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)
- Due to the intermediate refrigerant injection, flow temperatures of 65 °C are possible at -20 °C outdoor temperature
- 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

Model range

Belaria® dual AR type			Refrigerant	Max. flow	Heat output A2W35		Cooling capacity A35W18	
	35 °C	55 °C		°C	stage 1 kW	stage 2 kW	stage 1 kW	stage 2 kW
(60)	A++	A+	2 x R410A	65	25.1	50.3	35.1	70.5

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)

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 hot water charging circuit
  - Bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
  - 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”

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

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

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

Recommended accessories
- Continuous, speed-controlled high-efficiency pump

Air/water heat pump - 2-stage

Hoval Belaria® dual AR

Belaria® dual AR type	Heat output for A2W35 stage 1 kW	Heat output for A2W35 stage 2 kW	Cooling capacity for A35W18 stage 1 kW	Cooling capacity for A35W18 stage 2 kW	Part No.
(60)	25.1	50.3	35.1	70.5	7016 825

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
A buffer storage tank must be provided.

Matching buffer storage tanks
see “Calorifiers”

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.

EnergyManager PV smart
Free feature to increase self-generated power consumption in use with HovalConnect.

Further information
see “Description”

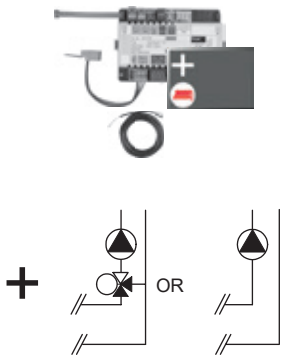
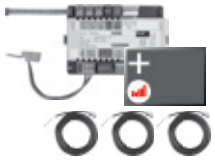
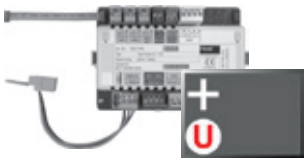
Electric heating elements
see “Calorifiers” - chapter “Electric heating elements”

Accessories

		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 hot water charging circuit - Bivalent and cascade management Can be optionally expanded by max. 1 module expansion and 1 controller module or 2 controller modules: - Module expansion heating circuit or - Module expansion heat balancing or - Module expansion Universal Can be optionally networked with up to 16 controller modules in total (incl. solar module) Incl. outdoor sensor, immersion sensor (calorifier sensor), contact sensor (flow temperature sensor) and RAST 5 basic plug set	6058 626
	**Set vibration-damping adjustable feet 55/65** 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	6040 854
	**Vibration damper set SDF** for Belaria® dual AR (60) for reducing transmission of solid-borne sound to the substructure and the hydraulic connection lines Consisting of: - 2 vibration dampers compressor-side - 2 vibration dampers evaporator side - 4 sound-insulating fastening feet for vibration dampers - 2 double-bellows rubber compensators DN 50 made of stainless steel - Fastening material	6055 451

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/cooling circuit w/o mixer or - 1 heating/cooling circuit with mixer Consisting of: - Fitting accessories - 1 contact sensor ALF/2P/4/T, L = 4.0 m - Basic plug set FE module **Notice** The supplementary plug set may have to be ordered to implement functions differing from the standard!	6034 576
 **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 incl. energy balancing in each case Consisting of: - Fitting accessories - 3 contact sensors ALF/2P/4/T, L = 4.0 m - Plug set FE module **Notice** The flow rate sensor set must be ordered as well.	6037 062
 **TopTronic® E module expansion Universal TTE-FE UNI** 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 Consisting of: - Fitting accessories - Plug set FE module **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	6034 575

Flow rate sensor sets

Plastic housing

Size	Connection inches	Flow rate l/min	Part No.
DN 8	G ¾″	0.9-15	6038 526
DN 10	G ¾″	1.8-32	6038 507
DN 15	G 1″	3.5-50	6038 508
DN 20	G 1¼″	5-85	6038 509
DN 25	G 1½″	9-150	6038 510

Brass housing

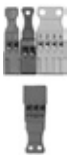
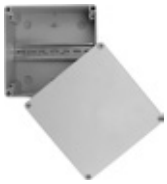
Size	Connection inches	Flow rate l/min	Part No.
DN 10	G 1″	2-40	6042 949
DN 32	G 1½″	14-240	6042 950
DN 40	G 2″	22-400	6055 092

Application recommended by Hoval
Flow rate sensor set DN 40 made of brass.
Installation location within the heat pump..

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

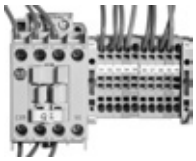
Notice
The flow rate sensor set must be installed without fail. With the help of flow rate sensors and further technical measures, the heating circuit freezing can be prevented. In order to protect the heat pump from frost in the event of a power failure or for example in bivalence mode, a system separation or other technical measures must be provided on site.

Accessories for TopTronic® E

		Part No.
	**TopTronic® E controller modules**	
	TTE-HK/WW TopTronic® E heating circuit/ hot water module	6034 571
	TTE-SOL TopTronic® E solar module	6037 058
	TTE-PS TopTronic® E buffer module	6037 057
	TTE-MWA TopTronic® E measuring module	6034 574
	**Supplementary plug set**	
	for basic module heat generator TTE-WEZ	6034 499
	for controller modules and module expansion TTE-FE HK	6034 503
	**TopTronic® E room control modules**	
	TTE-RBM TopTronic® E room control modules	
	easy white	6037 071
	comfort white	6037 069
	comfort black	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 LAN	6049 496
	HovalConnect WLAN	6049 498
	HovalConnect Modbus	6049 501
	HovalConnect KNX	6049 593
	TopTronic® E interface modules	
	GLT module 0-10 V	6034 578
	**TopTronic® E sensors**	
	AF/2P/K Outdoor sensor H x W x D = 80 x 50 x 28 mm	2055 889
	TF/2P/5/6T Immersion sensor, L = 5.0 m	2055 888
	ALF/2P/4/T Contact sensor, L = 4.0 m	2056 775
	TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m	2056 776
	**Bivalent switch** for various release or switching functions	
	Bivalent switch 1-piece	2056 858
	Bivalent switch 2-piece	2061 826
	**System housing**	
	System housing 182 mm	6038 551
	System housing 254 mm	6038 552
	**TopTronic® E wall casing**	
	WG-190 Wall casing small	6052 983
	WG-360 Wall casing medium	6052 984
	WG-360 BM Wall casing medium with control module cut-out	6052 985
	WG-510 Wall casing large	6052 986
	WG-510 BM Wall casing large with control module cut-out	6052 987

Further information
see “Controls”

Accessories

	Part No.
 **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
 **Control set (switching contactor)** for installation in the wall-hanging electrical box. Necessary for the control of an electric heating element.	6033 403
 **System water protection filter FF050-200** Cast-iron casing with opposite connection flanges at same height for filtration of heating and cooling water, with high filtration capacity for corrosion particles and dirt without significant pressure loss. Consisting of: Casing and cover made of cast iron GGG-50 Cover with clip lock - Filter strainer insert made of stainless steel - Cover seal made of NBR - 2 magnetic inserts (nickel-neodymium) - 2 pressure gauges - Very large Filter surface made of stainless steel - Filter fineness 200 µm - With filling and drain valve - Connections flange DN 50 - Nominal pressure: 10 bar Max. flow rate: (Δp < 0.1 bar): 18 m³/h Weight: 15 kg Water temperature max. 80 °C	2076 376

Notice
Fulfills the function of sludge separator and strainer

Further strainers
see “Various system components”

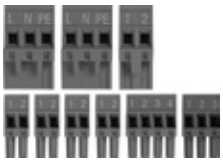
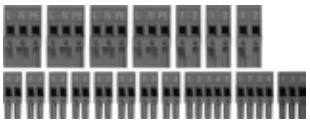
Vibration decoupler
for reducing structure-borne noise from heat pumps in the indoor area
Consisting of:
- 1 vibration decoupler insulated for heating side flat-sealing with union nut
- 2 flat seals
Nominal pressure: PN 10

Dimension	Connection inches	Nominal length mm	Part No.
DN 25	1″	300	2082 222
DN 25	1″	500	2082 223
DN 25	1″	1000	2080 794
DN 32	1¼″	300	2082 224
DN 32	1¼″	500	2082 225
DN 32	1¼″	1000	2080 796
DN 40	1½″	500	2082 226
DN 40	1½″	1000	2080 798
DN 50	2″	500	2082 227
DN 50	2″	1000	2080 800

Accessories

		Part No.
	**Switching ball valve VBI60.40-25L** PN 40, DN 40, kvs 25, Internal thread Rp 1½″ Leakage rate: 0...0.0001 % of kvs value Permitted media: cold water, cooling water, DHW, hot water, water with frost protection Recommendation: water treatment according to VDI 2035 Media temperature: -10...120 °C Ball valve body: brass Ball: brass chrome-plated Tappet: brass Gland: EPDM O-rings	6052 446
	**Switching ball valve VBI60.50-37L** PN 40, DN 50, kvs 37, Internal thread Rp 2″ Leakage rate: 0...0.0001 % of kvs value Permitted media: cold water, cooling water, DHW, hot water, water with frost protection Recommendation: water treatment according to VDI 2035 Media temperature: -10...120 °C Ball valve body: brass Ball: brass chrome-plated Tappet: brass Gland: EPDM O-rings	6052 447
	**Motor drive GLB341.9E** For straight-way ball valves VAG60.. and switching ball valves VBI60.. DN 15..50 Operating voltage: 230 V, 50/60 Hz Control signal 2-point/3-point Single-wire/2 wire control Operating time: 150 s Nominal torque: 10 Nm Permitted ambient temperature: -32 °C to +55 °C	2070 331

Accessories

	Part No.
 **Expansion connector set** for the automatic heat pump device 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: - 1 230 V digital input - 2 230 V outputs - 4 low-voltage inputs - 1 ratio. Input - 1 4-pin low-voltage input	6032 509
 **Universal plug set** for automatic heat pump device ECR461 Plugs: - 3 digital 230 V inputs - 4 230 V outputs - 6 low-voltage inputs - 2 low-voltage outputs - 1 ratio. input - 1 electronic expansion valve - 1 4-pin low-voltage input	6032 510

Services

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.

Belaria® dual AR (60)

Type		(60)
• Energy efficiency class of the compound system with control	35 °C/55 °C	A++/A++
• Room heating energy efficiency “moderate climate” 35 °C ηS [1), 2)]	%	160
• Room heating energy efficiency “moderate climate” 55 °C ηS [1), 2)]	%	125
• Seasonal coefficient of performance moderate climate 35 °C /55 °C	SCOP	4.0/3.2
Max. performance data heating and cooling in acc. with EN 14511		
• Heat output A2W35	kW	50.3
• Coefficient of performance A2W35	COP	3.6
• Heat output A-7W35	kW	45.5
• Coefficient of performance A-7W35	COP	3.1
• Cooling capacity A35W18	kW	70.5
• Energy efficiency ratio A35W18	EER	3.3
• Cooling capacity A35W7	kW	49.2
• Energy efficiency ratio A35W7	EER	2.4
Sound data		
• Max. sound power level 1-stage day operation	dB(A)	70
• Max. sound power level 2-stage day operation	dB(A)	73
• Max. sound power level 1-stage whisper mode	dB(A)	66
• Max. sound power level 2-stage whisper mode	dB(A)	67
• Sound pressure level at 5 m [3)]	dB(A)	48
• Sound pressure level at 10 m [3)]	dB(A)	42
Hydraulic data		
• Maximum flow temperature	°C	65
• Nominal heating water quantity heating ΔT 5 K (A7W35)	m^3/h	11.9
• Nominal heating water quantity heating ΔT 8 K (A7W35)	m^3/h	7.5
• Nominal heating water quantity cooling ΔT 4 K (A35W7)	m^3/h	10.6
• Nominal heating water quantity cooling ΔT 4 K (A35W18)	m^3/h	15.2
• Pressure drop with nominal heating water quantity ΔT 5 K (A7W35)	kPa	39
• Max. operating pressure on the heating side	bar	6
• Flow/return connection heating	R (ext. thread)	2″
• Built-in condensate drain	R (ext. thread)	2″
• Built-in fan		2 x owl-wing axial fan
• Nominal air quantity	m^3/h	2 x 11000
• Max./min. fan speed	rpm	700/175
Cooling technical data		
• Refrigerant		R410A
• Refrigeration circuits		2
• Compressor stages		2
• Refrigerant filling quantity	kg	2 x 17.8
• Compressor oil filling quantity	l	2 x 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	2 x 1.45
• Fan power consumption (total)	W	2 x 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	1500 x 3272 x 895
• Weight	kg	880

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

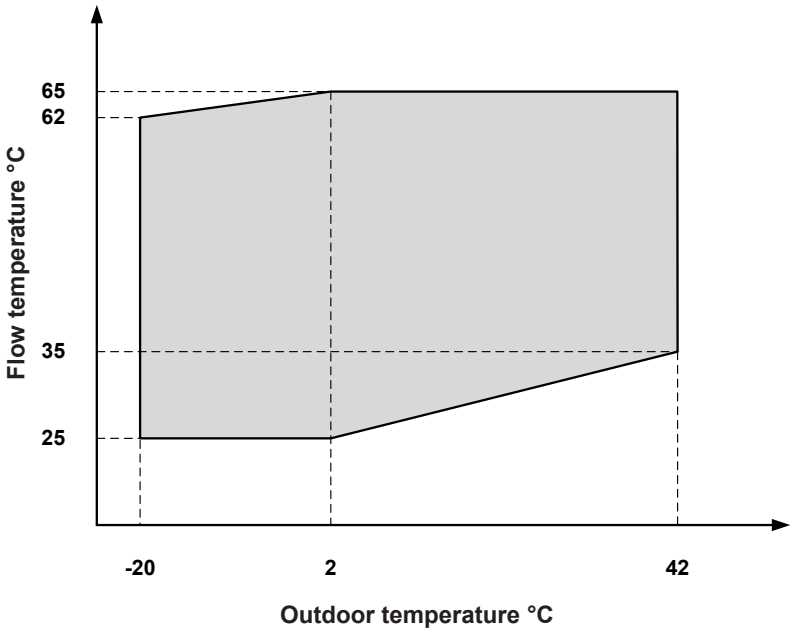
[2)] 4 % can be added for class IV heat pump incl. control and room thermostat.

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

Using a fault-current circuit breaker RCCB type B. IΔn ≥ 300 mA is recommended. Country-specific regulations must be observed.

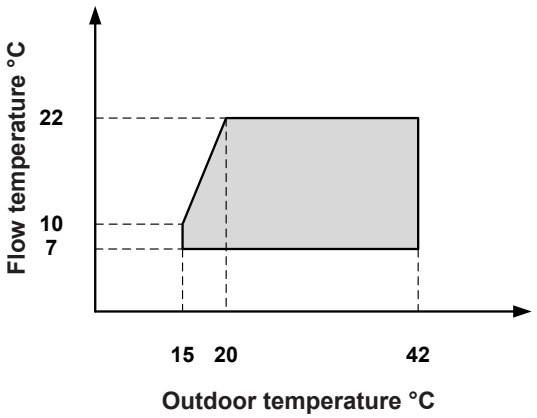
Diagrams of areas of application

Heating and hot water



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

Cooling



Area of application of the heat pump for cooling

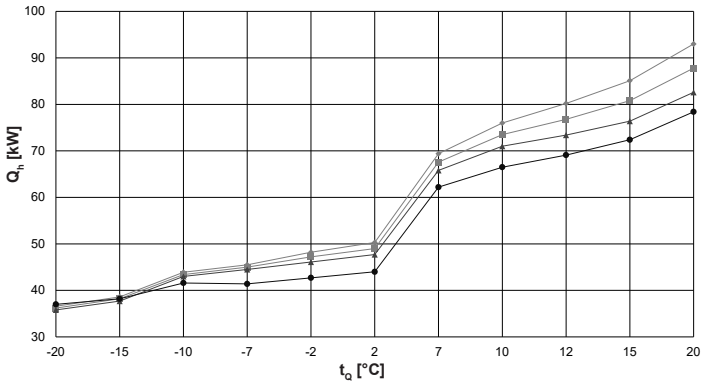
Performance data – heating

Maximum heat output allowing for defrosting losses

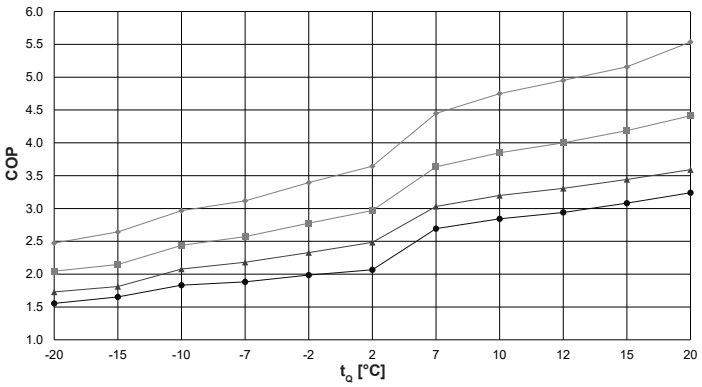
Belaria® dual AR (60)

Full load (2-stage)

Heat output

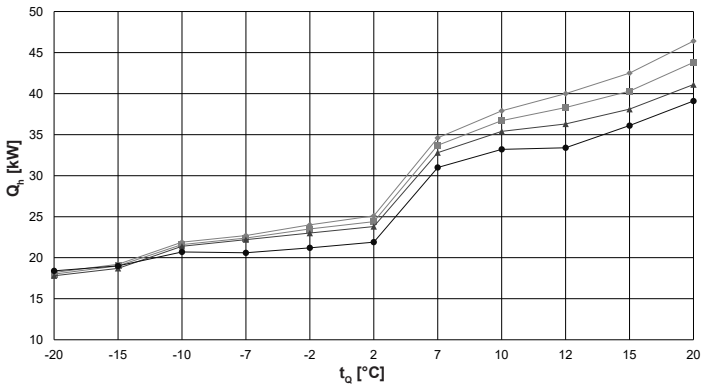


Coefficient of performance

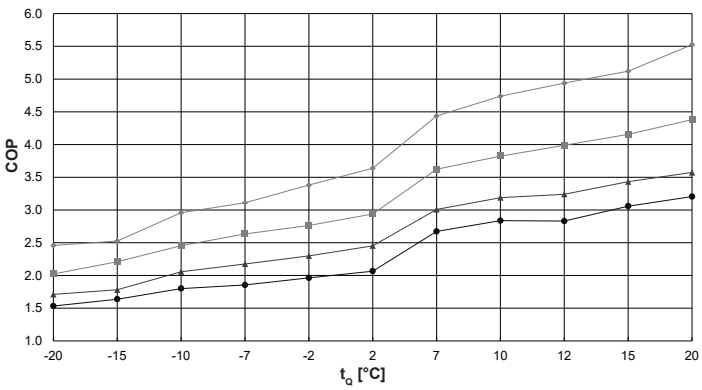


Partial load (1-stage)

Heat output



Coefficient of performance



t_Q = source temperature (°C)
Q_h = 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

Performance data – heating

Belaria® dual AR

Data according to EN 14511

Type		(60) Stage 1			(60) Stage 2		
t_{VL} °C	t_Q °C	Q_h kW	P kW	COP	Q_h kW	P kW	COP
	-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
	-10	21.9	7.4	2.9	43.9	14.8	3.0
	-7	22.7	7.3	3.1	45.5	14.6	3.1
	-2	24.0	7.1	3.4	48.2	14.2	3.4
35	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
	-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
	-10	21.6	8.8	2.5	43.4	17.8	2.4
	-7	22.4	8.8	2.6	45.0	17.5	2.6
	-2	23.5	8.5	2.8	47.2	17.0	2.8
45	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
	-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
	-10	21.4	10.4	2.1	43.0	20.7	2.1
	-7	22.2	10.2	2.2	44.5	20.4	2.2
	-2	23.0	10.0	2.3	46.1	19.8	2.3
55	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
	-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
	-10	20.7	11.5	1.8	41.6	22.7	1.8
	-7	20.6	11.1	1.9	41.4	22.0	1.9
	-2	21.2	10.8	2.0	42.7	21.5	2.0
62	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

t_{VL} = heating flow temperature (°C)
t_Q = source temperature (°C)
Q_h = heat output at full load (kW), measured in accordance with standard EN 14511
P = power consumption for the overall unit (kW)
COP = Coefficient of Performance in accordance with standard EN 14511

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

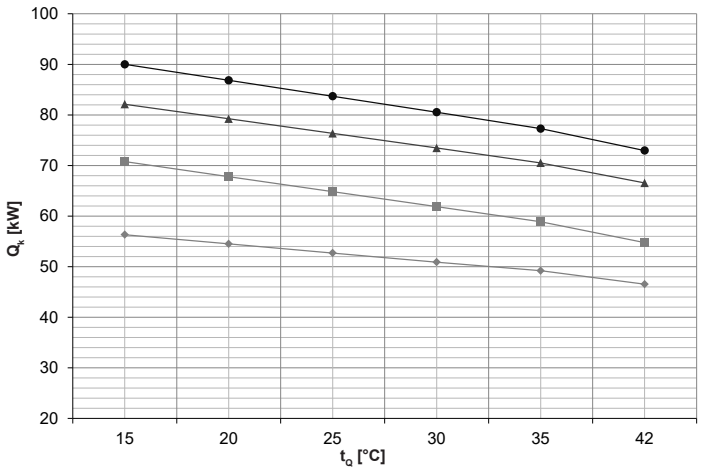
Performance data – cooling

Maximum cooling capacity

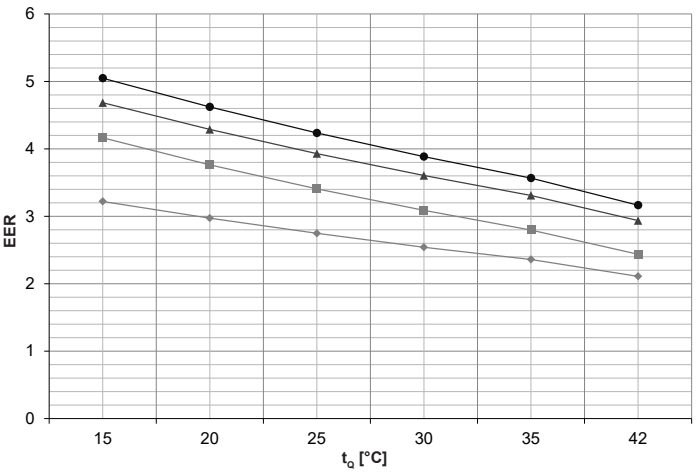
Belaria® dual AR (60)

Full load

Cooling capacity

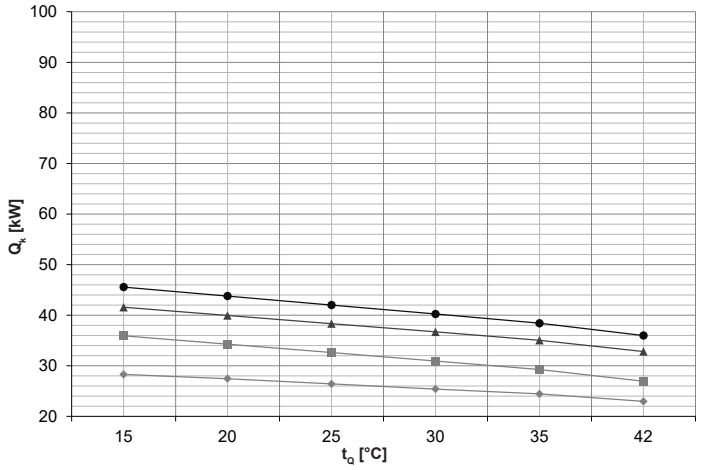


Energy efficiency ratio

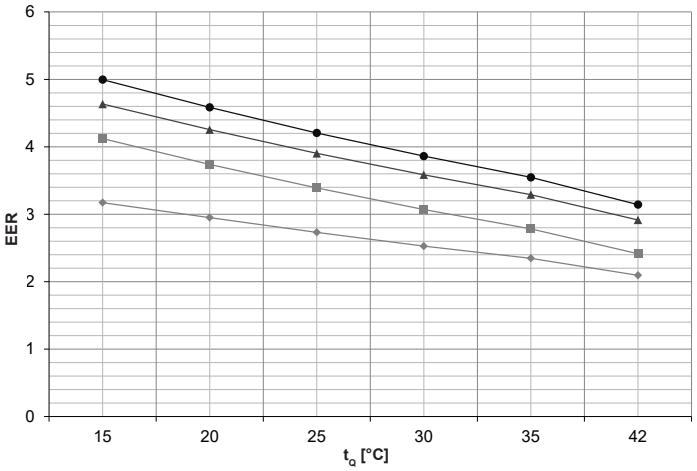


Partial load

Cooling capacity



Energy efficiency ratio



t_Q = source temperature (°C)
Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

7 °C
12 °C
18 °C
22 °C

Performance data – cooling

Belaria® dual AR (60)

Data according to EN 14511

Type		(60) Stage 1			(60) Stage 2		
t_{VL} °C	t_Q °C	Q_k kW	P kW	EER	Q_k kW	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

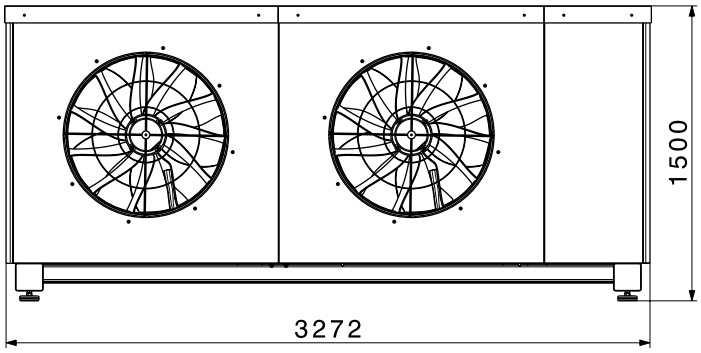
t_{VL} = cooling water flow temperature (°C)
t_Q = source temperature (°C)
Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511
P = power consumption for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

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

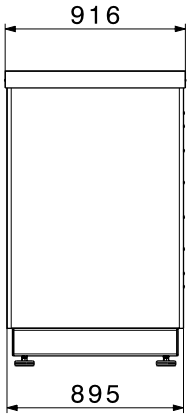
Belaria® dual AR (60)

(Dimensions in mm)

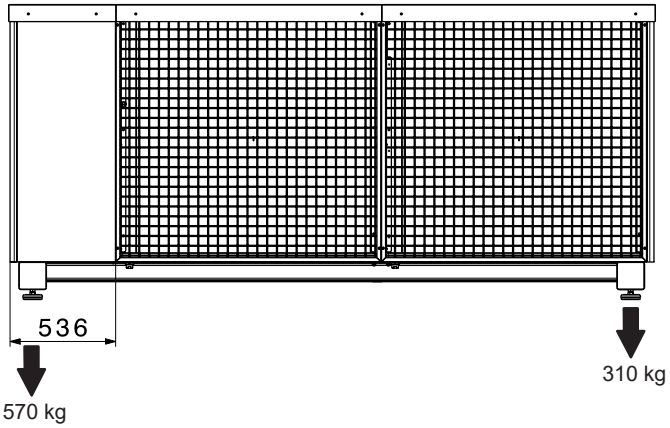
Front view (exhaust side)



Side view

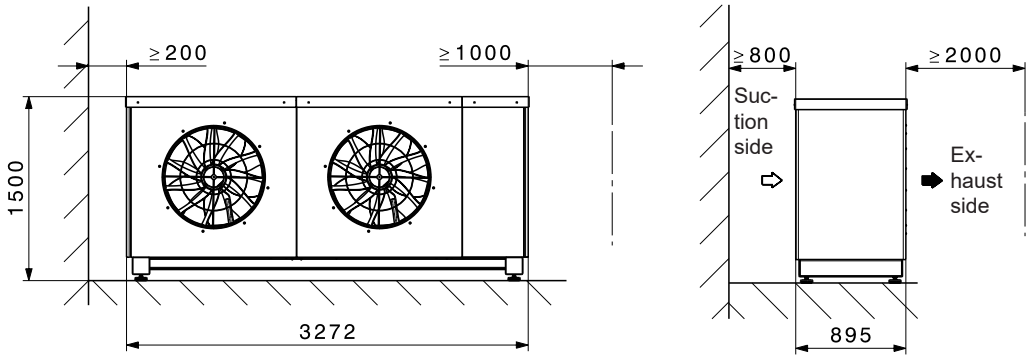


Rear (suction side)



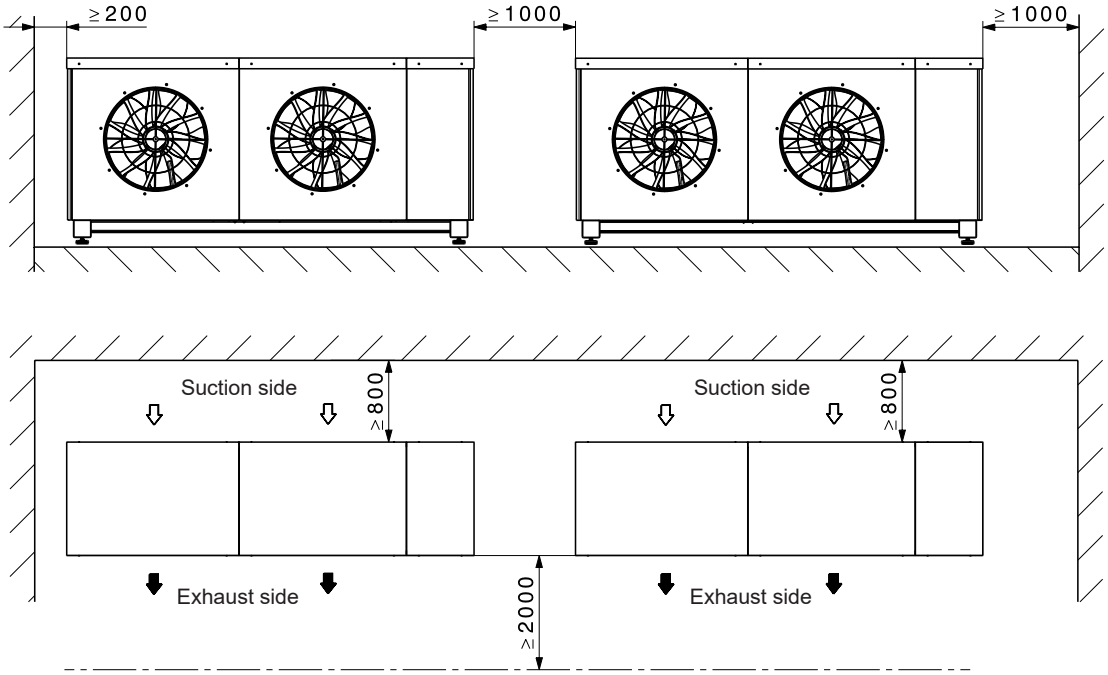
Space requirement

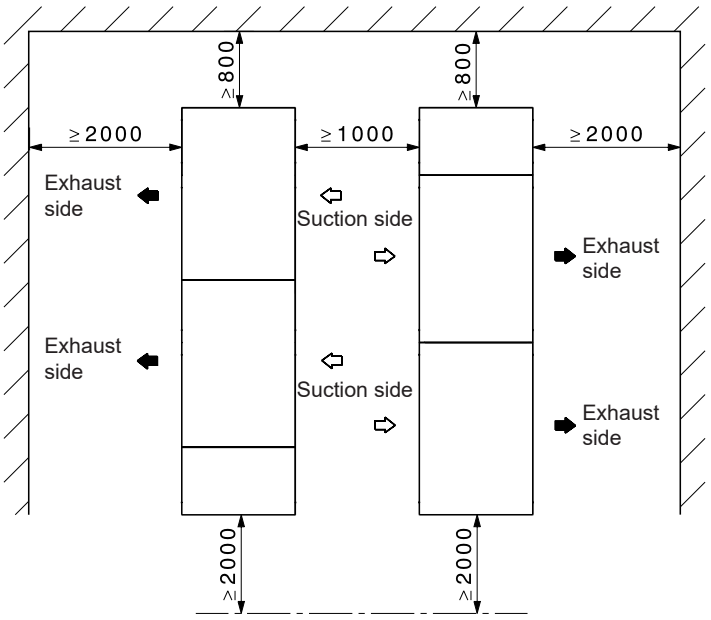
(Dimensions in mm)



Minimum distances for cascade systems

(Dimensions in mm)

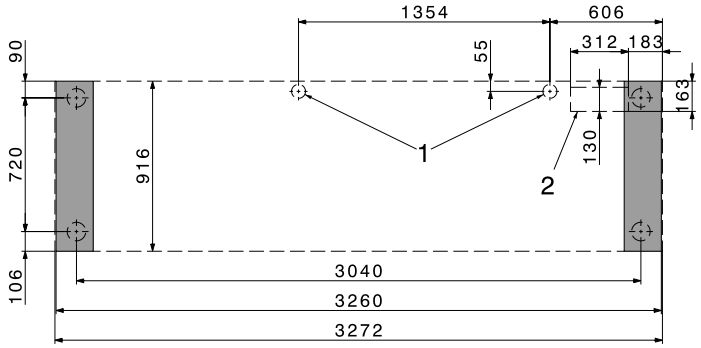




Base design

(Dimensions in mm)

Base plan feet

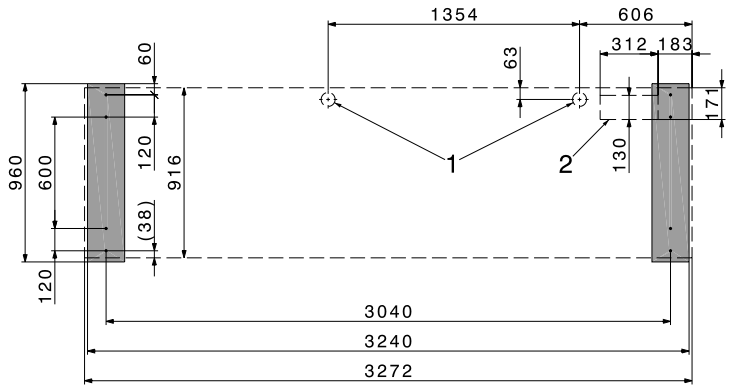


1 Condensate drain with electric auxiliary heating

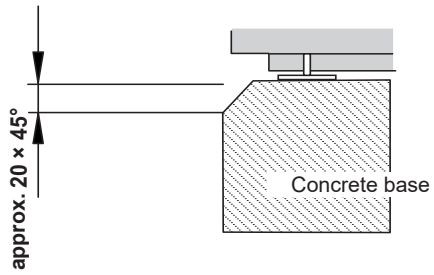
2 Hydraulic and electrical connection

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

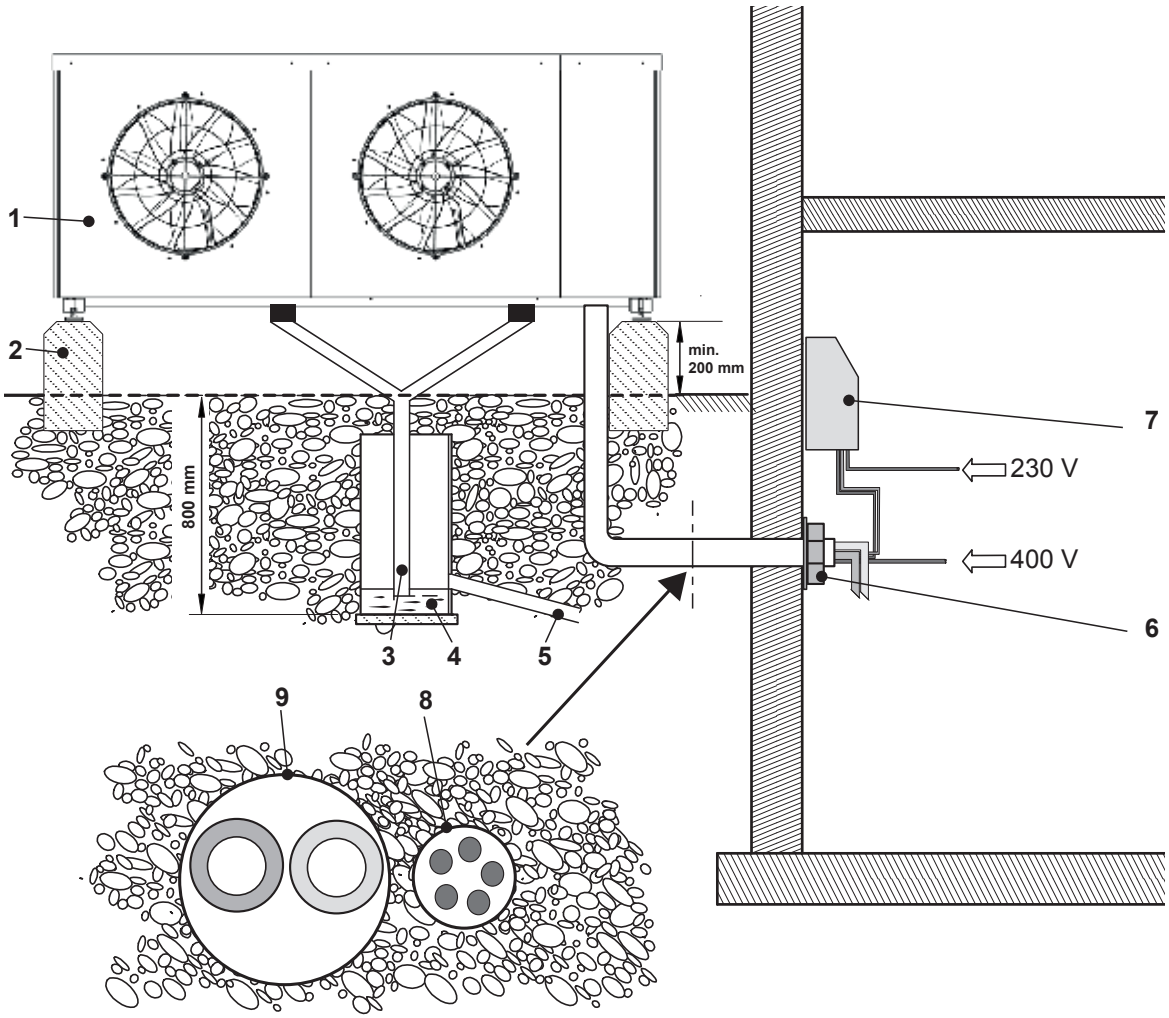
Base plan set of vibration-damping feet



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



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 sewage 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

	Main current	400 V/5-pin/configuration cross section on site
	Control current	230 V/3-pin/configuration cross section on site
	Bus line	24 V/2-pin (see wiring diagram)
	Pump control CP	24 V/2-pin (see wiring diagram)
1 cable 10 x 1,5 mm²	Fault contact CP	230 V/2-pin (see wiring diagram)
	Lock by energy supply company	230 V/2-pin (see wiring diagram)
	Reset	230 V/1-pin (see wiring diagram)
	Heat generator block	230 V/1-pin (see wiring diagram)
	Collective fault	230 V/2-pin (see wiring diagram)
	Electric inset	230 V/1-pin (see wiring diagram)
	Flow rate meter	230 V/4-pin (see wiring diagram)

Options

CP pump ON/OFF (does not apply for pump control 0-10 V)	230 V/2-pin (see wiring diagram)
Fault contact for PLC	230 V/2-pin (see wiring diagram)
Electricity meter	230 V/2-pin (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.

* In cooling mode or with longer pipelines, 2″ pipes are too small.

Electrical box Belaria® dual AR (60)

(Dimensions in mm)