Hoval Belaria® twin I
Hoval Belaria® twin IR

Air/water heat pump

- Air/water heat pump in compact design for indoor installation
- Sturdy housing without cold bridges with steel/plastic section frame and plastic corner connections. Removable side walls (panels) made of power-coated Zincor sheet steel with optimum heat and noise insulation Colour light grey (RAL 7035)
- Two suction gas cooled scroll compressors
- With large-area aluminium/copper ribbed pipe evaporator and plate-type condenser made from stainless steel/copper
- Speed-controlled centrifugal fan
- Refrigeration circuit with electronic expansion valve, filter dryer with sight glass, suction-gas heat exchanger, manifold and high-pressure pressure controller
- Two electronic starting current limiters with integrated rotary field/phase monitoring
- With efficient defrosting control via inversion of the refrigeration circuit
- Filled with refrigerant R407C, wired up internally ready for connection
- Hoval Belaria® twin IR with additional cooling function
- Electrical box and terminal box with built-in TopTronic® E controller (integrated at bottom right on front). With monitoring and fault signalling function.

Condensate connection
- The drain pipeline is to be made with sufficient incline and without change of the cross-section.
- Siphon on site

Heat source connections (air intake and air blow-off)
- Air intake from the rear (long side)
- Blow-out opening (can be converted for the air blow-out direction to the side left or right)

Electrical connections
- Connection: at the bottom on the left or right
- Do not attach any rigid connections (e.g. cable duct) to the heat pump housing

Installation
- Variable and cost-effective installation possibilities thanks to blow-off side panel with changeover function

Options for the air duct
- Wall connection element, air intake box, blow-out panel, wall feed-through with weather protection grille or mesh grille

Recommended accessories
- High-efficiency pump with continuously variable speed control, see Accessories

Delivery
- One-piece construction
- Completely packaged

Model range

Belaria® twin I type	35 °C	55 °C	Heat output A2W35 kW stage 1	Heat output A2W35 kW stage 2	Belaria® twin IR type	35 °C	55 °C	Heat output A2W35 kW stage 1	Heat output A2W35 kW stage 2	Cooling capacity A35W18 kW stage 1	Cooling capacity A35W18 kW stage 2
(20)	A++	A+	10.4	20.8	(20)	A++	A+	10.4	20.8	14.3	26.6
(25)	A++	A+	12.5	25.0	(25)	A++	A+	12.5	25.0	15.8	30.3
(30)	A++	A+	15.2	30.4	(30)	A++	A+	15.2	30.4	19.0	35.5

Energy efficiency class of the compound system with control.

TopTronic® E controller

Control panel
- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module
- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- 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 charging circuit
  - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

Options for TopTronic® E controller
- Can be expanded by max. 1 module expansion:
  - module expansion heating circuit or
  - module expansion heat balancing or
  - module expansion Universal
- Can be networked with a total of up to 16 controller modules:
  - heating circuit/hot water module
  - solar module
  - buffer module
  - measuring module

Number of modules that can be additionally installed in the heat generator:
- 1 module expansion and 1 controller module
  or
- 2 controller modules

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

Further information about the TopTronic® E
see “Controls”

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.

Air/water heat pump - 2-stage

Hoval Belaria® twin I

Belaria® twin I type	Heat output with A2W35 kW		Part No.
	stage 1	stage 2	
(20)	10.4	20.8	7019 020
(25)	12.5	25.0	7019 021
(30)	15.2	30.4	7019 022

Air/water heat pump - 2-stage (cooling function)

Hoval Belaria® twin IR

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

Belaria® twin IR type	Heat output with A2W35 kW		Cooling capacity with A35W18 kW		Part No.
	stage 1	stage 2	stage 1	stage 2	
(20)	10.4	20.8	14.3	26.6	7019 023
(25)	12.5	25.0	15.8	30.3	7019 024
(30)	15.2	30.4	19.0	35.5	7019 025

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 “Circulating pumps”

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

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

Further information
see “Description”

Notice
A buffer storage tank must be provided.

Matching buffer storage tanks
see “Calorifiers”

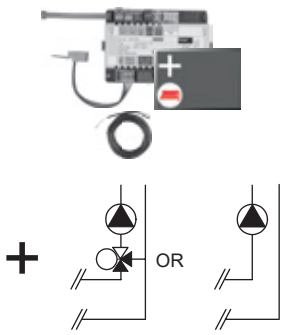
Hose set SPCH32-32-15-2 — 6058 821
for Belaria® twin I/IR (20)
Consisting of:
- 2 reinforced hoses PN 10 DN 32 1¼″ IT insulated for heating side flat-sealing with union nut
- Length: 1.5 m
- Seals

Hose set SPCH40-40-15-2 — 6058 822
for Belaria® twin I/IR (25,30)
Consisting of:
- 2 reinforced hoses PN 10 DN 40 1½″ IT insulated for heating side flat-sealing with union nut
- Length: 1.5 m
- Seals

TopTronic® E module expansions

for TopTronic® E basic module heat generator

Part No.

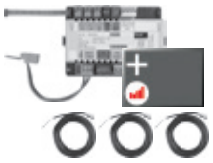


TopTronic® E module expansion heating circuit TTE-FE HK
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer

Consisting of:
- Fitting accessories
- 1 contact sensor ALF/2P/4/T, L = 4.0 m
- Basic plug set FE module

6034 576

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

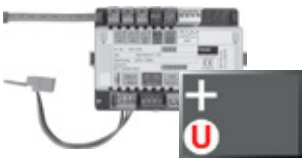


TopTronic® E module expansion heating circuit incl. energy balancing
TTE-FE HK-EBZ
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling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

6037 062

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



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

6034 575

Further information
see “Controls” - “Hoval TopTronic® E module expansions” chapter

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

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

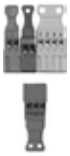
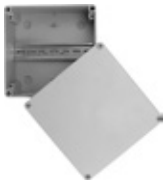
Size	Connection inches	Flow rate l/min	Part No.
DN 10	G 1″	2-40	6042 949
DN 32	G 1½″	14-240	6042 950
DN 40	G 2 ″	22-400	6055 092

Hoval recommended use
Flow rate sensor set DN 32 made of brass.
Installation location outside the heat pump.

Recommended accessories:
speed-controlled high-efficiency pump
see “Circulating pumps”

Notice
Installation of a flow rate sensor set is recommended. 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.
 **System water protection filter FGM025-200** For horizontal installation in return For filtration of heating and cooling water, with high filtration capacity for corrosion particles and dirt without significant pressure drop Consisting of: - Filter head and bowl in brass - Magnetic insert (nickel-neodymium) - 2 pressure gauges - Very large filter surface in stainless steel - Filter fineness 200 µm - With drain valve - Connections Rp 1″ internal thread with integrated shut-off valves and union connection (outlet) Max. flow rate (Δp < 0.1 bar): 5.5 m³/h Weight: 6.8 kg Water temperature: max. 90 °C - incl. steam diffusion-tight insulating shells	6058 256
Notice Fulfills the function of sludge separator and strainer	
Strainers see “Various system components”	
 **System water protection filter FGM050-200** For horizontal installation in return For filtration of heating and cooling water, with high filtration capacity for corrosion particles and dirt without significant pressure drop Consisting of: - Filter head and bowl in brass - Magnetic insert (nickel-neodymium) - 2 pressure gauges - Very large filter surface in stainless steel - Filter fineness 200 µm - With drain valve - Connections Rp 2″ internal thread with integrated shut-off valves and union connection (outlet) Max. flow rate (Δp < 0.1 bar): 7.2 m³/h Weight: 6.9 kg Water temperature: max. 90 °C - incl. steam diffusion-tight insulating shells	6058 257
Notice Fulfills the function of sludge separator and strainer	
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

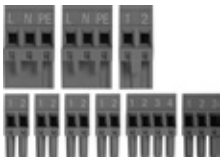
Accessories

Switching ball valve VBI60...L
DN 25-50, PN 16, 120 °C

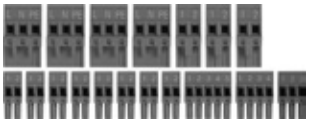
- Three-way ball valve made of brass with threaded connection
- Leakage rate: 0 ... 0.0001 % of kvs value
- Permitted media: cold water, cooling water, DHW, hot water, water with frost protection
- Recommendation: water treatment according to VDI 2035
- Media temperature: -10 ... 120 °C

DN	Connection inches	kvs m³/h	Part No.
25	Rp 1″	9	6052 444
32	Rp 1¼″	13	6052 445
40	Rp 1½″	25	6052 446
50	Rp 2″	37	6052 447

Motor drive GLB341.9E — 2070 331
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

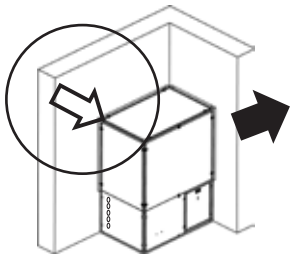


Expansion connector set — 6032 509
for the automatic heat pump device ECR461
Use for additional function:
- Flow monitor
- Crankcase bottom heating
(included in the scope of delivery for Belaria® twin A, twin AR, dual AR)
- Condensation drain heating
- Heat quantity metering
Plugs:
- 1 230 V digital input
- 2 230 V outputs
- 4 low-voltage inputs
- 1 ratio. Input
- 1 4-pin low-voltage input



Universal plug set — 6032 510
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

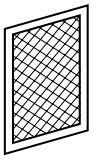
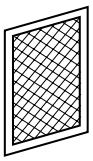
Accessories of the air ducting



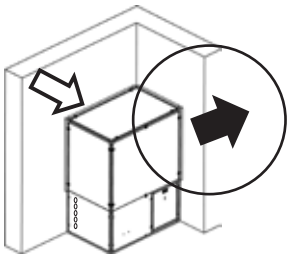
Indoor installation “standard”

Installation directly on the wall

		Part No.
	Intake	
	**Wall connection element WAE1 for suction** for Belaria® twin I/IR (20) for sealing the suction side directly on the wall black synthetic rubber, 50 mm	2033 866
	**Wall connection element WAE1 for suction** for Belaria® twin I/IR (25,30) for sealing the suction side directly on the wall black synthetic rubber, 50 mm	2033 868
	**Wall insulation 1250 x 600 x 20** for Belaria® comfort ICM (8,13), for Belaria® twin I/IR (20-30) for suction and exhaust	2076 728
	**Weatherproof grille WG1 for suction** for Belaria® twin I/IR (20) suitable for wall insulation 1250 x 600 x 20 for suction, made of aluminium with grilles	2033 846
	**Weatherproof grille WG1 for suction** for Belaria® twin I/IR (25,30) suitable for wall insulation 1250 x 600 x 20 for suction, made of aluminium with grilles	2033 848

		Part No.
	**Weatherproof grille WG1 sound-insulated** for Belaria® twin I/IR (20) suitable for wall insulation 1250 x 600 x 20 for suction, made of aluminium with grilles Reduction of sound power level 5 dB(A)	2076 723
	**Weatherproof grille WG1 sound-insulated** for Hoval Belaria® I/IR (25,30) in aluminium with blades for the suction suitable for masonry insulation and mesh grille	2076 726
	**Mesh grille MG1 for suction** for Belaria® twin I/IR (20) suitable for wall insulation 1250 x 600 x 20 Replaces weatherproof grille WG1 for air duct	2033 816
	**Mesh grille MG1 for suction** for Belaria® twin I/IR (25,30) suitable for wall insulation 1250 x 600 x 20 Replaces weatherproof grille WG1 for air duct	2033 818

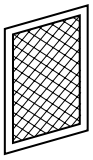
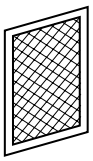
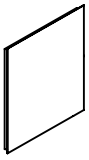
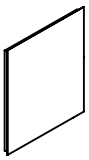
Accessories of the air ducting



Indoor installation “standard”

Installation directly on the wall

		Part No.
	Outlet	
	**Wall connection element WAE2 for exhaust** for Belaria® twin I/IR (20) black synthetic rubber, 50 mm for sealing the suction side directly on the wall	2033 871
	**Wall connection element WAE2 for exhaust** for Belaria® twin I/IR (25,30) black synthetic rubber, 50 mm for sealing the suction side directly on the wall	2033 872
	**Wall insulation 1250 x 600 x 20** for Belaria® comfort ICM (8,13), for Belaria® twin I/IR (20-30) for suction and exhaust	2076 728
	**Weatherproof grille WG2 for exhaust** for Belaria® twin I/IR (20) suitable for wall insulation 1250 x 600 x 20 for exhaust, made of aluminium with grilles	2033 851
	**Weatherproof grille WG2 for exhaust** for Belaria® twin I/IR (25,30) suitable for wall insulation 1250 x 600 x 20 for exhaust, made of aluminium with grilles	2033 852

		Part No.
	**Weatherproof grille WG2 sound-insulated** for Belaria® twin I/IR (20) suitable for wall insulation 1250 x 600 x 20 for exhaust, made of aluminium with grilles Reduction of sound power level 5 dB(A)	2076 725
	**Weatherproof grille WG2 sound-insulated** for Belaria® twin I/IR (25,30) suitable for wall insulation 1250 x 600 x 20 for exhaust, made of aluminium with grilles Reduction of sound power level 5 dB(A)	2076 727
	**Mesh grille MG2 for exhaust** for Belaria® twin I/IR (20) suitable for wall insulation 1250 x 600 x 20 Replaces weatherproof grille WG2 for air duct	2033 821
	**Mesh grille MG2 for exhaust** for Belaria® twin I/IR (25,30) suitable for wall insulation 1250 x 600 x 20 Replaces weatherproof grille WG2 for air duct	2033 822
	**Side panel** for Belaria® twin I/IR (20) Side wall for covering the exhaust opening on the side. Required if the exhaust is upwards or if on-site air ducts are used.	6020 596
	**Side panel** for Belaria® twin I/IR (25,30) Side wall for covering the exhaust opening on the side. Required if the exhaust is upwards or if on-site air ducts are used.	6020 595
	Installation with cold ambient temperature *Necessary for heating room temperatures < 10 °C*	
	**Crankcase heater** for Belaria® twin I/IR (20-30), Thermalia® comfort (8-17), Thermalia® comfort H (7,10), Thermalia® twin (20-42), Thermalia® twin H (13-22) Necessary for heating room temperatures < 10 °C for protecting the compressor For Belaria® twin I/IR 2 pieces are necessary	6019 718

Part No.

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® twin I

Type		(20)		(25)		(30)	
		1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
• Energy efficiency class of the compound system with control	35 °C/55 °C	A++/A+		A++/A+		A++/A+	
• Room heating energy efficiency “moderate climate” 35 °C ηS [1), 2)]	%	153		152		150	
• Room heating energy efficiency “moderate climate” 55 °C ηS [1), 2)]	%	111		111		112	
• Seasonal coefficient of performance moderate climate 35 °C/55 °C	SCOP	3.9/2.6		3.9/2.9		3.8/2.9	
Max. performance data heating in acc. with EN 14511							
• Heat output A2W35	kW [3)]	10.4	20.8	12.5	25.0	15.2	30.4
• Coefficient of performance A2W35	COP	3.9	3.5	3.9	3.5	3.8	3.4
• Heat output A-7W35	kW [3)]	8.8	17.6	9.4	20.8	5.9	24.4
• Coefficient of performance A-7W35	COP	3.4	3.1	2.8	3.0	1.9	3.1
Sound data							
• Sound power level EN 12102 (inside)	dB(A)	58		60		61	
• Sound power level EN 12102 (outlet) [4)]	dB(A)	64		66		67	
• Sound pressure level 5 m	dB(A)	45		47		48	
• Sound pressure level 10 m	dB(A)	39		41		42	
Hydraulic data							
• Max. flow temperature	°C	55		55		55	
• Max. operating pressure on the heating side	bar	6		6		6	
• Flow/return connection heating	R (ext. thread)	1¼″		1½″		1½″	
• Pressure drop heat pump	kPa	15		17		15	
• Nominal heating water quantity	m^3/h	4.5		4.9		5.1	
• Nominal air volume	m^3/h	3000-6000		3800-7500		4500-9000	
• Externally available pressure	Pa	200		200		200	
• Max. speed in air ducts	m/s	4		4		4	
Cooling technical data							
• Refrigerant		R407C		R407C		R407C	
• Compressor/stages		2/2		2/2		2/2	
• Refrigerant filling quantity	kg	11.3		12.5		13.0	
• Compressor oil filling quantity	l	1.9		1.9		1.9	
Electrical data							
• Electrical connection compressor	V/Hz	3~400/50		3~400/50		3~400/50	
• Electrical connection fan	V/Hz	3~400/50		3~400/50		3~400/50	
• Electrical connection control	V/Hz	1~230/50		1~230/50		1~230/50	
• Max. heat pump operating current	A	14.6		17.9		21.9	
• Compressor power consumption A2W35	kW	2.7	5.9	3.2	7.1	4.0	8.9
• Compressor power consumption A20W55	kW	4.1	9.1	5.2	11.5	5.8	12.8
• Max. starting current heat pump (with jump start)	A	24.2		29.7		35.1	
• External protection main current	A	16		20		25	
• External protection main current	Type	C,D,K		C,D,K		C,D,K	
• External protection control current	A	13		13		13	
• External protection control current	Type	B,C,D,K,Z		B,C,D,K,Z		B,C,D,K,Z	
Dimensions/weight							
• Dimensions (H x W x D)	mm	1735 x 1200 x 880		1935 x 1300 x 980		1935 x 1300 x 980	
• Weight	kg	400		455		485	

[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)] kW = incl. defrosting loss

[4)] The sound power levels apply in whisper mode. Values increase by +4 dB(A) in normal operation.

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

Belaria® twin IR

Type		(20)		(25)		(30)	
		1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
• Energy efficiency class of the compound system with control	35 °C/55 °C	A++/A+		A++/A+		A++/A+	
• Room heating energy efficiency “moderate climate” 35 °C ηS [1), 2)]	%	155		153		151	
• Room heating energy efficiency “moderate climate” 55 °C ηS [1), 2)]	%	112		112		113	
• Seasonal coefficient of performance moderate climate 35 °C/55 °C	SCOP	3.9/2.6		3.9/2.9		3.8/2.9	
Max. performance data heating and cooling in acc. with EN 14511							
• Heat output A2W35	kW [3)]	10.4	20.8	12.5	25.0	15.2	30.4
• Coefficient of performance A2W35	COP	3.9	3.5	3.9	3.5	3.8	3.4
• Heat output A-7W35	kW [3)]	8.8	17.6	9.4	20.8	5.9	24.4
• Coefficient of performance A-7W35	COP	3.4	3.1	2.8	3.0	1.9	3.1
• Cooling capacity A35W18	kW	14.3	26.6	15.8	30.3	19.0	35.5
• Energy efficiency ratio A35W18	EER	3.6	3.1	3.4	3.0	3.3	2.9
• Cooling capacity A35W7	kW	10.2	19.0	10.8	22.0	13.2	24.7
• Energy efficiency ratio A35W7	EER	2.8	2.5	2.6	2.4	2.6	2.3
Sound data							
• Sound power level EN 12102 (inside)	dB(A)	58		60		61	
• Sound power level EN 12102 (outlet) [4)]	dB(A)	63		65		66	
• Sound pressure level 5 m	dB(A)	44		46		47	
• Sound pressure level 10 m	dB(A)	38		40		41	
Hydraulic data							
• Max. flow temperature	°C	55		55		55	
• Max. operating pressure on the heating side	bar			6			
• Flow/return connection heating	R (ext. thread)	1¼″		1½″		1½″	
• Pressure drop heat pump	kPa	15		17		15	
• Nominal heating water quantity	m^3/h	4.5		4.9		5.1	
• Nominal air volume	m^3/h	3000-6000		3800-7500		4500-9000	
• Externally available pressure	Pa	200		200		200	
• Max. speed in air ducts	m/s	4		4		4	
Cooling technical data							
• Refrigerant		R407C		R407C		R407C	
• Compressor/stages		2/2		2/2		2/2	
• Refrigerant filling quantity	kg	13.0		18.3		19.8	
• Compressor oil filling quantity	l	1.9		1.9		1.9	
Electrical data							
• Electrical connection compressor	V/Hz	3~400/50		3~400/50		3~400/50	
• Electrical connection fan	V/Hz	3~400/50		3~400/50		3~400/50	
• Electrical connection control	V/Hz	1~230/50		1~230/50		1~230/50	
• Max. heat pump operating current	A	14.6		17.9		21.9	
• Compressor power consumption A2W35	kW	2.7		3.2		4.0	
• Compressor power consumption A20W55	kW	4.1		5.2		5.8	
• Max. starting current heat pump (with jump start)	A	24.2		29.7		35.1	
• External protection main current	A	16		20		25	
• External protection main current	Type	C,D,K		C,D,K		C,D,K	
• External protection control current	A	13		13		13	
• External protection control current	Type	B,C,D,K,Z		B,C,D,K,Z		B,C,D,K,Z	
Dimensions/weight							
• Dimensions (H x W x D)	mm	1735 x 1200 x 880		1935 x 1300 x 980		1935 x 1300 x 980	
• Weight	kg	400		455		485	

[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.

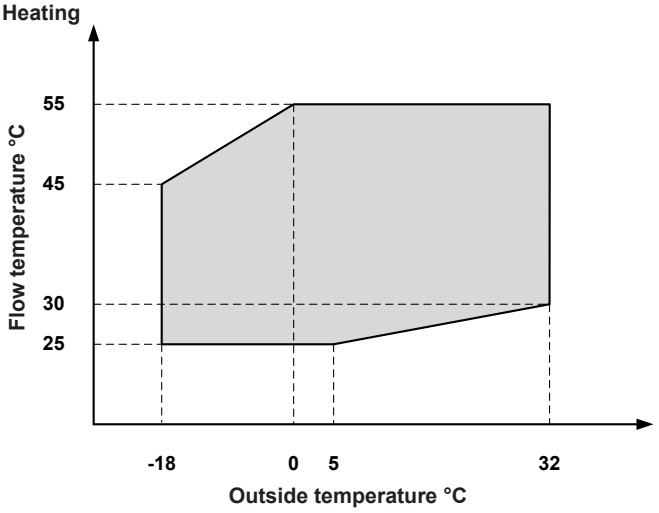
[3)] kW = incl. defrosting loss

[4)] The sound power levels apply in whisper mode. Values increase by +4 dB(A) in normal operation.

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

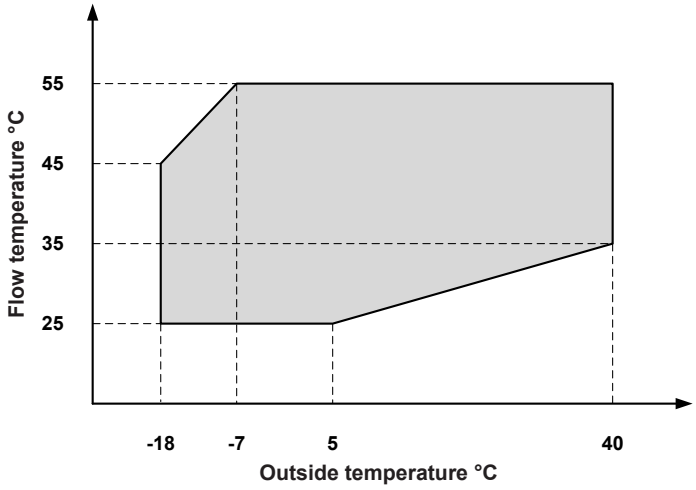
Diagrams of areas of application

Belaria® twin I (20-30), Belaria® twin IR (20-30)
Heating



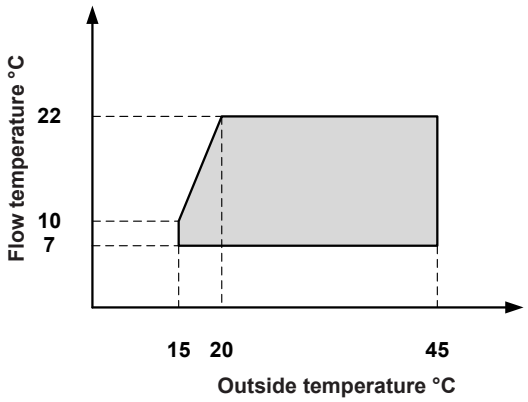
Area of application of the heat pump for heating

Belaria® twin I (20-30), Belaria® twin IR (20-30)
Hot water



Area of application of the heat pump for domestic hot water

Belaria® twin IR (20-30)
Cooling



Area of application of the heat pump for cooling

Belaria® twin I, twin IR (20-30)

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.

The effective sound pressure in the installation room depends on various factors such as room size, absorption capacity, reflection, free sound propagation etc.
For this reason, it is important to ensure that where possible, the boiler room is outside noise-sensitive areas of the building and equipped with a sound-absorbing door.

Belaria® twin I, twin IR		(20)		(25)		(30)	
Stage		1	2	1	2	1	2
Sound power level in the installation room	dB(A)	55	58	57	60	58	61

Outlet and intake directly through the wall
The sound pressure levels indicated below apply if the air intake and outlet are positioned across a corner from each other on a straight wall without roofing.

Belaria® twin I		(20)		(25)		(30)	
		1	2	1	2	1	2
Sound power level [1]	dB(A)	60	64	62	66	63	67
Sound pressure level 5 m [1]	dB(A)	41	45	43	47	44	48
Sound pressure level 10 m [1]	dB(A)	35	39	37	41	38	42

Belaria® twin IR		(20)		(25)		(30)	
		1	2	1	2	1	2
Sound power level [1]	dB(A)	60	63	62	65	63	66
Sound pressure level 5 m [1]	dB(A)	41	45	43	47	44	48
Sound pressure level 10 m [1]	dB(A)	35	39	37	41	38	42

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

Reduced sound levels (outside) as a result of the installation situation

The following reductions in the sound levels can be assumed as a result of the installation of the following components in the air duct:

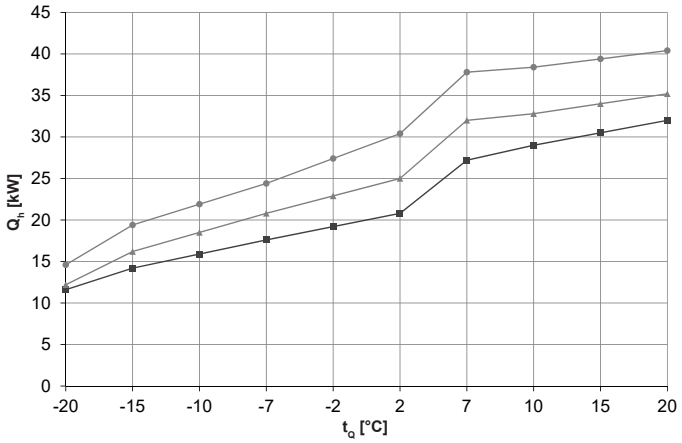
- Light well from a depth of 1.5 m: - 4 dB(A)
- Air duct insulated on the inside with 90° elbow, L < 2 m: - 6 dB(A)
- Air duct insulated on the inside with 90° elbow, L > 2 m: - 8 dB(A)

Performance data - heating

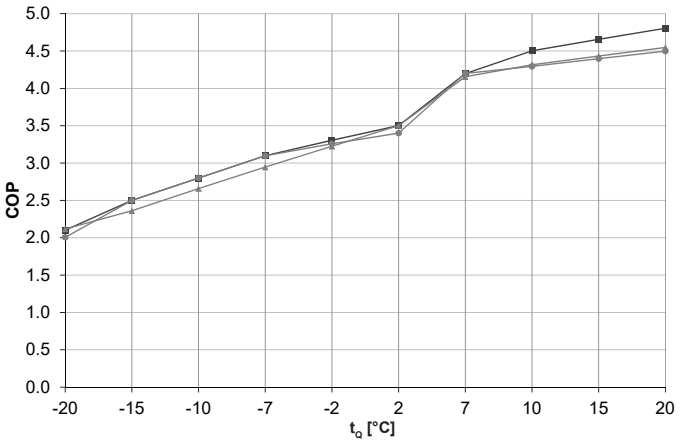
Maximum heat output allowing for defrosting losses

Belaria® twin I (20-30), twin IR (20-30)

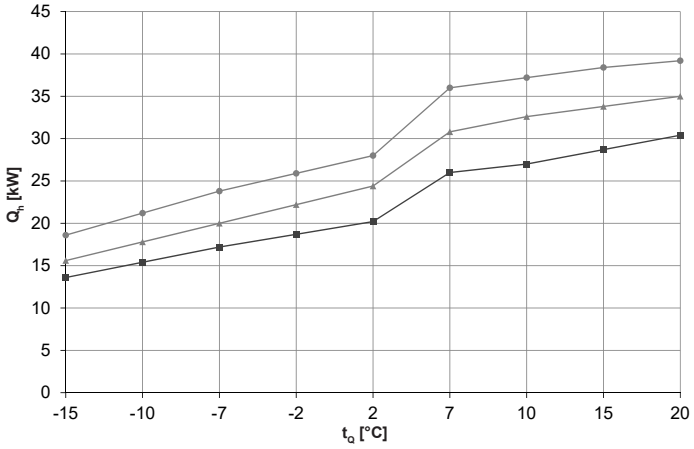
Heat output - t_{VL} 35 °C



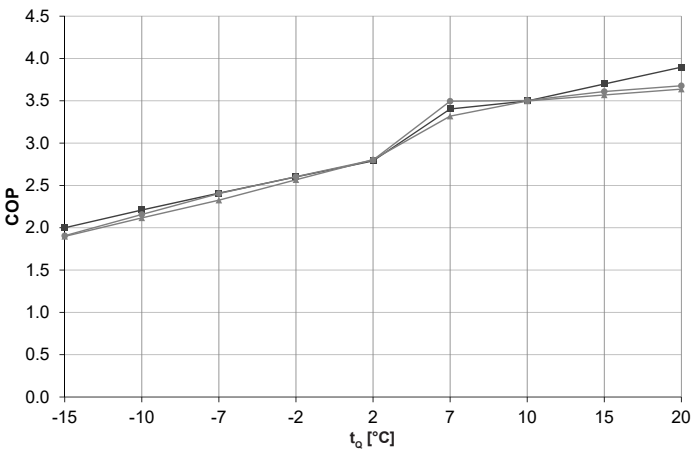
Coefficient of performance - t_{VL} 35 °C



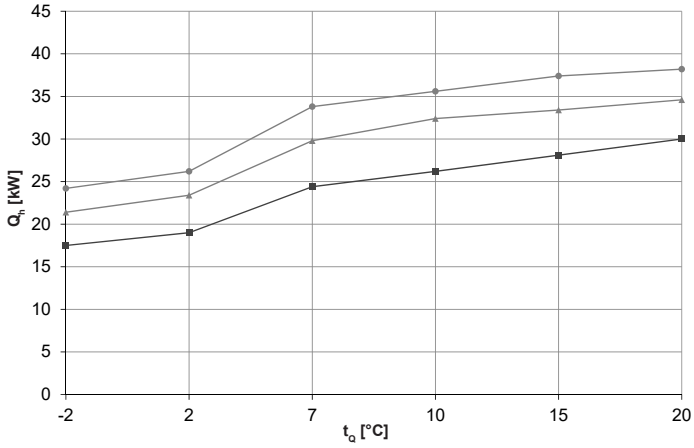
Heat output - t_{VL} 45 °C



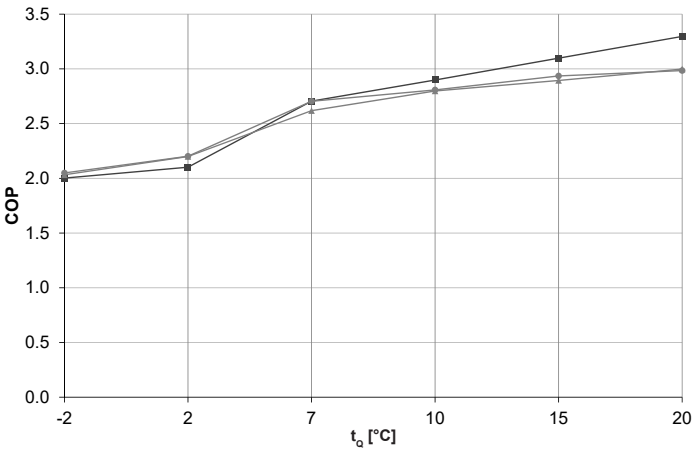
Coefficient of performance - t_{VL} 45 °C



Heat output - t_{VL} 55 °C



Coefficient of performance - t_{VL} 55 °C



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 I/IR (20)
Belaria® twin I/IR (25)
Belaria® twin I/IR (30)

Performance data - heating

Belaria® twin I (20-30), twin IR (20-30)

Indications acc. to EN 14511

t_{VL} °C	t_Q °C	Q_h kW	(20) P kW	COP	Q_h kW	(25) P kW	COP	Q_h kW	(30) P kW	COP
35	-20	11.6	5.5	2.1	12.2	5.8	2.1	14.6	7.3	2.0
	-15	14.2	5.7	2.5	16.2	6.9	2.4	19.4	7.8	2.5
	-10	15.9	5.7	2.8	18.5	7.0	2.7	21.9	7.8	2.8
	-7	17.6	5.7	3.1	20.8	7.1	3.0	24.4	7.9	3.1
	-2	19.2	5.8	3.3	22.9	7.1	3.2	27.4	8.4	3.3
	2	20.8	5.9	3.5	25.0	7.1	3.5	30.4	8.9	3.4
	7	27.2	6.5	4.2	32.0	7.7	4.2	37.8	9.0	4.2
	10	29.0	6.4	4.5	32.8	7.6	4.3	38.4	8.9	4.3
	15	30.5	6.6	4.7	34.0	7.7	4.4	39.4	9.0	4.4
	20	32.0	6.7	4.8	35.2	7.7	4.6	40.4	9.0	4.5
45	-15	13.6	6.8	2.0	15.6	8.2	1.9	18.6	9.8	1.9
	-10	15.4	7.0	2.2	17.8	8.4	2.1	21.2	9.8	2.2
	-7	17.2	7.1	2.4	20.0	8.6	2.3	23.8	9.9	2.4
	-2	18.7	7.2	2.6	22.2	8.7	2.6	25.9	10.0	2.6
	2	20.2	7.2	2.8	24.4	8.7	2.8	28.0	10.0	2.8
	7	26.0	7.6	3.4	30.8	9.3	3.3	36.0	10.3	3.5
	10	27.0	7.7	3.5	32.6	9.3	3.5	37.2	10.6	3.5
	15	28.7	7.8	3.7	33.8	9.5	3.6	38.4	10.6	3.6
	20	30.4	7.8	3.9	35.0	9.6	3.6	39.2	10.7	3.7
55	-2	17.5	8.7	2.0	21.4	10.5	2.0	24.2	11.8	2.1
	2	19.0	9.0	2.1	23.4	10.6	2.2	26.2	11.9	2.2
	7	24.4	9.0	2.7	29.8	11.4	2.6	33.8	12.5	2.7
	10	26.2	9.0	2.9	32.4	11.6	2.8	35.6	12.7	2.8
	15	28.1	9.1	3.1	33.4	11.5	2.9	37.4	12.7	2.9
	20	30.0	9.1	3.3	34.6	11.5	3.0	38.2	12.8	3.0

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

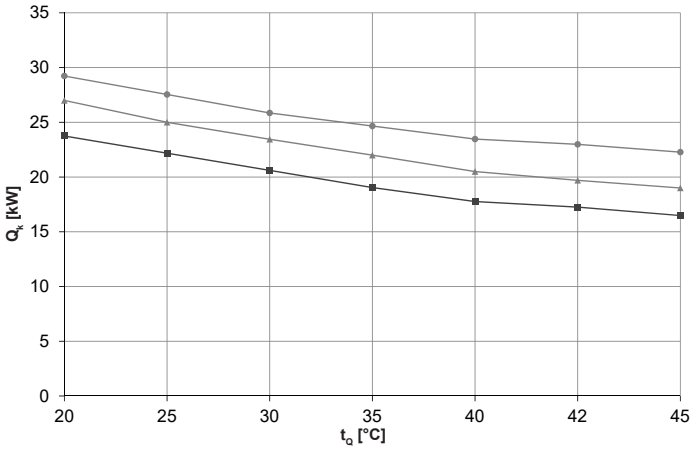
Observe daily power interruptions!
see “Engineering heat pumps general”

Performance data - cooling

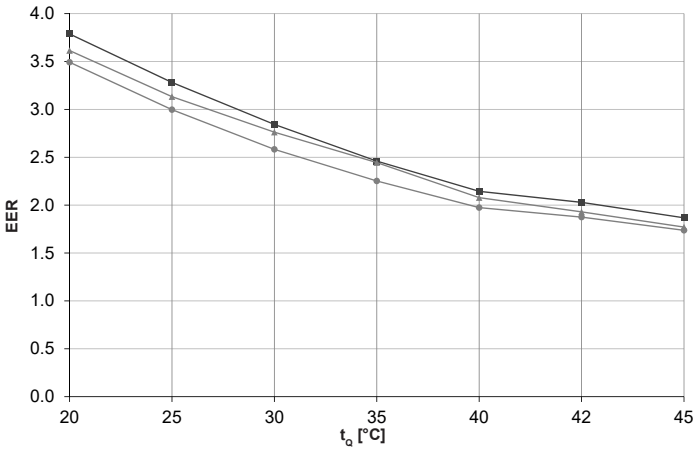
Maximum cooling capacity

Belaria® twin IR (20-30)

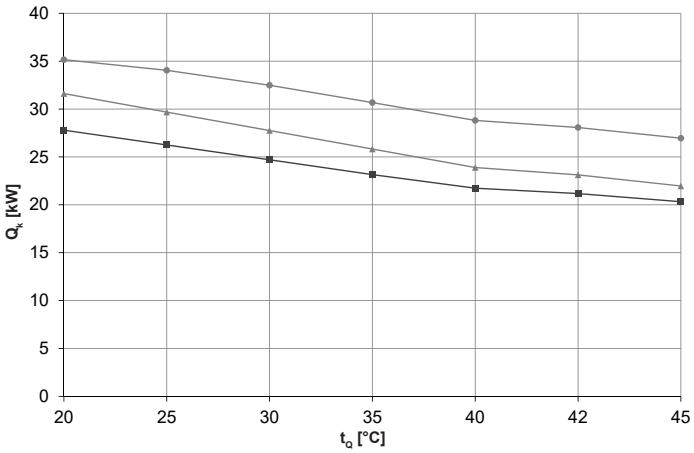
Cooling capacity - t_{VL} 7 °C



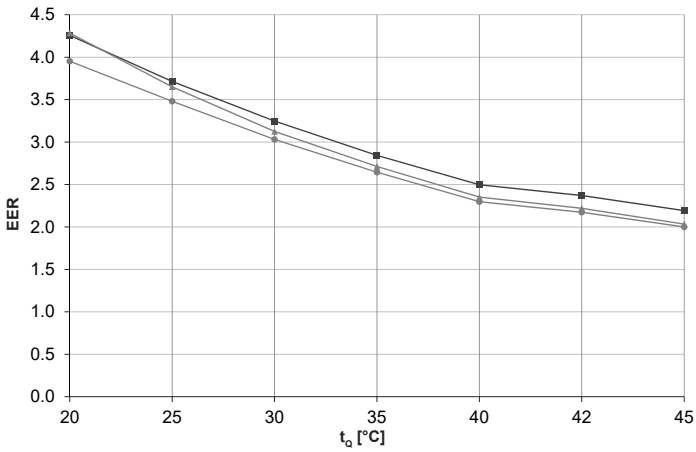
Energy efficiency ratio - t_{VL} 7 °C



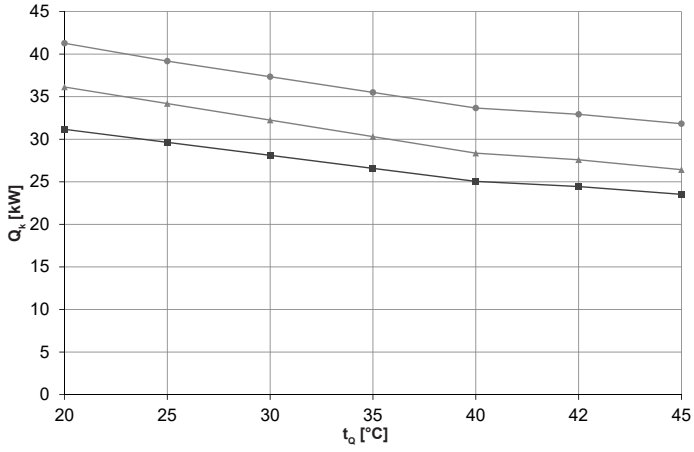
Cooling capacity - t_{VL} 13 °C



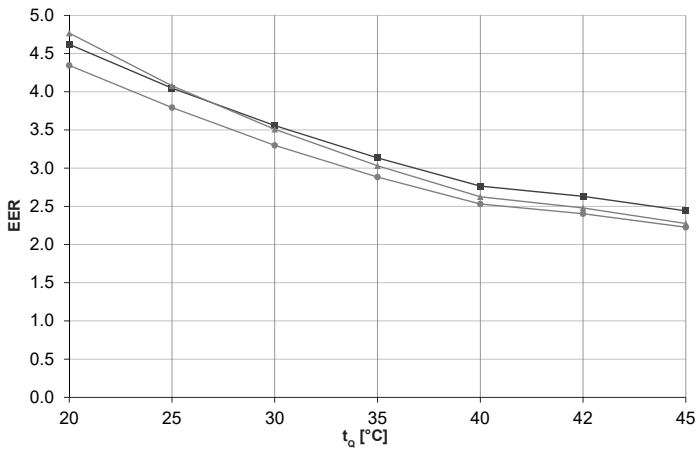
Energy efficiency ratio - t_{VL} 13 °C



Cooling capacity - t_{VL} 18 °C



Energy efficiency ratio - 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 = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

Belaria® twin IR (20)
Belaria® twin IR (25)
Belaria® twin IR (30)

Performance data - cooling

Belaria® twin IR (20-30)

Indications acc. to EN 14511

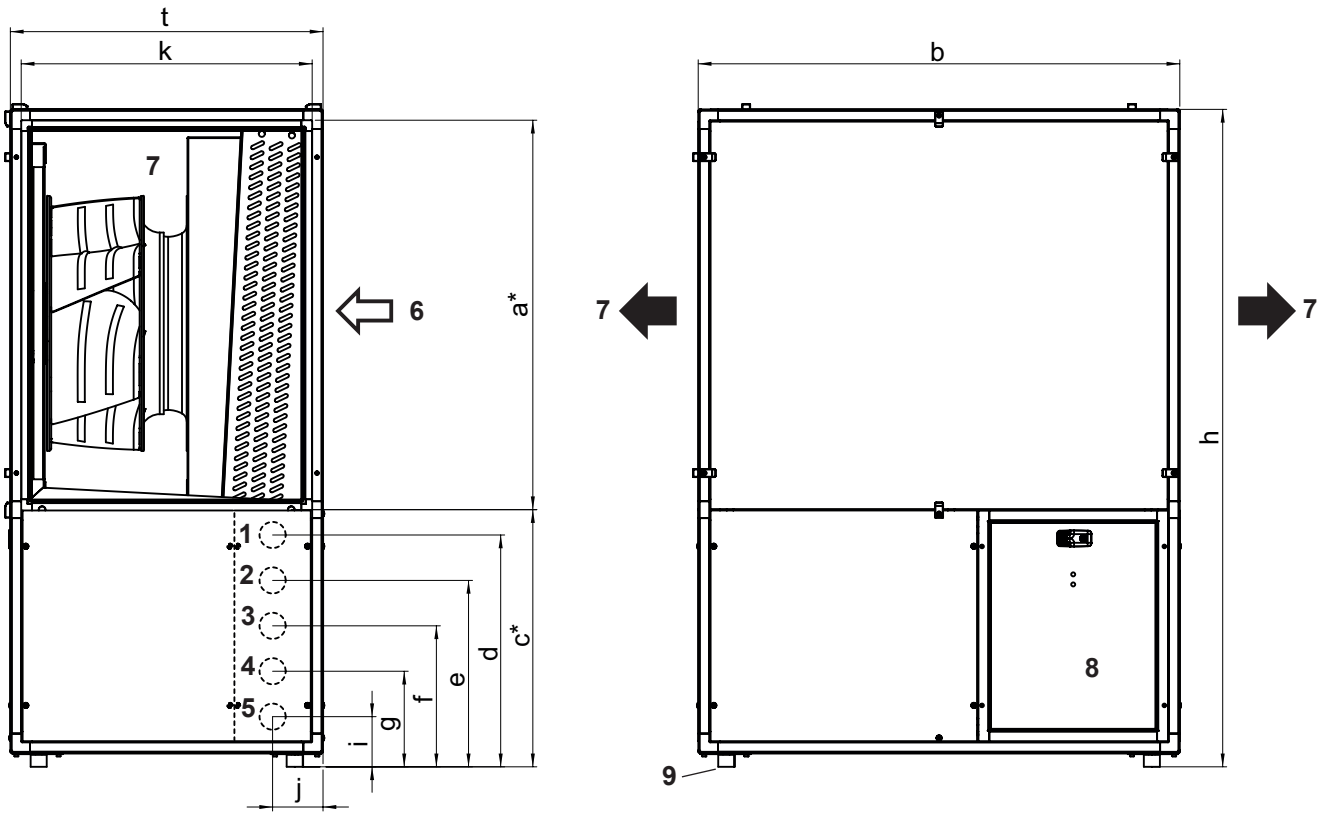
		(20)			(25)			(30)		
t_{VL} °C	t_Q °C	Q_k kW	P kW	EER	Q_k kW	P kW	EER	Q_k kW	P kW	EER
	20	23.8	6.3	3.8	27.0	7.5	3.6	29.2	8.4	3.5
	25	22.2	6.8	3.3	25.0	8.0	3.1	27.5	9.2	3.0
	30	20.6	7.3	2.8	23.5	8.5	2.8	25.9	10.0	2.6
7	35	19.0	7.7	2.5	22.0	9.0	2.4	24.7	10.9	2.3
	40	17.8	8.3	2.1	20.5	9.9	2.1	23.5	11.9	2.0
	42	17.3	8.5	2.0	19.7	10.2	1.9	23.0	12.3	1.9
	45	16.5	8.8	1.9	19.0	10.7	1.8	22.3	12.8	1.7
	20	25.8	6.4	4.0	29.3	7.0	4.2	32.3	8.8	3.7
	25	24.2	6.9	3.5	27.4	7.9	3.5	31.2	9.5	3.3
	30	22.6	7.4	3.0	25.5	8.7	2.9	28.9	10.4	2.8
10	35	21.1	7.9	2.7	23.6	9.3	2.5	27.5	11.3	2.4
	40	19.7	8.5	2.3	21.7	9.9	2.2	26.1	12.2	2.1
	42	19.2	8.7	2.2	21.0	10.1	2.1	25.5	12.6	2.0
	45	18.4	9.0	2.0	19.8	10.5	1.9	24.6	13.1	1.9
	20	27.8	6.5	4.3	31.6	7.4	4.3	35.2	8.9	4.0
	25	26.2	7.1	3.7	29.7	8.1	3.7	34.0	9.8	3.5
	30	24.7	7.6	3.3	27.8	8.9	3.1	32.5	10.7	3.0
13	35	23.2	8.1	2.8	25.8	9.5	2.7	30.7	11.6	2.6
	40	21.7	8.7	2.5	23.9	10.2	2.4	28.8	12.5	2.3
	42	21.2	8.9	2.4	23.1	10.4	2.2	28.1	12.9	2.2
	45	20.3	9.3	2.2	22.0	10.8	2.0	27.0	13.5	2.0
	20	29.1	6.6	4.4	33.9	7.7	4.4	37.1	8.9	4.2
	25	27.6	7.2	3.9	32.0	8.4	3.8	36.0	9.9	3.6
	30	26.1	7.7	3.4	30.0	9.1	3.3	34.9	11.0	3.2
15	35	24.5	8.3	3.0	28.0	9.8	2.9	32.8	11.8	2.8
	40	23.1	8.8	2.6	26.1	10.4	2.5	30.7	12.8	2.4
	42	22.5	9.1	2.5	25.3	10.7	2.4	29.8	13.2	2.3
	45	21.6	9.4	2.3	24.1	11.1	2.2	28.5	13.7	2.1
	20	31.2	6.7	4.6	36.1	7.6	4.8	41.3	9.5	4.4
	25	29.6	7.3	4.1	34.2	8.4	4.1	39.2	10.3	3.8
	30	28.1	7.9	3.6	32.3	9.2	3.5	37.3	11.3	3.3
18	35	26.6	8.5	3.1	30.3	10.0	3.0	35.5	12.3	2.9
	40	25.1	9.1	2.8	28.4	10.8	2.6	33.7	13.3	2.5
	42	24.4	9.3	2.6	27.6	11.1	2.5	32.9	13.7	2.4
	45	23.5	9.6	2.4	26.4	11.6	2.3	31.8	14.3	2.2
	20	32.9	6.9	4.8	38.4	8.1	4.7	46.2	9.5	4.9
	25	31.3	7.5	4.2	36.2	8.8	4.1	43.5	10.5	4.1
	30	29.7	8.1	3.7	33.9	9.5	3.6	40.7	11.5	3.5
20	35	28.2	8.6	3.3	31.6	10.1	3.1	37.9	12.6	3.0
	40	26.6	9.2	2.9	29.7	10.9	2.7	35.2	13.6	2.6
	42	25.9	9.5	2.7	28.9	11.2	2.6	34.0	14.0	2.4
	45	25.0	9.8	2.6	27.7	11.5	2.4	32.4	14.6	2.2
	20	34.7	7.1	4.9	38.8	8.2	4.8	47.8	9.5	5.0
	25	33.0	7.7	4.3	36.8	8.9	4.2	45.3	10.6	4.3
	30	31.4	8.2	3.8	34.9	9.6	3.7	42.9	11.7	3.7
22	35	29.7	8.8	3.4	32.9	10.3	3.2	40.4	12.8	3.2
	40	28.1	9.4	3.0	31.0	10.9	2.8	37.9	13.9	2.7
	42	27.4	9.6	2.9	30.2	11.2	2.7	36.9	14.3	2.6
	45	26.4	10.0	2.7	29.0	11.6	2.5	35.4	15.0	2.4

t_{VL} = cooling water flow temperature (°C)
t_Q = source temperature (°C)
Q_k = cooling capacity at full load (kW), measured in accordance with standard EN 14511
P = power consumption of 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® twin I (20-30), Belaria® twin IR (20-30)

(Dimensions in mm)



1 Heating flow with flexible connection hose
Belaria® twin I, Belaria® twin IR (20): R 1¼″;
Belaria® twin I, Belaria® twin IR (25,30): R 1½″

2 For sensor/control lines

3 For sensor/control lines

4 Heating return with flexible connection hose
Belaria® twin I, Belaria® twin IR (20): R 1¼″;
Belaria® twin I, Belaria® twin IR (25,30): R 1½″

5 Condensate drain with flexible connection hose 1″.
An airtight siphon with a minimum height of 100 mm must be installed in the condensate line on site!

6 Air intake (evaporator inlet)
Connection directly on the plastic frame (2 mm thick)

7 Air outlet opening, panels removable
Outlet directions: optionally towards the left or right side (repositioning on-site)
Accessories for “Flex” indoor installation:
Blow-off panel with air hose connection plate.

8 Electrical box and terminal box/TopTronic® E controller and operating switch

9 Adjustable feet, see dimension h ± 8 mm
(Axis dimension from outside 90 mm)
- Level heat pump horizontally

Belaria® twin I, Belaria® twin IR	b	h	a	c	d	e	f	g	i	j	k	t
(20)	1200	1735	965	740	675	540	400	260	125	125	820	880
(25,30)	1300	1935	1165	740	675	540	400	260	125	125	920	980

* Dimensions of the divided version of the Belaria® twin I, twin IR (20-30) (only available in Switzerland)

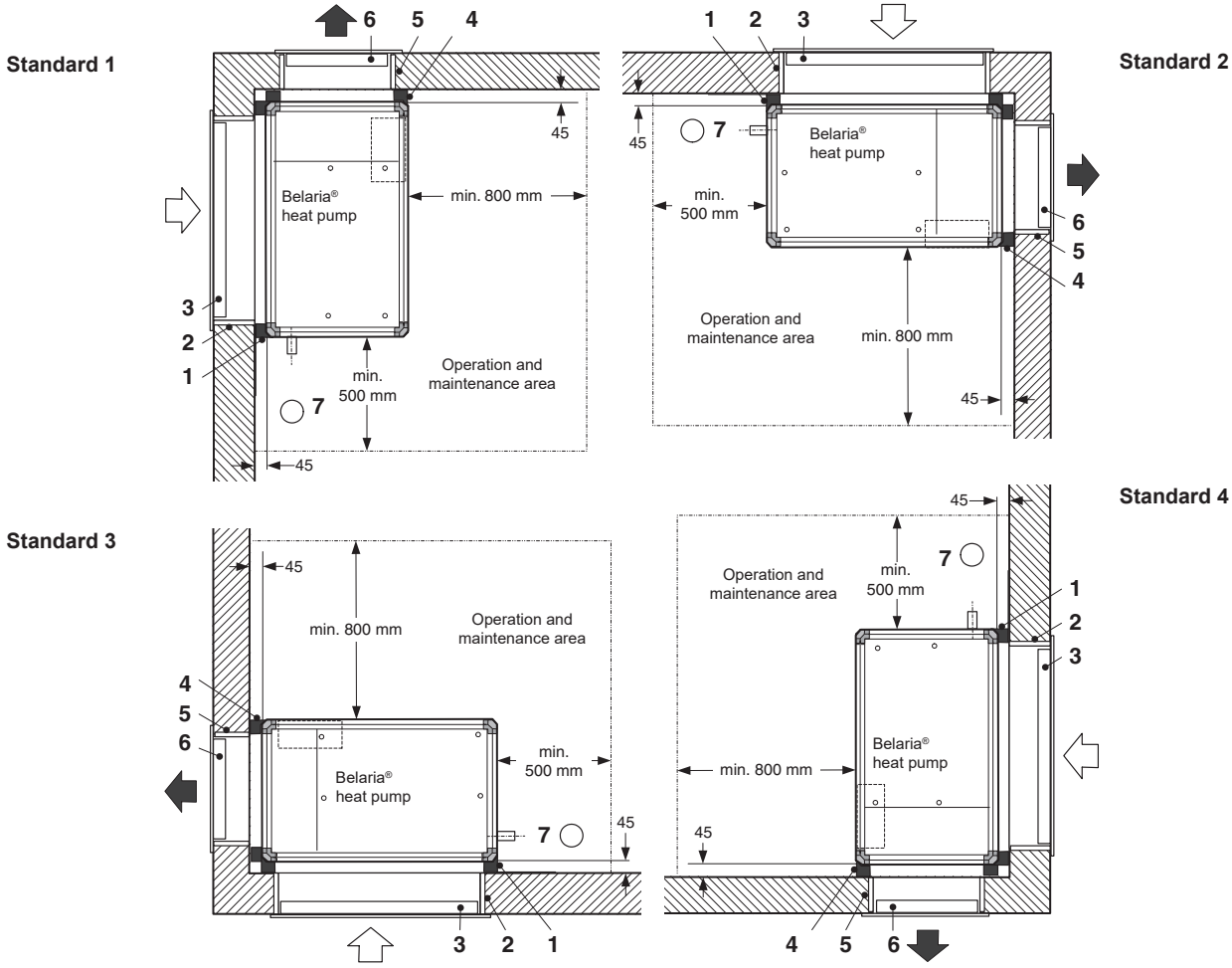
Space requirement “standard” installation with wall insulation MI

“Standard” installation with wall insulation MI
Installation in the corner of the boiler room, directly on the outer wall, with wall connection element and weatherproof grille. Intake at the back, outlet to the right (preferred) or to the left. Water connections on the opposite side.

Cut-outs
The cut-outs must be created professionally and without cold bridges!
The dimensions of the cut-outs are “clear dimensions” measured from the finished floor!

Air ducts
Concrete ducts have unfavourable acoustic properties and often magnify sound emissions. It is therefore advisable to equip the air ducts with a sound-absorbing, weatherproof lining. The air ducts must be drained.

Outlet to the right



Belaria® twin I (20-30), Belaria® twin IR (20-30)		Application	Accessories type
Heat pump		Indoor installation	
1	Wall connection element	Intake	WAE1
2	Wall insulation	Intake	MI1
3	Weatherproof grille	Intake	WG1
3	Weatherproof grille sound-insulated	Intake	WG1
4	Wall connection element	Outlet	WAE2
5	Wall insulation	Outlet	MI2
6	Weatherproof grille	Outlet	WG2
6	Weatherproof grille sound-insulated	Outlet	WG2
7	Condensate drain (on site, siphon height approx.100 mm)		

Space requirement “standard” installation with wall insulation MI

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Installation in the corner of the boiler room, directly on the outer wall, with wall connection element and weatherproof grille. Intake at the back, outlet to the right (preferred) or to the left. Water connections on the opposite side.

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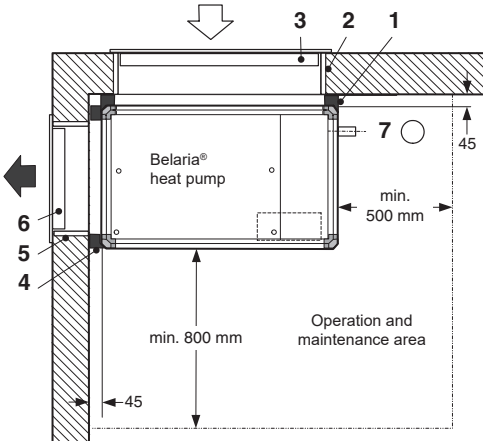
Air ducts
Concrete ducts have unfavourable acoustic properties and often magnify sound emissions. It is therefore advisable to equip the air ducts with a sound-absorbing, weatherproof lining. The air ducts must be drained.

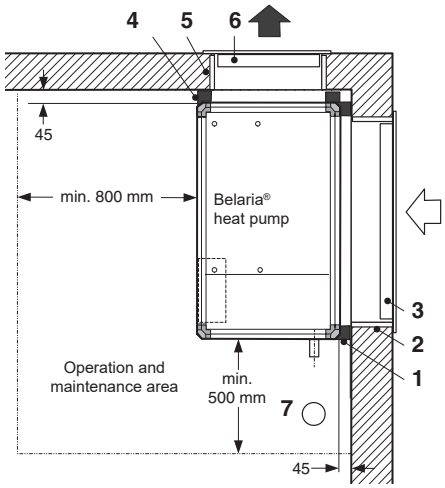
The blow-off opening on the right side should be preferred as a result of accessibility for service!

Outlet to the left

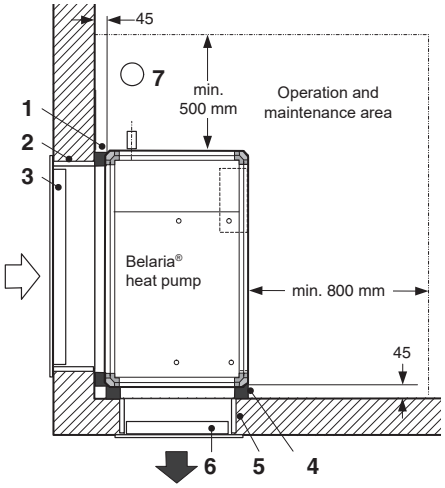
Standard 5



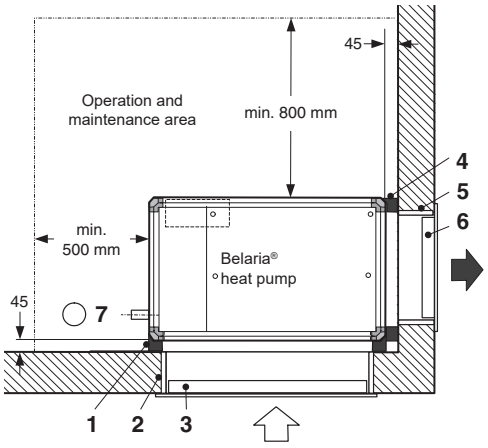
Standard 6



Standard 7



Standard 8

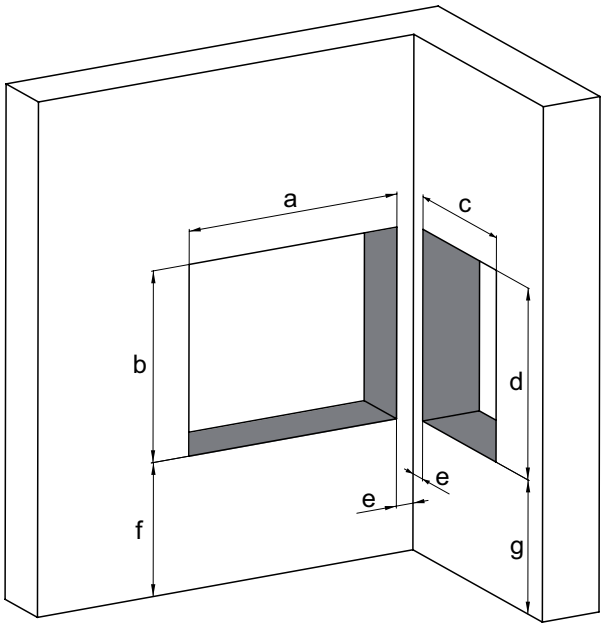


Belaria® twin I (20-30), Belaria® twin IR (20-30)		Application	Accessories type
Heat pump		Indoor installation	
1	Wall connection element	Intake	WAE1
2	Wall insulation	Intake	MI1
3	Weatherproof grille	Intake	WG1
3	Weatherproof grille sound-insulated	Intake	WG1
4	Wall connection element	Outlet	WAE2
5	Wall insulation	Outlet	MI2
6	Weatherproof grille	Outlet	WG2
6	Weatherproof grille sound-insulated	Outlet	WG2
7	Condensate drain (on site, siphon height approx.100 mm)		

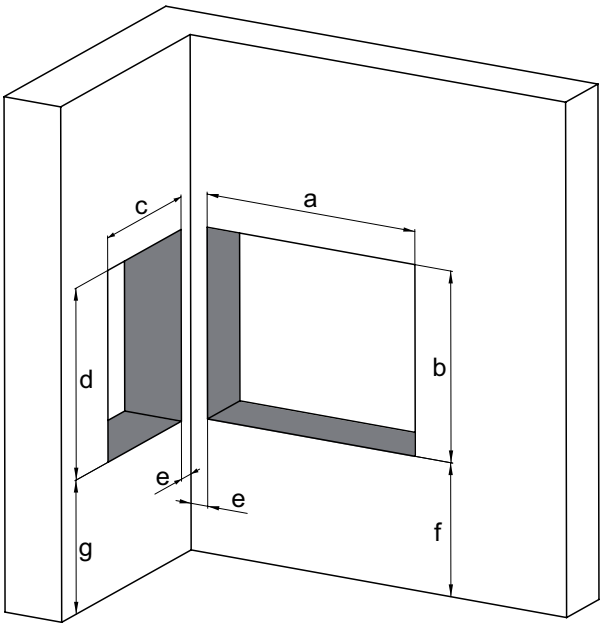
Space requirement “standard” installation with wall insulation MI

Cut-out dimensions
“Standard” installations - heat pump in the corner, without air ducts, with wall insulation MI
(Dimensions in mm)
- The cut-outs must be created professionally.
- Cut-out dimensions from top edge of finished floor

Standard installation 1–4
Air outlet to the right
Preferred solution due to ease of access for servicing

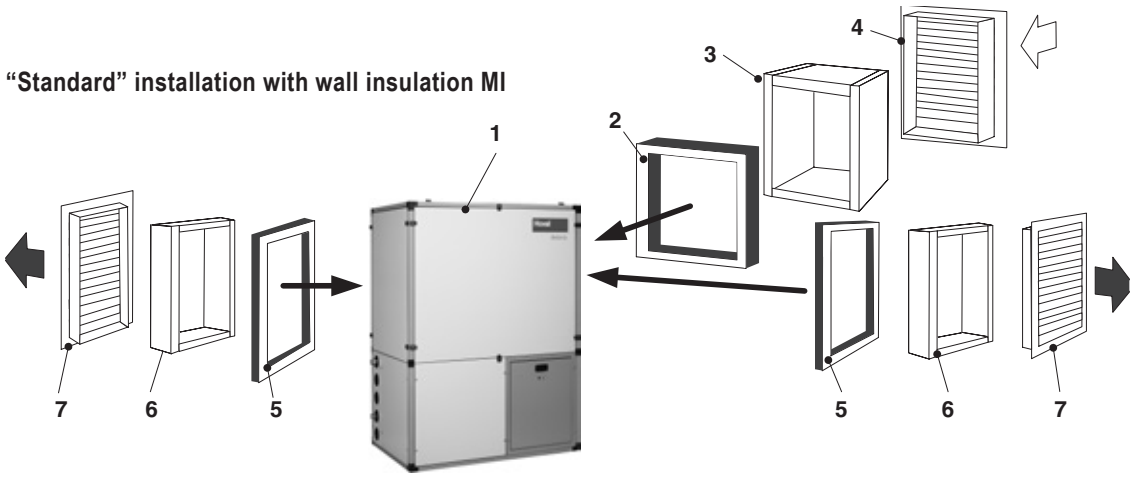


Standard installation 5–8
Air outlet to the left



Belaria® twin I, Belaria® twin IR	Cut-out dimensions						
	a	b	c	d	e	f	g
(20)	1140	950	820	950	70	740	740
(25,30)	1240	1150	920	1150	70	740	740

“Standard” installation with wall insulation MI



1 Heat pump
Intake
2 Wall connection element
3 Wall insulation (20 mm)
4 Weatherproof grille
4 Weatherproof grille sound-insulated

Outlet
5 Wall connection element
6 Wall insulation (20 mm)
7 Weatherproof grille
7 Weatherproof grille sound-insulated

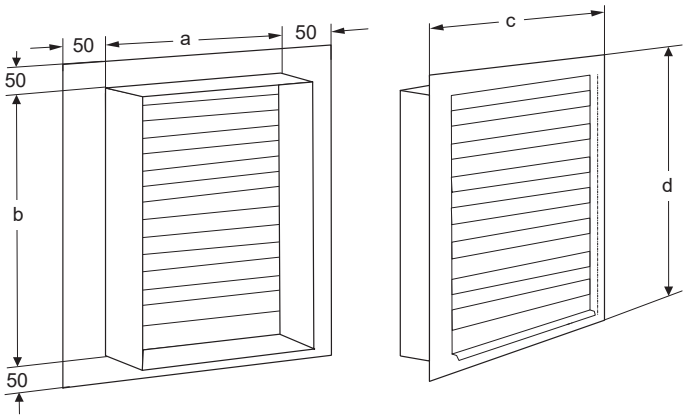
Weatherproof grille

(Dimensions in mm)

Weatherproof grille made from aluminium with mesh grille.

For the cut-outs with wall insulation type MI-E01 (intake) or MI-A01, MI-A02 (outlet).

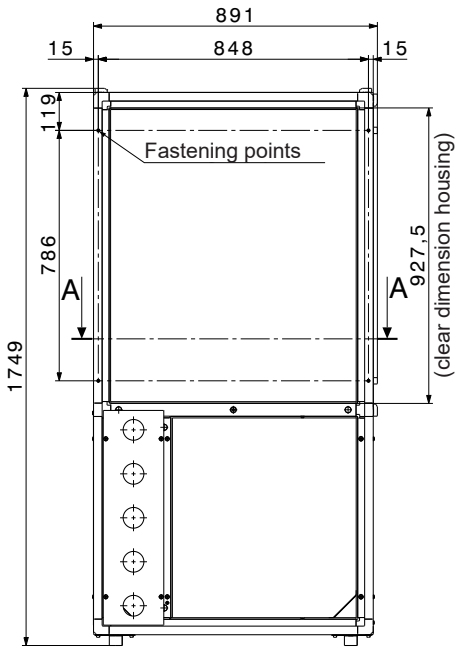
If the thermal insulation for the wall openings is provided on-site, it must be 20 mm thick!

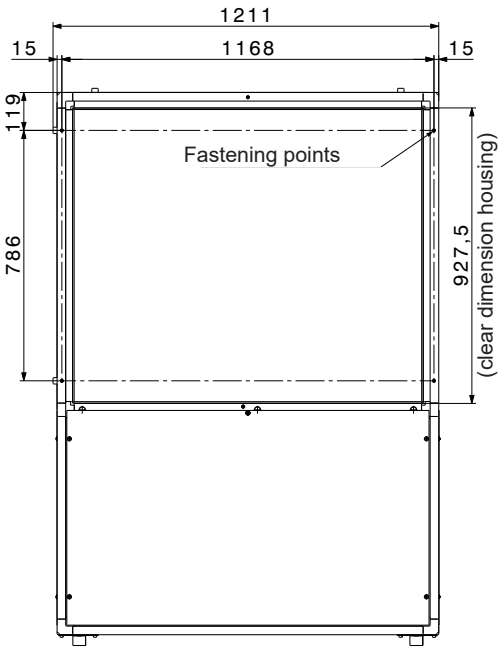


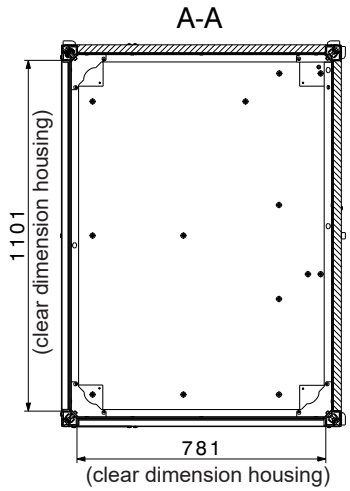
Weatherproof grille type	Belaria® twin I, Belaria® twin IR type	Application for	a	b	c	d
WG1	(20)	Intake	1100	900	1180	1000
WG1	(25,30)	Intake	1200	1100	1280	1200
WG2	(20)	Outlet	780	900	860	1000
WG2	(25,30)	Outlet	880	1100	960	1200

Clear dimensions Belaria® twin I (20), Belaria® twin IR (20)

(Dimensions in mm)







Clear dimensions Belaria® twin I (25,30), Belaria® twin IR (25,30)

(Dimensions in mm)