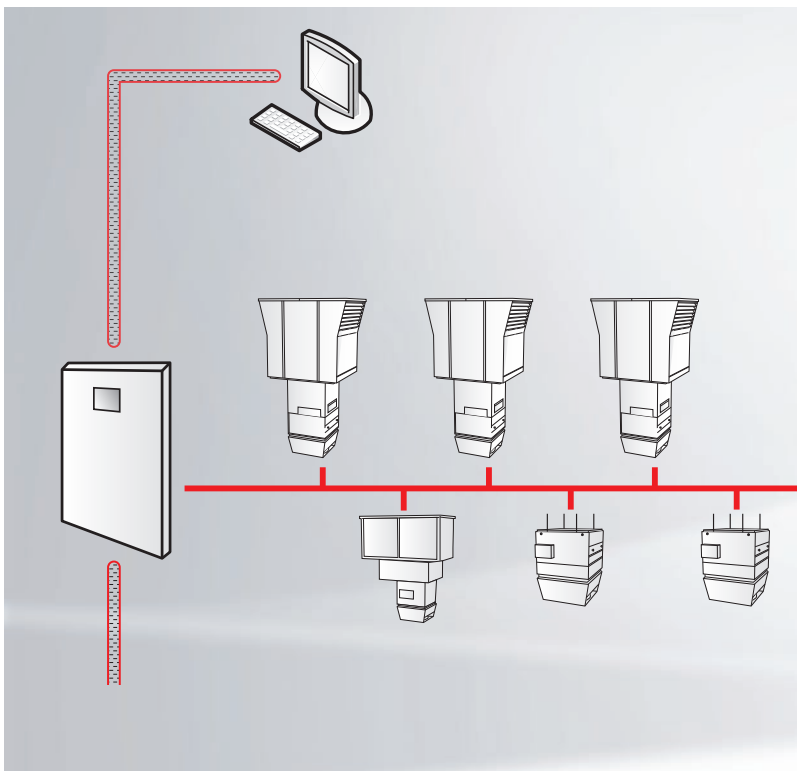
Clean and ecological.

Hoval indoor climate systems create a comfortable climate and always ensure fresh air. By guiding the air streams separately in the plate heat exchanger, dirt and odours from the extract air are diverted directly outside, preventing contamination of the supply air.

The individual indoor climate system units are installed on the ceiling or in the roof, distributed throughout the interior. Supply and extract air ducts are not required and there are no contaminated, difficult-to-clean pipes. Duct-free ventilation is therefore able to ensure maximum hygiene and comfort.

Fresh air at all times – a plus for the environment and your health

- Renewable energy for heating and cooling
- Highly efficient energy recovery
- Fully separate air streams in energy recovery
- Clean supply air at all times, as difficult-to-clean air ducts are not required



The zone-based control concept enables need-based ventilation, heating and cooling of indoor areas used for various purposes.

Competent and reliable.

Right from the planning stage, our specialists get to grips with your system's unique requirements profile. Drawing on their expertise and years of experience, they bring together the best possible units and components from across the Hoval product ranges to create your tailor-made indoor climate system. Energy efficient and cost effective, easy to operate, environmentally friendly, easy to service and good for your staff.

You can rely on Hoval – over the entire lifecycle of our products

- Ready-to-connect systems with pre-defined hydraulic and electric connection points for hassle-free planning
- Compact and simple function units with easy, clearly defined operating modes for smooth integration in any building
- Patented control algorithms with our specialists' expertise for energy-efficient operation
- Safety guarantee with CE certification
- Reliable, durable operation and hassle-free maintenance during operating times due to units that can be deactivated individually
- Independent unit response to alarm messages with alarm notification via e-mail
- Local contact for guaranteed close cooperation and immediate assistance at all times
- One contact person for the entire system



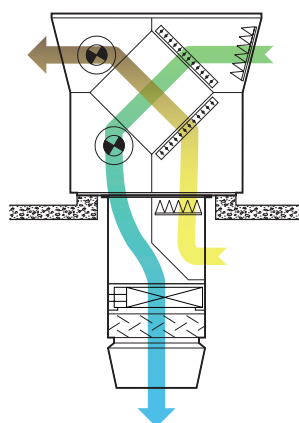
RoofVent® supply and extract air handling units

Ventilation, heating and cooling of high spaces with energy recovery.

There is more than 45 years of climate technology experience in the new RoofVent® generation. This experience has allowed us to see what an environmentally compatible and easy-to-use indoor climate system looks like. The units in the RoofVent® product range control the supply of fresh air and the removal of extract air through the roof – all while guaranteeing maximum energy efficiency. This economical and ecological indoor climate solution is perfect for use in combination with heat pumps.

RoofVent® supply and extract air handling units – it doesn't get more efficient than this

- Huge amount of flexibility and customised applications due to diverse product variants with optional equipment
- Heat recovery rate of up to 86% with the Hoval high-performance plate heat exchanger
- Suitable for combination with reversible heat pumps with a heating and cooling capacity of up to 67 kilowatts
- Reduced investment costs, as an equipment room and water supply network are not required
- Easily extendable with additional units
- Connection point for the entire electrical system on the below-roof unit – the electrical supply for the roof unit is integrated and tested at the factory
- Hoval HK-Select planning tool with all technical data for the quick and easy design of the RoofVent® units
- Efficient air distribution with the integrated Air-Injector – reduced heat loss and no pressure drops in ducts



Technical data

Air flow rate	m³/h
Heat output	kW
Cooling capacity (total)	kW
Operating distance	m x m
Weight	kg



Supply and extract air handling units with efficient air distribution

RoofVent® RP Heating and cooling with decentralised heat pump	RoofVent® RG Heating with gas-fired heat generation	RoofVent® RH Heating with central heat generation	RoofVent® RC Heating and cooling with central heat and cold generation in the 2-pipe system	RoofVent® RHC Heating and cooling with central heat and cold generation in the 4-pipe system
Ventilation - Fresh air supply - Extract air removal - Filters fresh air, recirculated air and extract air - Air distribution with Air-Injector - Recirculation operation	Ventilation - Fresh air supply - Extract air removal - Filters fresh air, recirculated air and extract air - Air distribution with Air-Injector - Recirculation operation	Ventilation - Fresh air supply - Extract air removal - Filters fresh air, recirculated air and extract air - Air distribution with Air-Injector - Recirculation operation	Ventilation - Fresh air supply - Extract air removal - Filters fresh air, recirculated air and extract air - Air distribution with Air-Injector - Recirculation operation	Ventilation - Fresh air supply - Extract air removal - Filters fresh air, recirculated air and extract air - Air distribution with Air-Injector - Recirculation operation
Heating With heat pump	Heating With condensing gas boiler	Heating With connection to boiler system	Heating With connection to boiler system	Heating With connection to boiler system
Cooling - Free cooling - With heat pump	Cooling Free cooling	Cooling Free cooling	Cooling - Free cooling - With connection to water chiller	Cooling - Free cooling - With connection to water chiller
Energy recovery	Energy recovery	Energy recovery	Energy recovery	Energy recovery
RP-6 RP-9	RG-9	RH-6 RH-9	RC-6 RC-9	RHC-6 RHC-9
5500 8000	8000	5500 8000	5500 8000	5500 8000
upto 44 upto 44/76	upto 70	upto 78 upto 139	upto 78 upto 139	upto 78 upto 139
upto 40 upto 40/67	–	– –	upto 52 upto 98	upto 52 upto 98
22 x 22 28 x 28	28 x 28	22 x 22 28 x 28	22 x 22 28 x 28	22 x 22 28 x 28
911 1200	1251	849 1104	882 1171	919 1244

TopVent® recirculation and supply air units

Cost-effective solution for heating and cooling high spaces with supply air, recirculation or mixed air.

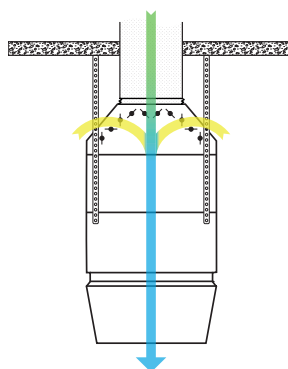
From large halls and high spaces to high-bay warehouses and supermarkets, the extensive model range in the TopVent® supply air and recirculation unit series caters to even the most diverse requirements and individual comfort expectations. The combination of decentralised and central heat and cold generation and the decentralised ventilation unit guarantees maximum sustainability in both the medium and long term.

Supply air and recirculation units in different output levels guarantee efficient air distribution via the patented Air-Injector vortex air distributor. Depending on the difference in temperature between the hall air and the air being blown in, the Air-Injector continuously and automatically adjusts the blowing angle and ensures an optimum flow stability.



The future of indoor climate systems: cost efficient, flexible and environmentally friendly

- Maximum flexibility for all types of halls and hall usages with its modular and scalable system building block design with controller TopTronic® C (heat generation, recirculation air heating and cooling and zone-based control)
- Cost-effective supplement to the RoofVent® supply and extract air handling systems if there is a temporary increase in demand for heat or cooling capacity
- Air duct-free systems for easy assembly and low energy consumption
- Different coil types and accessories for tailor-made solutions
- Air curtains of different sizes and designs to protect entrance areas against the cold
- Control of up to ten units with the EasyTronic EC controller
- All supply air units can easily be adapted for operation with recirculated or mixed air
- All supply air units are available in two sizes, each fitted with a continuously adjustable fan and heating/cooling coil in different output levels for tailor-made solutions
- Hoval HK-Select planning tool with all technical data for the quick and easy design of the TopVent® units
- Efficient air distribution with the integrated Air-Injector – reduced heat loss and no pressure drops in ducts



Technical data

Air flow rate	m³/h
Heat output	kW
Cooling capacity (total)	kW
Operating distance	m x m
Weight	kg

TopVent® recirculation units



Recirculation units with efficient air distribution

TopVent® TP Heating and cooling with decentralised heat pump		TopVent® TH Heating with central heat generation		TopVent® TC Heating and cooling with central heat and cold generation in the 2-pipe system		TopVent® THC Heating and cooling with central heat and cold generation in the 4-pipe system	
Ventilation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Air filtration (option)		■ Ventilation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Outlet nozzle (option) ■ Air filtration (option)		Ventilation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Air filtration (option)		Ventilation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Air filtration (option)	
Heating ■ With heat pump		Heating ■ With connection to boiler system		Heating ■ With connection to boiler system		Heating ■ With connection to boiler system	
Cooling ■ With heat pump				Cooling ■ With connection to water chiller		Cooling ■ With connection to water chiller	
TP-6	TP-9	TH-6	TH-9	TC-6	TC-9	THC-6	THC-9
6000	9000	6000	9000	6000	9000	6000	9000
up to 44	up to 44/76	up to 76	up to 118	up to 76	up to 141	up to 76	up to 118
up to 40	up to 40/67	–	–	up to 44	up to 87	up to 44	up to 87
23 x 23	30 x 30	23 x 23	30 x 30	23 x 23	30 x 30	23 x 23	30 x 30
245	316	111	166	216	276	269	340

TopVent® recirculation units



Recirculation units

TopVent® TW pro
Air curtain
with central heat generation

Ventilation

- Recirculation operation
- Air distribution via outlet grid

Heating

- With connection to boiler system
- TW Pro 150-1
- TW Pro 150-2
- TW Pro 200-1
- TW Pro 200-2

TopVent® TV
Heating
with central heat generation

Ventilation

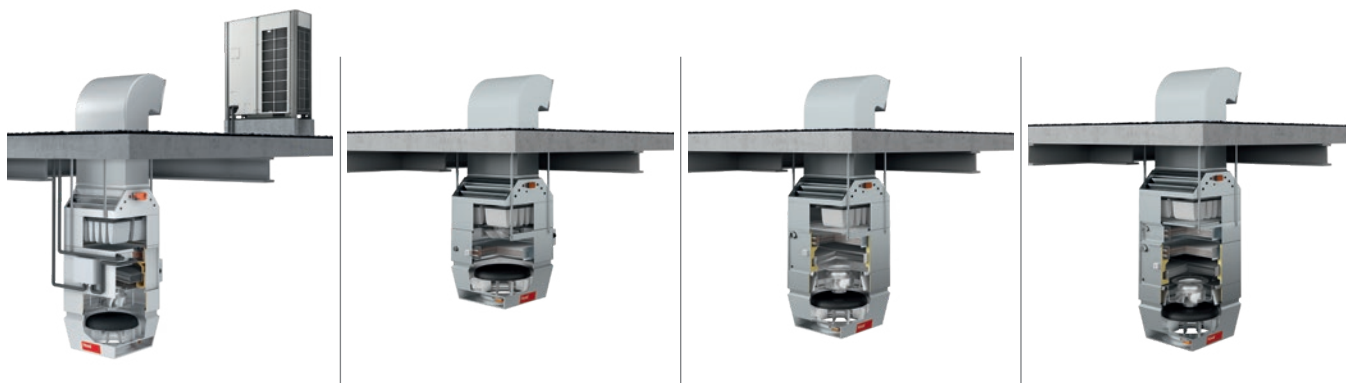
- Recirculation operation
- Air distribution via air outlet louvre

Heating

- With connection to boiler system

Technical data		150-0	200-0	150-1	200-1	150-2	200-2	TV-2	TV-4	TV-5
Air flow rate	m³/h	8500	12800	7900	11900	7300	10700	2100	4850	5700
Heat output	kW	–	–	up to 32	up to 48	up to 58	up to 88	up to 13	up to 30	up to 45
Cooling capacity (total)	kW	–	–	–	–	–	–	–	–	–
Operating distance	m x m	8.0	8.0	7.5	7.5	7.0	7.0	7 x 7	10 x 10	12 x 12
Weight	kg	43	58	51	66	54	70	16	23	24

TopVent® supply air units



Supply air units with efficient air distribution

TopVent® MP Heating and cooling with decentralised heat pump		TopVent® MH Heating with central heat generation		TopVent® MC Heating and cooling with central heat and cold generation in the 2-pipe system		TopVent® MHC Heating and cooling with central heat and cold generation in the 4-pipe system	
Ventilation ■ Fresh air supply (duct connection) ■ Mixed air operation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Air filtration		Ventilation ■ Fresh air supply (duct connection) ■ Mixed air operation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Air filtration		Ventilation ■ Fresh air supply (duct connection) ■ Mixed air operation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Air filtration		Ventilation ■ Fresh air supply (duct connection) ■ Mixed air operation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Air filtration	
Heating ■ With heat pump		Heating ■ With connection to boiler system		Heating ■ With connection to boiler system		Heating ■ With connection to boiler system	
Cooling ■ With heat pump		Cooling ■ Free cooling		Cooling ■ Free cooling ■ With connection to water chiller		Cooling ■ Free cooling ■ With connection to water chiller	
MP-6	MP-9	MH-6	MH-9	MC-6	MC-9	MHC-6	MHC-9
6000	9000	6000	9000	6000	9000	6000	9000
up to 44	up to 44/76	up to 78	up to 121	up to 78	up to 145	up to 78	up to 121
up to 40	up to 40/67	–	–	up to 34	up to 68	up to 34	up to 68
23 x 23	30 x 30	23 x 23	30 x 30	23 x 23	30 x 30	23 x 23	30 x 30
304	380	172	228	266	334	305	399

TopVent® roof units

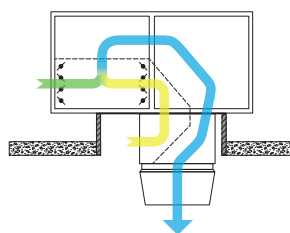
The TopVent® roof ventilation units have been specially developed for the requirements of modern logistics, production or industrial halls.

- Maintenance access from the outside
- Optimum climate
- Economical

These units are mainly used where **undisturbed hall operation** at a constant temperature is required. Service, maintenance and even installation are performed from the roof, so operation can continue in the hall without any disruption. 4 recirculation and supply air units in each case, with various output levels, guarantee efficient air distribution via the patented Air-Injector vortex air distributor. Heating and cooling is possible using a central supply or with a decentralised heat pump (TopVent® SH optionally also available with adiabatic cooling).

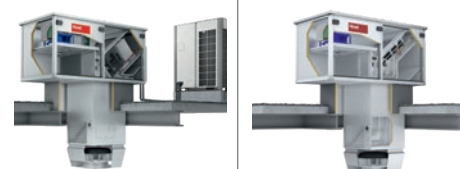
For undisturbed hall operation.

- Maintenance work can be performed from the roof, meaning that work in the hall is not restricted.
- Little space is required in the hall – there just needs to be enough room for air distribution.
- Hoval HK-Select planning tool with all technical data for the quick and easy design of the TopVent® units
- Efficient air distribution with the integrated Air-Injector – lower heat losses and no duct pressure losses



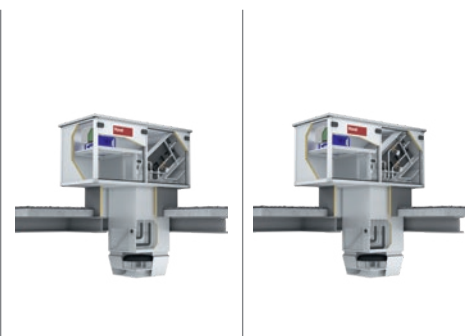
Technical data	
Air flow rate	m³/h
Heat output	kW
Cooling capacity (total) kW	
Operating distance	m x m
Weight	kg

TopVent® roof recirculation units



Roof recirculation units v			
TopVent® CP Heating and cooling with decentralised heat pump	TopVent® CH Heating with central heat generation in the 2-pipe system		
Ventilation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Air filtration	Ventilation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Outlet nozzle (Option) ■ Air filtration		
Heating ■ With heat pump	Heating ■ With connection to boiler system		
Cooling ■ With heat pump			
CP-6	CP-9	CH-6	CH-9
6000	9000	6000	9000
up to 44	up to 44/76	up to 76	up to 118
up to 40	up to 40/67	–	–
23 x 23	31 x 31	23 x 23	31 x 31
672	869	616	719

TopVent® roof supply air units



with efficient air distribution

TopVent® CC
Heating and cooling with central heat and cold generation in the 2-pipe system

Ventilation

- Recirculation operation
- Air distribution with Air-Injector
- Air filtration

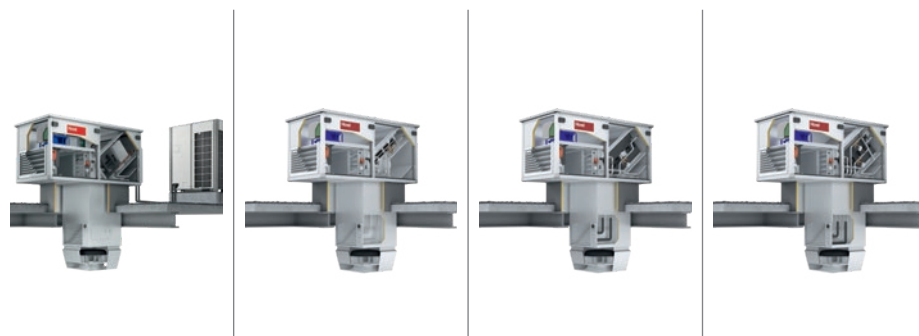
Heating

- With connection to boiler system

Cooling

- With connection to water chiller

CC-6	CC-9	CHC-6	CHC-9
6000	9000	6000	9000
up to 76	up to 141	up to 76	up to 118
up to 44	up to 87	up to 44	up to 87
23 x 23	31 x 31	23 x 23	31 x 31
647	843	684	898



Roof supply air units with efficient air distribution

TopVent® SP
Heating and cooling with decentralised heat pump

Ventilation

- Recirculation operation
- Supply air operating mode
- Air distribution with Air-Injector
- Air filtration

Heating

- With heat pump

Cooling

- Free cooling
- With heat pump

SP-6	SP-9
6000	9000
up to 44	up to 44/76
up to 40	up to 40/67
23 x 23	31 x 31
717	924

TopVent® SH
Heating with central heat generation in the 2-pipe system

Ventilation

- Recirculation operation
- Supply air operating mode
- Air distribution with Air-Injector
- Outlet nozzle (Option)
- Air filtration

Heating

- With connection to boiler system

Cooling

- Free cooling
- adiabatic cooling (Option)

SH-6	SH-9
6000	9000
up to 78	up to 121
–	–
23 x 23	31 x 31
661	846

TopVent® SC
Heating and cooling with central heat and cold generation in the 2-pipe system

Ventilation

- Recirculation operation
- Supply air operating mode
- Air distribution with Air-Injector
- Air filtration

Heating

- With connection to boiler system

Cooling

- Free cooling
- With connection to water chiller

SC-6	SC-9
6000	9000
up to 78	up to 145
up to 34	up to 68
23 x 23	31 x 31
692	898

TopVent® SHC
Heating and cooling with central heat and cold generation in the 4-pipe system

Ventilation

- Recirculation operation
- Supply operating air mode
- Air distribution with Air-Injector
- Air filtration

Heating

- With connection to boiler system

Cooling

- Free cooling
- With connection to water chiller

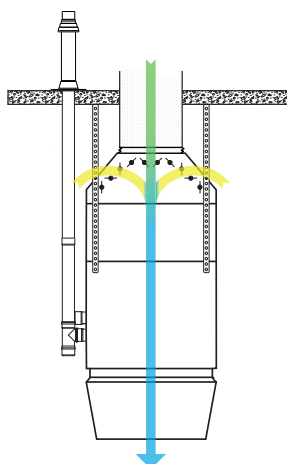
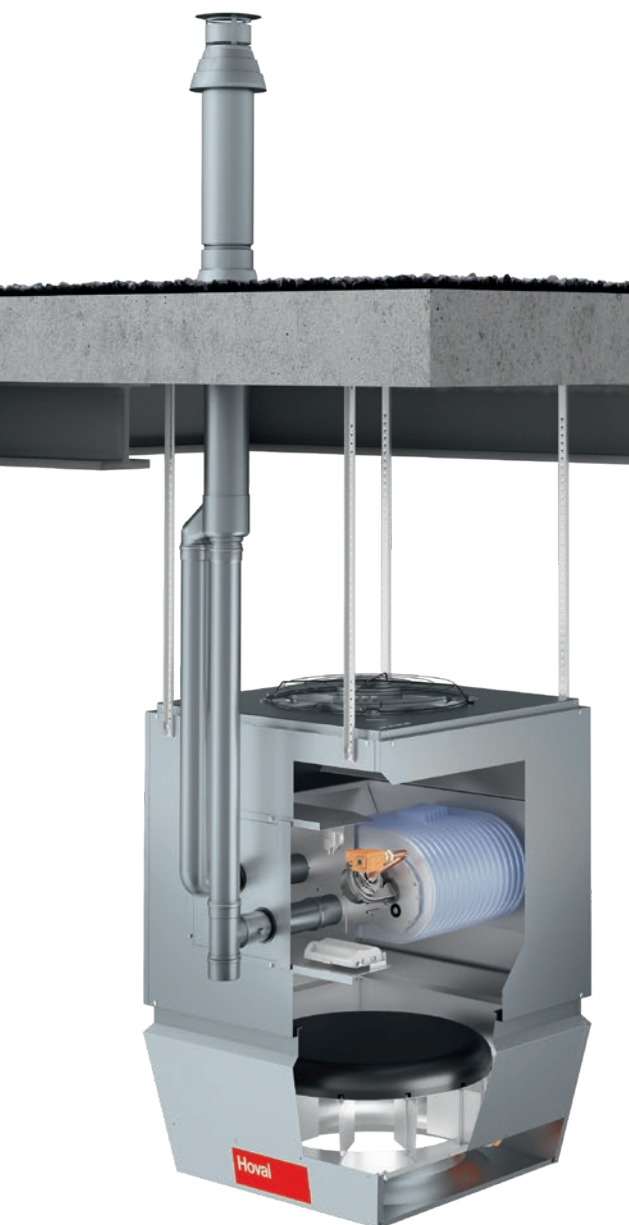
SHC-6	SHC-9
6000	9000
up to 78	up to 121
up to 34	up to 68
23 x 23	31 x 31
729	953

TopVent® gas-fired recirculation and supply air units:

In TopVent® gas units, heat is generated via a decentralised, gas-fired heat exchanger. The modulating premix burners used keep emissions to a minimum, guaranteeing cost effectiveness and environmental efficiency. The systems are delivered ready to install with a suspension set and exhaust accessories.

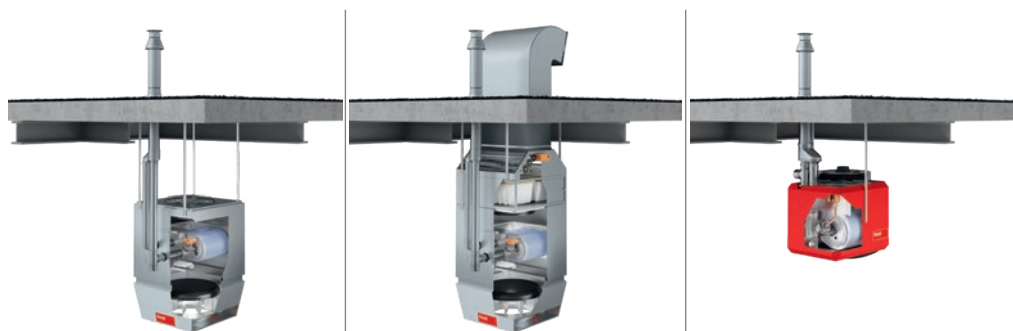
Generates heat exactly where it is needed – superior technology for decentralised heating

- Heat is generated exactly where it is needed and is guided directly into the hall without any losses. No pipes or heat loss from the heat generator to the heat consumer
- Reduced investment and running costs, as a boiler room, fuel storage room and hot water supply network are not required for the gas-fired system
- Room air-independent supply – supply air is injected from outside
- Broad model range permits planning to size – precisely attuned to the room circumstances and specific requirements
- TempTronic MTC – cost-effective basic controller for up to 8 TopVent GV units
- Air distribution is continuously adjusted with the integrated Air-Injector



Technical data	
Air flow rate	m³/h
Heat output	kW
Operating distance	m x m
Weight	kg

TopVent® gas-fired recirculation and supply air units:



Gas-fired recirculation and supply air units with efficient air distribution

TopVent® TG Recirculation unit with efficient air distribution		TopVent® MG Supply air unit with efficient air distribution		TopVent® GV Recirculation unit	
Ventilation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Air filtration (option) ■ Outlet nozzle (option)		Ventilation ■ Fresh air supply (duct connection) ■ Mixed air operation ■ Recirculation operation ■ Air distribution with Air-Injector ■ Air filtration		Ventilation ■ Recirculation operation ■ Air distribution via air outlet louvre	
Heating ■ With gas-fired heat exchanger		Heating ■ With gas-fired heat exchanger		Heating ■ With gas-fired heat exchanger	
TG-6	TG-9	MG-6	MG-9	GV-3	GV-5
7000	11000	7000	11000	4200	8500
30	60	30	60	30	50
28 x 28	31 x 31	28 x 28	31 x 31	12 x 12	16 x 16
125	170	175	230	40	80

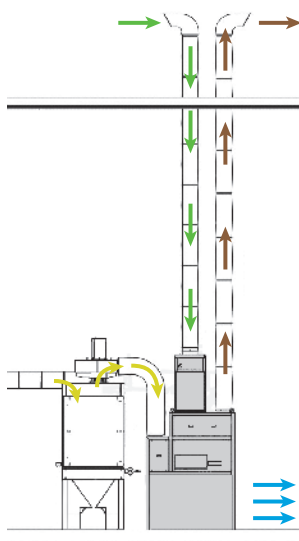
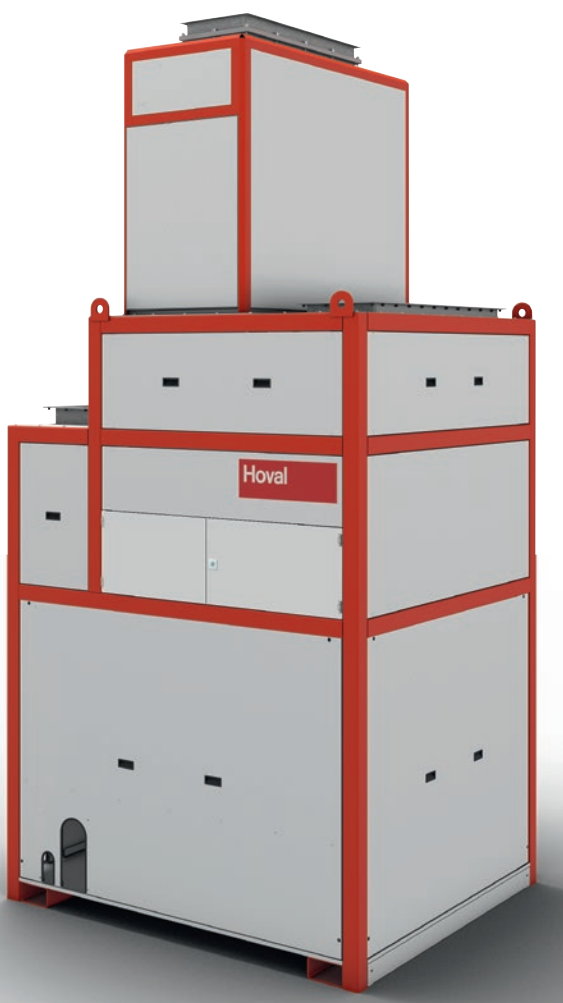
ProcessVent compact units

Ventilation, heating and cooling of production halls with highly efficient energy recovery from process air.

ProcessVent units in combination with an extract air purification plant form a single efficient universal system with outstanding emission levels and heating cost savings of up to 98%. The compact units are deployed in halls with enclosed machine tools or welding plants and are positioned right next to machine groups.

Clear the air and benefit from a healthy indoor climate and reduced operating costs

- Energy recovery from (clean) process air via an oil-tight plate heat exchanger ensures significantly reduced heat energy costs.
- Ecological! Even vapours which are not captured by the extract air purification plant condense in the oil-tight plate heat exchanger of the ProcessVent units. Cutting fluid can therefore be recovered or disposed of in an environmentally responsible manner.
- Choice of a heating/cooling coil for supplemental heating or cooling of the fresh air, or in recirculation operation
- ProcessVent units use the integrated control to work both in conjunction with the extract air purification plant or autonomously. This means that each unit can be tailored to each operating condition.
- Complies with the legal requirements for energy-efficient, environmentally friendly production methods and healthy working conditions
- Possibility of an investment subsidy through relevant subsidy programmes, including subsidies for cross-sectional technologies or energy recovery and waste heat utilisation measures



Technical data

Air flow rate	m³/h
Heat output	kW
Cooling capacity (total)	kW
Operating distance	m x m
Weight	kg



Compact units with energy recovery from process air

ProcessVent PV Compact unit for ventilating with energy recovery from process air	ProcessVent PVH Compact unit for ventilating and heating with energy recovery from process air	ProcessVent PVC Compact unit for ventilating, heating and cooling with energy recovery from process air
Ventilation - Fresh air supply - Extract air removal (air conveyance via the extract air purification plant) - Recirculation operation - Air filtration	Ventilation - Fresh air supply - Extract air removal (air conveyance via the extract air purification plant) - Recirculation operation - Air filtration	Ventilation - Fresh air supply - Extract air removal (air conveyance via the extract air purification plant) - Recirculation operation - Air filtration
	Heating With connection to boiler system	Heating With connection to boiler system
		Cooling With connection to water chiller
Energy recovery from process air		
PV-10	PVH-10	PVC-10
10000	10000	10000
–	up to 234	up to 256
–	–	up to 118
–	–	–
1657	1699	1754

Aftersales, Service and Spares

Comprehensive support for lasting performance, efficiency and reliability

Hoval service extends far beyond consultation and purchase. We have a team of fully qualified service engineers on hand and offer aftersales care tailored to meet a variety of specific requirements.

Peace of Mind

Our team of service engineers are Gas Safe registered and fully qualified, with knowledge of all the latest products, technical developments and legislative requirements to ensure your equipment retains the highest standard of performance.

Standard and Extended Warranties

All of our products come with warranties as standard. The UltraGas® 2 includes a 10 year heat exchanger warranty.* Extended warranties may be available on request.

Commissioning and Servicing

We have a range of commissioning and servicing packages available to choose from to suit your needs. When you choose Hoval to commission and service your equipment you can rest assured that we will deliver optimum performance from the first day of operation, with prolonged product life and minimum environmental impact.

Service Plans

Hoval offers a range of flexible service plans designed to provide expert maintenance and long-term support for your heating system. Whether you prefer an annual service package, a plan that locks in pricing for multiple years, or one that aligns with an extended warranty, there are options to suit different needs. Each plan includes benefits such as scheduled service visits, discounts on spare parts and breakdown rates, and additional savings on essential service kits—helping to ensure reliable performance and peace of mind.



Spares

We maintain comprehensive stocks of commonly used spare parts which are generally available for next day delivery.

Hoval also offers spares kits for our UltraGas® and TopGas® boilers which contain all the necessary spares needed for a standard service. Any items used by a Hoval engineer attending site will be replenished so they are always on hand, just in case.

As the manufacturer, we have fact direct access to spare parts.

Comprehensive Maintenance

Our full service package encompasses the boiler, burner and boiler controls, and delivers benefits including:

- Optimised control settings
- Reduced energt consumption and carbon emissions
- Early defect detection and timely wear checks

Biomass and CHP

Maintenance of biomass boilers and combined heat and power (CHP) plants requires specialist knowledge, and we have many years' experience in this area, meaning we can provide:

- Precise control to maintain outputs while reducing running costs and emissions
- Harmonised integration between different heat sources



Hoval quality.
You can count on us.

Hoval

Hoval is one of the leading international companies for heating and indoor climate solutions. Drawing on more than 75 years of experience and benefiting from a close-knit team culture, the Hoval Group delivers exciting solutions and develops technically superior products. This leadership role requires a sense of responsibility for energy and the environment, which is expressed in an intelligent combination of different heating technologies and customised indoor climate solutions.

Hoval also provides personal consultations and comprehensive customer service. With around 2500 employees in 15 companies around the world, Hoval sees itself not as a conglomerate, but as a large family that thinks and acts globally.

Hoval heating and indoor climate solutions are currently exported to more than 50 countries.

Responsibility for energy and environment

Your Hoval partner

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