Hoval

FACTBOOK

Hoval Belaria® fit (53, 85)

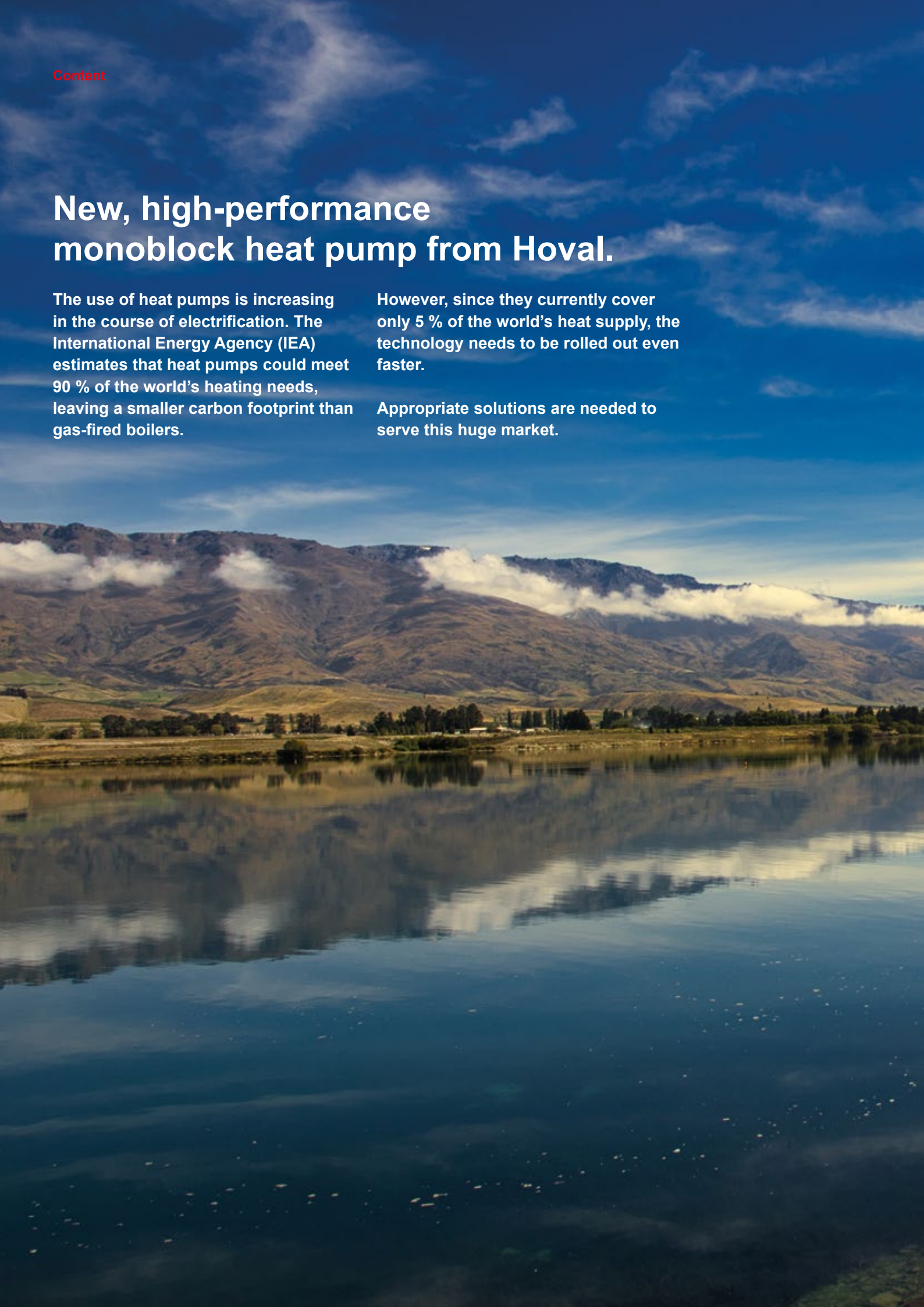
Air/water heat pump
for high-performance solutions.

New, high-performance monoblock heat pump from Hoval.

The use of heat pumps is increasing in the course of electrification. The International Energy Agency (IEA) estimates that heat pumps could meet 90 % of the world's heating needs, leaving a smaller carbon footprint than gas-fired boilers.

However, since they currently cover only 5 % of the world's heat supply, the technology needs to be rolled out even faster.

Appropriate solutions are needed to serve this huge market.



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Content

The 2022 heat pump family

Welcome Hoval Belaria® fit (53, 85).

BasicLine

Basic regulation (standalone)

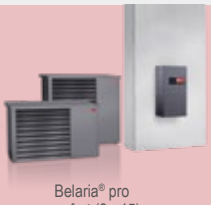
CombiVal WPE / WPER / WPEF

Three lines for quick selection.

The strategy of the three lines supports the quick preliminary selection of the right heat pump from the heat pump family according to the customer's needs. BasicLine and PremiumLine for single-family and two-family house areas of application. Compared to the BasicLine, the PremiumLine is characterised by higher efficiency and the TopTronic® E system control. ProfiLine products are suitable for medium and large buildings with higher output requirements. These different applications of the lines are reflected not only in the power range but also in the equipment, especially in the functionality of the control system.

PremiumLine

Built-in TopTronic® E system controller (online possible)



Belaria® pro comfort (8 - 15)

Belaria® pro compact (8, 13/100/300)

Belaria® pro (24)

UltraSource® B comfort C (8 - 17)
UltraSource® B compact C (8, 11/200)

Belaria® twin I / IR (20 - 30)

Belaria® comfort ICM (8, 13)

Belaria® twin A / AR (32)

UltraSource® T comfort (8 - 17)

UltraSource® T compact (8, 13/200)

Thermalia® comfort (8 - 17)
Thermalia® comfort H (7 - 10)

Thermalia® twin (20 - 42)
Thermalia® twin H (13 - 22)

ProfiLine

TopTronic® E system controller (control system)

Belaria® dual AR (60)

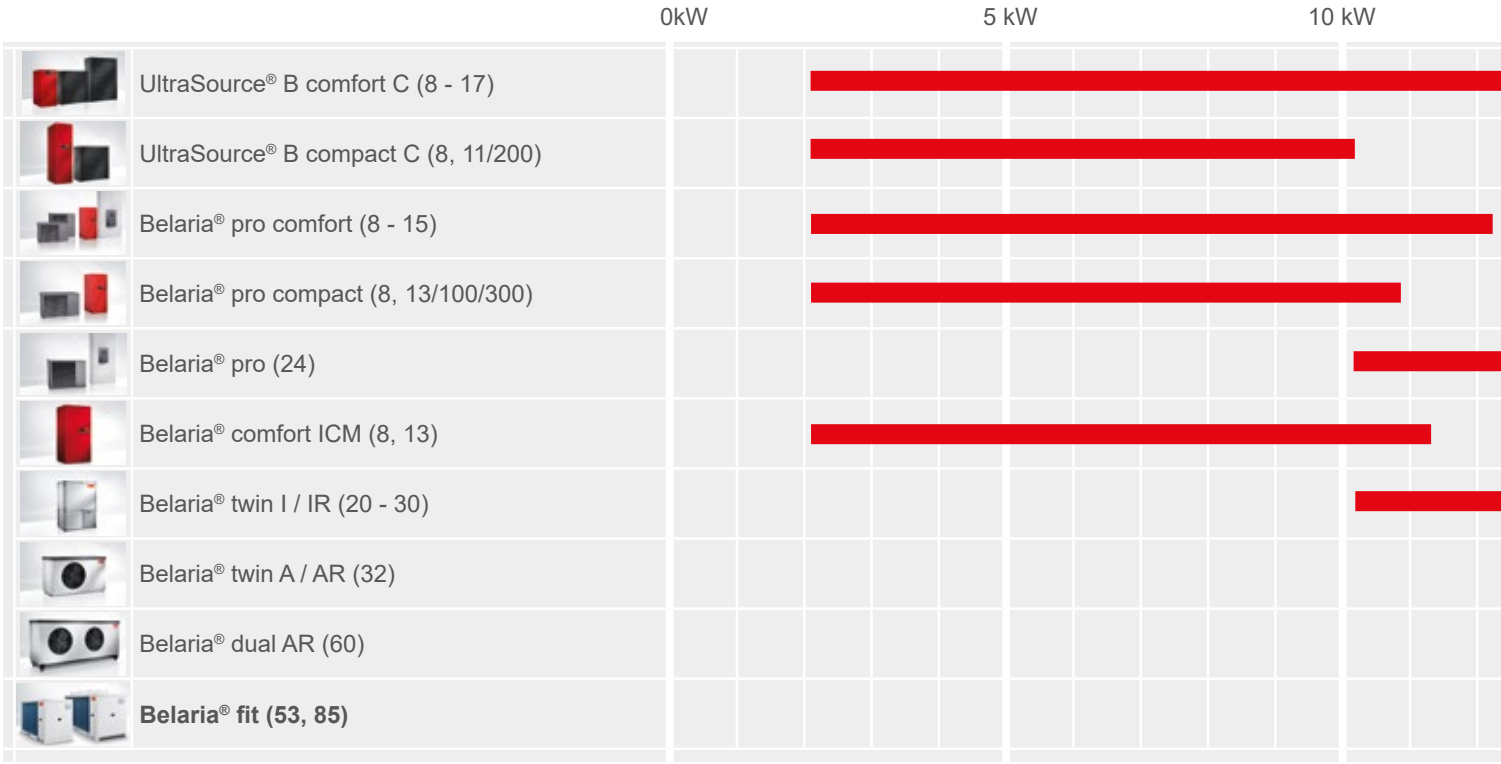
Belaria® fit (53, 85)

Thermalia® dual (55 - 140)
Thermalia® dual H (35 - 90)
Thermalia® dual R (55 - 140)

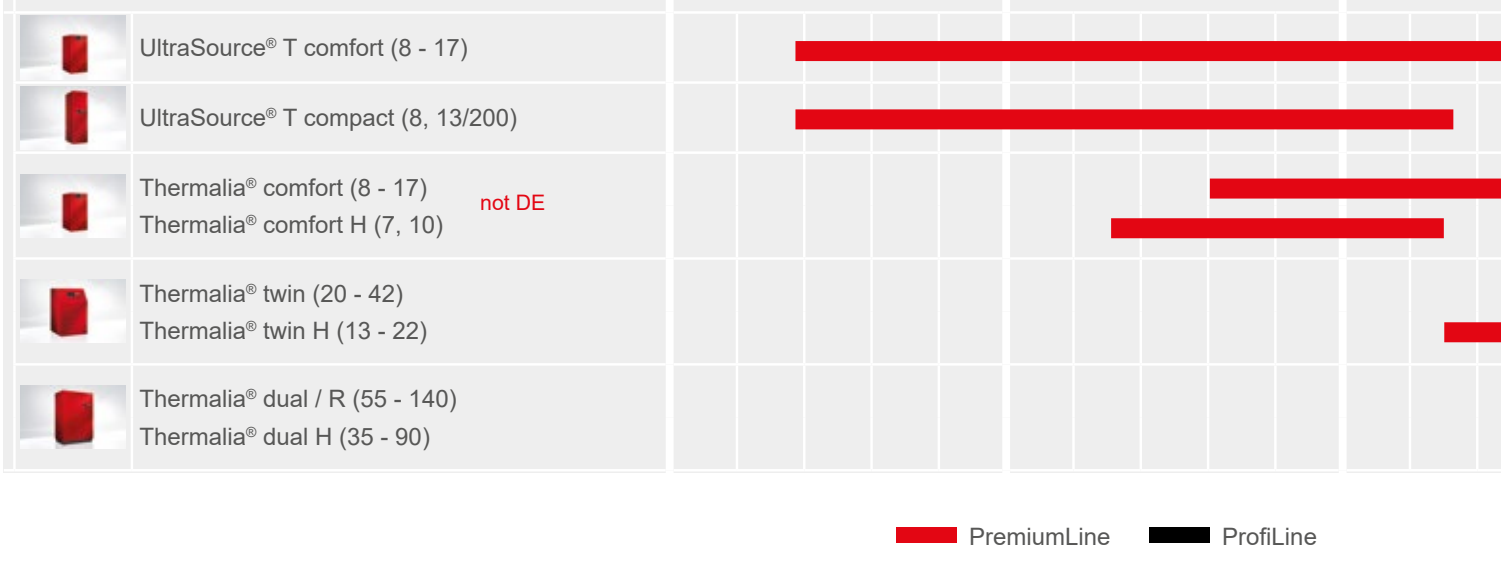
Hoval heat pumps

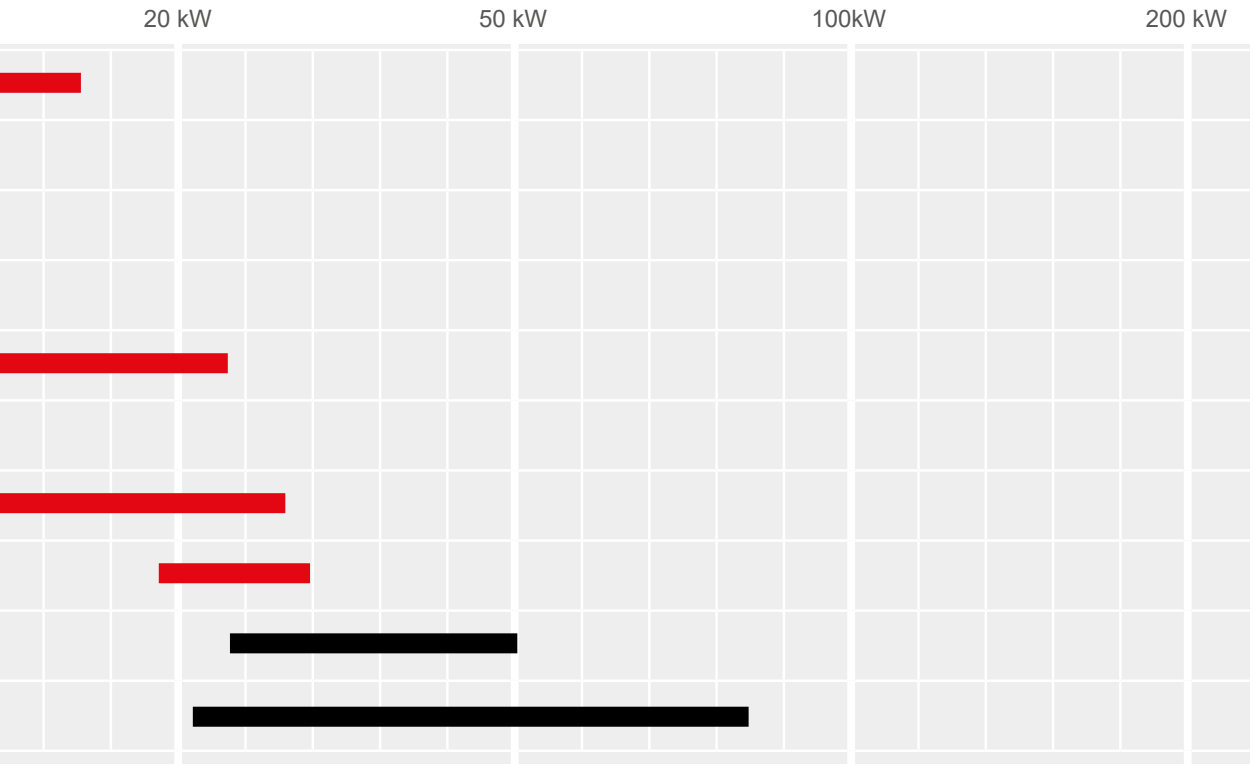
This is what they can do.

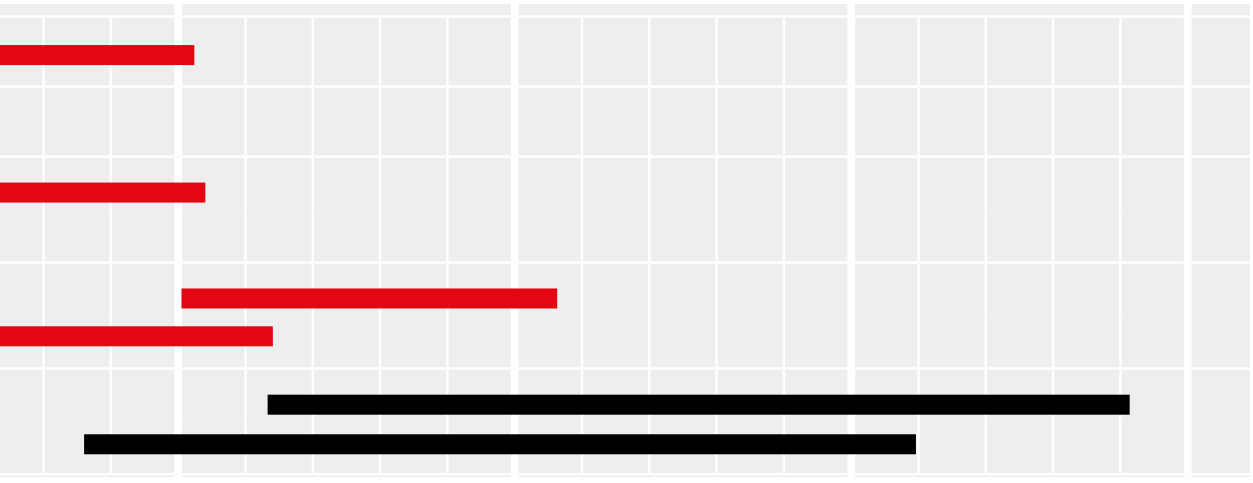
Air/water heat pumps with A2W35



Brine/water heat pumps with B0W35 / W10W35




20 kW
50 kW
100kW
200 kW



Hoval Belaria® fit (53, 85)

Are you curious? Let's get to know one another!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Hoval Belaria® fit (53, 85)

The Belaria® fit was designed for systems with high heating and cooling capacities as a modulating air/water heat pump in compact design for outdoor installation, and allows cascades of up to 16 units.

Added value for your benefit:

- Efficient
- Modular
- Sustainable

Belaria® fit (53, 85)

With the new Belaria® fit heat pump, Hoval offers a suitable product for a wide range of applications in the medium and some upper market segments.

The Belaria® fit was designed for stand-alone or hybrid heating, cooling and domestic hot water applications; it is excellently suited for the following applications:

- Industry
- Hotels
- Shopping centres
- Hospitals
- Office buildings
- Multiple dwelling units

Efficient

Thanks to inverter technology in compressors and fans, the Belaria® fit continuously adjusts its output values over a very wide range, so it always runs at optimum efficiency.
On the one hand, the Belaria® fit can be used as a standalone solution for heating, cooling and domestic hot water in various applications. In combination with other heat generation systems such as UltraGas®, TopGas® and BioLyt, it becomes even more interesting, also for refurbishment solutions.
Frequency-controlled compressors and fans allow fast and precise adjustment of the required heating and cooling capacity to suit the application.

Modular

Up to 16 Belaria® fit units can be combined flexibly to form an easily controllable cascade. This increases operational reliability – and the output which can be modulated increases into the megawatt range. Hybrid systems in which the Belaria® fit is combined with a gas condensing boiler, for example, offer particularly interesting price/performance ratios.
The ready-to-connect, compact monoblock design of the Belaria® fit allows simple and fast installation.

Sustainable

The R32 refrigerant complies with EU regulations and offers a future-oriented solution with a low environmental footprint. Systems with the Belaria® fit are considered sustainable due to their high efficiency and are eligible for subsidies.
With the help of inverter technology in compressors and R32 refrigerant, with high volumetric refrigerating capacity, operating costs can be saved compared to other, environmentally harmful refrigerants such as R410A.
Speed-controlled fans enable noise-reduced operation at night.

Hoval Belaria® fit (53, 85)

Precise output on request.

Renewable energies up to 1.4 MW – even up to 4 MW in the hybrid system

With the Belaria® fit, efficient systems with a high proportion of renewable energies can be planned. As a monovalent system, up to 1.4 MW is possible. Bivalent hybrid systems can even supply up to 4 MW – depending on the required proportion of renewable energies.

50 % heat load through heat pump ▶ **80 % renewable energies in the annual demand**

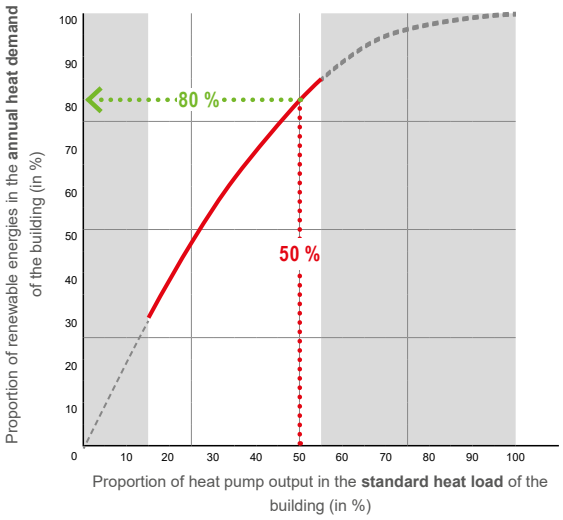
The Belaria® fit covers the base load of the entire annual demand.
An additional heat generator only supplies the energy for demand peaks, at low outdoor temperatures or increased domestic water requirements.
The entire system is controlled by the Hoval TopTronic® E system control.

In addition to ecological advantages, the hybrid systems offer:

- Increased efficiency, as the advantages of the energy sources in terms of output and temperature level can be used selectively.
- Increased working safety due to redundancy of heat generators and reduced dependence on a specific energy source.
- Lower investment costs for the additional heat generators.

Renewable energy sources in refurbishment

The Belaria® fit opens up new possibilities for heating system refurbishment: Existing systems, for example gas condensing boiler systems, can be cost-effectively supplemented with a Belaria® fit. They are then considered renewable energy systems.



With 50 % of the heat load, the Belaria® fit provides 80 % of the annual energy consumption. As a result, legal requirements for a high proportion of renewable energies can be met cost-effectively, even in large plants.

Belaria® fit		(53)	(85)
35 °C		A++	A++
Refrigerant		R32	R32
Max. flow	°C	54	55
Heat output [1] A2W35	kW	22.4-53.3	38.1-84.8
Cooling capacity [1] A35W18	kW	23.7-75.6	40.2-119.0

[1] Modulation range

Belaria® fit (53): up to 853 kW

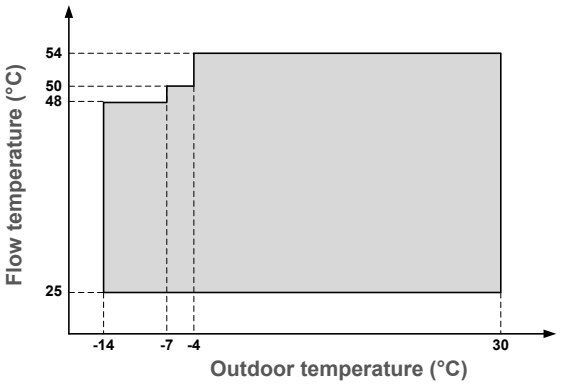
Belaria® fit (85): up to 1.4 MW

Hoval Belaria® fit (53, 85)

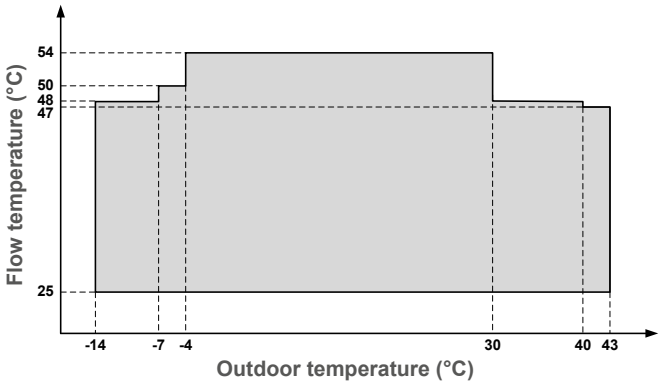
Areas of application.

Area of application for heating and domestic hot water

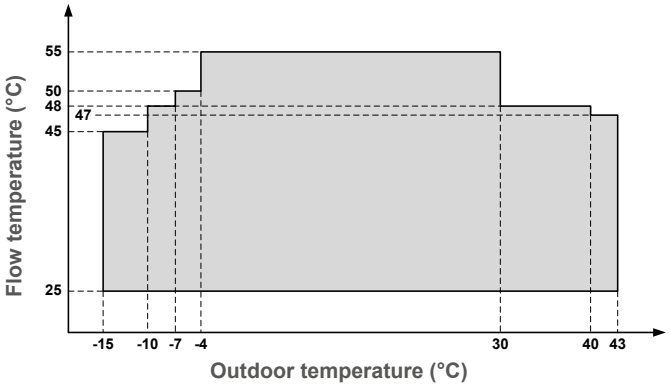
Heating Belaria® fit (53)



Domestic hot water Belaria® fit (53)

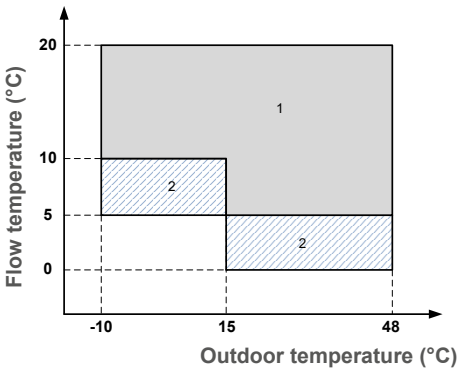


Heating and domestic hot water Belaria® fit (85)



Area of application for cooling

Cooling Belaria® fit (53, 85)



1 Normal operating range

2 Operating range in which the use of ethylene glycol is mandatory

Comparison of details

Refrigerant, efficiency, noise.

Hoval Belaria® fit (53, 85)

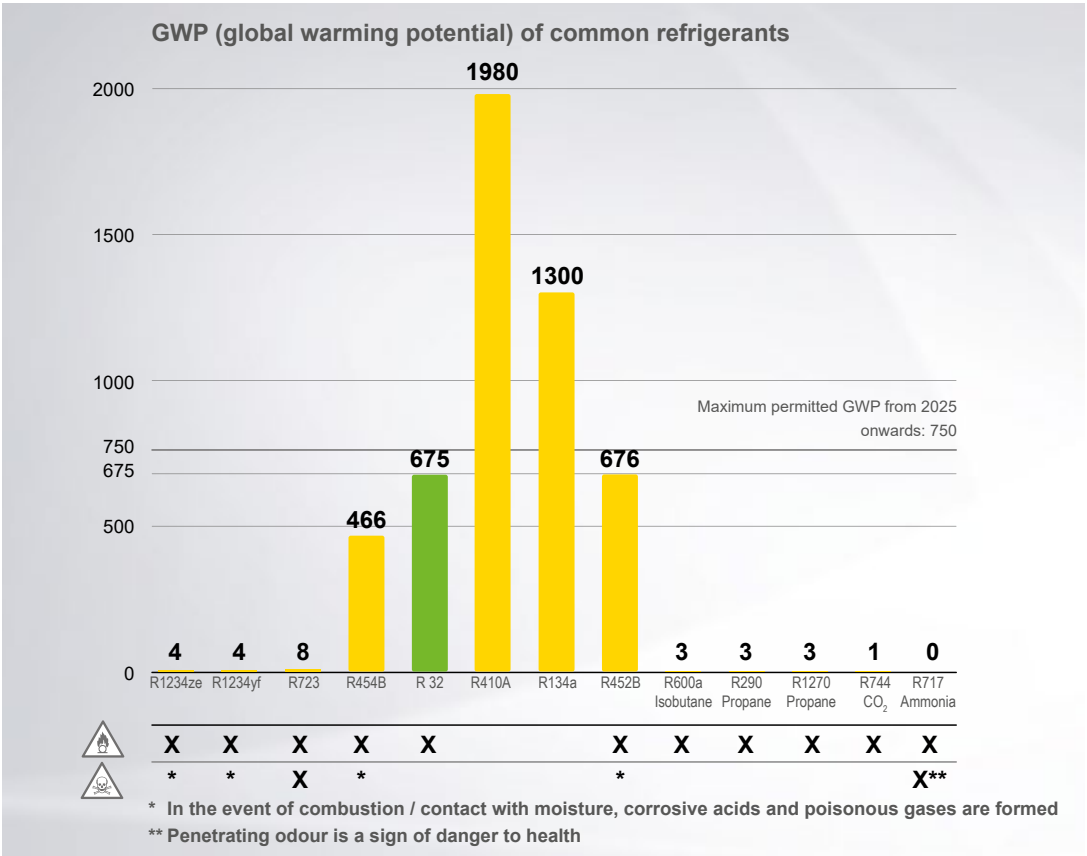
Refrigerant R32.

Environment and legal basis.

Greenhouse gases are driving global heating and climate change. When you think about climate change, CO_2 and methane are the first things that come to mind. However, there are more than 20 natural and man-made greenhouse gases that contribute towards global heating. The global warming potential (GWP) describes how much a greenhouse gas contributes to global warming compared to the same amount of CO_2.

The common refrigerant R410A, which is often used in heat pumps, is to be largely replaced by the Phase Down Scenario (roadmap for the gradual reduction of synthetic refrigerant production) by 2025 due to its high GWP value. Despite apparently closed refrigerant circuits and clear regulations on releasing refrigerants, R410A has an enormous impact on the environment – 1980 times greater than that of CO2, for example.

With the Belaria® fit, Hoval is making an important contribution to curbing greenhouse gas emissions, as it is a very good alternative to – for example – R410A. Compared to R410A, R32 has a 77 % lower global warming potential (taking into account the filling quantity), making R32 an important selling point. Because R32 has a much lower burning rate than R290 (propane), it is classified as only slightly hazardous and flammable, but not explosive.
The advantages are a smaller filling quantity, a lower global warming potential (GWP) and thus a significantly lower environmental impact. R32 has been used successfully in various applications for several years. R32 can transport thermal energy much more effectively, which guarantees the best efficiency values for cooling and heating. This means maximum comfort with minimum energy consumption.



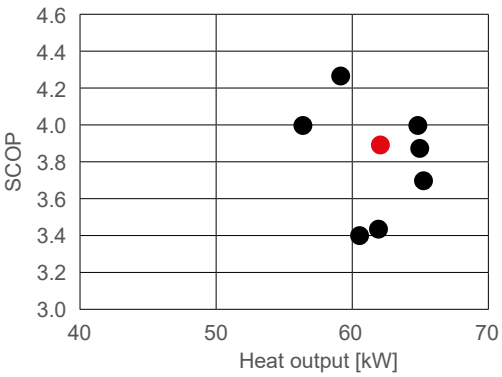
Hoval Belaria® fit (53, 85)
Efficiency SCOP.

Warm in summer, cold in winter. The required heat output for a building changes with the seasonal temperature fluctuations. The Belaria® fit optimally adapts its output to the respective demand thanks to modulating inverter technology. It switches on and off less frequently, i.e. it works more evenly. This not only increases efficiency, but also reduces operating costs. The Seasonal Coefficient of Performance (SCOP) enables efficiency values to be compared.

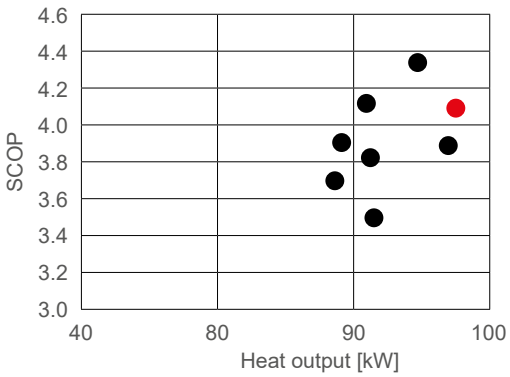
SCOP = Seasonal Coefficient of Performance
The calculation takes the ratio between supplied energy – the electric current – and the generated heating energy. The two values are determined at different operating conditions over one year and weighted by climate zone.

If the annual coefficients of performance (SCOP) of the Belaria® fit are compared with various competitors, the Belaria® fit is one of the most efficient heat pumps in its class.

Belaria® fit (53)



Belaria® fit (85)



Belaria® fit
Competitors

Hoval Belaria® fit (53, 85)

Sound.

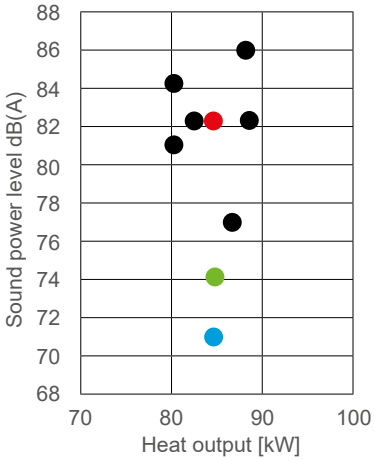
The sound levels refer to devices with maximum test conditions.
The noise levels are determined according to the tensiometric method (EN ISO 9614-2).
The data refers to the following conditions in heating mode:

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

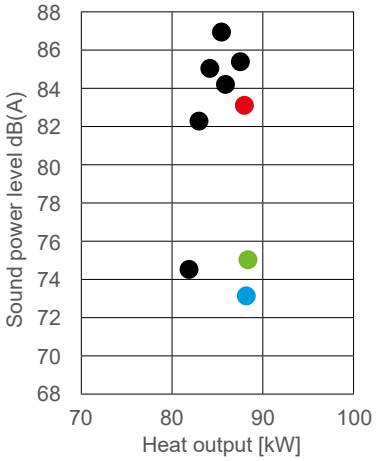
The data refers to the following conditions in cooling mode:

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

Belaria® fit (53)



Belaria® fit (85)



- Belaria® fit (Standard)
- Belaria® fit (Silent)
- Belaria® fit (Supersilent)
- Competitors

A look inside
Components and dimensions.

Hoval Belaria® fit (53, 85)
Components.

Evaporator
Multi-row fin evaporator with large surface area with hydrophilic coating of the fins. Hydrophilic means that the condensed water droplets turn into fine water films, which prevents the formation of ice bridges and ensures consistently high efficiency and shorter defrosting times.

Control panel
The control panels of the Belaria® fit (53, 85) are basically identical. All components necessary for optimal control of heat pumps and cascading are installed with a very clear layout. On the main control board there are DIP and rotary switches, as well as display and push-buttons for parameter setting and display of current status values. Of course, parameters can also be set via the operator terminal.

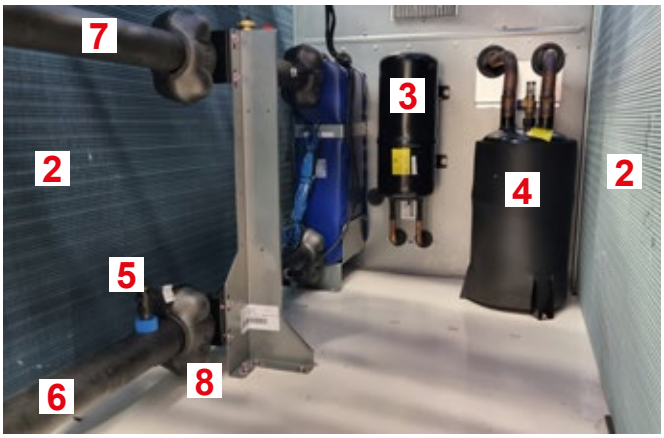
4-way valve
4-way valves allow the system to be used for both heating and cooling and ensure effective and energy-optimised defrosting of the evaporator. The 4-way valve of the Belaria® fit (85) was installed behind the control panel.

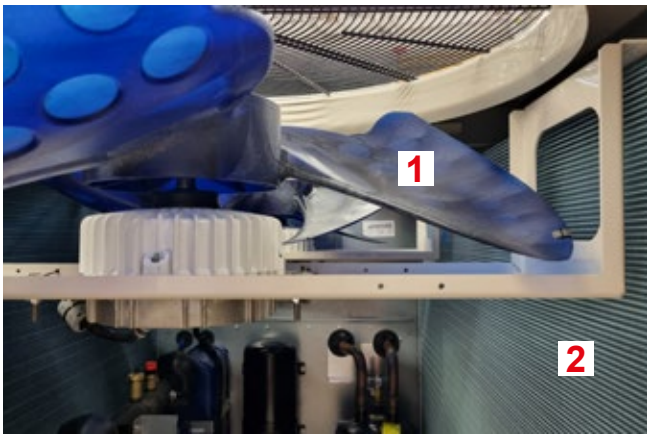
Oil separator
Oil separators prevent oil deposits in the system and rule out unwanted accumulations of oil in the evaporator.

Compressors
Two speed-controlled rotary compressors are installed in the Belaria® fit (53), and two scroll compressors, also speed-controlled, are installed in the Belaria® fit (85), ensuring energy-efficient and quiet operation. Thanks to speed control, the output of the heat pump is optimally adapted to the required heating and cooling capacity of the building, so it provides modulation. If full output is required, the oscillating bearing and additional encapsulation of the compressors ensure quiet operation. The compressors are also interconnected in the refrigerant circuit with a special system for oil recovery.

Hoval Belaria® fit (53, 85)
A look inside.

Basically, the internal components are identical for both heat pumps.
However, some of the components differ in their power ratings.





1 Fan
The fans with aerodynamically optimised blades are made of ABS resin (acrylonitrile-butadiene-styrene copolymer) with 20 % glass fibre content. This means that the fans are very light. The brushless motors of the fans are speed-controlled and increase both service life and efficiency.

2 Evaporator
The evaporators of the two types have the same design, but are considerably larger in the Belaria® fit (85). Thanks to the hydrophilic coating of the fins, it has been possible to choose very small distances between the fins (1.5 mm); this results in large heat exchanger surfaces, high performance values and small dimensions.

3 Collector
Collectors ensure that the appropriate amount of refrigerant is in the refrigeration circuit in any operating condition and that optimum output is always available.

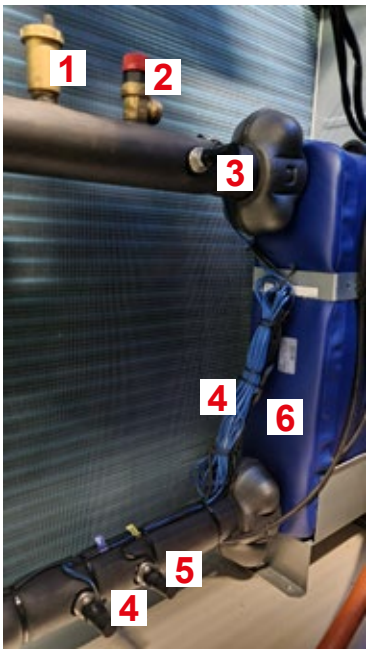
4 Suction gas accumulator
The suction gas accumulator separates liquid refrigerant coming from the evaporator, stores it and thus ensures that only gaseous refrigerant is supplied to the compressor via the suction line.

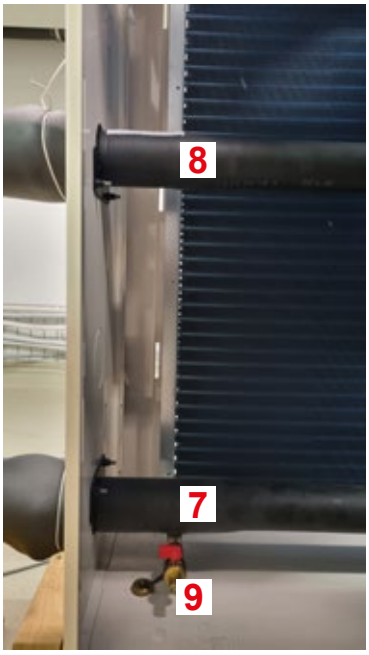
5 Continuous flow switch
The continuous flow switches turn off the heat pumps when the water flow is too low.

6 Flow line

7 Return line

8 Victaulic coupling
Victaulic couplings inside the heat pumps are used to connect sections of the supply and return lines.





1 Air vent

2 Safety valve

The safety valve ensures that the pressure on the water side does not exceed 6 bar.
The Belaria® fit (85) does not have a safety valve installed. This must be installed by the customer

3 Return temperature sensor Twi

Twi is used to control the heat pumps.

4 Temperature sensor Tw

In single units, the temperature sensor Tw is already installed on the flow. For heat pumps in cascade connection, the flow temperature sensor of the master unit must be installed outside the master unit as far away as possible on the common flow of the cascade.

5 Flow temperature sensor Two

Two is used to control the heat pumps.

6 Condenser

Direct expansion heat exchanger made of brazed stainless steel plates (AISI 316) with thermal insulation in expanded polypropylene, thickness 17 mm, including frost protection heating, flow monitor and anti-icing probe.

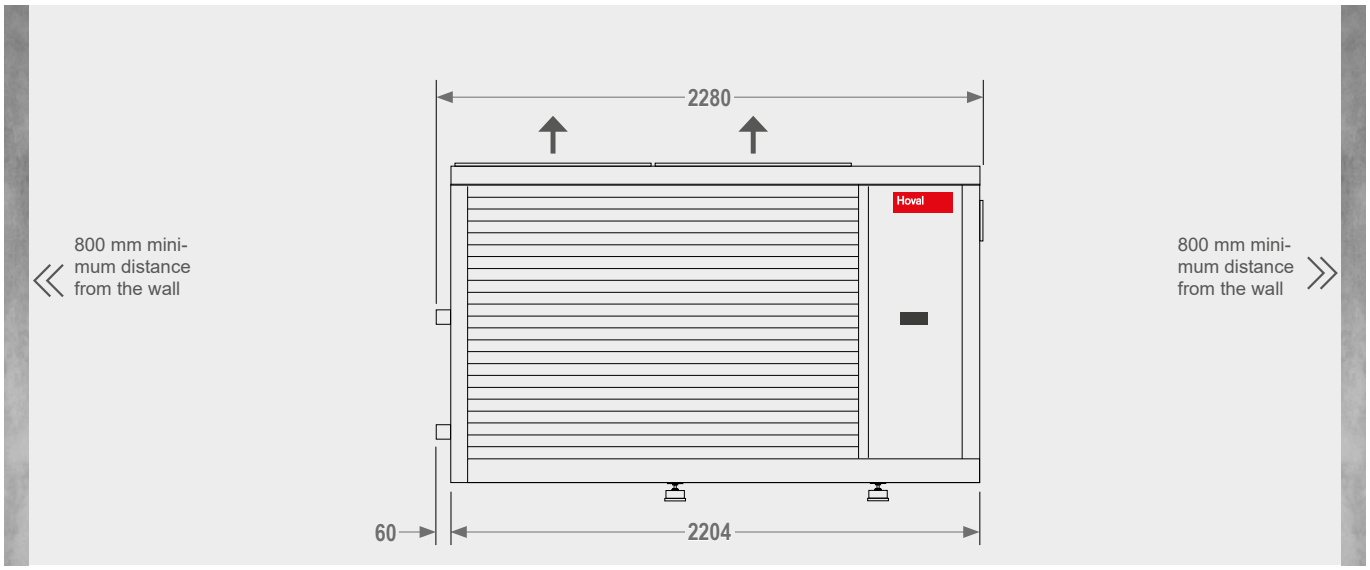
7 Flow line

8 Return line

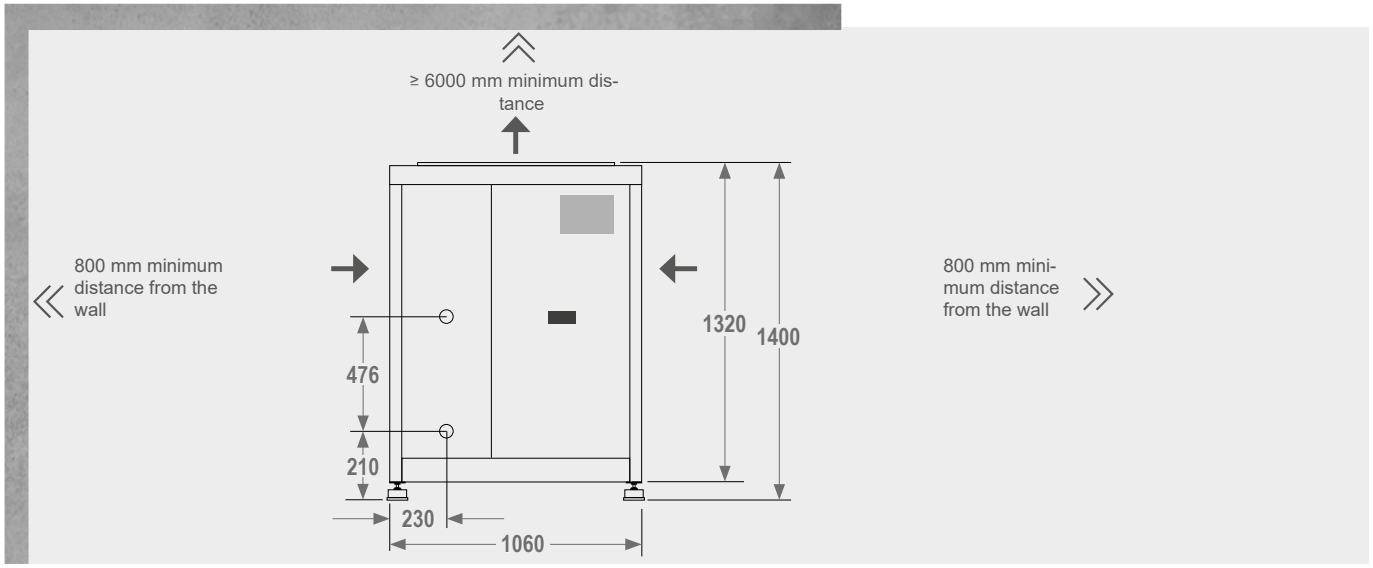
9 Drainage

Hoval Belaria® fit (53)
Dimensions.

Front view
(Dimensions in mm)



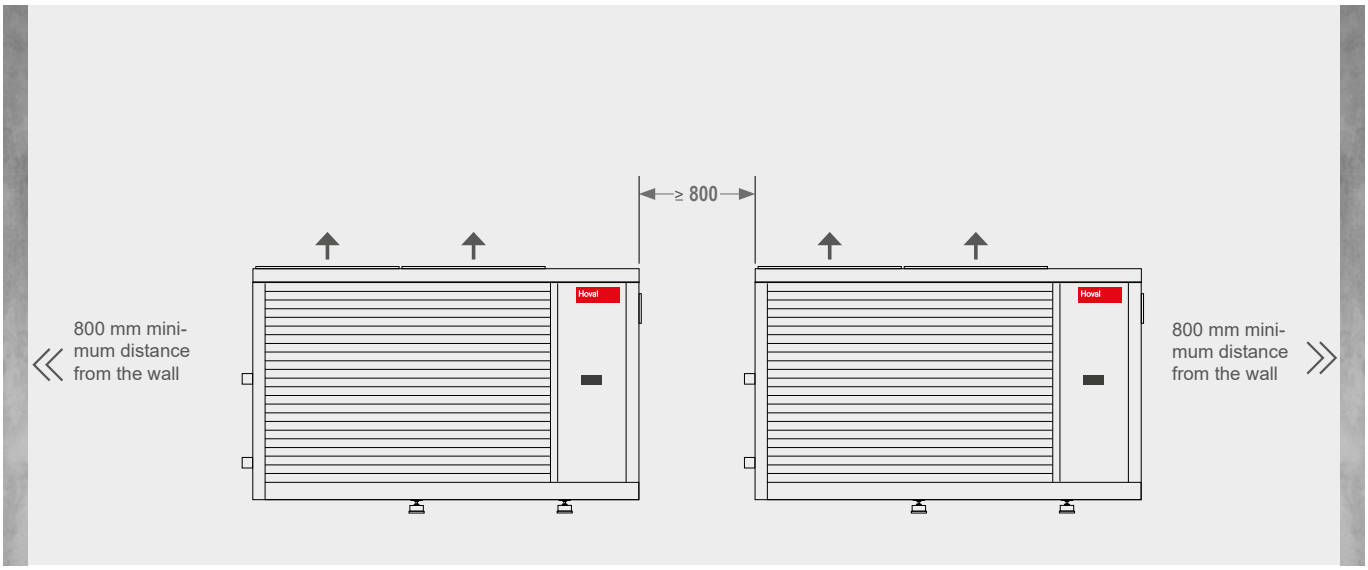
View from right
(Dimensions in mm)



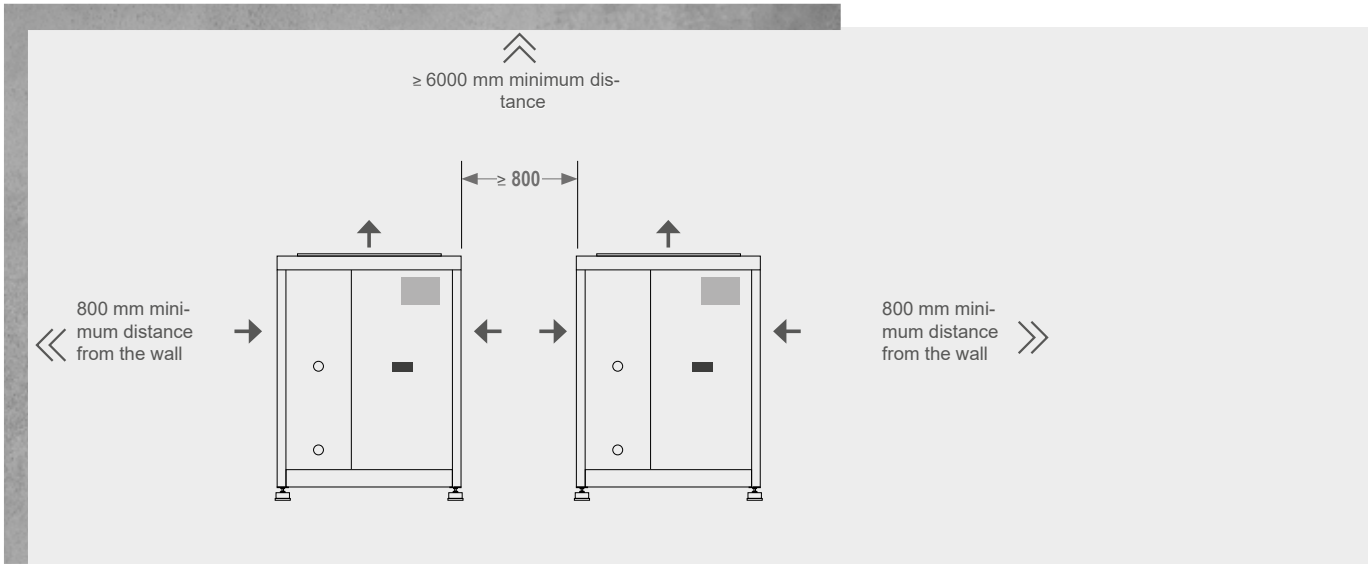
Hoval Belaria® fit (53)

Minimum distances for cascade systems.

Front view
(Dimensions in mm)

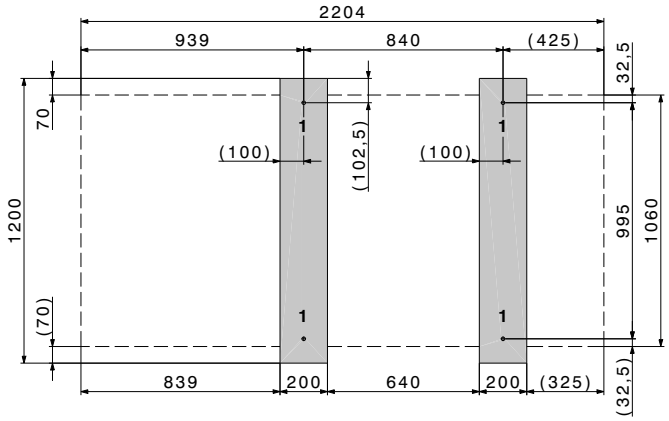


View from right
(Dimensions in mm)



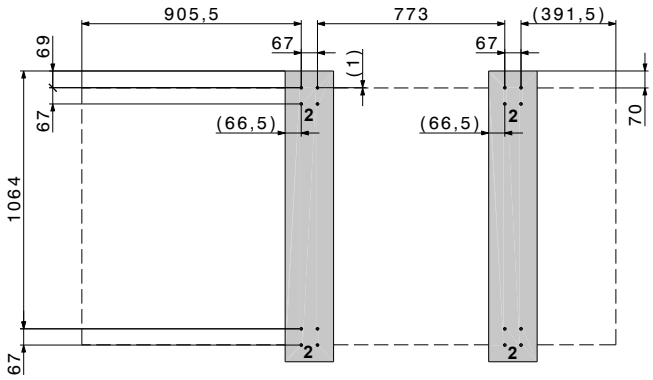
Hoval Belaria® fit (53)
Base design.

Base plan feet
(Dimensions in mm)



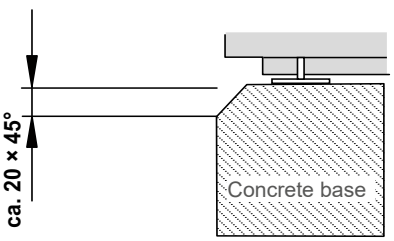
1 Hole for attachment of the heat pump M12

Base plan set vibration-damping adjustable feet
(Dimensions in mm)



2 Holes for vibration-damping adjustable feet

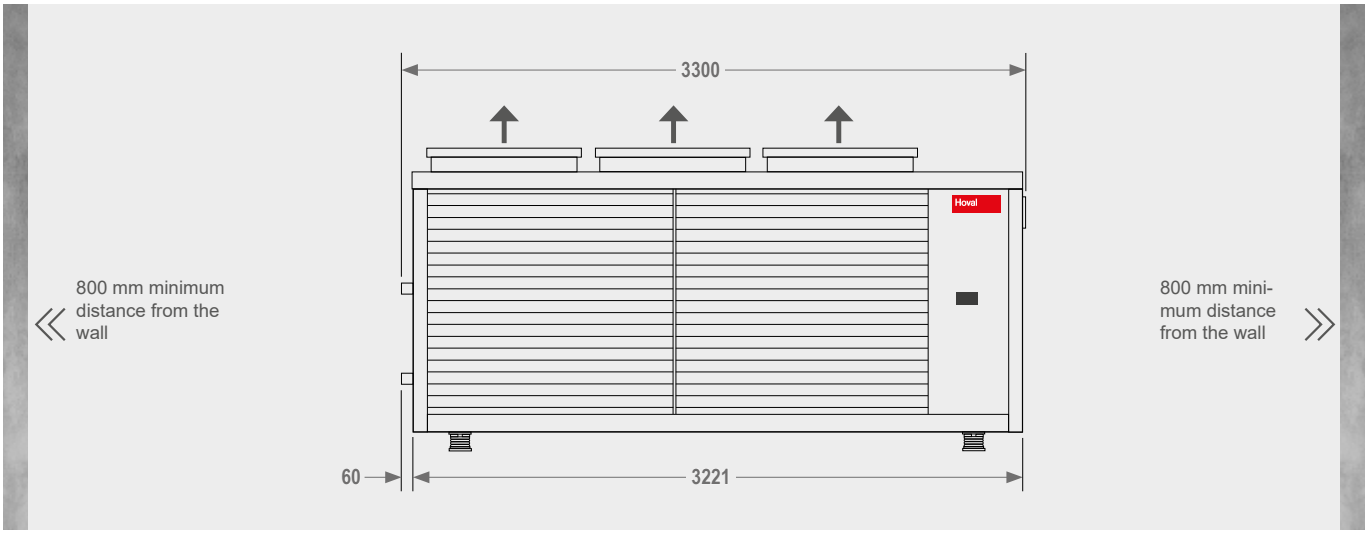
The concrete base must have a level surface the size of the Belaria® fit. The base should have chamfered edges.



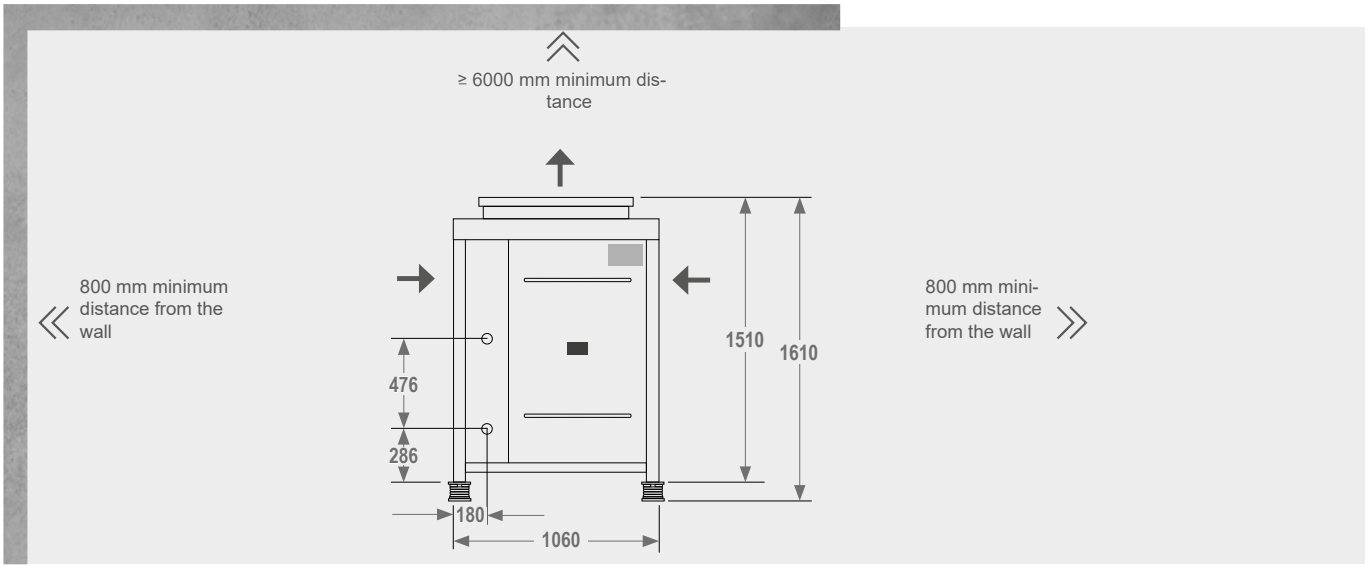
Hoval Belaria® fit (85)

Dimensions.

Front view
(Dimensions in mm)



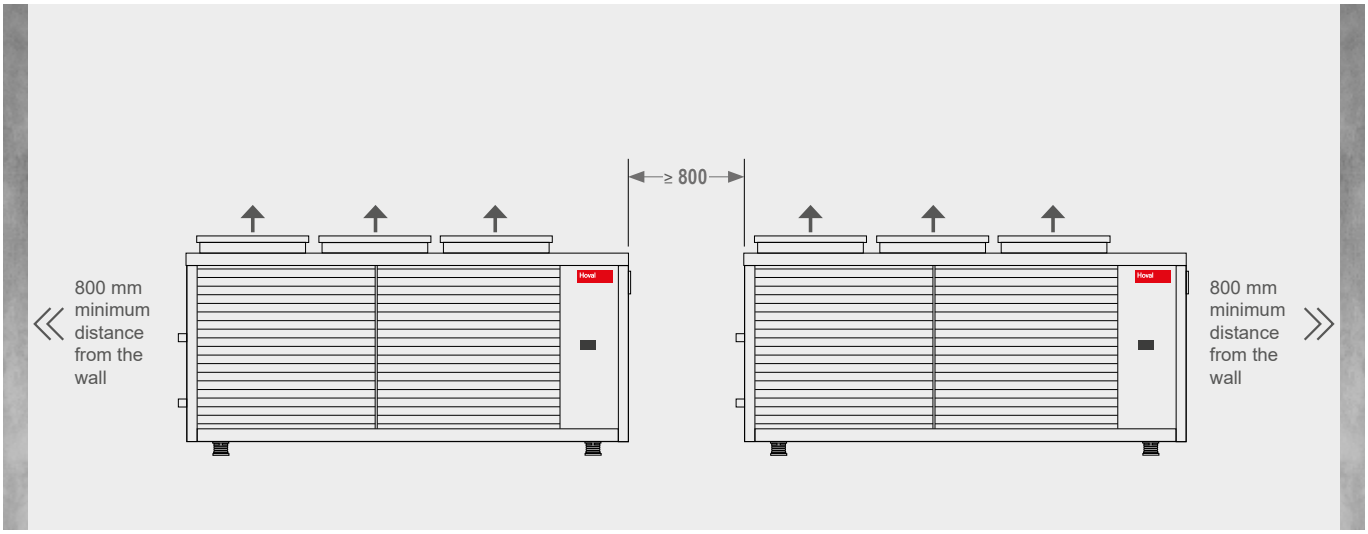
View from right
(Dimensions in mm)



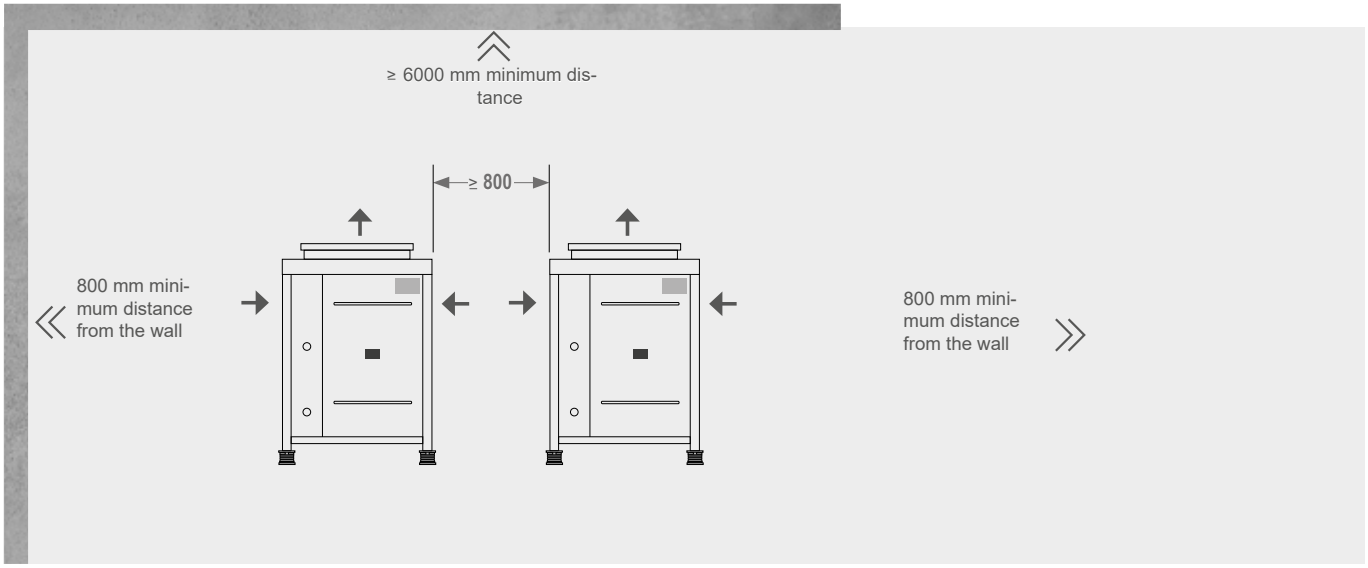
Hoval Belaria® fit (85)

Minimum distances for cascade systems.

Front view
(Dimensions in mm)



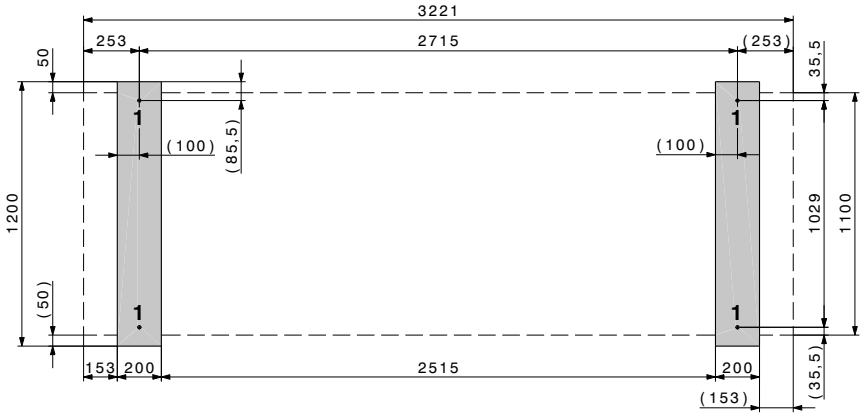
View from right
(Dimensions in mm)



Hoval Belaria® fit (85)

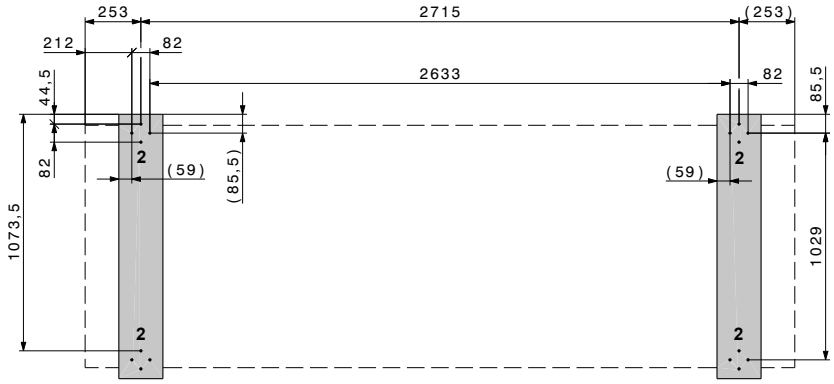
Base design.

Base plan feet
(Dimensions in mm)



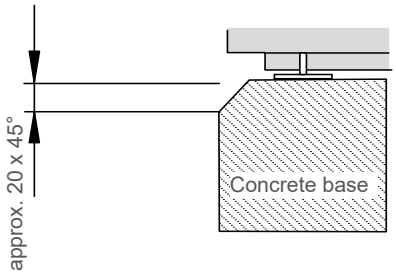
1 Hole for attachment of the heat pump M16

Base plan set vibration-damping adjustable feet
(Dimensions in mm)



2 Holes for vibration-damping adjustable feet

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



Hoval Belaria® fit (53, 85)

Technical data.

Type		(53)	(85)
Seasonal coefficient of performance SCOP [1]	-	3.9	4.0
Room heating energy efficiency ηS heating [1]	%	152	159
Energy efficiency class [1]	-	A++	A++
Heat output / COP at A2/W35	kW / -	53.3 / 3.5	84.8 / 3.4
Heat output / COP at A-7/W35	kW / -	40.6 / 2.8	65.9 / 2.7
Cooling capacity / EER at A35/W18	kW / -	75.6 / 3.3	119.0 / 3.3
Cooling capacity / EER at A35/W7	kW / -	55.0 / 2.6	88.4 / 2.7
Maximum flow temperature	°C	54	55
Min. / max. outdoor temperature heating	°C	-14...30	-14...30
Min. / max. outdoor temperature cooling	°C	-10...48	-10...48
Sound power level (Super Low Noise)	dB(A)	71	73
Compressor type	-	Rotary inverter	Scroll inverter
Number of compressors	-	2	2
Refrigerant	-	R32	R32
Amount of refrigerant	kg	14	17.5
Number of refrigeration circuits	-	1	1
Plate heat exchanger flow rate	m^3/h	6.5...18	10.5...23
Plate heat exchanger pressure drop	bar	0.62	0.86
Fan type / number	- / -	Brushless direct current / 2	Brushless direct current / 3
Standard air flow rate	m^3/h	24000	36000
Maximum water-side pressure	bar	6	6
Electrical connection	-	400/3/50+N	

[1] Moderate climate and flow temperature 35 °C

Data according to EN 14511

Detailed technical data can be found in the catalogue.

Hoval Belaria® fit (53)

Performance data – heating.

Type		Maximum output			Minimum output		
t_{VL} °C	t_Q °C	Q_h kW	P kW	COP	Q_h kW	P kW	COP
25	-14	34.0	11.9	2.9	7.9	3.3	2.4
	-7	42.6	12.3	3.5	16.3	4.6	3.5
	2	55.1	12.5	4.4	23.7	4.9	4.8
	7	63.5	12.5	5.1	27.6	4.9	5.6
	10	67.8	12.5	5.4	29.5	4.9	6.0
	18	83.9	12.3	6.8	36.2	4.7	7.7
30	-14	32.6	12.6	2.6	8.0	3.7	2.2
	-7	41.5	13.3	3.1	16.0	5.1	3.2
	2	54.1	13.8	3.9	23.1	5.4	4.3
	7	62.4	13.9	4.5	26.8	5.4	4.9
	10	66.8	14.0	4.8	28.5	5.4	5.2
	18	82.4	14.1	5.9	35.0	5.3	6.6
35	-14	31.5	13.5	2.3	8.2	4.1	2.0
	-7	40.6	14.4	2.8	15.7	5.5	2.9
	2	53.3	15.1	3.5	22.4	5.9	3.8
	7	62.0	15.9	3.9	26.0	6.0	4.3
	10	65.7	15.6	4.2	27.6	6.0	4.6
	18	80.6	15.9	5.1	33.8	5.9	5.7
40	-14	30.5	14.3	2.1	8.4	4.6	1.8
	-7	39.8	15.5	2.6	15.4	6.0	2.6
	2	52.5	16.6	3.2	21.9	6.6	3.3
	7	60.0	16.9	3.6	25.3	6.7	3.8
	10	64.8	17.2	3.8	26.9	6.7	4.0
	18	79.1	17.7	4.5	32.6	6.6	4.9
45	-14	30.8	15.9	1.9	9.2	5.3	1.7
	-7	40.6	17.4	2.3	15.9	6.8	2.4
	2	53.7	18.8	2.9	22.1	7.5	2.9
	7	62.0	20.0	3.1	25.4	7.9	3.2
	10	66.2	19.8	3.4	27.1	7.7	3.5
	18	80.7	20.4	4.0	32.5	7.7	4.2
50	-7	40.0	18.9	2.1	15.9	7.4	2.1
	2	53.0	20.6	2.6	21.6	8.3	2.6
	7	61.1	21.4	2.9	24.7	8.5	2.9
	10	65.1	21.8	3.0	26.2	8.6	3.1
	18	79.3	22.5	3.5	31.1	8.6	3.6
54	2	52.4	22.0	2.4	21.2	8.9	2.4
	7	60.3	23.0	2.6	24.1	9.2	2.6
	10	64.3	23.5	2.7	25.6	9.3	2.8
	18	78.2	24.1	3.3	30.0	9.4	3.2

Data according to EN 14511

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, overall unit (kW)
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Output correction factors in silenced mode

	Silent	Supersilent
Heat output factor	0.92	0.87
Power consumption factor	0.92	0.87
COP factor	1.00	1.00

Hoval Belaria® fit (53)

Performance data – cooling.

Type		Maximum output			Minimum output		
t_{VL} °C	t_Q °C	Q_k kW	P kW	EER	Q_k kW	P kW	EER
7	15	67.6	13.5	5.0	22.7	3.4	6.7
	20	64.5	15.2	4.3	21.3	3.8	5.6
	25	61.3	16.9	3.6	20.0	4.2	4.7
	30	58.2	18.7	3.1	18.6	4.8	3.9
	35	55.0	20.8	2.6	17.1	5.3	3.2
	40	51.8	22.4	2.3	15.7	5.9	2.6
	44	48.5	24.4	2.0	14.1	6.6	2.1
10	15	74.2	13.6	5.5	24.6	3.4	7.3
	20	70.9	15.3	4.6	23.2	3.7	6.2
	25	67.6	17.2	3.9	21.7	4.2	5.2
	30	64.2	19.0	3.4	20.2	4.7	4.3
	35	60.7	20.9	2.9	18.6	5.3	3.5
	40	57.2	22.9	2.5	17.0	6.0	2.9
	44	53.7	25.0	2.2	15.3	6.7	2.3
12	15	78.8	13.7	5.8	26.0	3.3	7.9
	20	75.4	15.5	4.9	24.5	3.7	6.6
	25	72.0	17.2	4.2	22.9	4.2	5.5
	30	68.3	19.2	3.6	21.3	4.7	4.5
	35	64.7	21.2	3.1	19.7	5.3	3.7
	40	61.0	23.3	2.6	17.9	6.0	3.0
	44	57.2	25.3	2.3	16.1	6.7	2.4
15	15	86.2	13.8	6.3	28.0	3.2	8.8
	20	82.4	15.7	5.3	26.4	3.6	7.3
	25	78.6	17.5	4.5	24.7	4.1	6.0
	30	74.7	19.6	3.8	23.0	4.7	4.9
	35	70.7	21.6	3.3	21.2	5.3	4.0
	40	66.8	23.7	2.8	19.3	6.0	3.2
	44	62.7	25.8	2.4	17.3	6.7	2.6
18	15	93.8	15.1	6.2	30.7	3.8	8.1
	20	89.7	17.2	5.2	29.4	3.9	7.5
	25	85.6	19.3	4.4	27.5	4.5	6.1
	30	81.4	21.6	3.8	25.6	5.2	5.0
	35	75.6	22.7	3.3	23.7	5.9	4.0
	40	72.6	26.1	2.8	21.5	6.7	3.2
	44	68.3	28.6	2.4	19.3	7.6	2.6
20	15	99.0	15.2	6.5	27.9	3.4	8.1
	20	94.7	17.3	5.5	30.9	3.8	8.1
	25	90.3	19.5	4.6	28.9	4.4	6.6
	30	85.9	21.7	4.0	27.0	5.1	5.3
	35	81.3	24.1	3.4	25.0	5.9	4.3
	40	76.7	26.4	2.9	22.7	6.7	3.4
	44	72.0	28.8	2.5	20.4	7.6	2.7

Data according to EN 14511

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, overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

Output correction factors in silenced mode

	Silent	Supersilent
Cooling capacity factor	0.90	0.85
Power consumption factor	1.00	1.00
EER factor	0.90	0.85

Hoval Belaria® fit (85)

Performance data – heating.

Type		Maximum output			Minimum output		
t_{VL} °C	t_Q °C	Q_h kW	P kW	COP	Q_h kW	P kW	COP
25	-14	49.1	19.3	2.6	25.8	7.3	3.6
	-7	64.2	19.8	3.3	31.7	6.9	4.6
	2	84.7	20.5	4.1	40.2	6.7	6.0
	7	96.9	20.9	4.6	45.3	6.8	6.7
	10	102.2	21.1	4.8	47.4	6.8	7.0
	18	114.9	21.6	5.3	54.2	6.7	8.1
30	-14	50.6	21.7	2.3	29.8	9.2	3.2
	-7	65.0	22.0	3.0	36.9	8.8	4.2
	2	84.7	22.6	3.7	47.4	8.8	5.4
	7	96.4	23.1	4.2	53.6	8.8	6.1
	10	101.5	23.3	4.4	56.2	8.9	6.3
	18	113.8	23.8	4.8	63.6	8.7	7.3
35	-14	52.3	24.6	2.1	25.1	8.7	2.9
	-7	65.9	24.6	2.7	30.4	8.2	3.7
	2	84.8	25.1	3.4	38.1	8.0	4.7
	7	96.1	25.6	3.8	42.8	8.0	5.3
	10	101.1	25.8	3.9	44.7	8.0	5.6
	18	112.9	26.3	4.3	51.4	8.0	6.4
40	-14	54.0	27.6	2.0	25.0	9.8	2.6
	-7	67.0	27.5	2.4	30.0	9.3	3.2
	2	85.0	27.8	3.1	37.3	9.1	4.1
	7	96.0	28.3	3.4	41.9	9.1	4.6
	10	100.8	28.6	3.5	43.8	9.1	4.8
	18	112.4	29.0	3.9	50.4	9.0	5.6
45	-14	55.9	30.9	1.8	24.9	11.2	2.2
	-7	68.2	30.6	2.2	29.7	10.7	2.8
	2	85.5	31.0	2.8	36.8	10.5	3.5
	7	97.3	31.5	3.1	41.2	10.4	4.0
	10	100.7	31.8	3.2	43.0	10.4	4.1
	18	111.9	32.3	3.5	49.7	10.3	4.8
50	-7	69.5	34.1	2.0	29.6	12.3	2.4
	2	86.2	34.5	2.5	36.5	12.1	3.0
	7	96.4	35.1	2.8	40.8	12.1	3.4
	10	100.9	35.4	2.9	42.6	12.1	3.5
	18	112.1	36.0	3.1	49.3	11.9	4.1
54	2	87.0	38.5	2.3	36.4	14.1	2.6
	7	96.7	38.7	2.5	40.6	14.0	2.9
	10	101.1	39.0	2.6	42.4	14.0	3.0
	18	112.3	39.8	2.8	49.2	13.8	3.6

Data according to EN 14511

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, overall unit (kW)
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Output correction factors in silenced mode

	Silent	Supersilent
Heat output factor	0.95	0.90
Power consumption factor	0.95	0.90
COP factor	1.00	1.00

Hoval Belaria® fit (85)

Performance data – cooling.

Type		Maximum output			Minimum output		
t_{VL} °C	t_Q °C	Q_k kW	P kW	EER	Q_k kW	P kW	EER
7	15	102.8	22.8	4.5	38.1	5.1	7.5
	20	99.3	25.1	4.0	36.1	5.3	6.9
	25	95.9	27.5	3.5	34.0	5.7	6.0
	30	92.1	30.3	3.0	32.0	6.4	5.0
	35	88.4	33.4	2.7	30.0	7.3	4.1
	40	84.7	36.5	2.3	27.9	8.4	3.3
	44	81.8	39.3	2.1	26.3	9.6	2.8
10	15	112.0	23.5	4.8	41.0	5.1	8.1
	20	108.1	25.8	4.2	38.8	5.3	7.4
	25	104.3	28.3	3.7	36.7	5.7	6.4
	30	100.4	31.1	3.2	34.5	6.4	5.4
	35	96.5	34.1	2.8	32.4	7.3	4.5
	40	92.6	37.3	2.5	30.3	8.5	3.6
	44	89.4	44.2	2.0	28.7	9.6	3.0
12	15	118.4	24.0	4.9	43.0	5.0	8.6
	20	114.3	26.3	4.4	40.8	5.3	7.8
	25	110.3	28.8	3.8	38.5	5.7	6.8
	30	106.2	31.5	3.4	36.3	6.4	5.7
	35	102.1	34.5	3.0	34.2	7.3	4.7
	40	98.1	37.7	2.6	32.1	8.5	3.8
	44	94.1	40.9	2.3	30.4	9.6	3.2
15	15	128.5	24.8	5.2	46.2	4.7	9.8
	20	124.2	27.1	4.6	43.9	5.2	8.5
	25	119.9	29.5	4.1	41.6	5.6	7.4
	30	115.6	32.3	3.6	39.3	6.3	6.2
	35	111.3	35.2	3.2	37.1	7.2	5.1
	40	106.9	38.3	2.8	34.9	8.4	4.1
	44	102.6	41.5	2.5	33.3	9.6	3.5
18	15	139.2	25.7	5.4	49.6	4.2	11.9
	20	134.7	27.8	4.8	47.2	4.8	9.7
	25	130.1	30.3	4.3	44.9	5.5	8.1
	30	125.7	32.9	3.8	42.5	6.2	6.8
	35	119.0	35.7	3.3	40.2	7.1	5.6
	40	116.7	38.9	3.0	38.1	8.3	4.6
	44	112.2	42.0	2.7	36.4	9.5	3.9
20	15	146.7	26.2	5.6	52.0	4.0	12.9
	20	142.1	28.4	5.0	49.6	4.7	10.5
	25	137.4	30.7	4.5	47.2	5.4	8.7
	30	132.8	33.3	4.0	44.8	6.1	7.3
	35	128.2	36.5	3.5	42.5	7.0	6.0
	40	123.6	39.1	3.2	40.3	8.2	4.9
	44	119.0	42.2	2.8	38.6	9.3	4.1

Data according to EN 14511

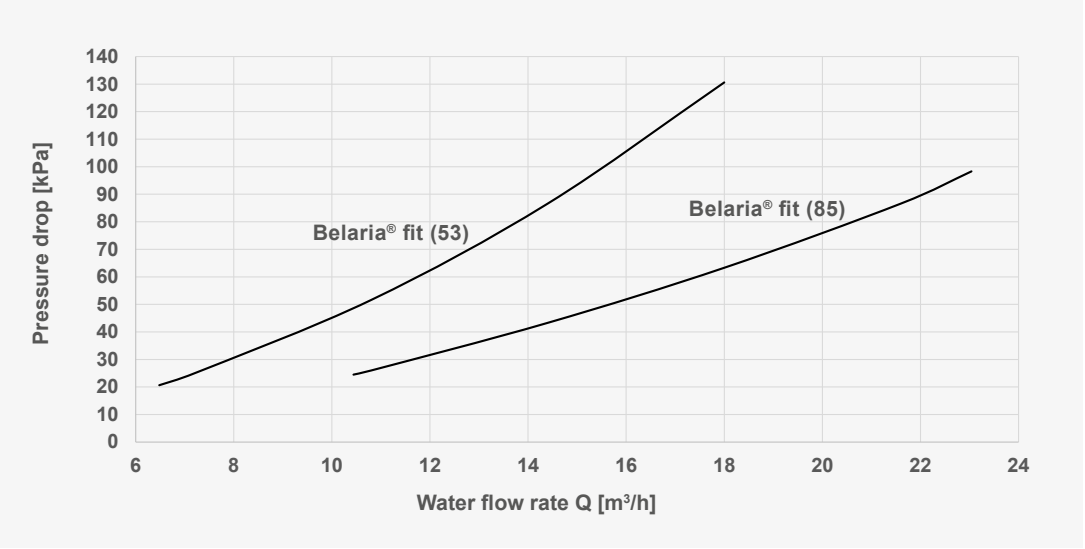
t_{VL} = cooling water flow temperature (°C)
t_Q = source temperature (°C)
Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511
P = power consumption, overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

Output correction factors in silenced mode

	Silent	Supersilent
Cooling capacity factor	0.93	0.88
Power consumption factor	1.02	1.02
EER factor	0.93	0.86

Hoval Belaria® fit (53, 85)

Pressure drop internal heat exchanger.



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

Correction factors when using glycol

Ethylene glycol percentage by weight %	10	20	30	40	50
Freezing point °C	-4	-9	-16	-23	-37
Correction factor for the cooling capacity/heat output of the unit	0.984	0.973	0.965	0.960	0.950
Correction factor for the flow rate	1.019	1.051	1.092	1.145	1.200
Correction factor for the pressure drop in the system	1.118	1.268	1.482	1.791	2.100

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

Permitted water flow rates

Belaria® fit		(53)	(85)
Minimum flow rate	[m³/h]	6.5	10.4
Maximum flow rate	[m³/h]	18.0	23.0

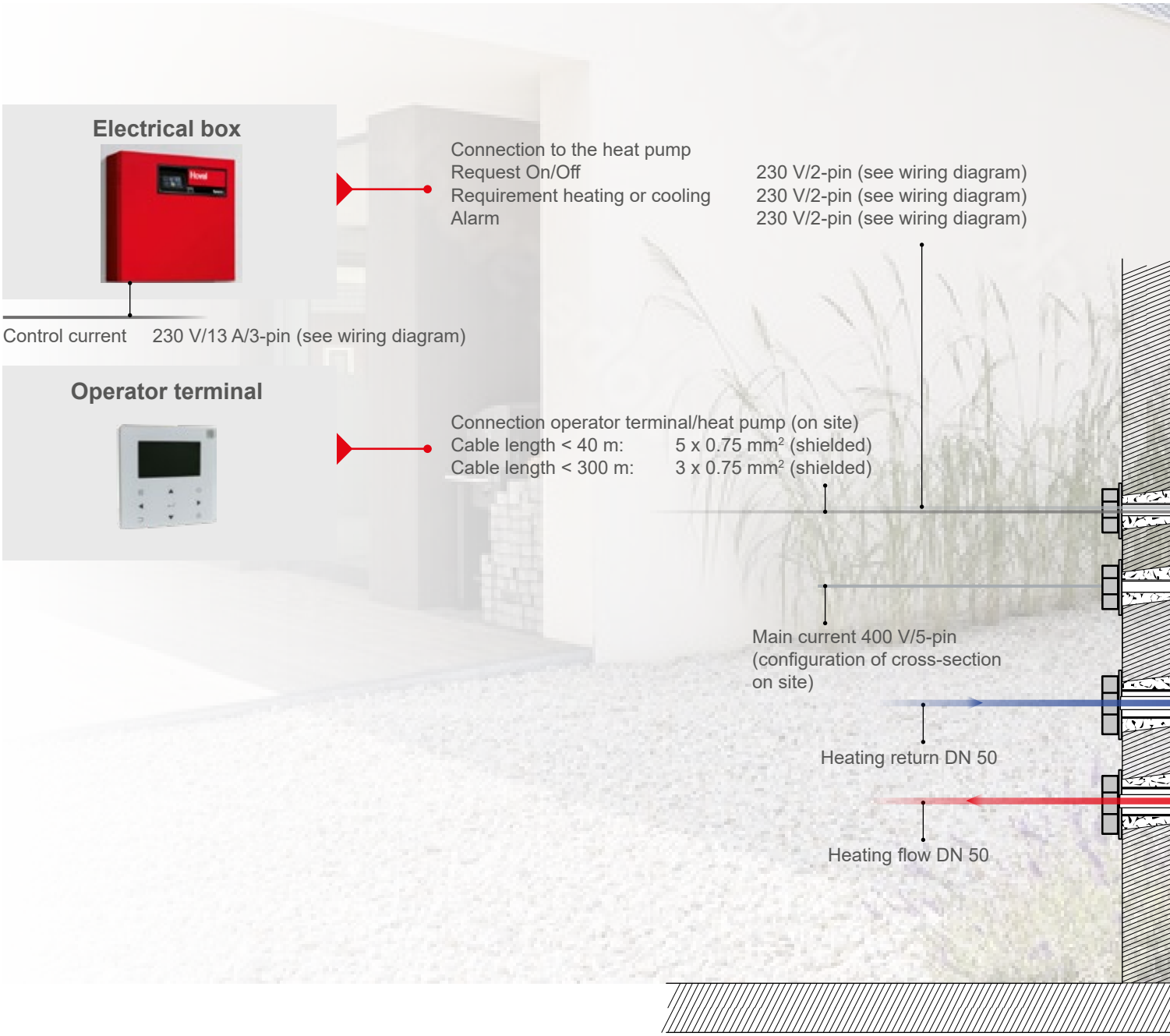
Hoval Belaria® fit and its accessories

What and where at a glance.

Hoval

Hoval Belaria® fit (53, 85)

Configuration and connection diagram.



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

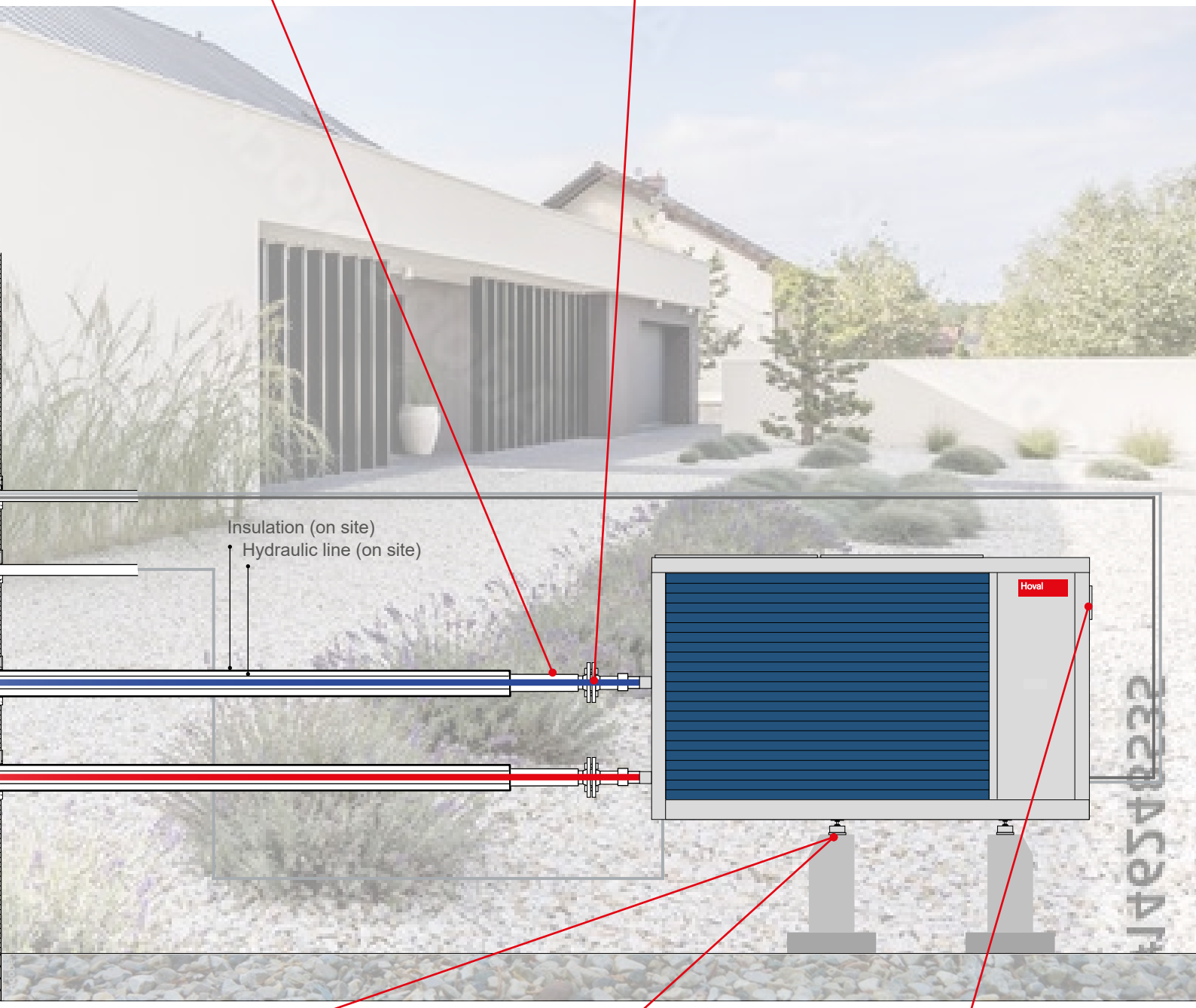
Engineering guidelines must be complied with.

On site

- Control module bracket
- Concrete base
- Vibration decouplers
- Hydraulic line
- Insulation
- Feed-throughs
- Connection operator terminal HP

Vibration decoupler set (option)

Set of welded-on flanges (option)



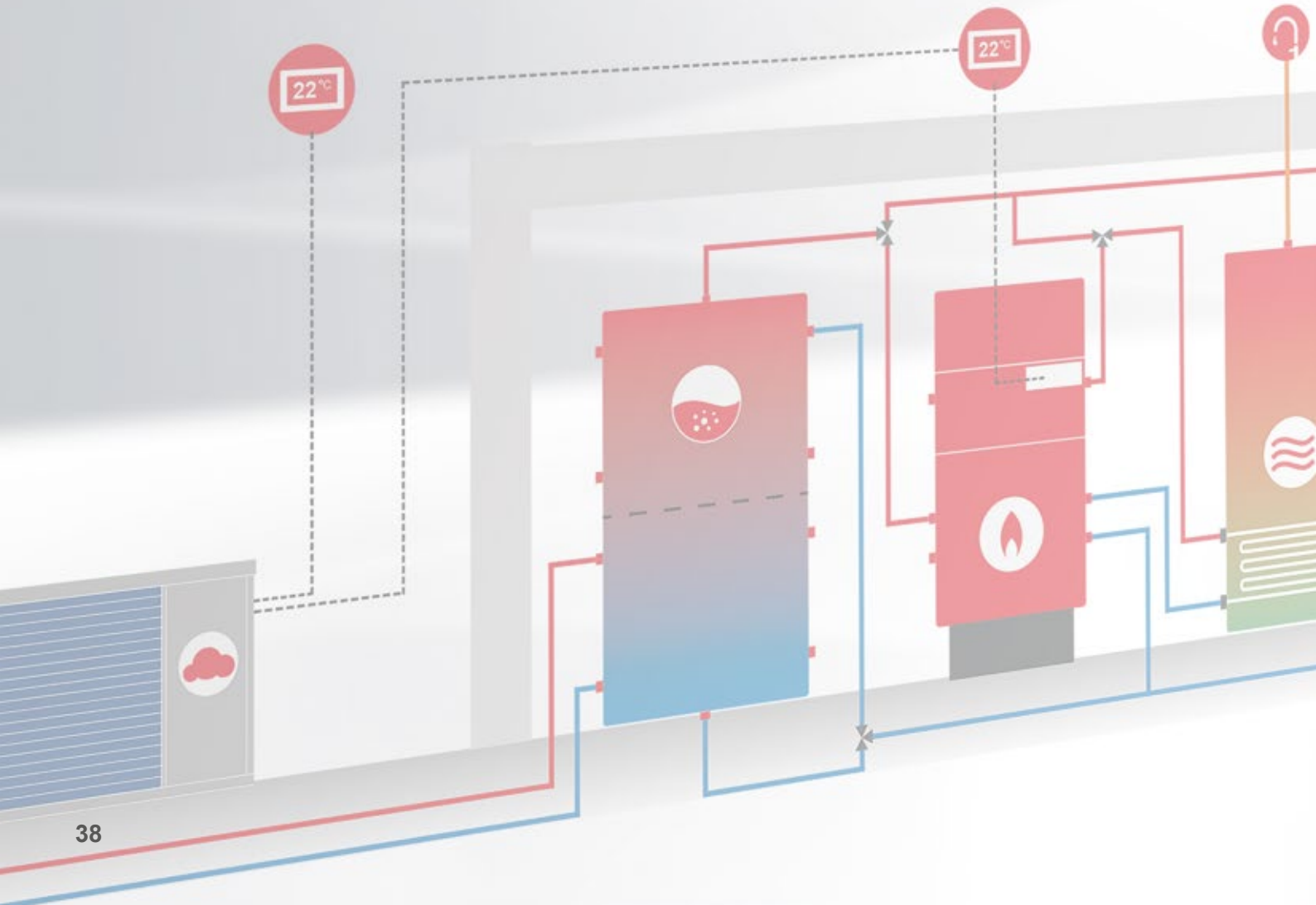
Vibration dampers for Belaria® fit (53) **(option)**

Vibration dampers for Belaria® fit (85) **(option)**

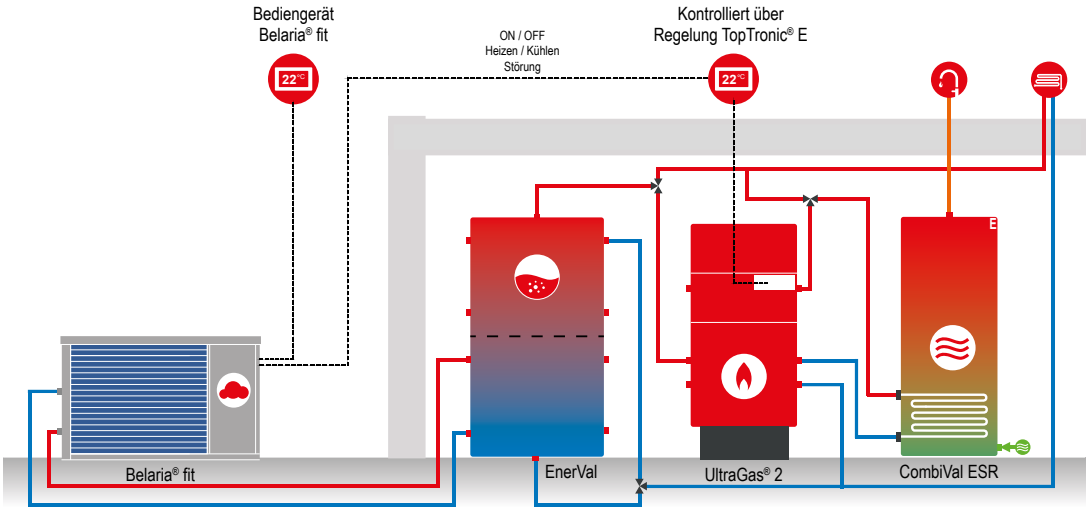
Installation possibility operator terminal

Hoval Belaria® fit (24) in the system

Hydraulic combination.



Hoval Belaria® fit control



Since the Belaria® fit can produce a maximum of 54/55 °C flow temperature, in the vast majority of cases hybrid systems are designed to allow higher flow temperatures. The Belaria® fit is not designed to control the components on the secondary system side, and so the control of the heating circuits, pumps, storage tanks, etc. must be managed with the TopTronic® E. For example, if an UltraGas® is used as an additional heat generator, its TopTronic® E can be used to control the secondary side. If no additional boiler is planned as secondary heat source, the secondary side must be controlled by means of an electrical box with TopTronic® E.

The operator terminal of the Belaria® fit regulates the heat pump completely autonomously with regard to monitoring, temperatures and cascading in heating mode as well as in cooling mode. Setting the parameters of the heat pump via the operator terminal is extremely quick and easy. A very big advantage of the Belaria® fit during commissioning.

The TopTronic® E supplies the ON/OFF command to the Belaria® fit via two relays on the one hand and on the other hand whether the Belaria® fit should be heating or cooling.

Planning as a guarantee of success

Pay attention to these issues.

Checklists
for planning and engineering.

Comprehensive planning is a prerequisite for the safe and reliable operation of a plant and thus for satisfied customers. Country-specific standards, guidelines and instructions for planning, design and installation must be observed. A checklist helps to ensure that nothing is forgotten. Detailed notes are listed in the catalogue.

Requirements and directives
- General
- Environment
- Electrical connection
- Planning and design

Design
- Heat for heating / domestic hot water
- Cooling
- Performance data

Heat source
- Air

Buffer storage tank

Electrical data
- Design
- Approval
- Off-periods by power companies

Water quality
- Heating water
- Replacement water

Connections
- Hydraulic – heating
- Hydraulic – domestic water
- Electrical
- Cooling

Setup
- General
- Outdoors (refrigerant)
- Indoors
- Sound emissions
- Distance (indoor and outdoor unit)

Hoval quality.
You can count on us.

Hoval

As a specialist in heating and climate technology, Hoval is your experienced partner for system solutions. For example, you can heat water with the sun's energy and your rooms with oil, gas, wood or a heat pump. Hoval ties together the various technologies and also integrates room ventilation into the system. So you can save energy while looking after the environment and your costs – and still enjoy the same level of comfort.

Hoval is one of the leading international companies for indoor climate solutions. More than 75 years of experience continuously motivate us to design innovative system solutions. We manufacture complete systems for heating, cooling and ventilation to more than 50 countries.

We take our responsibility for the environment seriously. Energy efficiency is at the heart of the heating and ventilation systems we design and develop.

Responsibility for energy and environment

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