

Description

Hoval Belaria® twin A Hoval Belaria® twin AR Air/water heat pump

- Compact air/water heat pump for outside installation
- High energy efficiency
- Evaporator and refrigeration part are placed adjacent to one another. The refrigeration part is encapsulated with electrolytically galvanised, powder-coated and sound-insulated steel sheets. Colour light grey (RAL 7035).
- Covering made of sheet steel, colour anthracite (DB 703)
- Two suction gas cooled scroll compressors.
- With large-area, multi-row aluminium/copper ribbed pipe evaporator and copper-brazed plate-type condenser made from stainless steel.
- Two electronic expansion valves for the highest efficiency and operational reliability
- Speed-controlled axial ventilator made from high-strength composite material with vanes as a compact unit for low energy consumption and the lowest noise level
- Two electronic starting current limiters with rotary field/phase monitoring.
- Hoval Belaria® twin AR - additionally with cooling function through inversion of cycle
- Filled with refrigerant R410A, wired up internally ready for connection
- Electrical box for wall mounting inside the building with built-in TopTronic® E controller
- The electrical box is not included in the scope of delivery and must be ordered in addition as an accessory.
- Strainer ball valve installed
- Connecting hoses already fitted. Heating side pipework in the casing.

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)

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 loading circuit
 - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Rast-5 basic plug set



Hoval Belaria® twin A			Heat output with A2W35	
35 °C	55 °C	Type	Stage 1	Stage 2
kW				
A++	A++	(17)	10.3	17.2
A+++	A++	(24)	13.1	23.7
A+++	A++	(32)	18.6	31.6

Hoval Belaria® twin AR			Heat output with A2W35		Cooling capacity with A35W7	
35 °C	55 °C	Type	Stage 1	Stage 2	Stage 1	Stage 2
kW						
A+++	A++	(17)	10.3	17.2	9.2	17.6
A+++	A++	(24)	13.1	23.7	12.7	22.8
A+++	A++	(32)	18.6	31.6	16.1	28.8

Energy efficiency class of the compound system with control



Seal of approval FWS

The Belaria® twin A and Belaria® twin AR (17-32) series are certified by the seal of approval of the authorisation commission of Switzerland

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion heat accounting 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 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"

Condensate connection

- The drain pipeline is to be made with sufficient incline and without change of the cross-section.
- The water connections and the drain pipelines must be carried out outdoors and must be protected against frost on site (see base plan).

Hydraulic connections

- Heating connections with flexible hoses to the bottom

Electrical connections

- Connection from the bottom (see base plan)

Options

- Diffuser for sound reduction

Delivery

One-piece design. Compact unit wired-up internally ready for connection.

Recommended accessories

- High-efficiency pump with continuously variable speed control

■ Part No.



Notice

Suitable charging pumps:

Hoval system pump set SPS-I
with interface for pump control
Type 0-10 V or PWM1

Premium pump Stratos
with IF module Stratos Ext. Off (0-10 V)

See brochure "Accessories" - chapter
"Circulating pumps"

Energy efficiency class

see Description

Notice

An energy buffer accumulator
must be provided.

Matching energy buffer storage tanks
see "Calorifiers"

Air/water heat pump - 2-stage

Part No.

Hoval Belaria® twin A

Air/water heat pump for outdoor installation
without electrical box.

Delivery

One-piece design. Compact unit wired-up
internally ready for connection.

Belaria® twin A type	Heat output with A2W35 kW		
	Stage 1	Stage 2	
(17)	10.3	17.2	7016 819
(24)	13.1	23.7	7016 820
(32)	18.6	31.6	7016 821

Hoval Belaria® twin AR (cooling function)

Design as for Hoval Belaria® twin A,
but with cooling function.

Belaria® twin AR type	Heat output with A2W35 kW		Cooling capacity with A35W7 kW		
	Stage 1	Stage 2	Stage 1	Stage 2	
(17)	10.3	17.2	9.2	17.6	7016 822
(24)	13.1	23.7	12.7	22.8	7016 823
(32)	18.6	31.6	16.1	28.8	7016 824

The electrical box with built-in TopTronic® E
controller must be ordered separately.

If the heat pump is ordered without electrical
box, engineering must absolutely be performed by Hoval, otherwise it will not be taken
into operation.

■ Part No.


Electrical box

for wall installation in building interiors with built-in Hoval TopTronic® E controller
Integrated control functions for
- 1 heating/cooling circuit with mixer
- 1 heating/cooling circuit without mixer
- 1 DHW charging circuit
- Bivalent and cascade management
• Option of extending by max. 1 module extension:
- heating circuit module extension or
- heat balancing module extension or
- universal module extension
• Option of networking with up to 16 controller modules (incl. solar module)
Incl. outdoor sensor, immersion sensor (calorifier sensor), contact sensor (flow temperature sensor) and RAST 5 basic connector set

Part No.

6046 330


Sound attenuation cowl for compressor

for reducing the transmission of noise. In heat pumps with two compressors, it is mandatory for two sound attenuation cowls to be ordered.

Belaria® twin A/AR type	Number of compressors
(17)	2
(24)	2
(32)	2

2069 695
2069 696
2069 697


Set vibration-damping adjustable feet 35/55

for reducing the transmission of solid-borne noise
Set comprises 4 vibration-damping adjustable feet, threaded rod and locknut
Material elastomer part: NR, black
Material housing: galvanised steel, chromated
for Belaria® twin A/AR (17)
for Belaria® twin A/AR (24)
for Belaria® twin A/AR (32)

6040 346
6040 347
6040 348

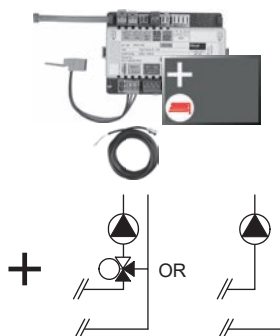

Diffuser

for fan of Belaria® twin A, twin AR, dual AR
for greater efficiency and lower noise
by up to 3 dB(A) depending on circumstances

2056 705

Recommended accessory:
High-efficiency pump with continuously variable speed control

Part No.



Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!

TopTronic® E module expansions for TopTronic® E basic module heat generator

Part No.

TopTronic® E module expansion heating circuit TTE-FE HK

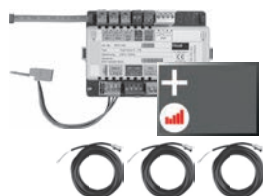
6034 576

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating circuit without mixer or
- 1 heating circuit with mixer

incl. fitting accessories
1x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel



Notice

The flow rate sensor set must be ordered as well.

TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ

6037 062

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer

incl. fitting accessories
3x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel



Flow rate sensor sets

Plastic housing

Size	Connection	Flow rate l/min
DN 8	G 3/4"	0.9-15
DN 10	G 3/4"	1.8-32
DN 15	G 1"	3.5-50
DN 20	G 1 1/4"	5-85
DN 25	G 1 1/2"	9-150

6038 526
6038 507
6038 508
6038 509
6038 510



Brass housing

Size	Connection	Flow rate l/min
DN 10	G 1"	2-40
DN 32	G 1 1/2"	14-240

6042 949
6042 950



TopTronic® E module expansion Universal TTE-FE UNI

6034 575

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

incl. fitting accessories

Can be installed in:
Boiler control, wall housing, control panel

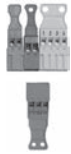
Notice

Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

Further information

see "Controls" - "Hoval TopTronic® E module expansions" chapter

■ Part No.


HovalConnect available from summer 2019

Up to that point, TopTronic® E online is delivered.


Accessories for TopTronic® E
Part No.
Supplementary plug set

for basic module heat generator (TTE-WEZ)
for controller modules and module expansion
TTE-FE HK

6034 499
6034 503

TopTronic® E controller modules

TTE-HK/WW TopTronic® E heating circuit/
hot water module
TTE-SOL TopTronic® E solar module
TTE-PS TopTronic® E buffer module
TTE-MWA TopTronic® E measuring module

6034 571
6037 058
6037 057
6034 574

TopTronic® E room control modules

TTE-RBM TopTronic® E room control modules
easy white
comfort white
comfort black

6037 071
6037 069
6037 070

Enhanced language package TopTronic® E

one SD card required per control module
Consisting of the following languages:
HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA

6039 253

HovalConnect

HovalConnect domestic starter LAN
HovalConnect domestic starter WLAN
HovalConnect commercial starter LAN
HovalConnect commercial starter WLAN
SMS remote control unit
System component SMS remote control unit

6049 496
6049 498
6049 495
6049 497
6018 867
6022 797

TopTronic® E interface modules

GLT module 0-10 V
HovalConnect domestic starter Modbus
HovalConnect domestic starter KNX
HovalConnect commercial starter Modbus
HovalConnect commercial starter KNX

6034 578
6049 501
6049 593
6049 500
6049 502

TopTronic® E wall casing

WG-190 Wall casing small
WG-360 Wall casing medium
WG-360 BM Wall casing medium with
control module cut-out
WG-510 Wall casing large
WG-510 BM Wall casing large with
control module cut-out

6035 563
6035 564
6035 565
6035 566
6038 533

TopTronic® E sensors

AF/2P/K Outdoor sensor
TF/2P/5/6T Immersion sensor, L = 5.0 m
ALF/2P/4/T Contact sensor, L = 4.0 m
TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m

2055 889
2055 888
2056 775
2056 776

System housing

System housing 182 mm
System housing 254 mm

6038 551
6038 552

Bivalent switch

2061 826

Further information
see "Controls"

Outdoor sensor, immersion sensor and
contact sensor supplied with the heat pump.

■ Part No.



Accessories

Part No.

Protective pipe immersion sleeve
SB280 1/2"

brass nickel-plated
PN10, 280 mm

2018 837


Trace heating tape

for heating a condensate
drainage pipe (on site)
and a condensate drip tray KWD
with thermostat and microfuses
Output: 40-80 W, 230 V
Length: cable 1.5 m; heating tape 2 m

6033 374


Screw-in electrical heating inset

for plants with energy buffer storage tank
as emergency heating.
Control set must be ordered.

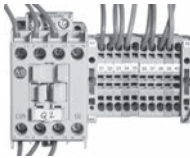
Type	Heat output [kW]	Installation depth [mm]
EP 2.5	2.35	390
EP 3.5	3.6	500
EP 5	4,9	620
EP 7.5	7.5	850

6049 557

6049 558

6049 559

6049 560


Control set (switching contactor)

for installation in the wall-hanging
electrical box.

6033 403

Necessary for the control of
an electrical heating inset.

Silt trap

Casing made of brass, PN 16
Max. operating temperature 110 °C
Sieve made of stainless steel,
size of mesh 0.5 mm

DN 25-1"

2046 978

DN 32-1¼"

2046 980

DN 40-1½"

2046 982

DN 50-2"

2046 984

Further strainers

see "Various system components"


Sludge separator CS 40-1 1/2" with magnet

for flow rates of 3.0 - 5.0 m³/h

for flow speed of 1.0 m/s

Housing made of plastic PPA with
diffuser and partial flow removal
with 4 extra-strong Neodymium magnets
Magnets removable for draining
EPP insulation 20 mm

Connections made of brass G 1½"

Drain made of brass: hose connection

Any inst. orientation - 360° rotating

Temperature range -10 to 120 °C

Operating pressure max.: 10 bar

Glycol proportion max.: 50 %

Weight: 1.88 kg

2063 737

■ Part No.



Accessories

Part No.

Sludge separator CS 50-2'' with magnet

2063 738

for flow rates of 5.0-8.0 m³/h

for flow speed of 1.0 m/s

Housing made of plastic PPA with

diffuser and partial flow removal

with 4 extra-strong Neodymium magnets

Magnets removable for draining

EPP insulation 20 mm

Connections made of brass G 2"

Drain made of brass: hose connection

Any inst. orientation - 360° rotating

Temperature range -10 to 120 °C

Operating pressure max.: 10 bar

Glycol proportion max.: 50 %

Weight: 2.32 kg

**Circulation pumps, actuators,
buffer storage tanks** see separate brochures

**Switching ball valve VBG60..****DN 15-50, PN 16, 120 °C**

- Three-way ball valve made of brass with threaded connection
- incl. seals and screw connections

DN	Connection Valve	Connection Fitting	kvs	Ḃ [m³/h] at ΔP 50 mbar
25	G 1½"	Rp 1"	13	2.91
32	G 2"	Rp 1¼"	25	5.59
40	G 2¼"	Rp 1½"	49	10.96
50	G 3"	Rp 2"	73	16.32

6045 769

6045 770

6045 771

6045 772

*Suitable motor drive*

Type	Voltage	Control signal	Actuator run time
GLB341.9E	230 V / 50/60 Hz	2-/3-point	150 s

2070 331

**Float ball flow switch**

2040 708

area of application 600-6000 l/h,

0-80 °C, nominal pressure 10 bar

connection Rp 1½"

installed length 335 mm

bistable reed contact as

normally open contact

**Float ball flow switch**

2040 709

area of application 1500-15000 l/h,

0-80 °C, nominal pressure 10 bar

connection Rp 2"

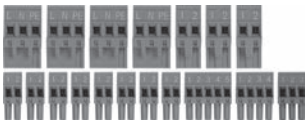
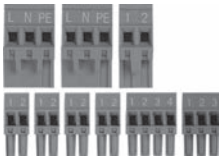
installed length 335 mm

bistable reed contact as

normally open contact

For active cooling, the installation
of a flow controller is mandatory!

■ Part No.



Part No.

Expansion connector set
for the automatic heat pump ECR461.
Use for additional function:
- Flow monitor
- Crankcase bottom heating
(included in the scope of delivery
for Belaria® twin A, twin AR, dual AR)
- Condensation drain heating
- Heat quantity metering
Plugs:
- 1x 230V digital input
- 2x 230V outputs
- 4x low-voltage inputs
- 1x ratio. Input

6032 509

Universal connector set
for automatic heat pump ECR461
Plugs:
- 3x 230V digital input
- 4x 230V outputs
- 6x low-voltage inputs
- 2x low-voltage outputs
- 1x ratio. input
- 1x electr. expansion valve

6032 510



Service

Commissioning

Commissioning by works service or Hoval
trained authorised serviceman/company is
condition for warranty.

For commissioning and other services
please contact your Hoval sales office.

■ Technical data

Hoval Belaria® twin A (17-32)

Type		(17)		(24)		(32)		
		1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	
Seasonal coefficient of performance moderate climate 35 °C /55 °C		SCOP	4.4/3.3		4.4/3.3		4.4/3.3	
Performance data acc. to EN 14511								
• Heat output A2W35	kW ¹	10.3	17.2	13.1	23.7	18.6	31.6	
• Power consumption A2W35	kW ¹	2.2	4.2	2.9	5.8	4.1	7.9	
• Coefficient of performance A2W35	COP	4.6	4.1	4.6	4.1	4.5	4.0	
• Weight	kg	430		575		590		
• Dimensions		see Dimensions						
• Compressor type		2 x spiral-(scroll), hermetic						
• Refrigerant filling R410A	kg	12.8		15.7		16.0		
• Fan type		radial/speed-controlled						
Nominal air quantity	m³/h	3500-7000		4500-9000		5500-11000		
• Expansion valve		2 x, electronically controlled						
• Evaporator		lamellar tube Alu/Cu						
• Condenser		copper brazed stainless steel plate heat exchanger						
Heating flow and return flow	R	1¼" (outer thread)		1½" (outer thread)		1½" (outer thread)		
• Heating water quantity 5k ΔT	m³/h	3.75		5.05		6.60		
• Pressure drop heat pump	kPa	14.2		10.7		11.9		
• max. operating pressure heating side	bar	3						
• Ranges of application for heating and hot water		see diagrams						
Electrical data								
<i>Voltage</i>								
• Compressor	V	3 x 400						
• Fan	V	3 x 400						
Frequency	Hz	50						
Voltage range	V	380-420						
<i>Current</i>								
• Power consumption compressor A2/W35	kW	2.21	4.23	2.84	5.85	4.07	7.87	
• Power consumption compressor A20/W55	kW	4.05	7.38	5.02	9.33	6.01	12.65	
• Operating current compressor I _{max} .	A	7.3	14.5	9.2	18.4	12.9	25.4	
• Operating current evaporator fan	A	-	1.45	-	1.45	-	1.45	
• Starting current with jump start	A	22.8		29.3		39.5		
• Principal current (external protection)	A	20		25		32		
	type	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K	
• Control current (external protection)	A	13	13	13	13	13	13	
	type	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	

¹ kW = incl. defrosting loss

■ Technical data

Hoval Belaria® twin AR (17-32)

Type		(17)		(24)		(32)	
		1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
Seasonal coefficient of performance moderate climate 35 °C /55 °C	SCOP	4.5/3.4		4.5/3.4		4.5/3.3	
Performance data acc. to EN 14511							
• Heat output A2W35	kW ¹	10.3	17.2	13.1	23.7	18.6	31.6
• Power consumption A2W35	kW ¹	2.2	4.2	2.9	5.8	4.1	7.9
• Coefficient of performance A2W35	COP	4.60	4.10	4.60	4.10	4.50	4.00
• Cooling capacity A35W7	kW	9.5	17.6	12.6	22.8	16.2	28.8
• Power consumption A35W7	kW	2.6	6.0	3.60	8.17	4.7	10.6
• Coefficient of performance A35W7	EER	3.64	2.93	3.5	2.79	3.41	2.71
• Cooling capacity A35W18	kW	12.7	23.5	17.4	31.4	22.7	40.4
• Power consumption A35W18	kW	2.7	6.2	3.9	8.8	5.2	11.7
• Coefficient of performance A35W18	EER	4.8	3.8	4.49	3.58	4.34	3.44
• Weight	kg	430		575		590	
• Dimensions		see Dimensions					
• Compressor type		2 x spiral-(scroll), hermetic					
• Refrigerant filling R410A	kg	9.7		14.6		14.8	
• Fan type				radial/speed-controlled			
Nominal air quantity	m³/h	3500-7000		4500-9000		5500-11000	
• Expansion valve		2 x, electronically controlled					
• Evaporator		lamellar tube Alu/Cu					
• Condenser		copper brazed/stainless steel plate heat exchanger					
Heating flow and return flow	R	1¼" (outer thread)		1½" (outer thread)		1½" (outer thread)	
• Heating water quantity 5k ΔT	m³/h	3.75		5.05		6.60	
• Pressure drop heat pump	kPa	14.2		10.7		11.9	
• max. operating pressure heating side	bar	3					
• Ranges of application for heating, hot water and cooling		see diagrams					
Electrical data							
<i>Voltage</i>							
• Compressor	V	3 x 400					
• Fan	V	3 x 400					
Frequency	Hz	50					
Voltage range	V	380-420					
<i>Current</i>							
• Power consumption compressor A2/W35	kW	2.21	4.23	2.84	5.85	4.07	7.87
• Power consumption compressor A20/W55	kW	4.05	7.38	5.02	9.33	6.01	12.65
• Operating current compressor I _{max} .	A	7.3	14.5	9.2	18.4	12.9	25.4
• Operating current evaporator fan	A	-	1.45	-	1.45	-	1.45
• Starting current with jump start	A	22.8		29.3		39.5	
• Principal current (external protection)	A	20		25		32	
	type	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K
	A	13	13	13	13	13	13
• Control current (external protection)	type	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z

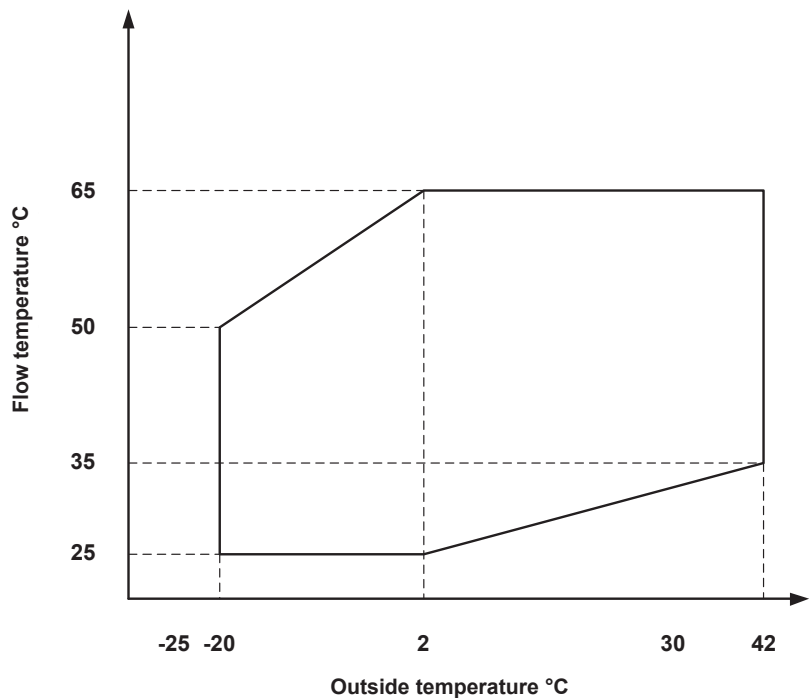
¹ kW = incl. defrosting loss

A flow controller must be installed for operational reliability in cooling mode.

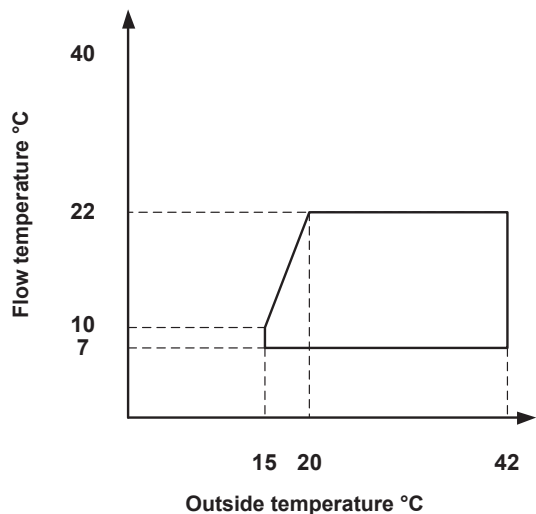
■ Technical data

Diagrams range of application

Belaria® twin A (17-32), Belaria® twin AR (17-32)
Heating and hot water



Belaria® twin AR (17-32)
Cooling



■ Technical data

Hoval Belaria® twin A (17-32)

Hoval Belaria® twin AR (17-32)

Sound pressure level - sound power level

The **sound pressure level** is dependent on the **place of measurement** in a sound field and describes the sound intensity at this place. The sound power level thus is a feature of the sound source and therefore is distance-unrelated; it describes the totality of sound power of the relevant source radiated into all directions.

Structure-borne sound

All connections must be fitted with compensators or vibration absorbers so that no structure-borne sound is being transmitted.

Special precautions must be taken for roof installation.

Heat pump with diffuser on the blow-out.

Entails a reduction of the sound power level of approx. 3 dB(A) depending on speed of rotation of ventilator.

Sound propagation

The further away you are from a sound source, the lower the acoustic energy, and consequently the immission values. In general, not only the distance between the heat pump and the immission point should be considered with regard to propagation, but also, depending on the circumstances, the following factors:

- Installation location
 - free-standing (reference factor Q= 2)
 - on the facade (reference factor Q=4)
 - in the corner (reference factor Q=8)
- Effect of obstacles
- Reflection against buildings, trees or rocks
- Effect of reflections from the ground
- Attenuation by the air and the ground
- Effect of wind and temperature stratifications of the air

The table below contains reference values and only takes account of the distance and installation location.

Belaria® twin A, Belaria® twin AR Type	Sound pressure level outside dB(A)	Distance m	Sound pressure level free installation dB(A)	Sound pressure level on facade dB(A)
(17)	63	1	55	58
		5	41	44
(24)	66	1	58	61
		5	44	47
(32)	72	1	64	67
		5	50	53

Information on sound levels applies to whisper mode. Values increase by + 4 dB(A) in normal operation

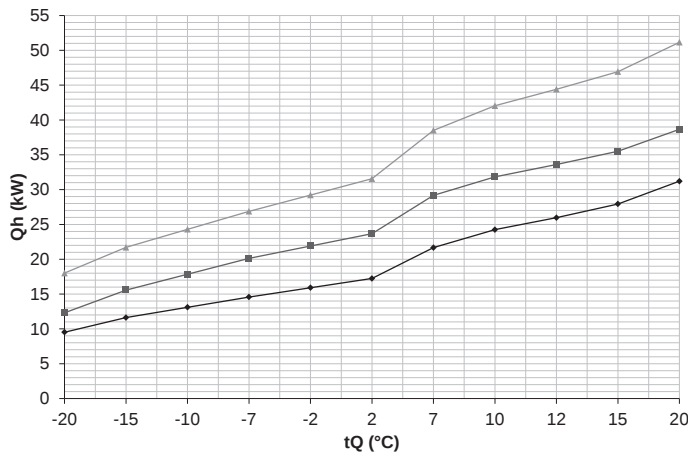
■ Technical data

Performance data - heating

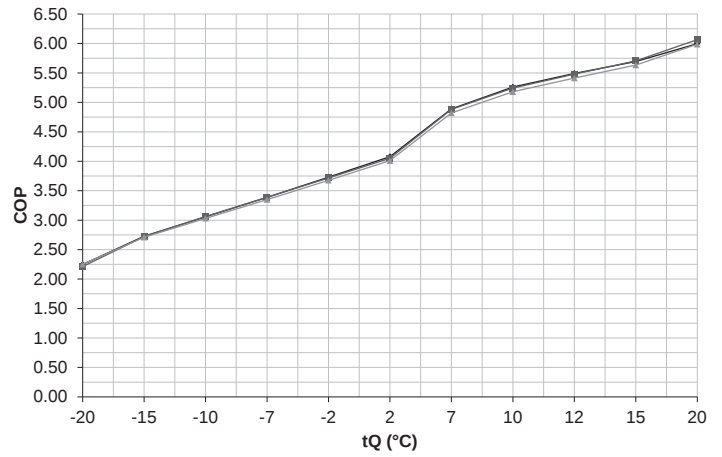
Maximum heat output allowing for defrosting losses

Hoval Belaria® twin A (17-32), twin AR (17-32)

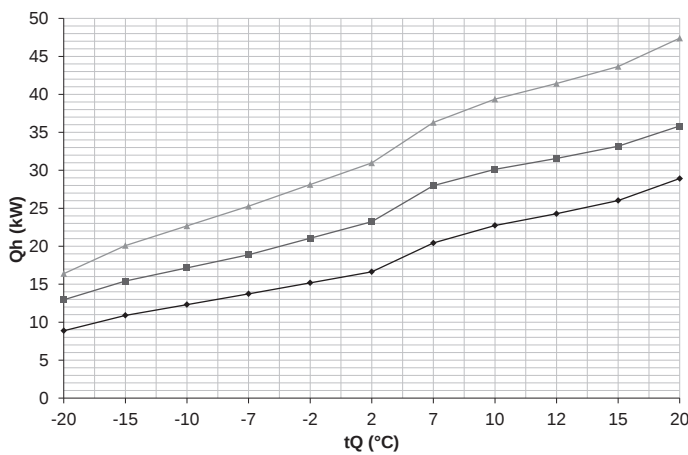
Heat output - t_{VL} 35 °C



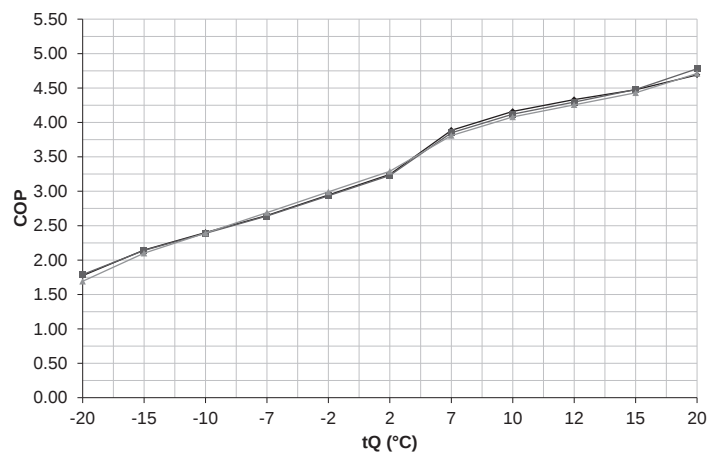
Output rating - t_{VL} 35 °C



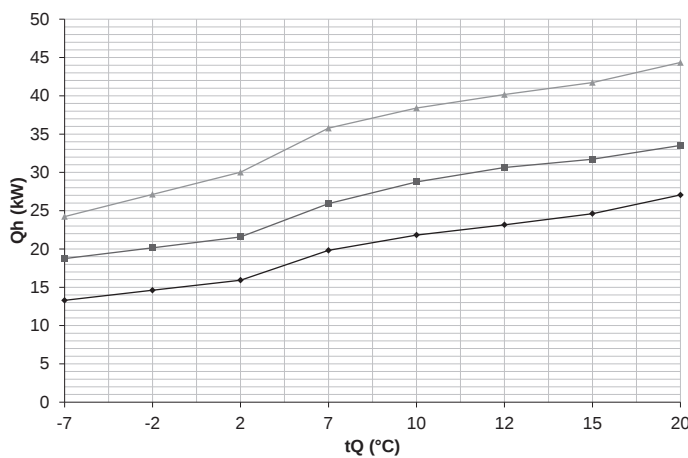
Heat output - t_{VL} 45 °C



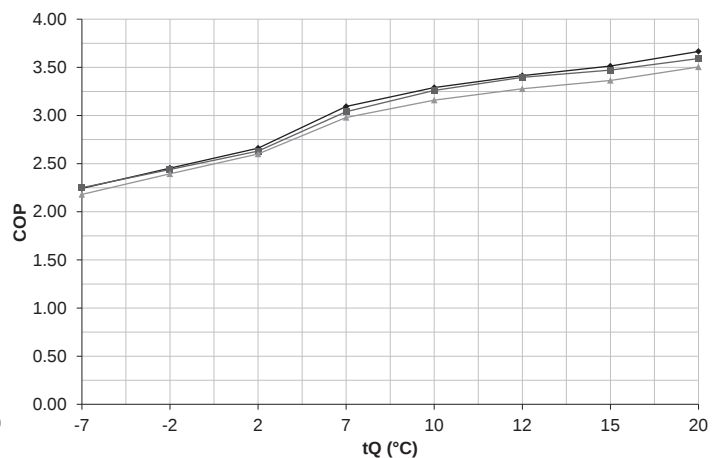
Output rating - t_{VL} 45 °C



Heat output - t_{VL} 55 °C



Output rating - t_{VL} 55 °C



Take account of daily power cuts!
see Engineering

 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

◆ Belaria® twin A/AR (17)
 ■ Belaria® twin A/AR (24)
 ▲ Belaria® twin A/AR (32)

■ Technical data

Performance data - heating

Hoval Belaria® twin A (17-32), twin AR (17-32)

Indications acc. to EN 14511

Type	tVL °C	tQ °C	Qh kW	(17) P kW	COP	Qh kW	(24) P kW	COP	Qh kW	(32) P kW	COP
35	-20	-20	9.5	4.2	2.25	12.3	5.6	2.21	18.0	8.0	2.25
	-15	-15	11.6	4.3	2.73	15.6	5.7	2.72	21.7	8.0	2.71
	-10	-10	13.1	4.3	3.06	17.9	5.8	3.06	24.3	8.0	3.03
	-7	-7	14.6	4.3	3.39	20.1	5.9	3.39	26.9	8.0	3.35
	-2	-2	15.9	4.3	3.73	21.9	5.9	3.72	29.2	7.9	3.68
	2	2	17.2	4.2	4.08	23.7	5.9	4.05	31.6	7.9	4.01
	7	7	21.7	4.4	4.89	29.2	6.0	4.88	38.5	8.0	4.82
	10	10	24.3	4.6	5.26	31.8	6.1	5.24	42.0	8.1	5.18
	12	12	26.0	4.7	5.49	33.6	6.1	5.48	44.4	8.2	5.41
	15	15	27.9	4.9	5.69	35.5	6.2	5.71	46.9	8.3	5.63
	20	20	31.2	5.2	6.00	38.7	6.4	6.07	51.2	8.5	5.99
40	-20	-20	9.2	4.6	1.99	12.6	6.4	1.97	17.2	8.8	1.94
	-15	-15	11.3	4.7	2.41	15.5	6.5	2.40	20.9	8.8	2.38
	-10	-10	12.7	4.7	2.70	17.5	6.5	2.69	23.5	8.7	2.68
	-7	-7	14.2	4.7	2.98	19.5	6.6	2.98	26.1	8.7	2.99
	-2	-2	15.5	4.7	3.30	21.5	6.5	3.29	28.7	8.7	3.30
	2	2	16.9	4.7	3.62	23.5	6.5	3.60	31.3	8.6	3.62
	7	7	21.0	4.8	4.35	28.6	6.6	4.32	37.4	8.8	4.27
	10	10	23.5	5.0	4.66	31.0	6.7	4.63	40.7	8.9	4.58
	12	12	25.1	5.2	4.86	32.6	6.7	4.83	42.9	9.0	4.79
	15	15	27.0	5.4	5.03	34.3	6.8	5.03	45.3	9.1	4.98
	20	20	30.1	5.7	5.29	37.1	6.9	5.34	49.2	9.3	5.28
45	-20	-20	8.9	5.0	1.77	12.9	7.2	1.79	16.4	9.7	1.69
	-15	-15	10.9	5.1	2.15	15.4	7.2	2.14	20.1	9.6	2.10
	-10	-10	12.3	5.1	2.40	17.2	7.2	2.39	22.7	9.5	2.39
	-7	-7	13.7	5.2	2.65	18.9	7.2	2.64	25.3	9.4	2.69
	-2	-2	15.2	5.2	2.95	21.1	7.2	2.93	28.1	9.4	2.99
	2	2	16.6	5.1	3.25	23.2	7.2	3.23	31.0	9.4	3.29
	7	7	20.4	5.3	3.89	28.0	7.3	3.85	36.3	9.5	3.81
	10	10	22.7	5.5	4.16	30.1	7.3	4.12	39.4	9.7	4.08
	12	12	24.3	5.6	4.33	31.6	7.4	4.30	41.4	9.7	4.26
	15	15	26.0	5.8	4.47	33.2	7.4	4.48	43.7	9.9	4.43
	20	20	28.9	6.2	4.69	35.8	7.5	4.78	47.4	10.1	4.71
50	-20	-20	-	-	-	-	-	-	-	-	-
	-15	-15	-	-	-	-	-	-	-	-	-
	-10	-10	-	-	-	-	-	-	-	-	-
	-7	-7	13.5	5.6	2.43	18.8	7.7	2.43	24.8	10.3	2.41
	-2	-2	14.9	5.6	2.68	20.6	7.7	2.67	27.6	10.4	2.66
	2	2	16.3	5.6	2.93	22.4	7.7	2.91	30.5	10.5	2.91
	7	7	20.1	5.8	3.45	27.0	7.9	3.42	36.0	10.8	3.35
	10	10	22.3	6.0	3.68	29.4	8.1	3.65	38.9	10.9	3.57
	12	12	23.7	6.2	3.83	31.1	8.2	3.80	40.8	11.0	3.71
	15	15	25.3	6.4	3.95	32.4	8.4	3.88	42.7	11.1	3.84
	20	20	28.0	6.8	4.13	34.7	8.7	4.00	45.9	11.4	4.04
55	-20	-20	-	-	-	-	-	-	-	-	-
	-15	-15	-	-	-	-	-	-	-	-	-
	-10	-10	-	-	-	-	-	-	-	-	-
	-7	-7	13.3	5.9	2.24	18.8	8.3	2.25	24.2	11.1	2.18
	-2	-2	14.6	6.0	2.45	20.2	8.3	2.44	27.1	11.3	2.39
	2	2	15.9	6.0	2.66	21.6	8.2	2.63	30.0	11.5	2.60
	7	7	19.8	6.4	3.09	25.9	8.5	3.04	35.8	12.0	2.98
	10	10	21.8	6.6	3.29	28.8	8.8	3.26	38.4	12.2	3.16
	12	12	23.2	6.8	3.41	30.6	9.0	3.40	40.2	12.3	3.28
	15	15	24.6	7.0	3.51	31.7	9.1	3.47	41.7	12.4	3.36
	20	20	27.1	7.4	3.67	33.5	9.3	3.59	44.3	12.7	3.50
60	-20	-20	-	-	-	-	-	-	-	-	-
	-15	-15	-	-	-	-	-	-	-	-	-
	-10	-10	-	-	-	-	-	-	-	-	-
	-7	-7	-	-	-	-	-	-	-	-	-
	-2	-2	-	-	-	-	-	-	-	-	-
	2	2	15.5	7.1	2.18	20.5	9.6	2.13	29.4	14.1	2.08
	7	7	19.4	7.6	2.56	25.0	10.0	2.51	35.4	14.5	2.44
	10	10	21.2	7.7	2.74	27.8	10.3	2.70	38.0	14.5	2.62
	12	12	22.4	7.8	2.86	29.6	10.5	2.82	39.7	14.5	2.74
	15	15	23.7	8.0	2.96	30.5	10.6	2.87	40.7	14.5	2.82
	20	20	25.8	8.3	3.13	32.0	10.8	2.96	42.4	14.4	2.94

tVL = heating flow temperature (°C)

tQ = source temperature (°C)

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

P = power consumption of the overall unit (kW)

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

Take account of daily power cuts!
see Engineering

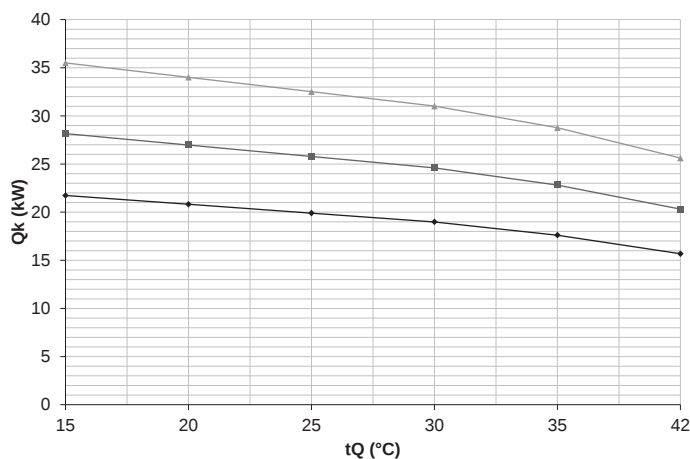
Technical data

Performance data - cooling

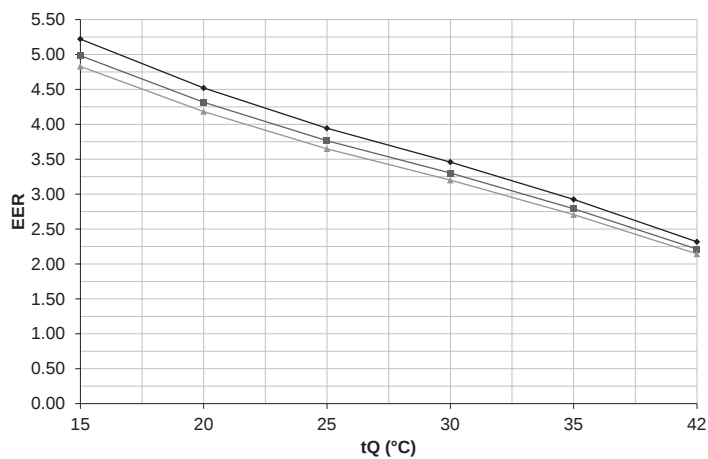
Maximum cooling capacity

Hoval Belaria® twin AR (17-32)

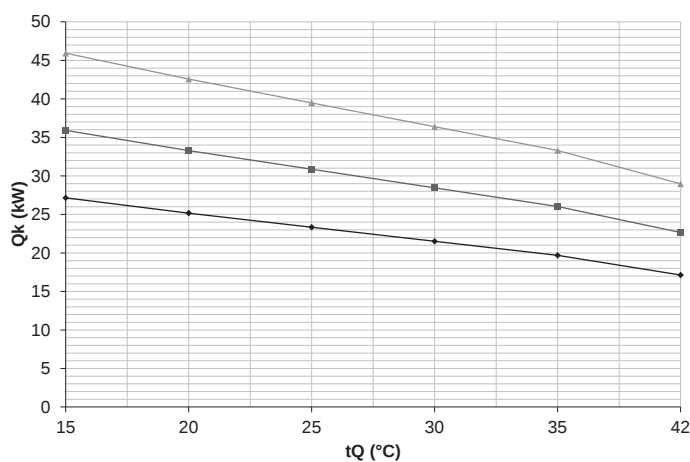
Cooling capacity - t_{VL} 7 °C



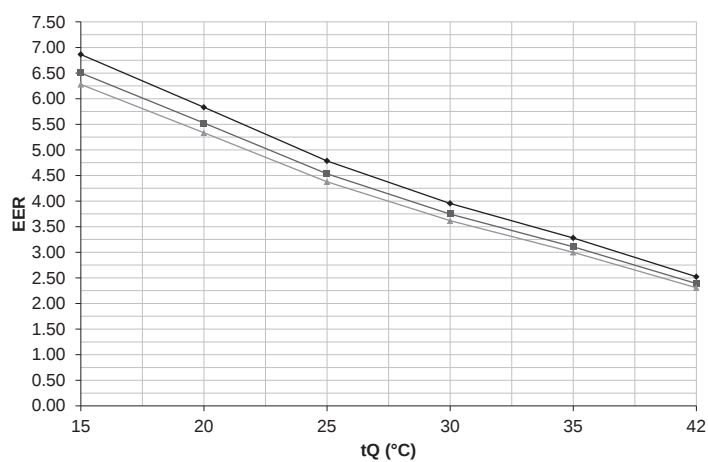
Output rating - t_{VL} 7 °C



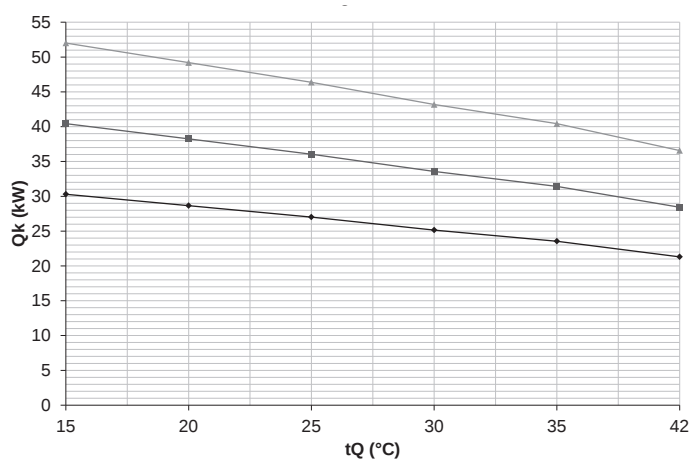
Cooling capacity - t_{VL} 13 °C



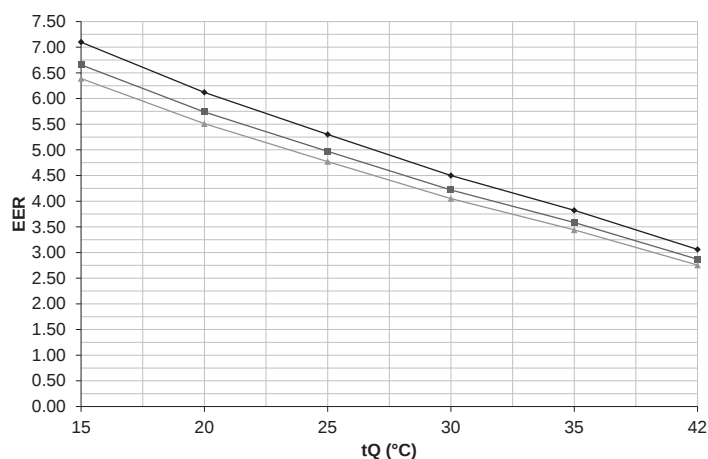
Output rating - t_{VL} 13 °C



Cooling capacity - t_{VL} 18 °C



Output rating - t_{VL} 18 °C


 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

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

◆ Belaria® twin AR (17)
 ■ Belaria® twin AR (24)
 ▲ Belaria® twin AR (32)

■ Technical data

Performance data - cooling

Hoval Belaria® twin AR (17-32)

Indications acc. to EN14511

Type	tVL °C	tQ °C	Qk kW	(17) P kW	EER	Qk kW	(24) P kW	EER	Qk kW	(32) P kW	EER
7	15	21.7	21.7	4.2	5.22	28.2	5.6	4.98	35.5	7.4	4.83
	20	20.8	20.8	4.6	4.52	27.0	6.2	4.32	34.0	8.1	4.18
	25	19.9	19.9	5.0	3.94	25.8	6.8	3.77	32.5	8.9	3.65
	30	19.0	19.0	5.5	3.46	24.6	7.4	3.30	31.0	9.7	3.20
	35	17.6	17.6	6.0	2.93	22.8	8.2	2.79	28.8	10.6	2.71
	42	15.7	15.7	6.8	2.32	20.3	9.2	2.21	25.6	11.9	2.14
10	15	25.1	25.1	3.7	6.77	33.1	5.2	6.42	42.3	6.8	6.20
	20	23.5	23.5	4.3	5.51	31.0	5.9	5.23	39.6	7.8	5.05
	25	22.0	22.0	4.8	4.55	28.9	6.7	4.32	36.9	8.9	4.17
	30	20.4	20.4	5.4	3.79	26.9	7.5	3.59	34.3	9.9	3.47
	35	18.8	18.8	5.9	3.16	24.8	8.3	3.00	31.6	10.9	2.90
	42	16.6	16.6	6.7	2.47	21.8	9.3	2.34	27.9	12.3	2.26
13	15	27.2	27.2	4.0	6.86	35.9	5.5	6.50	45.9	7.3	6.28
	20	25.2	25.2	4.3	5.83	33.3	6.0	5.52	42.6	8.0	5.33
	25	23.3	23.3	4.9	4.78	30.9	6.8	4.53	39.5	9.0	4.38
	30	21.5	21.5	5.4	3.95	28.5	7.6	3.75	36.4	10.1	3.62
	35	19.7	19.7	6.0	3.28	26.0	8.4	3.11	33.3	11.1	3.00
	42	17.1	17.1	6.8	2.52	22.7	9.5	2.39	29.0	12.6	2.31
15	15	28.9	28.9	4.1	7.05	38.0	5.8	6.60	48.4	7.6	6.33
	20	27.0	27.0	4.5	6.03	35.5	6.3	5.64	45.2	8.4	5.41
	25	25.2	25.2	5.0	5.06	33.2	7.0	4.74	42.2	9.3	4.54
	30	23.3	23.3	5.5	4.23	30.7	7.7	3.96	39.1	10.3	3.80
	35	21.6	21.6	6.1	3.55	28.4	8.5	3.32	36.2	11.4	3.18
	42	19.6	19.6	6.8	2.87	25.8	9.6	2.68	32.9	12.8	2.57
18	15	30.3	30.3	4.3	7.10	40.4	6.1	6.66	52.0	8.1	6.39
	20	28.7	28.7	4.7	6.12	38.2	6.7	5.74	49.2	8.9	5.51
	25	27.0	27.0	5.1	5.30	36.1	7.3	4.97	46.4	9.7	4.77
	30	25.2	25.2	5.6	4.50	33.6	8.0	4.22	43.2	10.7	4.05
	35	23.5	23.5	6.2	3.82	31.4	8.8	3.58	40.4	11.8	3.44
	42	21.3	21.3	7.0	3.06	28.4	9.9	2.87	36.6	13.3	2.76
20	15	30.5	30.5	4.2	7.32	41.7	6.0	6.91	54.5	8.2	6.67
	20	29.2	29.2	4.7	6.26	39.6	6.7	5.90	51.6	9.1	5.68
	25	27.8	27.8	5.2	5.40	37.6	7.4	5.07	48.7	10.0	4.88
	30	26.5	26.5	5.6	4.69	35.5	8.1	4.39	45.9	10.9	4.21
	35	25.1	25.1	6.1	4.10	33.2	8.8	3.77	42.5	11.9	3.57
	42	23.2	23.2	6.8	3.41	30.6	9.7	3.14	39.0	13.1	2.98
22	15	33.2	33.2	4.2	7.85	44.3	6.1	7.28	56.9	8.2	6.94
	20	31.5	31.5	4.8	6.62	42.0	6.8	6.14	54.0	9.2	5.85
	25	29.8	29.8	5.3	5.63	39.7	7.6	5.22	51.1	10.3	4.98
	30	28.1	28.1	5.7	4.91	37.5	8.2	4.55	48.2	11.1	4.34
	35	26.0	26.0	6.2	4.18	34.6	8.9	3.88	44.5	12.0	3.70
	42	24.1	24.1	6.9	3.52	32.2	9.9	3.27	41.4	13.3	3.12

tVL = cooling water flow temperature (°C)

tQ = source temperature (°C)

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

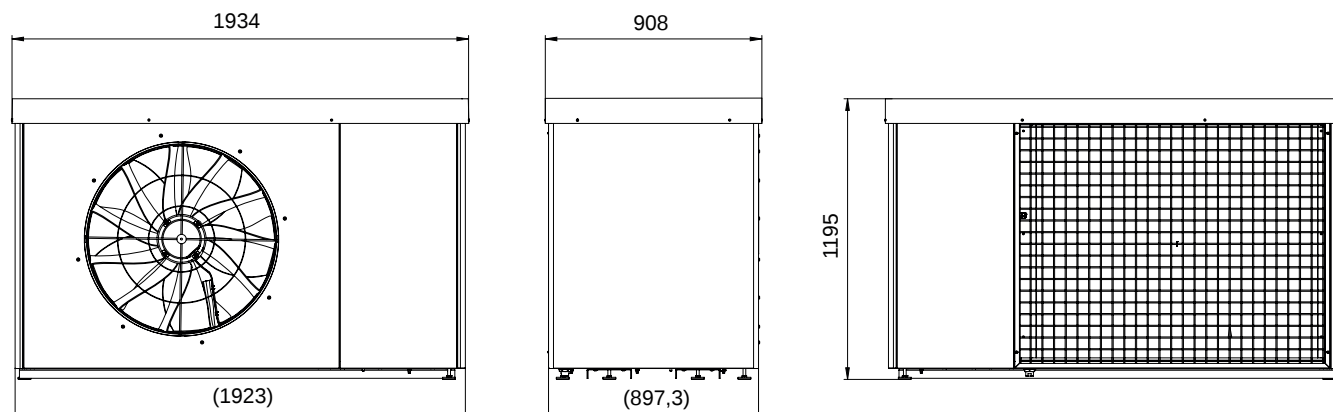
P = power consumption of the overall unit (kW)

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

■ Dimensions

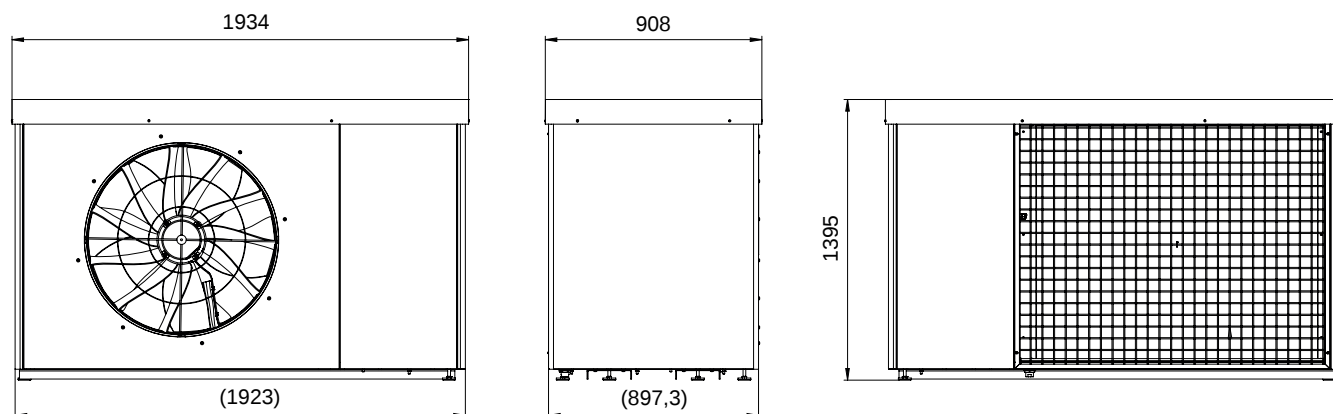
Hoval Belaria® twin A (17), Belaria® twin AR (17)

(Dimensions in mm)



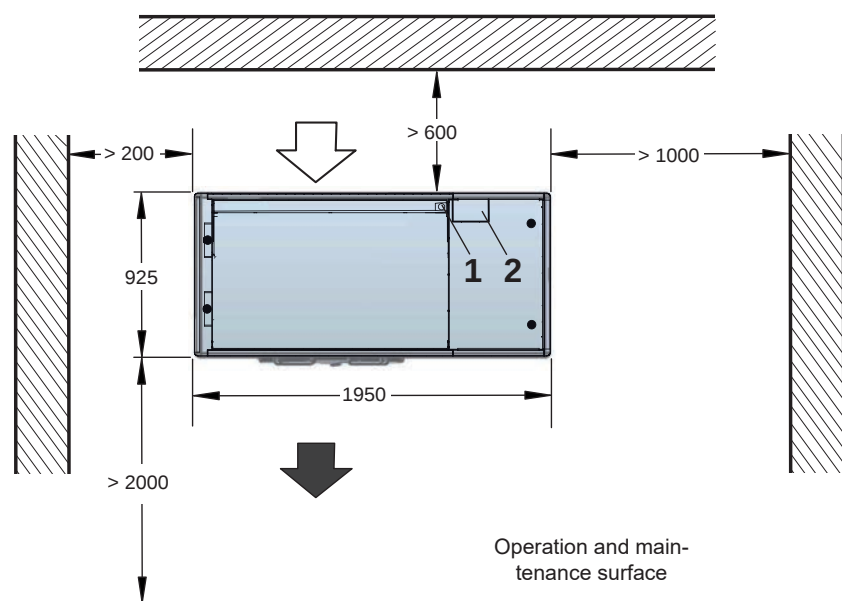
Hoval Belaria® twin A (24,32), Belaria® twin AR (24,32)

(Dimensions in mm)



Space requirement for Hoval Belaria® twin A (17-32), Belaria® twin AR (17-32)

(Dimensions in mm)

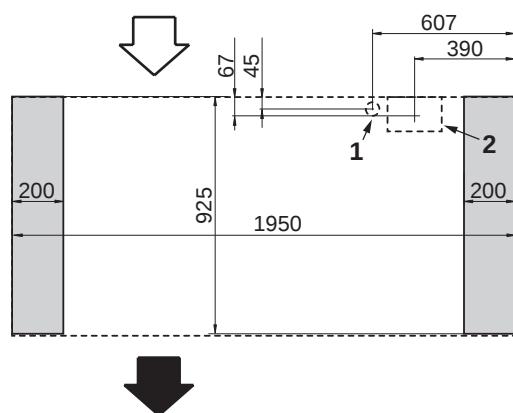


- 1 Condensate drain (Rp 1") with electric trace heating
- 2 Hydraulic and electrical connection

■ Dimensions

Base plan Hoval Belaria® twin A (17-32), Belaria® twin AR (17-32)

(Dimensions in mm)

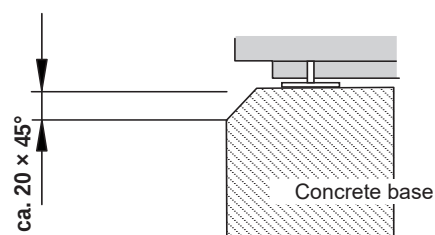


- 1 Condensate drain (Rp 1")
with electric trace heating
- 2 Hydraulic and electrical connection

The condensate drain is located on the rear (suction side).

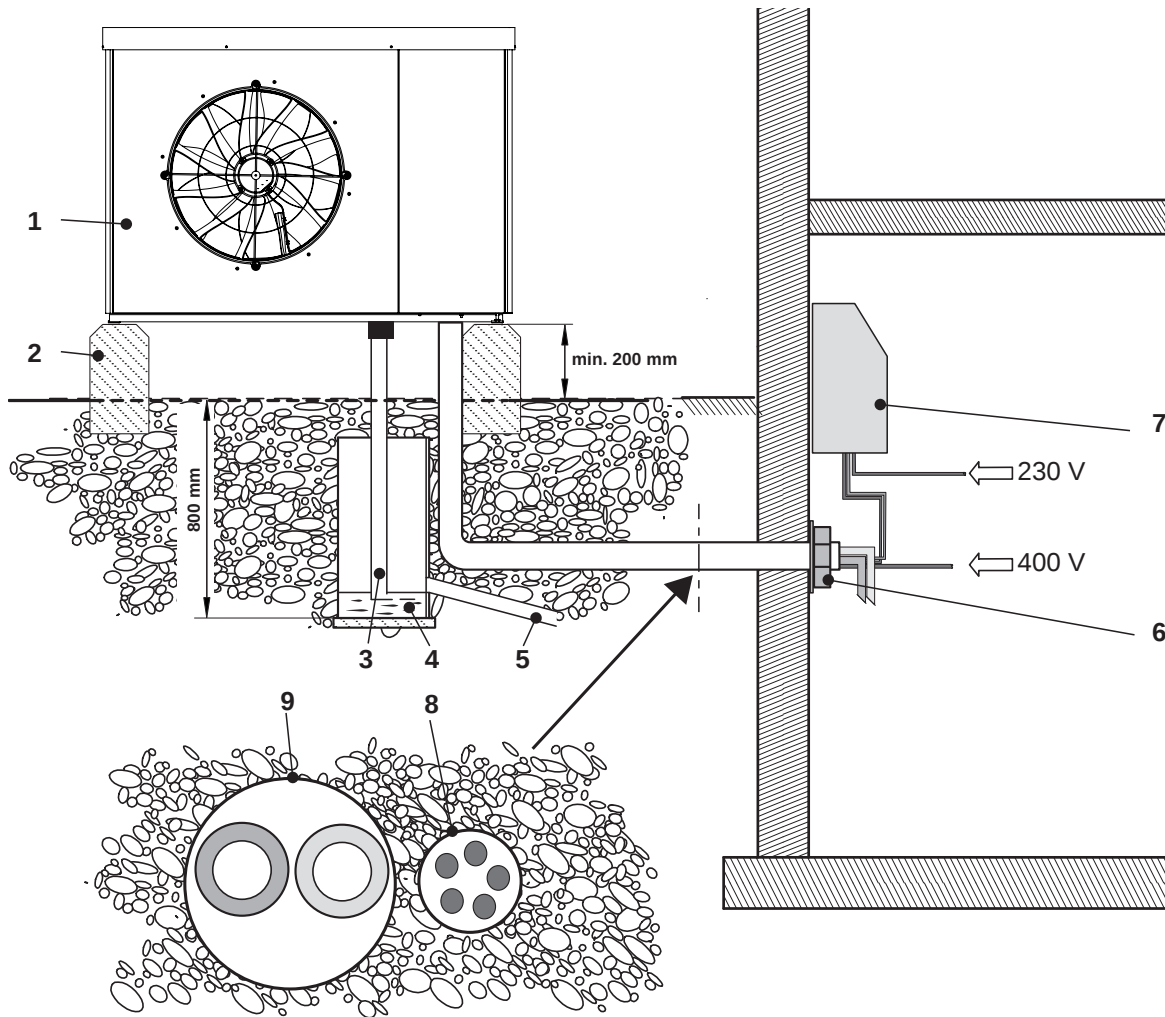
The concrete base must have a level surface
the size of the Belaria® twin A/AR
(1950 mm × 925 mm).

The base should have chamfered edges.



■ Dimensions

Configuration and connection diagram Belaria® twin A (17-32), Belaria® twin AR (17-32)



- 1 Belaria® twin A (17-32)/Belaria® twin AR (17-32)
- 2 Concrete base
- 3 Condensate drain (R 1") with electr. auxiliary heating (on site)
- 4 Possible variant with duct diameter / gravel bed
- 5 Discharge into the sewer system
- 6 Wall lead-through (hydraulic and electrical connections)
- 7 Terminal box/TopTronic® E controller
- 8 Empty tube for electrical connections outdoor unit

Necessary

1 cable 10 x 1.5 mm ²	Main current	400 V/5-pole/configuration cross section on site
	Control current	230 V/3-pole/configuration cross section on site
	Bus line	24 V/2-pole/2 x 1.0 mm ² shielded
	Pump control CP	24 V/2-pole/2 x 1.0 mm ² shielded
	Fault contact CP	230 V/2-pole/2 x 1.5 mm ²
	Lock by energy supply company	230 V/2-pole/2 x 1,5 mm ²
	Reset	230 V/1-pole/1 x 1.5 mm ²
	Heat generator block	230 V/1-pole/1 x 1.5 mm ²
	Collective fault	230 V/2-pole/2 x 1.5 mm ²
Electric inset	230 V/1-pole/1 x 1.5 mm ²	

Options

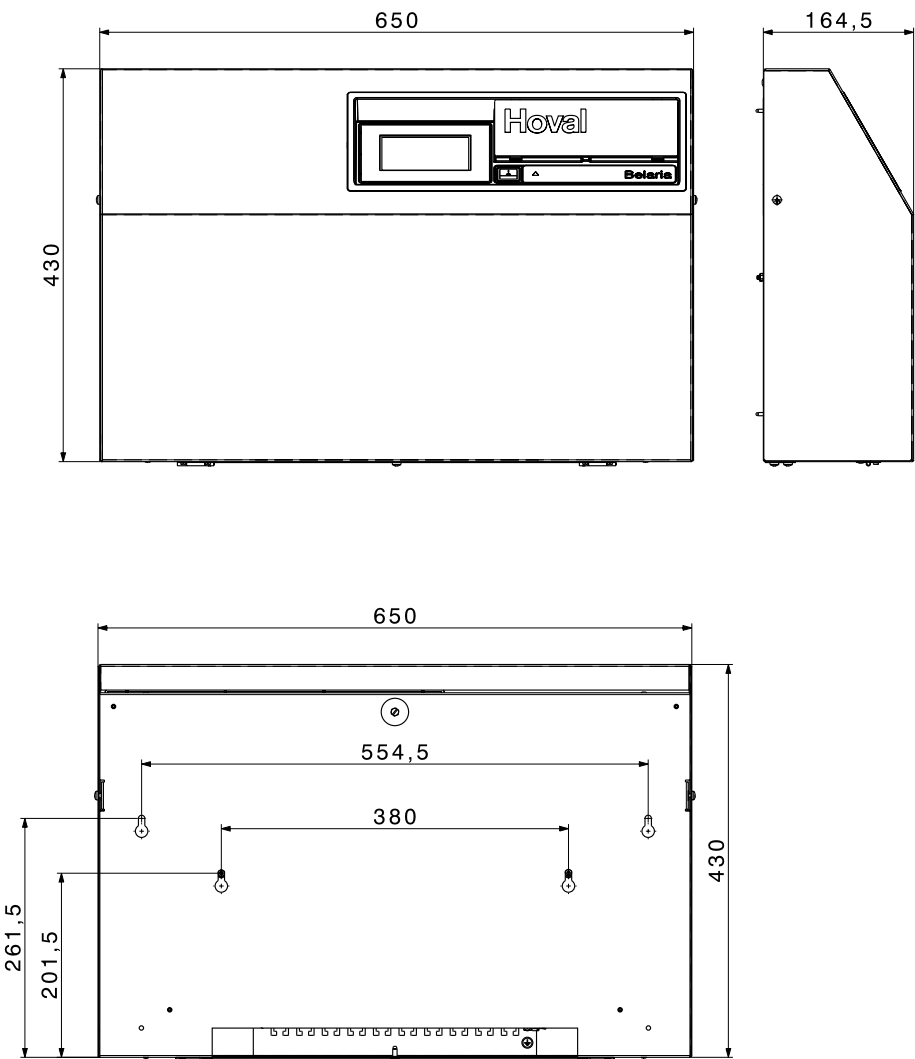
CP pump ON/OFF (does not apply for pump control 0-10 V)	230 V/2-pole/2 x 1.5 mm ²
Fault contact for PLC	230 V/2-pole/2 x 1.5 mm ²
Flow rate meter	230 V/2-pole/2 x 1.5 mm ²
Electricity meter	230 V/2-pole/2 x 1.5 mm ²
USB cable for line recorder	
USB 2.0 extension cable active	

- 9 Empty tube for hydraulic connections outdoor unit
 - Heating flow (17) R 1¼"/(24,32) R 1½"
 - Heating return (17) R 1¼"/(24,32) R 1½"

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

■ Dimensions

Electrical box for Hoval Belaria® twin A (17-32), Belaria® twin AR (17-32)
(Dimensions in mm)



Description

Hoval Belaria® dual AR

Air/water heat pump

- Air/water heat pump in compact design for outdoor installation
- High energy efficiency
- Evaporator and refrigeration part are placed adjacent to one another. The refrigeration part is encapsulated with electrolytically galvanised, powder-coated and sound-insulated steel sheets. Colour light grey (RAL 7035)
- Covering made of sheet steel Colour anthrazite (DB 703)
- Refrigerant interim injection. This permits flow temperatures from 65 °C up to an outdoor temperature of -20 °C
- With large-area, multi-row aluminium/copper ribbed pipe evaporator and copper-brazed plate-type condenser made from stainless steel
- Two electronic expansion valves for the highest efficiency and operational reliability
- Two speed-controlled axial fans made from high-strength composite material with vanes as a compact unit for low energy consumption and the lowest noise level
- Two separate refrigeration circuits in one casing
- Two electronic starting current limiters including phase and phase-sequence monitoring
- With cooling function through inversion of cycle
- Filled with refrigerant R410A, wired up internally ready for connection
- Electrical box for wall mounting inside the building with built-in TopTronic® E controller
- The electrical box is not included in the scope of delivery and must be ordered in addition as an accessory.
- Strainer ball valve installed
- Connecting hoses already fitted. Heating side pipework in the casing.

TopTronic® E controller

Control panel

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

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 online HovalConnect)
- Adaptation of the heating strategy based on the weather forecast (with online HovalConnect)

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 DHW charging circuit
 - Bivalent and cascade management



Hoval Belaria® dual AR

35 °C	55 °C	Type	Refrigerant	Max. flow °C	Heat output for A2W35		Cooling capacity for A35W7	
					Stage 1	Stage 2	Stage 1	Stage 2
					kW		kW	
A++	A+	(60)	2x R410A	65	25.1	50.3	24.6	49.2



Seal of approval FWS

The Belaria® dual AR (60) series are certified by the seal of approval of the authorisation commission of Switzerland

- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Rast5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
 - Heating circuit module expansion or
 - Universal module expansion or
 - Heat balancing module expansion
- 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"

Condensate connection

- The discharge pipe must be configured with a sufficient slope and without a change of section
- The customer is responsible for providing the water connections and condensate discharge pipe outdoors and ensuring that they are protected against frost (see base plan)

Hydraulic connections

- Heating connections with flexible hoses downwards

Electrical connections

- Connection from below (see base plan)

Options

- Diffuser for sound reduction

Delivery

- One-piece design. Compact unit wired-up internally ready for connection.

Recommended accessories

- Continuous, speed-controlled high-efficiency pump

■ Part No.



Notice
Corresponding charging pumps:

Hoval system pump set SPS-I with interface for pump control
Type 0–10 V or PWM1

Stratos premium pump
with IF module Stratos Ext. Off (0-10 V)

See “Circulating pumps”

Energy efficiency class
See Description

Notice
An energy buffer accumulator must be provided.

Matching energy buffer storage tanks see “Calorifiers”

Hoval Belaria® dual AR
Air/water heat pump - 2-stage

Part No.

Air/water heat pump with cooling function for outdoor installation without electrical box.

Delivery
One-piece design. Compact unit wired-up internally ready for connection.

Belaria® dual AR Type	Heat output for A2W35		Cooling capacity for A35W7	
	Stage 1	Stage 2	Stage 1	Stage 2
	kW		kW	
(60)	25.1	50.3	24.6	49.2

The electrical box with built-in TopTronic® E controller must be ordered separately.

If the heat pump is ordered without electrical box, engineering must absolutely be performed by Hoval, otherwise it will not be taken into operation.

■ Part No.

**Accessories****Part No.****Electrical box**

6046 330

for wall installation in building interiors with built-in Hoval TopTronic® E controller
 Integrated control functions for
 - 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 DHW charging circuit
 - Bivalent and cascade management
 • Option of extending by max. 1 module extension:
 - heating circuit module extension or
 - heat balancing module extension or
 - universal module extension
 • Option of networking with up to 16 controller modules (incl. solar module)
 Incl. outdoor sensor, immersion sensor (calorifier sensor), contact sensor (flow temperature sensor) and RAST 5 basic connector set

**Sound attenuation cowl for compressor**

2069 706

for Thermalia® dual (70) and Belaria® dual AR (60)
 for reducing the transmission of acoustic noise. Two sound attenuation cowls must be ordered for heat pumps with two compressors.
 Number of compressors:
 Thermalia® dual (70): 2 pieces
 Belaria® dual AR (60): 2 pieces

**Set vibration-damping adjustable feet 55/65**

6040 854

for Belaria® dual AR (60)
 for reducing the transmission of solid-borne noise
 Set comprises 4 vibration damping feet, threaded rod and lock nut
 Material elastomer part: NR, black
 Material housing: galvanised steel, chromated

**Diffuser**

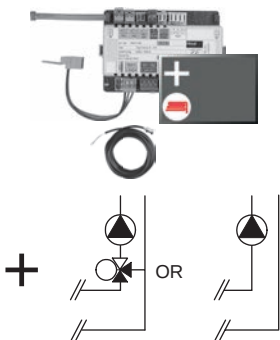
2056 705

for fan of Belaria® twin A, twin AR, dual AR
 for greater efficiency and lower noise
 by up to 3 dB(A) depending on circumstances

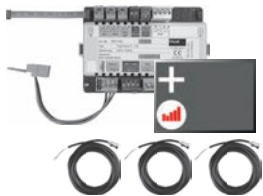
2 diffusers are required for each heat pump.

Recommended accessory:
High-efficiency pump with continuously variable speed control

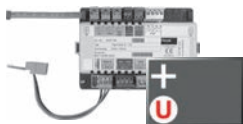
■ Part No.



Notice
The supplementary plug set may have to be ordered to implement functions differing from the standard!



Notice
The flow rate sensor set must be ordered as well.



Notice
Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

TopTronic® E module expansions
for TopTronic® E basic module heat generator

Part No.

TopTronic® E module expansion heating circuit TTE-FE HK
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating circuit without mixer or
- 1 heating circuit with mixer

6034 576

incl. fitting accessories
1x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer

in each case incl. energy balancing

6037 062

incl. fitting accessories
3x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

Flow rate sensor sets

Plastic housing

Size	Connection	Flow rate l/min	
DN 8	G 3/4"	0.9-15	6038 526
DN 10	G 3/4"	1.8-32	6038 507
DN 15	G 1"	3.5-50	6038 508
DN 20	G 1 1/4"	5-85	6038 509
DN 25	G 1 1/2"	9-150	6038 510

Brass housing

Size	Connection	Flow rate l/min	
DN 10	G 1"	2-40	6042 949
DN 32	G 1 1/2"	14-240	6042 950

TopTronic® E module expansion Universal TTE-FE UNI

6034 575

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

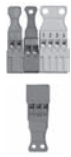
incl. fitting accessories

Can be installed in:
Boiler control, wall housing, control panel

Further information

see "Controls" - "Hoval TopTronic® E module expansions" chapter

■ Part No.

**HovalConnect available from summer 2019**

Up to that point, TopTronic® E online is delivered.

**Accessories for TopTronic® E****Part No.****Supplementary plug set**

for basic module heat generator (TTE-WEZ)
for controller modules and module expansion
TTE-FE HK

6034 499
6034 503

TopTronic® E controller modules

TTE-HK/WW TopTronic® E heating circuit/
hot water module
TTE-SOL TopTronic® E solar module
TTE-PS TopTronic® E buffer module
TTE-MWA TopTronic® E measuring module

6034 571
6037 058
6037 057
6034 574

TopTronic® E room control modules

TTE-RBM TopTronic® E room control modules
easy white
comfort white
comfort black

6037 071
6037 069
6037 070

Enhanced language package TopTronic® E

one SD card required per control module
Consisting of the following languages:
HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA

6039 253

HovalConnect

HovalConnect domestic starter LAN
HovalConnect domestic starter WLAN
HovalConnect commercial starter LAN
HovalConnect commercial starter WLAN
SMS remote control unit
System component SMS remote control unit

6049 496
6049 498
6049 495
6049 497
6018 867
6022 797

TopTronic® E interface modules

GLT module 0-10 V
HovalConnect domestic starter Modbus
HovalConnect domestic starter KNX
HovalConnect commercial starter Modbus
HovalConnect commercial starter KNX

6034 578
6049 501
6049 593
6049 500
6049 502

TopTronic® E wall casing

WG-190 Wall casing small
WG-360 Wall casing medium
WG-360 BM Wall casing medium with
control module cut-out
WG-510 Wall casing large
WG-510 BM Wall casing large with
control module cut-out

6035 563
6035 564
6035 565
6035 566
6038 533

TopTronic® E sensors

AF/2P/K Outdoor sensor
TF/2P/5/6T Immersion sensor, L = 5.0 m
ALF/2P/4/T Contact sensor, L = 4.0 m
TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m

2055 889
2055 888
2056 775
2056 776

System housing

System housing 182 mm
System housing 254 mm

6038 551
6038 552

Bivalent switch

2061 826

Further information
see "Controls"

Outdoor sensor, immersion sensor and
contact sensor supplied with the heat pump.

■ Part No.



Accessories

Part No.

Protective pipe immersion sleeve
SB280 1/2"

brass nickel-plated
PN10, 280 mm

2018 837


Trace heating tape

for heating a condensate
drainage pipe (on site)
and a condensate drip tray KWD
with thermostat and microfuses
Output: 40-80 W, 230 V
Length: cable 1.5 m; heating tape 2 m

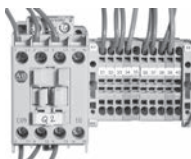
6033 374


Screw-in electrical heating inset

for plants with energy buffer storage tank
as emergency heating.
Control set must be ordered.

Type	Heat output [kW]	Installation depth [mm]
EP 2.5	2.35	390
EP 3.5	3.6	500
EP 5	4.6	620
EP 7.5	7.5	850

EP 2.5	2.35	390	6049 557
EP 3.5	3.6	500	6049 558
EP 5	4.6	620	6049 559
EP 7.5	7.5	850	6049 560


Control set (switching contactor)

for installation in the wall-hanging
electrical box.

6033 403

Necessary for the control
of an electrical heating inset.

Strainer PN16 B50-50-2"

Casing made of brass, PN 16
Max. operating temperature 110 °C
Sieve made of stainless steel,
size of mesh 0.5 mm

2046 984

Further strainers
see "Various system components"

Sludge separator CS 50-2" with magnet

for flow rates of 5.0-8.0 m³/h
for flow speed of 1.0 m/s
Housing made of plastic PPA with
diffuser and partial flow removal
with 4 extra-strong Neodymium magnets
Magnets removable for draining
EPP insulation 20 mm
Connections made of brass G 2"
Drain made of brass: hose connection
Any inst. orientation - 360° rotating
Temperature range -10 to 120 °C
Operating pressure max.: 10 bar
Glycol proportion max.: 50 %
Weight: 2.32 kg

2063 738

**Circulation pumps, actuators,
buffer storage tanks** see separate brochures

■ Part No.



Accessories

Part No.

Switching ball valve VBG60..

DN 15-50, PN 16, 120 °C

- Three-way ball valve made of brass with threaded connection
- incl. seals and screw connections

DN	Connection Valve	Connection Fitting	kvs	$\dot{V}$ [m³/h] at ΔP 50 mbar
40	G 2¼"	Rp 1½"	49	10.96
50	G 2¾"	Rp 2"	73	16.32

6045 771
6045 772



Suitable motor drive

Type	Voltage	Control signal	Actuator run time
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GLB341.9E 230 V / 50/60 Hz 2-/3-point 150 s

2070 331



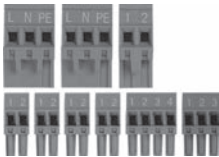
Floating cone flow controller

Operating range
3000–30,000 l/h, 0–80 °C
Nominal pressure 10 bar
DN 65 connection
Installation length 335 mm
Bistable Reed contact
Contact open without flow

2064 164

For active cooling, the installation
of a flow controller is mandatory!

■ Part No.

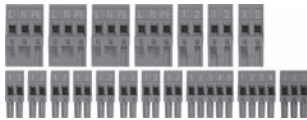


Accessories

Part No.

Expansion connector set
for the automatic heat pump ECR461.
Use for additional function:
- Flow monitor
- Crankcase bottom heating
(included in the scope of delivery
for Belaria® twin A, twin AR, dual AR)
- Condensation drain heating
- Heat quantity metering
Plugs:
- 1x 230V digital input
- 2x 230V outputs
- 4x low-voltage inputs
- 1x ratio. Input

6032 509



Universal connector set
for automatic heat pump ECR461
Plugs:
- 3x 230V digital input
- 4x 230V outputs
- 6x low-voltage inputs
- 2x low-voltage outputs
- 1x ratio. input
- 1x electr. expansion valve

6032 510

■ Technical data

Hoval Belaria® dual AR (60)

Seasonal coefficient of performance moderate climate 35 °C /55 °C	SCOP	4.0/3.2
Performance data (heating) in acc. with EN 14511		
• Heat output A2W35	kW	50.3
• Heat output A7W35	kW	69.5
• Heat output A-7W35	kW	45.5
• Power consumption A2W35	kW	13.8
• Power consumption A7W35	kW	15.6
• Power consumption A-7W35	kW	14.6
• Coefficient of performance A2W35	COP	3.6
• Coefficient of performance A7W35	COP	4.5
• Coefficient of performance A-7W35	COP	3.1
Performance data (cooling) in acc. with EN 14511		
• Cooling capacity A35W18	kW	70.5
• Cooling capacity A35W7	kW	49.2
• Cooling capacity A35W18 (partial load)	kW	35.0
• Power consumption A35W18	kW	21.3
• Power consumption A35W7	kW	20.8
• Power consumption A35W18 (partial load)	kW	16.6
• Coefficient of performance A35W18	EER	3.3
• Coefficient of performance A35W7	EER	2.4
• Coefficient of performance A35W18 (partial load)	EER	3.3
Sound data		
• Sound power level at full load ¹⁾	dB (A)	67.0
• Sound pressure level at 5 m (on facade) ¹⁾	dB (A)	48.0
• Sound pressure level at 10 m (on facade) ¹⁾	dB (A)	42.0
• Sound power level at partial load ¹⁾	dB (A)	66.0
• Sound pressure level at 5 m (on facade) ¹⁾	dB (A)	47.0
• Sound pressure level at 10 m (on facade) ¹⁾	dB (A)	41.0
Hydraulic data		
• Maximum flow temperature	°C	65
• Nominal flow rate heating water 5K ΔT	m³/h	12.9
• Nominal flow rate heating water 8K ΔT	m³/h	7.3
• Condenser pressure drop at nominal flow rate	kPa	6.0
• Max. operating pressure on the heating side	bar	3
• Flow/return connection heating	R	2" external thread
• Built-in condensate drain	R	2" external thread
• Built-in fan		2x owl-wing axial fan
• Nominal air quantity	m³/h	2x 11,000
• Max./min. fan speed	rpm	700/175
Cooling technical data		
• Refrigerant		R410A
• Refrigeration circuits		2
• Compressor stages		2
• Refrigerant fill volume	kg	2x 14.8
• Compressor oil fill volume	l	2x 3.3
Electrical data		
• Compressor/heating element/fan connections	V/Hz	3~ 400/50
• Control electrical connection	V/Hz	1~ 230/50
• Starting current (compressor and fan)	A	80,5
• Compressor operating current	A	2 x 21.61
• Fan operating current (maximum value)	A	2x 1.45
• Fan power consumption (total)	W	2x 620
• Main current fuse	A	63 A
• Control current fuse	A	B 13
• Heating element fuse (up to 9 kW)	A	B 13
Dimensions/Weight		
• Dimensions (H x W x D)	mm	1439 x 3272 x 895
• Weight	kg	880

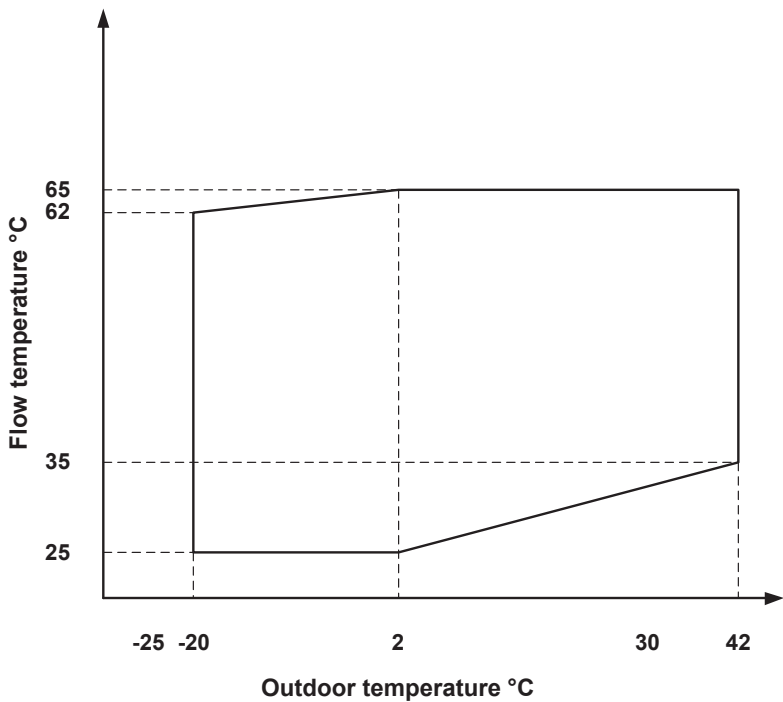
¹⁾ The sound power levels apply in whisper mode.

The values increase by +6 dB(A) in full-load operation or +4 dB(A) in partial load operation.

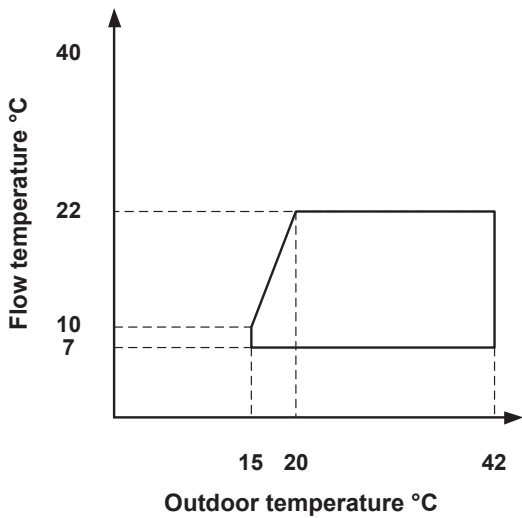
■ Technical data

Graphs of operating range

Heating and how water

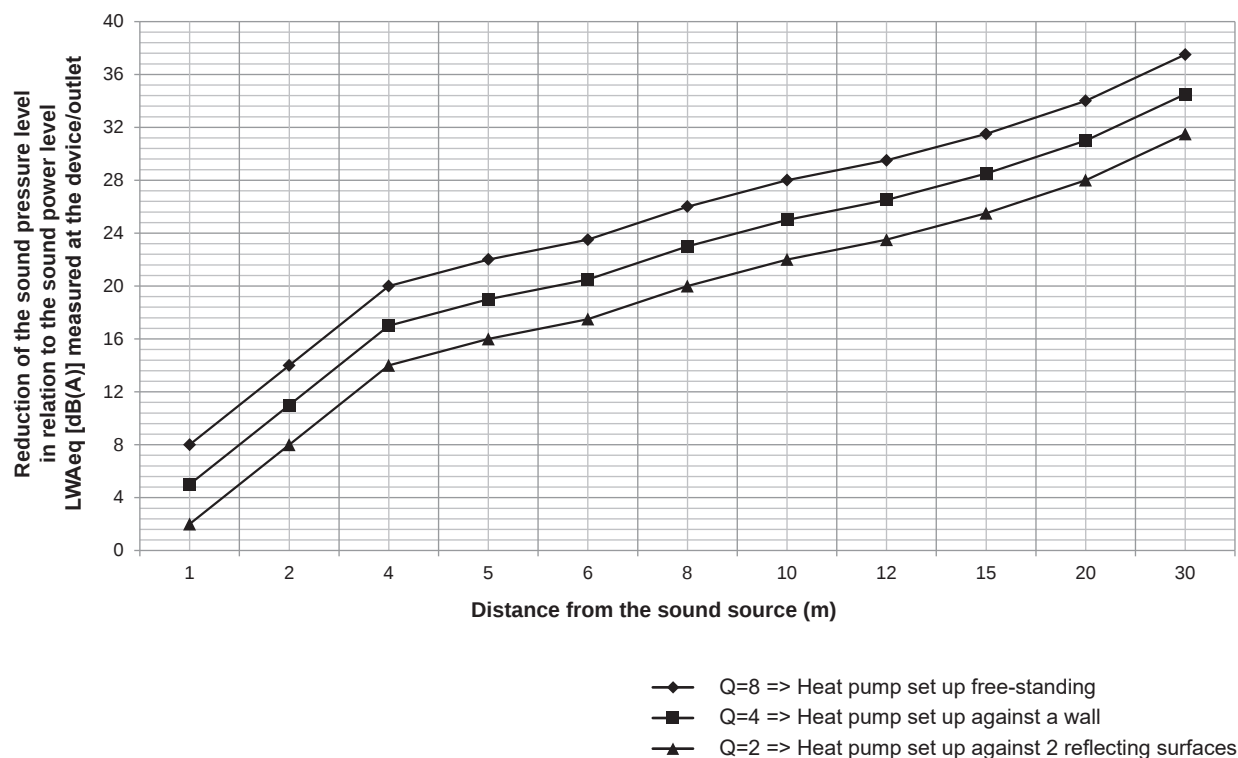


Cooling



■ Technical data

Diagram for rough calculation of the sound pressure level



Example 1:

The sound pressure level of the **Belaria® dual AR (60)** should be measured at a distance of **5 m** if it is installed on a facade.

Sound power level	-	Sound pressure level reduction (5 m)	=	Sound pressure level (5 m)
67.0 dB(A) ¹⁾	-	19 dB(A)	=	48.0 dB(A) ¹⁾

The sound pressure level of the **Belaria® dual AR (60)** should be measured at a distance of **10 m** if it is installed on a facade.

Sound power level	-	Sound pressure level reduction (10 m)	=	Sound pressure level (10 m)
67.0 dB(A) ¹⁾	-	25 dB(A)	=	42.0 dB(A) ¹⁾

¹⁾ The sound power levels apply in whisper mode.

The values increase by +6 dB(A) in full-load operation or +4 dB(A) in partial load operation.

Technical data

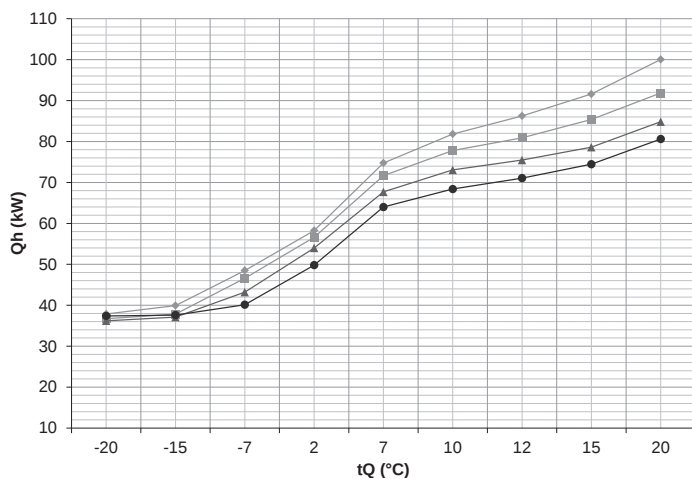
Performance data – heating

Maximum heat output allowing for defrosting losses

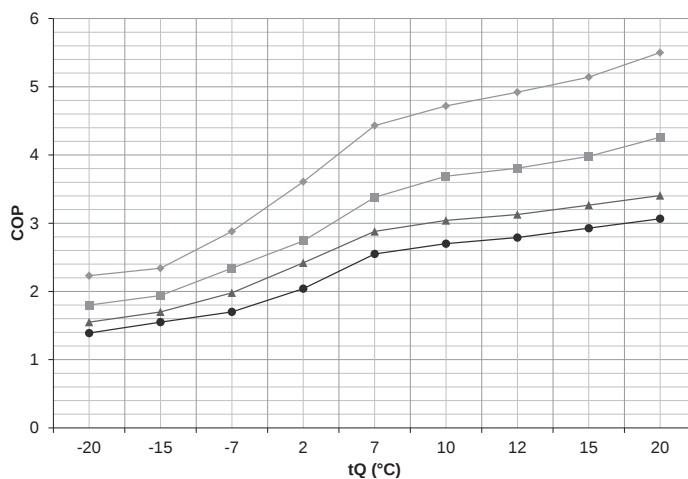
Hoval Belaria® dual AR (60)

Full load (2-stage)

Heat output

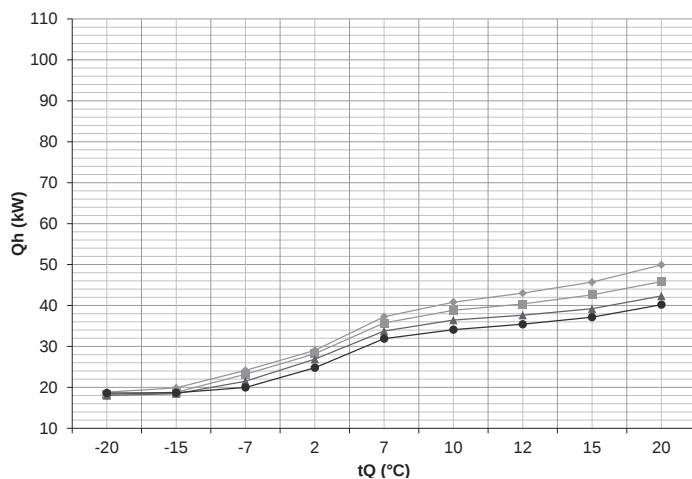


Coefficient of performance

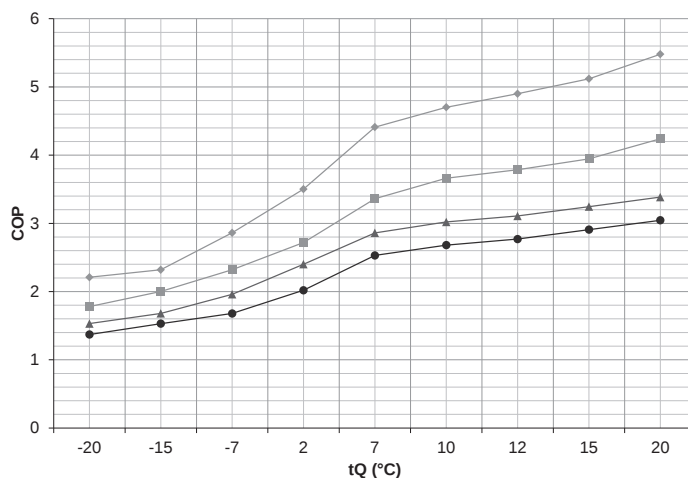


Partial load (1-stage)

Heat output



Coefficient of performance



tQ = Source temperature (°C)

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

COP = Coefficient of performance in accordance with standard EN 14511

◆ 35 °C
 ■ 45 °C
 ▲ 55 °C
 ● 62 °C

■ Technical data

Performance data – heating

Hoval Belaria® dual AR

Data according to EN 14511

Type	tFL °C	tQ °C	Qh kW	(60) Stage 1 P kW	COP	Qh kW	(60) Stage 2 P kW	COP
35		-20	18.2	7.4	2.5	36.6	14.8	2.5
		-15	19.2	7.6	2.6	38.6	14.6	2.6
		-7	22.7	7.3	3.1	45.5	14.6	3.1
		2	25.1	6.9	3.6	50.3	13.8	3.6
		7	34.6	7.8	4.4	69.4	15.6	4.5
		10	37.9	8.0	4.7	76.0	16.0	4.7
		12	40.0	8.1	4.9	80.2	16.2	4.9
		15	42.5	8.3	5.1	85.1	16.5	5.2
		20	46.4	8.4	5.5	93.0	16.8	5.5
45		-20	18.0	8.9	2.0	36.2	17.7	2.0
		-15	19.0	8.6	2.2	38.2	17.8	2.1
		-7	22.4	8.8	2.6	45.0	17.5	2.6
		2	24.4	8.3	2.9	49.0	16.5	3.0
		7	33.7	9.3	3.6	67.6	18.6	3.6
		10	36.7	9.6	3.8	73.5	19.1	3.6
		12	38.3	9.6	4.0	76.8	19.2	4.0
		15	40.3	9.7	4.2	80.8	19.3	4.2
		20	43.8	10.0	4.4	87.8	19.9	4.4
55		-20	17.8	10.4	1.7	35.8	20.7	1.7
		-15	18.7	10.5	1.8	37.7	20.8	1.8
		-7	22.2	10.2	2.2	44.5	20.4	2.2
		2	23.8	9.7	2.5	47.7	19.2	2.5
		7	32.8	10.9	3.0	65.8	21.7	3.0
		10	35.4	11.1	3.2	71.0	22.2	3.2
		12	36.6	11.2	3.3	73.4	22.2	3.3
		15	38.1	11.1	3.4	76.4	22.2	3.4
		20	41.1	11.5	3.6	82.6	23.0	3.6
62		-20	18.4	12.0	1.5	37.0	23.8	1.6
		-15	19.0	11.6	1.6	38.2	23.1	1.7
		-7	20.6	11.1	1.9	41.4	22.0	1.9
		2	21.9	10.6	2.1	44.0	21.3	2.1
		7	31.0	11.6	2.7	62.2	23.1	2.7
		10	33.2	11.7	2.8	66.5	23.4	2.6
		12	33.4	11.8	2.9	69.1	23.5	2.9
		15	36.1	11.8	3.1	72.4	23.5	3.1
		20	39.1	12.2	3.2	78.4	24.2	3.2

tFL = Heating flow temperature (°C)

tQ = Source temperature (°C)

Qh = 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 in accordance with standard EN 14511

Technical data

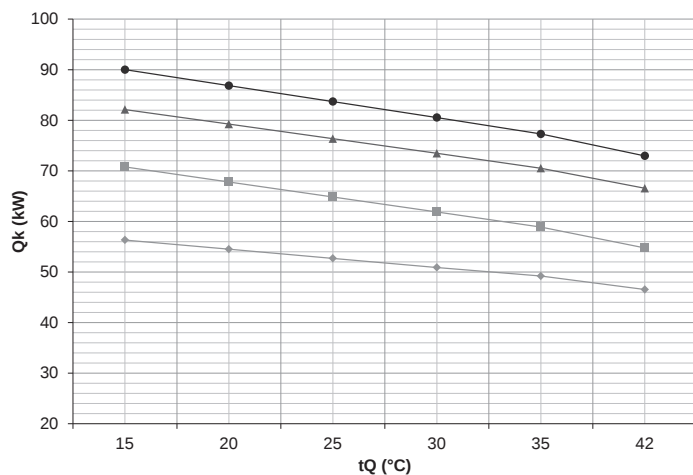
Performance data – cooling

Maximum cooling capacity

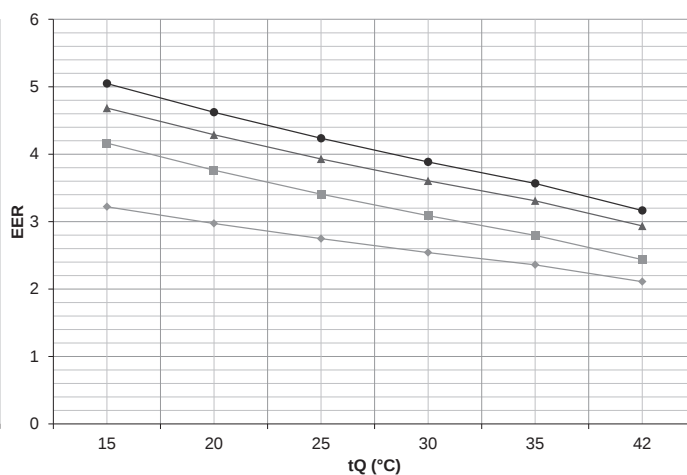
Hoval Belaria® dual AR (60)

Full load

Cooling capacity

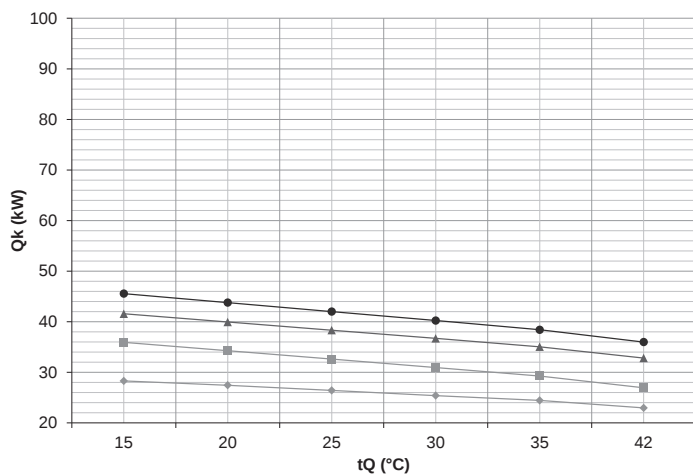


Coefficient of performance

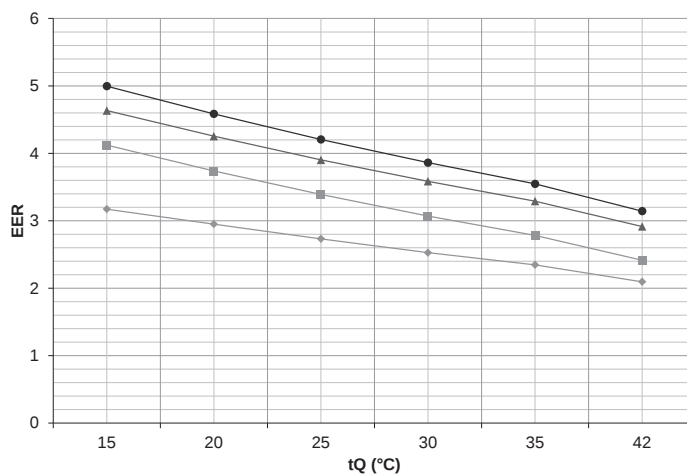


Partial load

Cooling capacity



Coefficient of performance



tQ = Source temperature (°C)

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

EER = Energy efficient rate for the overall unit in accordance with standard EN 14511

◆ 7 °C
 ■ 12 °C
 ▲ 18 °C
 ● 22 °C

■ Technical data

Performance data – cooling

Maximum cooling capacity

Hoval Belaria® dual AR (60)

Data according to EN 14511

Type	tFL °C	tQ °C	Qk kW	(60) Stage 1 P kW	EER	Qk kW	(60) Stage 2 P kW	EER
7		15	28.3	8.9	3.2	56.3	17.5	3.2
		20	27.4	9.3	3.0	54.5	18.3	3.0
		25	26.4	9.7	2.7	52.7	19.2	2.7
		30	25.4	10.1	2.5	50.9	20.0	2.5
		35	24.5	10.4	2.3	49.2	20.9	2.4
		42	23.0	11.0	2.1	46.5	22.1	2.1
10		15	33.0	8.8	3.7	65.0	17.2	3.8
		20	31.5	9.2	3.4	62.5	18.1	3.4
		25	30.1	9.6	3.1	60.0	19.1	3.1
		30	28.7	10.1	2.9	57.5	20.0	2.9
		35	27.3	10.5	2.6	55.0	21.0	2.6
		42	25.4	11.1	2.3	51.5	22.3	2.3
13		15	35.9	8.7	4.1	70.8	17.0	4.2
		20	34.3	9.2	3.7	67.8	18.0	3.8
		25	32.6	9.6	3.4	64.8	19.0	3.4
		30	30.9	10.1	3.1	61.9	20.0	3.1
		35	29.3	10.5	2.8	58.9	21.1	2.8
		42	26.9	11.2	2.4	54.8	22.5	2.4
15		15	38.8	8.9	4.4	76.5	17.3	4.4
		20	37.1	9.3	4.0	73.5	18.3	4.0
		25	35.5	9.7	3.6	70.6	19.2	3.7
		30	33.8	10.2	3.3	67.7	20.2	3.3
		35	32.2	10.6	3.0	64.7	21.2	3.1
		42	29.9	11.2	2.7	60.7	22.6	2.7
18		15	41.6	9.0	4.6	82.1	17.5	4.7
		20	40.0	9.4	4.3	79.2	18.5	4.3
		25	38.3	9.8	3.9	76.4	19.4	3.9
		30	36.7	10.2	3.6	73.5	20.4	3.6
		35	35.1	10.7	3.3	70.5	21.3	3.3
		42	32.8	11.3	2.9	66.6	22.7	2.9
20		15	43.6	9.1	4.8	86.1	17.7	4.9
		20	41.9	9.5	4.4	83.1	18.6	4.5
		25	40.2	9.9	4.1	80.0	19.6	4.1
		30	38.5	10.3	3.7	77.0	20.6	3.7
		35	36.7	10.7	3.4	73.9	21.5	3.4
		42	34.4	11.4	3.0	69.8	22.9	3.1
22		15	45.6	9.1	5.0	90.0	17.8	5.0
		20	43.8	9.6	4.6	86.9	18.8	4.6
		25	42.0	10.0	4.2	83.7	19.8	4.2
		30	40.2	10.4	3.9	80.5	20.7	3.9
		35	38.4	10.8	3.5	77.3	21.7	3.6
		42	36.0	11.5	3.1	73.0	23.1	3.2

tFL = Cooling water flow temperature (°C)

tQ = Source temperature (°C)

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

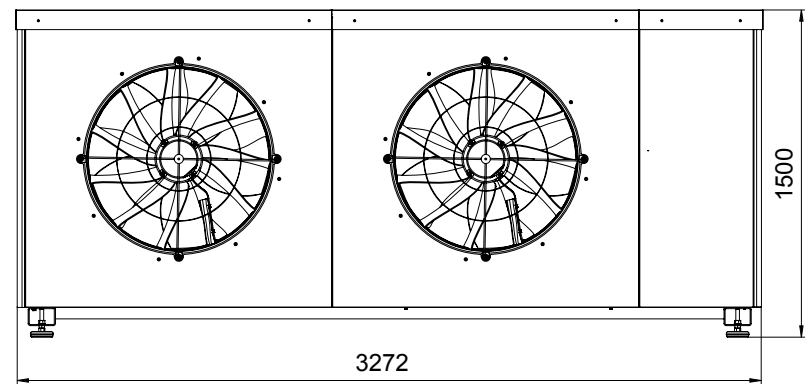
P = Power consumption for the overall unit (kW)

EER = Energy efficient rate for the overall unit in accordance with standard EN 14511

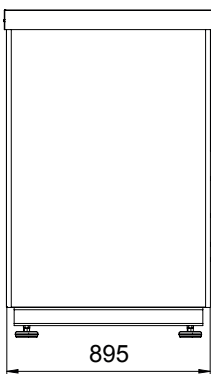
■ Dimensions

Hoval Belaria® dual AR (60)
(Dimensions in mm)

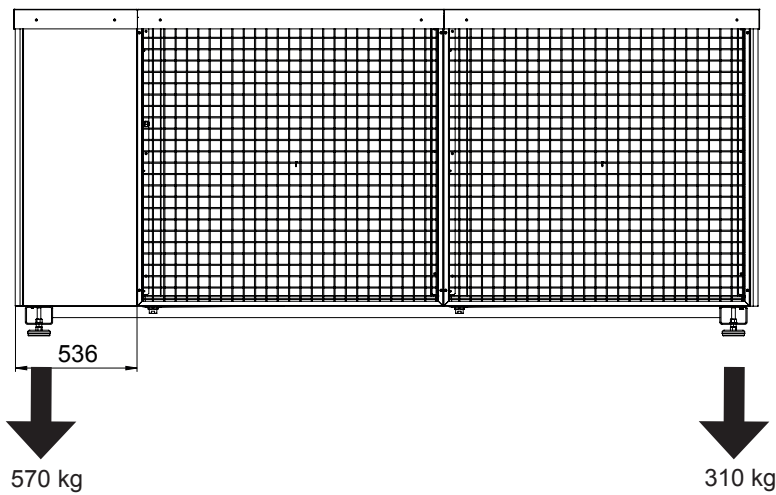
Front view (exhaust side)



Page view



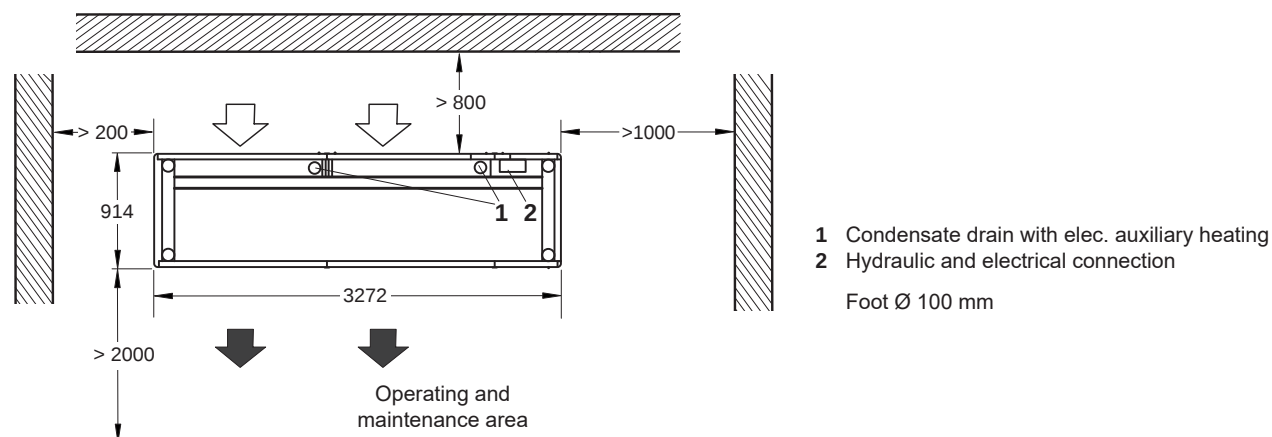
Rear (suction side)



■ Dimensions

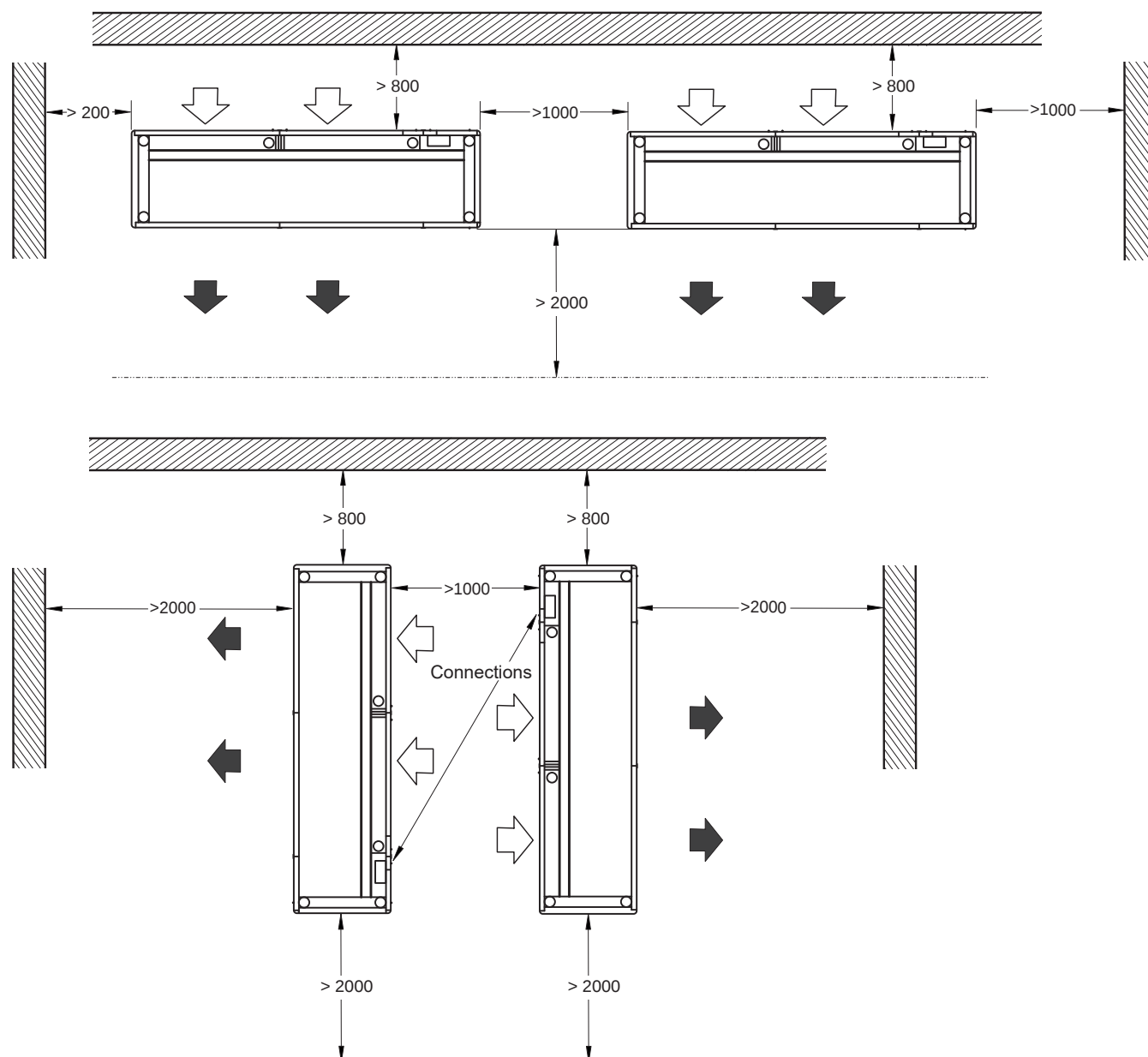
Space requirement

(Dimensions in mm)



Minimum distances for cascade systems

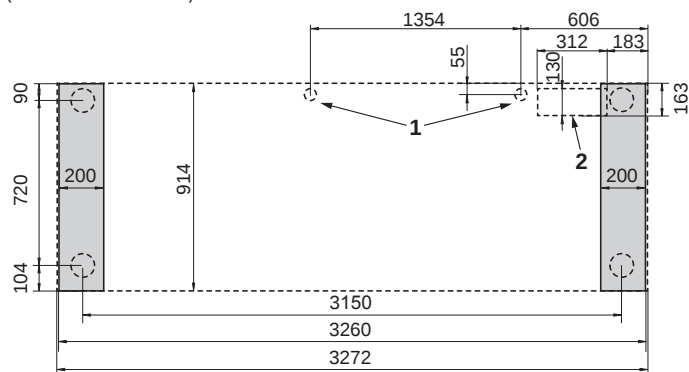
(Dimensions in mm)



■ Dimensions

Base design

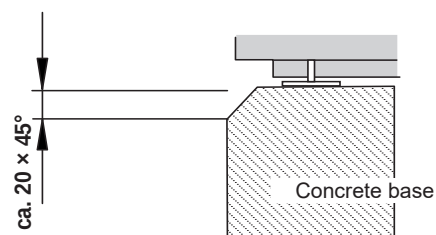
(Dimensions in mm)



- 1 Condensate drain with elec. auxiliary heating
- 2 Hydraulic and electrical connection

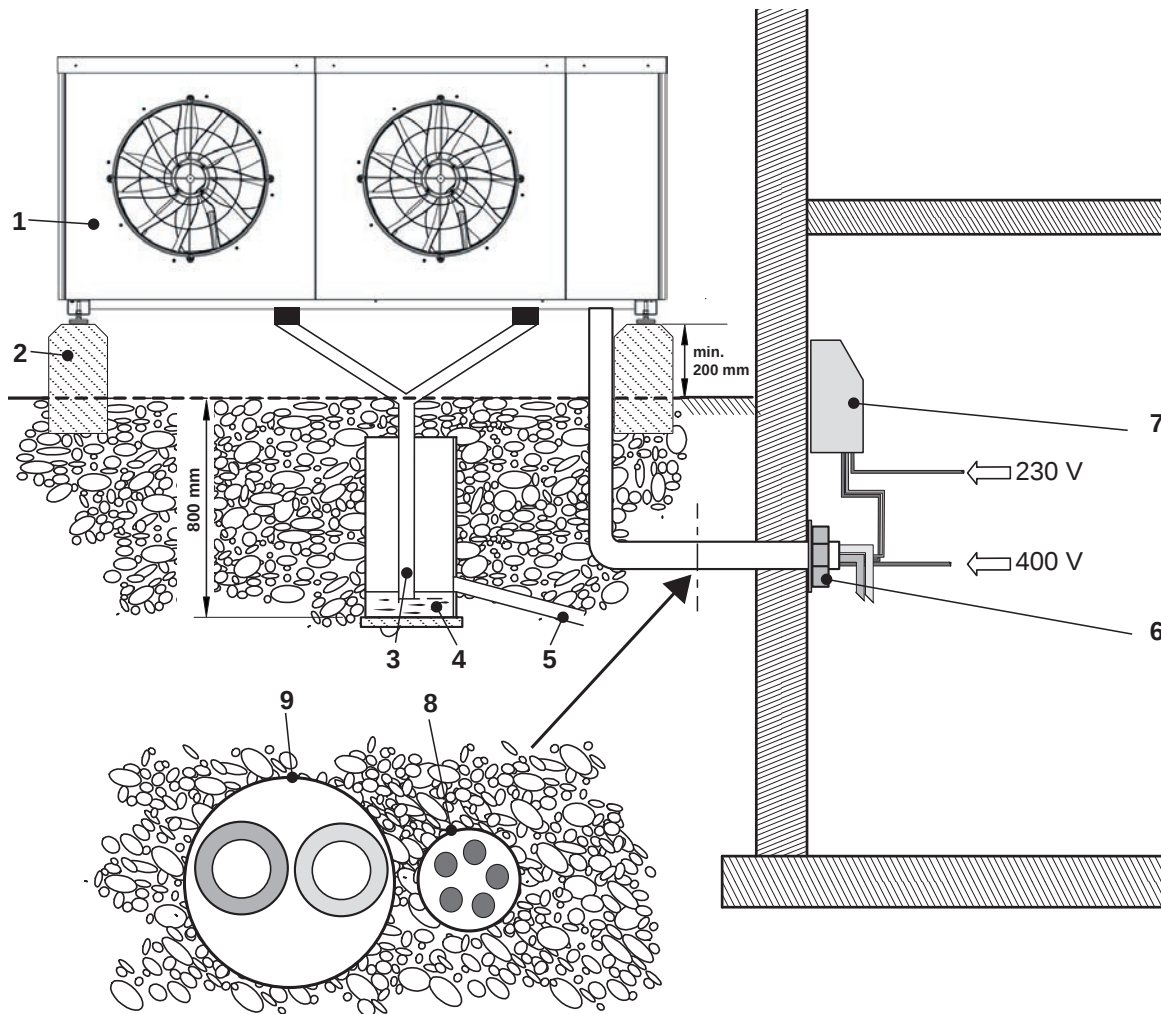
The condensate drain is located on the rear (suction side).

The concrete base must have a level surface the size of the Belaria® dual AR (60). The base should have chamfered edges.



■ Dimensions

Configuration and connection diagram for the Belaria® dual AR (60)



- 1 Belaria® dual AR (60)
- 2 Concrete base
- 3 Condensate drain with elec. auxiliary heating (provided by customer)
- 4 Possible variant with duct (Ø 300 mm)
- 5 Discharge into the sewer system
- 6 Wall lead-through (hydraulic and electrical connections)
- 7 Electrical box/TopTronic® E controller
- 8 Empty tube for electrical connections for outdoor unit

Necessary

1 cable 10 x 1,5 mm ²	Main current	400 V/5-pole/configuration cross section on site
	Control current	230 V/3-pole/configuration cross section on site
	Bus line	24 V/2-pole (see wiring diagram)
	Pump control CP	24 V/2-pole (see wiring diagram)
	Fault contact CP	230 V/2-pole (see wiring diagram)
	Lock by energy supply company	230 V/2-pole (see wiring diagram)
	Reset	230 V/1-pole (see wiring diagram)
	Heat generator block	230 V/1-pole (see wiring diagram)
	Collective fault	230 V/2-pole (see wiring diagram)
	Electric inset	230 V/1-pole (see wiring diagram)

Options

CP pump ON/OFF (does not apply for pump control 0-10 V)	230 V/2-pole (see wiring diagram)
Fault contact for PLC	230 V/2-pole (see wiring diagram)
Flow rate meter	230 V/2-pole (see wiring diagram)
Electricity meter	230 V/2-pole (see wiring diagram)
USB cable for line recorder	
USB 2.0 extension cable active	

- 9 Empty tube for hydraulic connections for outdoor unit
 - Heating flow R 2"
 - Heating return R 2"

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

■ Dimensions

Electrical box for Hoval Belaria® dual AR (60)

(Dimensions in mm)

