

Air/water heat pumpsSplit version
modulating**Hoval Belaria® SRM****4.8 - 11.4 kW****Hoval Belaria® compact SRM****4.8 - 11.4 kW**

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Split version
modulating
high temperature**Hoval Belaria® SHM****9.5 - 13.2 kW**

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Split version,
modulating**Hoval UltraSource B comfort C****2.1 - 17.4 kW****Hoval UltraSource B compact C****2.1 - 10.2 kW**

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UltraSource B comfort C (8,17)
UltraSource B compact C (8/200)
 available starting July 2019

Indoor installation,
modulating**Hoval Belaria® comfort ICM****2.1 - 12.7 kW**

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Belaria® comfort ICM (8)
 available starting July 2019

Indoor installation
two-stage



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Outdoor installation
two-stage



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Outdoor installation
two-stage



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Brine/water or
water/water heat pumps



Hoval UltraSource T comfort 1.8 - 17.6 kW
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UltraSource T comfort (8,17)
UltraSource T compact (8/200)
available starting July 2019



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■ Description

Hoval Belaria® SRM **Hoval Belaria® compact SRM** **Modulating heat pump system for** **heating and cooling in the living area**

Split system comprising indoor unit
 and outdoor unit.
 Modulation range 30 % to 100 %

Indoor unit Belaria® SRM

- Compact unit for wall installation
- Casing made from painted, galvanised sheet steel. Colour pure white (RAL 9010).
- Condenser stainless steel/Cu
- Speed-controlled high-efficiency pump
- Pressure expansion tank 10 litres
- Pressure gauge
- Flow sensor
- Cut-off valves for heating flow and return (included separately)
- Emergency heating
 Hoval Belaria® SRM (4) 3 kW
 Hoval Belaria® SRM (6-16) 3/9 kW
 (see also technical data) with safety thermostat, safety valve
- Strainer, air-bleeding valve, overpressure valve
- Controller with heating, cooling and calorifier function (operating unit included separately)
- With cooling function through inversion of cycle
- Electrical box
- Flow and return sensor installed
- Filling and drain valve

Belaria® compact SRM indoor unit

- Compact floor-standing unit
- Casing made from painted, galvanised sheet steel. Colour RAL 9010 (pure white).
- Condenser stainless steel/Cu
- Stainless steel calorifier installed
 Hoval Belaria® compact SRM (4) 180 litres
 Hoval Belaria® compact SRM (6-16) 260 litres
- Speed-controlled high-efficiency pump
- Pressure expansion tank 10 litres
- Pressure gauge
- Flow sensor
- Cut-off valves for heating flow and return (included separately)
- Emergency heating
 Hoval Belaria® compact SRM (4) 3 kW
 Hoval Belaria® compact SRM (6-16) 3/9 kW
 (see also technical data) with safety thermostat, safety valve
- Strainer, air-bleeding valve, overpressure valve
- Controller with heating, cooling and calorifier function (included separately)
- With cooling function through inversion of cycle
- Electrical box
- Flow and return sensor installed
- Filling and drain valve

Outdoor unit

- Compact unit for outdoor installation
- Casing made from painted, galvanised sheet steel, colour beige/grey (similar to RAL 7044)
- Speed-controlled compressor
- 1 / 2 speed-controlled fans
- Coated Alu/Cu finned-tube evaporator
- Electronic expansion valve



Outdoor unit



Indoor unit
 Hoval Belaria® SRM



Indoor unit
 Hoval Belaria® compact SRM

Hoval Belaria® SRM **Hoval Belaria® compact SRM**

35 °C	55 °C	Type	Heat output		Cooling capacity
			with A-7W35 kW	with A2W35 kW	with A35W18 kW
			4.6	4.8	5.9
			5.3	6.4	7.3
			6.4	7.7	8.4
			8.8	9.1	15.1
			11.7	10.9	16.1
			12.3	11.4	16.8

Energy efficiency class of the compound system with control
 Performance data at nominal output



The built-in high-efficiency pumps fulfil the Ecodesign requirements of 2015 with an EER of ≤ 0.23.

Seal of approval FWS

The Belaria® SRM (4-16) series is certified by the seal of approval of the authorisation commission of Switzerland

- Four-way valve
- Filled with refrigerant R 410 A
- Shut-off valves on the refrigerant side
- Outdoor sensor installed

Connections, heating/cooling

- Heating connections
 Indoor unit Hoval Belaria® SRM (4-16) bottom, indoor unit Hoval Belaria® compact SRM (4-16) top
- 2 cut-off valves included separately

Connections, refrigerant line

- Indoor unit Belaria® SRM (4-16) bottom, indoor unit Belaria® compact SRM (4-16) top
- Outdoor unit on the right side
- Hot gas line 15.9 mm (5/8")
 liquid line:
 Belaria® SRM,
 compact SRM (4-8) 6.4 mm (1/4")
 Hoval Belaria® SRM,
 compact SRM (11-16) 9.5 mm (3/8")

Condensate drain

- Free run-off of the condensate for draining off
- An optional condensate drip tray for collective discharge of the condensate is available

Electrical connections

- Outdoor unit on the right side connection:
 Belaria® SRM, compact SRM (4-8) 230 V,
 Belaria® SRM, compact SRM (11-16)
 3 x 400 V
- Indoor unit is fed from the outdoor unit
- Emergency heating is connected to the indoor unit separately
- Electric heating element connection in the external calorifier 1 x 400 V (Belaria® SRM (4-16))

Delivery

- Inside and outdoor unit delivered packaged separately.
- Both cut-off valves are included separately with the indoor unit.
- Sensor for calorifier supplied loose in the indoor unit (Belaria® SRM (4-16))

On site

- Installation of the insulation set (Hoval Belaria® SRM)
- Installation of the collective alarm board
- Wall openings for refrigerant connecting lines.
- Electr. connecting line outside/indoor unit

■ Part No.

Hoval Belaria® SRM
Hoval Belaria® compact SRM
air/water heat pump system

Part No.

Modulating heat pump system for heating and cooling. Comprising inside and outdoor unit.
Belaria® compact SRM with integrated calorifier in the indoor unit.



Hoval Belaria® SRM
Heat pump system

Type	Heat output kW		Cooling ca- pacity kW
	A-7W35	A2W35	A35W18
(4)	4.6	4.8	5.9
(6)	5.3	6.4	7.3
(8)	6.4	7.7	8.4
(11)	8.8	9.1	15.1
(14)	11.7	10.9	16.1
(16)	12.3	11.4	16.8

7013 709
7013 710
7013 711
7013 712
7013 713
7013 714



Hoval Belaria® compact SRM
Heat pump system with
integrated calorifier

Type	Calorifier litres	Heat output kW		Cooling ca- pacity kW
		A2W35		A35W18
(4)	180	4.8		5.9
(6)	260	6.4		7.3
(8)	260	7.7		8.4
(11)	260	9.1		15.1
(14)	260	10.9		16.1
(16)	260	11.4		16.8

7013 715
7013 716
7013 717
7013 718
7013 719
7013 720

Energy efficiency class
see Description



Connection set
for Belaria® SRM (4-16)
Prevents vibrations of the heating
pump on the heating network
Consisting of:
2 pcs. flexible hoses DN 32, L=1.5 m
2 pcs. reduction nipple R 1¼" x RG 1"
2 pcs. seals

6024 913

■ Part No.



Accessories

Part No.

Room station

Additional controller as room station
same function as controller
on the unit (cable connection)

6043 816



Room thermostat with remote control

RS-W (cable connection)

6023 044

RS-R (with radio transmission)

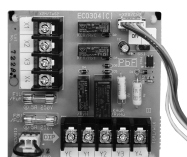
6023 045



Outside temperature sensor

additional outside temperature sensor
necessary if the outside unit is placed
in an unfavourable position
(exposure to sunlight)

2053 179



Additional board (A4P/A7P)

digital on/off board for:
- alarm output
- change-over to external heat source

6019 357



Condensate drip tray cpl. w/ A4P board

for Belaria® SRM (4-16),
compact SRM (4-16)
for collection of the condensate under
the outdoor unit
Material: UV-resistant plastic
Tray heater 120 W, 230 V with thermostat
with additional protection
Condensate outlet: Ø (outside) 38 mm
Dimensions: 960 x 420 x 40 (LxWxT)
For mounting on socket, the vibration
dampers have to be ordered separately.
digital on/off board for:
- energetic control of the heating tape

6033 389

Notice

Only use a condensate drip tray if it is
absolutely necessary. If the condensation
can flow away unobstructed,
no condensate drip tray will be required.



Base set SKW01

for outdoor unit
for Belaria® SRM (4-8) and
compact SRM (4-8)
Comprising:
2 U-irons painted
Mandatory when using
a condensate drip tray for outdoor unit
on concrete base.
Base must be mounted under the
condensate drip tray.

6031 247

Notice

When ordering the concrete base sets
BSW01-FU or BSW01-FD, it is mandatory to
order as well a base for the outdoor unit.



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

A digital on/off board for (A4P/A7P) must be
ordered as well for an energetic control.

■ Part No.



Accessories

Part No.

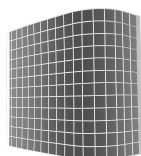
Protective roof for outdoor unit
for Belaria® SRM, compact SRM (4-8)
Aluminium powder-coated
Colour: silk grey RAL 7044
Can also be combined with wall
bracket for outdoor unit.

6040 215



Protective roof for outdoor unit
for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
Aluminium powder-coated
Colour: silk grey RAL 7044
Can also be combined with wall bracket
for outside unit.

6040 216



Protective grid for outdoor unit
for Belaria® SRM and compact SRM (4-8)
sturdy grid for protection
of the evaporator
Material: coated stainless
steel (RAL 7044)
Mounting on site

6031 613



Protective grid for outdoor unit
for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
sturdy grid for protection
of the evaporator
Material: coated stainless
steel (RAL 7044)
Mounting on site

6028 144



Protective grid for outdoor unit
for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
sturdy grid for protection
of the evaporator (on the front)
Material: coated stainless
steel (RAL 7044)
Mounting on site

6028 243



Wall console for outdoor unit
for Belaria® SRM and compact SRM (4-8)
for attachment of the unit to the wall
2 brackets made of steel sheet
incl. vibration dampers and
fixing material
Attention:
Cannot be used in this form
on insulated walls!
Not suitable for lightweight walls!

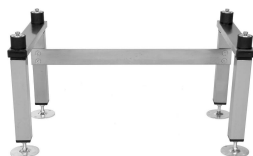
6031 530



Wall console for outdoor unit
for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
for fastening the unit onto the wall
2 stainless steel clamps
incl. vibration dampers
and fastening material
Caution:
Not to be used in this form
on insulated walls!
Not suitable for lightweight walls!

6040 353

■ Part No.



Stand bracket

for Belaria® SRM and compact SRM (4-8)
for mounting the unit on the floor
incl. vibration damper
Dimensions: 300 x 620 x 300 (L x W x H)
Weight: 6.5 kg

Part No.

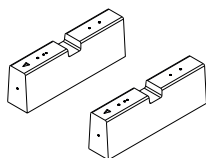
6040 354



Stand bracket

for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
for mounting the unit on the floor
incl. vibration damper
Dimensions (LxWxH): 300x660x400
Weight: 7.5 kg

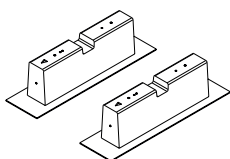
6040 355



Concrete base set BSW01-FU

to securely erect an outdoor unit
on solid ground.
Consisting of:
2 concrete bases with molded
fastening sleeves, screw set
Weight: 2 pieces of 58 kg

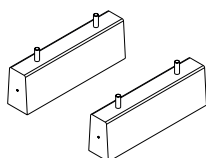
6046 157



Concrete base set BSW01-FD

to securely erect an outdoor unit
on flat roof.
Consisting of:
2 concrete bases with molded
fastening sleeves, protective mats
with aluminium facing, screw set
Weight: 2 pieces of 58 kg

6046 158



Concrete base set BSW01-ZS

to securely erect an
outdoor unit in drainage bed
for gardens and meadows.
Additional base height 250 mm for
plug combination with set BSW01-FU
Consisting of:
2 additional concrete bases,
screw set
Weight: 2 pieces of 58 kg

6046 159

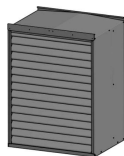


Vibration damper

for Belaria® SRM (4-16),
compact SRM (4-16) and SHM (11-16)
for installing the unit on
a concrete base (on site).
4 pieces incl. dowels HKD-S M8x30,
washers and nuts

6022 489

■ Part No.



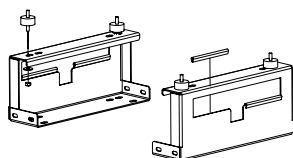
Accessories

Part No.

Acoustic insulation housing SDG01

6040 356

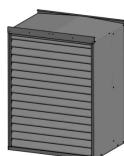
for Belaria® SRM (4-8) and
compact SRM (4-8)
for reducing the noise level
of the unit set up outdoors
Protects the unit against any
weather influences
Steel with aluminium zinc coating
Colour: grey (RAL 9006)
Dimensions: 1065 x 1200 x 900 (HxWxD)
Sound attenuation depending on
installation and ambient conditions
up to -6 dB(A)
Base set SDG01 must be
ordered as accessory



Base set SDG01

6042 937

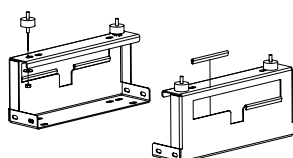
for sound attenuation housing SDG01
Overall height: 250 mm
Consisting of:
2 U-shaped brackets, coated
4 vibration dampers
Must be ordered as accessory
for use with sound
attenuation housing SDG01



Acoustic insulation housing SDG02

6040 357

for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
for reducing the noise level
of the unit set up outdoors
Protects the unit against any
weather influences
Steel with aluminium zinc coating
Colour: grey (RAL 9006)
Dimensions (HxWxD): 1610x1200x900
Sound attenuation depending on
installation and ambient conditions
up to -6 dB(A)
Base set SDG02 must be
ordered as accessory

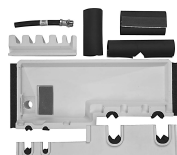


Base set SDG02

6042 938

for sound attenuation housing SDG02
Overall height: 190 mm
Consisting of:
2 U-shaped brackets, coated
4 vibration dampers
Must be ordered as accessory
for use with sound
attenuation housing SDG02

■ Part No.



Condensate drip tray KWD - SD housing

acoustig insulation housing for
Belaria® SRM (4-16), compact SRM (4-16)
and SHM (11-16)
for collection of the condensate
under the outdoor unit
in the acoustic insulation housing
SDG01 and SDG02
With drain port for hose connection
Without support heating strip

Insulation set (inside unit)

for Belaria® SRM (4-16)
Required to prevent the temperature
falling beneath the dewpoint in
cooling mode with flow temperatures
below +20 °C

Fan convectors FWT-CT

to Belaria® SRM and compact SRM (4-16)
Blower convector for heating and cooling for
wall installation. Spreads warmth or cold if in-
stalled in a heating system with heat pump.
Sound power level min. - max.
= 36 - 59 dB(A) Dimensions
FWT-CT (2-4): 288 x 800 x 206 (H x W x D)
FWT-CT (5,6): 310 x 1065 x 224 (H x W x D)
Colour white
Weight
FWT-CT (2-4): 9 kg
FWT-CT (5,6): 14 kg

Type	Heat output t-VL 50 °C W	Cooling capacity t-VL 7 °C W	Flow rate l/h	
FWT-CT (2)	2900	2290	420l/h	6040 205
FWT-CT (3)	3140	2460	460l/h	6040 206
FWT-CT (4)	3960	3080	570l/h	6040 207
FWT-CT (5)	5420	4250	780l/h	6040 208
FWT-CT (6)	6450	4690	910l/h	6040 209

Suitable motorised switching or through
valves see brochure "Accessories".

The minimum flow rate of the Belaria® SRM,
compact SRM must be observed during the
process of dimensioning.

Remote control FWT-CT
must be ordered separately.

Part No.

6040 344

6031 249

6040 205

6040 206

6040 207

6040 208

6040 209

■ Part No.



Accessories

Part No.

Remote control - FWT-CT
for Fan Coil FWT-CT (2-6)
with radio transmission
Operating mode selection
Display of operating states
Configurable day program
Temperature setting

6040 359



In-wall installation box - fan convector
for fan convectors FWT-CT (2-6)
for simplified piping installation
Pipe inlet on top or on side
Condensate connection available
on bottom left or right
Outside diameter 16 mm
Consisting of:
in-wall installation box and cover panel
Cardboard cover to protect against
dirt build-up during installation
4 fixing screws
Material: plastic
Colour: white
Dimensions: 85 x 520 x 65 (H x W x D)

2067 872



Connection set AS32-2/ H
for compact mounting
of all required fittings
of a direct circuit
consisting of:
2 thermometer ball valves
Wall bracket included separately
Connection T-piece DN32
in the return flow for connecting the
sludge separator CS 32 bottom and
the expansion tank on the side
on connection set
installation option
for an overflow valve
incl. non-return valve

6039 793

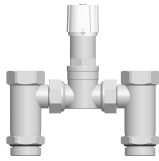


Connection set AS32-2/ HW
for compact mounting
of all required fittings
of a direct circuit and
hot water charging
Consisting of:
Fully assembled armature group
with 2 thermometer ball valves
Thermal insulation box made
of EPP half-shells
3-way motor valve 2-LR230A
included separately
Connection T-piece DN32
in the return flow for connecting the
sludge separator CS 32 bottom and
the expansion tank on the side
on connection set
installation option for an
overflow valve
incl. non-return valve

6039 794

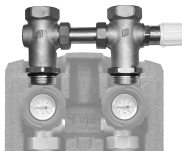
■ Part No.

Part No.



Bypass valve DN 25 (1")
for installation on a HA group DN 25
Pressure range 0.1 - 0.6 bar

6046 875



Bypass valve DN 32 (1 1/4")
for Belaria® SRM und compact SRM (11-16)
for the installation in a HA group DN 32
Setting range 0.6-1.5 bar
Max. flow rate: 1.5 m³/h
with self-sealing screw connection for
mounting between flow and return
ball valve

6014 849

Overflow valves must close completely
under the set pressure.



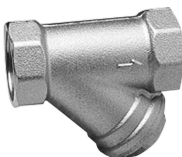
Sludge separator CS 25-1" with magnet
for flow rates of 1.0 - 2.0 m³/h
for flow speed of 1.0 m/s
Housing made of plastic PPA with
diffuser and partial flow removal
with 4 extra-strong Neodymium magnets
Magnets removable for draining
EPP insulation 20 mm
Connections made of brass G 1"
Drain made of brass: hose connection
Any inst. orientation -360° rotating
Temperature range -10 to 120 °C
Operating pressure max.: 10 bar
Glycol proportion max.: 50 %
Weight: 1.21 kg

2063 735



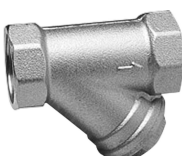
Sludge separator CS 32-1 1/4" with magnet
for flow rates of 2.0 - 3.0 m³/h
for flow speed of 1.0 m/s
Housing made of plastic PPA with
diffuser and partial flow removal
with 4 extra-strong Neodymium magnets
Magnets removable for draining
EPP insulation 20 mm
Connections made of brass G 1 1/4"
Drain made 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: 1.37 kg

2063 736



Strainer PN16 B50-25-1"
Casing brass, PN 16
Connections Rp 1"
Operating temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm

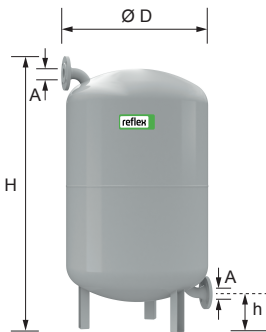
2046 978



Strainer PN16 B50-32-1 1/4"
Casing brass, PN 16
Connections Rp 1 1/4"
Operation temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm

2046 980

■ Part No.



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	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

6045 769
6045 770

Suitable motor drive

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

2070 331

Circulation pumps, actuators,
buffer storage tanks see separate brochures

Reflex V40

In-line vessel made of sheet steel,
Designed for operating overpressures up to 10 bar.

Reflex type	Ø D mm	H mm	h mm	A
V 40	409	562	113	R 1"

2057 249

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.

■ Technical data

Hoval Belaria® SRM (4-16)
Hoval Belaria® compact SRM (4-16)

Type		SRM (4)	SRM (6)	SRM (8)	SRM (11)	SRM (14)	SRM (16)
Performance data							
• Heat output A-7W35 ²	kW	4.60	5.43	6.40	8.80	11.70	12.10
• Output rating A-7W35 ²	COP	2.81	2.93	2.77	2.92	2.75	2.63
• Heat output A2W35 ²	kW	3.27	4.69	5.80	8.56	10.30	11.70
• Output rating A2W35 ²	COP	4.02	3.80	3.67	3.65	3.45	3.40
• Heat output A10W35 ²	kW	4.47	6.29	7.39	11.20	14.30	17.50
• Output rating A10W35 ²	COP	5.34	5.23	4.91	4.91	4.71	4.51
• Cooling capacity A35W18 ¹	kW	5.90	7.30	8.40	15.10	16.10	16.80
• Output rating A35W18 ¹	EER	3.16	3.20	2.92	3.39	3.01	2.77
• Cooling capacity A35W7 ¹	kW	4.50	5.50	6.40	11.70	12.60	13.10
• Output rating A35W7 ¹	EER	2.22	2.18	1.98	2.78	2.51	2.32
Dimensions							
• Outdoor unit H/W/D	mm	735/832/307			1345/900/320		
• Indoor unit H/W/D Belaria® SRM	mm	890/480/344					
• Indoor unit H/W/D Belaria® compact SRM	mm	1732/600/728					
Weights							
• Net weight of outdoor unit	kg	54	56	56	113	113	113
• Net weight of indoor unit Belaria® SRM	kg	44	48	48	48	48	48
• Net weight of indoor unit Belaria® compact SRM	kg	115	126	126	129	129	129
• Gross weight of outdoor unit	kg	57	59	59	128	128	128
• Gross weight of indoor unit Belaria® SRM	kg	47	51	51	51	51	51
• Gross weight of indoor unit Belaria® compact SRM	kg	128	140	140	142	142	142
• Compressor hermetically sealed, variable speed compressor							
• Refrigerant filling R 410A	kg	1.5	1.6	1.6	3.4	3.4	3.4
• Fan		axial, variable speed			2 x axial, variable speed		
• Evaporator		fins coated aluminium, tubes copper					
• Condenser type		Copper-soldered stainless steel plate heat exchanger					
• Condenser water content	litres	0.9	1.3	1.3	1.0	1.0	1.0
• Pipe connection flow/return	R	11/4"	11/4"	11/4"	11/4"	11/4"	11/4"
• Max. volume flow	m³/h	1.5	2.0	2.0	3.1	3.1	3.1
• Min. volume flow	m³/h	0.7	0.7	0.7	0.9	0.9	0.9
• Max. operat. press. on the heating side	bar	3.0	3.0	3.0	3.0	3.0	3.0
• Expansion tank volume	litres	10	10	10	10	10	10
• Total water content Belaria® SRM	litres	3	5	5	5	5	5
• Total water content Belaria® compact SRM	litres	4.4	5.8	5.8	5.5	5.5	5.5
• Calorifier / Belaria® compact SRM	litres	180	260	260	260	260	260
• Max. hot water temperature ³	°C	65	65	65	65	65	65
• Operating pressure/test pressure	bar	8/13	8/13	8/13	8/13	8/13	8/13
• Calorifier material		Stainless steel (EN 1.4521)					
• Thermal insulation material		EPS					
• Standby losses (EN 12897)	kWh/24 h	1.4	1.9	1.9	1.9	1.9	1.9
Connection, refrigerant line							
• Dimension of liquid line	Inches/mm	1/4 / 6.4	1/4 / 6.4	1/4 / 6.4	3/8 / 9.5	3/8 / 9.5	3/8 / 9.5
• Dimension of gas pipe	Inches/mm	5/8 / 15.9	5/8 / 15.9	5/8 / 15.9	5/8 / 15.9	5/8 / 15.9	5/8 / 15.9
• Max. length of refrigerant line	m	30	30	30	30	30	30
• Min. length of refrigerant line	m	3	3	3	3	3	3
• Max. height differ. outside/indoor unit		20	20	20	30	30	30
• See diagrams for areas of application for heating, hot water and cooling.							
Electrical data							
• Max. power consumption during heating operation							
• Heat pump	kW	2.4	2.6	3.3	4.8	6.2	7.1
• Emergency heating	kW	3	2 stage 3/9	2 stage 3/9	2 stage 3/9	2 stage 3/9	2 stage 3/9
Voltage							
• Compressor	V	230	230	230	3 x 400	3 x 400	3 x 400
• Fan	V	230	230	230	230	230	230
• Emergency heating	V	230		3 kW and 9 kW	3 x 400 volts		
• Frequency	Hz	50	50	50	50	50	50
• Voltage range		+/- 10 %	+/- 10 %	+/- 10 %	+/- 10 %	+/- 10 %	+/- 10 %
Operating current max.							
• Compressor	A	15	15	15	16	16	16
• Starting current	A	11	11	11	8	8	8
• Fuse	A	16T	16T	16T	16T	16T	16T

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

¹ Cooling capacity and EER at nominal load (EN 14511)

² Heat output and COP at nominal load (EN 14511)

³ with electric supplemental heating

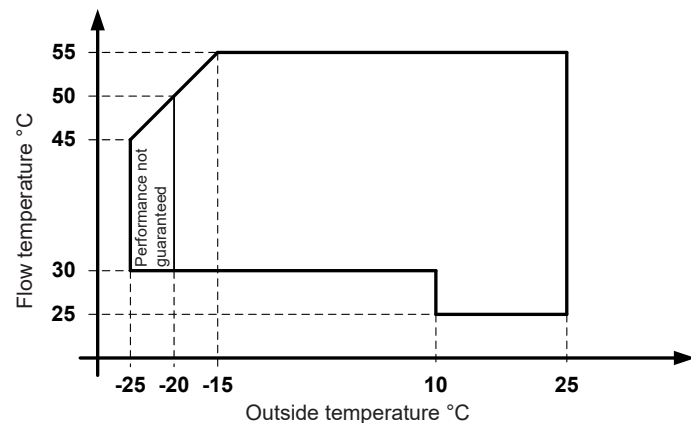
■ Technical data

Diagrams of areas of application

Heating

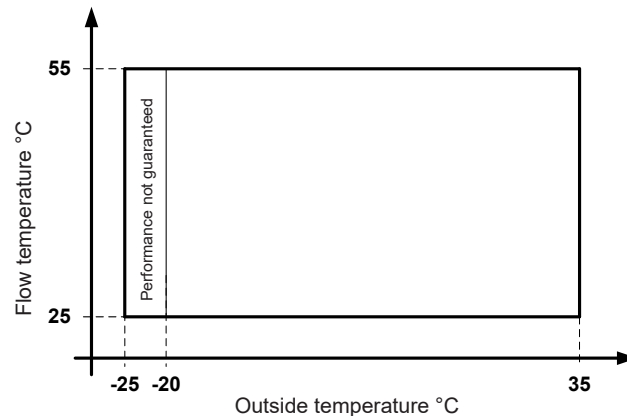
Belaria® SRM (4-8)

Belaria® compact SRM (4-8)



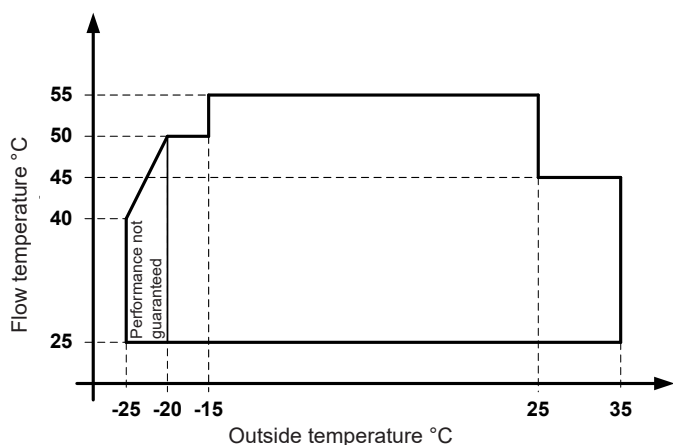
Belaria® SRM (11-16)

Belaria® compact SRM (11-16)

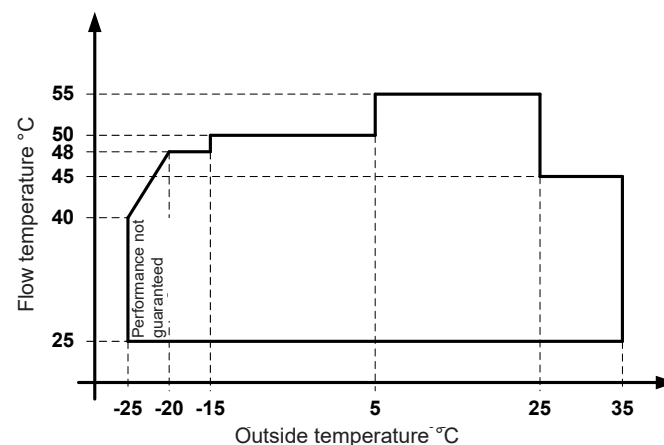


Hot water

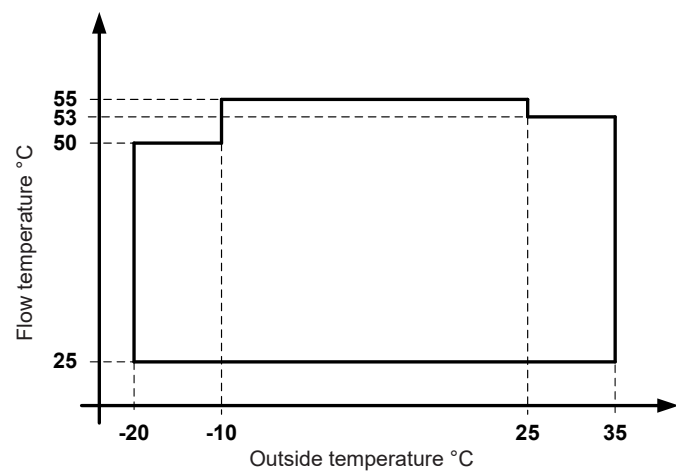
Belaria® SRM (4)



Belaria® SRM (6-8)

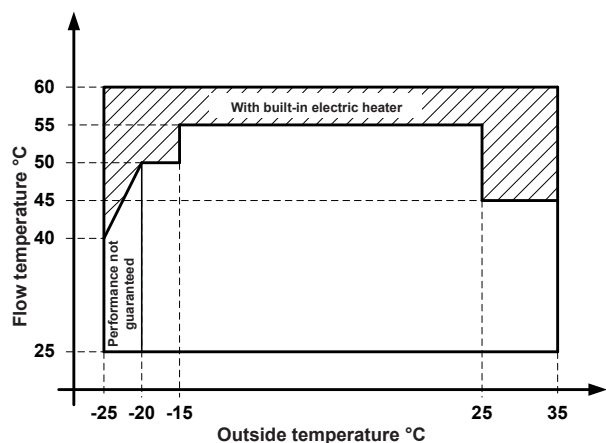


Belaria® SRM (11-16)

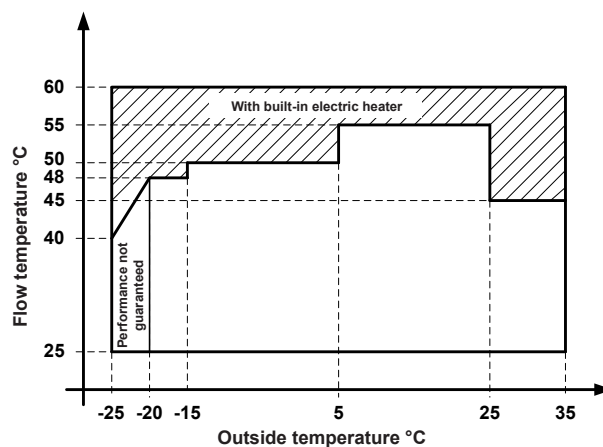


■ Technical data

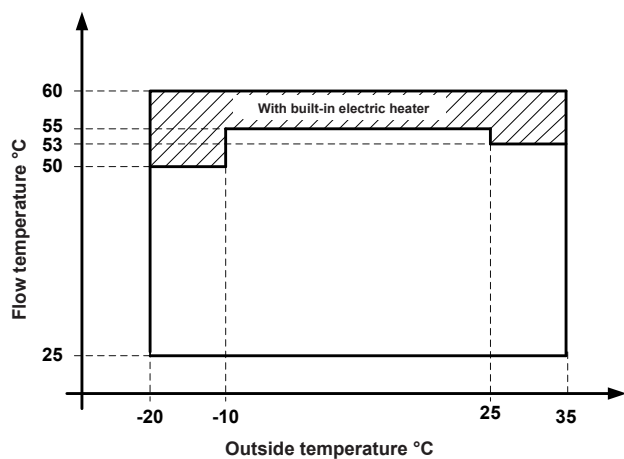
Belaria® compact SRM (4)



Belaria® compact SRM (6-8)

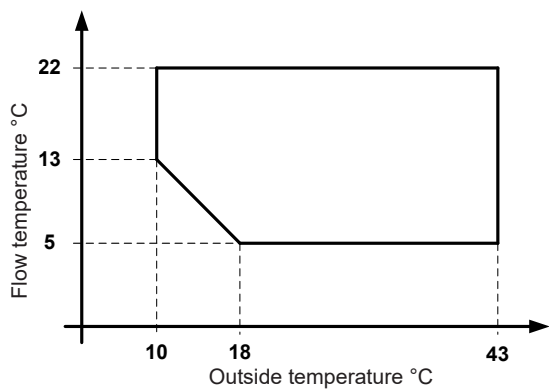


Belaria® compact SRM (11-16)

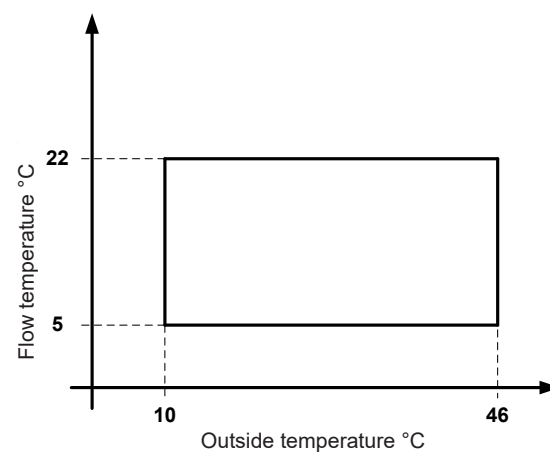


Cooling

Belaria® SRM (4-8)
Belaria® compact SRM (4-8)



Belaria® SRM (11-16)
Belaria® compact SRM (11-16)



■ Technical data

Hoval Belaria® SRM

Hoval Belaria® compact SRM

• Sound pressure level - sound power level³

The sound pressure levels indicated below apply if the outdoor unit is placed at a building facade. 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.

The **sound pressure level** is dependent on the **place of measurement** within a sound field and describes the sound intensity at this point. In contrast, the **sound power level** is a characteristic of the **sound source** and therefore does not change with distance; it describes the totality of sound power of the relevant source radiated in all directions.

Structure-borne sound

The indoor unit must be attached to the wall with a sound insulation dowel with collar. The bases and consoles for the outdoor unit must be erected/installed with vibration-damping against the structural shell.

Belaria® SRM		(4)	(6)	(8)	(11)	(14)	(16)
<i>Outdoor unit</i>							
• Sound power level in heating operation ^{2,3}	dB(A)	57	58	58	58	58	60
• Sound pressure level in heating operation at 5 m ^{1,2,3}	dB(A)	38	39	39	39	39	41
• Sound pressure level in heating operation at 10 m ^{1,2,3}	dB(A)	32	33	33	33	33	35
<i>Indoor unit</i>							
• Sound pressure level at 1 m	dB(A)	28	28	28	33	33	33

¹ The sound pressure levels indicated apply if the outdoor unit is placed at a building facade. 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.

² The sound levels apply in whisper mode. The values are increased at full load by + 4 dB(A) for Belaria® SRM (4-8) and by 6 dB(A) for the Belaria® SRM (11-16).

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

Pressure expansion tank

The indoor unit is equipped with an expansion tank (flat shape) with a volume of 10 l, pre-pressure 1 bar

		Factory setting						
Pre-pressure ¹	bar	0.5	0.8	1.0	1.2	1.5	1.8	2.1
Capacity	l	5.5	4.5	4.0	3.5	2.5	2.0	0.7
Maximum possible system height Hp ²	m	2	5	7	9	12	15	18

¹ Pre-pressure = system height + 0.3 bar. The pre-pressure should be adjusted to the system height.

² System pressure Hp = hydrostatic pressure of the system, i.e. height from the centre of the tank to the highest air-bleeding point of the system.

$$V_n = V_A \times f \times X \text{ (litres)}$$

V_n = expansion volume (litres)

V_A = system content at + 10 °C

f = thermal expansion factor (45°), $f = 0.01$

X = add-on factor, $X = 3$

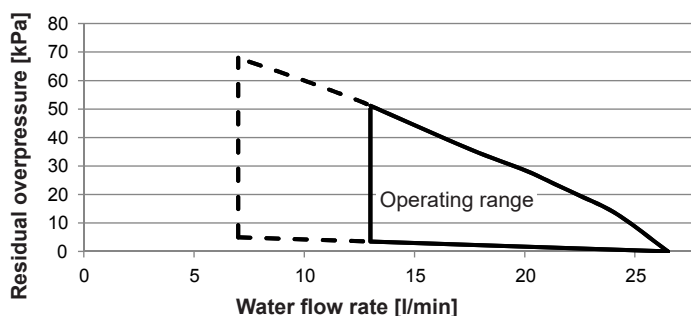
	System	V_A	V_n
System content (underfloor heating system)	5 kW	120 l	3.6 l expansion quantity
	6 kW	140 l	4.2 l expansion quantity
	7 kW	160 l	4.8 l expansion quantity
	8 kW	180 l	5.4 l expansion quantity
	9 kW	200 l	6.0 l expansion quantity

If the capacity of the installed expansion tank is not sufficient, an additional tank must be installed outside the unit.

■ Technical data

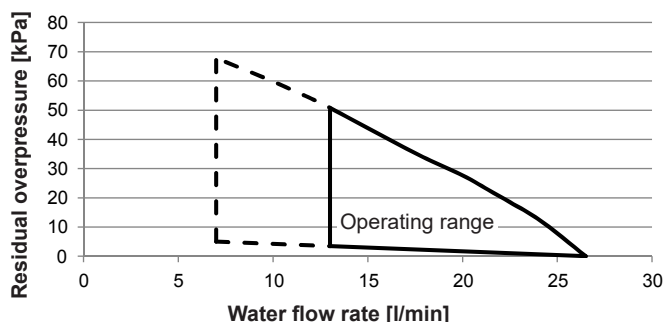
Pump characteristic curves Belaria® SRM (4-16)

Belaria® SRM (4)

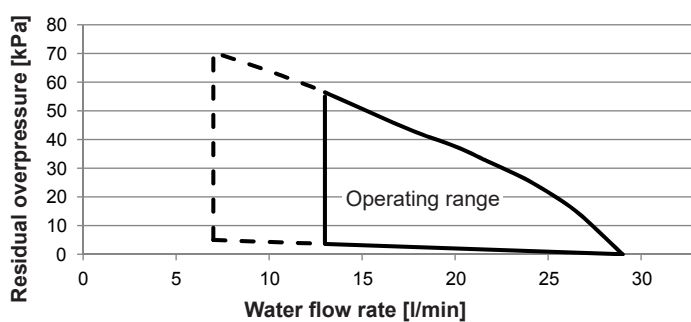


Pump characteristic curves Belaria® compact SRM (4-16)

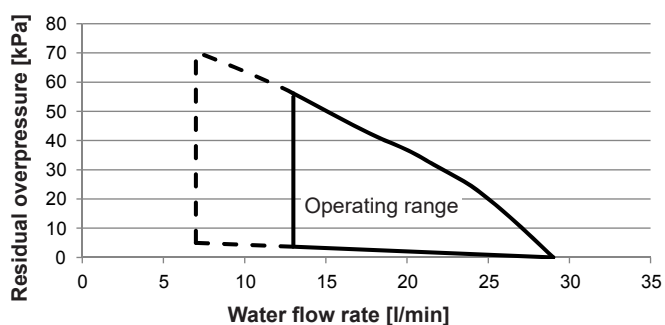
Belaria® compact SRM (4)



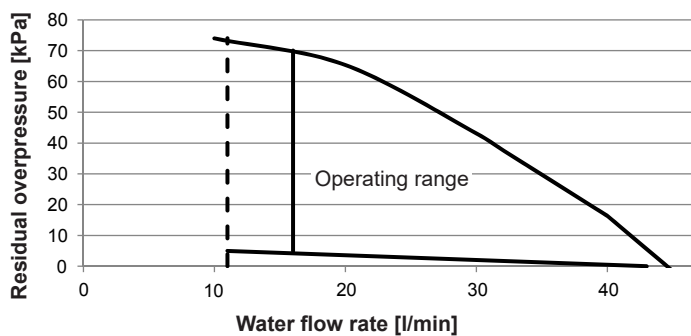
Belaria® SRM (6,8)



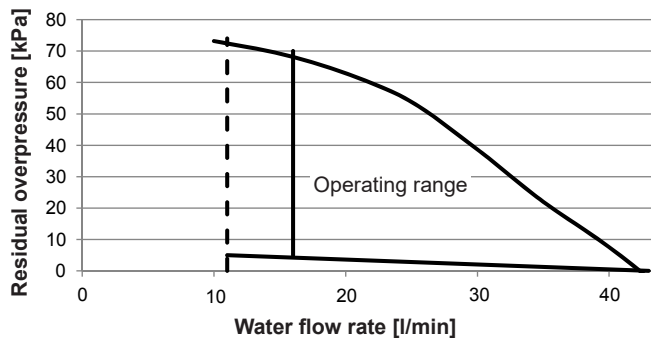
Belaria® compact SRM (6,8)



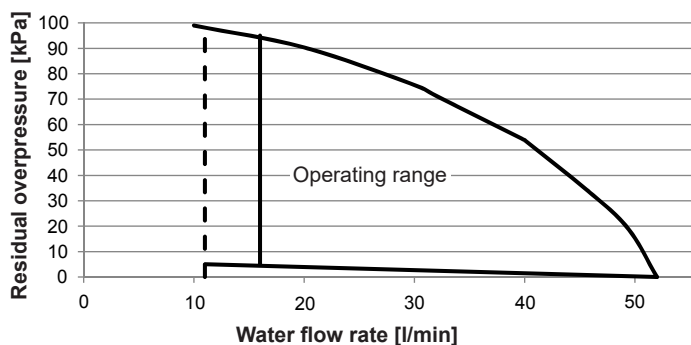
Belaria® SRM (11)



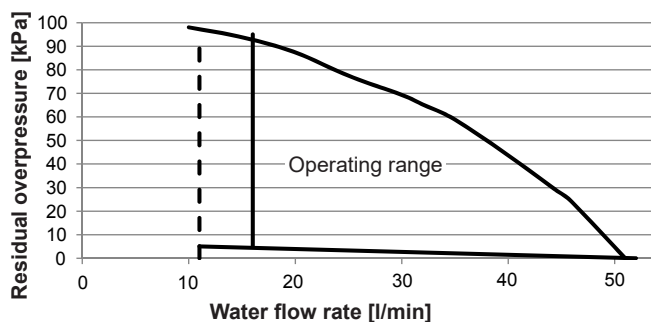
Belaria® compact SRM (11)



Belaria® SRM (14,16)



Belaria® compact SRM (14,16)



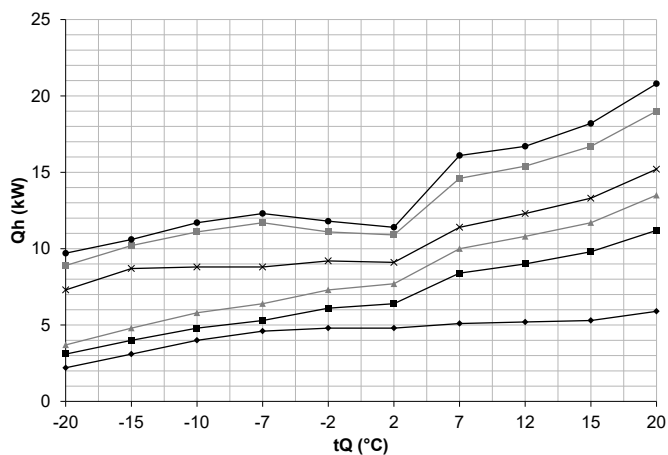
■ Technical data

Performance data - heating

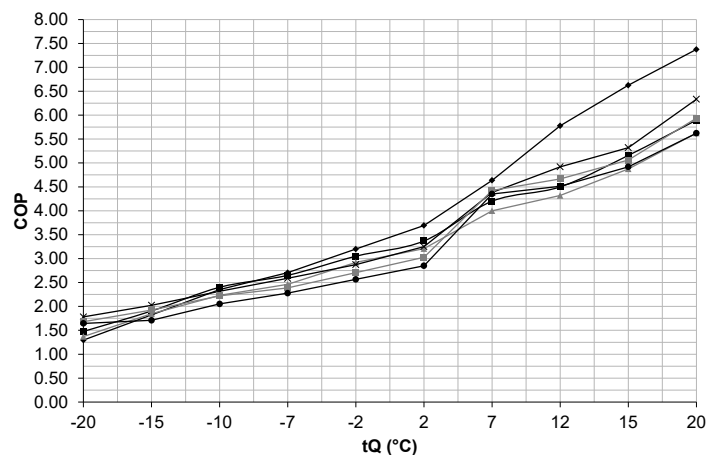
Maximum heat output allowing for defrosting losses

Hoval Belaria® SRM (4-16), Belaria® compact SRM (4-16)

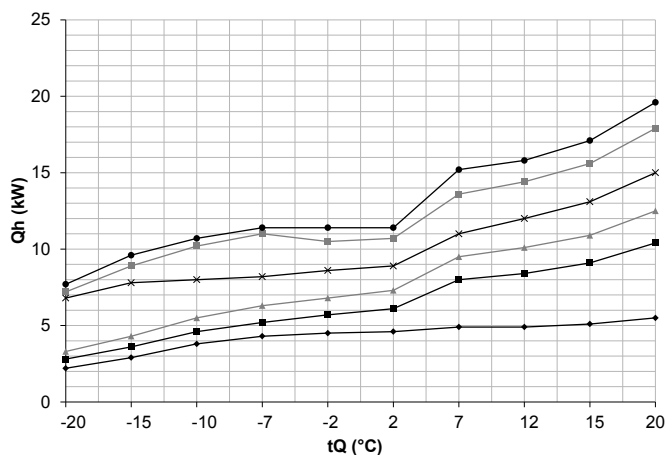
Heat output - t_{VL} 35 °C



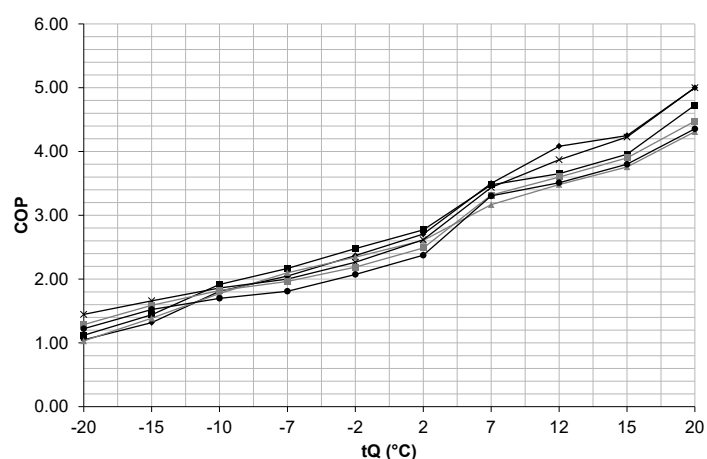
Output rating - t_{VL} 35 °C



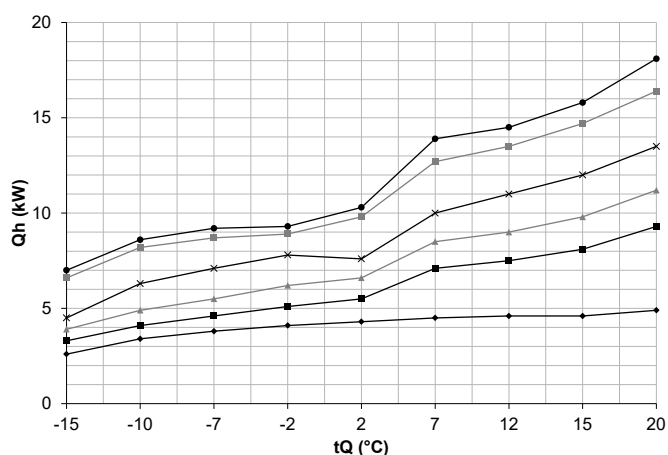
Heat output - t_{VL} 45 °C



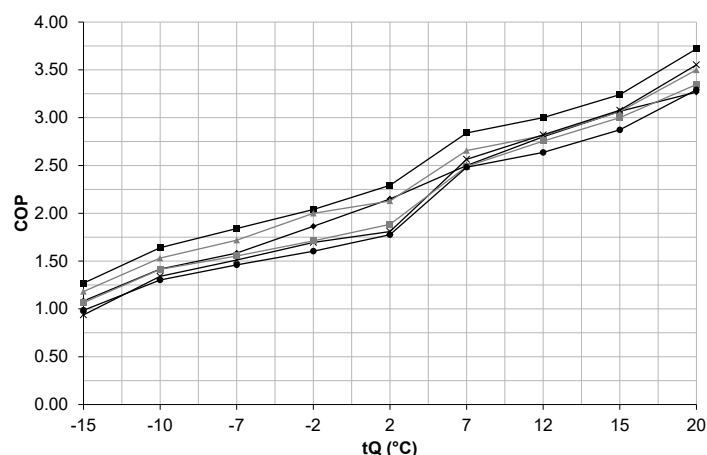
Output rating - t_{VL} 45 °C



Heat output - t_{VL} 55 °C



Output rating - t_{VL} 55 °C



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® SRM (4)
- Belaria® SRM (6)
- ▲ Belaria® SRM (8)
- × Belaria® SRM (11)
- ▣ Belaria® SRM (14)
- Belaria® SRM (16)

■ Technical data

Performance data - heating

Hoval Belaria® SRM (4-16), Belaria® compact SRM (4-16)

Indications acc. to EN14511

Type	tQ °C	Qh kW	(4) P kW	COP	Qh kW	(6) P kW	COP	Qh kW	(8) P kW	COP	Qh kW	(11) P kW	COP	Qh kW	(14) P kW	COP	Qh kW	(16) P kW	COP
30	-20	2.3	1.5	1.48	3.2	1.9	1.67	3.8	2.4	1.57	7.3	3.7	1.98	9.0	4.9	1.82	9.6	5.6	1.71
	-15	3.3	1.5	2.16	4.1	1.9	2.22	5.0	2.4	2.08	8.8	3.9	2.25	10.3	5.0	2.08	10.6	5.8	1.84
	-10	4.2	1.5	2.73	5.0	1.8	2.72	6.0	2.3	2.55	9.0	3.4	2.63	11.3	4.7	2.44	11.8	5.3	2.25
	-7	4.7	1.5	3.07	5.5	1.8	3.03	6.6	2.3	2.84	9.1	3.1	2.91	11.9	4.5	2.68	12.6	5.0	2.53
	-2	4.8	1.4	3.56	6.2	1.8	3.44	7.4	2.3	3.24	9.6	2.9	3.29	11.4	3.7	3.06	12.1	4.2	2.86
	2	4.9	1.2	4.12	6.6	1.8	3.74	7.9	2.3	3.51	9.5	2.6	3.71	11.2	3.3	3.46	11.7	3.7	3.21
	7	5.3	1.0	5.30	8.5	1.8	4.61	10.2	2.4	4.33	11.9	2.3	5.21	15.1	3.1	4.92	16.6	3.5	4.81
	12	5.3	0.8	6.87	9.2	1.8	5.05	11.0	2.3	4.76	12.9	2.2	5.82	16.0	3.0	5.38	17.3	3.4	5.16
	15	5.5	0.8	7.20	10.0	1.8	5.60	12.0	2.3	5.28	14.0	2.2	6.36	17.3	3.0	5.85	18.8	3.4	5.60
	20	6.0	0.7	8.14	11.5	1.8	6.54	13.8	2.3	6.14	15.9	2.1	7.43	19.8	2.9	6.75	21.5	3.3	6.43
35	-20	2.2	1.7	1.29	3.1	2.1	1.47	3.7	2.7	1.38	7.3	4.1	1.80	8.9	5.3	1.70	9.7	5.9	1.64
	-15	3.1	1.7	1.80	4.0	2.1	1.94	4.8	2.6	1.82	8.7	4.3	2.03	10.2	5.3	1.91	10.6	6.2	1.71
	-10	4.0	1.7	2.36	4.8	2.0	2.37	5.8	2.6	2.23	8.8	3.8	2.34	11.1	5.0	2.20	11.7	5.7	2.04
	-7	4.6	1.7	2.81	5.3	2.0	2.64	6.4	2.6	2.48	8.8	3.4	2.57	11.7	4.9	2.40	12.3	5.4	2.28
	-2	4.8	1.5	3.13	6.1	2.0	3.10	7.3	2.5	2.92	9.2	3.2	2.88	11.1	4.1	2.72	11.8	4.6	2.55
	2	4.8	1.3	3.59	6.4	1.9	3.37	7.7	2.4	3.17	9.1	2.8	3.20	10.9	3.6	3.05	11.4	4.0	2.85
	7	5.1	1.1	4.57	8.4	2.0	4.20	10.0	2.5	3.94	11.4	2.6	4.46	14.6	3.3	4.36	16.1	3.7	4.30
	12	5.2	0.9	6.05	9.0	2.0	4.60	10.8	2.5	4.32	12.3	2.5	4.98	15.4	3.3	4.70	16.7	3.7	4.54
	15	5.3	0.8	6.53	9.8	1.9	5.12	11.7	2.4	4.80	13.3	2.5	5.44	16.7	3.3	5.11	18.2	3.7	4.92
	20	5.9	0.8	7.22	11.2	1.9	5.99	13.5	2.4	5.66	15.2	2.4	6.33	19.0	3.2	5.88	20.8	3.7	5.64
40	-20	2.2	1.9	1.15	2.9	2.4	1.24	3.5	3.0	1.16	7.3	4.5	1.63	8.8	5.6	1.57	9.6	6.3	1.52
	-15	3.2	1.9	1.67	3.8	2.3	1.64	4.5	2.9	1.54	8.5	4.7	1.82	9.7	5.6	1.75	9.9	6.2	1.59
	-10	4.0	1.9	2.12	4.7	2.3	2.10	5.7	2.9	1.98	8.5	4.1	2.07	10.8	5.4	1.99	11.2	6.0	1.87
	-7	4.5	1.9	2.40	5.3	2.2	2.38	6.4	2.8	2.24	8.5	3.8	2.26	11.4	5.3	2.14	12.0	5.9	2.05
	-2	4.6	1.7	2.71	6.0	2.1	2.82	7.3	2.7	2.66	8.8	3.5	2.51	10.8	4.5	2.41	11.5	5.1	2.27
	2	4.7	1.5	3.05	6.2	2.1	3.00	7.4	2.6	2.83	8.6	3.1	2.75	10.5	3.9	2.69	11.1	4.4	2.52
	7	5.0	1.3	3.82	8.2	2.2	3.80	9.8	2.7	3.58	11.2	2.8	3.95	13.9	3.7	3.74	15.5	4.2	3.71
	12	5.1	1.0	5.00	8.7	2.1	4.14	10.5	2.7	3.88	12.2	2.8	4.42	14.7	3.6	4.07	16.1	4.1	3.97
	15	5.2	1.0	5.27	9.5	2.1	4.55	11.4	2.7	4.27	13.2	2.7	4.83	16.0	3.6	4.43	17.5	4.1	4.30
	20	5.7	1.0	5.97	10.9	2.1	5.29	13.0	2.6	4.97	15.1	2.7	5.60	18.3	3.6	5.10	20.0	4.1	4.94
45	-20	2.2	2.1	1.01	2.8	2.5	1.10	3.3	3.2	1.03	6.8	4.7	1.44	7.2	5.6	1.28	7.7	6.3	1.22
	-15	2.9	2.2	1.36	3.6	2.5	1.47	4.3	3.1	1.39	7.8	4.7	1.67	8.9	5.6	1.60	9.6	6.3	1.53
	-10	3.8	2.1	1.81	4.6	2.4	1.91	5.5	3.1	1.80	8.0	4.3	1.87	10.2	5.6	1.83	10.7	6.3	1.71
	-7	4.3	2.1	2.10	5.2	2.4	2.19	6.3	3.0	2.06	8.2	4.1	2.01	11.0	5.6	1.97	11.4	6.3	1.82
	-2	4.5	1.9	2.41	5.7	2.3	2.50	6.8	2.9	2.34	8.6	3.8	2.25	10.5	4.8	2.17	11.4	5.5	2.06
	2	4.6	1.7	2.71	6.1	2.2	2.77	7.3	2.8	2.61	8.9	3.4	2.58	10.7	4.3	2.45	11.4	4.8	2.39
	7	4.9	1.4	3.40	8.0	2.3	3.43	9.5	3.0	3.22	11.0	3.2	3.48	13.6	4.1	3.29	15.2	4.6	3.29
	12	4.9	1.2	4.06	8.4	2.3	3.66	10.1	2.9	3.44	12.0	3.1	3.89	14.4	4.0	3.59	15.8	4.5	3.51
	15	5.1	1.2	4.22	9.1	2.3	4.03	10.9	2.9	3.78	13.1	3.1	4.24	15.6	4.0	3.90	17.1	4.5	3.81
	20	5.5	1.1	4.88	10.4	2.2	4.66	12.5	2.9	4.39	15.0	3.0	4.93	17.9	4.0	4.48	19.6	4.5	4.35
50	-20	2.1	2.3	0.89	2.7	2.6	1.05	3.3	3.2	1.02	-	-	-	-	-	-	-	-	-
	-15	2.9	2.3	1.22	3.5	2.5	1.40	4.2	3.2	1.32	6.9	4.7	1.47	8.2	5.6	1.47	8.8	6.3	1.40
	-10	3.6	2.3	1.57	4.5	2.5	1.80	5.3	3.2	1.69	7.6	4.6	1.64	9.2	5.6	1.65	9.7	6.3	1.55
	-7	4.1	2.3	1.78	5.0	2.5	2.04	6.0	3.1	1.91	8.0	4.6	1.74	9.8	5.6	1.75	10.3	6.3	1.63
	-2	4.3	2.1	2.03	5.6	2.4	2.35	6.7	3.0	2.22	8.6	4.3	2.00	10.2	5.2	1.95	10.4	5.8	1.81
	2	4.4	1.9	2.29	6.0	2.3	2.61	7.2	2.9	2.45	8.4	3.8	2.21	10.3	4.7	2.19	11.0	5.4	2.04
	7	4.7	1.7	2.83	7.5	2.4	3.14	9.0	3.1	2.94	10.7	3.5	3.03	13.4	4.6	2.93	14.5	5.1	2.86
	12	4.7	1.5	3.22	8.0	2.4	3.35	9.6	3.1	3.15	11.7	3.5	3.38	14.2	4.4	3.19	15.1	5.0	3.05
	15	4.8	1.4	3.47	8.7	2.4	3.65	10.4	3.0	3.43	12.7	3.5	3.69	15.4	4.5	3.46	16.4	5.0	3.31
	20	5.2	1.3	3.92	9.9	2.4	4.19	11.9	3.0	3.94	14.2	3.4	4.16	17.2	4.4	3.87	18.8	5.0	3.78
55	-15	2.6	2.4	1.08	3.3	2.6	1.28	3.9	3.3	1.20	4.5	4.8	0.94	6.6	6.2	1.06	7.0	7.1	0.98
	-10	3.4	2.4	1.39	4.1	2.5	1.61	4.9	3.2	1.52	6.3	4.7	1.34	8.2	5.8	1.41	8.6	6.6	1.31
	-7	3.8	2.4	1.58	4.6	2.5	1.82	5.5	3.2	1.71	7.1	4.7	1.52	8.7	5.6	1.56	9.2	6.3	1.46
	-2	4.1	2.2	1.85	5.1	2.5	2.09	6.2	3.1	1.96	7.8	4.6	1.70	8.9	5.2	1.70	9.3	5.8	1.62
	2	4.3	2.0	2.11	5.5	2.4	2.29	6.6	3.1	2.15	7.6	4.2	1.81	9.8	5.2	1.90	10.3	5.8	1.78
	7	4.5	1.8	2.58	7.1	2.5	2.85	8.5	3.2	2.69	10.0	3.9	2.54	12.7	5.1	2.52	13.9	5.6	2.48
	12	4.6	1.5	3.01	7.5	2.5	3.04	9.0	3.2	2.87	11.0	3.9	2.84	13.5	4.9	2.75	14.5	5.5	2.64
	15	4.6	1.5	3.13	8.1	2.5	3.30	9.8	3.2	3.10	12.0	3.9	3.11	14.7	4.9	2.99	15.8	5.5	2.86
	20	4.9	1.5	3.37	9.3	2.5	3.77	11.2	3.2	3.55	13.5	3.8	3.51	16.4	4.9	3.33	18.1	5.5	3.27

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)

incl. high-efficiency pump, measured in accordance with EN 14511

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

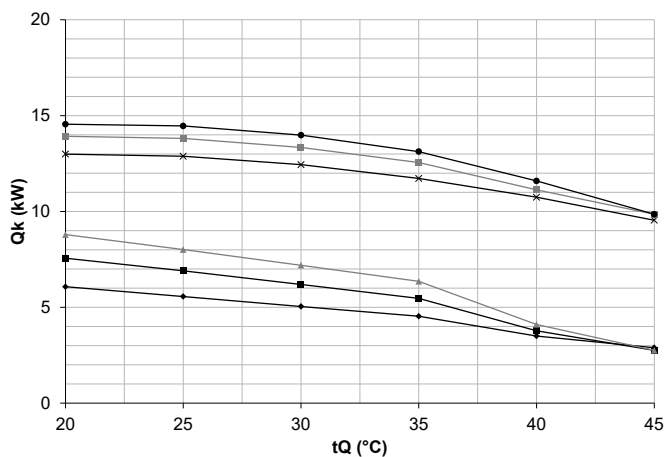
■ Technical data

Performance data - cooling

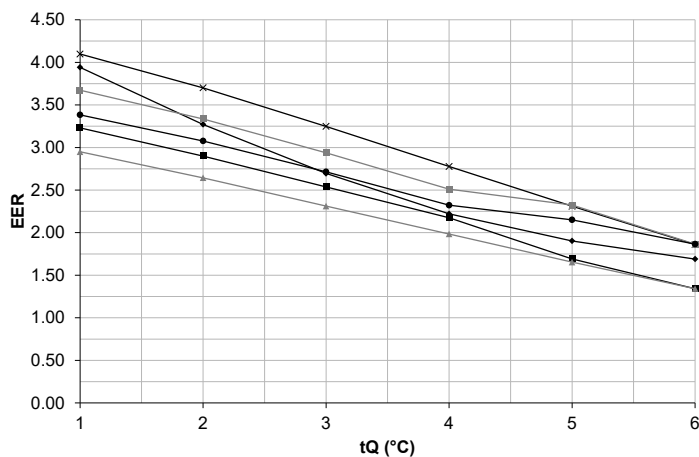
Maximum cooling capacity

Hoval Belaria® SRM (4-16), Belaria® compact SRM (4-16)

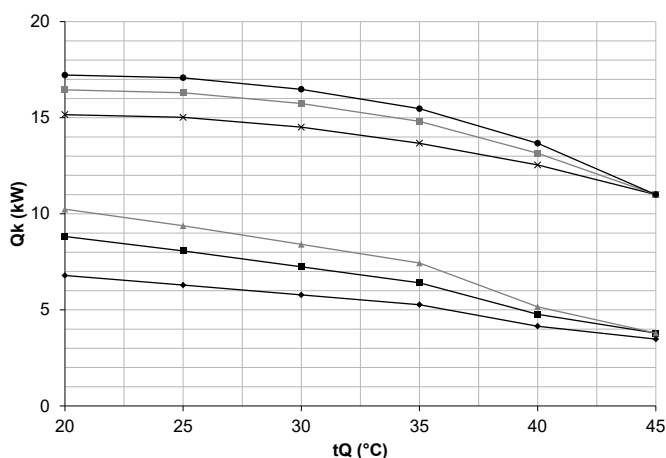
Cooling capacity - t_{VL} 7 °C



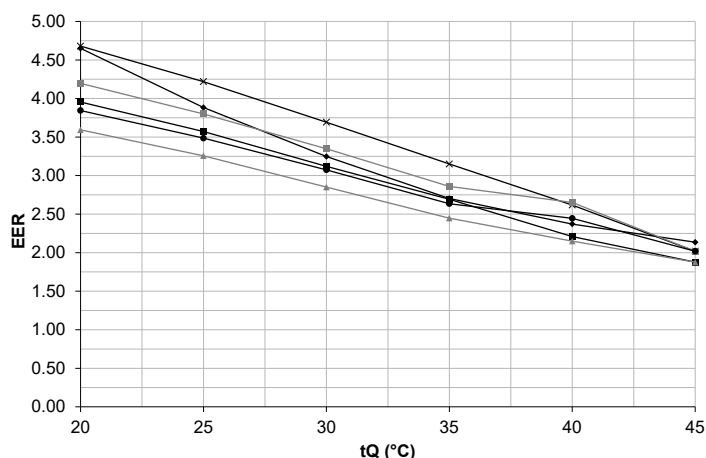
Output rating - t_{VL} 7 °C



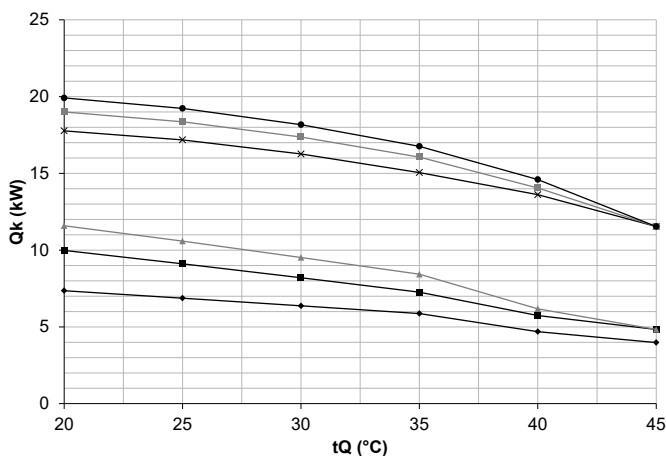
Cooling capacity - t_{VL} 13 °C



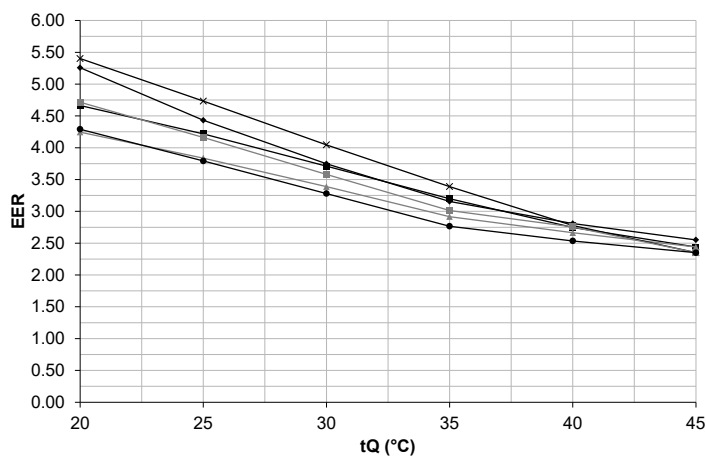
Output rating - t_{VL} 13 °C



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

- ◆ Belaria® SRM (4)
- Belaria® SRM (6)
- ▲ Belaria® SRM (8)
- × Belaria® SRM (11)
- Belaria® SRM (14)
- Belaria® SRM (16)

■ Technical data

Performance data - cooling

Hoval Belaria® SRM (4-16), Belaria® compact SRM (4-16)

Indications acc. to EN14511

Type	tQ	Qk	(4) P	EER	Qk	(6) P	EER	Qk	(8) P	EER	Qk	(11) P	EER	Qk	(14) P	EER	Qk	(16) P	EER
tVL	°C	kW	kW		kW	kW		kW	kW		kW	kW		kW	kW		kW	kW	
7	20	6.1	1.5	3.94	7.6	2.3	3.23	8.8	3.0	2.95	13.0	3.2	4.10	13.9	3.8	3.67	14.6	4.3	3.38
	25	5.6	1.7	3.27	6.9	2.4	2.90	8.0	3.0	2.64	12.9	3.5	3.70	13.8	4.1	3.34	14.5	4.7	3.08
	30	5.0	1.9	2.70	6.2	2.4	2.54	7.2	3.1	2.31	12.4	3.8	3.25	13.3	4.5	2.94	14.0	5.2	2.71
	35	4.5	2.0	2.22	5.5	2.5	2.18	6.4	3.2	1.98	11.7	4.2	2.78	12.6	5.0	2.51	13.1	5.7	2.32
	40	3.5	1.8	1.90	3.8	2.2	1.69	4.1	2.5	1.65	10.7	4.7	2.31	11.1	4.8	2.32	11.6	5.4	2.15
	45	2.9	1.7	1.69	2.8	2.1	1.34	2.8	2.1	1.34	9.5	5.1	1.86	9.9	5.3	1.87	9.9	5.3	1.87
10	20	6.5	1.5	4.30	8.2	2.3	3.57	9.5	2.9	3.26	13.8	3.2	4.31	14.9	3.9	3.88	15.7	4.4	3.57
	25	5.9	1.7	3.58	7.5	2.3	3.22	8.7	3.0	2.93	13.7	3.5	3.88	14.9	4.2	3.53	15.6	4.8	3.24
	30	5.4	1.8	2.96	6.7	2.4	2.82	7.8	3.0	2.57	13.2	3.9	3.40	14.3	4.6	3.10	15.0	5.3	2.86
	35	4.9	2.0	2.46	5.9	2.5	2.42	6.9	3.1	2.21	12.4	4.3	2.91	13.5	5.1	2.65	14.1	5.8	2.45
	40	3.8	1.8	2.13	4.3	2.2	1.94	4.6	2.4	1.89	11.4	4.7	2.42	12.0	4.9	2.46	12.5	5.5	2.27
	45	3.2	1.7	1.90	3.2	2.0	1.59	3.2	2.0	1.59	10.1	5.2	1.95	10.6	5.4	1.98	10.6	5.4	1.98
13	20	6.8	1.5	4.65	8.8	2.2	3.96	10.2	2.9	3.59	15.2	3.2	4.68	16.5	3.9	4.20	17.2	4.5	3.84
	25	6.3	1.6	3.88	8.1	2.3	3.57	9.4	2.9	3.26	15.0	3.6	4.22	16.3	4.3	3.80	17.1	4.9	3.49
	30	5.8	1.8	3.25	7.2	2.3	3.12	8.4	3.0	2.85	14.5	3.9	3.69	15.7	4.7	3.35	16.5	5.4	3.07
	35	5.3	2.0	2.70	6.4	2.4	2.69	7.4	3.0	2.45	13.7	4.3	3.15	14.8	5.2	2.86	15.5	5.9	2.64
	40	4.2	1.8	2.37	4.8	2.2	2.21	5.2	2.4	2.15	12.5	4.8	2.62	13.2	5.0	2.65	13.7	5.6	2.45
	45	3.5	1.6	2.13	3.8	2.0	1.88	3.8	2.0	1.88	11.0	5.5	2.02	11.0	5.5	2.02	11.0	5.5	2.02
15	20	7.0	1.4	4.87	9.3	2.2	4.20	10.8	2.8	3.84	16.1	3.3	4.94	17.5	4.0	4.41	18.3	4.5	4.03
	25	6.5	1.6	4.10	8.5	2.2	3.82	9.9	2.8	3.48	16.0	3.6	4.44	17.3	4.3	3.99	18.1	5.0	3.65
	30	6.0	1.8	3.43	7.6	2.3	3.35	8.8	2.9	3.05	15.4	4.0	3.89	16.7	4.8	3.51	17.5	5.4	3.22
	35	5.5	1.9	2.88	6.7	2.3	2.88	7.8	3.0	2.63	14.5	4.4	3.32	15.7	5.2	3.00	16.4	6.0	2.76
	40	4.4	1.7	2.53	5.1	2.1	2.41	5.6	2.4	2.34	13.3	4.8	2.76	14.0	5.0	2.78	14.5	5.7	2.57
	45	3.7	1.6	2.29	4.2	2.0	2.09	4.2	2.0	2.09	11.4	5.3	2.14	11.4	5.3	2.14	11.4	5.3	2.14
18	20	7.4	1.4	5.26	10.0	2.1	4.66	11.6	2.7	4.25	17.8	3.3	5.40	19.0	4.0	4.71	19.9	4.6	4.29
	25	6.9	1.6	4.43	9.1	2.2	4.22	10.6	2.8	3.84	17.2	3.6	4.73	18.4	4.4	4.16	19.2	5.1	3.79
	30	6.4	1.7	3.75	8.2	2.2	3.71	9.5	2.8	3.39	16.3	4.0	4.04	17.4	4.9	3.58	18.2	5.5	3.28
	35	5.9	1.9	3.16	7.3	2.3	3.20	8.4	2.9	2.92	15.1	4.4	3.39	16.1	5.3	3.01	16.8	6.1	2.77
	40	4.7	1.7	2.81	5.7	2.1	2.75	6.2	2.3	2.66	13.6	4.9	2.78	14.1	5.1	2.75	14.6	5.8	2.53
	45	4.0	1.6	2.55	4.8	2.0	2.44	4.8	2.0	2.44	11.5	4.9	2.35	11.5	4.9	2.35	11.5	4.9	2.35
22	20	8.0	1.3	5.96	11.0	2.1	5.32	12.8	2.6	4.85	19.8	3.3	5.93	21.2	4.1	5.14	22.2	4.8	4.65
	25	7.5	1.5	5.05	10.1	2.1	4.87	11.8	2.7	4.44	19.2	3.7	5.20	20.5	4.5	4.52	21.4	5.2	4.11
	30	7.0	1.6	4.26	9.1	2.1	4.27	10.5	2.7	3.90	18.2	4.1	4.44	19.4	5.0	3.90	20.3	5.7	3.55
	35	6.5	1.8	3.65	8.0	2.2	3.70	9.3	2.8	3.36	16.8	4.5	3.72	17.9	5.5	3.28	18.7	6.2	3.00
	40	5.2	1.6	3.27	6.7	2.0	3.28	7.1	2.3	3.16	15.2	5.0	3.05	15.7	5.2	3.01	16.3	5.9	2.76
	45	4.5	1.5	3.00	5.8	2.0	2.99	5.8	2.0	2.99	12.1	4.4	2.76	12.1	4.4	2.76	12.1	4.4	2.76

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) incl. high-efficiency pump,
measured in accordance with EN 14511

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

Take account of daily power cuts!
see Engineering

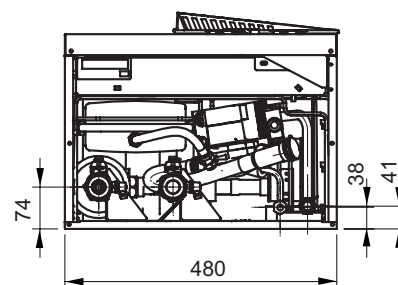
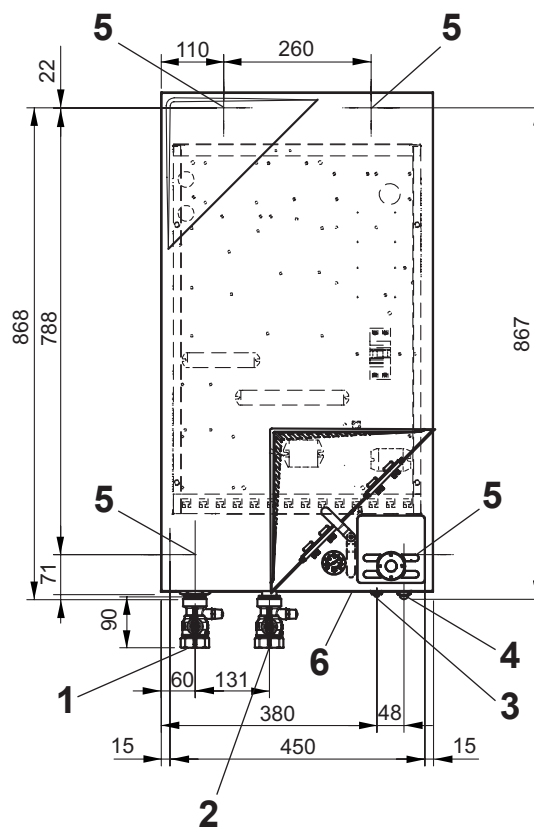
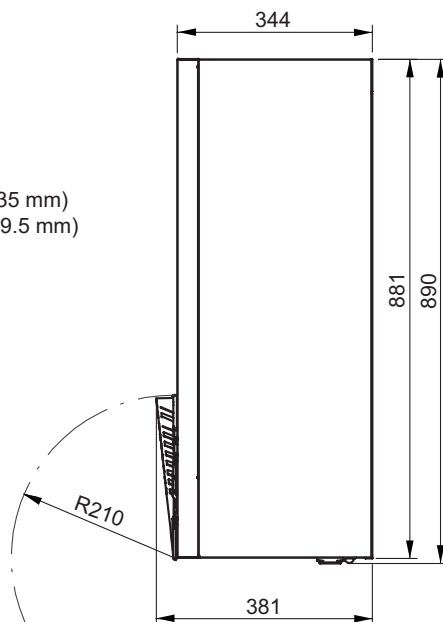
■ Dimensions

Hoval Belaria® SRM (4-16)

Indoor unit

(dimensions in mm)

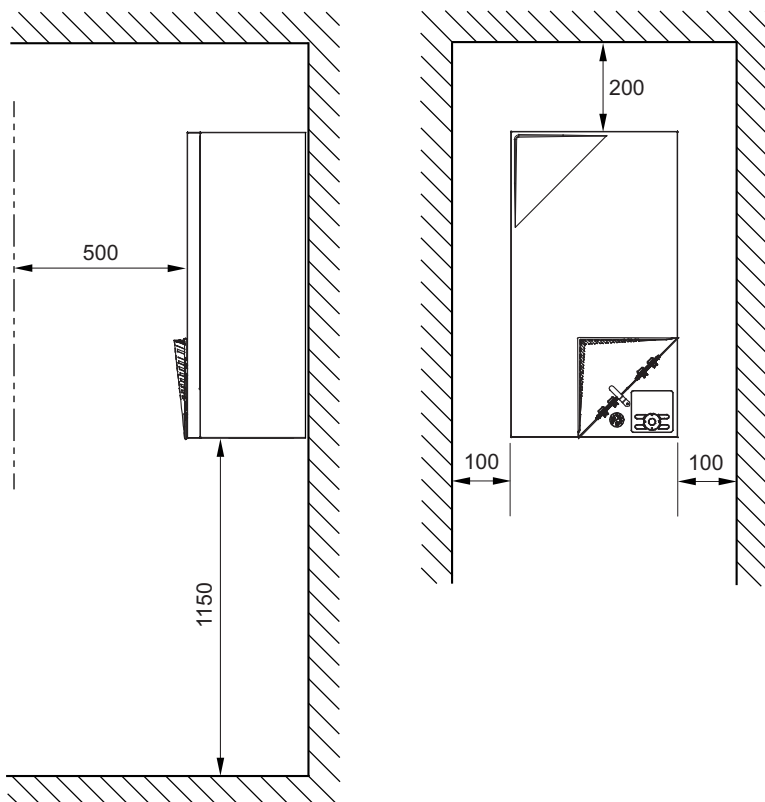
- 1 Heating flow Rp 1 1/4"
- 2 Heating return Rp 1 1/4"
- 3 Liquid line
Belaria® SRM (4-8) 1/4" (6.35 mm)
Belaria® SRM (11-16) 3/8" (9.5 mm)
- 4 Hot gas line 5/8" (15.9 mm)
- 5 Mounting holes
- 6 Drain safety valve Rp 1/2"



Space requirement for maintenance work and ventilation

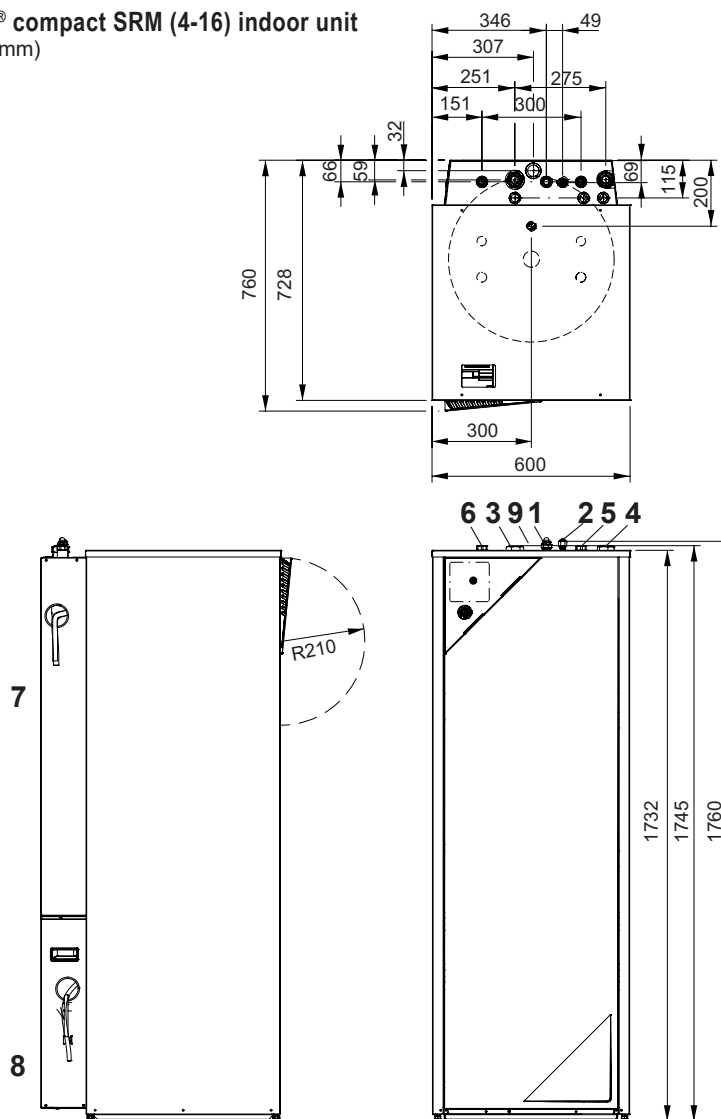
Indoor unit

(Dimensions in mm)



■ Dimensions

Hoval Belaria® compact SRM (4-16) indoor unit (Dimensions in mm)

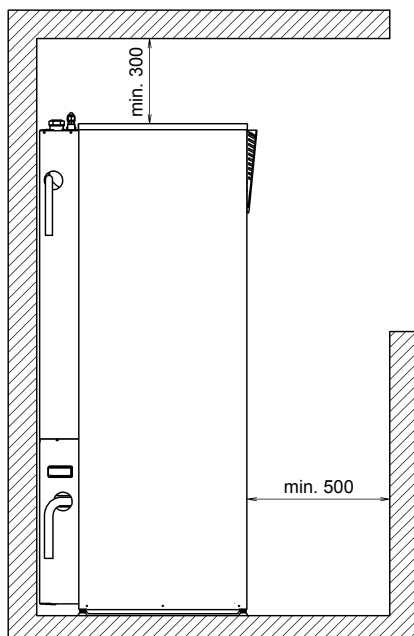


- 1 Hot gas line $\frac{5}{8}$ " (15.9 mm)
 - 2 Liquid line
 - Belaria® SRM (4-8) $\frac{1}{4}$ " (6.35 mm)
 - Belaria® SRM (11-16) $\frac{3}{8}$ " (9.5 mm)
 - 3 Heating flow R $1\frac{1}{4}$ "
 - 4 Heating return R $1\frac{1}{4}$ "
 - 5 Cold water connection R 1"
 - 6 Hot water connection R 1"
 - 7 Drain safety valve
 - 8 Condensate drain (cooling)
 - 9 Cable entry point
- Union nut

Space requirement for maintenance work and ventilation

Indoor unit

(Dimensions in mm)

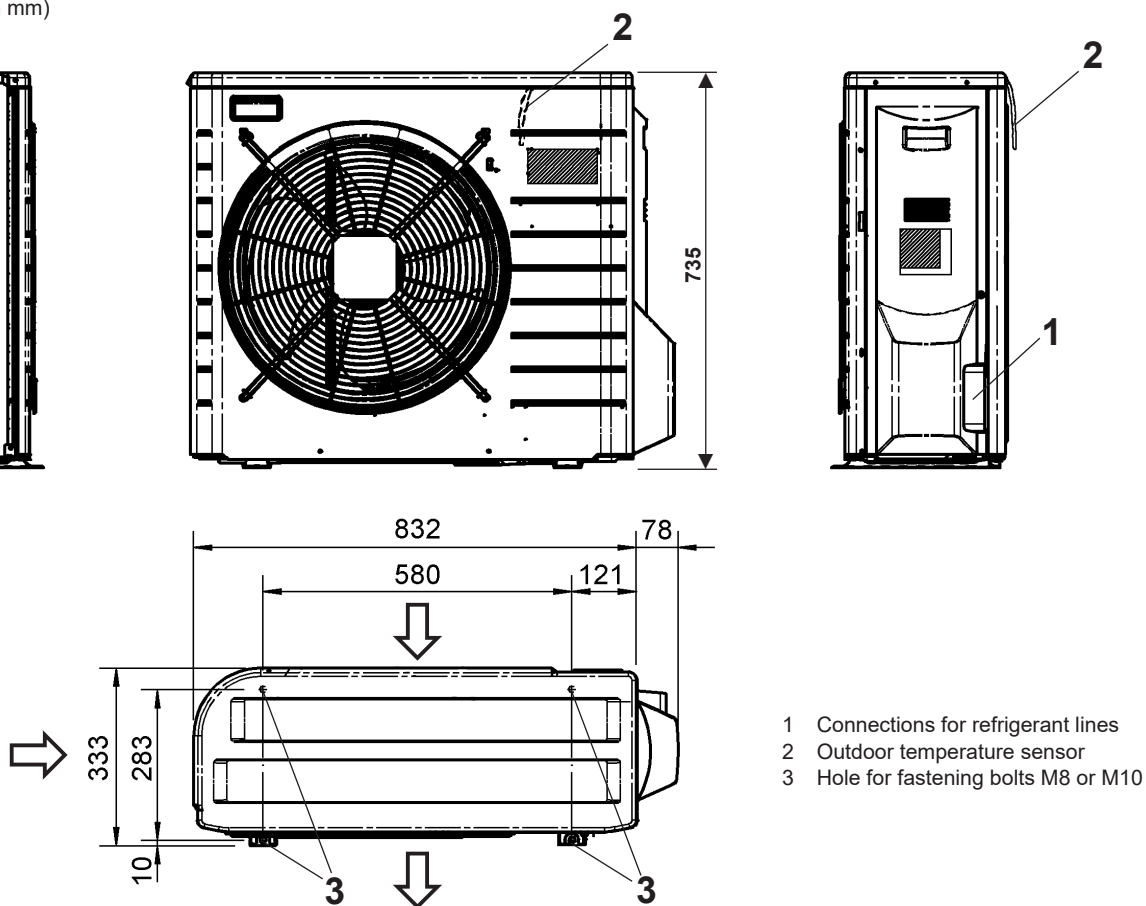


■ Dimensions

Hoval Belaria® SRM (4-8), Hoval Belaria® compact SRM (4-8)

Outdoor unit

(Dimensions in mm)

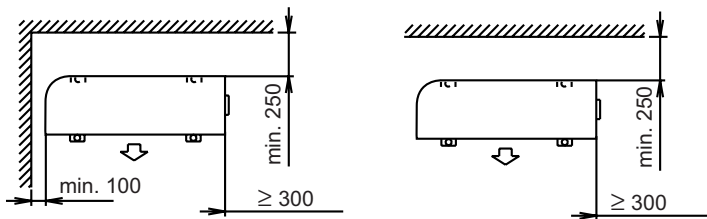


- 1 Connections for refrigerant lines
- 2 Outdoor temperature sensor
- 3 Hole for fastening bolts M8 or M10

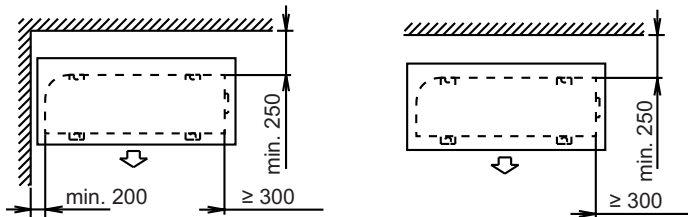
■ Dimensions

Space requirement

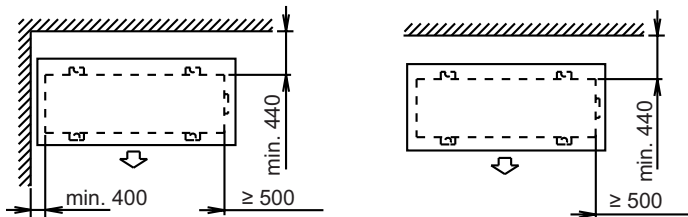
Space requirement for Belaria® SRM, Belaria® compact SRM outdoor unit without roof (Dimensions in mm)



Space requirement for Belaria® SRM, Belaria® compact SRM outdoor unit with roof (Dimensions in mm)



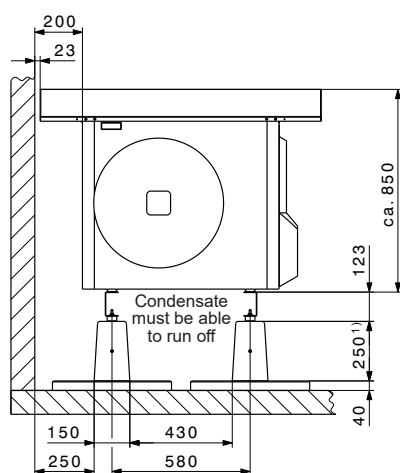
Space requirement for Belaria® SRM, Belaria® compact SRM with acoustic insulation housing (Dimensions in mm)



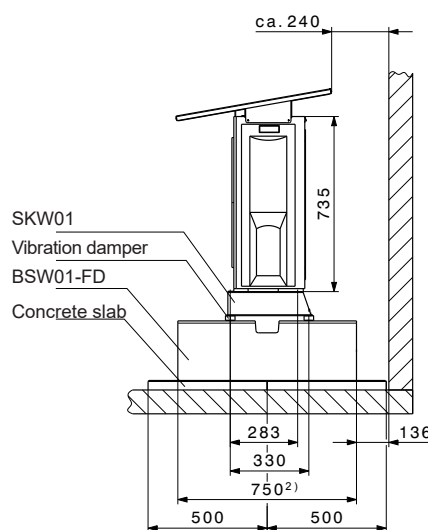
Base plans for Belaria® SRM (4-8), Belaria® compact SRM (4-8) (Dimensions in mm)

Concrete base - firm base

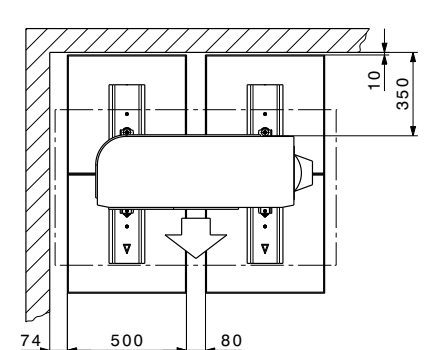
Front view



Side view

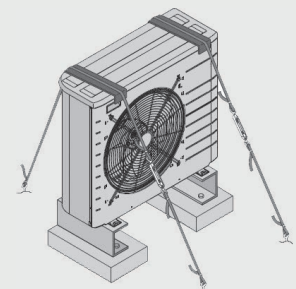


View from above



- 1) Depending on the possible snow depth; for version with sound attenuation housing >50-70 base height 200 mm (included in the scope of delivery)
- 2) Design with sound attenuation housing min. length 950

- There must be adequate space for the outlet (approx. 1 m) to route off the cooled air.
- The outdoor unit must be protected against heavy snowfall. If necessary, provide cover (e.g. roof, see Accessories).
- Observe the maximum permissible roof load without fail! (weight of unit, concrete base and any snow load).
- The outdoor unit must be placed on feet at least 250 mm / 50 mm high. There must be a gravel bed under it to discharge the condensation. (see base plans)
- The external unit must be secured against blowing over in windy areas.



Dimensions of protective roof for outdoor unit

Belaria® SRM type	W	D
(4-8)	1102	577

- Prevention of the transmission of structure-borne sound to the roof is very important. Specialists may need to be consulted, depending on the specific roof design.
- The outdoor unit must not be installed directly above bedrooms!
- The outdoor unit must be attached to the base using 4 vibration dampers M8 and concrete dowels (see Accessories).
- The outdoor unit must be protected against heavy snowfall. If necessary, provide a cover.
- Observe the maximum permissible roof load without fail! (weight of unit, concrete base and any snow load).

■ Dimensions

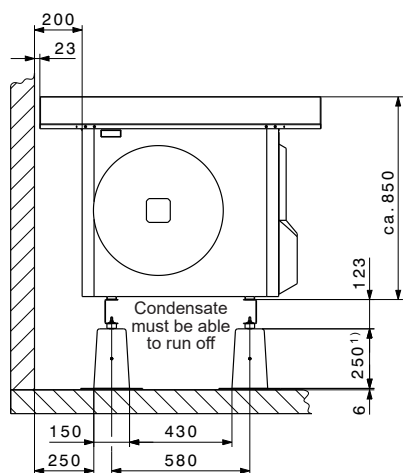
Space requirement

Base plans for Belaria® SRM (4-8), Belaria® compact SRM (4-8)

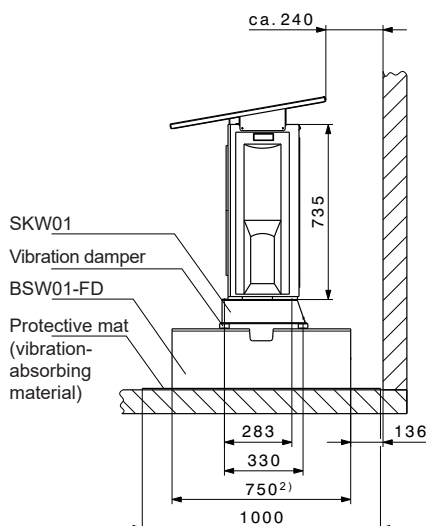
(Dimensions in mm)

Concrete base - flat roof

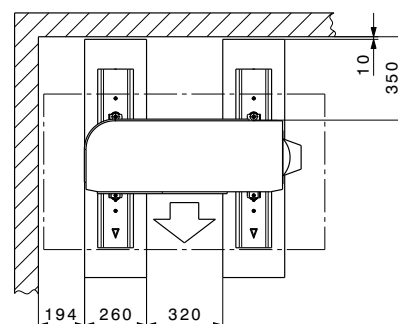
Front view



Side view



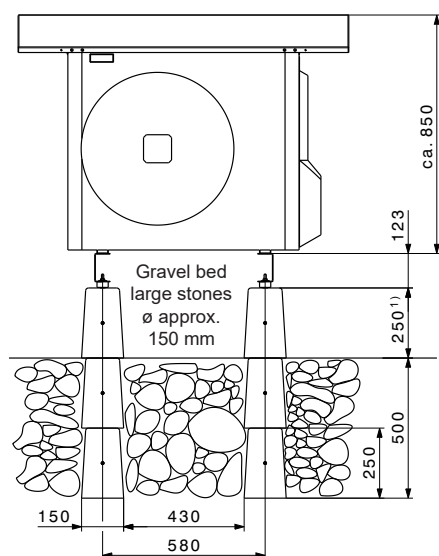
View from above



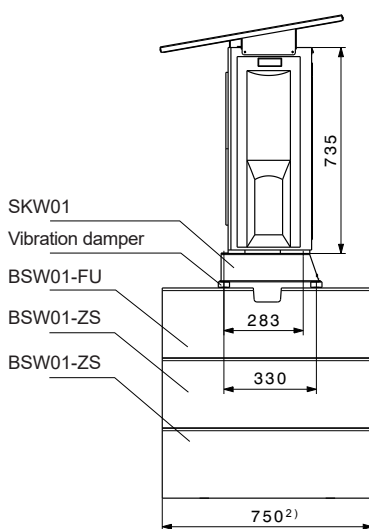
- ¹⁾ Depending on the possible snow depth; for version with sound attenuation housing >50-70 base height 200 mm (included in the scope of delivery)
- ²⁾ Design with sound attenuation housing min. length 950

Concrete base - gravel bed

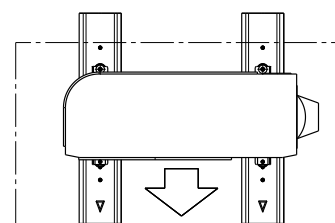
Front view



Side view



View from above



- ¹⁾ Depending on the possible snow depth; for version with sound attenuation housing >50-70 base height 200 mm (included in the scope of delivery)
- ²⁾ Design with sound attenuation housing min. length 950

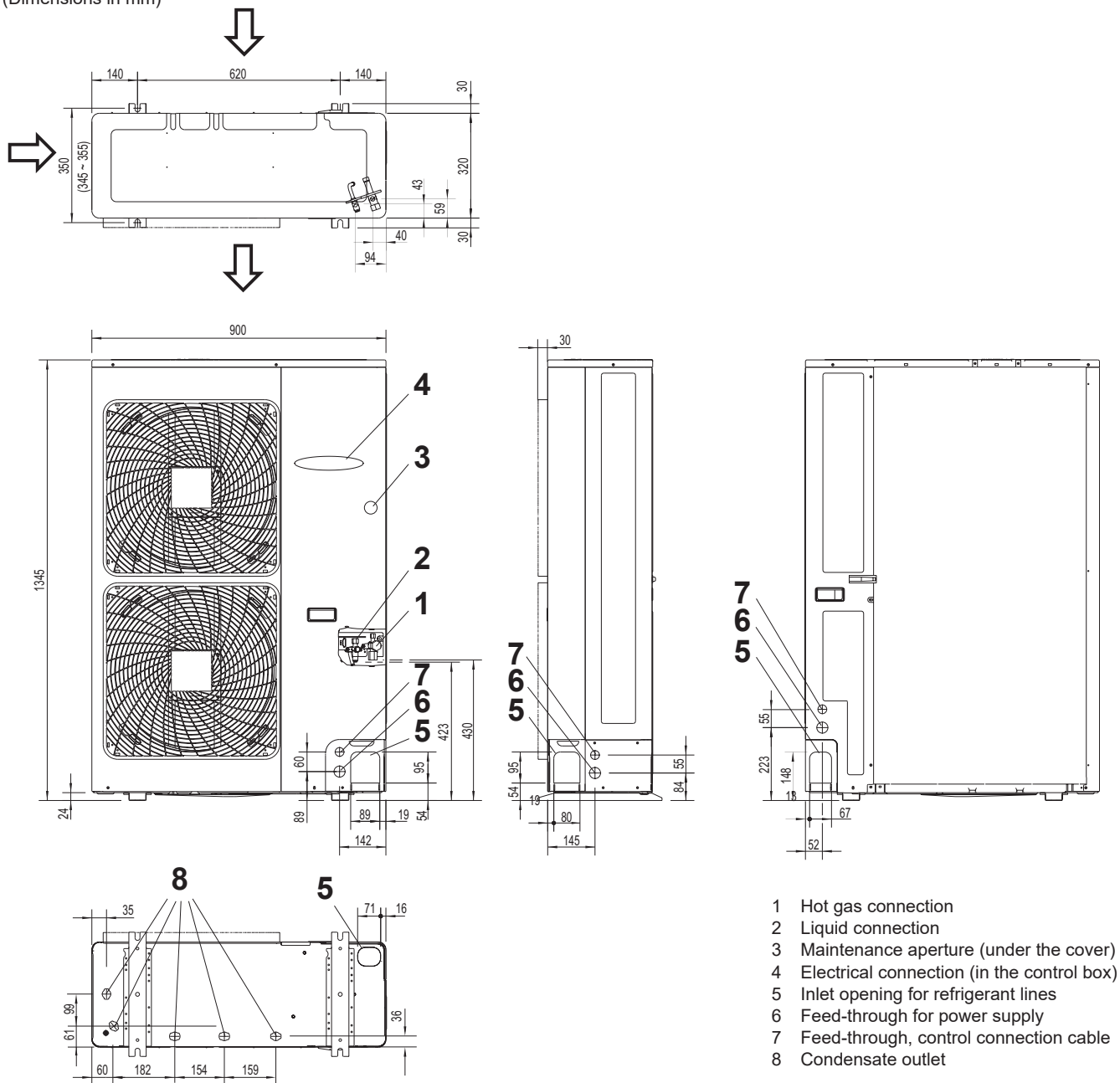
■ Dimensions

Space requirement

Hoval Belaria® SRM (11-16), Hoval Belaria® compact SRM (11-16)

Outdoor unit

(Dimensions in mm)

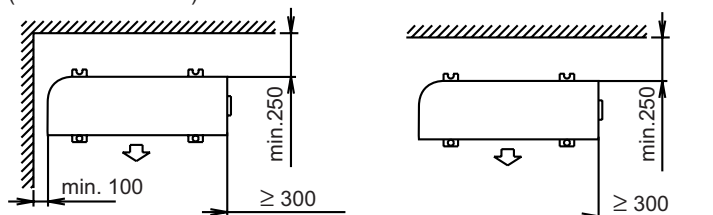


■ Dimensions

Space requirement

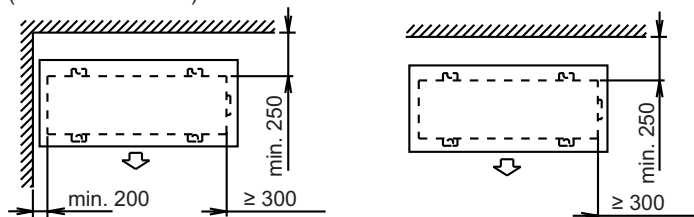
Space requirement for Belaria® SRM, Belaria® compact SRM outdoor unit without roof

(Dimensions in mm)



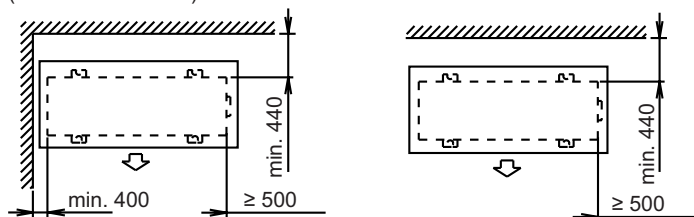
Space requirement for Belaria® SRM, Belaria® compact SRM outdoor unit with roof

(Dimensions in mm)



Space requirement for Belaria® SRM, Belaria® compact SRM with acoustic insulation housing

(Dimensions in mm)

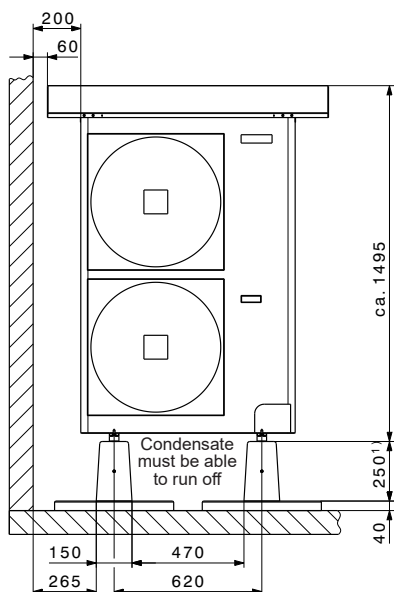


Base plans for Belaria® SRM, Belaria® compact SRM (11-16)

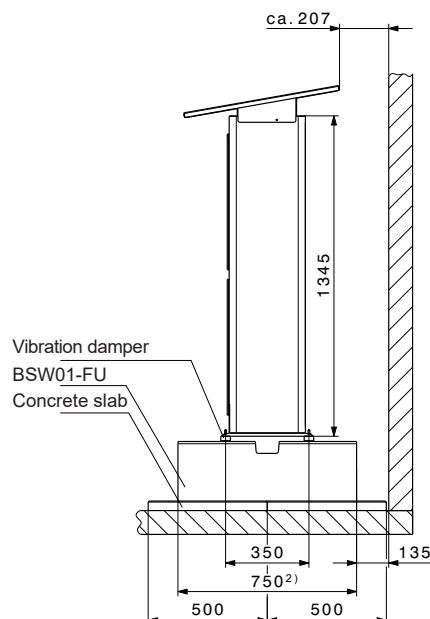
(Dimensions in mm)

Concrete base - firm base

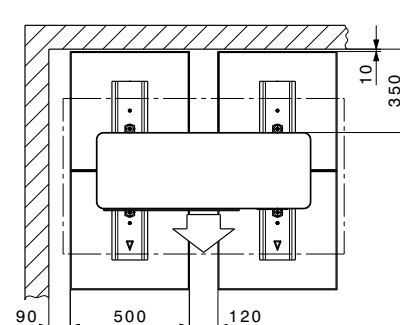
Front view



Side view



View from above



- ¹⁾ Depending on the possible snow depth; for version with sound attenuation housing >50-70 base height 200 mm (included in the scope of delivery)
- ²⁾ Design with sound attenuation housing min. length 950

- The outdoor unit must be attached to the base using 4 vibration dampers M8 and concrete dowels (see Accessories).
- If the outdoor unit is exposed to strong winds, the bases must be extended to approx. 700 mm and anchoring cables fitted.

■ Engineering

Requirements and directives

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

Set-up

General comments

- The distance between the inside and outdoor unit must be as short as possible. Only short and simple routing of refrigerant lines guarantees cost effectiveness.
- The required minimum length for the lines between the outside and indoor unit is 3 m, and the lines must not be shorter than this. The maximum permissible length of the lines between the outdoor and indoor unit is 30 m (4-8) and 50 m (11-16) and must not be exceeded. The maximum permissible height difference between outside and indoor unit is 20/30 m. The maximum permissible length of the lines between calorifier and indoor unit is 10 m. The cable of the tank sensor must not be shortened. It is essential to clarify details of the installation location and line routing with Hoval!

Indoor unit

- The indoor unit of the Hoval Belaria® SRM air/water heat pump system can be mounted on the wall in the boiler room using a sound insulation dowel with collar.
- The installation location must be selected in accordance with the valid requirements and directives.
- The installation must be free from dust or other foreign matter which could lead to contamination.
- Where possible, the installation location should be outside noise-sensitive areas of the building and equipped with a sound-absorbing door.

- The heating supply and return should be connected flexibly in structures which are sensitive with regard to noise emissions (see accessories).
- Access for the purpose of operation and maintenance must be ensured.
- Rooms with high air humidity, for example laundry rooms, are not suitable installation locations (dewpoint <10 °C).

The installation of a magnetic sludge separator is mandatory.

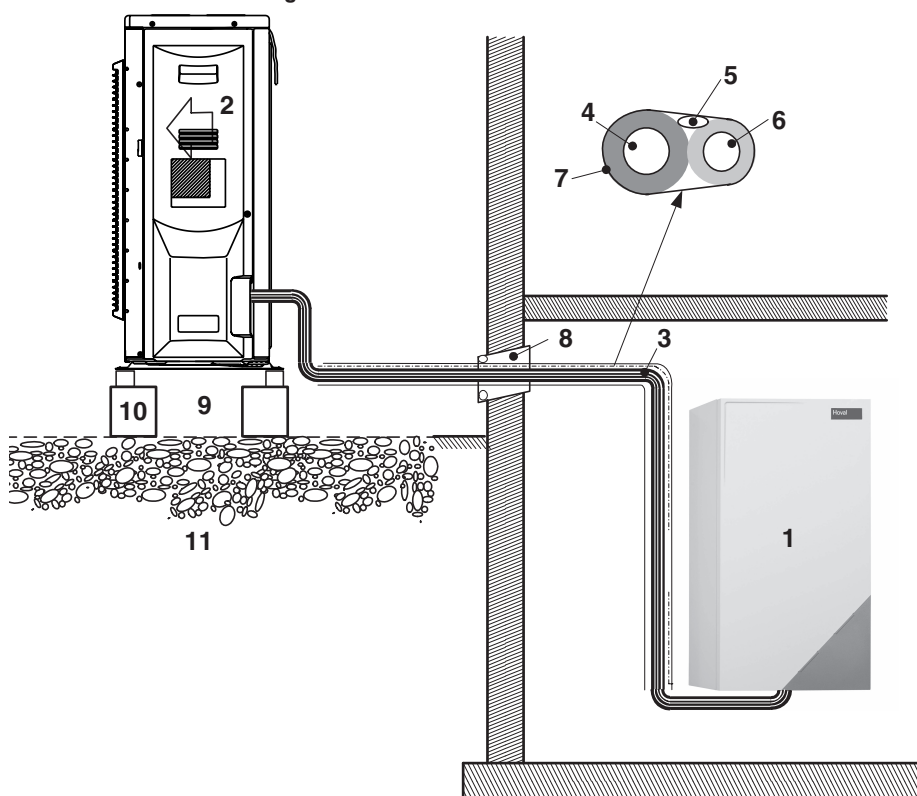
Outdoor unit

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

- The subsoil in the installation location must be sufficiently stable to bear the weight of the unit and its vibration in operation.
- The location should have adequate space for installation, maintenance and cleaning of the unit (see dimensions "Space requirements").
- As condensate flows out of the outdoor unit, a gravel bed to absorb the condensate must be installed under it. Do not place anything which is sensitive to moisture under the unit.
- Due to the sound emissions, the installation location should not be beneath living-room or bedroom windows and be far enough away from neighbouring buildings (perform calculation).
- The selected location should be such that the air blown out by the unit does not bother occupants of the building or neighbours.
- No parts and plants at risk of frost damage are allowed to be on the blow-out side.

- Installation on a wall console is not suitable in the case of lightweight walls. Lightweight walls can increase sound emissions and transmit structure-borne sound.
- It is essential to avoid air short-circuiting. The space necessary for intake and outlet must always be provided (see space requirements).
- The installation location must be selected so that the air intake and outlet are not blocked or obstructed by snow, leaves, etc.
- Installation in wall niches is not recommended (air short circuit, sound echo).
- The units cannot be installed one above the other.
- Install the units, the mains cables and the branch wiring at least 3 m away from TV sets and radios. This should prevent interference with picture and sound.
- The intake air must be completely free from aggressive substances such as ammonia, sulphur, chlorine etc.
- Install the outdoor unit so that the intake side faces the wall and is not directly exposed to the wind.
- Never install the outdoor unit in a place where the intake side is directly exposed to the wind.
- Fit a deflector plate on the air outlet side of the outdoor unit to prevent exposure to the wind.
- In areas with heavy snowfall, select an installation location where snow cannot impair the operation of the unit (cover).
- Install the unit at sufficient height from the ground to ensure that the unit is not covered by snow and freezing condensate cannot impair operation (see separate base plans).

Cross-section of connecting line



- 1 Indoor unit
- 2 Outdoor unit (evaporator/fan/compressor)
- 3 Refrigerant connecting line
- 4 Hot gas line with thermal insulation
- 5 1 x communication line 4-pole, 1 x electrical power supply outdoor unit SRM (4-8) 3-pole, SRM (11-16) 5-pole, 1 x connection line condensate drip tray heater 2-pole (optional), 1 x electrical power supply condensate drip tray heater 3-pole (optional) if separate protection necessary
- 6 Refrigerant liquid line with thermal insulation
- 7 Wrapping or duct (on site)
- 8 PE casing tube Ø at least 100 mm with sealing (on site). All casing tubes for the lines must be routed straight (it must be possible to look down the tube and see the other end!).
- 9 Condensate
- 10 Base or paving slab to be provided on site (The height is to be determined depending on the climate zone, recommended height >250 mm)
- 11 Drainage (on site)

Line length between outdoor unit and indoor unit

Hoval Belaria® SRM type	(4-8)	(11-16)
• Minimum line length	3 m	3 m
• Maximum permissible length	30 m	50 m
• Maximum permissible height difference	20 m	30 m

■ Engineering

Condensate (outdoor unit)

- Condensate must be able to run off freely.
- Use a condensate drip tray if the condensate has to be drained off collectively (option).
- It is essential to insulate the condensate hose from the tray, and if necessary, equip the hose with trace heating.

Refrigerant connecting lines

- The refrigerant connecting lines must be installed by qualified technicians.
- The line dimensions must be precisely adhered to (see also Section "Prices"; refrigerant connecting lines).
- The inside and outdoor unit, with the hot gas and liquid line, must be fitted professionally with thermal insulation.

Wall lead-through, protective pipe for routing of the lines

The wall lead-through and the protective pipe (Ø min. 100 mm) for the connecting lines must be routed with no changes of direction, executed professionally and sealed.

The lines must not be concreted in, as the vibrations can generate structure-borne sound. In the external area, the protective pipes must be manufactured from UV-resistant material.

Room cooling

- Room cooling can be effected with fan convectors and is recommended. The connection lines for the fan convectors must have condensation-proof insulation. In addition, the condensate from the fan convectors must be drained off.
- Optimum comfort can be achieved with an additional Hoval HomeVent comfort ventilation unit with the CoolVent option.
- We do not recommend the use of panel heating for room cooling. Various criteria such as temperatures below the dewpoint or the temperature profile must be allowed for and can lead to costly consequential damage in the case of inadequate planning or incorrect use. We recommend that you consult Hoval.

Electric connecting cables

- The electric connecting cables on the outdoor unit must be connected flexibly.
- Taking advantage of the special reduced tariffs offered by local energy companies for heat pump systems often means interrupted operation. For example, within any 24-hour period, the power supply may be interrupted for 3 periods of 2 hours each. This must be taken into account when dimensioning and planning the heat pump.
- The trace heating tape must be connected externally in accordance with applicable regulations and protected by a ground fault circuit interrupter.

Necessity of an oil separator

If the outdoor unit is placed lower than the indoor unit, an oil separator must be bent or installed in the hot gas line for each 10 m of height difference (siphon). The oil separator prevents the compressor oil flowing back after switching off and thus slugging which could damage the compressor.

Further guidelines
see "Engineering"

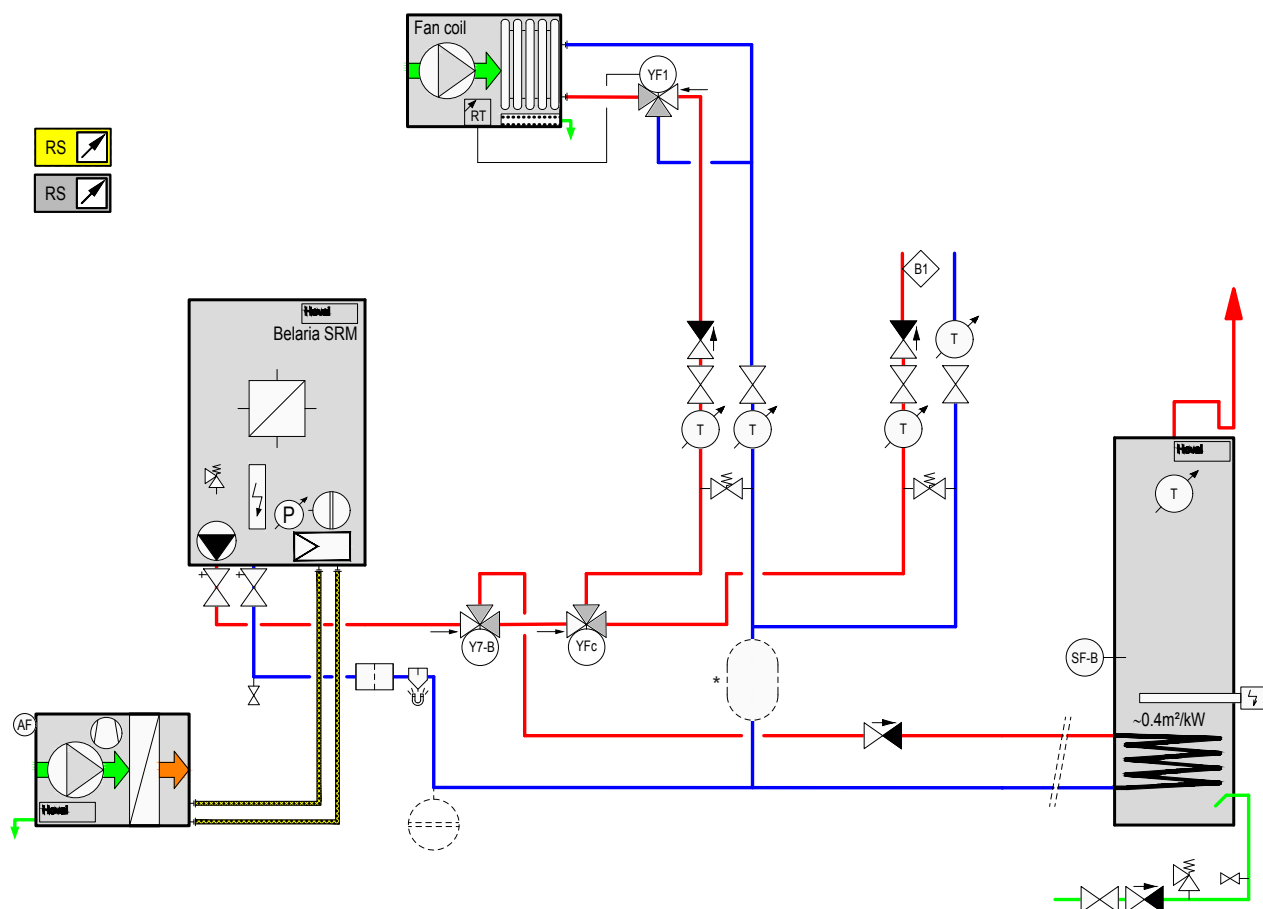
■ Examples

Hoval Belaria® SRM

Air/water heat pump with

- calorifier
- cooling Fan Coil
- 1 direct circuit

Hydraulic schematic BBAAE020



* Additional volume for defrosting process

Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

B1	Flow temperature guard (if required)
AF	Outdoor sensor
YF1	Actuator Fan Coil
Y7-B	Switching valve (Belaria® SRM)
YFc	Switching valve (Fan Coil)
SF-B	Calorifier sensor

Option

BR	Burner connection
RT	External room/humidity thermostat

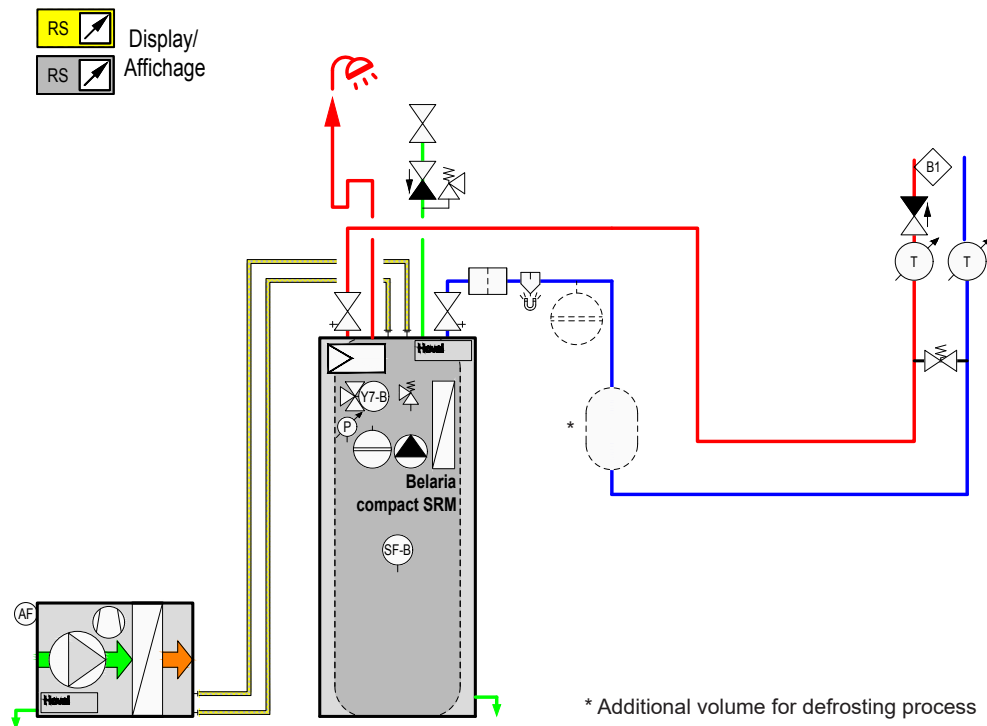
■ Examples

Hoval Belaria® compact SRM

Air/water heat pump with

- integrated calorifier
- 1 direct circuit

Hydraulic schematic BBABE010



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

AF Outdoor sensor
Y7-B Switching valve (Belaria® SRM)
SF-B Calorifier sensor

Description

Hoval Belaria® SHM

Modulating heat pump system operating with 2 compressors in series for heating and providing hot water

High-temperature split system consisting of indoor unit and outdoor unit.
Modulation range approx. 30-100 %

Indoor unit

- Compact unit for floor mounting
- Casing made from painted, galvanised sheet steel. Colour grey metallic
- Condenser stainless steel/Cu, filled with refrigerant R134a
- Speed-controlled high-efficiency pump controlled by the indoor unit Δt
- Pressure expansion tank 12 litres
- Pressure gauge
- Cut-off valves for heating flow and return with flexible hose (mounted), safety temperature limiter, safety valve
- Water filter, air-bleeding valve, overpressure valve
- Controller supplied separately for wall mounting with heating and calorifier function
- Electrical box
- Flow and return sensor installed
- Filling and drain valve
- Sensor for hot water preparation supplied (can not be shortened)

Outdoor unit

- DHW heating sensor included (cannot be shortened)
- Compact unit for outdoor installation
- Casing made from painted, galvanised sheet steel, colour silk grey (similar to RAL 7044)
- Speed-controlled scroll compressor
- Two speed-controlled fans
- Coated Al/Cu finned-tube evaporator
- Electronic expansion valve
- Four-way valve for defrosting
- Filled with refrigerant R 410 A
- Shut-off valves on the refrigerant side
- Electrical box, connection on the right
- Outdoor sensor fitted

Connections, refrigerant line

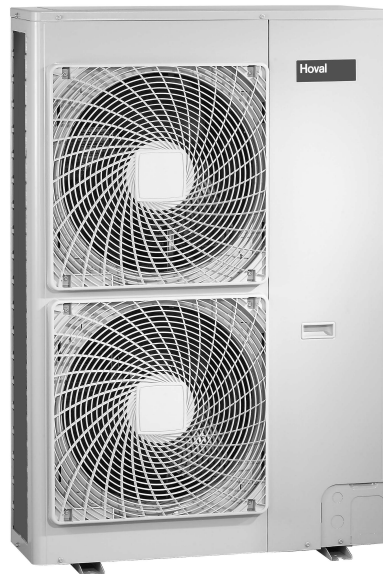
- Indoor unit on the rear, left or right
- Outdoor unit on the right side
- Hot gas line 15.9 mm ($\frac{5}{8}$ ")
liquid line 9.5 mm ($\frac{3}{8}$ ")

Condensate drain

- The outdoor unit is provided with a condensate drip tray
- The draining condensation must be able to percolate away under the outdoor unit or be carried away via a condensate drain
- An optional condensate drip tray for collective discharge of the condensate is available

Electrical connections

- Outdoor unit on the right side 3 x 400 V
- Indoor unit rear left 3 x 400 V
- Emergency heating (3 x 400 volts) is connected externally separately (optional)



Outdoor unit



Indoor unit

Hoval Belaria® SHM

35 °C	55 °C	Type	Heat output with A2W45 kW
B	A*	(11)	9.5
B	A*	(14)	11.8
B	A*	(16)	13.2

Energy efficiency class of the compound system with control

Performance data at max. output

The built-in high-efficiency pumps fulfil the Ecodesign requirements of 2015 with an EEI of ≤ 0.23 .

Delivery

- Inside and outdoor unit delivered packaged separately
- Controller and both cut-off valves are included separately with the indoor unit
- Sensor for calorifier supplied loose in the indoor unit (cannot be shortened)

On site

- Mounting accessories
- Mounting of the controller (wall mounting)

Option

- Emergency heating 6 kW (3 x 400 V, see "Technical data") with safety thermostat, safety valve

■ Part No.

High-temperature heat pump system
up to 80 °C flow temperature!



Energy efficiency class
see Description

Hoval Belaria® SHM
air/water heat pump system

Part No.

Split system comprising indoor unit
and outdoor unit.

Delivery
Inside and outdoor unit delivered
packaged separately.

Belaria® SHM Type	Heat output A2W45 kW	
(11)	9.5	7015 993
(14)	11.8	7015 994
(16)	13.2	7015 995

Accessories



Interface module RTD-W
for external output control
ON/OFF, 0-10 V, MOD bus

2061 516



Room station (PCB2)
incl. room sensor (cable connection - slave);
additionally to operator terminal in the indoor
unit (master: wall mounting in basement)

2037 734



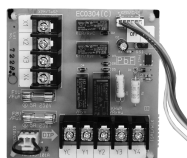
Room thermostat with remote control
RS-W (cable connection)

6023 044

RS-R (with radio transmission)

6023 045

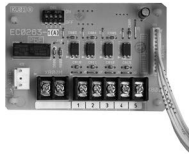
Notice
The request circuit board A8P must be or-
dered as well for these room thermostats.



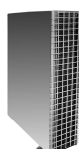
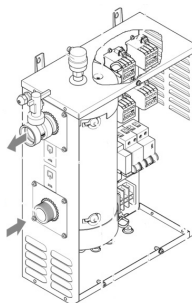
Additional board (A4P/A7P)
digital on/off board for:
- alarm output
- change-over to external heat source

6019 357

■ Part No.


Notice

Only use a condensate drip tray if it is absolutely necessary. If the condensation can flow away unobstructed, no condensate drip tray will be required.


Accessories
Part No.
Demand board (A8P)

2037 415

for external power limitation
4 inputs

Limitation of current (A) or power (kW)
External control heating/cooling
and On/Off

**Condensate drip tray cpl.
for outdoor unit**

6033 522

for Belaria® SHM (11-16)
for collection of the condensate under
the outdoor unit

Material: UV-resistant plastic
Tray heater 120 W, 230 V with thermostat
with additional protection
Condensate outlet: Ø (outside) 38 mm
Dimensions: 960 x 420 x 40 (LxWxD)
For mounting on socket, the vibration
dampers have to be ordered separately.

Trace heating tape

6033 374

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

Electrical emergency heating

6022 606

for external mounting on the wall
incl. air vent valve,
entry R 1¼"
exit Rp 1¼"
flow switch thermal protection,
switching contactor
Power: 6 kW, 3x400 V

Demand board (A8P) necessary.

Protective roof for outdoor unit

6040 216

for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
Aluminium powder-coated
Colour: silk grey RAL 7044
Can also be combined with wall bracket
for outdoor unit.

Protective grid for outdoor unit

6028 144

for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
sturdy grid for protection
of the evaporator
Material: coated stainless
steel (RAL 7044)
Mounting on site

Protective grid for outdoor unit

6028 243

for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
sturdy grid for protection
of the evaporator (on the front)
Material: coated stainless
steel (RAL 7044)
Mounting on site

■ Part No.

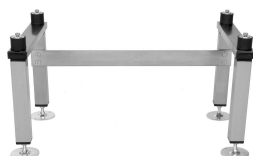


Accessories

Part No.

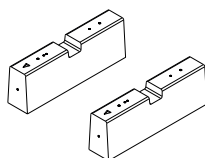
Wall console for outdoor unit
for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
for fastening the unit onto the wall
2 stainless steel clamps
incl. vibration dampers
and fastening material
Caution:
Not to be used in this form
on insulated walls!
Not suitable for lightweight walls!

6040 353



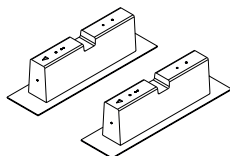
Stand bracket
for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
for mounting the unit on the floor
incl. vibration damper
Dimensions (LxWxH): 300x660x400
Weight: 7.5 kg

6040 355



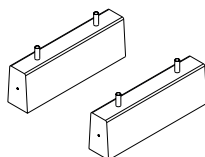
Concrete base set BSW01-FU
to securely erect an outdoor unit
on solid ground.
Consisting of:
2 concrete bases with molded
fastening sleeves, screw set
Weight: 2 pieces of 58 kg

6046 157



Concrete base set BSW01-FD
to securely erect an outdoor unit
on flat roof.
Consisting of:
2 concrete bases with molded
fastening sleeves, protective mats
with aluminium facing, screw set
Weight: 2 pieces of 58 kg

6046 158



Concrete base set BSW01-ZS
to securely erect an
outdoor unit in drainage bed
for gardens and meadows.
Additional base height 250 mm for
plug combination with set BSW01-FU
Consisting of:
2 additional concrete bases,
screw set
Weight: 2 pieces of 58 kg

6046 159

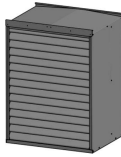


Vibration damper
for Belaria® SRM (4-16),
compact SRM (4-16) and SHM (11-16)
for installing the unit on
a concrete base (on site).
4 pieces incl. dowels HKD-S M8x30,
washers and nuts

6022 489

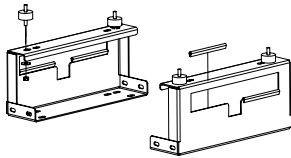
■ Part No.

Part No.


Acoustic insulation housing SDG02

6040 357

for Belaria® SRM (11-16),
compact SRM (11-16) and SHM (11-16)
for reducing the noise level
of the unit set up outdoors
Protects the unit against any
weather influences
Steel with aluminium zinc coating
Colour: grey (RAL 9006)
Dimensions (HxWxD): 1610x1200x900
Sound attenuation depending on
installation and ambient conditions
up to -6 dB(A)
Base set SDG02 must be
ordered as accessory


Base set SDG02

6042 938

for sound attenuation housing SDG02
Overall height: 190 mm
Consisting of:
2 U-shaped brackets, coated
4 vibration dampers
Must be ordered as accessory
for use with sound
attenuation housing SDG02


Condensate drip tray KWD - SD housing

6040 344

acoustic insulation housing for
Belaria® SRM (4-16), compact SRM (4-16)
and SHM (11-16)
for collection of the condensate
under the outdoor unit
in the acoustic insulation housing
SDG01 and SDG02
With drain port for hose connection
Without support heating strip


Connection set AS32-2/ H

6039 793

for compact mounting
of all required fittings
of a direct circuit
consisting of:
2 thermometer ball valves
Wall bracket included separately
Connection T-piece DN 32
in the return flow for connecting the
sludge separator CS 32 bottom and
the expansion tank on the side
on connection set
installation option
for an overflow valve
incl. non-return valve

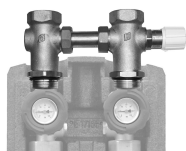
■ Part No.

**Connection set AS32-2/ HW**

for compact mounting
of all required fittings
of a direct circuit and
hot water charging
Consisting of:
Fully assembled armature group
with 2 thermometer ball valves
Thermal insulation box made
of EPP half-shells
3-way motor valve 2-LR230A
included separately
Connection T-piece DN 32
in the return flow for connecting the
sludge separator CS 32 bottom and
the expansion tank on the side
on connection set
installation option for an
overflow valve
incl. non-return valve

Part No.

6039 794

**Bypass valve DN 32 (1 1/4")**

for the installation in a HA group DN 32
Setting range 0.6-1.5 bar
Max. flow rate: 1.5 m³/h
with self-sealing screw connection for
mounting between flow and return
ball valve

6014 849

Overflow valves must close
completely under the set pressure.

**Sludge separator CS 25-1" with magnet**

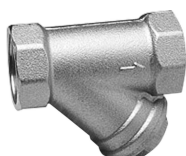
for flow rates of 1.0 - 2.0 m³/h
for flow speed of 1.0 m/s
Housing made of plastic PPA with
diffuser and partial flow removal
with 4 extra-strong Neodymium magnets
Magnets removable for draining
EPP insulation 20 mm
Connections made of brass G 1"
Drain made of brass: hose connection
Any inst. orientation -360° rotating
Temperature range -10 to 120 °C
Operating pressure max.: 10 bar
Glycol proportion max.: 50 %
Weight: 1.21 kg

2063 735

**Sludge separator CS 32-1 1/4" with magnet**

for flow rates of 2.0 - 3.0 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 1 1/4"
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: 1.37 kg

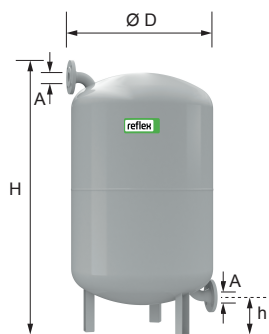
2063 736

**Strainer PN 16 B50-32-1 1/4"**

Casing brass, PN 16
Connections Rp 1 1/4"
Operation temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm

2046 980

■ Part No.



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	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

6045 769

6045 770

Suitable motor drive

Type	Voltage	Control signal	Actuator run time
------	---------	----------------	-------------------

GLB341.9E 230 V / 50/60 Hz 2-/3-point 150 s

2070 331

Circulation pumps, actuators, buffer storage tanks
see separate brochures

Reflex V40

Sheet steel intermediate tank, designed for operating pressures up to 10 bar.

Reflex Type	Ø D mm	H mm	h mm	A
V 40	409	562	113	R 1"

2057 249

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.

■ Technical data

Hoval Belaria® SHM

Type		SHM (11)	SHM (14)	SHM (16)
Seasonal coefficient of performance moderate climate 35 °C/55 °C	SCOP	2.7/3.0	2.8/3.0	2.9/3.0
Performance data according to EN 14511				
• Heat output A2W45	kW ¹	9.5	11.8	13.2
• Power consumption A2W45	kW ¹	3.3	4.4	5.1
• Coefficient of performance - heating A2W45	COP	2.9	2.7	2.6
• Weight inside/outdoor unit	kg		144/120	
• Compressor		2 x spiral-(scroll), hermetic, speed-controlled		
• Refrigerant filling R-410A/ R134a	kg		4.5/3.2	
• Fan type		2 x axial, speed-controlled		
• Evaporator		lamellar tube Alu-coated/Cu		
Pipe series		2		
• Condenser		soldered stainless steel plate heat exchanger		
Capacity	litres		2,78	
Tube connection	G		1¼"	
• Nominal volume flow	(Δt = 10K)	m³/h	0.95	1.2
	(Δt = 5K)	m³/h	1.9	2.4
• Min. volume flow		m³/h	0.69	
• Max. operating pressure heating side		bar	3	
• Operating limit values				
Heat source heating				
Min. outside air temperature	°C		-20	
Max. outside air temperature	°C		20	
• Range of application see diagram				
Electrical data		indoor unit		outdoor unit
Power consumption				
• Emergency heating (option)	kW	1-stage - 6.0		—
Voltage				
• Compressor	V	3 x 400		3 x 400
Emergency heating (option)	V	3 x 400		—
Frequency	Hz	50		50
Voltage range (400 V)	V	380-415		380-415
Operating current max.				
• Compressor	A	11.0		12.0
Starting current	A	5.8		5.8
• Fuse	A	16T		16T

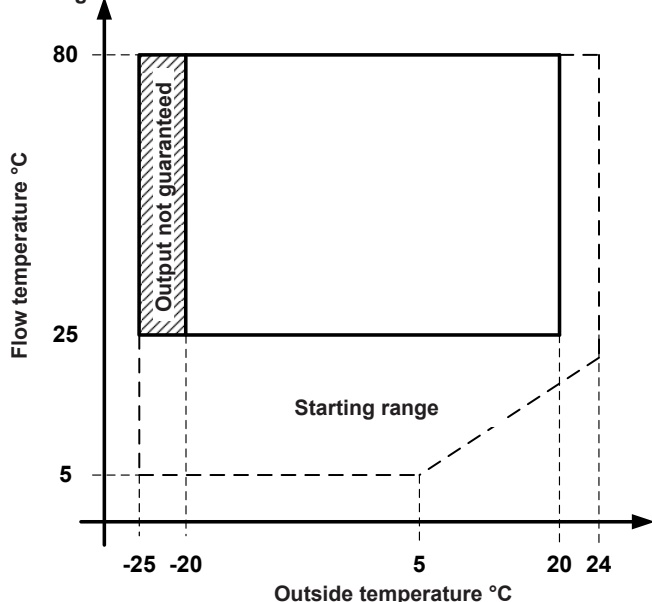
Using a residual current circuit breaker RCCB type B, $I_{\Delta n} \geq 300$ mA is recommended. Country-specific regulations must be observed.

¹ kW = overall unit incl. defrosting loss (Δt 5K EN14511)

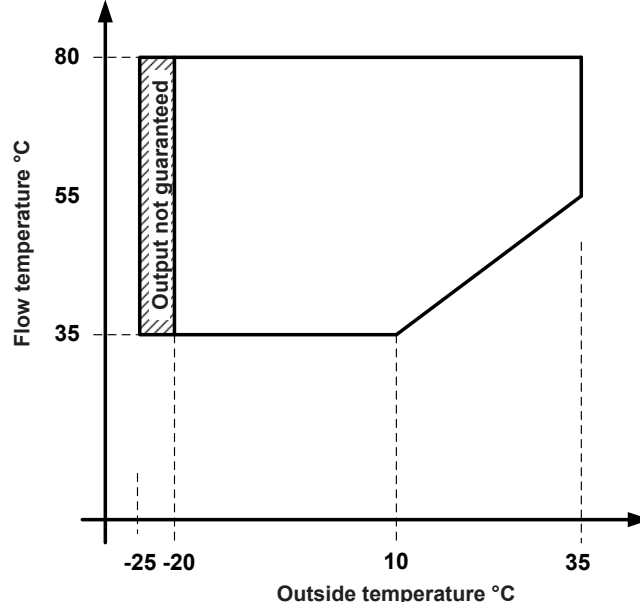
Diagram of area of application

Belaria® SHM

Heating



Hot water



■ Technical data

Hoval Belaria® SHM

• Sound pressure level – sound power level ³

The sound pressure levels indicated below 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.

The **sound pressure level** is dependent on the **place of measurement** within a sound field and describes the sound intensity at this point. In contrast, the **sound power level** is a characteristic of the **sound source** and therefore does not change with distance; it describes the totality of sound power of the relevant source radiated in all directions.

Structure-borne sound

The bases and consoles for the outdoor unit must be erected/installed with vibration-damping against the structural shell.

Indoor unit

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.

Type		SHM (11)	SHM (14)	SHM (16)
Outdoor unit				
• Sound power level in heating operation ³	dB(A)	68	69	71
• Sound pressure level in heating operation at 5 m ^{1,3}	dB(A)	47	48	50
• Sound pressure level in heating operation at 10 m ^{1,3}	dB(A)	41	42	44
Indoor unit				
• Sound power level	dB(A)	43	45	46
• Sound pressure level ² 1 m flow 65 °C/return 55 °C - front side	dB(A)	40	43	45

¹ 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.

² The sound level of the indoor unit apply in whisper mode. The values increase by approx. +2 dB(A) at full load.

³ The sound values apply with a clean evaporator. These values can be temporarily exceeded before defrosting.

Pressure expansion tank

The indoor unit is equipped with an expansion tank (flat shape) with a volume of 12 l, pre-pressure 1 bar

Pre-pressure ¹	bar	1.5	1.8	2.1
Capacity	l	3.0	2.4	0.85
Maximum possible system height Hp ²	m	12	15	18

¹ Pre-pressure = system height + 0.3 bar. The pre-pressure should be adjusted to the system height.

² System pressure Hp = hydrostatic pressure of the system, i.e. height from the centre of the tank to the highest air-bleeding point of the system

$$V_n = V_A \times f \times X \text{ (litres)}$$

V_n = expansion volume (litres)

V_A = system content at + 10 °C

f = thermal expansion factor (45°), $f = 0.01$

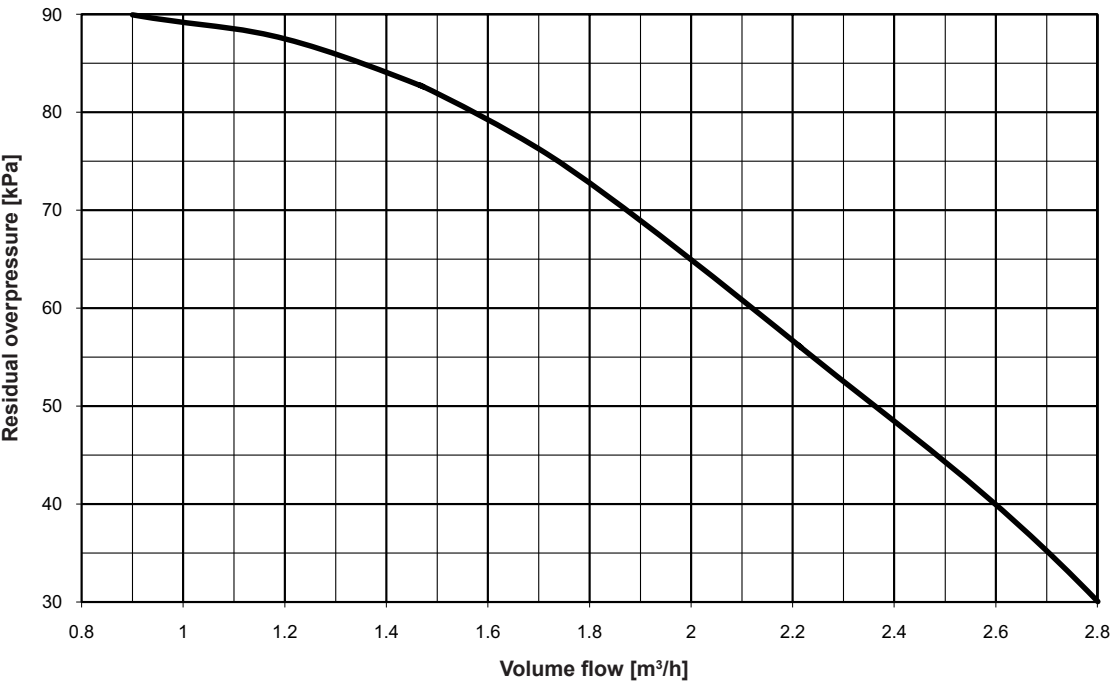
X = add-on factor acc. to SWKI 93-1, $X = 3$

	System	V_A	V_n
System content (underfloor heating system)	5 kW	120 l	3.6 l expansion quantity
	6 kW	140 l	4.2 l expansion quantity
	7 kW	160 l	4.8 l expansion quantity
	8 kW	180 l	5.4 l expansion quantity
	9 kW	200 l	6.0 l expansion quantity

If the capacity of the installed expansion tank is not sufficient, an additional tank must be installed outside the unit.

■ Technical data

Pump characteristic curve Belaria® SHM (11-16)
externally available pressure



The minimum volume flow of 11.5 litres/min
(0.69 m³/h) must always be provided.

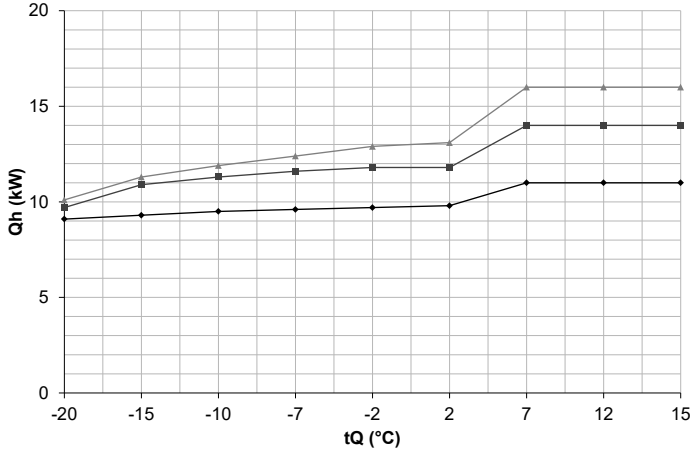
Technical data

Performance data - heating

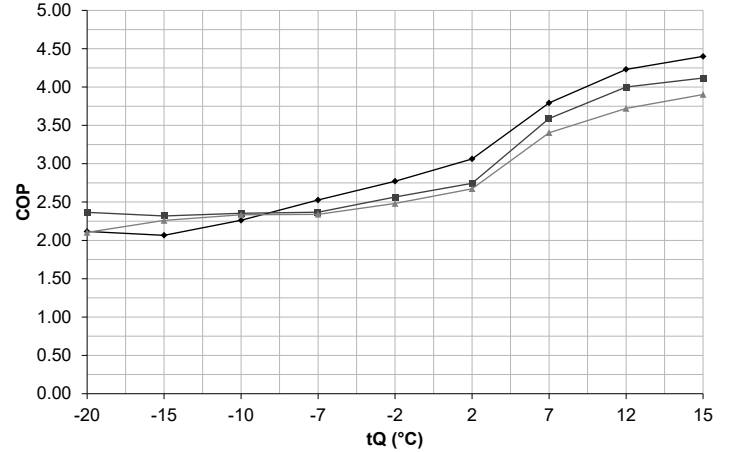
Maximum heat output allowing for defrosting losses

Hoval Belaria® SHM (11-16)

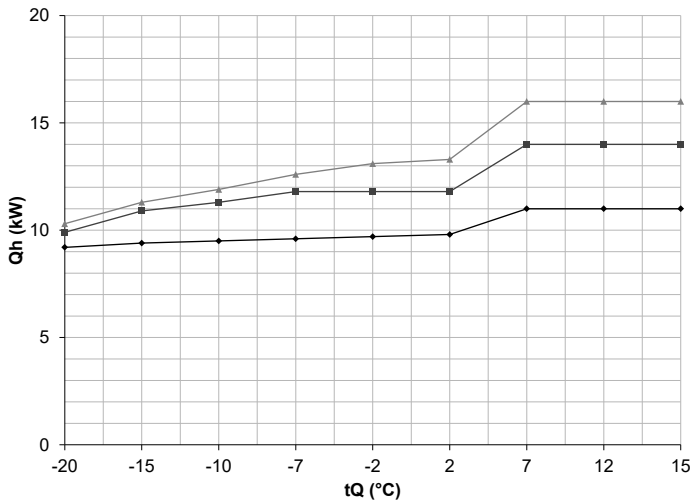
Heat output - t_{VL} 35 °C



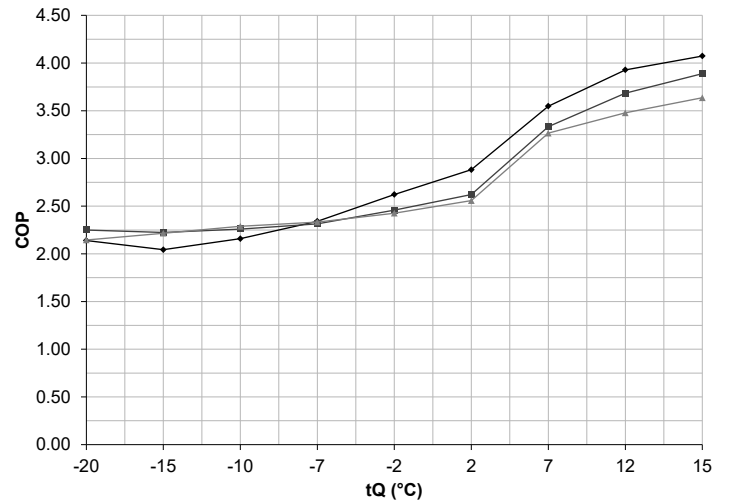
Output rating - t_{VL} 35 °C



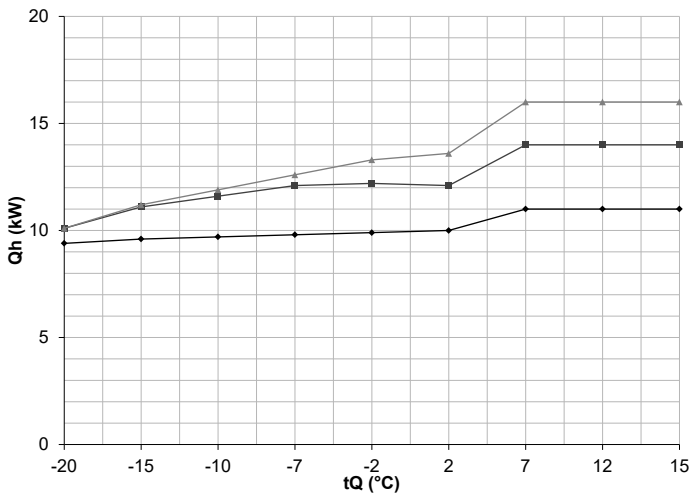
Heat output - t_{VL} 50 °C



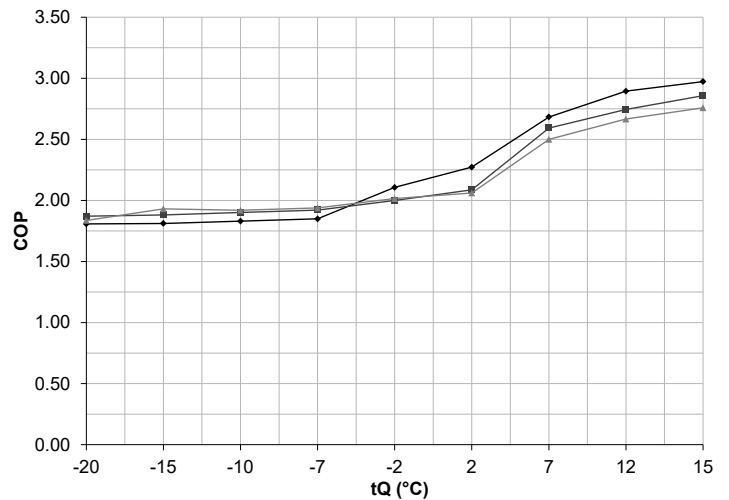
Output rating - t_{VL} 50 °C



Heat output - t_{VL} 75 °C



Output rating - t_{VL} 75 °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® SHM (11)
 ■ Belaria® SHM (14)
 ▲ Belaria® SHM (16)

■ Technical data

Performance data - heating

Hoval Belaria® SHM (11-16)

Indications acc. to EN14511

Type tVL °C	tQ °C	Qh kW	SHM (11) P kW	COP	Qh kW	SHM (14) P kW	COP	Qh kW	SHM (16) P kW	COP
35	-20	9.1	4.3	2.12	9.7	4.1	2.37	10.1	4.8	2.10
	-15	9.7	4.5	2.16	10.9	4.7	2.32	11.3	5.0	2.26
	-10	9.6	4.2	2.29	11.3	4.8	2.35	11.9	5.1	2.33
	-7	9.5	3.8	2.50	11.6	4.9	2.37	12.4	5.3	2.34
	-2	9.4	3.5	2.69	11.8	4.6	2.57	12.9	5.2	2.48
	2	9.4	3.2	2.94	11.8	4.3	2.74	13.1	4.9	2.67
	7	11.0	2.9	3.79	14.0	3.9	3.59	16.0	4.7	3.40
	12	11.0	2.6	4.23	14.0	3.5	4.00	16.0	4.3	3.72
40	15	11.0	2.5	4.40	14.0	3.4	4.12	16.0	4.1	3.90
	-20	9.2	4.3	2.14	9.8	4.2	2.33	10.2	4.8	2.13
	-15	9.7	4.5	2.16	10.9	4.8	2.27	11.3	5.0	2.26
	-10	9.6	4.2	2.29	11.3	4.8	2.35	11.9	5.2	2.29
	-7	9.5	3.9	2.44	11.7	4.9	2.39	12.5	5.3	2.36
	-2	9.5	3.5	2.71	11.8	4.7	2.51	13.0	5.2	2.50
	2	9.4	3.2	2.94	11.8	4.3	2.74	13.2	5.0	2.64
	7	11.0	3.0	3.67	14.0	4.0	3.50	16.0	4.7	3.40
45	12	11.0	2.7	4.07	14.0	3.6	3.89	16.0	4.4	3.64
	15	11.0	2.5	4.40	14.0	3.5	4.00	16.0	4.2	3.81
	-20	9.2	4.3	2.14	9.8	4.3	2.28	10.2	4.8	2.13
	-15	9.7	4.6	2.11	10.9	4.8	2.27	11.3	5.1	2.22
	-10	9.6	4.3	2.23	11.3	4.9	2.31	11.9	5.2	2.29
	-7	9.5	4.0	2.38	11.7	5.0	2.34	12.5	5.3	2.36
	-2	9.5	3.6	2.64	11.8	4.7	2.51	13.0	5.3	2.45
	2	9.5	3.3	2.88	11.8	4.4	2.68	13.2	5.1	2.59
50	7	11.0	3.0	3.67	14.0	4.1	3.41	16.0	4.8	3.33
	12	11.0	2.8	3.93	14.0	3.7	3.78	16.0	4.5	3.56
	15	11.0	2.6	4.23	14.0	3.6	3.89	16.0	4.3	3.72
	-20	9.2	4.3	2.14	9.9	4.4	2.25	10.3	4.8	2.15
	-15	9.7	4.6	2.11	10.9	4.9	2.22	11.3	5.1	2.22
	-10	9.7	4.4	2.20	11.3	5.0	2.26	11.9	5.2	2.29
	-7	9.6	4.1	2.34	11.8	5.1	2.31	12.6	5.4	2.33
	-2	9.5	3.7	2.57	11.8	4.8	2.46	13.1	5.4	2.43
55	2	9.5	3.4	2.79	11.8	4.5	2.62	13.3	5.2	2.56
	7	11.0	3.1	3.55	14.0	4.2	3.33	16.0	4.9	3.27
	12	11.0	2.8	3.93	14.0	3.8	3.68	16.0	4.6	3.48
	15	11.0	2.7	4.07	14.0	3.6	3.89	16.0	4.4	3.64
	-20	9.2	4.3	2.14	9.9	4.6	2.15	10.3	4.8	2.15
	-15	9.8	4.7	2.09	10.9	4.9	2.22	11.3	5.1	2.22
	-10	9.7	4.4	2.20	11.4	5.0	2.28	12.0	5.3	2.26
	-7	9.6	4.2	2.29	11.8	5.1	2.31	12.6	5.4	2.33
65	-2	9.5	3.7	2.57	11.8	4.9	2.41	13.1	5.4	2.43
	2	9.5	3.5	2.71	11.8	4.6	2.57	13.3	5.3	2.51
	7	11.0	3.2	3.44	14.0	4.2	3.33	16.0	5.0	3.20
	12	11.0	2.9	3.79	14.0	3.9	3.59	16.0	4.7	3.40
	15	11.0	2.8	3.93	14.0	3.7	3.78	16.0	4.5	3.56
	-20	9.3	4.7	1.98	10.0	4.9	2.04	10.4	5.1	2.04
	-15	9.8	5.1	1.92	11.0	5.2	2.12	11.4	5.4	2.11
	-10	9.8	4.9	2.00	11.5	5.4	2.13	12.1	5.7	2.12
75	-7	9.7	4.7	2.06	11.9	5.5	2.16	12.7	5.9	2.15
	-2	9.6	4.2	2.29	12.0	5.3	2.26	13.3	5.9	2.25
	2	9.6	3.9	2.46	11.9	5.0	2.38	13.5	5.8	2.33
	7	11.0	3.6	3.06	14.0	4.7	2.98	16.0	5.6	2.86
	12	11.0	3.3	3.33	14.0	4.3	3.26	16.0	5.2	3.08
	15	11.0	3.2	3.44	14.0	4.2	3.33	16.0	5.0	3.20
	-20	9.4	5.2	1.81	10.1	5.4	1.87	10.1	5.5	1.84
	-15	10.0	5.7	1.75	11.1	5.9	1.88	11.2	5.8	1.93
80	-10	9.9	5.5	1.80	11.6	6.1	1.90	11.9	6.2	1.92
	-7	9.9	5.3	1.87	12.1	6.3	1.92	12.6	6.5	1.94
	-2	9.8	4.7	2.09	12.2	6.1	2.00	13.3	6.6	2.02
	2	9.8	4.4	2.23	12.1	5.8	2.09	13.6	6.6	2.06
	7	11.0	4.1	2.68	14.0	5.4	2.59	16.0	6.4	2.50
	12	11.0	3.8	2.89	14.0	5.1	2.75	16.0	6.0	2.67
	15	11.0	3.7	2.97	14.0	4.9	2.86	16.0	5.8	2.76
	-20	9.4	5.5	1.71	10.1	5.8	1.74	10.0	5.7	1.75
	-15	10.0	6.1	1.64	11.1	6.2	1.79	11.1	6.1	1.82
	-10	10.0	5.9	1.69	11.6	6.5	1.78	11.9	6.4	1.86
	-7	9.9	5.7	1.74	12.1	6.7	1.81	12.6	6.8	1.85
	-2	9.8	5.1	1.92	12.2	6.5	1.88	13.3	7.0	1.90
	2	9.8	4.8	2.04	12.1	6.2	1.95	13.6	7.0	1.94
	7	11.0	4.4	2.50	14.0	5.7	2.46	16.0	6.7	2.39
	12	11.0	4.1	2.68	14.0	5.5	2.55	16.0	6.4	2.50
	15	11.0	4.0	2.75	14.0	5.3	2.64	16.0	6.2	2.58

tVL = heating flow temperature (°C)

tQ = source temperature (°C)

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

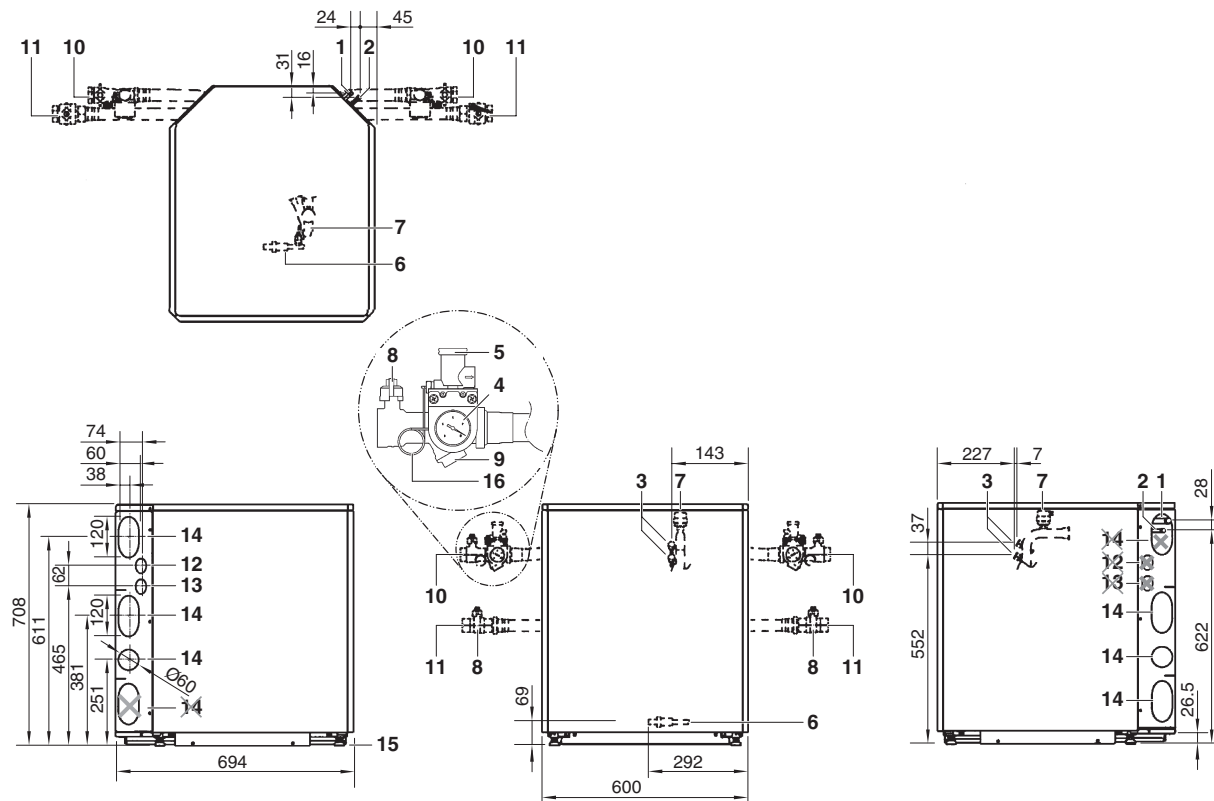
P = power consumption of the overall unit (kW)

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

Take account of daily power cuts!
see Engineering

■ Dimensions

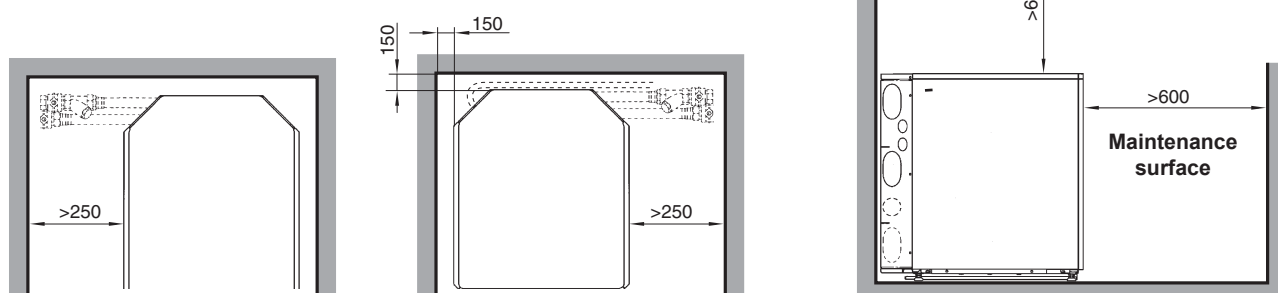
Hoval Belaria® SHM (11-16) indoor unit (Dimensions in mm)



Electric cables can only be fed in on the rear left side!

- | | | |
|---|---------------------------|--|
| 1 Hot gas line R410A 5/8" (15.9 mm) | 6 Drain for water circuit | 12 Feed-through for control cable (opening Ø 37 mm) |
| 2 Liquid line R410A 3/8" (9.5 mm) | 7 Air bleeding | 13 Feed-through for power supply (opening Ø 37 mm) |
| 3 Maintenance connections R410A Ø 12.7 mm | 8 Shut-off valve | 14 Feed-through for refrigerant line and flow/return |
| 4 Pressure gauge | 9 Water filter | 15 Levelling feet |
| 5 Safety valve | 10 Heating return G 1" | |
| | 11 Heating flow G 1" | |

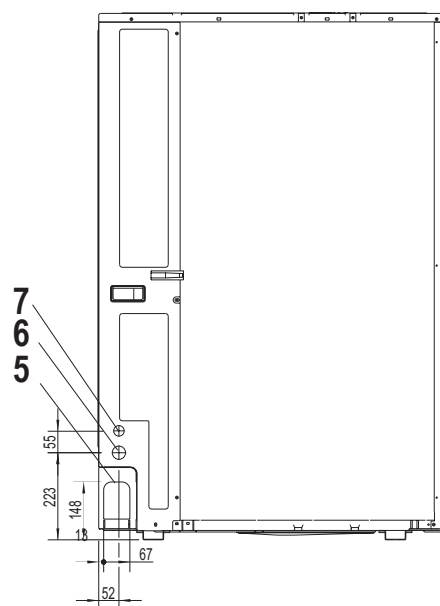
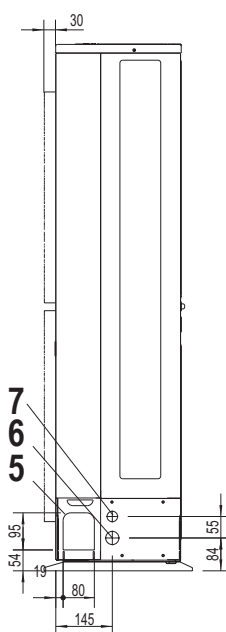
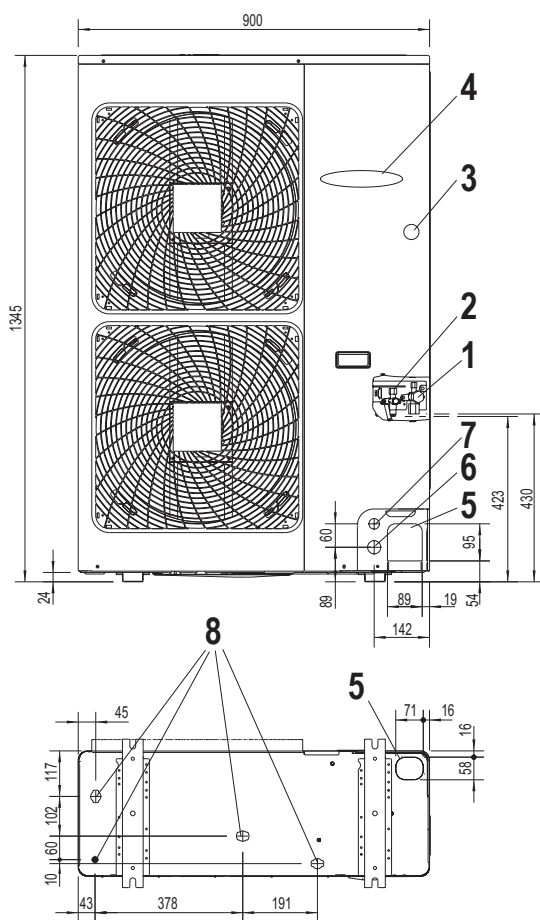
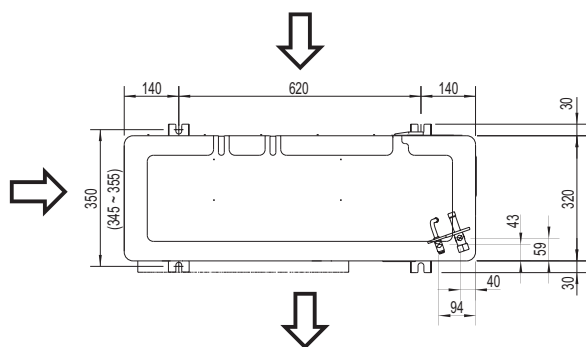
Space requirement for Hoval Belaria® SHM indoor unit (Dimensions in mm)



■ Dimensions

Hoval Belaria® SHM (11-16) outdoor unit

(Dimensions in mm)

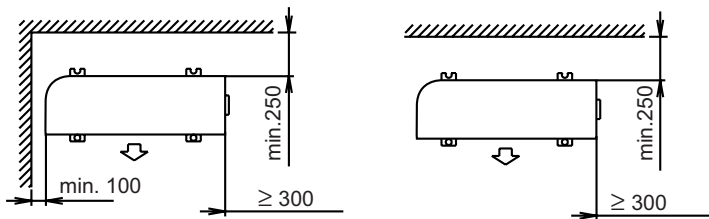


- 1 Hot gas connection
- 2 Liquid connection
- 3 Maintenance aperture (under the cover)
- 4 Electrical connection (in the control box)
- 5 Inlet opening for refrigerant lines
- 6 Feed-through for power supply
- 7 Feed-through, control connection cable
- 8 Condensate outlet

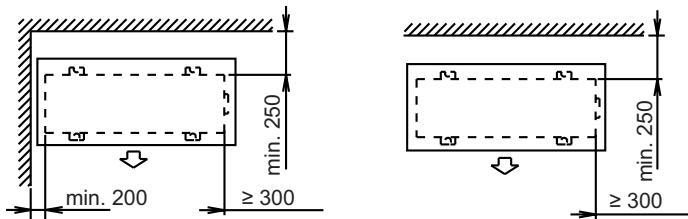
■ Dimensions

Space requirement

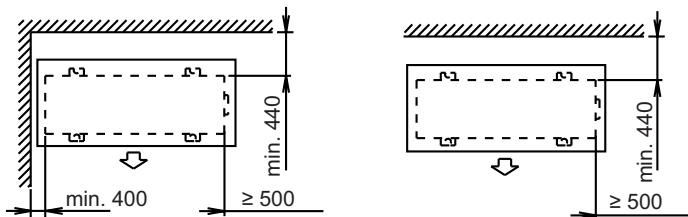
Space requirement for Hoval Belaria® SHM (11-16) outdoor unit without roof (Dimensions in mm)



Space requirement for Hoval Belaria® SHM (11-16) outdoor unit with roof (Dimensions in mm)



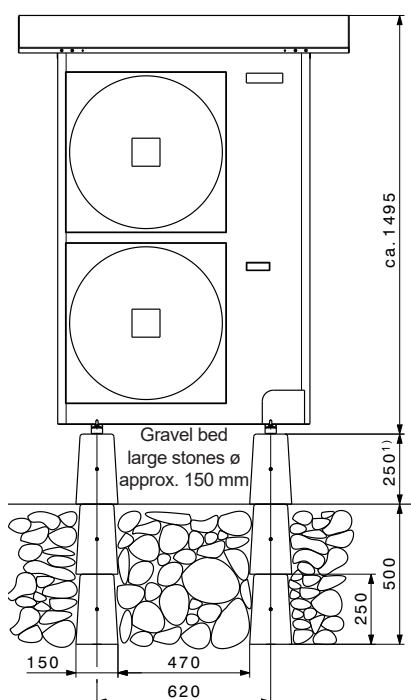
Space requirement for Hoval Belaria® SHM (11-16) with acoustic insulation housing (Dimensions in mm)



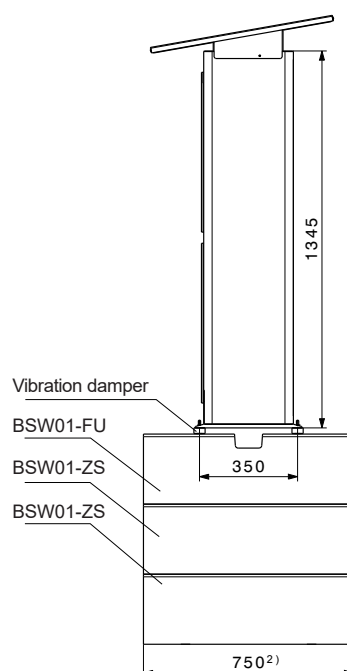
Base plans for Hoval Belaria® SHM (11-16) (Dimensions in mm)

Concrete base - gravel bed

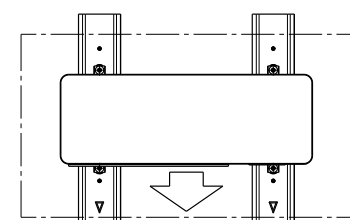
Front view



Side view



View from above



There must be adequate space for the outlet (approx. 1 m) to route off the cooled air.

The outdoor unit must be protected against heavy snowfall. If necessary, provide a cover.

The outdoor unit must be placed on feet at least 250 mm / 50 mm high. There must be a gravel bed under it to discharge the condensation. (see base plans)

Dimensions of protective roof for outdoor unit

Belaria® SHM type	B	T
(11-16)	1180	660

- 1) Depending on the possible snow depth; for version with sound attenuation housing >50-70 base height 200 mm (included in the scope of delivery)
- 2) Design with sound attenuation housing min. length 950

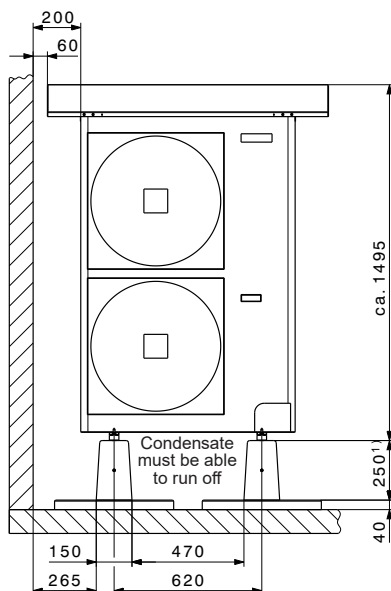
■ Dimensions

Base plans for für Belaria® SHM (11-16)

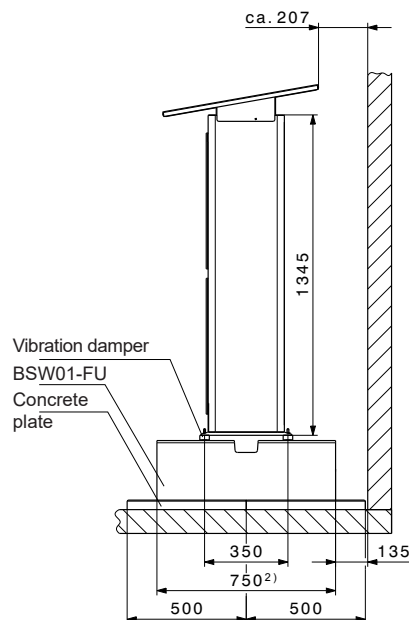
(Dimensions in mm)

Concrete base - firm base

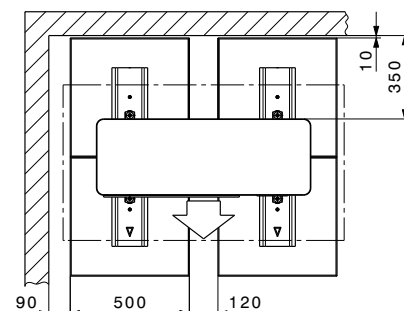
Front view



Side view



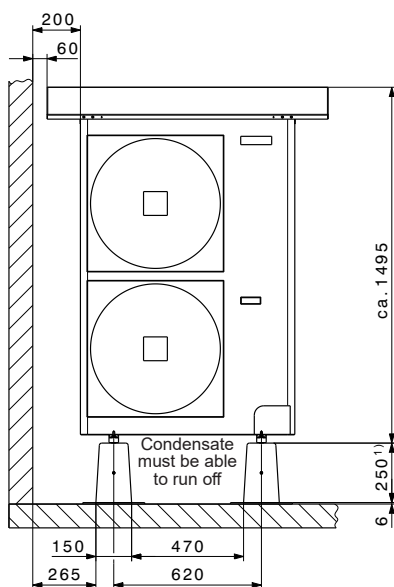
View from above



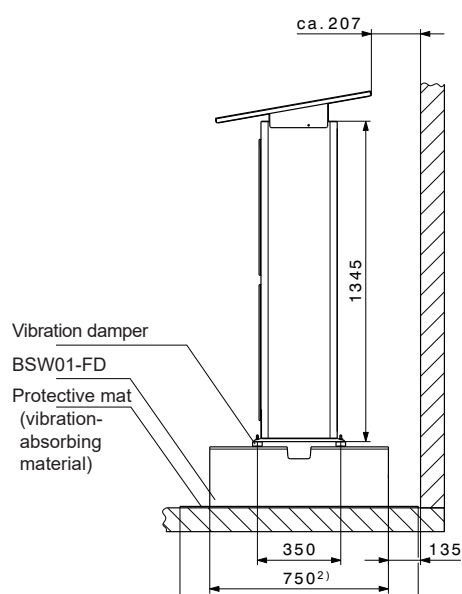
- The outdoor unit must be attached to the base using 4 vibration dampers M8 and concrete dowels (see Accessories).
- If the outdoor unit is exposed to strong winds, the bases must be extended to approx. 700 mm and anchoring cables fitted.

Concrete base - flat roof

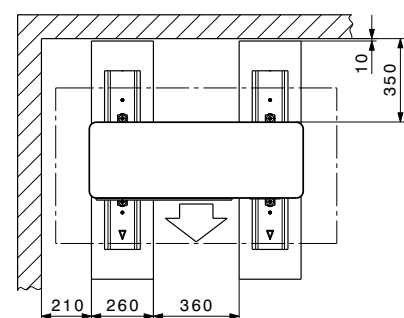
Front view



Side view



View from above



- Prevention of the transmission of structure-borne sound to the roof is very important. Specialists may need to be consulted, depending on the specific roof design.
- The outdoor unit must not be installed directly above bedrooms!
- The outdoor unit must be attached to the base using 4 vibration dampers M8 and concrete dowels (see Accessories).
- The outdoor unit must be protected against heavy snowfall. If necessary, provide a cover (see Accessories).
- The condensate must be routed away from the base so that no ice can form on the base.
- Observe the maximum permissible roof load without fail! (weight of unit, concrete base and any snow load).
- If the outdoor unit is exposed to strong winds, the bases must be extended to approx. 700 mm and anchoring cables fitted. In addition, wind deflectors must be installed.

■ Engineering

Requirements and directives

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

Installation

General comments

- The distance between the inside and outdoor unit must be as short as possible. Only short and simple routing of refrigerant lines guarantees cost effectiveness.
- The required minimum length for the lines between the outside and indoor unit is 3 m, and the lines must not be shorter than this. The maximum permissible length of the lines between the outside and indoor unit is 30 m and must not be exceeded. The maximum permissible height difference between outside and indoor unit is 30 m. The maximum permissible length of the lines between calorifier and indoor unit is 10 m. It is essential to clarify details of the installation location and line routing with Hoval!

Indoor unit

- The indoor unit of the Hoval Belaria® SHM air/water heat pump system can be mounted on the floor in the boiler room.
- The installation location must be selected in accordance with the valid requirements and directives.
- The installation must be free from dust or other foreign matter which could lead to contamination.
- Where possible, the installation location should be outside noise-sensitive areas of the building and equipped with a sound-absorbing door.
- Access for the purpose of operation and maintenance must be ensured.
- The installation location must be frost-free.
- The space around the indoor unit allows for adequate air circulation.
- Precautions are taken in case water is drained via the safety valve.
- The indoor unit is not designed to be allowed to be installed where there could be a potentially explosive atmosphere.
- Do not install the indoor unit in a room that will also be used as a workplace or workshop. If construction work is taking place in the vicinity (e.g. sanding work) which gives rise to a lot of dust, the unit must be switched off and covered.
- If the noise level is measured under the actual installation conditions, this will be higher than specified in the unit specification. This is because of reflected noise from the surroundings. Select the installation location accordingly.
- Take precautions so that no damage can be caused by leaking water if there is a leak at the installation location and in the vicinity.
- The floor must withstand the weight of the indoor unit. It must be level so that no vibration and noise is created and the unit stands securely.

- Do not place objects on the unit.
- Do not climb onto, sit on or stand on the unit.
- Make sure that adequate precautions are or will be taken according to the particular local and national regulations in the event that there is a leak in the refrigerant circuit.
- Rooms with high air humidity, for example laundry rooms, are not suitable installation locations (dewpoint <10 °C).

The installation of a magnetic sludge separator is mandatory.

Outdoor unit

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

- The subsoil in the installation location must be sufficiently stable to bear the weight of the unit and its vibration in operation.
- The location should have adequate space for installation, maintenance and cleaning of the unit (see dimensions "Space requirements").
- As condensate flows out of the outdoor unit, a gravel bed to absorb the condensate must be installed under it. Do not place anything which is sensitive to moisture under the unit.
- Due to the sound emissions, the installation location should not be beneath living-room or bedroom windows and be far enough away from neighbouring buildings (perform calculation).
- The selected location should be such that the air blown out by the unit does not bother occupants of the building or neighbours.
- No parts and plants at risk of frost damage are allowed to be on the blow-out side.
- It is essential to avoid air short-circuiting. The space necessary for intake and outlet must always be provided (see space requirements).
- The installation location must be selected so that the air intake and outlet are not blocked or obstructed by snow, leaves, etc.
- Installation in wall niches is not recommended (air short circuit, sound echo).
- The units cannot be installed one above the other.
- Install the units, the mains cables and the branch wiring at least 3 m away from TV sets and radios. This should prevent interference with picture and sound.
- The intake air must be completely free of aggressive substances such as ammonia, sulphur, chlorine etc.
- Installation on a wall console is not suitable in the case of lightweight walls. Lightweight walls can increase sound emissions and transmit structure-borne sound.
- Install the outdoor unit so that the intake side faces the wall and is not directly exposed to the wind.

- Never install the outdoor unit in a place where the intake side is directly exposed to the wind.
- Fit a deflector plate on the air outlet side of the outdoor unit to prevent exposure to the wind.
- The outdoor unit must be protected against heavy snowfall.
- Install the unit at sufficient height from the ground to ensure that the unit is not covered by snow and freezing condensate cannot impair operation (see separate base plans).

Condensate (outdoor unit)

- Condensate must be able to run off freely.
- Use a condensate drip tray if the condensate has to be drained off collectively (option).
- It is essential to insulate the condensate hose from the tray, and if necessary, equip the hose with trace heating.

Refrigerant connecting lines

- The refrigerant connecting lines may only be installed by authorised persons and following consultation or approval by Hoval.
- The line dimensions must be precisely adhered to (see also Section "Part No."; refrigerant connecting lines).
- The inside and outdoor unit, with the hot gas and liquid line, must be fitted professionally with thermal insulation.

Wall lead-through, protective pipe for routing of the lines

The wall lead-through and the protective pipe (Ø min. 100 mm) for the connecting lines must be routed with no changes of direction, executed professionally and sealed.

Electric connecting cables

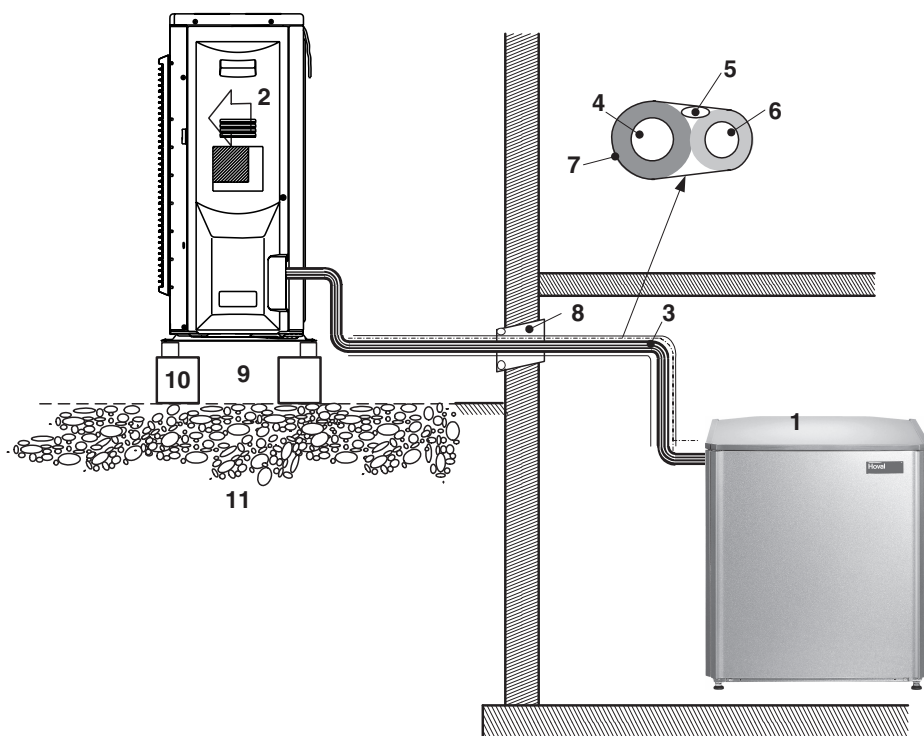
- The electric connecting cables on the outdoor unit must be connected flexibly.
- Taking advantage of the special reduced tariffs offered by local energy companies for heat pump systems often means interrupted operation. For example, within any 24-hour period, the power supply may be interrupted for 3 periods of 2 hours each. This must be taken into account when dimensioning and planning the heat pump.

Necessity of an oil separator

If the outdoor unit is placed lower than the indoor unit, an oil separator must be bent or installed in the hot gas line for each 10 m of height difference (siphon). The oil separator prevents the compressor oil flowing back after switching off and thus slugging which could damage the compressor.

■ Engineering

Cross-section of connecting line



- 1 Indoor unit (evaporator / compressor / condenser)
- 2 Outdoor unit (evaporator / fan / compressor)
- 3 Refrigerant connecting line
- 4 Hot gas line with thermal insulation
- 5 Electric connecting cable (on site) Belaria® SHM (11-16) 1 cable (control connection cable)
- 6 Refrigerant liquid line with thermal insulation
- 7 Wrapping or duct
- 8 PE casing tube Ø at least 100 mm with sealing (on site). All casing tubes for the lines must be routed straight (it must be possible to look down the tube and see the other end!).
- 9 Condensate
- 10 Base or paving slab to be provided on site on gravel (The height is to be determined depending on the climate zone, recommended height >250 mm; consider max. possible local snow height)
- 11 Drainage (on site)

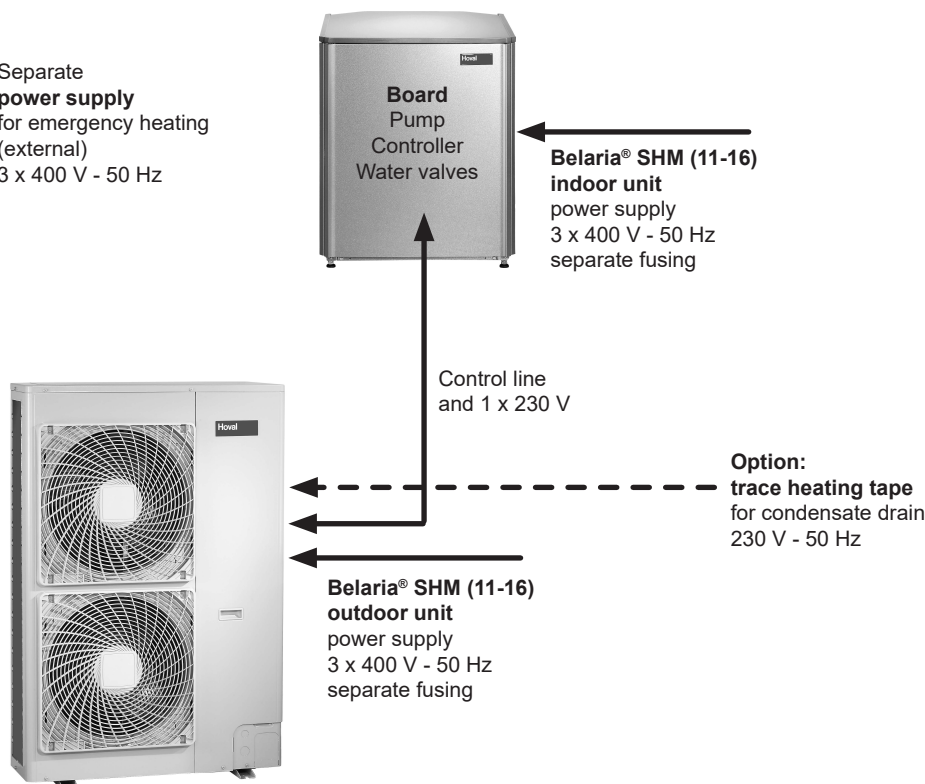
Line length between outdoor unit and indoor unit

Hoval Belaria® SHM type (11-16)

- Minimum line length 5 m
- Maximum permissible length 50 m
- Maximum permissible height difference 30 m

Electrical connection Hoval Belaria® SHM

Separate power supply for emergency heating (external)
3 x 400 V - 50 Hz



The trace heating tape must be connected according to the local regulations, e.g. separate protection by a ground fault circuit interrupter.

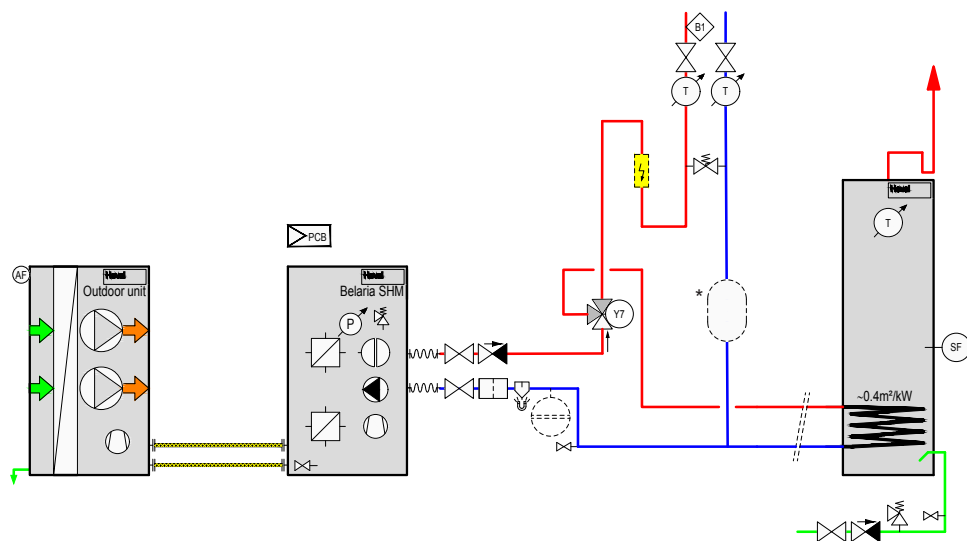
■ Examples

Belaria® SHM (11-16)

Air/water heat pump with

- calorifier
- 1 direct circuit

Hydraulic schematic BBACE020



* Additional volume for defrosting process

Important notices

- Direct circuit not suitable for low-temperature heating systems
- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

PCB	Room station
AF	Outdoor sensor
SF	Calorifier sensor
Y7	Switching valve

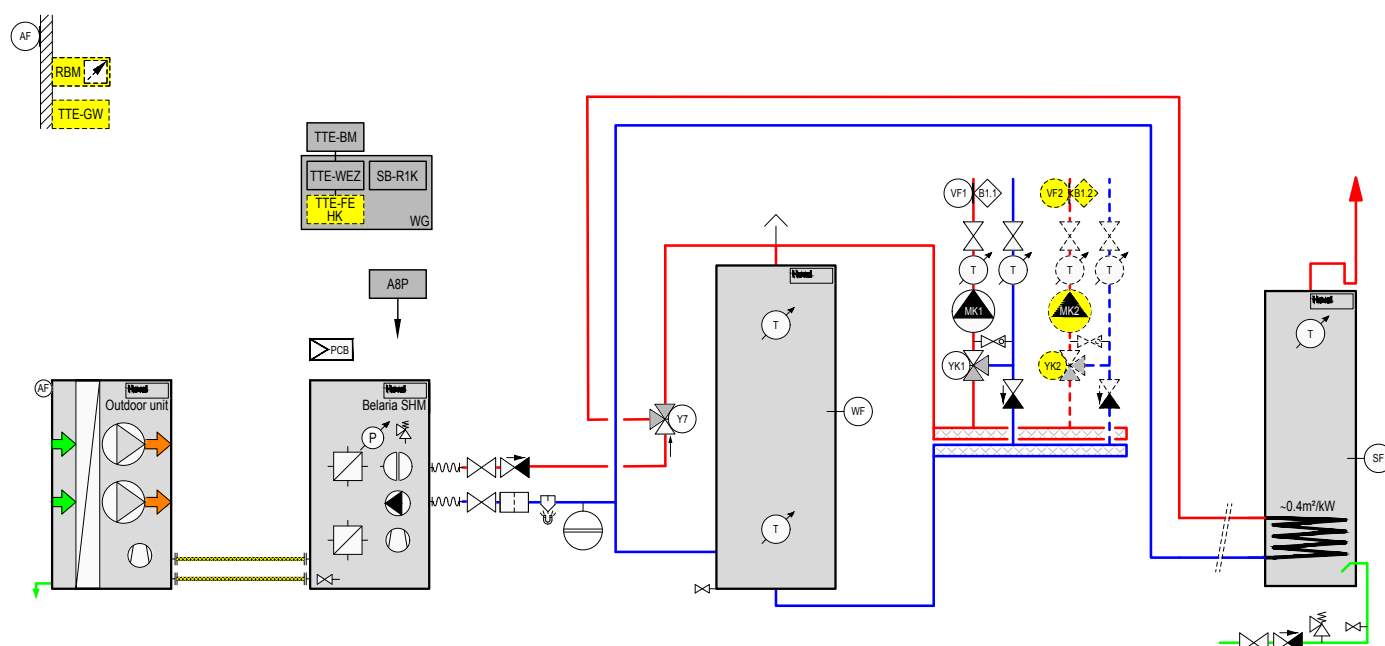
Examples

Belaria® SHM (11-16)

Air/water heat pump with

- energy buffer storage tank
- calorifier
- 1-... mixer circuit(s)

Hydraulic schematic BBACE040



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

TTE-BM	TopTronic® E control module
TTE-WEZ	TopTronic® E basic module heat generator (in the wall housing)
SB-R1K	System module relays 1 contact
WG	Wall housing
A8P	Additional board
PCB	Room station
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
Y7	Switching valve
<i>Option</i>	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

Description

Hoval UltraSource B comfort C
Hoval UltraSource B compact C
Modulating heat pump system for heating and cooling in the living area.
UltraSource B compact C (8/200), (11/200) version additionally with domestic hot water storage tank.
Split system comprising indoor unit and outdoor unit.

Indoor unit UltraSource B comfort C

- Compact floor-mounted air/water heat pump
- UltraSource B comfort C (8) with rotary compressor controlled by inverter
- UltraSource B comfort C (11,17) with scroll capsule compressor controlled by inverter
- Casing made from painted, galvanised sheet steel. Colour flame red/brown red (RAL 3000/RAL 3011)
- Plate-type condenser made of stainless steel/CU
- Integrated components:
 - Speed-regulated high-efficiency pump
 - Flow sensor/flow meter or heat meter
 - E-heating element 1 to 6 kW
 - 3-way changeover ball cock for heating/ domestic hot water (see accessories for domestic hot water set)
- With cooling function with corresponding hydraulics
- Safety set consisting of safety valve, automatic air vent and pressure gauge (see accessories)
- Diaphragm pressure expansion tanks see "Various system components"
- Sensor set consisting of outdoor sensor, flow sensor and domestic hot water sensor included in the scope of delivery
- TopTronic® E controller installed
- Hydraulic connections
 - Heating connections 1" left or right side. See accessories for connecting hoses
- Working medium lines can be connected at rear
- Electrical connections at rear

Indoor unit UltraSource B compact C

- Compact floor-mounted air/water heat pump
- UltraSource B compact C (8/200) with rotary compressor controlled by inverter
- UltraSource B compact C (11/200) with scroll capsule compressor controlled by inverter
- Casing made from painted, galvanised sheet steel. Colour flame red/brown red (RAL 3000/RAL 3011)
- Plate-type condenser made of stainless steel/CU
- Integrated calorifier 200 litres (can be divided for easier transport into the building; weight 1294 x 770 x 602)
- Enamel painted calorifier with PU hard-foam insulation energy efficiency class A, load profile XL. Maintenance flange and magnesium protection anode built in
- Integrated components:
 - Speed-regulated high-efficiency pump
 - Flow sensor/flow meter or heat meter
 - E-heating element 1 to 6 kW
- With cooling function with corresponding hydraulics
- Safety set consisting of safety valve, automatic air vent and pressure gauge (see accessories)



Indoor unit

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



Outdoor unit (8,11)

Outdoor unit (17)

Hoval UltraSource B comfort C Hoval UltraSource B compact C

35 °C	55 °C	Type	Heat output ¹⁾		Cooling capacity ¹⁾	
			A-7W35 kW	A2W35 kW	A35W18 kW	
		(8)	2.0-6.0	2.1-7.6	2.9-8.9	
		(8/200)	2.0-6.0	2.1-7.6	2.9-8.9	
		(11)	2.8-10.0	2.8-10.2	3.5-11.0	
		(11/200)	2.8-10.0	2.8-10.2	3.5-11.0	
		(17)	6.0-14.8	6.0-17.4	6.2-17.7	

Energy efficiency class of the compound system with control

¹⁾ Modulation range

The built-in high-efficiency pumps fulfil the Eco-design requirements of 2015 with an EEL of ≤ 0.23.

Seal of approval FWS

The UltraSource B series is certified by the CH certification commission.



- Diaphragm pressure expansion tanks see "System components"
- Sensor set consisting of outdoor sensor, flow sensor and domestic hot water sensor included in the scope of delivery
- TopTronic® E controller installed
- Internally decoupled against solid-borne noise and can be connected directly
- Hydraulic connections
 - Heating connections 1" top
 - Hot and cold water connections ¾" top
- Working medium lines can be connected at right or left side
- Electrical connections at top

Outdoor unit

- Elegant and extremely quiet outdoor unit
- Compact unit for outdoor installation
- Housing with sheet metal enclosure, powder-coated, anthracite colour (DB703)
- U-shaped louvre-type evaporator
- Speed-controlled axial fan with FlowGrid (inlet grille)
- Condensate tray incl. tray heating for channelling all the condensate in the outdoor unit, fixed installation, connection 1" accessible from below
- Working medium line connections can be connected underneath
 - Suction gas line 16 mm
 - Liquid line 12 mm

- Electrical connections on left side, lead-in from underneath
 - 230 V control current, supplied from the indoor unit
 - Data cable - bus connection to the indoor unit

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

■ Description

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
- 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:
 - Module expansion heating circuit 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"**

Delivery

- Indoor and outdoor unit delivered
- packaged separately
- Sensor set in the indoor unit supplied loose

On site

- Masonry penetrations for working
medium connection line
- Electrical connecting line outdoor/indoor unit

■ Part No.

Air/water heat pump
Hoval UltraSource B comfort C
Hoval UltraSource B compact C

Part No.

Modulating air/water heat pump
for heating and cooling.
Comprising indoor unit and outdoor unit.
UltraSource B compact C with integrated
calorifier in the indoor unit.

UltraSource B comfort C (8,17)
UltraSource B compact C (8/200)
available starting July 2019

With built-in Hoval TopTronic® E control

- Integrated control functions for
- 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 DHW charging circuit
 - Bivalent and cascade management
 - Can be optionally expanded with max.
1 module expansion:
 - 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)

Delivery

- Indoor and outdoor unit delivered
packaged separately
- Sensor set in the indoor unit supplied loose



Outdoor unit (8,11)



Outdoor unit (17)

Hoval UltraSource B comfort C

Type	Heat output ¹⁾		Cooling capacity ¹⁾	
	A-7W35 kW	A2W35 kW	A35W18 kW	
(8)	2.0-6.0	2.1-7.6	2.9-8.9	7016 659
(11)	2.8-10.0	2.8-10.2	3.5-11.0	7016 662
(17)	6.0-14.8	6.0-17.4	6.2-17.7	7016 665

¹⁾ Modulation range

Hose set

for UltraSource B comfort (8-17)

Consisting of:

flexible connection hoses for
heating side insulated 1"

L = 1.0 m, can be shortened on one side

6046 173



Hoval UltraSource B compact C
with integrated 200 litre calorifier.

Type	Heat output ¹⁾		Cooling capacity ¹⁾	
	A-7W35 kW	A2W35 kW	A35W18 kW	
(8/200)	2.0-6.0	2.1-7.6	2.9-8.9	7016 660
(11/200)	2.8-10.0	2.8-10.2	3.5-11.0	7016 663

¹⁾ Modulation range

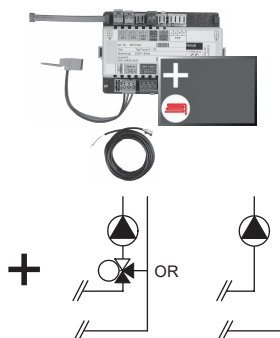


Outdoor unit (8,11)

No hose set necessary

Energy efficiency class
see "Description"

■ Part No.



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/hot water module for implementing the following functions:

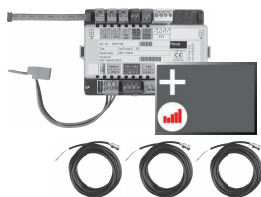
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer

incl. assembly material
1x contact sensor ALF/2P/4/T, L = 4.0 m

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

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

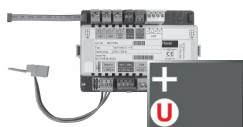
6037 062

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

- 1 heating/cooling circuit without mixer or
 - 1 heating/cooling circuit with mixer
- each incl. energy balancing

incl. assembly material
3x contact sensor ALF/2P/4/T, L = 4.0 m

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



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. assembly material

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

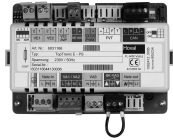
Further information

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

Notice

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

■ 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"

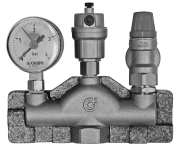
Outdoor sensor, immersion sensor and
contact sensor supplied with the heat pump.

■ Part No.

Heating/cooling accessories

Part No.

Pressure expansion tanks
see "Various system components"



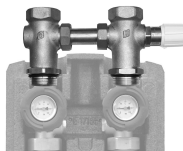
Safety set SG15-1"
Suitable up to max. 50 kW
complete with safety valve (3 bar)
Pressure gauge and automatic air vent
with cut off valve
Connection: 1" internal thread

641 184



Connection set AS32-2/ H
for compact mounting
of all required fittings
of a direct circuit
consisting of:
2 thermometer ball valves
Wall bracket included separately
Connection T-piece DN 32
in the return flow for connecting the
sludge separator CS 32 bottom and
the expansion tank on the side
on connection set
installation option
for an overflow valve
incl. non-return valve

6039 793



Bypass valve DN 32 (1 1/4")
for the installation in a HA group DN 32
Setting range 0.6-1.5 bar
Max. flow rate: 1.5 m³/h
with self-sealing screw connection for
mounting between flow and return
ball valve

6014 849

Strainers
see "Various system components"



Sludge separator CS 25-1" with magnet
for flow rates of 1.0 - 2.0 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 1"
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: 1.21 kg

2063 735

■ Part No.

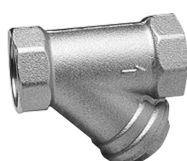


Sludge separator CS 32-1 1/4" with magnet

for flow rates of 2.0 - 3.0 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 1 1/4"
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: 1.37 kg

Part No.

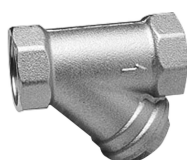
2063 736



Strainer PN 16 B50-25-1"

Casing brass, PN 16
Connections Rp 1"
Operating temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm

2046 978



Strainer PN 16 B50-32-1 1/4"

Casing brass, PN 16
Connections Rp 1 1/4"
Operation temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm

2046 980



Dew point switch FAS

mechanical dew point switch
for monitoring the
formation of condensation using
adjustable switching value

2070 911

Domestic hot water accessories



Warm water set

for UltraSource B comfort C,
UltraSource T comfort
Consisting of:
Motor drive for installed
changeover valve
Includes distance wave and flexible
connection hose insulated 1"
L = 1.0 m

6046 181



Titanium impressed current anode

for UltraSource B compact C,
UltraSource T compact
as cathodic protection for
enamelled calorifier

6046 662

In every case, either a Correx electrical anode
or a magnesium anode may be used.

Screw-in electric immersion heater

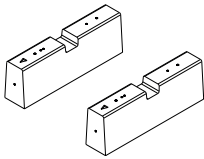
for plants with buffer storage tank
as emergency heating.



Type	Heat output [kW]	Install. length [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

■ Part No.



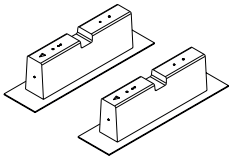
Outdoor unit accessories

Part No.

Concrete base set BSW01-FU
to securely erect an outdoor unit
on solid ground.
Consisting of:
2 concrete bases with molded
fastening sleeves, screw set
Weight: 2 pieces of 58 kg

6046 157

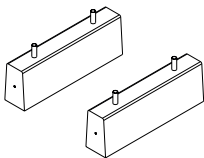
Also order M10 vibration damper set



Concrete base set BSW01-FD
to securely erect an outdoor unit
on flat roof.
Consisting of:
2 concrete bases with molded
fastening sleeves, protective mats
with aluminium facing, screw set
Weight: 2 pieces of 58 kg

6046 158

Also order M10 vibration damper set



Concrete base set BSW01-ZS
to securely erect an
outdoor unit in drainage bed
for gardens and meadows.
Additional base height 250 mm for
plug combination with set BSW01-FU
Consisting of:
2 additional concrete bases,
screw set
Weight: 2 pieces of 58 kg

6046 159



Vibration damper set M10
for installing the unit on
a concrete base.

6043 779

■ Technical data

Hoval UltraSource B comfort C (11)
Hoval UltraSource B compact C (11/200)

Type		(8)	(11)	(17)	(8/200)	(11/200)
• Energy efficiency class of the compound system with control	35 °C / 55 °C	A+++/A++	A+++/A++	A+++/A+++	A+++/A++	A+++/A++
• Energy efficiency class load profile XL	Hot water	-	-	-	A	A
• Seasonal coefficient of performance moderate climate 35 °C/55 °C	SCOP	5.1/3.7	4.5/3.4	5.2/3.9	5.1/3.7	4.5/3.4
Performance data (heating) in acc. with EN 14511						
• Heat output A2W35	kW	3.9	5.9	11.3	3.9	5.9
• Power consumption A2W35	kW	0.9	1.3	2.5	0.9	1.3
• Coefficient of performance A2W35	COP	4.4	4.4	4.5	4.4	4.4
• Heat output A7W35	kW	4.5	6.8	12.8	4.5	6.8
• Power consumption A7W35	kW	0.9	1.3	2.5	0.9	1.3
• Coefficient of performance A7W35	COP	5.2	5.1	5.1	5.2	5.1
• Heat output A-7W35	kW	3	4.4	8.7	3	4.4
• Power consumption A-7W35	kW	0.9	1.3	2.6	0.9	1.3
• Coefficient of performance A-7W35	COP	3.4	3.3	3.3	3.4	3.3
Performance data (cooling) in acc. with EN 14511						
• Cooling capacity A35W18	kW	5	7.8	12	5	7.8
• Power consumption A35W18	kW	1	1.8	2.7	1	1.8
• Coefficient of performance A35W18	EER	4.8	4.3	4.4	4.8	4.3
• Cooling capacity A35W7	kW	3.8	5.4	8.5	3.8	5.4
• Power consumption A35W7	kW	1	1.7	2.5	1	1.7
• Coefficient of performance A35W7	EER	3.7	3.1	3.4	3.7	3.1
Sound data						
• Sound power level EN 12102 outdoor unit ^{5) 6)}	dB (A)	46	49.8	57	46	49.8
• Sound pressure level 5 m ^{4) 5)}	dB (A)	27	30.8	38	27	30.8
• Sound pressure level 10 m ^{4) 5)}	dB (A)	21	24.8	32	21	24.8
• Sound power level EN 12102 indoor unit	dB (A)	42	45.3	45	42	45.3
Hydraulic data						
• Max. flow temperature (without/with screw-in electrical heating inset)	°C	62/65	63/65	62/65	62/65	63/65
• Max. flow heating water with A7/W35, 5K ΔT	m³/h	1.5	2.2	3.7	1.5	2.2
• Nominal flow rate heating water 5K ΔT	m³/h	0.8	1.2	2.2	0.8	1.2
• Residual overpressure of heating pump (at max. pump speed)	kPa	65	57	37	65	57
• Max. operating pressure on the heating side	bar	3	3	3	3	3
• Max. operating pressure process water side	bar	-	-	-	10	10
• Flow/return connection heating	R	1"	1"	1"	1"	1"
• Cold/hot water connection	R	-	-	-	¾"	¾"
• Nominal air volume outdoor unit (A7W35 and nominal rotation speed)	m³/h	2500	3600	5000	2500	3600
Cooling technical data						
• Refrigerant		R410A	R410A	R410A	R410A	R410A
• Compressor/stages		Inverter/1	Inverter/1	Inverter/1	Inverter/1	Inverter/1
• Refrigerant fill volume	kg	3.2	4.1 (up to 6 m)	4.8	3.2	4.1 (up to 6 m)
• Compressor oil fill volume	l	0.35/FV50S	0.99/FV50S	1/FVC68D	0.35/FV50S	0.99/FV50S
• Refrigerant line connections suction gas side	mm	12 x 1	16 x 1	18 x 1	12 x 1	16 x 1
• Refrigerant line connections liquid side	mm	10 x 1	12 x 1	12 x 1	10 x 1	12 x 1
• Max. cable length	m	20	20	20	20	20
• Max. difference in height ³⁾	m	10	10	10	10	10
Electrical data						
• Electrical connection compressor	V / Hz	1~230/50	3~400/50	3~400/50	1~230/50	3~400/50
• Electrical connection electric immersion heater	V / Hz	1~230/50 3~400/50	3~400/50	3~400/50	1~230/50 3~400/50	3~400/50
• Control electrical connection	V / Hz	1~230/50	1~230/50	1~230/50	1~230/50	1~230/50
• Max. compressor operating current	A	15.8	9	14.8	15.8	9
• Max. fan operating current	A	0.21	0.5	0.5	0.21	0.5
• Max. fan power consumption	W	48	113	113	48	113
• Max. electric immersion heater operating current	A	13	13	13	13	13
• Output factor		0.94	0.97	0.95	0.94	0.97
• Main current fuse	A	16	13	16	16	13
• Control current fuse	A	13	13	13	13	13
• Fuse electric immersion heater	A	13	13	13	13	13

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

■ Technical data

Type		(8)	(11)	(17)	(8/200)	(11/200)
Dimensions / weight of indoor unit						
• Dimensions (H x W x D)	mm	1243/620/760	1243/620/760	1243/620/760	1950/602/770	1950/602/770
• Tilting measure	mm	-	-	-	2150	2150
• Weight	kg	149	165	168	251	270
• Minimum sizes of installation room ¹⁾	m ³	7.3	9.3	10.9	7.3	9.3
Dimensions / weight of outdoor unit						
• Dimensions (H x W x D)	mm	1200 x 1090 x 745		1546/1090/745	1200 x 1090 x 745	
• Weight	kg	110	110	150	110	110
Warm water storage unit						
• Storage capacity	l	-	-	-	192	192
• Maximum storage tank temperature	°C	-	-	-	55	55
• Maximum storage tank temperature with electric immersion heater	°C	-	-	-	75	75
• Output capacity at 46 °C draw-off temperature - heat pump ²⁾	l	-	-	-	260	260
• Output capacity at 40 °C draw-off temperature - heat pump ²⁾	l	-	-	-	315	315

¹⁾ If the installation room is smaller than the required minimum size, it must be designed as a machine room in accordance with EN 378.

²⁾ 12 °C cold water temperature/58 °C storage tank temperature

³⁾ Oil lifting bends must be installed according to specifications (see engineering notices)

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

⁵⁾ The sound values apply with a clean evaporator. These values are temporarily exceeded before defrosting.

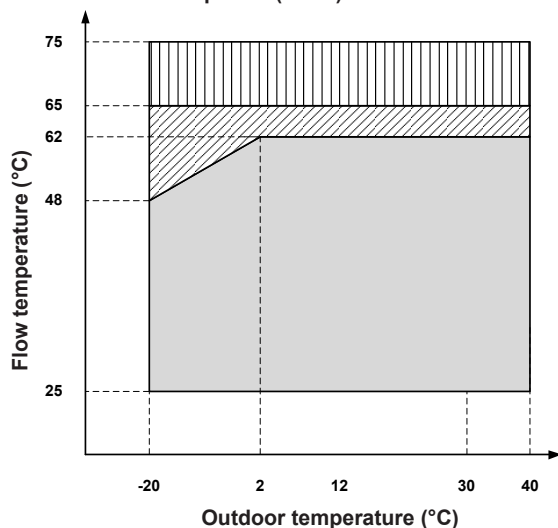
⁶⁾ The sound power level is reduced by 4 dB(A) in whisper mode.

■ Technical data

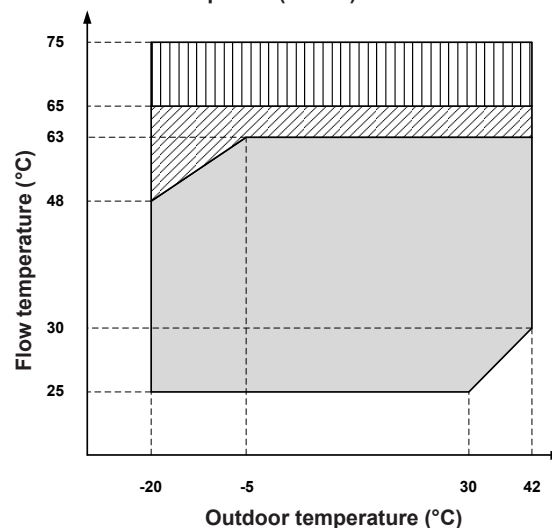
Diagrams of application areas

Heating and hot water

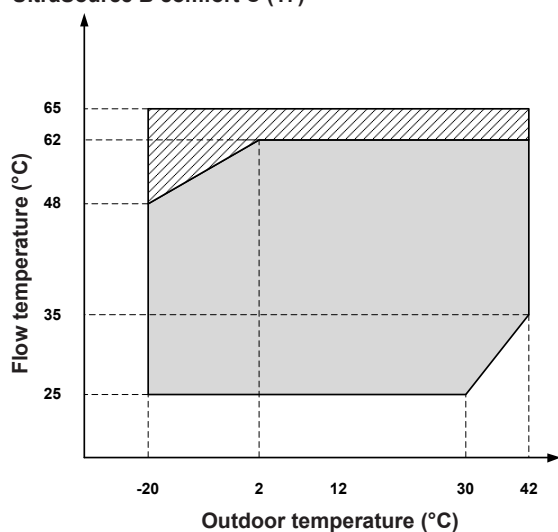
UltraSource B comfort C (8)
UltraSource B compact C (8/200)



UltraSource B comfort C (11)
UltraSource B compact C (11/200)



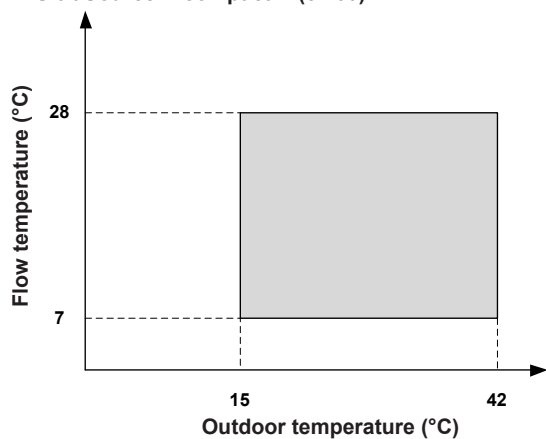
UltraSource B comfort C (17)



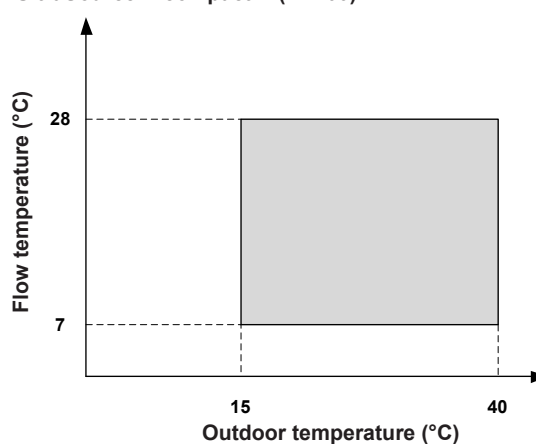
- Application area heating/domestic hot water heat pump (UltraSource B comfort C and compact C)
- Extended application area heating/domestic hot water heat pump including electric immersion heater (UltraSource B comfort C and compact C)
- Extended application area domestic hot water heat pump including electric immersion heater (only UltraSource B compact C)

Cooling

UltraSource B comfort C (8)
UltraSource B compact C (8/200)



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



- Application area cooling heat pump (UltraSource B comfort C and compact C)

■ Technical data

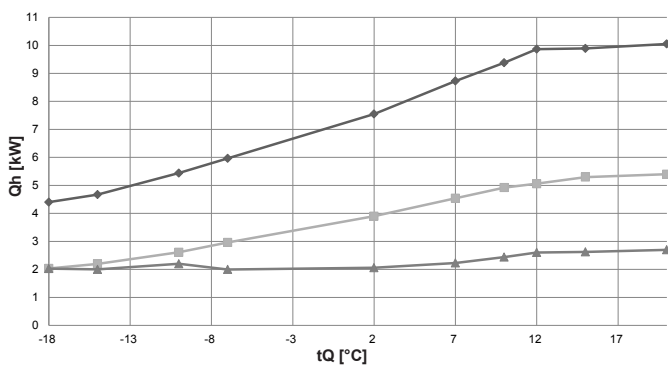
Performance data – heating

Maximum heat output allowing for defrosting losses

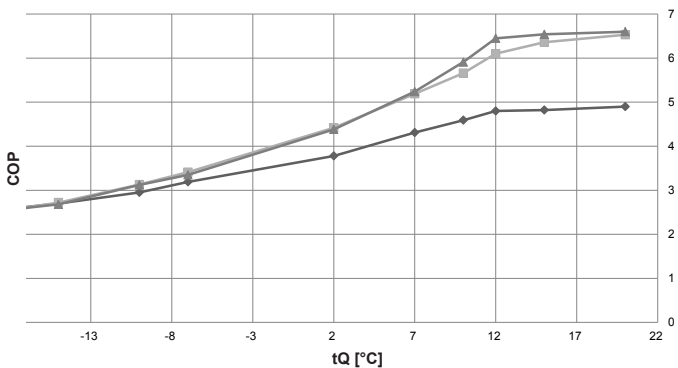
Hoval UltraSource B comfort C (8), compact C (8/200)

Data according to EN 14511

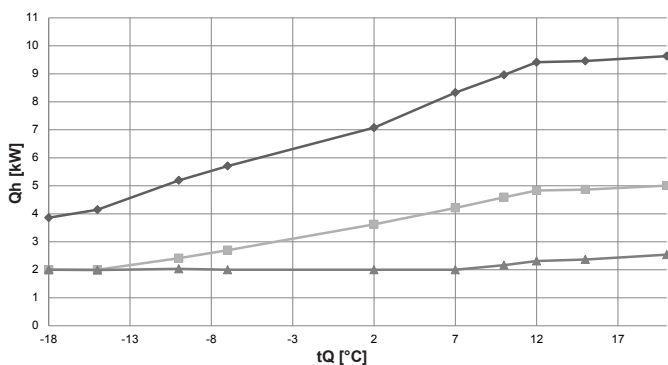
Heat output - $t_{FL} 35^{\circ}C$



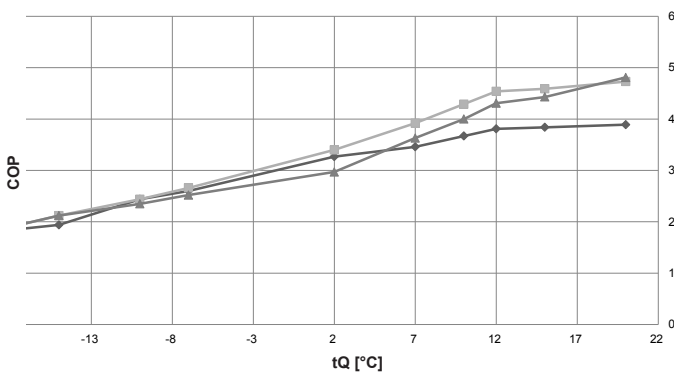
Coefficient of performance - $t_{FL} 35^{\circ}C$



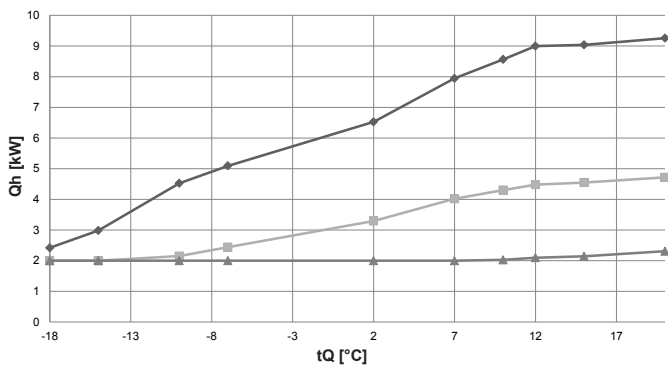
Heat output - $t_{FL} 45^{\circ}C$



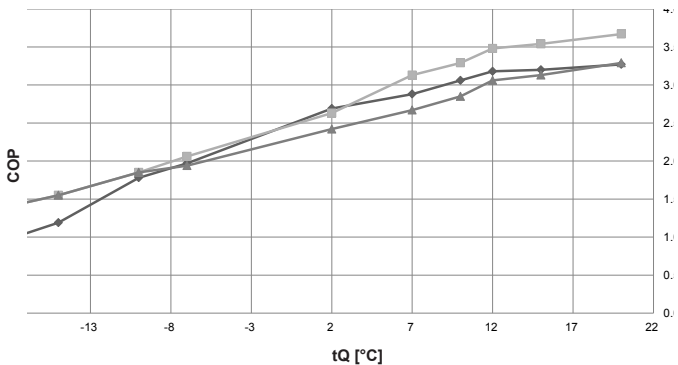
Coefficient of performance - $t_{FL} 45^{\circ}C$



Heat output - $t_{FL} 55^{\circ}C$



Coefficient of performance - $t_{FL} 55^{\circ}C$



Observe daily power interruptions!
see engineering

t_{FL} = Heating flow temperature (°C)

t_Q = Source temperature (°C)

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

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

◆ Maximum output
■ Nominal output
▲ Minimum output

■ Technical data

Performance data – heating

Hoval UltraSource B comfort C (8), compact C (8/200)

Data according to EN 14511

tFL °C	tQ °C	Maximum output			Nominal output			Minimum output		
		Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
35	-18	4.4	1.7	2.6	2	0.8	2.6	2	0.8	2.6
	-15	4.7	1.7	2.7	2.2	0.8	2.7	2	0.8	2.7
	-10	5.4	1.8	3	2.6	0.8	3.1	2.2	0.7	3.1
	-7	6	1.9	3.2	2.7	0.9	3.4	2	0.6	3.4
	2	7.6	2	3.8	3.9	0.9	4.4	2.1	0.5	4.4
	7	8.7	2	4.3	4.5	0.9	5.2	2.2	0.4	5.2
	10	9.4	2	4.6	4.9	0.9	5.7	2.4	0.4	5.9
	12	9.9	2.1	4.8	5.1	0.8	6.1	2.6	0.4	6.5
	15	9.9	2.1	4.8	5.3	0.8	6.4	2.6	0.4	6.5
	20	10.1	2.1	4.9	5.4	0.8	6.5	2.7	0.4	6.6
45	-18	3.9	2.1	1.8	2	1.1	1.9	2	1.1	1.9
	-15	4.2	2.1	1.9	2	0.9	2.1	2	0.9	2.1
	-10	5.2	2.1	2.4	2.4	1	2.4	2	0.9	2.4
	-7	5.7	2.2	2.6	2.7	1	2.7	2	0.8	2.5
	2	7.1	2.2	3.3	3.6	1.1	3.4	2	0.7	3
	7	8.3	2.4	3.5	4.2	1.1	3.9	2	0.6	3.6
	10	9	2.4	3.7	4.6	1.1	4.3	2.2	0.5	4
	12	9.4	2.5	3.8	4.8	1.1	4.5	2.3	0.5	4.3
	15	9.5	2.5	3.8	4.9	1.1	4.6	2.4	0.5	4.4
	20	9.6	2.5	3.9	5	1.1	4.7	2.5	0.5	4.8
50	-18	2.9	2.3	1.3	2	1.3	1.5	2.0	1.3	1.6
	-15	3.4	2.3	1.5	2	1.2	1.7	2.0	1.2	1.7
	-10	4.7	2.3	2.0	2.3	1.1	2	2.1	1.0	2.1
	-7	5.3	2.4	2.2	2.6	1.2	2.2	2.0	0.9	2.2
	2	6.8	2.3	2.9	3.5	1.2	2.9	2.0	0.7	2.8
	7	8.2	2.6	3.1	4.1	1.2	3.4	2.1	0.7	2.9
	10	8.8	2.6	3.4	4.5	1.2	3.7	2.1	0.6	3.4
	12	9.2	2.6	3.5	4.7	1.2	3.9	2.2	0.6	3.6
	15	9.2	2.6	3.5	4.7	1.2	3.9	2.3	0.6	3.7
	20	9.5	2.6	3.6	4.9	1.2	4.1	2.4	0.6	3.8
55	-18	2.4	2.5	1	2	1.4	1.4	2	1.4	1.4
	-15	3	2.5	1.2	2	1.3	1.6	2	1.3	1.6
	-10	4.5	2.5	1.8	2.2	1.2	1.9	2	1.1	1.9
	-7	5.1	2.6	2	2.4	1.2	2.1	2	1	1.9
	2	6.5	2.4	2.7	3.3	1.3	2.6	2	0.8	2.4
	7	8	2.8	2.9	4	1.3	3.1	2	0.8	2.7
	10	8.6	2.8	3.1	4.3	1.3	3.3	2	0.7	2.9
	12	9	2.8	3.2	4.5	1.3	3.5	2.1	0.7	3.1
	15	9	2.8	3.2	4.6	1.3	3.5	2.2	0.7	3.1
	20	9.3	2.8	3.3	4.7	1.3	3.7	2.3	0.7	3.3
60 (92 %)	-18	-	-	-	-	-	-	-	-	-
	-15	-	-	-	-	-	-	-	-	-
	-10	-	-	-	-	-	-	-	-	-
	-7	4.9	2.6	1.9	2.3	1.2	1.9	1.9	1.0	1.9
	2	6.1	2.4	2.5	3.1	1.3	2.4	1.9	0.8	2.3
	7	7.8	3.0	2.6	3.9	1.4	2.9	2.0	0.9	2.3
	10	8.4	3.0	2.8	4.2	1.4	2.9	2.0	0.8	2.6
	12	8.6	3.0	2.9	4.3	1.4	3.1	2.0	0.8	2.7
	15	8.6	3.0	2.9	4.4	1.4	3.1	2.1	0.8	2.8
	20	9.1	3.0	3.0	4.6	1.4	3.3	2.3	0.8	3.0

tFL = Heating flow temperature (°C)

tQ = Source temperature (°C)

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

P = Power consumption, overall unit (kW)

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

Observe daily power interruptions!
see engineering

■ Technical data

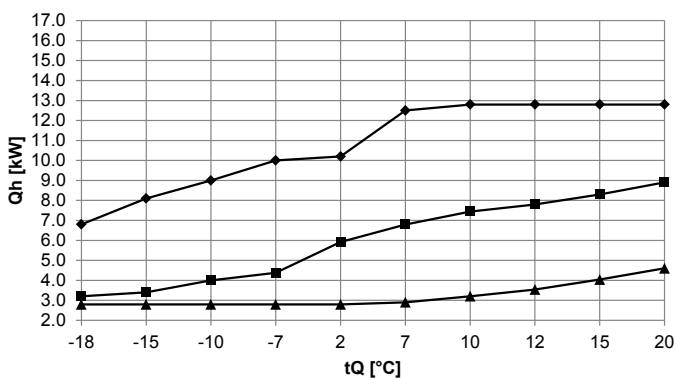
Performance data – heating

Maximum heat output allowing for defrosting losses

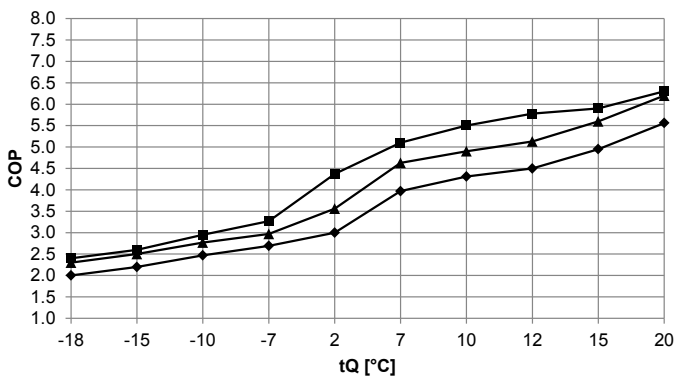
Hoval UltraSource B comfort C (11), compact C (11/200)

Data according to EN 14511

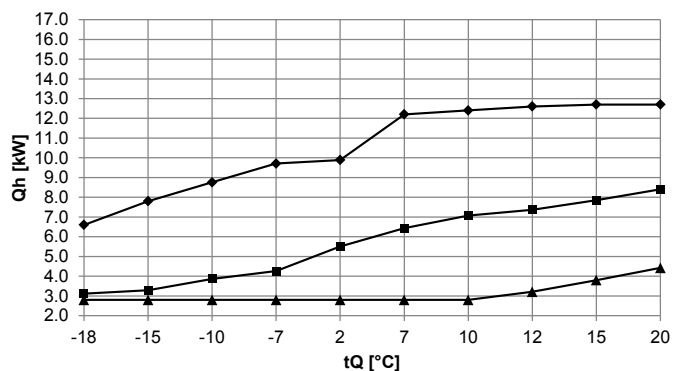
Heat output - $t_{FL} 35^{\circ}\text{C}$



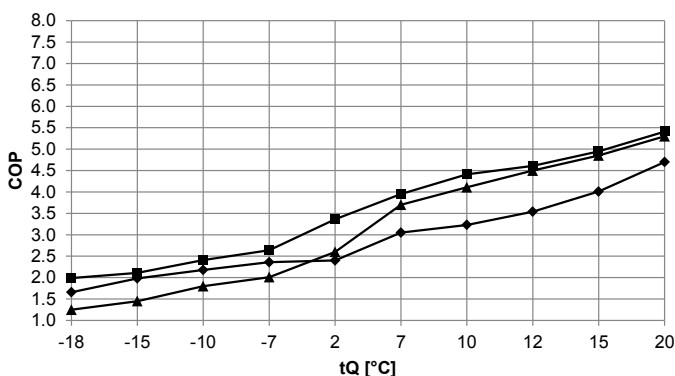
Coefficient of performance - $t_{FL} 35^{\circ}\text{C}$



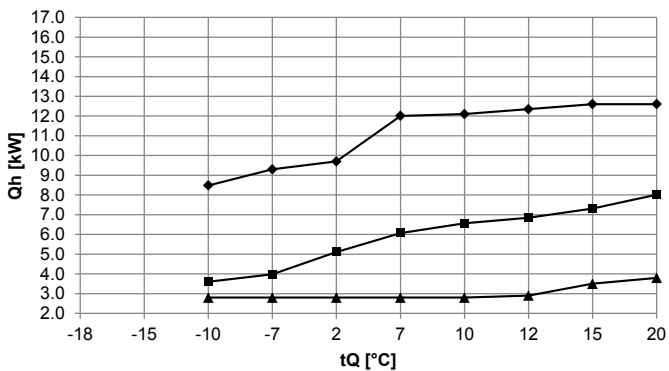
Heat output - $t_{FL} 45^{\circ}\text{C}$



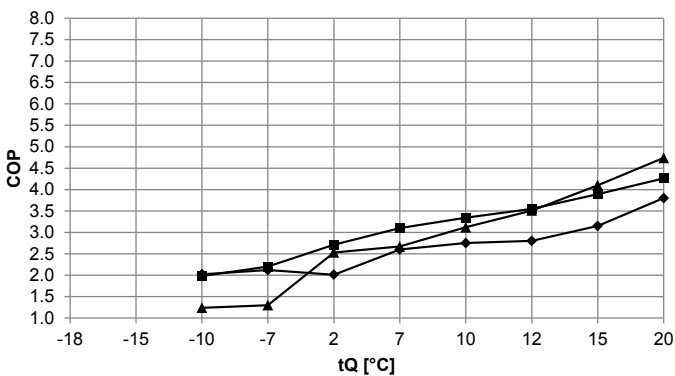
Coefficient of performance - $t_{FL} 45^{\circ}\text{C}$



Heat output - $t_{FL} 55^{\circ}\text{C}$



Coefficient of performance - $t_{FL} 55^{\circ}\text{C}$



Observe daily power interruptions!
see engineering

t_{FL} = Heating flow temperature ($^{\circ}\text{C}$)

t_Q = Source temperature ($^{\circ}\text{C}$)

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

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

◆ Maximum output
■ Nominal output
▲ Minimum output

■ Technical data

Performance data – heating

Hoval UltraSource B comfort C (11), compact C (11/200)

Data according to EN 14511

tFL °C	tQ °C	Maximum output			Nominal output			Minimum output		
		Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
35	-18	6.8	3.4	2.0	3.2	1.3	2.4	2.8	1.2	2.3
	-15	8.1	3.6	2.2	3.4	1.3	2.6	2.8	1.1	2.5
	-10	9.0	3.6	2.5	4.0	1.4	3.0	2.8	1.0	2.8
	-7	10.0	3.7	2.7	4.4	1.3	3.3	2.8	0.9	3.0
	2	10.2	3.4	3.0	5.9	1.4	4.4	2.8	0.8	3.6
	7	12.5	3.2	4.0	6.8	1.3	5.1	2.9	0.6	4.6
	10	12.8	3.0	4.3	7.4	1.4	5.5	3.2	0.7	4.9
	12	12.8	2.9	4.5	7.8	1.4	5.8	3.5	0.7	5.1
	15	12.8	2.6	5.0	8.3	1.4	5.9	4.0	0.7	5.6
	20	12.8	2.3	5.6	8.9	1.4	6.3	4.6	0.7	6.2
45	-18	6.6	4.0	1.7	3.1	1.6	2.0	2.8	2.2	1.3
	-15	7.8	3.9	2.0	3.3	1.6	2.1	2.8	1.9	1.5
	-10	8.8	4.0	2.2	3.9	1.6	2.4	2.8	1.6	1.8
	-7	9.7	4.1	2.4	4.3	1.6	2.6	2.8	1.4	2.0
	2	9.9	4.1	2.4	5.5	1.6	3.4	2.8	1.1	2.6
	7	12.2	4.0	3.1	6.4	1.6	4.0	2.8	0.8	3.7
	10	12.4	3.8	3.2	7.1	1.6	4.4	2.8	0.7	4.1
	12	12.6	3.6	3.5	7.4	1.6	4.6	3.2	0.7	4.5
	15	12.7	3.2	4.0	7.9	1.6	5.0	3.8	0.8	4.9
	20	12.7	2.7	4.7	8.4	1.6	5.4	4.4	0.8	5.3
50	-18	6.4	4.2	1.5	3.0	1.7	1.8	2.7	2.4	1.1
	-15	7.4	4.2	1.8	3.1	1.7	1.9	2.6	2.0	1.3
	-10	8.6	4.1	2.1	3.7	1.7	2.2	2.8	1.9	1.5
	-7	9.5	4.3	2.2	4.1	1.7	2.4	2.8	1.8	1.6
	2	9.8	4.5	2.2	5.3	1.8	3.0	2.8	1.1	2.6
	7	12.1	4.3	2.8	6.3	1.8	3.5	2.8	0.9	3.1
	10	12.3	4.1	3.0	6.8	1.8	3.9	2.8	0.8	3.5
	12	12.5	4.0	3.1	7.1	1.7	4.1	3.1	0.8	4.0
	15	12.7	3.6	3.5	7.6	1.7	4.4	3.7	0.8	4.5
	20	12.7	3.0	4.2	8.2	1.7	4.8	4.1	0.8	5.0
55	-18	-	-	-	-	-	-	-	-	-
	-15	-	-	-	-	-	-	-	-	-
	-10	8.5	4.2	2.0	3.6	1.8	2.0	2.8	2.3	1.2
	-7	9.3	4.4	2.1	4.0	1.8	2.2	2.8	2.2	1.3
	2	9.7	4.8	2.0	5.1	1.9	2.7	2.8	1.1	2.5
	7	12.0	4.6	2.6	6.1	2.0	3.1	2.8	1.1	2.7
	10	12.1	4.4	2.8	6.6	2.0	3.3	2.8	0.9	3.1
	12	12.4	4.4	2.8	6.9	1.9	3.6	2.9	0.8	3.5
	15	12.6	4.0	3.2	7.3	1.9	3.9	3.5	0.9	4.1
	20	12.6	3.3	3.8	8.0	1.9	4.3	3.8	0.8	4.7
62	-18	-	-	-	-	-	-	-	-	-
	-15	-	-	-	-	-	-	-	-	-
	-10	-	-	-	-	-	-	-	-	-
	-7	-	-	-	-	-	-	-	-	-
	2	8.3	5.7	1.5	4.8	2.3	2.1	-	-	-
	7	10.4	5.6	1.9	5.7	2.4	2.4	-	-	-
	10	10.9	5.3	2.1	6.3	2.4	2.6	-	-	-
	12	10.9	5.0	2.2	6.6	2.4	2.8	-	-	-
	15	10.9	4.1	2.7	7.0	2.2	3.2	-	-	-
	20	11.2	3.7	3.1	7.8	2.2	3.6	-	-	-

tFL = Heating flow temperature (°C)

tQ = Source temperature (°C)

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

P = Power consumption, overall unit (kW)

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

Observe daily power interruptions!
see engineering

■ Technical data

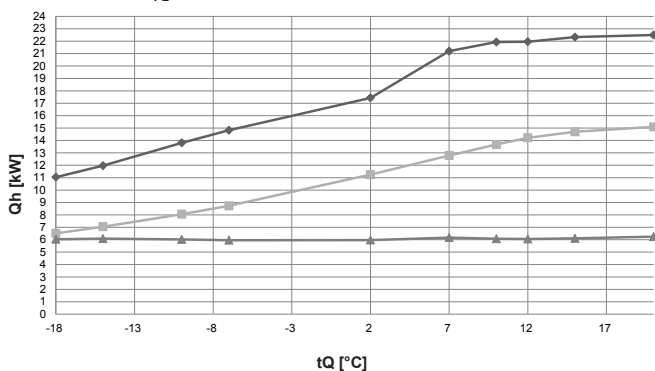
Performance data – heating

Maximum heat output allowing for defrosting losses

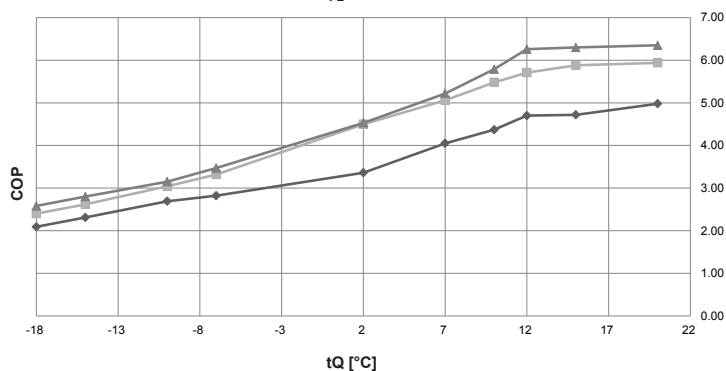
Hoval UltraSource B comfort C (17)

Data according to EN 14511

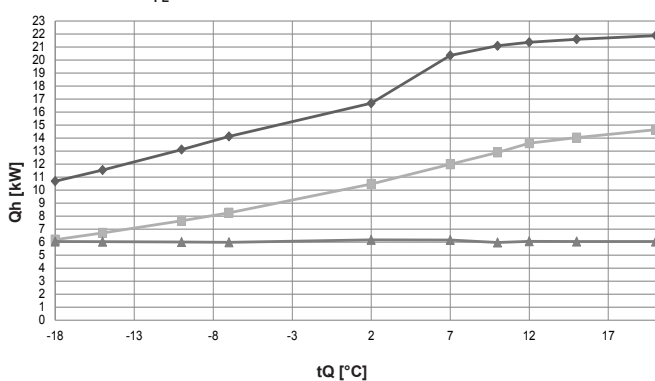
Heat output - t_{FL} 35 °C



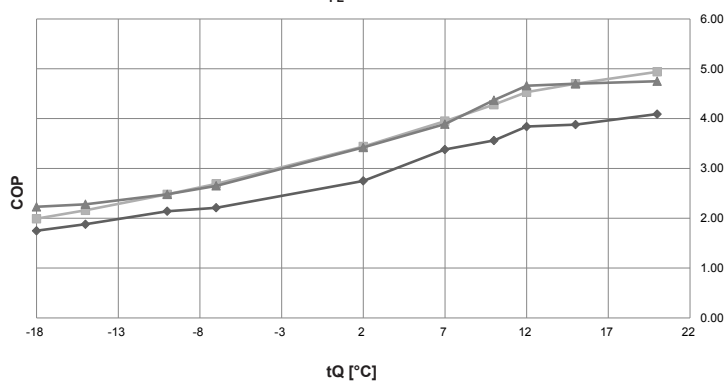
Coefficient of performance - t_{FL} 35 °C



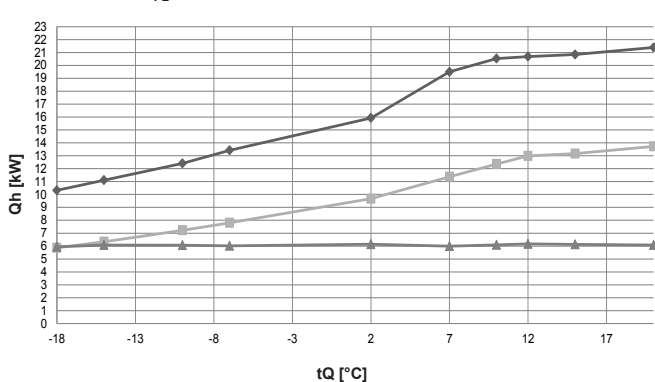
Heat output - t_{FL} 45 °C



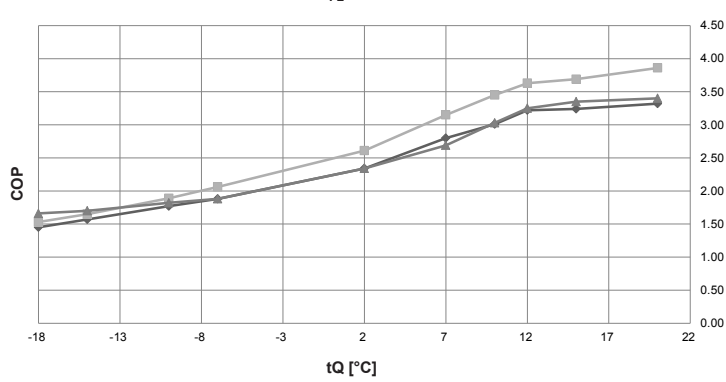
Coefficient of performance - t_{FL} 45 °C



Heat output - t_{FL} 55 °C



Coefficient of performance - t_{FL} 55 °C



Observe daily power interruptions!
see engineering

t_{FL} = Heating flow temperature (°C)

t_Q = Source temperature (°C)

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

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

◆ Maximum output
■ Nominal output
▲ Minimum output

■ Technical data

Performance data – heating

Hoval UltraSource B comfort C (17)

Data according to EN 14511

tFL °C	tQ °C	Maximum output			Nominal output			Minimum output		
		Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
35	-18	11	5.3	2.1	6.5	2.7	2.4	6	2.3	2.6
	-15	12	5.2	2.3	7.1	2.7	2.6	6.1	2.2	2.8
	-10	13.8	5.1	2.7	8.1	2.7	3	6	2	3
	-7	14.8	5.3	2.8	8.7	2.6	3.3	6	1.7	3.5
	2	17.4	5.2	3.4	11.3	2.5	4.5	6.0	1.3	4.5
	7	21.2	5.2	4.1	12.8	2.5	5.1	6.2	1.2	5.2
	10	21.9	5	4.4	13.7	2.5	5.5	6.1	1	5.8
	12	22	4.7	4.7	14.2	2.5	5.7	6.1	1	6.3
	15	22.3	4.7	4.7	14.7	2.5	5.9	6.1	1	6.3
	20	22.5	4.5	5	15.1	2.5	5.9	6.3	1	6.4
45	-18	10.7	6.1	1.8	6.2	3.1	2	6	2.7	2.2
	-15	11.5	6.1	1.9	6.7	3.1	2.2	6	2.6	2.3
	-10	13.1	6.1	2.1	7.6	3.1	2.5	6	2.4	2.5
	-7	14.1	6.4	2.2	8.3	3.1	2.7	6	2.3	2.7
	2	16.7	6.1	2.8	10.5	3	3.4	6.2	1.8	3.4
	7	20.4	6	3.4	12	3	4	6.2	1.6	3.9
	10	21.1	5.9	3.6	12.9	3	4.3	6	1.4	4.4
	12	21.4	5.6	3.8	13.6	3	4.5	6.1	1.3	4.7
	15	21.6	5.6	3.8	14	3	4.7	6	1.3	4.7
	20	21.9	5.4	4.1	14.7	3	4.9	6	1.3	4.8
50	-18	10.5	6.7	1.6	6	3.7	1.6	6.0	3.3	1.8
	-15	11.3	6.6	1.7	6.5	3.7	1.8	6.1	3.2	1.9
	-10	12.8	6.5	2.0	7.4	3.6	2.1	6.1	3.0	2.0
	-7	13.8	6.7	2.1	8	3.6	2.3	6.0	2.8	2.1
	2	16.3	6.4	2.5	10.1	3.5	2.9	6.1	2.3	2.7
	7	19.9	6.6	3.0	11.7	3.4	3.4	6.0	2.0	3.1
	10	20.9	6.4	3.3	12.6	3.4	3.7	6.1	1.8	3.4
	12	21.0	6.0	3.5	13.3	3.4	4	6.1	1.7	3.7
	15	21.3	6.0	3.6	13.6	3.3	4.1	6.1	1.6	3.8
	20	21.7	5.9	3.7	14.2	3.3	4.3	6.1	1.6	3.9
55	-18	10.3	7.1	1.5	5.9	3.8	1.5	6	3.6	1.7
	-15	11.1	7.1	1.6	6.3	3.8	1.7	6.1	3.6	1.7
	-10	12.4	7	1.8	7.2	3.8	1.9	6.1	3.3	1.8
	-7	13.4	7.1	1.9	7.8	3.8	2.1	6	3	1.9
	2	15.9	6.8	2.3	9.7	3.7	2.6	6.1	2.6	2.3
	7	19.5	7	2.8	11.4	3.6	3.2	6	2	2.7
	10	20.5	6.8	3	12.4	3.6	3.5	6	2	3
	12	20.7	6.4	3.2	13	3.6	3.6	6.2	2	3.3
	15	20.9	6.4	3.2	13.2	3.6	3.7	6.1	1.8	3.4
	20	21.4	6.4	3.3	13.7	3.6	3.9	6.1	1.8	3.4
62	-18	-	-	-	-	-	-	-	-	-
	-15	-	-	-	-	-	-	-	-	-
	-10	12.1	7.6	1.6	7	4.1	1.7	5.9	3.6	1.6
	-7	13.1	7.7	1.7	7.6	4.1	1.9	5.9	3.5	1.7
	2	15.2	7.4	2.1	9.3	4	2.3	5.9	2.8	2.1
	7	19.0	7.6	2.5	11.1	3.9	2.9	5.8	2.4	2.4
	10	20.0	7.2	2.8	12.1	3.8	3.2	6.0	2.1	2.8
	12	20.2	6.8	3.0	12.7	3.8	3.3	6.0	2.0	3.0
	15	20.1	6.9	2.9	12.7	3.9	3.3	5.9	2.0	3.0
	20	20.8	6.9	3.0	13.3	3.9	3.5	5.9	1.9	3.0

tFL = Heating flow temperature (°C)

tQ = Source temperature (°C)

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

P = Power consumption, overall unit (kW)

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

Observe daily power interruptions!
see engineering

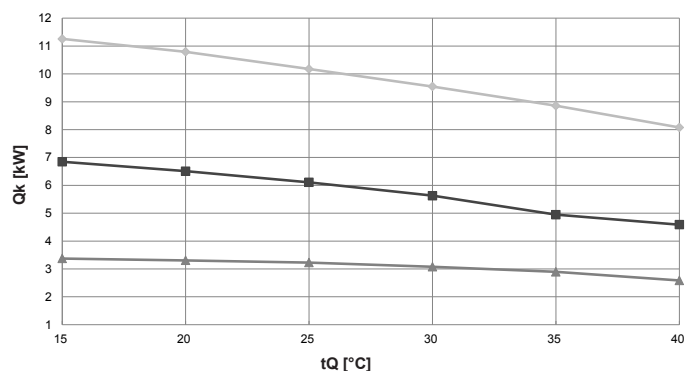
■ Technical data

Performance data – cooling

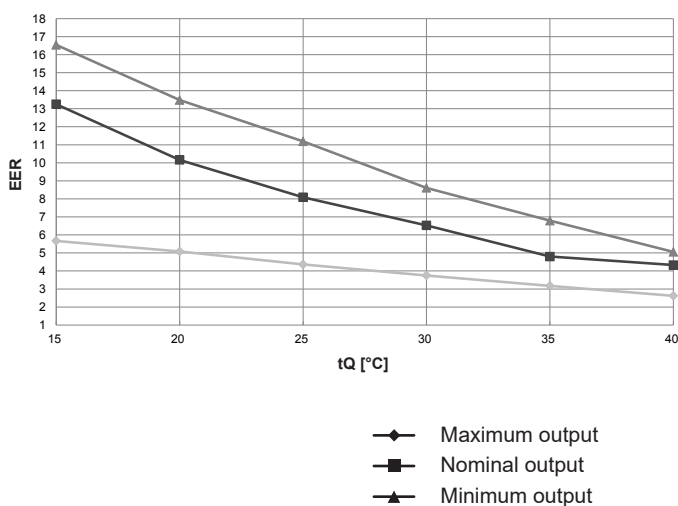
Maximum cooling capacity

Hoval UltraSource B comfort C (8), compact C (8/200)

Cooling capacity - t_{FL} 18 °C



Coefficient of performance - t_{FL} 18 °C



◆ Maximum output
■ Nominal output
▲ Minimum output

Hoval UltraSource B comfort C (8), compact C (8/200)

Data according to EN 14511

tFL °C	tQ °C	Maximum output			Nominal output			Minimum output		
		Qk kW	P kW	EER	Qk kW	P kW	EER	Qk kW	P kW	EER
7	15	8.1	1.7	4.8	4.7	0.6	7.8	2.4	0.2	10.1
	20	7.7	1.9	4.1	4.5	0.7	6.4	2.2	0.3	7.5
	25	7.3	2.1	3.5	4.3	0.8	5.3	2.1	0.4	5.9
	30	6.8	2.3	3	4	0.9	4.4	2.1	0.5	4.4
	35	6.3	2.4	2.6	3.8	1	3.7	2	0.5	3.8
	40	5.8	2.7	2.2	3.4	1.1	3	2	0.7	3.1
12	15	9.7	1.8	5.3	5.7	0.6	10.1	2.8	0.2	13.6
	20	9.2	2	4.6	5.3	0.7	7.8	2.8	0.3	10.6
	25	8.7	2.2	4	5.1	0.8	6.4	2.6	0.3	8.1
	30	8	2.4	3.4	4.8	0.9	5.3	2.5	0.4	6.4
	35	7.5	2.6	2.9	4.3	1	4.2	2.3	0.5	5.1
	40	6.8	2.8	2.4	4	1.1	3.6	2.2	0.6	3.9
18	15	11.3	2	5.7	6.9	0.5	13.3	3.4	0.2	16.5
	20	10.8	2.1	5.1	6.5	0.6	10.2	3.3	0.3	13.5
	25	10.2	2.3	4.4	6.1	0.8	8.1	3.2	0.3	11.2
	30	9.6	2.6	3.8	5.6	0.9	6.5	3.1	0.4	8.1
	35	8.9	2.8	3.2	5	1	4.8	2.9	0.4	6.8
	40	8.1	3.1	2.6	4.6	1.1	4.3	2.6	0.5	5.1

tFL = Cooling water flow temperature (°C)

tQ = Source temperature (°C)

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

P = Power consumption, overall unit (kW)

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

Observe daily power interruptions!
see engineering

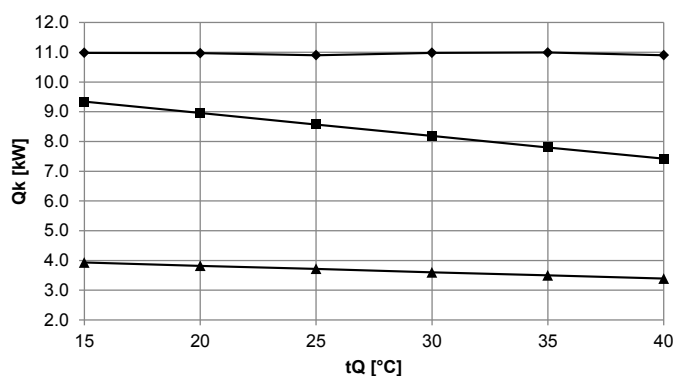
■ Technical data

Performance data – cooling

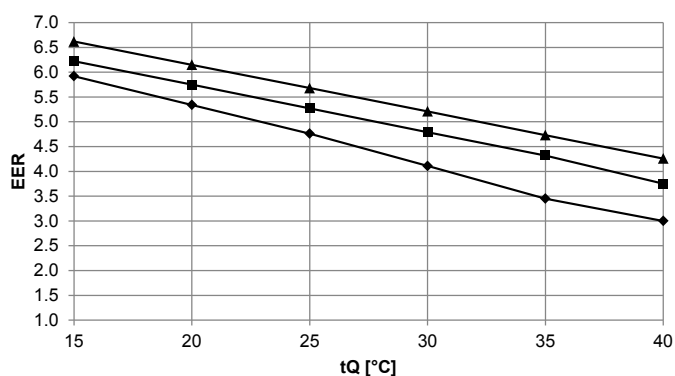
Maximum cooling capacity

Hoval UltraSource B comfort C (11), compact C (11/200)

Cooling capacity - t_{FL} 18 °C



Coefficient of performance - t_{FL} 18 °C



◆ Maximum output
■ Nominal output
▲ Minimum output

Hoval UltraSource B comfort C (11), compact C (11/200)

Data according to EN 14511

tFL °C	tQ °C	Maximum output			Nominal output			Minimum output		
		Qk kW	P kW	EER	Qk kW	P kW	EER	Qk kW	P kW	EER
7	15	11.2	2.4	4.7	6.9	1.4	5.0	2.9	0.6	4.5
	20	10.5	2.5	4.3	6.6	1.5	4.5	2.9	0.7	4.1
	25	9.9	2.6	3.8	6.2	1.5	4.1	3.0	0.8	3.6
	30	9.3	2.8	3.3	5.8	1.6	3.6	3.0	0.9	3.2
	35	8.6	3.0	2.8	5.4	1.7	3.1	2.9	1.1	2.8
	40	8.0	3.4	2.6	5.0	1.9	2.6	2.9	1.2	2.3
12	15	10.8	2.1	5.2	8.0	1.4	5.6	3.1	0.6	5.4
	20	10.9	2.3	4.6	7.7	1.5	5.1	3.0	0.6	5.0
	25	10.8	2.7	4.0	7.3	1.6	4.6	2.9	0.7	4.5
	30	10.8	3.2	3.4	6.9	1.7	4.1	2.8	0.7	4.0
	35	10.1	3.4	3.0	6.5	1.8	3.7	2.9	0.8	3.6
	40	9.5	3.8	2.5	6.1	1.9	3.2	2.9	0.9	3.1
18	15	11.0	1.9	5.9	9.3	1.5	6.2	3.9	0.6	6.6
	20	11.0	2.1	5.3	9.0	1.6	5.8	3.8	0.6	6.2
	25	10.9	2.3	4.8	8.6	1.6	5.3	3.7	0.7	5.7
	30	11.0	2.7	4.1	8.2	1.7	4.8	3.6	0.7	5.2
	35	11.0	3.2	3.5	7.8	1.8	4.3	3.5	0.7	4.7
	40	10.9	3.6	3.0	7.4	2.0	3.8	3.4	0.8	4.3

tFL = Cooling water flow temperature (°C)

tQ = Source temperature (°C)

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

P = Power consumption, overall unit (kW)

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

Observe daily power interruptions!
see engineering

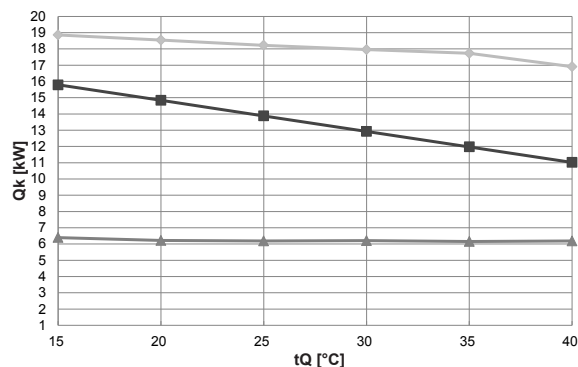
■ Technical data

Performance data – cooling

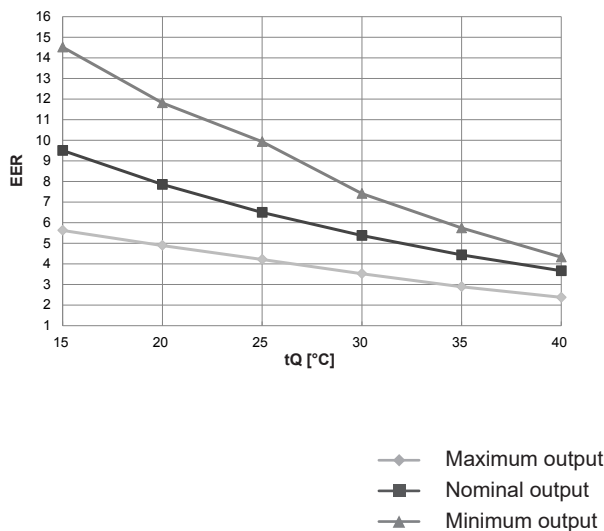
Maximum cooling capacity

Hoval UltraSource B comfort C (17)

Cooling capacity - t_{FL} 18 °C



Coefficient of performance - t_{FL} 18 °C



Hoval UltraSource B comfort C (17)

Data according to EN 14511

t _{FL} °C	t _Q °C	Maximum output			Nominal output			Minimum output		
		Q _k kW	P kW	EER	Q _k kW	P kW	EER	Q _k kW	P kW	EER
7	15	16.5	3.9	4.2	11.2	1.7	6.5	6.2	0.7	8.5
	20	16.2	4.6	3.5	10.5	1.9	5.6	6.2	0.9	7
	25	15.5	5.3	2.9	9.8	2.1	4.7	6.2	1.1	5.7
	30	14.9	6.2	2.4	9.1	2.3	4	6.1	1.3	4.7
	35	14.2	7.7	1.9	8.5	2.5	3.4	6.1	1.6	3.8
	40	13.5	9	1.5	7.9	2.8	2.9	6	1.9	3.1
12	15	18.2	3.7	5	13.4	1.7	7.9	6.3	0.5	11.7
	20	17.9	4.3	4.2	12.6	1.9	6.6	6.1	0.7	9.2
	25	17.2	5	3.5	11.8	2.1	5.6	6.1	0.8	7.3
	30	16.4	5.8	2.8	10.9	2.4	4.6	6.2	1.1	5.6
	35	15.5	7.1	2.2	10	2.6	3.9	6.1	1.4	4.4
	40	14.7	8.2	1.8	9.2	2.9	3.2	6.1	1.7	3.6
18	15	18.9	3.4	5.6	15.8	1.7	9.5	6.4	0.4	14.5
	20	18.5	3.8	4.9	14.8	1.9	7.9	6.2	0.5	11.8
	25	18.2	4.3	4.2	13.9	2.1	6.5	6.2	0.6	9.9
	30	18	5.1	3.5	12.9	2.4	5.4	6.2	0.8	7.4
	35	17.7	6.1	2.9	12	2.7	4.4	6.2	1.1	5.7
	40	16.9	7.1	2.4	11	3	3.7	6.2	1.4	4.3

t_{FL} = Cooling water flow temperature (°C)

t_Q = Source temperature (°C)

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

P = Power consumption, overall unit (kW)

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

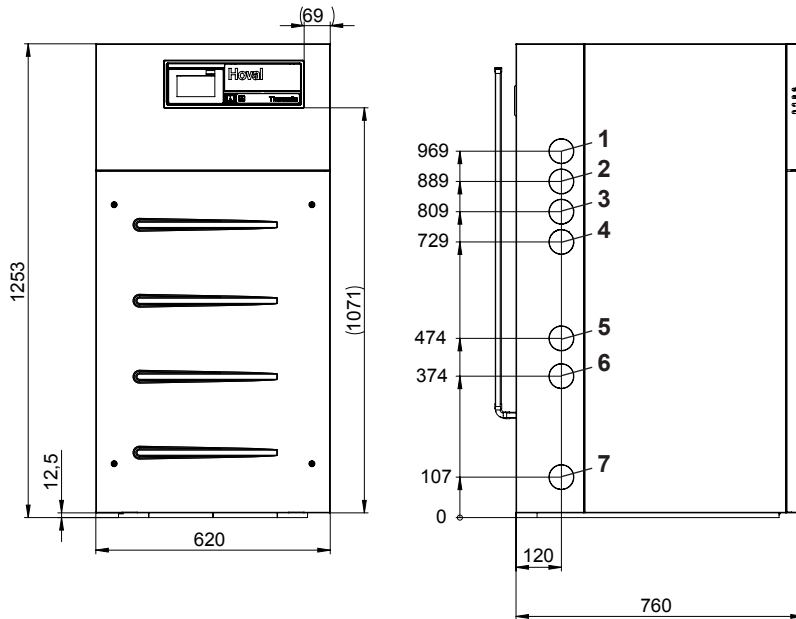
Observe daily power interruptions!
see engineering

■ Dimensions

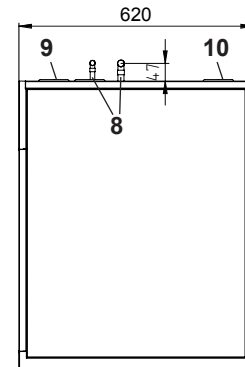
Hoval UltraSource B comfort C (8-17)

Indoor unit

(Dimensions in mm)



View from above



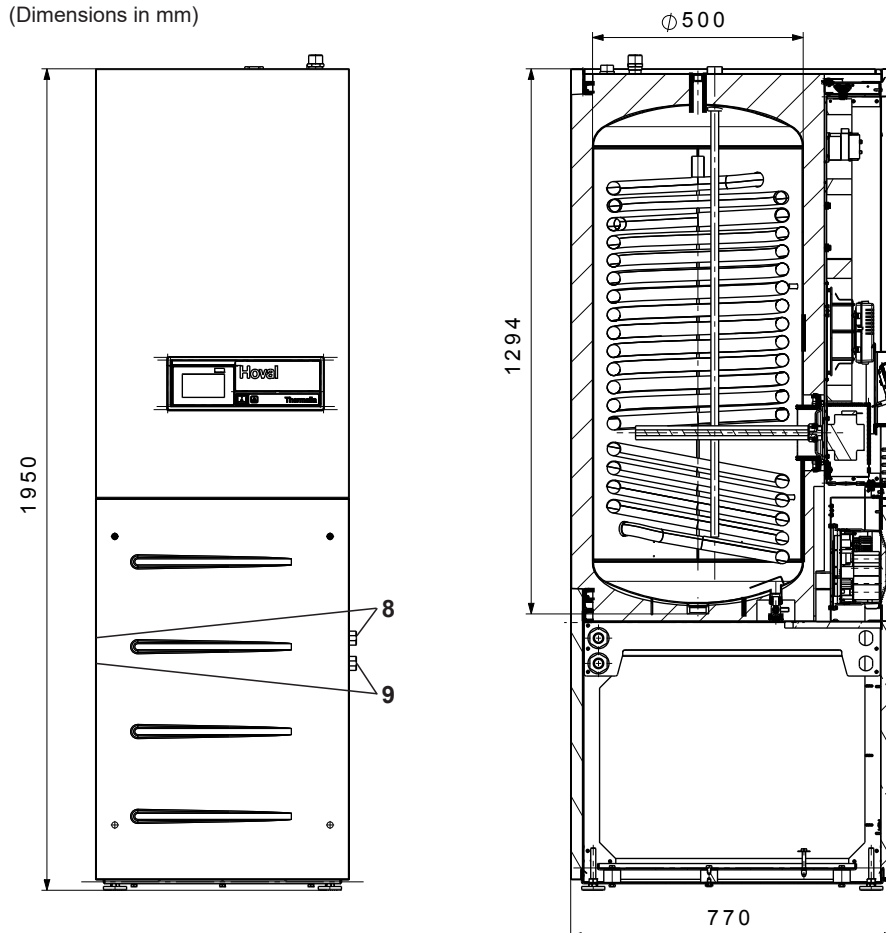
Connections (1-7) optionally on the left or right

- 1 Free
- 2 Flow heating 1"
- 3 Flow hot water charging 1"
- 4 Free
- 5 Free
- 6 Free
- 7 Return heating 1"
- 8 Working medium lines
- 9 Cable feed-in main current
- 10 Cable feed-in sensors

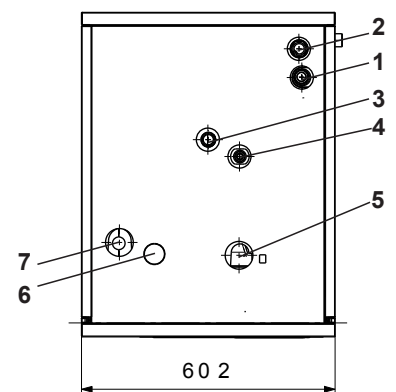
Hoval UltraSource B compact C (8,11/200)

Indoor unit with calorifier

(Dimensions in mm)



View from above



- 1 Flow heating 1"
- 2 Return heating 1"
- 3 Hot water connection 3/4"
- 4 Cold water connection 3/4"
- 5 Cable feed-in sensors
- 6 Circulation connection 3/4"
- 7 Cable feed-in main current
- 8 Working medium line
- 9 Working medium line

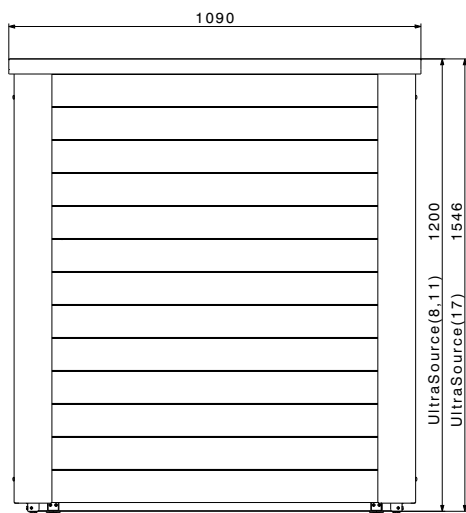
■ Dimensions

Hoval UltraSource B

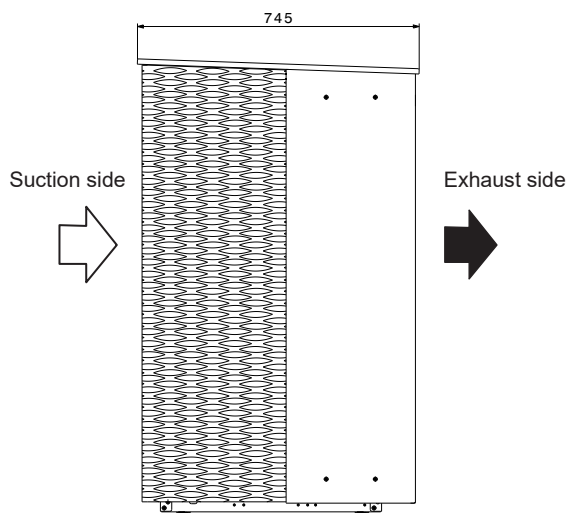
Outdoor unit

(Dimensions in mm)

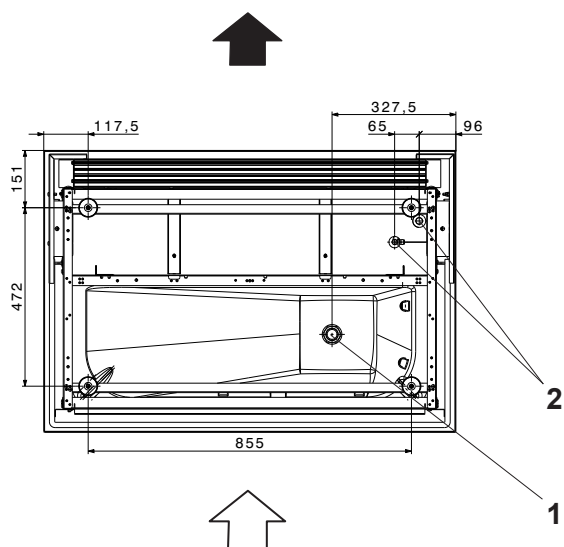
Front view



View from left



View from below



- 1 Condensate drain (Rp 1")
- 2 Connections for working medium lines Ø 10,12,16 or 18

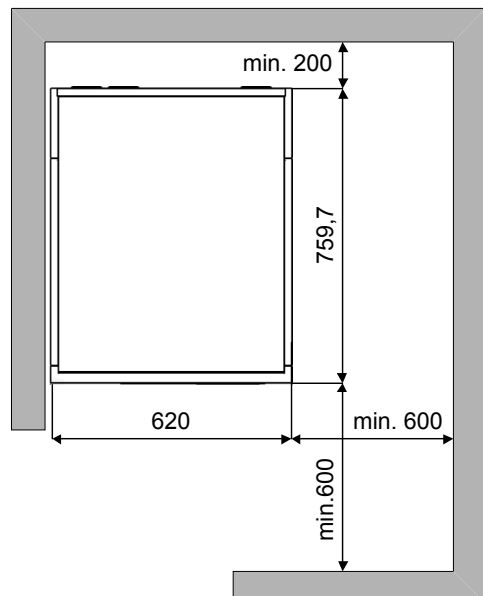
■ Dimensions

Space requirement

Hoval UltraSource B comfort C (8-17) left

Indoor unit

(Dimensions in mm)

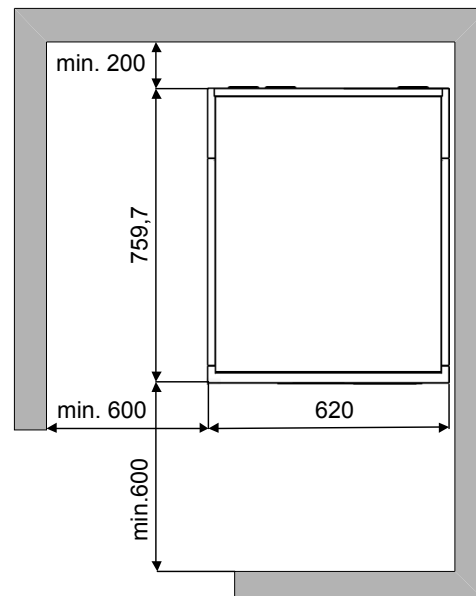


A gap of at least 200 mm must be guaranteed at the rear for the working medium as well as electrical connection.

Hoval UltraSource B comfort C (8-17) right

Indoor unit

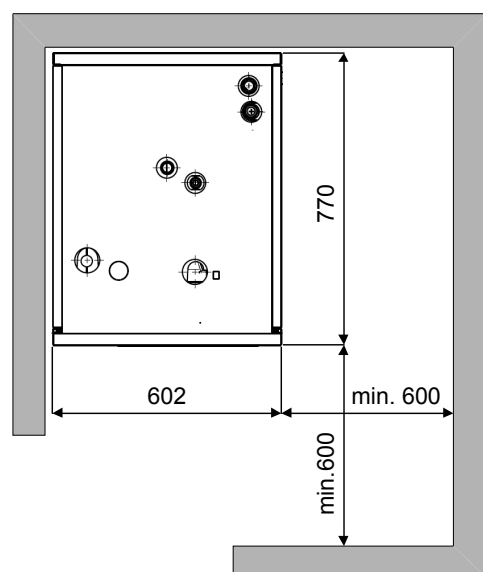
(Dimensions in mm)



Hoval UltraSource B compact C (8,11/200)

Indoor unit

(Dimensions in mm)



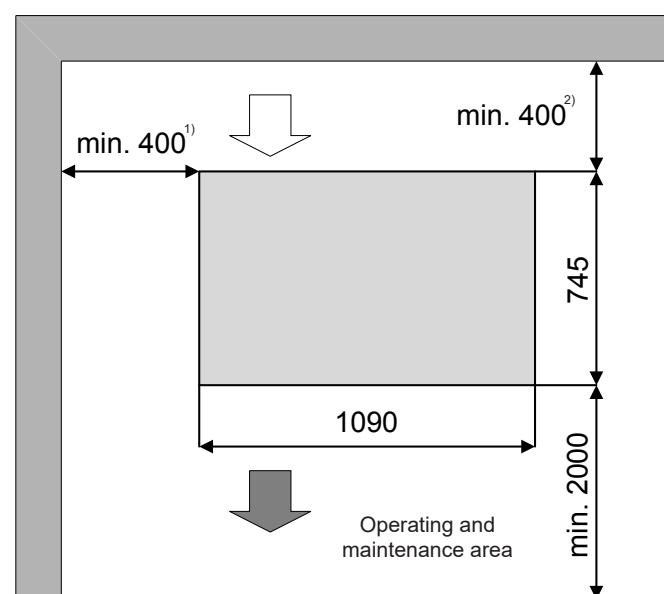
Due to the need for access to the 3-way changeover ball cock for heating and domestic hot water, a gap of at least 600 mm must be guaranteed on the right side.

Hoval UltraSource B

Outdoor unit

(Dimensions in mm)

View from above



¹⁾ Due to the need for access during maintenance, a gap of 400 mm must be guaranteed on both sides.

²⁾ If the air intake grille can not be lifted upwards, there must be a gap of min. 600 mm on the suction side.

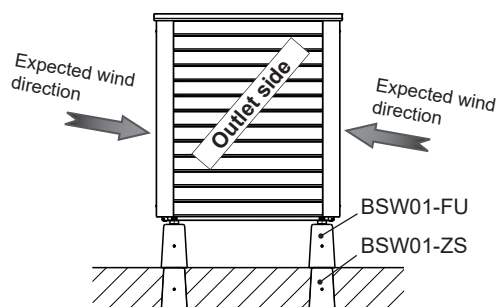
■ Dimensions

Space requirement

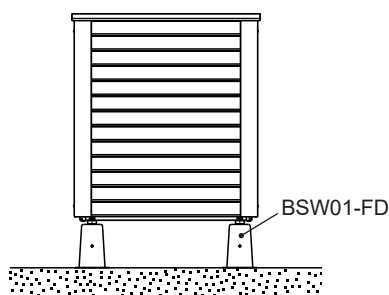
Installation variants for Hoval UltraSource B outdoor unit

(Dimensions in mm)

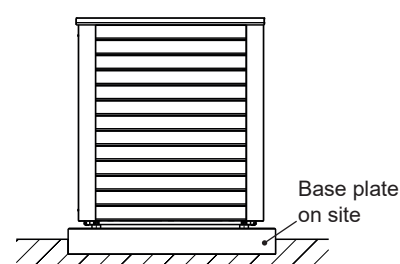
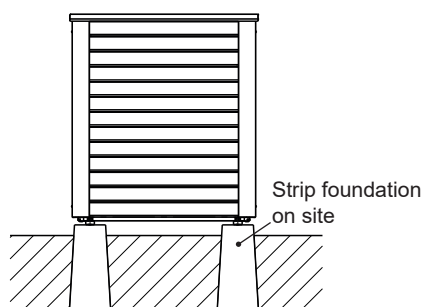
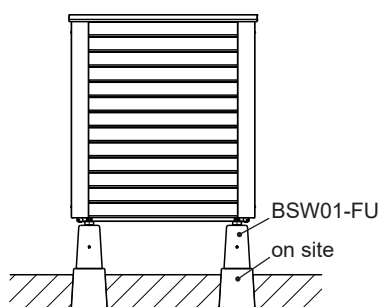
Firm base with Hoval concrete base set



Flat roof or existing firm base

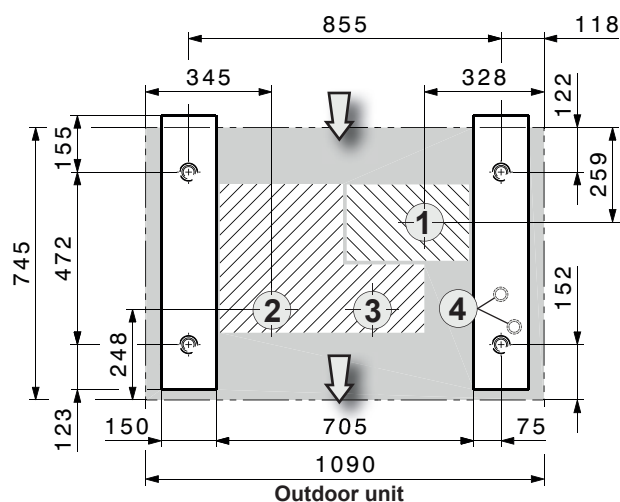


Firm base on site



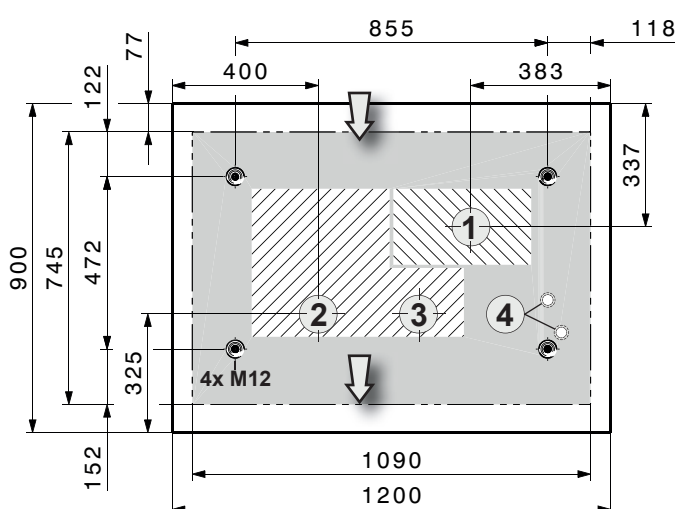
Strip foundation

Plan concrete base set
(view from top)





Floor plate

Floor plan
(view from top)

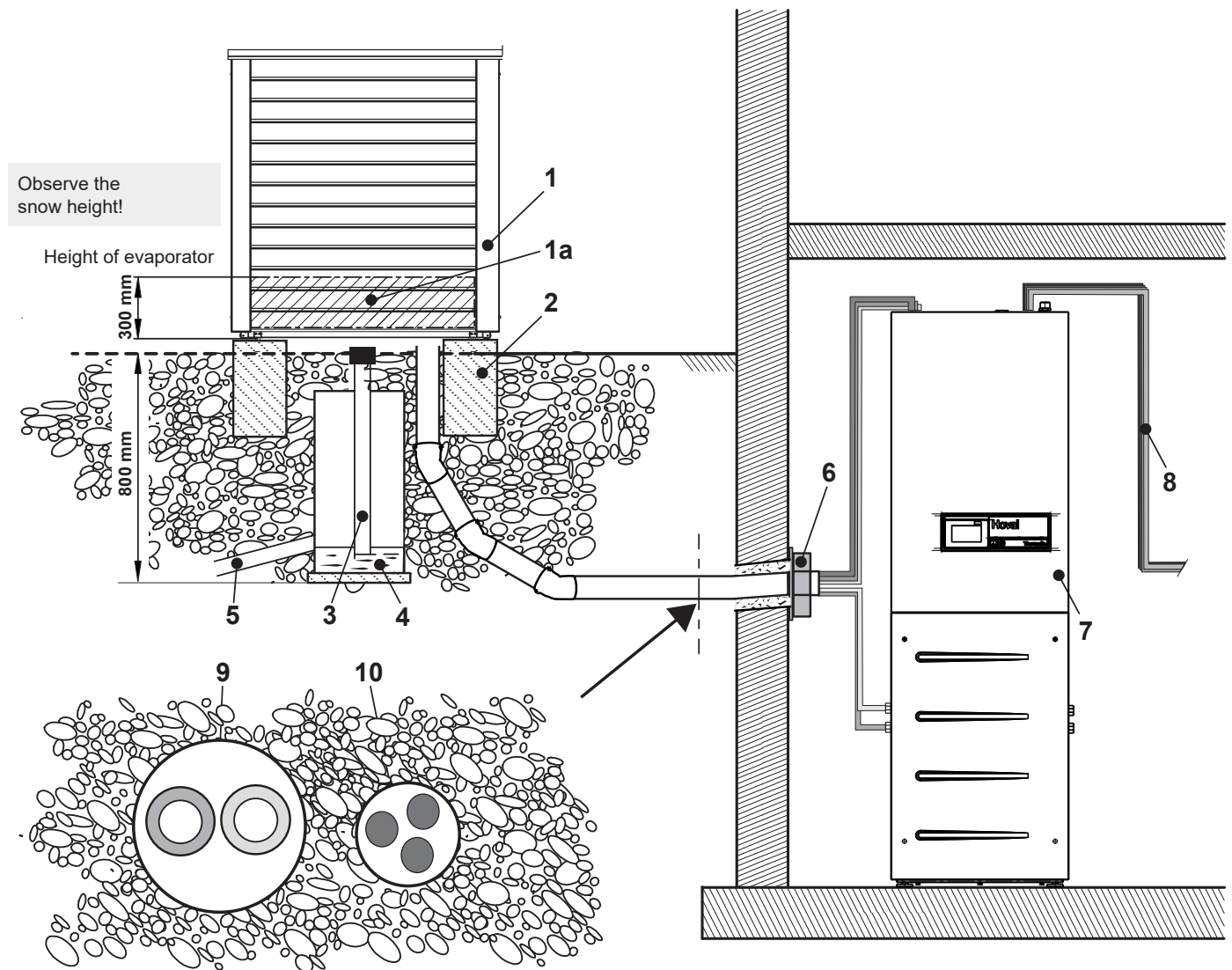


- 1 Optimum position for condensate drain DN 100
Upper edge of condensate drain 50 - 100 mm above floor level
Alternative: without drain. Infiltration of the condensate into the ground.
- 2 Optimum position of empty tube DN 150 for refrigerant connection lines
Upper edge of empty tube 50 - 100 mm above strip foundation level
- 3 Optimum position for empty tube for electrical cables
- 4 Connections for working medium lines

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

■ Dimensions

Configuration and connection diagram for Hoval UltraSource B



- | | | | | |
|----|---|----------|------|------|
| 1 | UltraSource outdoor unit | | | |
| 1a | Space for connection of working medium lines, condensate drain etc. | | | |
| 2 | Concrete base | | | |
| 3 | Condensate drain (Rp 1") | | | |
| 4 | Possible variant with duct / gravel bed | | | |
| 5 | Discharge into the sewer system | | | |
| 6 | Wall lead-through (hydraulic and electrical connections) | | | |
| 7 | UltraSource indoor unit | | | |
| 8 | Main current | 400 V 3N | | |
| | Control current | 1x 230 V | | |
| | Main current immersion heater | 400 V 3N | | |
| | Network cables (optional) | | | |
| 9 | Empty pipe for working medium lines | (8) | (11) | (17) |
| | Suction gas line | 1/2" | 5/8" | 3/4" |
| | Liquid line | 3/8" | 1/2" | 1/2" |
| 10 | Empty tube for electrical connections for outdoor unit | | | |
| | Control current outdoor unit | 1x 230 V | | |
| | Trace heating tape | 1x 230 V | | |
| | Data bus RS485 | | | |

■ Engineering

Requirements and directives

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

Set-up

- The distance between the indoor and outdoor unit must be as short as possible. Only short and simple routing of refrigerant lines guarantees cost effectiveness.
- The maximum permissible length of the lines between the outdoor and indoor unit is 20 m and must not be exceeded.
- The maximum height difference between the outdoor and indoor unit is 10 m and must not be exceeded either.
- If the height difference between the indoor and outdoor unit is less than 5 m, an oil lifting bend must be installed in the suction gas line before the slope. If the height difference is greater, this measure must also be taken every 5 m (see assembly instructions). The oil lifting bends must be installed by a specialist refrigeration engineer. It does not matter whether the indoor or the outdoor unit is higher.
- Due to efficient water heating, the line length with the UltraSource B comfort C between the calorifier and the indoor unit is not allowed to be more than 10 m.

Indoor unit

- The installation location must be selected in accordance with the valid requirements and directives. In particular, EN 378 Parts 1 and 2 as well as BGR 500 must be complied with.
- The indoor unit must be installed in a room protected against frost, by an approved specialist company. Room temperature must be between 5 °C and 25 °C.
- If the installation room is smaller than the required minimum size, it must be designed as a machine room in accordance with the provisions of EN 378.
- Installation in wet rooms, dusty rooms or rooms with a potentially explosive atmosphere is not permitted.
- To minimise vibration and noise inside the building, heat pumps should be isolated as well as possible from the building structure. For example heat pumps should never be installed on lightweight ceilings/floor. In the case of floating screed, a recess should be cut in the screed and the impact sound insulation around the heat pump.
- The connections for the working medium lines in the UltraSource B comfort C are on the back and in the UltraSource B compact C are either on the right or left of the heat pump.
- The connections for the heating flow and return in the UltraSource B comfort C are on either the left or right and in the UltraSource B compact C they are on the top.
- The connections for hot and cold water as well as for the hot water circulation are also located on top in the UltraSource B compact C.
- A gap of at least 600 mm must be observed for maintenance work on the front and, depending on where the working agent connection lines are connected, on the right or left side, of the heat pump (see dimensions/space requirement).

- False flow rates as a result of incorrect dimensions of the pipework, incorrect fittings or improper pump operation can cause damage to the heat pump.

The installation of a magnetic sludge separator is mandatory.

Outdoor unit

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

- Maximum line length see set-up.
- Maximum height difference between the indoor and outdoor units see set-up.
- The installation location must be chosen in such a way that no noise pollution can occur (do not install near bedrooms, keep a distance from neighbours), hedges and bushes can have a sound-absorbing effect.
- A frost-proof connection of the condensate drain is required.
- Unobstructed air inflow and outflow must be possible.
- It is imperative that the minimum distances are observed (see dimensions/space requirement)
- The intake air must be free of impurities such as sand and aggressive substances such as ammonia, sulphur, chlorine etc.
- The outdoor unit must be installed on a load-bearing fixed structure.
- If the machine is installed at wind-prone locations (e.g. on the roof), the alignment of the machine must be selected in such a way that the expected wind direction is normal to the suction direction of the outdoor unit.
- If it is not possible to install in areas subject to strong winds, an additional wind shield in the form of a hedge, for example, should be installed.
- If the installation location is not protected against snowfall, it must be chosen in such a way that the evaporator remains free of snow in any case.
- The outdoor unit must always be installed on a solid surface in a horizontal position. This can be achieved by means of specially installed concrete bases.
- The load-bearing capability must be adequate. The unit must be fixed there four times with M10 screws.
- Air heat pumps generate condensation during operation. This can be up to 6 litres per defrost cycle within 2 minutes for the outdoor unit of the UltraSource.
- The condensate drain must be protected against frost.
- The condensate collection tank included in the outdoor unit is already equipped with a tank heater at the factory and thus prevents freezing.
- The condensate drain line is also secured with the preassembled heating tape.
- The air outlet has increased susceptibility to frost. Gutters, water pipes and water containers must not be situated right next to the outlet.

- If installed near the coast, the location must be at least 5 km from the coastline. If this safe distance is not complied with, increased corrosion can be expected. These cases are excluded from the warranty.
- To prevent damage caused by animals such as rodents or insects, all cable ducts must be properly sealed.

Electrical connections

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

■ Engineering

Routing of the working medium line

- If the working medium connecting lines are laid in the ground, this must be done in a protective tube. For example, this can be a PVC pipe with a diameter of 150 mm. Only 15° and 30° bends are to be used for empty pipe installation (no 45° and 90° bends).
- The total change of direction of all bends must not exceed 150° (important for routing in the ground)
- Wall ducts slightly tilted to the outside or seal on site
- Empty tube without a change of direction: min. 100 mm
- Under no circumstances are the working medium lines allowed to be laid flush-mounted in the building.
- Routing in the screed (underlay) must be avoided. If there is no other possibility, especial care is important. The installer should route the refrigerant line in collaboration with Hoval customer service.
- After the working medium line has been laid, it must be checked for damage and reinsulated. In case of cooling, condensate can form on the pipes.
- The working medium lines are only allowed to be connected and working medium is only allowed to be handled by authorised personnel of Hoval or by trained specialist personnel.
- The flow of working medium in the connecting lines can cause flow noise. The working medium lines must be laid decoupled from the building and must never be laid flush-mounted.
- Care must be taken to ensure that neither working medium nor water pipes pass through the sleeping or living areas.
- The shut-off valves are not allowed to be opened until immediately before commissioning.

Room cooling

- Room cooling can be provided by fan convectors and is recommended. The connection lines for the fan convectors must have condensation-proof insulation. In addition, the condensate from the fan convectors must be drained off.
- We do not recommend the use of panel heating for room cooling. Various criteria such as temperatures below the dewpoint or the temperature profile must be allowed for and can lead to costly consequential damage in the case of inadequate planning or incorrect use. We recommend that you consult Hoval.

Connection on drinking water side

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

Installation on heating side

- All pertinent laws, regulations and standards for heating house pipework and for heat pump systems must be complied with.
- It is imperative that a strainer and sludge trap is installed in the heating return upstream from the heat pump.
- The safety and expansion devices for closed heating systems must be provided in accordance with EN 12828.
- Dimensioning of the pipework must be done according to the required flow rates.
- Ventilation possibilities must be provided at the highest point and drainage possibilities at the lowest points of the connecting lines.
- To prevent energy losses, the connecting lines must be insulated with suitable material.

Additional instructions
see "Engineering"

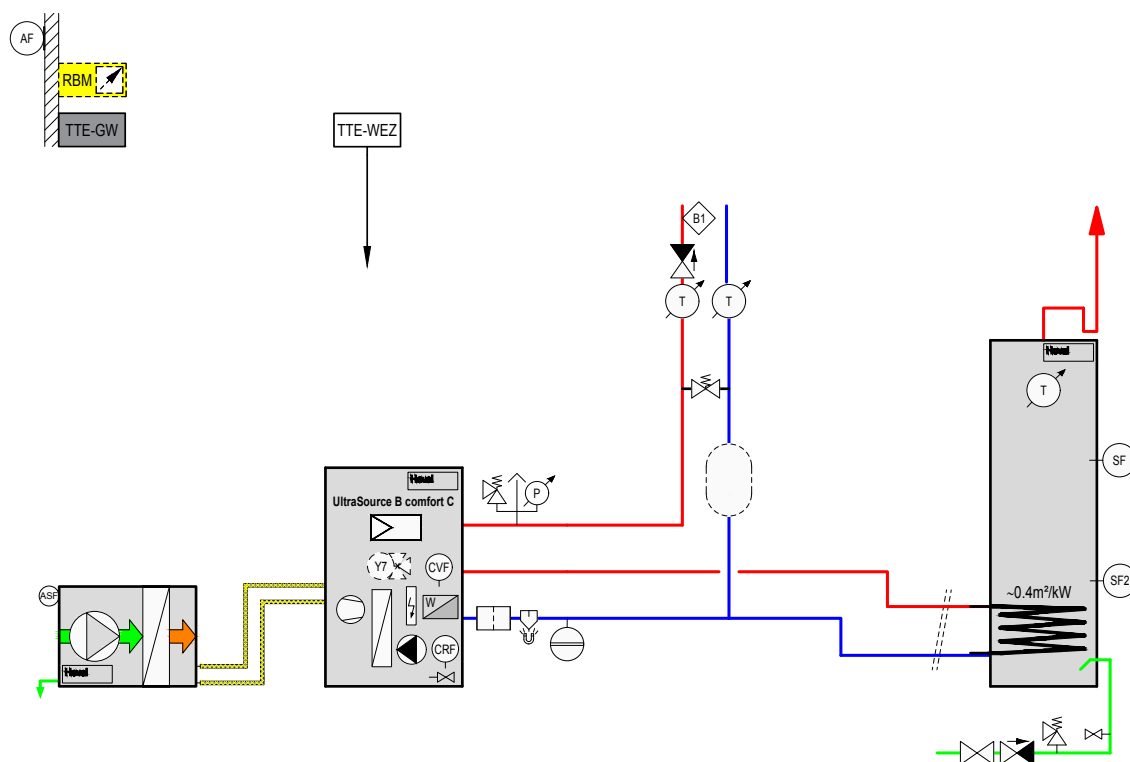
■ Examples

UltraSource B comfort C

Air/water heat pump with

- Calorifier
- 1 direct circuit

Hydraulic schematic BBAKE010



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on site, dimensioning and local regulations.
- With underfloor heating, a flow temperature monitor must be installed.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install pockets to prevent single-pipe gravity circulation!

TTE-H-Gen	TopTronic® E basic module heat generator (installed)
B1	Flow temperature monitor (if required)
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
Y7	Switching valve
ASF	Intake sensor

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

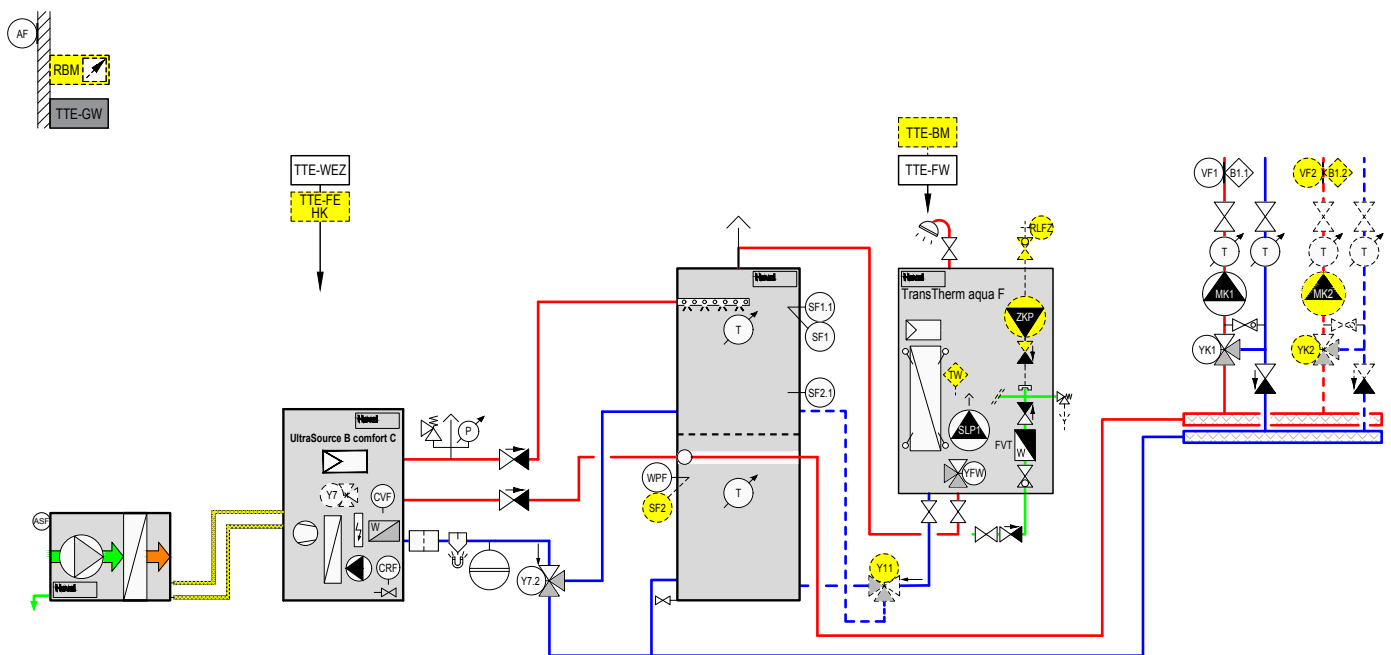
■ Examples

UltraSource B comfort C

Air/water heat pump with

- Energy buffer storage tank
- TransTherm aqua F fresh water module
- 1-... mixer circuit(s)

Hydraulic schematic BBAKE030



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on site, dimensioning and local regulations.
- With underfloor heating, a flow temperature monitor must be installed.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install pockets to prevent single-pipe gravity circulation!

TTE-H-Gen	TopTronic® E basic module heat generator (installed)
TTE-DH	TopTronic® E basic module district heating/fresh water
VF1	Flow temperature sensor 1
B1.1	Flow temperature monitor (if required)
MK1	Pump, mixer circuit 1
YK1	Actuator, mixer 1
AF	Outdoor sensor
SF1	Calorifier sensor 1
SF1.1	Calorifier sensor 1.1
SF2.1	Calorifier sensor 2.1
WPF	Heat pump buffer sensor
Y7	Switching valve
Y7.2	Switching valve 2
ASF	Intake sensor
SLP1	Calorifier charging pump
<i>Option</i>	
TTE-BM	TopTronic® E control module
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
RLFZ	Circulation sensor
SF2	Calorifier sensor 2
Y11	Return switch actuator
ZKP	Recirculation pump
TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature monitor (if required)
MC2	Pump, mixer circuit 2
YK2	Actuator, mixer 2

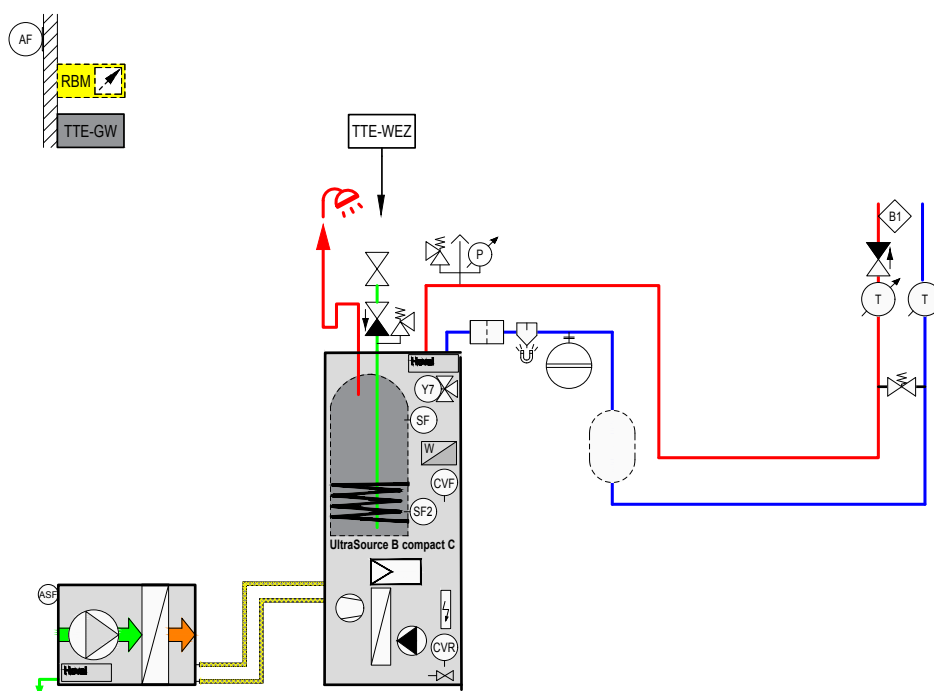
■ Examples

UltraSource B compact C

Air/water heat pump with

- Integrated calorifier
- 1 direct circuit

Hydraulic schematic BBAIE010



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on site, dimensioning and local regulations.
- With underfloor heating, a flow temperature monitor must be installed.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install pockets to prevent single-pipe gravity circulation!

TTE-H-Gen	TopTronic® E basic module heat generator (installed)
B1	Flow temperature monitor (if required)
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
Y7	Switching valve
ASF	Intake sensor

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

Description

Hoval Belaria® comfort ICM

Modulating air/water heat pump

- Air/water heat pump in compact design for indoor installation.
- Sturdy housing with steel frame. Removable side walls made of power-coated sheet steel with optimum heat and noise insulation. Colour flame red/brown red (RAL 3000/RAL 3011)
- Belaria® comfort ICM (8) with rotary compressor controlled by inverter
- Belaria® comfort ICM (13) with scroll capsule compressor controlled by inverter
- With enclosed scroll compressor controlled by inverter
- With large-area, aluminium/copper ribbed pipe evaporator and plate-type condenser made from stainless steel/Cu
- Speed-controlled centrifugal fan
- Refrigerant circuit with electronic expansion valve, filter dryer with sight glass, suction-gas heat exchanger, manifold, high and low-pressure pressure controllers
- Efficient defrosting control via reversible refrigeration circuit
- With cooling function with corresponding hydraulics
- Speed-controlled high-efficiency pump installed
- Flow sensor/flow meter or heat meter
- Electrical heater 1 to 6 kW
- Filled with refrigerant R410A, wired up internally ready for connection
- Hydraulic connections removable from left or right, hoses 1" see accessories
- Safety set consisting of safety valve, automatic air vent and pressure gauge (see accessories)
- Diaphragm pressure expansion tanks see "Various system components"
- The heat pump can be brought in separately. Separation of the heat pump must be performed by a Hoval specialist.
- TopTronic® E controller installed

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



Belaria® comfort ICM (8)
available starting July 2019

Hoval Belaria® comfort ICM		Type	Heat output ¹⁾ for A2W35 kW	COP for A2W35	Cooling capacity ¹⁾ for A35W18 kW
35 °C	55 °C				
A+++	A++	(8)	2.1-6.6	4.3	2.7-8.0
A+++	A++	(13)	3.8-12.7	4.1	6.9-13.9

Energy efficiency class of the compound system with control

¹⁾ Modulation range

The built-in high-efficiency pumps fulfil the Eco-design requirements of 2015 with an EEL of ≤ 0.23.

Seal of approval FWS

The Belaria® comfort ICM (13) is certified by the CH certification commission.

- 1 heating/cooling circuit without mixer
- 1 DHW charging circuit
- Bivalent and cascade management
- 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:
 - Module expansion heating circuit or
 - Module expansion heat balancing or
 - Module expansion universal
- 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

- Discharge pipe must be configured with a sufficient slope and without a change of section

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

Set-up

- Variable and cost-effective corner installation, air blow-off and hydraulic connection can be selected on the left or right

Options

- Hot water set: Drive motor for 3-way switch ball valve with flexible hose 1", calorifier sensor
- Active cooling mode
- Internet connection
- Weatherproof grille
- Mesh grille
- Wall insulation
- Wall connection elements
- Air hose

Delivery

- One-piece design
- Completely packed

■ Part No.



Energy efficiency class see description

**Air/water heat pump
Hoval Belaria® comfort ICM**

Part No.

Modulating air/water heat pump for indoor installation for heating, cooling and heating domestic hot water with built-in Hoval TopTronic® E controller.

Belaria® comfort ICM (8)
available starting July 2019

- Integrated control functions for
- 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 DHW charging circuit
 - Bivalent and cascade management
 - Can be optionally expanded with max. 1 module expansion:
 - 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)

Without accessories on the air side.

Delivery

- One-piece design, compact unit wired-up internally ready for connection, supplied fully packaged
- The heat pump can be brought in separately. Separation of the heat pump must be performed by a Hoval specialist.

Belaria® comfort ICM Type	Heat output ¹⁾ for A2W35 kW	Cooling capacity ¹⁾ for A35W18 kW
(8)	2.1-6.6	2.7-8.0
(13)	3.8-12.7	6.9-13.9

7015 989
7015 990

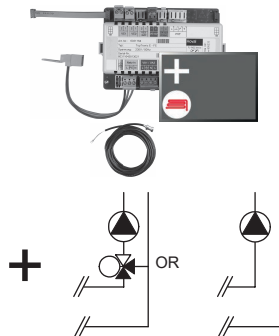
¹⁾ Modulation range



Hose set
for Belaria® comfort ICM (8,13)
Consisting of:
flexible connection hoses for
heating side insulated 1"
L = 1.0 m, can be shortened on one side

6044 178

■ Part No.


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/hot water module for implementing the following functions:

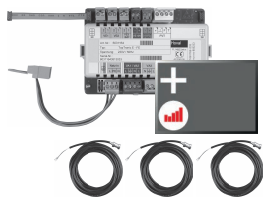
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer

incl. assembly material
1x contact sensor ALF/2P/4/T, L = 4.0 m

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

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

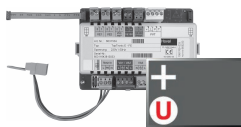
6037 062

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

- 1 heating/cooling circuit without mixer or
 - 1 heating/cooling circuit with mixer
- each incl. energy balancing

incl. assembly material
3x contact sensor ALF/2P/4/T, L = 4.0 m

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


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. assembly material

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

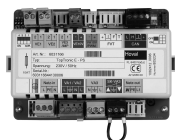
Further information

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

Notice

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

■ 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"

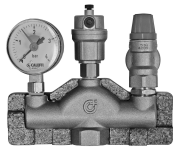
Outdoor sensor, immersion sensor and
contact sensor supplied with the heat pump.

■ Part No.

Heating accessories

Part No.

Pressure expansion tanks
see "Various system components"


Safety set SG15-1"

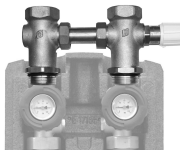
641 184

Suitable up to max. 50 kW
complete with safety valve (3 bar)
Pressure gauge and automatic air vent
with cut off valve
Connection: 1" internal thread


Connection set AS32-2/ H

6039 793

for compact mounting
of all required fittings
of a direct circuit
consisting of:
2 thermometer ball valves
Wall bracket included separately
Connection T-piece DN 32
in the return flow for connecting the
sludge separator CS 32 bottom and
the expansion tank on the side
on connection set
installation option
for an overflow valve
incl. non-return valve


Bypass valve DN 32 (1 1/4")

6014 849

for the installation in a HA group DN 32
Setting range 0.6-1.5 bar
Max. flow rate: 1.5 m³/h
with self-sealing screw connection for
mounting between flow and return
ball valve

Strainers
see "Various system components"


Sludge separator CS 25-1" with magnet

2063 735

for flow rates of 1.0 - 2.0 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 1"
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: 1.21 kg

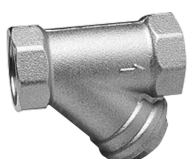
■ Part No.

**Sludge separator CS 32-1 1/4" with magnet**

for flow rates of 2.0 - 3.0 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 1 1/4"
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: 1.37 kg

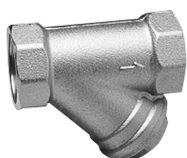
Part No.

2063 736

**Strainer PN 16 B50-25-1"**

Casing brass, PN 16
Connections Rp 1"
Operating temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm

2046 978

**Strainer PN 16 B50-32-1 1/4"**

Casing brass, PN 16
Connections Rp 1 1/4"
Operation temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm

2046 980

Intermediate tanks
see "Various system components"

Domestic hot water accessories**Hot water set**

for Belaria® compact ICM (8,13)
Consisting of:
Motor drive for built-in
changeover valve and flexible
connection hose 1"
L = 1.0 m, can be shortened on one side

6044 177

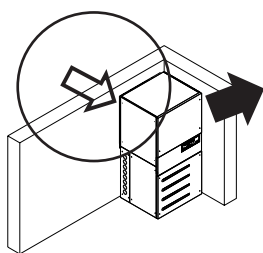
**Screw-in electrical heating inset**

for plants with buffer storage tank
as emergency heating.

Heat output		Install. length
Type	[kW]	[mm]

EP 2.5	2.35	390	6049 557
EP 3.5	3.6	500	6049 558
EP 5	4.9	620	6049 559
EP 7.5	7.5	850	6049 560

■ Part No.



Accessories of the air guide

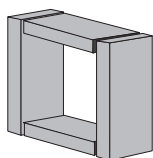
Part No.

“Standard” indoor installation
Installation directly in the corner
Intake

Wall connection element WA-E01

for Belaria® comfort ICM
for sealing the suction side directly
on the wall
black synthetic rubber
50 mm

6031 891


“Wall insulation” MI-E01

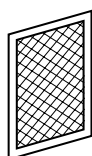
for Belaria® comfort ICM
4-piece, black synthetic
rubber, steam-tight, 20 mm thick,
depth 330 mm, self-adhesive

6031 933


Weatherproof grille WG-E01

for Belaria® comfort ICM
blades for the suction
aluminum

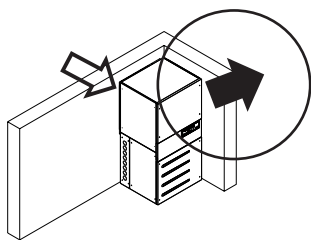
6031 935


Mesh grille MG-E01

for Belaria® comfort ICM

6031 938

■ Part No.



Accessories of the air guide

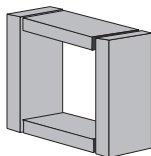
Part No.

“Standard” indoor installation
Installation directly in the corner



Wall connection set WA-A01
for Belaria® comfort ICM
consisting of:
Wall connection element black
synthetic rubber, 50 mm
blow-out panel steel,
powder-coated

6031 892



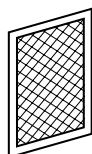
“Wall insulation” MI-A01
for Belaria® comfort ICM
4-piece, black synthetic
rubber, steam-tight, 20 mm thick,
depth 330 mm, self-adhesive.

6031 934



Weatherproof grille WG-A01
for Belaria® comfort ICM
blades for the blow-out
aluminum

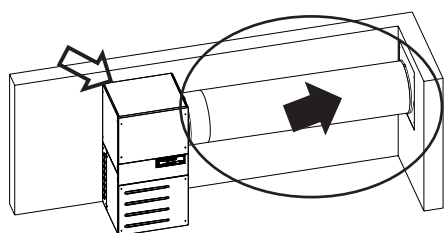
6031 936



Mesh grille MG-A01
for Belaria® comfort ICM

6031 939

■ Part No.



Accessories of the air guide

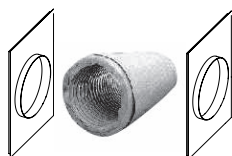
Part No.

“Flex” indoor installation

“Flex” installation for individual solutions

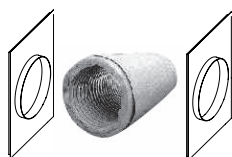
Intake

see “Standard” installation

**Air hose set LS560-2**

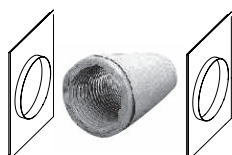
6032 045

for Belaria® comfort ICM
length 2 m (can be shortened),
Ø 560 mm
insulated hose,
plastic foil outside.
Insulation mineral wool,
metal spiral inside with plastic foil.
incl. clamps and connection plates;
heat pump and wall side.

**Air hose set LS560-3**

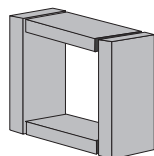
6032 046

for Belaria® comfort ICM
length 3 m (can be shortened),
Ø 560 mm
insulated hose,
plastic foil outside.
Insulation mineral wool,
metal spiral inside with plastic foil.
incl. clamps and connection plates;
heat pump and wall side.

**Air hose set LS560-5**

6032 047

for Belaria® comfort ICM
length 5 m (can be shortened),
Ø 560 mm
insulated hose,
plastic foil outside.
Insulation mineral wool,
metal spiral inside with plastic foil.
incl. clamps and connection plates;
heat pump and wall side.

**“Wall insulation” MI-A02**

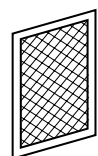
6032 563

for Belaria® comfort ICM
4-piece, black synthetic
rubber, steam-tight, 20 mm thick,
depth 330 mm, self-adhesive.

**Weatherproof grille WG-A02**

6031 937

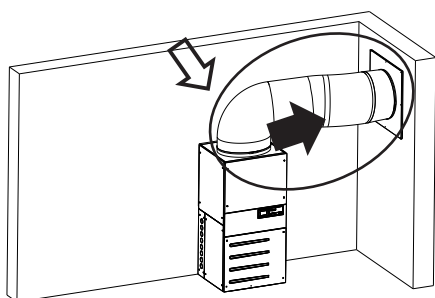
for Belaria® comfort ICM
with blades for blow-out opening
with air hose in an air duct.
Aluminum

**Mesh grille MG-A02**

6031 940

for Belaria® comfort ICM
for blow-out opening with
air hose in an air duct

■ Part No.

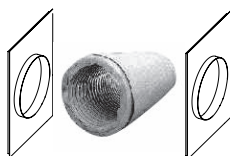


Accessories of the air guide

Part No.

“Flex” indoor installation
“Flex” installation for individual solutions
Intake

see “Standard” installation

Outlet on top via flexible hose

Air hose set LSO 560-2

for Belaria® comfort ICM

length 2 m (can be shortened), Ø 560 mm

insulated hose, plastic foil outside.

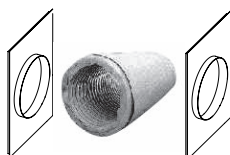
Insulation mineral wool,

metal spiral inside with plastic foil.

Incl. clamps and connection plates;

heat pump and wall side.

6046 564


Air hose set LSO 560-3

for Belaria® comfort ICM

length 3 m (can be shortened), Ø 560 mm

insulated hose, plastic foil outside.

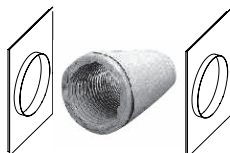
Insulation mineral wool,

metal spiral inside with plastic foil.

Incl. clamps and connection plates;

heat pump and wall side.

6046 565


Air hose set LSO 560-5

for Belaria® comfort ICM

length 5 m (can be shortened), Ø 560 mm

insulated hose, plastic foil outside.

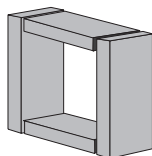
Insulation mineral wool,

metal spiral inside with plastic foil.

Incl. clamps and connection plates;

heat pump and wall side.

6046 566


“Wall insulation” MI-A02

for Belaria® comfort ICM

4-piece, black synthetic

rubber, steam-tight, 20 mm thick,

depth 330 mm, self-adhesive.

6032 563


Weatherproof grille WG-A02

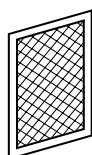
for Belaria® comfort ICM

with blades for blow-out opening

with air hose in an air duct.

Aluminum

6031 937


Mesh grille MG-A02

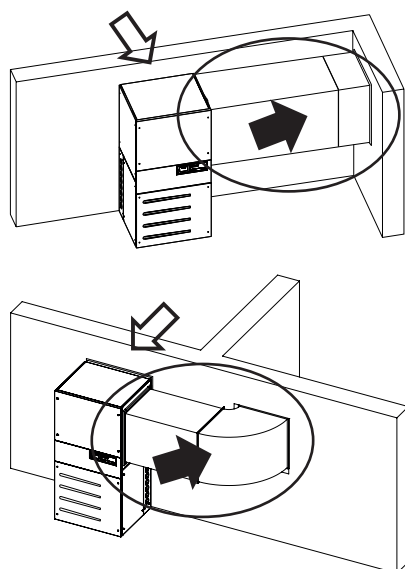
for Belaria® comfort ICM

for blow-out opening with

air hose in an air duct

6031 940

■ Part No.

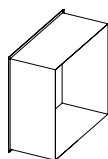


Accessories of the air guide

Part No.

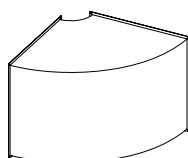
“Duct” indoor installation
Straight or with elbow
Intake

see “Standard” installation

Blow off to the side via duct

Wall fitting MS01

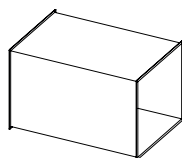
for Belaria® comfort ICM
For connection of the air duct
LKG 10 or LKG 15 on the wall
air duct wall fitting insulated
incl. installation material
H x W: 680 x 650 mm

6040 349


Air duct elbow LKB90 - 90°

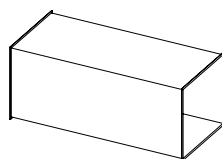
for Belaria® comfort ICM
air duct 90° insulated
incl. installation material
H x W: 680 x 650 mm

6040 350


Air duct LKG10 - 1.0 m

for Belaria® comfort ICM
air duct outlet side insulated,
incl. installation material
H x W x L: 680 x 650 mm x 1000 mm
ducts can be shortened

6040 351


Air duct LKG15 - 1.5 m

for Belaria® comfort ICM
air duct outlet side insulated,
incl. installation material
H x W x L: 680 x 650 mm x 1500 mm
ducts can be shortened

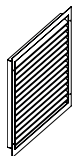
6040 352


Weatherproof grille WG-MS01

for Belaria® comfort ICM
Weatherproof grille outlet
via air duct
Anodized aluminium
incl. installation material

6040 363

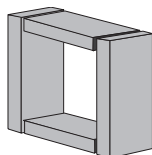
■ Part No.



Mesh grille MG-MS01
for Belaria® comfort ICM
Mesh grille outlet
via air duct
Galvanised steel
incl. installation material

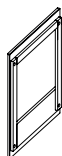
Part No.

6040 364



“Wall insulation” MI-E01
for Belaria® comfort ICM
4-piece, black synthetic
rubber, steam-tight, 20 mm thick,
depth 330 mm, self-adhesive

6031 933



Blow-out panel cpl. - duct conn.RAL 3000
for Belaria® comfort ICM
For connection of the air duct
LKG 10 or LKG 15 to the heat pump

6038 045

■ Technical data

Hoval Belaria® comfort ICM (8,13)

Type		(8)	(13)
Energy efficiency class of the compound system with control	35 °C / 55 °C	A+++/A++	A+++/A++
Coefficient of performance moderate climate 35 °C/55 °C	SCOP	4.5/3.3	4.6/3.5
Performance data (heating) in acc. with EN 14511			
• Heat output A2W35	kW	3.9	7.1
• Power consumption A2W35	kW	0.9	1.7
• Coefficient of performance A2W35	COP	4.3	4.1
• Heat output A7W35	kW	4.5	8.3
• Power consumption A7W35	kW	0.9	1.7
• Coefficient of performance A7W35	COP	5.1	4.8
• Heat output A-7W35	kW	2.8	5.5
• Power consumption A-7W35	kW	0.9	1.7
• Coefficient of performance A-7W35	COP	3.2	3.3
Performance data (cooling) in acc. with EN 14511			
• Cooling capacity A35W18	kW	5.1	9.5
• Power consumption A35W18	kW	1.1	2.3
• Coefficient of performance A35W18	EER	4.5	4.1
• Cooling capacity A35W7	kW	3.4	6.8
• Power consumption A35W7	kW	1.1	2.2
• Coefficient of performance A35W7	EER	2.7	3.0
Sound data			
• Sound power level EN 12102 outdoor ¹⁾	dB (A)	44	49
• Sound pressure level at 5 m	dB (A)	25	30
• Sound pressure level at 10 m	dB (A)	19	24
• Sound power level EN 12102 indoor	dB (A)	44	42
Hydraulic data			
• Max. flow temperature	°C	65	65
• Max. flow of heating water with A7/W35, 5K ΔT	m³/h	1.5	2.5
• Nominal flow rate heating water 5K ΔT	m³/h	0.8	1.4
• Residual overpressure of heating pump at nominal output	kPa	49	68
• Max. operating pressure on the heating side	bar	3	3
• Flow/return connection heating	R	1"	1"
• Built-in condensate drain (hose connection)	mm	35	35
• Built-in fan		Centrifugal fan	Centrifugal fan
• Air quantity at max. speed A7W35	m³/h	2200	3900
• Residual pressure at maximum rpm	Pa	150	110
Cooling technical data			
• Refrigerant		R410A	R410A
• Compressor/stages		Inverter/1	Inverter/1
• Refrigerant fill volume	kg	3.2	6.2
• Compressor oil fill volume (FV50S)	l	0.35	1.9
Electrical data			
• Electrical connection compressor	V / Hz	1~230/50	3~400/50
• Electrical connection immersion heater	V / Hz	3~400/50	3~400/50
• Control electrical connection	V / Hz	1~230/50	1~230/50
• Max. compressor operating current	A	15.8	15.8
• Max. immersion heater operating current	A	13	13
• Max. fan operating current	A	0,24	0,5
• Max. fan power consumption	W	56	115
• Main current fuse	A	C 16	C 20
• Control current fuse	A	B 13	B 13
• Immersion heater fuse	A	B 13	B 13
Dimensions / weight			
• Dimensions (H x W x D)	mm	1830 x 910 x 780	1830 x 910 x 780
• Weight	kg	280	298
• Minimum sizes of installation room	m³	7.3	14.1

¹⁾ The sound power levels apply in whisper mode. Values increase by +4 dB(A) in normal operation.

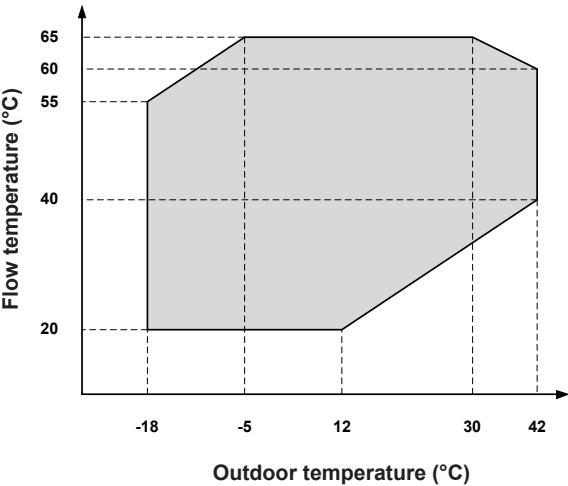
Using a residual current circuit breaker RCCB type B. IΔn ≥ 300 mA is recommended. Country-specific regulations must be observed.

■ Technical data

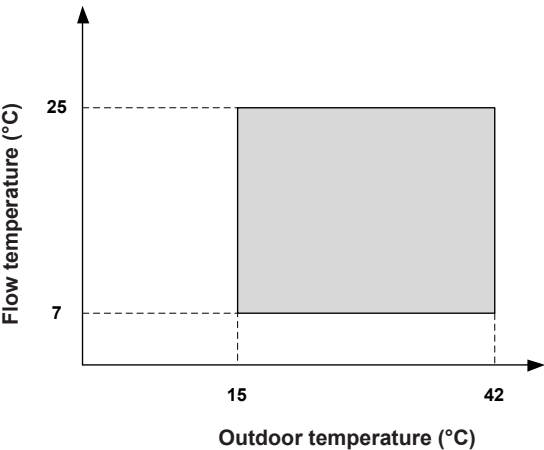
Graphs of operating range

Belaria® comfort ICM (8,13)

Heating and how water



Cooling



■ Technical data

Hoval Belaria® comfort ICM (8,13)

Sound pressure level – sound power level

The **sound pressure level** is dependent on the **place of measurement** and the installation environment within a sound field and describes the sound intensity at this point. In contrast, the **sound power level** is a characteristic of the sound source and therefore does not change with distance; it describes the totality of sound power of the relevant source radiated in all directions.

Indoor unit

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.

Type (indications for equipment room)	(8)	(13)
• Standard installation		
Sound power level	dB (A) 44	42

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 with weather protection grille without roofing.

Type (indications for outside)	(8)	(13)
• Sound power level ¹	dB (A) 44	49
• Sound pressure level at 5 m ¹	dB (A) 25	30
• Sound pressure level at 10 m ¹	dB (A) 19	24

¹ The sound power levels apply in 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 hose sound-insulated on the inside, L < 2 m: - 4 dB(A)
- Air hose sound-insulated on the inside, L > 2 m: - 6 dB(A)

Structure-borne sound

To prevent the transmission of structure-borne sound, all connections must be fitted with compensators or vibration dampers.

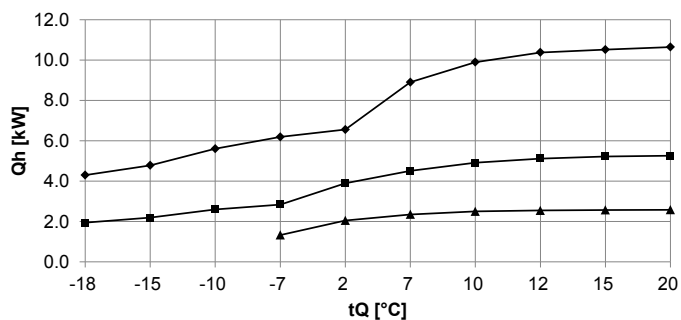
Technical data

Performance data – heating

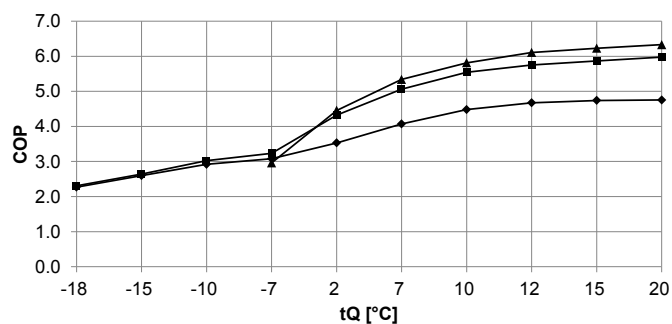
Maximum heat output allowing for defrosting losses

Hoval Belaria® comfort ICM (8)

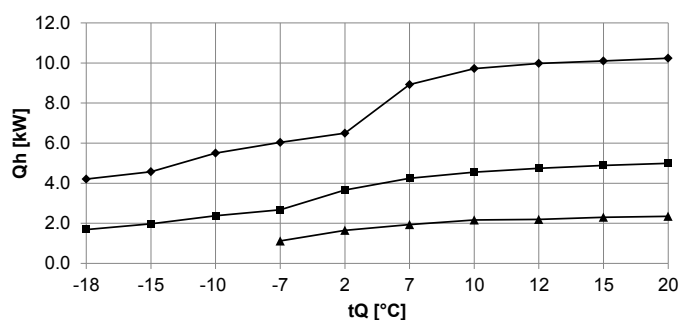
Heat output - t_{FL} 35 °C



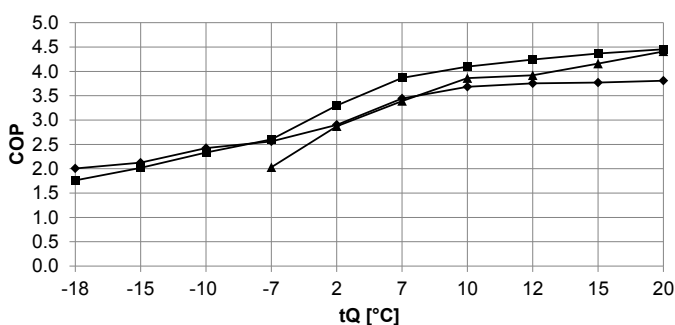
Coefficient of performance - t_{FL} 35 °C



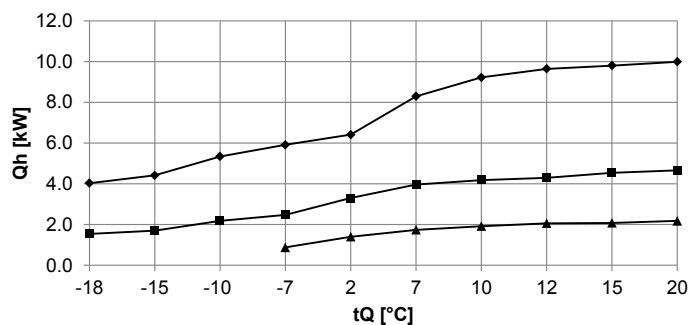
Heat output - t_{FL} 45 °C



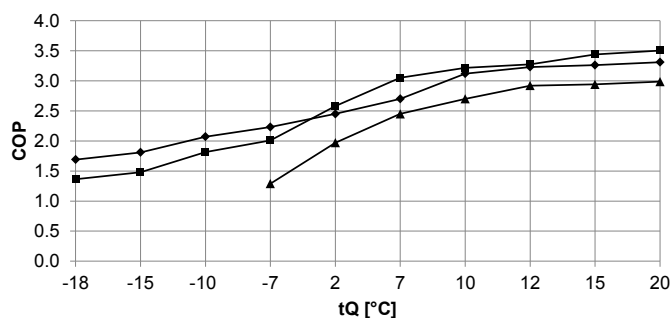
Coefficient of performance - t_{FL} 45 °C



Heat output - t_{FL} 55 °C



Coefficient of performance - t_{FL} 55 °C



Observe daily power interruptions!
see project planning

t_{FL} = Heating flow temperature (°C)

t_Q = Source temperature (°C)

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

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

◆ Maximum output
■ Nominal output
▲ Minimum output

■ Technical data

Performance data – heating

Hoval Belaria® comfort ICM (8)

Data according to EN 14511

tFL °C	tQ °C	Maximum output			Nominal output			Minimum output		
		Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
35	-18	4.30	1.84	2.27	1.94	0.84	2.31	-	-	-
	-15	4.78	1.84	2.60	2.19	0.83	2.64	-	-	-
	-10	5.61	1.92	2.92	2.60	0.86	3.02	-	-	-
	-7	6.19	1.92	3.08	2.84	0.86	3.23	1.33	0.47	2.96
	2	6.56	1.87	3.53	3.89	0.90	4.32	2.05	0.46	4.46
	7	8.91	2.10	4.07	4.51	0.87	5.06	2.35	0.44	5.34
	10	9.90	2.21	4.48	4.91	0.89	5.55	2.50	0.43	5.81
	12	10.38	2.22	4.68	5.12	0.89	5.75	2.55	0.44	6.11
	15	10.52	2.24	4.74	5.22	0.89	5.87	2.57	0.43	6.23
45	20	10.65	2.24	4.75	5.26	0.88	5.98	2.58	0.43	6.33
	-18	4.21	2.10	2.00	1.69	0.96	1.76	-	-	-
	-15	4.57	2.15	2.13	1.98	0.98	2.02	-	-	-
	-10	5.50	2.27	2.42	2.38	1.02	2.33	-	-	-
	-7	6.04	2.36	2.56	2.68	1.03	2.60	1.12	0.57	2.03
	2	6.50	2.24	2.90	3.66	1.11	3.30	1.65	0.58	2.87
	7	8.92	2.59	3.44	4.25	1.10	3.86	1.94	0.57	3.39
	10	9.72	2.64	3.68	4.55	1.11	4.10	2.17	0.58	3.86
	12	9.98	2.66	3.75	4.75	1.12	4.24	2.20	0.56	3.92
50	15	10.10	2.68	3.77	4.89	1.12	4.37	2.30	0.58	4.16
	20	10.24	2.69	3.81	4.99	1.12	4.46	2.35	0.57	4.41
	-18	3.37	2.28	1.48	1.52	1.04	1.49	-	-	-
	-15	3.89	2.37	1.64	1.78	1.07	1.66	-	-	-
	-10	4.88	2.52	1.93	2.26	1.13	2.04	-	-	-
	-7	5.58	2.53	2.21	2.56	1.13	2.26	1.20	0.62	1.94
	2	5.90	2.44	2.42	3.50	1.17	2.90	1.84	0.60	3.07
	7	7.92	2.86	2.77	4.01	1.19	3.26	2.09	0.60	3.48
	10	8.67	2.97	2.92	4.30	1.19	3.48	2.19	0.58	3.79
55	12	8.98	2.96	3.03	4.43	1.19	3.63	2.21	0.59	3.76
	15	9.43	3.02	3.12	4.68	1.20	3.90	2.30	0.58	3.97
	20	9.72	3.01	3.23	4.80	1.18	4.06	2.35	0.58	4.08
	-18	4.03	2.39	1.69	1.54	1.13	1.36	-	-	-
	-15	4.41	2.45	1.81	1.70	1.15	1.48	-	-	-
	-10	5.34	2.59	2.07	2.18	1.20	1.82	-	-	-
	-7	5.91	2.66	2.23	2.47	1.23	2.01	0.88	0.69	1.29
	2	6.41	2.63	2.45	3.30	1.28	2.58	1.40	0.72	1.97
	7	8.29	3.07	2.70	3.96	1.27	3.05	1.74	0.72	2.45
60	10	9.22	2.97	3.12	4.18	1.30	3.22	1.92	0.72	2.70
	12	9.64	3.00	3.23	4.29	1.31	3.27	2.06	0.72	2.92
	15	9.80	3.01	3.26	4.54	1.32	3.44	2.08	0.72	2.94
	20	9.99	3.03	3.31	4.66	1.33	3.50	2.18	0.73	2.99
	-7	5.19	2.57	2.02	2.24	1.35	1.66	-	-	-
	2	5.63	2.54	2.22	3.10	1.44	2.15	1.32	0.81	1.62
	7	7.28	2.97	2.45	3.64	1.45	2.51	1.60	0.82	1.95
	10	8.10	2.87	2.82	3.95	1.43	2.76	1.81	0.79	2.29
	12	8.47	2.90	2.92	4.15	1.44	2.88	1.99	0.79	2.52
	15	8.60	2.89	2.98	4.36	1.44	3.03	2.00	0.79	2.54
	20	8.79	2.91	3.02	4.47	1.44	3.10	2.09	0.79	2.65

tFL = Heating flow temperature (°C)

tQ = Source temperature (°C)

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

P = Power consumption of the overall unit (kW) incl. high-efficiency pump, measured in accordance with EN 14511

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

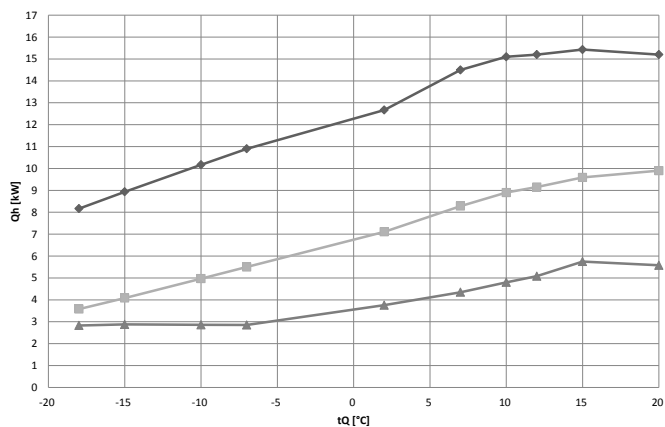
Technical data

Performance data – heating

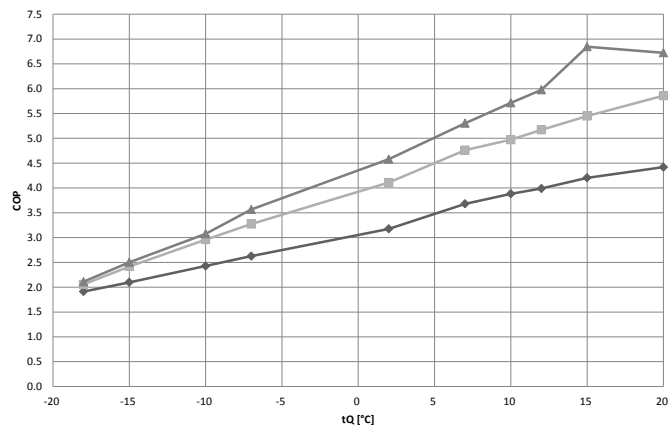
Maximum heat output allowing for defrosting losses

Hoval Belaria® comfort ICM (13)

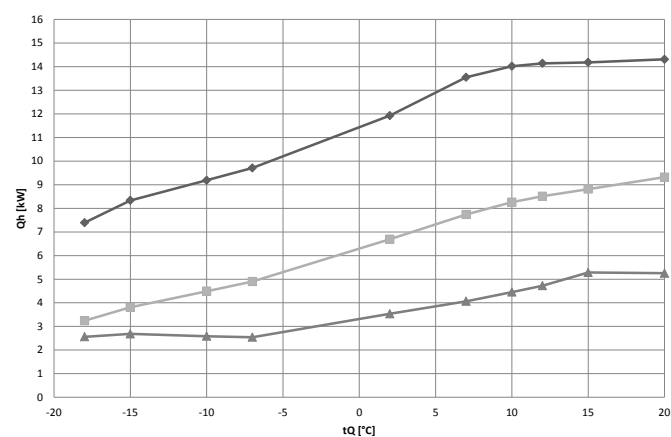
Heat output - t_{FL} 35 °C



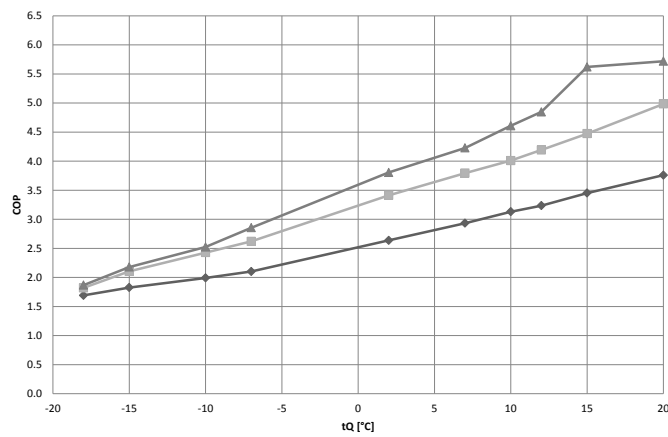
Coefficient of performance - t_{FL} 35 °C



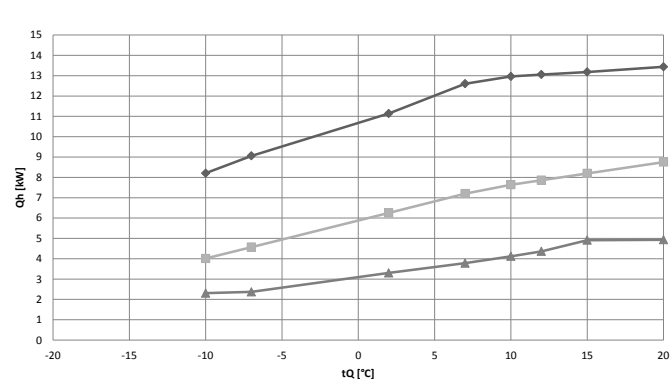
Heat output - t_{FL} 45 °C



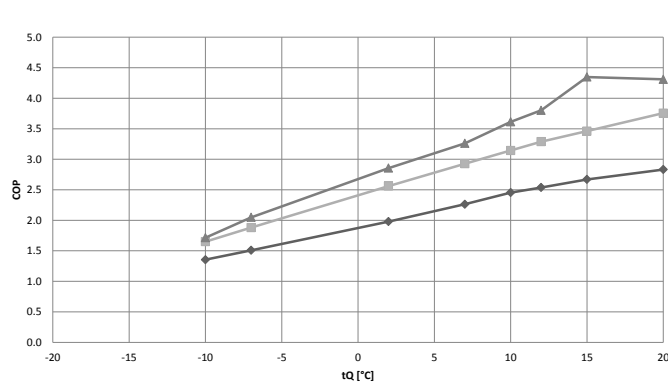
Coefficient of performance - t_{FL} 45 °C



Heat output - t_{FL} 55 °C



Coefficient of performance - t_{FL} 55 °C



Observe daily power interruptions!
see project planning

t_{FL} = Heating flow temperature (°C)

t_Q = Source temperature (°C)

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

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

◆ Maximum output
■ Nominal output
▲ Minimum output

■ Technical data

Performance data – heating

Hoval Belaria® comfort ICM (13)

Data according to EN 14511

tFL °C	tQ °C	Maximum output			Nominal output			Minimum output		
		Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
35	-18	8.2	4.3	1.9	3.6	1.7	2.1	2.8	1.3	2.1
	-15	8.9	4.3	2.1	4.1	1.7	2.4	2.9	1.2	2.5
	-10	10.2	4.2	2.4	5.0	1.7	3.0	2.9	0.9	3.1
	-7	10.9	4.2	2.6	5.5	1.7	3.3	2.9	0.8	3.6
	2	12.7	4.0	3.2	7.1	1.7	4.1	3.8	0.8	4.6
	7	14.5	3.9	3.7	8.3	1.7	4.8	4.4	0.8	5.3
	10	15.1	3.9	3.9	8.9	1.8	5.0	4.8	0.8	5.7
	12	15.2	3.8	4.0	9.2	1.8	5.2	5.1	0.9	6.0
	15	15.4	3.7	4.2	9.6	1.8	5.5	5.8	0.8	6.9
	20	15.2	3.4	4.4	9.9	1.7	5.9	5.6	0.8	6.7
45	-18	7.4	4.4	1.7	3.2	1.8	1.8	2.6	1.4	1.9
	-15	8.3	4.6	1.8	3.8	1.8	2.1	2.7	1.2	2.2
	-10	9.2	4.6	2.0	4.5	1.9	2.4	2.6	1.0	2.5
	-7	9.7	4.6	2.1	4.9	1.9	2.6	2.5	0.9	2.9
	2	11.9	4.5	2.6	6.7	2.0	3.4	3.5	0.9	3.8
	7	13.6	4.6	2.9	7.7	2.0	3.8	4.1	1.0	4.2
	10	14.0	4.5	3.1	8.3	2.1	4.0	4.5	1.0	4.6
	12	14.1	4.4	3.2	8.5	2.0	4.2	4.7	1.0	4.9
	15	14.2	4.1	3.5	8.8	2.0	4.5	5.3	0.9	5.6
	20	14.3	3.8	3.8	9.3	1.9	5.0	5.3	0.9	5.7
55	-18	-	-	-	-	-	-	-	-	-
	-15	-	-	-	-	-	-	-	-	-
	-10	8.2	6.1	1.4	4.0	2.4	1.7	2.3	1.4	1.7
	-7	9.1	6.0	1.5	4.7	2.4	2.0	2.4	1.2	2.1
	2	11.1	5.6	2.0	6.3	2.4	2.6	3.3	1.2	2.9
	7	12.6	5.6	2.3	7.2	2.5	2.9	3.8	1.2	3.3
	10	13.0	5.3	2.5	7.6	2.4	3.1	4.1	1.1	3.6
	12	13.1	5.1	2.5	7.9	2.4	3.3	4.4	1.2	3.8
	15	13.2	4.9	2.7	8.2	2.4	3.5	4.9	1.1	4.4
	20	13.4	4.7	2.8	8.8	2.3	3.8	4.9	1.1	4.3
60	-18	-	-	-	-	-	-	-	-	-
	-15	-	-	-	-	-	-	-	-	-
	-10	-	-	-	-	-	-	-	-	-
	-7	-	-	-	-	-	-	-	-	-
	2	10.6	6.2	1.7	6.0	2.7	2.2	3.2	1.3	2.5
	7	11.9	6.1	2.0	6.8	2.7	2.5	3.6	1.3	2.8
	10	12.4	5.9	2.1	7.3	2.7	2.7	3.9	1.3	3.1
	12	12.5	5.7	2.2	7.6	2.7	2.8	4.2	1.3	3.3
	15	12.7	5.5	2.3	7.9	2.7	3.0	4.7	1.3	3.8
	20	13.1	5.3	2.5	8.5	2.6	3.3	4.8	1.3	3.7

tFL = Heating flow temperature (°C)

tQ = Source temperature (°C)

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

P = Power consumption of the overall unit (kW) incl. high-efficiency pump, measured in accordance with EN 14511

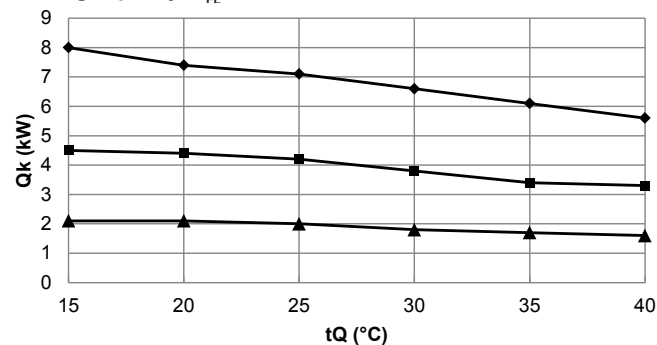
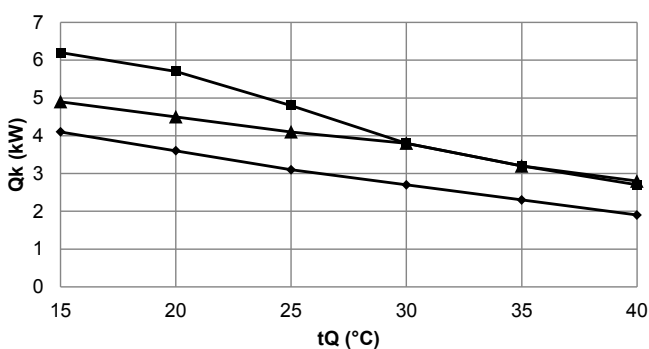
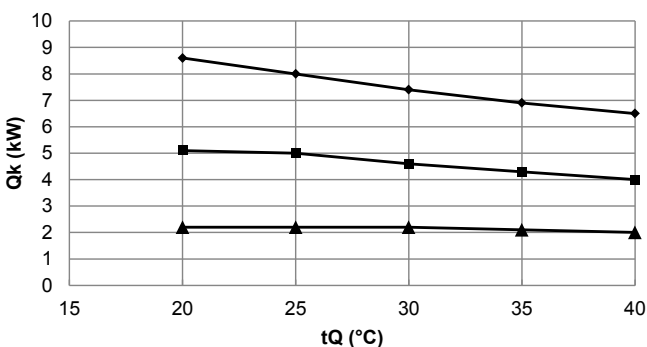
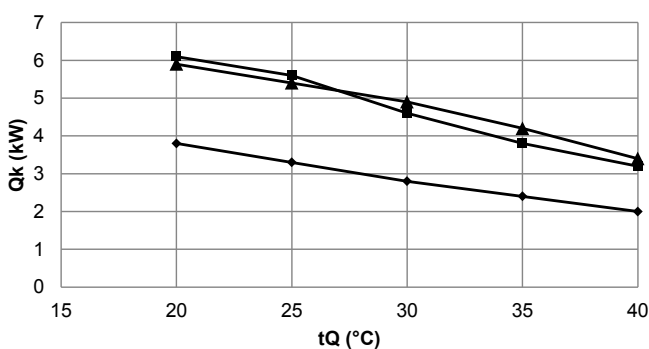
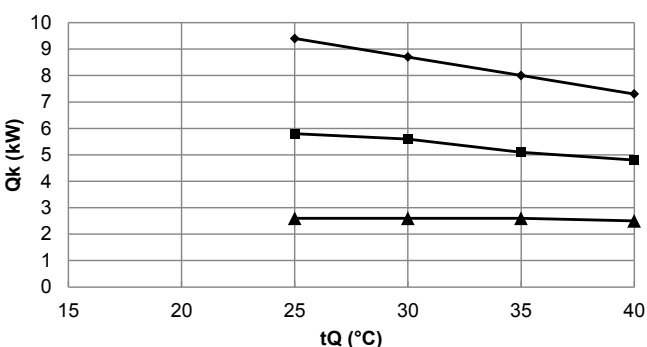
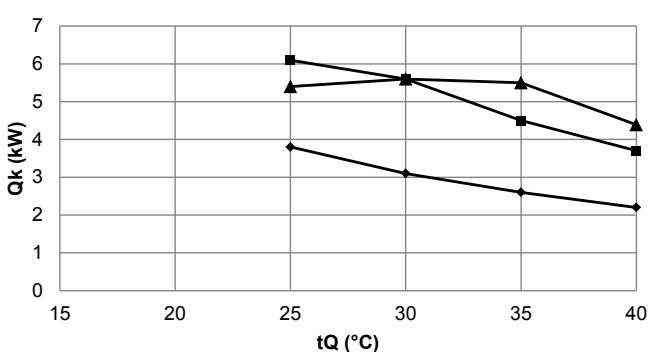
COP = Coefficient of performance for the overall unit in accordance with standard EN 14511

Technical data

Performance data – cooling

Maximum cooling capacity

Hoval Belaria® comfort ICM (8)

Cooling capacity - $t_{FL} 7\text{ °C}$

Coefficient of performance - $t_{FL} 7\text{ °C}$

Cooling capacity - $t_{FL} 12\text{ °C}$

Coefficient of performance - $t_{FL} 12\text{ °C}$

Cooling capacity - $t_{FL} 18\text{ °C}$

Coefficient of performance - $t_{FL} 18\text{ °C}$

 t_{FL} = Cooling water flow temperature (°C)

 t_Q = Source temperature (°C)

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

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

◆ Maximum output
 ■ Nominal output
 ▲ Minimum output

■ Technical data

Performance data – cooling

Hoval Belaria® comfort ICM (8)

Data according to EN 14511

tFL °C	tQ °C	Maximum output			Nominal output			Minimum output		
		Qk kW	P kW	EER	Qk kW	P kW	EER	Qk kW	P kW	EER
7	20	7.4	2.1	3.6	4.4	0.8	5.7	2.1	0.5	4.5
	25	7.1	2.3	3.1	4.2	0.9	4.8	2	0.5	4.1
	30	6.6	2.5	2.7	3.8	1	3.8	1.8	0.5	3.8
	35	6.1	2.7	2.3	3.4	1.1	3.2	1.7	0.5	3.2
	40	5.6	2.9	1.9	3.3	1.2	2.7	1.6	0.6	2.8
12	15	-	-	-	-	-	-	-	-	-
	20	8.6	2.3	3.8	5.1	0.8	6.1	2.2	0.8	5.9
	25	8	2.4	3.3	5	0.9	5.6	2.2	0.9	5.4
	30	7.4	2.6	2.8	4.6	1	4.6	2.2	1	4.9
	35	6.9	2.9	2.4	4.3	1.1	3.8	2.1	1.1	4.2
18	40	6.5	6.2	2	4	1.3	3.2	2	1.2	3.4
	15	-	-	-	-	-	-	-	-	-
	20	-	-	-	-	-	-	-	-	-
	25	9.4	2.5	3.8	5.8	0.9	6.1	2.6	0.5	5.4
	30	8.7	2.9	3.1	5.6	1	5.6	2.6	0.5	5.6
	35	8	3.1	2.6	5.1	1.1	4.5	2.6	0.5	5.5
	40	7.3	3.4	2.2	4.8	1.3	3.7	2.5	0.6	4.39

tFL = Cooling water flow temperature (°C)

tQ = Source temperature (°C)

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

P = Power consumption of the overall unit (kW) incl. high-efficiency pump, measured in accordance with EN 14511

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

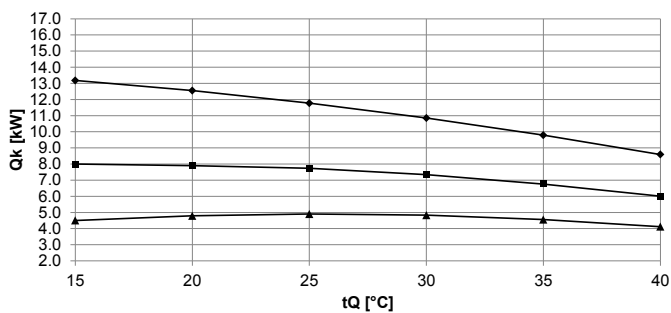
Technical data

Performance data – cooling

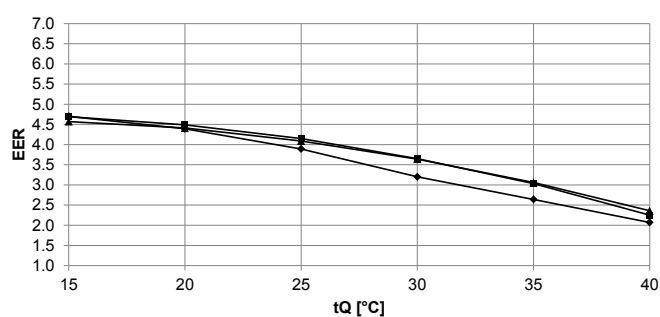
Maximum cooling capacity

Hoval Belaria® comfort ICM (13)

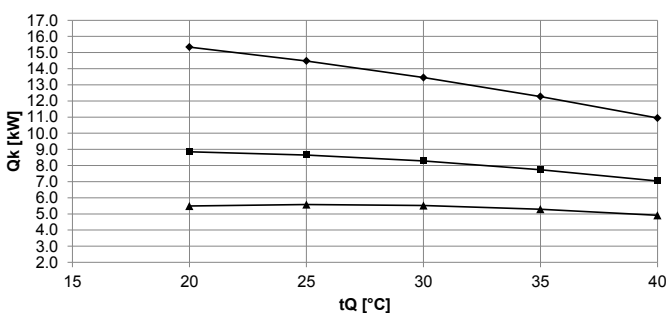
Cooling capacity - $t_{FL} 7\text{ °C}$



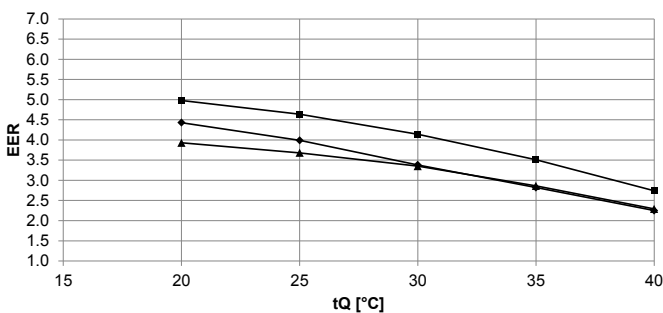
Coefficient of performance - $t_{FL} 7\text{ °C}$



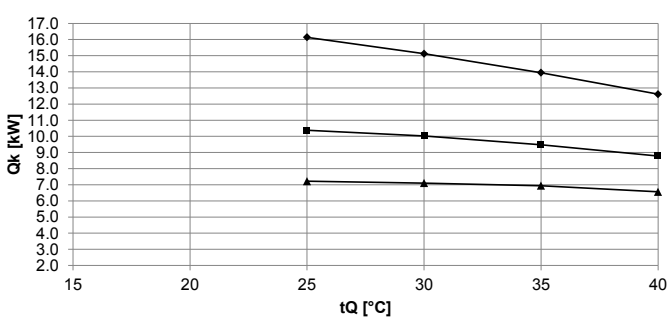
Cooling capacity - $t_{FL} 12\text{ °C}$



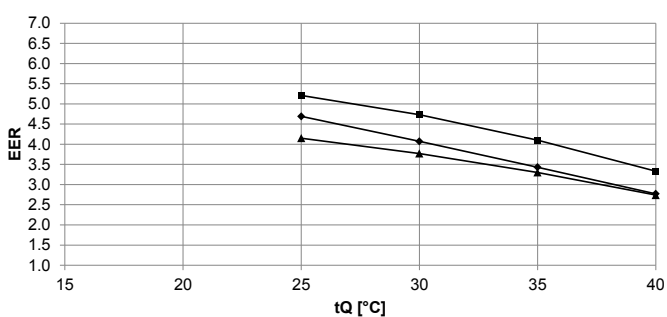
Coefficient of performance - $t_{FL} 12\text{ °C}$



Cooling capacity - $t_{FL} 18\text{ °C}$



Coefficient of performance - $t_{FL} 18\text{ °C}$


 t_{FL} = Cooling water flow temperature (°C)

 t_Q = Source temperature (°C)

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

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

◆ Maximum output
 ■ Nominal output
 ▲ Minimum output

■ Technical data

Performance data – cooling

Hoval Belaria® comfort ICM (13)

Data according to EN 14511

tFL °C	tQ °C	Maximum output			Nominal output			Minimum output		
		Qk kW	P kW	EER	Qk kW	P kW	EER	Qk kW	P kW	EER
7	15	13.2	2.8	4.7	8.0	1.7	4.7	4.5	1.0	4.6
	20	12.6	2.9	4.4	7.9	1.8	4.5	4.8	1.1	4.4
	25	11.8	3.0	3.9	7.7	1.9	4.2	4.9	1.2	4.1
	30	10.9	3.4	3.2	7.3	2.0	3.7	4.8	1.3	3.6
	35	9.8	3.7	2.6	6.8	2.2	3.0	4.6	1.5	3.1
	40	8.6	4.2	2.1	6.0	2.7	2.3	4.1	1.7	2.4
12	15	-	-	-	-	-	-	-	-	-
	20	15.3	3.5	4.4	8.9	1.8	5.0	5.5	1.4	3.9
	25	14.5	3.6	4.0	8.7	1.9	4.6	5.6	1.5	3.7
	30	13.5	4.0	3.4	8.3	2.0	4.1	5.5	1.7	3.4
	35	12.3	4.4	2.8	7.7	2.2	3.5	5.3	1.9	2.9
	40	10.9	4.9	2.3	7.0	2.6	2.7	4.9	2.1	2.3
18	15	-	-	-	-	-	-	-	-	-
	20	-	-	-	-	-	-	-	-	-
	25	16.1	3.5	4.7	10.4	2.0	5.2	7.2	1.7	4.2
	30	15.1	3.7	4.1	10.0	2.1	4.7	7.1	1.9	3.8
	35	13.9	4.1	3.4	9.5	2.3	4.1	6.9	2.1	3.3
	40	12.6	4.6	2.8	8.8	2.6	3.3	6.6	2.4	2.7

tFL = Cooling water flow temperature (°C)

tQ = Source temperature (°C)

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

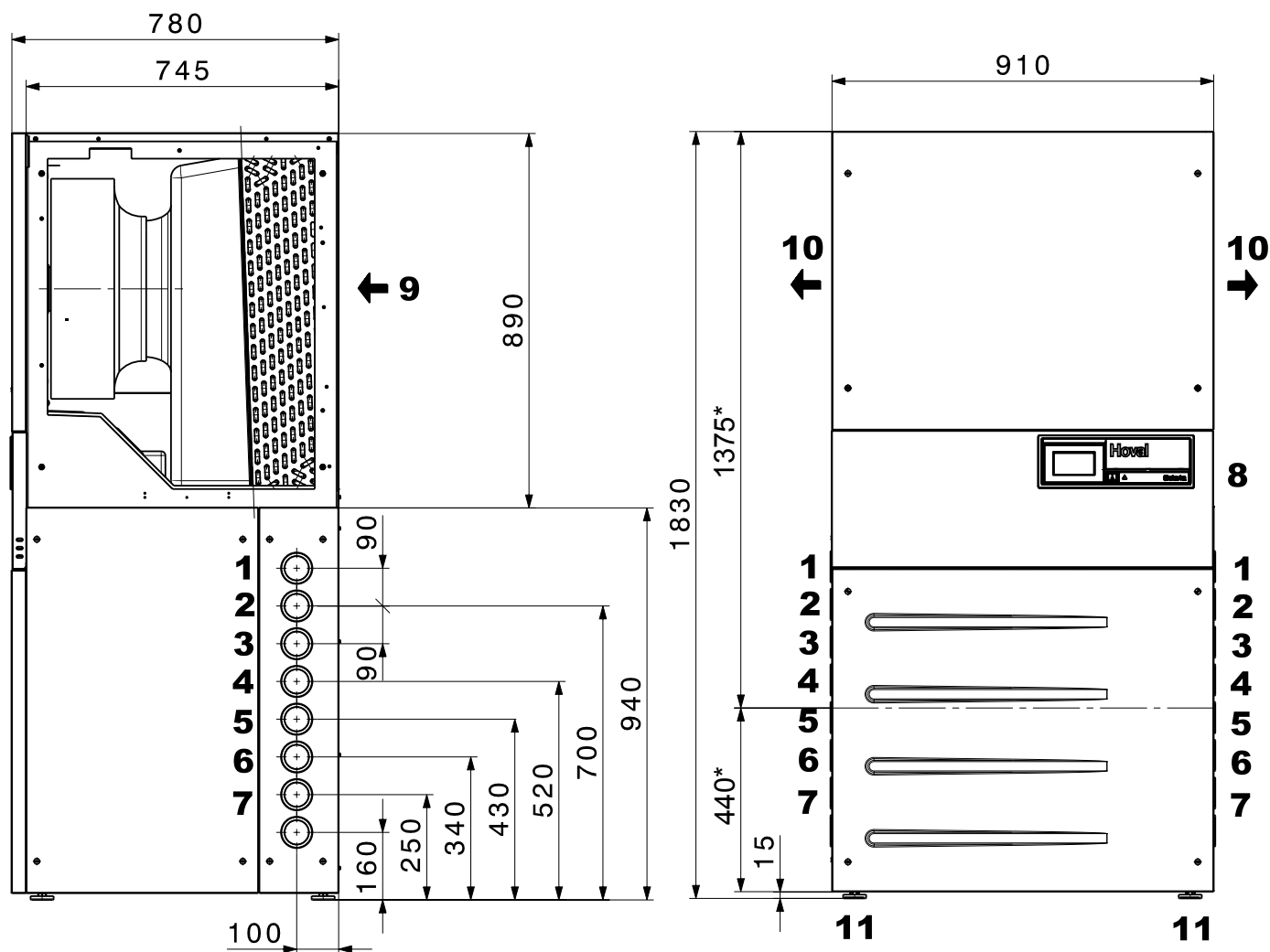
P = Power consumption of the overall unit (kW) incl. high-efficiency pump, measured in accordance with EN 14511

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

■ Dimensions

Hoval Belaria® comfort ICM (8,13)

(Dimensions in mm)



Connections optionally on the left or right
Conversion on site

* Dimensions of the divided version
of the Belaria® comfort ICM (8,13)

- 1 DHW flow R 1"
- 2 Heating flow R1"
- 3 Condensate drain
- 4 Heating return R1"
- 5 Main electrical connection
- 6 Control current connection
- 7 Free
- 8 Control panel
- 9 Air intake (evaporator inlet)
- 10 Air outlet opening
- 11 Adjustable feet

■ Dimensions

Space requirement “standard” installation with wall insulation MI

“Standard” installation with wall insulation MI

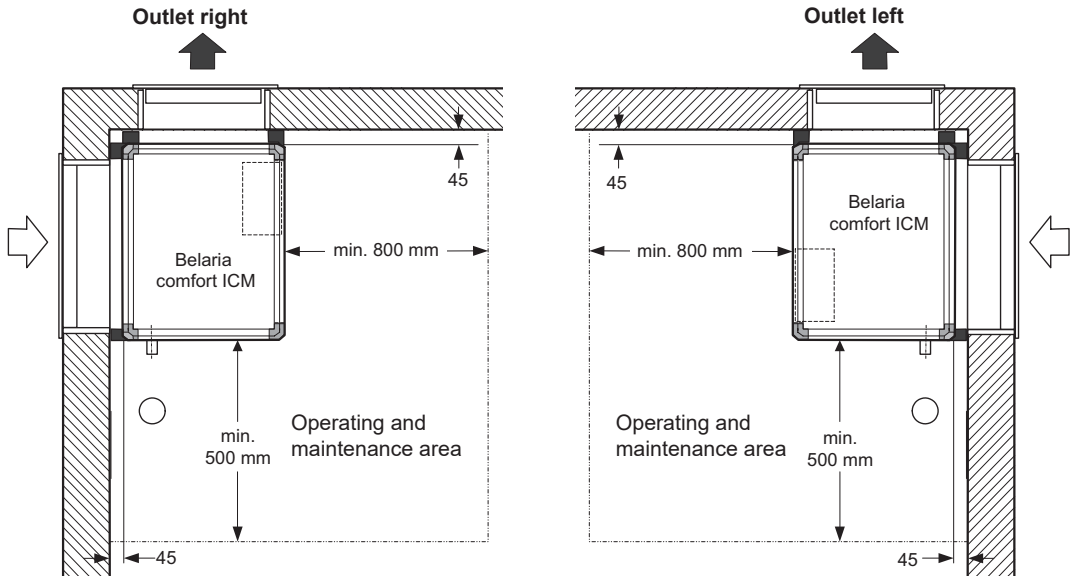
Installation in the corner of the boiler room, directly on the outside wall, with wall connection element and weatherproof grille. Intake at the back, outlet to the right (preferred) or to the left. Water connections on the opposite side.

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.



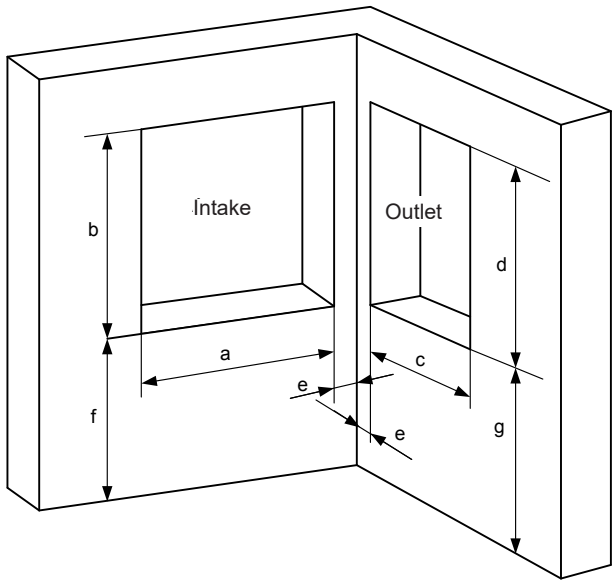
Cut-out dimensions

“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.

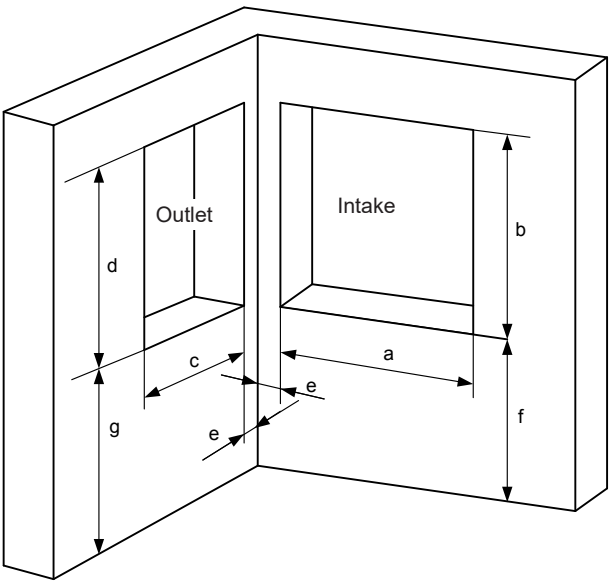
Standard installation 1

Air outlet to the right
Preferred solution due to ease of access for servicing



Standard installation 2

Air outlet to the left



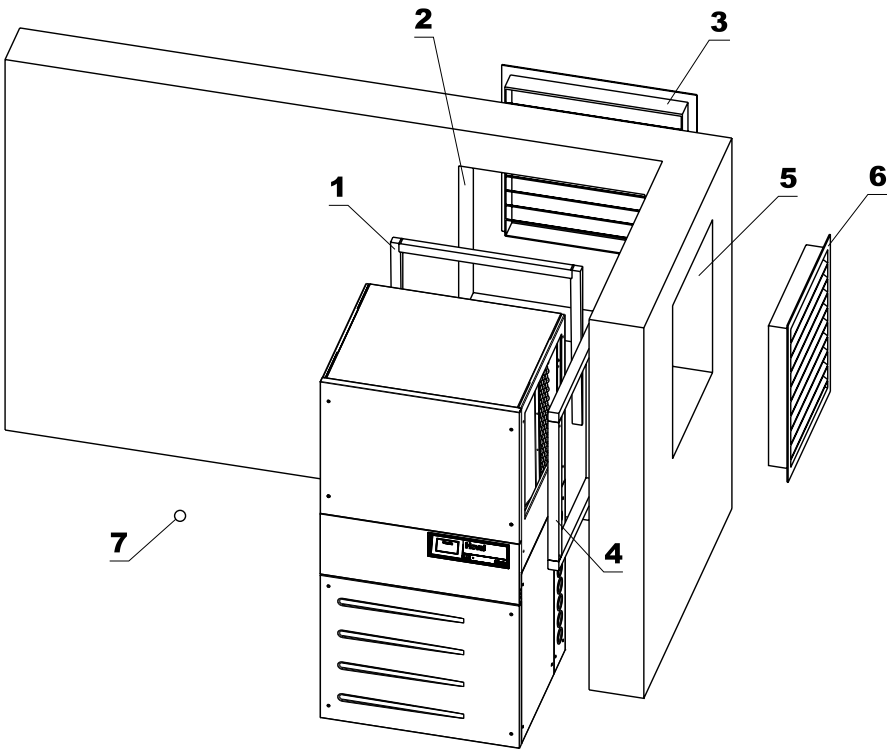
Cut-out dimensions

Belaria® comfort ICM	a	b	c	d	e	f	g
(8,13)	850	855	680	825	80	950	960

■ Dimensions

Space requirement installation with wall insulation MI

“Standard” installation with wall insulation MI

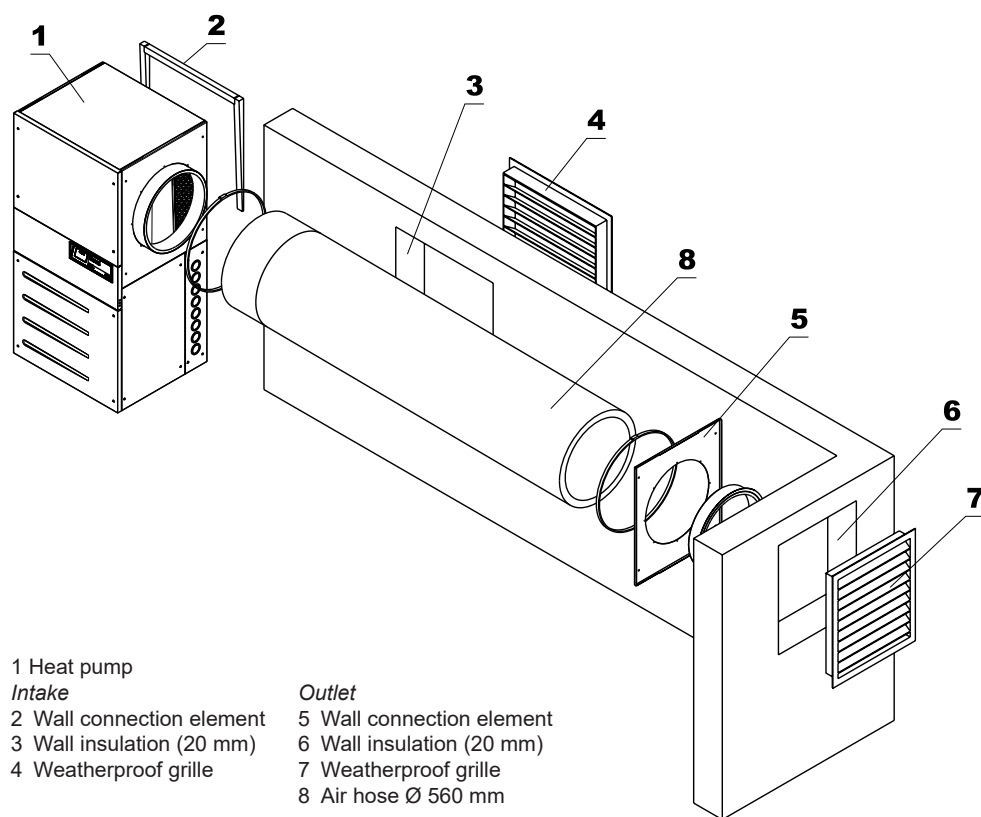


Belaria® comfort ICM		Application	Accessories Type	Part No.
Heat pump		Indoor installation		
1	Wall connection element	Intake	WA-E01	6031 891
2	Wall insulation	Intake	MI-E01	6031 933
3	Weatherproof grille	Intake	WG-E01	6031 935
4	Wall connection set	Outlet	WA-A01	6031 892
5	Wall insulation	Outlet	MI-A01	6031 934
6	Weatherproof grille	Outlet	WG-A01	6031 936
7	Condensate drain			

■ Dimensions

Space requirement "flex" installation

"Flex" installation with wall insulation MI

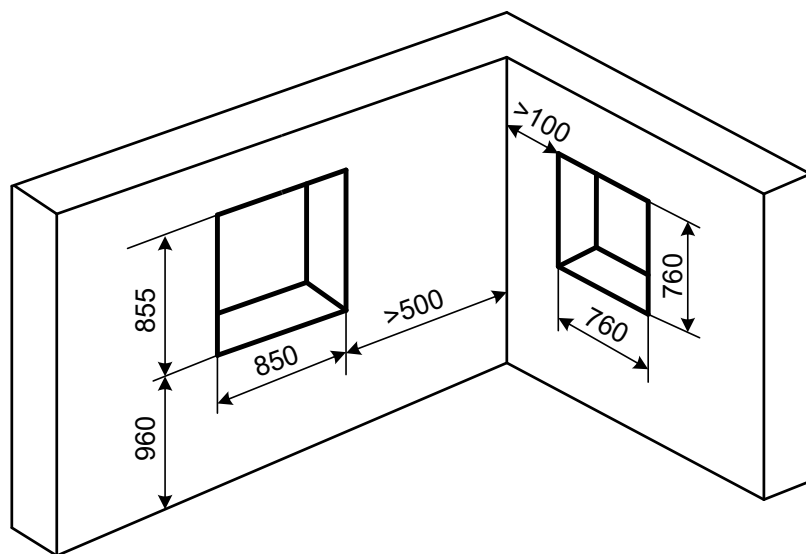


Cut-out dimensions

"Flex" installations with wall insulation MI

(Dimensions in mm)

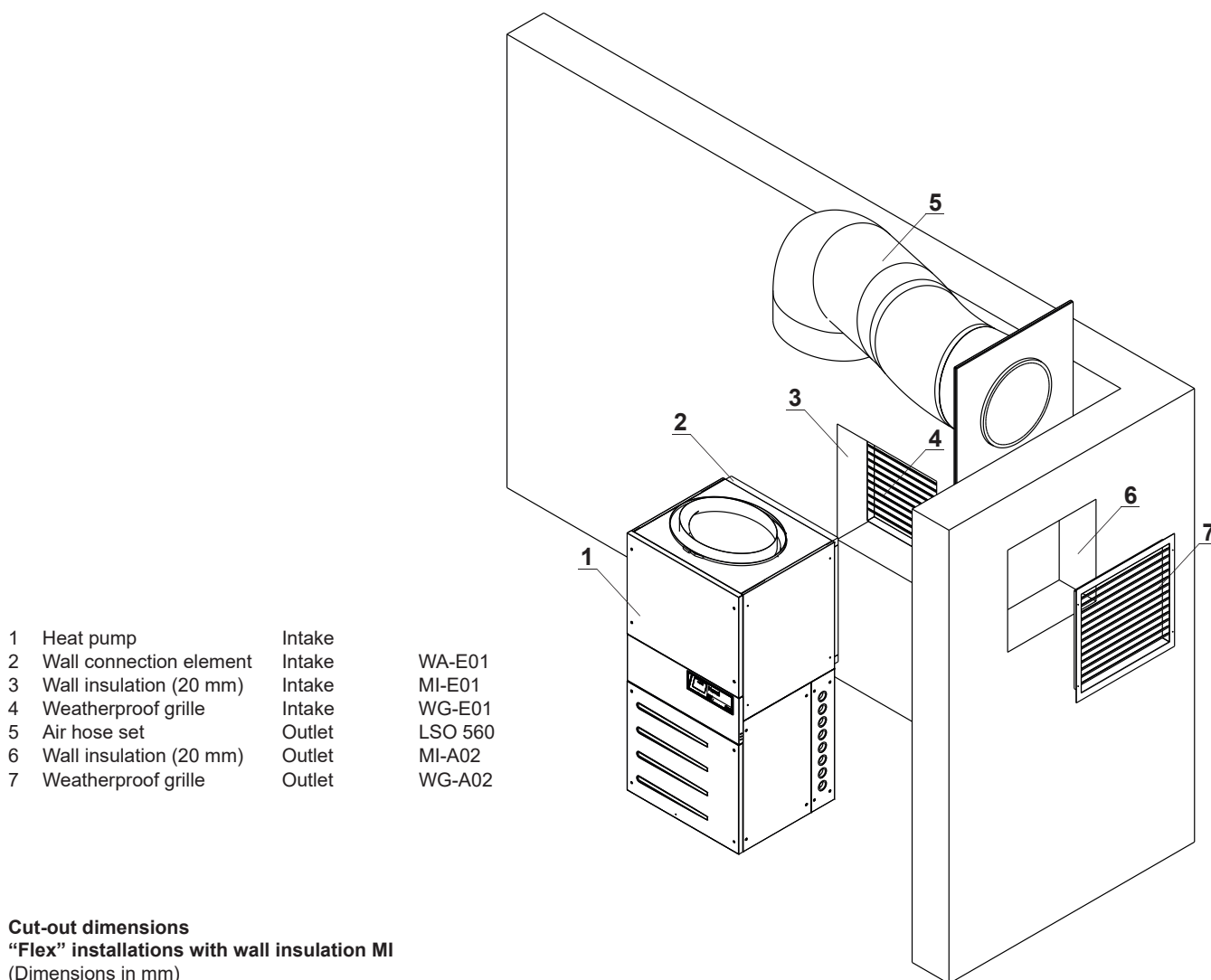
- The cut-outs must be created professionally.
- Cut-out dimensions from top edge of finished floor.



■ Dimensions

Space requirement "flex" installation

"Flex" installation with wall insulation MI, blow out at top through flexible hose

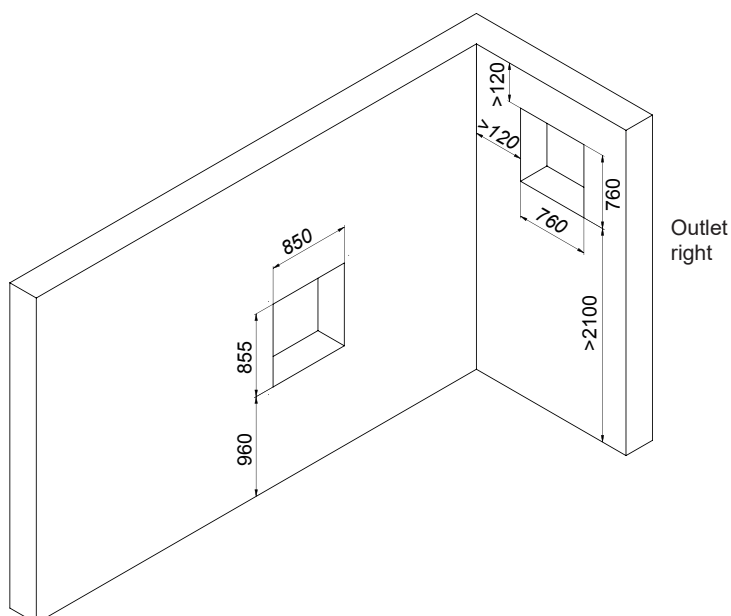


Cut-out dimensions

"Flex" installations with wall insulation MI

(Dimensions in mm)

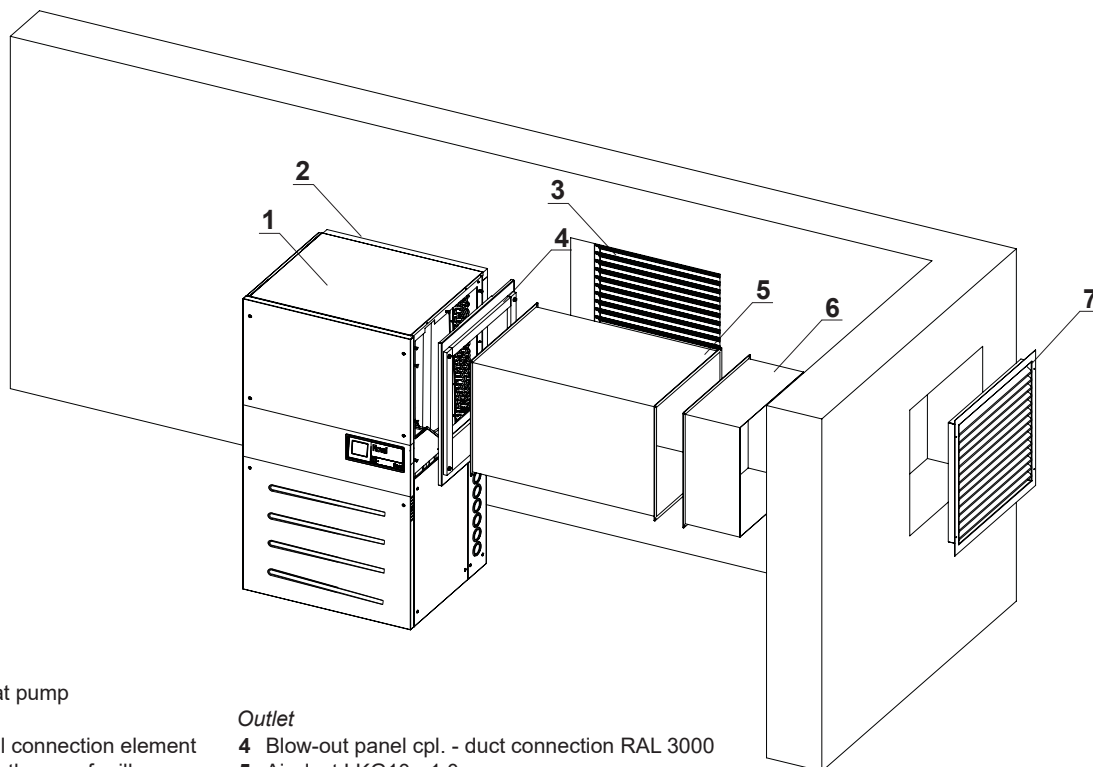
- The cut-outs must be created professionally.
- Cut-out dimensions from top edge of finished floor.



■ Dimensions

Space requirement "duct" indoor installation

"Duct" indoor installation, straight



1 Heat pump

Intake

2 Wall connection element

3 Weatherproof grille

Outlet

4 Blow-out panel cpl. - duct connection RAL 3000

5 Air duct LKG10 - 1.0 m

Air duct LKG15 - 1.5m

6 Wall fitting MS01

7 Weatherproof grille

Notice

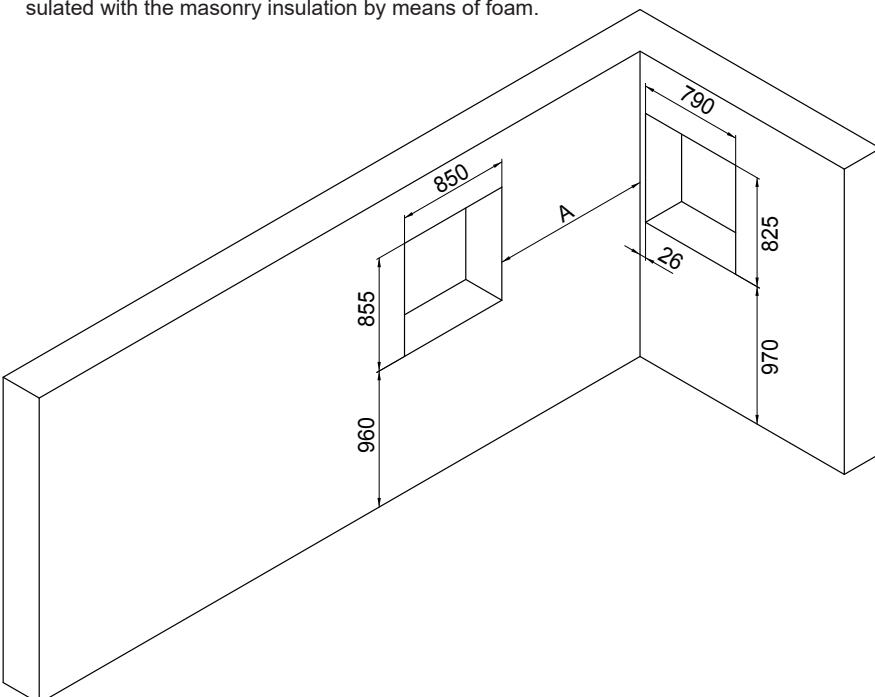
Ducts cannot be shortened!

Cut-out dimensions

"Duct" indoor installation, straight

(Dimensions in mm)

- The cut-outs must be created professionally.
- The masonry support is fixed into the wall opening insulated with the masonry insulation by means of foam.



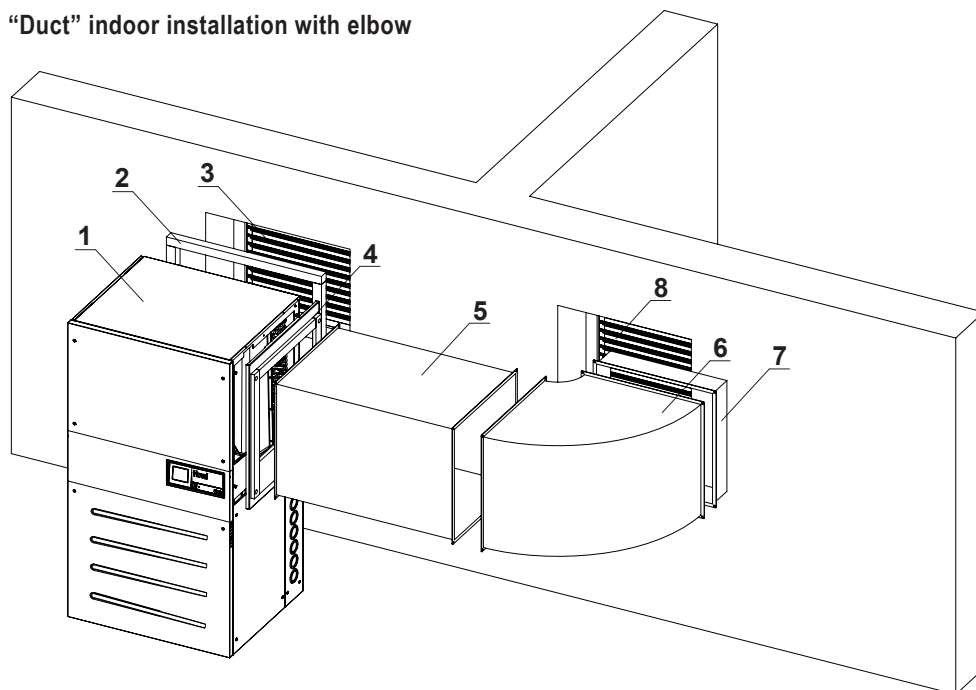
A depends on the selection of the air duct:

Length of air duct	A
1000	1130
1500	1630

■ Dimensions

Space requirement "duct" indoor installation

"Duct" indoor installation with elbow



1 Heat pump

Intake

2 Wall connection element

3 Weatherproof grille

Outlet

4 Blow-out panel cpl. - duct connection RAL 3000

5 Air duct LKG10 - 1.0 m

Air duct LKG15 - 1.5m

6 Air duct elbow LKB90 - 90°

7 Wall fitting MS01

8 Weatherproof grille

Notices

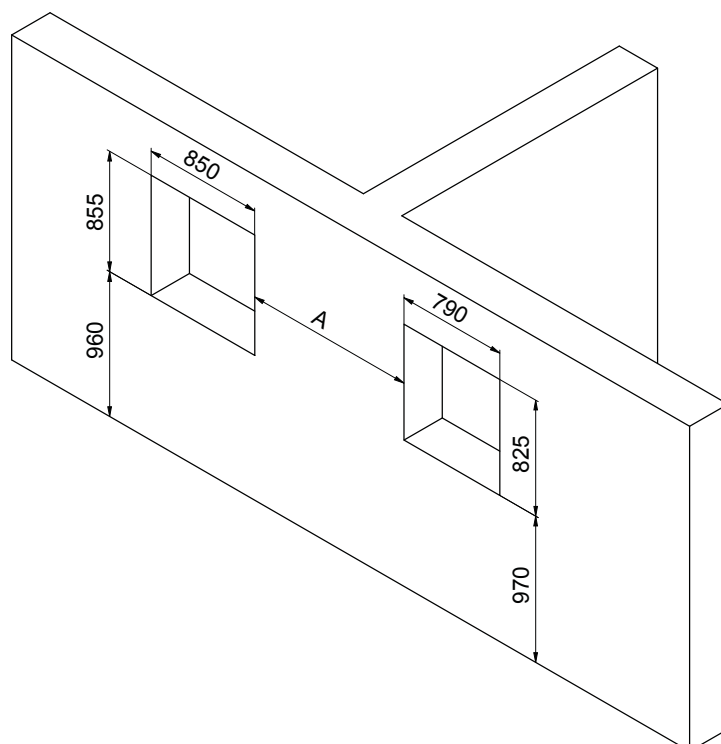
- Ducts cannot be shortened!
- In order to prevent an air short circuit, the partition must be positioned between the suction and exhaust opening.

Cut-out dimensions

"Duct" indoor installation with elbow

(Dimensions in mm)

- The cut-outs must be created professionally.
- The masonry support is fixed into the wall opening insulated with the masonry insulation by means of foam.



A depends on the selection of the air duct:

Length of air duct	A
1000	1126
1500	1626

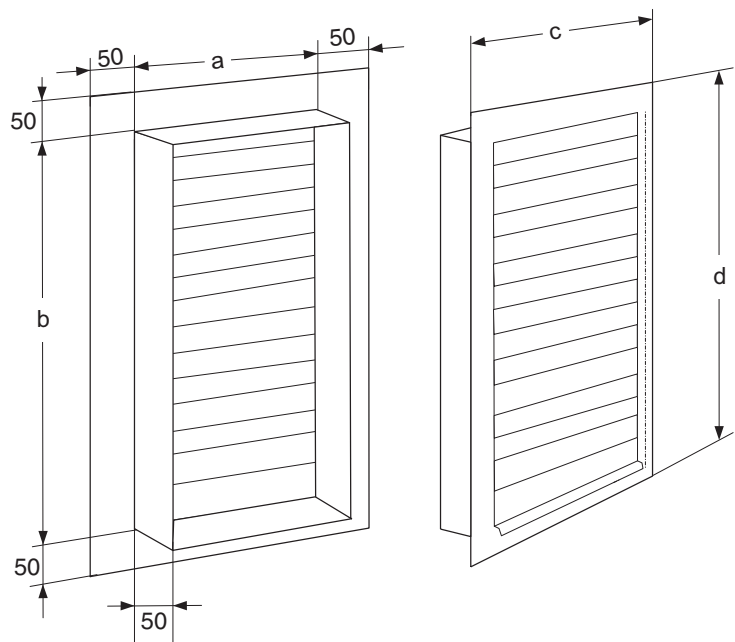
■ Dimensions

Dimensions, weatherproof grille
(Dimensions in mm)

Weatherproof grille made of aluminium with mesh grille.

For the openings with Hoval wall insulation type MI -E01 (suction) or MI -A01, MI -A02 (exhaust).

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



Weatherproof grille Type	Belaria® comfort ICM Type	Application for	a	b	c	d
WG-E01	8,13	Intake	810	796	890	896
WG-A01	8,13	Outlet	640	746	720	846
WG-A02	8,13	Outlet Flex	720	696	800	796
WG-MS01	8,13	Outlet duct	750	746	830	846

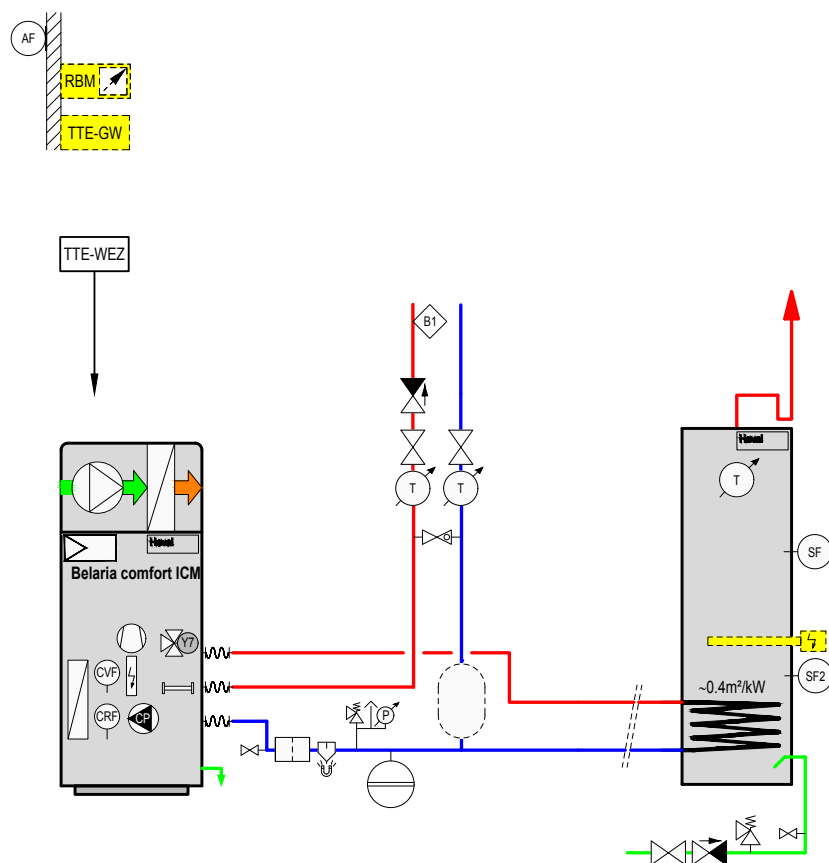
■ Examples

Belaria® comfort ICM (8,13)

Air/water heat pump with

- Calorifier
- 1 direct circuit

Hydraulic schematic BBADE030



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on site, dimensioning and local regulations.
- With underfloor heating, a flow temperature monitor must be installed.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install pockets to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
B1	Flow temperature monitor (if required)

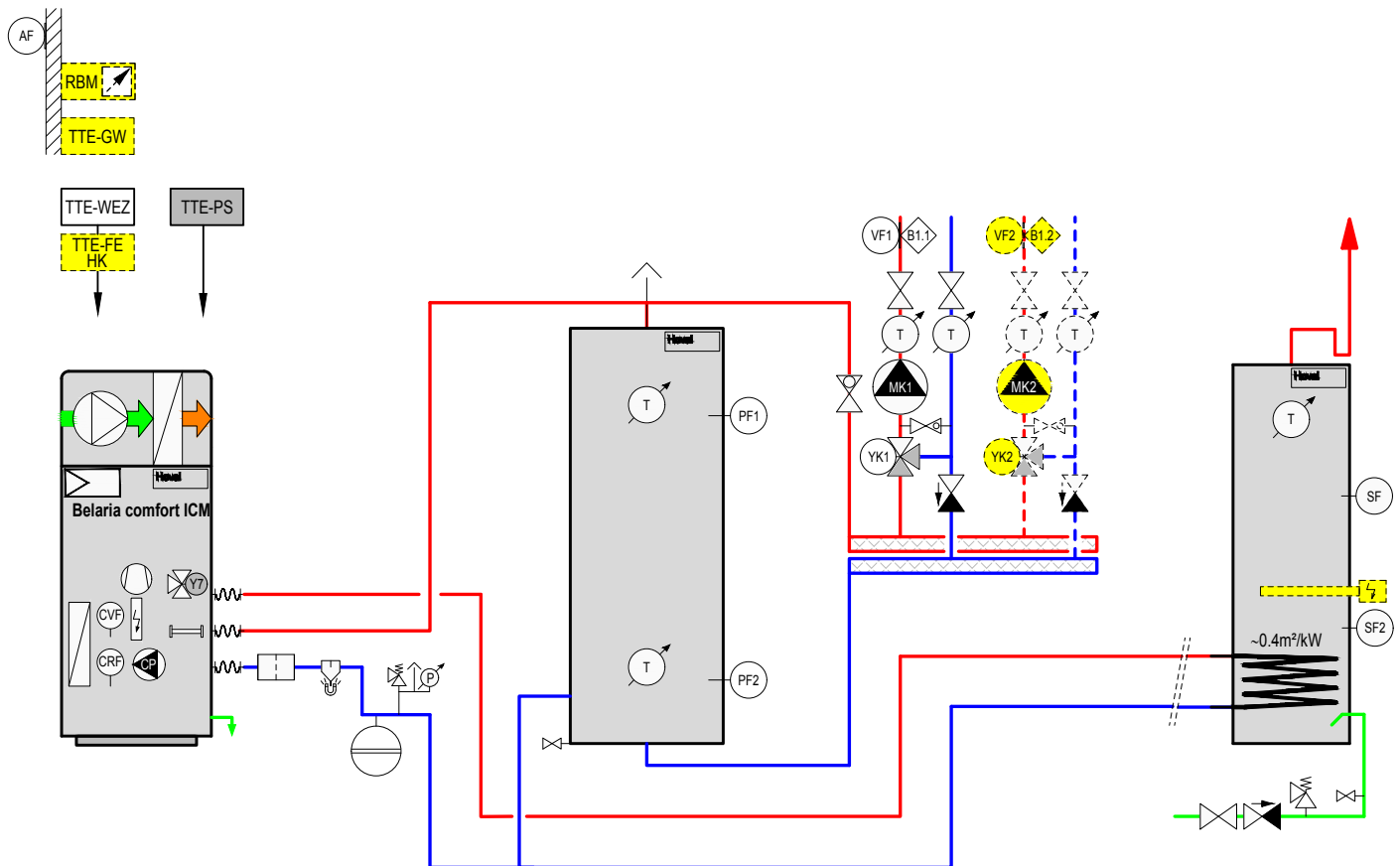
<i>Option</i>	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

■ Examples

Belaria® comfort ICM (8,13)

Air/water heat pump with

- energy buffer storage tank
- calorifier
- 1-... mixer circuit(s)

Hydraulic schematic BBADE040**Important notices**

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on site, dimensioning and local regulations.
- With underfloor heating, a flow temperature monitor must be installed.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install pockets to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
TTE-PS	TopTronic® E buffer module
VF1	Flow temperature sensor 1
B1.1	Flow temperature monitor (if required)
MK1	Pump, mixer circuit 1
YK1	Actuator, mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
PF1	Buffer sensor 1
PF 2	Buffer sensor 2

<i>Option</i>	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature monitor (if required)
MC2	Pump, mixer circuit 2
YK2	Actuator, mixer 2

Description

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
- Refrigerant circuit with electronic expansion valve, filter dryer with sight glass, suction-gas heat exchanger, manifold, high and low-pressure pressure controllers
- Two electronic starting current limiters with integrated rotary field/phase monitoring
- With efficient defrosting control via inversion of the refrigeration circuit
- Filled with refrigerant R 407C, 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.
- Flexible hoses:
 - type (15): 1" length 1.0 m
 - type (20): 1¼" length 1.5 m
 - type (25,30): 1½" length 1.5 m

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 I

		Type	Heat output with A2W35 kW	
35 °C	55 °C		Stage 1	Stage 2
A ⁺	A ⁺	(15)	8.0	15.9
A ⁺⁺	A ⁺	(20)	10.4	20.8
A ⁺⁺	A ⁺	(25)	12.5	25.0
A ⁺⁺	A ⁺	(30)	15.2	30.4

Hoval Belaria® twin IR

		Type	Heat output with A2W35 kW		Cooling capacity with A35W18 kW	
35 °C	55 °C		Stage 1	Stage 2	Stage 1	Stage 2
A ⁺	A ⁺	(15)	8.0	15.9	10.0	18.4
A ⁺⁺	A ⁺	(20)	10.4	20.8	14.3	26.6
A ⁺⁺	A ⁺	(25)	12.5	25.0	15.8	30.3
A ⁺⁺	A ⁺	(30)	15.2	30.4	19.0	35.5

Energy efficiency class of the compound system with control



Seal of approval FWS

The Belaria® twin I, twin IR (15-30) 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 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"

Water connections

- Water connection set complete (included with HP housing, assembly on-site)
- Heating and condensation connections made of flexible pipes with external thread (R) (supplied ex-works). Connection side can be selected on left or right.



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

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"

Air/water heat pump - 2-stage

Part No.

Hoval Belaria® twin I

Air/water heat pump for indoor installation
with built-in Hoval TopTronic® E control

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
- Can be optionally expanded by
max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion universal
 - module expansion heat accounting
- Can be optionally networked with a
total of up to 16 controller modules
(incl. solar module)

Incl. a complete water connection set.
Without accessories on the air side.

Delivery

One-piece construction; Compact device
internally wired ready-for-installation, delivered
completely packed, with flexible hoses

Belaria® twin I type	Heat output with A2W35 kW		
	Stage 1	Stage 2	
(15)	8.0	15.9	7013 500
(20)	10.4	20.8	7013 501
(25)	12.5	25.0	7013 502
(30)	15.2	30.4	7013 503

Notice

An energy buffer accumulator
must be provided.

Matching energy buffer storage tanks
see "Calorifiers"

Air/water heat pump - 2-stage

Hoval Belaria® twin IR (cooling function)

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		
	Stage 1	Stage 2	Stage 1	Stage 2	
(15)	8.0	15.9	9.2	18.4	7013 504
(20)	10.4	20.8	13.3	26.6	7013 505
(25)	12.5	25.0	15.1	30.3	7013 506
(30)	15.2	30.4	17.7	35.5	7013 507

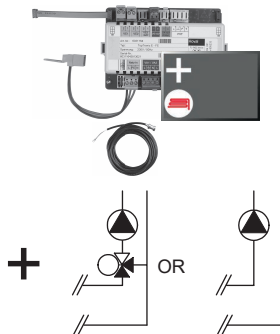
Sound attenuation cowl for compressor

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 I/IR type	Number of compressors	
(15)	2	2069 698
(20)	2	2069 699
(25)	2	2069 699
(30)	2	2069 699

■ 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

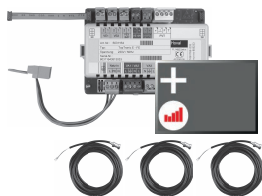
6034 576

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

in each case incl. energy balancing

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

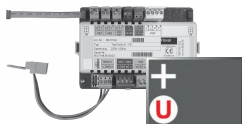
Plastic housing

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

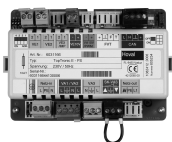
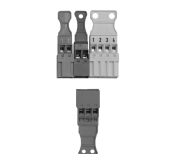
Notice

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

2018 837

SB280 1/2"

brass nickel-plated

PN10, 280 mm



Screw-in electrical heating inset

for installations with technical storage tank
as emergency heating.

Type	Heat output [kW]	Installation length [mm]
------	---------------------	-----------------------------

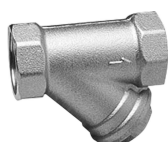
EP 2.5	2.35	390
EP 3.5	3.6	500
EP 5	4.9	620
EP 7.5	7.5	850

6049 557

6049 558

6049 559

6049 560



Strainer

Brass casing, PN 16

Max. operating temperature 110 °C

Sieve made of stainless steel,

Mesh size 0.5 mm

DN 25-1"

2046 978

DN 32-1 1/4"

2046 980

DN 40-1 1/2"

2046 982

DN 50-2"

2046 984



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 1 1/2"	Rp 1"	13	2.91
32	G 2"	Rp 1 1/4"	25	5.59
40	G 2 1/4"	Rp 1 1/2"	49	10.96
50	G 2 3/4"	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

■ Part No.



Accessories

Part No.

Float ball flow switch
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

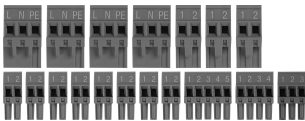
2040 708

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



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

■ Part No.

Part No.

**Sludge separator CS 25-1" with magnet**

2063 735

for flow rates of 1.0 - 2.0 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 1"

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: 1.21 kg

**Sludge separator CS 32-1¼" with magnet**

2063 736

for flow rates of 2.0 - 3.0 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 1¼"

Drain made of brass: hose connection

Any inst. orientation -360° rotating

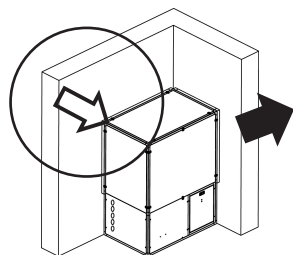
Temperature range -10 to 120 °C

Operating pressure max.: 10 bar

Glycol proportion max.: 50 %

Weight: 1.37 kg

■ Part No.



Accessories of the air ducting

Part No.

Indoor installation "standard"

Installation directly on the wall

Intake


Wall connection element WAE1

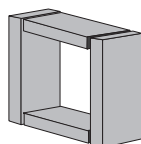
black synthetic rubber, 50 mm, for sealing the suction side directly on the wall.

for Belaria® twin I, Belaria® twin IR (15,20)

for Belaria® twin I, Belaria® twin IR (25,30)

2033 866

2033 868


Wall insulation MI 1

4-piece, black synthetic rubber, steam-tight, 20 mm thick, depth 330 mm, self-adhesive covering and protected with peel-off film.

for Belaria® twin I, Belaria® twin IR (15,20)

for Belaria® twin I, Belaria® twin IR (25,30)

2033 856

2033 858


Weatherproof grille WG 1

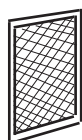
Of aluminium with grilles for intake with wall insulation MI 1

for Belaria® twin I, Belaria® twin IR (15,20)

for Belaria® twin I, Belaria® twin IR (25,30)

2033 846

2033 848


Mesh grid MG 1

for wall insulation MI 1 (for air shaft, replaces weatherproof grille WG 1)

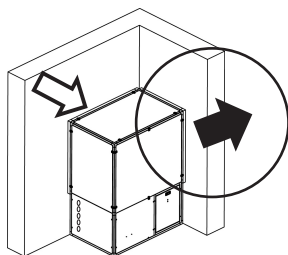
for Belaria® twin I, Belaria® twin IR (15,20)

for Belaria® twin I, Belaria® twin IR (25,30)

2033 816

2033 818

■ Part No.



Accessories of the air ducting

Part No.

Indoor installation “standard”

Installation directly on the wall

Outlet

Wall connection element WAE2

black synthetic rubber, 50 mm, for sealing the outlet side directly on the wall.

for Belaria® twin I, Belaria® twin IR (15)

2033 870

for Belaria® twin I, Belaria® twin IR (20)

2033 871

for Belaria® twin I, Belaria® twin IR (25,30)

2033 872


Wall insulation MI 2

4-piece, black synthetic rubber, steam-tight, 20 mm thick, depth 330 mm, self-adhesive covering and protected with peel-off film

for Belaria® twin I, Belaria® twin IR (15)

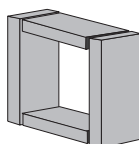
2033 860

for Belaria® twin I, Belaria® twin IR (20)

2033 861

for Belaria® twin I, Belaria® twin IR (25,30)

2033 862


Weatherproof grille WG 2

Of aluminium with grilles for outlet with wall insulation MI 2

for Belaria® twin I, Belaria® twin IR (15)

2033 850

for Belaria® twin I, Belaria® twin IR (20)

2033 851

for Belaria® twin I, Belaria® twin IR (25,30)

2033 852


Mesh grid MG 2

for wall insulation MI 2 (for air shaft, replaces weatherproof grille WG 2)

for Belaria® twin I, Belaria® twin IR (15)

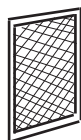
2033 820

for Belaria® twin I, Belaria® twin IR (20)

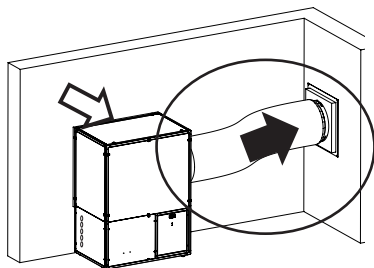
2033 821

for Belaria® twin I, Belaria® twin IR (25,30)

2033 822



■ Part No.

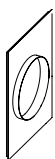


Accessories of the air ducting

Part No.

Indoor installation "flex"*"Flex" installation for individual solutions.***Intake**

see "standard" installation

**Lateral outlet via flexible hose
(only for Belaria® twin I, twin IR (15))****Outlet panel "Flex" AP 2 left/right**

for Belaria® twin I, twin IR (15)

Side wall with outlet aperture
for air hoseMaterial: painted sheet steel
thermally insulated

2033 828

**Air hose LS 2**

for Belaria® twin I, twin IR (15)

insulated hose of plastic foil outside
insulation mineral wool

metal spiral inside with plastic foil

incl. clamps

L = 2 m (can be shortened), Ø 600 mm

6019 582

**Air hose LS 3**

for Belaria® twin I, twin IR (15)

insulated hose of plastic foil outside
insulation mineral wool

metal spiral inside with plastic foil

incl. clamps

L = 3 m (can be shortened), Ø 600 mm

6019 584

**Air hose LS 5**

for Belaria® twin I, twin IR (15)

insulated hose of plastic foil outside
insulation mineral wool

metal spiral inside with plastic foil

incl. clamps

L = 5 m (can be shortened), Ø 600 mm

6019 586

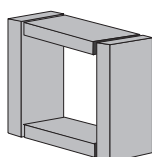
**Air hose connection plate LAP3**

for Belaria® twin I, twin IR (15)

of galvanised sheet steel with
thermal insulation

Pipe connection Ø 600 mm

6019 580

**Wall insulation MI 3**

for Belaria® twin I, twin IR (15)

4-piece

black synthetic rubber

steam-tight

20 mm thick, depth 330 mm

self-adhesive covering and protected
with peel-off film

2033 864

■ Part No.

Part No.

Indoor installation “flex”

“Flex” installation for individual solutions.

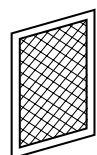
**Lateral outlet via flexible hose
(only for Belaria® twin I, twin IR (15))**

Continuation



Weatherproof grille WG 3
for Belaria® twin I, twin IR (15)
of aluminium with grilles for outlet
with duct

2033 854



Mesh grid MG 3
for Belaria® twin I, twin IR (15)
for air shaft
replaces weatherproof grilles WG 3

2033 844



Panel

Side wall for covering the blow-out opening on
the side. Required if the blow-off is upwards or
if on-site air ducts are used.

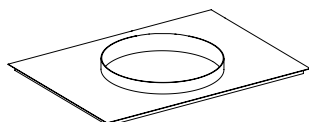
for Belaria® twin I, Belaria® twin IR (15)
for Belaria® twin I, Belaria® twin IR (20)
for Belaria® twin I, Belaria® twin IR (25,30)

6019 778

6020 596

6020 595

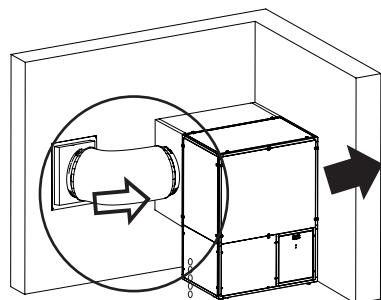
**Outlet on top via flexible hose
(only for Belaria® twin I, twin IR (15))**



Outlet panel “Flex” AP2 on top
for Belaria® twin I, twin IR (15)
Panel on top with outlet aperture for
air hose Ø 600 mm
Material: painted sheet steel
thermally insulated

6019 776

■ Part No.



Accessories of the air ducting

Part No.

Indoor installation "vario"*"Vario" installation for individual solutions.***Air intake box ASK**

Same housing type as heat pump. With connection opening with changeover function for intake with air hose to Belaria® twin I, Belaria® twin IR (15-30) or on-site air duct.

Type	Depth mm	
for Belaria® twin I, Belaria® twin IR (15,20)	700	6019 576
for Belaria® twin I, Belaria® twin IR (25,30)	700	6019 578

Intake via connection box and flexible hose (only for Belaria® twin I, twin IR (15))**Intake panel AP1**

for Belaria® twin I, twin IR (15)
for intake box type ASK
with pipe connection
Material: painted sheet steel
thermally insulated

6019 641

**Air hose connection plate LAP3**

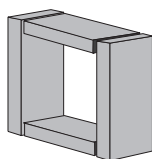
for Belaria® twin I, twin IR (15)
of galvanised sheet steel with
thermal insulation
Pipe connection Ø 600 mm

6019 580

**Weatherproof grille WG 3**

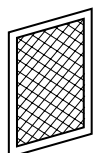
for Belaria® twin I, twin IR (15)
of aluminium with grilles for outlet
with duct

2033 854

**Wall insulation MI 3**

for Belaria® twin I, twin IR (15)
4-piece
black synthetic rubber
steam-tight
20 mm thick, depth 330 mm
self-adhesive covering and protected
with peel-off film

2033 864

**Mesh grid MG 3**

for Belaria® twin I, twin IR (15)
for air shaft
replaces weatherproof grilles WG 3

2033 844

■ Part No.

Accessories of the air ducting

Part No.

Installation with cold ambient temperature

Necessary for heating room temperatures < 10 °C


Crankcase heater

for Belaria® twin I, twin IR,
Thermalia® comfort, Thermalia® twin
for compressor protection
For Belaria® twin I, twin IR
2 pieces are necessary!

6019 718

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.

■ Technical data

Hoval Belaria® twin I (15,20)

Type		(15)		(20)	
		1st stage	2nd stage	1st stage	2nd stage
Seasonal coefficient of performance moderate climate 35 °C /55 °C	SCOP	3.7/2.9		3.9/2.6	
<i>Performance data acc. to EN 14511</i>					
• Heat output A2W35	kW ¹	8.0	15.9	10.4	20.8
• Power consumption A2W35	kW ¹	2.0	4.5	2.7	5.9
• Coefficient of performance A2W35	COP	3.9	3.6	3.9	3.5
• Weight	kg	370		400	
• Dimensions		see Dimensions			
• Compressor type		2 x spiral-(scroll), hermetic			
• Refrigerant filling R407c	kg	8.8		11.3	
• Fan type		radial/speed-controlled			
Nominal air quantity	m³/h	2250-4500		3000-6000	
Externally available pressure	Pa	160		200	
Max. speed in air ducts	m/s	4		4	
• Evaporator		lamellar tube Alu/Cu			
• Condenser		copper brazed stainless steel plate heat exchanger			
Heating flow and return flow	R	1"		1¼"	
• Nominal heating water quantity	m³/h	3.20		4.49	
• Pressure drop heat pump	kPa	14		15	
• Max. operating pressure heating side	bar	6		6	
• Ranges of application for heating, hot water and cooling see diagram					
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 data</i>					
• Power consumption compressor A2/W35	kW	2.02	4.48	2.67	5.94
• Power consumption compressor A20/W55	kW	2.94	6.53	4.10	9.10
• Operating current compressor I _{max} .	A	5.9	11.78	7.8	14.6
• Operating current evaporator fan	A	1.00	1.00	1.00	2.80
• Starting current with jump start	A	13.60	19.37	16.4	24.2
• Principal current (external protection)	A	16		20	
	Type	C,D,K		C,D,K	
• Control current (external protection)	A	13		13	
	Type	B,C,D,K,Z		B,C,D,K,Z	
• Electric heating element (external protection)	A	-		-	
	Type	-		-	

¹ kW = incl. defrosting loss

■ Technical data

Hoval Belaria® twin I (25,30)

Type		(25)	(30)		
		1st stage	2nd stage	1st stage	2nd stage
Seasonal coefficient of performance moderate climate 35 °C /55 °C	SCOP	3.9/2.9		3.8/2.9	
Performance data acc. to EN 14511					
• Heat output A2W35	kW ¹	12.5	25.0	15.2	30.4
• Power consumption A2W35	kW ¹	3.2	7.1	4.0	8.9
• Coefficient of performance A2W35	COP	3.9	3.5	3.8	3.4
• Weight	kg	455		485	
• Dimensions		see Dimensions			
• Compressor type		2 x spiral-(scroll), hermetic			
• Refrigerant filling R407c	kg	12.5		13.0	
• Fan type		radial/speed-controlled			
Nominal air quantity	m³/h	3800 - 7500		4500 - 9000	
Externally available pressure	Pa	200		200	
Max. speed in air ducts	m/s	4		4	
• Evaporator		lamellar tube Alu/Cu			
• Condenser		copper brazed stainless steel plate heat exchanger			
Heating flow and return flow	R	1½"		1½"	
• Nominal heating water quantity	m³/h	4.85		5.14	
• Pressure drop heat pump	kPa	17		15	
• Max. operating pressure heating side	bar	6		6	
• Ranges of application for heating, hot water and cooling see diagram					
Electrical data					
<i>Voltage</i>					
• Compressor	V	3 x 400		3 x 400	
• Fan	V	3 x 400		3 x 400	
Frequency	Hz				
Voltage range	V	380-420			
<i>Current data</i>					
• Power consumption compressor A2/W35	kW	3.21	7.14	4.00	8.94
• Power consumption compressor A20/W55	kW	5.19	11.54	5.76	12.80
• Operating current compressor I _{max} .	A	9.5	17.9	11.5	21.9
• Operating current evaporator fan	A	1.40	4.20	1.40	4.20
• Starting current with jump start	A	20.2	29.7	23.6	35.1
• Principal current (external protection)	A	32		32	
	Type	C,D,K		C,D,K	
• Control current (external protection)	A	13		13	
	Type	B,C,D,K,Z		B,C,D,K,Z	
• Electric heating element (external protection)	A	-		-	
	Type	-		-	

¹ kW = incl. defrosting loss

■ Technical data

Hoval Belaria® twin IR (15,20)

Type		(15)		(20)	
		1st stage	2nd stage	1st stage	2nd stage
Seasonal coefficient of performance moderate climate 35 °C/55 °C	SCOP	3.7/2.9		3.9/2.9	
Performance data acc. to EN 14511					
• Heat output A2W35	kW ¹	8.0	15.9	10.4	20.8
• Power consumption A2W35	kW ¹	2.0	4.5	2.7	5.9
• Coefficient of performance A2W35	COP	3.9	3.6	3.9	3.5
• Cooling capacity A35W10	kW	7.2	13.2	11.3	21.1
• Power consumption A35W10	kW	2.8	5.9	3.7	8.0
• Coefficient of performance A35W10	EER	2.59	2.25	3.03	2.66
• Cooling capacity A35W18	kW	10.0	18.4	14.3	26.6
• Power consumption A35W18	kW	3.0	6.4	4.0	8.5
• Coefficient of performance A35W18	EER	3.32	2.89	3.58	3.13
• Weight	kg	370		400	
• Dimensions		see Dimensions			
• Compressor type		2 x spiral-(scroll), hermetic			
• Refrigerant filling R407c	kg	12.5		13.0	
• Fan type		radial/speed-controlled			
Nominal air quantity	m³/h	2250-4500		3000-6000	
Externally available pressure	Pa	160		200	
Max. speed in air ducts	m/s	4		4	
• Evaporator		lamellar tube Alu/Cu			
• Condenser		copper brazed stainless steel plate heat exchanger			
Heating flow and return flow	R	1"		1¼"	
• Nominal heating water quantity	m³/h	3.20		4.49	
• Pressure drop heat pump	kPa	14		15	
• Max. operating pressure heating side	bar	6		6	
• Ranges of application for heating, hot water and cooling see diagram					
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 data</i>					
• Power consumption compressor A2/W35	kW	2.02	4.48	2.67	5.94
• Power consumption compressor A20/W55	kW	2.94	6.53	4.10	9.10
• Operating current compressor I _{max} .	A	5.9	10.78	7.8	14.6
• Operating current evaporator fan	A	1.00	1.00	1.00	2.80
• Starting current with jump start	A	13.6	19.37	16.4	24.2
• Principal current (external protection)	A	16		20	
	Type	C,D,K		C,D,K	
• Control current (external protection)	A	13		13	
	Type	B,C,D,K,Z		B,C,D,K,Z	
• Electric heating element (external protection)	A	-		-	
	Type	-		-	

¹ kW = incl. defrosting loss

■ Technical data

Hoval Belaria® twin IR (25,30)

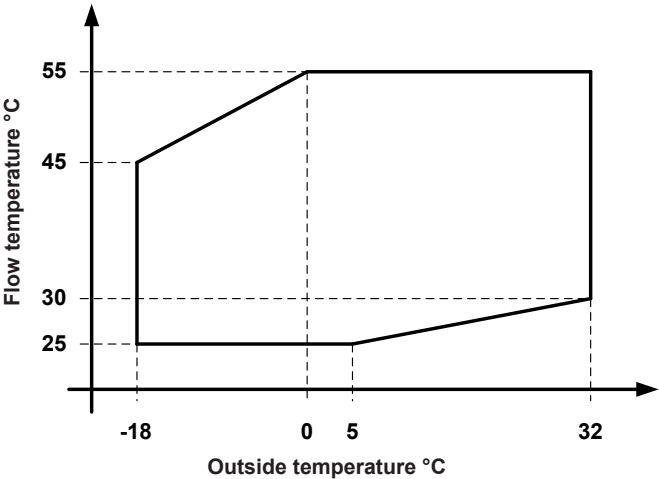
Type		(25)		(30)	
		1st stage	2nd stage	1st stage	2nd stage
Seasonal coefficient of performance moderate climate 35 °C /55 °C	SCOP	3.9/2.9		3.8/2.9	
Performance data acc. to EN 14511					
• Heat output A2W35	kW ¹	12.5	25.0	15.2	30.4
• Power consumption A2W35	kW ¹	3.2	7.1	4.0	8.9
• Coefficient of performance A2W35	COP	3.9	3.5	3.8	3.4
• Cooling capacity A35W10	kW	12.3	23.6	14.7	27.5
• Power consumption A35W10	kW	4.3	9.3	5.3	11.3
• Coefficient of performance A35W10	EER	2.87	2.54	2.78	2.44
• Cooling capacity A35W18	kW	15.8	30.3	19.0	35.5
• Power consumption A35W18	kW	4.6	10.0	5.8	12.3
• Coefficient of performance A35W18	EER	3.43	3.03	3.29	2.88
• Weight	kg	455		485	
• Dimensions		see Dimensions			
• Compressor type		2 x spiral-(scroll). hermetic			
• Refrigerant filling R407c	kg	18.3		19.8	
• Fan type		radial/speed-controlled			
Nominal air quantity	m³/h	3800-7500		4500-9000	
Externally available pressure	Pa	200		200	
Max. speed in air ducts	m/s	4		4	
• Evaporator		lamellar tube Alu/Cu			
• Condenser		copper brazed/stainless steel plate heat exchanger			
Heating flow and return flow	R	1½"		1½"	
• Nominal heating water quantity	m³/h	4.85		5.14	
• Pressure drop heat pump	kPa	17		15	
• Max. operating pressure heating side	bar	6		6	
• Ranges of application for heating. hot water and cooling see diagram					
Electrical data					
Voltage					
• Compressor	V	3 x 400		3 x 400	
• Fan	V	3 x 400		3 x 400	
Frequency	Hz				
Voltage range	V	380-420			
Current data					
• Power consumption compressor A2/W35	kW	3.21	7.14	4.00	8.94
• Power consumption compressor A20/W55	kW	5.19	11.54	5.76	12.80
• Operating current compressor I _{max} .	A	9.5	17.9	11.5	21.9
• Operating current evaporator fan	A	1.40	4.20	1.40	4.20
• Starting current with jump start	A	20.6	29.7	23.6	35.1
• Principal current (external protection)	A	32		32	
	Type	C.D.K		C.D.K	
• Control current (external protection)	A	13		13	
	Type	B.C.D.K.Z		B.C.D.K.Z	
• Electric heating element (external protection)	A	-		-	
	Type	-		-	

¹ kW = incl. defrosting loss

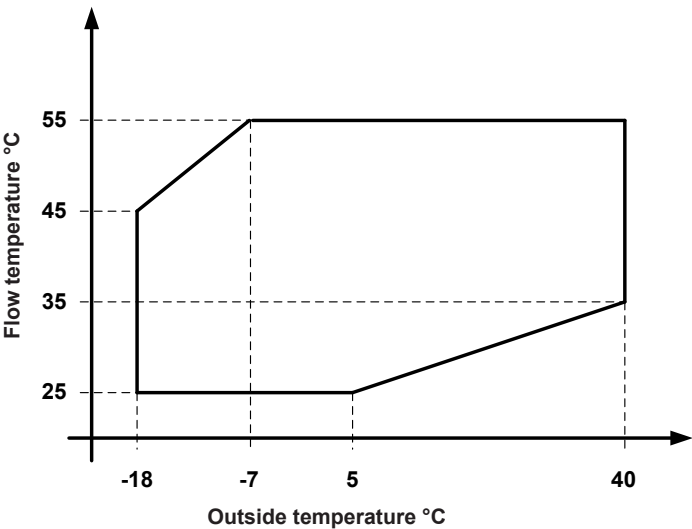
■ Technical data

Diagrams range of application

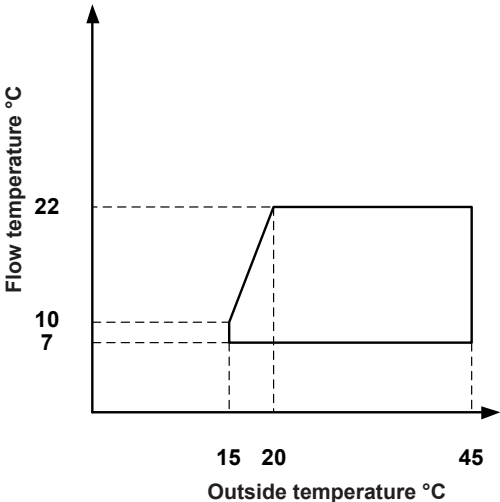
Belaria® twin I (15-30), Belaria® twin IR (15-30)
Heating



Belaria® twin I (15-30), Belaria® twin IR (15-30)
Hot water



Belaria® twin IR (15-30)
Cooling



■ Technical data

Hoval Belaria® twin I, twin IR (15-30)

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	(15)		(20)		(25)		(30)	
Stage	1	2	1	2	1	2	1	2
Sound power level in the installation room dB(A)	52	55	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, twin IR	(15)		(20)		(25)		(30)	
Sound power level ¹ dB(A)	56	61	60	63	62	65	63	66
Sound pressure level 5 m ¹ dB(A)	40	44	41	45	43	47	44	48
Sound pressure level 10 m ¹ dB(A)	34	38	35	39	37	41	38	42

¹ Information on sound levels applies to whisper mode.
Values increase by + 4dB(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:

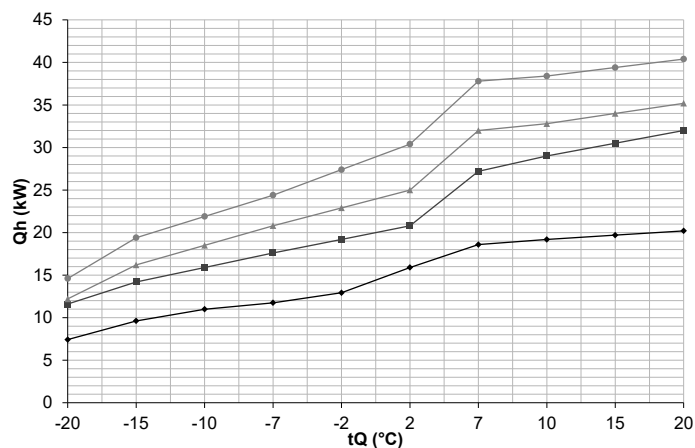
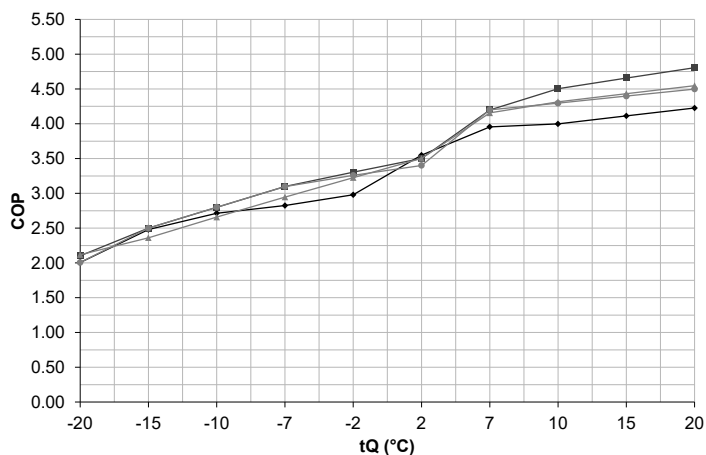
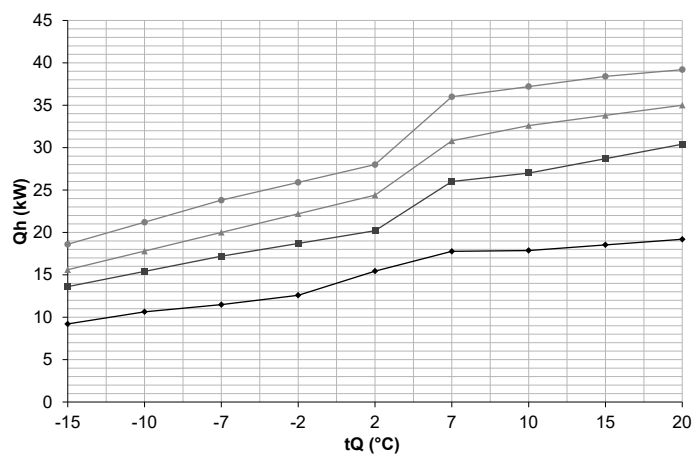
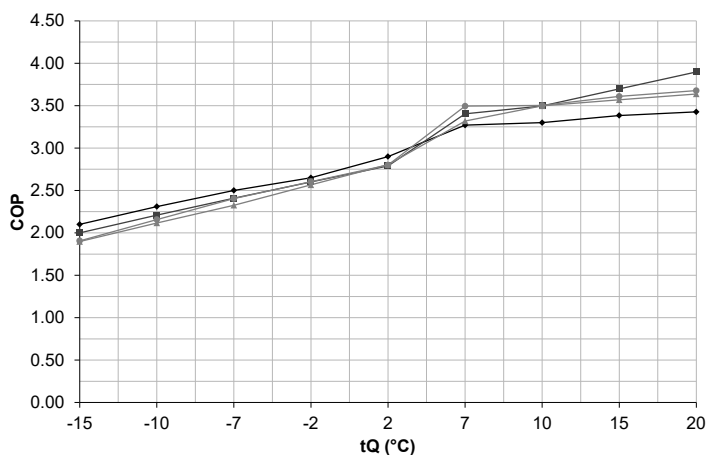
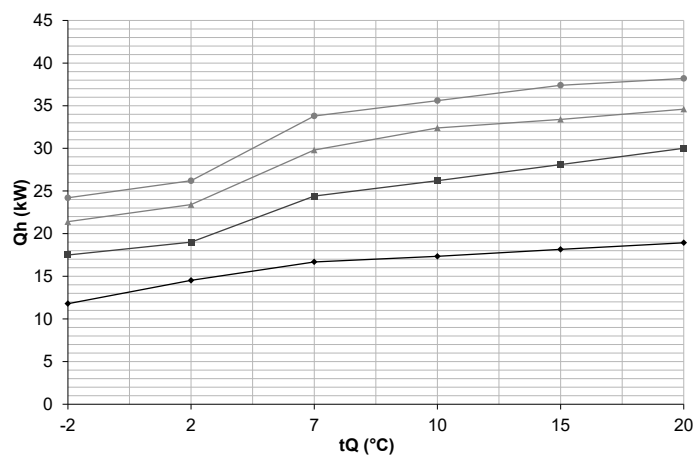
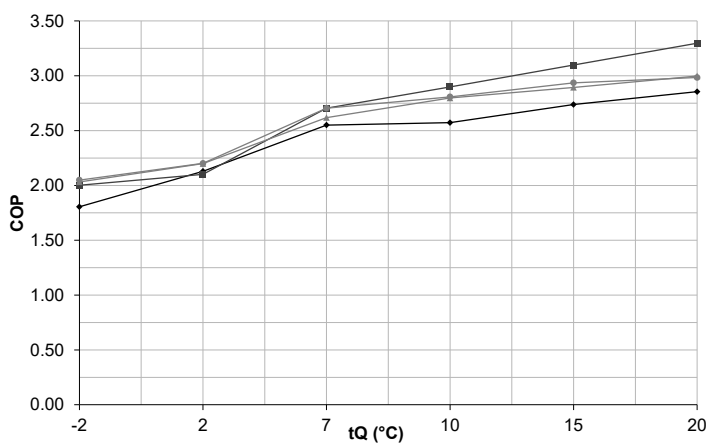
- Light well from a depth of 1.5 m: - 4 dB(A)
- Air duct insulated on the inside with 90° elbow, L < 2 m: - 6 dB(A)
- Air duct insulated on the inside with 90° elbow, L > 2 m: - 8 dB(A)

Technical data

Performance data - heating

Maximum heat output allowing for defrosting losses

Hoval Belaria® twin I (15-30), twin IR (15-30)

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)

 tQ = 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 (15)
- Belaria® twin I/IR (20)
- ▲ Belaria® twin I/IR (25)
- Belaria® twin I/IR (30)

■ Technical data

Performance data - heating

Hoval Belaria® twin I (15-30), twin IR (15-30)

Indications acc. to EN 14511

tVL °C	tQ °C	Qh kW	(15) P kW	COP	Qh kW	(20) P kW	COP	Qh kW	(25) P kW	COP	Qh kW	(30) P kW	COP
35	-20	7.4	3.7	2.01	11.6	5.5	2.10	12.2	5.8	2.12	14.6	7.3	2.01
	-15	9.6	3.9	2.48	14.2	5.7	2.50	16.2	6.9	2.36	19.4	7.8	2.50
	-10	11.0	4.1	2.71	15.9	5.7	2.80	18.5	7.0	2.66	21.9	7.8	2.80
	-7	11.8	4.2	2.82	17.6	5.7	3.10	20.8	7.1	2.95	24.4	7.9	3.10
	-2	12.9	4.3	2.98	19.2	5.8	3.30	22.9	7.1	3.23	27.4	8.4	3.26
	2	15.9	4.5	3.55	20.8	5.9	3.50	25.0	7.1	3.50	30.4	8.9	3.40
	7	18.6	4.7	3.96	27.2	6.5	4.20	32.0	7.7	4.16	37.8	9.0	4.20
	10	19.2	4.8	4.00	29.0	6.4	4.50	32.8	7.6	4.32	38.4	8.9	4.30
	15	19.7	4.8	4.11	30.5	6.6	4.66	34.0	7.7	4.43	39.4	9.0	4.40
	20	20.2	4.8	4.23	32.0	6.7	4.80	35.2	7.7	4.55	40.4	9.0	4.50
45	-15	9.2	4.6	2.10	13.6	6.8	2.00	15.6	8.2	1.90	18.6	9.8	1.91
	-10	10.6	5.0	2.31	15.4	7.0	2.21	17.8	8.4	2.12	21.2	9.8	2.16
	-7	11.5	5.2	2.50	17.2	7.1	2.41	20.0	8.6	2.33	23.8	9.9	2.40
	-2	12.6	5.4	2.65	18.7	7.2	2.60	22.2	8.7	2.57	25.9	10.0	2.60
	2	15.4	5.5	2.90	20.2	7.2	2.79	24.4	8.7	2.80	28.0	10.0	2.80
	7	17.8	5.5	3.27	26.0	7.6	3.40	30.8	9.3	3.32	36.0	10.3	3.50
	10	17.9	5.8	3.30	27.0	7.7	3.50	32.6	9.3	3.50	37.2	10.6	3.50
	15	18.5	5.7	3.38	28.7	7.8	3.70	33.8	9.5	3.57	38.4	10.6	3.61
55	-2	11.8	6.5	1.81	17.5	8.7	2.00	21.4	10.5	2.03	24.2	11.8	2.05
	2	14.5	6.8	2.13	19.0	9.0	2.10	23.4	10.6	2.20	26.2	11.9	2.20
	7	16.7	6.5	2.55	24.4	9.0	2.71	29.8	11.4	2.62	33.8	12.5	2.70
	10	17.3	6.7	2.57	26.2	9.0	2.90	32.4	11.6	2.80	35.6	12.7	2.81
	15	18.2	6.6	2.74	28.1	9.1	3.10	33.4	11.5	2.89	37.4	12.7	2.94
	20	18.9	6.6	2.86	30.0	9.1	3.30	34.6	11.5	3.00	38.2	12.8	2.98

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

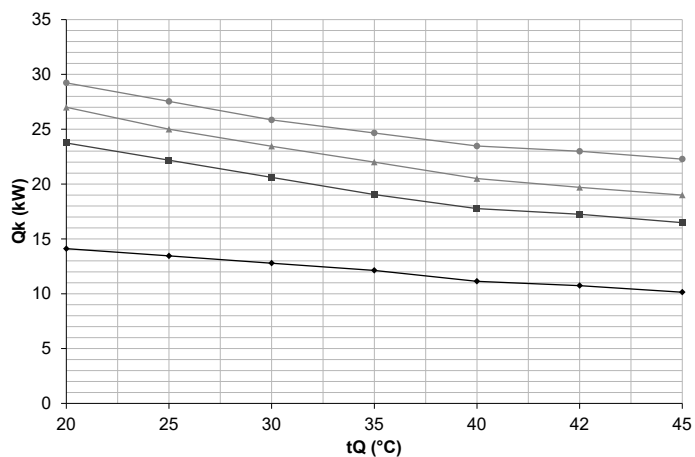
Technical data

Performance data - cooling

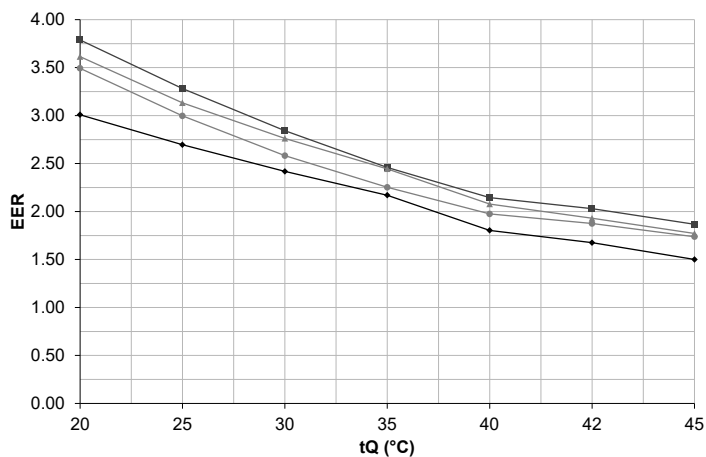
Maximum cooling capacity

Hoval Belaria® twin IR (15-30)

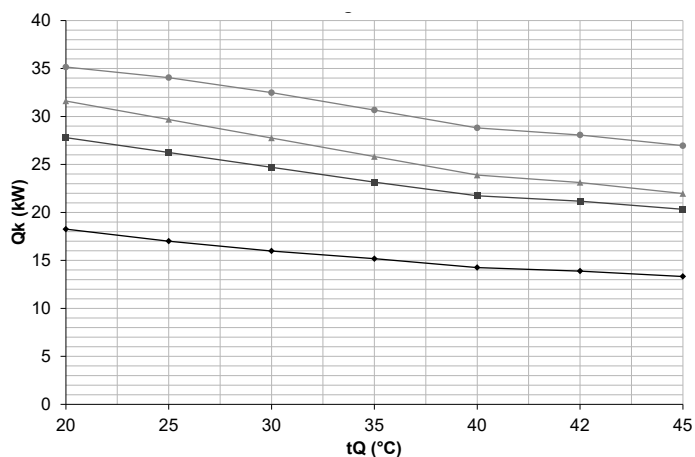
Cooling capacity - t_{VL} 7 °C



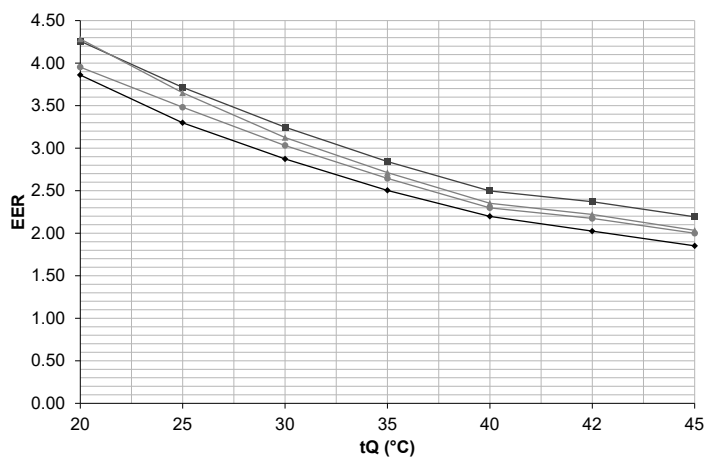
Output rating - t_{VL} 7 °C



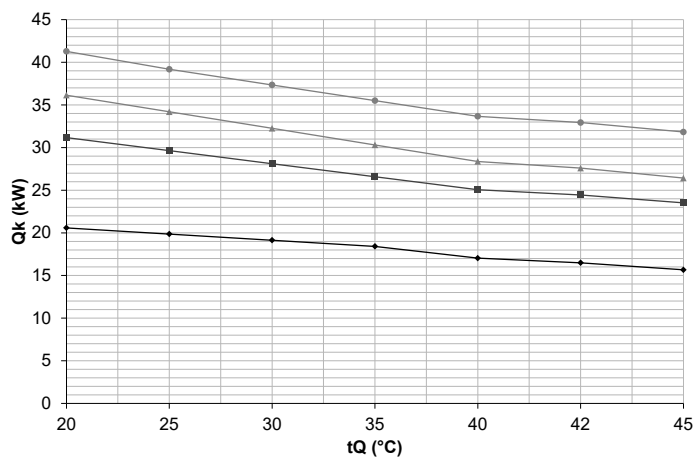
Cooling capacity - t_{VL} 13 °C



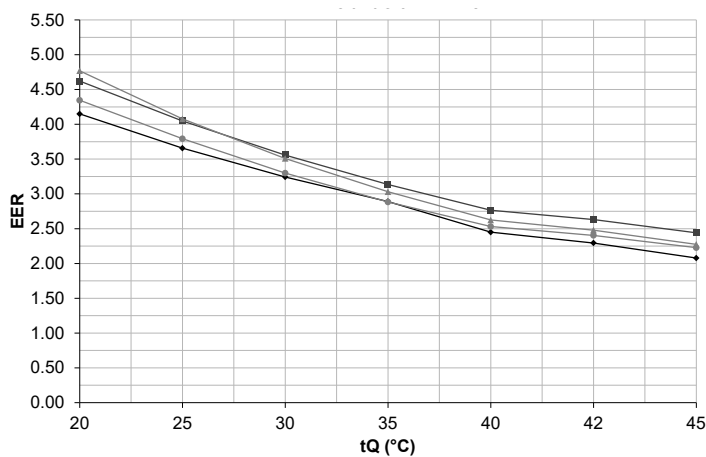
Output rating - t_{VL} 13 °C



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 IR (15)
 ■ Belaria® twin IR (20)
 ▲ Belaria® twin IR (25)
 ● Belaria® twin IR (30)

■ Technical data

Performance data - cooling

Hoval Belaria® twin IR

Indications acc. to EN14511

			(15)			(20)			(25)			(30)	
tVL °C	tQ °C	Qk kW	P kW	EER	Qk kW	P kW	EER	Qk kW	P kW	EER	Qk kW	P kW	EER
7	20	14.1	4.7	3.01	23.8	6.3	3.79	27.0	7.5	3.61	29.2	8.4	3.49
	25	13.5	5.0	2.70	22.2	6.8	3.28	25.0	8.0	3.13	27.5	9.2	3.00
	30	12.8	5.3	2.42	20.6	7.3	2.84	23.5	8.5	2.76	25.9	10.0	2.58
	35	12.1	5.6	2.17	19.0	7.7	2.46	22.0	9.0	2.44	24.7	10.9	2.25
	40	11.1	6.2	1.80	17.8	8.3	2.14	20.5	9.9	2.08	23.5	11.9	1.97
	42	10.7	6.4	1.68	17.3	8.5	2.03	19.7	10.2	1.93	23.0	12.3	1.88
	45	10.1	6.8	1.50	16.5	8.8	1.87	19.0	10.7	1.77	22.3	12.8	1.74
10	20	16.9	4.6	3.67	25.8	6.4	4.03	29.3	7.0	4.18	32.3	8.8	3.65
	25	15.3	5.0	3.06	24.2	6.9	3.50	27.4	7.9	3.49	31.2	9.5	3.27
	30	13.9	5.3	2.61	22.6	7.4	3.04	25.5	8.7	2.94	28.9	10.4	2.79
	35	13.2	5.9	2.25	21.1	7.9	2.66	23.6	9.3	2.54	27.5	11.3	2.44
	40	12.6	6.2	2.03	19.7	8.5	2.33	21.7	9.9	2.19	26.1	12.2	2.14
	42	12.3	6.7	1.85	19.2	8.7	2.20	21.0	10.1	2.07	25.5	12.6	2.03
	45	11.9	7.0	1.70	18.4	9.0	2.03	19.8	10.5	1.88	24.6	13.1	1.88
13	20	18.3	4.7	3.86	27.8	6.5	4.26	31.6	7.4	4.28	35.2	8.9	3.95
	25	17.0	5.2	3.30	26.2	7.1	3.71	29.7	8.1	3.65	34.0	9.8	3.48
	30	16.0	5.6	2.87	24.7	7.6	3.25	27.8	8.9	3.13	32.5	10.7	3.03
	35	15.2	6.1	2.50	23.2	8.1	2.84	25.8	9.5	2.71	30.7	11.6	2.64
	40	14.3	6.5	2.20	21.7	8.7	2.50	23.9	10.2	2.35	28.8	12.5	2.30
	42	13.9	6.9	2.02	21.2	8.9	2.37	23.1	10.4	2.22	28.1	12.9	2.17
	45	13.3	7.2	1.85	20.3	9.3	2.19	22.0	10.8	2.03	27.0	13.5	2.00
15	20	19.2	4.8	3.98	29.1	6.6	4.41	33.9	7.7	4.38	37.1	8.9	4.15
	25	18.1	5.3	3.45	27.6	7.2	3.85	32.0	8.4	3.80	36.0	9.9	3.62
	30	17.4	5.7	3.03	26.1	7.7	3.37	30.0	9.1	3.30	34.9	11.0	3.18
	35	16.5	6.2	2.66	24.5	8.3	2.96	28.0	9.8	2.88	32.8	11.8	2.78
	40	15.4	6.7	2.30	23.1	8.8	2.61	26.1	10.4	2.50	30.7	12.8	2.40
	42	14.9	7.0	2.13	22.5	9.1	2.48	25.3	10.7	2.37	29.8	13.2	2.27
	45	14.3	7.3	1.94	21.6	9.4	2.29	24.1	11.1	2.17	28.5	13.7	2.08
18	20	20.6	5.0	4.15	31.2	6.7	4.62	36.1	7.6	4.77	41.3	9.5	4.35
	25	19.9	5.4	3.66	29.6	7.3	4.05	34.2	8.4	4.08	39.2	10.3	3.79
	30	19.1	5.9	3.24	28.1	7.9	3.56	32.3	9.2	3.51	37.3	11.3	3.30
	35	18.4	6.4	2.89	26.6	8.5	3.13	30.3	10.0	3.03	35.5	12.3	2.88
	40	17.0	7.0	2.45	25.1	9.1	2.77	28.4	10.8	2.62	33.7	13.3	2.53
	42	16.5	7.2	2.29	24.4	9.3	2.63	27.6	11.1	2.48	32.9	13.7	2.40
	45	15.7	7.5	2.08	23.5	9.6	2.44	26.4	11.6	2.28	31.8	14.3	2.23
20	20	23.4	5.0	4.70	32.9	6.9	4.76	38.4	8.1	4.74	46.2	9.5	4.87
	25	22.2	5.5	4.04	31.3	7.5	4.18	36.2	8.8	4.12	43.5	10.5	4.14
	30	21.0	6.1	3.46	29.7	8.1	3.67	33.9	9.5	3.59	40.7	11.5	3.53
	35	19.8	6.5	3.03	28.2	8.6	3.26	31.6	10.1	3.12	37.9	12.6	3.02
	40	18.3	7.1	2.58	26.6	9.2	2.88	29.7	10.9	2.73	35.2	13.6	2.59
	42	17.7	7.3	2.41	25.9	9.5	2.74	28.9	11.2	2.59	34.0	14.0	2.44
	45	16.8	7.7	2.19	25.0	9.8	2.55	27.7	11.5	2.41	32.4	14.6	2.22
22	20	26.2	5.0	5.25	34.7	7.1	4.89	38.8	8.2	4.75	47.8	9.5	5.02
	25	24.5	5.6	4.41	33.0	7.7	4.31	36.8	8.9	4.16	45.3	10.6	4.27
	30	22.8	6.1	3.74	31.4	8.2	3.81	34.9	9.6	3.65	42.9	11.7	3.66
	35	21.2	6.7	3.17	29.7	8.8	3.37	32.9	10.3	3.21	40.4	12.8	3.15
	40	19.5	7.2	2.70	28.1	9.4	2.99	31.0	10.9	2.83	37.9	13.9	2.73
	42	18.9	7.5	2.53	27.4	9.6	2.85	30.2	11.2	2.69	36.9	14.3	2.58
	45	17.9	7.8	2.29	26.4	10.0	2.66	29.0	11.6	2.50	35.4	15.0	2.36

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)

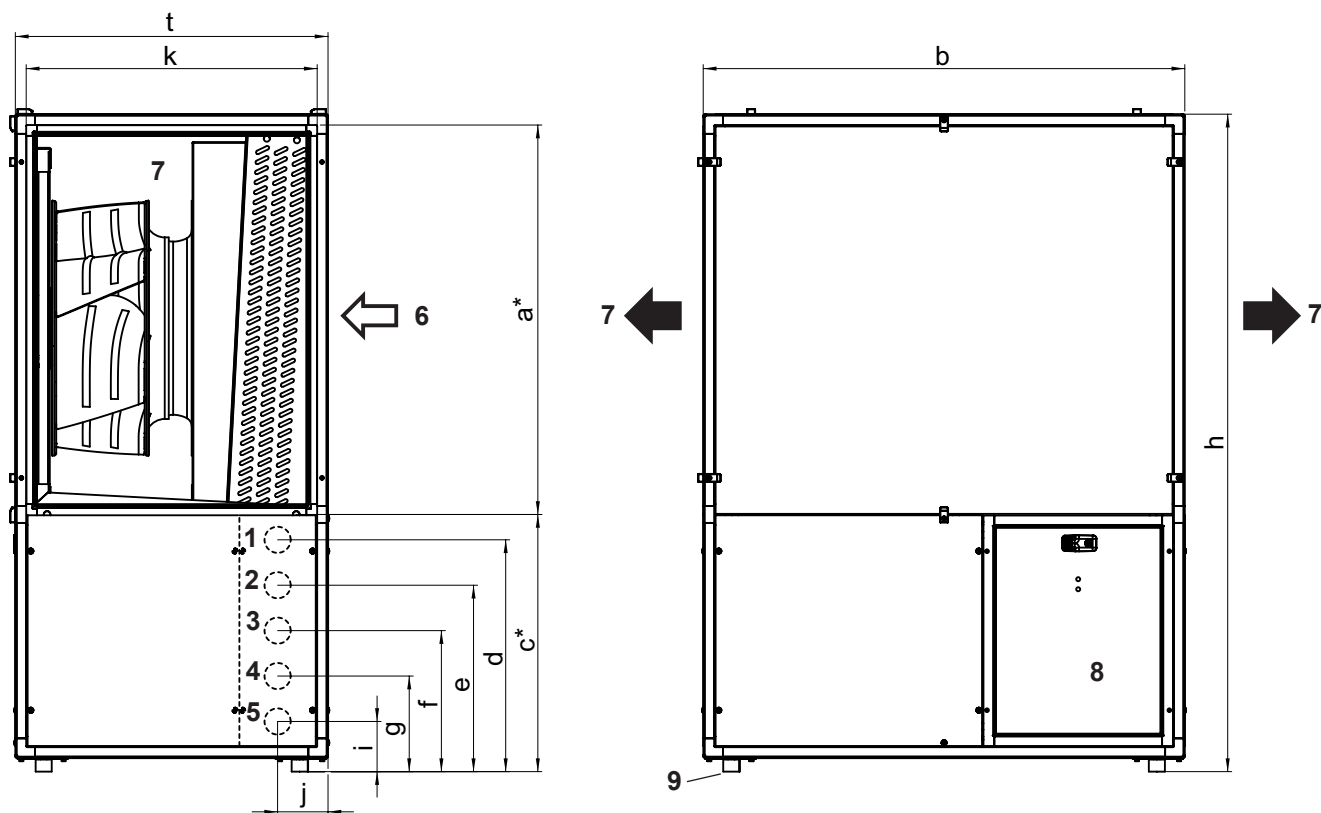
EER = Energy Efficiency Rate for the overall unit in accordance with standard EN 14511

Take account of daily power cuts!
see Engineering

■ Dimensions

Hoval Belaria® twin I (15-30), Belaria® twin IR (15-30)

(Dimensions in mm)



- 1 Heating flow with flexible connection hose
Hoval Belaria® twin I, Belaria® twin IR (15): R 1";
Hoval Belaria® twin I, Belaria® twin IR (20): R 1¼";
Hoval 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
Hoval Belaria® twin I, Belaria® twin IR (15): R 1";
Hoval Belaria® twin I, Belaria® twin IR (20): R 1¼";
Hoval 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
Blow-off directions: optionally towards the left or right side (repositioning on-site)
Accessories for indoor installation "flex":
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 w ± 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
(15)	1200	1635	965	640	575	460	350	240	125	125	720	780
(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 (15-30) (only available in Switzerland)

■ Dimensions

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

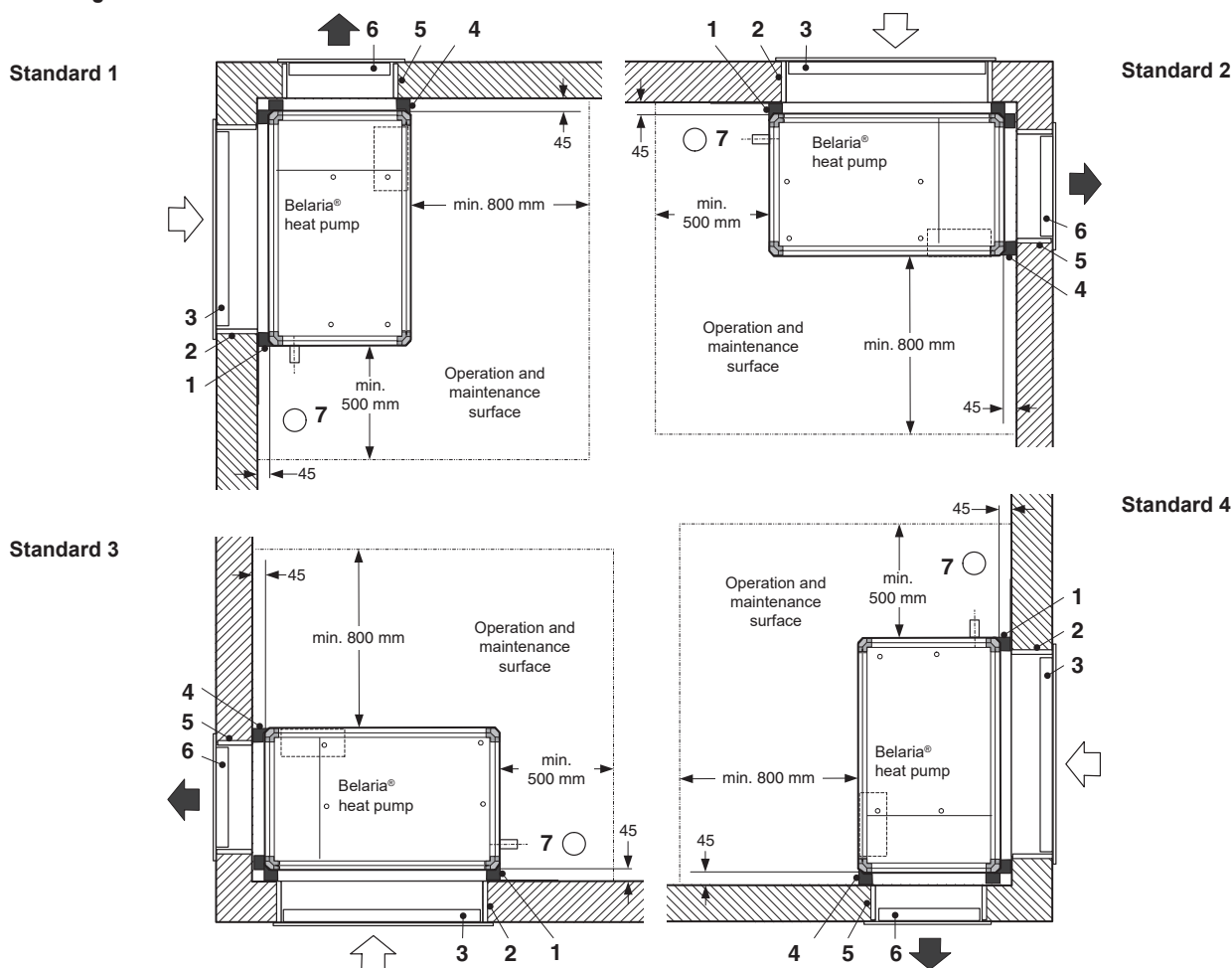
The cut-outs must be created professionally and without cold bridges!

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 (15-30), Belaria® twin IR (15-30)	Application	Accessories Type	Belaria® twin I, Belaria® twin IR			
			(15) Part No.	(20) Part No.	(25) Part No.	(30) Part No.
Heat pump	Indoor installation					
1 Wall connection element	Intake	WAE1	2033 866	2033 866	2033 868	2033 868
2 Wall insulation	Intake	MI 1	2033 856	2033 856	2033 858	2033 858
3 Weatherproof grille	Intake	WG 1	2033 846	2033 846	2033 848	2033 848
4 Wall connection element	Outlet	WAE2	2033 870	2033 871	2033 872	2033 872
5 Wall insulation	Outlet	MI 2	2033 860	2033 861	2033 862	2033 862
6 Weatherproof grille	Outlet	WG 2	2033 850	2033 851	2033 852	2033 852
7 Condensate drain (on site, siphon height approx. 100 mm)						

■ Dimensions

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!

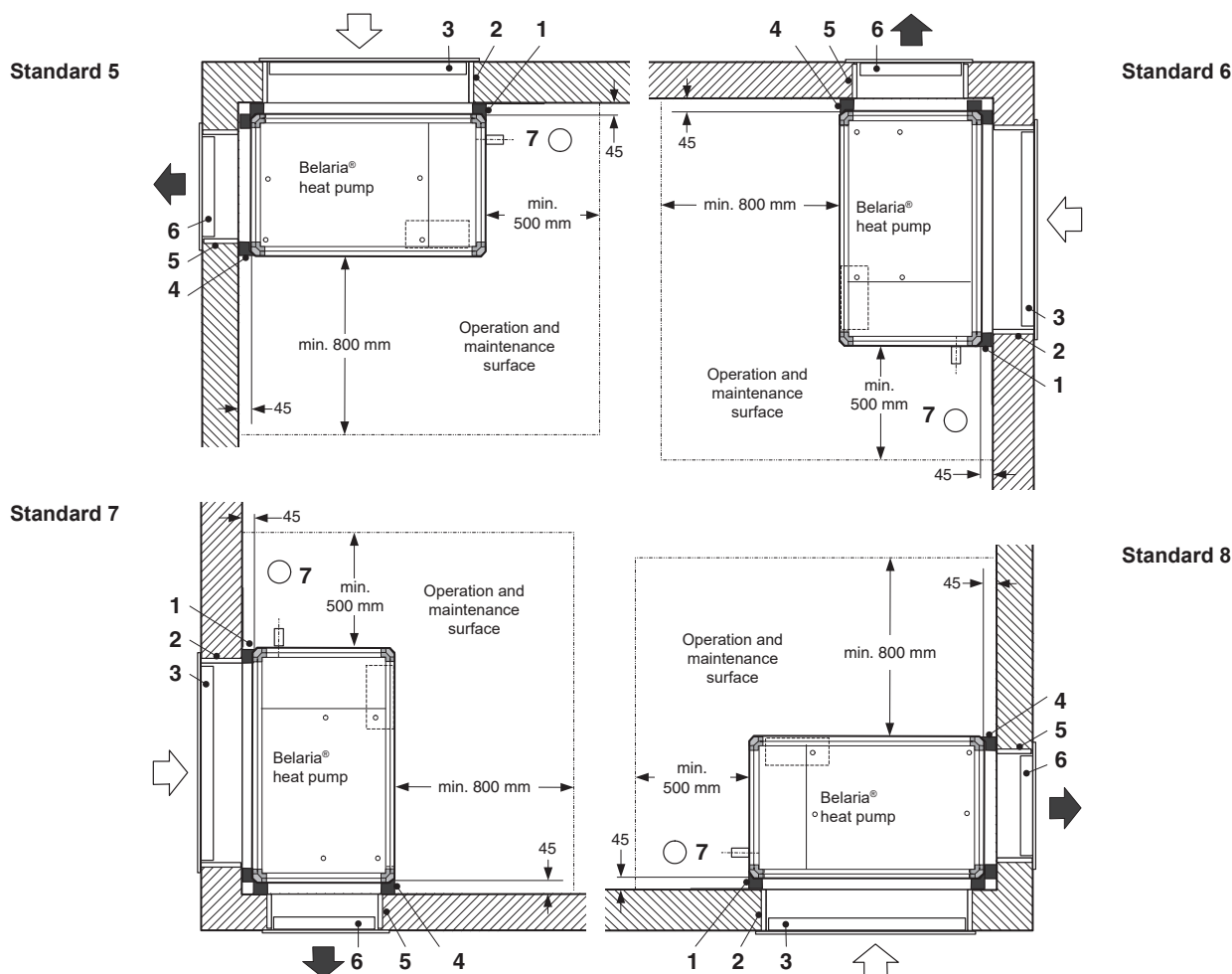
The dimensions of the cut-outs are “clear dimensions” measured from the finished floor!

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.

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

Outlet to the left



Belaria® twin I (15-30), Belaria® twin IR (15-30)	Application	Accessories Type	(15) Part No.	Belaria® twin I, Belaria® twin IR			
				(20) Part No.	(25) Part No.	(30) Part No.	
Heat pump		Indoor installation					
1	Wall connection element	Intake	WAE1	2033 866	2033 866	2033 868	2033 868
2	Wall insulation	Intake	MI 1	2033 856	2033 856	2033 858	2033 858
3	Weatherproof grille	Intake	WG 1	2033 846	2033 846	2033 848	2033 848
4	Wall connection element	Outlet	WAE2	2033 870	2033 871	2033 872	2033 872
5	Wall insulation	Outlet	MI 2	2033 860	2033 861	2033 862	2033 862
6	Weatherproof grille	Outlet	WG 2	2033 850	2033 851	2033 852	2033 852
7	Condensate drain (on site, siphon height approx.100 mm)						

■ Dimensions

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

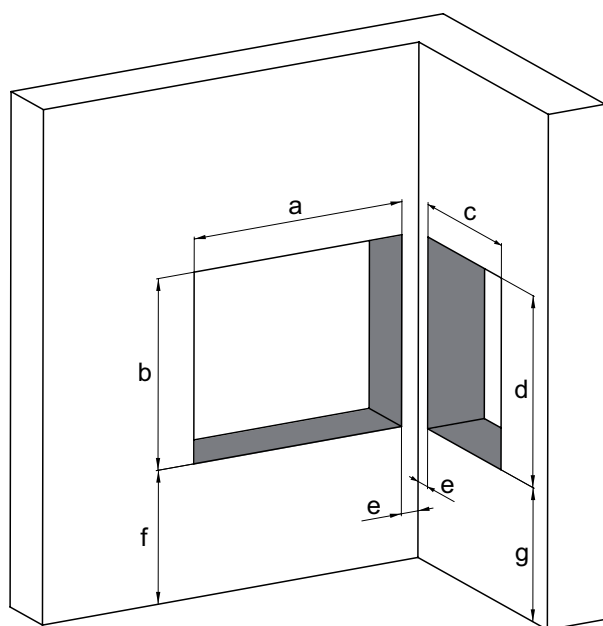
(Dimensions in mm)

- The cut-outs must be created professionally.
- Cut-out dimensions from top edge of the finished floor

Standard installation 1–4

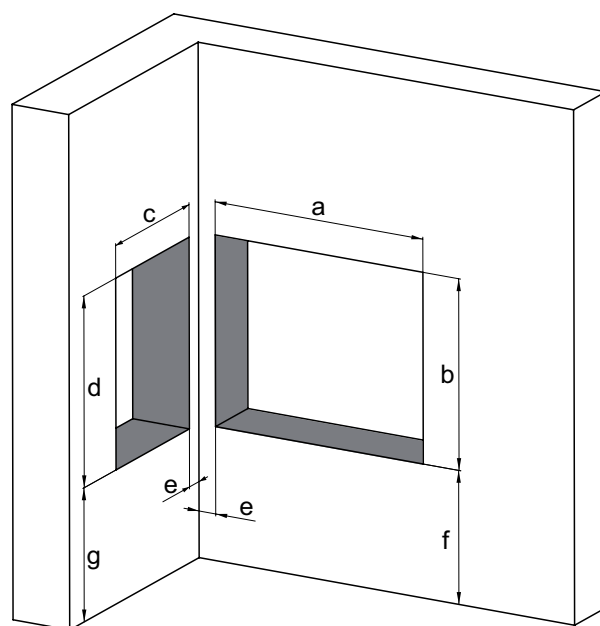
Air outlet to the right

Preferred solution due to ease of access for servicing



Standard installation 5–8

Air outlet to the left

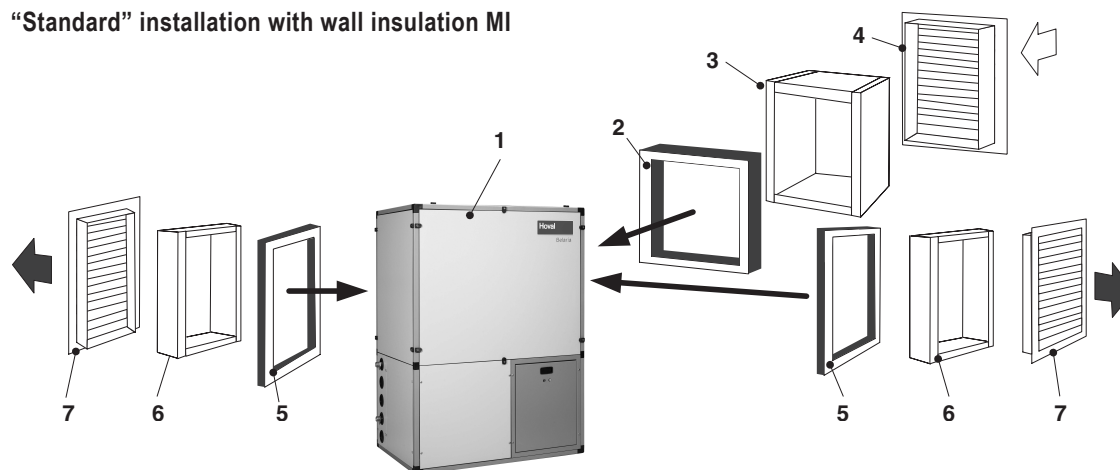


Belaria® twin I,
Belaria® twin IR

Cut-out dimensions

	a	b	c	d	e	f	g
(15)	1140	950	720	950	70	640	640
(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

Outlet

5 Wall connection element

6 Wall insulation (20 mm)

7 Weatherproof grille

■ Dimensions

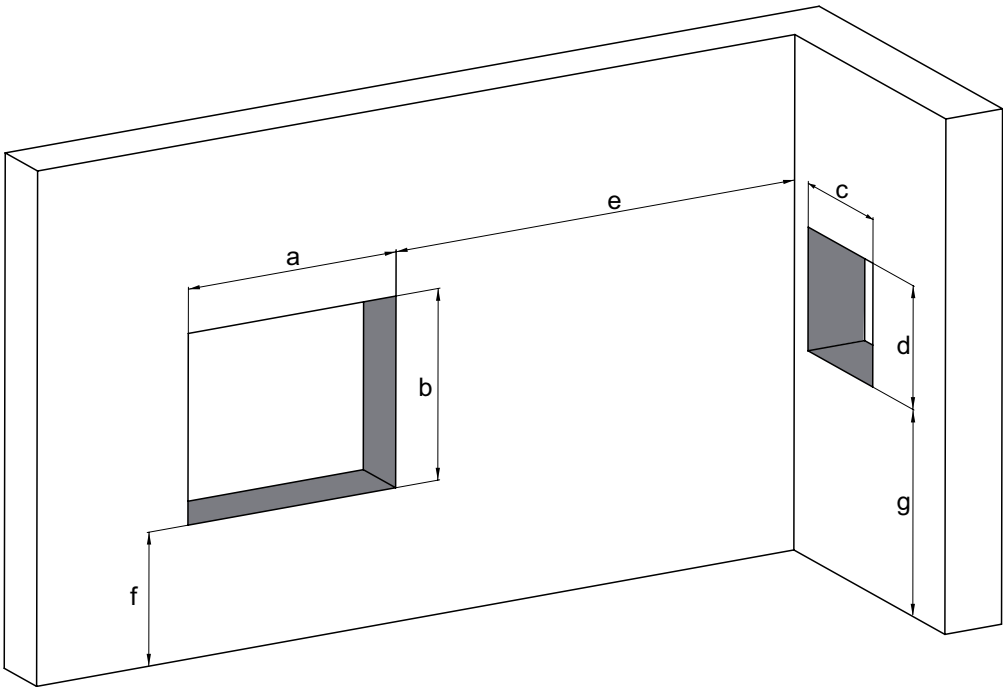
Space requirement “flex” installation for Hoval Belaria® twin I and Belaria® twin IR (15)

Cut-out dimensions

“Flex” installations with wall insulation MI

(Dimensions in mm)

- The cut-outs must be created professionally.
- Cut-out dimensions from top edge of the finished floor

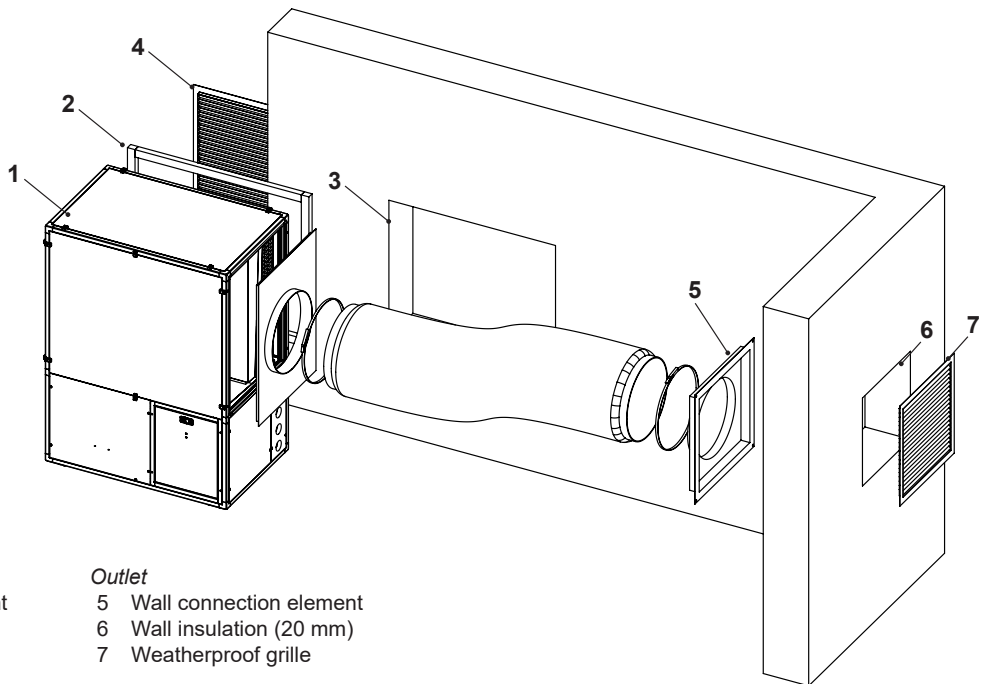


Belaria® twin I,
Belaria® twin IR

Cut-out dimensions

	a	b	c	d	e	g min.	f
(15)	1140	950	760	760	> 1000	840	640

“Flex” installation with wall insulation MI



1 Heat pump

Intake

2 Wall connection element

3 Wall insulation (20 mm)

4 Weatherproof grille

Outlet

5 Wall connection element

6 Wall insulation (20 mm)

7 Weatherproof grille

■ Dimensions

Space requirement “vario” installation for Hoval Belaria® twin I and Belaria® twin IR (15)

Corner installation “standard/vario” combination

(Dimensions in mm from finished floor)

Intake:

“Vario” with air box as well as air hose and wall feed-through

Outlet:

“Standard” with wall lead-through

Air ducting

The minimum bending radius (1R) as well as the operating and maintenance surface must be maintained.

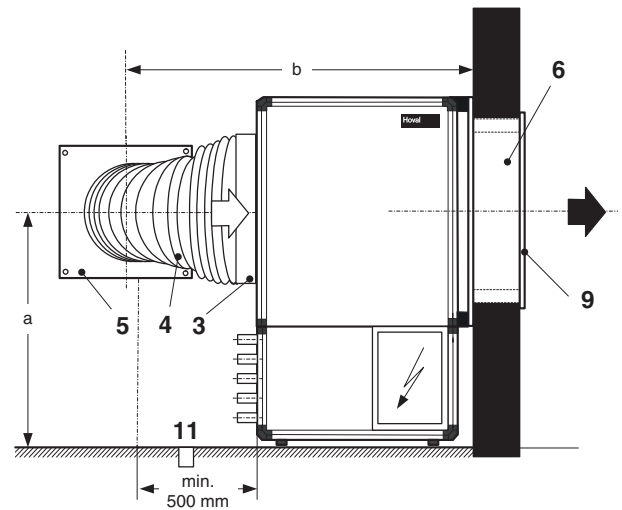
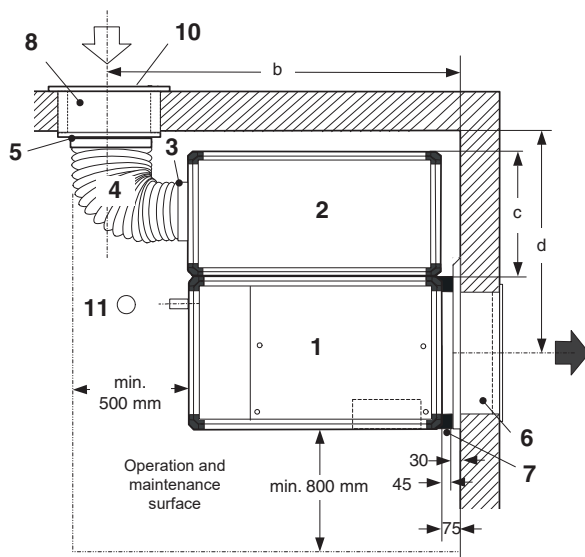
Cut-out

The positions of the openings are to be defined in relation to the system.

Cut-out dimensions

see “standard” or “flex” installation.

Blow-out to left mirror image



Belaria® twin IR	a	b	c	d
(15)	1140	≥ 2000	700	≥ 1290

Belaria® twin I (15), Belaria® twin IR (15)

Accessories Type

Belaria® twin I, Belaria® twin IR (15) Part No.

1	Heat pump		
2	Air intake box	ASK	6019 576
3	Air hose connection plate, round	AP1	6019 641
4	Air hose, length 2 m	LS 2	6019 582
5	Air hose connection plate, round	LAP3	6019 580
6	Wall insulation	MI 2	2033 860
7	Wall connection element outlet	WAE2	2033 870
8	Wall insulation	MI 3	2033 864
9	Weatherproof grille	WG 2	2033 850
10	Weatherproof grille	WG 3	2033 854
11	Condensate drain (on site, siphon height approx. 100 mm)		

■ Dimensions

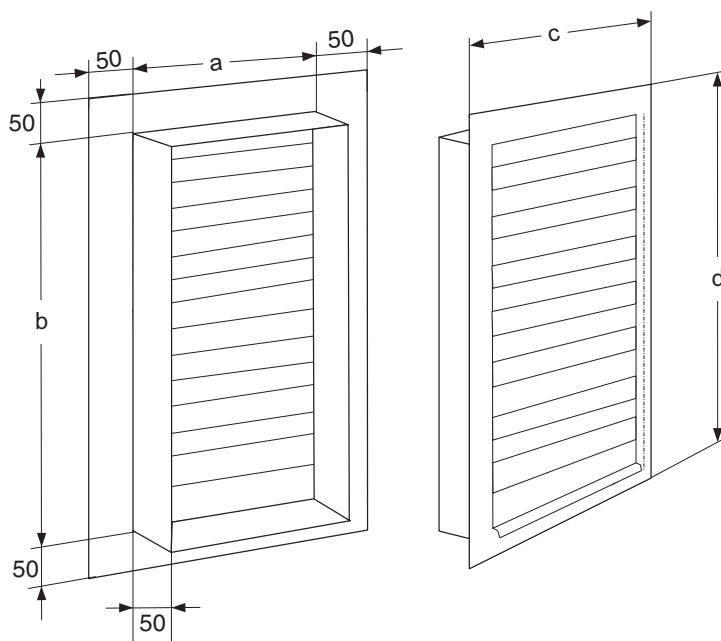
Dimensions of weatherproof grille

(Dimensions in mm)

Weatherproof grille made from aluminium with mesh grid.

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

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



Weatherproof grille	Belaria® twin I, Belaria® twin IR	Application				
Type	Type	for	a	b	c	d
WG 1	(15,20)	Intake	1100	900	1180	1000
WG 1	(25,30)	Intake	1200	1100	1280	1200
WG 2	(15)	Outlet	680	900	760	1000
WG 2	(20)	Outlet	780	900	860	1000
WG 2	(25,30)	Outlet	880	1100	960	1200
WG 3	(15)	Vario	720	700	800	800

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 per-
formed 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



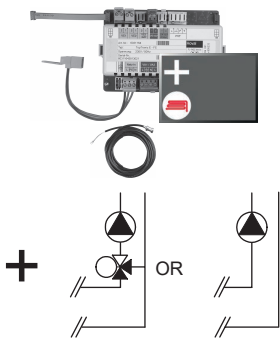
Diffuser

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

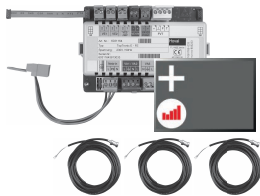
2056 705

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

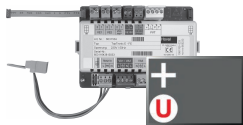
■ Part No.



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



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 ¾"	0.9-15
DN 10	G ¾"	1.8-32
DN 15	G 1"	3.5-50
DN 20	G 1¼"	5-85
DN 25	G 1½"	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 1½"	14-240

6042 949
6042 950

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

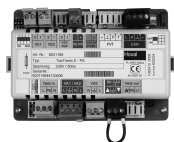
6034 575

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**

2018 837

SB280 1/2"brass nickel-plated
PN10, 280 mm**Trace heating tape**

6033 374

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**Screw-in electrical heating inset**for plants with energy buffer storage tank
as emergency heating.
Control set must be ordered.

	Heat output	Installation depth
Type	[kW]	[mm]

EP 2.5 2.35 390

6049 557

EP 3.5 3.6 500

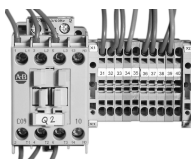
6049 558

EP 5 4,9 620

6049 559

EP 7.5 7.5 850

6049 560

**Control set (switching contactor)**

6033 403

for installation in the wall-hanging
electrical box.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 32-1 1/4"

2046 980

DN 40-1 1/2"

2046 982

DN 50-2"

2046 984

Further strainers

see "Various system components"

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

2063 737

for flow rates of 3.0 - 5.0 m³/h
for flow speed of 1.0 m/sHousing 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 1 1/2"

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: 1.88 kg

■ 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	Fitting	kvs	ṽ [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



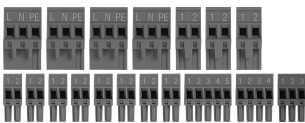
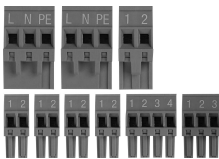
Float ball flow switch

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.



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

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

Part No.

6032 509

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							
Voltage							
• Compressor	V	3 x 400					
• Fan	V	3 x 400					
Frequency	Hz	50					
Voltage range	V	380-420					
Current							
• 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

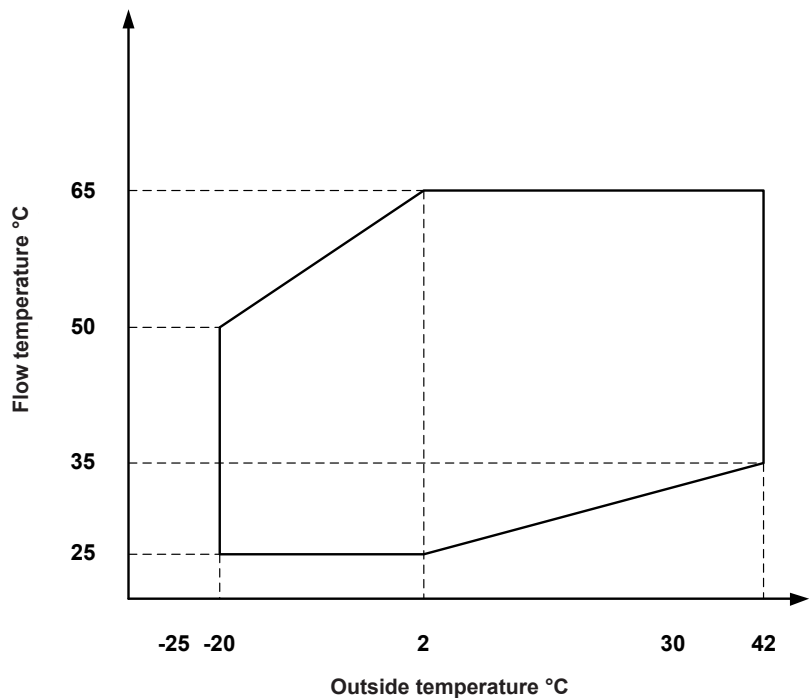
¹ kW = incl. defrosting loss

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

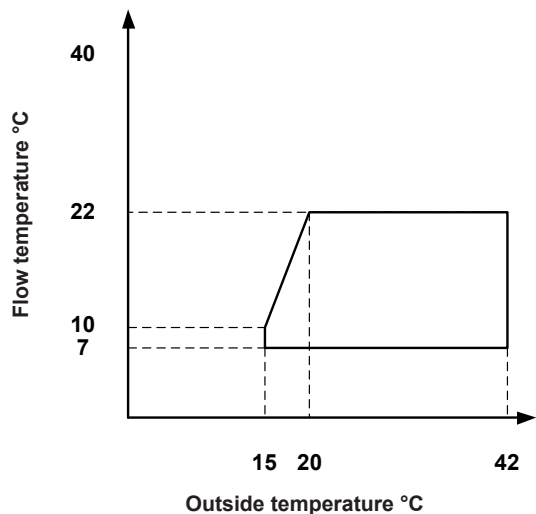
■ Technical data

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

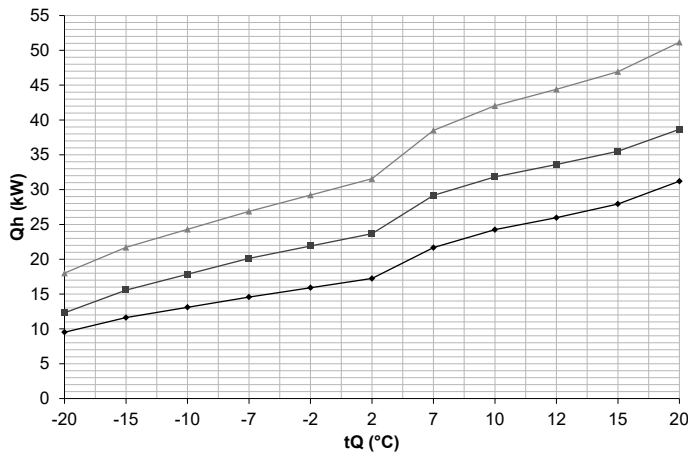
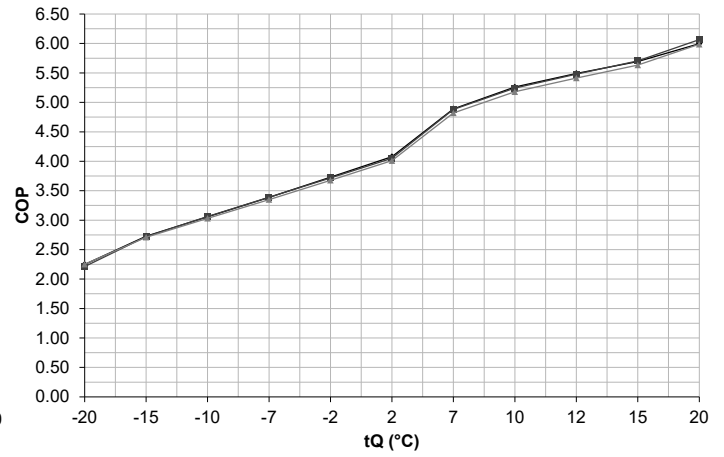
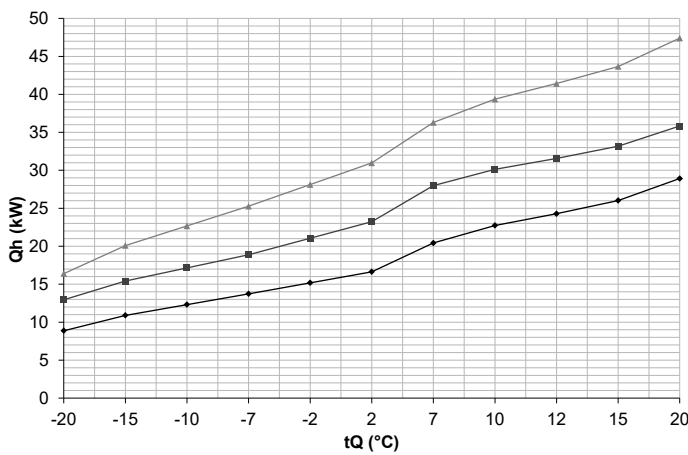
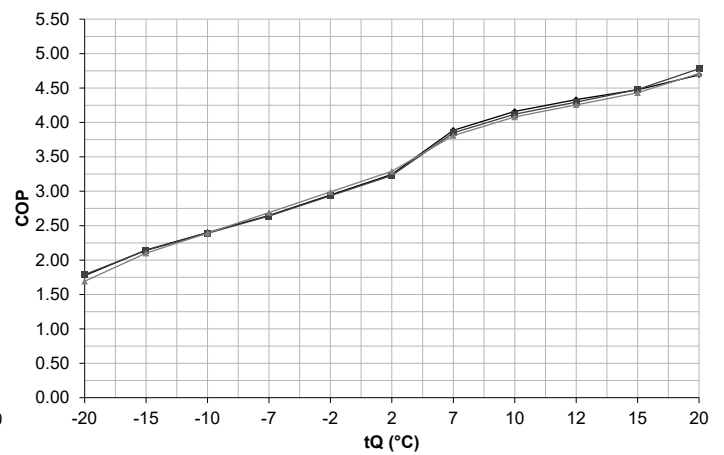
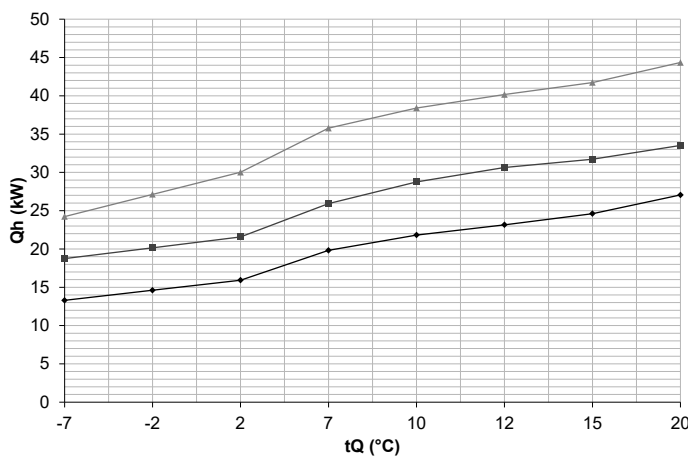
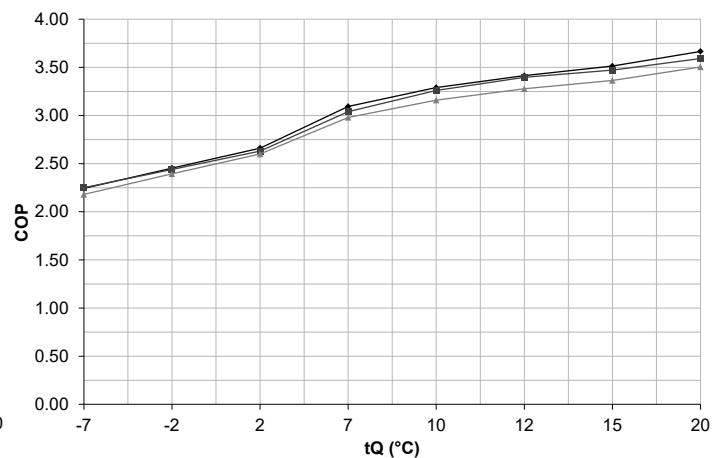
Information on sound levels applies to whisper mode. Values increase by + 4 dB(A) in normal operation

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

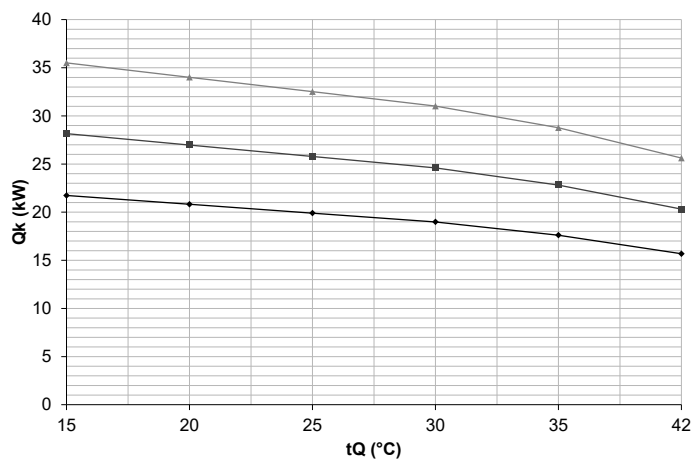
Technical data

Performance data - cooling

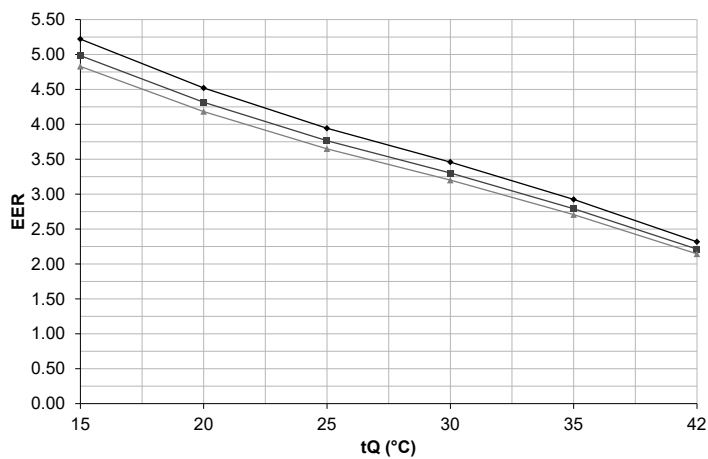
Maximum cooling capacity

Hoval Belaria® twin AR (17-32)

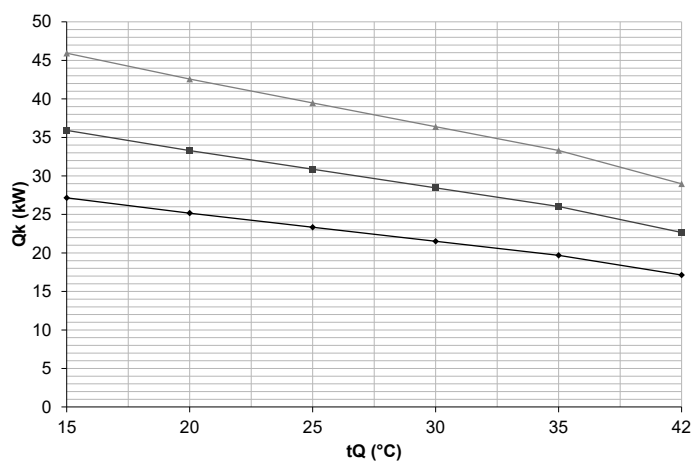
Cooling capacity - t_{VL} 7 °C



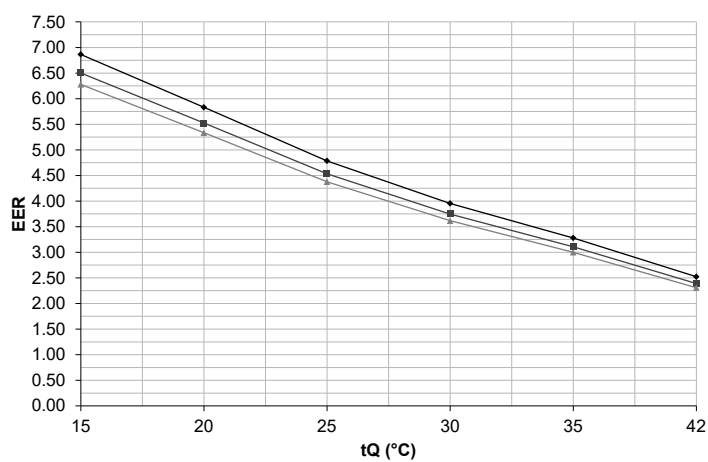
Output rating - t_{VL} 7 °C



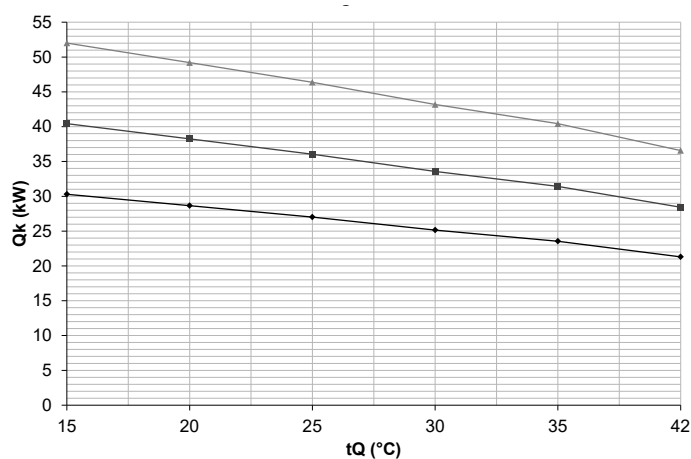
Cooling capacity - t_{VL} 13 °C



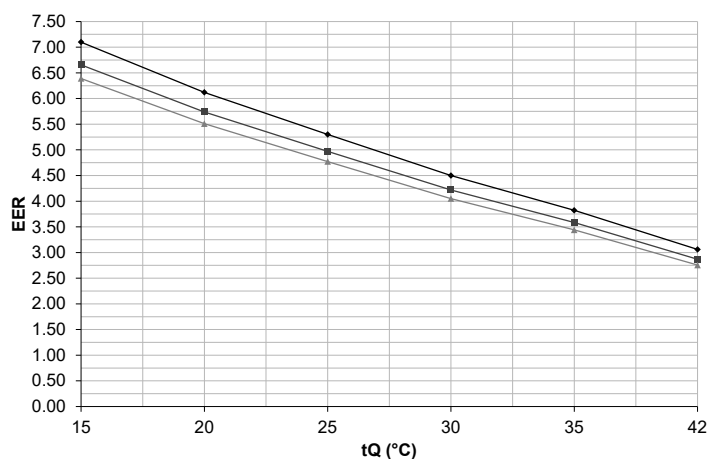
Output rating - t_{VL} 13 °C



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

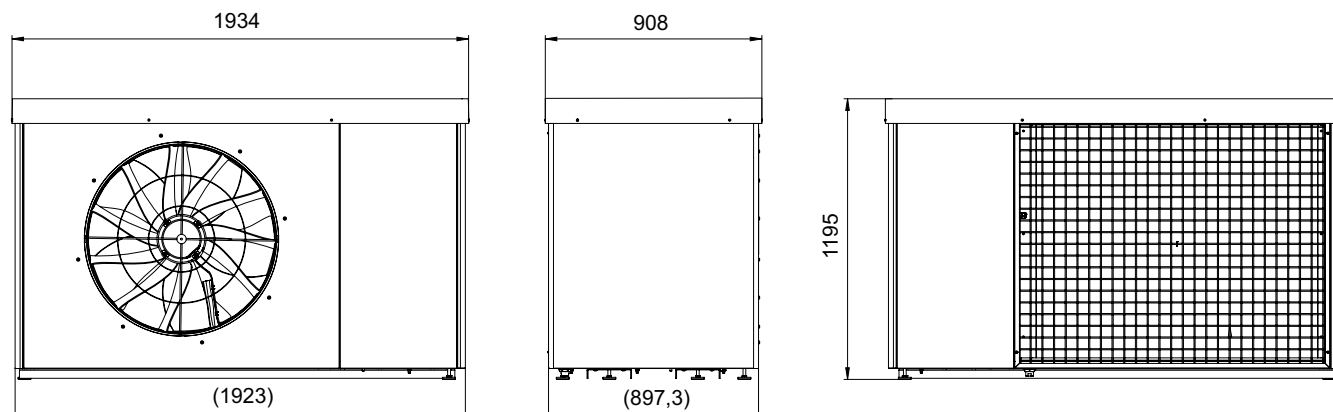
P = power consumption of the overall unit (kW)

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

■ Dimensions

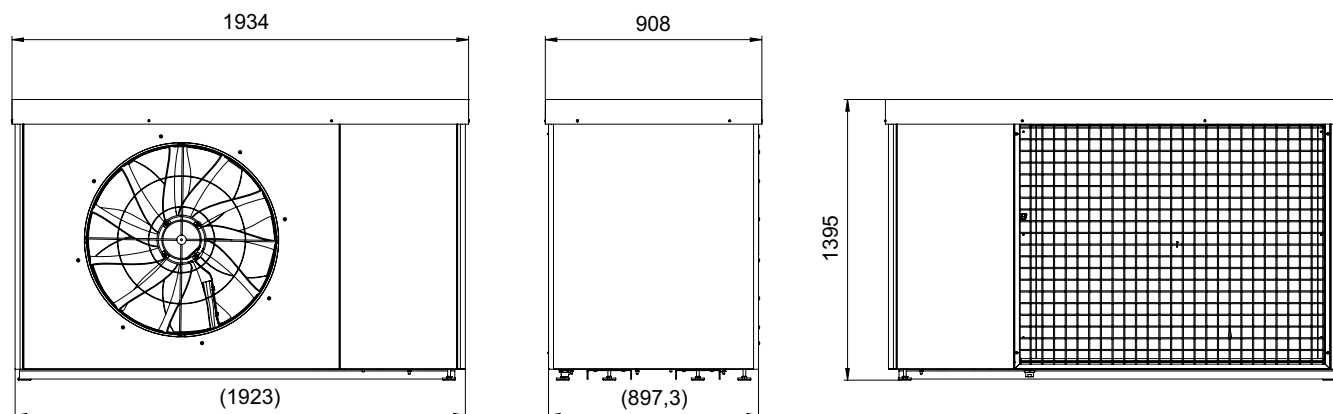
Hoval Belaria® twin A (17), Belaria® twin AR (17)

(Dimensions in mm)



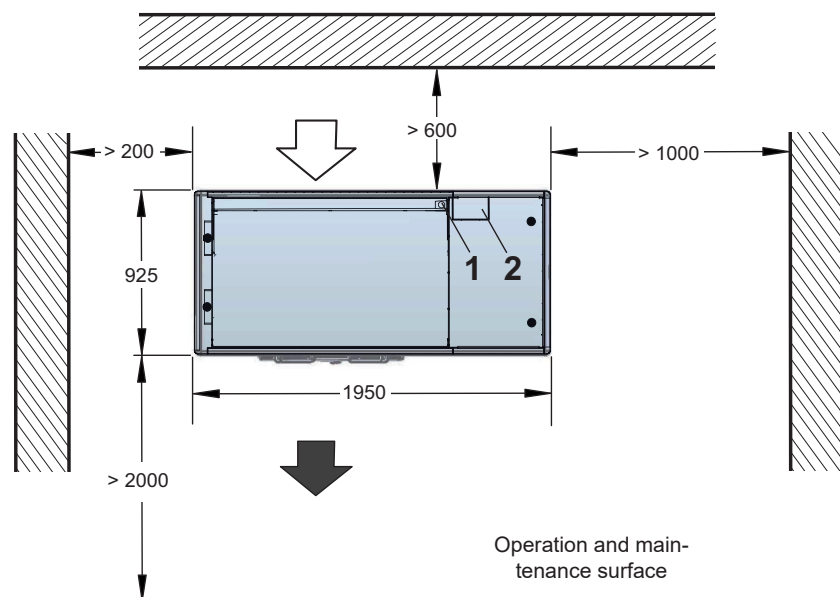
Hoval Belaria® twin A (24,32), Belaria® twin AR (24,32)

(Dimensions in mm)



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

(Dimensions in mm)

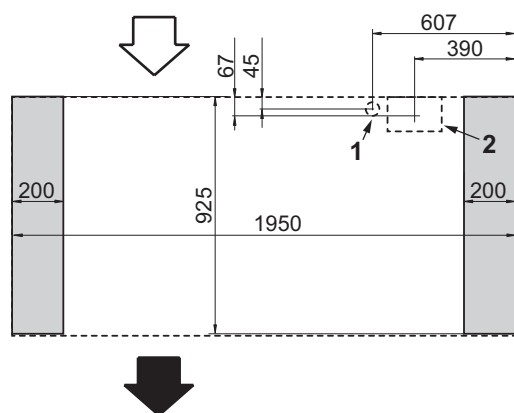


- 1 Condensate drain (Rp 1") with electric trace heating
- 2 Hydraulic and electrical connection

■ Dimensions

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

(Dimensions in mm)

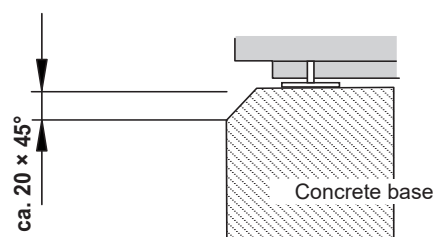


- 1 Condensate drain (Rp 1")
with electric trace heating
- 2 Hydraulic and electrical connection

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

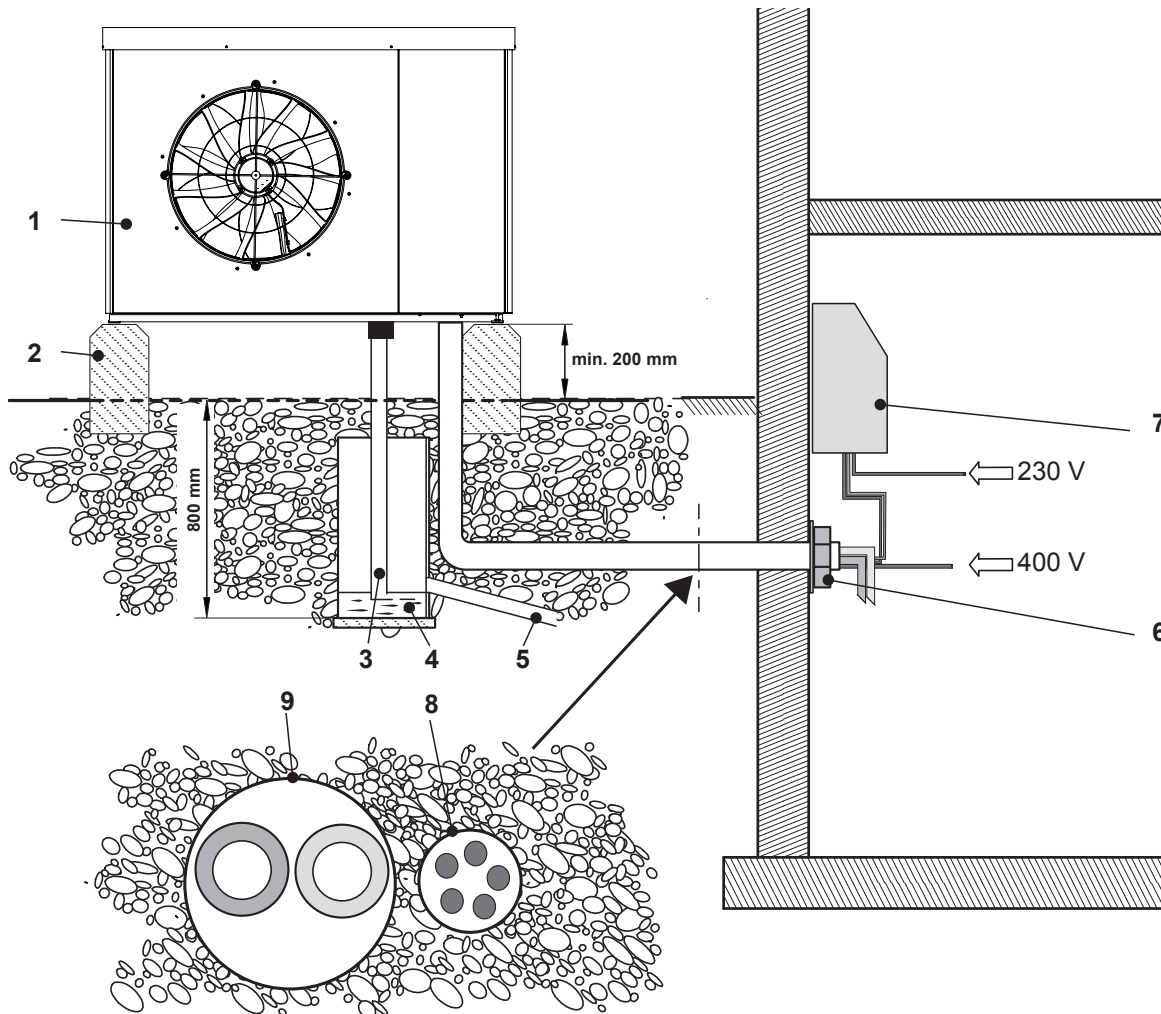
The concrete base must have a level surface
the size of the Belaria® twin A/AR
(1950 mm × 925 mm).

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

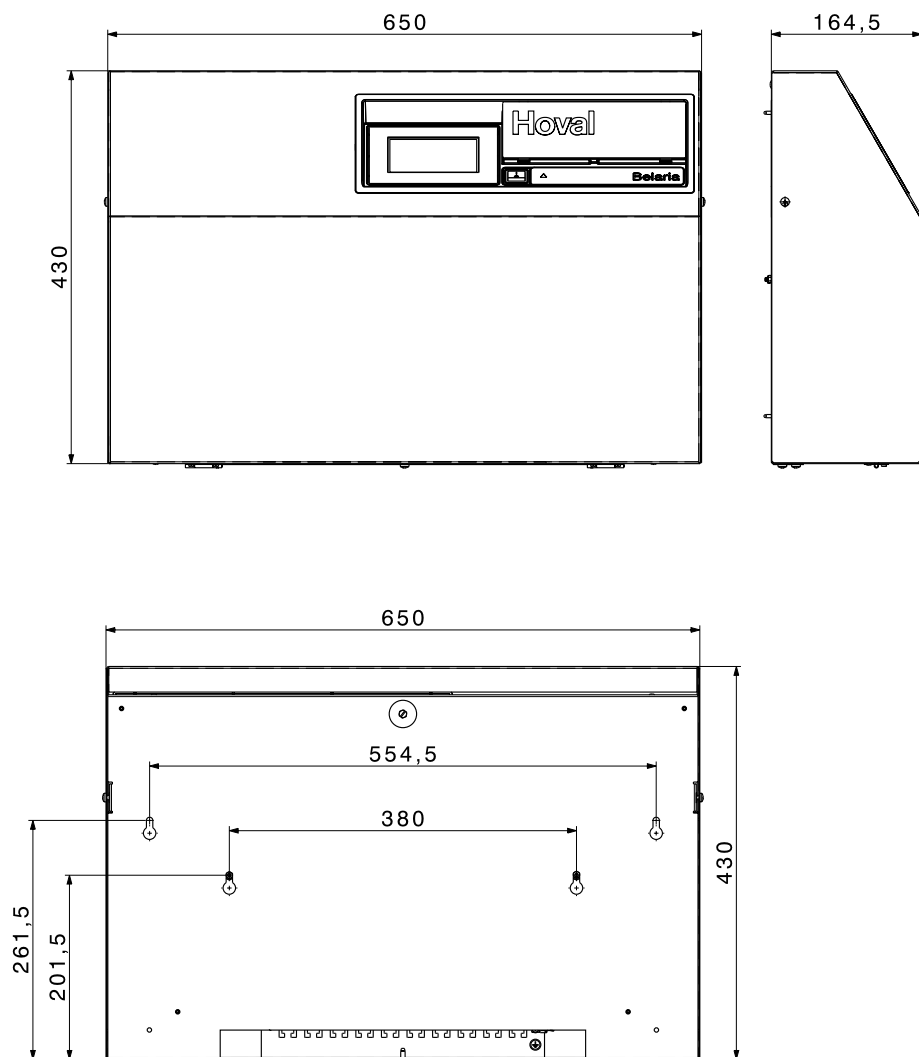
CP pump ON/OFF (does not apply for pump control 0-10 V)	230 V/2-pole/2 x 1.5 mm ²
Fault contact for PLC	230 V/2-pole/2 x 1.5 mm ²
Flow rate meter	230 V/2-pole/2 x 1.5 mm ²
Electricity meter	230 V/2-pole/2 x 1.5 mm ²
USB cable for line recorder	
USB 2.0 extension cable active	

- 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

Hoval Belaria® dual AR					Heat output for A2W35		Cooling capacity for A35W7	
35 °C	55 °C	Type	Refrigerant	Max. flow °C	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

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

6046 330


Sound attenuation cowl for compressor

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

2069 706


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


Diffuser

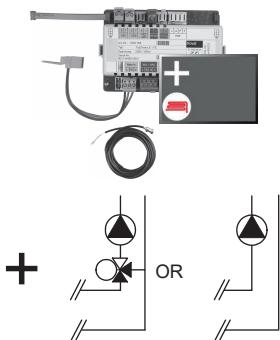
for fan of Belaria® twin A, twin AR, dual AR
for greater efficiency and lower noise
by up to 3 dB(A) depending on circumstances

2056 705

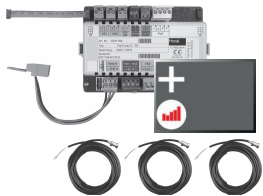
2 diffusers are required for each heat pump.

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

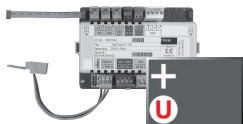
■ Part No.



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

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

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

in each case incl. energy balancing

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

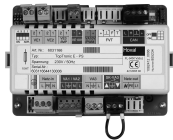
incl. fitting accessories

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.

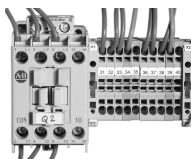
Type	Heat output [kW]	Installation depth [mm]
EP 2.5	2.35	390
EP 3.5	3.6	500
EP 5	4.6	620
EP 7.5	7.5	850

6049 557

6049 558

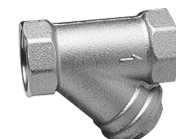
6049 559

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.

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	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
GLB341.9E	230 V / 50/60 Hz	2-/3-point	150 s

2070 331

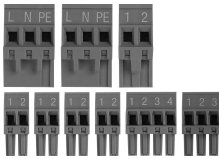


Floating cone flow controller
Operating range
3000–30,000 l/h, 0–80 °C
Nominal pressure 10 bar
DN 65 connection
Installation length 335 mm
Bistable Reed contact
Contact open without flow

2064 164

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

■ Part No.

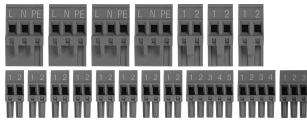


Accessories

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

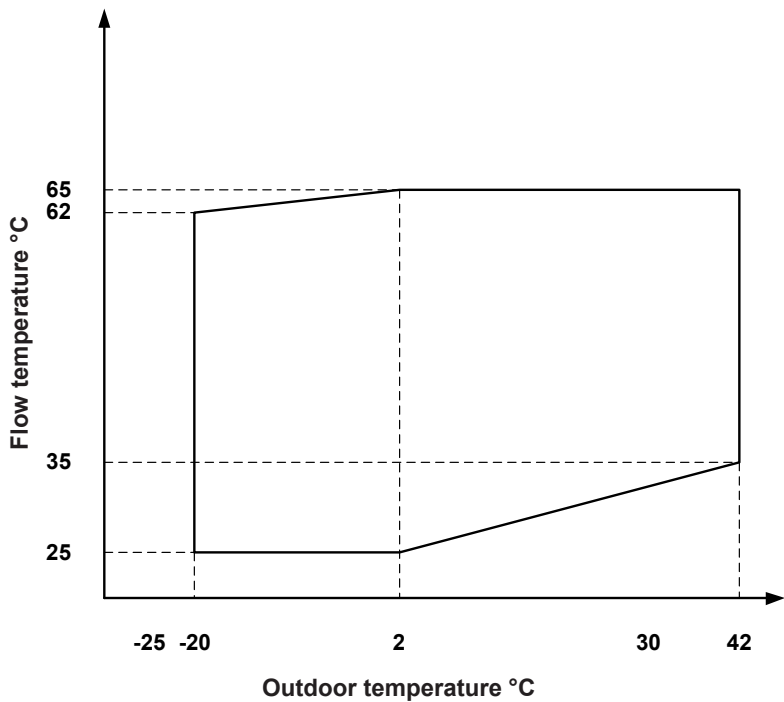
¹⁾ The sound power levels apply in whisper mode.

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

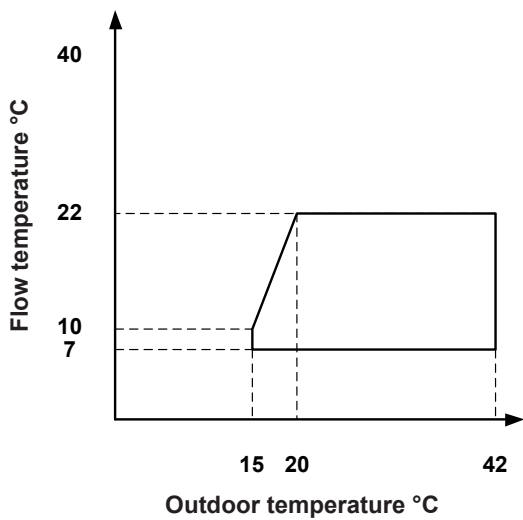
■ Technical data

Graphs of operating range

Heating and how water

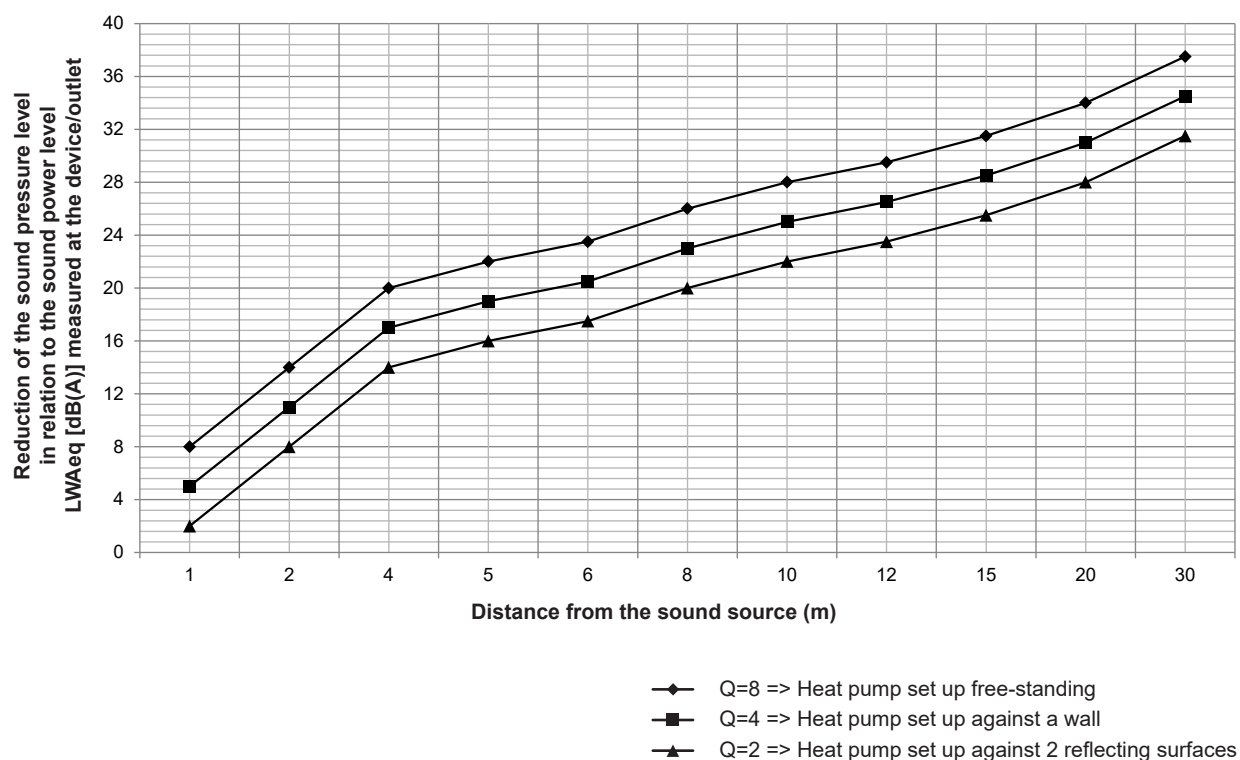


Cooling



■ 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

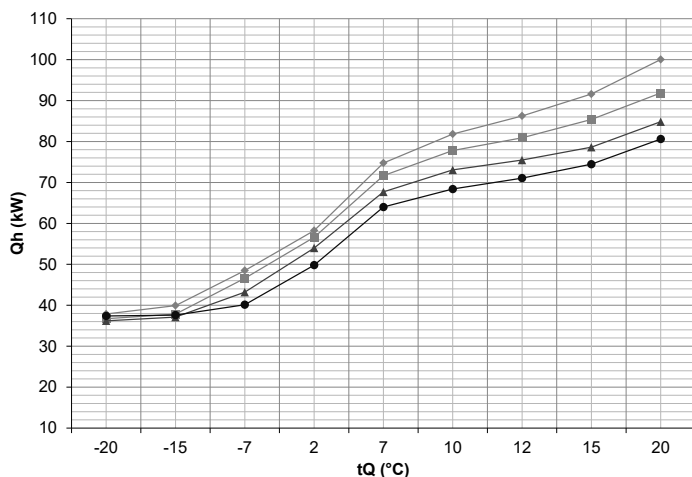
Performance data – heating

Maximum heat output allowing for defrosting losses

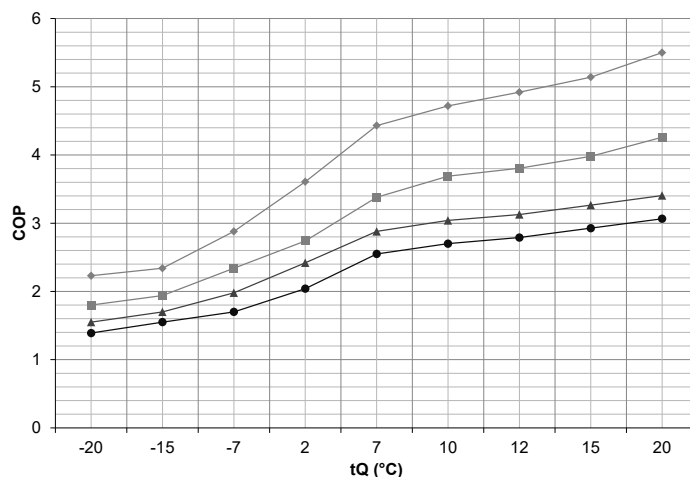
Hoval Belaria® dual AR (60)

Full load (2-stage)

Heat output

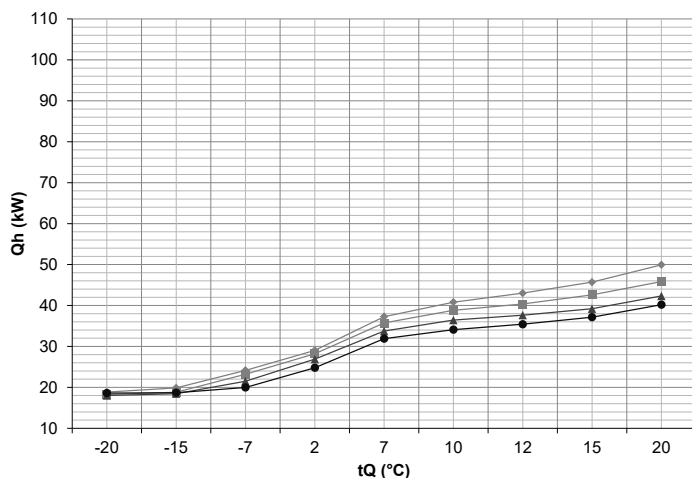


Coefficient of performance

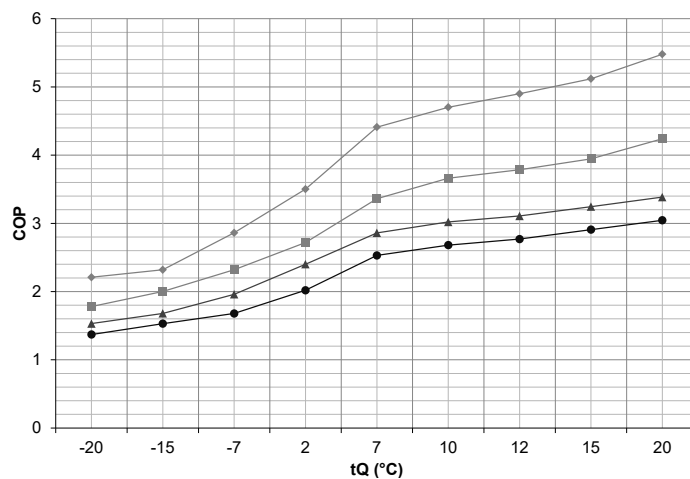


Partial load (1-stage)

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

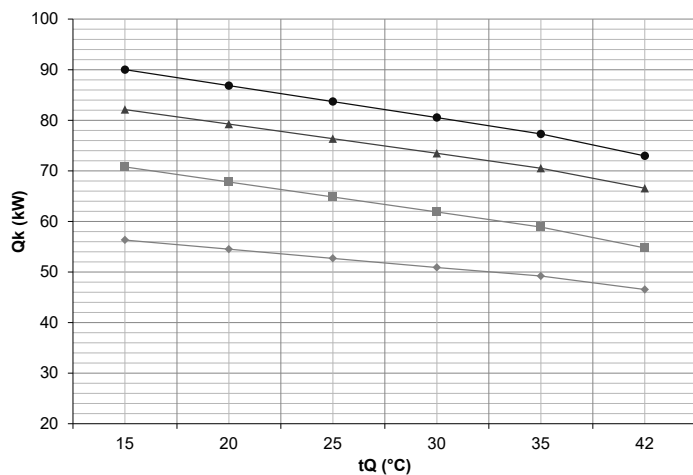
Performance data – cooling

Maximum cooling capacity

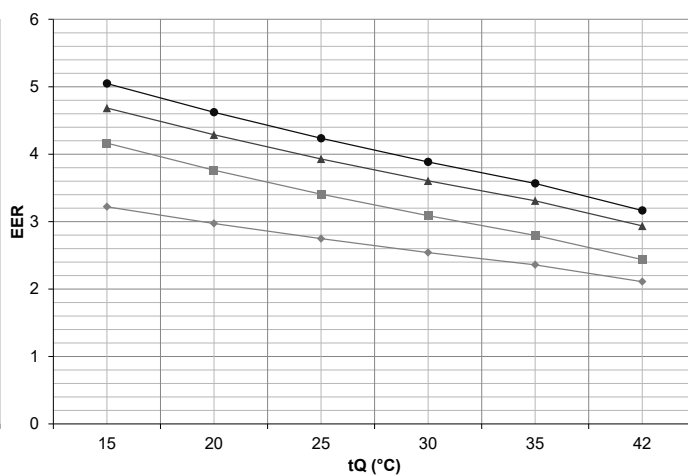
Hoval Belaria® dual AR (60)

Full load

Cooling capacity

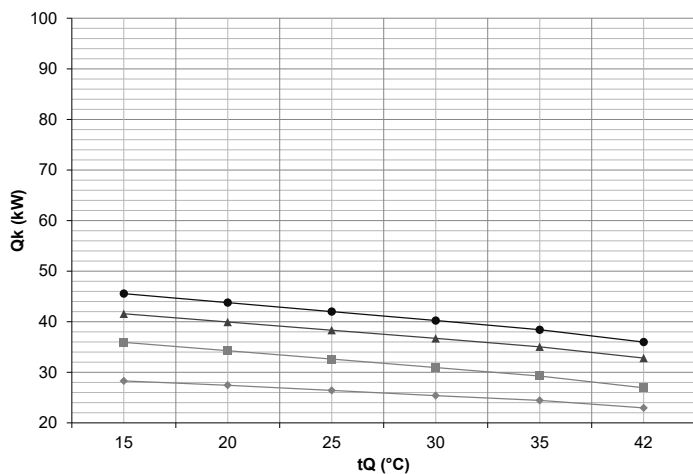


Coefficient of performance

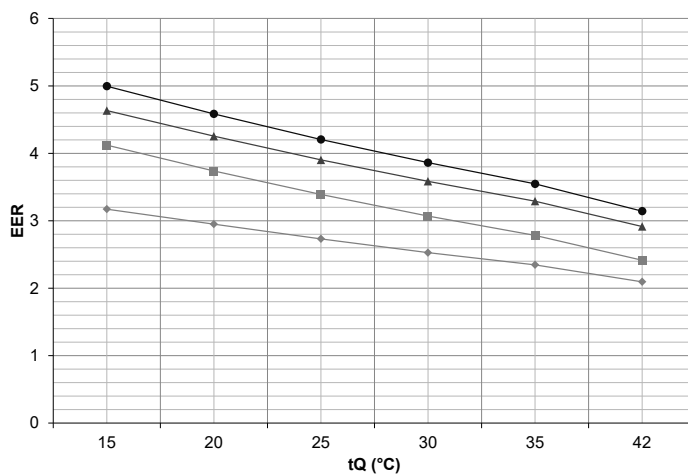


Partial load

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	(60) Stage 1				(60) Stage 2		
tFL °C	tQ °C	Qk kW	P kW	EER	Qk 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

tFL = Cooling water flow temperature (°C)

tQ = Source temperature (°C)

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

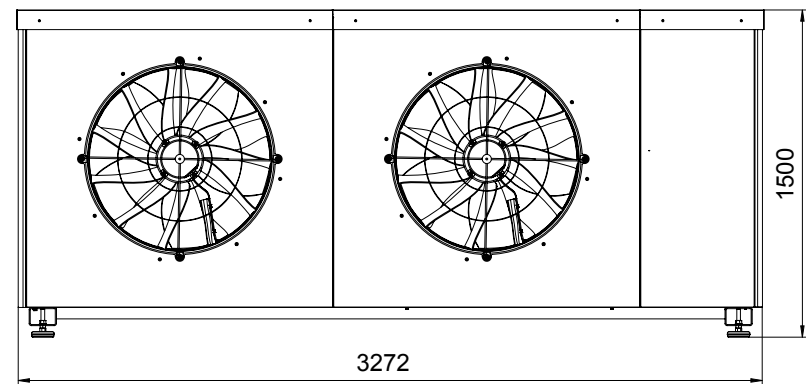
P = Power consumption for the overall unit (kW)

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

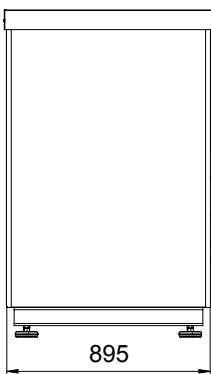
■ Dimensions

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

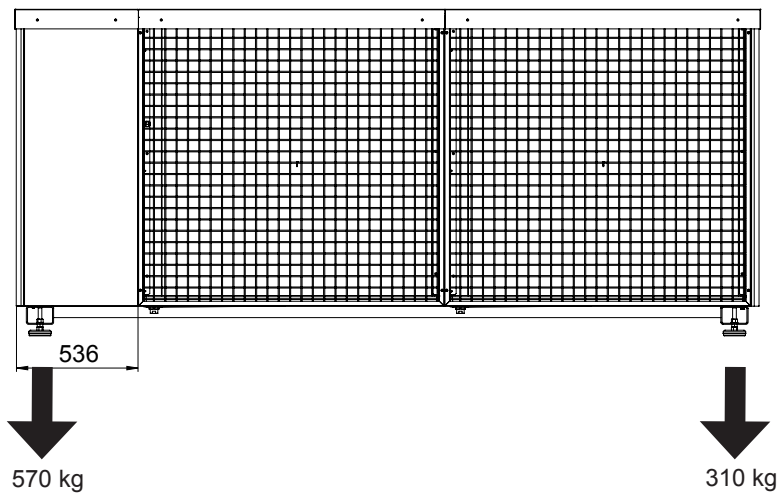
Front view (exhaust side)



Page view



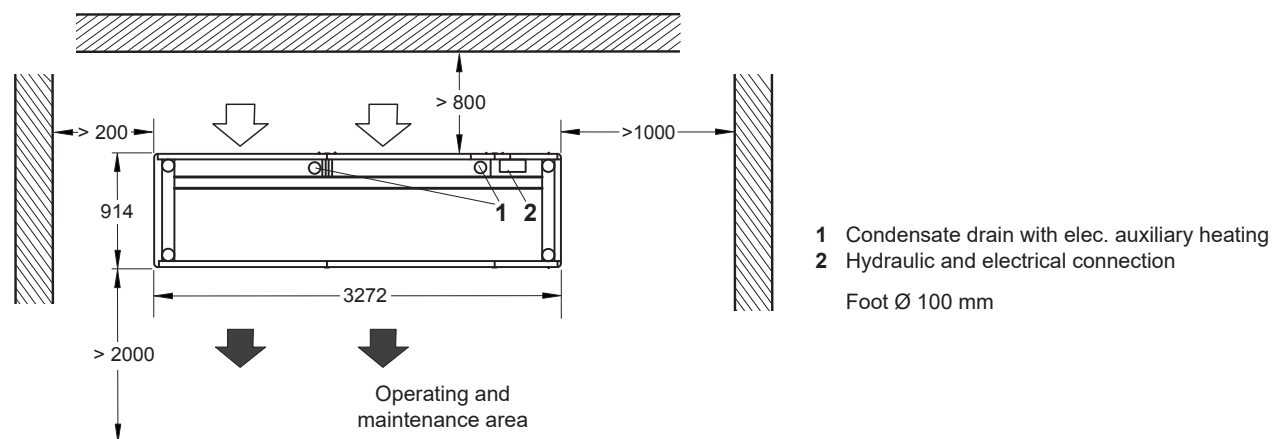
Rear (suction side)



■ Dimensions

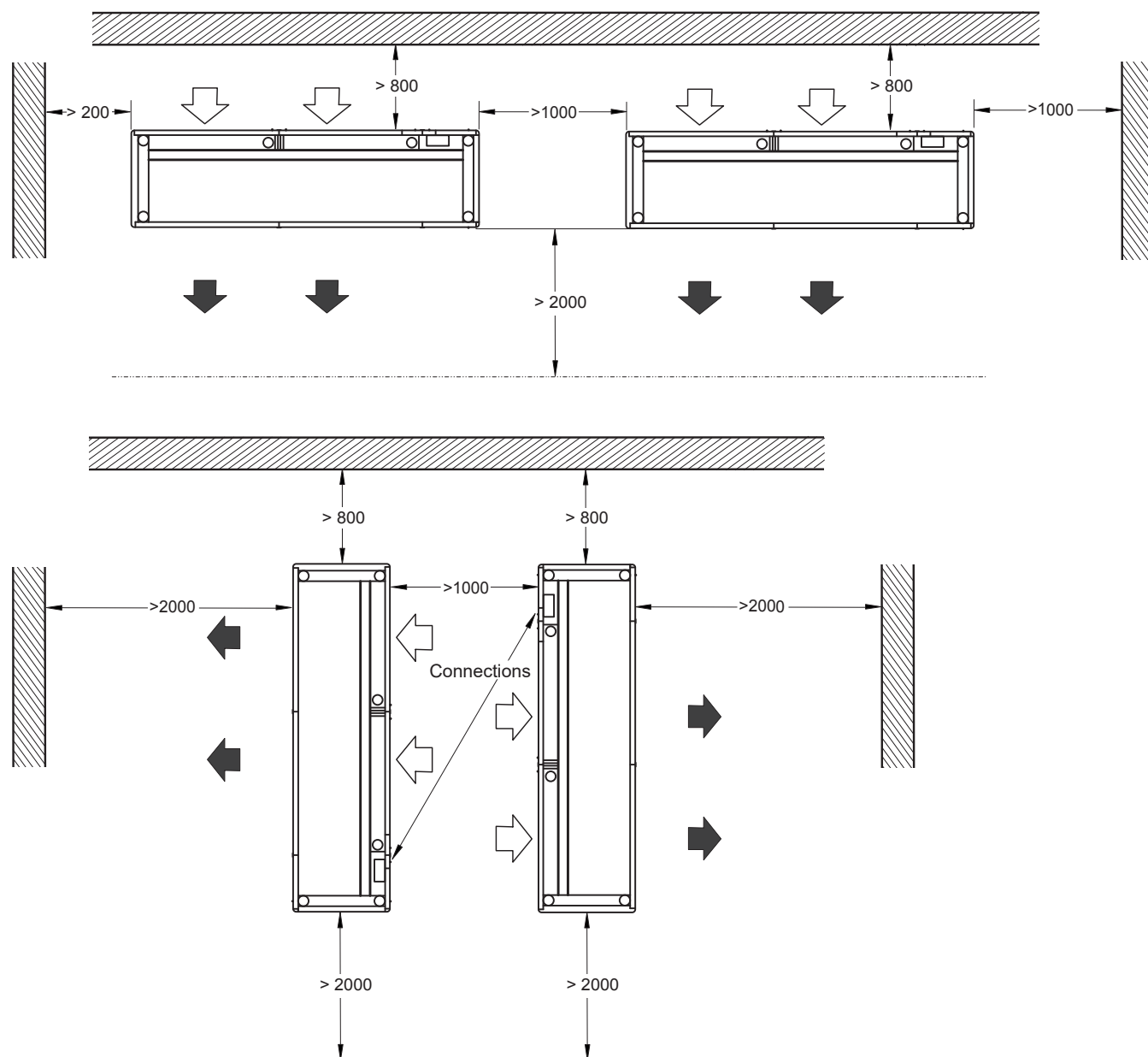
Space requirement

(Dimensions in mm)



Minimum distances for cascade systems

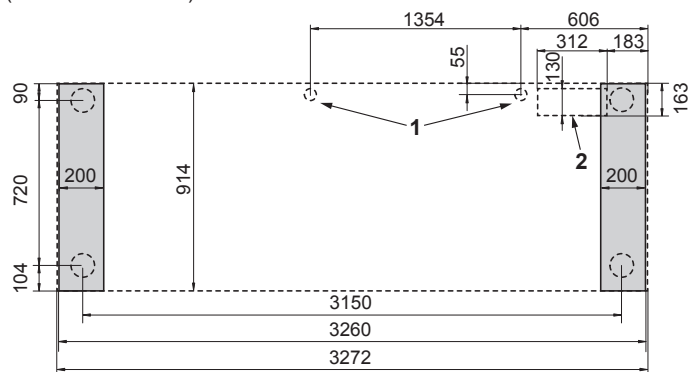
(Dimensions in mm)



■ Dimensions

Base design

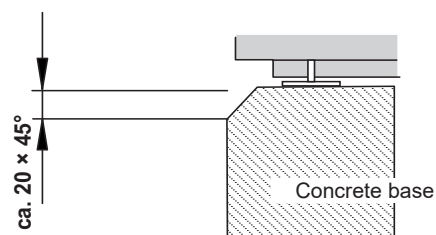
(Dimensions in mm)



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

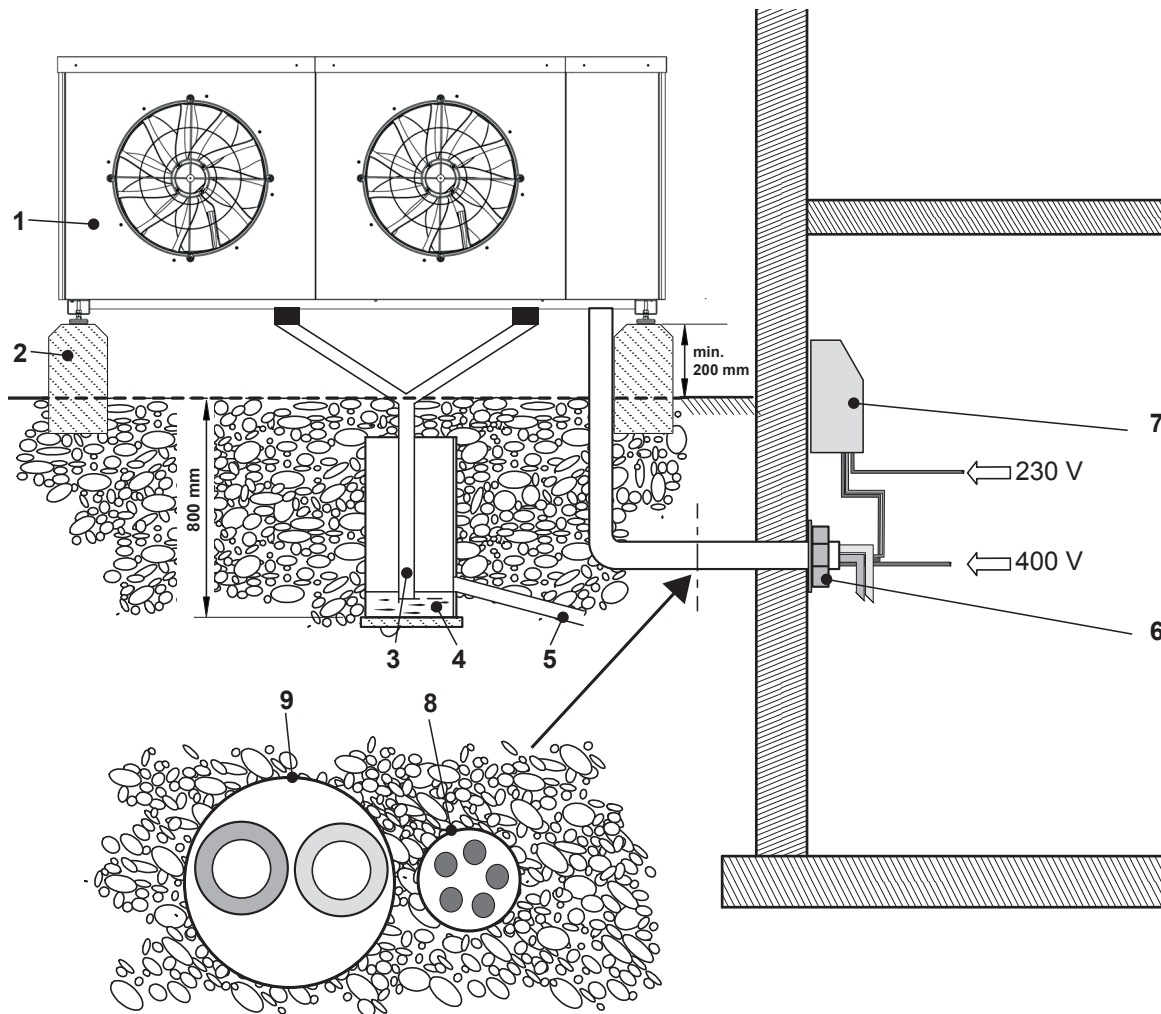
The condensate drain is located on the rear (suction side).

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

	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)
1 cable 10 x 1,5 mm ²	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	

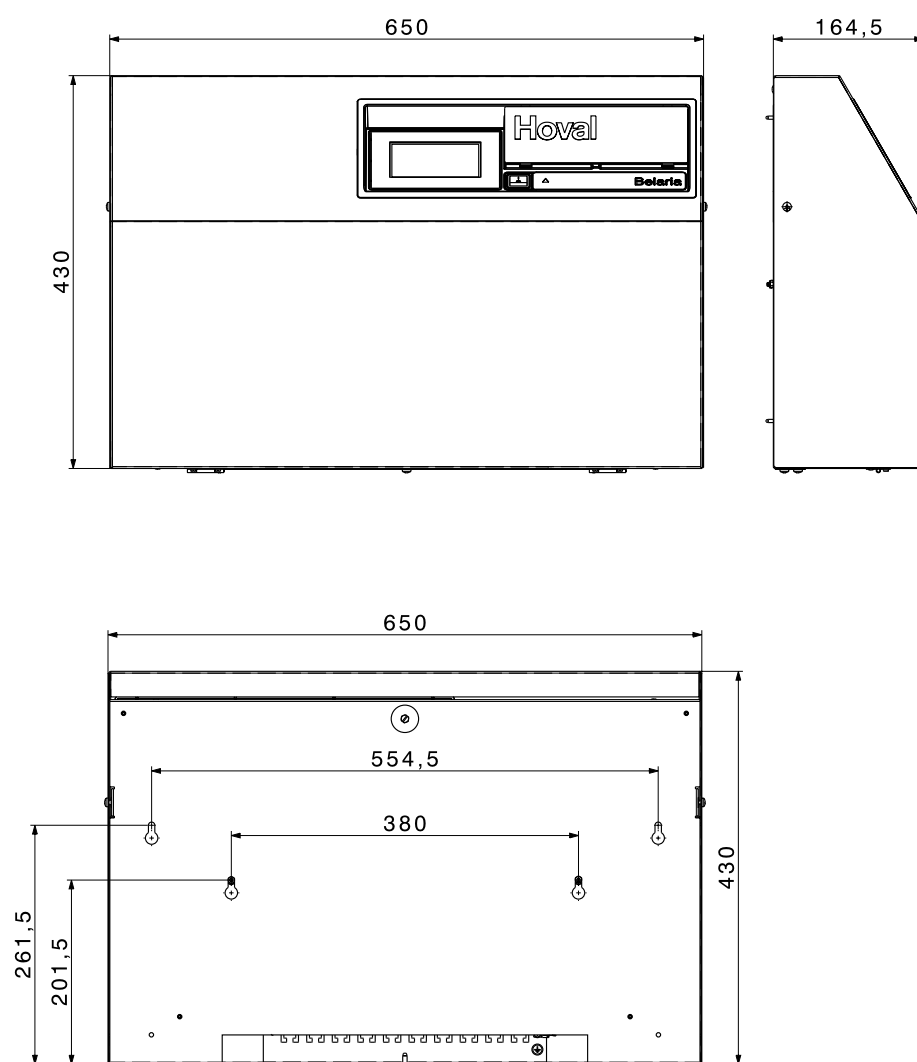
- 9 Empty tube for hydraulic connections for outdoor unit
 - Heating flow R 2"
 - Heating return R 2"

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)



Description

Hoval UltraSource T comfort
Hoval UltraSource T compact
Modulating heat pump system for heating and cooling in the living area.
UltraSource T compact (8,13/200) version additionally with hot water storage tank.

UltraSource T comfort

- Compact floor-mounted brine/water and water/water heat pumps with enclosed scroll compressor controlled by inverter
- UltraSource T comfort (8) with rotary compressor controlled by inverter
- UltraSource T comfort (13,17) with scroll capsule compressor controlled by inverter
- Casing made from painted, galvanised sheet steel. Colour flame red/brown red (RAL 3000/RAL 3011)
- Acoustically insulated casing with triple mounting of the compressor
- Evaporator and plate-type condenser made of stainless steel/CU
- Integrated components:
 - One speed-regulated high-efficiency pump each on the heating and brine sides
 - Flow sensor/flow meter or heat meter
 - 3-way changeover ball cock for heating/ domestic hot water (see accessories for domestic hot water set)
 - Brine side diaphragm pressure expansion tank mounted
- Safety set consisting of safety valve, automatic air vent and pressure gauge (see accessories)
- Diaphragm pressure expansion tanks see "System components"
- Sensor set consisting of outdoor sensor, flow sensor and domestic hot water sensor included in the scope of delivery
- TopTronic® E controller installed
- With corresponding separating plate heat exchanger in the primary circuit can also be used as water/water heat pump
- Hydraulic connections
 - Heating connections R 1" on left or right side. See accessories for connecting hoses
- Brine connection R 1" on left or right side See accessories for connecting hoses
- Electrical connections at rear

UltraSource T compact

- Compact floor-mounted brine/water and water/water heat pumps with enclosed scroll compressor controlled by inverter
- UltraSource T compact (8/200) with rotary compressor controlled by inverter
- UltraSource T compact (13/200) with scroll capsule compressor controlled by inverter
- Casing made from painted, galvanised sheet steel. Colour flame red/brown red (RAL 3000/RAL 3011)
- Acoustically insulated casing with triple mounting of the compressor
- Evaporator and plate-type condenser made of stainless steel/CU
- Integrated calorifier 200 litres (can be divided for easier transport into the building; weight 1294 x 770 x 602)
- Enamel painted calorifier with PU hard-foam insulation energy efficiency class A, load profile XL. Maintenance flange and magnesium protection anode built in



Indoor unit
UltraSource T comfort



Indoor unit
UltraSource T compact

Hoval UltraSource T comfort (8-17)

Hoval UltraSource T compact (8,13/200)

Water/water		Brine/water		Type	Heat output ¹⁾	
35 °C	55 °C	35 °C	55 °C		B0W35 kW	W10W35 kW
				(8)	1.8-7.8	2.5-9.8
				(8/200)	1.8-7.8	2.5-9.8
				(13)	2.9-13.3	3.5-13.3
				(13/200)	2.9-13.3	3.5-13.3
				(17)	4.3-17.6	5.7-21.5

Energy efficiency class of the compound system with control

¹⁾ Modulation range

The built-in high-efficiency pumps fulfil the Eco-design requirements of 2015 with an EEL of ≤ 0.23.

Seal of approval FWS

The UltraSource T series is certified by the CH certification commission.

- Integrated components:
 - One speed-regulated high-efficiency pump each on the heating and brine sides
 - Flow sensor/flow meter or heat meter
 - E-heating element 1 to 6 kW
 - Brine side diaphragm pressure expansion tank mounted
- Safety set consisting of safety valve, automatic air vent and pressure gauge (see accessories)
- Diaphragm pressure expansion tanks see "System components"
- Sensor set consisting of outdoor sensor, flow sensor and domestic hot water sensor included in the scope of delivery
- TopTronic® E controller installed
- With corresponding separating plate heat exchanger in the primary circuit can also be used as water/water heat pump
- Internally decoupled against solid-borne noise and can be connected directly
- Hydraulic connections
 - Heating connections R 1" top
 - Hot and cold water connections Rp ¾" top
- Brine connection R 1" on right or left side
- Electrical connections at top

Brine/water application

- Integrated brine pressure monitoring
- Brine safety set consisting of safety valve, automatic air vent and pressure gauge see accessories
- Brine connection on right or left side (comfort version: connection hoses see accessories)
- Hydraulic connection brine/water version see engineering

Water/water application

- For water/water applications, an intermediate circuit is required see engineering
- Safety heat exchanger set consisting of heat exchanger, safety group and diaphragm expansion tank see accessories
- Ground water pump kit see accessories
- Flow monitor see accessories
- Hydraulic connection water/water version see engineering

Cooling

- UltraSource T comfort and compact can be equipped with a passive cooling set (see accessories)
- Hydraulic version of the cooling functions see engineering

UltraSource T comfort (8,17)
UltraSource T compact (8/200)
 available starting July 2019



■ Description

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
- 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:
 - Module expansion heating circuit 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" section

Delivery

- One-piece design. Compact unit wired-up internally ready for connection, supplied fully packaged
- Sensor set supplied loose

■ Part No.

Brine/water heat pump
Hoval UltraSource T comfort
Hoval UltraSource T compact

Part No.

Modulating brine/water heat pump system
for indoor installation with
built-in TopTronic® E controller

UltraSource T comfort (8,17)
available starting July 2019

- Integrated control functions for
- 1 heating/cooling circuit with mixer
 - 1 heating/cooling circuit without mixer
 - 1 DHW charging circuit
 - Bivalent and cascade management
 - Can be optionally expanded with
max. 1 module expansion:
 - 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)

Delivery

- One-piece design. Compact unit
wired-up internally ready for connection,
supplied fully packaged
- Sensor set supplied loose



Hoval UltraSource T comfort
Heat pump system
Working medium R 410A
Max. flow temperature 65 °C

Type	Heat output ¹⁾	
	B0W35 kW	W10W35 kW
(8)	1.8-7.8	2.5-9.8
(13)	2.9-13.3	3.5-13.3
(17)	4.3-17.6	5.7-21.5

7016 666
7016 672
7016 678

¹⁾ Modulation range



Hose set
for UltraSource T comfort (8,13)
Consisting of:
Flexible connection hoses for
heating and brine side insulated 1"
L = 1.0 m, can be shortened on one side

6046 175



Hose set
for UltraSource T comfort (17)
Consisting of:
flexible connection hoses for
heating side insulated 1"
L = 1.0 m, can be shortened on one side
And insulated for brine side 1 1/4"
L = 1.5 m

6046 176

Available starting July 2019

■ Part No.



Energy efficiency class
 see “Description”

Hoval UltraSource T compact
 Heat pump system with integrated calorifier
 Working medium R 410A
 Max. flow temperature 65 °C

Type	Heat output ¹⁾	
	B0W35 kW	W10W35 kW
(8/200)	1.8-7.8	2.5-9.8
(13/200)	2.9-13.3	3.5-13.3

¹⁾ Modulation range

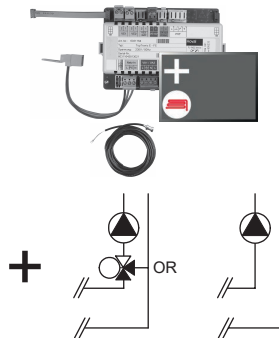
No hose set necessary

Part No.

UltraSource T compact (8/200)
 available starting July 2019

7016 667
 7016 673

■ Part No.



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/hot water module for implementing the following functions:

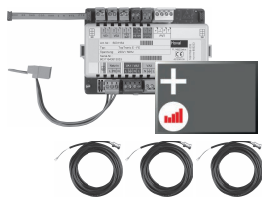
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer

incl. assembly material
1x contact sensor ALF/2P/4/T, L = 4.0 m

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

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

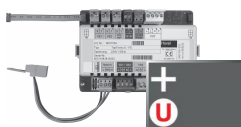
6037 062

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

- 1 heating/cooling circuit without mixer or
 - 1 heating/cooling circuit with mixer
- each incl. energy balancing

incl. assembly material
3x contact sensor ALF/2P/4/T, L = 4.0 m

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



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. assembly material

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

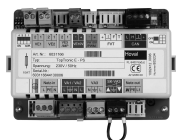
Further information

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

Notice

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

■ 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"

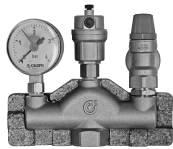
Outdoor sensor, immersion sensor and
contact sensor supplied with the heat pump.

■ Part No.

Heating accessories

Part No.

Pressure expansion tanks
see "Various system components"



Safety set SG15-1"
Suitable up to max. 50 kW
complete with safety valve (3 bar)
Pressure gauge and automatic air vent
with cut off valve
Connection: 1" internal thread

641 184

Strainers
see "Various system components"



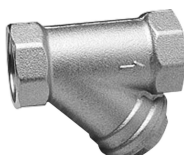
Sludge separator CS 25-1" with magnet
for flow rates of 1.0 - 2.0 m³/h
for flow speed of 1.0 m/s
Housing made of plastic PPA with
diffuser and partial flow removal
with 4 extra-strong Neodymium magnets
Magnets removable for draining
EPP insulation 20 mm
Connections made of brass G 1"
Drain made of brass: hose connection
Any inst. orientation -360° rotating
Temperature range -10 to 120 °C
Operating pressure max.: 10 bar
Glycol proportion max.: 50 %
Weight: 1.21 kg

2063 735



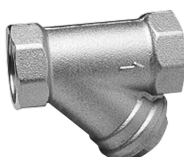
Sludge separator CS 32-1 1/2" with magnet
for flow rates of 2.0 - 3.0 m³/h
for flow speed of 1.0 m/s
Housing made of plastic PPA with
diffuser and partial flow removal
with 4 extra-strong Neodymium magnets
Magnets removable for draining
EPP insulation 20 mm
Connections made of brass G 1 1/2"
Drain made 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: 1.37 kg

2063 736



Strainer PN 16 B50-25-1"
Casing brass, PN 16
Connections Rp 1"
Operating temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm

2046 978



Strainer PN 16 B50-32-1 1/2"
Casing brass, PN 16
Connections Rp 1 1/2"
Operation temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm

2046 980

■ Part No.



Connection set AS32-2/ H
 for compact mounting
 of all required fittings
 of a direct circuit
 consisting of:
 2 thermometer ball valves
 Wall bracket included separately
 Connection T-piece DN 32
 in the return flow for connecting the
 sludge separator CS 32 bottom and
 the expansion tank on the side
 on connection set
 installation option
 for an overflow valve
 incl. non-return valve

Part No.

6039 793

6014 849

Bypass valve DN 32 (1 1/4")
 for the installation in a HA group DN 32
 Setting range 0.6-1.5 bar
 Max. flow rate: 1.5 m³/h
 with self-sealing screw connection for
 mounting between flow and return
 ball valve

Domestic hot water accessories



Warm water set
 for UltraSource B comfort C,
 UltraSource T comfort
 Consisting of:
 Motor drive for installed
 changeover valve
 Includes distance wave and flexible
 connection hose insulated 1"
 L = 1.0 m

6046 181

Titanium impressed current anode
 for UltraSource B compact C,
 UltraSource T compact
 as cathodic protection for
 enamelled calorifier

6046 662

Screw-in electric immersion heater
 for plants with buffer storage tank
 as emergency heating.

Heat output		Install. length
Type	[kW]	
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

■ Part No.

Brine accessories

Part No.

Connection hoses brine already included in hose set for UltraSource T comfort



Instantaneous water heater kit DN 50

6044 070

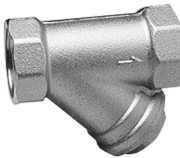
from ready electrical box
for electrical protection incl.
assembly fittings.
for combination with all screw-in
heating inset EP.
Screw-in heaters must be
ordered separately.



Safety group for brine circuit SI-Gr.

2015 354

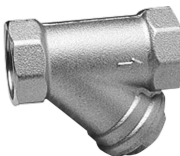
Retaining bar incl. safety valve,
pressure gauge, air vent and connection
fittings for expansion chambers



Strainer PN 16 B50-25-1"

2046 978

Casing brass, PN 16
Connections Rp 1"
Operating temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm



Strainer PN 16 B50-32-1 1/4"

2046 980

Casing brass, PN 16
Connections Rp 1 1/4"
Operation temperature max.: 110 °C
Sieve made of stainless steel
Mesh size 0.5 mm



Brine filling station in compact design DN 25

6037 537

with shut-off valves,
filter and EPS insulation.
Application temperatures -20°C to +60°C
Frost protection max. 50 %
Connections DN 25 G 1", kvs 12.5
Max. operating pressure 1.0 MPa (10 bar)
Dirt screen integrated



Brine filling station in compact design DN 32

6033 364

with shut-off valves,
filter and EPS insulation.
Application temperatures -20°C to +60°C
Frost protection max. 50 %
Connections DN 32 G 1 1/4", kvs 22
Max. operating pressure 1.0 MPa (10 bar)
Dirt screen integrated

■ Part No.



Ground water accessories

Ground water pump set US T (13)
for UltraSource T comfort (13)
Consisting of:
Protection for control of a 3-phase
ground water pipe. Ready to connect
without thermal surge protect

Ground water pump set US T (13)
for UltraSource T compact (13)
Consisting of:
Protection for control of a 3-phase
ground water pump. Ready to connect
without thermal overload protection

Ground water pump set US T (17)
for UltraSource T comfort (17)
Consisting of:
Protection for control of a 3-phase
ground water pump. Ready to connect
without thermal overload protection

Safety heat exchanger set
for UltraSource T comfort,
UltraSource T compact
for use of the ground water heat source
Consisting of:
Insulated heat exchanger and bracket
for mounting

**Safety heat exchanger set
(stainless steel)**
for UltraSource T comfort,
UltraSource T compact
for use of the ground water heat source
Consisting of:
Insulated heat exchanger (soldered
stainless steel)
and bracket for mounting

Flow monitor set
for UltraSource T comfort,
UltraSource T compact
for installation on ground water side
Consisting of:
Ground water float ball

Passive cooling accessories

Passive cooling set US T (8)
for UltraSource T comfort (8),
UltraSource T compact (8/200)
for passive cooling via
probe or ground water
Consisting of:
Insulated heat exchanger and bracket
for mounting

Passive cooling set US T (13)
for UltraSource T comfort (13),
UltraSource T compact (13/200)
for passive cooling via
probe or ground water
Consisting of:
Insulated heat exchanger and bracket
for mounting

Passive cooling set US T (17)
for UltraSource T comfort (17)
for passive cooling via
probe or ground water
Consisting of:
Insulated heat exchanger and bracket
for mounting

Part No.

6046 182

6046 183

Available starting July 2019

6048 004

Notice:
The pump of the UltraSource T (8) is mono-
phase (230 V). Therefore, no ground water
kit is required.

6046 190

6046 194

6046 186

6046 177

Available starting July 2019

6046 178

6046 179

Available starting July 2019

■ Technical data

Hoval UltraSource T comfort (8-17)

Hoval UltraSource T compact (8/200,13/200)

Type		(8)	(13)	(17)	(8/200)	(13/200)
Brine/water application B0W35						
• Energy efficiency class of the compound system with control 35/55°C		A+++/A+++	A+++/A+++	A+++/A+++	A+++/A+++	A+++/A+++
• Energy efficiency class load profile XL		-	-	-	A	A
• Seasonal coefficient of performance moderate climate 35 °C/55 °C	SCOP	5.4/4.2	5.5/4.2	5.9 / 4.3	5.4/4.2	5.5/4.2
Water/water application W10W35						
• Energy efficiency class of the compound system with control 35/55°C		A+++/A+++	A+++/A+++	A+++/A+++	A+++/A+++	A+++/A+++
• Energy efficiency class load profile XL		-	-	-	A	A
• Seasonal coefficient of performance moderate climate 35 °C/55 °C	SCOP	7.9/6.3	8.0/5.6	8.0/5.9	7.9/6.3	8.0/5.6
Performance data in acc. with EN 14511						
• Heat output B0W35	kW	4.1	6.6	11.42	4.1	6.6
• Power consumption B0W35	kW	0.87	1.3	2.26	0.87	1.3
• Coefficient of performance B0W35	COP	4.71	5	5.05	4.71	5
• Heat output W10W35	kW	5.55	8.6	15.24	5.55	8.6
• Power consumption W10W35	kW	0.85	1.3	2.36	0.85	1.3
• Coefficient of performance W10W35	COP	6.53	6.3	6.46	6.53	6.3
Sound data in acc. with EN 12102						
• Sound power level (nominal)	dB(A)	45	41	44	45	41
• Sound power level (maximum)	dB(A)	51	47	55	51	47
Hydraulic data						
• Max. flow temperature (without/with screw-in electrical heating inset)	°C	62	63	62	62/65	63/65
• Max. operating pressure source side	bar	3	3	3	3	3
• Max. operating pressure on the heating side	bar	3	3	3	3	3
• Heating flow and return connection	R	1"	1"	1"	1"	1"
• Connections source side	R	1"	1"	5/4"	1"	1"
Nominal flow rate and pressure drop brine/water						
• Heating (dT = 5K)						
- Max. flow rate B5/W35	m³/h	1.6	2.3	3.3	1.6	2.3
- Nominal flow rate	m³/h	0.7	1.2	2	0.7	1.2
- Pressure drop	kPa	7	9	35	7	9
- Residual overpressure (max. pump speed)	kPa	67	76	44	67	76
• Heat source (dT = 3K)						
- Nominal flow rate	m³/h	0.94	1.6	2.8	0.94	1.6
- Pressure drop	kPa	9	9	22	9	9
- Residual overpressure	kPa	65	71	52	65	71
Nominal flow rate and pressure drop water/water						
• Heating (dT = 5K)						
- Max. flow rate W10/W35	m³/h	1.7	2.3	3.7	1.7	2.3
- Nominal flow rate	m³/h	0.94	1.5	2.65	0.94	1.5
- Pressure drop	kPa	12	14	61	12	14
- Residual overpressure	kPa	67	72	20	67	72
• Heat source (dT = 3K)						
- Nominal flow rate	m³/h	1.36	2.1	4	1.36	2.1
- Pressure drop	kPa	5	6	10	5	6
- Residual overpressure max. pump speed	kPa	70	74	19	70	74
Cooling technical data						
• Refrigerant		R410A	R410A	R410A	R410A	R410A
• Compressor/stages		1-modulating	1-modulating	1-modulating	1-modulating	1-modulating
• Refrigerant fill volume	kg	2.3	3	3.8	2.3	3
• Compressor oil fill volume	l	0.35	0.74	1	0.35	0.74
• Type of compressor oil		DAPHNE HERMETIC OIL FV50S	Emkarate RL32 - 3MAF	DAPHNE HERMETIC OIL FVC68D	DAPHNE HERMETIC OIL FV50S	Emkarate RL32 - 3MAF
Electrical data						
• Electrical connection compressor	V/Hz	1x 230 / 50	3x 400 / 50	3x 400 / 50	1x 230 / 50	3x 400 / 50
• Electrical connection electric immersion heater	V/Hz	-	-	-	1~230/50 3~400/50	3x 400 / 50
• Control electrical connection	V/Hz	1x 230 / 50	1x 230 / 50	1x 230 / 50	1x 230 / 50	1x 230 / 50
• Compressor operating current max.	A	15.8	9	14.79	15.8	9
• Electric immersion heater operating current max.	A	-	-	-	13	13
• Starting current	A	<15.8	<9	<14.79	<15.8	<9
• Output factor	-	0.99	0.97	0.95	0.99	0.97
• Main current fuse	A	16	13	16	16	13
- Type		C,K	C,K	C,K	C,K	C,K
• Control current fuse	A	13	13	13	13	13

■ Technical data

Type		(8)	(13)	(17)	(8/200)	(13/200)
- Type		B.Z	B.Z	B.Z	B.Z	B.Z
• Fuse electric immersion heater	A	13	13	-	13	13
- Type		B.Z	B.Z	-	B.Z	B.Z

Dimensions/weight						
• Dimensions (H x W x D)	mm	1253x620x760	1253x620x760	1253x620x760	1950x602x770	1950x602x770
• Tilting dimension	mm	-	-	-	2150	2150
• Weight	kg	165	170	196	265	270
• Minimum sizes of installation room ¹⁾	m3	5.2	6.8	8.6	5.2	6.8

Hot water storage tank						
• Storage capacity	l	-	-	-	192	192
• Max. operating pressure	bar	-	-	-	10	10
• Storage tank temperature max.	°C	-	-	-	55	55
• Maximum storage tank temperature with electric immersion heater	°C	-	-	-	65	65
• Output capacity at 46 °C draw-off temperature - heat pump (=Tsp =58°) ²⁾		-	-	-	260	260
• Output capacity at 40 °C draw-off temperature - heat pump (=Tsp=58°) ²⁾		-	-	-	315	315

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

¹⁾ If the installation room is smaller than the required minimum size, it must be designed as a machine room in accordance with EN 378.

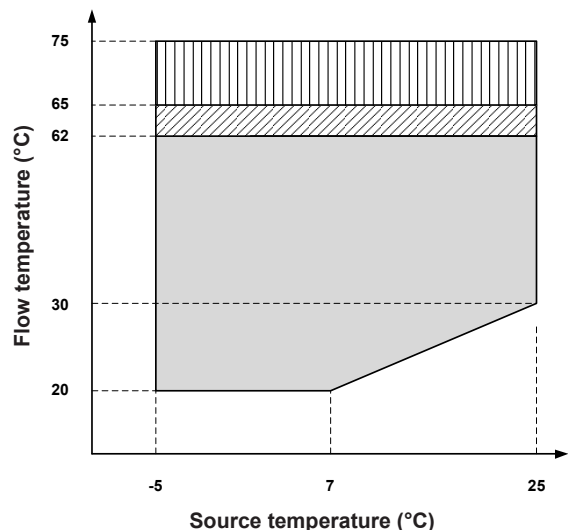
²⁾ 12 °C cold water temperature/58 °C storage tank temperature

■ Technical data

Diagram of area of application

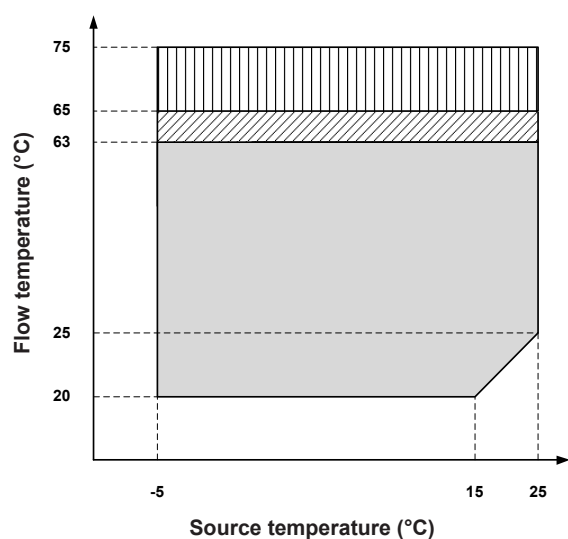
Heating and hot water

UltraSource T comfort (8), UltraSource T compact (8/200)



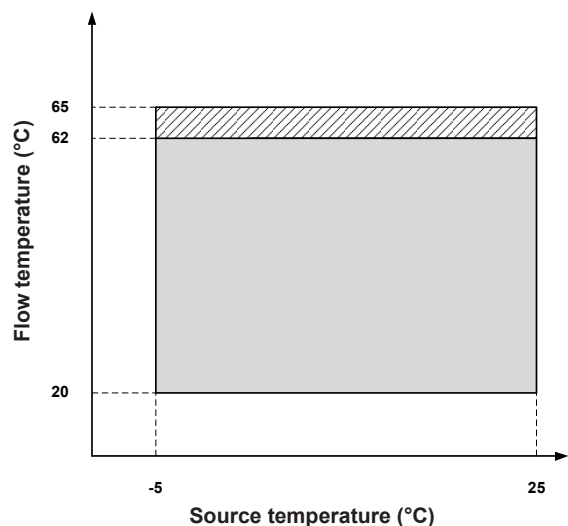
- Application area heating heat pump (UltraSource T comfort C and compact C)
- ▨ Extended application area heating heat pump including electric immersion heater (only UltraSource T compact)
- ▤ Extended application area domestic hot water heat pump including electric immersion heater (only UltraSource T compact)

UltraSource T comfort (13), UltraSource T compact (13/200)



- Application area heating heat pump (UltraSource T comfort C and compact C)
- ▨ Extended application area heating heat pump including electric immersion heater (only UltraSource T compact)
- ▤ Extended application area domestic hot water heat pump including electric immersion heater (only UltraSource T compact)

UltraSource T comfort (17)



- Application area heating heat pump (UltraSource T comfort C and compact C)
- ▨ Extended application area domestic hot water heat pump including electric immersion heater (only UltraSource T compact)

■ Technical data

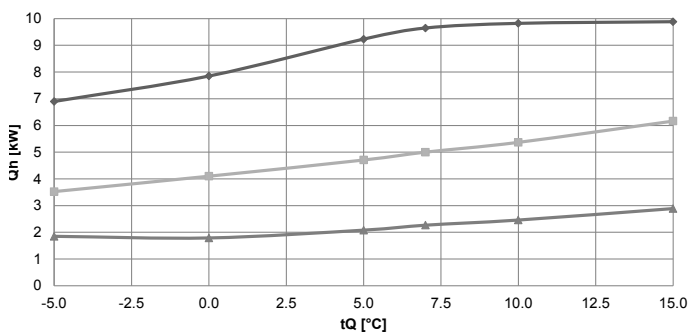
Performance data – heating

Maximum heat output

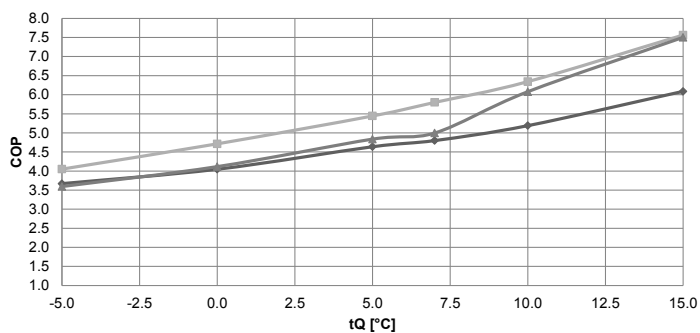
Hoval UltraSource T comfort (8), compact (8/200) with R410A

Data according to EN 14511

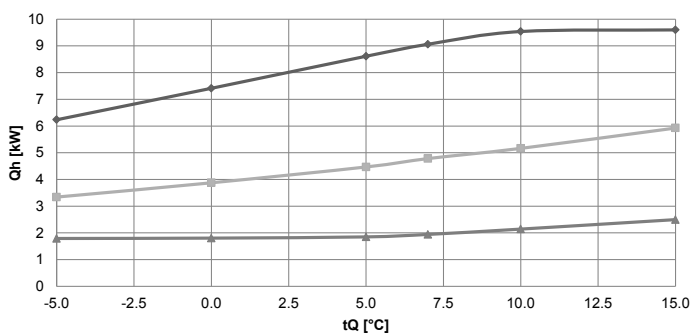
Heat output - t_{FL} 35 °C



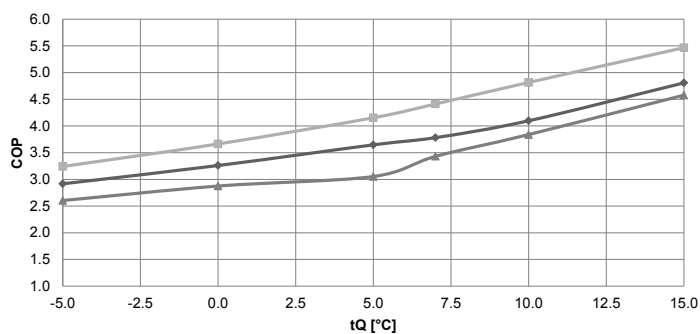
Coefficient of performance - t_{FL} 35 °C



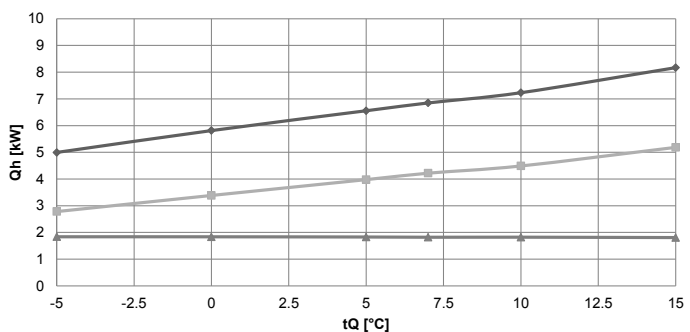
Heat output - t_{FL} 45 °C



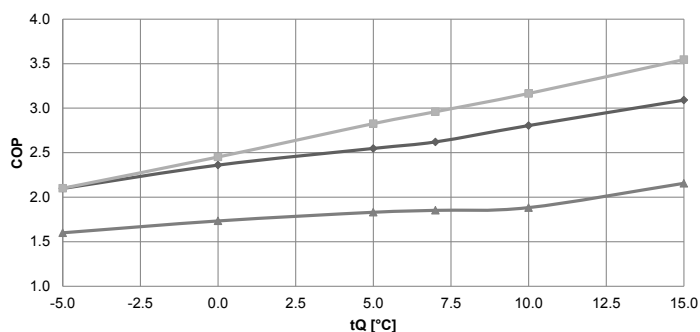
Coefficient of performance - t_{FL} 45 °C



Heat output - t_{FL} 62 °C



Coefficient of performance - t_{FL} 62 °C



t_{FL} = Heating flow temperature (°C)

t_Q = Source temperature (°C)

Q_h = Heat output (kW), measured in accordance with standard EN 14511 with 25 % ethylene glycol (Antifrogen N)

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

◆ Maximum output
■ Nominal output
▲ Minimum output

■ Technical data

Performance data – heating

Hoval UltraSource T comfort (8), compact (8/200) with R410A

Data according to EN 14511

Type Boiler tFL (°C)	Heat source Medium t1	tQ °C	Maximum output			Nominal output			Minimum output		
			Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
35	Brine	-5	6.90	1.88	3.67	3.52	0.87	4.05	1.85	0.51	3.59
		0	7.85	1.94	4.05	4.10	0.87	4.71	1.79	0.43	4.12
		5	9.23	1.99	4.64	4.71	0.86	5.44	2.08	0.43	4.84
		7	9.65	2.01	4.80	5.00	0.86	5.80	2.27	0.45	5.00
	Water	10	9.82	1.89	6.34	5.37	0.85	6.34	2.46	0.40	6.08
		15	9.88	1.62	7.56	6.16	0.81	7.56	2.89	0.39	7.50
45	Brine	-5	6.23	2.14	2.92	3.34	1.03	3.24	1.79	0.69	2.60
		0	7.41	2.27	3.26	3.88	1.06	3.66	1.80	0.63	2.88
		5	8.61	2.36	3.65	4.47	1.08	4.15	1.85	0.61	3.05
		7	9.06	2.40	3.78	4.78	1.08	4.41	1.94	0.57	3.43
	Water	10	9.54	2.33	4.10	5.16	1.07	4.81	2.14	0.56	3.84
		15	9.60	2.00	4.81	5.92	1.08	5.47	2.50	0.55	4.58
50	Brine	-5	5.92	2.29	2.59	3.19	1.13	2.82	1.84	0.81	2.26
		0	7.04	2.46	2.87	3.77	1.16	3.23	1.83	0.73	2.50
		5	8.18	2.57	3.18	4.35	1.19	3.65	1.82	0.69	2.64
		7	8.61	2.64	3.27	4.64	1.19	3.89	1.85	0.63	2.92
	Water	10	9.16	2.60	3.52	5.00	1.19	4.20	2.03	0.62	3.27
		15	9.36	2.23	4.20	5.71	1.21	4.71	2.37	0.60	3.95
55	Brine	-5	5.36	2.16	2.48	3.12	1.21	2.57	1.80	0.92	1.96
		0	6.31	2.27	2.78	3.61	1.25	2.89	1.85	0.87	2.11
		5	7.17	2.35	3.05	4.24	1.28	3.32	1.85	0.80	2.32
		7	7.53	2.40	3.14	4.51	1.29	3.48	1.86	0.78	2.39
	Water	10	8.02	2.41	3.33	4.85	1.28	3.77	1.79	0.72	2.49
		15	9.14	2.46	3.71	5.62	1.33	4.23	2.19	0.72	3.05
62	Brine	-5	5.00	2.38	2.10	2.78	1.32	2.10	1.84	1.15	1.60
		0	5.81	2.46	2.36	3.38	1.38	2.45	1.84	1.06	1.73
		5	6.56	2.57	2.55	3.98	1.41	2.83	1.83	1.00	1.83
		7	6.85	2.61	2.62	4.22	1.43	2.96	1.82	0.98	1.85
	Water	10	7.23	2.58	2.80	4.49	1.42	3.16	1.82	0.97	1.88
		15	8.17	2.64	3.09	5.19	1.46	3.55	1.81	0.84	2.16

tFL = Heating flow temperature (°C)

tQ = Source temperature (°C)

Qh = Heat output (kW), measured in accordance with standard EN 14511
with 25 % ethylene glycol (Antifrogen N)

P = Power consumption, overall unit (kW)

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

Observe daily power interruptions!
see project planning

■ Technical data

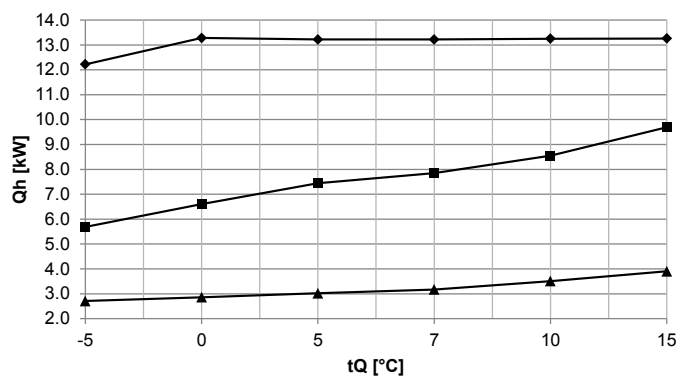
Performance data – heating

Maximum heat output

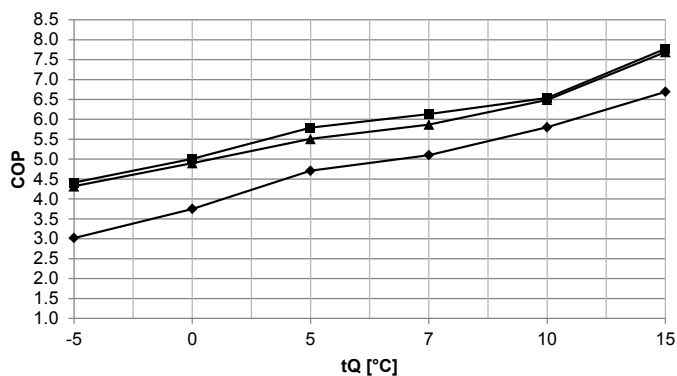
Hoval UltraSource T comfort (13), compact (13/200) with R410A

Data according to EN 14511

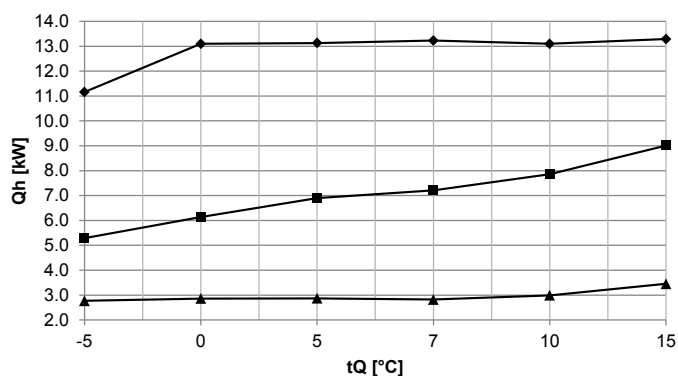
Heat output - t_{FL} 35 °C



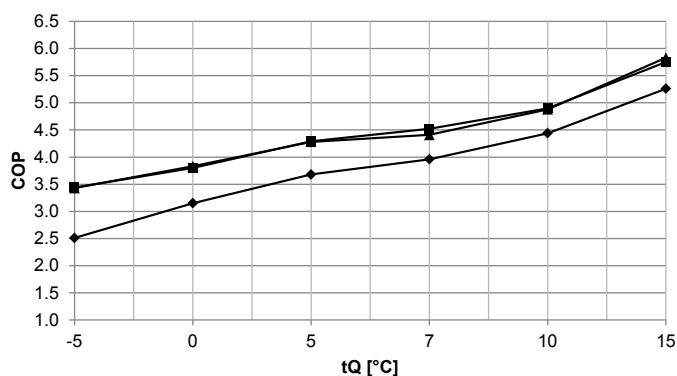
Coefficient of performance - t_{FL} 35 °C



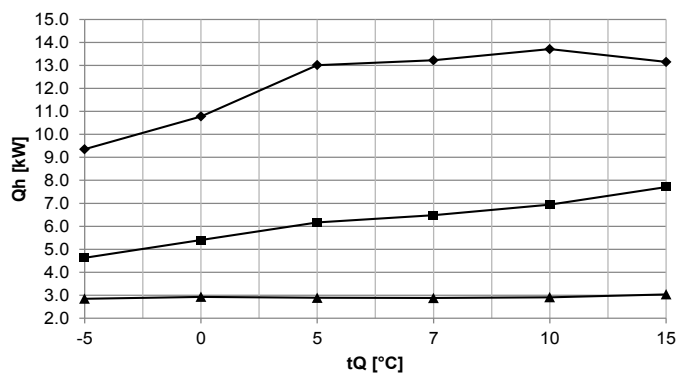
Heat output - t_{FL} 45 °C



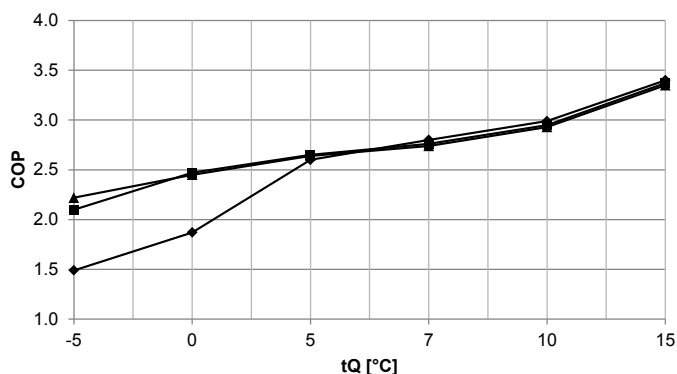
Coefficient of performance - t_{FL} 45 °C



Heat output - t_{FL} 62 °C



Coefficient of performance - t_{FL} 62 °C



t_{FL} = Heating flow temperature (°C)

t_Q = Source temperature (°C)

Q_h = Heat output (kW), measured in accordance with standard EN 14511 with 25 % ethylene glycol (Antifrogen N)

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

◆ Maximum output
■ Nominal output
▲ Minimum output

■ Technical data

Performance data – heating

Hoval UltraSource T comfort (13), compact (13/200) with R410A

Data according to EN 14511

Type Boiler tFL (°C)	Heat source Medium t1	tQ °C	Maximum output			Nominal output			Minimum output		
			Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
35	Brine	-5	12.2	4.1	3.0	5.7	1.3	4.4	2.7	0.6	4.3
		0	13.3	3.5	3.8	6.6	1.3	5.0	2.9	0.6	4.9
		5	13.2	2.8	4.7	7.4	1.3	5.8	3.0	0.6	5.5
		7	13.2	2.6	5.1	7.9	1.3	6.1	3.2	0.5	5.9
	Water	10	13.3	2.3	5.8	8.6	1.3	6.5	3.5	0.5	6.5
		15	13.3	2.0	6.7	9.7	1.3	7.8	3.9	0.5	7.7
45	Brine	-5	11.2	4.4	2.5	5.3	1.5	3.4	2.8	0.8	3.4
		0	13.1	4.2	3.2	6.1	1.6	3.8	2.9	0.8	3.8
		5	13.1	3.6	3.7	6.9	1.6	4.3	2.9	0.7	4.3
		7	13.2	3.3	4.0	7.2	1.6	4.5	2.8	0.6	4.4
	Water	10	13.1	3.0	4.4	7.9	1.6	4.9	3.0	0.6	4.9
		15	13.3	2.5	5.3	9.0	1.6	5.8	3.5	0.6	5.8
50	Brine	-5	10.6	4.8	2.2	5.1	1.7	3.0	2.9	0.9	3.2
		0	12.5	4.6	2.7	5.9	1.7	3.4	2.9	0.8	3.5
		5	13.3	4.1	3.3	6.6	1.8	3.8	3.0	0.7	4.0
		7	13.2	3.8	3.5	6.9	1.8	4.0	2.9	0.7	4.1
	Water	10	13.1	3.4	3.9	7.6	1.8	4.3	2.9	0.7	4.5
		15	13.3	2.9	4.6	8.7	1.8	4.9	3.2	0.6	5.0
55	Brine	-5	10.1	5.7	1.8	4.9	1.9	2.6	2.9	1.0	2.8
		0	11.9	5.2	2.3	5.8	1.9	3.0	3.0	1.0	3.0
		5	13.2	4.5	3.0	6.4	2.0	3.3	2.9	0.9	3.4
		7	13.2	4.2	3.2	6.7	2.0	3.4	2.8	0.8	3.5
	Water	10	13.1	3.8	3.5	7.2	2.0	3.7	2.8	0.8	3.8
		15	13.2	3.3	4.1	8.2	2.0	4.2	3.1	0.7	4.4
62	Brine	-5	9.4	6.3	1.5	4.6	2.2	2.1	2.9	1.3	2.2
		0	10.8	5.8	1.9	5.4	2.2	2.5	2.9	1.2	2.5
		5	13.0	5.0	2.6	6.2	2.3	2.7	2.9	1.1	2.6
		7	13.2	4.7	2.8	6.5	2.4	2.8	2.9	1.1	2.7
	Water	10	13.7	4.4	3.0	6.9	2.4	3.0	2.9	1.0	2.9
		15	13.2	3.9	3.4	7.7	2.3	3.4	3.0	0.9	3.4

tFL = Heating flow temperature (°C)

tQ = Source temperature (°C)

Qh = Heat output (kW), measured in accordance with standard EN 14511
with 25 % ethylene glycol (Antifrogen N)

P = Power consumption, overall unit (kW)

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

Observe daily power interruptions!
see project planning

■ Technical data

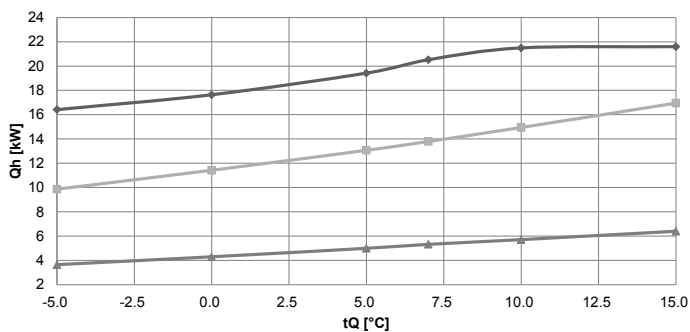
Performance data – heating

Maximum heat output

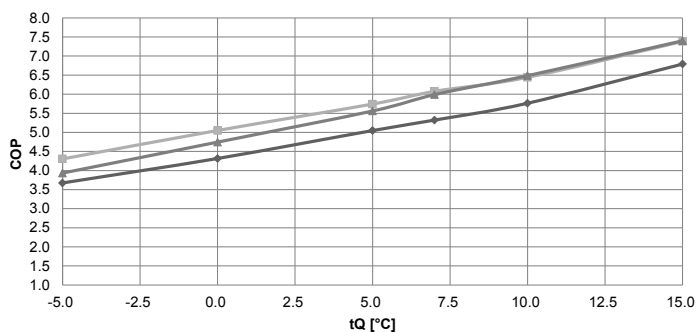
Hoval UltraSource T comfort (17) with R410A

Data according to EN 14511

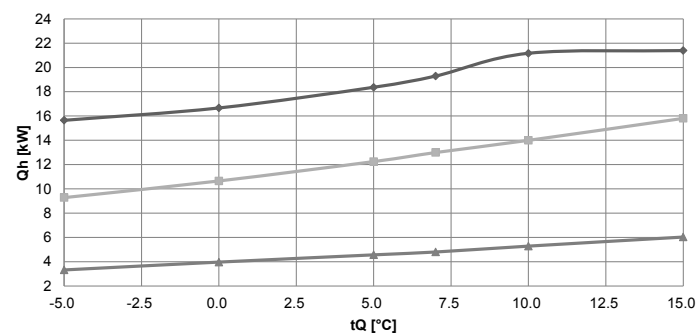
Heat output - t_{FL} 35 °C



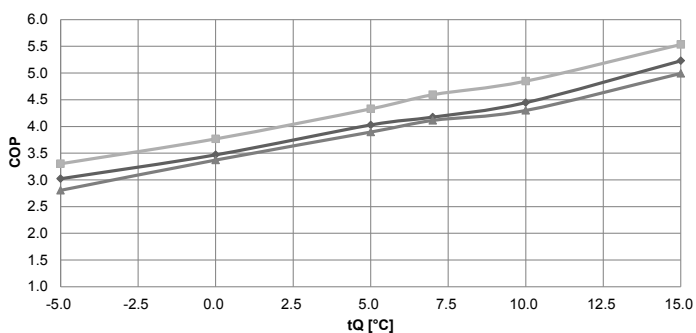
Coefficient of performance - t_{FL} 35 °C



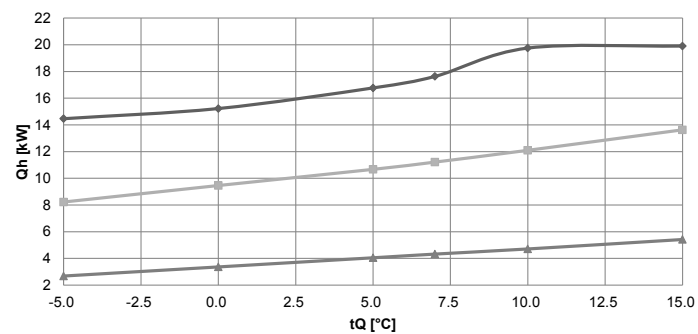
Heat output - t_{FL} 45 °C



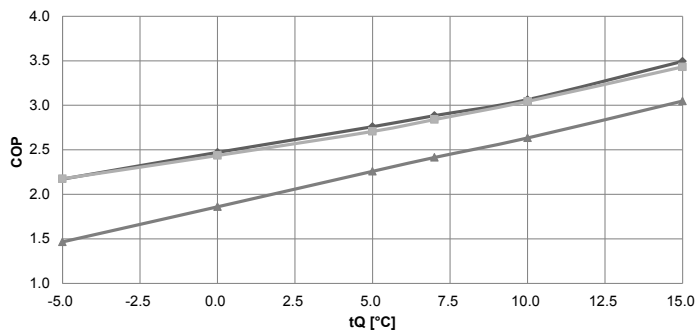
Coefficient of performance - t_{FL} 45 °C



Heat output - t_{FL} 62 °C



Coefficient of performance - t_{FL} 62 °C



t_{FL} = Heating flow temperature (°C)

t_Q = Source temperature (°C)

Q_h = Heat output (kW), measured in accordance with standard EN 14511 with 25 % ethylene glycol (Antifrogen N)

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

◆ Maximum output
■ Nominal output
▲ Minimum output

■ Technical data

Performance data – heating

Hoval UltraSource T comfort (17) with R410A

Data according to EN 14511

Type Boiler tFL (°C)	Heat source Medium t1	tQ °C	Maximum output			Nominal output			Minimum output		
			Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
35	Brine	-5	16.41	4.47	3.67	9.86	2.29	4.30	3.65	0.93	3.93
		0	17.64	4.09	4.32	11.42	2.26	5.05	4.29	0.91	4.74
		5	19.42	3.85	5.05	13.06	2.28	5.74	4.99	0.90	5.56
		7	20.52	3.86	5.32	13.79	2.27	6.08	5.32	0.89	5.99
	Water	10	21.50	3.73	5.76	14.94	2.32	6.44	5.71	0.88	6.49
		15	21.60	3.18	6.79	16.95	2.30	7.38	6.40	0.86	7.40
45	Brine	-5	15.64	5.18	3.02	9.28	2.29	4.30	3.65	0.93	3.93
		0	16.66	4.80	3.47	11.42	2.26	5.05	4.29	0.91	4.74
		5	18.37	4.56	4.03	13.06	2.28	5.74	4.99	0.90	5.56
		7	19.29	4.62	4.17	13.79	2.27	6.08	5.32	0.89	5.99
	Water	10	21.17	4.76	4.45	14.94	2.32	6.44	5.71	0.88	6.49
		15	21.39	4.09	5.23	16.95	2.30	7.38	6.40	0.86	7.40
50	Brine	-5	15.16	5.58	2.72	8.82	3.06	2.88	3.07	1.29	2.38
		0	16.18	5.22	3.10	10.22	3.11	3.29	3.76	1.30	2.90
		5	17.75	5.04	3.52	11.83	3.13	3.78	4.44	1.30	3.41
		7	18.69	5.05	3.70	12.51	3.14	3.99	4.71	1.30	3.62
	Water	10	20.72	5.29	3.92	13.49	3.21	4.20	5.12	1.38	3.70
		15	20.96	4.60	4.56	15.29	3.20	4.78	5.81	1.37	4.24
55	Brine	-5	15.00	5.88	2.55	8.70	3.28	2.65	2.87	1.49	1.92
		0	15.84	5.51	2.88	10.17	3.39	3.00	3.55	1.53	2.32
		5	17.27	5.34	3.23	11.49	3.38	3.40	4.23	1.48	2.85
		7	18.14	5.37	3.38	12.15	3.38	3.59	4.50	1.48	3.05
	Water	10	20.20	5.57	3.63	12.96	3.49	3.72	4.87	1.52	3.20
		15	20.34	4.85	4.19	14.66	3.48	4.21	5.61	1.50	3.73
62	Brine	-5	14.46	6.66	2.17	8.22	3.78	2.17	2.68	1.83	1.47
		0	15.23	6.16	2.47	9.46	3.88	2.44	3.36	1.81	1.86
		5	16.77	6.08	2.76	10.67	3.94	2.71	4.05	1.79	2.26
		7	17.63	6.11	2.88	11.22	3.95	2.84	4.32	1.79	2.41
	Water	10	19.75	6.45	3.06	12.10	3.97	3.04	4.71	1.79	2.63
		15	19.91	5.70	3.49	13.63	3.97	3.43	5.42	1.78	3.05

tFL = Heating flow temperature (°C)

tQ = Source temperature (°C)

Qh = Heat output (kW), measured in accordance with standard EN 14511
with 25 % ethylene glycol (Antifrogen N)

P = Power consumption, overall unit (kW)

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

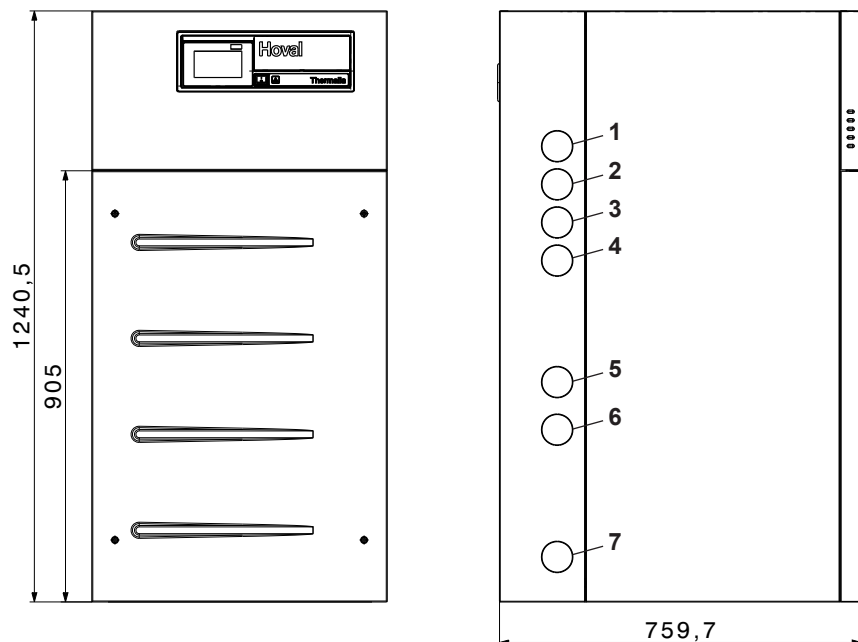
Observe daily power interruptions!
see project planning

■ Dimensions

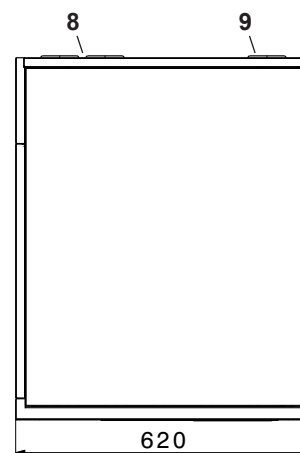
Hoval UltraSource T comfort (8-17)

Indoor unit

(Dimensions in mm)



View from above



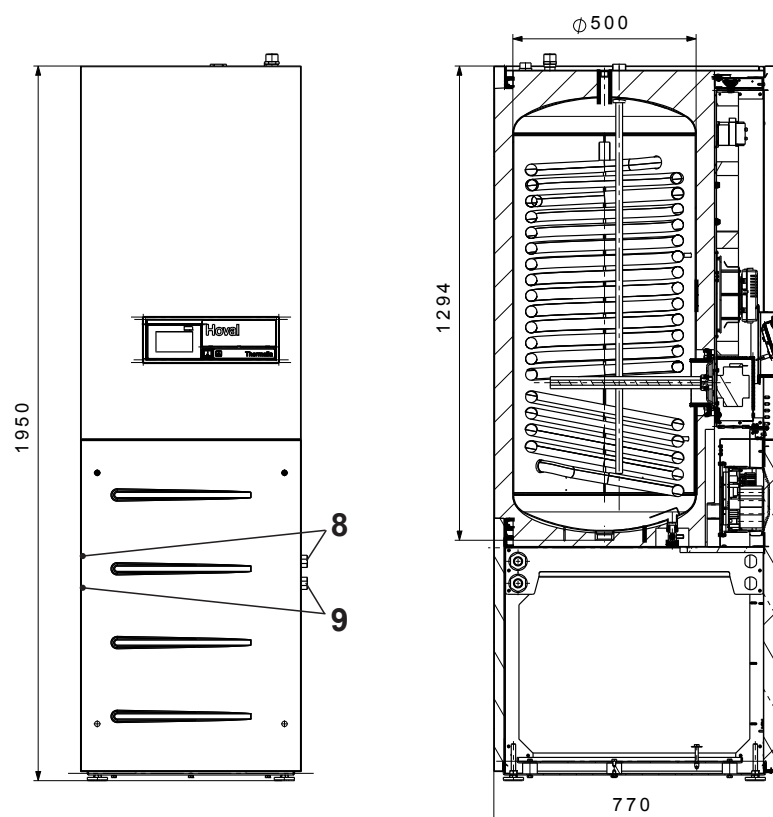
Connections (1-7) on either the left or right side

- 1 Free
- 2 Brine outlet 1"
- 3 Flow heating 1"
- 4 Flow hot water charging 1"
- 5 Brine inlet 1"
- 6 Free
- 7 Return heating 1"
- 8 Cable feed-in main current
- 9 Cable feed-in sensors

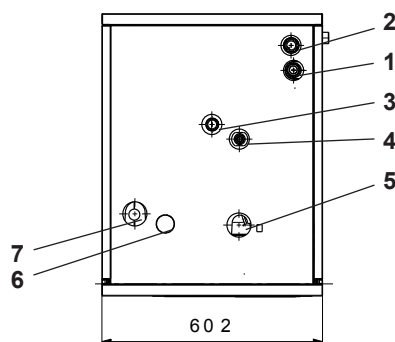
Hoval UltraSource T compact (8,13/200)

Indoor unit with calorifier

(Dimensions in mm)



View from above



- 1 Flow heating 1"
- 2 Return heating 1"
- 3 Hot water connection 3/4"
- 4 Cold water connection 3/4"
- 5 Cable feed-in sensors
- 6 Circulation connection 3/4"
- 7 Cable feed-in main current
- 8 Brine entry (connection right or left) 1"
- 9 Brine exit (connection right or left) 1"

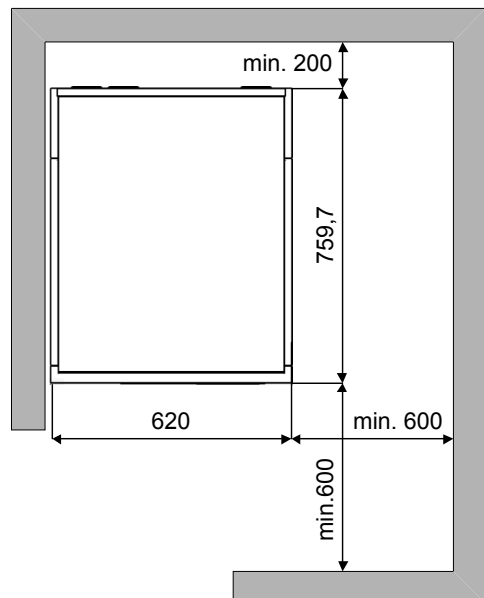
■ Dimensions

Space requirement

Hoval UltraSource T comfort (8-17) left

Indoor unit

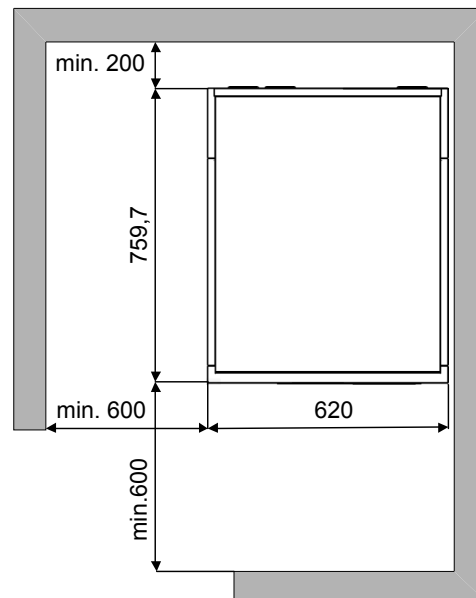
(Dimensions in mm)



Hoval UltraSource T comfort (8-17) right

Indoor unit

(Dimensions in mm)

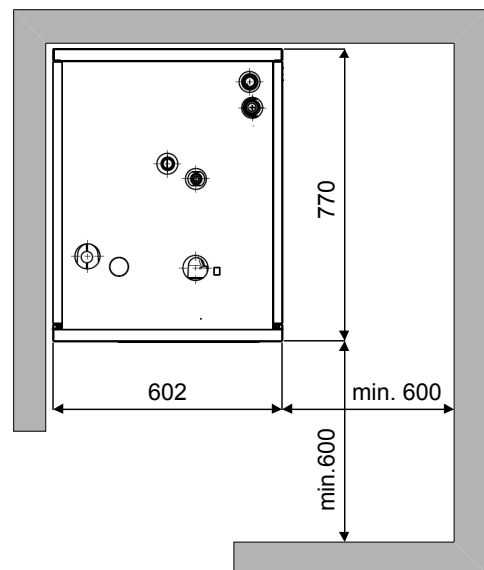


A gap of at least 200 mm must be guaranteed at the rear for the electrical connection.

Hoval UltraSource T compact (8,13/200)

Indoor unit

(Dimensions in mm)



Due to the need for access to the 3-way changeover ball cock for heating and domestic hot water, a gap of at least 600 mm must be guaranteed on the right side.

■ Engineering

Requirements and directives

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

Set-up

- The UltraSource T comfort and UltraSource T compact must be installed in a room protected against frost, by an approved specialist company. Room temperature must be between 5 °C and 25 °C.
- If the installation room is smaller than the required minimum size, it must be designed as a machine room in accordance with the provisions of EN 378.
- Installation in wet rooms, dusty rooms or rooms with a potentially explosive atmosphere is not permitted.
- To minimise vibration and noise inside the building, heat pumps should be isolated as well as possible from the building structure. For example heat pumps should never be installed on lightweight ceilings/floor. In the case of floating screed, a recess should be cut in the screed and the impact sound insulation around the heat pump.
- The connections for the brine flow and return in the UltraSource T comfort and in the UltraSource T compact can be on either the left or right side.
- The connections for the heating flow and return in the UltraSource T comfort can be on either the left or right and in the UltraSource T compact they are on the top.
- The connections for hot and cold water as well as hot water circulation are located on top of the UltraSource T compact.
- The applicable laws, regulations and standards have to be observed, in particular EN 378 Parts 1 and 2 as well as BGR 500.
- A gap of at least 600 mm must be observed for maintenance work on the front and, depending on where the brine lines are connected, on the right or left side, of the heat pump.
- False flow rates as a result of incorrect dimensions of the pipework, incorrect fittings or improper pump operation can cause damage to the heat pump.

The installation of a magnetic sludge separator is mandatory.

Installation on heating side

- All pertinent laws, regulations and standards for building heating system pipework and for heat pump systems must be complied with.
- It is imperative that a strainer and a sludge separator are installed in the heating return upstream from the heat pump.
- The safety and expansion devices for closed heating systems must be provided in accordance with EN 12828.
- Dimensioning of the pipework must be done according to the required flow rates.
- Ventilation possibilities must be provided at the highest point and drainage possibilities at the lowest points of the connecting lines.
- To prevent energy losses, the connecting lines must be insulated with suitable material.

Installation on brine side

- The connection fittings for the brine pipe of the UltraSource T comfort are located in the heat pump and can be pulled out either to the left or right through the openings provided.
- The connection fittings for the brine pipe of the UltraSource T compact are located on the right side when delivered. If necessary, the brine line connections can also be taken out on the left side of the heat pump. The connections for the brine pipe are changed over on site. If the brine pipe connections are changed to the left, the hose of the brine entry line (upper line) must be shortened from 450 mm to 285 mm. Once the connection line has been shortened, it must be insulated again with Armaflex.

Connection on drinking water side

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

Electrical connections

- The electrical connection must be carried out by a qualified technician and registered with the responsible energy supply company. The relevant electrical installation company is responsible for ensuring that electrical connection is carried out in accordance with standards and that safeguard measures are put in place.
- The mains voltage at the connection terminals of the heat pump must be 400 V or 230 V +/- 10 %. The dimensions of the connection line must be checked by the electrical company carrying out the work.
- A fault-current circuit breaker is recommended. A "zeroing TN-S" can be used instead of the RCCB type B. Country-specific requirements must be complied with. If the "fault-current circuit breaker" safeguard measure is implemented nevertheless by the electrical company, a separate fault-current circuit breaker is recommended for the heat pumps.
- This residual-current circuit breaker must be of the all-current-sensitive type B ($I_{\Delta N} \geq 300 \text{ mA}$). The specified RCCB types apply to the heat pump regardless of externally connected components (refer to assembly instructions, data sheets).
- Owing to the starting currents that occur, circuit breakers with a type "C" or "K" tripping characteristic are to be used for the main circuit.
- For the control circuit and additional electric heating (if present), circuit breakers with a type "B" or "Z" tripping characteristic are sufficient.
- The electrical connecting and feeder lines must be copper cables.
- Please refer to the wiring diagram for electrical details.

For other engineering notices and guidelines regarding probes, flat plate collectors or ground water use, see "Engineering"

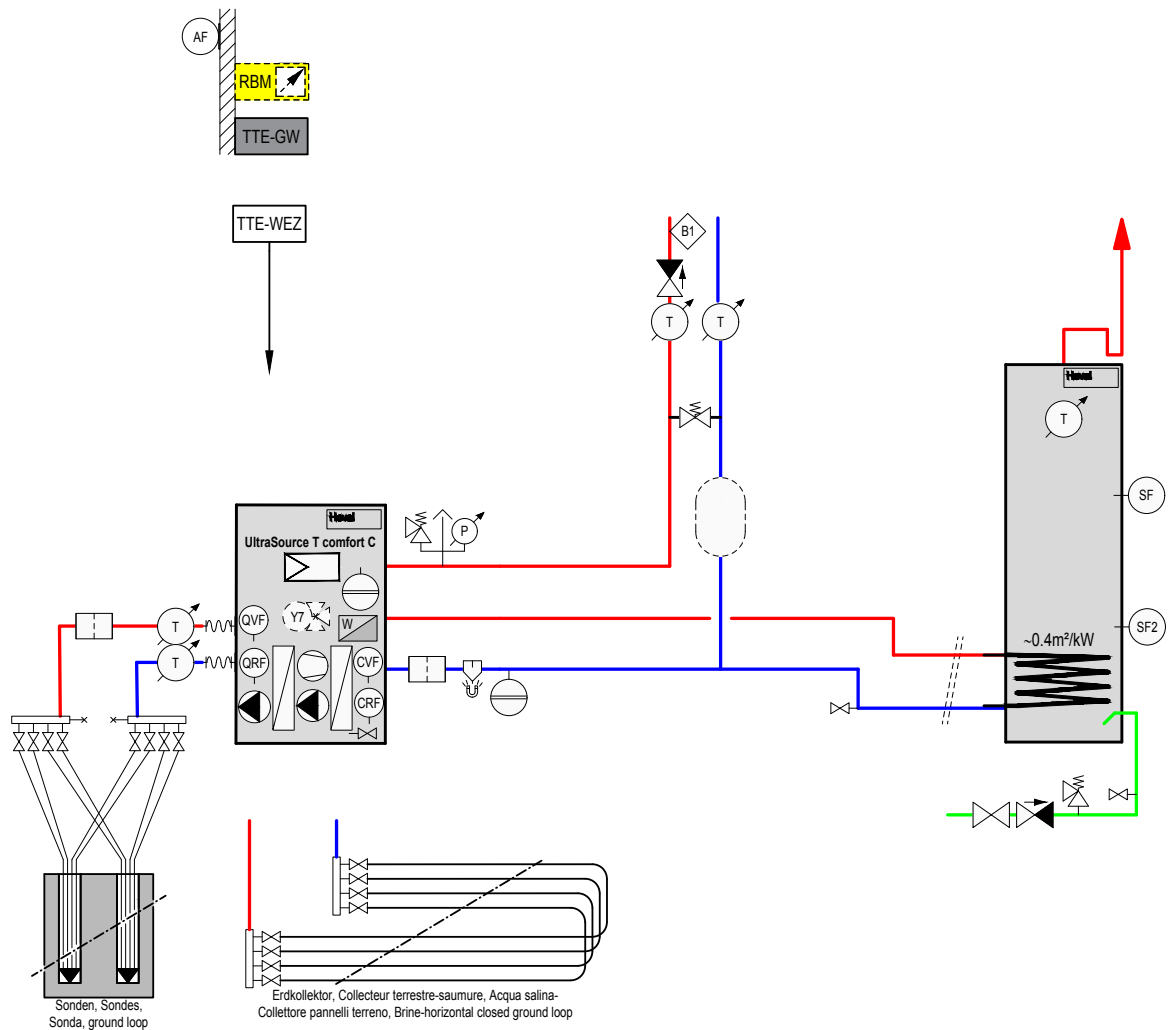
■ Examples

UltraSource T comfort

Brine/water and water/water heat pump with

- Earth probes
- 1 direct circuit

Hydraulic schematic BBBFE010



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on site, dimensioning and local regulations.
- With underfloor heating, a flow temperature monitor must be installed.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install pockets to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
B1	Flow temperature monitor (if required)
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
<i>Option</i>	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
Y7	Switching valve

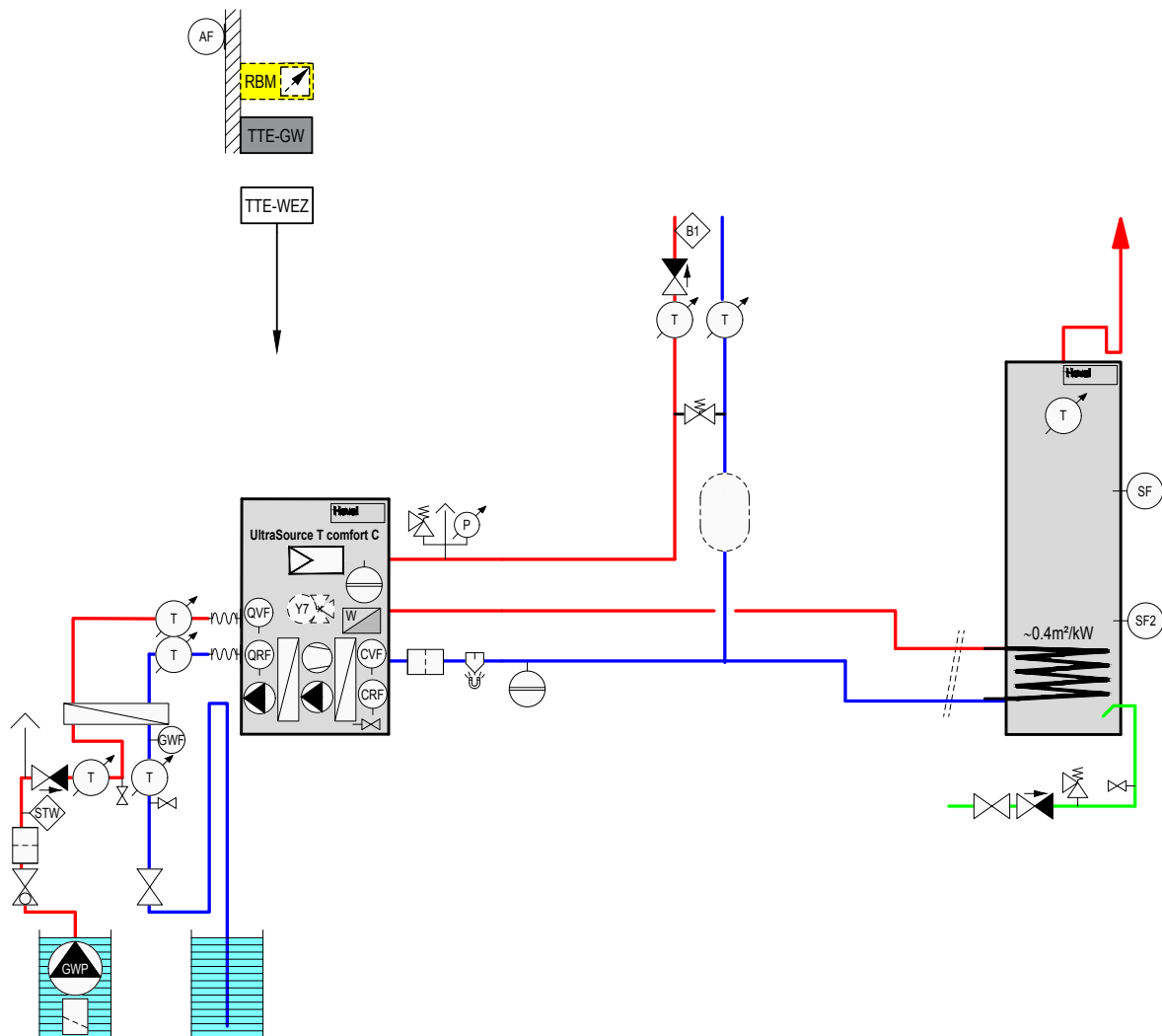
■ Examples

UltraSource T comfort

Brine/water and water/water heat pump with

- Water/water - indirect use
- 1 direct circuit

Hydraulic schematic BBBFE030



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on site, dimensioning and local regulations.
- With underfloor heating, a flow temperature monitor must be installed.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install pockets to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
B1	Flow temperature monitor (if required)
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
<i>Option</i>	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
Y7	Switching valve

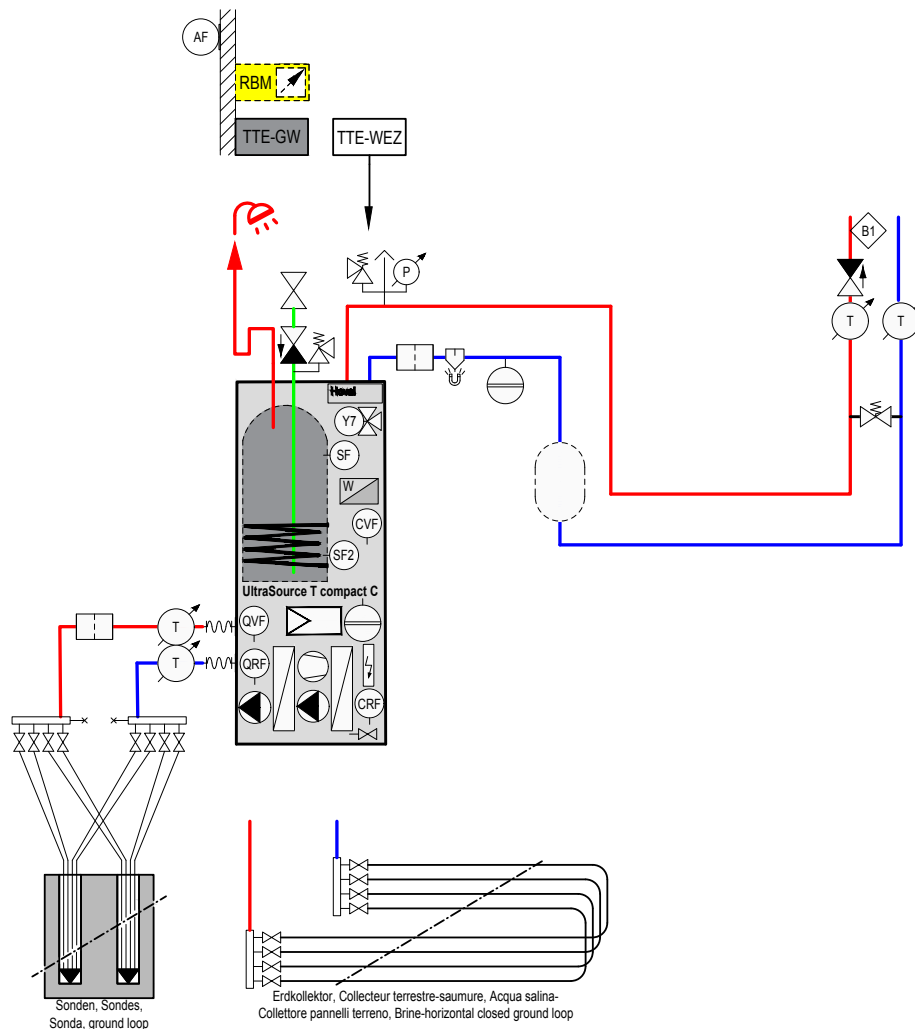
■ Examples

UltraSource T compact

Brine/water and water/water heat pump with

- Integrated calorifier
- Earth probes
- 1 direct circuit

Hydraulic schematic BBBEE010



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on site, dimensioning and local regulations.
- With underfloor heating, a flow temperature monitor must be installed.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install pockets to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
B1	Flow temperature monitor (if required)
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
Y7	Switching valve
<i>Option</i>	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

■ Description

Hoval Thermalia® comfort

Brine/water-water/water heat pump

- Brine/water-water/water heat pump in compact design with high energy efficiency for indoor installation. Extremely low-noise with triple-mounted construction
- Stable framework of galvanised sheet steel; with removable, powder-coated, sound-insulated side panels, colour brown red (RAL 3011)
- Sound-insulated plastic hood, colour flame red (RAL 3000)
- Safety valve incl. hose installed at the side of the heating
- Comprising a spiral (Scroll) compressor
- Electronic expansion valve
- Plate heat exchanger system of stainless steel
- Electronic starting current limiter with rotary field/phase monitoring.
- Speed-controlled, highly efficient heating and brine pump
- 3-way switch ball valve for heating and hot water
- Integrated brine pressure monitoring
- Brine pressure gauge and pressure valve incl. hose
- Brine expansion vessel 18 litres
- Hydraulic connections with flexible hoses, removable to the left, right or top:
 - comfort (6-13): 1" 2x 1 m top, 1" 2x 1.5 m bottom
 - comfort (17): 1 1/4" 2x 1.52 m top, 2x 1 m bottom
 - comfort H (7,10): 1" 1x 1 m resp. 1x 0.85 m top, 2x 1.75 m bottom
- Sound-insulating floor mat
- Refrigerant
 - Thermalia® comfort (6-17) with R410A
 - Thermalia® comfort H (7,10) with R134a
- Heat pump wired ready
- Temperatures and pressures of brine and refrigeration circuit available
- TopTronic® E controller installed



Thermalia® comfort

Water/water		Brine/water		Type	Refrigerant	Max. flow °C	Heat output	
35 °C	55 °C	35 °C	55 °C				B0W35 kW	W10W35 kW
A++	A++	A++	A+	(6)	R410A	62	5.8	7.1
A++	A++	A++	A+	(8)	R410A	62	7.6	9.6
A++	A++	A++	A++	(10)	R410A	62	10.6	12.7
A++	A++	A++	A++	(13)	R410A	62	13.4	17.5
A++	A++	A++	A++	(17)	R410A	62	17.2	22.3
A++	A++	A++	A++	H (7)	R134a	67	6.5	9.1
A++	A++	A++	A++	H (10)	R134a	67	9.1	12.8

Energy efficiency class of the compound system with control



The built-in high-efficiency pumps fulfil the Ecodesign requirements of 2015 with an EEI of ≤ 0.23.

Seal of approval FWS

The Thermalia® comfort (6-17), comfort H (7,10) series are certified by the seal of approval of the authorisation commission of Switzerland

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

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 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"

Electrical connections

Electrical connection selectable between lateral (left/right) or top

Delivery

Heat pump on pallet, plastic hood and floor plate separately packed. Hose sleeves, clamps and sensor set included separately

Option

- Drive motor for 3-way switch ball valve with flexible hose 1"
- internet connection

■ Part No.


**Brine/water-water/water heat pump
Hoval Thermalia® comfort**
Part No.

Brine/water-water/water heat pump with hermetic spiral (scroll) compressor for indoor installation with flexible connection pipes and built-in Hoval TopTronic® E control

Control functions integrated for

- 1 heating circuit with mixer
- 1 heating circuit without mixer
- 1 hot water loading circuit
- bivalent and cascade management
- Can be optionally expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion universal
 - module expansion heat accounting
- Can be optionally networked with a total of up to 16 controller modules (incl. solar module)

Delivery

- Compact device internally wired ready for installation
- Heat pump on pallet, plastic hood and floor plate separately packed
- Hose sleeves, clamps and sensor set included separately
- Flexible hoses (removable to the left, right or top)

Hoval Thermalia® comfort

Refrigerant R410A

Flow temperature max. 62 °C

Thermalia® comfort Type	Heat output	
	with B0W35 kW	with W10W35 kW
(6)	5.8	7.1
(8)	7.6	9.6
(10)	10.6	12.7
(13)	13.4	17.5
(17)	17.2	22.3

Energy efficiency class
see Description

7014 715
7014 716
7014 717
7014 718
7014 719

Hoval Thermalia® comfort H

Refrigerant R134a

Flow temperature max. 67 °C

Thermalia® comfort Type	Heat output	
	with B0W35 kW	with W10W35 kW
(7)	6.5	9.1
(10)	9.1	12.8

7014 721
7014 722

Suitable plate heat exchanger
see chapter "plate heat exchanger
for Hoval Thermalia®"

■ Part No.



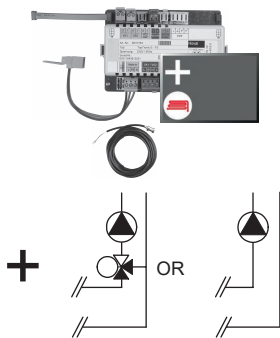
Accessories

Part No.

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.

Thermalia® comfort Type	Number of compressors	
(6)	1	2069 694
(8)	1	2069 695
(10)	1	2069 695
(13)	1	2069 696
(17)	1	2069 697
H (7)	1	2069 698
H (10)	1	2069 699

■ 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.

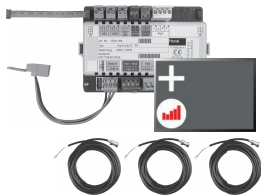
TopTronic® E module expansion heating circuit TTE-FE HK
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 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



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

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

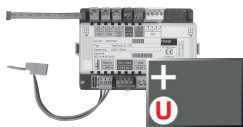
Plastic housing		
Size	Connection	Flow rate l/min
DN 8	G ¾"	0.9-15
DN 10	G ¾"	1.8-32
DN 15	G 1"	3.5-50
DN 20	G 1¼"	5-85
DN 25	G 1½"	9-150

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 1½"	14-240

6042 949
6042 950



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

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

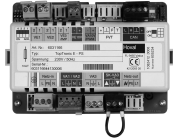
6034 575

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

Accessories for water heating



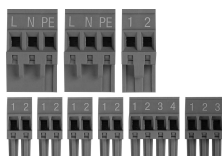
Hot water set
 for Thermalia® comfort (6-17),
 comfort H (7,10)
 Consisting of:
 Motor drive LRA 230A for integrated
 switching valve and flexible
 connecting hose 1"

6026 251



Screw-in electrical heating inset
 for plants with energy buffer storage tank
 as emergency heating.

Type	Heat output [kW]	Installation depth [mm]	
EP 2.5	2.35	390	6049 557
EP 3.5	3.6	500	6049 558
EP 5	4.9	620	6049 559
EP 7.5	7.5	850	6049 560



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

■ Part No.

Accessories

Part No.

Necessary at boiler room temperatures < 10 °C


Crankcase heater

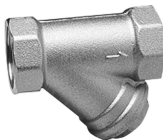
for Belaria® twin I, twin IR,
Thermalia® comfort, Thermalia® twin
for compressor protection
For Belaria® twin I, twin IR
2 pieces are necessary!

6019 718


Instantaneous water heater kit DN 50

from ready electrical box
for electrical protection incl.
assembly fittings.
for combination with all screw-in
heating inset EP.
Screw-in heaters must be
ordered separately.

6044 070


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


Sludge separator CS 25-1" with magnet

for flow rates of 1.0 - 2.0 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 1"
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: 1.21 kg

2063 735


Sludge separator CS 32-1¼" with magnet

for flow rates of 2.0 - 3.0 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 1¼"
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: 1.37 kg

2063 736

■ Part No.



Freeze protection concentrate
PowerCool DC 924-PXL
on basis propylene glycol
completely mixable with water
with corrosion protection
Frost protection: -20 °C with
40 % mixture ratio
Content plastic container: 10 kg

Part No.

2009 987



Float ball flow switch
area of application 300-3000 l/h,
0-80 °C, nominal pressure 10 bar
connection Rp 1½"
installed length 335 mm
bistable reed contact as
normally open contact

2040 707



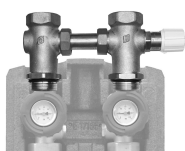
Float ball flow switch
area of application 600-6000 l/h,
0-80 °C, nominal pressure 10 bar
connection Rp 1½"
installed length 335 mm
bistable reed contact as
normally open contact

2040 708



Ground water pump kit SB-GWP
for Thermalia® comfort (6-17),
comfort H (7,10)
Contactor for actuation of a 3-phase
ground water pump.
Ready to connect without thermal
overload protection

6025 513



Bypass valve DN 32 (1¼")
for the installation in a HA group DN 32
Setting range 0.6-1.5 bar
Max. flow rate: 1.5 m³/h
with self-sealing screw connection for
mounting between flow and return
ball valve

6014 849

■ Part No.



Brine filling station in compact design DN 25
with shut-off valves,
filter and EPS insulation.
Application temperatures -20°C to +60°C
Frost protection max. 50 %
Connections DN 25 G 1", kvs 12.5
Max. operating pressure 1.0 MPa (10 bar)
Dirt screen integrated

Part No.

6037 537



Brine filling station in compact design DN 32
with shut-off valves,
filter and EPS insulation.
Application temperatures -20°C to +60°C
Frost protection max. 50 %
Connections DN 32 G 1¼", kvs 22
Max. operating pressure 1.0 MPa (10 bar)
Dirt screen integrated

6033 364



Immersion sensor TF/2P/2.5/6T, L = 2.5 m
for TopTronic® E controller modules/
module expansions with exception of
basic module district heating/fresh
water or basic module district heating
com, cable length: 2.5 m without plug
sensor sleeve diameter: 6 x 50 mm,
dewpoint-proof,
sensor may already be included in scope
of delivery of heat generator/controller
module/module expansion, operating
temperature: -20...105 °C, index of
protection: IP67

2056 789

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.

■ Technical data

Hoval Thermalia® comfort (6-17) with R410A

Type		(6)	(8)	(10)	(13)	(17)
Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C	SCOP	4.4/3.2	4.6/3.3	5.0/3.5	5.0/3.7	5.0/3.7
<i>Performance data acc. to EN 14511</i>						
• Heat output B0W35	kW ¹	5.83	7.56	10.58	13.36	17.18
• Power consumption B0W35	kW ¹	1.31	1.66	2.20	2.78	3.64
• Coefficient of performance B0W35	COP	4.45	4.55	4.81	4.81	4.72
• Heat output W10W35	kW ¹	7.11	9.63	12.71	17.52	22.34
• Power consumption W10W35	kW ¹	1.31	1.64	2.09	2.79	3.80
• Coefficient of performance W10W35	COP	5.43	5.87	6.08	6.28	5.88
• Operating weight	approx. kg	140	150	160	170	180
• Compressor type		1 x spiral (scroll), hermetic				
• Refrigerant filling R410A	kg	1.3	1.6	1.85	2.12	2.4
• Condenser/evaporator		Plate heat exchanger				
Material		Stainless steel V4A, AISI 316, 1.4401				
Piping connections with flex. connecting hose	G	1"	1"	1"	1"	1"
<i>Nominal volume flow and resistance brine/water heat pump</i>						
• <i>Heating</i> (ΔT = 5 K)	m³/h	1.01	1.30	1.82	2.30	2.96
ΔP Pressure drop condenser	kPa	6.2	6.7	8.3	9.2	10.2
Residual overpressure	kPa	69	68	57	67	62
• <i>Heat source</i> (ΔT = 3.5 K)	m³/h	1.26	1.65	2.34	2.96	3.78
ΔP Pressure drop evaporator (glycol)	kPa	11.3	12.9	16.5	20.4	16.2
Residual overpressure	kPa	60	63	55	94	98
<i>Nominal volume flow and resistance water/water heat pump</i>						
• <i>Heating</i> (ΔT = 5 K)	m³/h	1.23	1.66	2.19	3.02	3.85
ΔP Pressure drop condenser	kPa	9.2	10.9	11.9	15.8	14.1
Residual overpressure	kPa	62	55	45	59	52
• <i>Heat source</i> (ΔT = 5 K) ⁵	m³/h	1.0	1.38	1.83	2.54	2.84
ΔP Pressure drop evaporator	kPa	9.3	10.6	13.5	16.7	13.2
Residual overpressure	kPa	68	72	80	108	110
• Operating pressure max.						
- Water side	bar	6				
- Brine side	bar	6				
<i>Operating limit values</i>						
• <i>Ranges of application for heating and see diagrams.</i>						
• <i>Ranges of application for heating and hot water see diagrams</i>						
• Installation place operation ⁴	min./max.	°C		5/35		
Storage	min./max.	°C		-15/50		
Electrical data ³						
Voltage	V				3 x 400	
Frequency	Hz				50	
Voltage range	V				380-420	
Operating pressure compressor lmax	A	4.8	6.2	7.4	9.7	13.0
Starting current with starting current limiter ²	A	9.6	12.4	14.8	19.4	26.0
Principal current (external protection) with brine systems	A	13	13	13	13	16
	Type	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K
Principal current (external protection) with ground water systems	A	13	13	13	13	16
	Type	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
	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

¹ kW = Standard values according to EN 14511; Values for B0W35 with 25 % monopolypropylene

² Effective value

³ Values for electrical data apply for supply voltage of 3 x 400 V

⁴ <10 °C Crankcase heater is necessary

⁵ ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.
The pump regulates the volumetric current to the set temperature difference.

■ Technical data

Hoval Thermalia® comfort H (7,10) with R134a

Type		H (7)	H (10)
Seasonal coefficient of performance moderate climate 35 °C /55 °C	SCOP	4.7/3.5	4.9/3.7
<i>Performance data acc. to EN 14511</i>			
• Heat output B0W35	kW ¹	6.5	9.1
• Power consumption B0W35	kW ¹	1.4	2.0
• Coefficient of performance B0W35	COP	4.50	4.6
• Heat output W10W35	kW ¹	9.1	12.8
• Power consumption W10W35	kW ¹	1.6	2.1
• Coefficient of performance W10W35	COP	5.90	6.0
• Operating weight	approx. kg	160	180
• Compressor type		1 x spiral (scroll), hermetic	
• Refrigerant filling R134a	kg	2.75	3.4
• Condenser/evaporator		Plate heat exchanger	
Material		Stainless steel V4A, AISI 316, 1.4401	
Piping connections with flex. connecting hose	G	1"	1"
<i>Nominal volume flow and resistance brine/water heat pump</i>			
• Heating ($\Delta T = 5 \text{ K}$)	m³/h	1.14	1.61
ΔP Pressure drop condenser	kPa	6.0	7.0
Residual overpressure	kPa	69	63
• Heat source ($\Delta T = 3.5 \text{ K}$)	m³/h	1,47	2,07
ΔP Pressure drop evaporator	kPa	12,5	16,2
Residual overpressure	kPa	59	60
<i>Nominal volume flow and resistance water/water heat pump</i>			
• Heating ($\Delta T = 5 \text{ K}$)	m³/h	1.6	2.25
ΔP Pressure drop condenser	kPa	13.0	14.0
Residual overpressure	kPa	57	41
• Heat source ($\Delta T = 5 \text{ K}$) ⁵	m³/h	1.34	1.89
ΔP Pressure drop evaporator	kPa	7.49	9.7
Residual overpressure	kPa	68	70
• Operating pressure max.			
- Water side	bar	6	
- Brine side	bar	6	
Operating limit values			
• Ranges of application for heating see diagrams.			
• Ranges of application for heating and hot water see diagrams			
• Installation place operation ⁴	min./max.	°C	5/35
Storage	min./max.	°C	-15/50
Electrical data ³			
Voltage	V	3 x 400	
Frequency	Hz	50	
Voltage range	V	380-420	
Operating pressure compressor I _{max}	A	6.8	10.1
Starting current with starting current limiter ²	A	13.6	20.2
Principal current (external protection) with brine systems	A	13	13
Principal current (external protection) with ground water systems	Type	C,D,K	C,D,K
	A	13	13
Control current (external protection)	Type	C,D,K	C,D,K
	A	13	13
	Type	B,C,D,K,Z	B,C,D,K,Z

¹ kW = standard values according to EN 14511; values for B0W35 with 25 % monopolypropylene

² Effective value

³ Values for electrical data apply for supply voltage of 3 x 400 V

⁴ <10 °C crankcase heater is necessary

⁵ ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.
The pump regulates the volumetric current to the set temperature difference.

■ Technical data

Hoval Thermalia® comfort (6-17), comfort H (7,10)

Sound emission

The effective sound pressure level ¹ in the installation room is dependent on different factors like room size, absorptive capacity, reflection, free sound spreading etc.

Therefore it is important that the installation room lies, if possible, outside the noise-sensitive range and is supplied with sound-absorbing doors.

Ducts and pipes must be fixed to walls and ceiling in a way that no structure-borne sound is being transmitted to the system.

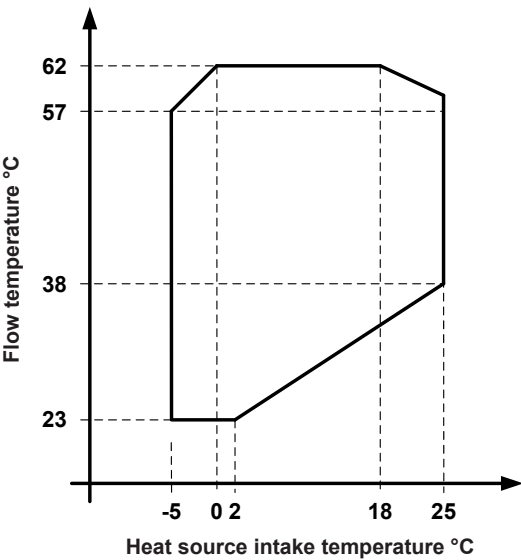
Thermalia® comfort (6-17)	(6)	(8)	(10)	(13)	(17)
Thermalia® comfort H			(7)		(10)
Sound power level dB(A)	45	46	46	49	50
Sound pressure level dB(A) ¹	35	35	36	37	38

¹ Sound pressure level, distance 1 m
(in standard room with approx. 5-6 dB(A) sound absorption)

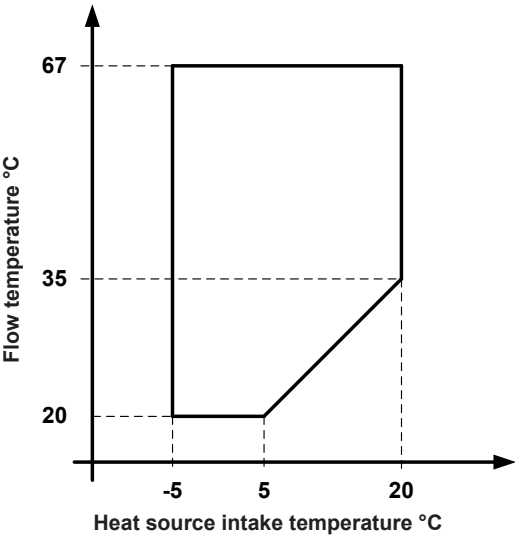
Diagrams range of application

Heating and hot water

Thermalia® comfort (6-17)



Thermalia® comfort H (7,10)

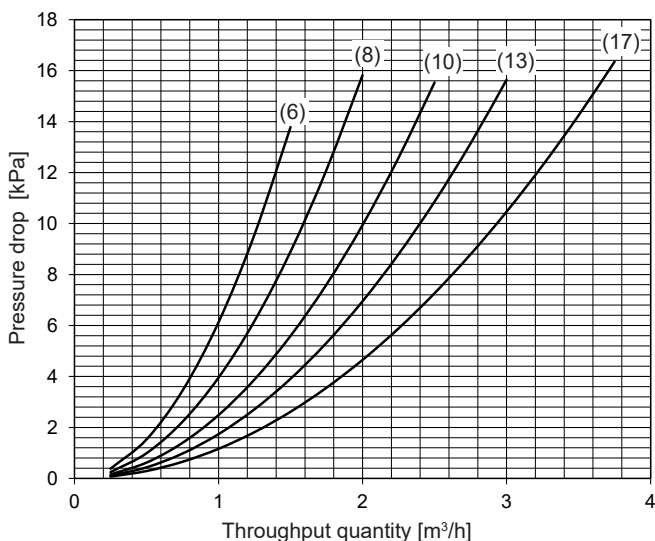


Technical data

Hoval Thermalia® comfort (6-17)

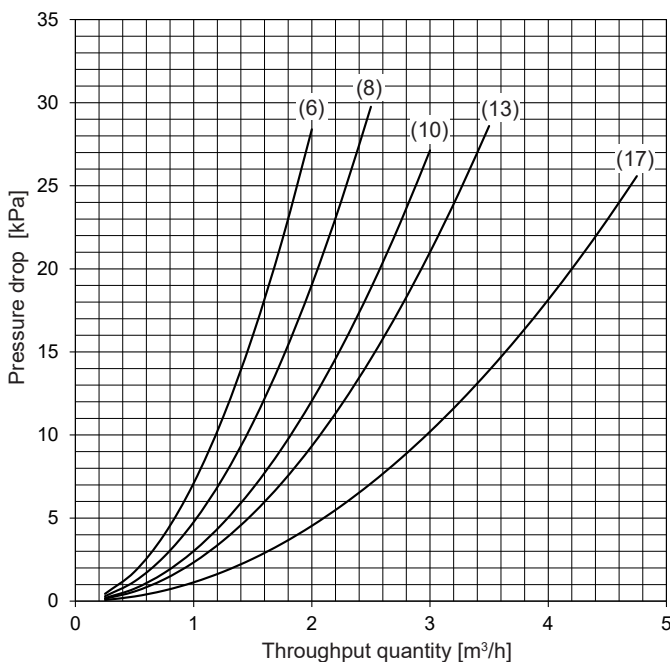
Heating

Pressure drop condenser with water



Heat source

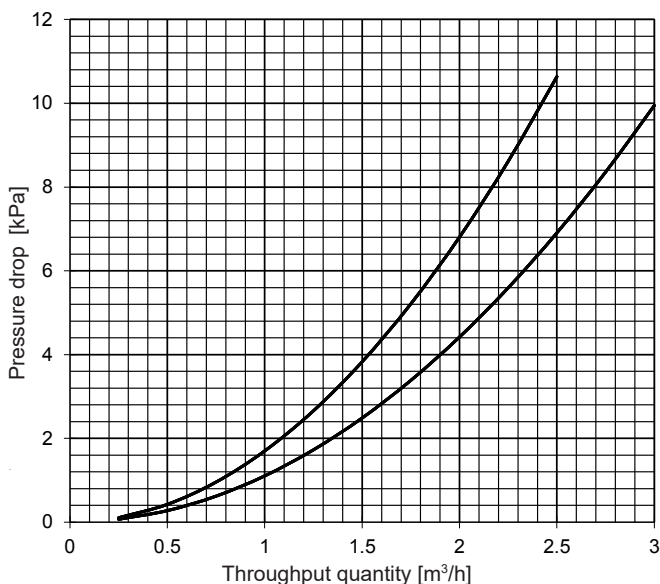
Pressure drop evaporator with ethylene glycol 25 % (Antifrogen N)



Hoval Thermalia® comfort H (7,10)

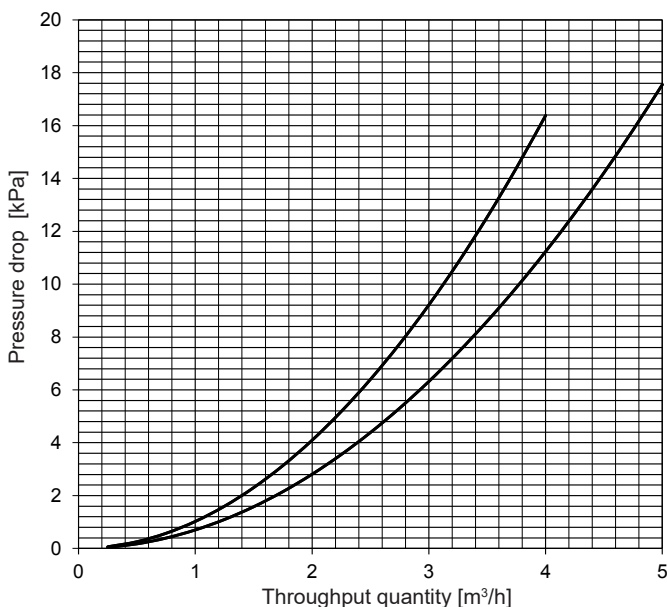
Heating

Pressure drop condenser with water



Heat source

Pressure drop evaporator with ethylene glycol 25 % (Antifrogen N)



Refrigeration capacity

$$Q_0 = Q - P$$

- Q_0 = Refrigeration capacity (kW)
- Q = Heat output (kW)
- P = Power consumption compressor (kW)
- Δt_2 = Temperature difference heat source supply/discharge (K)
- C = 0.86
- c_p = 0.89 (specific heat)
- γ = 1.05 (specific weight, density)

Volume flow evaporator

$$V = \frac{Q_0 \cdot c}{\Delta t_2 \cdot c_p \cdot \gamma} \quad (\text{m}^3/\text{h})$$

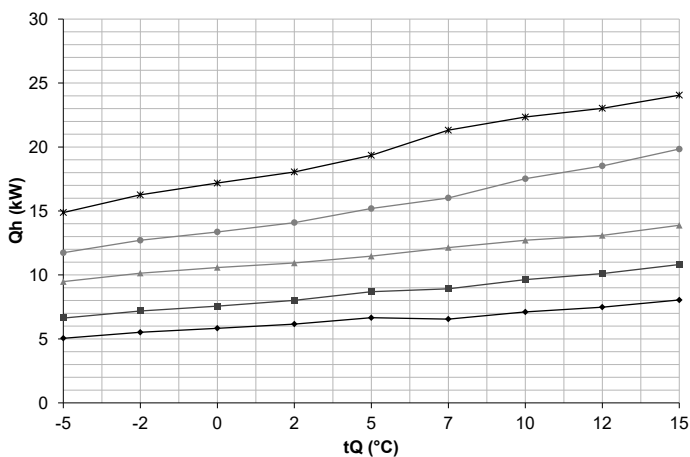
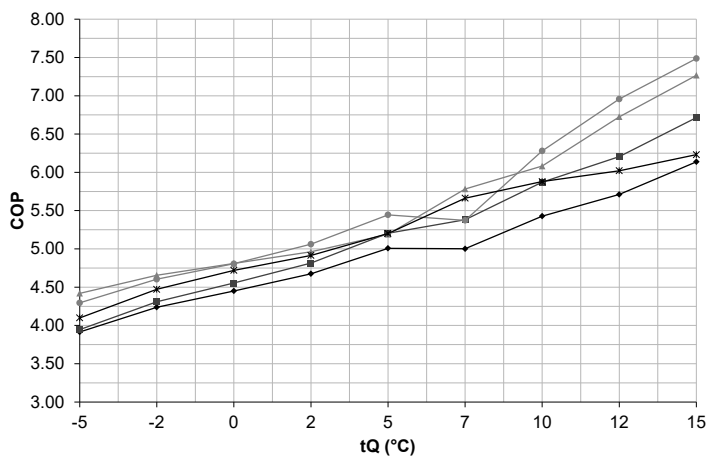
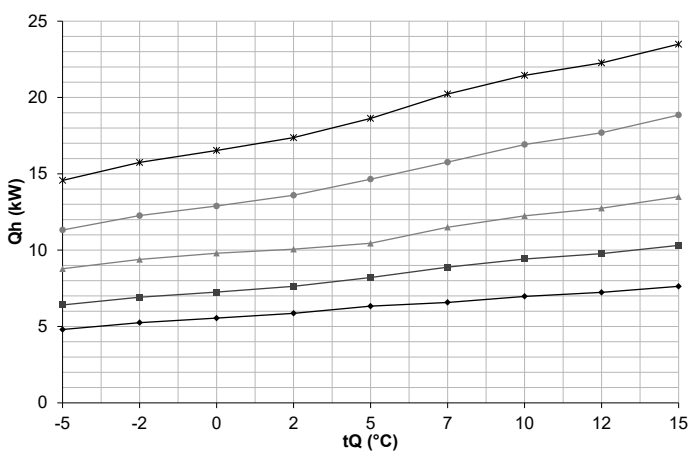
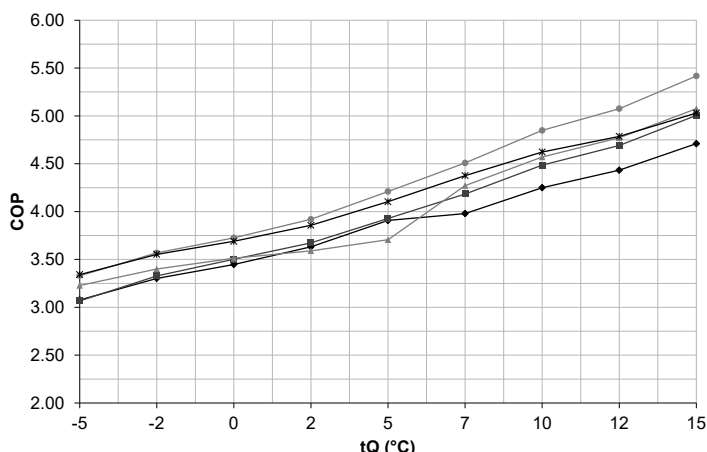
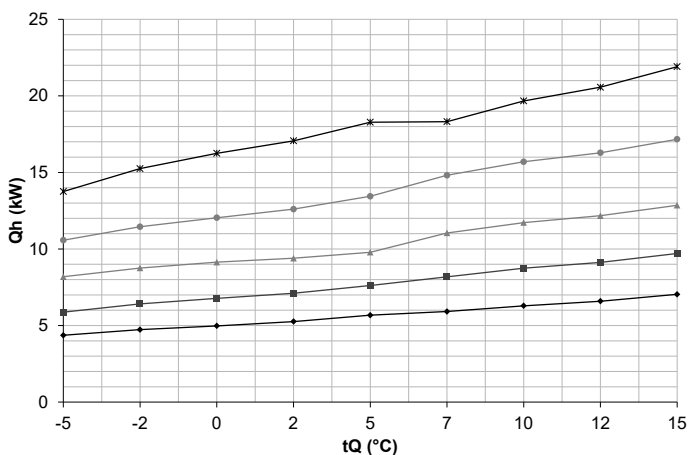
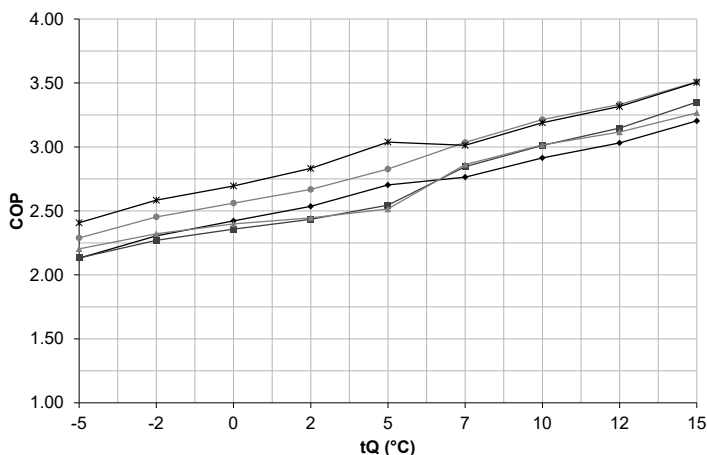
- Δp (kPa) = Pressure drop with frost protection (1 kPa = 0.1 mWC)
- Δp = $f \times \Delta P \times f$ Ethylene glycol % (Antifrogen N)
- 0.97 $\hat{=}$ 20 %
- 1 $\hat{=}$ 25 %
- 1.03 $\hat{=}$ 30 %
- Δp_w (kPa) = Pressure drop with water (1 kPa = 0.1 mWC)
- $\Delta p_w = \Delta P \times 0.89$

Technical data

Performance data - heating

Maximum heat output

Hoval Thermalia® comfort (6-17)

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} 62 °C

Output rating - t_{VL} 62 °C

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

 tQ = 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

- ◆ Thermalia® comfort (6)
- Thermalia® comfort (8)
- ▲ Thermalia® comfort (10)
- Thermalia® comfort (13)
- ✕ Thermalia® comfort (17)

Technical data

Performance data - heating

Hoval Thermalia® comfort (6-17)

Indications acc. to EN 14511

Type	tVL	tQ	Qh	(6)	COP	Qh	(8)	COP	Qh	(10)	COP	Qh	(13)	COP	Qh	(17)	COP
tVL	°C	°C	kW	P		kW	P		kW	P		kW	P		kW	P	
°C				kW			kW			kW			kW			kW	
30	Brine	-5	5.1	1.2	4.28	6.7	1.5	4.34	9.7	2.0	4.97	11.9	2.5	4.73	15.0	3.4	4.42
		-2	5.6	1.2	4.65	7.3	1.5	4.75	10.4	2.0	5.24	12.9	2.5	5.07	16.4	3.4	4.87
		0	5.9	1.2	4.90	7.7	1.5	5.03	10.8	2.0	5.41	13.5	2.6	5.29	17.4	3.4	5.18
		2	6.3	1.2	5.14	8.1	1.5	5.33	11.2	2.0	5.60	14.3	2.6	5.58	18.3	3.4	5.38
		5	6.8	1.2	5.49	8.9	1.5	5.78	11.8	2.0	5.89	15.4	2.6	6.00	19.6	3.4	5.68
	Water	7	6.5	1.2	5.47	8.9	1.5	5.95	12.4	1.9	6.49	16.1	2.7	5.97	21.7	3.5	6.23
		10	7.2	1.2	5.96	9.7	1.5	6.52	12.9	1.9	6.79	17.7	2.6	6.93	22.6	3.5	6.43
		12	7.6	1.2	6.29	10.2	1.5	6.92	13.2	1.7	7.75	18.8	2.4	7.87	23.3	3.5	6.56
		15	8.2	1.2	6.78	11.0	1.5	7.52	14.0	1.7	8.44	20.2	2.4	8.50	24.2	3.6	6.75
	Brine	-5	5.1	1.3	3.91	6.6	1.7	3.95	9.5	2.1	4.42	11.7	2.7	4.29	14.9	3.6	4.10
		-2	5.5	1.3	4.24	7.2	1.7	4.31	10.1	2.2	4.66	12.7	2.8	4.60	16.3	3.6	4.47
		0	5.8	1.3	4.45	7.6	1.7	4.55	10.6	2.2	4.81	13.4	2.8	4.81	17.2	3.6	4.72
		2	6.2	1.3	4.68	8.0	1.7	4.81	10.9	2.2	4.96	14.1	2.8	5.06	18.0	3.7	4.92
		5	6.7	1.3	5.01	8.7	1.7	5.20	11.5	2.2	5.19	15.2	2.8	5.44	19.4	3.7	5.20
	Water	7	6.6	1.3	5.00	8.9	1.7	5.38	12.1	2.1	5.78	16.0	3.0	5.37	21.3	3.8	5.66
		10	7.1	1.3	5.43	9.6	1.6	5.87	12.7	2.1	6.08	17.5	2.8	6.28	22.3	3.8	5.88
		12	7.5	1.3	5.71	10.1	1.6	6.21	13.1	1.9	6.73	18.5	2.7	6.96	23.0	3.8	6.02
		15	8.0	1.3	6.14	10.8	1.6	6.71	13.9	1.9	7.27	19.8	2.7	7.49	24.1	3.9	6.23
40	Brine	-5	4.9	1.4	3.46	6.5	1.9	3.46	9.1	2.4	3.75	11.5	3.1	3.76	14.7	4.0	3.69
		-2	5.4	1.4	3.72	7.1	1.9	3.76	9.8	2.5	3.95	12.5	3.1	4.03	16.0	4.0	3.97
		0	5.7	1.5	3.90	7.4	1.9	3.97	10.2	2.5	4.08	13.1	3.1	4.21	16.9	4.1	4.15
		2	6.0	1.5	4.10	7.8	1.9	4.18	10.5	2.5	4.19	13.8	3.1	4.43	17.7	4.1	4.33
		5	6.5	1.5	4.40	8.5	1.9	4.49	11.0	2.5	4.36	14.9	3.1	4.76	19.0	4.1	4.60
	Water	7	6.6	1.5	4.43	8.9	1.9	4.71	11.8	2.4	4.93	15.9	3.2	4.91	20.8	4.2	4.95
		10	7.0	1.5	4.77	9.5	1.9	5.09	12.5	2.4	5.23	17.2	3.1	5.48	21.9	4.2	5.19
		12	7.4	1.5	5.00	9.9	1.9	5.36	12.9	2.3	5.60	18.1	3.1	5.89	22.6	4.2	5.34
		15	7.8	1.5	5.35	10.6	1.8	5.75	13.7	2.3	5.99	19.3	3.1	6.31	23.8	4.3	5.57
	Brine	-5	4.8	1.6	3.08	6.4	2.1	3.07	8.8	2.7	3.23	11.3	3.4	3.33	14.6	4.4	3.34
		-2	5.3	1.6	3.30	6.9	2.1	3.33	9.4	2.8	3.40	12.3	3.4	3.57	15.7	4.4	3.55
		0	5.6	1.6	3.45	7.3	2.1	3.50	9.8	2.8	3.51	12.9	3.5	3.73	16.5	4.5	3.69
		2	5.9	1.6	3.63	7.6	2.1	3.67	10.1	2.8	3.59	13.6	3.5	3.92	17.4	4.5	3.86
		5	6.3	1.6	3.91	8.2	2.1	3.93	10.5	2.8	3.71	14.7	3.5	4.21	18.6	4.5	4.10
	Water	7	6.6	1.7	3.98	8.9	2.1	4.18	11.5	2.7	4.27	15.8	3.5	4.51	20.2	4.6	4.38
		10	7.0	1.6	4.25	9.4	2.1	4.49	12.3	2.7	4.57	16.9	3.5	4.85	21.5	4.6	4.62
		12	7.2	1.6	4.43	9.8	2.1	4.69	12.8	2.7	4.77	17.7	3.5	5.08	22.3	4.7	4.79
		15	7.6	1.6	4.71	10.3	2.1	5.00	13.5	2.7	5.08	18.9	3.5	5.42	23.5	4.7	5.03
50	Brine	-5	4.7	1.7	2.73	6.2	2.3	2.71	8.6	3.0	2.86	11.1	3.8	2.95	14.3	4.8	2.97
		-2	5.1	1.7	2.92	6.7	2.3	2.93	9.2	3.1	3.01	12.0	3.8	3.17	15.6	4.9	3.18
		0	5.4	1.8	3.04	7.1	2.3	3.07	9.6	3.1	3.11	12.6	3.8	3.30	16.4	5.0	3.32
		2	5.7	1.8	3.20	7.4	2.3	3.21	9.9	3.1	3.17	13.3	3.8	3.47	17.3	5.0	3.47
		5	6.2	1.8	3.44	8.0	2.3	3.42	10.3	3.1	3.27	14.3	3.9	3.71	18.6	5.0	3.69
	Water	7	6.4	1.8	3.54	8.6	2.4	3.63	11.4	3.0	3.74	15.5	3.9	3.97	19.6	5.1	3.83
		10	6.8	1.8	3.75	9.2	2.4	3.88	12.1	3.0	3.99	16.6	3.9	4.25	20.9	5.1	4.06
		12	7.1	1.8	3.90	9.5	2.4	4.05	12.6	3.0	4.15	17.3	3.9	4.43	21.7	5.2	4.20
		15	7.5	1.8	4.11	10.1	2.3	4.30	13.3	3.0	4.39	18.4	3.9	4.71	23.0	5.2	4.42
	Brine	-5	4.5	1.9	2.44	5.9	2.5	2.40	8.4	3.3	2.55	10.9	4.1	2.64	14.0	5.3	2.66
		-2	4.9	1.9	2.60	6.5	2.5	2.59	9.0	3.4	2.69	11.8	4.2	2.83	15.4	5.4	2.87
		0	5.2	1.9	2.70	6.9	2.5	2.72	9.4	3.4	2.78	12.4	4.2	2.96	16.3	5.4	3.01
		2	5.5	1.9	2.84	7.2	2.6	2.83	9.7	3.4	2.83	13.0	4.2	3.09	17.2	5.5	3.15
		5	6.0	2.0	3.05	7.8	2.6	3.00	10.1	3.5	2.92	13.9	4.2	3.30	18.5	5.5	3.35
	Water	7	6.3	2.0	3.18	8.4	2.6	3.19	11.2	3.4	3.33	15.2	4.3	3.53	19.0	5.6	3.39
		10	6.7	2.0	3.35	8.9	2.6	3.40	11.9	3.4	3.52	16.2	4.3	3.76	20.3	5.7	3.59
		12	6.9	2.0	3.46	9.3	2.6	3.54	12.4	3.4	3.65	16.9	4.3	3.91	21.1	5.7	3.72
		15	7.3	2.0	3.63	9.9	2.6	3.75	13.1	3.4	3.85	17.9	4.3	4.14	22.4	5.7	3.92
62	Brine	-5	4.4	2.0	2.13	5.9	2.8	2.13	8.2	3.7	2.20	10.6	4.6	2.29	13.8	5.7	2.41
		-2	4.7	2.1	2.31	6.4	2.8	2.27	8.8	3.8	2.32	11.5	4.7	2.45	15.3	5.9	2.58
		0	5.0	2.1	2.42	6.8	2.9	2.36	9.1	3.8	2.40	12.0	4.7	2.56	16.3	6.0	2.70
		2	5.3	2.1	2.54	7.1	2.9	2.43	9.4	3.8	2.45	12.6	4.7	2.67	17.1	6.0	2.83
		5	5.7	2.1	2.70	7.6	3.0	2.54	9.8	3.9	2.52	13.4	4.8	2.83	18.3	6.0	3.04
	Water	7	5.9	2.1	2.76	8.2	2.9	2.85	11.0	3.9	2.86	14.8	4.9	3.04	18.3	6.1	3.01
		10	6.3	2.2	2.91	8.7	2.9	3.01	11.7	3.9	3.02	15.7	4.9	3.21	19.7	6.2	3.19
		12	6.6	2.2	3.03	9.1	2.9	3.15	12.2	3.9	3.12	16.3	4.9	3.33	20.6	6.2	3.32
		15	7.0	2.2	3.20	9.7	2.9	3.35	12.9	3.9	3.27	17.2	4.9	3.51	21.9	6.2	3.51

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

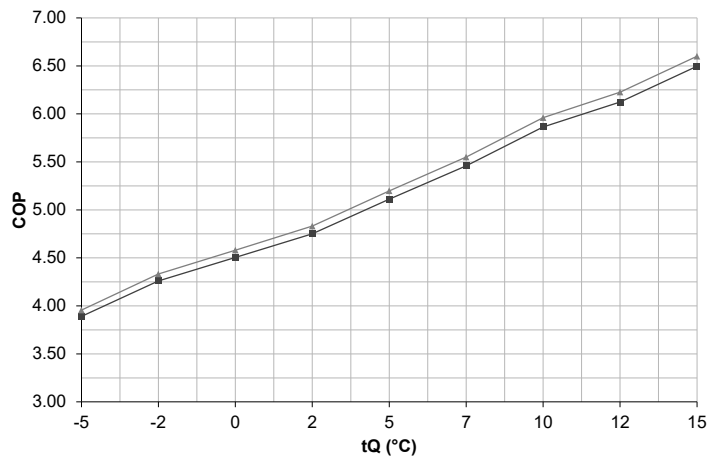
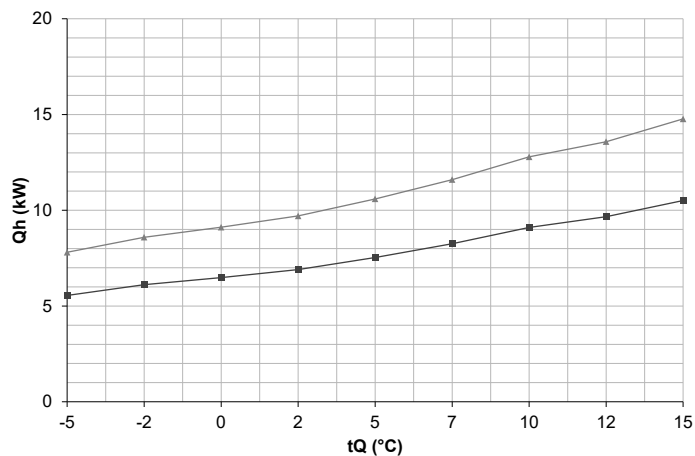
Technical data

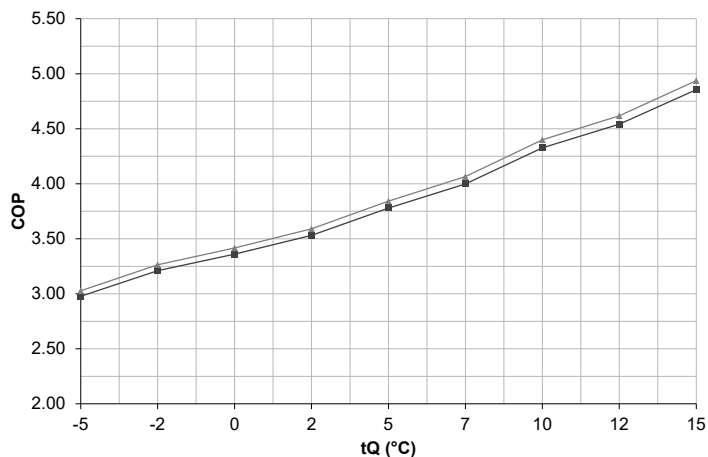
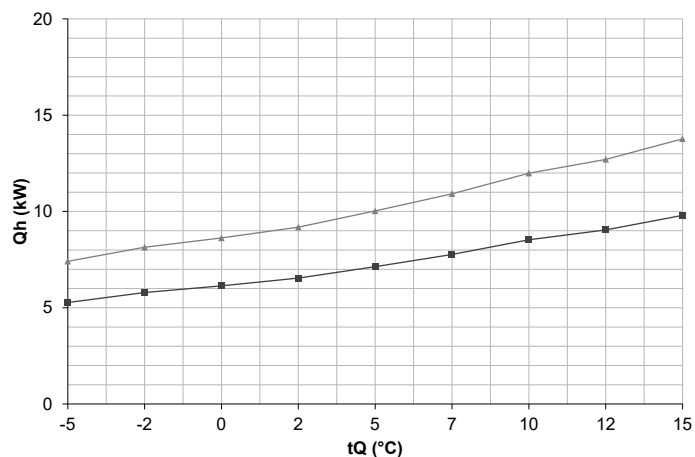
Performance data - heating

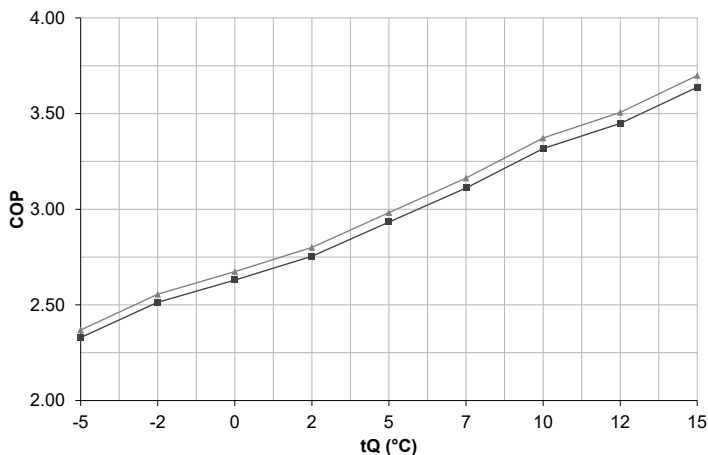
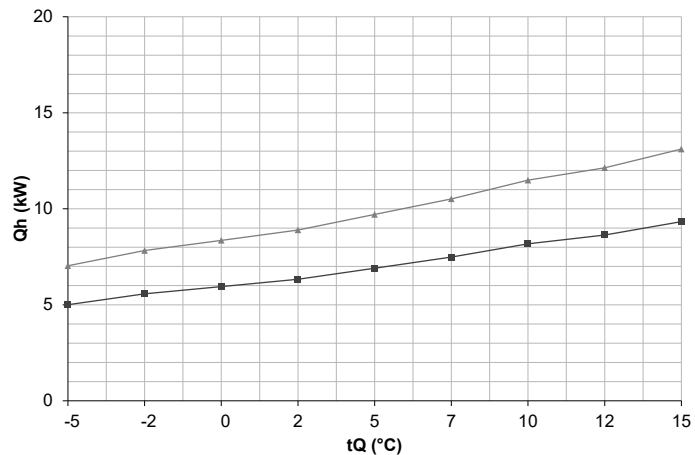
Maximum heat output

Hoval Thermalia® comfort H (7,10)

Heat output - t_{VL} 35 °C

Output rating - t_{VL} 35 °C

Heat output - t_{VL} 50 °C

Output rating - t_{VL} 50 °C

Heat output - t_{VL} 65 °C

Output rating - t_{VL} 65 °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

Thermalia® comfort H (7)
 Thermalia® comfort H (10)

■ Technical data

Performance data - heating

Hoval Thermalia® comfort H (7,10)

Indications acc. to EN 14511

Type tVL °C	tQ °C	Qh kW	H (7) P kW	COP	Qh kW	H (10) P kW	COP
30	Brine	-5	5.6	1.4	4.16	7.9	1.9
		-2	6.2	1.4	4.58	8.7	1.9
		0	6.6	1.4	4.86	9.2	1.9
		2	7.0	1.4	5.13	9.8	1.9
		5	7.6	1.4	5.53	10.7	1.9
	Water	7	8.4	1.4	5.92	11.8	2.0
		10	9.3	1.5	6.33	13.0	2.0
		12	9.8	1.5	6.59	13.8	2.1
		15	-	-	-	-	-
		15	-	-	-	-	-
35	Brine	-5	5.6	1.4	3.89	7.8	2.0
		-2	6.1	1.4	4.26	8.6	2.0
		0	6.5	1.4	4.50	9.1	2.0
		2	6.9	1.5	4.75	9.7	2.0
		5	7.5	1.5	5.11	10.6	2.0
	Water	7	8.3	1.5	5.46	11.6	2.1
		10	9.1	1.6	5.86	12.8	2.1
		12	9.7	1.6	6.12	13.6	2.2
		15	10.5	1.6	6.50	14.8	2.2
		15	-	-	-	-	-
40	Brine	-5	5.5	1.5	3.54	7.7	2.1
		-2	6.0	1.6	3.85	8.4	2.2
		0	6.3	1.6	4.05	8.9	2.2
		2	6.8	1.6	4.26	9.5	2.2
		5	7.4	1.6	4.58	10.4	2.2
	Water	7	8.1	1.7	4.86	11.3	2.3
		10	8.9	1.7	5.26	12.5	2.3
		12	9.4	1.7	5.52	13.2	2.4
		15	10.2	1.7	5.89	14.4	2.4
		15	-	-	-	-	-
45	Brine	-5	5.4	1.7	3.24	7.5	2.3
		-2	5.9	1.7	3.49	8.2	2.3
		0	6.2	1.7	3.66	8.7	2.3
		2	6.6	1.7	3.85	9.3	2.4
		5	7.2	1.7	4.13	10.1	2.4
	Water	7	7.9	1.8	4.36	11.1	2.5
		10	8.7	1.8	4.75	12.2	2.5
		12	9.2	1.8	5.00	12.9	2.5
		15	10.0	1.9	5.37	14.0	2.6
		15	-	-	-	-	-
50	Brine	-5	5.3	1.8	2.98	7.4	2.4
		-2	5.8	1.8	3.21	8.1	2.5
		0	6.1	1.8	3.36	8.6	2.5
		2	6.5	1.9	3.53	9.2	2.6
		5	7.1	1.9	3.78	10.0	2.6
	Water	7	7.8	1.9	4.00	10.9	2.7
		10	8.5	2.0	4.33	12.0	2.7
		12	9.0	2.0	4.54	12.7	2.8
		15	9.8	2.0	4.86	13.8	2.8
		15	-	-	-	-	-
55	Brine	-5	5.2	1.9	2.75	7.3	2.6
		-2	5.7	1.9	2.96	8.0	2.7
		0	6.1	2.0	3.10	8.5	2.7
		2	6.5	2.0	3.26	9.1	2.7
		5	7.1	2.0	3.48	9.9	2.8
	Water	7	7.7	2.1	3.68	10.8	2.9
		10	8.4	2.1	3.97	11.8	2.9
		12	8.9	2.1	4.15	12.5	3.0
		15	9.6	2.2	4.42	13.5	3.0
		15	-	-	-	-	-
62	Brine	-5	5.1	2.1	2.44	7.1	2.9
		-2	5.6	2.1	2.64	7.9	2.9
		0	6.0	2.2	2.76	8.4	3.0
		2	6.4	2.2	2.89	9.0	3.0
		5	7.0	2.3	3.08	9.8	3.1
	Water	7	7.5	2.3	3.27	10.6	3.2
		10	8.2	2.4	3.49	11.6	3.3
		12	8.7	2.4	3.64	12.2	3.3
		15	9.4	2.4	3.85	13.2	3.4
		15	-	-	-	-	-
65	Brine	-5	5.0	2.1	2.33	7.0	3.0
		-2	5.6	2.2	2.51	7.8	3.1
		0	5.9	2.3	2.63	8.4	3.1
		2	6.3	2.3	2.75	8.9	3.2
		5	6.9	2.4	2.93	9.7	3.3
	Water	7	7.5	2.4	3.11	10.5	3.3
		10	8.2	2.5	3.32	11.5	3.4
		12	8.6	2.5	3.45	12.1	3.5
		15	9.3	2.6	3.64	13.1	3.5
		25	-	-	-	-	-

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)

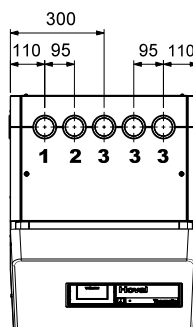
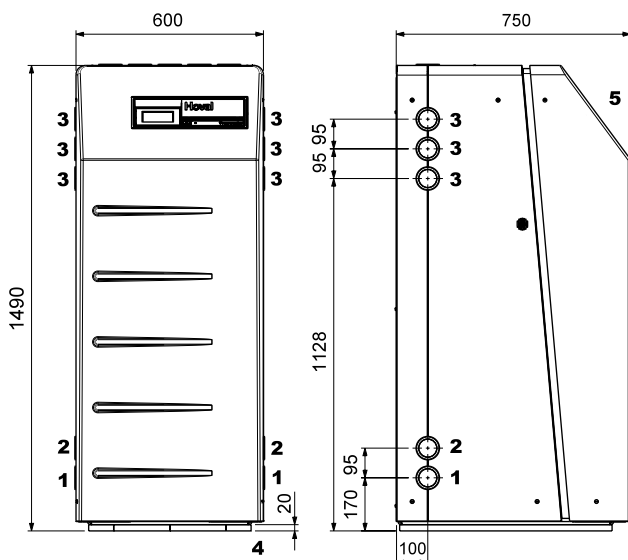
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Take account of daily power cuts!
see Engineering

■ Dimensions

Hoval Thermalia® comfort (6-17) and comfort H (7,10)

Dimensions in mm



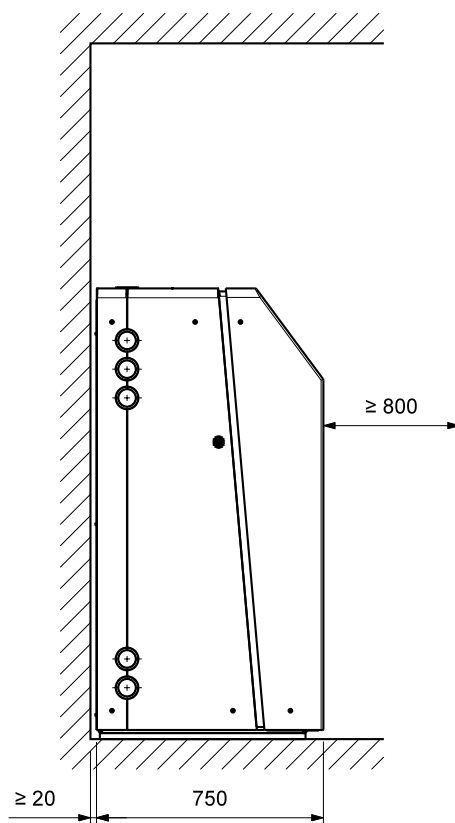
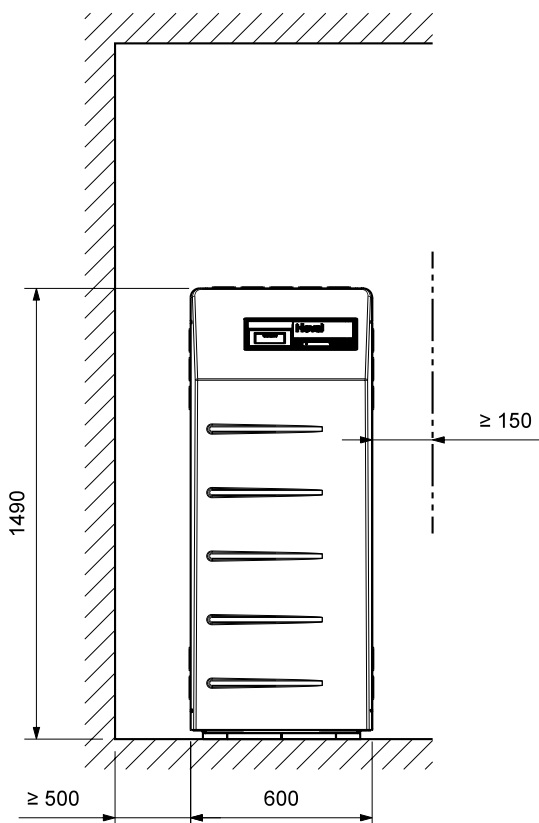
- 1 Heat source - outlet R1" (selectable lateral or above)
- 2 Heat source - inlet R1" (selectable lateral or above)
- 3 Openings freely selectable for:
 - heating flow R1"
 - heating return R1"
 - hot water R1" (left or above)
 - electrical connection
- 4 Vibration damping
- 5 Control panel

The 4 flexible hoses 1" can be extracted from the heat pump by at least 30 cm

Required space

(required wall distance in mm for operation and maintenance)

front	rear	right or left side
min. 800	min. 20	min. 500



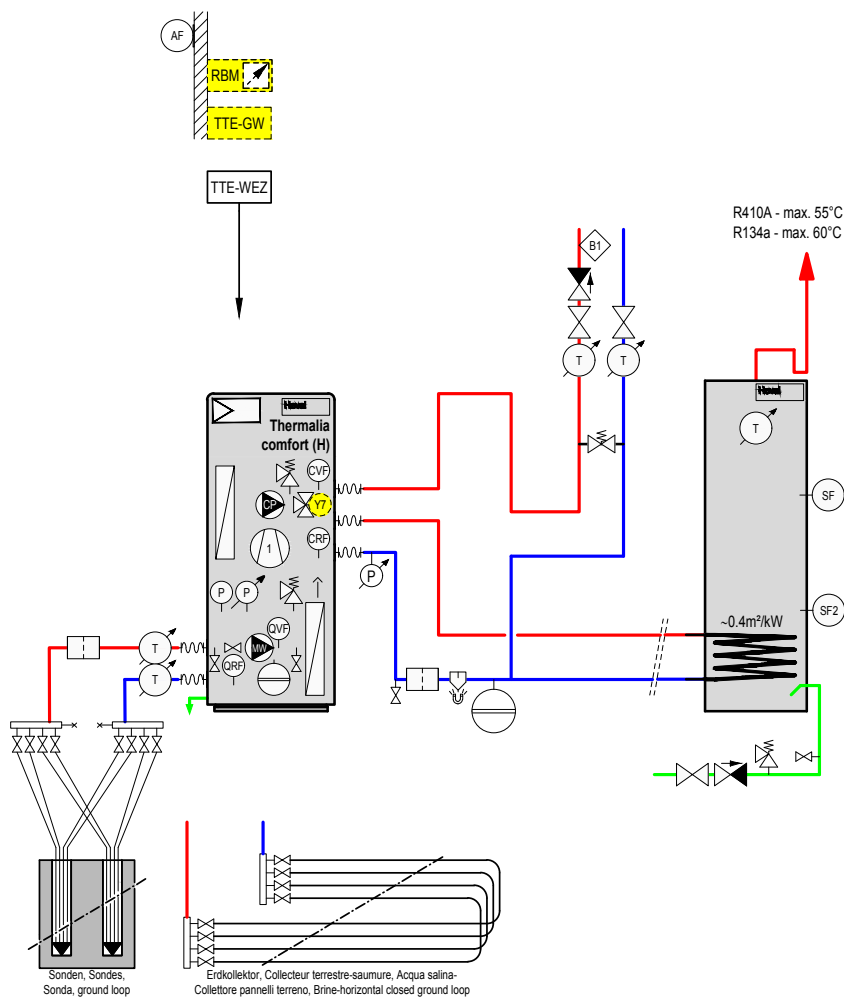
■ Examples

Thermalia® comfort (6-17), comfort H (7,10)

Brine/water-water/water heat pump with

- earth probes
- calorifier
- 1 direct circuit

Hydraulic schematic BBBAE020



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
B1	Flow temperature guard (if required)
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
Y7	Switching valve

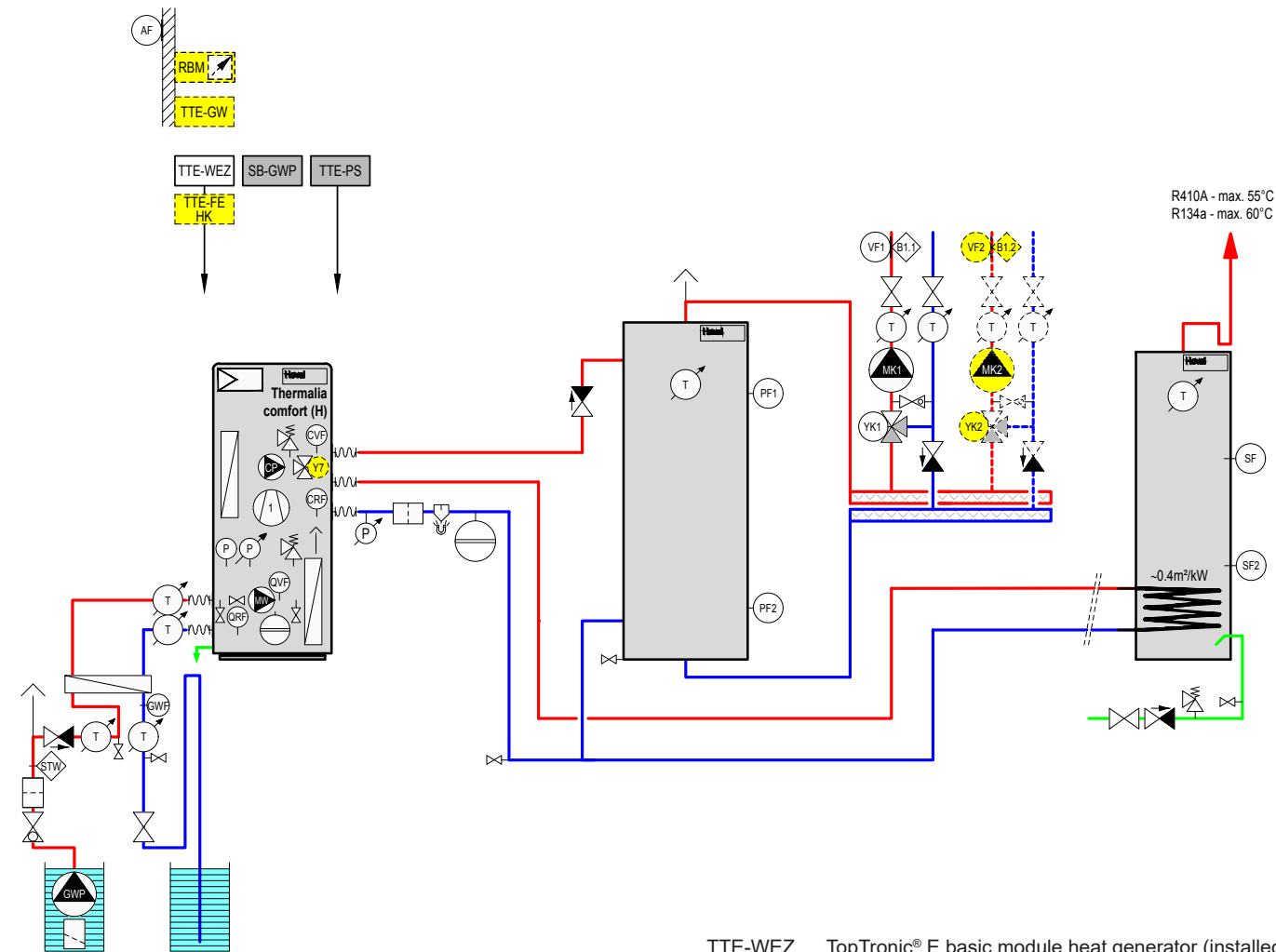
■ Examples

Thermalia® comfort (6-17), comfort H (7,10)

Brine/water-water/water heat pump with

- water/water - indirect utilisation
- energy buffer storage tank
- calorifier
- 1-... mixer circuit(s)

Hydraulic schematic BBBAE070



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
SB-GWP	System module ground water pump
TTE-PS	TopTronic® E buffer module
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
PF1	Buffer sensor 1
PF2	Buffer sensor 2
GWF	Frost controller
STW	Flow controller
GWP	Ground water pump

Option	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

Description

Hoval Thermalia® twin

Hoval Thermalia® twin H

Brine/water-water/water heat pump

- Brine/water-water/water heat pump with two output stages for indoor installation
- Compact unit with high energy efficiency
- Extremely low-noise with triple-mounted construction
- Stable framework of galvanised sheet steel; with removable, powder-coated, sound-insulated side panels, colour brown red (RAL 3011)
- Sound-insulated plastic hood, colour flame red (RAL 3000)
- Temperatures and pressures of brine and refrigeration circuit available
- 2 spiral (scroll) compressors
- Electronic expansion valve
- Plate heat exchanger system of stainless steel
- Electronic starting current limiter with rotary field/phase monitoring for each compressor
- Integrated brine pressure monitoring
- Hydraulic connections to the rear
- 4 flexible hoses incl. 90° bend (included separately)
Thermalia® twin (20,26): 1½" 4x 1 m
Thermalia® twin (35,42): 2" 4x 1 m
Thermalia® twin H (13-22): 1½" 4x 0.965 m
- Sound-insulating floor mat
- Refrigerant
Thermalia® twin (20-42) with R410A
Thermalia® twin H (13-22) with R134a
- Heat pump wired ready
- TopTronic® E controller installed

TopTronic® E controller

Control panel

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

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- 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



Thermalia® twin

Water/water		Brine/water		Type	Refrigerant	max. flow °C	Heat output	
35 °C	55 °C	35 °C	55 °C				B0W35 kW	W10W35 kW
A+++	A+++	A+++	A++	twin (20)	R410A	62	20.4	27.3
A+++	A+++	A+++	A++	twin (26)	R410A	62	26.2	35.1
A+++	A+++	A+++	A+++	twin (36)	R410A	62	35.3	46.4
A+++	A+++	A+++	A++	twin (42)	R410A	62	42.0	55.4
A+++	A+++	A+++	A++	twin H (13)	R134a	67	12.3	17.0
A+++	A+++	A+++	A++	twin H (19)	R134a	67	18.0	24.7
A+++	A+++	A+++	A++	twin H (22)	R134a	67	20.9	28.8

Energy efficiency class of the compound system with control



Seal of approval FWS

The Thermalia® twin (20-42) and twin H (13-22) 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 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"

Electrical connections

- Connection to the rear

Delivery

- Heat pump on pallet, plastic hood and floor plate separately packed
- Flexible hoses included
- Sensor set separately packed

Option

- Internet connection

■ Part No.

**Notice**

Suitable heat source and 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

**Brine/water-water/water heat pump
Hoval Thermalia® twin**

Part No.

Brine/water-water/water heat pump with
2 hermetic spiral (scroll) compressors for
indoor installation with flexible connection
pipes and built-in Hoval TopTronic® E control

Control functions integrated for

- 1 heating circuit with mixer
- 1 heating circuit without mixer
- 1 hot water loading circuit
- bivalent and cascade management
- Can be optionally expanded by max.
1 module expansion:
 - module expansion heating circuit or
 - module expansion universal
 - module expansion heat accounting
- Can be optionally networked with a
total of up to 16 controller modules
(incl. solar module)

Delivery

- Compact device internally
wired ready for installation
- Heat pump on pallet, plastic hood and
sound-insulating floor mat separately
packed.
- Flexible hoses included
- Sensor set separately packed

Hoval Thermalia® twin

Refrigerant R410A

Flow temperature max. 62 °C

Thermalia® twin Type	Heat output		
	with B0W35 kW	with W10W35 kW	
(20)	20.4	27.3	7014 725
(26)	26.2	35.1	7014 726
(36)	35.3	46.4	7014 727
(42)	42.0	55.4	7014 728

Hoval Thermalia® twin H

Refrigerant R134a

Flow temperature max. 67 °C

Thermalia® twin Type	Heat output		
	with B0W35 kW	with W10W35 kW	
(13)	12.3	17.0	7014 729
(19)	18.0	24.7	7014 730
(22)	20.9	28.8	7014 731

■ Part No.



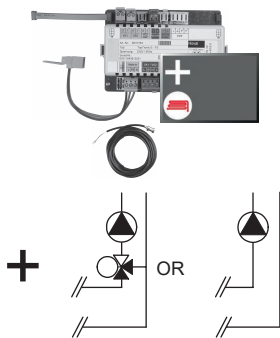
Accessories

Part No.

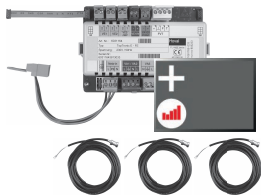
Sound attenuation cowl for compressor
for reducing the transmission of noise. In heat pumps with two compressors, it is mandatory for two sound attenuation cowls to be ordered.

Thermalia® twin Type	Number of compressors	
(20)	2	2069 695
(26)	2	2069 696
(36)	2	2069 697
(42)	2	2069 697
H (13)	2	2069 698
H (19)	2	2069 699
H (22)	2	2069 699

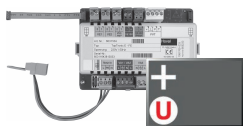
■ Part No.



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
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

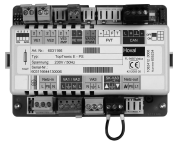
incl. fitting accessories

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

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.


Further information
see "Controls"

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

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

**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	Fitting	kvs	\dot{V} [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 2¾"	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

**Screw-in electrical heating inset**

for plants with technical storage tank as emergency heating.

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

**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

■ Part No.

Part No.

Necessary at boiler room temperatures < 10 °C


Crankcase heater

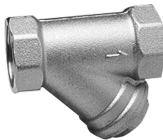
for Belaria® twin I, twin IR,
Thermalia® comfort, Thermalia® twin
for compressor protection
For Belaria® twin I, twin IR
2 pieces are necessary!

6019 718


Instantaneous water heater kit DN 50

from ready electrical box
for electrical protection incl.
assembly fittings.
for combination with all screw-in
heating inset EP.
Screw-in heaters must be
ordered separately.

6044 070


Strainer

Brass casing, PN 16
Max. operating temperature 110 °C
Sieve made of stainless steel,
Mesh size 0.5 mm

DN 25-1"

2046 978

DN 32-1¼"

2046 980

DN 40-1½"

2046 982

DN 50-2"

2046 984


Sludge separator CS 40-1½" 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

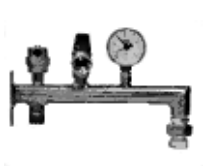
2063 737


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

■ Part No.



Safety group for brine circuit SI-Gr.
Retaining bar incl. safety valve,
pressure gauge, air vent and connection
fittings for expansion chambers

Part No.

2015 354



Expansion chamber
Reflex NG 25
for systems up to approx. 20 kW
Operating pressure: up to 6 bar
Pre-pressure: 1.5 bar
Ø 280 mm, H = 490 mm

242 791

Ground water accessories



Float ball flow switch
nominal pressure 10 bar
installed length 335 mm
bistable reed contact as
contact open, if there is no flow

Area of application l/h	°C	Connection
1500-15000	0-80	Rp 2"

2040 709



Ground water pump kit SB-GWP
for Thermalia® twin (20-42),
twin H (13-22)
Contactor for actuation of a 3-phase
ground water pump.
Ready to connect without thermal
overload protection

6041 092

■ Part No.



Brine filling station in compact design DN 25
with shut-off valves,
filter and EPS insulation.
Application temperatures -20°C to +60°C
Frost protection max. 50 %
Connections DN 25 G 1", kvs 12.5
Max. operating pressure 1.0 MPa (10 bar)
Dirt screen integrated

Part No.

6037 537



Brine filling station in compact design DN 32
with shut-off valves,
filter and EPS insulation.
Application temperatures -20°C to +60°C
Frost protection max. 50 %
Connections DN 32 G 1¼", kvs 22
Max. operating pressure 1.0 MPa (10 bar)
Dirt screen integrated

6033 364



Immersion sensor TF/2P/2.5/6T, L = 2.5 m
for TopTronic® E controller modules/
module expansions with exception of
basic module district heating/fresh
water or basic module district heating
com, cable length: 2.5 m without plug
sensor sleeve diameter: 6 x 50 mm,
dewpoint-proof,
sensor may already be included in scope
of delivery of heat generator/controller
module/module expansion, operating
temperature: -20...105 °C, index of
protection: IP67

2056 789



Freeze protection concentrate PowerCool DC 924-PXL
on basis propylene glycol
completely mixable with water
with corrosion protection
Frost protection: -20 °C with
40 % mixture ratio
Content plastic container: 10 kg

2009 987



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.

■ Technical data

Hoval Thermalia® twin (20-42) with R410A and Thermalia® twin H (13-22) with R134a

Type		(20)	(26)	(36)	(42)	H (13)	H (19)	H (22)
Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C	SCOP	5.2/3.6	5.2/3.6	5.4/3.9	5.3/3.6	4.7/3.4	4.6/3.5	4.9/3.5
<i>Performance data acc. to EN 14511</i>								
• Heat output B0W35	kW ¹	20.4	26.2	35.3	42.0	12.3	18.0	20.9
• Power consumption B0W35	kW ¹	4.2	5.5	7.1	8.8	2.7	4.1	4.6
• Performance B0W35	COP	4.89	4.79	4.96	4.76	4.48	4.42	4.58
• Heat output W10W35	kW ¹	27.3	35.1	46.4	55.4	17.0	24.7	28.8
• Power consumption W10W35	kW ¹	4.2	5.5	7.2	9.1	3.0	4.4	4.9
• Performance W10W35	COP	6.59	6.40	6.41	6.06	5.76	5.61	5.89
• Operating weight	approx. kg	280	286	298	310	273	283	293
• Compressor type		2 x spiral (scroll). hermetic						
• Refrigerant filling R410A	kg	6.5	7.1	8.2	9.0	-	-	-
• Refrigerant filling R134a	kg	-	-	-	-	4.8	5.9	6.5
• Condenser/evaporator		Plate heat exchanger						
Material		Stainless steel V4A, AISI 316, 1.4401						
Connections	R	1½"	1½"	2"	2"	2"	2"	2"
Piping connections with flex. connecting hose	Rp	1½"	1½"	2"	2"	2"	2"	2"
<i>Nominal volume flow and resistance brine/water heat pump</i>								
• <i>Heating</i> (Δ <i>t</i> = 7 <i>K</i>)	m³/h	2.5	3.3	4.4	5.2	1.6	2.3	2.7
Δ <i>P</i> Pressure drop condenser	kPa	5.3	7.3	5.0	5.3	1.6	2.0	2.3
• <i>Heat source</i> (Δ <i>t</i> = 3.5 <i>K</i>)	m³/h	5.0	6.3	8.1	10.2	3.3	4.7	5.6
Δ <i>P</i> Pressure drop evaporator	kPa	12	13	14	14	4.0	5.0	6.0
<i>Nominal volume flow and resistance water/water heat pump</i>								
• <i>Heating</i> (Δ <i>t</i> = 7 <i>K</i>)	m³/h	3.4	4.3	5.7	6.8	2.2	3.2	3.8
Δ <i>P</i> Pressure drop condenser	kPa	9.8	12.5	8.5	9.0	3.1	3.9	4.4
• <i>Heat source</i> (Δ <i>t</i> = 5 <i>K</i>) ⁵	m³/h	4.0	5.0	6.8	8.0	2.6	3.7	4.4
Δ <i>P</i> Pressure drop evaporator	kPa	5.0	5.5	6.5	6.0	2.4	3.0	3.6
• Operating pressure max.								
- Water side	bar	6						
- Brine side	bar	6						
• Operating limit values - <i>see diagram range of application</i>								
• Installation place operation ⁴	min./max.	°C	5/35					
Storage	min./max.	°C	-15/50					
Electrical data ³								
Voltage	V	3 x 400						
Frequency	Hz	50						
Voltage range	V	380-420						
• Operating pressure compressor I _{max}		13.1	16.9	24.0	29.3	9.4	13.3	15.8
• Starting current with starting current limiter ²		25.4	32.7	44.5	55.1	21.7	27.1	37.4
• Principal current (external protection) with brine systems	Type	16	20	32	32	16	16	20
• Principal current (external protection) with ground water systems		20	25	32	40	16	20	25
• Control current (external protection)		C,D,K	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K
		13	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	B,C,D,K,Z

¹ kW = standard values according to EN 14511; values for B0W35 with 25 % ethylene glycol (Antifrogen N)² Effective value, operating current compressor 1 + starting current with starting current limiter³ Values for electrical data apply for supply voltage of 3 x 400 V⁴ <10 °C crankcase heater necessary⁵ ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin. The pump regulates the volumetric current to the set temperature difference.

■ Technical data

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

Sound emission

The effective sound pressure level ¹ in the installation room is dependent on different factors like room size, absorptive capacity, reflection, free sound spreading etc.

Therefore it is important that the installation room lies, if possible, outside the noise-sensitive range and is supplied with sound-absorbing doors.

Ducts and pipes must be fixed to walls and ceiling in a way that no structure-borne sound is being transmitted to the system.

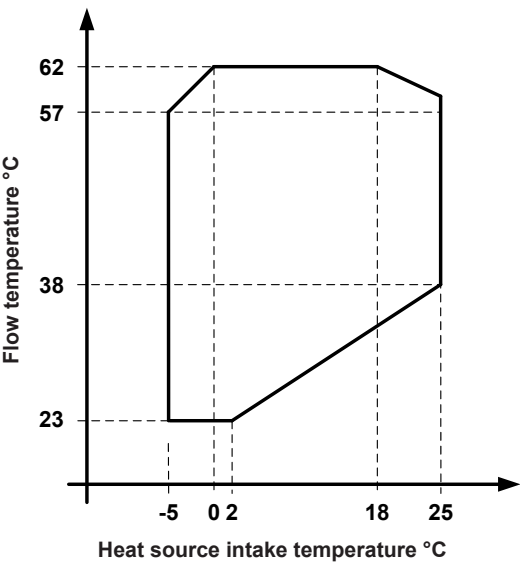
Thermalia® twin		(20)		(26)		(36)		(42)	
Thermalia® twin H		(13)		(19)		(22)			
Stage		1	2	1	2	1	2	1	2
Sound power level dB(A)	dB(A)	47	50	49	51	52	55	53	56
Sound pressure level dB(A) ¹	dB(A)	35	38	37	39	40	43	41	44

¹ Sound pressure level, distance 1 m (in standard room with approx. 5-6 dB(A) sound absorption)

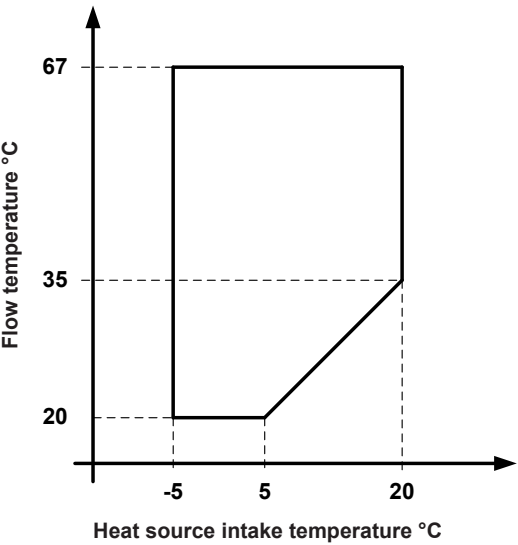
Diagrams range of application

Heating and hot water

Thermalia® twin (20-42)



Thermalia® twin H (13-22)



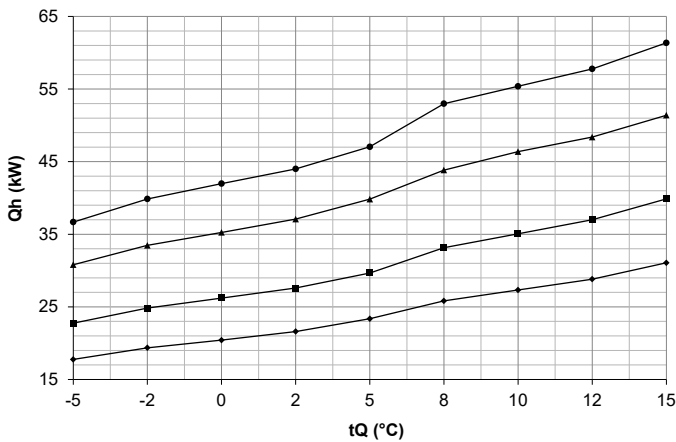
Technical data

Performance data - heating

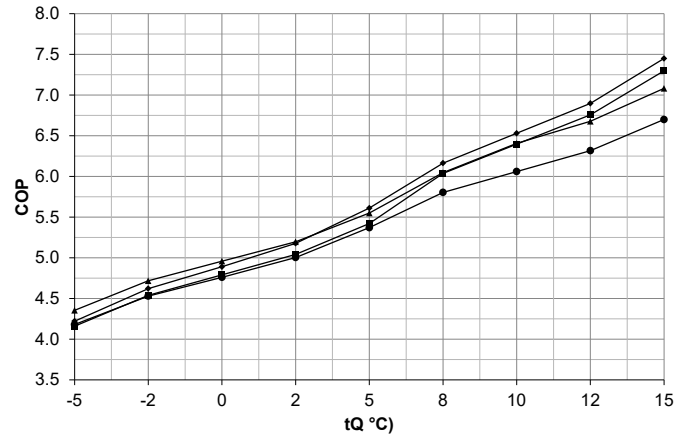
Maximum heat output

Hoval Thermalia® twin (20-42)

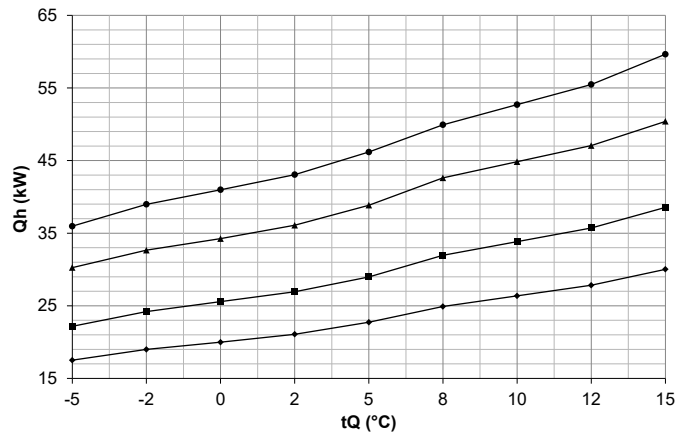
Heat output - t_{VL} 35 °C



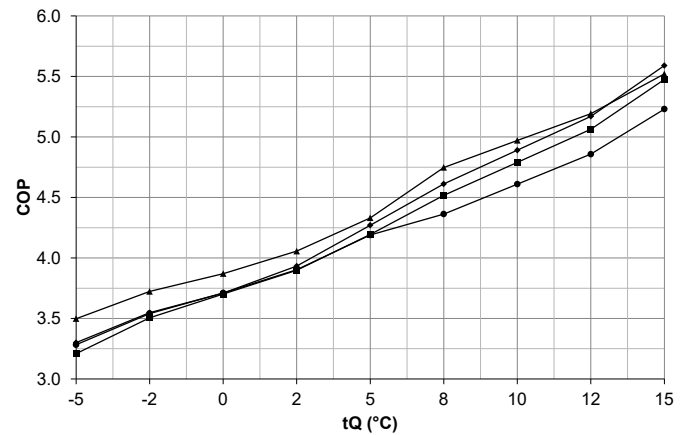
Output rating - t_{VL} 35 °C



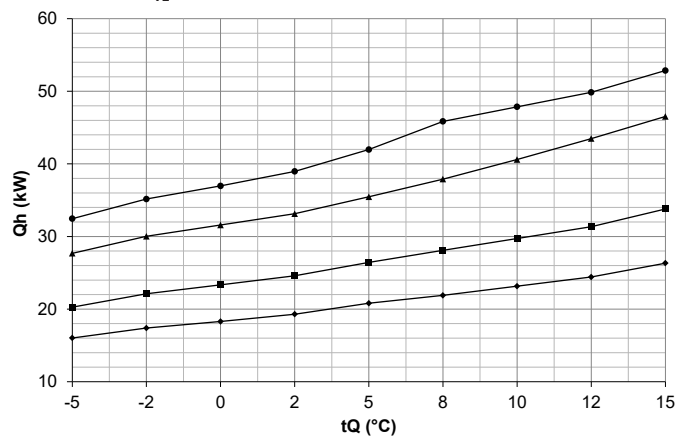
Heat output - t_{VL} 45 °C



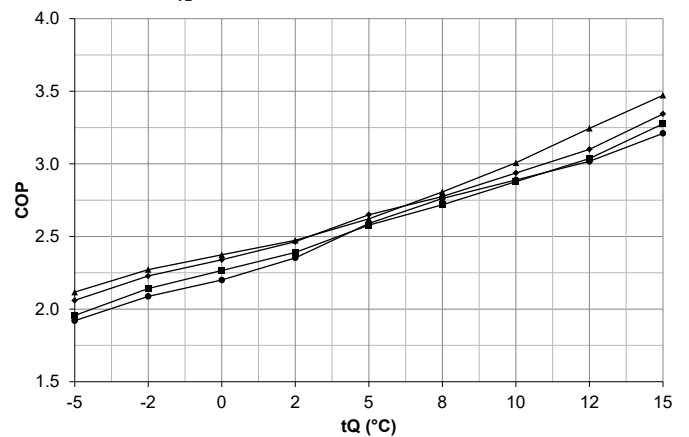
Output rating - t_{VL} 45 °C



Heat output - t_{VL} 60 °C



Output rating - t_{VL} 60 °C


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

 t_Q = source temperature (°C)

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

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

- ◆ Thermalia® twin (20)
- Thermalia® twin (26)
- ▲ Thermalia® twin (36)
- Thermalia® twin (42)

■ Technical data

Performance data - heating

Hoval Thermalia® twin (20-42)

Indications acc. to EN14511

Type	tVL	tQ	Qh	(20)	COP	Qh	(26)	COP	Qh	(36)	COP	Qh	(42)	COP
	°C	°C	kW	P		kW	P		kW	P		kW	P	
30	Brine	-5	18.1	3.7	4.85	23.3	4.9	4.77	31.4	6.3	4.96	36.8	7.9	4.68
		-2	19.8	3.7	5.32	25.4	4.9	5.22	34.2	6.3	5.42	40.3	7.9	5.11
		0	20.9	3.7	5.64	26.8	4.9	5.53	36.1	6.3	5.72	42.5	7.9	5.39
		2	22.0	3.7	5.97	28.2	4.8	5.84	38.0	6.3	6.03	44.8	7.9	5.68
	Water	5	23.8	3.7	6.47	30.4	4.8	6.30	40.8	6.3	6.48	48.1	7.9	6.12
		8	26.3	3.6	7.33	33.7	4.7	7.18	44.4	6.4	6.96	54.5	8.0	6.84
		10	27.8	3.6	7.76	35.7	4.7	7.61	47.2	6.4	7.43	56.7	8.0	7.10
		12	29.3	3.6	8.20	37.6	4.7	8.03	49.0	6.3	7.74	58.9	8.0	7.36
35	Brine	15	31.6	3.6	8.85	40.5	4.7	8.67	51.9	6.3	8.21	62.2	8.0	7.74
		-5	17.8	4.2	4.22	22.8	5.5	4.16	30.8	7.1	4.35	36.7	8.8	4.18
		-2	19.4	4.2	4.62	24.8	5.5	4.54	33.5	7.1	4.72	39.9	8.8	4.53
		0	20.4	4.2	4.89	26.2	5.5	4.79	35.3	7.1	4.96	42.0	8.8	4.76
	Water	2	21.6	4.2	5.18	27.6	5.5	5.04	37.1	7.1	5.20	44.0	8.8	5.00
		5	23.4	4.2	5.61	29.7	5.5	5.42	39.8	7.2	5.55	47.0	8.8	5.37
		8	25.8	4.2	6.16	33.1	5.5	6.04	43.8	7.3	6.05	53.0	9.1	5.80
		10	27.3	4.2	6.53	35.1	5.5	6.40	46.4	7.2	6.41	55.4	9.1	6.06
40	Brine	12	28.8	4.2	6.90	37.0	5.5	6.76	48.4	7.2	6.68	57.8	9.1	6.32
		15	31.1	4.2	7.45	39.9	5.5	7.30	51.4	7.3	7.08	61.4	9.2	6.70
		-5	17.6	4.8	3.71	22.5	6.2	3.63	30.5	7.9	3.88	36.3	9.9	3.68
		-2	19.2	4.8	4.02	24.5	6.2	3.96	33.1	7.9	4.17	39.4	9.9	3.98
	Water	0	20.2	4.8	4.23	25.9	6.2	4.18	34.8	8.0	4.35	41.5	9.9	4.18
		2	21.3	4.8	4.48	27.3	6.2	4.40	36.6	8.0	4.56	43.5	9.9	4.39
		5	23.0	4.7	4.86	29.3	6.2	4.74	39.3	8.1	4.87	46.6	9.9	4.71
		8	25.4	4.8	5.29	32.6	6.3	5.18	43.2	8.1	5.33	51.5	10.3	5.00
45	Brine	10	26.8	4.8	5.61	34.5	6.3	5.49	45.6	8.1	5.61	54.0	10.3	5.25
		12	28.3	4.8	5.92	36.4	6.3	5.80	47.7	8.2	5.85	56.6	10.3	5.51
		15	30.5	4.8	6.40	39.2	6.3	6.27	50.9	8.2	6.21	60.5	10.3	5.88
		-5	17.5	5.3	3.30	22.2	6.9	3.21	30.3	8.7	3.50	36.0	11.0	3.28
	Water	-2	19.0	5.4	3.55	24.2	6.9	3.50	32.7	8.8	3.72	39.0	11.0	3.54
		0	20.0	5.4	3.71	25.6	6.9	3.70	34.3	8.9	3.87	41.0	11.0	3.71
		2	21.1	5.4	3.93	26.9	6.9	3.90	36.1	8.9	4.06	43.1	11.0	3.90
		5	22.7	5.3	4.27	29.0	6.9	4.19	38.9	9.0	4.33	46.2	11.0	4.19
50	Brine	8	24.9	5.4	4.61	32.0	7.1	4.52	42.6	9.0	4.75	49.9	11.4	4.36
		10	26.4	5.4	4.89	33.8	7.1	4.79	44.8	9.0	4.97	52.7	11.4	4.61
		12	27.8	5.4	5.17	35.7	7.1	5.06	47.1	9.1	5.19	55.5	11.4	4.86
		15	30.0	5.4	5.59	38.5	7.0	5.48	50.4	9.1	5.52	59.6	11.4	5.23
	Water	-5	17.0	6.0	2.84	21.8	7.8	2.78	29.6	9.6	3.07	34.5	12.5	2.75
		-2	18.4	6.0	3.06	23.6	7.8	3.03	32.1	9.7	3.30	37.4	12.6	2.97
		0	19.4	6.1	3.20	24.9	7.8	3.20	33.8	9.8	3.45	39.4	12.6	3.12
		2	20.4	6.1	3.38	26.1	7.7	3.37	35.2	9.8	3.60	41.6	12.6	3.31
55	Brine	5	22.0	6.0	3.65	28.0	7.7	3.63	37.2	9.7	3.84	44.7	12.4	3.59
		8	24.0	6.1	3.92	30.8	8.0	3.84	42.1	10.1	4.18	48.7	13.0	3.76
		10	25.4	6.1	4.15	32.6	8.0	4.07	44.2	10.1	4.36	51.3	12.9	3.96
		12	26.8	6.1	4.39	34.4	8.0	4.30	46.3	10.2	4.55	53.8	12.9	4.17
	Water	15	28.9	6.1	4.74	37.1	8.0	4.64	49.5	10.3	4.83	57.6	12.9	4.47
		-5	16.4	6.6	2.47	21.4	8.8	2.44	29.0	10.6	2.73	33.0	14.1	2.34
		-2	17.8	6.7	2.66	23.1	8.7	2.65	31.6	10.7	2.95	35.9	14.2	2.53
		0	18.8	6.7	2.79	24.2	8.6	2.80	33.3	10.8	3.10	37.9	14.2	2.66
60	Brine	2	19.8	6.7	2.94	25.3	8.6	2.95	34.2	10.6	3.22	40.1	14.1	2.84
		5	21.3	6.7	3.16	26.9	8.5	3.18	35.6	10.4	3.41	43.3	13.9	3.12
		8	23.1	6.9	3.37	29.7	9.0	3.30	41.5	11.2	3.72	47.5	14.5	3.28
		10	24.5	6.9	3.57	31.4	9.0	3.50	43.6	11.2	3.88	49.9	14.5	3.45
	Water	12	25.8	6.9	3.77	33.2	9.0	3.69	45.6	11.3	4.04	52.2	14.4	3.62
		15	27.9	6.8	4.07	35.8	9.0	3.99	48.6	11.4	4.28	55.7	14.4	3.87
		-5	16.0	7.8	2.06	20.3	10.4	1.96	27.7	13.1	2.12	32.5	16.9	1.92
		-2	17.4	7.8	2.23	22.1	10.3	2.14	30.0	13.2	2.27	35.2	16.8	2.09

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

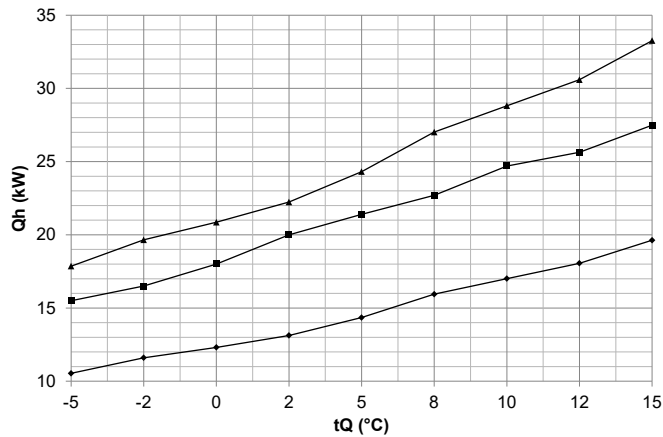
Technical data

Performance data - heating

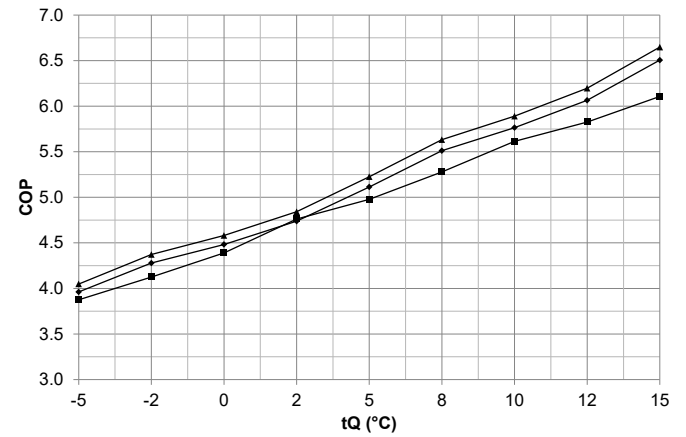
Maximum heat output

Hoval Thermalia® twin H (13-22)

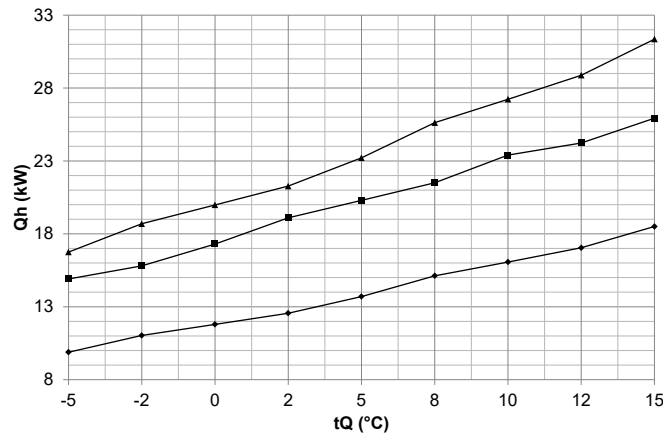
Heat output - t_{VL} 35 °C



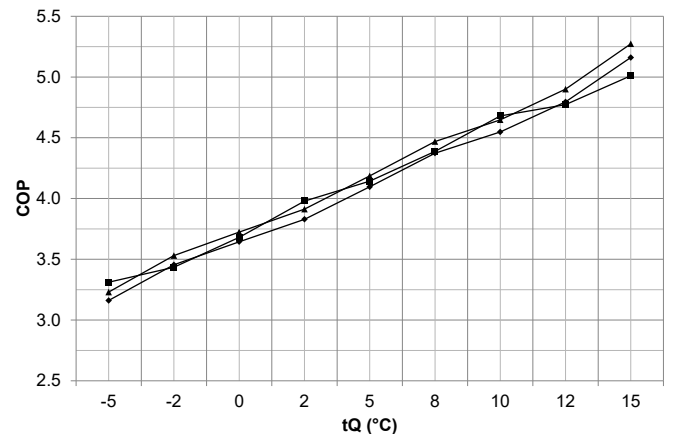
Output rating - t_{VL} 35 °C



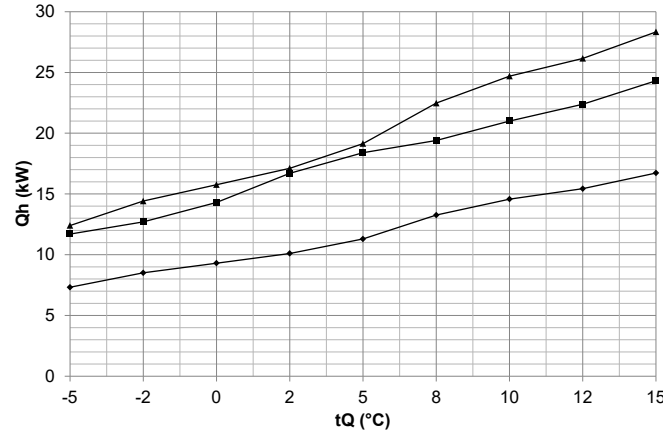
Heat output - t_{VL} 45 °C



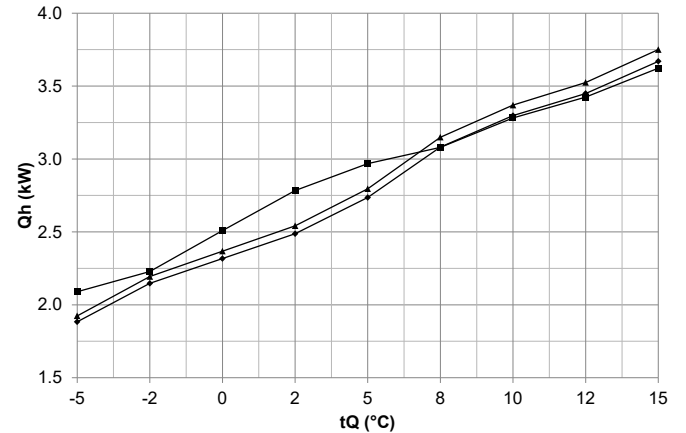
Output rating - t_{VL} 45 °C



Heat output - t_{VL} 60 °C



Output rating - t_{VL} 60 °C


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

 t_Q = source temperature (°C)

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

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

◆ Thermalia® twin H (13)
 ■ Thermalia® twin H (19)
 ▲ Thermalia® twin H (22)

Technical data

Performance data - heating

Hoval Thermalia® twin H (13-22)

Indications acc. to EN14511

Type		tQ °C	H (13)			H (19)			H (22)		
			tQ °C	Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW
30	Brine	-5	10.9	2.4	4.48	15.8	3.5	4.51	18.4	4.0	4.58
		-2	11.9	2.5	4.81	16.8	3.7	4.54	20.1	4.1	4.92
		0	12.6	2.5	5.03	18.4	3.7	4.97	21.3	4.1	5.14
		2	13.4	2.5	5.33	20.5	3.8	5.39	22.7	4.2	5.45
	Water	5	14.7	2.5	5.78	22.0	3.9	5.64	24.9	4.2	5.91
		8	16.4	2.6	6.27	24.0	4.0	5.96	27.7	4.3	6.40
		10	17.5	2.7	6.57	25.3	4.0	6.33	29.6	4.4	6.72
		12	-	-	-	-	-	-	-	-	-
35	Brine	15	-	-	-	-	-	-	-	-	-
		-5	10.5	2.7	3.96	15.5	4.0	3.87	17.9	4.4	4.05
		-2	11.6	2.7	4.28	16.5	4.0	4.09	19.7	4.5	4.37
		0	12.3	2.7	4.48	18.0	4.1	4.42	20.9	4.6	4.58
	Water	2	13.1	2.8	4.74	20.0	4.2	4.76	22.2	4.6	4.84
		5	14.3	2.8	5.11	21.4	4.3	4.98	24.3	4.7	5.23
		8	15.9	2.9	5.51	22.7	4.3	5.24	27.0	4.8	5.63
		10	17.0	3.0	5.76	24.7	4.4	5.61	28.8	4.9	5.89
40	Brine	12	18.1	3.0	6.06	25.6	4.4	5.83	30.6	4.9	6.20
		15	19.6	3.0	6.51	27.5	4.5	6.11	33.3	5.0	6.65
		-5	10.2	2.9	3.53	15.1	4.4	3.43	17.3	4.8	3.61
		-2	11.3	3.0	3.83	16.1	4.4	3.66	19.2	4.9	3.92
	Water	0	12.1	3.0	4.03	17.6	4.5	3.91	20.4	5.0	4.12
		2	12.8	3.0	4.25	19.5	4.6	4.24	21.8	5.0	4.34
		5	14.0	3.1	4.56	20.8	4.7	4.43	23.8	5.1	4.66
		8	15.5	3.2	4.89	22.0	4.8	4.58	26.3	5.3	5.00
45	Brine	10	16.5	3.2	5.10	24.0	4.8	5.00	28.0	5.4	5.21
		12	17.5	3.3	5.37	25.1	4.9	5.13	29.7	5.4	5.49
		15	19.1	3.3	5.77	26.8	5.0	5.36	32.3	5.5	5.90
		-5	9.9	3.1	3.16	14.9	4.5	3.31	16.8	5.2	3.23
	Water	-2	11.0	3.2	3.45	15.8	4.6	3.43	18.7	5.3	3.53
		0	11.8	3.2	3.64	17.3	4.7	3.68	20.0	5.4	3.72
		2	12.6	3.3	3.83	19.1	4.8	3.98	21.3	5.4	3.91
		5	13.7	3.3	4.10	20.3	4.9	4.14	23.2	5.5	4.19
50	Brine	8	15.1	3.5	4.37	21.5	4.9	4.39	25.6	5.7	4.47
		10	16.1	3.5	4.55	23.4	5.0	4.68	27.2	5.9	4.65
		12	17.0	3.6	4.79	24.2	5.1	4.77	28.9	5.9	4.90
		15	18.5	3.6	5.16	25.9	5.2	5.01	31.4	5.9	5.27
	Water	-5	9.0	3.4	2.67	13.8	4.9	2.82	15.3	5.6	2.73
		-2	10.2	3.4	2.95	14.8	4.9	3.02	17.3	5.7	3.02
		0	11.0	3.5	3.14	16.3	5.0	3.26	18.6	5.8	3.20
		2	11.7	3.5	3.32	18.3	5.2	3.52	19.9	5.9	3.39
55	Brine	5	12.9	3.6	3.58	19.7	5.3	3.72	21.9	6.0	3.66
		8	14.5	3.7	3.88	20.8	5.4	3.85	24.6	6.2	3.96
		10	15.6	3.8	4.07	22.6	5.4	4.19	26.4	6.3	4.16
		12	16.5	3.9	4.27	23.6	5.5	4.27	28.0	6.4	4.37
	Water	15	17.9	3.9	4.58	25.4	5.6	4.54	30.3	6.5	4.68
		-5	8.2	3.6	2.25	12.8	5.2	2.46	13.9	6.0	2.30
		-2	9.3	3.7	2.52	13.8	5.3	2.60	15.8	6.1	2.58
		0	10.1	3.8	2.70	15.3	5.4	2.83	17.2	6.2	2.76
60	Brine	2	10.9	3.8	2.87	17.5	5.6	3.13	18.5	6.3	2.94
		5	12.1	3.9	3.13	19.0	5.7	3.33	20.5	6.4	3.20
		8	13.9	4.0	3.45	20.1	5.8	3.47	23.5	6.7	3.53
		10	15.1	4.1	3.65	21.8	5.9	3.69	25.5	6.8	3.73
	Water	12	16.0	4.2	3.83	23.0	6.0	3.82	27.1	6.9	3.92
		15	17.3	4.2	4.09	24.8	6.2	4.03	29.3	7.0	4.18
		-5	7.3	3.9	1.88	11.7	5.6	2.09	12.4	6.4	1.92
		-2	8.5	4.0	2.15	12.7	5.7	2.23	14.4	6.6	2.19

tVL = heating flow temperature (°C)

tQ = source temperature (°C)

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

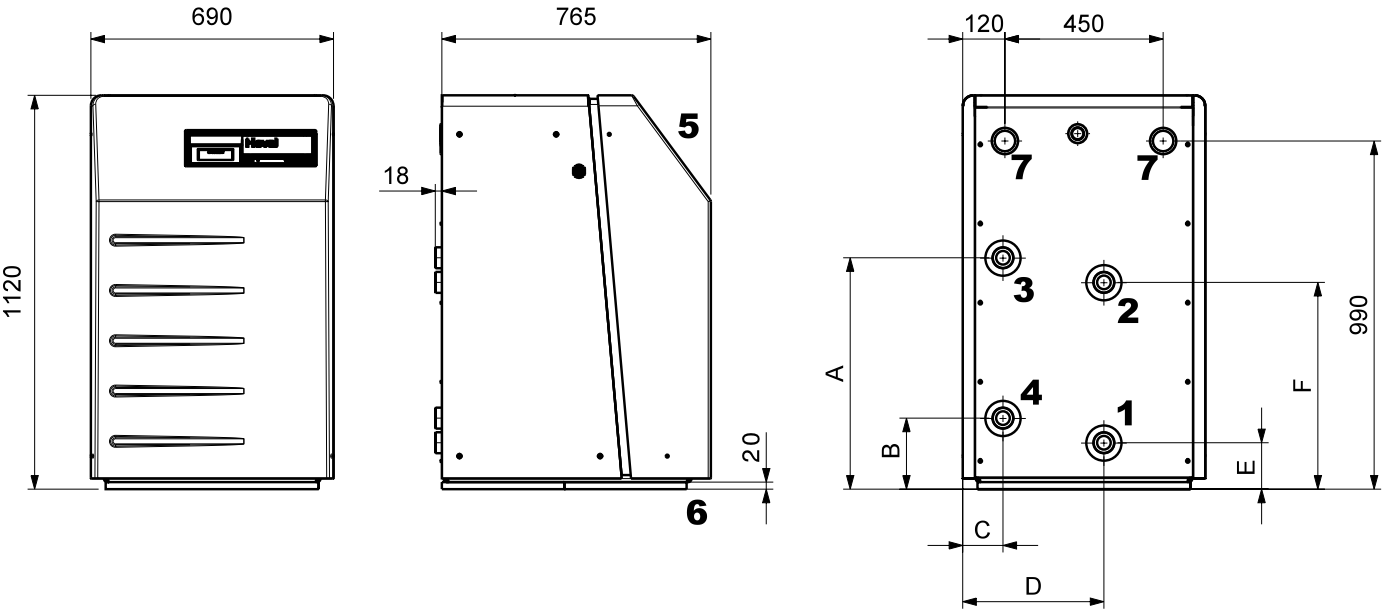
P = power consumption of the overall unit (kW)

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

Take account of daily power cuts!
see Engineering

■ Dimensions

Hoval Thermalia® twin (20-42) and twin H (13-22)
(Dimensions in mm)

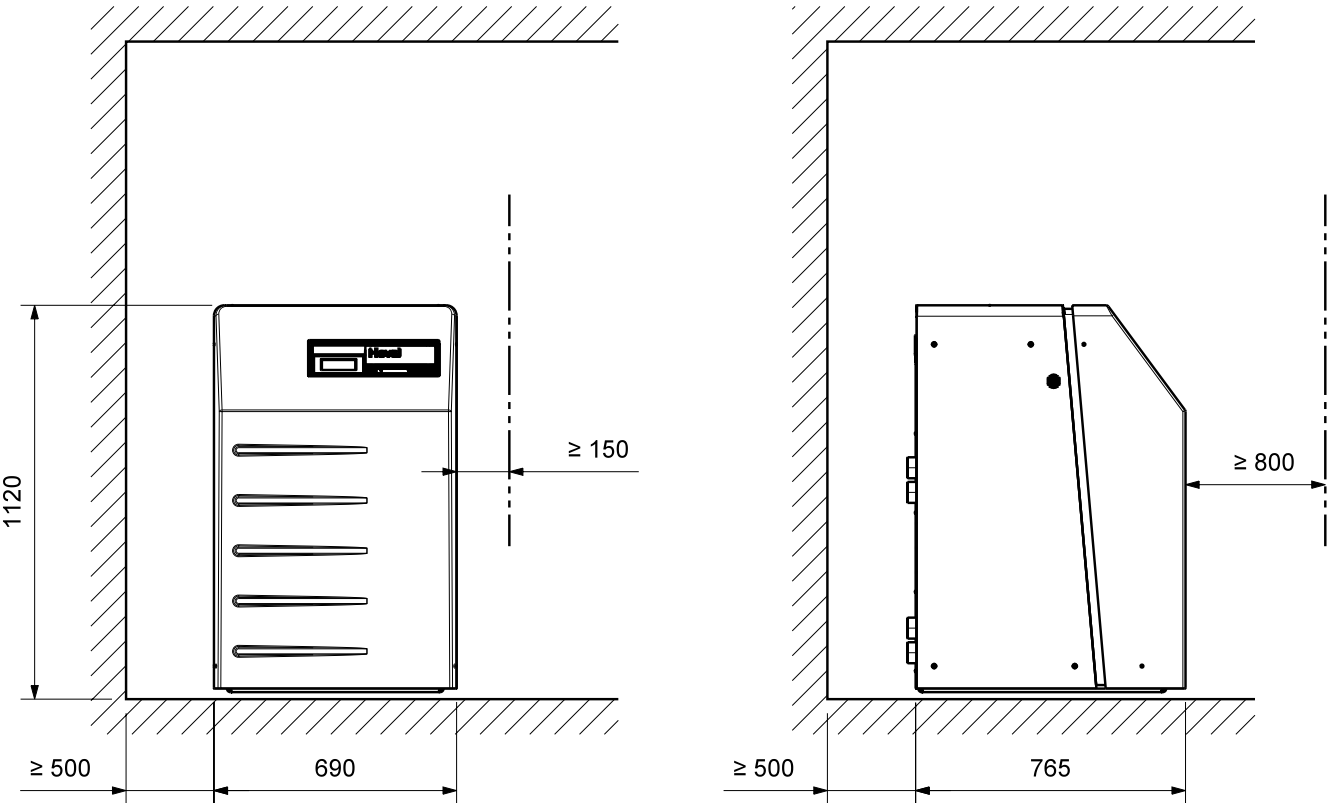


Type	A	B	C	D	E	F
Thermalia® twin (20-42)	741	222	274.5	481.5	170	689
Thermalia® twin H (13-22)	658	202	114	401	132	588

Required space (required wall distance in mm for operation and maintenance)

Front	Rear	Right or left side
min. 800	min. 500	min. 500

- 1 Heat source - discharge R 1½"
Thermalia® twin (20,26), twin H (13,19)
Heat source - discharge R 2"
Thermalia® twin (36,42), twin H (22)
- 2 Heat source - inlet R 1½"
Thermalia® twin (20,26), twin H (13,19)
Heat source - inlet R 2"
Thermalia® twin (36,42), twin H (22)
- 3 Heating flow type R 2"
- 4 Heating return type R 2"
- 5 Operating panel
- 6 Vibration damping
- 7 Electrical connection



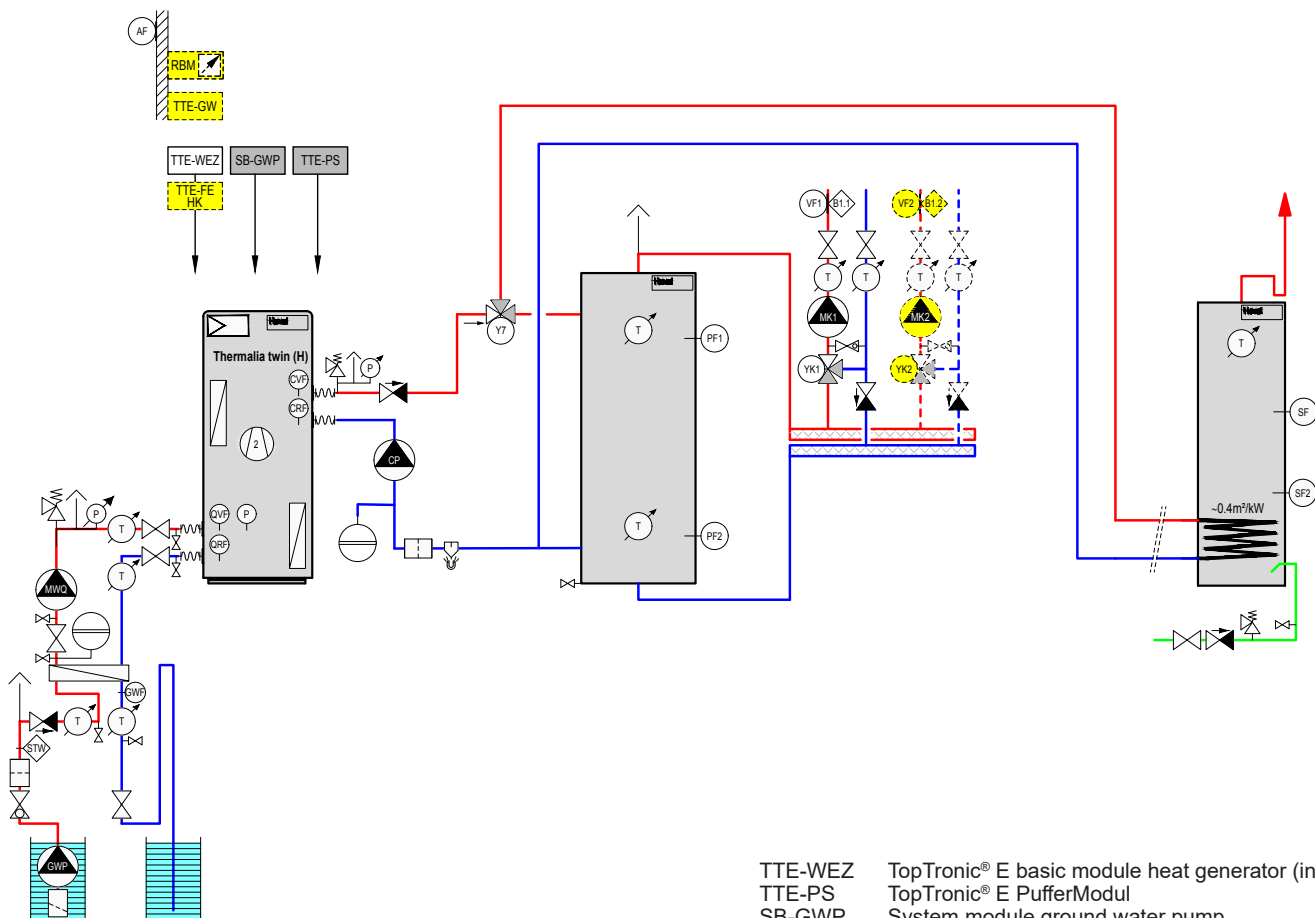
■ Examples

Thermalia® twin

Brine/water-water/water heat pump with

- water/water - indirect utilisation
- energy storage buffer tank
- calorifier
- 1-... mixer circuit(s)

Hydraulic schematic BBBCE070



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
TTE-PS	TopTronic® E PufferModul
SB-GWP	System module ground water pump
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
PF1	Buffer sensor 1
PF2	Buffer sensor 2
Y7	Switching valve
GWF	Frost controller
STW	Flow controller
CP	Condenser pump
GWP	Ground water pump
MWQ	Delivery pump in heat source intermediate circuit (cold-water design)

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

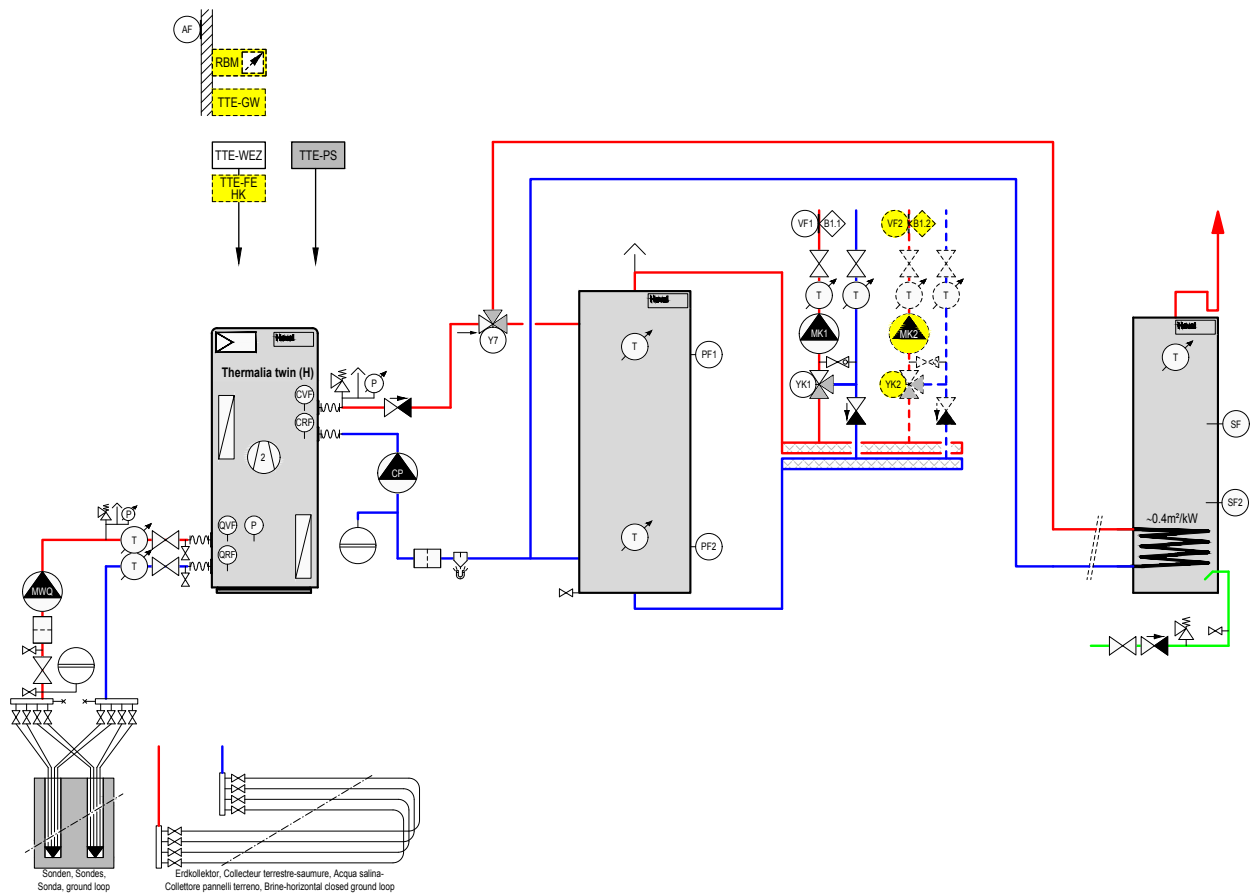
Examples

Thermalia® twin

Brine/water-water/water heat pump with

- earth probes
- energy storage buffer tank
- calorifier
- 1-... mixer circuit(s)

Hydraulic schematic BBBCE030



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
TTE-PS	TopTronic® E buffer module
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
PF1	Buffer sensor 1
PF2	Buffer sensor 2
Y7	Switching valve
CP	Condenser pump
MWQ	Delivery pump in heat source intermediate circuit (cold-water design)

Option	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

■ Description

Hoval Thermalia® dual

Brine/water-water/water heat pump

- Compact unit with high energy efficiency
- Extremely quiet running thanks to 3-bearing construction
- Stable steel frame structure, a ground plate including vibration-free machine adjustable feet
- Removable, powder-coated sheet steel side panels and front doors with quick-release fasteners
- All casing parts are sound-insulated and thermally insulated
- Colour of side panels, ceiling and rear side: brown red (RAL 3011)
- Colour of doors: flame red (RAL 3000)
- 2 spiral (scroll) compressors
- With plate heat exchanger (condenser and evaporator) made of stainless steel (1.4401), soldered
- Two separate refrigerant circuits with electronic expansion valves, filter dryer with sight glass, liquid receivers and high-pressure and low-pressure sensors
- Electronic initial current limiter with rotating field and phase monitoring
- Integrated brine pressure monitoring
- Two output levels
- Hydraulic connections with flexible hoses and flanges
- Thermalia® dual, dual R (55-85): 2" 4x 1 m
- Thermalia® dual, dual R (110,140): flange DN80/PN6
- Thermalia® dual H (35-70): 2" 4x 1 m
- Thermalia® dual H (90): flange DN80/PN6
- Working media
- Thermalia® dual, dual R (55-140) with R410A
- Thermalia® dual H (35-90) with R134a
- Heat pump wired and ready to connect
- Operating side on front with integrated TopTronic® E controller



Thermalia® dual

Water/ water		Brine/ water		Type	Refrigerant	Flow		Heat output		Cooling capacity	
35 °C	55 °C	35 °C	55 °C			min. °C	max. °C	B0W35 kW	W10W35 kW	B17W9 kW	B25W18 kW
A+++	A+++	A+++	A++	(55)	2 x R410A	-	62	57.9	76.7	-	-
		A+++	A++	(70)	2 x R410A	-	62	73.2	97.2	-	-
				(85)	2 x R410A	-	62	84.8	112.8	-	-
				(110)	2 x R410A	-	62	113.4	149.1	-	-
				(140)	2 x R410A	-	62	137.8	181.1	-	-
A+++	A+++	A+++	A++	H (35)	2 x R134a	-	70	34.9	49.3	-	-
A+++	A+++	A+++	A++	H (50)	2 x R134a	-	70	52.5	71.8	-	-
		A+++	A++	H (70)	2 x R134a	-	70	70.9	97.1	-	-
				H (90)	2 x R134a	-	70	87.3	119.5	-	-
A+++	A+++	A+++	A++	R (55)	2 x R410A	7	62	57.9	76.7	64.7	81.1
		A+++	A++	R (70)	2 x R410A	7	62	73.2	97.2	86.2	108.3
				R (85)	2 x R410A	7	62	84.8	112.8	107.0	127.7
				R (110)	2 x R410A	7	62	113.4	149.1	138.1	165.0
				R (140)	2 x R410A	7	62	137.8	181.1	156.9	183.9

Energy efficiency class of the compound system with control



Seal of approval FWS

The Thermalia® dual (55-140), dual H (35-90) series are certified by the seal of approval of the authorisation commission of Switzerland

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

Options for TopTronic® E controller

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

Electrical connections

- Connection at rear

Delivery

- Heat pump pre-assembled and packed

■ Part No.


Notice

Suitable heat source and 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

**Hoval Thermalia® dual
Brine/water or water/water heat pump**
Part No.

Brine/water-water/water heat pump with 2 hermetic spiral (scroll) compressors for indoor installation with built-in Hoval TopTronic® E control

Integrated control functions for

- 1 heating/cooling circuit with mixer
- 1 heating/cooling circuit without mixer
- 1 hot water loading circuit
- bivalent and cascade management
- Can be optionally expanded by max. 1 module expansion:
 - module expansion heating circuit or
 - module expansion universal or
 - module expansion heat balancing
- Can be optionally networked with a total of up to 16 controller modules (incl. solar module)

Delivery

Compact unit wired-up internally ready for connection, supplied fully packaged incl. connection hoses 2" or weld-on flanges DN80/PN6

Hoval Thermalia® dual

Working medium R410A, 2 circuits.

Max. flow temperature 62 °C

Thermalia® dual type	Heat output		
	for B0W35 kW	for W10W35 kW	
(55)	57.9	76.7	7014 291
(70)	73.2	97.2	7014 292
(85)	84.8	112.8	7014 293
(110)	113.4	149.1	7014 294
(140)	137.8	181.1	7014 295

Hoval Thermalia® dual H

Working medium R134a, 2 circuits.

Max. flow temperature 70 °C

Thermalia® dual H type	Heat output		
	for B0W35 kW	for W10W35 kW	
H (35)	34.9	49.3	7014 296
H (50)	52.5	71.8	7014 297
H (70)	70.9	97.1	7014 298
H (90)	87.3	119.5	7014 299

Hoval Thermalia® dual R

Working medium R410A, 2 circuits.

Max. flow temperature 62 °C

Thermalia® dual R type	Cooling capacity ¹⁾		
	for B17W9 kW	for B25W18 kW	
R (55)	64.7	81.1	7016 550
R (70)	86.2	108.3	7016 551
R (85)	107.0	127.7	7016 552
R (110)	138.1	165.0	7016 553
R (140)	156.9	183.9	7016 554

¹⁾ Heat output: see Hoval Thermalia® dual

■ Part No.



Accessories

Part No.

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.

Thermalia® dual type	Number of compressors	
(55)	2	2069 701
(70)	2	2069 706
(85)	2	2069 707
(110)	2	2069 708
(140)	2	2069 708
H (35)	2	2069 703
H (50)	2	2069 705
H (70)	2	2069 704
H (90)	2	2069 704
R (55)	2	2069 701
R (70)	2	2069 706
R (85)	2	2069 707
R (110)	2	2069 708
R (140)	2	2069 708


Set of sound attenuation feet 65/75

6045 228

for Thermalia® dual (55, 70), H (35, 50), dual R (55,70)

for reducing the transmission of solid-borne noise

Set consisting of 4 vibration-damping adjustable feet, threaded rod and locknut

Elastomer part material: NR, black

Housing material: galvanised steel, chromated


Set of sound attenuation feet 45/55,

6045 229

for Thermalia® dual (85, 110, 140),

H (70, 90), dual R (85, 110, 140)

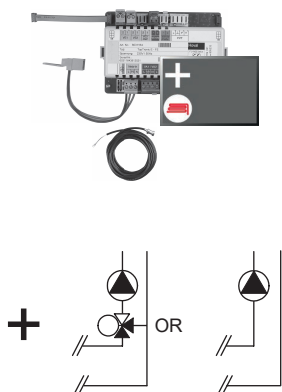
for reducing the transmission of solid-borne noise

Set consisting of 4 vibration-damping adjustable feet, threaded rod and locknut

Elastomer part material: NR, black

Housing material: galvanised steel, chromated

■ Part No.


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

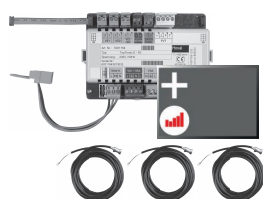
1x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:

Boiler control, wall housing, control panel

Notice

The 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

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
- in each case incl. energy balancing

incl. fitting accessories

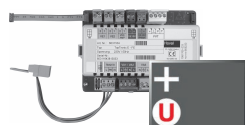
3x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:

Boiler control, wall housing, control panel

Notice

Suitable flow rate sensors (pulse sensors) must be provided on site.


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

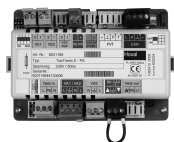
Further information

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

Notice

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

■ 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


Flange compensator set DN80 PN6

for Thermalia® dual(110-140), dual H(90),
dual R (110-140)

for reducing the transmission of
solid-borne and fluid-borne noise

Set consisting of 4 flange compensators

DN80 PN6 without fittings

Structural length 130 mm

6040 025


**Immersion sensor TF/2P/2.5/6T,
L = 2.5 m**

for TopTronic® E controller modules/
module expansions with exception of
basic module district heating/fresh
water or basic module district heating
com, cable length: 2.5 m without plug
sensor sleeve diameter: 6 x 50 mm,
dewpoint-proof,
sensor may already be included in scope
of delivery of heat generator/controller
module/module expansion, operating
temperature: -20...105 °C, index of
protection: IP67

2056 789


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


Float ball flow switch

nominal pressure 10 bar

installed length 335 mm

bistable reed contact as normally open contact

Contact open, if there is no flow

Area of application
l/h °C

Connection

1500-15000 0-80

Rp 2"

2040 709

3000-30000 0-80

DN 65

2064 164

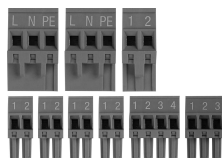
8000-60000 0-80

DN 65

2064 165

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

■ 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

Part No.

6032 509


Frost protection temperature switch
270XT-95068

to heat source ground water

Type of protection: IP 40

Area of application: -24/18 °C

2007 313


Freeze protection concentrate
PowerCool DC 924-PXL

on basis propylene glycol

completely mixable with water

with corrosion protection

Frost protection: -20 °C with

40 % mixture ratio

Content plastic container: 10 kg

2009 987

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 Thermalia® dual (55-140) with R410A

Type		(55)	(70)	(85)	(110)	(140)
Seasonal coefficient of performance moderate climate (brine) 35 °C / 55 °C	SCOP	5.1/3.7	5.0/3.7	5.1/3.7	5.1/3.7	5.0/3.7
<i>Performance data acc. to EN 14511</i>						
• Heat output B0W35	kW	57.9	73.2	84.8	113.4	137.8
• Power consumption B0W35	kW	12.5	15.9	18.3	27.9	29.9
• Performance B0W35	COP	4.63	4.60	4.63	4.62	4.61
• Heat output W10W35	kW	76.9	97.2	112.8	149.1	181.1
• Power consumption W10W35	kW	12.7	16.6	19.1	26.0	31.3
• Performance W10W35	COP	6.07	5.87	5.91	5.73	5.79
Sound data according to EN 12102						
• Sound power level	dB(A)	57.2	55.7	57.2	64.2	64.2
Hydraulic data brine/water						
• Maximum flow temperature	°C	62	62	62	62	62
• Operating pressure	bar	6	6	6	6	6
<i>B0W35</i>						
• Heating water spread	K	5	5	5	5	5
• Required volume flow	m³/h	10.1	12.7	14.3	19.3	23.4
• Pressure drop, condenser	kPa	6.9	9.7	10.7	13.7	11.5
• Condenser connections	R ext. thread	2"	2"	2"	DN80/PN6	DN80/PN6
<i>B0W35</i>						
• Brine spread	K	3	4	4	4	5
• Required volume flow	m³/h	14.1	13.4	15.1	20.4	19.8
• Pressure drop, evaporator	kPa	14.3	9.7	10.7	13.7	11.5
• Evaporator connections	R ext. thread	2"	2"	2"	DN80/PN6	DN80/PN6
Hydraulic data water/water						
• Maximum flow temperature	°C	62	62	62	62	62
• Operating pressure	bar	6	6	6	6	6
<i>W10/B7W35 (intermediate circuit)</i>						
• Heating water spread	K	5	5	5	5	5
• Required volume flow	m³/h	12.0	14.8	16.8	22.8	27.8
• Pressure drop, condenser	kPa	6.9	9.7	10.7	13.7	11.5
• Condenser connections	R ext. thread	2"	2"	2"	DN80/PN6	DN80/PN6
<i>W10/B7W35 (intermediate circuit)</i>						
• Ground water spread ¹	K	3	4	4	4	5
• Required volume flow GW	m³/h	16.3	15.1	17.1	23.3	22.6
• Pressure drop, evaporator	kPa	14.3	9.7	10.7	13.7	11.5
• Evaporator connections	R ext. thread	2"	2"	2"	DN80/PN6	DN80/PN6
Refrigerating data						
• Refrigerant				R410A		
• Refrigerant filling quantity	kg	2x6,0	2x7,4	2x8,2	2x10,0	2x10,7
• Compressor oil filling quantity	kg	2x2,46	2x3,30	2x3,60	2x6,70	2x6,70
(Type of compressor oil: DAPHNE HERMETIC OIL FVC32D for dual (55), EMKARATE® RL 32HB - 160SZ - 160Z)						
Electrical data						
• Power supply	V			3+N~400 V / 50 Hz		
• Max. power consumption (without pumps)	kW	24.8	30.4	34.6	46.6	56.6
• Max. operating current (without pumps)	A	45.6	51.0	58.2	75.6	93.2
• Max. starting current	A	85.3	100.5	114.1	160.3	186.6
• Main current fuse (on site)	A	C63	C63	C80	C100	C125
• Control current fuse (on site)	A	16	16	16	16	16
Dimensions / weight						
• Dimensions (H x W x D)	mm		1907 x 1066 x 774		1907 x 1316 x 774	
• Minimum size of the installation room (without ventilation)	m³	16	17	19	26	31
• Weight	kg	560	620	700	770	820

¹ ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.
The pump regulates the volumetric current to the set temperature difference.

■ Technical data

Hoval Thermalia® dual H (35-90) with R134a

Type		H (35)	H (50)	H (70)	H (90)
Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C	SCOP	4.6/3.5	4.8/3.6	4.8/3.5	4.7/3.5
Performance data acc. to EN 14511					
• Heat output B0W35	kW	34.9	52.5	70.9	87.3
• Power consumption B0W35	kW	8.1	12.0	16.3	20.3
• Performance B0W35	COP	4.31	4.38	4.35	4.30
• Heat output W10W35	kW	49.3	71.8	97.1	119.5
• Power consumption W10W35	kW	8.2	12.3	16.8	21.1
• Performance W10W35	COP	6.01	5.83	5.78	5.66
Sound data according to EN 12102					
• Sound power level	dB(A)	55.2	60.2	63.2	63.2
Hydraulic data brine/water					
• Maximum flow temperature	°C	70	70	70	70
• Operating pressure	bar	6	6	6	6
B0W35					
• Heating water spread	K	5	5	5	5
• Required volume flow	m³/h	5.5	9.0	12.1	15.1
• Pressure drop, condenser	kPa	9.3	5.1	5.8	7.2
• Condenser connections	R ext. thread	2"	2"	2"	DN80/PN6
B0W35					
• Brine spread	K	3	3	4	4
• Required volume flow	m³/h	8.9	12.4	12.6	15.7
• Pressure drop, evaporator	kPa	9.2	5.7	8.3	9.0
• Evaporator connections	R ext. thread	2"	2"	2"	DN80/PN6
Hydraulic data water/water					
• Maximum flow temperature	°C	70	70	70	70
• Operating pressure	bar	6	6	6	6
W10/B7W35 (intermediate circuit)					
• Heating water spread	K	5	5	5	5
• Required volume flow	m³/h	8.5	11.4	15.2	18.9
• Pressure drop, condenser	kPa	14.5	5.1	5.8	7.2
• Condenser connections	R ext. thread	2"	2"	2"	DN80/PN6
W10/B7W35 (intermediate circuit)					
• Ground water spread ¹	K	3	3	4	4
• Required volume flow GW	m³/h	10.9	15.3	15.3	19.1
• Pressure drop, evaporator	kPa	20.0	25.2	25.2	19.6
• Evaporator connections	R ext. thread	2"	2"	2"	DN80/PN6
Refrigerating data					
• Refrigerant		R134a			
• Refrigerant filling quantity	kg	2x5.4	2x8.0	2x8.2	2x9.0
• Compressor oil filling quantity	kg	2x3.3	2x6.2	2x8.0	2x8.0
(Type of compressor oil: EMKARATE® RL 32HB - 160SZ - 160Z)					
Electrical data					
• Power supply	V	3+N~400 V / 50 Hz			
• Max. power consumption (without pumps)	kW	17.4	25.6	34.8	44.2
• Max. operating current (without pumps)	A	32.0	45.6	58.6	75.8
• Max. starting current	A	76.0	107.8	151.8	182.9
• Main current fuse (on site)	A	C50	C63	C80	C100
• Control current fuse (on site)	A	16	16	16	16
Dimensions / weight					
• Dimensions (H x W x D)	mm	1907 x 1066 x 774	1907 x 1316 x 774		
• Minimum size of the installation room (without ventilation)	m³	22	24	27	36
• Weight	kg	491	700	770	800

¹ ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.
The pump regulates the volumetric current to the set temperature difference.

■ Technical data

Hoval Thermalia® dual R (55-140) with R410A

Type		R (55)	R (70)	R (85)	R (110)	R (140)
Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C	SCOP	5.1/3.7	5.0/3.7	5.1/3.7	5.1/3.7	5.0/3.7
Performance data acc. to EN 14511						
• Heat output B0W35	kW	57.9	73.2	84.8	113.4	137.8
• Power consumption B0W35	kW	12.5	15.9	18.3	27.9	29.9
• Performance B0W35	COP	4.63	4.60	4.63	4.62	4.61
• Heat output W10W35	kW	76.9	97.2	112.8	149.1	181.1
• Power consumption W10W35	kW	12.7	16.6	19.1	26.0	31.3
• Performance W10W35	COP	6.07	5.87	5.91	5.73	5.79
• Cooling capacity B17W9	kW	64.7	86.2	107.0	138.1	156.9
• Power consumption B17W9	kW	10.6	13.1	14.8	21.2	25.9
• Performance B17W9	EER	6.12	6.6	7.21	6.51	6.05
• Cooling capacity B25W18	kW	81.1	108.3	127.7	165.0	183.9
• Power consumption B25W18	kW	12.6	16.2	18.4	26.2	30.4
• Performance B25W18	EER	6.44	6.71	6.95	6.31	6.04
Sound data according to EN 12102						
• Sound power level	dB(A)	57.2	55.7	57.2	64.2	64.2
Hydraulic data brine/water						
• Maximum flow temperature	°C	62	62	62	62	62
• Operating pressure	bar	6	6	6	6	6
B0W35						
• Heating water spread	K	5	5	5	5	5
• Required volume flow	m³/h	10.1	12.7	14.3	19.3	23.4
• Pressure drop, condenser	kPa	6.9	9.7	10.7	13.7	11.5
• Condenser connections	R AG	2"	2"	2"	DN80/PN6	DN80/PN6
B0W35						
• Brine spread	K	3	4	4	4	5
• Required volume flow	m³/h	14.1	13.4	15.1	20.4	19.8
• Pressure drop, evaporator	kPa	14.3	9.7	10.7	13.7	11.5
• Evaporator connections	R AG	2"	2"	2"	DN80/PN6	DN80/PN6
Hydraulic data water/water						
• Maximum flow temperature	°C	62	62	62	62	62
• Operating pressure	bar	6	6	6	6	6
W10/B7W35 (intermediate circuit)						
• Heating water spread	K	5	5	5	5	5
• Required volume flow	m³/h	12.0	14.8	16.8	22.8	27.8
• Pressure drop, condenser	kPa	6.9	9.7	10.7	13.7	11.5
• Condenser connections	R AG	2"	2"	2"	DN80/PN6	DN80/PN6
W10/B7W35 (intermediate circuit)						
• Ground water spread ¹	K	3	4	4	4	5
• Required volume flow GW	m³/h	16.3	15.1	17.1	23.3	22.6
• Pressure drop, evaporator	kPa	14.3	9.7	10.7	13.7	11.5
• Evaporator connections	R AG	2"	2"	2"	DN80/PN6	DN80/PN6
Refrigerating data						
• Refrigerant				R410A		
• Refrigerant filling quantity	kg	2x6.0	2x7.4	2x8.2	2x10.0	2x10.7
• Compressor oil filling quantity	dm³	2x2.46	2x3.3	2x3.6	2x6.7	2x6.7
(Type of compressor oil: DAPHNE HERMETIC OIL FVC32D for dual (55), EMKARATE® RL 32HB - 160SZ - 160Z)						
Electrical data						
• Power supply	V			3+N~400 V / 50 Hz		
• Max. power consumption (without pumps)	kW	24.8	30.4	34.6	46.6	56.6
• Max. operating current (without pumps)	A	45.6	51.0	58.2	75.6	93.2
• Max. starting current	A	85.3	100.5	114.1	160.3	186.6
• Main current fuse (on site)	A	C63	C63	C80	C100	C125
• Control current fuse (on site)	A	16	16	16	16	16
Dimensions / weight						
• Dimensions (H x W x D)	mm		1907 x 1066 x 774		1907 x 1316 x 774	
• Minimum size of the installation room (without ventilation)	m³	27.2	33.6	37.3	45.5	48.6
• Weight	kg	560	620	700	770	820

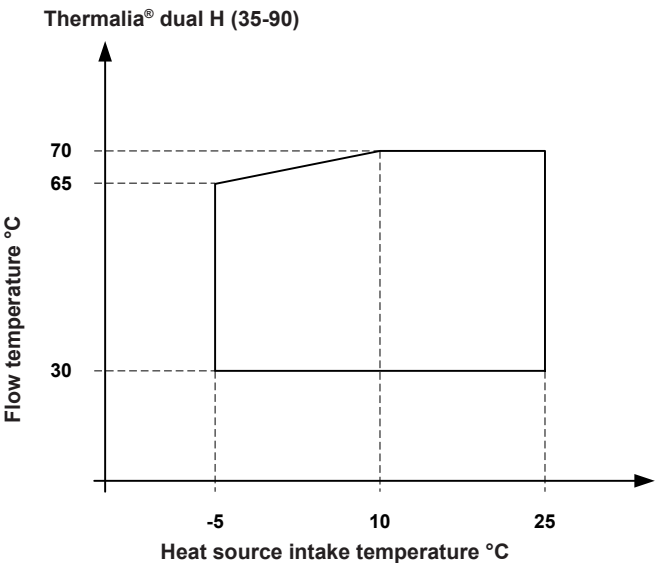
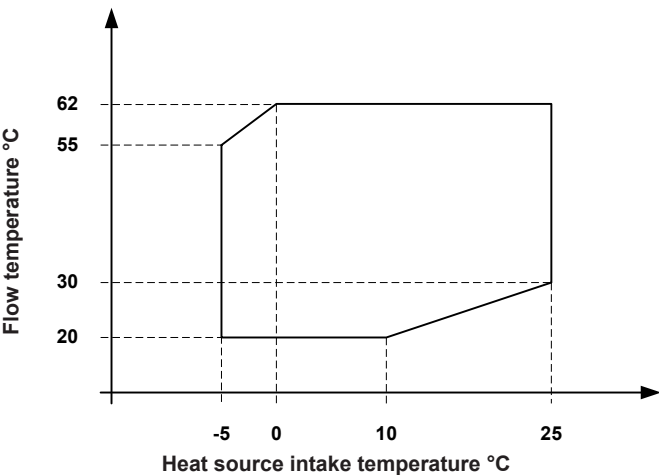
¹ ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.
The pump regulates the volumetric current to the set temperature difference.

■ Technical data

Diagrams range of application

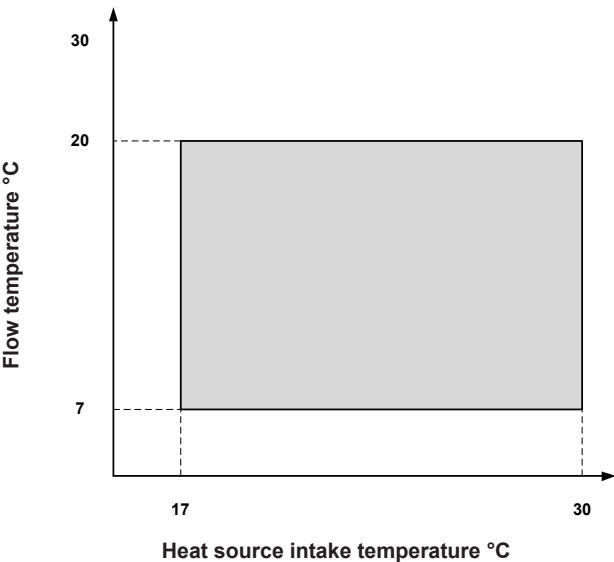
Heating and hot water

Thermalia® dual (55-140), dual R (55-140)



Cooling

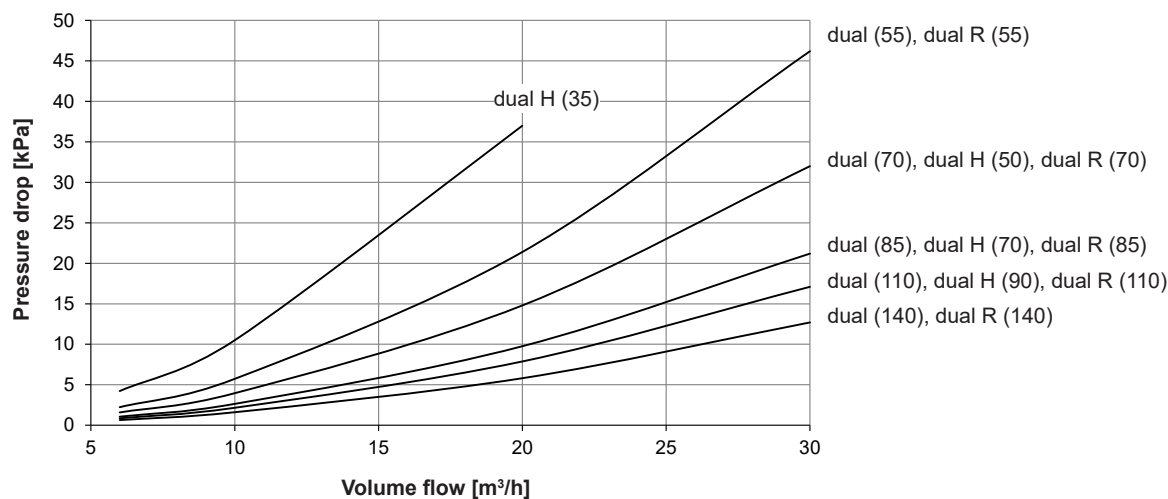
Thermalia® dual R (55-140)



■ Technical data

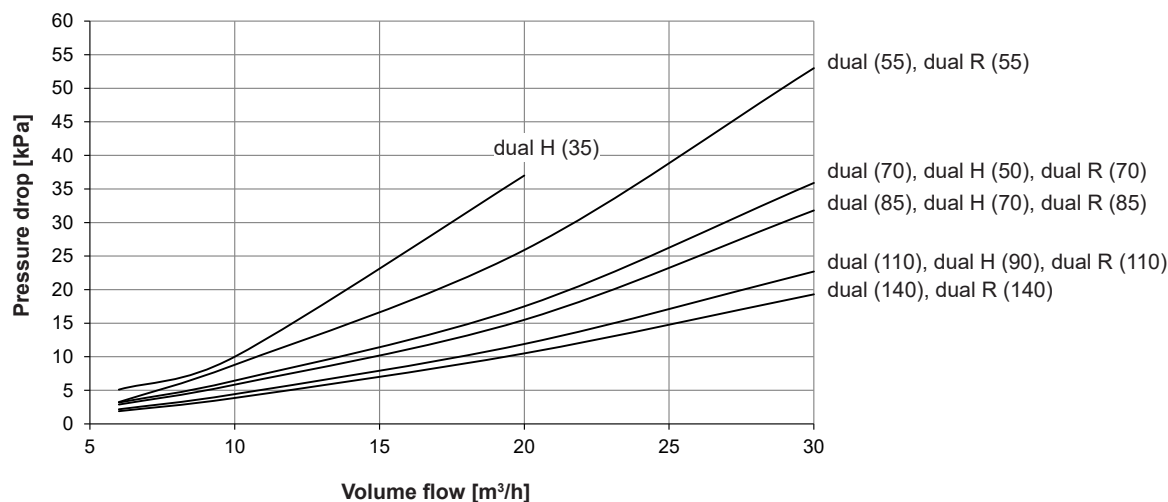
Heating

Pressure drop condenser with water



Heat source

Pressure drop evaporator with ethylene glycol 25 % (antifrogen N)



Cooling capacity

$$Q_0 = Q - P$$

- Q_0 = cooling capacity (kW)
 Q = heat output (kW)
 P = power consumption compressor (kW)
 Δt_2 = temperature difference heat source supply/discharge (K)
 C = 0.86
 c_p = 0.89 (specific heat)
 γ = 1.05 (specific weight, density)

Volume flow evaporator

$$V = \frac{Q_0 \cdot c}{\Delta t_2 \cdot c_p \cdot \gamma} \quad (\text{m}^3/\text{h})$$

- Δp (kPa) = pressure drop with frost protection (1 kPa = 0.1 mWC)
 $\Delta p = f \times \Delta P \quad f$ Ethylene glycol % (Antifrogen N)
- | | | |
|------|---|------|
| 0.97 | △ | 20 % |
| 1 | △ | 25 % |
| 1.03 | △ | 30 % |

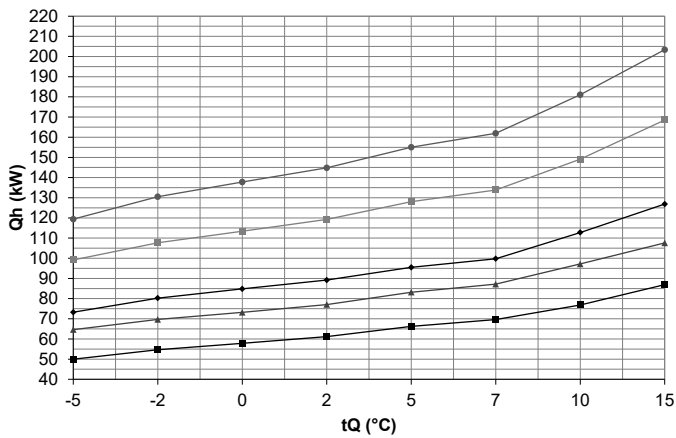
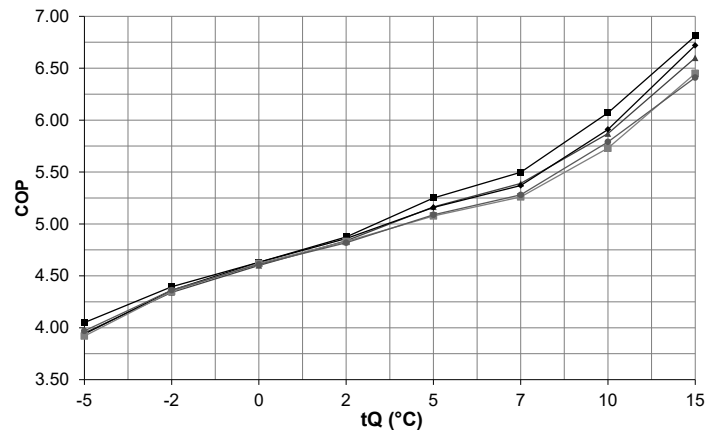
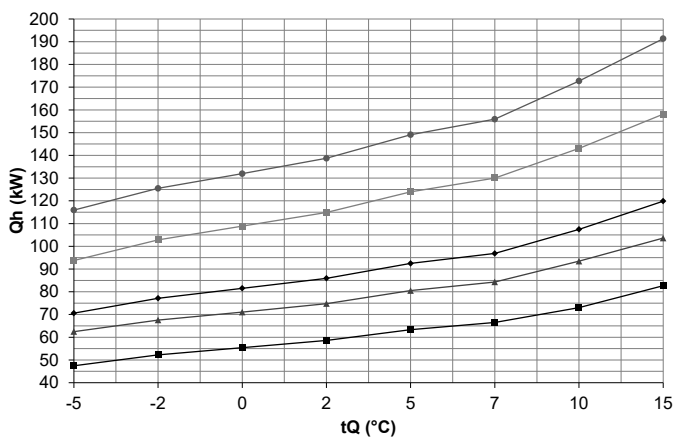
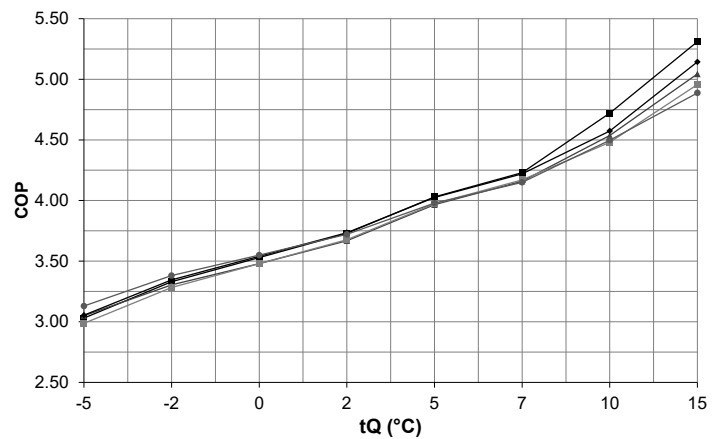
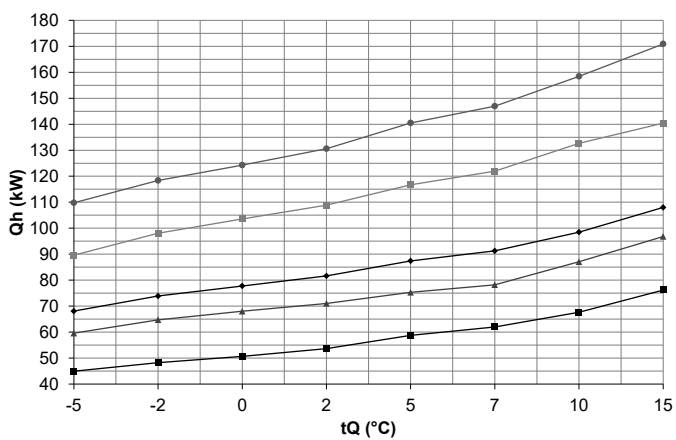
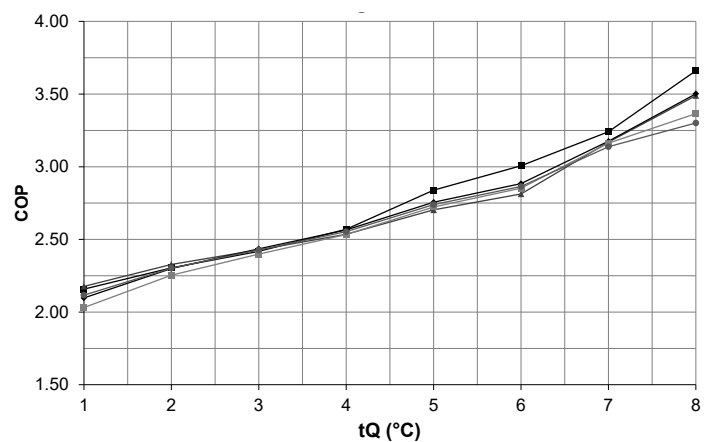
- Δp_w (kPa) = Pressure drop with water (1 kPa = 0.1 mWC)
 $\Delta p_w = \Delta P \times 0.89$

■ Technical data

Performance data - heating

Maximum heat output

Hoval Thermalia® dual (55-140), dual R (55-140) with R410A

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} 62 °C

Output rating - t_{VL} 62 °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

- Thermalia® dual, dual R (55)
- ▲ Thermalia® dual, dual R (70)
- ◆ Thermalia® dual, dual R (85)
- Thermalia® dual, dual R (110)
- Thermalia® dual, dual R (140)

Technical data

Performance data - heating

Hoval Thermalia® dual (55-140), dual R (55-140)

Indications acc. to EN 14511

Type	tVL °C	tQ °C	(55), R (55)			(70), R (70)			(85), R (85)			(110), R (110)			(140), R (140)		
			Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
30	Brine	-5	50.6	10.9	4.67	65.6	14.3	4.59	74.0	15.6	4.74	100.1	21.2	4.71	121.5	25.4	4.79
		-2	55.9	10.9	5.12	70.6	13.8	5.12	81.2	15.5	5.24	109.0	20.9	5.22	132.6	25.3	5.24
		0	59.3	11.0	5.41	74.1	13.6	5.47	86.0	15.5	5.56	115.0	20.8	5.54	139.9	25.4	5.52
		2	62.6	11.0	5.68	78.2	13.5	5.77	90.5	15.5	5.83	121.1	20.9	5.79	147.0	25.5	5.75
		5	67.6	11.2	6.05	84.9	13.7	6.18	97.1	15.7	6.19	130.3	21.5	6.07	157.5	26.0	6.06
		7	70.9	11.2	6.31	89.2	13.8	6.46	101.5	15.8	6.44	136.5	21.7	6.28	164.5	26.2	6.27
	Water	10	78.4	11.0	7.10	99.1	14.5	6.82	115.4	16.9	6.84	152.2	23.1	6.59	185.3	27.7	6.69
		15	88.8	11.2	7.93	109.6	14.2	7.73	130.3	16.7	7.82	173.7	23.2	7.48	209.4	28.0	7.47
35	Brine	-5	50.0	12.3	4.05	64.6	16.4	3.95	73.2	18.6	3.94	99.1	25.3	3.92	119.4	30.1	3.97
		-2	54.7	12.4	4.40	69.7	16.1	4.34	80.2	18.4	4.36	107.7	24.8	4.35	130.5	29.9	4.36
		0	57.9	12.5	4.63	73.2	15.9	4.60	84.8	18.3	4.63	113.4	24.6	4.62	137.8	29.9	4.61
		2	61.2	12.6	4.87	77.0	15.9	4.84	89.2	18.4	4.86	119.2	24.7	4.83	144.8	30.0	4.82
		5	66.3	12.6	5.25	83.2	16.1	5.16	95.5	18.5	5.16	128.0	25.2	5.08	155.0	30.5	5.09
		7	69.6	12.7	5.50	87.2	16.2	5.39	99.8	18.6	5.37	133.9	25.4	5.26	161.9	30.7	5.28
	Water	10	76.9	12.7	6.07	97.2	16.6	5.87	112.8	19.1	5.91	149.1	26.0	5.73	181.1	31.3	5.79
		15	86.9	12.8	6.81	107.6	16.3	6.60	126.8	18.9	6.72	168.5	26.1	6.45	203.4	31.7	6.41
40	Brine	-5	48.9	14.0	3.50	63.7	18.4	3.47	72.2	20.9	3.45	96.8	28.4	3.41	117.8	33.6	3.50
		-2	53.5	14.0	3.81	68.8	18.2	3.78	78.9	20.7	3.81	105.6	28.0	3.78	128.1	33.5	3.83
		0	56.6	14.1	4.02	72.2	18.1	4.00	83.4	20.6	4.05	111.4	27.8	4.01	135.0	33.4	4.04
		2	59.8	14.1	4.24	76.0	18.1	4.20	87.7	20.6	4.26	117.3	27.8	4.22	141.9	33.6	4.23
		5	64.8	14.1	4.58	81.9	18.1	4.51	94.1	20.7	4.54	126.1	28.2	4.48	152.2	33.9	4.49
		7	68.1	14.2	4.81	85.7	18.2	4.72	98.3	20.7	4.74	131.9	28.3	4.66	159.0	34.1	4.67
	Water	10	75.0	14.1	5.32	95.3	18.6	5.13	110.1	21.3	5.17	146.1	29.0	5.04	176.9	34.8	5.08
		15	84.8	14.2	5.98	105.6	18.4	5.73	123.4	21.1	5.85	163.3	29.0	5.63	197.4	35.4	5.57
45	Brine	-5	47.5	15.7	3.03	62.5	20.5	3.05	70.6	23.1	3.05	93.7	31.4	2.99	115.9	37.0	3.13
		-2	52.2	15.7	3.33	67.6	20.4	3.30	77.2	23.1	3.35	102.8	31.3	3.28	125.5	37.1	3.38
		0	55.4	15.7	3.53	71.1	20.4	3.48	81.5	23.0	3.54	108.9	31.3	3.48	132.0	37.2	3.55
		2	58.6	15.7	3.73	74.8	20.4	3.67	85.9	23.0	3.73	114.9	31.2	3.68	138.7	37.3	3.72
		5	63.3	15.7	4.03	80.5	20.3	3.97	92.5	23.0	4.03	124.0	31.2	3.97	149.1	37.5	3.98
		7	66.5	15.7	4.23	84.3	20.3	4.16	96.8	22.9	4.22	130.0	31.2	4.17	155.9	37.6	4.15
	Water	10	73.1	15.5	4.72	93.5	20.6	4.54	107.5	23.5	4.57	143.0	31.9	4.48	172.7	38.4	4.50
		15	82.7	15.6	5.31	103.6	20.5	5.04	119.9	23.3	5.14	158.1	31.9	4.96	191.3	39.2	4.89
50	Brine	-5	47.1	17.1	2.76	61.8	22.5	2.75	70.3	26.1	2.69	93.5	35.5	2.63	114.2	41.9	2.72
		-2	51.1	17.2	2.98	66.9	22.5	2.97	76.6	25.9	2.96	102.2	35.0	2.92	123.7	41.6	2.97
		0	53.9	17.2	3.13	70.3	22.6	3.11	80.8	25.8	3.14	107.9	34.8	3.10	130.1	41.5	3.14
		2	57.0	17.2	3.32	73.7	22.6	3.26	84.9	25.7	3.30	113.5	34.7	3.27	136.8	41.6	3.29
		5	62.1	17.1	3.62	78.9	22.6	3.50	91.0	25.7	3.54	121.8	34.8	3.50	146.9	41.8	3.51
		7	65.3	17.1	3.82	82.3	22.5	3.65	95.1	25.7	3.70	127.4	34.9	3.65	153.6	41.9	3.66
	Water	10	71.7	17.2	4.17	91.6	22.6	4.05	104.8	25.7	4.08	140.0	34.9	4.01	168.5	42.0	4.02
		15	80.9	17.2	4.70	101.6	22.7	4.48	116.4	25.5	4.56	152.9	34.8	4.39	185.3	42.9	4.32
55	Brine	-5	46.5	18.6	2.50	62.1	24.2	2.56	70.5	28.3	2.49	92.8	38.5	2.41	113.7	45.5	2.50
		-2	49.9	18.7	2.67	66.8	24.2	2.77	76.6	27.7	2.76	101.7	37.4	2.72	122.0	44.4	2.75
		0	52.5	18.7	2.80	70.0	24.1	2.90	80.6	27.4	2.94	107.4	36.8	2.92	127.8	43.9	2.91
		2	55.5	18.7	2.97	73.2	24.1	3.03	84.4	27.3	3.09	112.8	36.7	3.07	134.2	43.9	3.06
		5	60.7	18.6	3.27	77.9	24.1	3.24	90.1	27.3	3.30	120.5	37.0	3.26	144.5	44.3	3.26
		7	64.0	18.5	3.46	81.1	24.1	3.37	93.9	27.3	3.44	125.7	37.1	3.39	151.2	44.5	3.40
	Water	10	70.2	18.8	3.73	89.7	24.6	3.64	102.2	27.9	3.66	136.9	37.8	3.62	164.3	45.5	3.61
		15	79.0	18.8	4.21	99.6	24.8	4.02	112.9	27.7	4.07	147.7	37.7	3.92	179.3	46.6	3.85
62	Brine	-5	45.0	20.8	2.16	59.6	27.4	2.18	68.1	32.5	2.10	89.6	44.1	2.03	109.8	51.9	2.12
		-2	48.2	20.9	2.30	64.7	27.8	2.33	73.9	32.1	2.30	98.0	43.5	2.25	118.4	51.4	2.30
		0	50.7	20.9	2.42	68.0	28.0	2.43	77.8	31.9	2.43	103.6	43.2	2.40	124.3	51.2	2.43
		2	53.7	20.9	2.57	71.0	28.0	2.54	81.6	31.8	2.57	108.9	43.0	2.53	130.6	51.2	2.55
		5	58.7	20.7	2.84	75.3	27.9	2.70	87.4	31.7	2.76	116.7	42.8	2.72	140.5	51.3	2.74
		7	62.0	20.6	3.01	78.2	27.8	2.81	91.3	31.6	2.88	121.9	42.7	2.85	147.0	51.3	2.86
	Water	10	67.6	20.9	3.24	87.1	27.5	3.17	98.5	31.0	3.18	132.7	42.0	3.16	158.4	50.5	3.14
		15	76.2	20.8	3.66	96.8	27.7	3.49	108.0	30.8	3.50	140.4	41.7	3.37	170.9	51.8	3.30

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

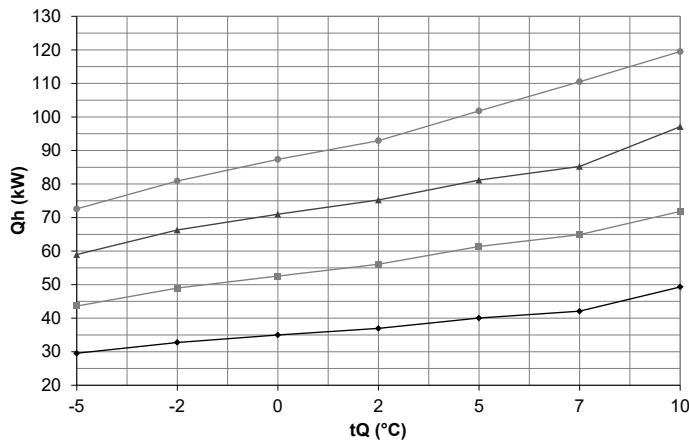
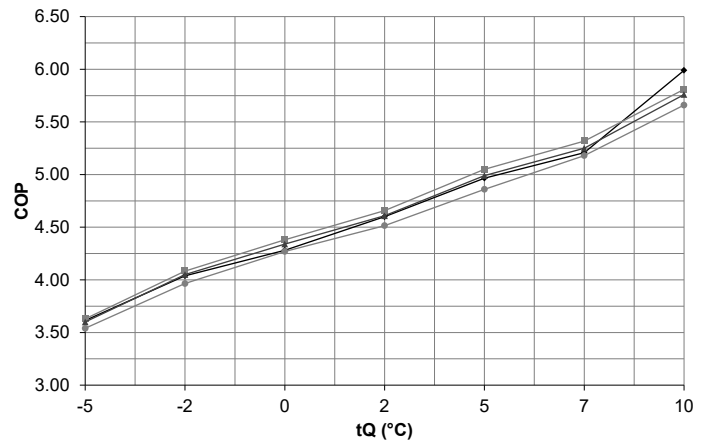
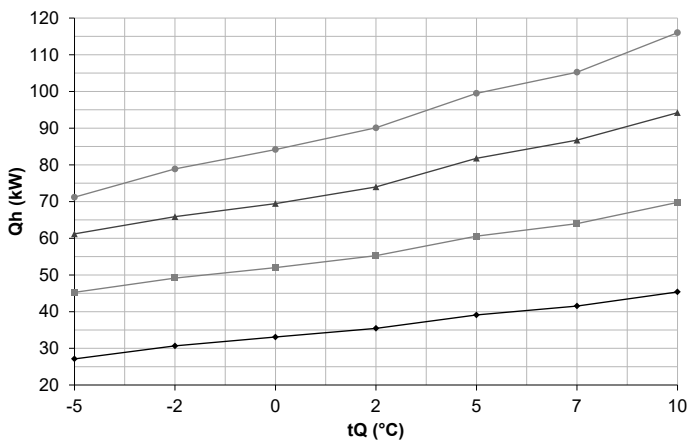
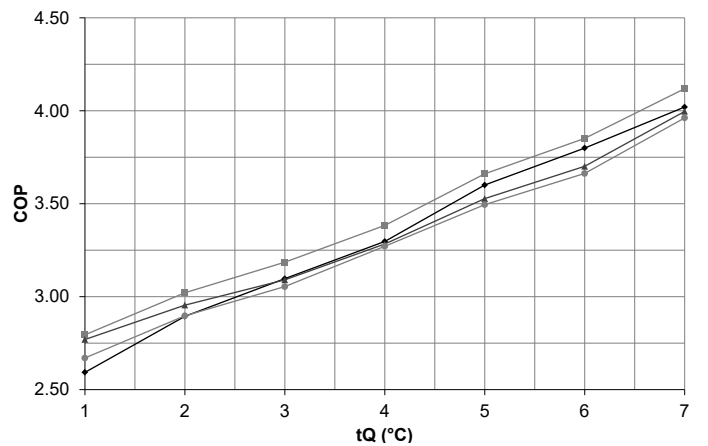
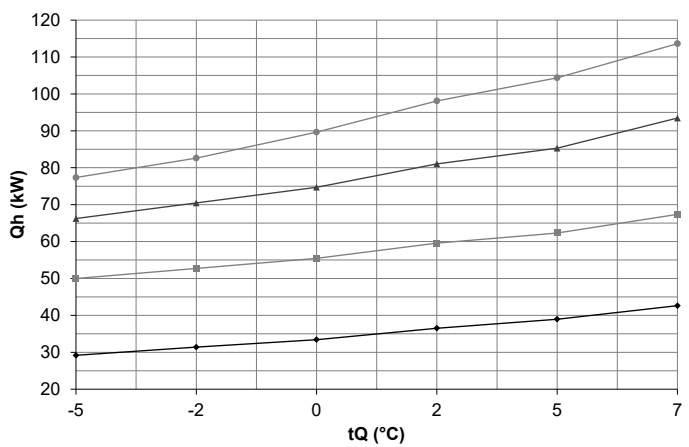
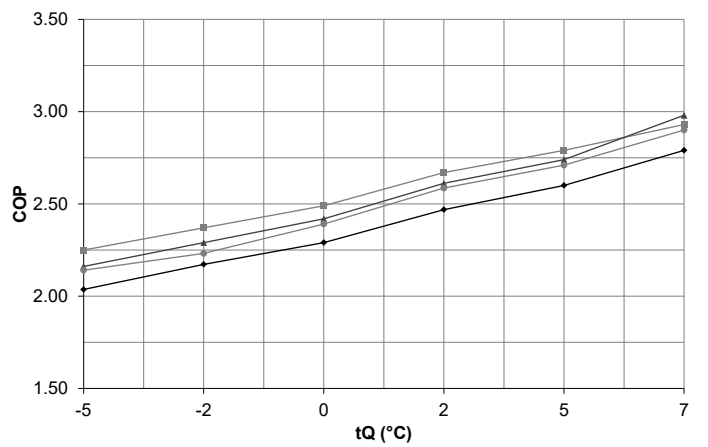
Take account of daily power cuts!
see Engineering

Technical data

Performance data - heating

Maximum heat output

Hoval Thermalia® dual H (35-90) with R134a

Heat output - t_{VL} 35 °C

Output rating - t_{VL} 35 °C

Heat output - t_{VL} 50 °C

Output rating - t_{VL} 50 °C

Heat output - t_{VL} 65 °C

Output rating - t_{VL} 65 °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

- ◆ Thermalia® dual H (35)
- Thermalia® dual H (50)
- ▲ Thermalia® dual H (70)
- Thermalia® dual H (90)

■ Technical data

Performance data - heating

Hoval Thermalia® dual H (35-90)

Indications acc. to EN 14511

Type	tVL °C	tQ °C	Qh kW	H (35) P kW	COP	Qh kW	H (50) P kW	COP	Qh kW	H (70) P kW	COP	Qh kW	H (90) P kW	COP
35	Brine	-5	29.5	8.2	3.61	43.6	12.0	3.63	59.0	16.4	3.60	72.6	20.5	3.54
		-2	32.8	8.1	4.04	49.0	12.0	4.08	66.3	16.4	4.05	80.9	20.4	3.97
		0	35.0	8.1	4.32	52.5	12.0	4.38	71.0	16.4	4.34	87.4	20.3	4.30
		2	37.0	8.0	4.60	56.1	12.0	4.66	75.2	16.3	4.61	92.9	20.6	4.51
		5	40.0	8.1	4.97	61.4	12.2	5.05	81.2	16.3	4.99	101.8	20.9	4.86
		7	42.1	8.1	5.21	64.9	12.2	5.32	85.2	16.2	5.25	110.5	21.3	5.18
		Water	10	49.3	8.2	5.99	71.8	12.4	5.81	16.9	5.76	119.5	21.1	5.66
40	Brine	-5	28.7	9.0	3.20	44.4	13.2	3.36	60.0	18.0	3.33	71.9	22.4	3.22
		-2	32.1	9.1	3.54	49.1	13.2	3.71	66.1	18.0	3.66	80.2	22.4	3.57
		0	34.5	9.1	3.78	52.4	13.3	3.95	70.2	18.1	3.88	86.1	22.5	3.82
		2	36.7	9.0	4.08	55.8	13.3	4.20	74.6	18.1	4.12	91.7	22.4	4.09
		5	40.1	9.0	4.43	61.0	13.5	4.53	81.4	18.5	4.40	100.4	23.3	4.31
		7	42.4	9.1	4.66	64.5	13.5	4.77	85.9	18.6	4.61	107.2	23.6	4.54
		Water	10	47.5	9.2	5.19	71.2	13.7	5.18	19.0	5.04	118.1	23.7	4.98
45	Brine	-5	27.8	9.7	2.86	45.1	14.6	3.09	61.0	19.9	3.06	71.4	24.4	2.92
		-2	31.5	9.8	3.20	49.7	14.7	3.39	66.0	19.9	3.32	79.5	24.7	3.22
		0	33.9	9.9	3.44	52.8	14.7	3.58	69.7	19.9	3.50	85.0	24.9	3.41
		2	36.4	9.9	3.66	55.8	14.8	3.77	74.0	20.2	3.66	90.8	25.3	3.59
		5	40.1	10.2	3.92	60.3	14.9	4.04	81.2	20.9	3.89	99.6	25.8	3.86
		7	42.6	10.3	4.14	63.3	15.0	4.22	85.8	21.2	4.04	105.5	26.1	4.04
		Water	10	46.6	10.2	4.58	70.4	15.3	4.61	21.4	4.43	116.9	26.4	4.42
50	Brine	-5	27.1	10.5	2.59	45.3	16.2	2.80	61.2	22.1	2.77	71.2	26.7	2.67
		-2	30.7	10.6	2.89	49.1	16.3	3.02	65.9	22.3	2.95	78.9	27.2	2.90
		0	33.1	10.7	3.10	52.0	16.3	3.19	69.5	22.5	3.09	84.2	27.6	3.05
		2	35.5	10.8	3.30	55.2	16.3	3.38	74.0	22.5	3.28	90.1	27.5	3.27
		5	39.1	10.9	3.60	60.6	16.5	3.66	81.8	23.2	3.53	99.5	28.5	3.50
		7	41.5	10.9	3.80	64.0	16.6	3.85	86.7	23.4	3.70	105.3	28.7	3.66
		Water	10	45.4	11.3	4.02	69.8	16.9	4.12	23.6	4.00	116.0	29.3	3.96
55	Brine	-5	26.4	11.5	2.30	45.1	18.0	2.51	61.0	24.5	2.49	71.2	29.1	2.45
		-2	29.9	11.7	2.56	48.6	18.0	2.70	65.8	25.0	2.63	78.3	30.0	2.61
		0	32.2	11.8	2.74	51.3	18.1	2.84	69.5	25.3	2.75	83.5	30.5	2.74
		2	34.5	11.9	2.91	54.8	18.2	3.02	74.2	25.5	2.92	89.7	30.9	2.91
		5	38.1	12.0	3.18	60.8	18.3	3.32	82.2	25.6	3.21	99.9	31.3	3.20
		7	40.4	12.1	3.35	64.6	18.4	3.51	87.3	25.7	3.40	106.5	31.5	3.38
		Water	10	44.8	12.5	3.58	69.0	18.8	3.68	25.9	3.63	115.4	32.2	3.58
65	Brine	-5	-	-	-	-	-	-	-	-	-	-	-	-
		-2	29.2	14.3	2.04	50.0	22.2	2.25	66.2	30.6	2.16	77.3	36.1	2.14
		0	31.4	14.5	2.17	52.7	22.2	2.37	70.5	30.8	2.29	82.6	37.0	2.23
		2	33.4	14.6	2.29	55.5	22.3	2.49	74.7	30.9	2.42	89.6	37.5	2.39
		5	36.5	14.8	2.47	59.6	22.3	2.67	81.0	31.0	2.61	98.1	37.9	2.59
		7	39.0	15.0	2.60	62.3	22.3	2.79	85.3	31.1	2.74	104.4	38.5	2.71
		Water	10	42.6	15.3	2.79	67.4	23.0	2.93	31.4	2.98	113.6	39.2	2.90

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

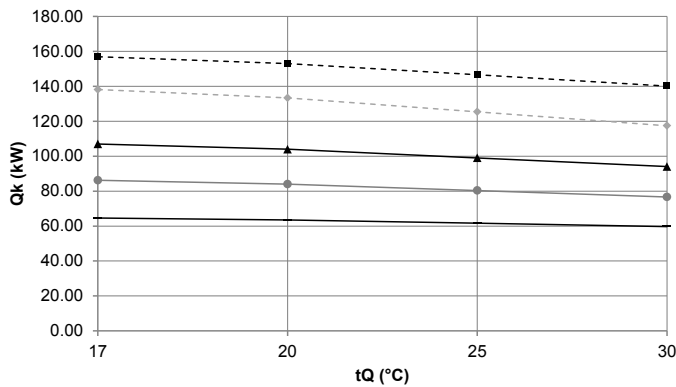
■ Dimensions

Performance data – cooling

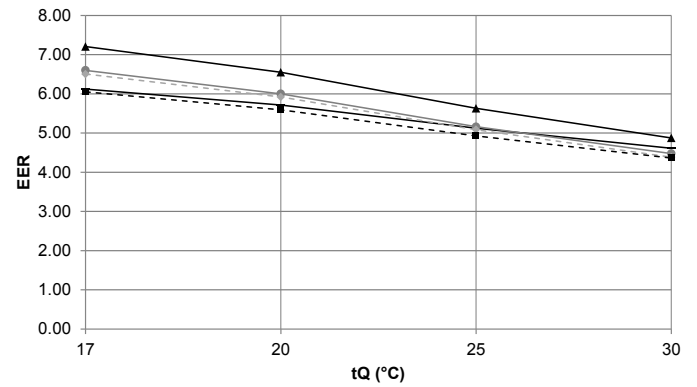
Maximum cooling capacity

Hoval Thermalia® dual R (55-140) with R410A

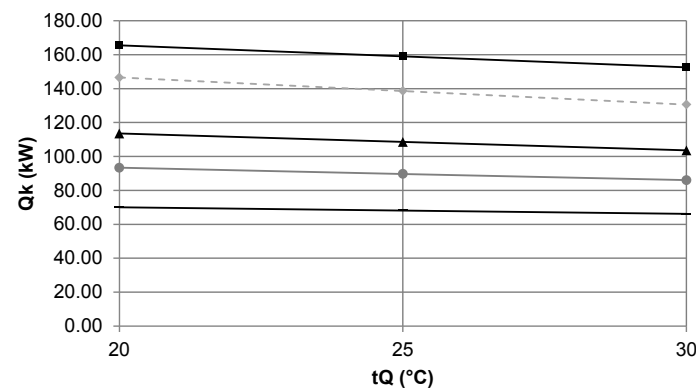
Cooling capacity - $t_{FL} 9^{\circ}\text{C}$



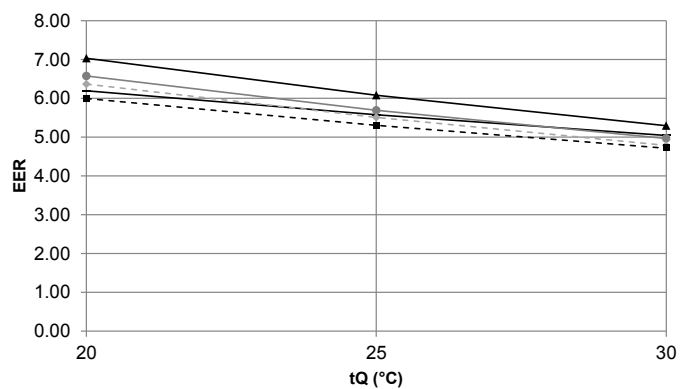
Coefficient of performance - $t_{FL} 9^{\circ}\text{C}$



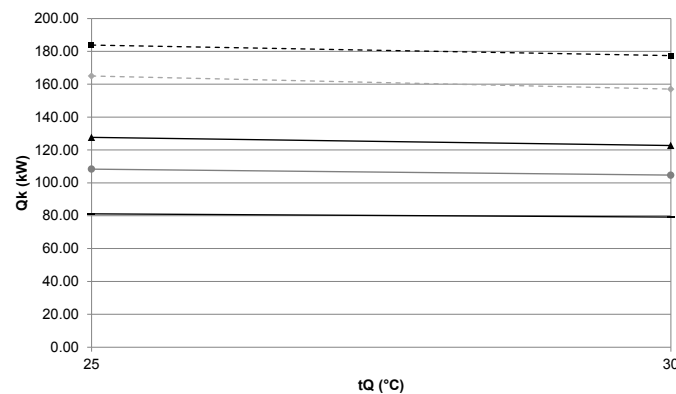
Cooling capacity - $t_{FL} 12^{\circ}\text{C}$



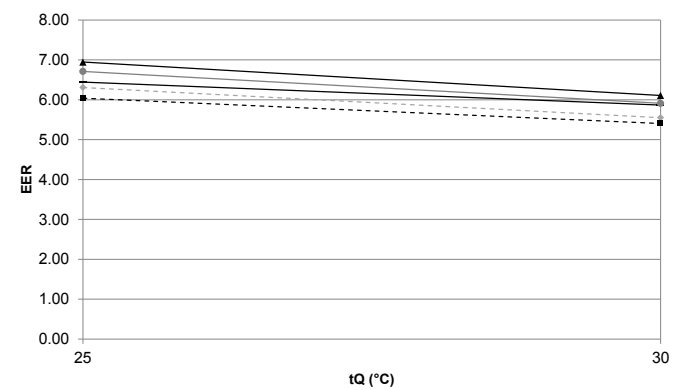
Coefficient of performance - $t_{FL} 12^{\circ}\text{C}$



Cooling capacity - $t_{FL} 18^{\circ}\text{C}$



Coefficient of performance - $t_{FL} 18^{\circ}\text{C}$


 t_{FL} = Cooling water flow temperature ($^{\circ}\text{C}$)

 t_Q = Source temperature ($^{\circ}\text{C}$)

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

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

- Thermalia® dual R (55)
- Thermalia® dual R (70)
- ▲— Thermalia® dual R (85)
- ◆— Thermalia® dual R (110)
- Thermalia® dual R (140)

■ Dimensions

Performance data – cooling

Hoval Thermalia® dual R (55-140)

Data according to EN 14511

Type	Heat source Medium t1	tQ °C	R (55)			R (70)			R (85)			R (110)			R (140)		
			Qk kW	P kW	EER	Qk kW	P kW	EER	Qk kW	P kW	EER	Qk kW	P kW	EER	Qk kW	P kW	EER
9	Brine (Sole)	17	64.66	10.56	6.12	86.20	13.06	6.60	106.97	14.84	7.21	138.10	21.23	6.51	156.90	25.92	6.05
		20	63.52	11.11	5.72	84.00	14.00	6.00	103.98	15.87	6.55	133.33	22.51	5.92	153.02	27.35	5.59
		25	61.62	12.03	5.12	80.34	15.56	5.16	99.00	17.58	5.63	125.37	24.65	5.09	146.56	29.74	4.93
		30	59.72	12.94	4.61	76.67	17.13	4.48	94.02	19.29	4.87	117.42	26.79	4.38	140.09	32.12	4.36
12	Brine (Sole)	20	70.02	11.30	6.20	93.34	14.19	6.58	113.55	16.14	7.04	146.53	23.01	6.37	165.46	27.59	6.00
		25	68.12	12.21	5.58	89.67	15.76	5.69	108.57	17.85	6.08	138.57	25.15	5.51	158.99	29.97	5.30
		30	66.22	13.13	5.04	86.01	17.32	4.97	103.59	19.56	5.30	130.62	27.29	4.79	152.52	32.36	4.71
15	Brine (Sole)	25	74.61	12.40	6.02	99.01	15.95	6.21	118.15	18.12	6.52	151.77	25.65	5.92	171.42	30.20	5.68
		30	72.71	13.31	5.46	95.34	17.52	5.44	113.17	19.83	5.71	143.82	27.79	5.18	164.96	32.59	5.06
18	Brine (Sole)	25	81.11	12.59	6.44	108.34	16.15	6.71	127.72	18.39	6.95	164.97	26.15	6.31	183.86	30.44	6.04
		30	79.21	13.50	5.87	104.68	17.71	5.91	122.74	20.10	6.11	157.02	28.29	5.55	177.39	32.82	5.40

tFL = Cooling water flow temperature (°C)

tQ = Source temperature (°C)

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

P = Power consumption of the overall unit (kW) incl. high-efficiency pump, measured in accordance with EN 14511

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

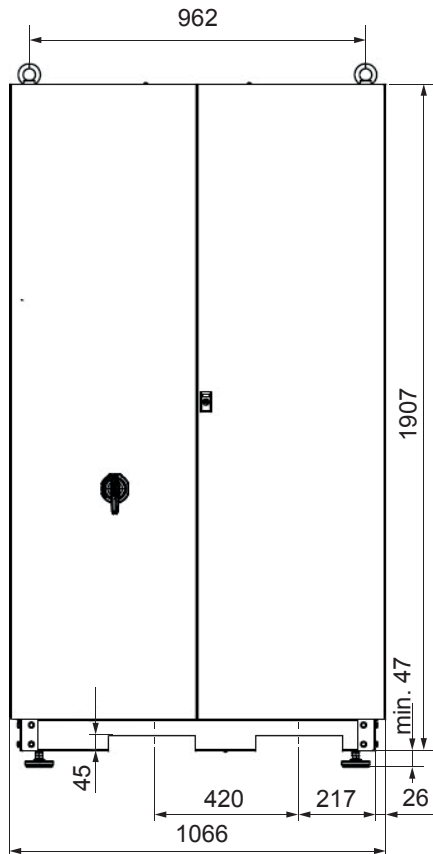
Take account of daily power cuts!

see Engineering

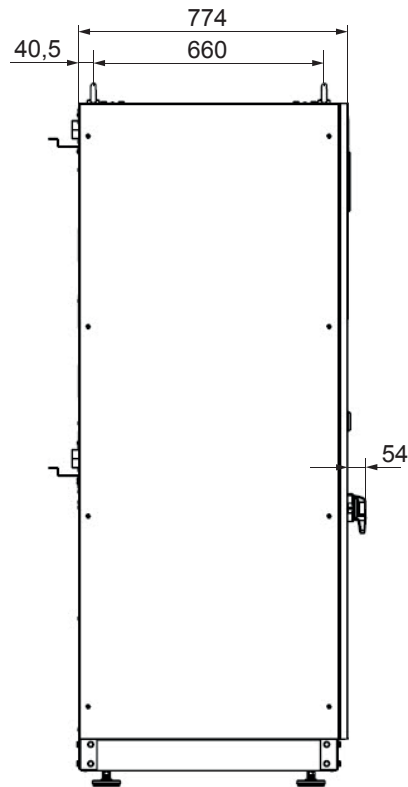
■ Dimensions

Hoval Thermalia® dual (55-85), dual H (35), dual R (55-85) (Dimensions in mm)

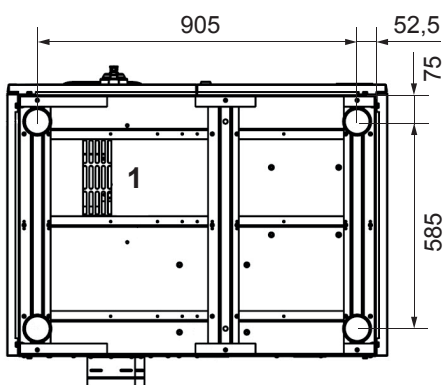
Front view



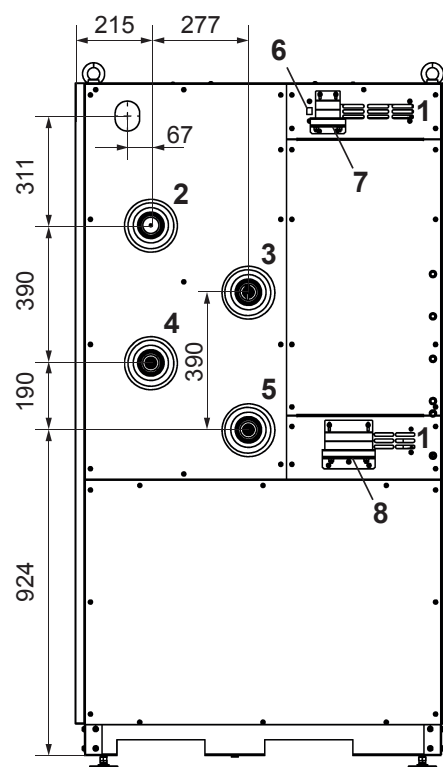
Side view



View from below



Rear view



- 1 Vent opening
- 2 Flow heating or storage tank Rp 2"
- 3 Brine or ground water inlet Rp 2"
- 4 Return heating or storage tank Rp 2"
- 5 Brine or ground water outlet Rp 2"
- 6 LAN interface
- 7 Cable feedthrough for sensors and actuators
- 8 Cable feedthrough for the mains supply and connection to the main circuit

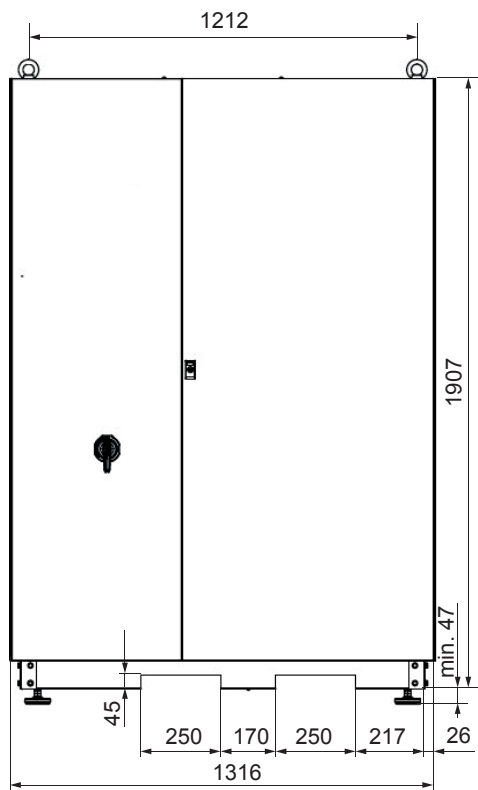
Adjustable feet
with M12 thread

■ Dimensions

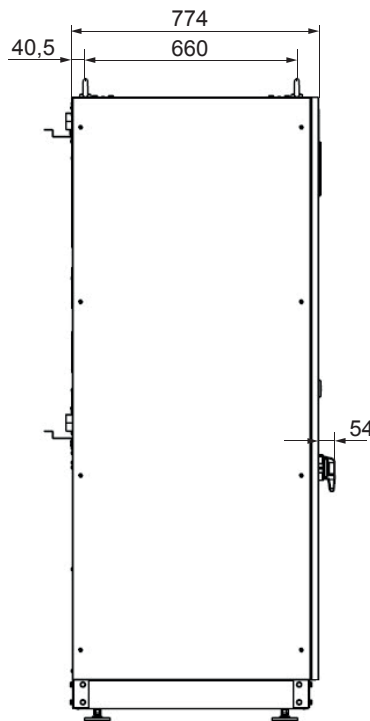
Hoval Thermalia® dual (110-140), dual H (50-90), dual R (110-140)

(Dimensions in mm)

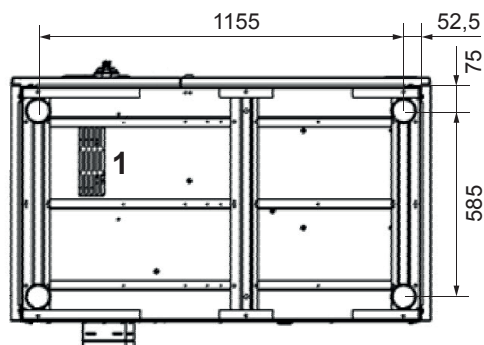
Front view



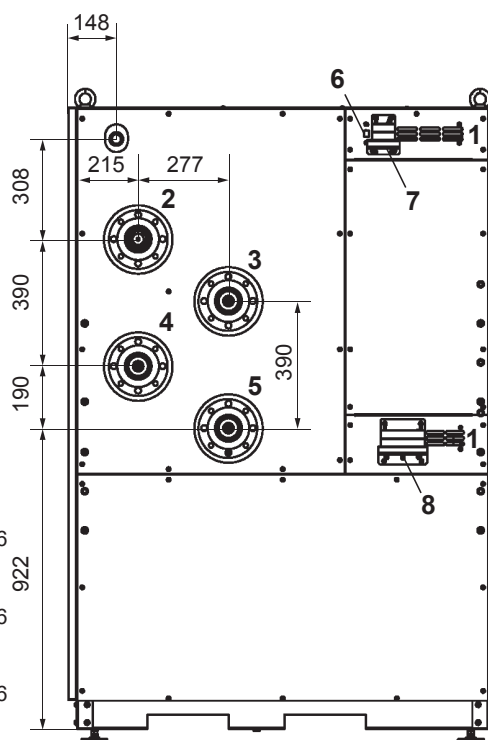
Side view



View from below



Rear view



- 1 Vent opening
- 2 Flow heating or storage tank
Thermalia® dual H (50,70) Rp 2"
- Thermalia® dual, dual R (110,140), dual H (90) flange DN80/PN6
- 3 Brine or ground water inlet
Thermalia® dual H (50,70) Rp 2"
- Thermalia® dual, dual R (110,140), dual H (90) flange DN80/PN6
- 4 Return heating or storage tank
Thermalia® dual H (50,70) Rp 2"
- Thermalia® dual, dual R (110,140), dual H (90) flange DN80/PN6
- 5 Brine or ground water outlet
Thermalia® dual H (50,70) Rp 2"
- Thermalia® dual, dual R (110,140), dual H (90) flange DN80/PN6
- 6 LAN interface
- 7 Cable feedthrough for sensors and actuators
- 8 Cable feedthrough
for the mains supply and connection to the main circuit

Adjustable feet
with M12 thread

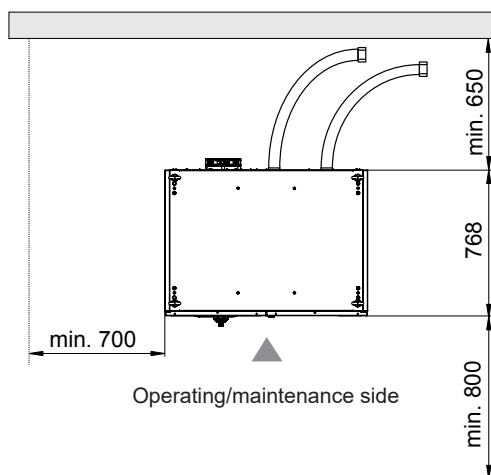
■ Dimensions

Space requirement

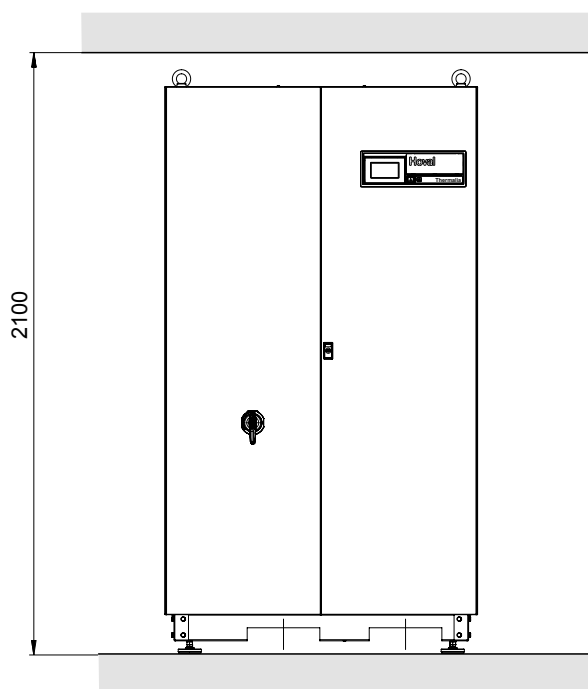
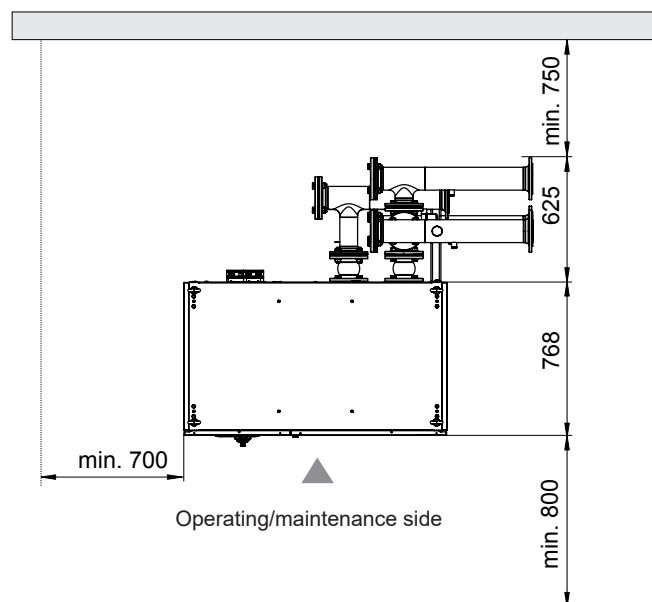
Required wall clearance for operation and maintenance

(Dimensions in mm)

Hoval Thermalia® dual (55-85), dual H (35-70), dual R (55-85)



Hoval Thermalia® dual (110-140), dual H (90), dual R (110-140)



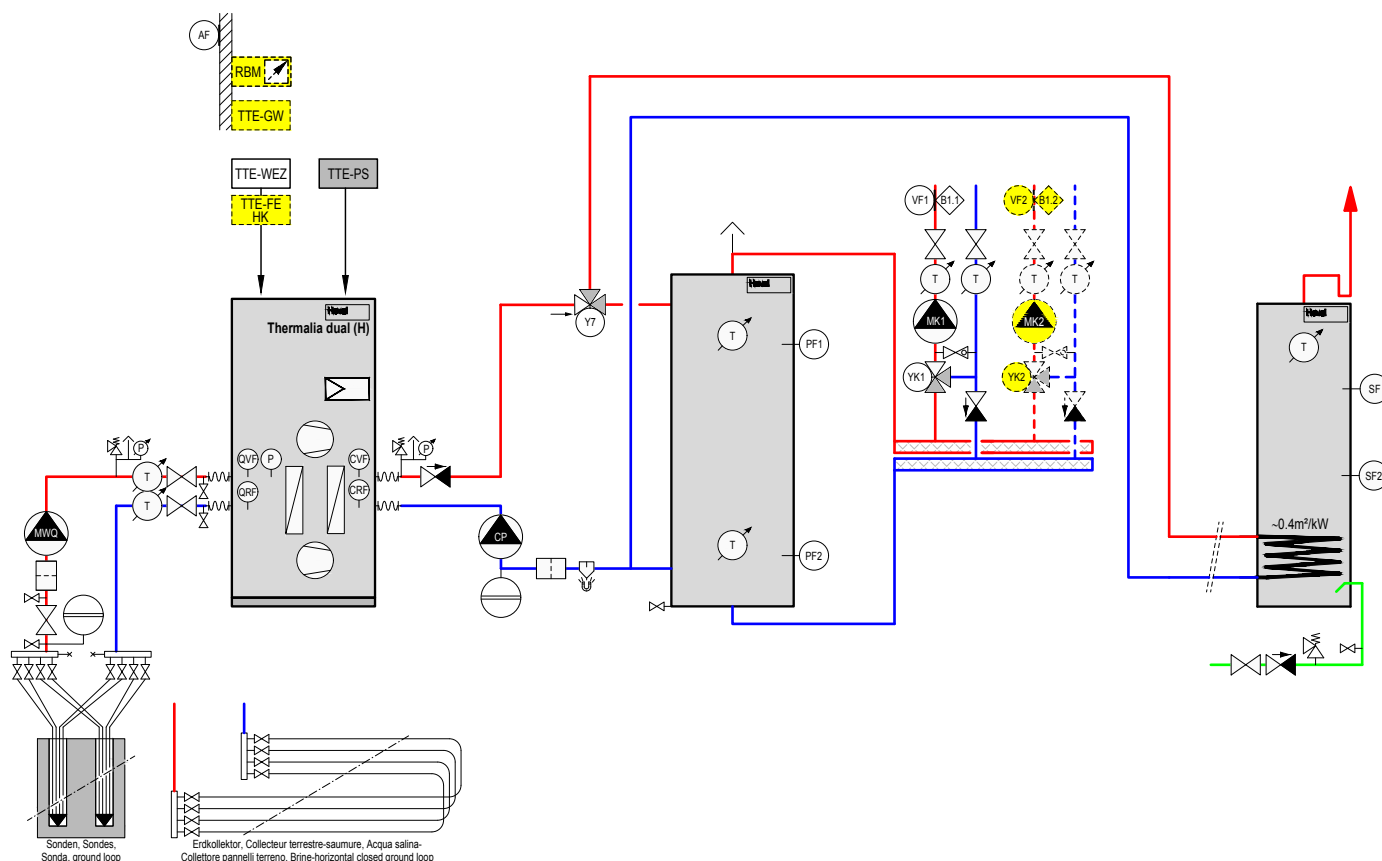
■ Examples

Thermalia® dual

Brine/water-water/water heat pump with

- energy buffer storage tank
- calorifier
- 1-... mixer circuit(s)

Hydraulic schematics BBBDE020



Important notices

- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
TTE-PS	TopTronic® E buffer module
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
PF1	Buffer sensor 1
PF2	Buffer sensor 2
Y7	Switching valve
CP	Condenser pump
MWQ	Delivery pump in heat source intermediate circuit (cold-water design)

Option	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway

TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

Description

Fan convectors FWT-CT

- Fan convector for heating and cooling
- Spreads warmth or cold if installed in a heating system with heat pump
- Sound power level min. - max. = 36-59 dB(A)
- Colour: white
- Dimensions
 - FWT-CT (2-4): 288 x 800 x 206 (H x W x D)
 - FWT-CT (5,6): 310 x 1065 x 224 (H x W x D)
- Weight
 - FWT-CT (2-4): 9 kg
 - FWT-CT (5,6): 14 kg
- Insulated with self-extinguishing thermal insulation class 1
- Remote control up to 9m possible (option)
- Exchangeable and washable air filter (self-extinguishing, class 1)
- 3-stage fan



FWT-CT (2-6)

Fan convectors FWT-CT

Type	Heat output t-FL 50 °C W	Cooling capacity t-FL 7 °C W	Flow rate l/h
FWT-CT (2)	2900	2290	420
FWT-CT (3)	3140	2460	460
FWT-CT (4)	3960	3080	570
FWT-CT (5)	5420	4250	780
FWT-CT (6)	6450	4690	910

Part No.



Fan convectors FWT-CT

for Belaria® SRM, compact SRM (4-16) and hybrid SRM

Fan convector for heating and cooling for wall installation. Spreads warmth or cold if installed in a heating system with heat pump.

Sound power level min. - max. = 36-59 dB(A)

Colour: white

Dimensions

FWT-CT (2-4): 288 x 800 x 206 (H x W x D)

FWT-CT (5,6): 310 x 1065 x 224 (H x W x D)

Weight

FWT-CT (2-4): 9 kg

FWT-CT (5,6): 14 kg

The minimum flow rate of the Belaria® SRM, compact SRM, hybrid SRM must be observed during the process of dimensioning.

Remote control FWT-CT must be ordered separately.

Type	Heat output t-FL 50 °C W	Cooling capacity t-FL 7 °C W	Flow rate l/h	Connection DN
(2)	2900	2290	420	20
(3)	3140	2460	460	20
(4)	3960	3080	570	25
(5)	5420	4250	780	25
(6)	6450	4690	910	25

6040 205

6040 206

6040 207

6040 208

6040 209



Remote control - FWT-CT

for Fan Coil FWT-CT (2-6)

with radio transmission

Operating mode selection

Display of operating states

Configurable day program

Temperature setting

6040 359

■ 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	Fitting	kvs	Ḃ [m³/h] at ΔP 50 mbar
20	G 1¼"	Rp ¾"	13	2.91
25	G 1½"	Rp 1"	13	2.91

Part No.

6045 768
6045 769



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

2070 331



In-wall installation box - fan convector
for fan convectors FWT-CT (2-6)
for simplified piping installation
Pipe inlet on top or on side
Condensate connection available
on bottom left or right
Outside diameter 16 mm
Consisting of:
in-wall installation box and cover panel
Cardboard cover to protect against
dirt build-up during installation
4 fixing screws
Material: plastic
Colour: white
Dimensions: 85 x 520 x 65 (H x W x D)

2067 872

Overflow valves
see chapter "Belaria® SRM, compact SRM"

■ Technical data

Fan convectors FWT-CT

Type				FWT-CT (2)	FWT-CT (3)	FWT-CT (4)	FWT-CT (5)	FWT-CT (6)
Heat output	t-FL 50 °C	W		2900	3140	3960	5420	6450
Cooling capacity	t-FL 7 °C	W		2290	2460	3080	4250	4690
Dimensions	Unit	Height	mm	288	288	288	310	310
		Width	mm	800	800	800	1065	1065
		Depth	mm	206	206	206	224	224
Weight	Unit	kg		9.0	9.0	9.0	14	14
	Operational weight	kg		9.6	9.6	9.6	15	15
Water flow	Cooling	l/h		420	460	570	780	910
	Heating	l/h		420	460	570	780	910
Pressure drop on water side	Cooling	kPa		34	24	31	28	32
	Heating	kPa		29	20	25	25	29
Sound power level	Stage high	dB (A)		45	48	55	55	59
	Stage medium	dB (A)		41	44	50	51	54
	Stage low	dB (A)		36	39	45	47	51
Sound pressure level	Stage high	dB (A)		34	35	42	42	46
	Stage medium	dB (A)		29	30	39	38	42
	Stage low	dB (A)		25	25	32	34	39
Water connections	Heat exchanger	Inches				½		
Electrical data								
Current consumption	Stage high	A		0.19	0.20	0.21	0.29	0.34
	Stage medium	A		0.18	0.20	0.20	0.26	0.32
	Stage low	A		0.17	0.19	0.19	0.25	0.31
Power consumption	Stage high	W		31	32	42	53	72
	Stage medium	W		29	31	37	47	68
	Stage low	W		25	29	33	42	60

Sound data

Type	Speed of rotation	1/1 octave sound power level [dB(A), ref. 20 µPa]							Total dB(A)
		125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
FWT-CT (2)	High	31	32	33	28	28	14	6	34
	Medium	25	29	28	24	19	9	5	29
	Low	20	28	24	20	11	8	6	25
FWT-CT (3)	High	30	33	33	32	28	17	8	35
	Medium	26	29	30	27	21	11	7	30
	Low	19	25	25	21	14	6	6	25
FWT-CT (4)	High	41	39	39	38	36	26	14	42
	Medium	38	36	37	34	32	22	10	39
	Low	30	30	31	28	23	12	7	32
FWT-CT (5)	High	37	38	38	39	33	22	11	42
	Medium	33	35	35	35	29	17	8	38
	Low	29	33	32	31	23	12	7	34
FWT-CT (6)	High	42	42	42	42	40	31	21	43
	Medium	37	38	39	38	34	24	13	42
	Low	34	35	36	35	30	20	9	39

Operating range

Thermal carrier: Water
 Water temperature: 4-50 °C
 Maximum permitted water-side pressure: 16 bar
 Air temperature: as below

Heating

Temperature	Ts [°C]	Th [°C]
Min. indoor temperature	15	-
Max. indoor temperature	27	-

Cooling

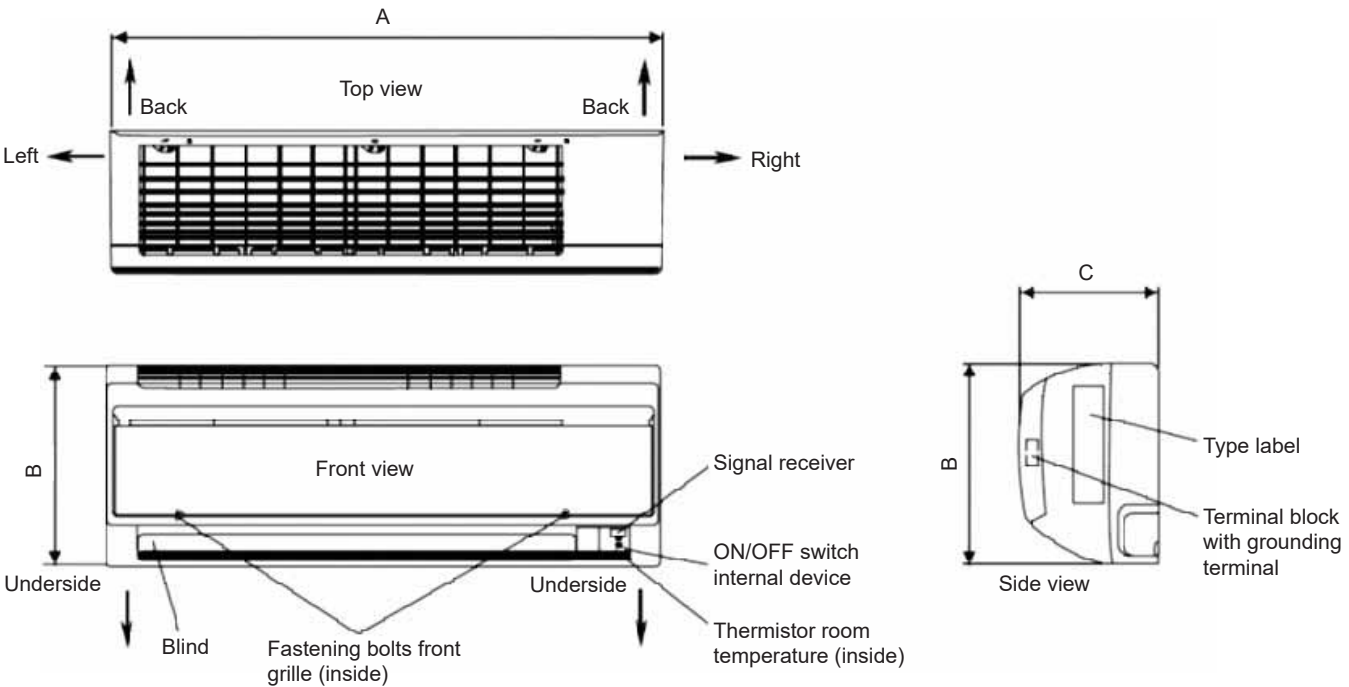
Temperature	Ts [°C]	Th [°C]
Min. indoor temperature	19	14
Max. indoor temperature	32	23

Ts = Dry temperature
 Th = Cooling limit temperature

■ Dimensions

Fan convectors FWT-CT
(Dimensions in mm)

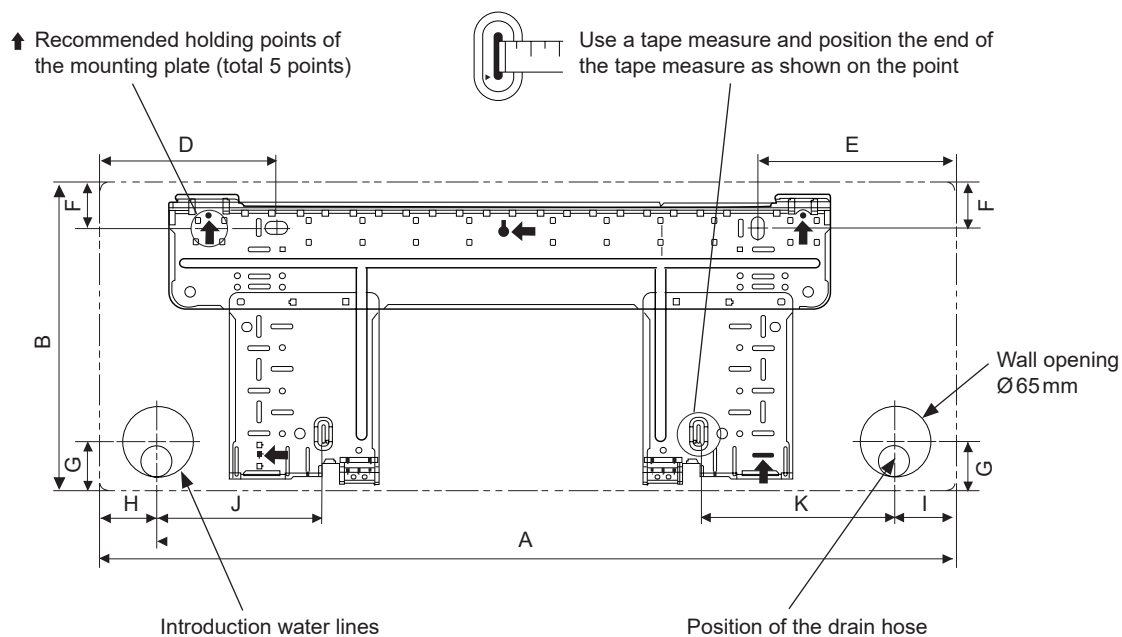
The marking → indicates the direction of the pipe



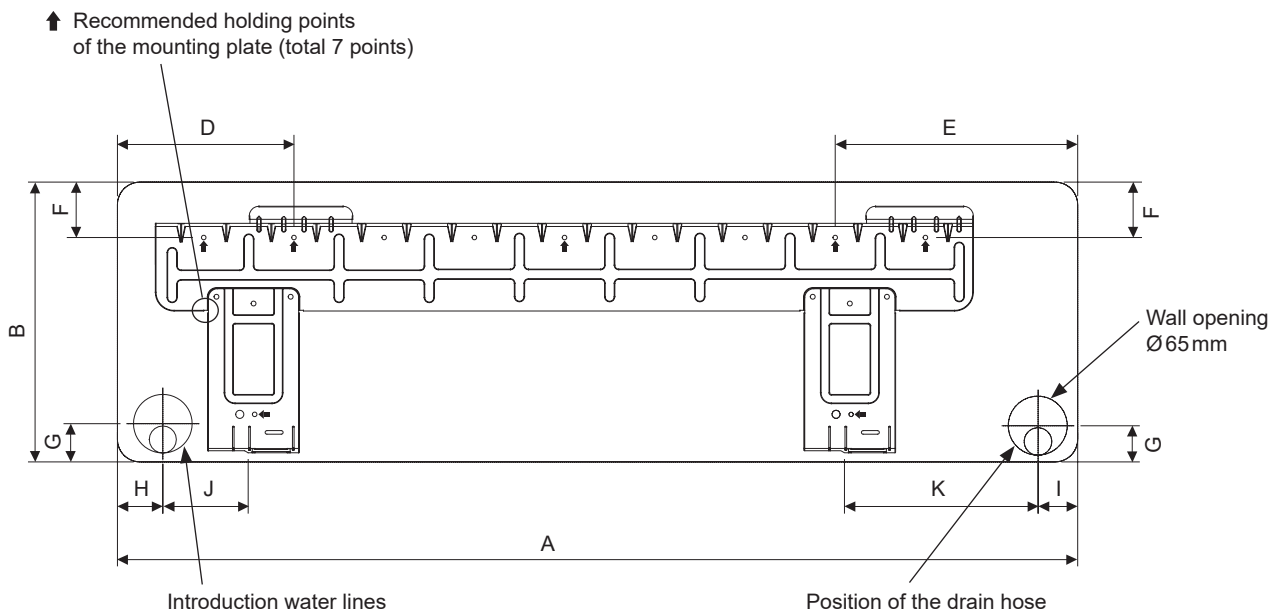
Type	A	B	C
FWT-CT (2-4)	800	288	206
FWT-CT (5.6)	1065	310	224

■ Dimensions

Mounting plate FWT-CT (2-4)



Mounting plate FWT-CT (5,6)

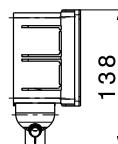
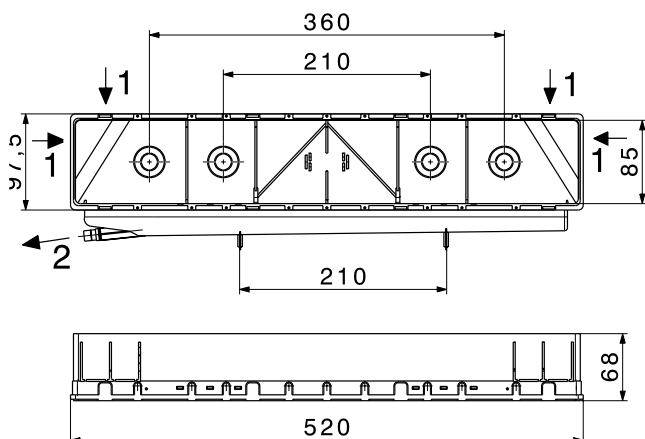


Type		A	B	C	D	E	F	G	H	I	J	K
FWT-CT (2-4)	mm	800	288	206	166	184	42	46	55	56	154	182
FWT-CT (5.6)	mm	1065	310	224	190	173	61	40	45	48	91	219

■ Dimensions

In-wall installation box

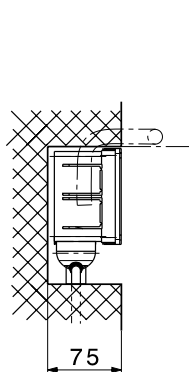
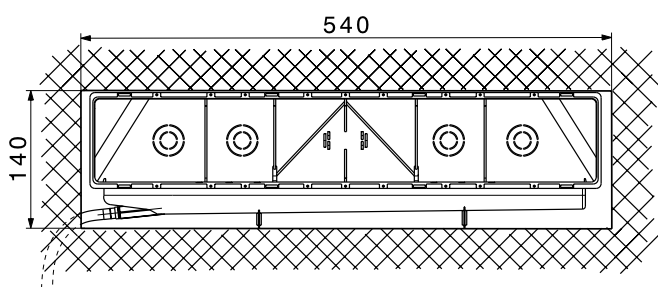
(Dimensions in mm)



- 1 Hydraulic and electrical connection
- 2 Condensate drain DN 15 (optionally left or right)

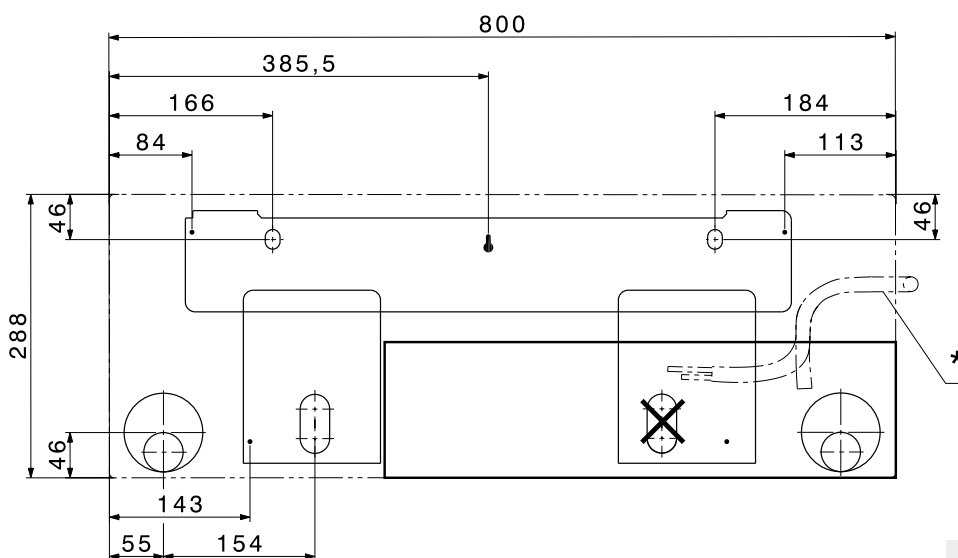
Wall opening

(Dimensions in mm)



Fan convectors FWT-CT (2-4) incl. mounting plate and in-wall installation box

(Dimensions in mm)

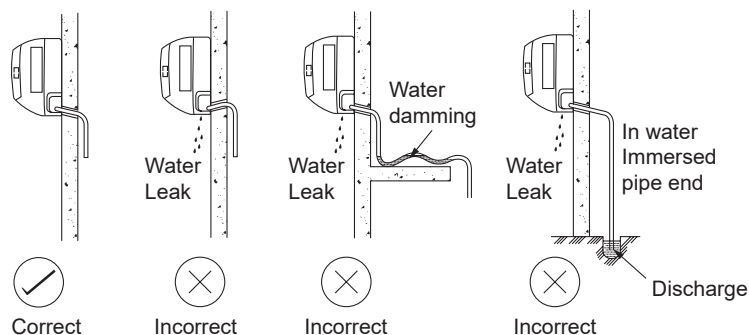


* Install possible connection variants on site if necessary.

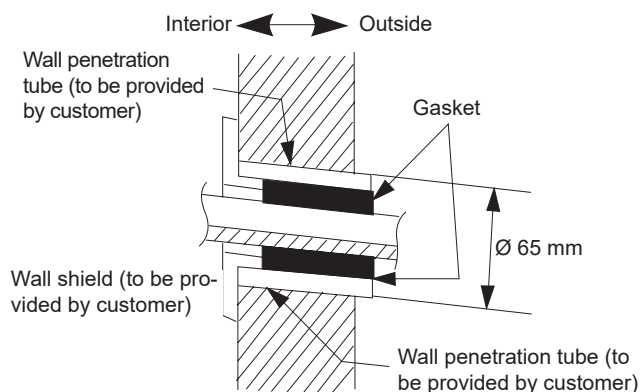
■ Engineering

Condensate drain

The interior **condensate drain** must slope downwards for draining away condensate without problems. Avoid circumstances which could cause water to emerge.



Hole made by tapered bit



Selection table

for Belaria® SRM, compact SRM, hybrid SRM

To ensure correct function of the Belaria® SRM, fan convectors are only allowed to be selected according to the table below. If a fan convector is used which has a lower cooling capacity than that of the heat pump, the volume of the intermediate tank must be at least 200 litres.

		FWT-CT				
		(2)	(3)	(4)	(5)	(6)
Cooling capacity A35/W7 *		2.29	2.46	3.08	4.25	4.69
Belaria® SRM (4)	1.35	•	•	•	•	•
Belaria® SRM (6)	1.65	•	•	•	•	•
Belaria® SRM (8) / hybrid SRM (8/32)	1.92	•	•	•	•	•
Belaria® SRM (11)	3.51				•	•
Belaria® SRM (14)	3.78				•	•
Belaria® SRM (16)	3.93				•	•

* 30 % modulated

■ Example

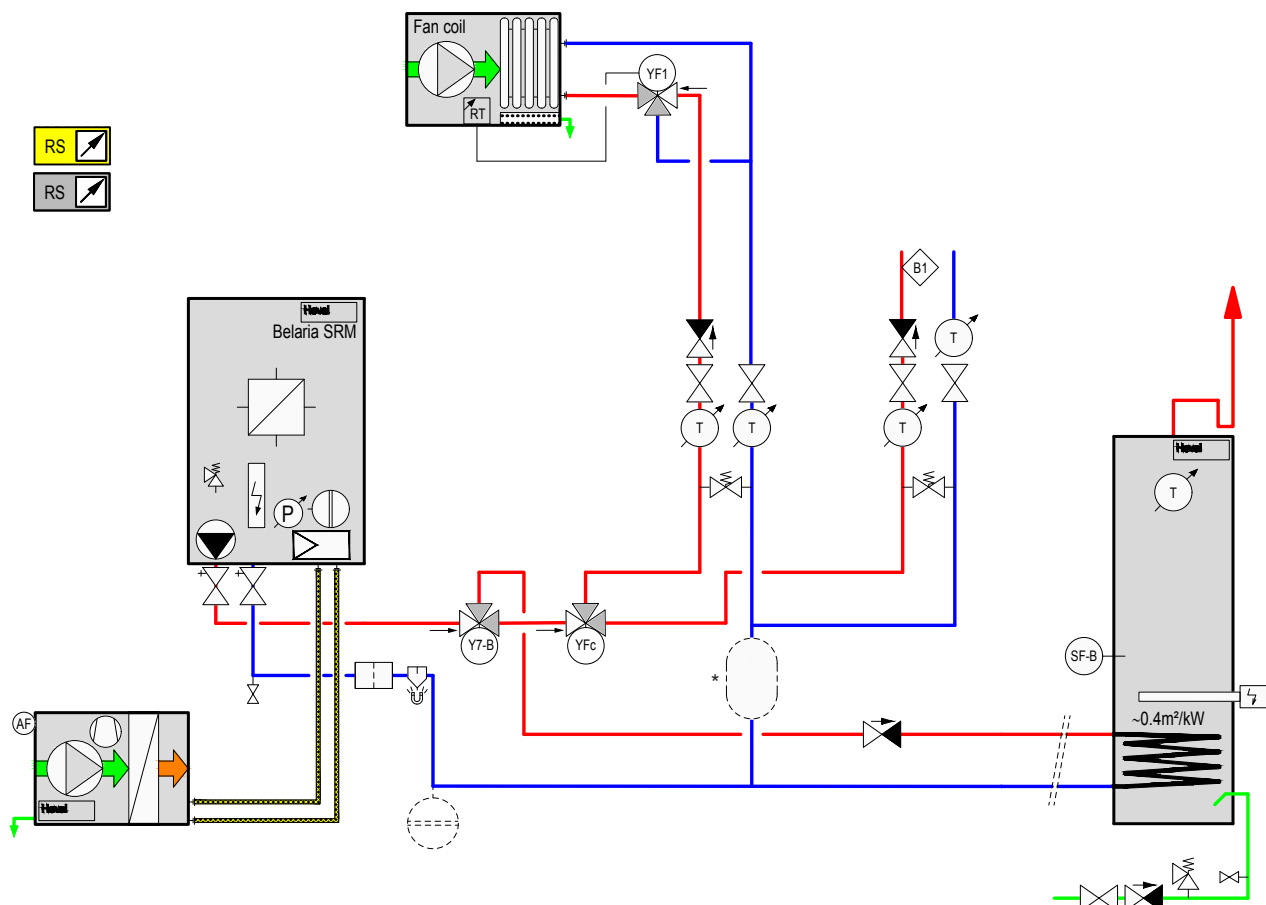
Hoval Belaria® SRM

Air/water heat pump with

- calorifiers
- Cooling fan convector (fan coil)
- 1 direct circuit

Hydraulic schematic BBAAE020

Sample applications with several
blower convectors on request.



* Additional volume for defrosting procedure

Important notices

The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on site, dimensioning and local regulations.

With underfloor heating, a flow temperature monitor must be installed. Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing! Install pockets to prevent single-pipe gravity circulation!

B1	Flow temperature guard (if required)
AF	Outdoor sensor
YF1	Actuator Fan Coil
Y7-B	Switching valve (Belaria® SRM)
YFc	Switching valve (fan coil)
SF-B	Hot water sensor

Option

BR	Burner connection
RT	External room/moisture thermostat

CAUTION

There must be an overflow valve in the cooling circuit!

■ Engineering

General

Requirements and directives

The following requirements and directives must be complied with:

- Technical information and installation instructions from Hoval
- Hydraulic regulations and those pertaining to instrumentation and control
- Building regulations
- Fire protection regulations
- Regulations of the local power station
- VDI 4640: Thermal use of the underground
- DIN EN 1736: Refrigerating systems and heat pumps
- DIN EN 378: Refrigerating systems and heat pumps - Safety and environmental requirements
- DIN EN 13313: Refrigerating systems and heat pumps - Competence of personnel
- VDI Directive 2035: Protection against corrosion and boiler scale in heating and domestic hot water systems.
- Country-specific and regional regulations and laws, in particular
- EN 12828: Heating systems in buildings - Design of hot water heating systems
- EN 12831: Heating systems in buildings - Method for calculation of the design heat load
- EN 15450: Heating systems in buildings - Design of heat pump heating systems

Switzerland:

Environment

- Chemical risk reduction ordinance (CRRV), Appendix 2.10 ff
- Instructions for using heat from water and ground (Buwal)
- Instructions for using heat with closed geothermal probes (Buwal)
- Noise abatement regulations (LSV)
- SN 253 120 (refrigerant definitions)
- Cantonal and local regulations

Electrical connection

- VSE recommendations for connecting heat pump systems for heating and domestic water heating to the network of electricity companies (2.29d, September 1983)
- Regulations of the local power station
- Do not attach any rigid connections (e.g. cable duct) to the heat pump housing

Planning and design

- Cantonal and local fire prevention authority regulations as well as state-specific regulations
- SWKI directive 92-1 hydraulic circuit of heat pump heating systems
- FWS and GKS regulations and codes of practice
- SWKI 93-1 guidelines "Safety engineering installations for heating systems"
- Bivalent plants: special engineering guidelines for the corresponding supplementary heat generator must be observed
- SIA 384/6 Geothermal probes

Austria:

Environment

- ÖWAV code of practice 207: Thermal use of underground water and the underground – heating and cooling
- ÖNORM S 5021: Basic acoustical principles for town, regional and physical planning
- ÖAL Directive no. 3: Assessment of noise imissions in the neighbouring area

Electrical connection

- Country-specific and regional regulations and laws, in particular ÖVE directives

Planning and design

- OIB Directive no. 4: Safety in use and barrier-free access
- ÖNORM B3417: Safety equipment for roofs
- ÖNORM H 5151-1: Design of hot water central heating systems with or without water heating
- ÖNORM H 5195-1 and -2: Heat transfer media for building services systems
- ÖNORM M 7755: Heat pump heating systems

Germany:

Environment

- DIN 8901: Refrigerating systems and heat pumps - Protection of soil, ground and surface water
- TA-Lärm: Requirements on the installation location

Electrical connection

- VDE directives
- Technical connection condition (TAB 2007) for connecting to the low voltage grid
- DIN 8947: Heat pumps; heat pump units with electric driven compressors for heating of water

Planning and design

- Energy Conservation Ordinance (EnEV)
- Renewable Energies Heating Law (EEWärmeG)
- Drinking Water Ordinance (TrinkwV)
- DVGW worksheets W 551 and W 553
- DIN EN 15450: Heating systems in buildings - Design of heat pump heating systems

Energy buffer storage tank

An energy buffer storage tank ensures optimal operating conditions for the heat pump.

- Hydraulic decoupling of the various volumetric flows from the heat pump and heat distribution system (heating)
 - Absorbs the power reserves of the heat pump and reduces the switch-on frequency (cycling)
 - Allows several heating circuits to be connected
- Hoval Belaria® twin air/water heat pumps and Thermalia® twin and Thermalia® dual brine/water heat pumps require an energy buffer storage tank.

An energy buffer storage tank can be dispensed with if the following pre-conditions are met:

Switzerland and Austria:

If there is a direct circuit of panel heating with storage capacity and a constant flow rate (2/3 must be incapable of being shut off; exception: Hoval Belaria® twin I, twin IR, twin A, twin AR).

Germany:

- Underfloor heating with storage capability and constant flow rate at all times through the heating system and heat pump
- The system volume must be at least 15 litres water content per kW heat output of the heat pump at the standard point W10W35, B0W35 or A2/W35

- A bypass with relief valve must be installed to ensure the minimum flow rate is achieved. The minimum water content of 15 litres/kW heat output is required between heat pump and bypass.

The energy buffer storage tank has the following dimensions:

$$V_{SP} \geq \frac{220 \cdot \dot{Q}_{HP}}{\Delta t \cdot n} \quad [\text{dm}^3]$$

V_{SP} Volume of the energy buffer storage tank [dm³]

\dot{Q}_{HP} Max. heat output of the heat pump [kW]
In 2-stage machines, the output of stage 1 should be used in the calculation

Δt Temperature difference between the on/off command

n Switching frequency per hour (maximum 3)

Energy buffer storage tank for optimising running time:

If the minimum volume cannot be met by panel heating, a minimum volume of 20 l/kW is to be recommended for the design of the energy buffer storage tank.

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

Set-up

The Hoval Thermalia® and Belaria® heat pumps can be mounted without a base in the boiler room.

- The installation location must be selected in accordance with the valid requirements and directives. Rooms with high air humidity, for example laundry rooms, etc. are not suitable installation locations (dewpoint <10 °C).
- The installation location must be free from dust or other foreign matter which could lead to contamination
- Access for the purpose of operation and maintenance must be ensured
- Penetrations and openings in the masonry must be created proficiently (cold bridges, etc. on the outside wall must be avoided at all costs)
- Concrete shafts and light wells by means of which the air is drawn in or blown out must be provided with drainage
- If the ambient temperature of the heat pump is less than 10 °C, it must be equipped with a crankcase heater for each compressor. This applies to heat pumps whether they are set up indoors or outdoors.

Noise emissions

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. If air/water heat pumps are set up indoors, the intake and exhaust air openings or the installation location must be selected so that the noise emissions are not perceived as a disruptive.

■ Engineering General

The openings in the masonry for intake and exhaust air or the installation location must be made in the less frequented area of the building (not below or adjacent to living rooms and bedrooms).

Air ducts made of concrete have unfavourable acoustic properties and often magnify noise emissions. It is therefore advisable to equip the air ducts with a sound-absorbing, weatherproof lining or with sound attenuation splitters.

When air/water heat pumps are set up outdoors, optimum planning of the installation location is particularly important, since the noise not only affects the building in question but also often adjacent buildings or properties. The installation location must be selected so that there are no living rooms and bedrooms in the noise emission area. In many cases, selecting the set-up location on the "noisy side" facing the road or street has proven to be ideal.

When it comes to noise emissions, local conditions and individual noise sensitivity play a significant role, which means it is recommended for a specialist (acoustic engineer) to be consulted with regard to finding a solution. No rigid connections (e.g. cable ducts) are allowed to be attached to heat pumps, in order to avoid solid-borne noise.

Design of the heat source

An earthbound heat source (flat collector, depth probe) must be designed for the total energy requirement. The total energy requirement is the sum of the energy requirements for room heating, water heating and, where applicable, special applications. The heat source is not designed for the heat pump!

Off-periods by power companies

If the power supply for the heat pump is temporarily shut down by the power company (for example due to special tariffs), this has to be taken into account in the design of the heat pump.

The daily heat quantity must then be produced when electricity is available. The heat pump must be designed for the maximum off-period in accordance with the energy supply contract. With radiator heating systems, the loss of radiant heat if the electricity is switched off by the energy company is seen as a nuisance, even though the room temperature may not in fact drop significantly. This must be taken into consideration in the design process. A larger energy buffer storage tank can only bring a limited improvement as with a heat pump, the temperature elevation is kept to a minimum for a better COP.

Example:

Calculated heat demand without off-periods:

10 kW (in 24 hours)

Off-period: 2 x 2 hours = 4 hours

Electricity available: 20 hours

$$\frac{10 \text{ kW} \cdot 24 \text{ h}}{20 \text{ hours}} = 12 \text{ kW}$$

This results in a surcharge of 20 %.

Surcharges for typical off-periods:

Off-period	Surcharge
1 x 1 hour	5 %
1 x 2 hours	10 %
2 x 2 hours	20 %
3 x 2 hours	33 %

Hot water supply

If the domestic hot water is heated using the heating heat pump, this must be taken into account when designing the heat pump.

One and two-family home

0.25 kW per person needs to be added to the heat output. This corresponds to a domestic hot water requirement of about 50 litres at 45 °C per day.

Germany:

Multi-family home:

In the multi-family home, the design is carried out according to DIN EN 15450 taking account of the hygiene requirements as stated in the Drinking Water Ordinance as well as DVGW worksheets W 551 and W 553. Accordingly, it is first necessary to calculate the maximum domestic hot water requirement and the consumption behaviour. As a rule of thumb, a daily average domestic hot water requirement of 1.45 kWh per person can be assumed. At a storage temperature of 60 °C, this corresponds to a water quantity of 25 l per person. In the case of increased domestic hot water requirement (large tubs, monsoon showers, etc.) the required bulk output and the daily domestic hot water requirement must be calculated and taken into consideration when dimensioning the heat pump or heat source.

Ideally, calorifiers with large inlying plain tube heat exchangers (CombiVal ESR and ESSR) are used.

The maximum heat output of the heat pump is decisive for setting the size of the heat exchanger surface area:

- Heat exchanger surface area = 0.3-0.4 m² per kW max. heat pump heat output during the operating time of the system (air/water heat pumps with A20/W55)
- In 2-stage heat pumps, the output of the first stage can be used

Power requirement for special applications

If the heat pump is also used, for example, to heat swimming pools, it is important to take the greatly increased energy requirement into consideration in the design phase.

In the case of an outdoor swimming pool which is only heated outside the heating season, the increased annual runtimes mean that the heat source needs to be correspondingly enlarged (only for geothermal heat).

If an indoor swimming pool is heated all year round, the required output for room heating and heating of the water in the pool must be added to the total output, in addition to the increased runtime.

Installation

The system must be filled in accordance with the applicable standards.

Where copper is used as an installation material, damage to the rubber tubes used with heat pumps to reduce the structure-borne sound level may occur. As an alternative, corrugated stainless steel tubing can be used (on site). However, such pipes bring less reduction of structure-borne sound.

An air separator must be installed in the flow pipe. A sludge separator must be installed in the return pipe to the heat pump.

Baking out

The baking out of buildings and floors must not be done with brine/water heat pumps (heat source linked to earth). If this instruction is not observed, the additional load can lead to irreparable damage to the heat source. Alternative heat sources should thus be used for the baking out.

This is generally done by installing an electric water heater.

However, mobile heaters running on electricity, oil or gas can also be used.

Operating modes

Monovalent:

As a stand-alone heat generator, the heat pump covers all heat demands at all times. For the monovalent operating mode, ensure that the maximum achievable flow temperature of the heat pump is greater than the maximum required flow temperature of the heating.

Example of new systems:

Brine/water or water/water heat pumps.

Bivalent parallel and single energy source:

The heat pump alone heats until the switch-on point (bivalent point) is reached. An additional heater then heats the water in parallel to this. If this additional heater is an electric water heater, then the operating mode is monoenergetic. For a bivalent parallel operating mode, ensure that the maximum achievable flow temperature of the heat pump is greater than the maximum required flow temperature of the heater.

Example: New installation of air/water heat pumps and retrofitting during refurbishment of an old building.

Bivalent alternative:

The heat pump alone heats until the switching point (bivalent point) is reached. An additional heat generator then heats the water alone. For the alternative bivalent operating mode, ensure that the maximum achievable flow temperature of the heat pump is greater than the maximum flow temperature of the heater. Higher temperatures are thereafter possible with the additional heat generator.

Example: Retrofitting during refurbishment of an old building

Bivalent semi-parallel:

The heat pump alone heats until the switch-on point (bivalent point) is reached. An additional heater then heats in parallel to this until the switch-off point of the heat pump. The heat pump can be switched off in this case either based on efficiency or energy cost criteria, taking account of the necessary flow temperature.

■ Engineering

General

Performance data

The standard points for specifying the relevant values are clearly defined. The following conditions apply to heat pump systems:

Air/water A2W35
Brine/water B0W35
Water/water W10/W35

Heat source:

- A2 = Air inlet temperature 2 °C
- B0 = Brine inlet temperature 0 °C
- W10 = Water inlet temperature 10 °C

Heat utilisation (heating):

- W35 = Water outlet temperature 35 °C

Electrical data

The grid operators require the following information in order to grant approval:

I_{\max} (A)	=	Max. current consumption of the compressor. Used for setting the dimensions of the feeder cable and fusing.
Blocking current referred to as LRA (A)	=	Current consumption on direct starting. Used for assessing the system perturbation (voltage dip)
Starting current (A)	=	Current consumption on direct starting with external starting current limiter
$\cos \phi$	=	Power factor; used for setting the dimensions of any power factor correction

This information specific to heat pumps is listed for the specific products in the Hoval catalogue and on the heat pump rating plate.

The required clarifications and the approval request must be made during the planning phase of the system. The approval of the responsible grid operator must have already been obtained when the heat pump is ordered!

If the inrush current exceeds the maximum values defined by the grid operator, a frequency converter must be supplied or installed by the client.

For brine/water heat pumps with flow temperatures higher than 60 °C and all air/water heat pumps

Maximum filling quantity without/with demineralisation

	Total hardness of the filling water up to.....							
[mol/m ³] ¹	<0.1	0.5	1	1.5	2	2.5	3	>3.0
f°H	<1	5	10	15	20	25	30	>30
d°H	<0.56	2.8	5.6	8.4	11.2	14.0	16.8	>16.8
e°H	<0.71	3.6	7.1	10.7	14.2	17.8	21.3	>21.3
~mg/l	<10	50.0	100.0	150.0	200.0	250.0	300.0	>300
Conductance ²	<20	100.0	200.0	300.0	400.0	500.0	600.0	>600
Output of the individual heat generator	Maximum filling quantity without demineralisation							
up to 50 kW	NO	50 l/kW	50 l/kW	20 l/kW	20 l/kW	20 l/kW	20 l/kW	
50 to 200 kW	REQUIREMENT	50 l/kW	20 l/kW	20 l/kW	Always demineralise			

¹ Total alkaline earths

² If the conductance in µS/cm exceeds the value in the table, a water analysis will be required.

Water quality

Heating water:

- The requirements of European standard EN 14868 and VDI 2035 or SIA 384/1:2009 must be met.
- Hoval heat generators are suitable for heating systems without significant oxygen intake (system type I in accordance with EN 14868).
- Systems with
 - **continuous** oxygen intake (e.g. underfloor heating systems without diffusion-proof plastic piping) or
 - **intermittent** oxygen intake (e.g. requiring frequent topping-up) must be equipped with a **system separation**.
- Treated heating water must be tested at least 1x per year, or more frequently if specified by the manufacturer of the inhibitor.
- In the case of existing systems (e.g. replacing the heat generator), if the water quality of the existing heating water meets the requirements of VDI 2035, re-filling the system is not recommended. The requirements of VDI 2035 also apply to replacement water.
- Before filling new systems and, where necessary, existing systems, the heating system must be professionally cleaned and flushed! The heat generator must not be filled until the heating system has been flushed.
- Parts of the heat generator/calorifier which come into contact with water are made of copper and stainless steel.
- Due to the danger of stress cracking corrosion to the stainless steel part and pitting in the copper part of the heat generator, the chloride, nitrate and sulphate content in the heating water must not exceed 100 mg/l in total.
- The pH value of the heating water should be between 8.3 and 9.0 after 6 - 12 weeks of heating operation to avoid obstruction of the flow as a result of deposits of corrosion products from other heating system materials.

■ Engineering

General

Filling and replacement water:

- As a rule, the best filling and replacement water for a system with Hoval heat generator is untreated mains water. However, the quality of the untreated mains water must still meet the requirements of VDI 2035 or be demineralised and/or treated with inhibitors. The requirements of EN 14868 must be met in this context.
- To maintain the high efficiency of the heat generator, the water content of the system and the maximum flow temperature should not exceed the values in the tables, based on the output of the heat generator (smallest heat generator for systems with more than one heat generator)
- The total quantity of filling and replacement water added to the heat generator over its service life must not be higher than three times the system water content

Engineering checklist for heat pump systems

Hoval Belaria® SRM, compact SRM, SHM air/water heat pump (split design)

- Installation location of outdoor unit/position: air outlet and intake must be clear
- No parts and plants at risk of frost damage are allowed to be on the blow-out side
- The necessary clearance (see "dimensions/space required") and accessibility must be assured
- Noise development requires minimum distances from sensitive rooms in adjacent buildings. These must be adhered to (TA-Lärm).
- There must be a condensate drain from the outdoor unit
- The indoor unit must be positioned so the necessary clearances are complied with
- Pipes (refrigerant) must be routed in accordance with the specifications in the installation instructions
- Direct connection to the heating network only by differential pressure bypass valve (minimum flow rate) and intermediate tank (minimum water volume)
- Definition of hydraulic diagram according to Hoval standard for heating and possibly hot water
- Dimensions of heat pump type selected according to Q_h, flow temperature and operating method. (Table/heat output curves/bivalence point)
- Poss. selection of type with cooling function
- Cooling with fan coils (important: condensate drain with fan coils)
- Clarification of electrical supply with energy supply company (conditions/off-periods/connected load)
- Clarification of subsidy amounts and ancillary conditions

Hoval Thermalia® brine/water heat pump

- Clarification of geothermal probe holes
- Installation location (not under bedroom)
- Geothermal probe calculation (domestic hot water supplement/number of probes/pressure drop calculation; aim for minimum current consumption of brine pump)
- Definition of hydraulic diagram according to Hoval standard for heating and possibly hot water (combination with solar, possible cascade connection according to Hoval system technology)
- Passive cooling according to configuration based on Hoval system technology.
- Dimensions of heat pump type selected according to Q_h, flow temperature and operating method. (Table/heat output curves/bivalence point)
- Possible configuration of calorifier with corresponding size and required heat register size according to table
- Clarification of electrical supply with energy supply company (conditions/off-periods/connected load)
- Clarification of subsidy amounts and ancillary conditions

Hoval Belaria® twin I, twin IR and Belaria® twin A, twin AR air/water heat pump

- Installation location (indoor or outdoor installation). Air outlet and intake must be clear. Comply with notices on air guidance.
- No parts and plants at risk of frost damage are allowed to be on the blow-out side
- The necessary clearance (see "dimensions/space required") and accessibility must be assured
- Noise development (not under bedrooms)
- Noise development requires minimum distances from sensitive rooms in adjacent buildings. These must be adhered to (TA-Lärm). Provide attenuation measures if required.
- There must be a condensate drain
- Definition of hydraulic diagram according to Hoval standard for heating and possibly hot water preheating (combination with solar)
- Definition of heat pump type according to Q_h and flow temperature (table)
- Define size of buffer storage tank
- Possibilities for transporting in (Belaria® twin I, twin IR)
- Dimensions of heat pump type selected according to Q_h, flow temperature and operating method (tables/heat output curves/bivalence point)
- Possible configuration of calorifier with corresponding size and required heat register size (important: configure with A20W55)
- Positioning and integration of technical storage tank
- Clarification of electrical supply with energy supply company (conditions/off-periods/connected load)
- Clarification of subsidy amounts and ancillary conditions

Hoval Thermalia® ground source heat pump

- Clarification of ground water approval
- Geological water inspection report
- Ground water temperatures summer + winter/quantity in l/min or m³/h.
- Installation location (not under bedroom)
- Definition of hydraulic diagram according to Hoval standard for heating and possibly hot water
- Connection of ground water only via separating heat exchanger (intermediate carrier circuit). Separating heat exchanger is configured according to the heat pump type (table).
- Dimensions of heat pump type selected according to Q_h, flow temperature and operating method. (Heat output table. Important: intermediate carrier circuit: read out heat output and flow temperature at brine/water +7 °C.)
- Design of ground source heat pump and possible intermediate circuit pump according to nominal flow rates and pressure drops
- Passive cooling according to configuration based on Hoval system technology
- Possible configuration of calorifier with corresponding size and required heat register size according to table
- Clarification of electrical supply with energy supply company (conditions/off-periods/connected load)
- Clarification of subsidy amounts and ancillary conditions

■ Engineering General

Clarify which installation location and which system concept are provided, and contact Hoval in case anything is unclear.

Checks before installation

The following checks are required before installation:

- Consult the installation, operating and maintenance instructions of the Hoval Thermalia® and Belaria® heat pumps
- Access for the purpose of operation and maintenance
- Dimensions and position of the masonry openings
- Position of the heating and condensate drain connections
- Position of the condensate drain in the room
- Drainage of the area ducts or set-up area for the Belaria® and acoustic insulation of the air ducts
- Installation of Belaria® outdoor unit

Hydraulics

- Check the hydraulic piping of the system according to be selected schematic diagram
- Clarify any open issues before installation
- The electrical diagram does not serve as a hydraulic diagram, but merely for positioning of sensors, valves, pumps and thermostats, etc.
- Fittings and instruments must be installed according to the corresponding engineering documents

Electrical installation

- The electrical connection cables to the heat pump must be installed in a flexible way
- The information on the plant diagram must be complied with
- Quality and routing regulations for the sensor cables must be complied with
- The low-voltage cables must be routed separately (not in the same cable duct as 230 V or 400 V cables)
- Comply with the connection requirements of the grid operator (TAB 2007)
- If a frequency converter is required (inrush current), it must be supplied by the client

Checks before commissioning

The following items must be checked before notifying Hoval that the plant is ready for commissioning:

- Hydraulic piping
- Positioning and installation of the instruments and fittings
- Positioning and installation of the sensors according to the corresponding electrical diagram or project diagram
- Electrical connections for heat pump, control systems, sensors, pumps, motorised valves, etc.
- Functions of the complete heat source system
- Flushing, filling and venting of the complete system

Geothermal probe systems/surface collectors

Comply with the following in geothermal probe systems that are filled with a mixture of antifreeze and water:

- Fully demineralised water must be used
- The concentration of antifreeze must be selected at least so as to ensure protection against frost down to -15 °C and so that the required minimum concentration stipulated by the antifreeze manufacturer is maintained (protection against sludge formation and corrosion). However, the antifreeze concentrations should be kept as low as possible with a view to improved heat transmission and lower pump output (SIA standard 384-6 § 4.5.2).
- The antifreeze and the water must be mixed in the required concentration prior to filling. Filling with ready-mixed solution that meets the aforementioned requirements is recommended.

Caution!

The condenser and evaporator of a heat pump are sensitive to blockage, as a result of which the system must be flushed carefully on the heating and source sides before the heat pump is connected. The heat exchanger should not have any flow during the flushing procedure.

Hydraulic calibration

- The flow rates are calibrated by the installer. This should be based on the recommended nominal flow rate of the heat pump.
- In systems with a buffer storage tank, the flow rate in the fully opened heat circuit should not be greater than the flow rate in the buffer circuit, otherwise the colder heating water return will overflow through the hot water storage tank, leading to mixed temperatures in the flow to the heating system

Notice for commissioning

The registration form should be sent to Hoval 14 days in advance.

- The commissioning should be carried out during the heating period, the best time is during the transitional period
- Temporary electrical installations as well as systems operating in the building carcass are exposed to hazards (electrical power cuts, incorrect operation by third parties, etc.) which can lead to damage to the heat pump and the entire system
- In systems in the building carcass, it is not possible to maintain the boundary conditions such as installation location without frost risk, minimum required return flow temperature, etc. for the heat pump in practical terms, meaning that no correct operation is assured

Caution!

• Air/water heat pumps

The heat output of the air/water heat pump is significantly dependent on the outdoor temperature, as a result of which no commissioning activities should be undertaken at temperatures close to the freezing point, in the building carcass for drying out of the structure or for routing underfloor heating pipes (provide the technical storage tank with an electric heating element). Split pipes can only be evacuated properly at a temperature above 8 °C, as a result of which the equipment room must have a room temperature of at least 15 °C. Due to the risk of moisture entering the refrigeration circuit, the outdoor unit cannot be connected in rainy weather. During commissioning, the room temperature of the heated rooms must be at least 15 °C. If a load balancing storage tank (buffer) is provided, its heating water temperature is not allowed to be less than 20 °C during commissioning.

• Brine/water heat pumps

The brine/water heat pumps with geothermal probes as the heat source are not suitable for drying out the building carcass or for laying underfloor heating pipes, due to the output/load mixing ratio. The long running times of the heat pump can lead to excessive use of the geothermal probes and thus long-term damage as well as a lower utilisation temperature and even the establishment of permafrost.

Commissioning

It is used for checking and setting the definitive operating values of the system as well as for instructing the operating personnel.

During commissioning, the engineering setpoints of the plant must be known, and the following persons must be present:

- The installer to inspect the heating-side installation
- The electrician to inspect the electrical installation
- Hoval Service
- The building owner or the person responsible for operation

Caution!

If Hoval is required to undertake provisional commissioning in uninhabited building carcasses without the required general conditions and proficiently undertaken electrical and heating installation of the system incl. bleeding, Hoval will not accept liability for operation. The system is operated at the owner's own risk. The required visits to the system will be invoiced separately.

The installer/planner of the plant is responsible for the operating instructions and for providing instruction in third-party products and/or the entire system!

All Hoval conceptual drawings and engineering guidelines serve as aids during planning. The planner of the plant is responsible for its correct functioning.

■ Engineering General

Heat sources

The heat source (with the exception of the temperature level of the heating system) significantly determines the annual COP that can be achieved, the operational safety and efficiency of a heat pump system.

The most important factors are

- unrestricted availability during the utilisation period
- temperature level of the heat source during the utilisation period
- energy required for transporting the heat source
- chemical and physical safety of the heat source (working safety, maintenance work involved)

Proficient planning and undertaking of the heat source use are amongst the most important tasks for the planning and installer.

Heat sources that are predominantly used for heating living areas are natural and renewable heat sources such as:

- Fresh air
- Ground
- Ground water

Waste heat utilisation with heat pumps involves using the heat pump for heat recovery in which the planning must take account not only of the usual criteria such as temperature level, type (waste water, extract air, exhaust gas), chemical and mechanical cleanliness, etc. but also the simultaneity of availability and heat use. A precise analysis is absolutely essential.

Fresh air

Fresh air is available everywhere. The following aspects must be considered when planning with fresh air as the heat source:

- Application area of the heat pump
- Output fluctuations of the heat pump due to temperature fluctuations of the heat source
- Defrosting losses of the heat pump
- Noise emissions from pumping air
- Formation of condensation
- In coastal regions or other areas with salty air, corrosion can decrease the life-time of the evaporator

Ground

Setting up and operating geothermal probes and ground source collectors requires official approval. The heat capacity and heat conductivity of the soil depend on its composition and water content. It is possible to use it in two different ways.

- Vertically with geothermal probes
- Horizontally with ground collectors

Observe the following:

- The heat withdrawn at any one time is always significantly greater than can be replenished naturally
- In bivalent systems, the dimensions of the heat source system must be suitable with regard to the amount of heat withdrawn
- Both systems have proven themselves in practice

Geothermal probes

The planning criteria are:

- VDI 4640
- The spec. heat extraction rate which depends on the thermal conductivity (λ) of the underground
- The max. heat extraction per year should not exceed 90 kWh per meter of geothermal probe length

In addition, the following aspects need to be considered:

- The lowest possible total hydraulic resistance through optimisation of the number of geothermal probes, probe diameter and depth
- **A certified, specialist drilling company must be used for planning and undertaking the system of geothermal probes**

Ground collectors

The energy that is used for compensating for the heat deficit or heat surplus comes almost exclusively from solar radiation and percolating water (rain, snow meltwater). A ground collector is, so to speak, as "climate collector" which is significantly influenced by weather events. The latent heat exploitation when there is a change of state in the water in the moist soil has a positive influence when it comes to calculating the balance. This means the evaporating temperature of the heat pump remains relatively constant over a long time. VDI 4640 must be taken into account during the design, as well as:

for the soil surface

- the climate zone and the aspect of the building
- the thermal conductivity of the soil and the effective number of operating hours

for the ground collector system

- the lowest possible total resistance
- by optimisation of the number of lines and line length
- If there is insufficient floorspace available, a pressure equalisation can be provided for regenerating the ground collector (e.g. roof collector)

For further details see:

Heat source use/ground collectors.

Ground water

If the temperature of the heat source for the heat pump is below 8 °C in the seasonal profile, this must be taken into account in the planning.

Using ground water as a heat source requires official approval. Ground water is a very good heat source because of its high heat capacity and heat transfer properties.

Connection of ground water only via a separating heat exchanger (intermediate carrier circuit). System-based clarifications are mandatory.

The most important criteria are:

- Hydro-geological report
- Water analysis
- Official approval/concession

In addition, the following aspects must be considered for the planning:

- VDI 4640
- Min. heat source temperature and flow rate during the utilisation period
- Min. permitted evaporator outlet temperature of the selected heat pump
- Official regulations such as type of use, configuration of the withdrawal and return well, etc.
- A certified, specialist drilling company must be used for planning and undertaking the system of ground water boreholes

The heat source must be free of chemical or mechanical contamination.

Preliminary information required for ground water

- Suitability regarding quantities and temperatures ($t \geq 8 \text{ °C}$)
- Official approval
- Hydro-geological report
- Water analysis
- The effective minimum ground water temperature

Remarks:

- The ground water temperature varies according to location
- Possibility of infiltration through water from rivers or lakes
- The design must be based on reliable temperature data
- The heat source system, (withdrawal and return well) must be installed professionally (by a specialist company)

The heat source must be free of chemical or mechanical contamination.

Surface water

If the temperature of the heat source for the heat pump is below 8 °C in the seasonal profile, this must be taken into account in the planning.

Planning a heat source system with lake/river water, etc. as the heat source is a challenging task and demands great experience from the planner. Due to the wide temperature fluctuations, direct use is only possible in exceptional cases. Under favourable conditions, for example close to the bank, it is possible to provide a filtering well (as with ground water) as well as an intermediate circuit (indirect use).

Use is not advised without reliable long-term information about the min./max. temperature of the heat source and chemical/mechanical safety.

A feasibility analysis and estimating the maintenance work involved are preconditions for implementation.

The dimensions of the heat exchanger for indirect use are as for ground water.

Using public surface water must be reported to the responsible water resources authority, as in the case of groundwater use.

* A qualified specialist company must be contacted for planning and installing the heat source system.

■ Engineering

Air/water heat pump

Dimensions of the Belaria® SRM and Belaria® compact SRM air/water heat pump with panel heating

Example:

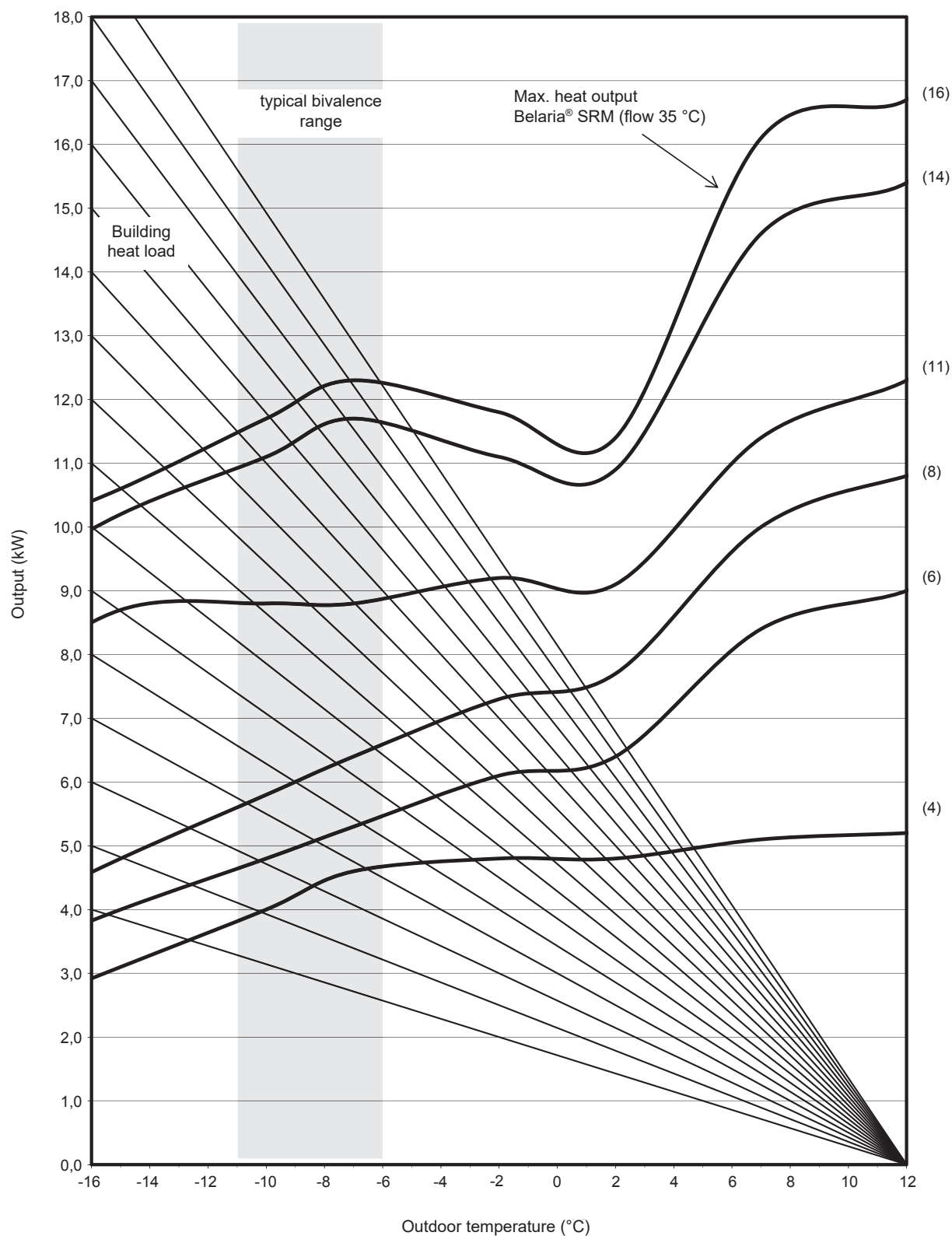
New building with panel heating.

Operating mode: single energy source

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of -16 °C and the output of the Belaria® SRM and Belaria® compact SRM at a flow temperature of 35 °C .

Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between -6 °C and -11 °C outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual output and the smaller the required output of the additional heating.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® SRM and Belaria® compact SRM air/water heat pump with radiator

Example:

Upgrade of older buildings with radiators.

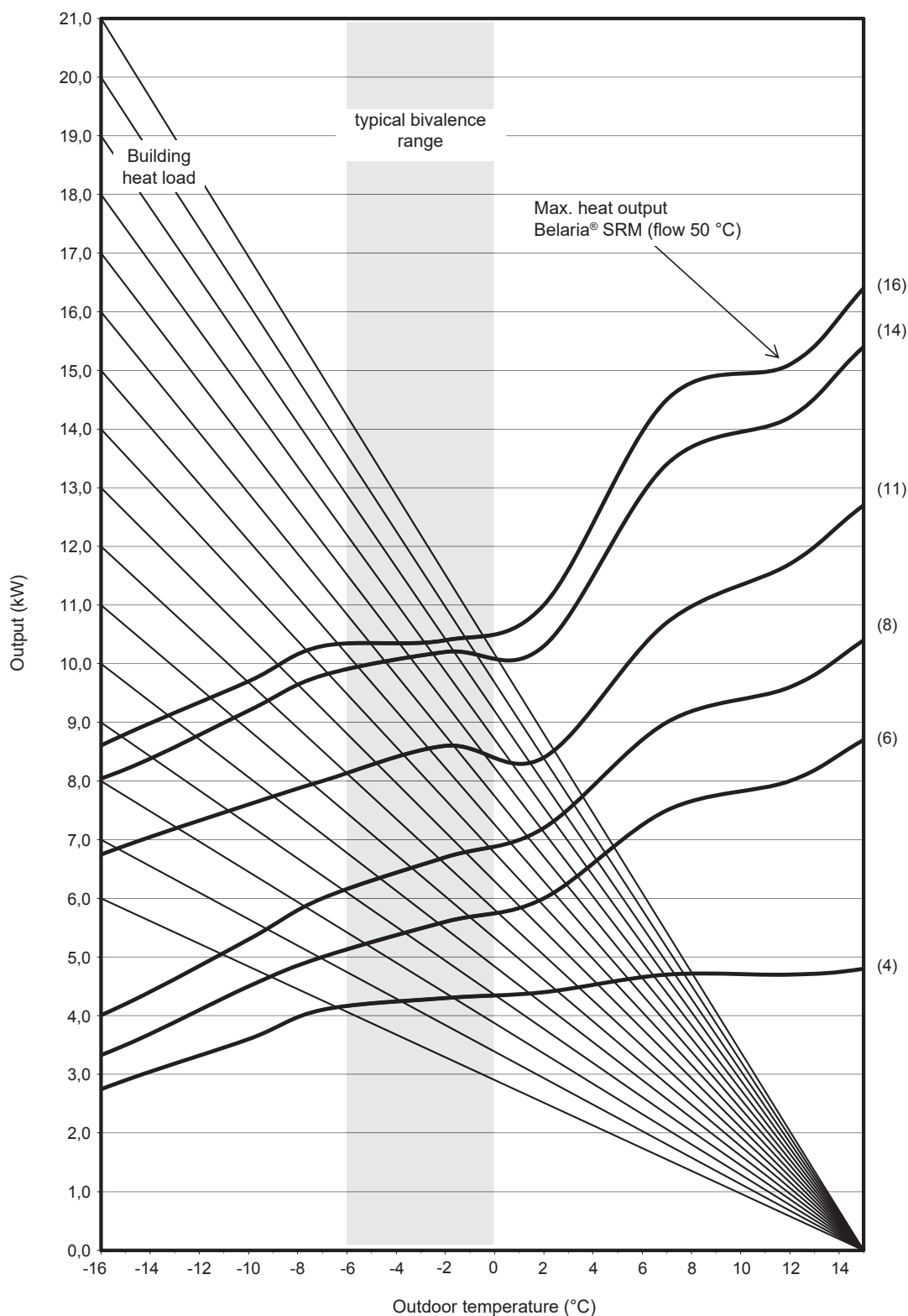
Operating mode:

Bivalent alternative or bivalent parallel

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the Belaria® SRM and Belaria® compact SRM at a flow temperature of $50\text{ }^{\circ}\text{C}$. In such a system, the balance point usually lies in the grey shaded area between $0\text{ }^{\circ}\text{C}$ and $-6\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual coefficient of performance. The alternative heating system must cover the entire building heating load.

Notice: If the heating system requires high flow temperatures, the balance point is usually determined by the maximum achievable flow temperature of the heat pump! This may lie outside the grey shaded bivalence range.



■ Engineering

Air/water heat pump

Dimensions of the UltraSource B comfort C and UltraSource B compact C air/water heat pumps with panel heating

Example:

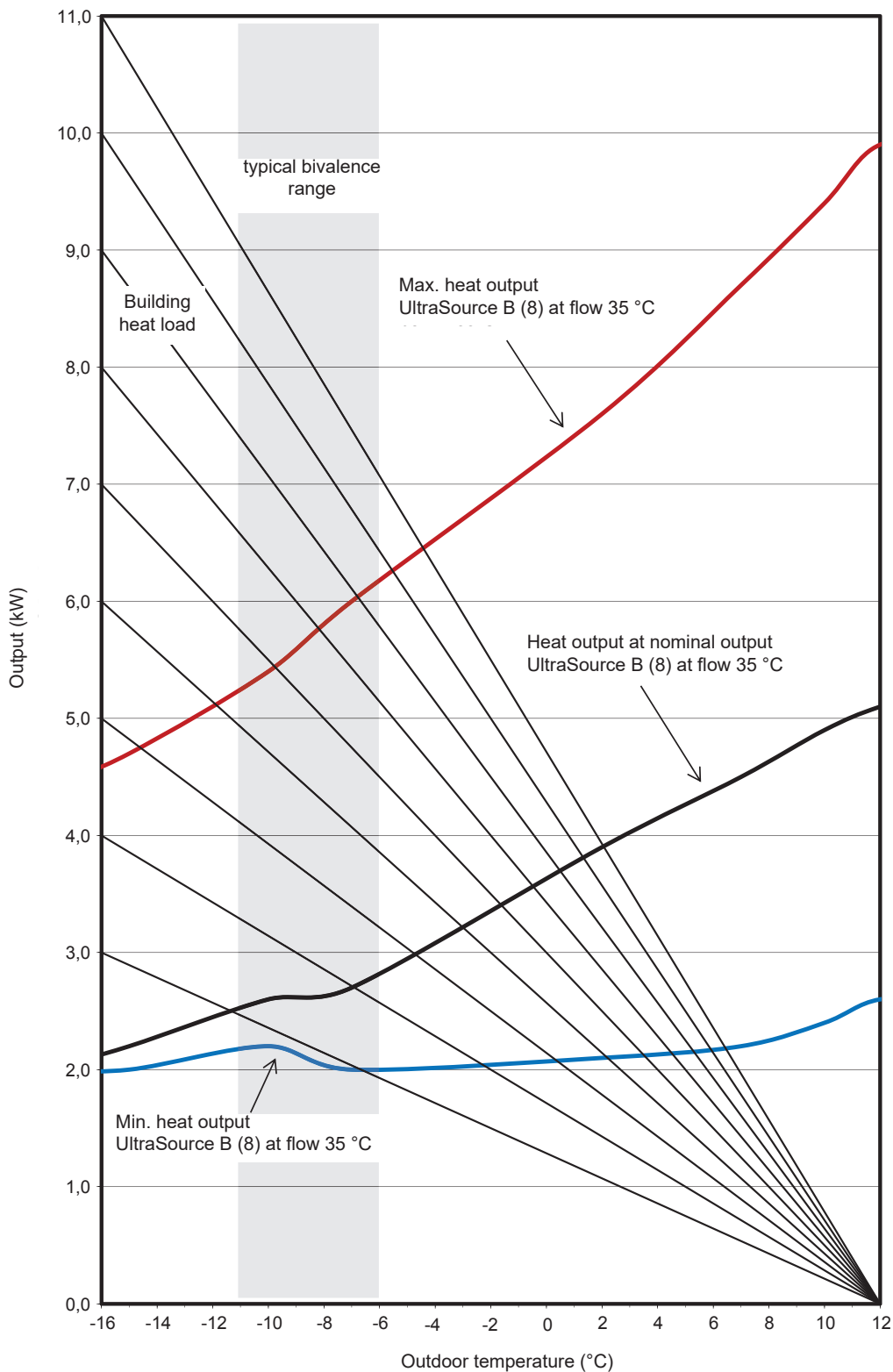
New building with panel heating.

Operating mode: single energy source

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the UltraSource B comfort C and UltraSource B compact C at a flow temperature of $35\text{ }^{\circ}\text{C}$.

Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between $-6\text{ }^{\circ}\text{C}$ and $-11\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual output and the smaller the required output of the additional heating.



■ Engineering

Air/water heat pump

Dimensions of the UltraSource B comfort C and UltraSource B compact C air/water heat pumps with radiators

Example:

Upgrade of older buildings with radiators

Operating mode:

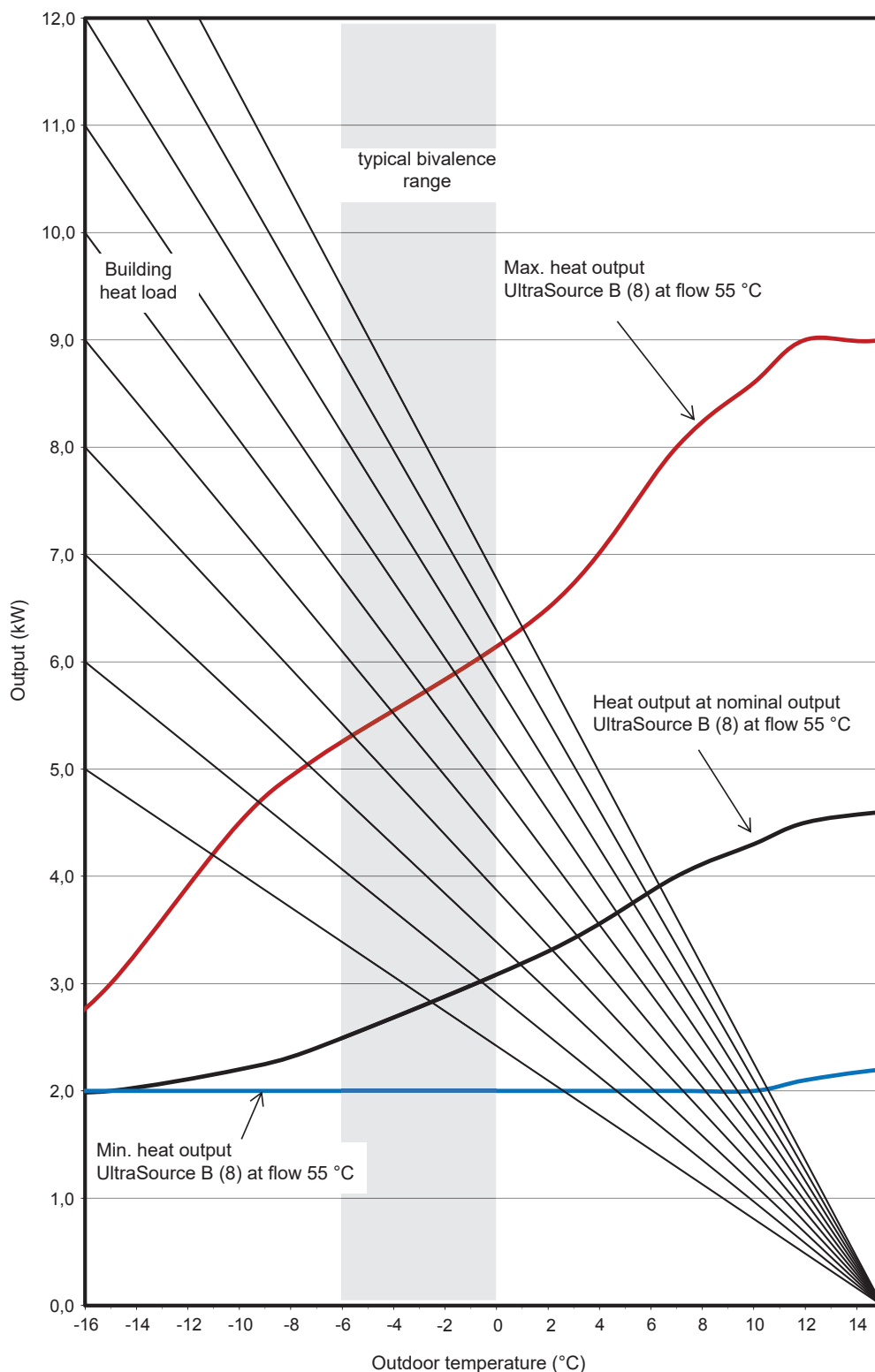
Bivalent alternative or bivalent parallel

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the UltraSource B comfort C and UltraSource B compact C at a flow temperature of $55\text{ }^{\circ}\text{C}$. In such a system, the balance point usually lies in the grey shaded area between $0\text{ }^{\circ}\text{C}$ and $-6\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual coefficient of performance. The alternative heating system must cover the entire building heating load.

Notice: If the heating system requires high flow temperatures, the balance point is usually determined by the maximum achievable flow temperature of the heat pump!

This may lie outside the grey shaded bivalence range.



■ Engineering

Air/water heat pump

Dimensions of the UltraSource B comfort C and UltraSource B compact C air/water heat pumps with panel heating

Example:

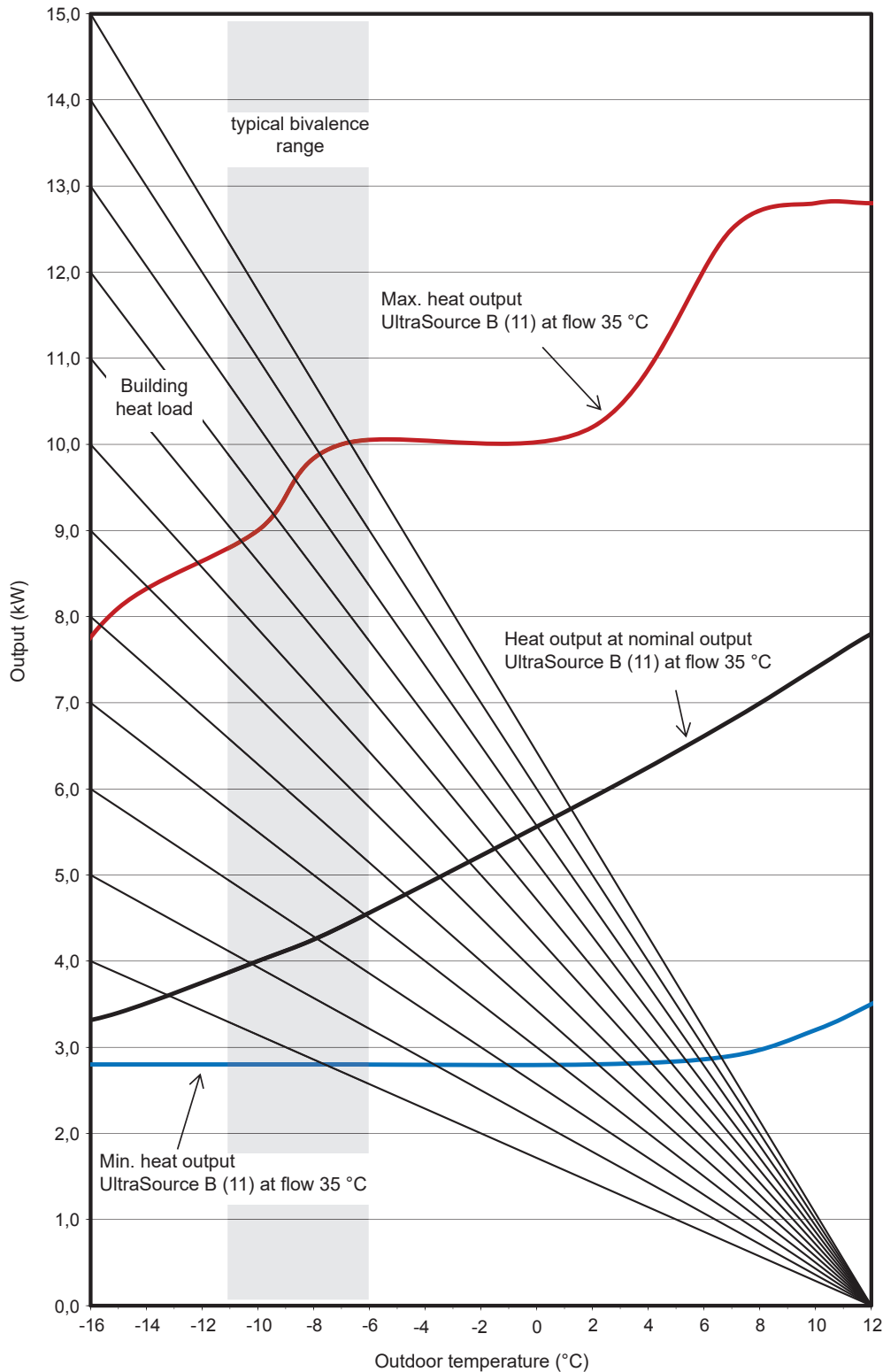
New building with panel heating.

Operating mode: single energy source

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the UltraSource B comfort C and UltraSource B compact C at a flow temperature of $35\text{ }^{\circ}\text{C}$.

Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between $-6\text{ }^{\circ}\text{C}$ and $-11\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual output and the smaller the required output of the additional heating.



■ Engineering

Air/water heat pump

Dimensions of the UltraSource B comfort C and UltraSource B compact C air/water heat pumps with radiators

Example:

Upgrade of older buildings with radiators

Operating mode:

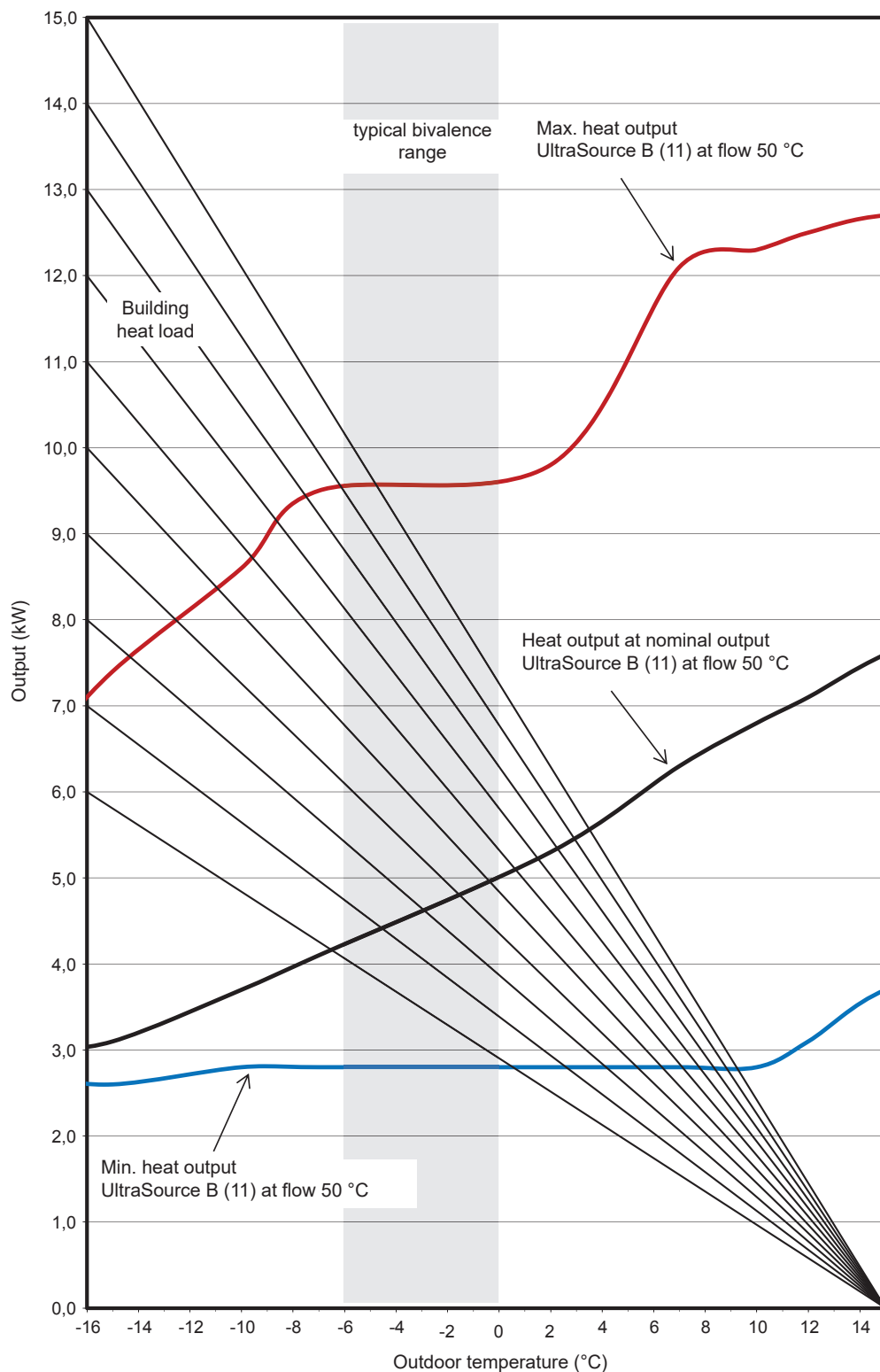
Bivalent alternative or bivalent parallel

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the UltraSource B comfort C and UltraSource B compact C at a flow temperature of $55\text{ }^{\circ}\text{C}$. In such a system, the balance point usually lies in the grey shaded area between $0\text{ }^{\circ}\text{C}$ and $-6\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual coefficient of performance. The alternative heating system must cover the entire building heating load.

Notice: If the heating system requires high flow temperatures, the balance point is usually determined by the maximum achievable flow temperature of the heat pump!

This may lie outside the grey shaded bivalence range.



■ Engineering

Air/water heat pump

Dimensions of the UltraSource B comfort C and UltraSource B compact C air/water heat pumps with panel heating

Example:

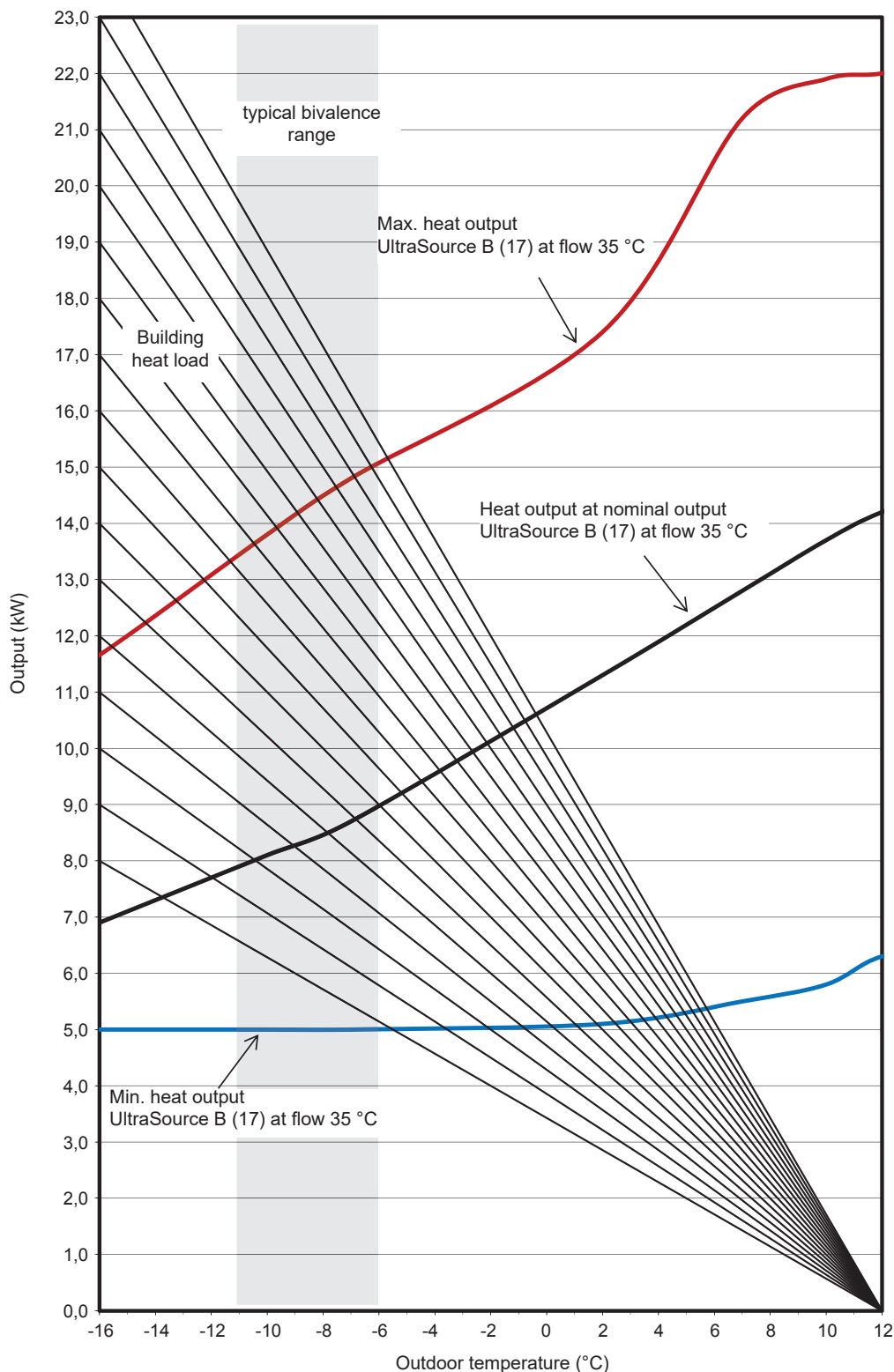
New building with panel heating.

Operating mode: single energy source

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the UltraSource B comfort C and UltraSource B compact C at a flow temperature of $35\text{ }^{\circ}\text{C}$.

Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between $-6\text{ }^{\circ}\text{C}$ and $-11\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual output and the smaller the required output of the additional heating.



■ Engineering

Air/water heat pump

Dimensions of the UltraSource B comfort C and UltraSource B compact C air/water heat pumps with radiators

Example:

Upgrade of older buildings with radiators

Operating mode:

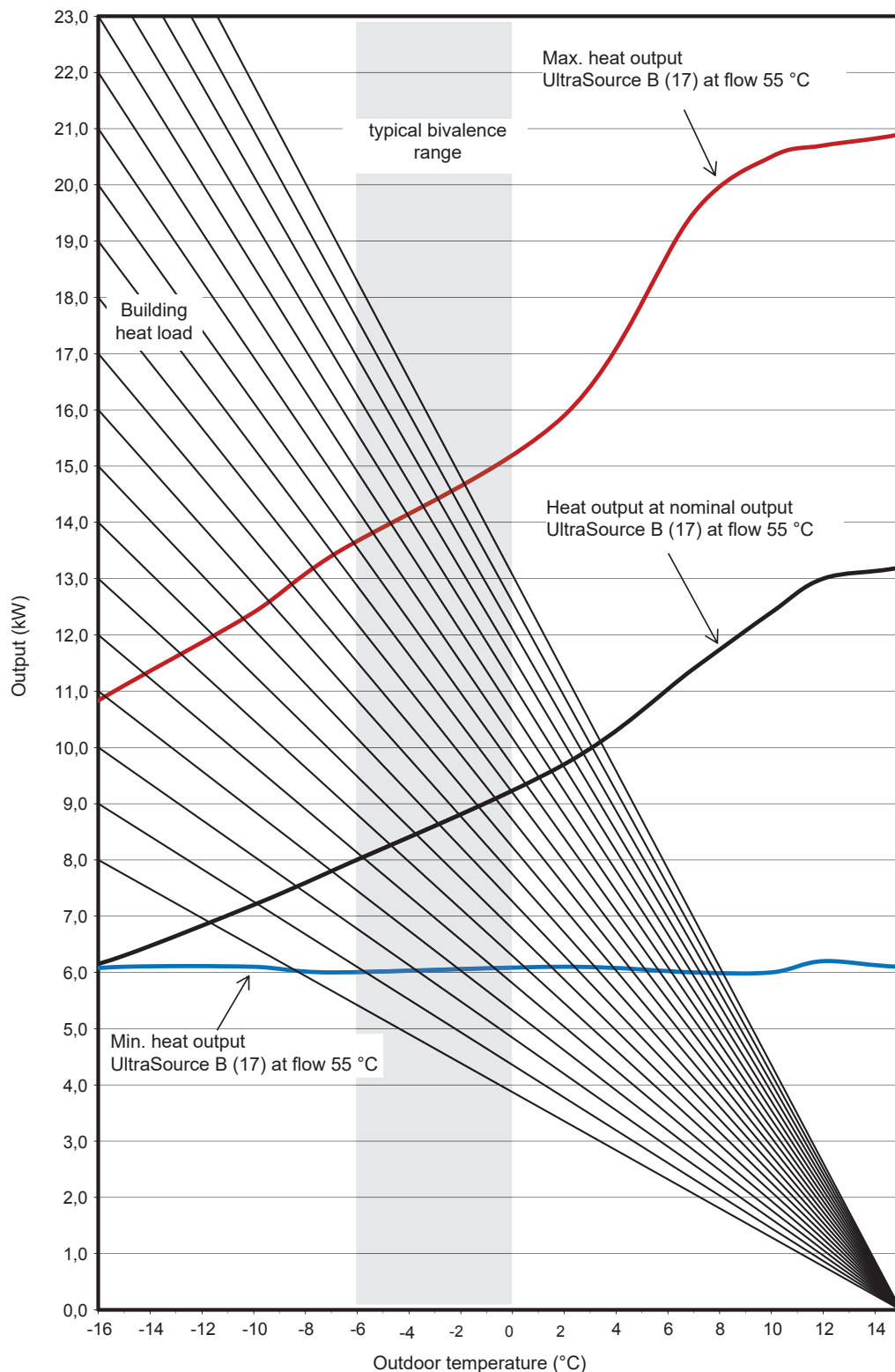
Bivalent alternative or bivalent parallel

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the UltraSource B comfort C and UltraSource B compact C at a flow temperature of $55\text{ }^{\circ}\text{C}$. In such a system, the balance point usually lies in the grey shaded area between $0\text{ }^{\circ}\text{C}$ and $-6\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual coefficient of performance. The alternative heating system must cover the entire building heating load.

Notice: If the heating system requires high flow temperatures, the balance point is usually determined by the maximum achievable flow temperature of the heat pump!

This may lie outside the grey shaded bivalence range.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® comfort ICM (8) air/water heat pumps with panel heating

Example:

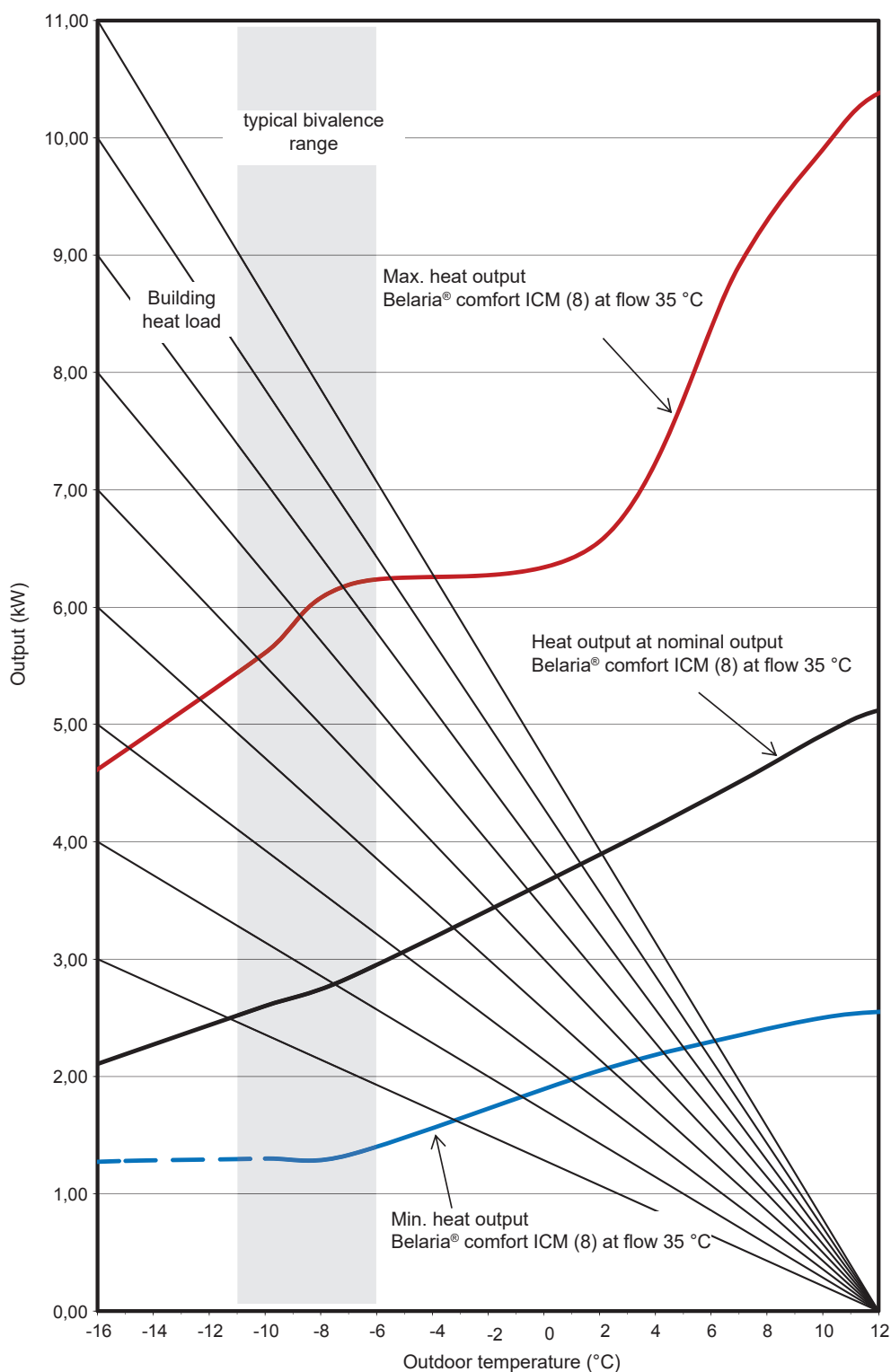
New building with panel heating.

Operating mode: single energy source

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of -16 °C and the output of the Belaria® comfort ICM (8) at a flow temperature of 35 °C .

Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between -6 °C and -11 °C outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual output and the smaller the required output of the additional heating.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® comfort ICM (8) air/water heat pumps with radiators

Example:

Upgrade of older buildings with radiators

Operating mode:

Bivalent alternative or bivalent parallel

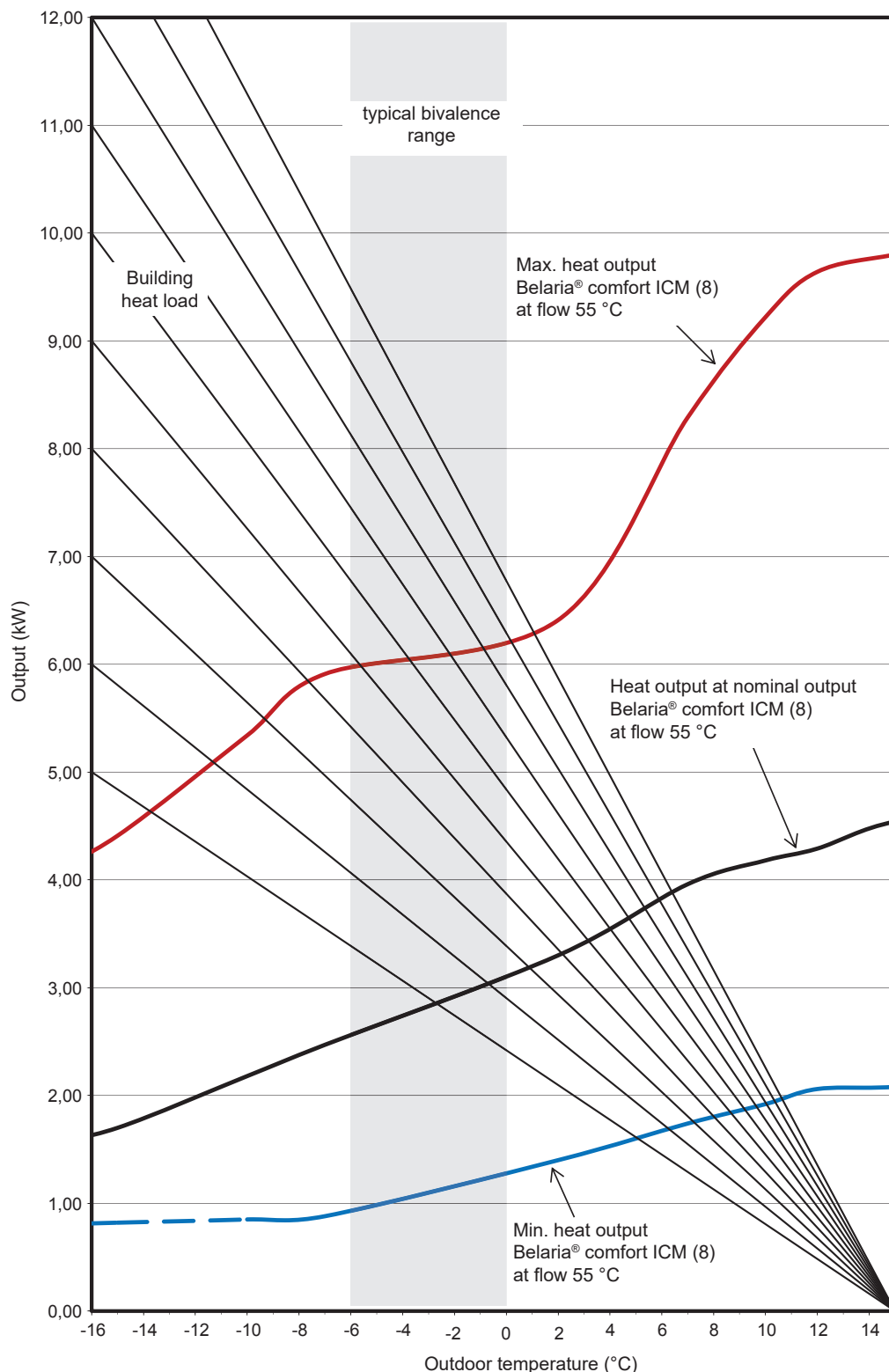
The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the Belaria® comfort ICM (8) at a flow temperature of $55\text{ }^{\circ}\text{C}$.

In such a system, the balance point usually lies in the grey shaded area between $0\text{ }^{\circ}\text{C}$ and $-6\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual coefficient of performance. The alternative heating system must cover the entire building heating load.

Notice: If the heating system requires high flow temperatures, the balance point is usually determined by the maximum achievable flow temperature of the heat pump!

This may lie outside the grey shaded bivalence range.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® comfort ICM (13) air/water heat pumps with panel heating

Example:

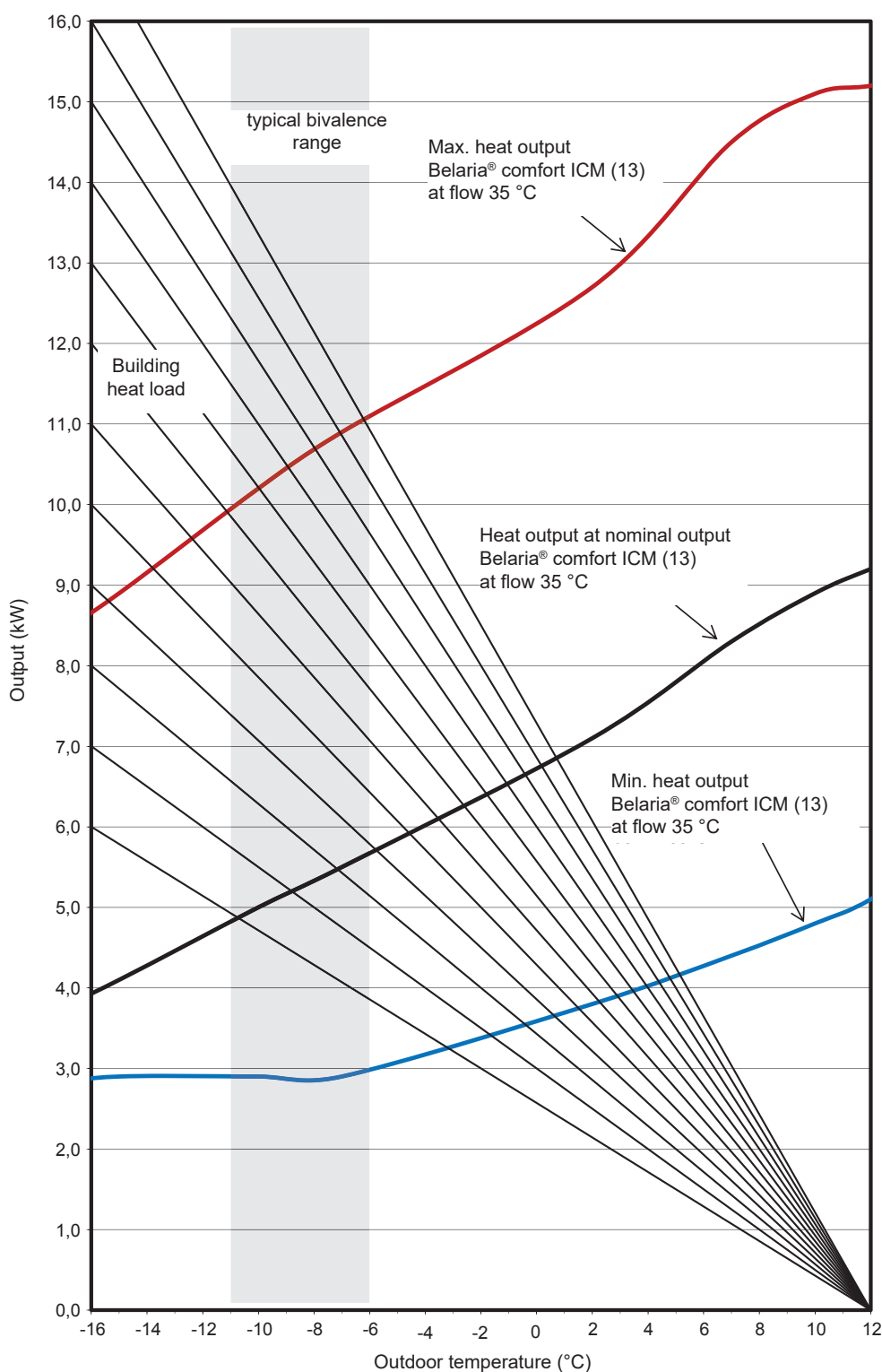
New building with panel heating.

Operating mode: single energy source

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of -16 °C and the output of the Belaria® comfort ICM (13) at a flow temperature of 35 °C .

Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between -6 °C and -11 °C outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual output and the smaller the required output of the additional heating.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® comfort ICM (13) air/water heat pumps with radiators

Example:

Upgrade of older buildings with radiators

Operating mode:

Bivalent alternative or bivalent parallel

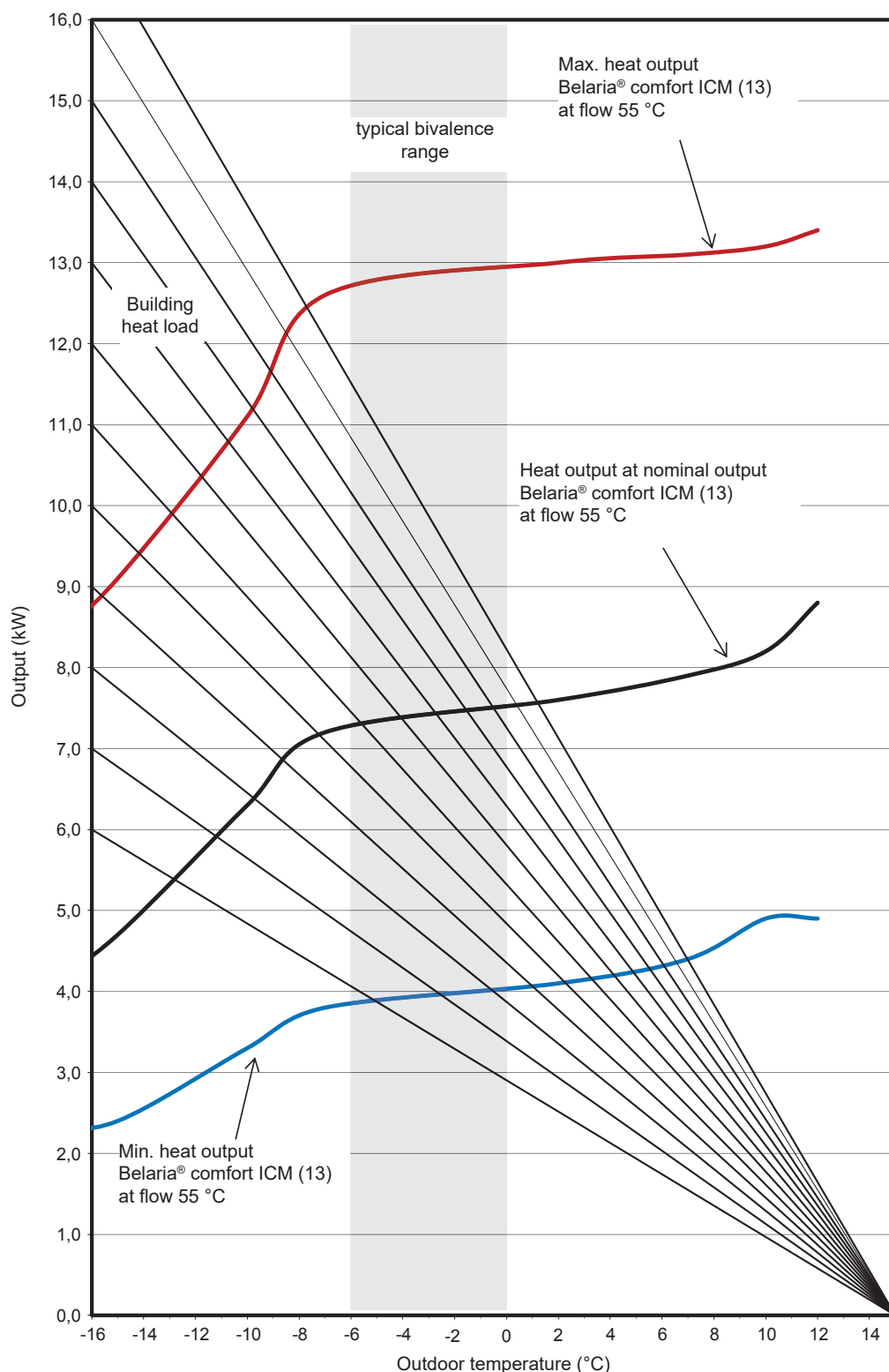
The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the Belaria® comfort ICM (13) at a flow temperature of $55\text{ }^{\circ}\text{C}$.

In such a system, the balance point usually lies in the grey shaded area between $0\text{ }^{\circ}\text{C}$ and $-6\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual coefficient of performance. The alternative heating system must cover the entire building heating load.

Notice: If the heating system requires high flow temperatures, the balance point is usually determined by the maximum achievable flow temperature of the heat pump!

This may lie outside the grey shaded bivalence range.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® twin I, Belaria® twin IR air/water heat pump with panel heating

Example:

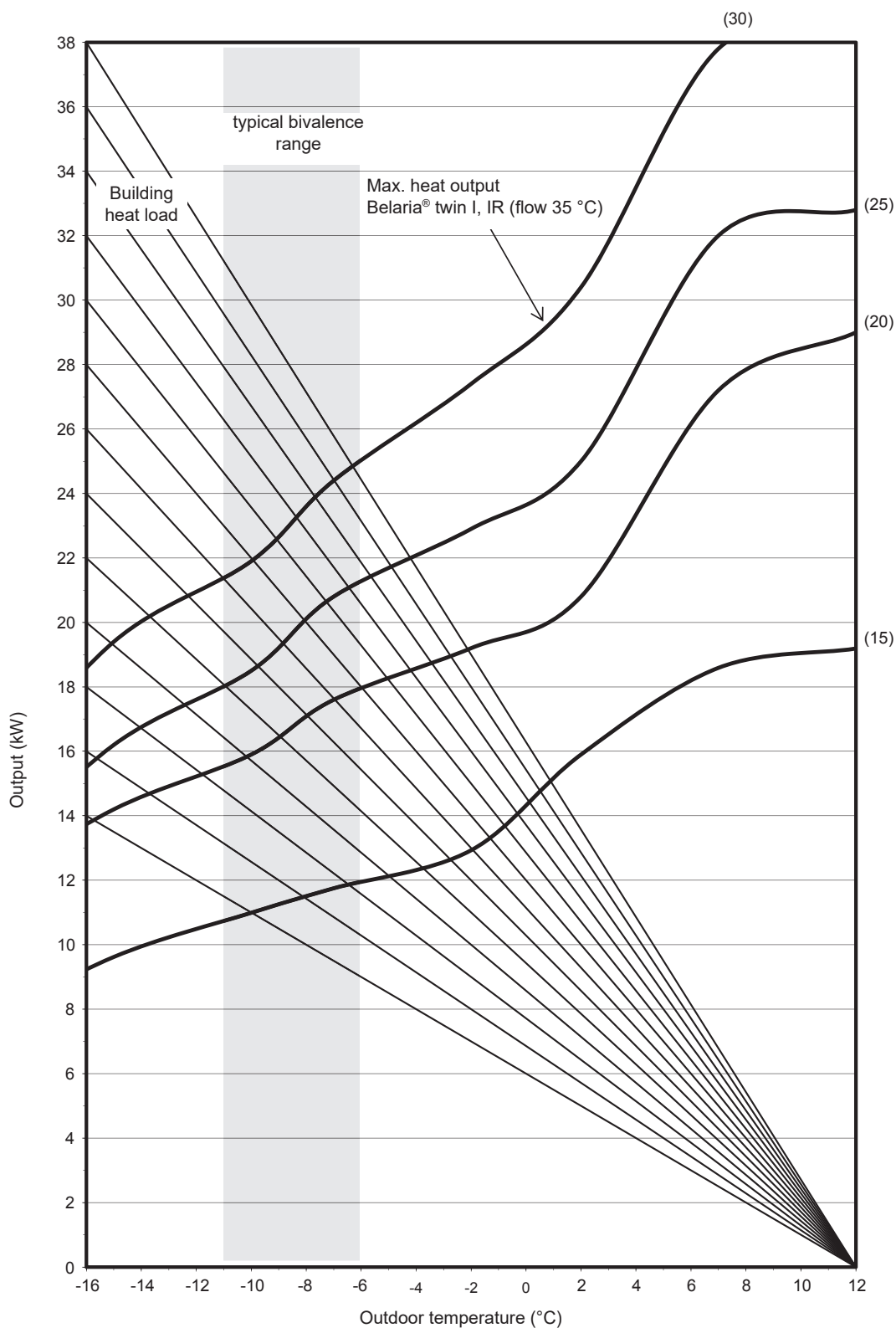
New building with panel heating.

Operating mode: single energy source

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the Belaria® twin I, Belaria® twin IR at a flow temperature of $35\text{ }^{\circ}\text{C}$.

Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between $-6\text{ }^{\circ}\text{C}$ and $-11\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual output and the smaller the required output of the additional heating.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® twin I, Belaria® twin IR air/water heat pump with radiator

Example:

Upgrade of older buildings with radiators.

Operating mode:

Bivalent alternative or bivalent parallel

The diagram shows simplified representations of the heating requirement for the building

(building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the Belaria® twin I, Belaria® twin IR at a flow temperature of $55\text{ }^{\circ}\text{C}$.

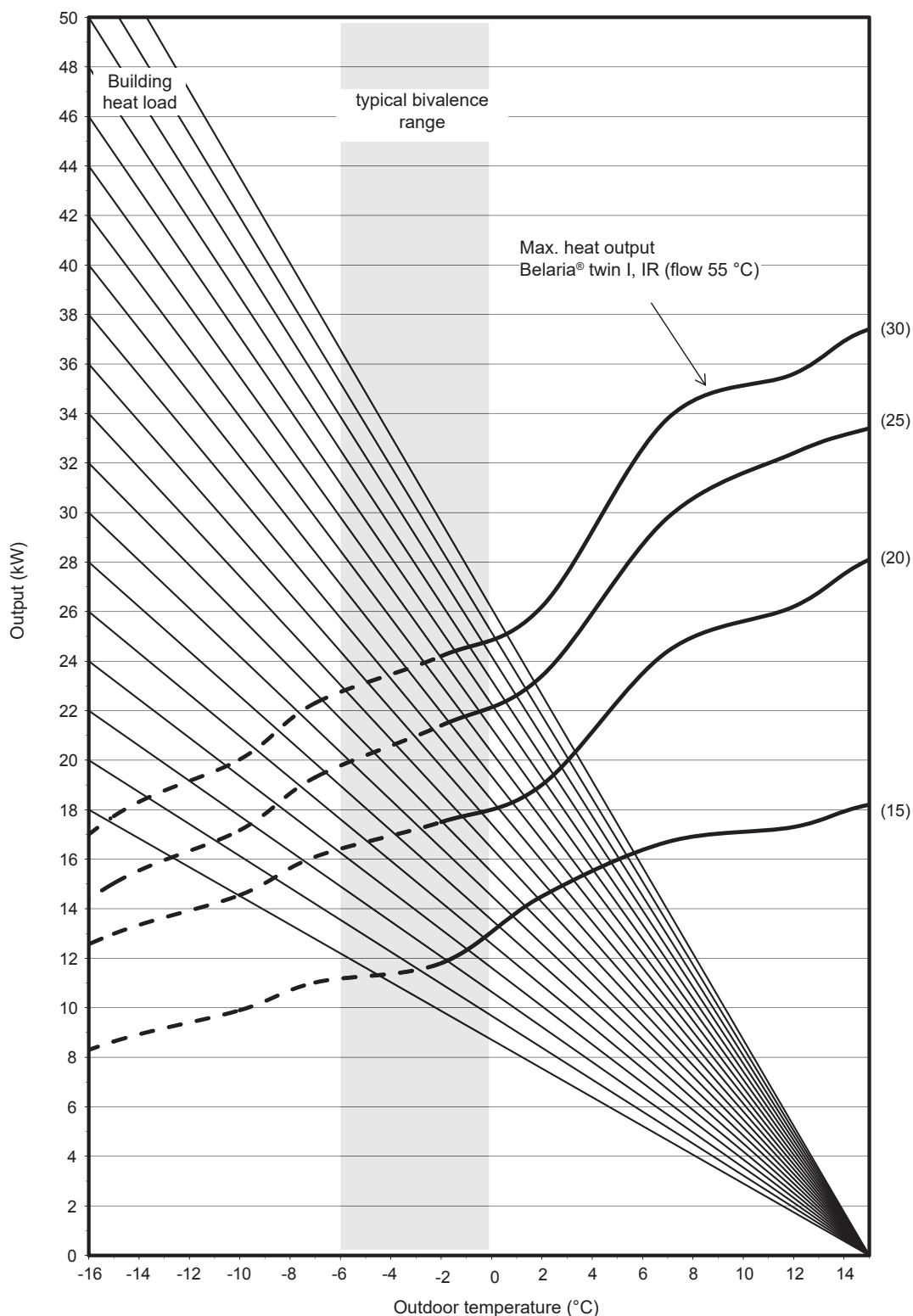
In such a system, the balance point usually lies in the grey shaded area between $0\text{ }^{\circ}\text{C}$ and $-6\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual coefficient of per-

formance. The alternative heating system must cover the entire building heating load.

Notice: If the heating system requires high flow temperatures, the balance point is usually determined by the maximum achievable flow temperature of the heat pump! This may lie outside the grey shaded bivalence range.

In the area of the dotted line, a flow temperature of $50\text{ }^{\circ}\text{C}$ can no longer be achieved by the heat pump.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® twin A, Belaria® twin AR air/water heat pump with panel heating

Example:

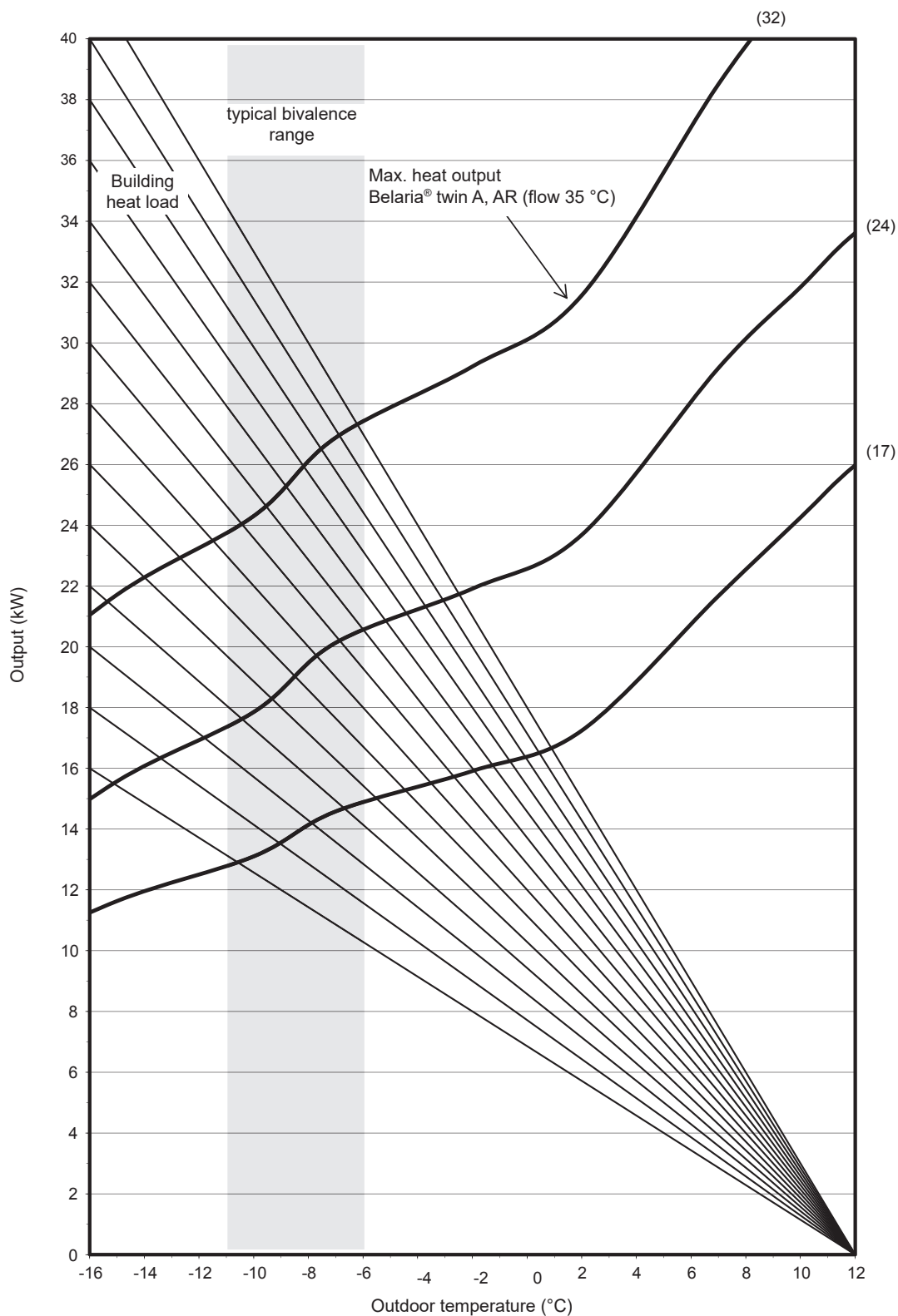
New building with panel heating.

Operating mode: single energy source

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the Belaria® twin A, Belaria® twin AR at a flow temperature of $35\text{ }^{\circ}\text{C}$.

Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between $-6\text{ }^{\circ}\text{C}$ and $-11\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual output and the smaller the required output of the additional heating.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® twin A, Belaria® twin AR air/water heat pump with radiator

Example:

Upgrade of older buildings with radiators.

Operating mode:

Bivalent alternative or bivalent parallel

The diagram shows simplified representations of the heating requirement for the building

(building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the Belaria® twin A, Belaria® twin AR at a flow temperature of $50\text{ }^{\circ}\text{C}$.

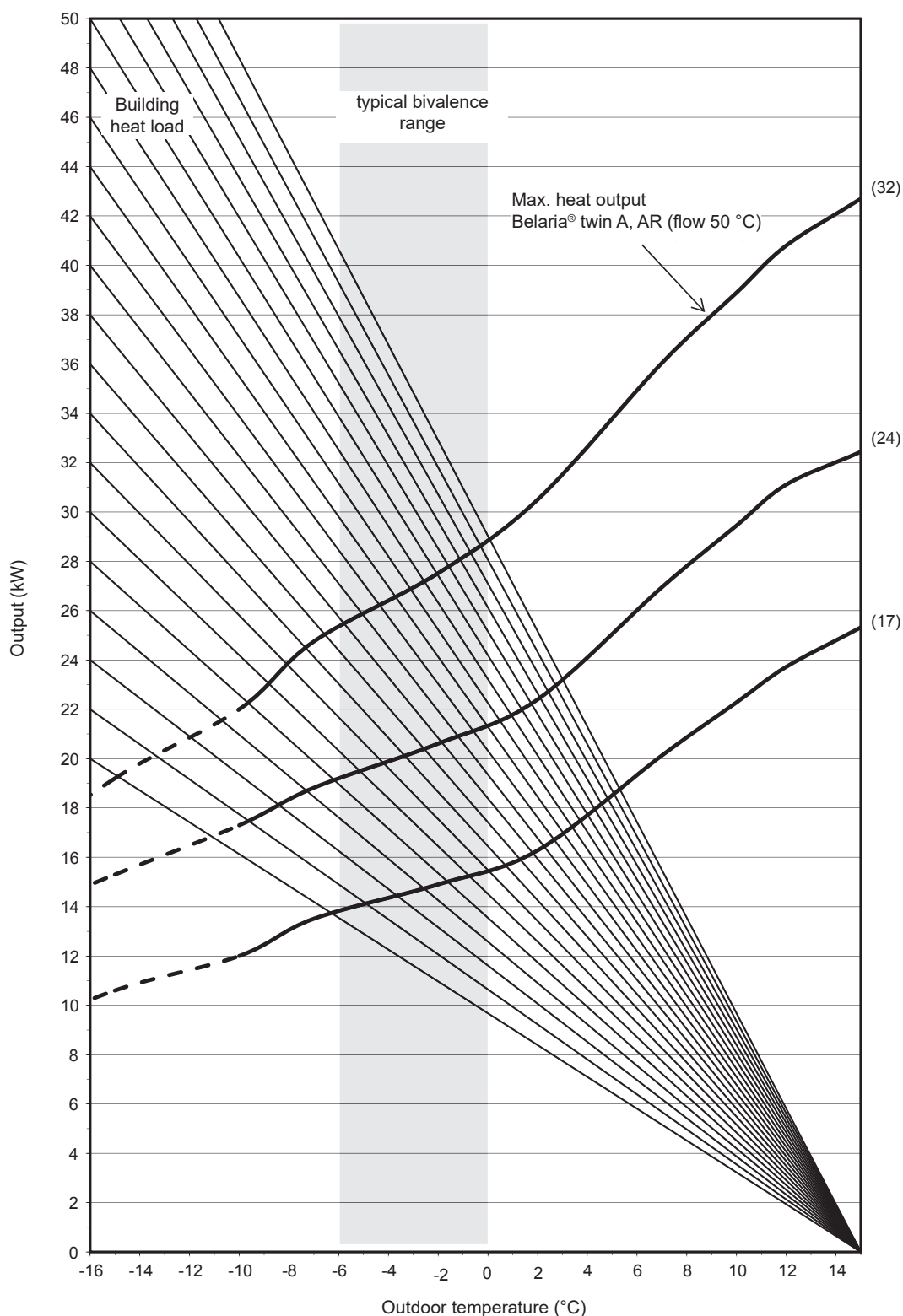
In such a system, the balance point usually lies in the grey shaded area between $0\text{ }^{\circ}\text{C}$ and $-6\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual coefficient of per-

formance. The alternative heating system must cover the entire building heating load.

Notice: If the heating system requires high flow temperatures, the balance point is usually determined by the maximum achievable flow temperature of the heat pump! This may lie outside the grey shaded bivalence range.

In the area of the dotted line, a flow temperature of $50\text{ }^{\circ}\text{C}$ can no longer be achieved by the heat pump.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® SHM air/water heat pump with radiator

Example:

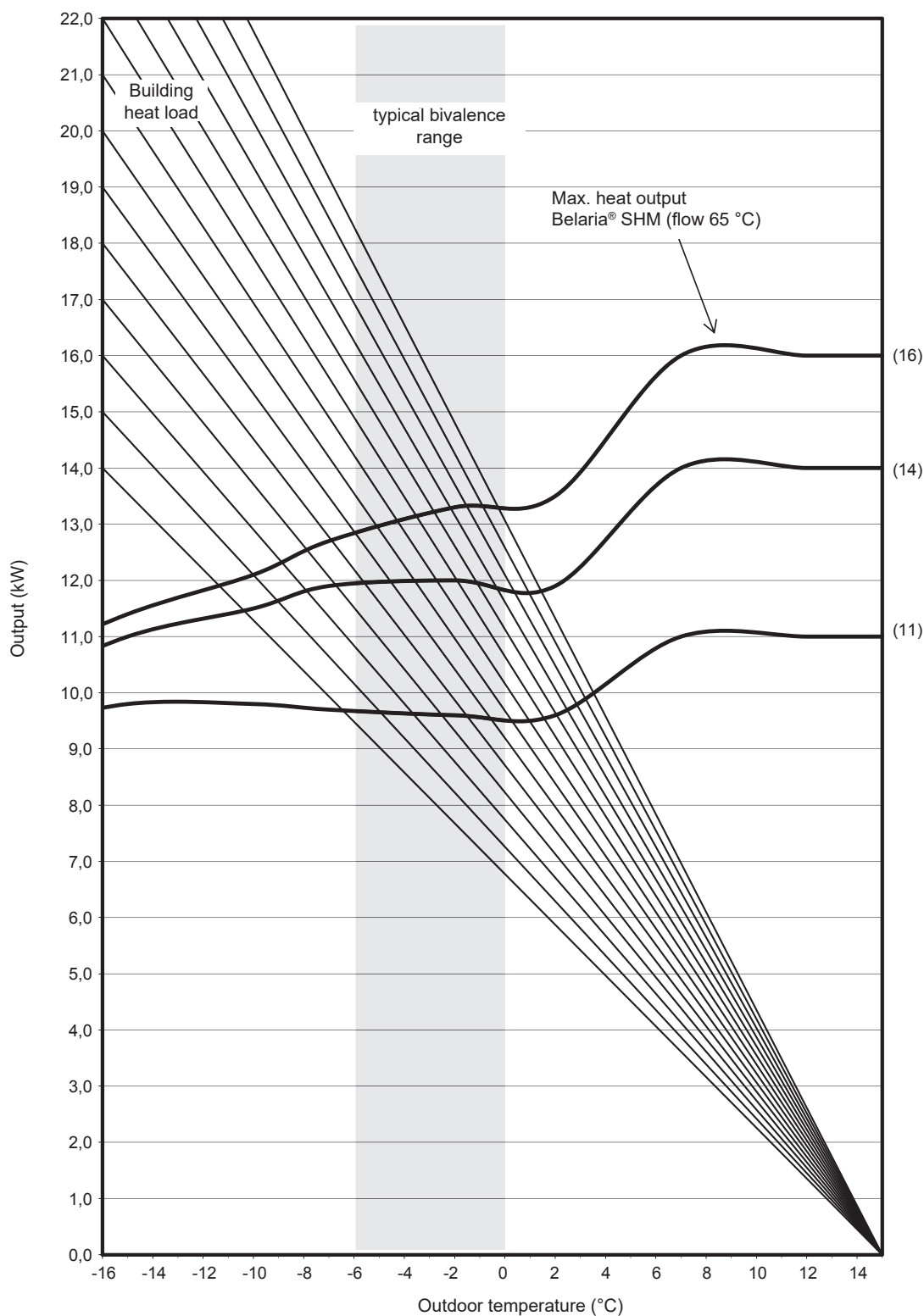
Upgrade of older buildings with radiators.

Bivalent alternative or bivalent parallel

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the Belaria® SHM at a flow temperature of $65\text{ }^{\circ}\text{C}$.

Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between $0\text{ }^{\circ}\text{C}$ and $-6\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual output and the smaller the required output of the additional heating.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® dual AR air/water heat pump with panel heating

Example:

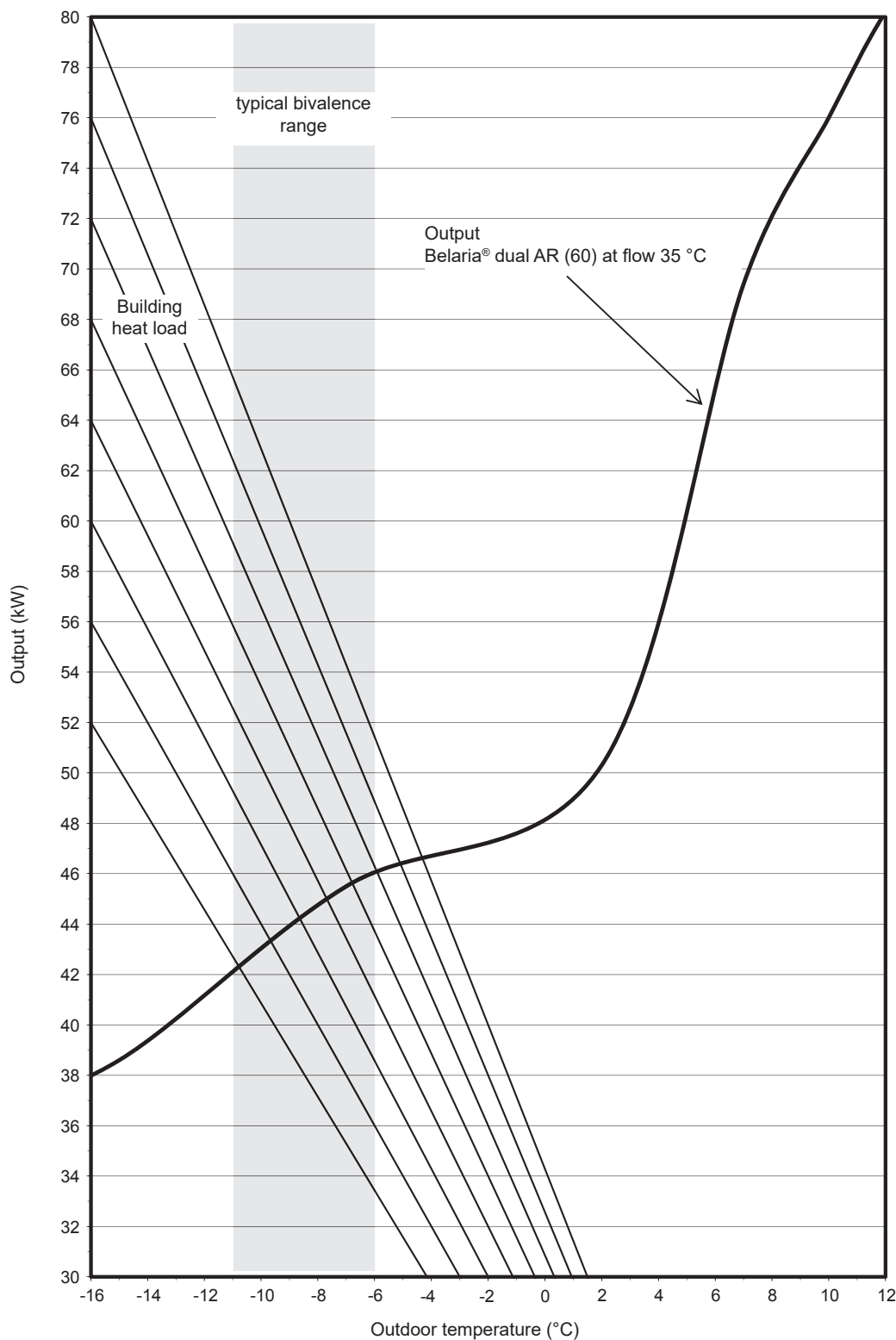
New building with panel heating.

Operating mode: single energy source

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the Belaria® dual AR at a flow temperature of $35\text{ }^{\circ}\text{C}$.

Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between $-6\text{ }^{\circ}\text{C}$ and $-11\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual output and the smaller the required output of the additional heating.



■ Engineering

Air/water heat pump

Dimensions of the Belaria® dual AR air/water heat pump with radiator

Example:

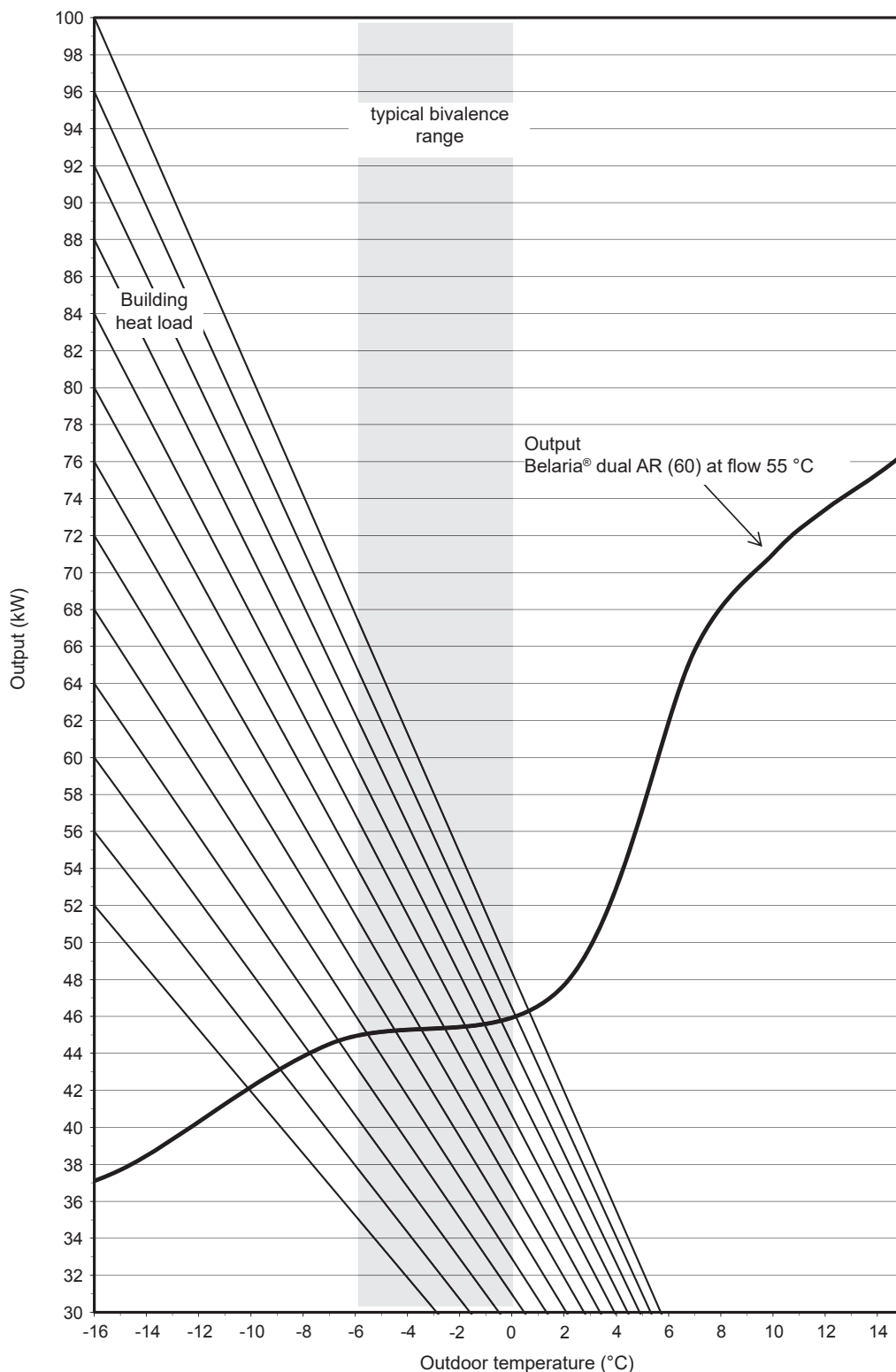
Upgrade of older buildings with radiators.

Operating mode:

Bivalent alternative or bivalent parallel

The diagram shows simplified representations of the heating requirement for the building (building characteristic curve) for a standard outdoor temperature of $-16\text{ }^{\circ}\text{C}$ and the output of the Belaria® dual AR at a flow temperature of $55\text{ }^{\circ}\text{C}$. Ideally, at this standard outdoor temperature, the balance point should be within the grey shaded area between $0\text{ }^{\circ}\text{C}$ and $-6\text{ }^{\circ}\text{C}$ outdoor temperature.

The further the balance point is displaced towards the left, the greater the contribution of the heat pump to the annual coefficient of performance. The alternative heating system must cover the entire building heating load. Notice: If the heating system requires high flow temperatures, the balance point is usually determined by the maximum achievable flow temperature of the heat pump! This may lie outside the grey bivalence range.



■ Engineering

Room heating and water heating energy efficiency

Room heating and water heating energy efficiency for air/water heat pumps				Room heating energy efficiency “moderate climate”		Water heating energy efficiency consumption profile/η _{wh}	
	Type	Symbol	Unit	35 °C	55 °C	35 °C	55 °C
UltraSource B comfort C	(8)	η _S	%	202	146	XL/95,8	
UltraSource B compact C	(8/200)	η _S	%	202	146	XL/95,8	
UltraSource B comfort C	(11)	η _S	%	176	135	-	
UltraSource B compact C	(11/200)	η _S	%	176	135	XL/100	
UltraSource B comfort C	(17)	η _S	%	206	127	XL/95,8	
Belaria® SRM	(4)	η _S	%	178	125	-	
Belaria® SRM	(6)	η _S	%	169	126	-	
Belaria® SRM	(8)	η _S	%	171	126	-	
Belaria® SRM	(11)	η _S	%	156	120	-	
Belaria® SRM	(14)	η _S	%	153	123	-	
Belaria® SRM	(16)	η _S	%	149	119	-	
Belaria® compact SRM	(4)	η _S	%	178	125	L/95	
Belaria® compact SRM	(6)	η _S	%	169	126	XL/90	
Belaria® compact SRM	(8)	η _S	%	171	126	XL/90	
Belaria® compact SRM	(11)	η _S	%	156	120	XL/98	
Belaria® compact SRM	(14)	η _S	%	153	123	XL/98	
Belaria® compact SRM	(16)	η _S	%	149	119	XL/98	
Belaria® hybrid SRM	(8/32)	η _S	%	-	129	XL/96	
Belaria® SHM	(11)	η _S	%	105	115	-	
Belaria® SHM	(14)	η _S	%	110	116	-	
Belaria® SHM	(16)	η _S	%	112	117	-	
Belaria® comfort ICM	(8)	η _S	%	177	152	-	
Belaria® comfort ICM	(13)	η _S	%	182	137	-	
Belaria® twin I	(15)	η _S	%	144	113	-	
Belaria® twin I	(20)	η _S	%	153	111	-	
Belaria® twin I	(25)	η _S	%	152	111	-	
Belaria® twin I	(30)	η _S	%	150	112	-	
Belaria® twin IR	(15)	η _S	%	145	114	-	
Belaria® twin IR	(20)	η _S	%	155	112	-	
Belaria® twin IR	(25)	η _S	%	153	112	-	
Belaria® twin IR	(30)	η _S	%	151	113	-	
Belaria® twin A	(17)	η _S	%	169	130	-	
Belaria® twin A	(24)	η _S	%	171	131	-	
Belaria® twin A	(32)	η _S	%	172	129	-	
Belaria® twin AR	(17)	η _S	%	177	133	-	
Belaria® twin AR	(24)	η _S	%	177	133	-	
Belaria® twin AR	(32)	η _S	%	177	131	-	
Belaria® dual AR	(60)	η _S	%	154	122	-	

■ Engineering

Room heating and water heating energy efficiency

Room heating and water heating energy efficiency for brine/water heat pumps				Room heating energy efficiency "moderate climate"		Water heating energy efficiency consumption profile/η _{wh}	
	Type	Symbol	Unit	35 °C	55 °C	35 °C	55 °C
UltraSource T comfort	(8)	η _S	%	209	158	XL/100	
UltraSource T compact	(8/200)	η _S	%	209	158	XL/100	
UltraSource T comfort	(13)	η _S	%	213	162	-	
UltraSource T compact	(13/200)	η _S	%	213	162	XL/106	
UltraSource T comfort	(17)	η _S	%	226	164	XL/100	
Thermalia® comfort	(6)	η _S	%	166	120	-	
Thermalia® comfort	(8)	η _S	%	176	125	-	
Thermalia® comfort	(10)	η _S	%	191	133	-	
Thermalia® comfort	(13)	η _S	%	192	139	-	
Thermalia® comfort	(17)	η _S	%	190	140	-	
Thermalia® comfort H	(7)	η _S	%	179	134	-	
Thermalia® comfort H	(10)	η _S	%	188	140	-	
Thermalia® twin	(20)	η _S	%	202	138	-	
Thermalia® twin	(26)	η _S	%	198	138	-	
Thermalia® twin	(36)	η _S	%	206	148	-	
Thermalia® twin	(42)	η _S	%	203	135	-	
Thermalia® twin H	(13)	η _S	%	181	127	-	
Thermalia® twin H	(19)	η _S	%	175	132	-	
Thermalia® twin H	(22)	η _S	%	183	133	-	
Thermalia® dual	(55)	η _S	%	195	138	-	
Thermalia® dual	(70)	η _S	%	193	140	-	
Thermalia® dual	(85)	η _S	%	194	142	-	
Thermalia® dual	(110)	η _S	%	194	141	-	
Thermalia® dual	(140)	η _S	%	193	141	-	
Thermalia® dual H	(35)	η _S	%	177	130	-	
Thermalia® dual H	(50)	η _S	%	182	135	-	
Thermalia® dual H	(70)	η _S	%	182	132	-	
Thermalia® dual H	(90)	η _S	%	178	131	-	
Thermalia® dual R	(55)	η _S	%	195	138	-	
Thermalia® dual R	(70)	η _S	%	193	140	-	
Thermalia® dual R	(85)	η _S	%	194	142	-	
Thermalia® dual R	(110)	η _S	%	194	141	-	
Thermalia® dual R	(140)	η _S	%	193	141	-	

Room heating and water heating energy efficiency for water/water heat pumps				Room heating energy efficiency "moderate climate"		Water heating energy efficiency consumption profile/η _{wh}	
	Type	Symbol	Unit	35 °C	55 °C	35 °C	55 °C
UltraSource T comfort	(8)	η _S	%	309	245	XL/100	
UltraSource T compact	(8/200)	η _S	%	309	245	XL/100	
UltraSource T comfort	(13)	η _S	%	313	217	-	
UltraSource T compact	(13/200)	η _S	%	313	217	XL/115	
UltraSource T comfort	(17)	η _S	%	311	226	XL/100	
Thermalia® comfort	(6)	η _S	%	205	150	-	
Thermalia® comfort	(8)	η _S	%	231	161	-	
Thermalia® comfort	(10)	η _S	%	245	170	-	
Thermalia® comfort	(13)	η _S	%	255	181	-	
Thermalia® comfort	(17)	η _S	%	240	173	-	
Thermalia® comfort H	(7)	η _S	%	238	177	-	
Thermalia® comfort H	(10)	η _S	%	249	185	-	
Thermalia® twin	(20)	η _S	%	277	183	-	
Thermalia® twin	(26)	η _S	%	274	180	-	
Thermalia® twin	(36)	η _S	%	270	191	-	
Thermalia® twin	(42)	η _S	%	259	176	-	
Thermalia® twin H	(13)	η _S	%	225	170	-	
Thermalia® twin H	(19)	η _S	%	226	172	-	
Thermalia® twin H	(22)	η _S	%	239	178	-	
Thermalia® dual	(55)	η _S	%	257	185	-	
Thermalia® dual	(70)	η _S	%	249	180	-	
Thermalia® dual	(85)	η _S	%	250	181	-	
Thermalia® dual	(110)	η _S	%	242	177	-	
Thermalia® dual	(140)	η _S	%	245	178	-	
Thermalia® dual H	(35)	η _S	%	254	179	-	
Thermalia® dual H	(50)	η _S	%	246	179	-	
Thermalia® dual H	(70)	η _S	%	245	177	-	
Thermalia® dual H	(90)	η _S	%	240	174	-	
Thermalia® dual R	(55)	η _S	%	257	185	-	
Thermalia® dual R	(70)	η _S	%	249	180	-	
Thermalia® dual R	(85)	η _S	%	250	181	-	
Thermalia® dual R	(110)	η _S	%	242	177	-	
Thermalia® dual R	(140)	η _S	%	245	178	-	

■ Engineering

Calorifier selection table

Belaria® air/water heat pumps

				Type	Belaria® SRM ¹⁾						Belaria® hybrid SRM ¹⁾	Belaria® SHM ¹⁾				UltraSource B comfort C ²⁾			Belaria® comfort ICM ³⁾		Belaria® twin I, twin IR					Belaria® twin A, twin AR			Belaria® dual AR			
Heat output 1st stage at A20W55					kW	(4)	(6)	(8)	(11)	(14)	(16)	(8/32)	(11)	(14)	(16)	(8)	(11)	(17)	(8)	(13)	(15)	(20)	(25)	(30)	(17)	(24)	(32)	(60)				
Email	CombiVal			ER 200	0.95																											
				ER 300	1.45																											
				ER 400	1.80																											
				ER 500	1.90																											
				ER 800	3.70																											
				ER 1000	4.50																											
				ESR 200	1.80																											
				ESR 300	2.60																											
				ESR 400	3.80																											
				ESSR 500	5.90																											
				ESSR 800	7.00																											
				ESSR 1000	9.15																											
	MultiVal			ERR 300	0.80																											
				ERR 400	1.00																											
				ERR 500	1.30																											
				ESRR 500	4.30																											
				ESRR 800	5.20																											
				ESRR 1000	6.10																											
Stainless steel	CombiVal			CR 200	0.90																											
				CR 300	1.20																											
				CR 500	1.80																											
				CR 800	2.40																											
				CR 1000	2.40																											
				CSR 300	2.90																											
				CSR 400	3.50																											
				CSR 500	4.90																											
				CSR 800	6.70																											
				CSR 1000	10.00																											
				CSR 1250	10.00																											
				CSR 1500	12.00																											
				CSR 2000	13.00																											
	CRR			CRR 500	1.20																											
				CRR 800	1.35																											
				CRR 1000	1.35																											
				CSRR 500	4.90																											
				CSRR 800	7.20																											
				CSRR 1000	10.00																											
				CSRR 1500	12.00																											
				CSRR 2000	12.00																											

¹ Heat output SRM, SHM and Hybrid 30 % modulated at A20W55² Heat output UltraSource B comfort C approx. 42 % modulated at A20W55³ Heat output Belaria® comfort ICM approx. 42 % modulated at A20W55**Notice:**

For higher comfort requirements or a higher hot water requirement, we recommend the storage tank series with larger heating coils: series ESR and ESSR (or CSR).

■ Engineering

Calorifier selection table

Thermalia® brine/water heat pumps

				UltraSource T comfort ¹⁾			Thermalia® comfort, comfort H						Thermalia® twin, twin H						Thermalia® dual, dual H, dual R										
			Type	(8)	(13)	(17)	(6)	(8)	(10)	(13)	(17)	H (7)	H (10)	(20)	(26)	(36)	(42)	H (13)	H (19)	H (22)	(55)	(70)	(85)	(110)	(140)	H (35)	H (50)	H (70)	H (90)
Heat output 1st stage at B2W55			kW	4.4	6.9	8.9	5.5	7.3	9.7	13.0	17.2	6.5	9.1	10.3	13.2	17.9	20.9	6.7	9.5	11.3	27.8	36.5	42.2	56.4	67.1	17.2	27.4	37.1	44.8
Email	CombiVal	ER 200	0.95																										
		ER 300	1.45																										
		ER 400	1.80																										
		ER 500	1.90																										
		ER 800	3.70																										
		ER 1000	4.50																										
		ESR 200	1.80																										
		ESR 300	2.60																										
		ESR 400	3.80																										
		ESSR 500	5.90																										
	ESSR 800	7.00																											
	ESSR 1000	9.15																											
	MultiVal	ERR 300	0.80																										
		ERR 400	1.00																										
		ERR 500	1.30																										
		ESRR 500	4.30																										
ESRR 800		5.20																											
ESRR 1000		6.10																											
Stainless steel	CombiVal	CR 200	0.90																										
		CR 300	1.20																										
		CR 500	1.80																										
		CR 800	2.40																										
		CR 1000	2.40																										
		CSR 300	2.90																										
		CSR 400	3.50																										
		CSR 500	4.90																										
		CSR 800	6.70																										
		CSR 1000	10.00																										
		CSR 1250	10.00																										
		CSR 1500	12.00																										
		CSR 2000	13.00																										
	CRR	CRR 500	1.20																										
		CRR 800	1.35																										
		CRR 1000	1.35																										
		CSRR 500	4.90																										
		CSRR 800	7.20																										
		CSRR 1000	10.00																										
		CSRR 1500	12.00																										
		CSRR 2000	12.00																										

¹⁾ Heat output UltraSource T comfort approx. 42 % modulated at B0W55

Notice:

For higher comfort requirements or a higher hot water requirement, we recommend the storage tank series with larger heating coils: series ESR and ESSR (or CSR).

■ Engineering

Calorifier selection table

Thermalia® water/water heat pumps

				UltraSource T comfort ¹⁾			Thermalia® comfort, comfort H						Thermalia® twin, twin H						Thermalia® dual, dual H, dual R										
			Type	(8)	(13)	(17)	(6)	(8)	(10)	(13)	(17)	H (7)	H (10)	(20)	(26)	(36)	(42)	H (13)	H (19)	H (22)	(55)	(70)	(85)	(110)	(140)	H (35)	H (50)	H (70)	H (90)
Heat output 1st stage at W10W55			kW	4.5	7.0	9.0	6.7	8.9	11.9	16.2	20.3	8.5	12.0	12.8	16.4	22.7	26.0	8.8	12.4	14.9	35.1	44.9	51.1	68.5	82.2	22.4	34.5	47.0	57.7
Email	CombiVal	ER 200	0.95																										
		ER 300	1.45																										
		ER 400	1.80																										
		ER 500	1.80																										
		ER 800	3.70																										
		ER 1000	4.50																										
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		ESR 300	2.60																										
		ESR 400	3.80																										
		ESSR 500	5.90																										
	ESSR 800	7.00																											
	ESSR 1000	9.15																											
	MultiVal	ERR 300	0.80																										
		ERR 400	1.00																										
ERR 500		1.30																											
ESRR 500		4.30																											
ESRR 800		5.20																											
ESRR 1000		6.10																											
Stainless steel	CombiVal	CR 200	0.90																										
		CR 300	1.20																										
		CR 500	1.80																										
		CR 800	2.40																										
		CR 1000	2.40																										
		CSR 300	2.90																										
		CSR 400	3.50																										
		CSR 500	4.90																										
		CSR 800	6.70																										
		CSR 1000	10.00																										
		CSR 1250	10.00																										
		CSR 1500	12.00																										
		CSR 2000	13.00																										
	CRR	CRR 500	1.20																										
		CRR 800	1.35																										
		CRR 1000	1.35																										
		CSRR 500	4.90																										
		CSRR 800	7.20																										
		CSRR 1000	10.00																										
		CSRR 1500	12.00																										
CSRR 2000	12.00																												

¹ Stainless steel version only available in Switzerland² Heat output UltraSource T comfort approx. 42 % modulated at W10W55**Notice:**

For higher comfort requirements or a higher hot water requirement, we recommend the storage tank series with larger heating coils: series ESR and ESSR (or CSR).

■ Engineering

Flat collector - dimension tables

Flat collectors DA25, 120 m

Laying distance 0.5 m

Heat load (incl. hot water) kW			UltraSource® T comfort/compact (8)					UltraSource® T comfort/compact (13)						UltraSource® T comfort (17)				
			3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
15 W/m²	Required area	m²	160	213	260	313	367	427	480	533	587	640	693	747	800	853	907	960
	Number of collector circuits	units	4	5	6	7	8	9	10	12	13	14	15	16	17	18	19	20
20 W/m²	Required area	m²	120	160	195	235	275	320	360	400	440	480	520	560	600	640	680	720
	Number of collector circuits	units	3	4	5	5	6	7	8	9	10	10	11	12	13	14	15	15
25 W/m²	Required area	m²	96	128	156	188	220	256	288	320	352	384	416	448	480	512	544	576
	Number of collector circuits	units	2	3	3	4	4	5	5	6	6	7	7	8	8	9	10	10
30 W/m²	Required area	m²	80	107	130	157	184	214	240	267	294	320	347	374	400	427	454	480
	Number of collector circuits	units	2	2	3	3	4	4	4	5	5	6	6	7	7	8	8	8
35 W/m²	Required area	m²	69	92	112	135	158	183	206	229	252	275	298	320	343	366	389	412
	Number of collector circuits	units	2	2	2	3	3	4	4	4	5	5	5	6	6	7	7	7

Type			Thermalia® comfort						
			(6)	(8)	(10)	(13)	(17)	H (7)	H (10)
15 W/m²	Required area	m²	300	393	560	707	907	340	473
	Number of collector circuits	units	7	9	12	15	19	8	10
20 W/m²	Required area	m²	225	295	420	530	680	255	355
	Number of collector circuits	units	5	7	9	12	15	6	8
25 W/m²	Required area	m²	180	236	336	424	544	204	284
	Number of collector circuits	units	3	4	6	8	10	4	5
30 W/m²	Required area	m²	150	197	280	354	454	170	237
	Number of collector circuits	units	3	4	5	6	8	3	4
35 W/m²	Required area	m²	129	169	240	303	389	146	203
	Number of collector circuits	units	3	3	4	6	7	3	4

Type			Thermalia® twin						
			(20)	(26)	(36)	(42)	H (13)	H (19)	H (22)
15 W/m²	Required area	m²	1080	1380	1880	2213	640	927	1087
	Number of collector circuits	units	23	29	40	47	14	20	23
20 W/m²	Required area	m²	810	1035	1410	1660	480	695	815
	Number of collector circuits	units	17	22	30	35	10	15	17
25 W/m²	Required area	m²	648	828	1128	1328	384	556	652
	Number of collector circuits	units	11	14	19	23	7	10	11
30 W/m²	Required area	m²	540	690	940	1107	320	464	544
	Number of collector circuits	units	9	12	16	19	6	8	10
35 W/m²	Required area	m²	463	592	806	949	275	398	466
	Number of collector circuits	units	8	10	14	16	5	7	8

Type			Thermalia® dual								
			(R)(55)	(R)(70)	(R)(85)	(R)(110)	(R)(140)	H (35)	H (50)	H (70)	H (90)
15 W/m²	Required area	m²	3027	3820	4433	5920	7193	1793	2700	3647	4453
	Number of collector circuits	units	64	80	93	124	150	38	57	76	75
20 W/m²	Required area	m²	2270	2865	3325	4440	5395	1345	2025	2735	3340
	Number of collector circuits	units	48	60	70	93	113	29	43	57	70
25 W/m²	Required area	m²	1816	2292	2660	3552	4316	1076	1620	2188	2672
	Number of collector circuits	units	31	39	45	60	72	18	27	37	45
30 W/m²	Required area	m²	1514	1910	2217	2960	3597	897	1350	1824	2227
	Number of collector circuits	units	26	32	37	50	60	15	23	31	38
35 W/m²	Required area	m²	1298	1638	1900	2538	3083	769	1158	1563	1909
	Number of collector circuits	units	22	28	32	43	52	13	20	27	32

Extraction rates

Soil type	Heat extraction rate [W/m²]
Dry, sandy soil	10-15
Moist, sandy soil	15-20
Dry, loamy soil	20-25
Moist, loamy soil	25-30
Silt	30-35
Sandy clay	35-40

- The design of flat plate collectors when using heat pumps with modulating output (types: UltraSource T comfort and compact) is based on the heat load of the building in accordance with DIN EN 18231 and the demand for hot water. This total demand (total output) minus the nominal compressor input power corresponds to the heat extraction power required by the flat plate collector
- All information relates to a total running time per year of max. 1800 h (heating of living space and water heating). This corresponds to a monovalent configuration when the heat pump meets the required total output for heating and domestic hot water (standard systems without special use). If the operating time is longer, the heat source must also be enlarged correspondingly.

■ Engineering

Depth probe - dimension tables

Flat collectors DA32, 200 m

Laying distance 0.65 m

Heat load (incl. hot water) kW			UltraSource® T comfort/compact (8)					UltraSource® T comfort/compact (13)						UltraSource® T comfort (17)				
			3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
15 W/m ²	Required area	m ²	160	213	260	313	367	427	480	533	587	640	693	747	800	853	907	960
	Number of collector circuits	units	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	8
20 W/m ²	Required area	m ²	120	160	195	235	275	320	360	400	440	480	520	560	600	640	680	720
	Number of collector circuits	units	1	2	2	2	3	3	3	3	4	4	4	5	5	5	6	6
25 W/m ²	Required area	m ²	96	128	156	188	220	256	288	320	352	384	416	448	480	512	544	576
	Number of collector circuits	units	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5
30 W/m ²	Required area	m ²	80	107	130	157	184	214	240	267	294	320	347	374	400	427	454	480
	Number of collector circuits	units	1	1	1	2	2	2	2	3	3	3	3	3	3	4	4	4
35 W/m ²	Required area	m ²	69	92	112	135	158	183	206	229	252	275	298	320	343	366	389	412
	Number of collector circuits	units	1	1	1	2	2	2	2	2	2	3	3	3	3	3	3	4

Type			Thermalia® comfort						
			(6)	(8)	(10)	(13)	(17)	H (7)	H (10)
15 W/m ²	Required area	m ²	300	393	560	707	907	340	473
	Number of collector circuits	units	3	3	5	6	7	3	4
20 W/m ²	Required area	m ²	225	295	420	530	680	255	355
	Number of collector circuits	units	2	3	4	4	6	2	3
25 W/m ²	Required area	m ²	180	236	336	424	544	204	284
	Number of collector circuits	units	2	2	3	4	5	2	3
30 W/m ²	Required area	m ²	150	197	280	354	454	170	237
	Number of collector circuits	units	2	2	3	3	4	2	2
35 W/m ²	Required area	m ²	129	169	240	303	389	146	203
	Number of collector circuits	units	1	2	2	3	3	2	2

Type			Thermalia® twin						
			(20)	(26)	(36)	(42)	H (13)	H (19)	H (22)
15 W/m ²	Required area	m ²	1080	1380	1880	2213	640	927	1087
	Number of collector circuits	units	9	11	15	17	5	7	9
20 W/m ²	Required area	m ²	810	1035	1410	1660	480	695	815
	Number of collector circuits	units	7	8	11	13	4	6	7
25 W/m ²	Required area	m ²	648	828	1128	1328	384	556	652
	Number of collector circuits	units	5	7	9	10	3	5	5
30 W/m ²	Required area	m ²	540	690	940	1107	320	464	544
	Number of collector circuits	units	5	6	8	9	3	4	5
35 W/m ²	Required area	m ²	463	592	806	949	275	398	466
	Number of collector circuits	units	4	5	7	8	3	3	4

Type			Thermalia® dual								
			(R)(55)	(R)(70)	(R)(85)	(R)(110)	(R)(140)	H (35)	H (50)	H (70)	H (90)
15 W/m²	Required area	m²	3027	3820	4433	5920	7193	1793	2700	3647	4453
	Number of collector circuits	units	23	29	34	45	54	14	21	28	34
20 W/m²	Required area	m²	2270	2865	3325	4440	5395	1345	2025	2735	3340
	Number of collector circuits	units	18	22	25	34	41	11	16	21	26
25 W/m²	Required area	m²	1816	2292	2660	3552	4316	1076	1620	2188	2672
	Number of collector circuits	units	14	18	20	27	33	9	13	17	21
30 W/m²	Required area	m²	1514	1910	2217	2960	3597	897	1350	1824	2227
	Number of collector circuits	units	12	15	17	23	27	7	11	14	17
35 W/m²	Required area	m²	1298	1638	1900	2538	3083	769	1158	1563	1909
	Number of collector circuits	units	10	13	15	20	24	6	9	12	15

Extraction rates

Soil type	Heat extraction rate [W/m ²]
Dry, sandy soil	10-15
Moist, sandy soil	15-20
Dry, loamy soil	20-25
Moist, loamy soil	25-30
Silt	30-35
Sandy clay	35-40

- The design of flat plate collectors when using heat pumps with modulating output (types: UltraSource T comfort and compact) is based on the heat load of the building in accordance with DIN EN 18231 and the demand for hot water. This total demand (total output) minus the nominal compressor input power corresponds to the heat extraction power required by the flat plate collector
- All information relates to a total running time per year of max. 1800 h (heating of living space and water heating). This corresponds to a monovalent configuration when the heat pump meets the required total output for heating and domestic hot water (standard systems without special use). If the operating time is longer, the heat source must also be enlarged correspondingly.

■ Engineering

Depth probe - dimension tables

			UltraSource® T comfort/compact (8)					UltraSource® T comfort/compact (13)						UltraSource® T comfort (17)					
Heat load (incl. hot water)		kW	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
40 W/m	Total depth	m	60	80	98	118	138	160	180	200	220	240	260	280	300	320	340	360	
	Frost protection	l	41	56	68	81	96	110	124	138	152	165	180	193	206	221	234	247	
45 W/m	Total depth	m	54	72	87	105	123	143	160	178	196	214	232	249	267	285	303	320	
	Frost protection	l	37	49	60	72	85	98	110	122	136	148	160	172	184	197	209	221	
50 W/m	Total depth	m	48	64	78	94	110	128	144	160	176	192	208	224	240	256	272	288	
	Frost protection	l	33	44	53	65	76	88	100	110	121	132	144	154	165	177	188	198	
55 W/m	Total depth	m	44	59	71	86	100	117	131	146	160	175	190	204	219	233	248	262	
	Frost protection	l	31	41	49	60	69	81	90	101	110	121	130	141	150	161	170	181	
60 W/m	Total depth	m	40	54	65	79	92	107	120	134	147	160	174	187	200	214	227	240	
	Frost protection	l	28	37	45	55	64	73	82	92	101	110	120	129	138	148	157	165	

			Thermalia®										
			comfort						twin				
Type			(6)	(8)	(10)	(13)	(17)	(7)	(10)	(20)	(26)	(36)	(42)
40 W/m	Total depth	m	113	148	210	265	339	128	178	405	518	705	830
	Frost protection	l	81	105	149	188	241	91	127	288	369	502	591
45 W/m	Total depth	m	101	132	187	236	301	114	158	360	460	627	738
	Frost protection	l	72	94	133	168	214	81	113	256	327	446	525
50 W/m	Total depth	m	91	118	168	212	271	102	142	324	414	564	664
	Frost protection	l	65	84	119	151	193	73	101	231	295	401	473
55 W/m	Total depth	m	83	108	153	193	247	93	130	295	377	513	604
	Frost protection	l	59	77	109	137	176	66	92	210	268	365	430
60 W/m	Total depth	m	76	99	140	177	226	85	119	270	345	470	554
	Frost protection	l	54	70	100	126	161	60	85	192	246	335	394

			Thermalia®											
			twin H			dual, dual R					dual H			
Type			(13)	(19)	(22)	(55)	(70)	(85)	(110)	(140)	(35)	(50)	(70)	(90)
40 W/m	Total depth	m	240	348	408	1135	1433	1663	2138	2698	670	1013	1365	1675
	Frost protection	l	171	248	290	808	1020	1183	1522	1920	477	721	972	1192
45 W/m	Total depth	m	214	309	363	1009	1274	1478	1900	2398	596	900	1214	1489
	Frost protection	l	152	220	258	718	907	1052	1352	1706	424	641	864	1060
50 W/m	Total depth	m	192	278	326	908	1146	1330	1710	2158	536	810	1092	1340
	Frost protection	l	137	198	232	646	815	946	1217	1536	381	577	777	954
55 W/m	Total depth	m	175	253	297	826	1042	1210	1555	1962	488	737	993	1219
	Frost protection	l	124	180	211	588	742	861	1106	1396	347	524	707	868
60 W/m	Total depth	m	160	232	272	757	955	1109	1425	1799	447	675	910	1117
	Frost protection	l	114	165	194	539	679	789	1014	1280	318	480	647	795

* The total depth and the antifreeze concentration are calculated for duplex probes (4 x 32 x 2.9) and corresponds to 33 % Hoval antifreeze concentrate for a frost protection of -15 °C. The frost protection for the connection pipes and supply pipes is to be calculated separately. The dimensioning table offers reference values for planning and is not intended as a substitute for geological evaluation.

Where the total depth is split between several boreholes, an additional allowance must be made. These allowances depend, amongst other things, on the distance between the boreholes.

Extraction rates

Soil type	Heat extraction rate [W/m]
Sand, dry gravel	< 25
Sand, grit, aquiferous	65-80
Clay, moist loam	35-50
Solid limestone	55-70
Sandstone	65-80
Acidic magmatite (e.g. granite)	65-85
Basic magmatite (e.g. basalt)	40-65
Gneiss	70-85

- The design of flat plate collectors when using heat pumps with modulating output (types: UltraSource T comfort and compact) is based on the heat load of the building in accordance with DIN EN 18231 and the demand for hot water. This total demand (total output) minus the nominal compressor input power corresponds to the heat extraction power required by the flat plate collector
- All information relates to a total running time per year of max. 1800 h (heating of living space and water heating). This corresponds to a monovalent configuration when the heat pump meets the required total output for heating and domestic hot water (standard systems without special use). If the operating time is longer, the heat source must also be enlarged correspondingly.

■ Engineering

Brine/water heat pump - flat collector

1 Explanation

To use the geothermal heat, geothermal collector circuits made of plastic of 120 m are laid horizontally and at a depth of approx. 1.2 m to 1.5 m. The collector pipes contain a mixture of water and antifreeze which is circulated by means of a circulating pump. The energy is transferred to an intermediate heat exchanger, which is where the evaporation takes place.

2 Laying depth

Depending on the depth of frost penetration, at least 20 cm under. A laying depth of between 1.2 m and 1.5 m is generally sufficient. Laying depths less than 2 m are to be avoided.

3 Laying distance

In practice, routing is carried out with the following average distances:

Pipe DA25 = 0.5 m

Pipe DA32 = 0.65 m

4 Laying area

The laying area must be grown and must not be raised unevenly. Before the first heat extraction, the ground has to be compressed. The surface must be undeveloped and even, have only a minimal slope and moreover may not be built on and/or sealed (asphalted, concreted over) at a later point in time. Sloping sites should be avoided because of the risk of slipping, but do not represent a problem for the function of the heat pump system.

It is important on sloping sites that the collector is laid across the slope, and that the distributor is located at the highest point if possible (ventilation). The location of the flat collector must be entered on a plan which remains attached to the heat pump.

5 Inserting the collectors

The collector pipes cannot be kinked or dented. The circuits are laid in a sand bed of approx. 10 cm. The circuits are then covered on every side with sand in order to protect them and to allow optimum heat transfer. The sand not needed between the collectors can be used for this. The circuits of 120 m are to be laid in their entirety (do not shorten them!) and extended into the shaft and/or into the basement approx. 1m or until assembly can be carried out smoothly at the distributor. When it is being filled, the collector must be kept under 3 bar (pressure protocol). It is recommended to lay warning tapes approx. 50 cm above the collector pipes. The brine circuit is to be filled with a water-antifreeze mixture with a frost protection of -15 °C (when using the Hoval antifreeze concentrate 33 vol %). Practical guide: Use water that has been preheated to 30 °C when mixing so that a lasting mixture is ensured and a sound measurement of frost protection is possible.

6 Safety distances

Water pipes: min. 1.5 m

Ducts: min. 1 m

Buildings, walls, area border: min. 1.2 m.

If these minimum distances cannot be observed, the object to be protected has to be insulated accordingly (closed pore insulation) to avoid frost damage.

7 Connection pipe to heating house

It is recommended to join the collector circuits to a shaft (preferably Hoval geothermal heat shaft), so that only two pipes have to be fed to the heating house after that. The geothermal heat shaft must be rainwater-tight and it is essential that it is drained (gravel layer, drainage,...). The connection pipes are also to be laid in a sand bed.

Configuration of the connection pipe according to applicable standards of the country in question.

8 Commissioning

Commissioning of the heat pump is carried out exclusively by Hoval customer service. The heat pump must be electrically connected and the plant filled, well flushed and vented. After commissioning, the customer receives a completion certificate.

As an option, an "inspection and system log book" can be obtained via Hoval customer service.

■ Engineering

Brine/water heat pump - depth probe

1 Explanation

To use the geothermal heat, depth probes (preferably 2-circuit probes) are inserted into the ground to a max. depth of 200 m per bore hole. The collector pipes contain a mixture of water and antifreeze which is circulated by means of a circulating pump. The energy is transferred to an intermediate heat exchanger, which is where the evaporation takes place.

A letter of approval is required from the authorities to lay a heat pump unit with depth probe.

2 Dimensioning of the deep borehole

The quick guide offers reference values for planning and is not intended as a substitute for geological evaluation.

In the case of special applications which do not increase the output of the heat pump (e.g. outdoor swimming pool), the heat source must be enlarged over the extended annual runtime (greater annual extraction).

3 Laying/drilling depth

The boreholes are made according to specification and the probes are inserted by the drilling company. If the subsoil actually hit differs from the projected geology, the depth of the borehole(s) must be adjusted to the new situation! The connection pipes are laid in trenches at a depth of approx. 1.2 m.

4 Laying/drilling spacing

Centre of deep borehole to centre of deep borehole min. 7 m (depending on the approval from the authorities, other distances can be stipulated). Larger distances between the boreholes reduce the additional allowance made for the total borehole metres.

The connection pipes are to be laid in a sand bed with a minimum distance of 50 cm.

5 Laying/drilling area

The surface must be undeveloped and even, and have only a minimal slope. The drilling points must be accessible with a drilling device (approx. 20 t in weight, approx. 3 m wide). The position of the depth probes and connection pipes is to be drawn on a plan, which remains on the heat pump.

6 Inserting the depth probes

The drilling company makes the borehole, inserts and backfills the probe and performs a pressure test. Ensure that the probe is properly and sufficiently backfilled from bottom to top. It is recommended to use 2-circuit (duplex) probes. Water and electricity are needed to make the borehole. The drilling mud must be capable of being stored at the borehole (skip or container). Buildings should possibly be protected against splash water from the drilling.

If several boreholes are required, ensure that the boreholes all have the same depth and that the connection pipes are all the same length in order to ensure equal rock pressure conditions. Otherwise, flow rate indicators have to be installed. It is recommended to lay warning tapes approx. 50 cm above the connection pipes.

The brine circuit is to be filled with a water-antifreeze mixture with a frost protection of -15 °C (when using the Hoval antifreeze concentrate 33 vol %). Practical guide: Use water that has been preheated to 30 °C when mixing so that a lasting mixture is ensured and a sound measurement of frost protection is possible.

7 Safety distances

Between the boreholes: min. 7 m.

To water pipes, ducts, buildings, walls and area borders: min. 3 m.

Depending on the approval from the authorities, other distances can be stipulated.

8 Connection pipe to heating house

It is recommended to join the collector circuits to a shaft (preferably Hoval geothermal heat shaft), so that only two pipes have to be fed to the heating house. The geothermal heat shaft must be rainwater-tight and it is essential that it is drained (gravel layer, drainage,...). The connection pipes are also to be laid in a sand bed.

Configuration of the connection pipe according to applicable standards of the country in question.

9 Curing time

Standard cement-bentonite mixtures for the grouting of the depth probes have a curing time of 28 days. Within this time period, the depth probe cannot be operated yet. Ask the drilling company about this.

10 Commissioning

Commissioning of the heat pump is carried out exclusively by Hoval customer service. The heat pump must be electrically connected and the plant filled, well flushed and vented. After commissioning, the customer receives a completion certificate.

As an option, an "inspection and system log book" can be obtained via Hoval customer service.

■ Engineering

Water/water heat pump - pumping and injection wells

1 Explanation

To use the ground water heat, pumping and injection wells are mounted. A submerged pump pumps the ground water through an intermediate heat exchanger. This intermediate circuit, which is filled with frost protection agent, transfers the energy to a heat exchanger in the heat pump, which is where evaporation takes place. A letter of approval is required from the authorities to mount a water/water heat pump unit.

2 Direct utilisation of ground water (without intermediate circuit)

The design of modern evaporators (brazen plate heat exchangers with very narrow plate spacing for high transfer rates) is such that applications with direct ground water through-flow are not recommended. These evaporators have very narrow flow channels and are extremely sensitive to even very fine dirt particles such as those abundant in ground water. If individual channels become blocked, they can freeze, resulting in leakage. This can cause irreparable damage to the heat pump. Flow controllers and temperature monitoring devices cannot be used, as the deviations are so slight that they are not registered. Upstream fine filters provide only a partial solution to the problem and need frequent cleaning.

Notice

In the case of systems without an intermediate heat exchanger (direct utilisation of ground water), Hoval accepts no liability for any damage caused by soiling or freezing of the evaporator!

3 Indirect utilisation of ground water (with intermediate circuit)

The somewhat lower performance coefficient is more than compensated for by the high operational reliability. Even with indirect use, ground water analysis is essential to allow selection of the appropriate intermediate heat exchanger and in order to identify problems caused by iron or manganese in combination with oxygen. Ideally, a separating heat exchanger in gasketed design should be used. Such heat exchangers can be dismantled for cleaning and have wider plate spacing. The hydraulic circuit must be executed in compliance with the Hoval circuit diagram. The intermediate circuit is filled with frost protection agent for frost protection of -15 °C (corresponds to 33 % Hoval antifreeze concentrate). The output of the heat pump can thus be read off for brine +5 °C.

4 Ground water

A pump trial run of at least 3 days must be performed in order to ascertain the effectiveness and in order to "clean" the production well. The minimum permissible temperature of the returned ground water is 5 °C.

For the intermediate heat exchanger, the following limit values have to be met strictly during the entire period of operation of the heat pump (ground water analysis is imperative, as the water quality can change continually):

ph-value	7 - 9
Sulphates	< 100 mg/l
Chlorides	< 50 mg/l
Nitrates	< 100 mg/l
Phosphates	< 2 mg/l
Free chlorides	< 0.5 mg/l
Free carbonic acid	< 20 mg/l
Ammonia	< 2 mg/l
Iron	< 0.2 mg/l *
Manganese	< 0.1 mg/l *
Oxygen	< 2 mg/l*
Electric conductance	50 - 600 µS/cm

* If the limit value for iron or manganese is exceeded, the presence of oxygen leads to silt-ing up of the heat exchanger or formation of iron and manganese oxide deposits in the injection well. The operation of a water/water heat pump is therefore not advisable.

5 Wells

Two bored wells are ideally mounted. However, where the geology permits this, the injection well can also be used as an absorbing well. Chiselled wells are to be avoided. The injection well should be at least 10 to 15 m away from the ground water flow (depending on the ground water situation, greater distances may be necessary).

6 Connection pipe

The supply and drainage pipe must be laid so that they are protected against frost at a minimum depth of 1.5 m. Ensure that there is a slight slope to the well.

From the production well, a feed pipe is to be laid for the electrical supply pipe of the pump. A backflushable fine filter with a maximum mesh size of 0.5 mm must be placed in the supply pipe, upstream of the heat pump.

A flow monitor is to be installed in the drainage pipe, upstream from the heat pump, to protect the heat pump (observe the installation instructions). After the flow controller, a throttle valve is to be installed to adjust the volume flow. The connection pipes are also to be laid in a sand bed.

The following dimensions are recommended (material PE-HD PN10):

Thermalia® comfort (6-10), comfort H (5-10): ED 40 (1¼")
 Thermalia® comfort (13,17), twin H (13): ED 50 (1½")
 Thermalia® twin (20,26) twin H (19,22), dual H (28,37) dual X (36): ED 63 (2")
 Thermalia® twin (36-42), dual (60), dual H (46,56): ED 75 (2½")
 Thermalia® dual (74-90): ED 90 (3")

The specified dimensions are sufficient for connection pipes with a length of approx. 25 m (one direction). For longer connection pipes, choose a larger pipe diameter.

7 Design of the well pump

$$m_w = \frac{(P_K \times 3600)}{(c \times \Delta T)} \quad [\text{kg/h}]$$

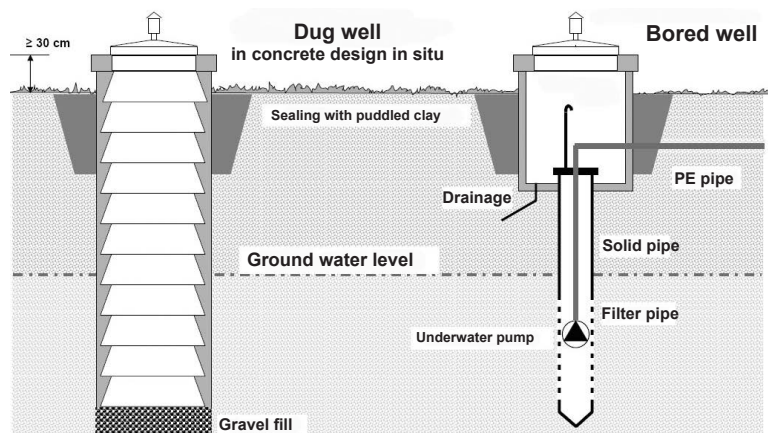
m_w = mass flow [kg/h] (corresponds approx. to a water volume flow [l/h])
 P_K = refrigerating capacity of the heat pump = heat output – electrical output [kW]
 c = specific heat capacity [kJ/kg.K]
 ($c_{\text{water}} = 4.187 \text{ kJ/kg.K}$)
 ΔT = temperature difference [K]
 (cooling down of the ground water)
 3600 = conversion factor (1 kWh = 3600 kJ)

Rule of thumb: 200 l/h per kW heat pump heat output with a temperature difference of 4 K. Underwater pumps with an integrated non-return valve must be used.

8 Commissioning

Commissioning of the heat pump is carried out exclusively by Hoval customer service. The heat pump must be electrically connected and the plant filled, well flushed and vented. After commissioning, the customer receives a completion certificate.

As an option, an "inspection and system log book" can be obtained via Hoval customer service.



■ Engineering

Active/passive cooling

- The low temperature can be output into the room using various systems
- Structural conditions (underfloor heating) and requirements on the room air status (dehumidification, room air temperature) must be taken into account when selecting the system
- It is of advantage to plan a separate cooling circuit for cooling. It can, for example, be combined with a cooling ceiling or a ventilation system.
- For lower comfort requirements where a cooling effect suffices, partial cooling via underfloor heating or blower convectors is also possible
- Special thermostatic valves are required that are suitable for heating and cooling operations. Standard thermostatic valves for heating systems close at low room temperatures.

Cooling via panel heating

- Recommended use with active and passive cooling
- In panel cooling, the surfaces enclosing the room (ceilings, floors or walls) are cooled by the following systems:
 - Underfloor heating
 - Cooling ceilings
 - Concrete core temperature control
- In all panel cooling systems, the temperature at the surfaces is not allowed to fall below the dewpoint temperature so that condensation will not form
- The fixed value of 18 °C is not allowed to be reduced by the user
- Dehumidification of the room air is not possible with panel cooling systems, and must be performed using additional systems if required
- If the room air is not dehumidified, the relative humidity will increase as the room temperature falls – which can lead to a reduction in comfort
- A plate heat exchanger is installed in the brine circuit (passive cooling)
- The minimum cooling temperature (dewpoint temperature) is regulated by a 3-way mixer valve
- Flow temperature monitoring is required so as to avoid condensation formation (dropping below the dewpoint) on cooling surfaces

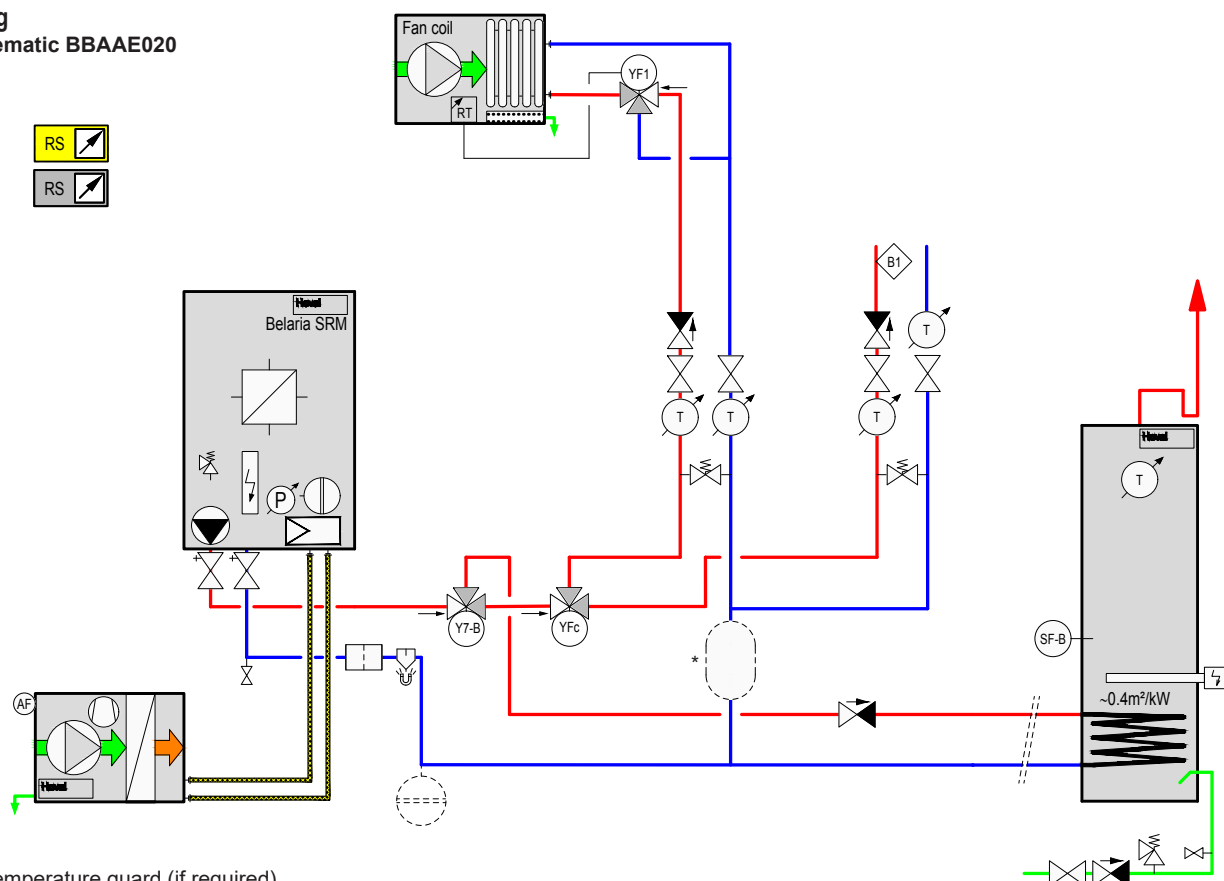
Cooling by fan convectors

- Recommended use only with active cooling
- The cooling circuit must be equipped with a flow controller
- Fan convectors can cool and dehumidify the room air. This increases the comfort level.
- In fan convectors, cold water flows at a temperature below the dewpoint. The resulting condensation must be drained away.
- The connection pipes to the fan convector must be insulated to prevent vapour diffusion and avoid any condensation forming on them

Pipe systems

- Materials resistant to corrosion must be used, such as plastic, chromium steel or a steel that has been treated to resist corrosion
- Galvanised pipes or fittings are not allowed to be used
- In the building, the network of pipes including storage tanks and fittings must be insulated to prevent vapour diffusion and avoid any condensation forming

■ Examples

Active cooling**Hydraulic schematic BBAAE020**

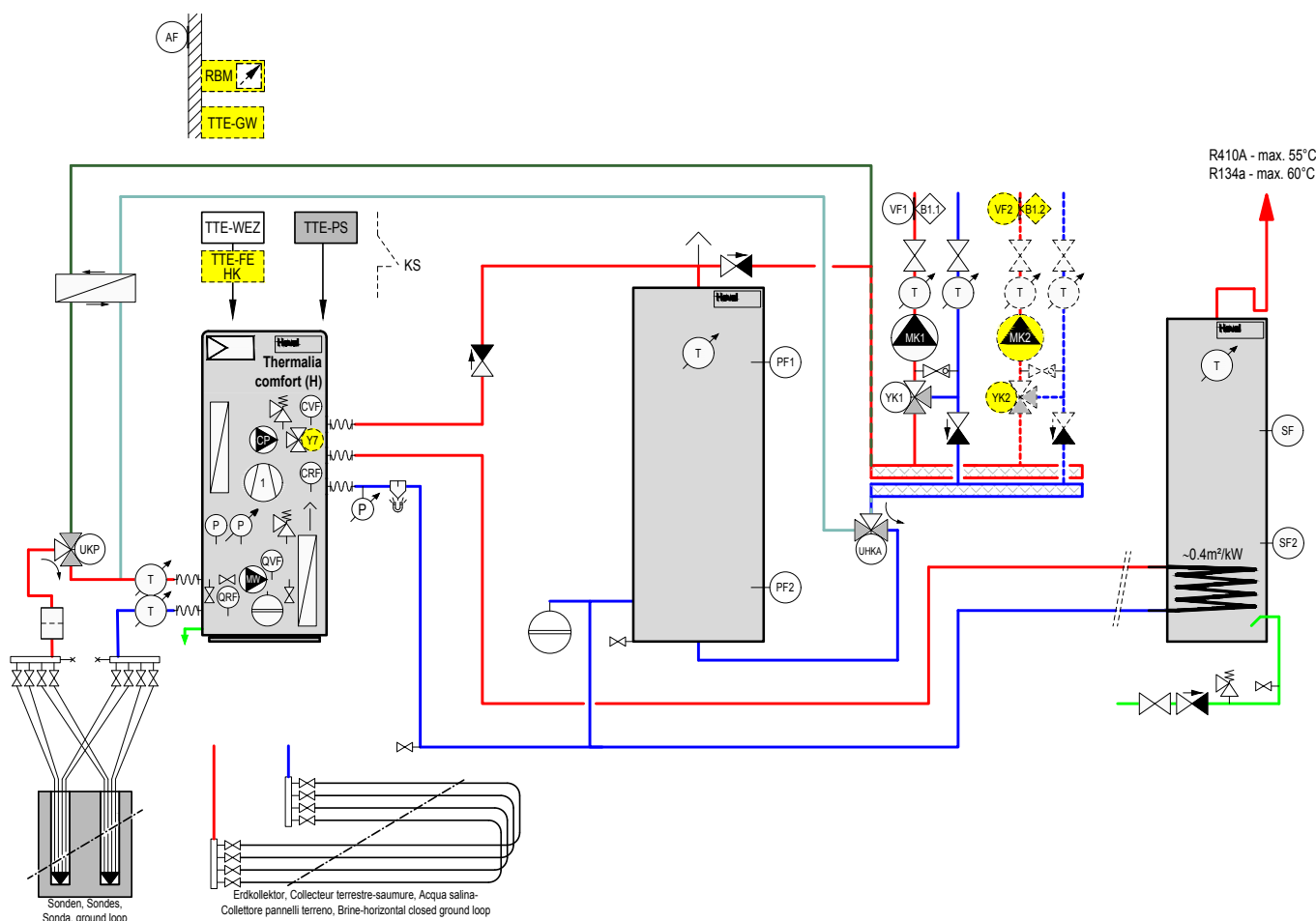
- B1 Flow temperature guard (if required)
 AF Outdoor sensor
 YF1 Actuator Fan Coil
 Y7-B Switching valve (Belaria® SRM)
 YFc Switching valve (fan coil)
 SF-B Calorifier sensor

- Option
 BR Burner connection
 RT External room/moisture thermostat

* Additional volume for defrosting procedure

■ Engineering

Passive cooling



TTE-WEZ	TopTronic® E basic module heat generator (installed)
TTE-PS	TopTronic® E buffer module
VF1	Flow temperature sensor 1
B1.1	Flow temperature monitor (if required)
MK1	Pump, mixer circuit 1
YK1	Actuator, mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
PF1	Buffer sensor 1
PF2	Buffer sensor 2
<i>Option</i>	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-FE	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature monitor (if required)
MC2	Pump, mixer circuit 2
YK2	Actuator, mixer 2

■ Engineering

Smart Grid (PV function)

Load management with heat pumps

Heat pumps are currently the most efficient method of storing electricity from volatile generation (green electricity from renewable sources such as: wind power, photovoltaic systems or even from combined heat and power). "Smart Grid" in this context refers to an intelligent power system. In contrast to earlier electricity connections that only operate in one direction, the Smart Grid features many distributed electricity generation and consumption systems. It is obvious that it makes most sense to consume the electricity close to where it is generated. This reduces the grid system load and the public grid system predominantly functions as a balancing mechanism.

The following conditions must be met by the system for efficient and convenient operation:

- Smart Meter electricity tariff or
- PV system/small wind turbine with Smart Grid-capable inverter or PV load manager (own electricity consumption)
- Heat pump
- TopTronic® E
- Energy buffer storage tank, min. 800 l
- Mixer circuit
- Possibly additional electrical heating

The heat pump is switched on and off or controlled according to demand, as in the past, depending on weather conditions. Moreover, it is switched on when a particular green electricity surplus is reached and charges the energy buffer storage tank and any calorifiers to a high, generally the maximum, temperature. At times when no green electricity (cheap electricity) is available any longer, the heating is supplied from the charged energy buffer storage tank. The heat pump needs to be operated less frequently during periods when electricity is expensive.

This is implemented using 2 digital inputs on the TopTronic® E. A 4-core signal cable from the inverter/PV load manager or from the Smart Meter is required for this. The information must be provided voltage-free.

