CATALOGUE

# Heat pumps

1.4.2026

**Hoval** | Responsibility for energy and environment

## Air/water heat pumps

Outdoor installation,
modulating

| | |
|---|---|
| **Hoval Belaria® pro comfort** | **3.5-14.5 kW** |
| **Hoval Belaria® pro compact** | **3.5-11.8 kW** |

| | |
|---|---|
| **Hoval Belaria® pro (20,25)** | **11.8-24.0 kW** |

| | |
|---|---|
| **Hoval Belaria® pro (40,50)** | **11.8-48.0 kW** |

| | |
|---|---|
| **Hoval Belaria® fit (8-26)** | **8.7-26.0 kW** |

| | |
|---|---|
| **Hoval Belaria® fit (40-70)** | **22.7-71.0 kW** |

## Brine/water or water/water heat pumps

**Hoval**

CATALOGUE

# Hoval Belaria® pro

Air/water heat pump
Belaria® pro comfort (8-15)
Belaria® pro compact (8/100/300), (13/100/300)

**Hoval** | Responsibility for energy and environment

## Table of contents

## Hoval Belaria® pro comfort
## Hoval Belaria® pro compact

**Modulating monoblock heat pump for heating and cooling.**
**Belaria® pro compact (8/100/300) and (13/100/300) additionally with integrated buffer storage tank (100 litres) and calorifier (300 litres) in the indoor unit.**

Monoblock heat pump set up outdoors consisting of outdoor unit and indoor unit.

*Belaria® pro outdoor unit*
- Compact floor-mounted air/water heat pump
- Elegant and extremely quiet outdoor unit
- Casing with sheet metal cladding, powder-coated, colour anthracite (DB703)
- Cooling unit with refrigerant R290
- Integrated components:
  - speed-controlled scroll compressor
  - L-shaped louvre-type evaporator with the Belaria® pro (8,13)
  - straight louvre-type evaporator with the Belaria® pro (15)
  - speed-controlled axial fan with FlowGrid (inlet grille) with the Belaria® pro (8,13), Belaria® pro (15) without FlowGrid
  - plate-type condenser made of stainless steel/copper
  - built-in gas separator with safety valve 2.5 bar
  - condensate drip tray incl. tray heating and condensate trace heater for channelling all the condensate in the outdoor unit, fixed installation, 1″ connection
- With cooling function with corresponding hydraulics
- Hydraulic connections behind louvre grille
  - Belaria® pro (8,13): heating connections 1″
  - Belaria® pro (15): heating connections 1¼″
  - Filter ball valve installed in the heat pump return
- Electrical connections behind louvre grille
  - 400 V main power supply, supplied from the indoor unit
  - 230 V control current, supplied from the indoor unit
  - Data cable for bus connection to the indoor unit
- With fitting accessories for fixing the outdoor unit on the ground

**Model range**

| Belaria® pro comfort<br>type | 35 °C | 55 °C | Heat output 1)<br>A-7W35<br>kW | A2W35<br>kW | Cooling capacity 1)<br>A35W18<br>kW |
|---|---|---|---|---|---|
| (8) | A+++ | A+++ | 2.7-8.3 | 3.5-8.3 | 4.9-8.1 |
| (13) | A+++ | A+++ | 5.0-10.3 | 5.3-11.8 | 6.7-11.4 |
| (15) | A+++ | A+++ | 6.9-13.3 | 7.1-14.5 | 7.9-13.6 |
|  | A+++ → D | A+++ → D |  |  |  |

| Belaria® pro compact<br>type | 35 °C | 55 °C |  | Heat output 1)<br>A-7W35<br>kW | A2W35<br>kW | Cooling capacity 1)<br>A35W18<br>kW |
|---|---|---|---|---|---|---|
| (8/100/300) | A+++ | A+++ | A | 2.7-8.3 | 3.5-8.3 | 4.9-8.1 |
| (13/100/300) | A+++ | A+++ | A | 5.0-10.3 | 5.3-11.8 | 6.7-11.4 |
|  | A+++ → D | A+++ → D | A+ → F |  |  |  |

Energy efficiency class of the compound system with control.

1) Modulation range

*Belaria® pro comfort indoor unit*
- Compact wall-mounted indoor unit
- Casing made of structured EPP, colour black
- TopTronic® E control installed with TopTronic® E control module
- With WFA-200S automatic heat pump device
- Integrated components:
  - speed-controlled high-efficiency pump
  - flow sensor/heat meter
  - electric heating element 6 kW
  - 3-way switching ball valve for heating/domestic hot water

- Hydraulic connections at bottom
  - Belaria® pro (8,13):
  - heating connections 1″
    domestic hot water connection 1″
  - Belaria® pro (15):
    heating connections 1¼″
    domestic hot water connection 1¼″
- Electrical connections introduced from bottom
- With fitting accessories for fixing the indoor unit to the wall
- Shut-off ball valves are included in the scope of delivery.

*Belaria® pro compact indoor unit*
- Compact floor-mounted indoor unit
- Casing made from painted, galvanised sheet steel, colour flame red/brown red (RAL 3000/RAL 3011)
- TopTronic® E control installed with TopTronic® E control module
- With WFA-200S automatic heat pump device
- Integrated 100 litre buffer storage tank
- Integrated 300 litre calorifier
- Enamel painted calorifier with PU hard-foam insulation, energy efficiency class A, load profile XXL. Maintenance flange and magnesium protection anode built in
- Integrated components:
  - speed-controlled high-efficiency pump
  - flow sensor/heat meter
  - electric heating element 6 kW
  - 3-way switching ball valve for heating/domestic hot water
  - heating/cooling circuit pump and mixer
- Hydraulic connections top
  - Heating connections 1″
  - Hot water connection 1″
  - Cold water connection 1″
- Electrical connections introduced from top
- Shut-off ball valves are included in the scope of delivery.

*TopTronic® E controller*

*Control panel*
- 4.3-inch colour touchscreen
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp
- Mains isolator

*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)

*TopTronic® E basic module heat generator TTE-WEZ*
- Integrated control functions for
  - 1 heating/cooling circuit with mixer
  - 1 heating/cooling circuit without mixer
  - 1 hot water charging circuit
  - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

*Options for TopTronic® E controller*
- Can be expanded by max. 1 module expansion:
  - module expansion heating circuit or
  - module expansion Universal or
  - module expansion heat balancing
- 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:*
Indoor unit Belaria® pro comfort:
- 1 module expansion and 1 controller module
**or**
- 2 controller modules

Indoor unit Belaria® pro compact:
- 1 module expansion and 1 controller module

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

**For further information about the TopTronic® E,** see "Controls"

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

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

*Delivery*
- Outdoor and indoor unit delivered packaged separately
- Belaria® pro comfort sensor kit included loose in the electrical box:
  - outdoor sensor (AF)
  - calorifier sensor (SF1/SF1.1)
  - flow sensor (VF1)
- Sensor set Belaria® pro compact:
  - outdoor sensor (AF) included loose in the electrical box
  - calorifier sensor (SF1/SF1.1) connected to terminal of the indoor unit and mounted
  - flow sensor (VF1) connected to terminal of the indoor unit and mounted
  - heat pump buffer sensor (WPF) connected to terminal of the indoor unit and mounted

*On site*
- Wall ducts for hydraulic connection lines
- Hydraulic connection lines from the outdoor unit to the inside of the building as far as the indoor unit
- Electrical connection line from the outdoor unit to the indoor unit
- Strip foundation, floor plate

**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems
With Hoval Integrate, Hoval heat pumps with TopTronic® E control can be integrated into home automation and energy management systems via open, standardised interfaces.
Predefined templates, plugins and Smart Grid integrations simplify implementation and enable intelligent decisions.
Functions such as PV surplus utilisation, dynamic electricity tariffs, grid-friendly control, load management or simple visualisations for analysis purposes can be created and operated individually.
System integrators are free to choose their desired system and benefit from broad compatibility and future-proof sector coupling.
Thanks to integrated building automation, end customers benefit from operating cost savings and cross-system functions.
Practical guide videos provide additional support for integration and commissioning – step by step and with a practical orientation.

**Notice**
Only available in Austria, Germany and Switzerland

# Hoval Belaria® pro comfort (8-15)
# Hoval Belaria® pro compact (8/100/300), (13/100/300)

## Air/water heat pump

### Hoval Belaria® pro comfort

| Belaria® pro comfort type | Heat output 1) A-7W35 kW | A2W35 kW | Cooling capacity 1) A35W18 kW | Part No. |
|---|---|---|---|---|
| (8) | 2.7-8.3 | 3.5-8.3 | 4.9-8.1 | 7019 480 |
| (13) | 5.0-10.3 | 5.3-11.8 | 6.7-11.4 | 7019 481 |
| (15) | 6.9-13.3 | 7.1-14.5 | 7.9-13.6 | 7019 482 |

1) Modulation range

### Hoval Belaria® pro compact

with integrated buffer storage tank (100 litres) and calorifier (300 litres)

| Belaria® pro compact type | Heat output 1) A-7W35 kW | A2W35 kW | Cooling capacity 1) A35W18 kW | Part No. |
|---|---|---|---|---|
| (8/100/300) | 2.7-8.3 | 3.5-8.3 | 4.9-8.1 | 7019 212 |
| (13/100/300) | 5.0-10.3 | 5.3-11.8 | 6.7-11.4 | 7019 213 |

1) Modulation range

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

**Further information**
see “Description”

**Further accessories can be found under the following rubrics:**
- Calorifiers/buffer storage tanks:
  - Calorifiers
  - Buffer storage tanks
  - Combination storage tanks
  - Electric heating elements
- Heating armature groups/heating distributors
- Various system components:
  - 2-way and 3-way valves
  - 3-way mixers
  - 2-way and 3-way ball valves
  - Motor drives and butterfly valves
  - Diaphragm pressure expansion tanks
  - Fittings
  - Plate heat exchangers
- Circulating pumps

**Notice**
Only available in Austria, Germany and Switzerland

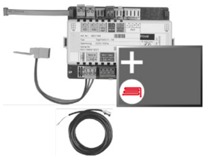
**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems

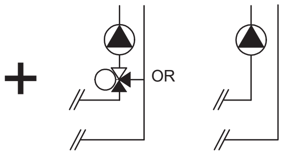
**Further information**
see “Description”

**Part No.**

## TopTronic® E module expansions

for TopTronic® E basic module heat generator





**TopTronic® E module expansion heating circuit TTE-FE HK**

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

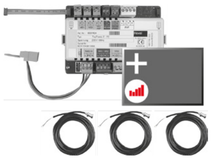
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer

Consisting of:

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

6034 576

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



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

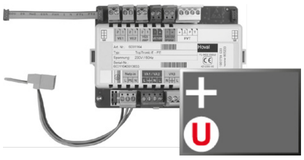
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

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

Consisting of:

- Fitting accessories
- 3 contact sensors ALF/2P/4/T, L = 4.0 m
- Plug set FE module

6037 062



**TopTronic® E module expansion Universal TTE-FE UNI**

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

Consisting of:

- Fitting accessories
- Plug set FE module

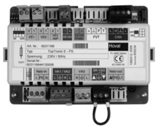
6034 575

**Further information**
see “Controls” section – “Hoval TopTronic® E module expansions” chapter

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

## Accessories for TopTronic® E

**Part No.**



**TopTronic® E controller modules**

| | | |
|---|---|---|
| TTE-HK/WW | TopTronic® E heating circuit/ hot water module | 6034 571 |
| TTE-SOL | TopTronic® E solar module | 6037 058 |
| TTE-PS | TopTronic® E buffer module | 6037 057 |
| TTE-MWA | TopTronic® E measuring module | 6034 574 |

**Supplementary plug set**

| | |
|---|---|
| for basic module heat generator TTE-WEZ | 6034 499 |
| for controller modules and module expansion TTE-FE HK | 6034 503 |

**TopTronic® E room control modules**

| | | |
|---|---|---|
| TTE-RBM | TopTronic® E room control modules | |
| | easy white | 6037 071 |
| | comfort white | 6037 069 |
| | comfort black | 6037 070 |

| | |
|---|---|
| **Enhanced language package TopTronic® E** | 6039 253 |

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

**HovalConnect**

| | |
|---|---|
| HovalConnect LAN | 6049 496 |
| HovalConnect WLAN | 6049 498 |
| HovalConnect Modbus | 6049 501 |
| HovalConnect KNX | 6049 593 |

**TopTronic® E interface modules**

| | |
|---|---|
| GLT module 0-10 V | 6034 578 |

**TopTronic® E sensors**

| | | |
|---|---|---|
| AF/2P/K | Outdoor sensor<br>H x W x D = 80 x 50 x 28 mm | 2055 889 |
| TF/2P/5/6T | Immersion sensor, L = 5.0 m | 2055 888 |
| ALF/2P/4/T | Contact sensor, L = 4.0 m | 2056 775 |
| TF/1.1P/2.5S/6T | Collector sensor, L = 2.5 m | 2056 776 |

**Bivalent switch**

for various release or switching functions

| | |
|---|---|
| Bivalent switch 1-piece | 2056 858 |
| Bivalent switch 2-piece | 2061 826 |

**System casing**

| | |
|---|---|
| System casing 182 mm | 6038 551 |
| System casing 254 mm | 6038 552 |

**TopTronic® E wall casing**

| | | |
|---|---|---|
| WG-190 | Wall casing small | 6052 983 |
| WG-360 | Wall casing medium | 6052 984 |
| WG-360 BM | Wall casing medium with control module cut-out | 6052 985 |
| WG-510 | Wall casing large | 6052 986 |
| WG-510 BM | Wall casing large with control module cut-out | 6052 987 |

**Further information**
see “Controls”

**Part No.**

## Accessories for Belaria® pro (8,13)

**HP line insul. WA-HP 125-32 with connector set**
Flexible, pre-insulated and self-compensating line with two heating pipes and two empty pipes.
With connector set consisting of:
- 4 clamping couplings WA DN 32 1″ ET 32 x 2.9 mm
- 1 end cap WA-HP 125-32
- 1 protective cap WA-HP 125-32
- 1 protective cap set WA-HP protection tube DN 25
- 1 split ring seal 125/200

Outside diameter: 125 mm
Fluid pipes: 2 x 32 mm / 2.9 mm (DN 25)
Outside diameter empty pipe 1: 32 mm
Outside diameter empty pipe 2: 25 mm
Bending radius: 0.3 m
Operating temperature: −10 ... 85 °C
Maximum temperature: 95 °C
Nominal pressure: 6 bar

| Dimension inside/outside | Line length m | Part No. |
|---|---|---|
| DN 25/32 | 5 | 6065 263 |
| DN 25/32 | 10 | 6065 264 |
| DN 25/32 | 15 | 6065 265 |
| DN 25/32 | 20 | 6065 266 |
| DN 25/32 | 25 | 6065 267 |

**Lining pipe DN 200 D210/D200 x 400** — 2080 584
for HP line insulated WA-HP
Lining pipe for feeding the HP lines through ceilings, walls and floors.
Suitable for walling in and cementing in.
Lining pipe material: PVC
Outer Ø: 210 mm
Internal Ø: 200 mm
Length: 400 mm

**Connection set AS25-BPA** — 6063 098
for Belaria® pro (8,13)
Flexible connection line that can be shortened for connecting flow and return within the heat pump
Consisting of:
- 1 3.0 m corrugated pipe DN 20 insulated
- Insulation 20/28 with PE protective foil
- 3 angle screw connections IT/ET 1″
- 4 union nuts 1″
- 2 support rings 1″
- Flat seals NBR

**Notice**
In cooling applications, the piping and fittings must be insulated accordingly.

**Adhesive tape IKB** — 2023 563
for thermal insulation made of EPDM
Thickness: 3 mm
Width: 50 mm
Roll: 15 m

Part No.

## Accessories for Belaria® pro (15)

**HP line insul. WA-HP 160-40 with connector set**

Flexible, pre-insulated and self-compensating line with two heating pipes and two empty pipes.

With connector set consisting of:
- 4 clamping couplings WA DN 40 1¼″ ET 40 x 3.7 mm
- 1 end cap WA-HP 160-40
- 1 protective cap WA-HP 160-40
- 1 protective cap set WA-HP protection tube DN 32
- 1 split ring seal 160/250

Outside diameter: 160 mm
Fluid pipes: 2 x 40 mm / 3.7 mm (DN 32)
Outside diameter empty pipe 1: 32 mm
Outside diameter empty pipe 2: 32 mm
Bending radius: 0.6 m
Operating temperature: −10 ... 85 °C
Maximum temperature: 95 °C
Nominal pressure: 6 bar

| Dimension inside/outside | Line length m | Part No. |
|---|---|---|
| DN 32/40 | 5 | 6065 268 |
| DN 32/40 | 10 | 6065 269 |
| DN 32/40 | 15 | 6065 270 |
| DN 32/40 | 20 | 6065 271 |
| DN 32/40 | 25 | 6065 272 |

**Lining pipe DN 250 D280/D250 x 400**

2087 112

for HP line insulated WA-HP
Lining pipe for feeding the HP lines through ceilings, walls and floors.
Suitable for walling in and cementing in.
Lining pipe material: PVC
Outer Ø: 280 mm
Internal Ø: 250 mm
Length: 400 mm

**Connection set AS32-BPA**

6063 099

for Belaria® pro (15)
Flexible connection line that can be shortened for connecting flow and return within the heat pump
Consisting of:
- 1 3.0 m corrugated pipe DN 25 insulated
- Insulation 20/35 with PE protective foil
- 3 angle screw connections IT/ET 1¼″
- 4 union nuts 1¼″
- 2 support rings 1¼″
- Flat seals NBR

**Notice**
In cooling applications, the piping and fittings must be insulated accordingly.

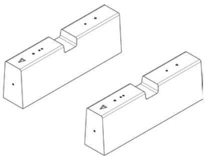
**Adhesive tape IKB**

2023 563

for thermal insulation made of EPDM
Thickness: 3 mm
Width: 50 mm
Roll: 15 m

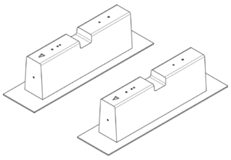
## Accessories

**Part No.**



**Concrete base set BSW02-FU**
for Belaria® pro (8-15) and
UltraSource® B (8,11)
for safe installation of an
outdoor unit on a firm base
Consisting of:
2 concrete bases with cast-in
fastening sleeves M8 and M10
Dimensions (H x W x D):
250 x 750 x 150 mm
Weight: 2 pieces of 57 kg

6054 856

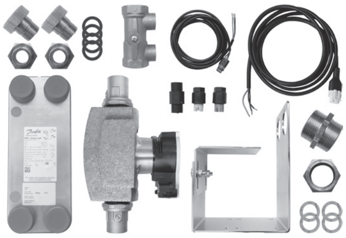


**Concrete base set BSW02-FD**
for Belaria® pro (8-15) and
UltraSource® B (8,11)
for safe installation of an outdoor
unit on the flat roof.
Consisting of:
2 concrete bases with cast-in
fastening sleeves M8 and M10
Protective mats with aluminium lining
Dimensions (H x W x D):
250 x 750 x 150 mm
Weight: 2 pieces of 57 kg

6054 857

**Notice**
In a flat roof installation, all standards concerning statics, wind load and access to roofs must be complied with.

**Further information**
see “Engineering” chapter



**Separation system of heat pump**
for separation of heating circuit and
primary heating circuit.
Consisting of:
- Plate heat exchanger (soldered)
Dimensioning ΔT: 3 K
- Wall installation connection bracket
- Connection screw fittings
- Pump incl. thermal insulation shell, mains and signal cable and connection screw fittings
- Filling/flushing unit

| Type | TS | Number of plates | Part No. |
|---|---|---|---|
| Belaria® pro comfort (8),<br>pro compact (8/100/300) | 25-30 | 30 | 6063 264 |
| Belaria® pro comfort (13),<br>pro compact (13/100/300) | 25-40 | 40 | 6063 265 |
| Belaria® pro comfort (15) | 32-50 | 50 | 6063 266 |

Diaphragm pressure expansion tanks and frost protection must be ordered separately.

**HA group HA 25-2-WP**
for Belaria® compact (8,13/100/300)
Direct heating/cooling circuit without
mixer for mounting in Belaria® pro
compact indoor unit

6062 554

**Correx® impressed current anode**
for Belaria® pro compact (8,13/100/300)
for long-term corrosion protection for
installation in the enamelled calorifier
with built-in socket.

6051 882

Only either a Correx® impressed current anode or a magnesium anode is allowed to be used.

**Part No.**

## Accessories

**Safety set SGK15-PN3 IT 1″ insulated**
Safety group made of composite material
(glass fiber reinforced polyamide)
complete with safety valve (3 bar),
quick air vent and pressure gauge
Connection IT 1″ (ISO228-1)
with insulating caps
Medium temperature range: 5 ... 90 °C
Setting (pressure): 3 bar
Area of application up to 50 kW

Part No. 6063 905

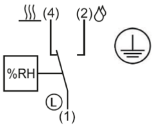
**Differential pressure relief valve DN 20**
for free installation
with flexible centre distance
Connections at both ends 1″ ET
Operating pressure: max. 10 bar
Operating temperature: max. 120 °C
Setting range: 0.05-0.5 bar
Length: 93 mm
Casing made of brass with setting handle
made of plastic

Part No. 240 554

**Vibration decoupler**
for reducing structure-borne noise from
heat pumps indoors, cannot be shortened
Consisting of:
- 1 vibration decoupler insulated for heating and brine side flat-sealing with union nut
- 2 flat seals

Nominal pressure: PN 10

| Dimension | Connection inches | Nominal length mm | Part No. |
|---|---|---|---|
| DN 25 | 1″ | 300 | 2082 222 |
| DN 25 | 1″ | 500 | 2082 223 |
| DN 25 | 1″ | 1000 | 2080 794 |
| DN 32 | 1¼″ | 300 | 2082 224 |
| DN 32 | 1¼″ | 500 | 2082 225 |
| DN 32 | 1¼″ | 1000 | 2080 796 |



**Dewpoint monitor (TPW)**
for monitoring the formation of
condensation in a compartment, with
gold contacts, can be installed as
required for pipes up to Ø 50 mm
The installation location must be
selected in such a way that a
representative humidity measurement
is guaranteed i.e. the room air must
flow unhindered through the slots
in the housing to the measuring
element inside the casing.
The TPW does not require
supply voltage or auxiliary energy
and should be mounted in an air flow
with an air velocity of at least
0.2 m/s.
Control range: 50 ... 90 % RH
Max. switch power: 100 mA/250 V AC
Operating temperature: 0 … 60 °C
Dimensions: 85 x 55 x 33 mm
Weight: approx. 92 g
Type of protection: IP20

Part No. 2070 911

**Notice**
The dewpoint monitor is the only safety equipment in cooling systems and is always mandatory, to prevent damage caused by condensing water in surface cooling systems (floor, wall, ceiling cooling)!
This applies to both active and passive cooling systems.

**Part No.**

## Services

**Services and associated scope of services**
see separate catalogue “Hoval Services”

Commissioning by Hoval customer service is a prerequisite for warranty/guarantee activation.

## Belaria® pro comfort (8-15)
## Belaria® pro compact (8/100/300,13/100/300)

| **Type** | | **(8)**<br>**(8/100/300)** | **(13)**<br>**(13/100/300)** | **(15)** |
|---|---|---|---|---|
| • Energy efficiency class of the compound system with control 1) (A+++ → | 35 °C/55 °C | A+++/A+++ | A+++/A+++ | A+++/A+++ |
| • Energy efficiency class load profile XXL (A+ → F) | Domestic hot water | -/A | -/A | - |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 207 | 203 | 221 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 154 | 154 | 162 |
| • Water heating energy efficiency consumption profile/ηwh 35 °C/55 °C | -/% | XXL/105 | XXL/101 | -/- |
| • Seasonal coefficient of performance moderate climate 35 °C/55 °C | SCOP | 5.3/3.9 | 5.2/4.0 | 5.6/4.1 |
| • Seasonal coefficient of performance heating A35W18 2) | SEER | 4.5 | 5.3 | 4.7 |
| • Seasonal coefficient of performance heating A35W7 2) | SEER | 2.5 | 2.9 | 3.0 |
| **Max./min. performance data heating and cooling in acc. with EN 14511** | | | | |
| • Max. heat output A2W35 | kW | 8.3 | 11.8 | 14.5 |
| • Max. heat output A-7W35 | kW | 8.3 | 10.3 | 13.3 |
| • Min. heat output A15W35 | kW | 4.5 | 5.4 | 7.7 |
| • Max. cooling capacity A35W18 | kW | 8.1 | 11.4 | 13.6 |
| • Max. cooling capacity A35W7 | kW | 6.4 | 8.8 | 10.0 |
| • Min. cooling capacity A35W18 | kW | 4.9 | 6.7 | 7.9 |
| **Nominal output data heating in acc. with EN 14511** | | | | |
| • Nominal heat output A2W35 | kW | 3.5 | 5.3 | 8.7 |
| • Coefficient of performance A2W35 | COP | 4.6 | 4.6 | 4.7 |
| • Nominal heat output A7W35 | kW | 4.1 | 5.9 | 9.8 |
| • Coefficient of performance A7W35 | COP | 5.4 | 5.5 | 5.6 |
| • Nominal heat output A-7W35 | kW | 4.0 | 5.3 | 8.5 |
| • Coefficient of performance A-7W35 | COP | 3.4 | 3.5 | 3.5 |
| **Nominal output data cooling in acc. with EN 14511** | | | | |
| • Nominal cooling capacity A35W18 | kW | 6.3 | 9.7 | 11.6 |
| • Energy efficiency ratio A35W18 | EER | 4.9 | 4.6 | 4.6 |
| • Nominal cooling capacity A35W7 | kW | 4.4 | 6.5 | 7.5 |
| • Energy efficiency ratio A35W7 | EER | 3.5 | 3.2 | 3.0 |
| **Sound data** | | | | |
| • Max. sound power level outdoor unit, day operation | dB(A) | 55 | 57 | 55 |
| • Sound power level EN 12102 outdoor unit whisper mode | dB(A) | 44 | 49 | 48 |
| • Sound power level EN 12102 outdoor unit 3) | dB(A) | 46 | 51 | 50 |
| • Sound pressure level 5 m 3), 4) | dB(A) | 27 | 32 | 31 |
| • Sound pressure level 10 m 3), 4) | dB(A) | 21 | 26 | 25 |
| **Hydraulic data** | | | | |
| • Max. flow temperature | °C | 70 | 70 | 70 |
| • Max. flow rate heating side with A7W35, ΔT 6 K | $m^3/h$ | 1.2 | 1.8 | 2.3 |
| • Nominal flow rate heating side with A7W35, ΔT 5 K | $m^3/h$ | 0.7 | 1 | 1.7 |
| • Max. flow rate heating side with A35W7, ΔT 4 K | $m^3/h$ | 2.5 | 3.1 | 3.6 |
| • Residual overpressure of heating pump at nominal flow A7W35, ΔT 5 K | kPa | 69 | 81 | 49 |
| • Residual overpressure of heating pump at max. flow rate A35W7, ΔT 4 K | kPa | 53 | 62 | 32 |
| • Max. operating pressure on the heating side 11) | bar | 2.5 | 2.5 | 2.5 |
| • Max. operating pressure domestic hot water side | bar | 10 | 10 | - |
| • Flow/return connection heating | G | 1″ | 1″ | 1¼" |
| • Cold water connection Belaria® pro comfort | R | 1″ | 1″ | 1¼" |
| • Cold/hot water connection Belaria® pro compact | R | 1″/1″ | 1″/1″ | - |
| • Nominal air volume outdoor unit (A7W35 and nominal rotation speed) | $m^3/h$ | 2000 | 3000 | 4900 |
| • Max. air volume outdoor unit (A7W35 and max. speed of rotation) | $m^3/h$ | 2560 | 3580 | 5900 |
| • Hydraulic connection line, max. length/dimension inside 5) | m/DN | 30/25 | 30/25 | 30/32 |

| Type | | (8) (8/100/300) | (13) (13/100/300) | (15) |
|---|---|---|---|---|
| **Cooling technical data** | | | | |
| • Compressor | | modulating | modulating | modulating |
| • Refrigerant | | R290 | R290 | R290 |
| • Refrigerant filling quantity | kg | 1.2 | 1.8 | 2.8 |
| • Compressor oil type | | PZ46M | PZ46M | PZ46M |
| • Compressor oil filling quantity | l | 0.9 | 0.9 | 0.9 |
| **Electrical data** | | | | |
| • Electrical connection of compressor | V/Hz | 3~400/50 | 3~400/50 | 3~400/50 |
| • Electrical connection of controller | V/Hz | 1~230/50 | 1~230/50 | 1~230/50 |
| • Electrical connection of electric heating element | V/Hz | 3~400/50 | 3~400/50 | 3~400/50 |
| • Max. heat pump operating current | A | 8.5 | 9.5 | 12.9 |
| • Max. compressor operating current | A | 8.5 | 9.5 | 12.9 |
| • Max. fan operating current | A | 0.3 | 0.6 | 0.4 |
| • Max. electric heating element operating current | A | 8.7 | 8.7 | 8.7 |
| • Max. output of electric heating element | kW | 6.0 | 6.0 | 6.0 |
| • Max. power consumption of heat pump | kW | 5.2 | 5.8 | 7.9 |
| • Max. fan power consumption | W | 70 | 140 | 84 |
| • Max. starting current heat pump $I_A$ | A | 8.5 | 9.5 | 12.9 |
| • Power factor (cos φ) | | 0.88 | 0.88 | 0.88 |
| • External protection main current | A | C/K 13 | C/K 13 | C/K 13 |
| • External protection control current | A | B/Z 13 | B/Z 13 | B/Z 13 |
| • External protection electric heating element | A | B/Z 13 | B/Z 13 | B/Z 13 |
| • Fault-current circuit breaker | | RCCB type B, IΔn ≥ 300 mA | | |
| • Recommended cable | | Cu 5 x 1.5 mm² | | |
| • Max. electrical output | kW | 4.8 at A-10W70 | 6.8 at A2W70 | 6.2 at A-7W70 |
| • Active power of heat pump | kW | 4.6 | 5.1 | 7.0 |
| • Max. operating voltage Ub | V | 3~400 | 3~400 | 3~400 |
| • Max. operating current Ib | A | 8.5 | 9.5 | 12.9 |
| • Max. inverter output current | A | 18.0 | 18.0 | 18.0 |
| • Pulse count | | 3 | 3 | 3 |
| • Max. switching frequency per hour/day at tn 0 °C | n | 3/72 | 3/72 | 3/72 |
| • Continuous load changes | | No | | |
| • Starting up under load | | No | | |
| • Feedback into the power system | | No | | |
| • Power factor correction | | No | | |
| • Starting up assistance | | Output control | | |
| • Type of starting up assistance | | Frequency converter | | |
| • Frequency converter | | 60-360 Hz (20-120 rps) | | |
| • Starting current/nominal current ratio | | 1.00 | | |
| **Dimensions/weight of outdoor unit** | | | | |
| • Dimensions (H x W x D) | mm | 954x1575x791 | | 1432x1575x791 |
| • Weight | kg | 287 | 300 | 350 |
| • Protection class | | IP24 | IP24 | IP24 |
| **Dimensions/weight of indoor unit Belaria® pro comfort** | | | | |
| • Dimensions (H x W x D) | mm | 1005x550x280 | | |
| • Weight | kg | 30 | 30 | 30 |
| • Protection class | | IP20 | IP20 | IP20 |
| **Dimensions/weight of indoor unit Belaria® pro compact** | | | | |
| • Dimensions (H x W x D) | mm | 1930x790x790 | | - |
| • Tilting dimension | mm | 2085 | 2085 | - |
| • Weight | kg | 360 | 360 | - |
| • Protection class | | IP20 | IP20 | - |
| • Dimensions without cladding (H x W x D) 6) | mm | 1930x783x785 | | - |

| **Type** | | **(8)**<br>**(8/100/300)** | **(13)**<br>**(13/100/300)** | **(15)** |
|---|---|---|---|---|
| **Hot water storage tank Belaria® pro compact** | | | | |
| • Volume [7] | $dm^3$ | 327 | 327 | - |
| • Heating surface of heating coil | $m^2$ | 4.0 | 4.0 | - |
| • Heating water of heating coil | $dm^3$ | 32 | 32 | - |
| • Maximum storage tank temperature with electric heating element | °C | 75 | 75 | - |
| • Max. operating temperature | °C | 80 | 80 | - |
| • Output capacity at 40 °C and storage tank temperature at 60 °C [8] | l | 570 | 570 | - |
| • Output capacity at 40 °C and storage tank temperature at 65 °C [9] | l | 634 | 634 | - |
| • Output capacity at 40 °C and storage tank temperature at 75 °C [10] | l | 745 | 745 | - |
| • Output capacity at 46 °C and storage tank temperature at 60 °C [8] | l | 469 | 469 | - |
| • Output capacity at 46 °C and storage tank temperature at 65 °C [9] | l | 522 | 522 | - |
| • Output capacity at 46 °C and storage tank temperature at 75 °C [10] | l | 613 | 613 | - |
| **Buffer storage tank Belaria® pro compact** | | | | |
| • Volume [7] | $dm^3$ | 93 | 93 | - |

1) Related to moderate climate

2) EN 14825

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

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) If the Belaria® pro is operated without a buffer storage tank connected in parallel,
the customer must assess whether the next larger pipe dimension is more suitable due to the pressure drop.
Hydraulic connection lines DN 40 are listed in the Belaria® pro (20,25) chapter.

6) The removal of the cladding sections is time-consuming.

7) Storage capacity incl. heating coil

8) 12 °C cold water temperature/60 °C lower storage tank temperature (heat pump)

9) 12 °C cold water temperature/65 °C lower storage tank temperature (heat pump + electric heating element)

9) 12 °C cold water temperature/75 °C lower storage tank temperature (heat pump + electric heating element)

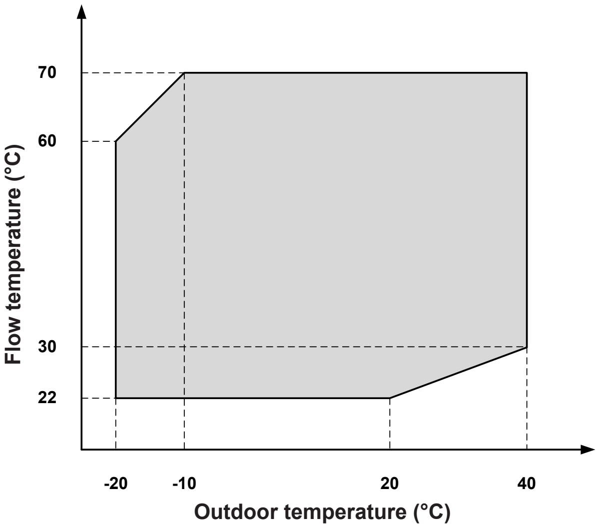
11) Maximum operating pressure of the system without isolating system 2.5 bar, because the outdoor unit is protected with 2.5 bar. Provide general protection of the system in the building with 3.0 bar.
An isolating system must be provided for system pressures of  2.5 bar or more.

Using a fault-current circuit breaker RCCB type B, IΔn ≥ 300 mA must be clarified based on the regulations of the country in question.

## Diagrams of areas of application

### Heating and domestic hot water

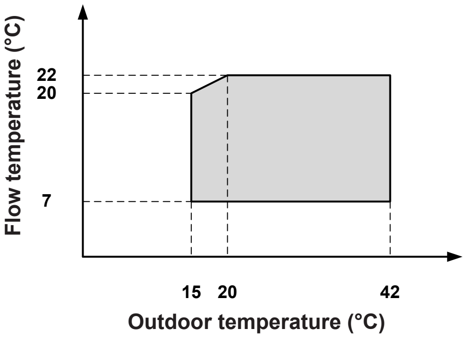
**Belaria® pro comfort (8-15)**
**Belaria® pro compact (8/100/300), (13/100/300)**



▨ Area of application of the heat pump for heating/domestic hot water (Belaria® pro comfort and pro compact)

### Cooling

**Belaria® pro comfort (8-15)**
**Belaria® pro compact (8/100/300), (13/100/300)**



▨ Area of application of the heat pump for cooling (Belaria® pro comfort and pro compact)

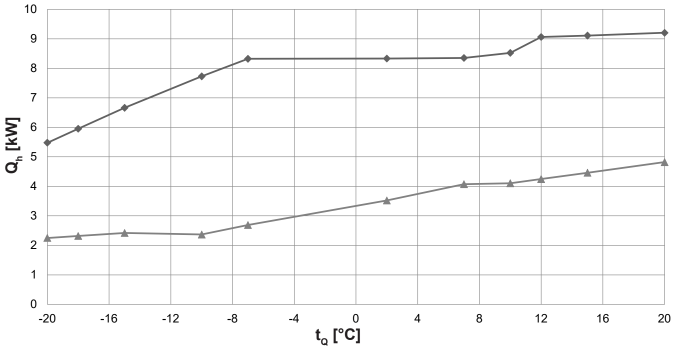
## Performance data – heating

Maximum heat output allowing for defrosting losses

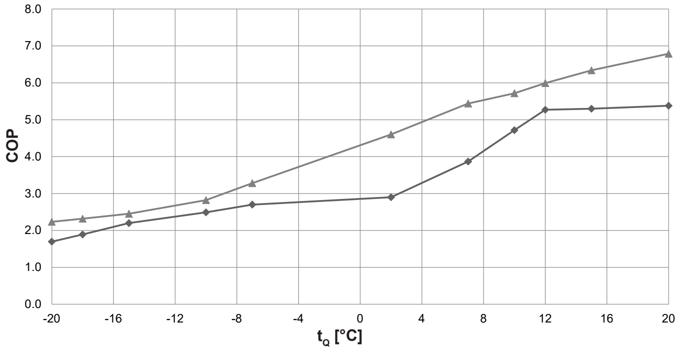
### Belaria® pro comfort (8), compact (8/100/300)

Data according to EN 14511

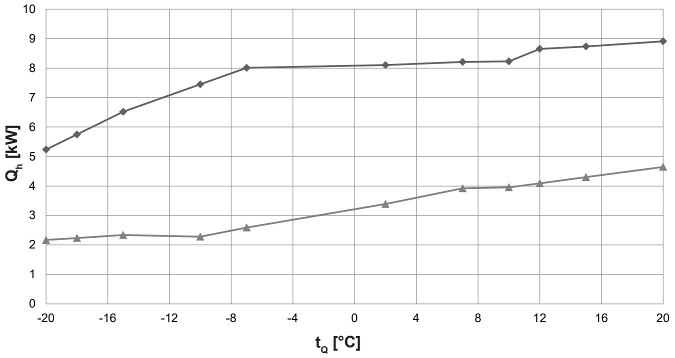
**Heat output – $t_{VL}$ 35 °C**



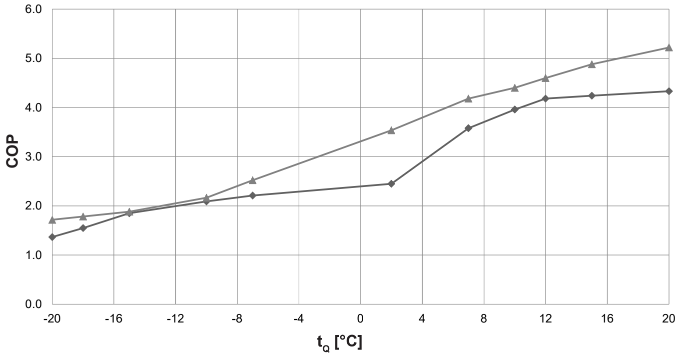
**Coefficient of performance – $t_{VL}$ 35 °C**



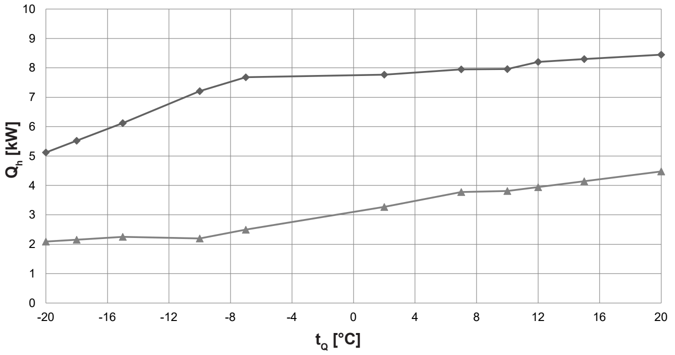
**Heat output – $t_{VL}$ 45 °C**



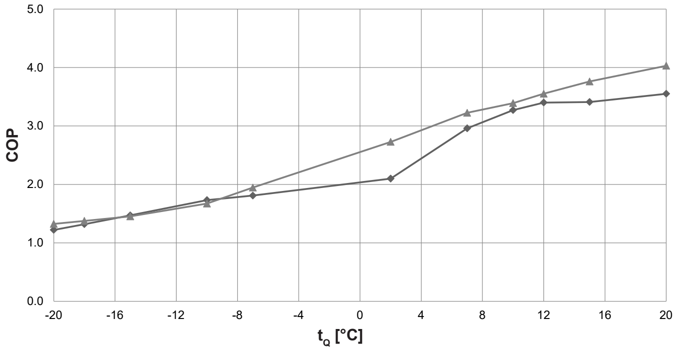
**Coefficient of performance – $t_{VL}$ 45 °C**



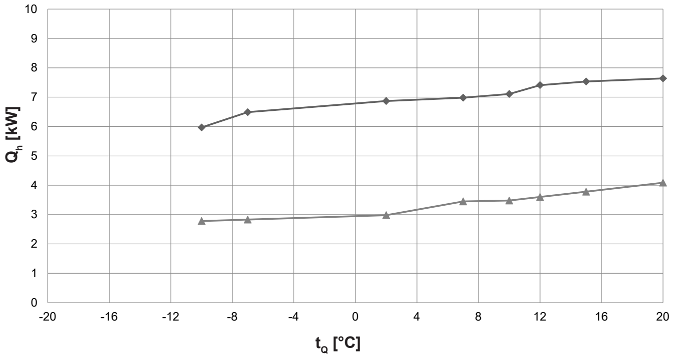
**Heat output – $t_{VL}$ 55 °C**



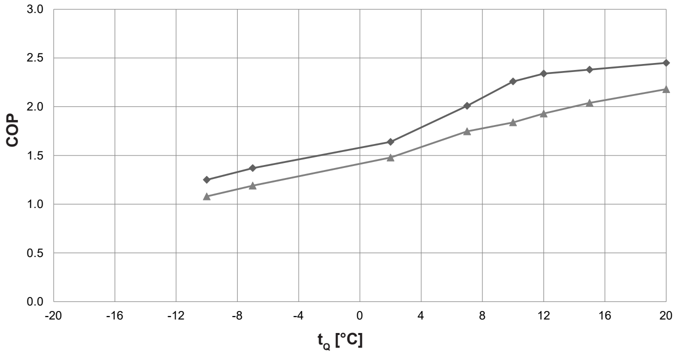
**Coefficient of performance – $t_{VL}$ 55 °C**



**Heat output – $t_{VL}$ 70 °C**



**Coefficient of performance – $t_{VL}$ 70 °C**



$t_{VL}$ = 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
▲ Minimum output

## Performance data – heating

### Belaria® pro comfort (8), compact (8/100/300)

Data according to EN 14511

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | −20 | 5.5 | 3.2 | 1.7 | 2.3 | 1.0 | 2.2 |
| | −18 | 6.0 | 3.1 | 1.9 | 2.3 | 1.0 | 2.3 |
| | −15 | 6.7 | 3.0 | 2.2 | 2.4 | 1.0 | 2.5 |
| | −10 | 7.7 | 3.1 | 2.5 | 2.4 | 0.8 | 2.8 |
| | −7 | 8.3 | 3.1 | 2.7 | 2.7 | 0.8 | 3.3 |
| | 2 | 8.3 | 2.9 | 2.9 | 3.5 | 0.8 | 4.6 |
| | 7 | 8.4 | 2.2 | 3.9 | 4.1 | 0.7 | 5.4 |
| | 10 | 8.5 | 1.8 | 4.7 | 4.1 | 0.7 | 5.7 |
| | 12 | 9.1 | 1.7 | 5.3 | 4.2 | 0.7 | 6.0 |
| | 15 | 9.1 | 1.7 | 5.3 | 4.5 | 0.7 | 6.3 |
| | 20 | 9.2 | 1.7 | 5.4 | 4.8 | 0.7 | 6.8 |
| 45 | −20 | 5.2 | 3.8 | 1.4 | 2.2 | 1.3 | 1.7 |
| | −18 | 5.8 | 3.7 | 1.6 | 2.2 | 1.3 | 1.8 |
| | −15 | 6.5 | 3.5 | 1.9 | 2.3 | 1.2 | 1.9 |
| | −10 | 7.5 | 3.6 | 2.1 | 2.3 | 1.1 | 2.2 |
| | −7 | 8.0 | 3.6 | 2.2 | 2.6 | 1.0 | 2.5 |
| | 2 | 8.1 | 3.3 | 2.5 | 3.4 | 1.0 | 3.5 |
| | 7 | 8.2 | 2.3 | 3.6 | 3.9 | 0.9 | 4.2 |
| | 10 | 8.2 | 2.1 | 4.0 | 4.0 | 0.9 | 4.4 |
| | 12 | 8.7 | 2.1 | 4.2 | 4.1 | 0.9 | 4.6 |
| | 15 | 8.7 | 2.1 | 4.2 | 4.3 | 0.9 | 4.9 |
| | 20 | 8.9 | 2.1 | 4.3 | 4.6 | 0.9 | 5.2 |
| 50 | −20 | 5.2 | 4.0 | 1.3 | 2.1 | 1.4 | 1.5 |
| | −18 | 5.6 | 3.9 | 1.4 | 2.2 | 1.4 | 1.6 |
| | −15 | 6.3 | 3.8 | 1.7 | 2.3 | 1.4 | 1.7 |
| | −10 | 7.3 | 3.8 | 1.9 | 2.2 | 1.2 | 1.9 |
| | −7 | 7.8 | 3.9 | 2.0 | 2.5 | 1.1 | 2.2 |
| | 2 | 7.9 | 3.5 | 2.3 | 3.3 | 1.1 | 3.1 |
| | 7 | 8.1 | 2.5 | 3.3 | 3.9 | 1.0 | 3.7 |
| | 10 | 8.1 | 2.2 | 3.6 | 3.9 | 1.0 | 3.9 |
| | 12 | 8.4 | 2.2 | 3.8 | 4.0 | 1.0 | 4.1 |
| | 15 | 8.5 | 2.2 | 3.8 | 4.2 | 1.0 | 4.3 |
| | 20 | 8.7 | 2.2 | 3.9 | 4.6 | 1.0 | 4.6 |
| 55 | −20 | 5.1 | 4.2 | 1.2 | 2.1 | 1.6 | 1.3 |
| | −18 | 5.5 | 4.2 | 1.3 | 2.2 | 1.6 | 1.4 |
| | −15 | 6.1 | 4.2 | 1.5 | 2.3 | 1.5 | 1.5 |
| | −10 | 7.2 | 4.2 | 1.7 | 2.2 | 1.3 | 1.7 |
| | −7 | 7.7 | 4.2 | 1.8 | 2.5 | 1.3 | 1.9 |
| | 2 | 7.8 | 3.7 | 2.1 | 3.3 | 1.2 | 2.7 |
| | 7 | 8.0 | 2.7 | 3.0 | 3.8 | 1.2 | 3.2 |
| | 10 | 8.0 | 2.4 | 3.3 | 3.8 | 1.1 | 3.4 |
| | 12 | 8.2 | 2.4 | 3.4 | 3.9 | 1.1 | 3.6 |
| | 15 | 8.3 | 2.4 | 3.4 | 4.1 | 1.1 | 3.8 |
| | 20 | 8.5 | 2.4 | 3.6 | 4.5 | 1.1 | 4.0 |

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

Further performance data – heating
see next page

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

## Performance data – heating

### Belaria® pro comfort (8), compact (8/100/300)

Data according to EN 14511

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 60 | −20 | 5.1 | 4.6 | 1.1 | - | - | - |
| | −18 | 5.4 | 4.6 | 1.2 | - | - | - |
| | −15 | 5.8 | 4.6 | 1.3 | - | - | - |
| | −10 | 6.7 | 4.5 | 1.5 | 2.1 | 1.5 | 1.4 |
| | −7 | 7.4 | 4.5 | 1.6 | 2.4 | 1.5 | 1.7 |
| | 2 | 7.6 | 3.9 | 1.9 | 3.2 | 1.4 | 2.3 |
| | 7 | 7.6 | 3.0 | 2.6 | 3.7 | 1.3 | 2.7 |
| | 10 | 7.8 | 2.7 | 2.8 | 3.7 | 1.3 | 2.9 |
| | 12 | 8.0 | 2.6 | 3.0 | 3.8 | 1.3 | 3.0 |
| | 15 | 8.1 | 2.7 | 3.0 | 4.0 | 1.3 | 3.2 |
| | 20 | 8.2 | 2.6 | 3.2 | 4.4 | 1.3 | 3.4 |
| 70 | −20 | - | - | - | - | - | - |
| | −18 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | 6.0 | 4.8 | 1.3 | 2.8 | 2.6 | 1.1 |
| | −7 | 6.5 | 4.7 | 1.4 | 2.8 | 2.4 | 1.2 |
| | 2 | 6.9 | 4.2 | 1.6 | 3.0 | 2.0 | 1.5 |
| | 7 | 7.0 | 3.5 | 2.0 | 3.4 | 2.0 | 1.7 |
| | 10 | 7.1 | 3.1 | 2.3 | 3.5 | 1.9 | 1.8 |
| | 12 | 7.4 | 3.2 | 2.3 | 3.6 | 1.9 | 1.9 |
| | 15 | 7.5 | 3.2 | 2.4 | 3.8 | 1.9 | 2.0 |
| | 20 | 7.6 | 3.1 | 2.5 | 4.1 | 1.9 | 2.2 |

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

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

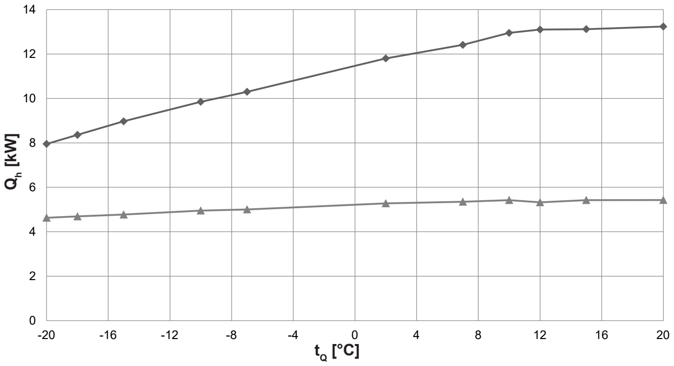
## Performance data – heating

Maximum heat output allowing for defrosting losses

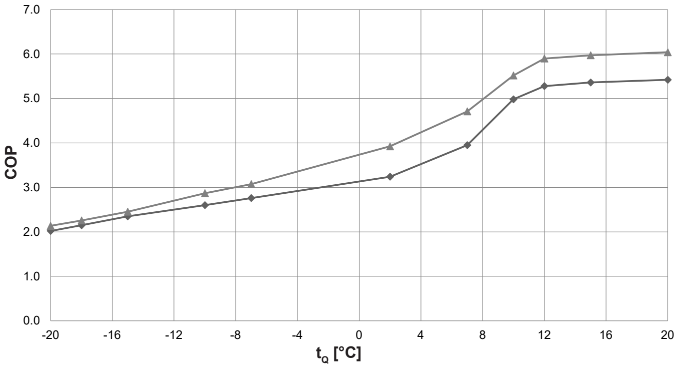
### Belaria® pro comfort (13), compact (13/100/300)

Data according to EN 14511

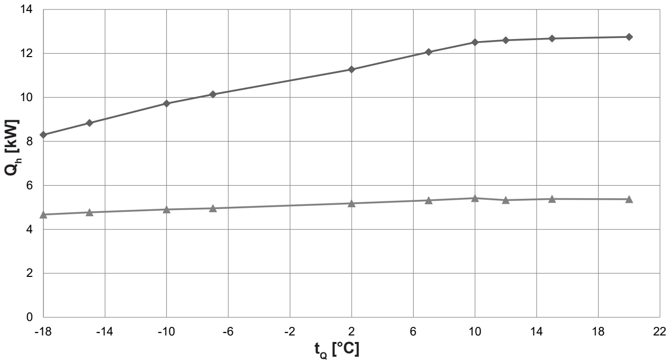
**Heat output – $t_{VL}$ 35 °C**



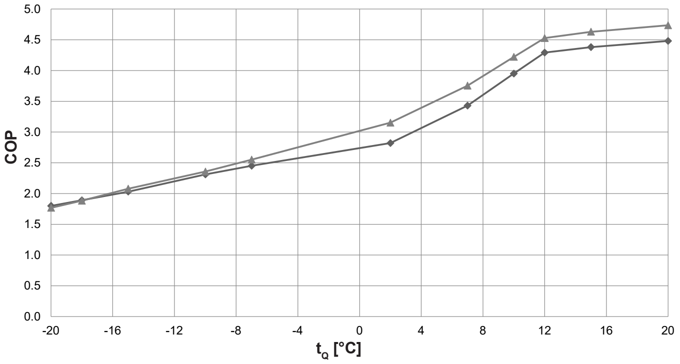
**Coefficient of performance – $t_{VL}$ 35 °C**



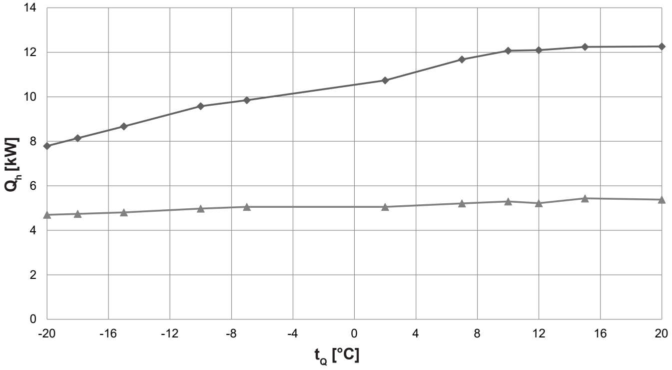
**Heat output – $t_{VL}$ 45 °C**



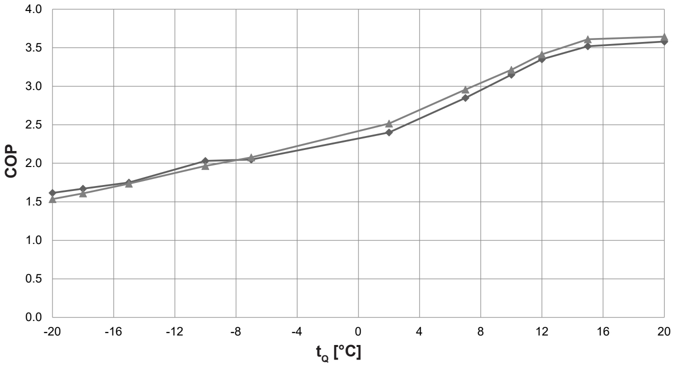
**Coefficient of performance – $t_{VL}$ 45 °C**



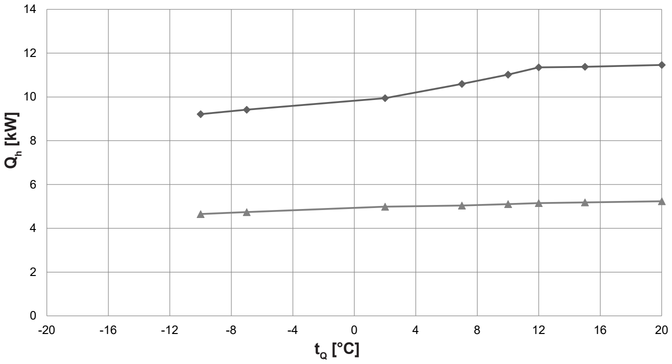
**Heat output – $t_{VL}$ 55 °C**



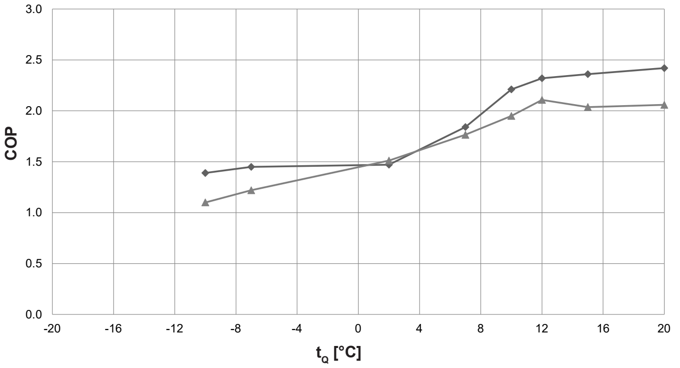
**Coefficient of performance – $t_{VL}$ 55 °C**



**Heat output – $t_{VL}$ 70 °C**



**Coefficient of performance – $t_{VL}$ 70 °C**



$t_{VL}$ = 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
▲ Minimum output

## Performance data – heating

### Belaria® pro comfort (13), compact (13/100/300)

Data according to EN 14511

| | | | Maximum output | | | Minimum output | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | −20 | 8.0 | 3.9 | 2.0 | 4.6 | 2.2 | 2.1 |
| | −18 | 8.4 | 3.9 | 2.2 | 4.7 | 2.1 | 2.3 |
| | −15 | 9.0 | 3.8 | 2.4 | 4.8 | 1.9 | 2.5 |
| | −10 | 9.9 | 3.8 | 2.6 | 5.0 | 1.7 | 2.9 |
| | −7 | 10.3 | 3.7 | 2.8 | 5.0 | 1.6 | 3.1 |
| | 2 | 11.8 | 3.6 | 3.2 | 5.3 | 1.3 | 3.9 |
| | 7 | 12.4 | 3.1 | 4.0 | 5.4 | 1.1 | 4.7 |
| | 10 | 13.0 | 2.6 | 5.0 | 5.4 | 1.0 | 5.5 |
| | 12 | 13.1 | 2.5 | 5.3 | 5.3 | 0.9 | 5.9 |
| | 15 | 13.1 | 2.4 | 5.4 | 5.4 | 0.9 | 6.0 |
| | 20 | 13.2 | 2.4 | 5.4 | 5.4 | 0.9 | 6.0 |
| 45 | −20 | 7.9 | 4.4 | 1.8 | 4.6 | 2.6 | 1.8 |
| | −18 | 8.3 | 4.4 | 1.9 | 4.7 | 2.5 | 1.9 |
| | −15 | 8.8 | 4.4 | 2.0 | 4.8 | 2.3 | 2.1 |
| | −10 | 9.7 | 4.2 | 2.3 | 4.9 | 2.1 | 2.4 |
| | −7 | 10.1 | 4.1 | 2.5 | 5.0 | 1.9 | 2.6 |
| | 2 | 11.3 | 4.0 | 2.8 | 5.2 | 1.7 | 3.2 |
| | 7 | 12.1 | 3.5 | 3.4 | 5.3 | 1.4 | 3.8 |
| | 10 | 12.5 | 3.2 | 4.0 | 5.4 | 1.3 | 4.2 |
| | 12 | 12.6 | 2.9 | 4.3 | 5.3 | 1.2 | 4.5 |
| | 15 | 12.7 | 2.9 | 4.4 | 5.4 | 1.2 | 4.6 |
| | 20 | 12.8 | 2.8 | 4.5 | 5.4 | 1.1 | 4.7 |
| 50 | −20 | 7.9 | 4.6 | 1.7 | 4.7 | 2.8 | 1.7 |
| | −18 | 8.2 | 4.6 | 1.8 | 4.7 | 2.7 | 1.7 |
| | −15 | 8.8 | 4.6 | 1.9 | 4.8 | 2.5 | 1.9 |
| | −10 | 9.6 | 4.4 | 2.2 | 4.9 | 2.3 | 2.2 |
| | −7 | 10.0 | 4.4 | 2.3 | 5.0 | 2.2 | 2.3 |
| | 2 | 11.0 | 4.2 | 2.6 | 5.1 | 1.8 | 2.8 |
| | 7 | 11.9 | 3.8 | 3.1 | 5.3 | 1.6 | 3.4 |
| | 10 | 12.3 | 3.5 | 3.6 | 5.4 | 1.4 | 3.7 |
| | 12 | 12.4 | 3.2 | 3.8 | 5.3 | 1.3 | 4.0 |
| | 15 | 12.5 | 3.2 | 4.0 | 5.4 | 1.3 | 4.1 |
| | 20 | 12.5 | 3.1 | 4.0 | 5.4 | 1.3 | 4.2 |
| 55 | −20 | 7.8 | 4.8 | 1.6 | 4.7 | 3.1 | 1.5 |
| | −18 | 8.1 | 4.9 | 1.7 | 4.7 | 2.9 | 1.6 |
| | −15 | 8.7 | 5.0 | 1.8 | 4.8 | 2.8 | 1.7 |
| | −10 | 9.6 | 4.7 | 2.0 | 5.0 | 2.5 | 2.0 |
| | −7 | 9.9 | 4.8 | 2.1 | 5.1 | 2.4 | 2.1 |
| | 2 | 10.7 | 4.5 | 2.4 | 5.1 | 2.0 | 2.5 |
| | 7 | 11.7 | 4.1 | 2.9 | 5.2 | 1.8 | 3.0 |
| | 10 | 12.1 | 3.8 | 3.2 | 5.3 | 1.6 | 3.2 |
| | 12 | 12.1 | 3.6 | 3.4 | 5.2 | 1.5 | 3.4 |
| | 15 | 12.2 | 3.5 | 3.5 | 5.4 | 1.5 | 3.6 |
| | 20 | 12.3 | 3.4 | 3.6 | 5.4 | 1.5 | 3.6 |

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

Further performance data – heating
see next page

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

## Performance data – heating

### Belaria® pro comfort (13), compact (13/100/300)

Data according to EN 14511

| | | | **Maximum output** | | | **Minimum output** | |
|---|---|---|---|---|---|---|---|
| **$t_{VL}$ °C** | **$t_Q$ °C** | **$Q_h$ kW** | **P kW** | **COP** | **$Q_h$ kW** | **P kW** | **COP** |
| 60 | −20 | 7.7 | 5.1 | 1.5 | - | - | - |
| | −18 | 8.1 | 5.2 | 1.6 | - | - | - |
| | −15 | 8.6 | 5.3 | 1.6 | - | - | - |
| | −10 | 9.4 | 5.3 | 1.8 | 5.0 | 2.8 | 1.8 |
| | −7 | 9.7 | 5.2 | 1.9 | 5.0 | 2.7 | 1.9 |
| | 2 | 10.5 | 5.1 | 2.0 | 5.0 | 2.3 | 2.2 |
| | 7 | 11.5 | 4.5 | 2.6 | 5.2 | 2.0 | 2.6 |
| | 10 | 11.9 | 4.3 | 2.8 | 5.2 | 1.9 | 2.8 |
| | 12 | 11.9 | 4.1 | 2.9 | 5.2 | 1.8 | 3.0 |
| | 15 | 12.0 | 3.9 | 3.1 | 5.2 | 1.7 | 3.1 |
| | 20 | 12.0 | 3.8 | 3.1 | 5.3 | 1.7 | 3.1 |
| 70 | −20 | - | - | - | - | - | - |
| | −18 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | 9.2 | 6.6 | 1.4 | 4.7 | 4.2 | 1.1 |
| | −7 | 9.4 | 6.5 | 1.5 | 4.7 | 3.9 | 1.2 |
| | 2 | 9.9 | 6.8 | 1.5 | 5.0 | 3.3 | 1.5 |
| | 7 | 10.6 | 5.8 | 1.8 | 5.0 | 2.9 | 1.8 |
| | 10 | 11.0 | 5.0 | 2.2 | 5.1 | 2.6 | 2.0 |
| | 12 | 11.4 | 4.9 | 2.3 | 5.2 | 2.4 | 2.1 |
| | 15 | 11.4 | 4.8 | 2.4 | 5.2 | 2.5 | 2.0 |
| | 20 | 11.5 | 4.7 | 2.4 | 5.2 | 2.5 | 2.1 |

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

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

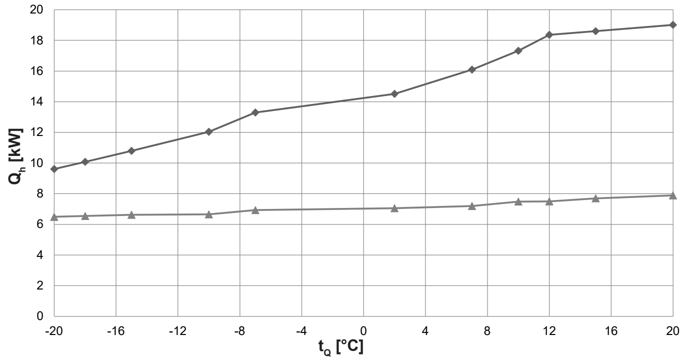
## Performance data – heating

Maximum heat output allowing for defrosting losses

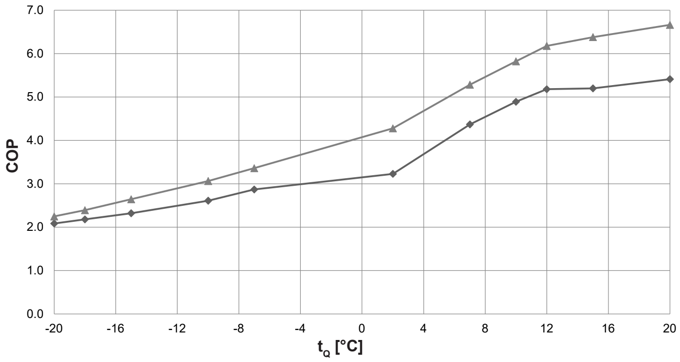
### Belaria® pro comfort (15)

Data according to EN 14511

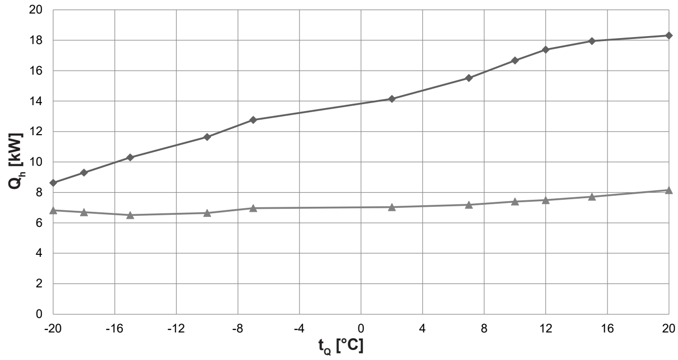
**Heat output – $t_{VL}$ 35 °C**



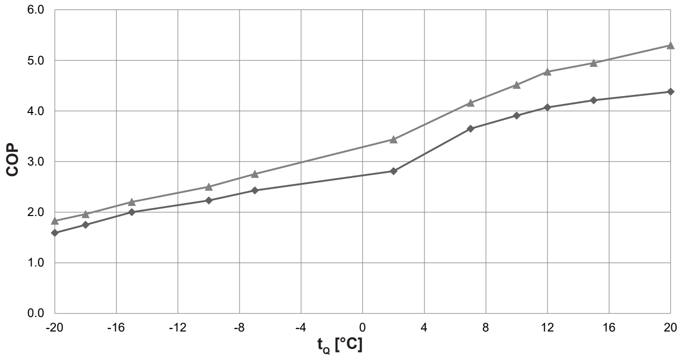
**Coefficient of performance – $t_{VL}$ 35 °C**



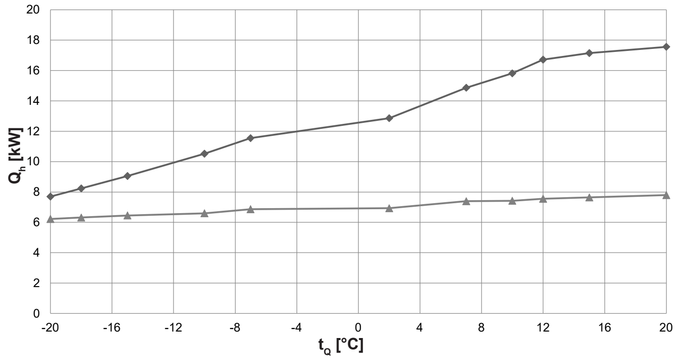
**Heat output – $t_{VL}$ 45 °C**



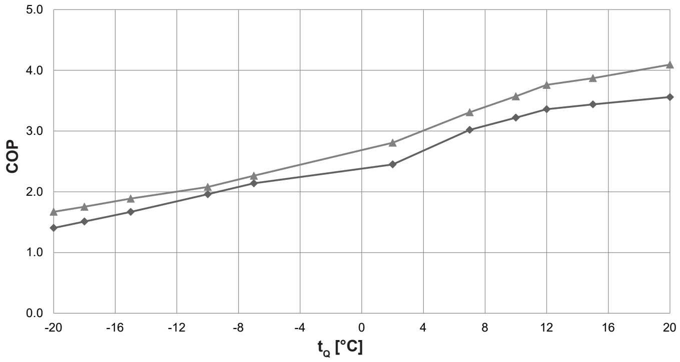
**Coefficient of performance – $t_{VL}$ 45 °C**



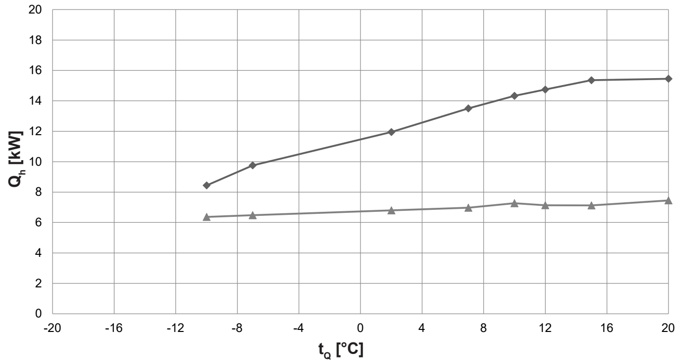
**Heat output – $t_{VL}$ 55 °C**



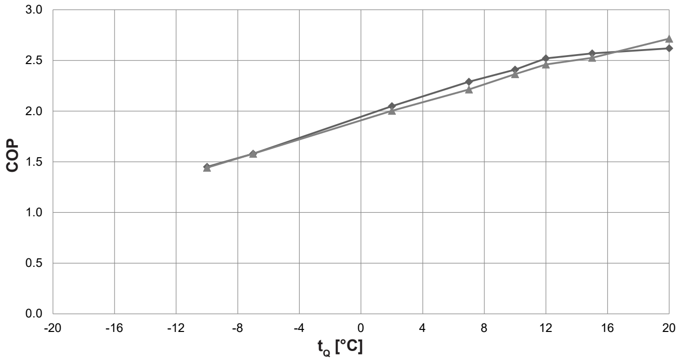
**Coefficient of performance – $t_{VL}$ 55 °C**



**Heat output – $t_{VL}$ 70 °C**



**Coefficient of performance – $t_{VL}$ 70 °C**



$t_{VL}$ = 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
▲ Minimum output

## Performance data – heating

### Belaria® pro comfort (15)

Data according to EN 14511

| $t_{VL}$ °C | $t_Q$ °C | | Maximum output | | | Minimum output | |
|---|---|---|---|---|---|---|---|
| | | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | −20 | 9.6 | 4.6 | 2.1 | 6.5 | 2.9 | 2.2 |
| | −18 | 10.1 | 4.6 | 2.2 | 6.5 | 2.7 | 2.4 |
| | −15 | 10.8 | 4.7 | 2.3 | 6.6 | 2.5 | 2.6 |
| | −10 | 12.0 | 4.6 | 2.6 | 6.7 | 2.2 | 3.1 |
| | −7 | 13.3 | 4.6 | 2.9 | 6.9 | 2.1 | 3.4 |
| | 2 | 14.5 | 4.5 | 3.2 | 7.1 | 1.6 | 4.3 |
| | 7 | 16.1 | 3.7 | 4.4 | 7.2 | 1.4 | 5.3 |
| | 10 | 17.3 | 3.5 | 4.9 | 7.5 | 1.3 | 5.8 |
| | 12 | 18.4 | 3.5 | 5.2 | 7.5 | 1.2 | 6.2 |
| | 15 | 18.6 | 3.6 | 5.2 | 7.7 | 1.2 | 6.4 |
| | 20 | 19.0 | 3.5 | 5.4 | 7.9 | 1.2 | 6.7 |
| 45 | −20 | 8.6 | 5.4 | 1.6 | 6.8 | 3.7 | 1.8 |
| | −18 | 9.3 | 5.3 | 1.8 | 6.7 | 3.4 | 2.0 |
| | −15 | 10.3 | 5.2 | 2.0 | 6.5 | 3.0 | 2.2 |
| | −10 | 11.6 | 5.2 | 2.2 | 6.7 | 2.7 | 2.5 |
| | −7 | 12.8 | 5.3 | 2.4 | 7.0 | 2.5 | 2.8 |
| | 2 | 14.2 | 5.0 | 2.8 | 7.0 | 2.0 | 3.4 |
| | 7 | 15.5 | 4.3 | 3.7 | 7.2 | 1.7 | 4.2 |
| | 10 | 16.7 | 4.3 | 3.9 | 7.4 | 1.6 | 4.5 |
| | 12 | 17.4 | 4.3 | 4.1 | 7.5 | 1.6 | 4.8 |
| | 15 | 17.9 | 4.3 | 4.2 | 7.7 | 1.6 | 4.9 |
| | 20 | 18.3 | 4.2 | 4.4 | 8.2 | 1.5 | 5.3 |
| 50 | −20 | 8.1 | 5.4 | 1.5 | 6.5 | 3.7 | 1.7 |
| | −18 | 8.8 | 5.4 | 1.6 | 6.5 | 3.5 | 1.9 |
| | −15 | 9.9 | 5.4 | 1.8 | 6.5 | 3.2 | 2.0 |
| | −10 | 11.1 | 5.3 | 2.1 | 6.6 | 2.9 | 2.3 |
| | −7 | 12.3 | 5.5 | 2.2 | 6.9 | 2.8 | 2.5 |
| | 2 | 13.5 | 5.1 | 2.6 | 7.0 | 2.2 | 3.1 |
| | 7 | 15.2 | 4.7 | 3.3 | 7.3 | 2.0 | 3.7 |
| | 10 | 16.3 | 4.7 | 3.5 | 7.4 | 1.8 | 4.0 |
| | 12 | 17.1 | 4.7 | 3.7 | 7.5 | 1.8 | 4.3 |
| | 15 | 17.5 | 4.7 | 3.8 | 7.7 | 1.8 | 4.4 |
| | 20 | 17.9 | 4.5 | 4.0 | 8.0 | 1.7 | 4.7 |
| 55 | −20 | 7.7 | 5.5 | 1.4 | 6.2 | 3.7 | 1.7 |
| | −18 | 8.2 | 5.5 | 1.5 | 6.3 | 3.6 | 1.8 |
| | −15 | 9.1 | 5.4 | 1.7 | 6.5 | 3.4 | 1.9 |
| | −10 | 10.5 | 5.4 | 2.0 | 6.6 | 3.2 | 2.1 |
| | −7 | 11.6 | 5.4 | 2.1 | 6.9 | 3.0 | 2.3 |
| | 2 | 12.9 | 5.2 | 2.5 | 6.9 | 2.5 | 2.8 |
| | 7 | 14.9 | 4.9 | 3.0 | 7.4 | 2.2 | 3.3 |
| | 10 | 15.8 | 4.9 | 3.2 | 7.4 | 2.1 | 3.6 |
| | 12 | 16.7 | 5.0 | 3.4 | 7.6 | 2.0 | 3.8 |
| | 15 | 17.2 | 5.0 | 3.4 | 7.6 | 2.0 | 3.9 |
| | 20 | 17.6 | 4.9 | 3.6 | 7.8 | 1.9 | 4.1 |

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

Further performance data – heating
see next page

**Observe daily power interruptions!**
see "Engineering heat pumps general"

## Performance data – heating

### Belaria® pro comfort (15)

Data according to EN 14511

| $t_{VL}$ °C | $t_Q$ °C | Maximum output<br>$Q_h$ kW | <br>P kW | <br>COP | Minimum output<br>$Q_h$ kW | <br>P kW | <br>COP |
|---|---|---|---|---|---|---|---|
| 60 | −20 | 6.3 | 4.9 | 1.3 | 6.3 | 4.3 | 1.5 |
| | −18 | 7.0 | 5.2 | 1.4 | 6.3 | 4.1 | 1.5 |
| | −15 | 8.2 | 5.6 | 1.5 | 6.4 | 3.9 | 1.7 |
| | −10 | 9.5 | 5.6 | 1.7 | 6.5 | 3.5 | 1.8 |
| | −7 | 10.8 | 5.4 | 2.0 | 6.7 | 3.4 | 2.0 |
| | 2 | 12.4 | 5.5 | 2.3 | 6.8 | 2.8 | 2.4 |
| | 7 | 14.5 | 5.4 | 2.7 | 7.0 | 2.5 | 2.8 |
| | 10 | 15.5 | 5.4 | 2.8 | 7.3 | 2.4 | 3.0 |
| | 12 | 16.1 | 5.4 | 3.0 | 7.3 | 2.3 | 3.2 |
| | 15 | 16.4 | 5.4 | 3.0 | 7.3 | 2.3 | 3.3 |
| | 20 | 16.7 | 5.1 | 3.3 | 7.4 | 2.1 | 3.5 |
| 70 | −20 | - | - | - | - | - | - |
| | −18 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | 8.4 | 5.8 | 1.5 | 6.4 | 4.4 | 1.4 |
| | −7 | 9.8 | 6.2 | 1.6 | 6.5 | 4.1 | 1.6 |
| | 2 | 12.0 | 5.8 | 2.1 | 6.8 | 3.4 | 2.0 |
| | 7 | 13.5 | 5.9 | 2.3 | 7.0 | 3.2 | 2.2 |
| | 10 | 14.3 | 5.9 | 2.4 | 7.3 | 3.1 | 2.4 |
| | 12 | 14.7 | 5.8 | 2.5 | 7.1 | 2.9 | 2.5 |
| | 15 | 15.4 | 6.0 | 2.6 | 7.1 | 2.8 | 2.5 |
| | 20 | 15.5 | 5.9 | 2.6 | 7.5 | 2.7 | 2.7 |

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

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

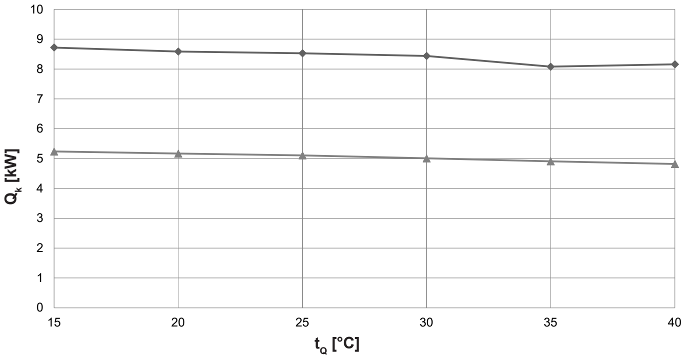
## Performance data – cooling

Maximum cooling capacity

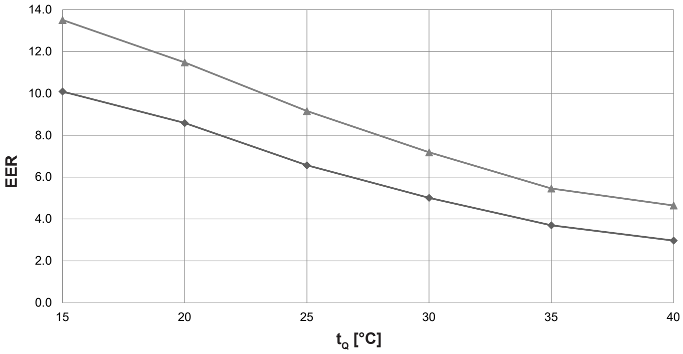
### Belaria® pro comfort (8), compact (8/100/300)

Data according to EN 14511

**Cooling capacity – $t_{VL}$ 18 °C**



**Energy efficiency ratio – $t_{VL}$ 18 °C**



◆ Maximum output
▲ Minimum output

### Belaria® pro comfort (8), compact (8/100/300)

Data according to EN 14511

| $t_{VL}$ °C | $t_Q$ °C | Maximum output<br>$Q_k$ kW | P kW | EER | Minimum output<br>$Q_k$ kW | P kW | EER |
|---|---|---|---|---|---|---|---|
| 7 | 15 | 8.7 | 1.0 | 8.6 | 5.1 | 0.5 | 10.3 |
| | 20 | 8.2 | 2.0 | 4.2 | 4.9 | 0.8 | 6.3 |
| | 25 | 7.8 | 2.3 | 3.4 | 4.7 | 0.9 | 5.1 |
| | 30 | 7.1 | 2.4 | 2.9 | 4.4 | 1.0 | 4.3 |
| | 35 | 6.4 | 3.0 | 2.2 | 4.1 | 1.3 | 3.3 |
| | 40 | 5.7 | 2.7 | 2.1 | 3.9 | 1.3 | 3.0 |
| 12 | 15 | 8.7 | 0.7 | 12.2 | 5.2 | 0.4 | 13.9 |
| | 20 | 8.6 | 1.5 | 5.6 | 5.1 | 0.6 | 8.1 |
| | 25 | 8.6 | 2.1 | 4.0 | 5.1 | 0.8 | 6.2 |
| | 30 | 8.1 | 2.4 | 3.4 | 4.8 | 0.9 | 5.3 |
| | 35 | 7.4 | 2.9 | 2.6 | 4.5 | 1.1 | 4.3 |
| | 40 | 6.9 | 2.8 | 2.5 | 4.2 | 1.1 | 4.0 |
| 18 | 15 | 8.7 | 0.9 | 10.1 | 5.2 | 0.4 | 13.5 |
| | 20 | 8.6 | 1.0 | 8.6 | 5.2 | 0.5 | 11.5 |
| | 25 | 8.5 | 1.3 | 6.6 | 5.1 | 0.6 | 9.2 |
| | 30 | 8.4 | 1.7 | 5.0 | 5.0 | 0.7 | 7.2 |
| | 35 | 8.1 | 2.2 | 3.7 | 4.9 | 0.9 | 5.5 |
| | 40 | 8.2 | 2.8 | 3.0 | 4.8 | 1.0 | 4.7 |

$t_{VL}$ = 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 for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

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

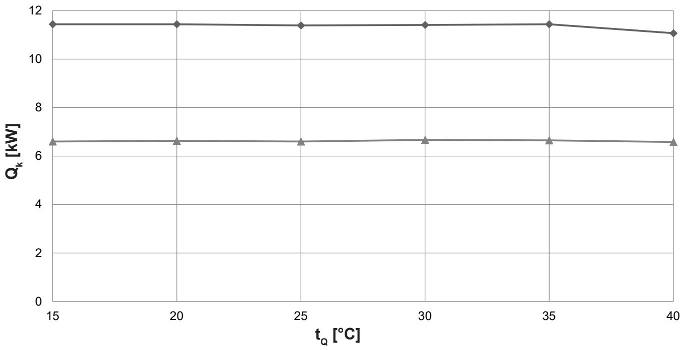
## Performance data – cooling

Maximum cooling capacity

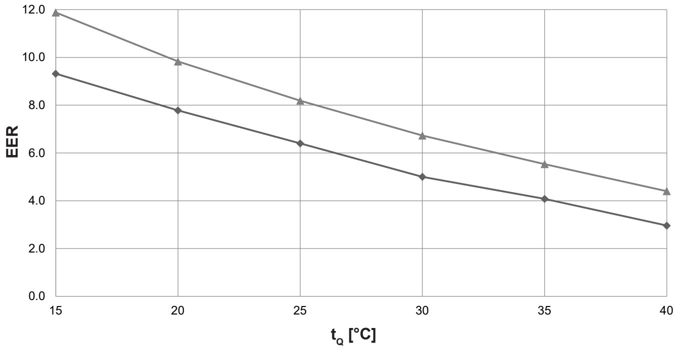
### Belaria® pro comfort (13), compact (13/100/300)

Data according to EN 14511

**Cooling capacity – $t_{VL}$ 18 °C**



**Energy efficiency ratio – $t_{VL}$ 18 °C**



◆ Maximum output
▲ Minimum output

### Belaria® pro comfort (13), compact (13/100/300)

Data according to EN 14511

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER |
| 7 | 15 | 11.4 | 2.6 | 4.5 | 6.6 | 0.9 | 7.1 |
| | 20 | 11.0 | 2.9 | 3.8 | 6.5 | 1.1 | 5.8 |
| | 25 | 10.4 | 3.1 | 3.3 | 6.3 | 1.3 | 4.8 |
| | 30 | 9.6 | 3.3 | 2.9 | 6.1 | 1.5 | 4.0 |
| | 35 | 8.8 | 3.6 | 2.5 | 5.9 | 1.8 | 3.3 |
| | 40 | 7.8 | 3.7 | 2.1 | 5.6 | 2.1 | 2.7 |
| 12 | 15 | 11.4 | 1.8 | 6.4 | 6.6 | 0.8 | 8.8 |
| | 20 | 11.4 | 2.3 | 5.1 | 6.6 | 0.9 | 7.2 |
| | 25 | 11.4 | 2.9 | 3.9 | 6.6 | 1.1 | 5.9 |
| | 30 | 10.9 | 3.2 | 3.4 | 6.5 | 1.3 | 5.1 |
| | 35 | 10.3 | 3.5 | 2.9 | 6.3 | 1.5 | 4.2 |
| | 40 | 9.4 | 3.7 | 2.5 | 6.1 | 1.7 | 3.5 |
| 18 | 15 | 11.4 | 1.2 | 9.3 | 6.6 | 0.6 | 11.9 |
| | 20 | 11.4 | 1.5 | 7.8 | 6.6 | 0.7 | 9.8 |
| | 25 | 11.4 | 1.8 | 6.4 | 6.6 | 0.8 | 8.2 |
| | 30 | 11.4 | 2.3 | 5.0 | 6.7 | 1.0 | 6.7 |
| | 35 | 11.4 | 2.8 | 4.1 | 6.7 | 1.2 | 5.5 |
| | 40 | 11.1 | 3.7 | 3.0 | 6.6 | 1.5 | 4.4 |

$t_{VL}$ = 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 for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

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

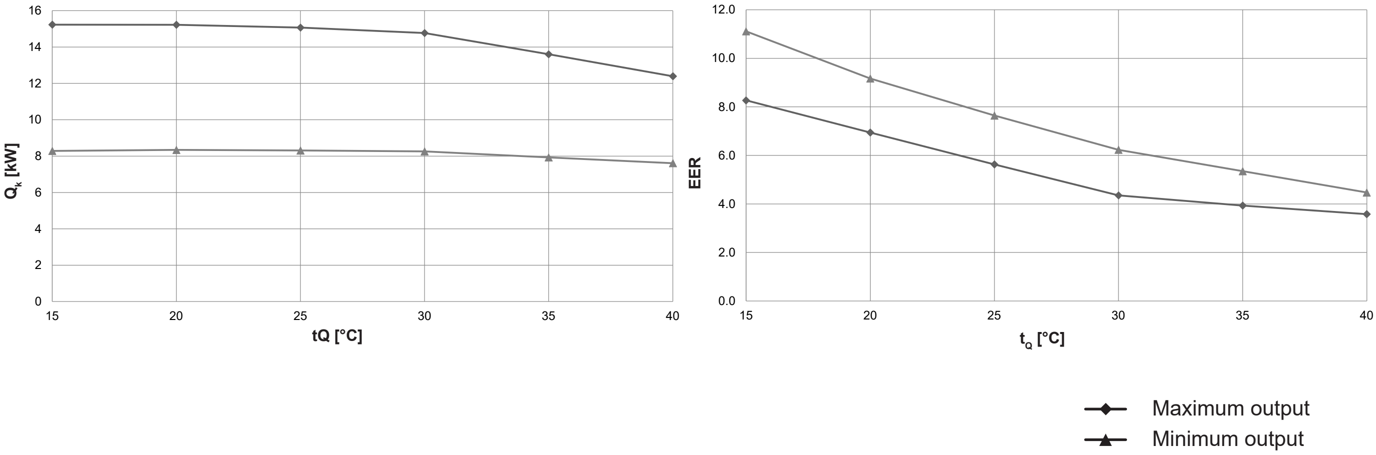
## Performance data – cooling

Maximum cooling capacity

### Belaria® pro comfort (15)

Data according to EN 14511

**Cooling capacity – $t_{VL}$ 18 °C** **Energy efficiency ratio – $t_{VL}$ 18 °C**



### Belaria® pro comfort (15)

Data according to EN 14511

| | | | Maximum output | | | Minimum output | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER |
| 7 | 15 | 14.1 | 3.0 | 4.7 | 8.0 | 1.2 | 6.6 |
| | 20 | 13.1 | 3.3 | 4.0 | 7.8 | 1.4 | 5.7 |
| | 25 | 11.9 | 3.3 | 3.6 | 7.4 | 1.5 | 5.0 |
| | 30 | 10.7 | 3.4 | 3.2 | 7.0 | 1.7 | 4.1 |
| | 35 | 10.0 | 3.4 | 2.9 | 6.9 | 2.0 | 3.5 |
| | 40 | 9.0 | 3.4 | 2.6 | 6.6 | 2.3 | 2.9 |
| 12 | 15 | 15.1 | 2.6 | 5.7 | 8.3 | 1.0 | 8.2 |
| | 20 | 14.6 | 3.2 | 4.5 | 8.2 | 1.2 | 6.9 |
| | 25 | 13.9 | 3.3 | 4.2 | 8.0 | 1.3 | 6.1 |
| | 30 | 12.6 | 3.3 | 3.8 | 7.6 | 1.5 | 5.1 |
| | 35 | 11.6 | 3.4 | 3.5 | 7.3 | 1.7 | 4.4 |
| | 40 | 10.7 | 3.4 | 3.1 | 7.1 | 2.0 | 3.6 |
| 18 | 15 | 15.2 | 1.8 | 8.3 | 8.3 | 0.7 | 11.1 |
| | 20 | 15.2 | 2.2 | 6.9 | 8.3 | 0.9 | 9.2 |
| | 25 | 15.1 | 2.7 | 5.6 | 8.3 | 1.1 | 7.6 |
| | 30 | 14.8 | 3.4 | 4.4 | 8.3 | 1.3 | 6.2 |
| | 35 | 13.6 | 3.5 | 3.9 | 7.9 | 1.5 | 5.4 |
| | 40 | 12.4 | 3.5 | 3.6 | 7.6 | 1.7 | 4.5 |

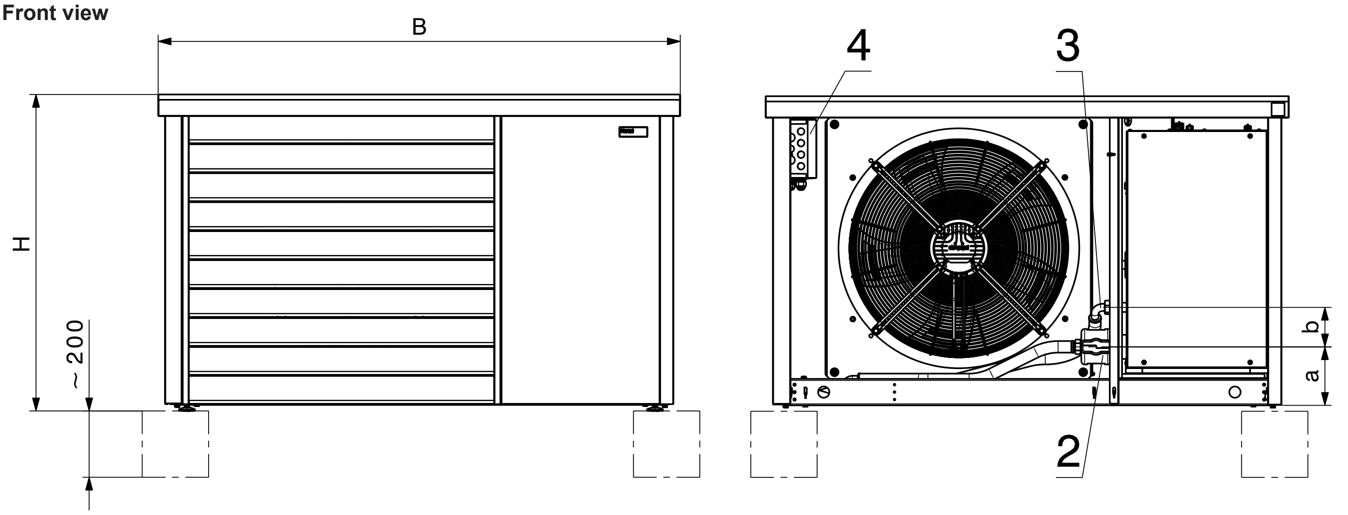
$t_{VL}$ = cooling water flow temperature (°C)
$t_Q$ = source temperature (°C)
$Q_k$ = cooling capacity (kW), measured in accordance with standard EN 14511
P = power consumption for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

**Observe daily power interruptions!**
see "Engineering heat pumps general"

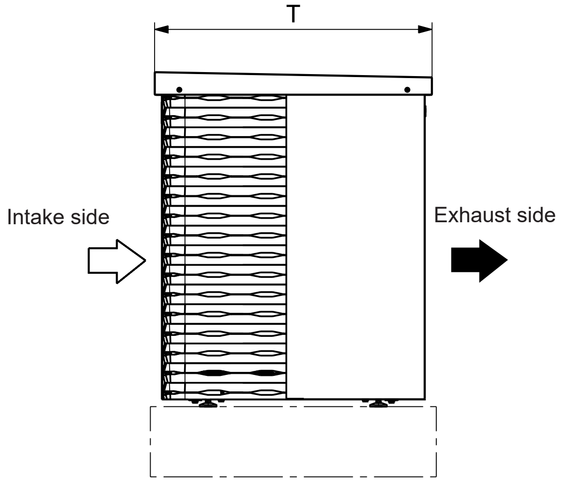
## Belaria® pro
## Outdoor unit

(Dimensions in mm)

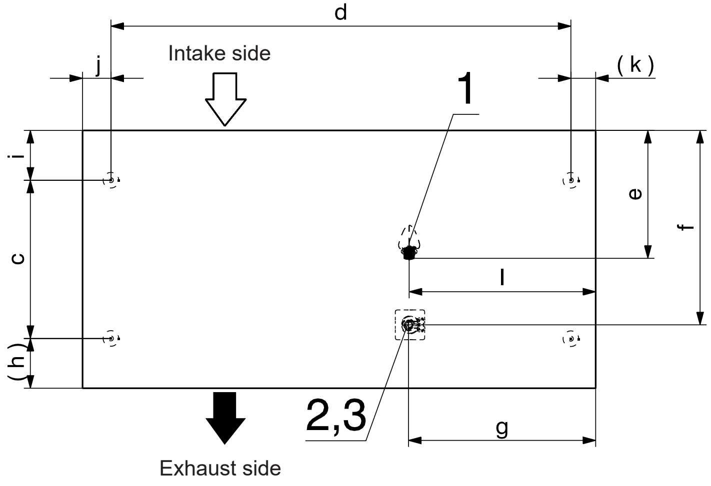
**Front view**



**View from the left**



**View from top**



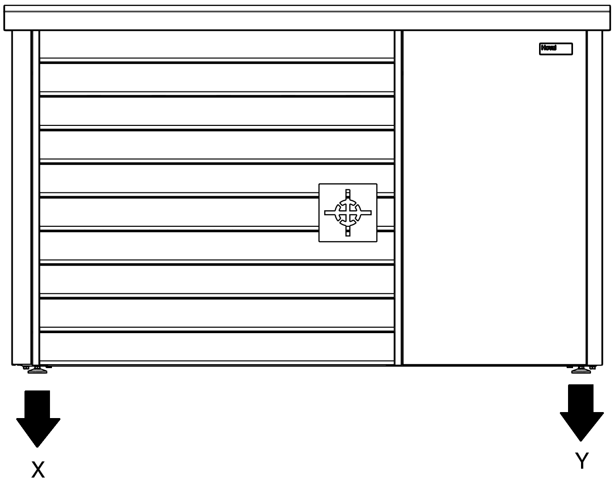
1 Condensate drain 1″
2 Connection hydraulic connection line return (8,13): 1″ ET/(15): 1¼″ ET
3 Connection hydraulic connection line flow (8,13): 1″ ET/(15): 1¼″ ET
4 Electrical connection

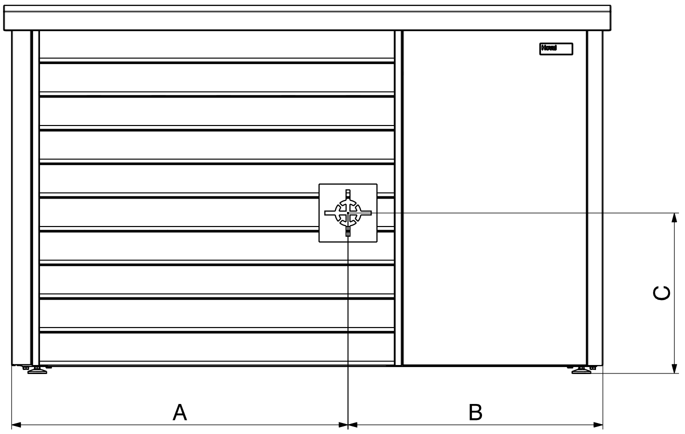
| Type | H | B | T | a | b | c | d | e | f | g | h | i | j | k | l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belaria® pro (8) | 954 | 1575 | 791 | 177 | 120 | 485 | 1410 | 400 | 600 | 620 | 150 | 155 | 90 | 75 | 570 |
| Belaria® pro (13) | 954 | 1575 | 791 | 177 | 120 | 485 | 1410 | 400 | 600 | 620 | 150 | 155 | 90 | 75 | 570 |
| Belaria® pro (15) | 1432 | 1575 | 791 | 177 | 120 | 485 | 1410 | 400 | 600 | 645 | 150 | 155 | 90 | 75 | 570 |

## Belaria® pro
## Outdoor unit

(Dimensions in mm)

### Centre of gravity

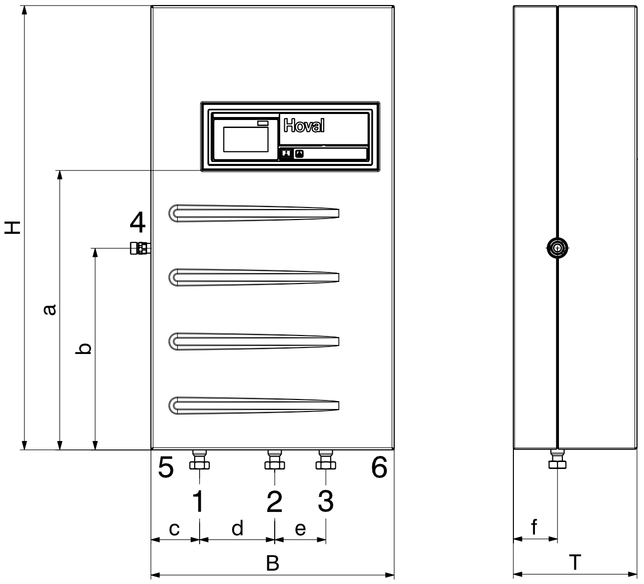




| Type | Position (mm) | | | Weight (kg) | |
|---|---|---|---|---|---|
| | A | B | C | X | Y |
| Belaria® pro (8) | 972 | 562 | 483 | 100 | 187 |
| Belaria® pro (13) | 967 | 568 | 482 | 105 | 195 |
| Belaria® pro (15) | 918 | 619 | 630 | 122 | 228 |

## Belaria® pro comfort (8-15)
## Indoor unit

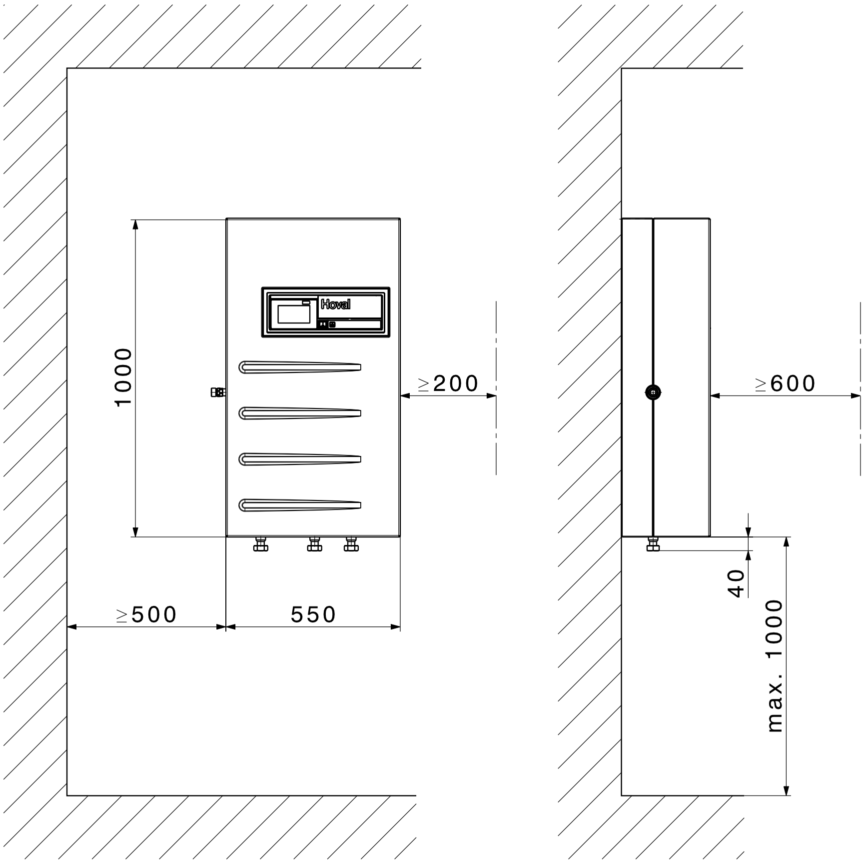
(Dimensions in mm)



| | | | |
|---|---|---|---|
| 1 | Flow outdoor unit<br>(return not guided through indoor unit) | 1″ ET<br>1¼″ ET | Belaria® pro (8,13)<br>Belaria® pro (15) |
| 2 | Flow heating | 1″ ET<br>1¼″ ET | Belaria® pro (8,13)<br>Belaria® pro (15) |
| 3 | Flow hot water charging | 1″ ET<br>1¼″ ET | Belaria® pro (8,13)<br>Belaria® pro (15) |
| 4 | Connection for diaphragm pressure expansion tank/pressure gauge | ¾″ ET | |
| 4 | Safety assembly (accessories) | | |
| 5 | Cable feed-in sensors, RS485 | | |
| 6 | Cable feed-in main current, control current | | |

| Type | H | B | T | a | b | c | d | e | f |
|---|---|---|---|---|---|---|---|---|---|
| Belaria® pro comfort (8) | 1005 | 550 | 280 | 630 | 455 | 110 | 170 | 115 | 100 |
| Belaria® pro comfort (13) | 1005 | 550 | 280 | 630 | 455 | 110 | 170 | 115 | 100 |
| Belaria® pro comfort (15) | 1005 | 550 | 280 | 630 | 455 | 110 | 170 | 115 | 100 |

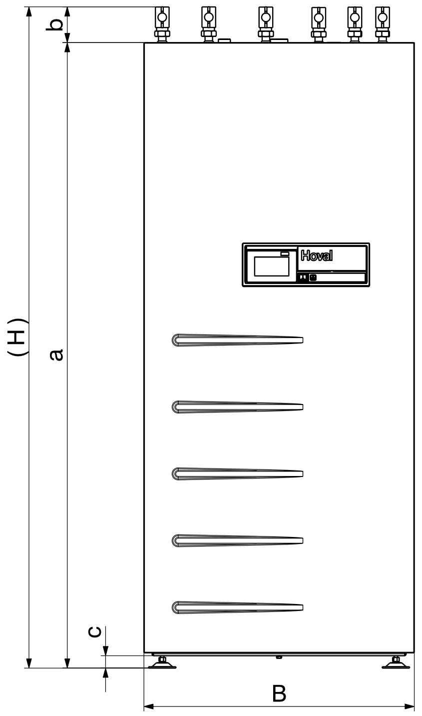
**Belaria® pro comfort (8-15)**
**Indoor unit wall-mounted**



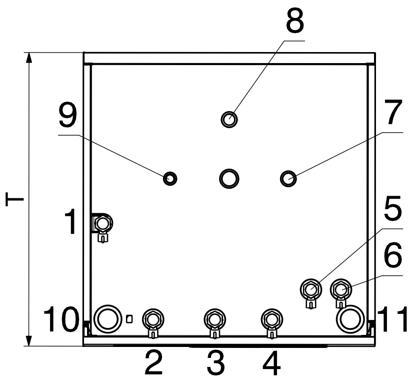
To ensure good operability and accessibility to the electrical/hydraulic connections, a clearance of max. 1000 mm must be provided from the ground to the lower edge of the indoor unit.

## Belaria® pro compact (8/100/300), (13/100/300)
## Indoor unit with buffer storage tank and calorifier

(Dimensions in mm)



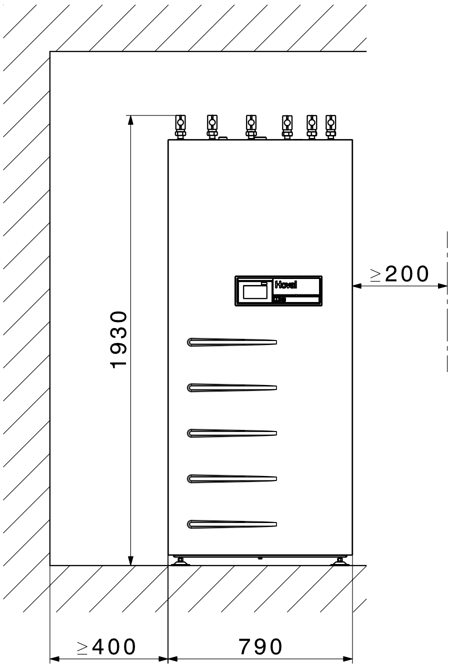
**View from above**

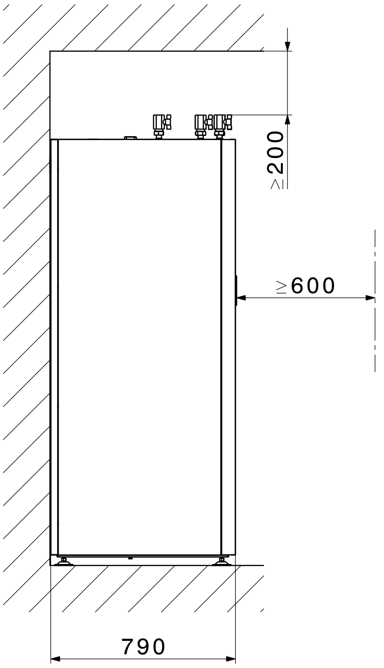


| | | |
|---|---|---|
| 1 | Outdoor unit flow | 1″ IT |
| 2 | Outdoor unit return | 1″ IT |
| 3 | Flow second heating circuit (optional) | 1″ IT |
| 4 | Return second heating circuit (optional) | 1″ IT |
| 5 | Flow heating circuit | 1″ IT |
| 6 | Return heating circuit | 1″ IT |
| 7 | Hot water connection | 1″ IT |
| 8 | Cold water connection | 1″ IT |
| 9 | Circulation connection | ¾″ ET |
| 10 | Cable feed-in sensors, RS485 | |
| 11 | Cable feed-in main current,<br>control current | |

| Type | H | B | T | a | b | c |
|---|---|---|---|---|---|---|
| Belaria® pro compact (8/100/300) | 1930 | 790 | 790 | 1825 | 105 | 38 |
| Belaria® pro compact (13/100/300) | 1930 | 790 | 790 | 1825 | 105 | 38 |

## Belaria® pro compact (8/100/300), (13/100/300)
## Indoor unit floor-mounted



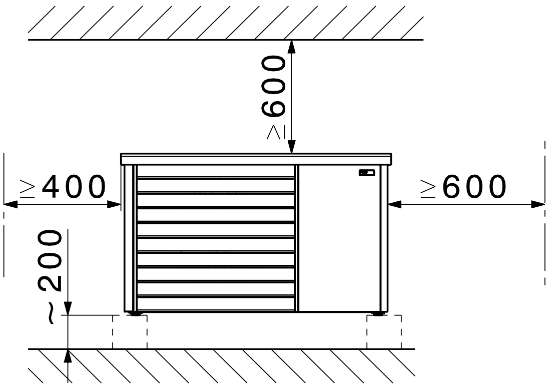


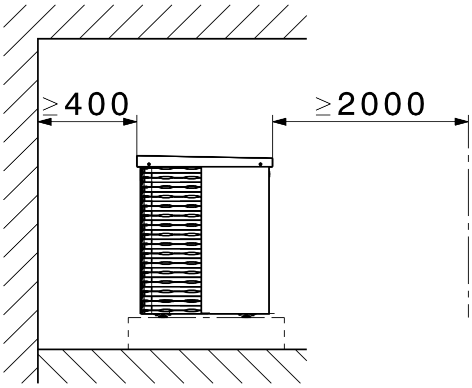
To ensure accessibility to the electrical/hydraulic connections, a clearance of at least 200 mm must be provided above the indoor unit. In addition, the side clearances must be observed.

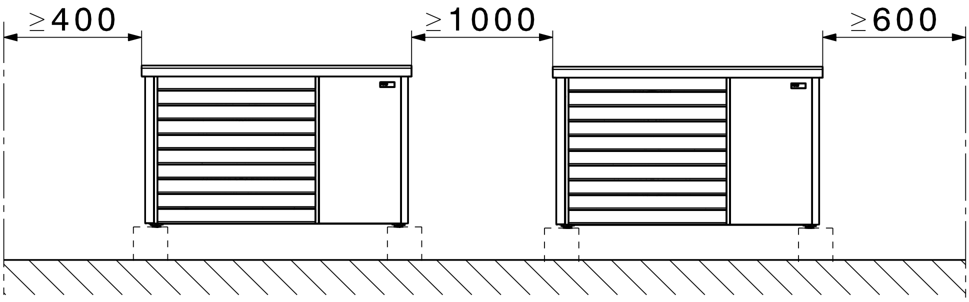
## Space requirement

(Dimensions in mm)

**Belaria® pro
Outdoor unit**





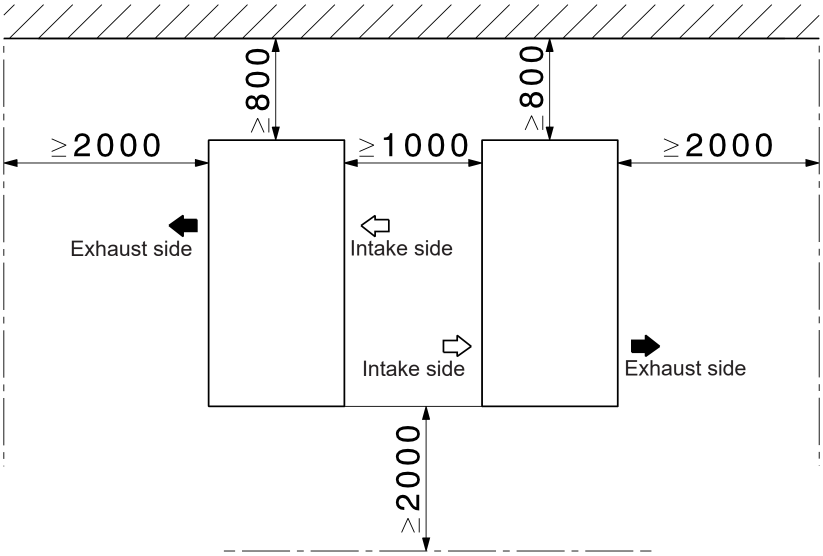


Any possible openings/recesses and ignition sources must be avoided within a radius of one meter around the outdoor unit.

In order to ensure accessibility during maintenance, a clearance of at least 600 mm upwards must be maintained.
For any service work, the minimum clearances at the rear and sides of the heat pump must be observed.

**Belaria® pro
Outdoor unit**

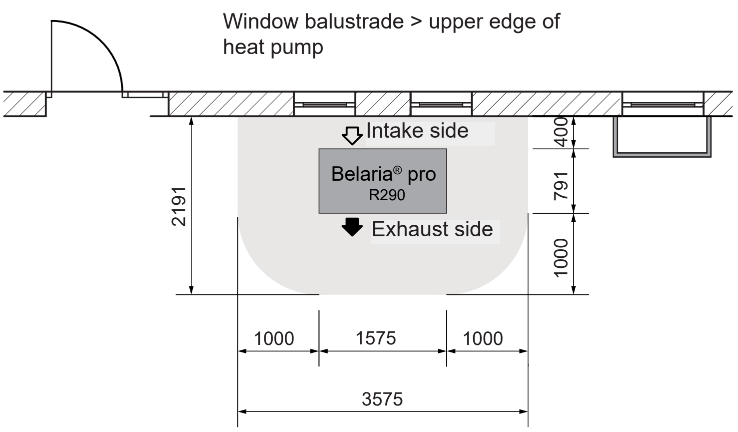
**View from above**

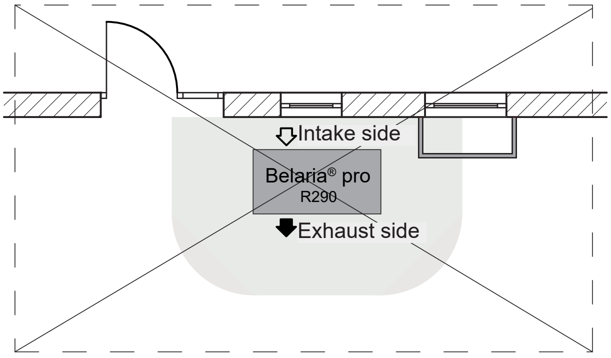


## Presentation of protection areas

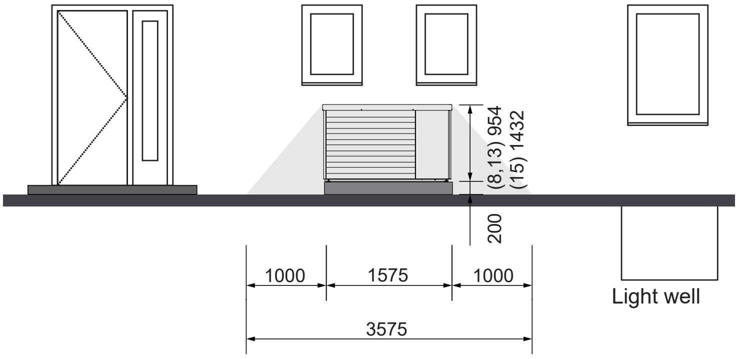
Belaria® pro with refrigerant R290
(Dimensions in mm)

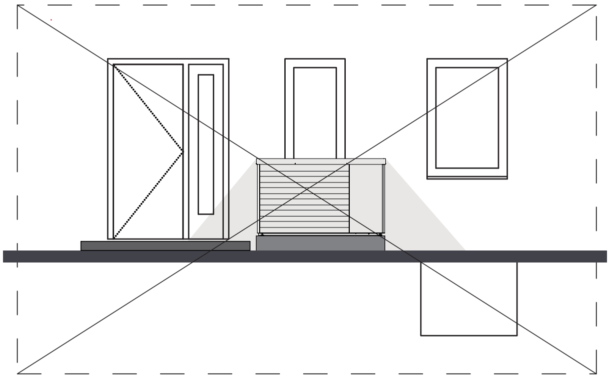
### Floor plan – protection area when installed in front of a wall





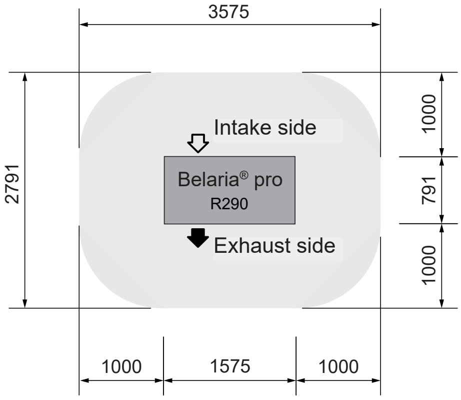
### View – protection area when installed in front of a wall

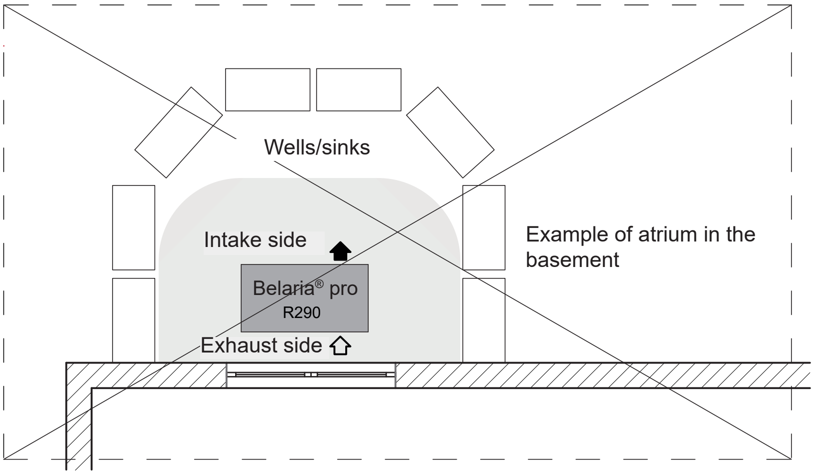




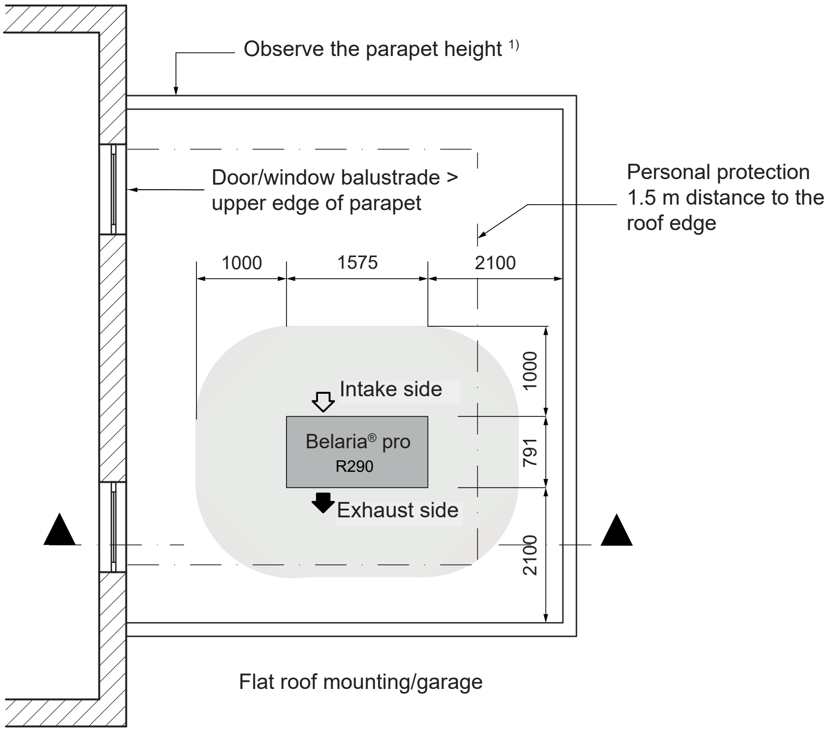
- The heat pump (outdoor unit) is only allowed to be placed outdoors and under no circumstances indoors.
- The outdoor unit is filled with the non-toxic, odourless and colourless but flammable refrigerant R290 (propane), which is heavier than air. If this escapes, there is a danger of fire/explosion. Therefore, all potential sources of ignition must be kept at least 1 m away in all directions. Smoking and the use of naked flames is prohibited in this area.
- Window balustrades must be higher than the upper edge of the outdoor unit in the protection area!
- The heat pump must be at least 1 m from the property boundary; observe building regulations!
- At the entrances to properties, it must be ensured that no vehicle can enter the protection area.
- To prevent the heat pump from being touched by vehicles, a collision guard must be installed if necessary. This must be located outside the protected area.

### Floor plan – protection area when installed outdoors



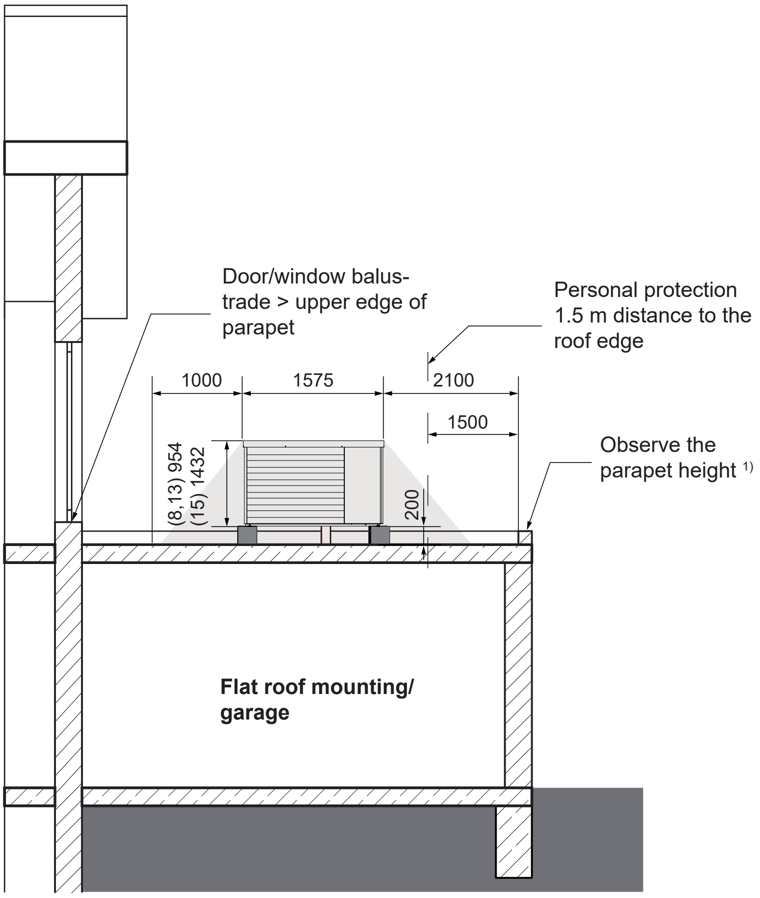


## Floor plan flat roof – protection area



1) In case of flat roof installation, the parapet must not represent a potential sink in which refrigerant could accumulate.

## Section flat roof – protection area

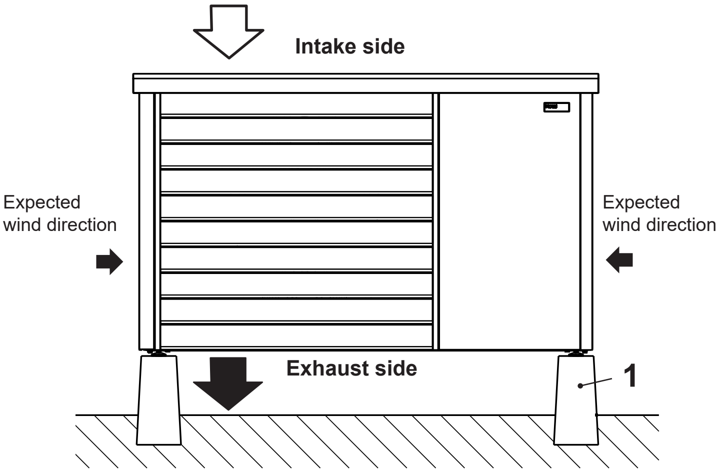


- Strict compliance with safety measures regarding combustible refrigerants.
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.6 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.
- There must be no floor-to-ceiling doors/ windows to the flat roof, or balustrade must be higher than the parapet.
- Protection areas around windows must be complied with.
- There must not be any pipe vents, skylights or the like on the flat roof within a radius of 1 m from the heat pump.
- If there is a risk of frost, a siphon must be installed in the shaft immediately before the condensate drain is introduced into the downpipe.
- Condensate drain into the sewage system via a frost-proof siphon or allow it to seep away freely.

## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

**Firm base on site with strip foundation**



1 Concrete base on site

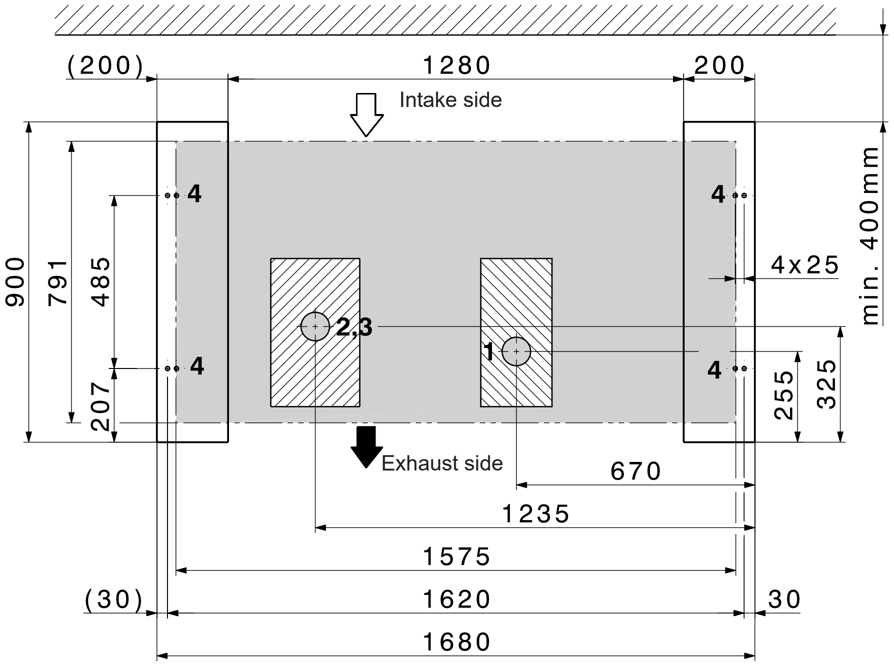
The base must not form a sink. A circumferential base is therefore not permitted.

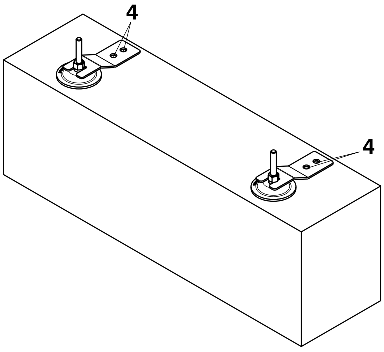
## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

**Strip foundation**

Plan concrete base set
(view from above)





Attachment of the outdoor unit from the outside (laterally) using the supplied clamps. The clamps are visible.
It is not necessary to remove the cladding sections.

▨ Possible area for empty tubes in the strip foundation

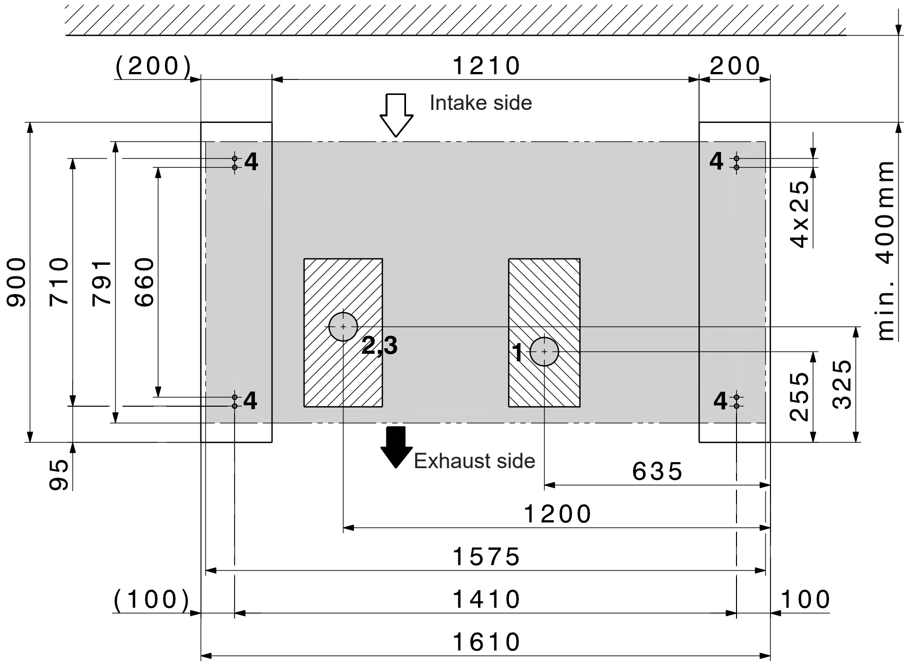
▧ Possible area for condensate drain in the strip foundation

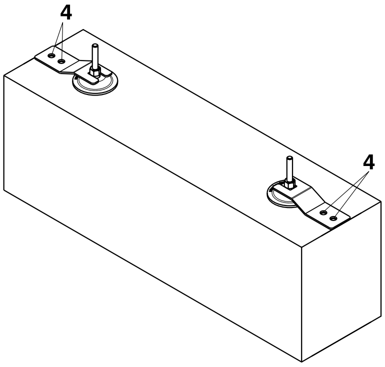
1 Condensate drain area
2 Area Flow hydraulics
Return hydraulics
3 Electrics area
4 Attachment points M8 Belaria® pro (dowels in scope of delivery)

## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

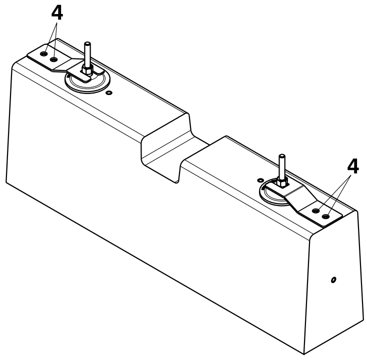
**Strip foundation**
Plan concrete base set
(view from above)





Attachment of the outdoor unit from the "inside/bottom" (grey area) of the heat pump using the supplied clamps.
The clamps are not visible.
It is necessary to remove the cladding sections.

Installation on concrete base set BSW02
Attention: dimensions (H x W x D) concrete base set BSW02 250 x 150 x 750 mm



▨ Possible area for empty tubes in the strip foundation

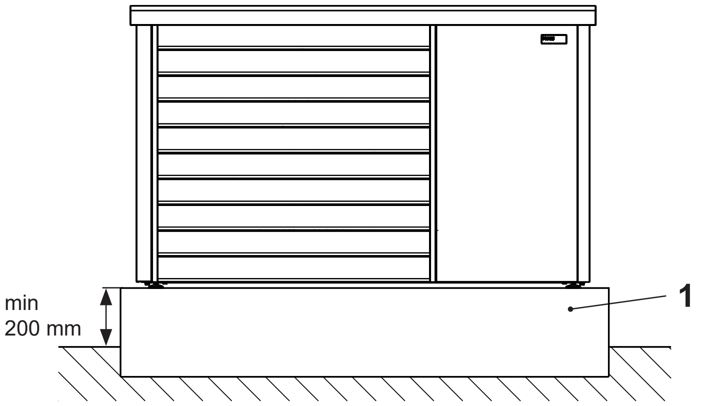
▨ Possible area for condensate drain in the strip foundation

1 Condensate drain area
2 Area Flow hydraulics
Return hydraulics
3 Electrics area
4 Attachment points M8 Belaria® pro (dowels in scope of delivery)

## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

### Firm base on site with floor plate

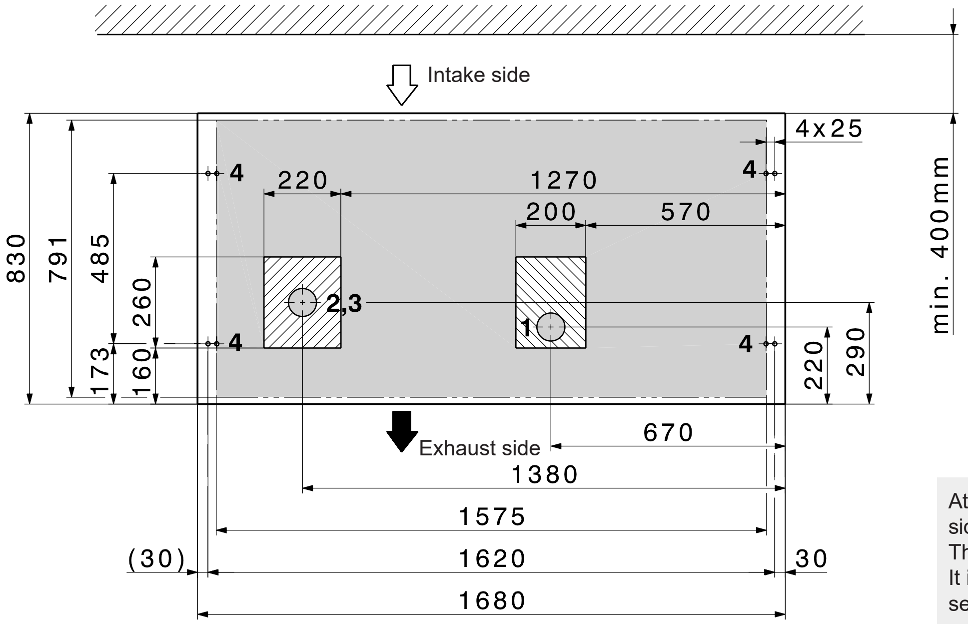


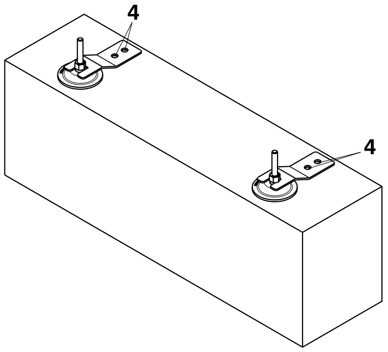
1 Floor plate on site

The base must not form a sink. A circumferential base is therefore not permitted.

### Floor plate

Plan
(view from above)





Attachment of the outdoor unit from the outside (laterally) using the supplied clamps.
The clamps are visible.
It is not necessary to remove the cladding sections.

▨ Possible area for empty tubes in the floor plate

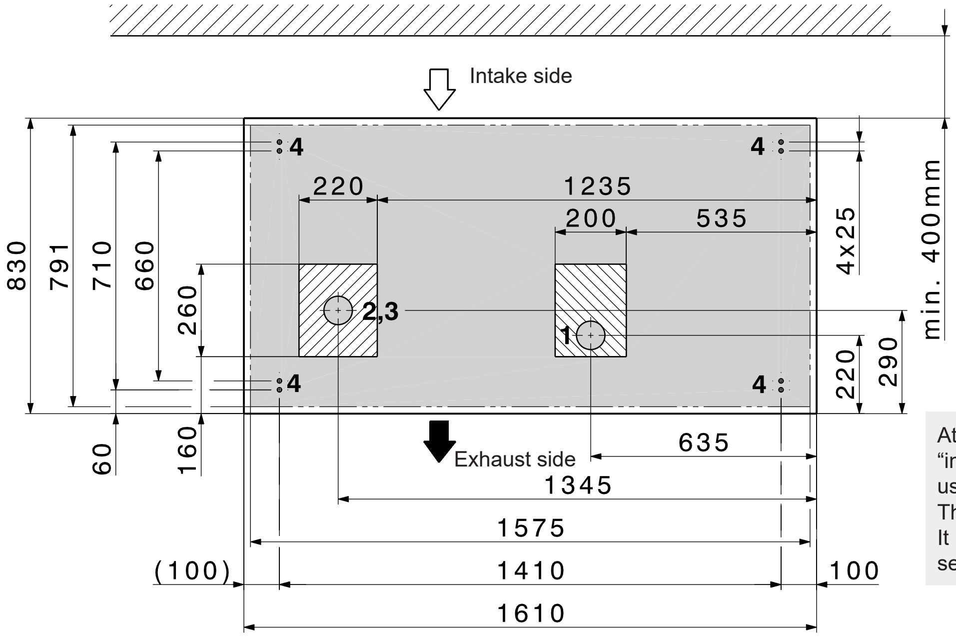
▨ Possible area for condensate drain in the floor plate

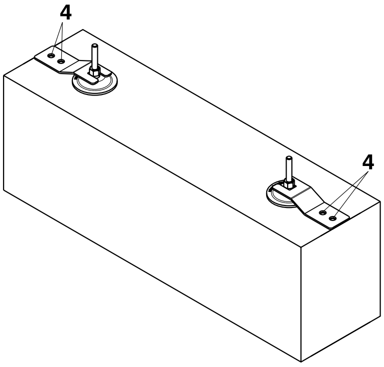
| | | |
|---|---|---|
| 1 | Condensate drain area | |
| 2 | Area | Flow hydraulics<br>Return hydraulics |
| 3 | Electrics area | |
| 4 | Attachment points M8 Belaria® pro (dowels in scope of delivery) | |

## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

**Floor plate**
Plan
(view from above)



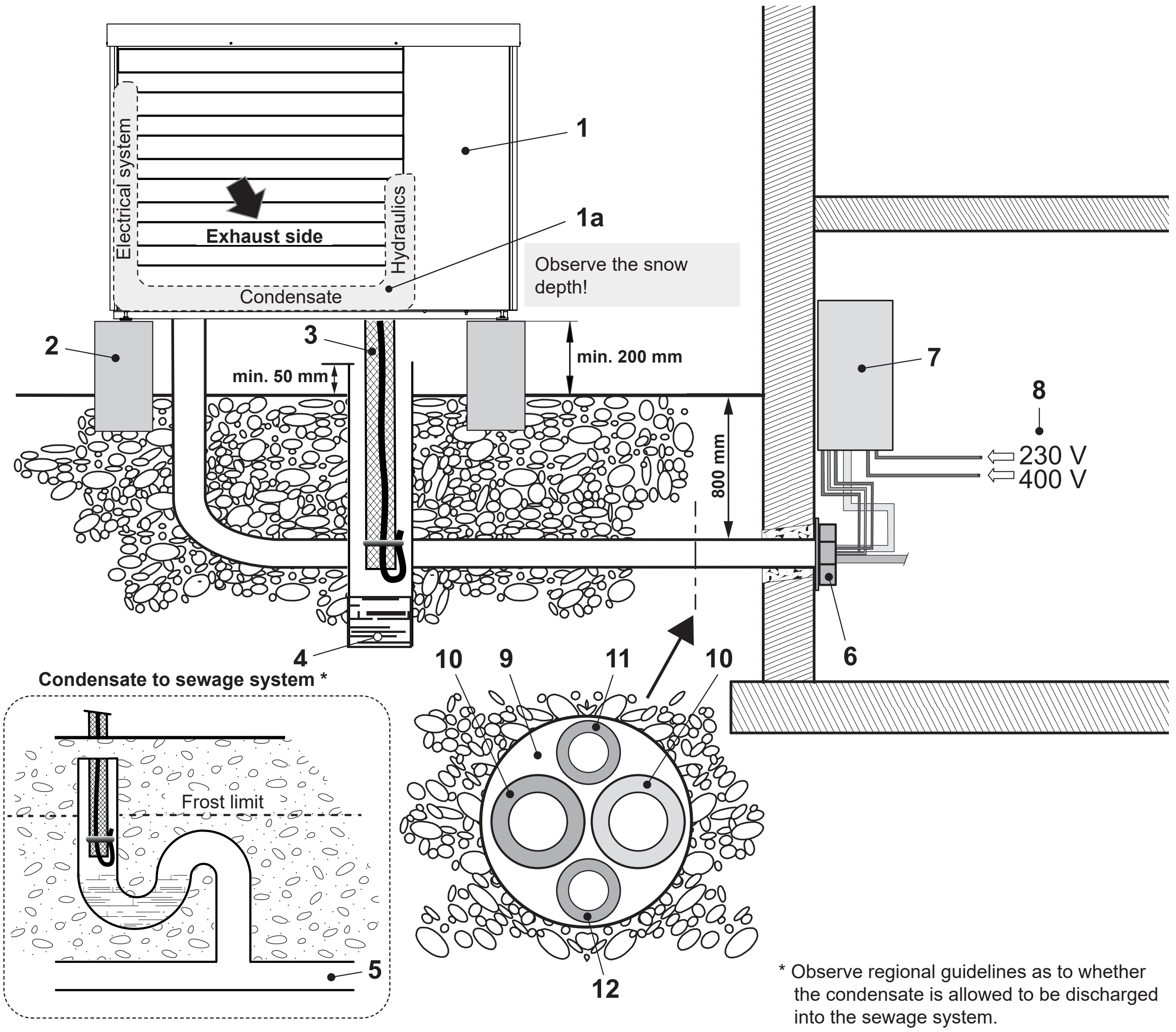


Attachment of the outdoor unit from the “inside/bottom” (grey area) of the heat pump using the supplied clamps.
The clamps are not visible.
It is necessary to remove the cladding sections.

| | |
|---|---|
| ▨ | Possible area for empty tubes in the floor plate |
| ▧ | Possible area for condensate drain in the floor plate |

1 Condensate drain area
2 Area Flow hydraulics
Return hydraulics
3 Electrics area
4 Attachment points M8 Belaria® pro (dowels in scope of delivery)

## Configuration and connection diagram Belaria® pro



* Observe regional guidelines as to whether the condensate is allowed to be discharged into the sewage system.

1 Outdoor unit
1a Space for connection of hydraulics (FL + RT), condensate drain and electrics.
2 Concrete base
3 Condensate drain heat pump Ø 28 mm, drain pipe DN 100
4 Variant 1: Seepage (duct/gravel layer)
5 Variant 2: Discharging into the sewage system (penetration into the soil must be made leak-tight)
6 Wall lead-through
(hydraulic and electrical connections)
7 Belaria® pro comfort indoor unit (8-15)
On the Belaria® pro compact (8/100/300), (13/100/300), the hydraulic and electrical connections are located on the top of the unit!
8 Main current:
3 x 400 V/50 Hz
Control current:
1 x 230 V/50 Hz
Electric heating element main current:
3 x 400 V/50 Hz
Network cables (optional)
9 Empty tube for hydraulics and electrics
10 Connection line flow + return
11 Empty tube for electrical connections for outdoor unit
Main current outdoor unit: 3 x 400 V/50 Hz
Control current outdoor unit: 1 x 230 V/50 Hz
12 Empty tube for data bus RS485

**Requirements and directives**

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

**Set-up**

- The distance between the outdoor and indoor unit must be as short as possible. Only short and simple routing of lines guarantees cost effectiveness and low heat losses.
- The maximum permitted single cable length is 30 m between the outdoor unit, via the indoor unit and the buffer storage tank. This must not be exceeded.
  In general, the customer must assess whether the next larger pipe dimension is more suitable due to the pressure drop.
- There must be no building openings (windows, doors, shafts, ventilation openings, etc.) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Wall ducts into the building must be airtight.
- The outdoor unit must not be placed in or near floor recesses.
- The outdoor unit must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air exhaust sides must not be narrowed or blocked. The air exhaust side must be unobstructed (> 2 m).
- For efficiency reasons, the line length with the Belaria® pro comfort between the calorifier and the indoor unit is not allowed to be more than 10 m.
- When using glycol (antifreeze) – primary and/or secondary – a separating system must be used.
- Filling the entire system with glycol or a frost protection agent/water mixture is considered improper use and is not permitted. If this is nevertheless desired for frost protection reasons, the system must be designed with a system separation. Only environmental compatible frost protection agent is allowed to be used.

**Outdoor unit**

**Important safety instruction**
The heat pump (outdoor unit) is only allowed to be placed outdoors and under no circumstances indoors.
The outdoor unit is filled with the non-toxic, odourless and colourless but flammable refrigerant R290 (propane), which is heavier than air. If this occurs, there is a danger of fire/explosion. Therefore, all potential sources of ignition must be kept at least 1 m away in all directions. Smoking and the use of naked flames is prohibited in this area.

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

- The maximum line length according to the installation must not be exceeded.
- The connection lines must be laid insulated and frost-proof.
- 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.
- 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 unit is installed at wind-prone locations, the alignment of the heat pump must be selected in such a way that the expected wind direction is crossways to the intake direction of the outdoor unit.
- If an alternative installation in areas subject to strong winds cannot be avoided, an additional wind shield in the form of a hedge, for example, should be installed, or additional fastening should be provided for the outdoor unit.
- At exposed installation locations prone to wind load, e.g. on building roofs, the surface load on the upper horizontal cover surface of the heat pump caused by wind suction must not exceed a value of 1800 N/m². The heat pump casing might be damaged if this value is not complied with.
- The permitted surface load must be determined in accordance with the specifications of standard EN 1991-1-1. Compliance must be checked by a qualified specialist. A professional inspection of the actual conditions on site is mandatory and must be carried out by a qualified specialist.
- When planning and installing the heat pump in locations exposed to wind load, please contact your sales consultant in good time.
- Notice on installing the cover: If the cover of the heat pump has been removed, it must be properly reinstalled after the work has been completed. Make sure that the cover is fully connected to the heat pump using all the screw holes provided, to ensure stability and tightness.
- If the installation location is not protected against snowfall, it must be chosen in such a way that the evaporator remains free of snow.
- The outdoor unit must always be installed on a solid surface in a horizontal position. This can be achieved by means of concrete bases or a floor plate.
- The load-bearing capability must be adequate. The unit must be fixed with 4 M8 screws.
- Air heat pumps generate condensate during operation. This can amount to 8 litres per defrost cycle within 2 minutes for the outdoor unit of the Belaria® pro.
- The condensate drain must be frost-proof so that the condensate can flow away without problems even at outdoor temperatures below 0 °C.
- If the discharge is into the sewage system, a siphon must be provided and the duct lead-through into the ground must be sealed so that no refrigerant can enter the sewage system uncontrolled.
- If there is a risk of frost, a siphon must be installed in the shaft immediately before the condensate drain is introduced into the downpipe.
- The condensate drip tray included in the outdoor unit is already equipped with tray heating at the factory that thus prevents freezing.
- The condensate drain line is also secured with the preassembled heating tape.
- The air exhaust has increased susceptibility to frost. Gutters, water pipes and water containers must not be situated right next to the exhaust.
- 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.
- The hydraulic lines from the heat pump can transmit structure-borne noise. Therefore, structure-borne noise decoupling should be provided, e.g. with sound-insulating hoses.

A strainer is located in the outdoor unit. At least one sludge and magnetite separator must be installed in the heating return.

**Flat roof installation**

Flat roof installation of the Belaria® pro is possible under the following conditions:

- Strict compliance with safety measures regarding flammable refrigerants (see below).
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.6 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.
- At exposed installation locations prone to wind load, e.g. on building roofs, the surface load on the upper horizontal cover surface of the heat pump caused by wind suction must not exceed a value of 1800 N/m². The heat pump casing might be damaged if this value is not complied with.
- The permitted surface load must be determined in accordance with the specifications of standard EN 1991-1-1. Compliance must be checked by a qualified specialist. A professional inspection of the actual conditions on site is mandatory and must be carried out by a qualified specialist.

- When planning and installing the heat pump in locations exposed to wind load, please contact your sales consultant in good time.
- Notice on installing the cover: If the cover of the heat pump has been removed, it must be properly reinstalled after the work has been completed. Make sure that the cover is fully connected to the heat pump using all the screw holes provided, to ensure stability and tightness.
- The heat pump contains electrically operated components and must be integrated in the structural lightning and surge protection for roof structures.

Safety measures to be complied with

- There must be no building openings (windows, doors, shafts, ventilation openings, etc.) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Wall ducts into the building must be airtight.
- The outdoor unit must not be placed in or near floor recesses.
- The outdoor unit must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air exhaust sides must not be narrowed or blocked. The air exhaust side must be unobstructed (> 2 m).
- The condensate is allowed to be directed into a shaft. A siphon must be installed upstream of the connection to the downpipe. The siphon must be located inside the building.

### Indoor unit

- The installation location must be selected in accordance with the valid requirements and directives.
- 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.
- Installation in wet rooms, dusty rooms or rooms with a potentially explosive atmosphere is not permitted.
- To minimise vibration and noise inside the building, the inside of the heat pump should be isolated as well as possible from the building structure. The screed must be recessed around the indoor unit. For example, indoor units should never be installed on lightweight ceilings/floors.
- The connections for the heat pump or heating flow are located at the bottom of the Belaria® pro comfort indoor unit and at the top of the Belaria® pro compact.
- The connections for hot and cold water as well as for the hot water circulation are also located on top in the Belaria® pro compact.
- Due to the accessibility to the hydraulic system, the distances must be maintained on all sides (see Dimensions/Space requirements).

### 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 connection lines specified in the technical data must be checked by the electrical company carrying out the work depending on the line length, the routing type and the type of line.
- A fault-current circuit breaker is recommended. Country-specific requirements must be complied with. If the “fault-current circuit breaker” safeguard measure is implemented by the electrical company, a separate fault-current circuit breaker is recommended for the heat pump.
- This fault-current circuit breaker must be of the all-current-sensitive type B ($I\Delta N \geq 300$ 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 connection and feeder lines must be copper cables.
- Please refer to the wiring diagrams for electrical details.
- 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.

### Routing of the hydraulic connection lines

- If the hydraulic connection 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.
- Wall ducts must be sealed to the outside on site.
- After the hydraulic connection lines have been laid, they must be checked for damage and reinsulated. In case of cooling, condensate can form on the pipes.
- The hydraulic connection lines must be laid decoupled from the building and must never be laid flush-mounted.
- Care must be taken to ensure that water pipes do not pass through the sleeping or living areas.
- Shut-off valves must be installed on site in accordance with the corresponding hydraulic diagram. The shut-off valves are not allowed to be opened until immediately before commissioning.
- The danger of frost damage must be taken into account if there are prolonged power outages.
- 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.

### 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.
- If panel heating is used for room cooling, various criteria such as temperatures below the dewpoint or the temperature profiles 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.

**Further guidelines**
see “Engineering”

### 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 data 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 must 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.
- A strainer is located in the outdoor unit. At least one sludge and magnetite separator must be installed in the heating return.
- 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 and given pressure drops.
- Ventilation possibilities must be provided at the highest points and drainage possibilities at the lowest points of the connection lines.
- To prevent energy losses, the connection lines must be insulated with suitable material in accordance with local regulations.

**Transport and storage**

- When removing the packaging, check the outdoor unit for damage. If the outdoor unit was damaged during transport or storage, contact Hoval customer service, a service partner or a licensed specialist immediately. They must carry out a leak test with a suitable leak detector. In the event of a leak, the outdoor unit must be repaired.
- Store the outdoor unit in a cool place without fire hazard and without direct exposure to heat sources. The ambient temperature must not exceed 43 °C.
- The same regulations apply for storage as for installation (no recesses, ventilation pipes, ignition sources in the storage area).
- The outdoor unit must not be stored in closed rooms, cellars or garages.
- The outdoor unit is only allowed to be stored outdoors.
- During transport, ensure sufficient ventilation in the closed vehicle, also when parking and stopping.
- Storage in passageways, escape routes or in front of entrances or exits is not permitted.
- Ignition sources such as naked flames, switched-on gas appliances, electric heaters, etc. must be kept away from the unit.
- Transport and storage only in upright position. Protect from mechanical damage and from falling over or falling down (make sure the load is secure).
- To prevent damage during transport, the outdoor unit should be moved to its final installation location as far as possible in packed state on the wooden pallet with a forklift or lift truck.
- Transport by crane: The outdoor unit can be lifted by a crane and carried to the installation site. For this purpose, there are three stiffening brackets below the cover with openings for the passage of the transport straps.

**Prerequisites for commissioning**

- Commissioning at cold outdoor temperatures is only possible if the system is preheated on site (e.g. with an electric bake-out device). During commissioning, the room temperature of the heated rooms must be at least 15 °C (compressor operation is not possible below this temperature, as there would be too little energy for defrosting). If a buffer storage tank is provided, its heating water temperature is not allowed to be less than 20 °C during commissioning.
- A heat pump should not be used for drying out of the building (screed heating), as this can significantly reduce the service life of the device. Alternatively, heating via a mobile heating station or E-set is a sensible option. This is particularly true for air/water heat pumps, since the heating output here is strongly dependent on the outdoor temperature and drying out of the building is not possible at temperatures below the frost line in the building carcass.

Hoval

# **Hoval quality.**
# You can count on us.

Hoval is one of the leading international companies for heating and indoor climate solutions. Drawing on more than 80 years of experience and benefiting from a close-knit team culture, the Hoval Group delivers exciting solutions and develops technically superior products. This leadership role requires a sense of responsibility for energy and the environment, which is expressed in an intelligent combination of different heating technologies and customised indoor climate solutions.

Hoval also provides personal consultations and comprehensive customer service. With around 2500 employees in 15 companies around the world, Hoval sees itself not as a conglomerate, but as a large family that thinks and acts globally.
Hoval heating and indoor climate solutions are currently exported to more than 50 countries.

## Responsibility for energy and environment

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hoval.co.uk

2026 - 04 | Subject to modifications

Your Hoval partner

Hoval

CATALOGUE

# Hoval Belaria® pro

## Air/water heat pump
## Belaria® pro (20,25)

**Hoval** | Responsibility for energy and environment

## Table of contents

## Hoval Belaria® pro

**Modulating monoblock heat pump for heating and cooling.**

Monoblock heat pump set up outdoors consisting of outdoor unit and electrical box.

*Belaria® pro outdoor unit*

- Compact floor-mounted air/water heat pump
- Elegant and extremely quiet outdoor unit
- Casing with sheet metal cladding, powder-coated, colour anthracite (DB703)
- Cooling unit with refrigerant R290
- Integrated components:
  - speed-controlled scroll compressor
  - straight louvre-type evaporator
  - speed-controlled axial fan
  - plate-type condenser made of stainless steel/copper
  - built-in gas separator with safety valve 2.5 bar
  - speed-controlled high-efficiency pump
  - flow rate sensor/heat meter
  - condensate drip tray incl. tray heating and condensate trace heater for channelling all the condensate in the outdoor unit, fixed installation, 1″ connection
  - integrated vibration-damping feet for effective structure-borne noise decoupling
- With cooling function with corresponding hydraulics
- Hydraulic connections behind louvre grille
  - Heating connections 1 ½″
  - Filter ball valve installed in the heat pump return
- Electrical connections behind louvre grille
  - 400 V main power supply
  - 230 V control current, supplied from the electrical box
  - Data cable for bus connection to the electrical box
- With fitting accessories for fixing the outdoor unit on the ground

*Belaria® pro electrical box*

- Compact wall-mounted electrical box
- Casing with sheet metal cladding, powder-coated, flame red (RAL 3000)
- TopTronic® E control installed with TopTronic® E control module
- With WFA-200S automatic heat pump device
- Integrated control functions for
  - 1 heating/cooling circuit with mixer
  - 1 heating/cooling circuit without mixer
  - 1 hot water charging circuit
  - bivalent and cascade management
- With control set (switching contactor) for activating an external electricheating element
- Electrical connections introduced from bottom
- With fitting accessories for fixing the electrical box to the wall
- Maximum cascading: 8 Belaria® pro (20,25)

*TopTronic® E controller*

*Control panel*

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

**Belaria® pro (20,25)**
Available starting June 2026

**Model range**

| Belaria® pro<br>type | 35 °C | 55 °C | Heat output 1)<br>A-7W35<br>kW | Heat output 1)<br>A2W35<br>kW | Cooling capacity 1)<br>A35W18<br>kW |
|---|---|---|---|---|---|
| (20) | A$^{+++}$ | A$^{+++}$ | 11.9-17.7 | 11.8-19.2 | 13.0-20.9 |
| (25) | A$^{+++}$ | A$^{+++}$ | 11.9-22.1 | 11.8-24.0 | 13.0-20.9 |
|  | A$^{+++}$ → D | A$^{+++}$ → D |  |  |  |

Energy efficiency class of the compound system with control.

1) Modulation range

*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)

*TopTronic® E basic module heat generator TTE-WEZ*

- Integrated control functions for
  - 1 heating/cooling circuit with mixer
  - 1 heating/cooling circuit without mixer
  - 1 hot water charging circuit
  - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

*Options for TopTronic® E controller*

- Can be expanded by max. 1 module expansion:
  - module expansion heating circuit or
  - module expansion Universal or
  - module expansion heat balancing
- 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 2 controller modules **or**
- 3 controller modules

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

**For further information about the TopTronic® E,** see “Controls”

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

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

*Delivery*
- Outdoor unit and electrical box delivered packaged separately
- Sensor kit included loose in the electrical box:
  - outdoor sensor (AF)
  - calorifier sensor (SF1/SF2)
  - flow sensor (VF1)

*On site*
- Wall ducts for hydraulic connection lines
- Hydraulic connection lines from the outdoor unit to the inside of the building
- Electrical connection line from the outdoor unit to the electrical box
- Strip foundation, floor plate

**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems
With Hoval Integrate, Hoval heat pumps with TopTronic® E control can be integrated into home automation and energy management systems via open, standardised interfaces.
Predefined templates, plugins and Smart Grid integrations simplify implementation and enable intelligent decisions.
Functions such as PV surplus utilisation, dynamic electricity tariffs, grid-friendly control, load management or simple visualisations for analysis purposes can be created and operated individually.
System integrators are free to choose their desired system and benefit from broad compatibility and future-proof sector coupling.
Thanks to integrated building automation, end customers benefit from operating cost savings and cross-system functions.
Practical guide videos provide additional support for integration and commissioning – step by step and with a practical orientation.

**Notice**
Only available in Austria, Germany and Switzerland

# Hoval Belaria® pro (20,25)

## Air/water heat pump

### Hoval Belaria® pro (20,25)

| Belaria® pro type | Heat output [1] A-7W35 kW | Heat output [1] A2W35 kW | Cooling capacity [1] A35W18 kW | Part No. |
|---|---|---|---|---|
| (20) | 11.9-17.7 | 11.8-19.2 | 13.0-20.9 | 7019 904 |
| (25) | 11.9-22.1 | 11.8-24.0 | 13.0-20.9 | 7019 905 |

[1] Modulation range

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

**Further information**
see "Description"

**Further accessories can be found under the following rubrics:**
- Calorifiers/buffer storage tanks:
  - Calorifiers
  - Buffer storage tanks
  - Combination storage tanks
  - Electric heating elements
- Heating armature groups/heating distributors
- Various system components:
  - 2-way and 3-way valves
  - 3-way mixers
  - 2-way and 3-way ball valves
  - Motor drives and butterfly valves
  - Diaphragm pressure expansion tanks
  - Fittings
  - Plate heat exchangers
- Circulating pumps

**Notice**
Only available in Austria, Germany and Switzerland

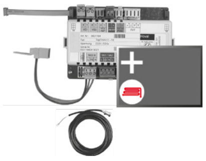
**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems

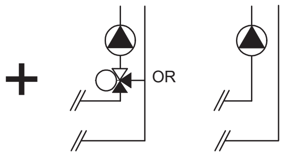
**Further information**
see "Description"

**Part No.**

## TopTronic® E module expansions

for TopTronic® E basic module heat generator



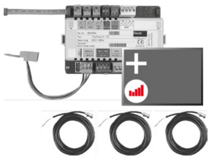


**TopTronic® E module expansion heating circuit TTE-FE HK**
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer

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

6034 576

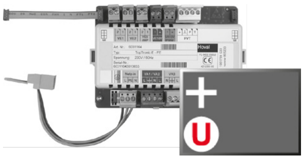
**Notice**
The supplementary plug set may have to be ordered to implement functions differing from the standard!



**TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ**
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer incl. energy balancing in each case

Consisting of:
- Fitting accessories
- 3 contact sensors ALF/2P/4/T, L = 4.0 m
- Plug set FE module

6037 062



**TopTronic® E module expansion Universal TTE-FE UNI**
Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

Consisting of:
- Fitting accessories
- Plug set FE module

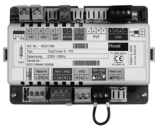
6034 575

**Further information**
see “Controls” section – “Hoval TopTronic® E module expansions” chapter

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

## Accessories for TopTronic® E

**Part No.**



**TopTronic® E controller modules**

| | | |
|---|---|---|
| TTE-HK/WW | TopTronic® E heating circuit/ hot water module | 6034 571 |
| TTE-SOL | TopTronic® E solar module | 6037 058 |
| TTE-PS | TopTronic® E buffer module | 6037 057 |
| TTE-MWA | TopTronic® E measuring module | 6034 574 |

**Supplementary plug set**

| | |
|---|---|
| for basic module heat generator TTE-WEZ | 6034 499 |
| for controller modules and module expansion TTE-FE HK | 6034 503 |

**TopTronic® E room control modules**

| | | |
|---|---|---|
| TTE-RBM | TopTronic® E room control modules | |
| | easy white | 6037 071 |
| | comfort white | 6037 069 |
| | comfort black | 6037 070 |

| | |
|---|---|
| **Enhanced language package TopTronic® E** | 6039 253 |

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

**HovalConnect**

| | |
|---|---|
| HovalConnect LAN | 6049 496 |
| HovalConnect WLAN | 6049 498 |
| HovalConnect Modbus | 6049 501 |
| HovalConnect KNX | 6049 593 |

**TopTronic® E interface modules**

| | |
|---|---|
| GLT module 0-10 V | 6034 578 |

**TopTronic® E sensors**

| | | |
|---|---|---|
| AF/2P/K | Outdoor sensor<br>H x W x D = 80 x 50 x 28 mm | 2055 889 |
| TF/2P/5/6T | Immersion sensor, L = 5.0 m | 2055 888 |
| ALF/2P/4/T | Contact sensor, L = 4.0 m | 2056 775 |
| TF/1.1P/2.5S/6T | Collector sensor, L = 2.5 m | 2056 776 |

**Bivalent switch**

for various release or switching functions

| | |
|---|---|
| Bivalent switch 1-piece | 2056 858 |
| Bivalent switch 2-piece | 2061 826 |

**System casing**

| | |
|---|---|
| System casing 182 mm | 6038 551 |
| System casing 254 mm | 6038 552 |

**TopTronic® E wall casing**

| | | |
|---|---|---|
| WG-190 | Wall casing small | 6052 983 |
| WG-360 | Wall casing medium | 6052 984 |
| WG-360 BM | Wall casing medium with control module cut-out | 6052 985 |
| WG-510 | Wall casing large | 6052 986 |
| WG-510 BM | Wall casing large with control module cut-out | 6052 987 |

**Further information**
see “Controls”

## Accessories for Belaria® pro (20,25)

**HP line insul. WA-HP 200-50**
**with connector set**
Flexible, pre-insulated and self-compensating line with two heating pipes and two empty pipes.
With connector set consisting of:
- 4 clamping couplings WA DN 50 1½″ ET 50 x 4.6 mm
- 1 end cap WA-HP 200-50
- 1 protective cap WA-HP 200-50
- 1 protective cap set WA-HP protection tube DN 40
- 1 split ring seal 200/250

Outside diameter: 200 mm
Fluid pipes: 2 x 50 mm / 4.6 mm (DN 40)
Outside diameter empty pipe 1: 32 mm
Outside diameter empty pipe 2: 32 mm
Bending radius: 0.8 m
Operating temperature: −10 ... 85 °C
Maximum temperature: 95 °C
Nominal pressure: 6 bar

| Dimension inside/outside | Line length m | **Part No.** |
|---|---|---|
| DN 40/50 | 5 | 6065 273 |
| DN 40/50 | 10 | 6065 274 |
| DN 40/50 | 15 | 6065 275 |
| DN 40/50 | 20 | 6065 276 |
| DN 40/50 | 25 | 6065 277 |

**Lining pipe DN 250 D280/D250 x 400**
2087 112

for HP line insulated WA-HP
Lining pipe for feeding the HP lines through ceilings, walls and floors.
Suitable for walling in and cementing in.
Lining pipe material: PVC
Outer Ø: 280 mm
Internal Ø: 250 mm
Length: 400 mm

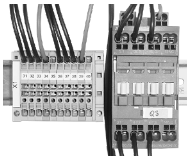
**Connection set AS40-BPA**
6063 100

for Belaria® pro (20,25)
Flexible connection line that can be shortened for connecting flow and return within the heat pump
Consisting of:
- 1 3.0 m corrugated pipe DN 32 insulated
- Insulation 19/42 with PE protective foil
- 2 angle screw connections IT/ET 1½″
- 4 union nuts 1½″
- 2 support rings 1½″
- Flat seals NBR

**Notice**
In cooling applications, the piping and fittings must be insulated accordingly.

**Adhesive tape IKB**
2023 563

for thermal insulation made of EPDM
Thickness: 3 mm
Width: 50 mm
Roll: 15 m

| | | Part No. |
|---|---|---|
|  | **Switching ball valve VBI60.40-25L; PN 40**<br>Internal thread Rp 1½″<br>Leakage rate: 0 ... 0.0001 % of kvs value<br>Permitted media: cold water,<br>cooling water, DHW, hot water,<br>water with frost protection<br>Recommendation:<br>water treatment according to VDI 2035<br>DN 40<br>kvs value: 25 m³/h<br>Medium temperature: −10 ... 120 °C<br>Ball valve body: brass<br>Ball: brass chrome-plated<br>Tappet: brass<br>Gland: EPDM O-rings | 6052 446 |
|  | **Motor drive GLB341.9E**<br>For straight-way ball valves VAG60.. and<br>switching ball valves VBI60.. DN 15-50<br>Operating voltage: 230 V, 50/60 Hz<br>Control signal 2-point/3-point<br>Single-wire/2 wire control<br>Operating time: 150 s<br>Nominal torque: 10 Nm<br>Permitted ambient temperature:<br>−32 ... 55 °C | 2070 331 |
|  | **Control set (switching contactor)**<br>**for Belaria® pro (20-50)**<br>For activating an external electric<br>heating element<br>3~400 V / 50 Hz<br>Control set for installation in the<br>wall-mounted electrical box | 6063 944 |
|  | **Safety set SGK15-PN3 IT 1″ insulated**<br>Safety group made of composite material<br>(glass fiber reinforced polyamide)<br>complete with safety valve (3 bar),<br>quick air vent and pressure gauge<br>Connection IT 1″ (ISO228-1)<br>with insulating caps<br>Medium temperature range: 5 ... 90 °C<br>Setting (pressure): 3 bar<br>Area of application up to 50 kW | 6063 905 |
|  | **Vibration decoupler**<br>for reducing structure-borne noise from<br>heat pumps indoors, cannot be shortened<br>Consisting of:<br>- 1 vibration decoupler insulated for heating<br>and brine side flat-sealing with union nut<br>- 2 flat seals<br>Nominal pressure: PN 10 | |

| Dimension | Connection inches | Nominal length mm | Part No. |
|---|---|---|---|
| DN 40 | 1½″ | 500 | 2082 226 |
| DN 40 | 1½″ | 1000 | 2080 798 |

**Part No.**

**Notice**
The dewpoint monitor is the only safety equipment in cooling systems and is always mandatory, to prevent damage caused by condensing water in surface cooling systems (floor, wall, ceiling cooling)!
This applies to both active and passive cooling systems.

| | |
|---|---|
| **Dewpoint monitor (TPW)**<br>for monitoring the formation of condensation in a compartment, with gold contacts, can be installed as required for pipes up to Ø 50 mm<br>The installation location must be selected in such a way that a representative humidity measurement is guaranteed i.e. the room air must flow unhindered through the slots in the housing to the measuring element inside the casing.<br>The TPW does not require supply voltage or auxiliary energy and should be mounted in an air flow with an air velocity of at least 0.2 m/s.<br>Control range: 50 ... 90 % RH<br>Max. switch power: 100 mA/250 V AC<br>Operating temperature: 0 … 60 °C<br>Dimensions: 85 x 55 x 33 mm<br>Weight: approx. 92 g<br>Type of protection: IP20 | 2070 911 |

**Part No.**

## Separation system of heat pump

### Hoval system pump set SPS-I

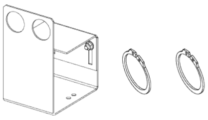
with interface for pump control with external thread including fittings

| Type | Nominal diameter DN | Delivery head mWC | Overall length mm | Integrated function [1] | Connection inches | Rated pressure PN | ≤ EEI | Part No. |
|---|---|---|---|---|---|---|---|---|
| SPS-I | 30 | 8 | 180 | F02 | G 2″ | 10 | 0.20 | 6059 326 |

[1] Type plate identification T
F02 = 0-10 V, PWM1, PWM2

**XB12L-1-70 PN 25 G 1¼″** — 2080 150

suitable for system separation
and/or Magro charging
Plate heat exchanger without seal
made of stainless steel, brazed with
copper solder under vacuum
Design resistant to corrosion
Calculation and materials according
to the AD information sheets
Produced according to DIN ISO 9001.
CE-tested.
Operating pressure: max. 25 bar
Operating temperature: max. 180 °C
Operating temperature: min. -10 °C
Suitable for circulation water/
water containing glycol with up to 50 %
glycol proportion, ethylene glycol/
propylene glycol-water mixtures,
ethanol-water solutions and other
suitable heat transfer fluids



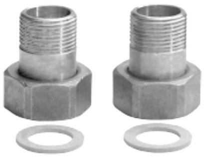
**Bracket for XB12 G 1¼″** — 2080 661

Bracket set comprises
bracket and two circlips
Height: 210 mm
Width: 120 mm
Depth: 155 mm

**Insulation for: XB12 H: 60-100, M: 50-92, L: 40-72** — 2080 126

made of polyurethane (PU)
Conductivity: 0.035 W/mK
Thickness: 20 mm
Operating temperature: max. 160 °C

**Notice**
Not for cooling applications



**Screw connection set G 1¼″ O -> G 1½″ O** — 2080 133

containing two end pieces
with union nuts and seals

**Notice**
2 sets are required.

**Part No.**

## Services

**Services and associated scope of services**
see separate catalogue “Hoval Services”

Commissioning by Hoval customer service is a prerequisite for warranty/guarantee activation.

## Belaria® pro (20,25)

| **Type** | | **(20)** | **(25)** |
|---|---|---|---|
| • Energy efficiency class of the compound system with control 1) ( A+++ → D) | 35 °C/55 °C | A+++/A+++ | A+++/A+++ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 223 | 220 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 162 | 164 |
| • Seasonal coefficient of performance moderate climate 35 °C/55 °C | SCOP | 5.6/4.1 | 5.6/4.2 |
| • Seasonal energy efficiency ratio A35W18 2) | SEER | 5.6 | 5.6 |
| • Seasonal energy efficiency ratio A35W7 2) | SEER | 3.2 | 3.2 |
| **Max./min. performance data heating and cooling in acc. with EN 14511** | | | |
| • Max. heat output A2W35 | kW | 19.2 | 24.0 |
| • Max. heat output A-7W35 | kW | 17.7 | 22.1 |
| • Min. heat output A15W35 | kW | 12.6 | 12.6 |
| • Max. cooling capacity A35W18 | kW | 20.9 | 20.9 |
| • Max. cooling capacity A35W7 | kW | 19.1 | 19.1 |
| • Min. cooling capacity A35W18 | kW | 13.0 | 13.0 |
| **Nominal output data heating in acc. with EN 14511** | | | |
| • Nominal heat output A2W35 | kW | 11.8 | 14.4 |
| • Coefficient of performance A2W35 | COP | 4.8 | 4.8 |
| • Nominal heat output A7W35 | kW | 13.5 | 16.5 |
| • Coefficient of performance A7W35 | COP | 5.7 | 5.5 |
| • Nominal heat output A-7W35 | kW | 11.9 | 14.5 |
| • Coefficient of performance A-7W35 | COP | 3.5 | 3.5 |
| **Nominal output data cooling in acc. with EN 14511** | | | |
| • Nominal cooling capacity A35W18 | kW | 18.6 | 18.6 |
| • Energy efficiency ratio A35W18 | EER | 4.5 | 4.5 |
| • Nominal cooling capacity A35W7 | kW | 13.8 | 13.8 |
| • Energy efficiency ratio A35W7 | EER | 3.4 | 3.4 |
| **Sound data** | | | |
| • Max. sound power level outdoor unit, day operation | dB(A) | 62 | 62 |
| • Sound power level EN 12102 outdoor unit whisper mode | dB(A) | 57 | 57 |
| • Sound power level EN 12102 outdoor unit 3) | dB(A) | 61 | 61 |
| • Sound pressure level 5 m 4) | dB(A) | 42 | 42 |
| • Sound pressure level 10 m 4) | dB(A) | 36 | 36 |
| **Hydraulic data** | | | |
| • Max. flow temperature | °C | 70 | 70 |
| • Max. flow rate heating side with A7W35, ΔT 6 K | $m^3/h$ | 3.1 | 3.9 |
| • Nominal flow rate heating side with A7W35, ΔT 5 K | $m^3/h$ | 2.3 | 2.9 |
| • Max. flow rate heating side with A35W7, ΔT 4 K | $m^3/h$ | 4.1 | 4.1 |
| • Residual overpressure of heating pump at nominal flow A7W35, ΔT 5 K | kPa | 70 | 62 |
| • Residual overpressure of heating pump at max. flow rate A35W7, ΔT 4 K | kPa | 20 | 20 |
| • Max. operating pressure on the heating side 5) | bar | 2.5 | 2.5 |
| • Flow/return connection heating | G | 1½″ | 1½″ |
| • Nominal air volume outdoor unit (A7W35 and nominal rotation speed) | $m^3/h$ | 6600 | 6600 |
| • Max. air volume outdoor unit (A7W35 and max. rotation speed) | $m^3/h$ | 8000 | 8000 |
| • Hydraulic connection line, max. length/dimension inside | m/DN | 30/40 | 30/40 |

| **Type** | | **(20)** | **(25)** |
|---|---|---|---|
| **Cooling technical data** | | | |
| • Compressor | | modulating | modulating |
| • Refrigerant | | R290 | R290 |
| • Refrigerant filling quantity | kg | 4.4 | 4.4 |
| • Compressor oil type | | PZ46M | PZ46M |
| • Compressor oil filling quantity | l | 0.9 | 0.9 |
| **Electrical data** | | | |
| • Electrical connection compressor | V/Hz | 3~400/50 | 3~400/50 |
| • Control electrical connection | V/Hz | 1~230/50 | 1~230/50 |
| • Electrical connection electric heating element | V/Hz | - | - |
| • Max. heat pump operating current | A | 19.5 | 19.5 |
| • Max. compressor operating current | A | 19.2 | 19.2 |
| • Max. fan operating current | A | 0.3 | 0.3 |
| • Max. operating current electric heating element | A | - | - |
| • Max. output of electric heating element | kW | - | - |
| • Max. heat pump power consumption | kW | 11.9 | 11.9 |
| • Max. fan power consumption | W | 194 | 194 |
| • Max. starting current heat pump I$_A$ | A | 19.2 | 19.2 |
| • Output factor (cos φ) | | 0.88 | 0.88 |
| • External protection main current | A | C/K 20 | C/K 20 |
| • External protection control current | A | B/Z 13 | B/Z 13 |
| • External protection electric heating element | A | - | - |
| • Fault-current circuit breaker | | RCCB type B, IΔn ≥ 300 mA | |
| • Recommended cable | | Cu 5 x 4.0 mm$^2$ | |
| • Nominal electrical output with A-7W35 | kW | 3.7 | 4.1 |
| • Max. electrical output | kW | 8.0 at A-20W60 | 11.4 at A-20W60 |
| • Active power of heat pump | kW | 10.5 | 10.5 |
| • Max. operating voltage Ub | V | 3~400 | 3~400 |
| • Max. operating current Ib | A | 19.5 | 19.5 |
| • Max. inverter output current | A | 24.0 | 24.0 |
| • Pulse count | | 3 | 3 |
| • Max. switching frequency per hour/day at tn 0 °C | n | 3/72 | 3/72 |
| • Continuous load changes | | No | |
| • Starting up under load | | No | |
| • Feedback into the power system | | No | |
| • Power factor correction | | No | |
| • Starting up assistance | | Output control | |
| • Type of starting up assistance | | Frequency converter | |
| • Frequency converter | | 60-360 Hz (20-120 rps) | |
| • Starting current/nominal current ratio | | 0.99 | |
| **Dimensions/weight of outdoor unit** | | | |
| • Dimensions (H x W x D) | mm | 1464 x 1928 x 997 | |
| • Weight | kg | 460 | 460 |
| • Protection class | | IP24 | IP24 |
| **Dimensions/weight of electrical box** | | | |
| • Dimensions (H x W x D) | mm | 750 x 600 x 160 | |
| • Weight | kg | 22 | 22 |
| • Protection class | | IP20 | IP20 |

1) Related to moderate climate.

2) EN 14825

3) The sound values apply when the evaporator is clean. These values are temporarily exceeded before defrosting.

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

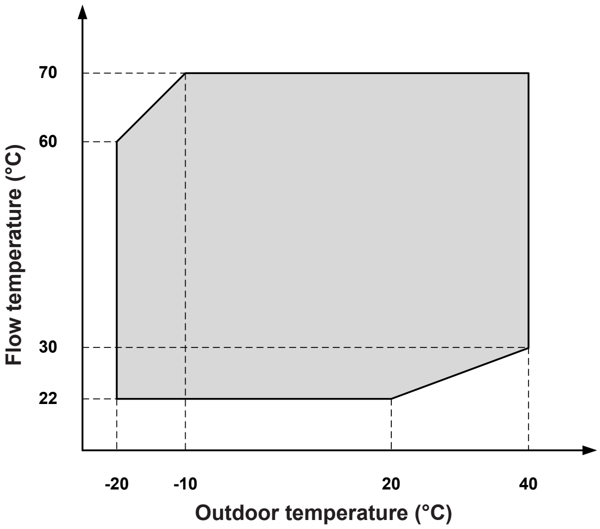
5) Maximum operating pressure of the system without isolating system 2.5 bar, because the outdoor unit is protected with 2.5 bar. Provide general protection of the system in the building with 3.0 bar.
An isolating system must be provided for system pressures of 2.5 bar or more.

Using a fault-current circuit breaker RCCB type B, IΔn ≥ 300 mA must be clarified based on the regulations of the country in question.

## Diagrams of areas of application

### Heating and domestic hot water

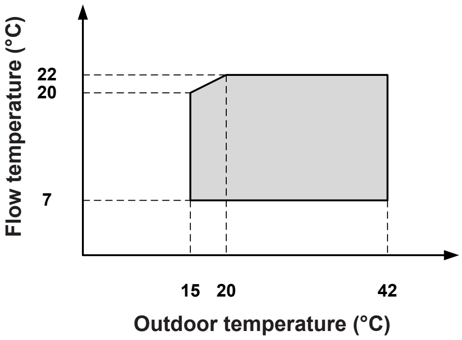
**Belaria® pro (20,25)**



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

### Cooling

**Belaria® pro (20,25)**



▨ Area of application of the heat pump for cooling

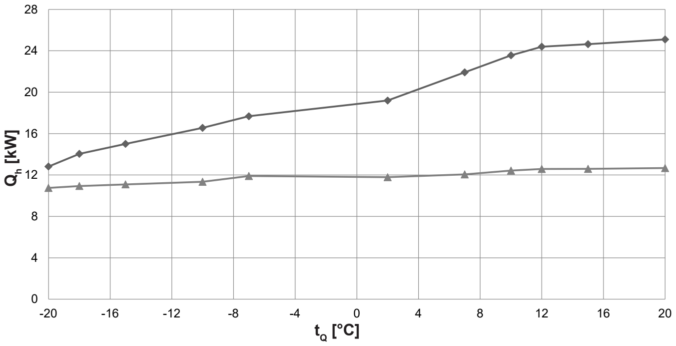
## Performance data – heating

Maximum heat output allowing for defrosting losses

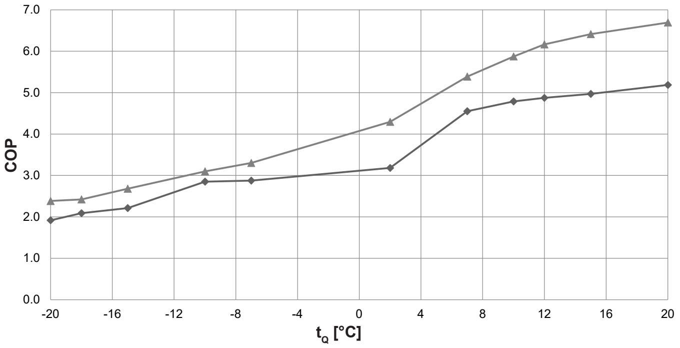
## Belaria® pro (20)

Data according to EN 14511

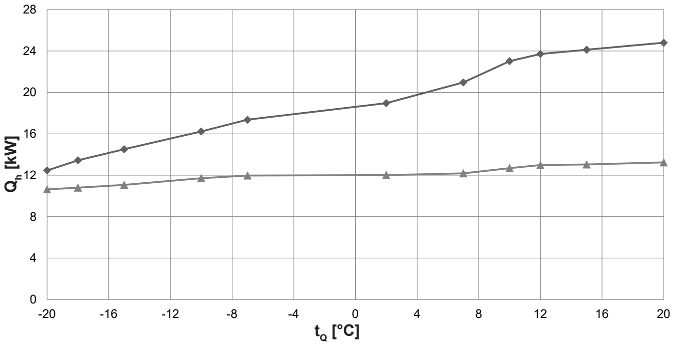
### Heat output – $t_{VL}$ 35 °C



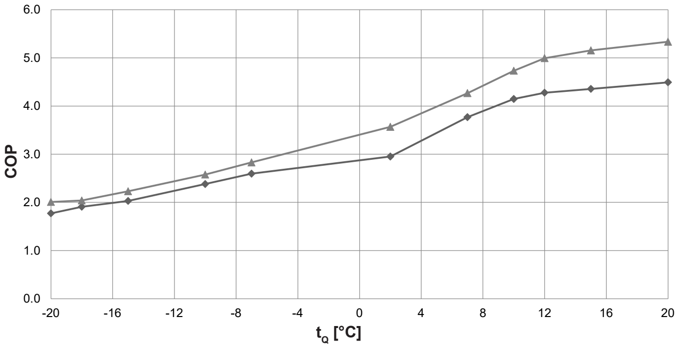
### Coefficient of performance – $t_{VL}$ 35 °C



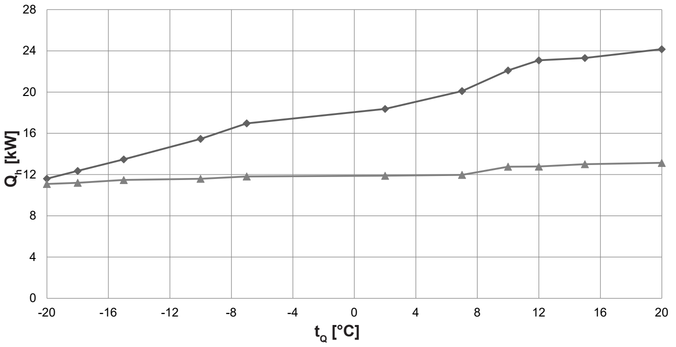
### Heat output – $t_{VL}$ 45 °C



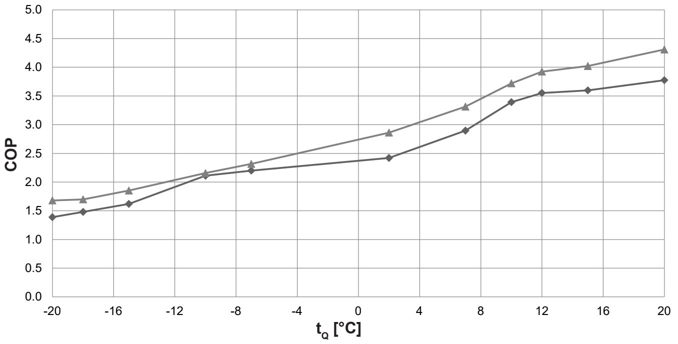
### Coefficient of performance – $t_{VL}$ 45 °C



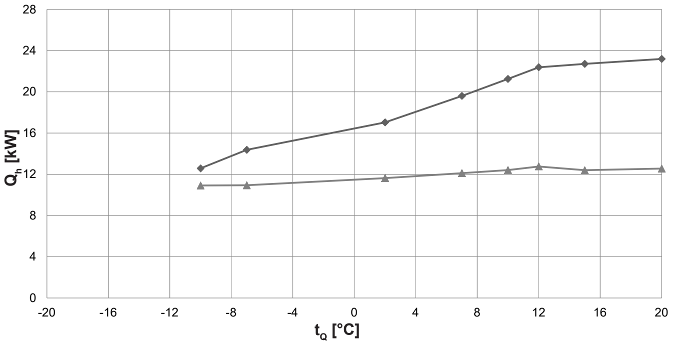
### Heat output – $t_{VL}$ 55 °C



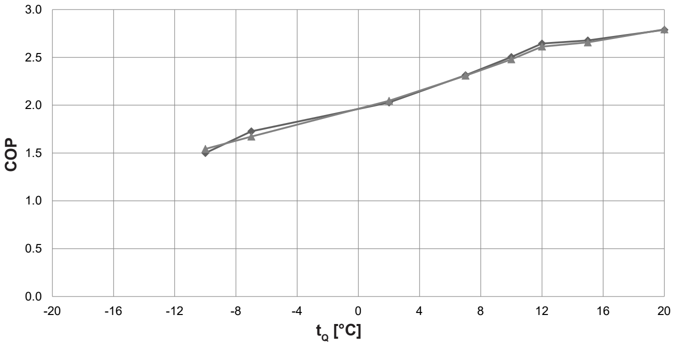
### Coefficient of performance – $t_{VL}$ 55 °C



### Heat output – $t_{VL}$ 70 °C



### Coefficient of performance – $t_{VL}$ 70 °C



$t_{VL}$ = 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
▲ Minimum output

## Performance data – heating

### Belaria® pro (20)

Data according to EN 14511

|  |  | Maximum output |  |  | Minimum output |  |  |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | −20 | 12.8 | 6.7 | 1.9 | 10.8 | 4.5 | 2.4 |
|  | −18 | 14.0 | 6.7 | 2.1 | 10.9 | 4.5 | 2.4 |
|  | −15 | 15.0 | 6.8 | 2.2 | 11.1 | 4.1 | 2.7 |
|  | −10 | 16.6 | 5.8 | 2.9 | 11.4 | 3.7 | 3.1 |
|  | −7 | 17.7 | 6.1 | 2.9 | 11.9 | 3.6 | 3.3 |
|  | 2 | 19.2 | 6.0 | 3.2 | 11.8 | 2.7 | 4.3 |
|  | 7 | 21.9 | 4.8 | 4.6 | 12.1 | 2.2 | 5.4 |
|  | 10 | 23.6 | 4.9 | 4.8 | 12.4 | 2.1 | 5.9 |
|  | 12 | 24.4 | 5.0 | 4.9 | 12.6 | 2.0 | 6.2 |
|  | 15 | 24.6 | 5.0 | 5.0 | 12.6 | 2.0 | 6.4 |
|  | 20 | 25.1 | 4.8 | 5.2 | 12.7 | 1.9 | 6.7 |
| 45 | −20 | 12.5 | 7.0 | 1.8 | 10.6 | 5.3 | 2.0 |
|  | −18 | 13.5 | 7.0 | 1.9 | 10.8 | 5.3 | 2.0 |
|  | −15 | 14.5 | 7.1 | 2.0 | 11.1 | 5.0 | 2.2 |
|  | −10 | 16.2 | 6.8 | 2.4 | 11.7 | 4.5 | 2.6 |
|  | −7 | 17.4 | 6.7 | 2.6 | 12.0 | 4.2 | 2.8 |
|  | 2 | 19.0 | 6.4 | 3.0 | 12.0 | 3.4 | 3.6 |
|  | 7 | 21.0 | 5.6 | 3.8 | 12.2 | 2.9 | 4.3 |
|  | 10 | 23.0 | 5.6 | 4.1 | 12.7 | 2.7 | 4.7 |
|  | 12 | 23.7 | 5.5 | 4.3 | 13.0 | 2.6 | 5.0 |
|  | 15 | 24.1 | 5.5 | 4.4 | 13.0 | 2.5 | 5.2 |
|  | 20 | 24.8 | 5.5 | 4.5 | 13.2 | 2.5 | 5.3 |
| 50 | −20 | 12.0 | 7.8 | 1.5 | 11.5 | 5.8 | 2.0 |
|  | −18 | 12.9 | 7.7 | 1.7 | 11.6 | 5.8 | 2.0 |
|  | −15 | 14.0 | 7.7 | 1.8 | 10.9 | 5.4 | 2.0 |
|  | −10 | 15.8 | 7.1 | 2.2 | 11.2 | 5.0 | 2.3 |
|  | −7 | 17.4 | 7.3 | 2.4 | 11.5 | 4.6 | 2.5 |
|  | 2 | 18.7 | 7.0 | 2.7 | 11.7 | 3.7 | 3.1 |
|  | 7 | 20.5 | 6.2 | 3.3 | 12.0 | 3.2 | 3.7 |
|  | 10 | 22.6 | 6.0 | 3.7 | 12.3 | 3.0 | 4.1 |
|  | 12 | 23.4 | 6.0 | 3.9 | 12.4 | 2.9 | 4.3 |
|  | 15 | 23.7 | 6.0 | 3.9 | 12.5 | 2.8 | 4.4 |
|  | 20 | 24.5 | 6.0 | 4.1 | 12.6 | 2.8 | 4.5 |
| 55 | −20 | 11.6 | 8.4 | 1.4 | 11.1 | 6.6 | 1.7 |
|  | −18 | 12.4 | 8.3 | 1.5 | 11.2 | 6.6 | 1.7 |
|  | −15 | 13.5 | 8.3 | 1.6 | 11.5 | 6.2 | 1.9 |
|  | −10 | 15.5 | 7.3 | 2.1 | 11.6 | 5.4 | 2.2 |
|  | −7 | 17.0 | 7.7 | 2.2 | 11.8 | 5.1 | 2.3 |
|  | 2 | 18.4 | 7.6 | 2.4 | 11.9 | 4.2 | 2.9 |
|  | 7 | 20.1 | 6.9 | 2.9 | 12.0 | 3.6 | 3.3 |
|  | 10 | 22.1 | 6.5 | 3.4 | 12.8 | 3.4 | 3.7 |
|  | 12 | 23.1 | 6.5 | 3.6 | 12.8 | 3.3 | 3.9 |
|  | 15 | 23.3 | 6.5 | 3.6 | 13.0 | 3.2 | 4.0 |
|  | 20 | 24.2 | 6.4 | 3.8 | 13.1 | 3.0 | 4.3 |

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

Further performance data – heating
see next page

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

## Performance data – heating

### Belaria® pro (20)

Data according to EN 14511

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 60 | −20 | 11.2 | 9.1 | 1.2 | 10.8 | 7.1 | 1.5 |
| | −18 | 11.8 | 9.1 | 1.3 | 10.9 | 7.1 | 1.5 |
| | −15 | 13.0 | 8.9 | 1.5 | 11.2 | 6.7 | 1.7 |
| | −10 | 15.1 | 8.3 | 1.8 | 11.5 | 6.0 | 1.9 |
| | −7 | 16.6 | 8.1 | 2.0 | 11.6 | 5.6 | 2.1 |
| | 2 | 18.1 | 8.2 | 2.2 | 11.3 | 4.8 | 2.3 |
| | 7 | 19.7 | 7.6 | 2.6 | 12.1 | 4.2 | 2.9 |
| | 10 | 21.6 | 7.0 | 3.1 | 12.4 | 3.8 | 3.2 |
| | 12 | 22.8 | 7.0 | 3.3 | 12.8 | 3.8 | 3.4 |
| | 15 | 22.9 | 7.0 | 3.3 | 12.8 | 3.7 | 3.5 |
| | 20 | 23.7 | 6.8 | 3.5 | 12.9 | 3.5 | 3.7 |
| 70 | −20 | - | - | - | - | - | - |
| | −18 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | 12.6 | 8.4 | 1.5 | 10.9 | 7.1 | 1.5 |
| | −7 | 14.4 | 8.3 | 1.7 | 10.9 | 6.5 | 1.7 |
| | 2 | 17.0 | 8.4 | 2.0 | 11.6 | 5.7 | 2.0 |
| | 7 | 19.6 | 8.5 | 2.3 | 12.1 | 5.2 | 2.3 |
| | 10 | 21.2 | 8.5 | 2.5 | 12.4 | 5.0 | 2.5 |
| | 12 | 22.4 | 8.5 | 2.6 | 12.8 | 4.9 | 2.6 |
| | 15 | 22.7 | 8.5 | 2.7 | 12.4 | 4.7 | 2.7 |
| | 20 | 23.2 | 8.3 | 2.8 | 12.6 | 4.5 | 2.8 |

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

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

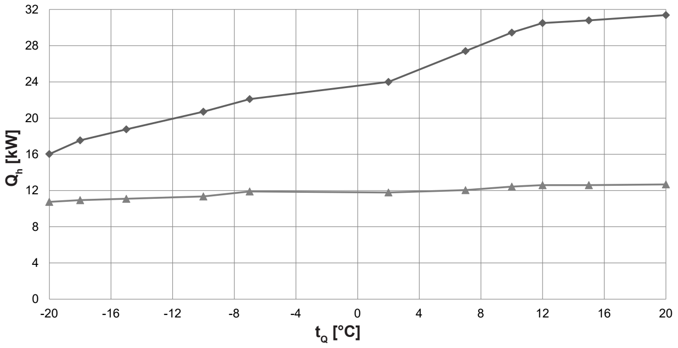
## Performance data – heating

Maximum heat output allowing for defrosting losses

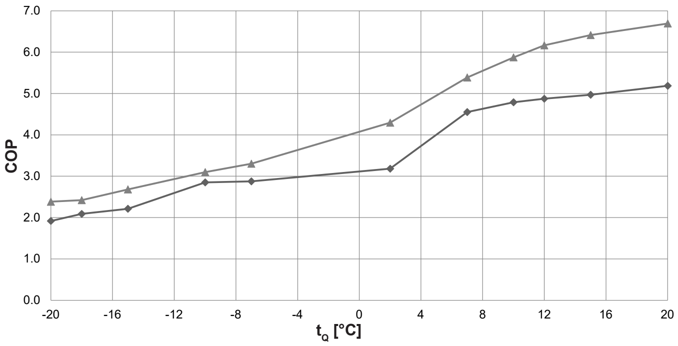
## Belaria® pro (25)

Data according to EN 14511

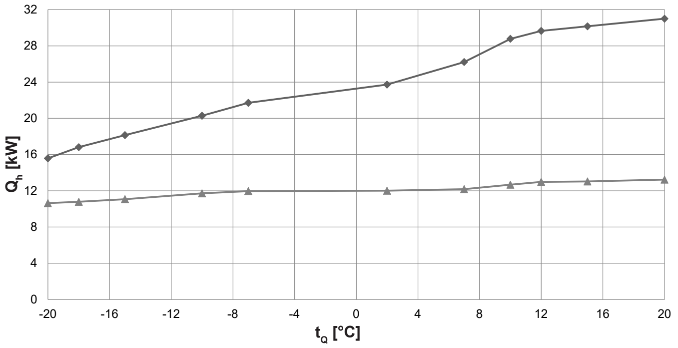
### Heat output – $t_{VL}$ 35 °C



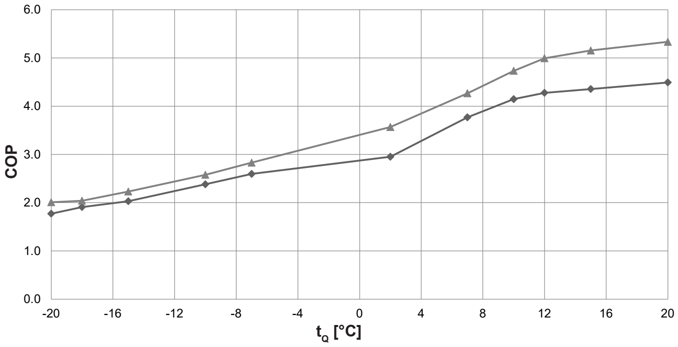
### Coefficient of performance – $t_{VL}$ 35 °C



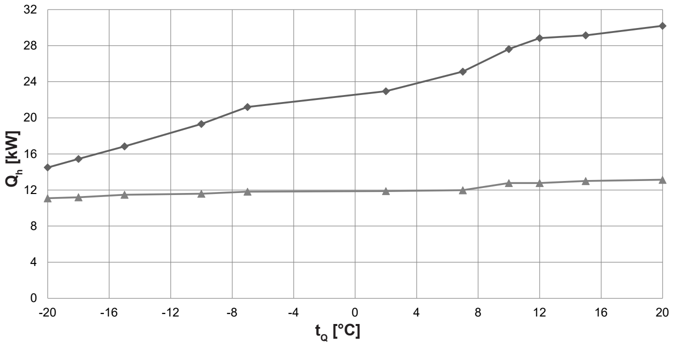
### Heat output – $t_{VL}$ 45 °C



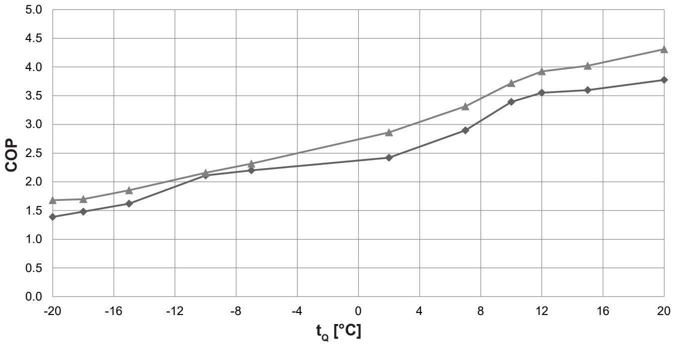
### Coefficient of performance – $t_{VL}$ 45 °C



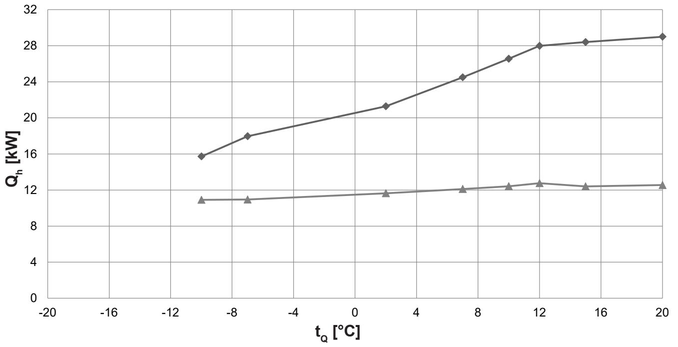
### Heat output – $t_{VL}$ 55 °C



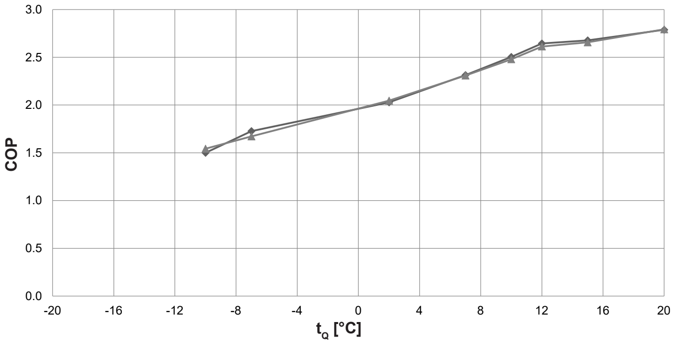
### Coefficient of performance – $t_{VL}$ 55 °C



### Heat output – $t_{VL}$ 70 °C



### Coefficient of performance – $t_{VL}$ 70 °C



$t_{VL}$ = 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
—▲— Minimum output

## Performance data – heating

### Belaria® pro (25)

Data according to EN 14511

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | −20 | 16.0 | 8.4 | 1.9 | 10.8 | 4.5 | 2.4 |
| | −18 | 17.6 | 8.4 | 2.1 | 10.9 | 4.5 | 2.4 |
| | −15 | 18.8 | 8.5 | 2.2 | 11.1 | 4.1 | 2.7 |
| | −10 | 20.7 | 7.3 | 2.9 | 11.4 | 3.7 | 3.1 |
| | −7 | 22.1 | 7.7 | 2.9 | 11.9 | 3.6 | 3.3 |
| | 2 | 24.0 | 7.5 | 3.2 | 11.8 | 2.7 | 4.3 |
| | 7 | 27.4 | 6.0 | 4.6 | 12.1 | 2.2 | 5.4 |
| | 10 | 29.5 | 6.2 | 4.8 | 12.4 | 2.1 | 5.9 |
| | 12 | 30.5 | 6.3 | 4.9 | 12.6 | 2.0 | 6.2 |
| | 15 | 30.8 | 6.2 | 5.0 | 12.6 | 2.0 | 6.4 |
| | 20 | 31.4 | 6.1 | 5.2 | 12.7 | 1.9 | 6.7 |
| 45 | −20 | 15.6 | 8.8 | 1.8 | 10.6 | 5.3 | 2.0 |
| | −18 | 16.8 | 8.8 | 1.9 | 10.8 | 5.3 | 2.0 |
| | −15 | 18.1 | 8.9 | 2.0 | 11.1 | 5.0 | 2.2 |
| | −10 | 20.3 | 8.5 | 2.4 | 11.7 | 4.5 | 2.6 |
| | −7 | 21.7 | 8.4 | 2.6 | 12.0 | 4.2 | 2.8 |
| | 2 | 23.7 | 8.0 | 3.0 | 12.0 | 3.4 | 3.6 |
| | 7 | 26.2 | 7.0 | 3.8 | 12.2 | 2.9 | 4.3 |
| | 10 | 28.8 | 6.9 | 4.1 | 12.7 | 2.7 | 4.7 |
| | 12 | 29.6 | 6.9 | 4.3 | 13.0 | 2.6 | 5.0 |
| | 15 | 30.2 | 6.9 | 4.4 | 13.0 | 2.5 | 5.2 |
| | 20 | 31.0 | 6.9 | 4.5 | 13.2 | 2.5 | 5.3 |
| 50 | −20 | 15.0 | 9.7 | 1.5 | 11.5 | 5.8 | 2.0 |
| | −18 | 16.1 | 9.6 | 1.7 | 11.6 | 5.8 | 2.0 |
| | −15 | 17.5 | 9.7 | 1.8 | 10.9 | 5.4 | 2.0 |
| | −10 | 19.8 | 8.8 | 2.2 | 11.2 | 5.0 | 2.3 |
| | −7 | 21.7 | 9.1 | 2.4 | 11.5 | 4.6 | 2.5 |
| | 2 | 23.3 | 8.8 | 2.7 | 11.7 | 3.7 | 3.1 |
| | 7 | 25.7 | 7.8 | 3.3 | 12.0 | 3.2 | 3.7 |
| | 10 | 28.2 | 7.5 | 3.7 | 12.3 | 3.0 | 4.1 |
| | 12 | 29.2 | 7.5 | 3.9 | 12.4 | 2.9 | 4.3 |
| | 15 | 29.6 | 7.5 | 3.9 | 12.5 | 2.8 | 4.4 |
| | 20 | 30.6 | 7.5 | 4.1 | 12.6 | 2.8 | 4.5 |
| 55 | −20 | 14.5 | 10.4 | 1.4 | 11.1 | 6.6 | 1.7 |
| | −18 | 15.4 | 10.4 | 1.5 | 11.2 | 6.6 | 1.7 |
| | −15 | 16.9 | 10.4 | 1.6 | 11.5 | 6.2 | 1.9 |
| | −10 | 19.3 | 9.2 | 2.1 | 11.6 | 5.4 | 2.2 |
| | −7 | 21.2 | 9.6 | 2.2 | 11.8 | 5.1 | 2.3 |
| | 2 | 23.0 | 9.5 | 2.4 | 11.9 | 4.2 | 2.9 |
| | 7 | 25.1 | 8.7 | 2.9 | 12.0 | 3.6 | 3.3 |
| | 10 | 27.6 | 8.1 | 3.4 | 12.8 | 3.4 | 3.7 |
| | 12 | 28.8 | 8.1 | 3.6 | 12.8 | 3.3 | 3.9 |
| | 15 | 29.1 | 8.1 | 3.6 | 13.0 | 3.2 | 4.0 |
| | 20 | 30.2 | 8.0 | 3.8 | 13.1 | 3.0 | 4.3 |

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

Further performance data – heating
see next page

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

## Performance data – heating

### Belaria® pro (25)

Data according to EN 14511

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 60 | −20 | 14.0 | 11.4 | 1.2 | 10.8 | 7.1 | 1.5 |
| | −18 | 14.8 | 11.4 | 1.3 | 10.9 | 7.1 | 1.5 |
| | −15 | 16.2 | 11.1 | 1.5 | 11.2 | 6.7 | 1.7 |
| | −10 | 18.8 | 10.4 | 1.8 | 11.5 | 6.0 | 1.9 |
| | −7 | 20.7 | 10.2 | 2.0 | 11.6 | 5.6 | 2.1 |
| | 2 | 22.6 | 10.2 | 2.2 | 11.3 | 4.8 | 2.3 |
| | 7 | 24.6 | 9.5 | 2.6 | 12.1 | 4.2 | 2.9 |
| | 10 | 27.0 | 8.7 | 3.1 | 12.4 | 3.8 | 3.2 |
| | 12 | 28.4 | 8.7 | 3.3 | 12.8 | 3.8 | 3.4 |
| | 15 | 28.6 | 8.7 | 3.3 | 12.8 | 3.7 | 3.5 |
| | 20 | 29.7 | 8.5 | 3.5 | 12.9 | 3.5 | 3.7 |
| 70 | −20 | - | - | - | - | - | - |
| | −18 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | 15.7 | 10.5 | 1.5 | 10.9 | 7.1 | 1.5 |
| | −7 | 18.0 | 10.4 | 1.7 | 10.9 | 6.5 | 1.7 |
| | 2 | 21.3 | 10.5 | 2.0 | 11.6 | 5.7 | 2.0 |
| | 7 | 24.5 | 10.6 | 2.3 | 12.1 | 5.2 | 2.3 |
| | 10 | 26.6 | 10.6 | 2.5 | 12.4 | 5.0 | 2.5 |
| | 12 | 28.0 | 10.6 | 2.6 | 12.8 | 4.9 | 2.6 |
| | 15 | 28.4 | 10.6 | 2.7 | 12.4 | 4.7 | 2.7 |
| | 20 | 29.0 | 10.4 | 2.8 | 12.6 | 4.5 | 2.8 |

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

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

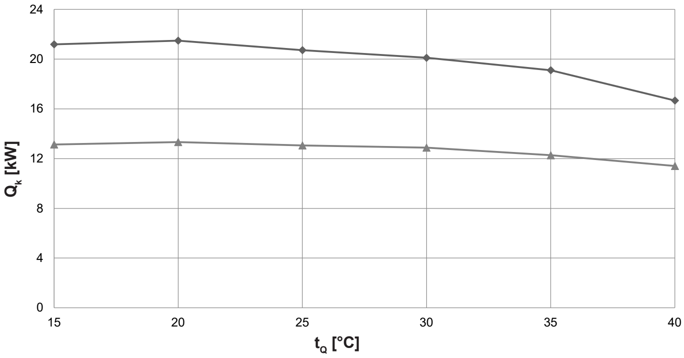
## Performance data – cooling

Maximum cooling capacity

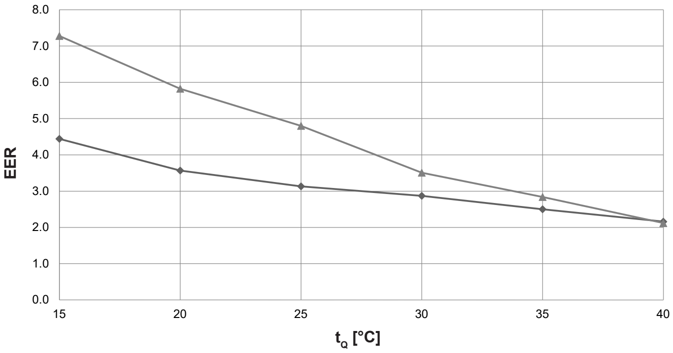
### Belaria® pro (20)

Data according to EN 14511

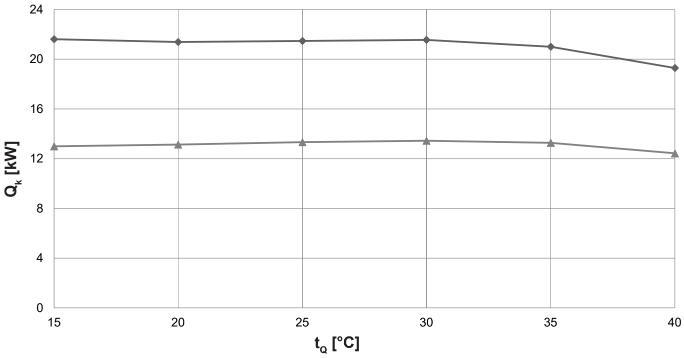
**Cooling capacity – $t_{VL}$ 7 °C**



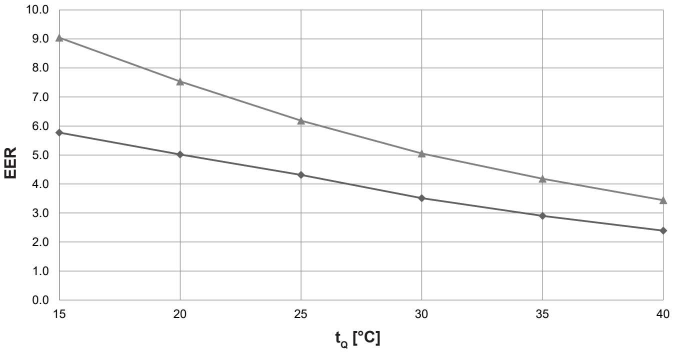
**Energy efficiency ratio – $t_{VL}$ 7 °C**



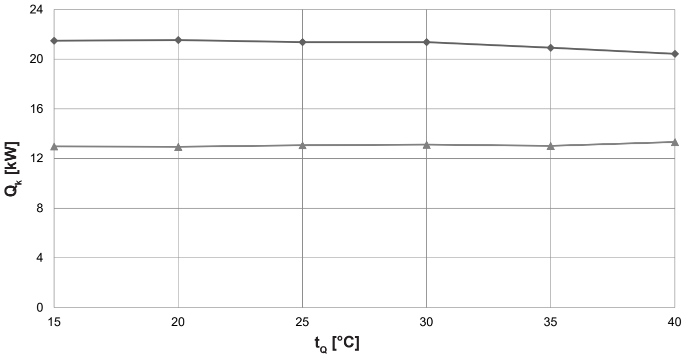
**Cooling capacity – $t_{VL}$ 12 °C**



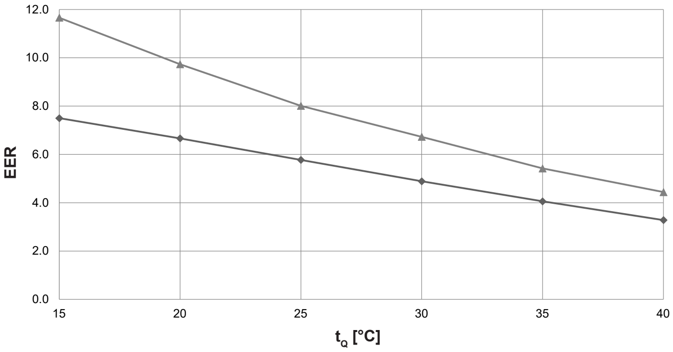
**Energy efficiency ratio – $t_{VL}$ 12 °C**



**Cooling capacity – $t_{VL}$ 18 °C**



**Energy efficiency ratio – $t_{VL}$ 18 °C**



◆ Maximum output

▲ Minimum output

## Belaria® pro (20)

Data according to EN 14511

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$<br>°C | $t_Q$<br>°C | $Q_k$<br>kW | P<br>kW | EER | $Q_k$<br>kW | P<br>kW | EER |
| 7 | 15 | 21.2 | 4.8 | 4.4 | 13.1 | 1.8 | 7.3 |
| | 20 | 21.5 | 6.0 | 3.6 | 13.3 | 2.3 | 5.8 |
| | 25 | 20.7 | 6.6 | 3.1 | 13.1 | 2.7 | 4.8 |
| | 30 | 20.1 | 7.0 | 2.9 | 12.9 | 3.7 | 3.5 |
| | 35 | 19.1 | 7.6 | 2.5 | 12.3 | 4.3 | 2.8 |
| | 40 | 16.7 | 7.7 | 2.2 | 11.4 | 5.4 | 2.1 |
| 12 | 15 | 21.6 | 3.8 | 5.8 | 13.0 | 1.4 | 9.0 |
| | 20 | 21.4 | 4.3 | 5.0 | 13.1 | 1.7 | 7.5 |
| | 25 | 21.5 | 5.0 | 4.3 | 13.3 | 2.2 | 6.2 |
| | 30 | 21.6 | 6.1 | 3.5 | 13.4 | 2.7 | 5.1 |
| | 35 | 21.0 | 7.2 | 2.9 | 13.3 | 3.2 | 4.2 |
| | 40 | 19.3 | 8.1 | 2.4 | 12.4 | 3.6 | 3.4 |
| 18 | 15 | 21.5 | 2.9 | 7.5 | 13.0 | 1.1 | 11.7 |
| | 20 | 21.5 | 3.2 | 6.7 | 13.0 | 1.3 | 9.7 |
| | 25 | 21.4 | 3.7 | 5.8 | 13.1 | 1.6 | 8.0 |
| | 30 | 21.4 | 4.4 | 4.9 | 13.1 | 2.0 | 6.7 |
| | 35 | 20.9 | 5.2 | 4.1 | 13.0 | 2.4 | 5.4 |
| | 40 | 20.4 | 6.2 | 3.3 | 13.3 | 3.0 | 4.4 |

$t_{VL}$ = 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 for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

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

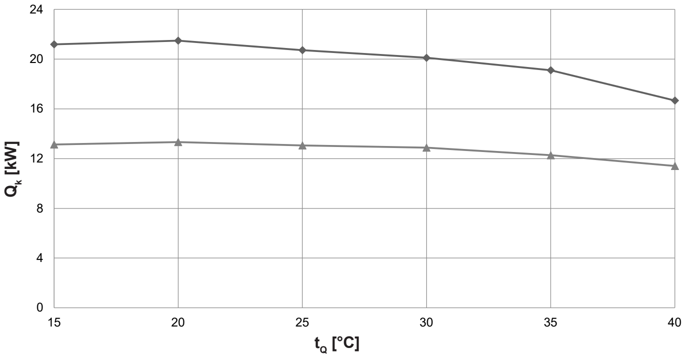
## Performance data – cooling

Maximum cooling capacity

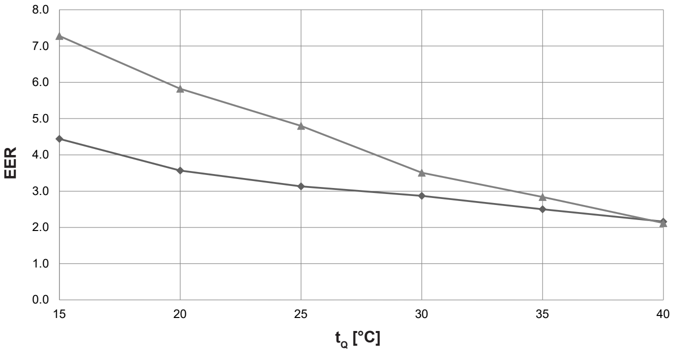
### Belaria® pro (25)

Data according to EN 14511

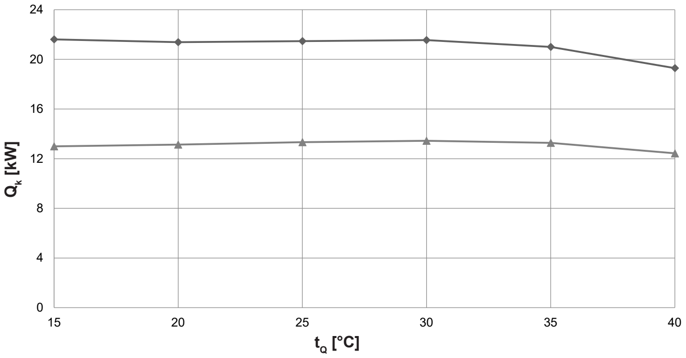
### Cooling capacity – $t_{VL}$ 7 °C



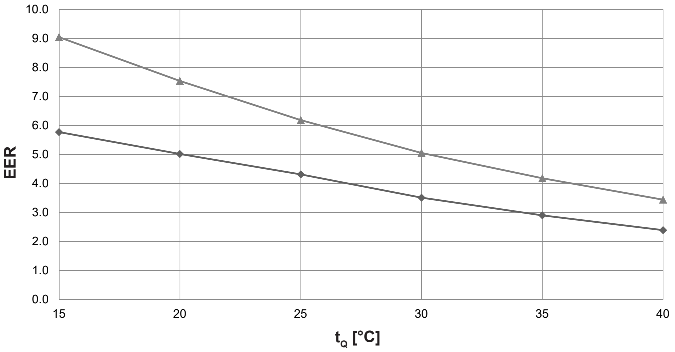
### Energy efficiency ratio – $t_{VL}$ 7 °C



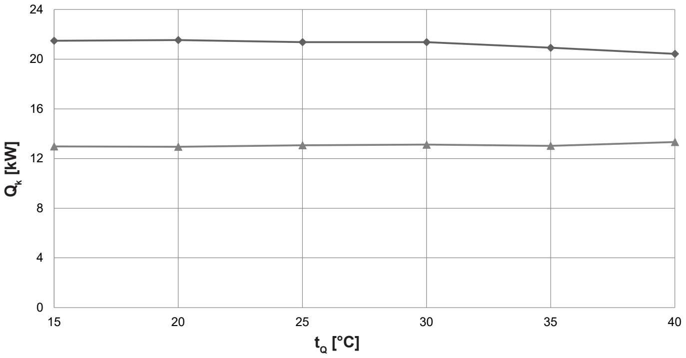
### Cooling capacity – $t_{VL}$ 12 °C



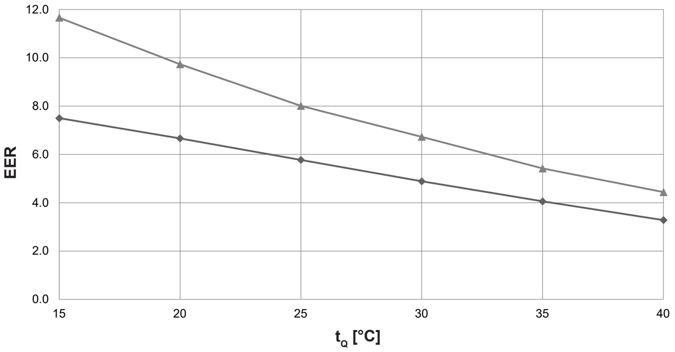
### Energy efficiency ratio – $t_{VL}$ 12 °C



### Cooling capacity – $t_{VL}$ 18 °C



### Energy efficiency ratio – $t_{VL}$ 18 °C



—◆— Maximum output

—▲— Minimum output

## Belaria® pro (25)

Data according to EN 14511

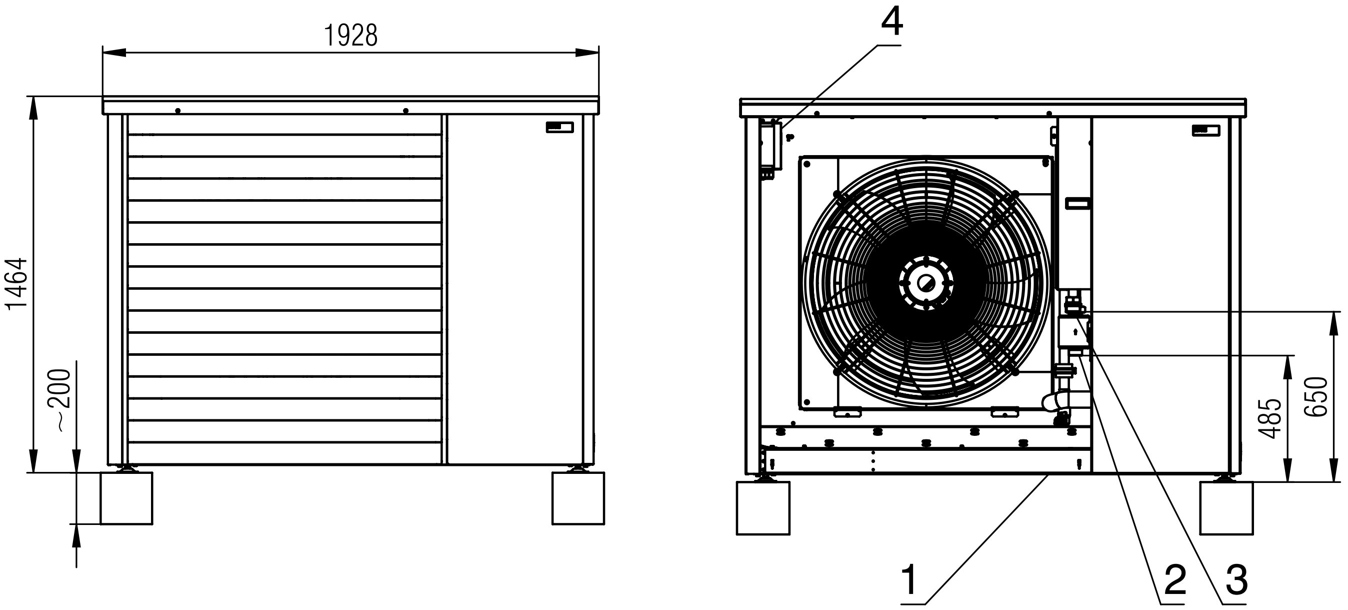
| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER |
| 7 | 15 | 21.2 | 4.8 | 4.4 | 13.1 | 1.8 | 7.3 |
| | 20 | 21.5 | 6.0 | 3.6 | 13.3 | 2.3 | 5.8 |
| | 25 | 20.7 | 6.6 | 3.1 | 13.1 | 2.7 | 4.8 |
| | 30 | 20.1 | 7.0 | 2.9 | 12.9 | 3.7 | 3.5 |
| | 35 | 19.1 | 7.6 | 2.5 | 12.3 | 4.3 | 2.8 |
| | 40 | 16.7 | 7.7 | 2.2 | 11.4 | 5.4 | 2.1 |
| 12 | 15 | 21.6 | 3.8 | 5.8 | 13.0 | 1.4 | 9.0 |
| | 20 | 21.4 | 4.3 | 5.0 | 13.1 | 1.7 | 7.5 |
| | 25 | 21.5 | 5.0 | 4.3 | 13.3 | 2.2 | 6.2 |
| | 30 | 21.6 | 6.1 | 3.5 | 13.4 | 2.7 | 5.1 |
| | 35 | 21.0 | 7.2 | 2.9 | 13.3 | 3.2 | 4.2 |
| | 40 | 19.3 | 8.1 | 2.4 | 12.4 | 3.6 | 3.4 |
| 18 | 15 | 21.5 | 2.9 | 7.5 | 13.0 | 1.1 | 11.7 |
| | 20 | 21.5 | 3.2 | 6.7 | 13.0 | 1.3 | 9.7 |
| | 25 | 21.4 | 3.7 | 5.8 | 13.1 | 1.6 | 8.0 |
| | 30 | 21.4 | 4.4 | 4.9 | 13.1 | 2.0 | 6.7 |
| | 35 | 20.9 | 5.2 | 4.1 | 13.0 | 2.4 | 5.4 |
| | 40 | 20.4 | 6.2 | 3.3 | 13.3 | 3.0 | 4.4 |

$t_{VL}$ = 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 for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

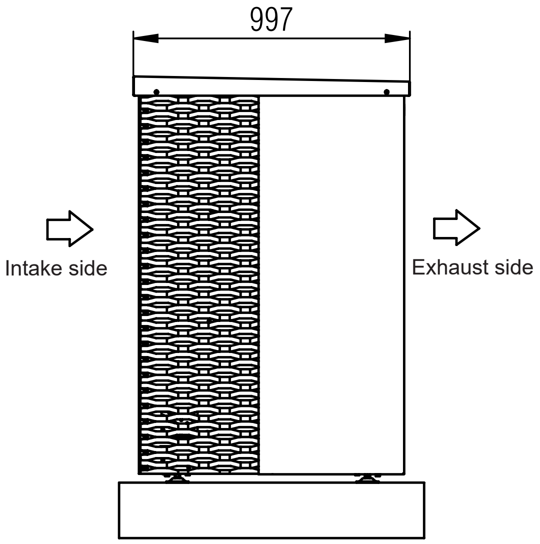
**Observe daily power interruptions!**
see “Engineering heat pumps general”

## Belaria® pro (20,25)
## Outdoor unit
(Dimensions in mm)

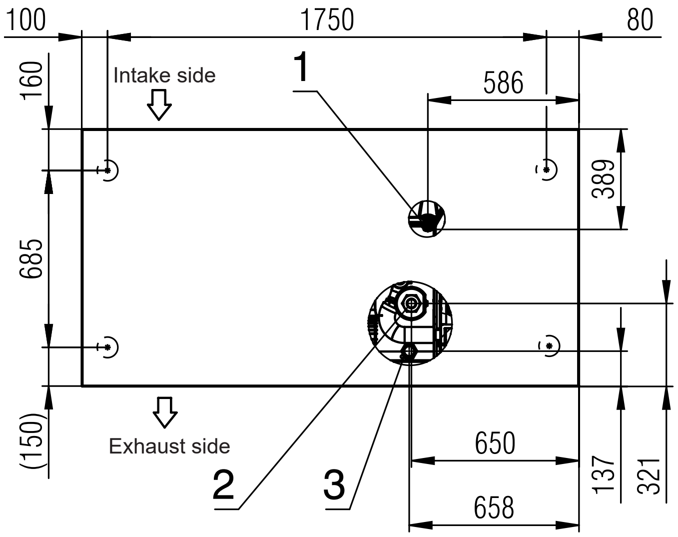
**Front view**



**View from the left**



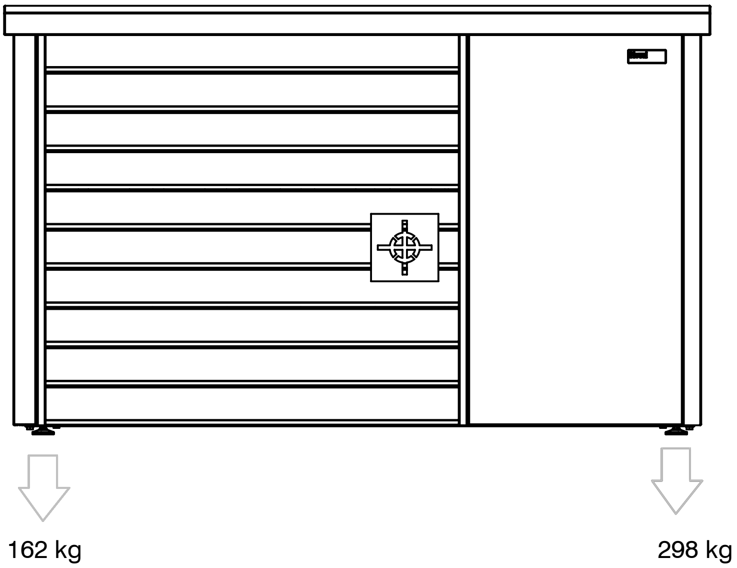
**View from top**

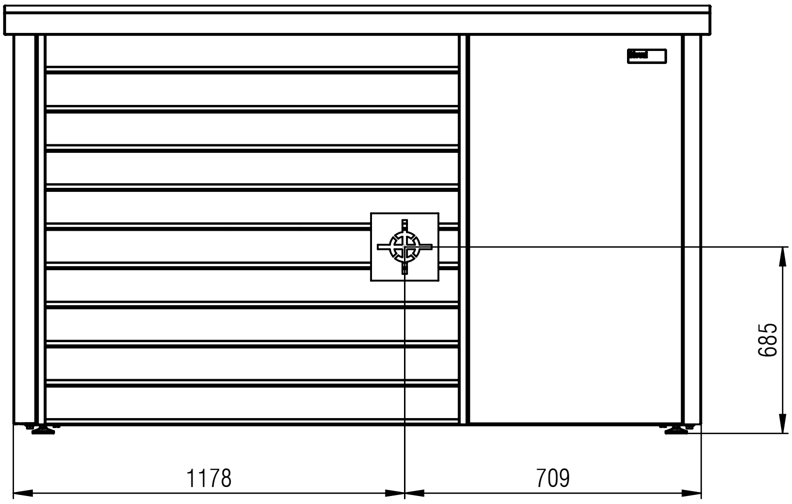


1 Condensate drain 1″
2 Connection hydraulic connection line return 1½″ ET
3 Connection hydraulic connection line flow 1½″ ET
4 Electrical connection

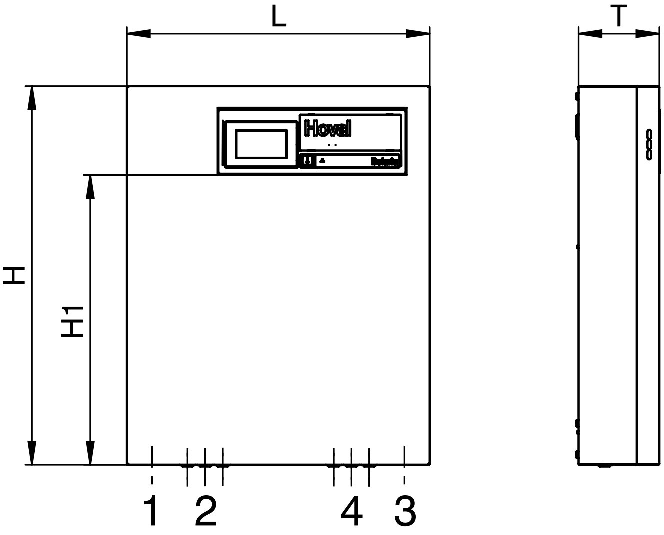
## Belaria® pro (20,25)
## Indoor unit
(Dimensions in mm)

**Centre of gravity**





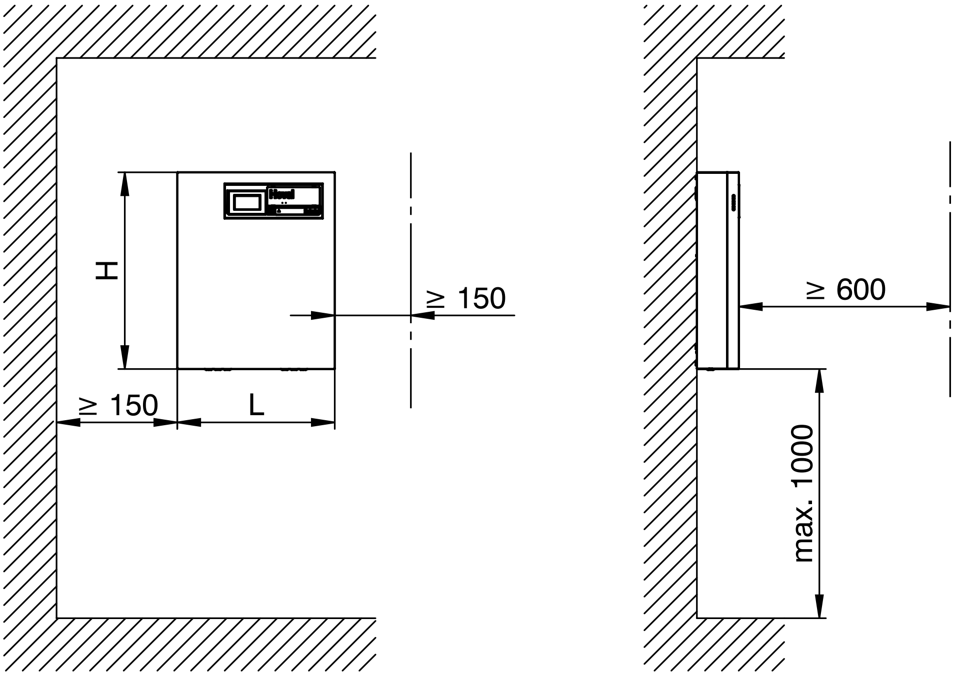
### Belaria® pro (20,25)
### Electrical box
(Dimensions in mm)



| Type | L | H | H1 | T |
|---|---|---|---|---|
| Belaria® pro (20,25) | 600 | 750 | 574 | 160 |

1 Cable feed-in control current, main current
2 Optional: Cable feed-in control current, main current
3 Cable feed-in sensors, RS485
4 Optional: Cable feed-in sensors, RS485

### Belaria® pro (20,25)
### Electrical box

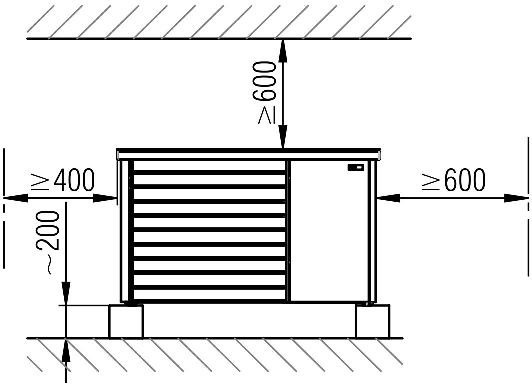


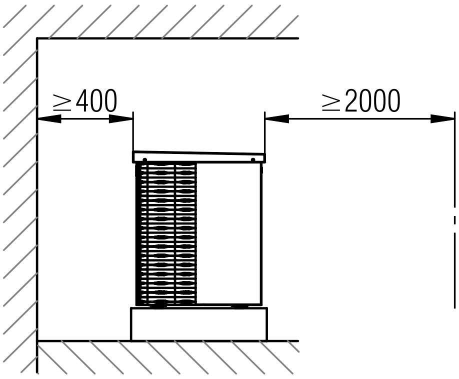
To ensure good operability and accessibility to the electrical connections, a clearance of max. 1000 mm must be provided from the ground to the lower edge of the indoor unit.

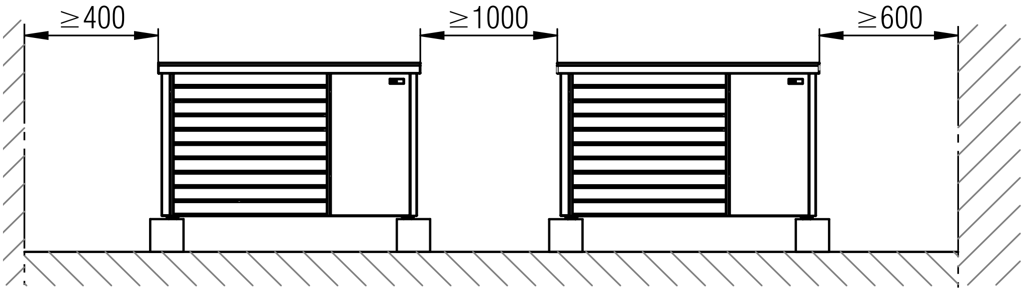
## Space requirement

(Dimensions in mm)

**Belaria® pro**
**Outdoor unit**





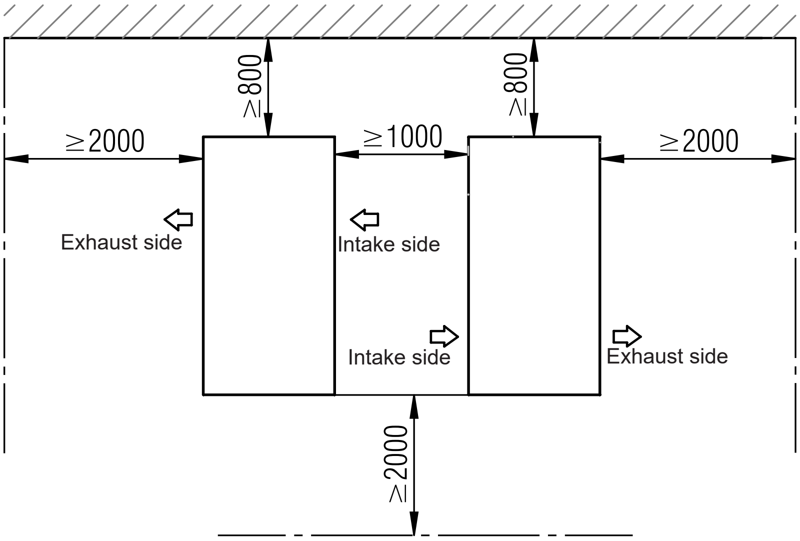


Any possible openings/recesses and ignition sources must be avoided within a radius of one meter around the outdoor unit.

In order to ensure accessibility during maintenance, a clearance of at least 600 mm upwards must be maintained.
For any service work, the minimum clearances at the rear and sides of the heat pump must be observed.

**Belaria® pro**
**Outdoor unit**

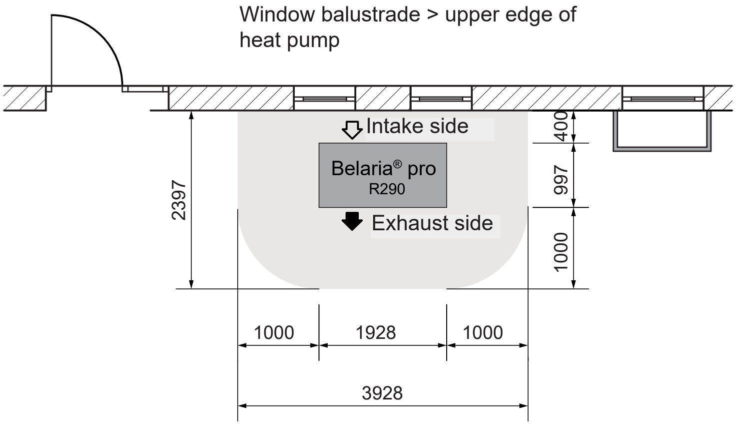
**View from above**

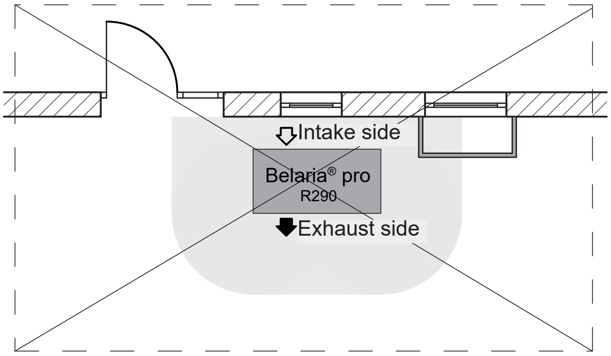


## Presentation of protection areas

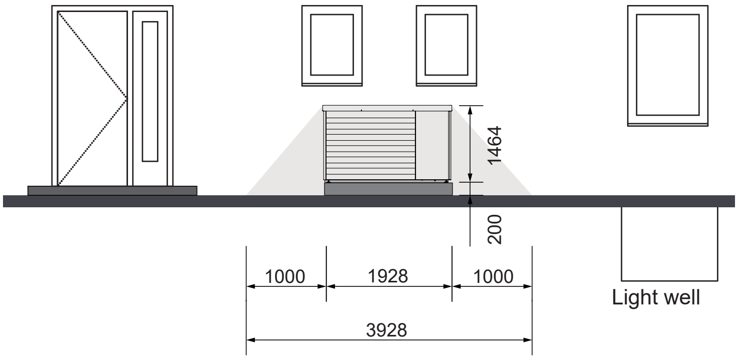
Belaria® pro with refrigerant R290
(Dimensions in mm)

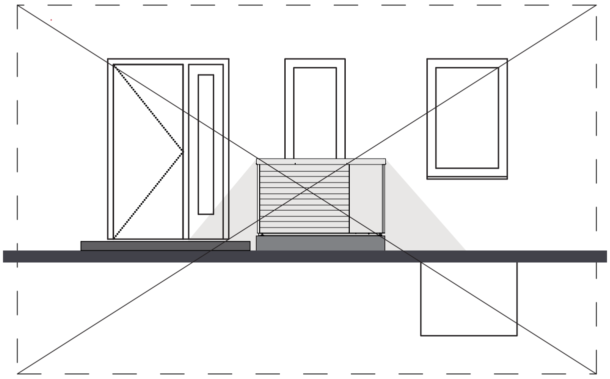
### Floor plan – protection area when installed in front of a wall





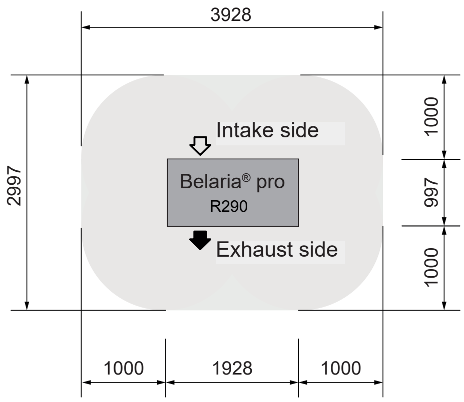
### View – protection area when installed in front of a wall

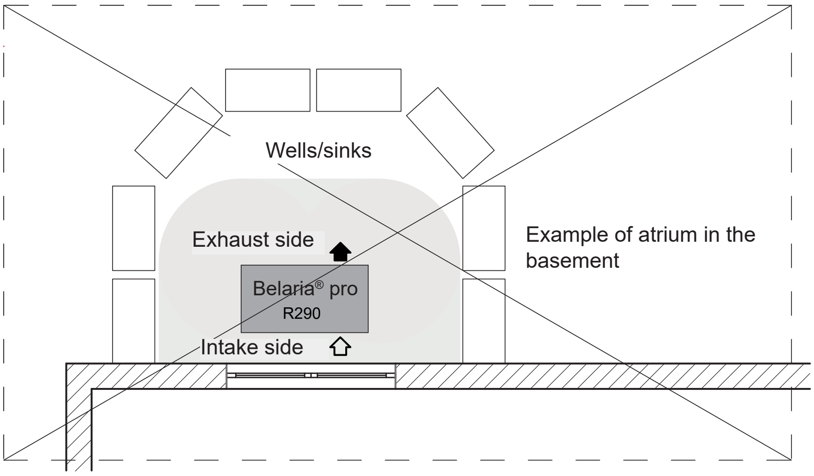




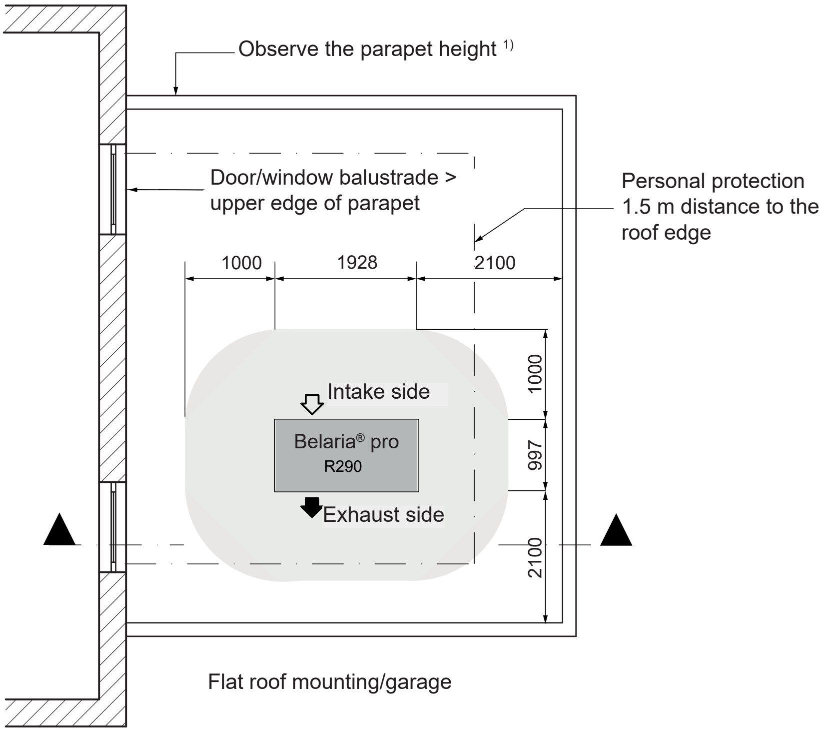
- The heat pump (outdoor unit) is only allowed to be placed outdoors and under no circumstances indoors.
- The outdoor unit is filled with the non-toxic, odourless and colourless but flammable refrigerant R290 (propane), which is heavier than air. If this escapes, there is a danger of fire/explosion. Therefore, all potential sources of ignition must be kept at least 1 m away in all directions. Smoking and the use of naked flames is prohibited in this area.
- Window balustrades must be higher than the upper edge of the outdoor unit in the protection area!
- The heat pump must be at least 1 m from the property boundary; observe building regulations!
- At the entrances to properties, it must be ensured that no vehicle can enter the protection area.
- To prevent the heat pump from being touched by vehicles, a collision guard must be installed if necessary. This must be located outside the protected area.

### Floor plan – protection area when installed outdoors



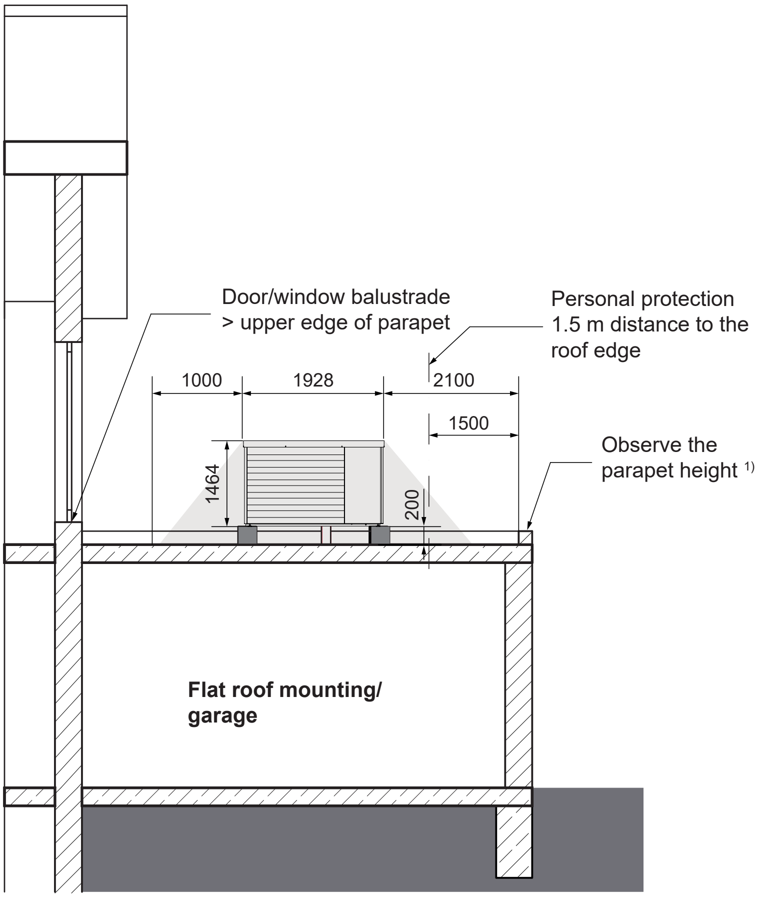


### Floor plan flat roof – protection area



[1] In case of flat roof installation, the parapet must not represent a potential sink in which refrigerant could accumulate.

### Section flat roof – protection area

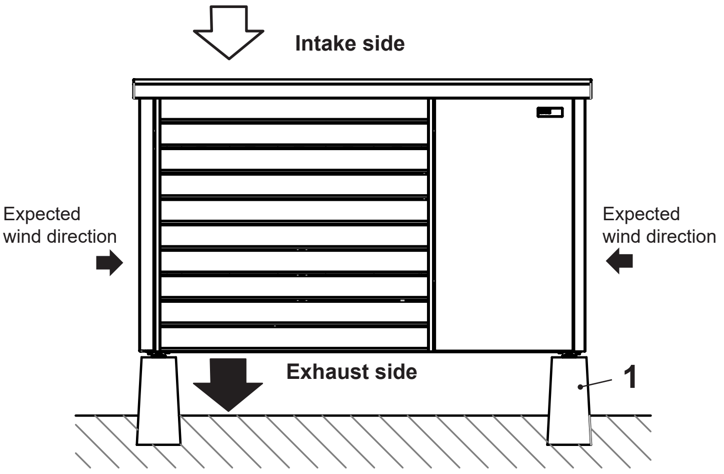


- Strict compliance with safety measures regarding combustible refrigerants.
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. strip foundation). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.6 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.
- There must be no floor-to-ceiling doors/ windows to the flat roof, or balustrade must be higher than the parapet.
- Protection areas around windows must be complied with.
- There must not be any pipe vents, skylights or the like on the flat roof within a radius of 1 m from the heat pump.
- If there is a risk of frost, a siphon must be installed in the shaft immediately before the condensate drain is introduced into the downpipe.
- Condensate drain into the sewage system via a frost-proof siphon or allow it to seep away freely.

## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

**Firm base on site with strip foundation**



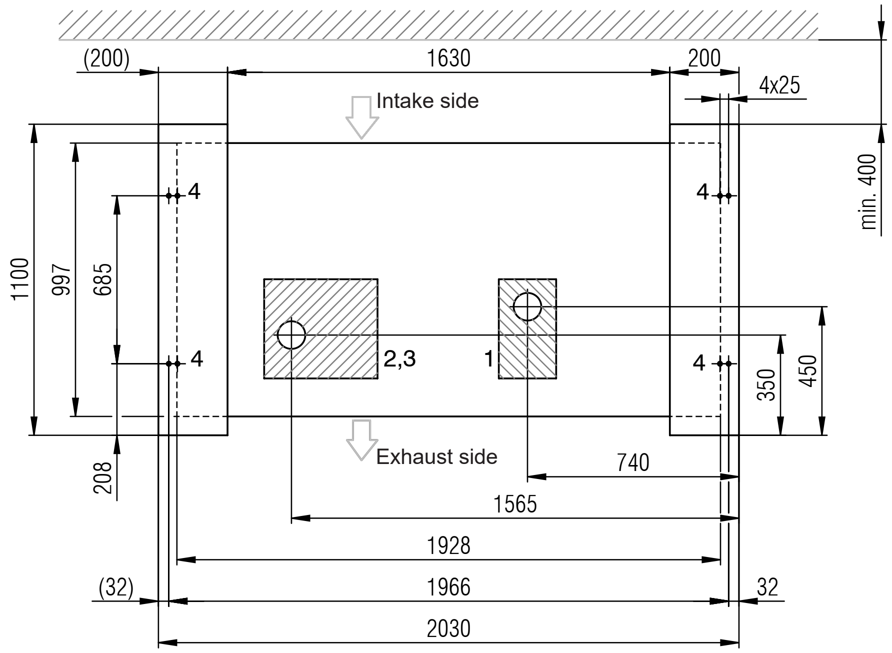
1 Strip foundation on site

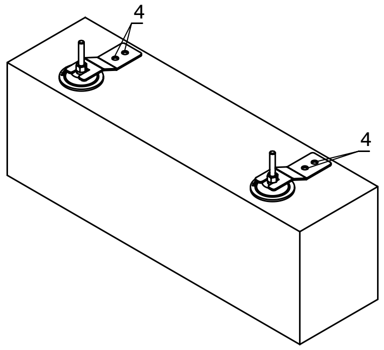
The base must not form a sink. A circumferential base is therefore not permitted.

## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

**Strip foundation**
Plan
(view from above)





Attachment of the outdoor unit from the outside (laterally) using the supplied clamps. The clamps are visible.
It is not necessary to remove the cladding sections.

▨ Possible area for empty tubes in the strip foundation

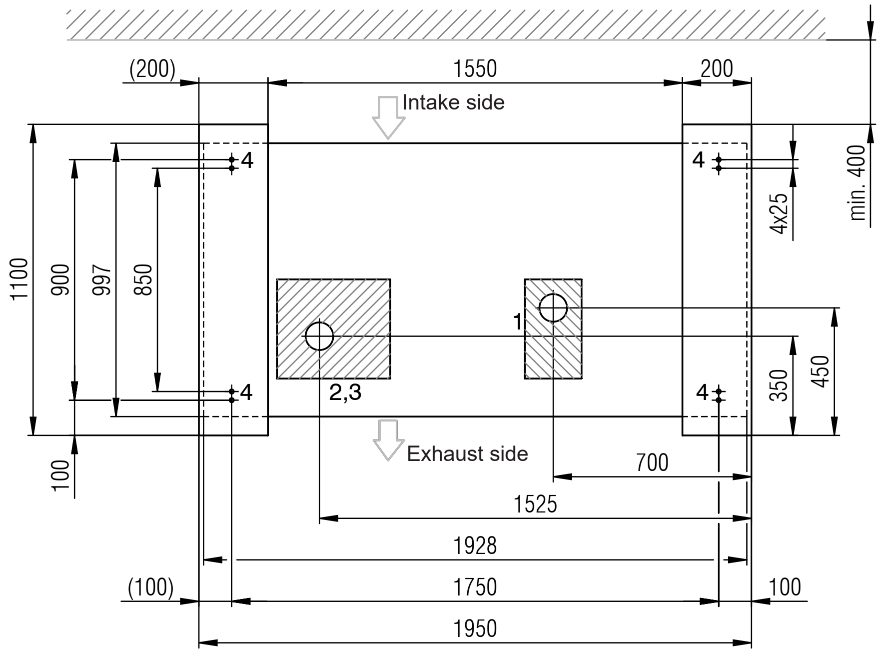
▧ Possible area for condensate drain in the strip foundation

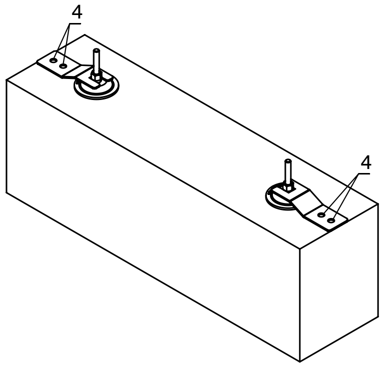
1 Condensate drain area
2 Area Flow hydraulics
Return hydraulics
3 Electrics area
4 Attachment points M8 Belaria® pro (dowels in scope of delivery)

## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

**Strip foundation**
Plan
(view from above)





Attachment of the outdoor unit from the “inside/bottom” (grey area) of the heat pump using the supplied clamps.
The clamps are not visible.
It is necessary to remove the cladding sections.

▨ Possible area for empty tubes in the strip foundation

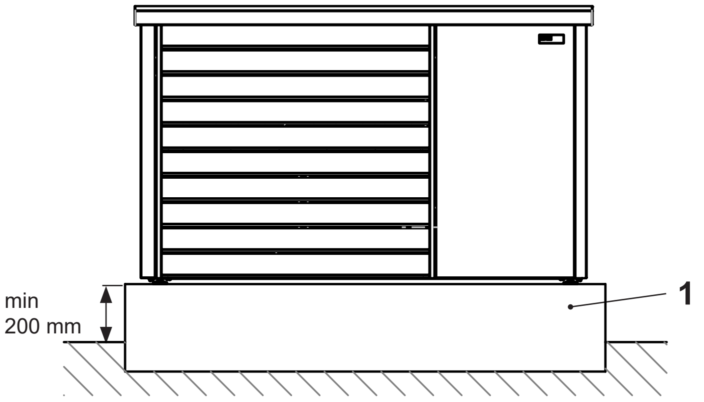
▧ Possible area for condensate drain in the strip foundation

| | | |
|---|---|---|
| 1 | Condensate drain area | |
| 2 | Area | Flow hydraulics<br>Return hydraulics |
| 3 | Electrics area | |
| 4 | Attachment points M8 Belaria® pro (dowels in scope of delivery) | |

## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

### Firm base on site with floor plate

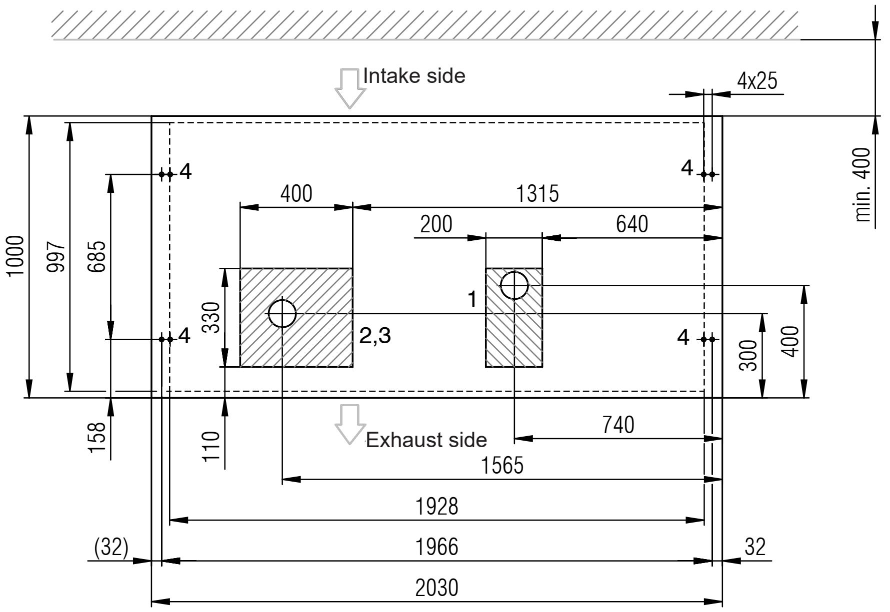


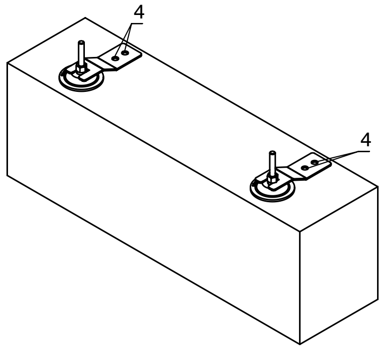
1 Floor plate on site

The base must not form a sink. A circumferential base is therefore not permitted.

### Floor plate

Plan
(view from above)





Attachment of the outdoor unit from the outside (laterally) using the supplied clamps.
The clamps are visible.
It is not necessary to remove the cladding sections.

▨ Possible area for empty tubes in the floor plate

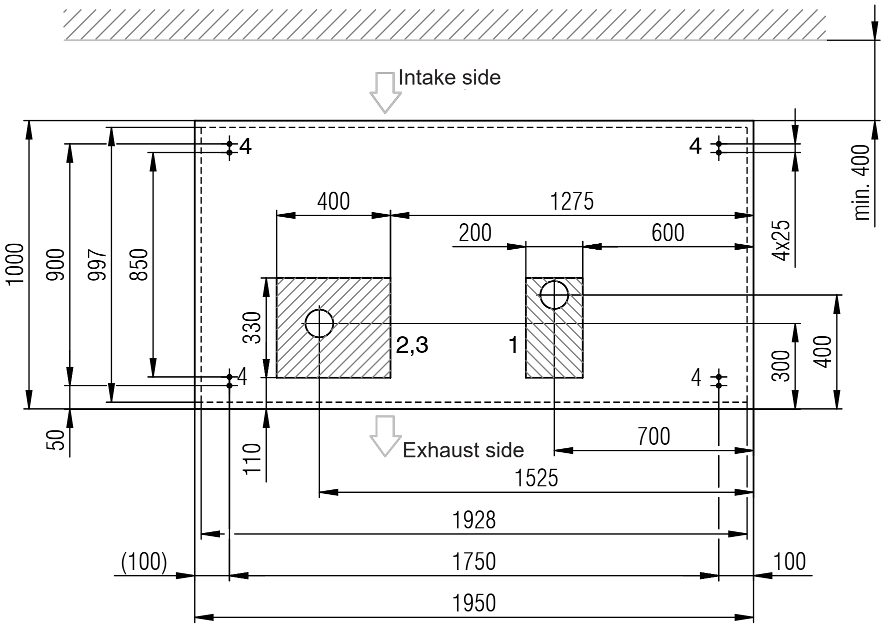
▧ Possible area for condensate drain in the floor plate

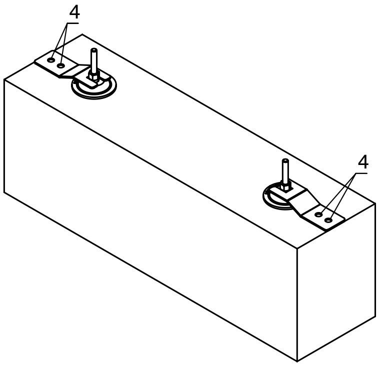
1 Condensate drain area
2 Area Flow hydraulics
Return hydraulics
3 Electrics area
4 Attachment points M8 Belaria® pro (dowels in scope of delivery)

## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

**Floor plate**
Plan
(view from above)





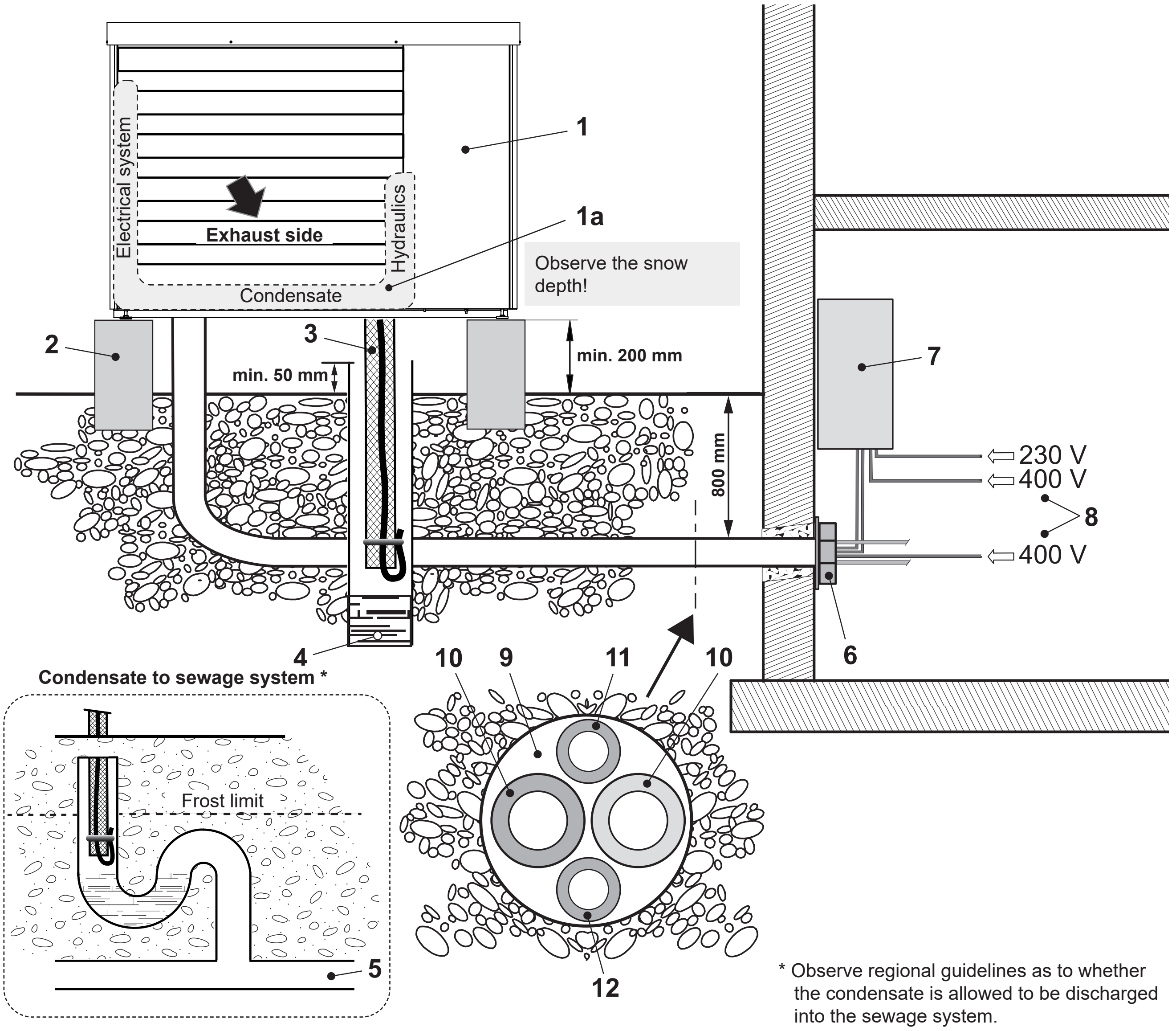
Attachment of the outdoor unit from the “inside/bottom” (grey area) of the heat pump using the supplied clamps.
The clamps are not visible.
It is necessary to remove the cladding sections.

▨ Possible area for empty tubes in the floor plate

▧ Possible area for condensate drain in the floor plate

1 Condensate drain area
2 Area Flow hydraulics
Return hydraulics
3 Electrics area
4 Attachment points M8 Belaria® pro (dowels in scope of delivery)

## Configuration and connection diagram Belaria® pro (20,25)



* Observe regional guidelines as to whether the condensate is allowed to be discharged into the sewage system.

1 Outdoor unit
1 a Space for connection of hydraulics (flow + return), condensate drain and electrics.
2 Strip foundation
3 Condensate drain heat pump Ø 28 mm, drain pipe DN 100
4 Variant 1: Seepage (duct/gravel layer)
5 Variant 2: Discharging into the sewage system (penetration into the soil must be made leak-tight)
6 Wall lead-through (hydraulic and electrical connections)
7 Electrical box
8 Main current:
3 x 400 V/50 Hz
Control current:
1 x 230 V/50 Hz
Electric heating element main current:
3 x 400 V/50 Hz
Network cables (optional)
9 Empty tube for hydraulics and electrics
10 Connection line flow + return
11 Empty tube for electrical connections for outdoor unit
Main current outdoor unit: 3 x 400 V/50 Hz
Control current outdoor unit: 1 x 230 V/50 Hz
12 Empty tube for data bus RS485

**Requirements and directives**
The general requirements and directives listed in the chapter Engineering apply.

**Set-up**
- The distance between the outdoor unit and the buffer storage tank must be as short as possible. Only short and simple routing of lines guarantees cost effectiveness and low heat losses.
- The maximum permitted single cable length is 30 m between the outdoor unit and the buffer storage tank. This must not be exceeded. In general, the customer must assess whether the next larger pipe dimension is more suitable due to the pressure drop.
- There must be no building openings (windows, doors, shafts, ventilation openings, etc.) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Wall ducts into the building must be airtight.
- The outdoor unit must not be placed in or near floor recesses.
- The outdoor unit must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air exhaust sides must not be narrowed or blocked. The air exhaust side must be unobstructed (> 2 m).
- When using glycol (antifreeze) – primary and/or secondary – a separating system must be used.
- Filling the entire system with glycol or a frost protection agent/water mixture is considered improper use and is not permitted. If this is nevertheless desired for frost protection reasons, the system must be designed with a system separation. Only environmental compatible frost protection agent is allowed to be used.

## Outdoor unit

**Important safety instruction**
The heat pump (outdoor unit) is only allowed to be placed outdoors and under no circumstances indoors.
The outdoor unit is filled with the non-toxic, odourless and colourless but flammable refrigerant R290 (propane), which is heavier than air. If this occurs, there is a danger of fire/explosion. Therefore, all potential sources of ignition must be kept at least 1 m away in all directions. Smoking and the use of naked flames is prohibited in this area.

The outdoor unit is installed outdoors. The installation location must be selected carefully. It is essential that the following ancillary conditions are met:
- The maximum line length must not be exceeded.
- The connection lines must be laid insulated and frost-proof.
- 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.
- 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 unit is installed at wind-prone locations, the alignment of the heat pump must be selected in such a way that the expected wind direction is crossways to the intake direction of the outdoor unit.
- If an alternative installation in areas subject to strong winds cannot be avoided, an additional wind shield in the form of a hedge, for example, should be installed, or additional fastening should be provided for the outdoor unit.
- At exposed installation locations prone to wind load, e.g. on building roofs, the surface load on the upper horizontal cover surface of the heat pump caused by wind suction must not exceed a value of 2000 N/m². The heat pump casing might be damaged if this value is not complied with.
- The permitted surface load must be determined in accordance with the specifications of standard EN 1991-1-1. Compliance must be checked by a qualified specialist. A professional inspection of the actual conditions on site is mandatory and must be carried out by a qualified specialist.
- When planning and installing the heat pump in locations exposed to wind load, please contact your sales consultant in good time.
- Notice on installing the cover: If the cover of the heat pump has been removed, it must be properly reinstalled after the work has been completed. Make sure that the cover is fully connected to the heat pump using all the screw holes provided, to ensure stability and tightness.
- If the installation location is not protected against snowfall, it must be chosen in such a way that the evaporator remains free of snow.
- The outdoor unit must always be installed on a solid surface in a horizontal position. This can be achieved by means of a strip foundation or a floor plate.
- The load-bearing capability must be adequate. The unit must be fixed with 4 M12 screws.
- Air heat pumps generate condensate during operation. This can amount to 15 litres per defrost cycle within 2 minutes for the outdoor unit of the Belaria® pro.
- The condensate drain must be frost-proof so that the condensate can flow away without problems even at outdoor temperatures below 0 °C.
- If the discharge is into the sewage system, a siphon must be provided and the duct lead-through into the ground must be sealed so that no refrigerant can enter the sewage system uncontrolled.
- If there is a risk of frost, a siphon must be installed in the shaft immediately before the condensate drain is introduced into the downpipe.
- The condensate drip tray included in the outdoor unit is already equipped with tray heating at the factory that thus prevents freezing.
- The condensate drain line is also secured with the preassembled heating tape.
- The air exhaust has increased susceptibility to frost. Gutters, water pipes and water containers must not be situated right next to the exhaust.
- 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.
- The hydraulic lines from the heat pump can transmit structure-borne noise. Therefore, structure-borne noise decoupling should be provided, e.g. with sound-insulating hoses.

A strainer is located in the outdoor unit. At least one sludge and magnetite separator must be installed in the heating return.

**Flat roof installation**
Flat roof installation of the Belaria® pro is possible under the following conditions:
- Strict compliance with safety measures regarding flammable refrigerants (see below).
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. strip foundation). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.6 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.
- At exposed installation locations prone to wind load, e.g. on building roofs, the surface load on the upper horizontal cover surface of the heat pump caused by wind suction must not exceed a value of 2000 N/m². The heat pump casing might be damaged if this value is not complied with.

- The permitted surface load must be determined in accordance with the specifications of standard EN 1991-1-1. Compliance must be checked by a qualified specialist. A professional inspection of the actual conditions on site is mandatory and must be carried out by a qualified specialist.
- When planning and installing the heat pump in locations exposed to wind load, please contact your sales consultant in good time.
- Notice on installing the cover: If the cover of the heat pump has been removed, it must be properly reinstalled after the work has been completed. Make sure that the cover is fully connected to the heat pump using all the screw holes provided, to ensure stability and tightness..
- The heat pump contains electrically operated components and must be integrated in the structural lightning and surge protection for roof structures.

Safety measures to be complied with

- There must be no building openings (windows, doors, shafts, ventilation openings, etc.) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Wall ducts into the building must be airtight.
- The outdoor unit must not be placed in or near floor recesses.
- The outdoor unit must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air exhaust sides must not be narrowed or blocked. The air exhaust side must be unobstructed (> 2 m).
- The condensate is allowed to be directed into a shaft. A siphon must be installed upstream of the connection to the downpipe. The siphon must be located inside the building.

**Electrical box**

- The installation location must be selected in accordance with the valid requirements and directives.
- The electrical box must be installed in a room protected against frost, by an approved specialist company. Room temperature must be between 5 °C and 25 °C.
- Installation in wet rooms, dusty rooms or rooms with a potentially explosive atmosphere is not permitted.
- The electrical connections can be introduced from the bottom with the electrical box of the Belaria® pro.
- To ensure accessibility to the electrical box, the distances must be maintained on all sides (see Dimensions/Space requirement).

**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 connection lines specified in the technical data must be checked by the electrical company carrying out the work depending on the line length, the routing type and the type of line.
- A fault-current circuit breaker is recommended. Country-specific requirements must be complied with. If the “fault-current circuit breaker” safeguard measure is implemented by the electrical company, a separate fault-current circuit breaker is recommended for the heat pump.
- This fault-current circuit breaker must be of the all-current-sensitive type B (IΔN ≥ 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 connection and feeder lines must be copper cables.
- Please refer to the wiring diagrams for electrical details.
- 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.

**Routing of the hydraulic connection lines**

- If the hydraulic connection 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.
- Wall ducts must be sealed to the outside on site.
- After the hydraulic connection lines have been laid, they must be checked for damage and reinsulated. In case of cooling, condensate can form on the pipes.
- The hydraulic connection lines must be laid decoupled from the building and must never be laid flush-mounted.
- Care must be taken to ensure that water pipes do not pass through the sleeping or living areas.
- Shut-off valves must be installed on site in accordance with the corresponding hydraulic diagram. The shut-off valves are not allowed to be opened until immediately before commissioning.
- The danger of frost damage must be taken into account if there are prolonged power outages.
- 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.

**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.
- If panel heating is used for room cooling, various criteria such as temperatures below the dewpoint or the temperature profiles 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.

**Further guidelines**
see “Engineering”

**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 data 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 must 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.
- A strainer is located in the outdoor unit. At least one sludge and magnetite separator must be installed in the heating return.
- 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 and given pressure drops.
- Ventilation possibilities must be provided at the highest points and drainage possibilities at the lowest points of the connection lines.
- To prevent energy losses, the connection lines must be insulated with suitable material in accordance with local regulations.

**Transport and storage**

- When removing the packaging, check the outdoor unit for damage. If the outdoor unit was damaged during transport or storage, contact Hoval customer service, a service partner or a licensed specialist immediately. They must carry out a leak test with a suitable leak detector. In the event of a leak, the outdoor unit must be repaired.
- Store the outdoor unit in a cool place without fire hazard and without direct exposure to heat sources. The ambient temperature must not exceed 43 °C.
- The same regulations apply for storage as for installation (no recesses, ventilation pipes, ignition sources in the storage area).
- The outdoor unit must not be stored in closed rooms, cellars or garages.
- The outdoor unit is only allowed to be stored outdoors.
- During transport, ensure sufficient ventilation in the closed vehicle, also when parking and stopping.
- Storage in passageways, escape routes or in front of entrances or exits is not permitted.
- Ignition sources such as naked flames, switched-on gas appliances, electric heaters, etc. must be kept away from the unit.
- Transport and storage only in upright position. Protect from mechanical damage and from falling over or falling down (make sure the load is secure).
- To prevent damage during transport, the outdoor unit should be moved to its final installation location as far as possible in packed state on the wooden pallet with a forklift or lift truck.
- Transport by crane: The outdoor unit can be lifted by a crane and transported to the installation site. For this purpose, there are three crane hooks below the cover with openings for the passage of the transport straps.

**Prerequisites for commissioning**

- Commissioning at cold outdoor temperatures is only possible if the system is preheated on site (e.g. with an electric bake-out device). During commissioning, the room temperature of the heated rooms must be at least 15 °C (compressor operation is not possible below this temperature, as there would be too little energy for defrosting). If a buffer storage tank is provided, its heating water temperature is not allowed to be less than 20 °C during commissioning.
- A heat pump should not be used for drying out of the building (screed heating), as this can significantly reduce the service life of the device. Alternatively, heating via a mobile heating station or E-set is a sensible option. This is particularly true for air/water heat pumps, since the heating output here is strongly dependent on the outdoor temperature and drying out of the building is not possible at temperatures below the frost line in the building carcass.

## Hoval quality.
You can count on us.

Hoval

Hoval is one of the leading international companies for heating and indoor climate solutions. Drawing on more than 80 years of experience and benefiting from a close-knit team culture, the Hoval Group delivers exciting solutions and develops technically superior products. This leadership role requires a sense of responsibility for energy and the environment, which is expressed in an intelligent combination of different heating technologies and customised indoor climate solutions.

Hoval also provides personal consultations and comprehensive customer service. With around 2500 employees in 15 companies around the world, Hoval sees itself not as a conglomerate, but as a large family that thinks and acts globally.
Hoval heating and indoor climate solutions are currently exported to more than 50 countries.

## Responsibility for energy and environment

**Liechtenstein**
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Hoval

CATALOGUE

# Hoval Belaria® pro

Air/water heat pump
Belaria® pro (40,50)

**Hoval** | Responsibility for energy and environment

## Table of contents

## Hoval Belaria® pro

**Modulating monoblock heat pump for heating and cooling.**

Monoblock heat pump set up outdoors consisting of outdoor unit and electrical box.

*Belaria® pro outdoor unit*
- Compact floor-mounted air/water heat pump
- Elegant, extremely quiet and efficient outdoor unit
- Casing with sheet metal cladding, powder-coated, colour anthracite (DB703)
- Two completely separated cooling units with the refrigerant R290
- Integrated components:
  - 2 speed-controlled scroll compressors
  - 2 straight fin evaporators
  - 2 speed-controlled axial fans
  - 2 plate condensers made of stainless steel/copper
  - 2 built-in gas separators with safety valve 2.5 bar
  - 2 speed-controlled high-efficiency pumps
  - 2 flow rate sensors/heat meters
  - 2 condensate drip trays including tray heating and condensate heating tape for channelling all the condensate in the outdoor unit, fixed installation, 1″ connection
  - integrated vibration-damping feet for effective structure-borne noise decoupling
- With cooling function with corresponding hydraulics
- Hydraulic connections behind louvre grille
  - Heating connections 2″
  - Filter ball valve installed in the heat pump return
- Electrical connections behind louvre grille
  - 400 V main power supply
  - 230 V control current, supplied from the electrical box
  - Data cable for bus connection to the electrical box
- With support rail for fixing the outdoor unit on the ground

**Model range**

| Belaria® pro type | | | Heat output 1) | | Cooling capacity 1) |
|---|---|---|---|---|---|
| | 35 °C | 55 °C | A-7W35 kW | A2W35 kW | A35W18 kW |
| (40) | A$^{+++}$ | A$^{+++}$ | 11.9-35.4 | 11.8-38.4 | 13.0-41.8 |
| (50) | A$^{+++}$ | A$^{+++}$ | 11.9-44.2 | 11.8-48.0 | 13.0-41.8 |
| | A$^{+++}$ → D | A$^{+++}$ → D | | | |

Energy efficiency class of the compound system with control.
1) Modulation range

*Belaria® pro electrical box*
- Compact wall-mounted electrical box
- Casing with sheet metal cladding, powder-coated, flame red (RAL 3000)
- TopTronic® E control installed with TopTronic® E control module
- With 2 WFA-200S automatic heat pump devices
- Integrated control functions for
  - 2 heating/cooling circuits with mixer
  - 2 heating/cooling circuits without mixer
  - 1 hot water charging circuit
  - bivalent and cascade management
- With control set (switching contactor) for activating an external electricheating element
- Electrical connections introduced from bottom
- With fitting accessories for fixing the electrical box to the wall (without screws)
- Maximum cascading: 4 Belaria® pro (40,50), since 2 TTE-WEZ are installed per unit

*TopTronic® E controller*

*Control panel*
- 4.3-inch colour touchscreen
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp
- Mains isolator

*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)

*TopTronic® E basic module heat generator TTE-WEZ*
- Integrated control functions for
  - 1 heating/cooling circuit with mixer
  - 1 heating/cooling circuit without mixer
  - 1 hot water charging circuit
  - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

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

*Number of additional modules that can be installed in the heat generator:*

- 1 module expansion and 1 controller module
  **or**
- 2 controller modules

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

**For further information about the TopTronic® E,** see "Controls"

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

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

*Delivery*

- Outdoor unit and electrical box delivered packaged separately
- Sensor kit included loose in the electrical box:
  - outdoor sensor (AF)
  - calorifier sensor (SF1/SF1.1 and SF2/SF2.1)
  - flow sensor (VF1)
  - plant flow sensor heating (AVF H)
  - plant flow sensor calorifier (AVF W)

*On site*

- Wall ducts for hydraulic connection lines
- Hydraulic connection lines from the outdoor unit to the inside of the building
- Electrical connection line from the outdoor unit to the electrical box
- Strip foundation, floor plate

**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems
With Hoval Integrate, Hoval heat pumps with TopTronic® E control can be integrated into home automation and energy management systems via open, standardised interfaces.
Predefined templates, plugins and Smart Grid integrations simplify implementation and enable intelligent decisions.
Functions such as PV surplus utilisation, dynamic electricity tariffs, grid-friendly control, load management or simple visualisations for analysis purposes can be created and operated individually.
System integrators are free to choose their desired system and benefit from broad compatibility and future-proof sector coupling.
Thanks to integrated building automation, end customers benefit from operating cost savings and cross-system functions.
Practical guide videos provide additional support for integration and commissioning – step by step and with a practical orientation.

**Notice**
Only available in Austria, Germany and Switzerland

## Air/water heat pump

### Hoval Belaria® pro (40,50)

| Belaria® pro type | Heat output [1] A-7W35 kW | Heat output [1] A2W35 kW | Cooling capacity [1] A35W18 kW | Part No. |
|---|---|---|---|---|
| (40) | 11.9-35.4 | 11.8-38.4 | 13.0-41.8 | 7019 608 |
| (50) | 11.9-44.2 | 11.8-48.0 | 13.0-41.8 | 7019 609 |

[1] Modulation range

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

**Further information**
see "Description"

**Notice**
Only available in Austria, Germany and Switzerland

**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems

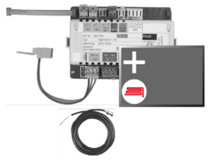
**Further information**
see "Description"

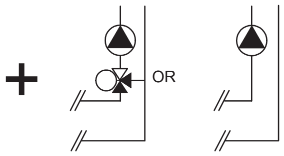
**Further accessories can be found under the following rubrics:**
- Calorifiers/buffer storage tanks:
  - Calorifiers
  - Buffer storage tanks
  - Combination storage tanks
  - Electric heating elements
- Heating armature groups/heating distributors
- Various system components:
  - 2-way and 3-way valves
  - 3-way mixers
  - 2-way and 3-way ball valves
  - Motor drives and butterfly valves
  - Diaphragm pressure expansion tanks
  - Fittings
  - Plate heat exchangers
- Circulating pumps

**Part No.**

## TopTronic® E module expansions

for TopTronic® E basic module heat generator





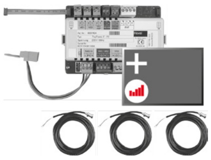
**TopTronic® E module expansion heating circuit TTE-FE HK**

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer

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

6034 576

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

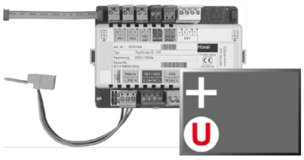


**TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ**

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer incl. energy balancing in each case

Consisting of:
- Fitting accessories
- 3 contact sensors ALF/2P/4/T, L = 4.0 m
- Plug set FE module

6037 062



**TopTronic® E module expansion Universal TTE-FE UNI**

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

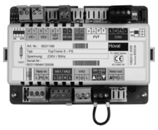
Consisting of:
- Fitting accessories
- Plug set FE module

6034 575

**Further information**
see “Controls” section – “Hoval TopTronic® E module expansions” chapter

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

## Accessories for TopTronic® E



**TopTronic® E controller modules**

| | | Part No. |
|---|---|---|
| TTE-HK/WW | TopTronic® E heating circuit/ hot water module | 6034 571 |
| TTE-SOL | TopTronic® E solar module | 6037 058 |
| TTE-PS | TopTronic® E buffer module | 6037 057 |
| TTE-MWA | TopTronic® E measuring module | 6034 574 |

**Supplementary plug set**

| | |
|---|---|
| for basic module heat generator TTE-WEZ | 6034 499 |
| for controller modules and module expansion TTE-FE HK | 6034 503 |

**TopTronic® E room control modules**

| | | |
|---|---|---|
| TTE-RBM | TopTronic® E room control modules | |
| | easy white | 6037 071 |
| | comfort white | 6037 069 |
| | comfort black | 6037 070 |

| | |
|---|---|
| **Enhanced language package TopTronic® E** | 6039 253 |

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

**HovalConnect**

| | |
|---|---|
| HovalConnect LAN | 6049 496 |
| HovalConnect WLAN | 6049 498 |
| HovalConnect Modbus | 6049 501 |
| HovalConnect KNX | 6049 593 |

**TopTronic® E interface modules**

| | |
|---|---|
| GLT module 0-10 V | 6034 578 |

**TopTronic® E sensors**

| | | |
|---|---|---|
| AF/2P/K | Outdoor sensor<br>H x W x D = 80 x 50 x 28 mm | 2055 889 |
| TF/2P/5/6T | Immersion sensor, L = 5.0 m | 2055 888 |
| ALF/2P/4/T | Contact sensor, L = 4.0 m | 2056 775 |
| TF/1.1P/2.5S/6T | Collector sensor, L = 2.5 m | 2056 776 |

**Bivalent switch**

for various release or switching functions

| | |
|---|---|
| Bivalent switch 1-piece | 2056 858 |
| Bivalent switch 2-piece | 2061 826 |

**System casing**

| | |
|---|---|
| System casing 182 mm | 6038 551 |
| System casing 254 mm | 6038 552 |

**TopTronic® E wall casing**

| | | |
|---|---|---|
| WG-190 | Wall casing small | 6052 983 |
| WG-360 | Wall casing medium | 6052 984 |
| WG-360 BM | Wall casing medium with control module cut-out | 6052 985 |
| WG-510 | Wall casing large | 6052 986 |
| WG-510 BM | Wall casing large with control module cut-out | 6052 987 |

**Further information**
see “Controls”

## Accessories

**Part No.**

**Switching ball valve VBI60.50-37L; PN 40** — 6052 447

Internal thread Rp 2″
Leakage rate: 0 ... 0.0001 % of kvs value
Permitted media: cold water,
cooling water, DHW, hot water,
water with frost protection
Recommendation:
water treatment according to VDI 2035
DN 50
kvs value: 37 m$^3$/h
Medium temperature: −10 ... 120 °C
Ball valve body: brass
Ball: brass chrome-plated
Tappet: brass
Gland: EPDM O-rings

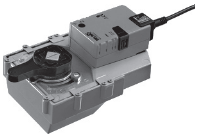
**Motor drive GLB341.9E** — 2070 331

For straight-way ball valves VAG60.. and switching ball valves VBI60.. DN 15-50
Operating voltage: 230 V, 50/60 Hz
Control signal 2-point/3-point
Single-wire/2 wire control
Operating time: 150 s
Nominal torque: 10 Nm
Permitted ambient temperature:
−32 ... 55 °C

**Butterfly valve**

Without motor
Nominal pressure: PN 6-16

| Connection size | $k_{vs}$ m$^3$/h | Part No. |
|---|---|---|
| DN 65 | 170 | 2031 065 |
| DN 80 | 260 | 2031 066 |
| DN 100 | 520 | 2087 238 |
| DN 125 | 880 | 2087 246 |
| DN 150 | 1400 | 2087 247 |



**Motor drives**

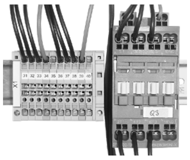
Control: 2-point (open-close)/partly 3-point
Nominal voltage: AC 100-240 V, 50/60 Hz

| Type | Control | Nm | s | Part No. |
|---|---|---|---|---|
| SR230A-R-5 | 2-/3-point | 20 | 90 | 2044 276 |
| GR230A-5 | 2-point | 40 | 150 | 2061 515 |
| DR230A-5 | 2-point | < 90 | 150 | 2087 248 |
| DR230A-7 | 2-point | < 90 | 150 | 2087 249 |
| PRCA-S2-T | 2-/3-point | 160 | 35 | 2082 322 |

Recommended use

| | SR230A-R-5 | GR230A-5 | DR230A-5 | DR230A7 | PRCA-S2T |
|---|---|---|---|---|---|
| DN 65 | ● | | | | |
| DN 80 | | ● | | | |
| DN 100 | | ● | ● | | |
| DN 125 | | | | ● | |
| DN 150 | | | | ● | ● |

**Part No.**



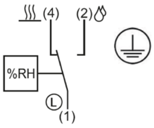
**Control set (switching contactor)**
**for Belaria® pro (20-50)**
For activating an external electric heating element
3~400 V / 50 Hz
Control set for installation in the wall-mounted electrical box

6063 944

**Vibration decoupler**
for reducing structure-borne noise from heat pumps indoors, cannot be shortened
Consisting of:
- 1 vibration decoupler insulated for heating and brine side flat-sealing with union nut
- 2 flat seals

Nominal pressure: PN 10

| Dimension | Connection inches | Nominal length mm | Part No. |
|---|---|---|---|
| DN 50 | 2″ | 500 | 2082 227 |
| DN 50 | 2″ | 1000 | 2080 800 |



**Dewpoint monitor (TPW)**
for monitoring the formation of condensation in a compartment, with gold contacts, can be installed as required for pipes up to Ø 50 mm
The installation location must be selected in such a way that a representative humidity measurement is guaranteed i.e. the room air must flow unhindered through the slots in the housing to the measuring element inside the casing.
The TPW does not require supply voltage or auxiliary energy and should be mounted in an air flow with an air velocity of at least 0.2 m/s.
Control range: 50 ... 90 % RH
Max. switch power: 100 mA/250 V AC
Operating temperature: 0 … 60 °C
Dimensions: 85 x 55 x 33 mm
Weight: approx. 92 g
Type of protection: IP20

2070 911

**Notice**
The dewpoint monitor is the only safety equipment in cooling systems and is always mandatory, to prevent damage caused by condensing water in surface cooling systems (floor, wall, ceiling cooling)!
This applies to both active and passive cooling systems.

**Part No.**

## Separation system of heat pump

### Hoval system pump set SPS-I with interface for pump control

**with external thread including fittings**

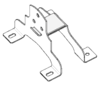
| Type | Nominal diameter DN | Delivery head mWC | Overall length mm | Integrated function [1] | Connection inches | Rated pressure PN | ≤ EEI | Part No. |
|---|---|---|---|---|---|---|---|---|
| SPS-I | 30 | 10 | 180 | F02 | G 2″ | 10 | 0.20 | 6065 021 |

**Notice**
2 pumps are required

[1] Type plate identification T
F02 = 0-10 V, PWM1, PWM2

**XB61L-1-40 PN 25 G 2″**
suitable for system separation
Plate heat exchanger without seal
made of stainless steel, brazed with
copper solder under vacuum
Design resistant to corrosion
Calculation and materials according
to the AD information sheets
Produced according to DIN ISO 9001.
CE-tested.
Operating pressure: max. 25 bar
Operating temperature: max. 180 °C
Operating temperature: min. −10 °C
Suitable for circulation water/
water containing glycol with up to 50 %
glycol proportion, ethylene glycol/
propylene glycol-water mixtures,
ethanol-water solutions and other
suitable heat transfer fluids

2080 135



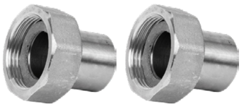
**Bracket for XB61L-SB-1-30…60**
for floor attachment
Height: 217 mm
Width: 300 mm
Depth: 110 mm

2085 352

**Insulation for: XB61 H: 30-90, M: 30-90, L: 30-50**
made of mineral wool
Conductivity: 0.029 W/mK
Thickness: 30 mm
Operating temperature: max. 160 °C

2080 129

**Notice**
Not for cooling applications



**Set with 2 welding ends G 2″ E/DN 40 with union nuts and seals**
suitable for the types:
XB52 and XB61
Diameter: 1½″
Operating pressure: max. 25 bar
Material: 1.0308

2080 134

**Notice**
2 sets are required.

**Part No.**

## Services

**Services and associated scope of services**
see separate catalogue “Hoval Services”

Commissioning by Hoval customer service is a prerequisite for warranty/guarantee activation.

## Belaria® pro (40,50)

| **Type** | | **(40)** | **(50)** |
|---|---|---|---|
| • Energy efficiency class of the compound system with control [1] ( A+++ → D) | 35 °C/55 °C | A+++/A+++ | A+++/A+++ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 202 | 210 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 155 | 163 |
| • Seasonal coefficient of performance moderate climate 35 °C/55 °C | SCOP | 5.1/3.9 | 5.3/4.1 |
| • Seasonal energy efficiency ratio A35W18 [2] | SEER | 5.7 | 5.7 |
| • Seasonal energy efficiency ratio A35W7 [2] | SEER | 3.3 | 3.3 |
| **Max./min. performance data heating and cooling in acc. with EN 14511** | | | |
| • Max. heat output A2W35 | kW | 38.4 | 48.0 |
| • Max. heat output A-7W35 | kW | 35.4 | 44.2 |
| • Min. heat output A15W35 | kW | 12.6 | 12.6 |
| • Max. cooling capacity A35W18 | kW | 41.8 | 41.8 |
| • Max. cooling capacity A35W7 | kW | 38.2 | 38.2 |
| • Min. cooling capacity A35W18 | kW | 13.0 | 13.0 |
| **Nominal output data heating in acc. with EN 14511** | | | |
| • Nominal heat output A2W35 | kW | 22.6 | 28.2 |
| • Coefficient of performance A2W35 | COP | 5.1 | 4.4 |
| • Nominal heat output A7W35 | kW | 23.2 | 32.1 |
| • Coefficient of performance A7W35 | COP | 5.7 | 5.3 |
| • Nominal heat output A-7W35 | kW | 27.7 | 37.1 |
| • Coefficient of performance A-7W35 | COP | 3.6 | 3.2 |
| **Nominal output data cooling in acc. with EN 14511** | | | |
| • Nominal cooling capacity A35W18 | kW | 35.8 | 35.8 |
| • Energy efficiency ratio A35W18 | EER | 4.1 | 4.1 |
| • Nominal cooling capacity A35W7 | kW | 25.0 | 25.0 |
| • Energy efficiency ratio A35W7 | EER | 3.0 | 3.0 |
| **Sound data** | | | |
| • Max. sound power level outdoor unit, day operation | dB(A) | 65 | 65 |
| • Sound power level EN 12102 outdoor unit whisper mode | dB(A) | 59 | 59 |
| • Sound power level EN 12102 outdoor unit [3] | dB(A) | 55 | 56 |
| • Sound pressure level 5 m [4] | dB(A) | 36 | 37 |
| • Sound pressure level 10 m [4] | dB(A) | 30 | 31 |
| **Hydraulic data** | | | |
| • Max. flow temperature | °C | 70 | 70 |
| • Max. flow rate heating side with A7W35, ΔT 6 K | $m^3/h$ | 6.3 | 7.9 |
| • Nominal flow rate heating side with A7W35, ΔT 5 K | $m^3/h$ | 5.1 | 5.7 |
| • Max. flow rate heating side with A35W7, ΔT 4 K | $m^3/h$ | 8.2 | 8.2 |
| • Residual overpressure of heating pump at nominal flow A7W35, ΔT 5 K | kPa | 57 | 46 |
| • Residual overpressure of heating pump at max. flow rate A35W7, ΔT 4 K | kPa | 37 | 37 |
| • Max. operating pressure on the heating side [5] | bar | 2.5 | 2.5 |
| • Flow/return connection heating | G | 2″ | 2″ |
| • Nominal air volume outdoor unit (A7W35 and nominal rotation speed) | $m^3/h$ | 2 x 6600 | 2 x 6600 |
| • Max. air volume outdoor unit (A7W35 and max. rotation speed) | $m^3/h$ | 2 x 8000 | 2 x 8000 |
| • Hydraulic connection line, max. length/dimension inside | m/DN | 30/50 | 30/50 |

| **Type** | | **(40)** | **(50)** |
|---|---|---|---|
| **Cooling technical data** | | | |
| • Compressor | | modulating | modulating |
| • Refrigerant | | R290 | R290 |
| • Refrigerant filling quantity | kg | Circuit 1 = 4.8<br>Circuit 2 = 4.9 | Circuit 1 = 4.8<br>Circuit 2 = 4.9 |
| • Compressor oil type | | PZ46M | PZ46M |
| • Compressor oil filling quantity | l | 0.9 | 0.9 |
| **Electrical data** | | | |
| • Electrical connection compressor | V/Hz | 3~400/50 | 3~400/50 |
| • Control electrical connection | V/Hz | 1~230/50 | 1~230/50 |
| • Electrical connection electric heating element | V/Hz | - | - |
| • Max. heat pump operating current | A | 37.2 | 37.2 |
| • Max. compressor operating current | A | 2 x 18.2 | 2 x 18.2 |
| • Max. fan operating current | A | 2 x 0.3 | 2 x 0.3 |
| • Max. operating current electric heating element | A | - | - |
| • Max. heat pump power consumption | kW | 16.8 | 24.0 |
| • Max. fan power consumption | W | 2 x 194 | 2 x 194 |
| • Max. starting current heat pump $I_A$ | A | 37.0 | 37.0 |
| • Output factor (cos φ) | | 0.88 | 0.88 |
| • External protection main current | A | C/K 40 | C/K 40 |
| • External protection control current | A | B/Z 16 | B/Z 16 |
| • External protection electric heating element | A | - | - |
| • Fault-current circuit breaker | | RCCB type B, IΔn ≥ 300 mA | |
| • Recommended cable | | Cu 5 x 10.0 mm² | |
| • Nominal electrical output with A-7W35 | kW | 7.7 | 11.5 |
| • Max. electrical output | kW | 16.8 at A-18W60 | 24.0 at A-20W60 |
| • Active power of heat pump | kW | 20.0 | 20.0 |
| • Max. operating voltage Ub | V | 3~400 | 3~400 |
| • Max. operating current Ib | A | 37 | 37 |
| • Max. inverter output current | A | 2 x 24.0 | 2 x 24.0 |
| • Pulse count | | 3 | 3 |
| • Max. switching frequency per hour/day at tn 0 °C | n | 3/72 | 3/72 |
| • Continuous load changes | | No | |
| • Starting up under load | | No | |
| • Feedback into the power system | | No | |
| • Power factor correction | | No | |
| • Starting up assistance | | Output control | |
| • Type of starting up assistance | | Frequency converter | |
| • Frequency converter | | 60-360 Hz (20-120 rps) | |
| • Starting current/nominal current ratio | | 1.00 | |
| **Dimensions/weight of outdoor unit** | | | |
| • Dimensions (H x W x D) | mm | 1514 x 3750 x 1005 | |
| • Weight | kg | 1000 | 1000 |
| • Protection class | | IP24 | IP24 |
| **Dimensions/weight of electrical box** | | | |
| • Dimensions (H x W x D) | mm | 750 x 600 x 160 | |
| • Weight | kg | 25 | 25 |
| • Protection class | | IP20 | IP20 |

[1] Related to moderate climate.

[2] EN 14825

[3] The sound values apply when the evaporator is clean. These values are temporarily exceeded before defrosting.

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

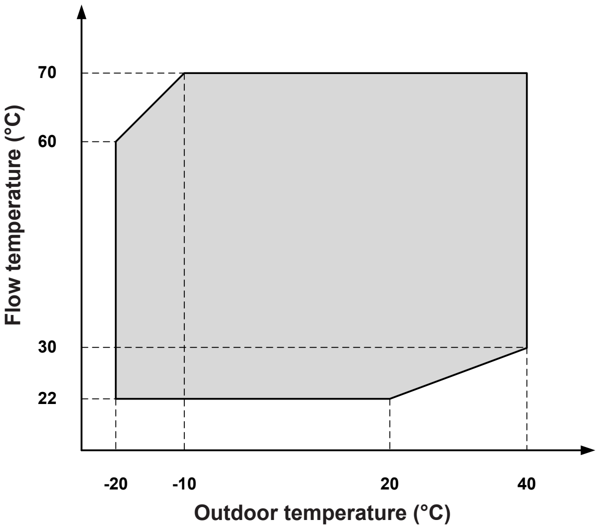
[5] Maximum operating pressure of the system without isolating system 2.5 bar, as the outdoor unit is protected with 2.5 bar.
Provide general protection of the system in the building with 3.0 bar.
A system separation must be provided for system pressures of 2.5 bar or more.

Using a fault-current circuit breaker RCCB type B, IΔn ≥ 300 mA must be clarified based on the regulations of the country in question.

## Diagrams of areas of application

### Heating and domestic hot water

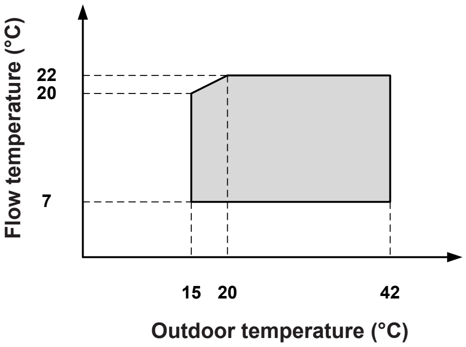
**Belaria® pro (40,50)**



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

### Cooling

**Belaria® pro (40,50)**



▨ Area of application of the heat pump for cooling

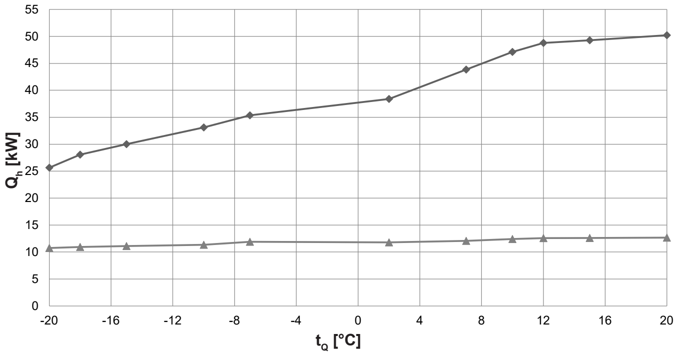
## Performance data – heating

Maximum heat output allowing for defrosting losses

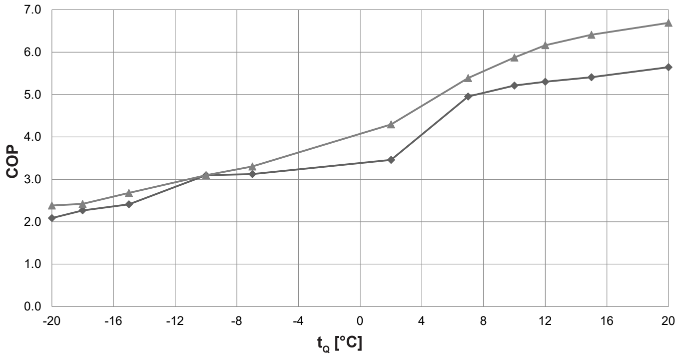
### Belaria® pro (40)

Data according to EN 14511

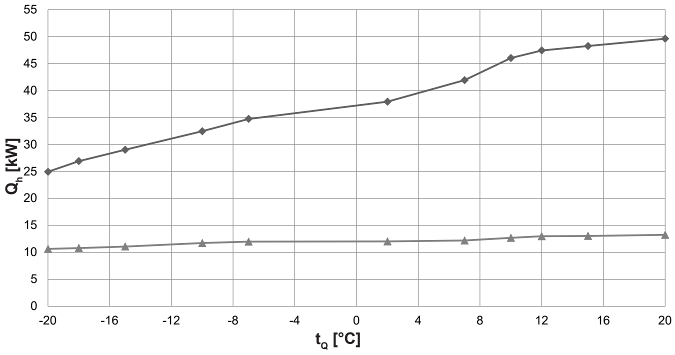
**Heat output – $t_{VL}$ 35 °C**



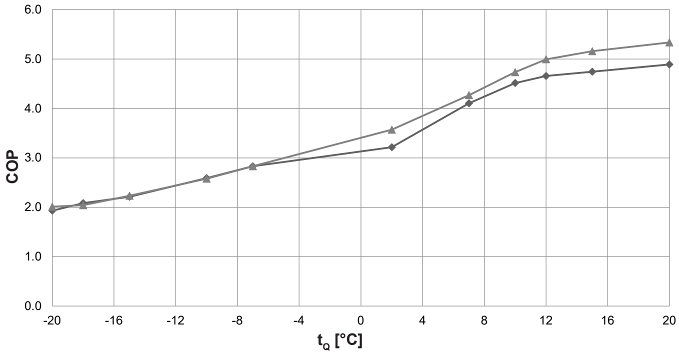
**Coefficient of performance – $t_{VL}$ 35 °C**



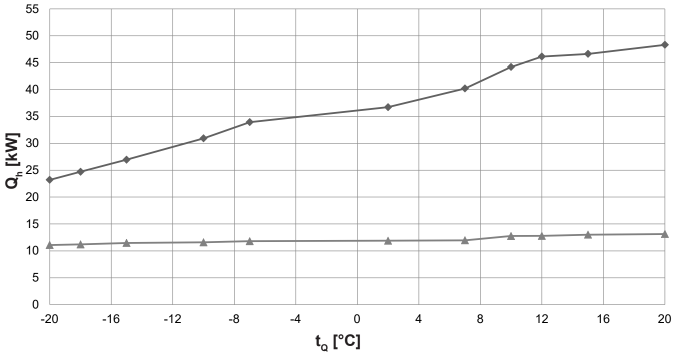
**Heat output – $t_{VL}$ 45 °C**



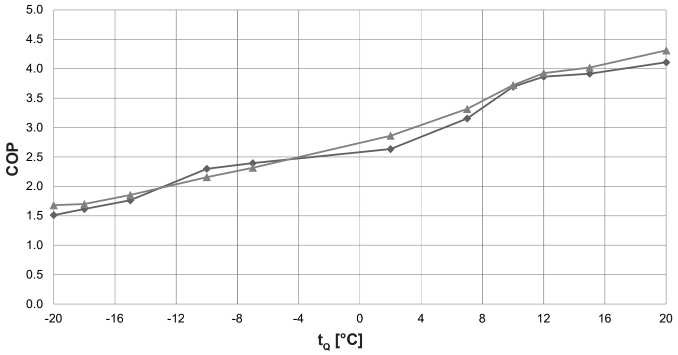
**Coefficient of performance – $t_{VL}$ 45 °C**



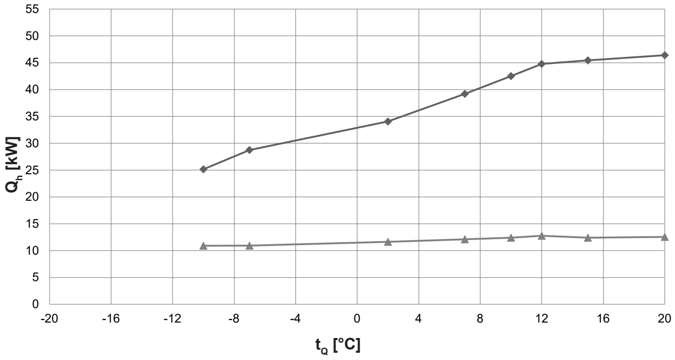
**Heat output – $t_{VL}$ 55 °C**



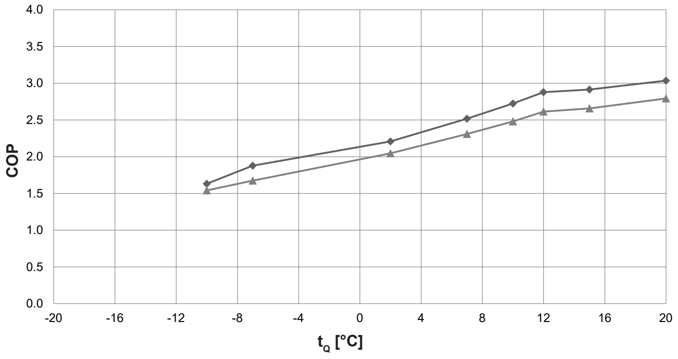
**Coefficient of performance – $t_{VL}$ 55 °C**



**Heat output – $t_{VL}$ 70 °C**



**Coefficient of performance – $t_{VL}$ 70 °C**



$t_{VL}$ = 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
▲ Minimum output

## Performance data – heating

### Belaria® pro (40)

Data according to EN 14511

| $t_{VL}$ °C | $t_Q$ °C | Maximum output<br>$Q_h$ kW | P kW | COP | Minimum output<br>$Q_h$ kW | P kW | COP |
|---|---|---|---|---|---|---|---|
| 35 | −20 | 25.6 | 12.3 | 2.1 | 10.8 | 4.5 | 2.4 |
| | −18 | 28.1 | 12.4 | 2.3 | 10.9 | 4.5 | 2.4 |
| | −15 | 30.0 | 12.5 | 2.4 | 11.1 | 4.1 | 2.7 |
| | −10 | 33.1 | 10.7 | 3.1 | 11.4 | 3.7 | 3.1 |
| | −7 | 35.4 | 11.3 | 3.1 | 11.9 | 3.6 | 3.3 |
| | 2 | 38.4 | 11.1 | 3.5 | 11.8 | 2.7 | 4.3 |
| | 7 | 43.8 | 8.8 | 5.0 | 12.1 | 2.2 | 5.4 |
| | 10 | 47.1 | 9.0 | 5.2 | 12.4 | 2.1 | 5.9 |
| | 12 | 48.8 | 9.2 | 5.3 | 12.6 | 2.0 | 6.2 |
| | 15 | 49.3 | 9.1 | 5.4 | 12.6 | 2.0 | 6.4 |
| | 20 | 50.2 | 8.9 | 5.6 | 12.7 | 1.9 | 6.7 |
| 45 | −20 | 24.9 | 12.9 | 1.9 | 10.6 | 5.3 | 2.0 |
| | −18 | 26.9 | 12.9 | 2.1 | 10.8 | 5.3 | 2.0 |
| | −15 | 29.0 | 13.1 | 2.2 | 11.1 | 5.0 | 2.2 |
| | −10 | 32.4 | 12.5 | 2.6 | 11.7 | 4.5 | 2.6 |
| | −7 | 34.7 | 12.3 | 2.8 | 12.0 | 4.2 | 2.8 |
| | 2 | 37.9 | 11.8 | 3.2 | 12.0 | 3.4 | 3.6 |
| | 7 | 41.9 | 10.2 | 4.1 | 12.2 | 2.9 | 4.3 |
| | 10 | 46.0 | 10.2 | 4.5 | 12.7 | 2.7 | 4.7 |
| | 12 | 47.4 | 10.2 | 4.7 | 13.0 | 2.6 | 5.0 |
| | 15 | 48.2 | 10.2 | 4.7 | 13.0 | 2.5 | 5.2 |
| | 20 | 49.6 | 10.1 | 4.9 | 13.2 | 2.5 | 5.3 |
| 50 | −20 | 24.0 | 14.3 | 1.7 | 11.5 | 5.8 | 2.0 |
| | −18 | 25.8 | 14.1 | 1.8 | 11.6 | 5.8 | 2.0 |
| | −15 | 28.0 | 14.2 | 2.0 | 10.9 | 5.4 | 2.0 |
| | −10 | 31.7 | 13.0 | 2.4 | 11.2 | 5.0 | 2.3 |
| | −7 | 34.8 | 13.4 | 2.6 | 11.5 | 4.6 | 2.5 |
| | 2 | 37.3 | 12.9 | 2.9 | 11.7 | 3.7 | 3.1 |
| | 7 | 41.1 | 11.5 | 3.6 | 12.0 | 3.2 | 3.7 |
| | 10 | 45.1 | 11.1 | 4.1 | 12.3 | 3.0 | 4.1 |
| | 12 | 46.8 | 11.1 | 4.2 | 12.4 | 2.9 | 4.3 |
| | 15 | 47.4 | 11.0 | 4.3 | 12.5 | 2.8 | 4.4 |
| | 20 | 49.0 | 11.0 | 4.5 | 12.6 | 2.8 | 4.5 |
| 55 | −20 | 23.2 | 15.3 | 1.5 | 11.1 | 6.6 | 1.7 |
| | −18 | 24.7 | 15.3 | 1.6 | 11.2 | 6.6 | 1.7 |
| | −15 | 27.0 | 15.3 | 1.8 | 11.5 | 6.2 | 1.9 |
| | −10 | 30.9 | 13.5 | 2.3 | 11.6 | 5.4 | 2.2 |
| | −7 | 33.9 | 14.2 | 2.4 | 11.8 | 5.1 | 2.3 |
| | 2 | 36.7 | 14.0 | 2.6 | 11.9 | 4.2 | 2.9 |
| | 7 | 40.2 | 12.7 | 3.2 | 12.0 | 3.6 | 3.3 |
| | 10 | 44.2 | 12.0 | 3.7 | 12.8 | 3.4 | 3.7 |
| | 12 | 46.1 | 11.9 | 3.9 | 12.8 | 3.3 | 3.9 |
| | 15 | 46.6 | 11.9 | 3.9 | 13.0 | 3.2 | 4.0 |
| | 20 | 48.3 | 11.8 | 4.1 | 13.1 | 3.0 | 4.3 |

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

Further performance data – heating
see next page

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

## Performance data – heating

### Belaria® pro (40)

Data according to EN 14511

| $t_{VL}$ °C | $t_Q$ °C | Maximum output<br>$Q_h$ kW | P kW | COP | Minimum output<br>$Q_h$ kW | P kW | COP |
|---|---|---|---|---|---|---|---|
| 60 | −20 | 22.3 | 16.7 | 1.3 | 10.8 | 7.1 | 1.5 |
| | −18 | 23.6 | 16.8 | 1.4 | 10.9 | 7.1 | 1.5 |
| | −15 | 25.9 | 16.4 | 1.6 | 11.2 | 6.7 | 1.7 |
| | −10 | 30.1 | 15.3 | 2.0 | 11.5 | 6.0 | 1.9 |
| | −7 | 33.1 | 15.0 | 2.2 | 11.6 | 5.6 | 2.1 |
| | 2 | 36.1 | 15.0 | 2.4 | 11.3 | 4.8 | 2.3 |
| | 7 | 39.3 | 14.0 | 2.8 | 12.1 | 4.2 | 2.9 |
| | 10 | 43.3 | 12.8 | 3.4 | 12.4 | 3.8 | 3.2 |
| | 12 | 45.5 | 12.8 | 3.6 | 12.8 | 3.8 | 3.4 |
| | 15 | 45.8 | 12.8 | 3.6 | 12.8 | 3.7 | 3.5 |
| | 20 | 47.5 | 12.5 | 3.8 | 12.9 | 3.5 | 3.7 |
| 70 | −20 | - | - | - | - | - | - |
| | −18 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | 25.2 | 15.4 | 1.6 | 10.9 | 7.1 | 1.5 |
| | −7 | 28.8 | 15.3 | 1.9 | 10.9 | 6.5 | 1.7 |
| | 2 | 34.1 | 15.4 | 2.2 | 11.6 | 5.7 | 2.0 |
| | 7 | 39.2 | 15.6 | 2.5 | 12.1 | 5.2 | 2.3 |
| | 10 | 42.5 | 15.6 | 2.7 | 12.4 | 5.0 | 2.5 |
| | 12 | 44.8 | 15.6 | 2.9 | 12.8 | 4.9 | 2.6 |
| | 15 | 45.4 | 15.6 | 2.9 | 12.4 | 4.7 | 2.7 |
| | 20 | 46.4 | 15.3 | 3.0 | 12.6 | 4.5 | 2.8 |

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

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

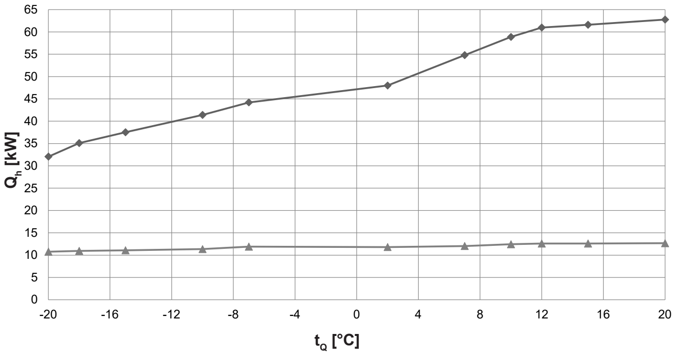
## Performance data – heating

Maximum heat output allowing for defrosting losses

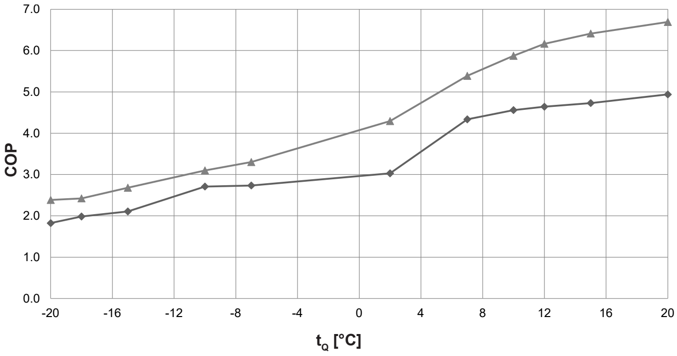
### Belaria® pro (50)

Data according to EN 14511

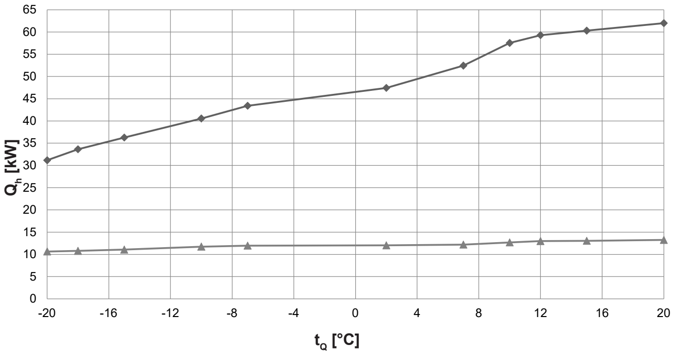
#### Heat output – $t_{VL}$ 35 °C



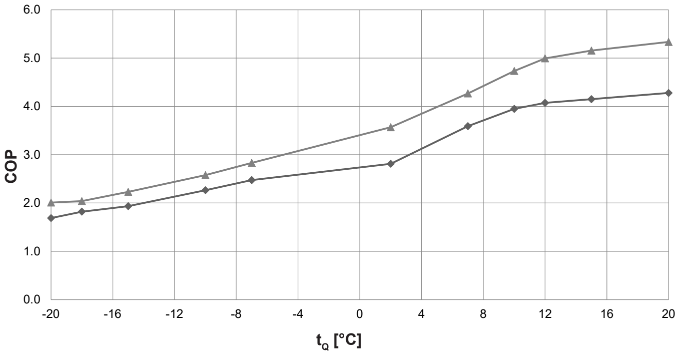
#### Coefficient of performance – $t_{VL}$ 35 °C



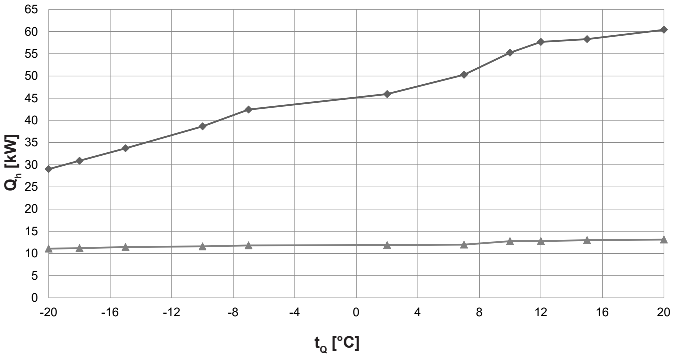
#### Heat output – $t_{VL}$ 45 °C



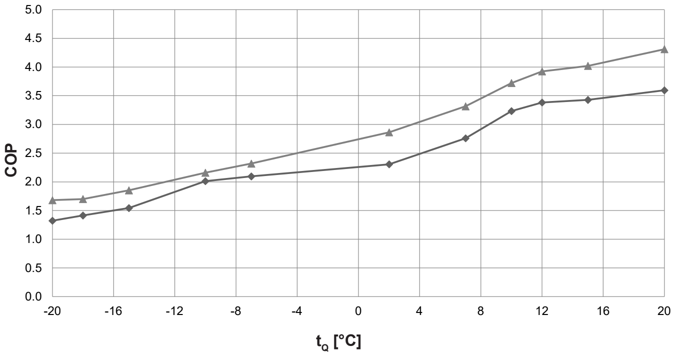
#### Coefficient of performance – $t_{VL}$ 45 °C



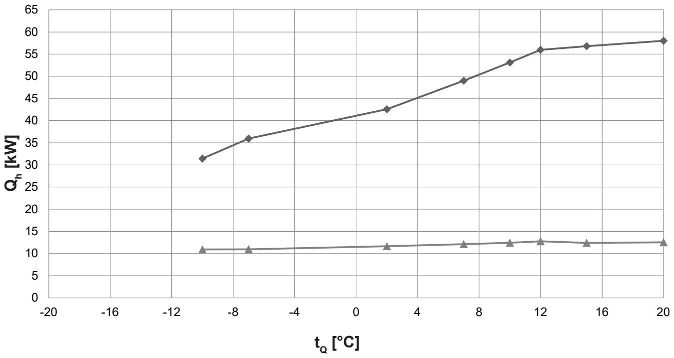
#### Heat output – $t_{VL}$ 55 °C



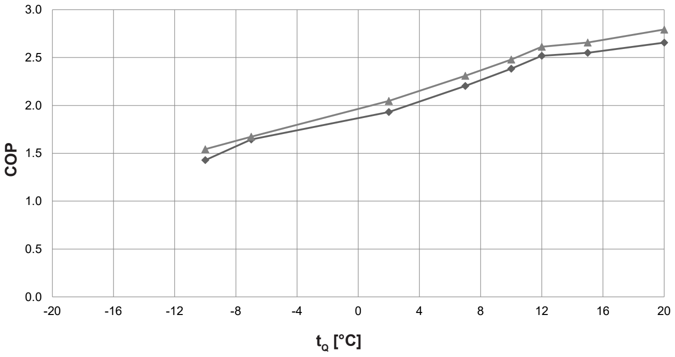
#### Coefficient of performance – $t_{VL}$ 55 °C



#### Heat output – $t_{VL}$ 70 °C



#### Coefficient of performance – $t_{VL}$ 70 °C



$t_{VL}$ = 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
▲ Minimum output

## Performance data – heating

### Belaria® pro (50)

Data according to EN 14511

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | −20 | 32.1 | 17.6 | 1.8 | 10.8 | 4.5 | 2.4 |
| | −18 | 35.1 | 17.7 | 2.0 | 10.9 | 4.5 | 2.4 |
| | −15 | 37.5 | 17.8 | 2.1 | 11.1 | 4.1 | 2.7 |
| | −10 | 41.4 | 15.3 | 2.7 | 11.4 | 3.7 | 3.1 |
| | −7 | 44.2 | 16.2 | 2.7 | 11.9 | 3.6 | 3.3 |
| | 2 | 48.0 | 15.8 | 3.0 | 11.8 | 2.7 | 4.3 |
| | 7 | 54.8 | 12.6 | 4.3 | 12.1 | 2.2 | 5.4 |
| | 10 | 58.9 | 12.9 | 4.6 | 12.4 | 2.1 | 5.9 |
| | 12 | 61.0 | 13.1 | 4.6 | 12.6 | 2.0 | 6.2 |
| | 15 | 61.6 | 13.0 | 4.7 | 12.6 | 2.0 | 6.4 |
| | 20 | 62.8 | 12.7 | 4.9 | 12.7 | 1.9 | 6.7 |
| 45 | −20 | 31.2 | 18.5 | 1.7 | 10.6 | 5.3 | 2.0 |
| | −18 | 33.6 | 18.5 | 1.8 | 10.8 | 5.3 | 2.0 |
| | −15 | 36.3 | 18.8 | 1.9 | 11.1 | 5.0 | 2.2 |
| | −10 | 40.6 | 17.9 | 2.3 | 11.7 | 4.5 | 2.6 |
| | −7 | 43.4 | 17.5 | 2.5 | 12.0 | 4.2 | 2.8 |
| | 2 | 47.4 | 16.9 | 2.8 | 12.0 | 3.4 | 3.6 |
| | 7 | 52.4 | 14.6 | 3.6 | 12.2 | 2.9 | 4.3 |
| | 10 | 57.5 | 14.6 | 3.9 | 12.7 | 2.7 | 4.7 |
| | 12 | 59.3 | 14.6 | 4.1 | 13.0 | 2.6 | 5.0 |
| | 15 | 60.3 | 14.5 | 4.1 | 13.0 | 2.5 | 5.2 |
| | 20 | 62.0 | 14.5 | 4.3 | 13.2 | 2.5 | 5.3 |
| 50 | −20 | 30.0 | 20.5 | 1.5 | 11.5 | 5.8 | 2.0 |
| | −18 | 32.3 | 20.2 | 1.6 | 11.6 | 5.8 | 2.0 |
| | −15 | 35.0 | 20.3 | 1.7 | 10.9 | 5.4 | 2.0 |
| | −10 | 39.6 | 18.6 | 2.1 | 11.2 | 5.0 | 2.3 |
| | −7 | 43.4 | 19.1 | 2.3 | 11.5 | 4.6 | 2.5 |
| | 2 | 46.7 | 18.4 | 2.5 | 11.7 | 3.7 | 3.1 |
| | 7 | 51.3 | 16.4 | 3.1 | 12.0 | 3.2 | 3.7 |
| | 10 | 56.4 | 15.8 | 3.6 | 12.3 | 3.0 | 4.1 |
| | 12 | 58.5 | 15.8 | 3.7 | 12.4 | 2.9 | 4.3 |
| | 15 | 59.3 | 15.8 | 3.8 | 12.5 | 2.8 | 4.4 |
| | 20 | 61.2 | 15.6 | 3.9 | 12.6 | 2.8 | 4.5 |
| 55 | −20 | 29.0 | 21.9 | 1.3 | 11.1 | 6.6 | 1.7 |
| | −18 | 30.9 | 21.8 | 1.4 | 11.2 | 6.6 | 1.7 |
| | −15 | 33.7 | 21.8 | 1.5 | 11.5 | 6.2 | 1.9 |
| | −10 | 38.6 | 19.2 | 2.0 | 11.6 | 5.4 | 2.2 |
| | −7 | 42.4 | 20.2 | 2.1 | 11.8 | 5.1 | 2.3 |
| | 2 | 45.9 | 19.9 | 2.3 | 11.9 | 4.2 | 2.9 |
| | 7 | 50.2 | 18.2 | 2.8 | 12.0 | 3.6 | 3.3 |
| | 10 | 55.2 | 17.1 | 3.2 | 12.8 | 3.4 | 3.7 |
| | 12 | 57.7 | 17.1 | 3.4 | 12.8 | 3.3 | 3.9 |
| | 15 | 58.3 | 17.0 | 3.4 | 13.0 | 3.2 | 4.0 |
| | 20 | 60.4 | 16.8 | 3.6 | 13.1 | 3.0 | 4.3 |

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

Further performance data – heating
see next page

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

## Performance data – heating

### Belaria® pro (50)

Data according to EN 14511

| $t_{VL}$ °C | $t_Q$ °C | Maximum output<br>$Q_h$ kW | P kW | COP | Minimum output<br>$Q_h$ kW | P kW | COP |
|---|---|---|---|---|---|---|---|
| 60 | −20 | 27.9 | 23.9 | 1.2 | 10.8 | 7.1 | 1.5 |
| | −18 | 29.5 | 23.9 | 1.2 | 10.9 | 7.1 | 1.5 |
| | −15 | 32.4 | 23.4 | 1.4 | 11.2 | 6.7 | 1.7 |
| | −10 | 37.7 | 21.9 | 1.7 | 11.5 | 6.0 | 1.9 |
| | −7 | 41.4 | 21.4 | 1.9 | 11.6 | 5.6 | 2.1 |
| | 2 | 45.2 | 21.5 | 2.1 | 11.3 | 4.8 | 2.3 |
| | 7 | 49.2 | 20.0 | 2.5 | 12.1 | 4.2 | 2.9 |
| | 10 | 54.1 | 18.4 | 2.9 | 12.4 | 3.8 | 3.2 |
| | 12 | 56.9 | 18.3 | 3.1 | 12.8 | 3.8 | 3.4 |
| | 15 | 57.3 | 18.2 | 3.1 | 12.8 | 3.7 | 3.5 |
| | 20 | 59.4 | 17.9 | 3.3 | 12.9 | 3.5 | 3.7 |
| 70 | −20 | - | - | - | - | - | - |
| | −18 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | 31.4 | 22.0 | 1.4 | 10.9 | 7.1 | 1.5 |
| | −7 | 35.9 | 21.9 | 1.6 | 10.9 | 6.5 | 1.7 |
| | 2 | 42.6 | 22.1 | 1.9 | 11.6 | 5.7 | 2.0 |
| | 7 | 49.0 | 22.2 | 2.2 | 12.1 | 5.2 | 2.3 |
| | 10 | 53.1 | 22.3 | 2.4 | 12.4 | 5.0 | 2.5 |
| | 12 | 56.0 | 22.2 | 2.5 | 12.8 | 4.9 | 2.6 |
| | 15 | 56.8 | 22.3 | 2.5 | 12.4 | 4.7 | 2.7 |
| | 20 | 58.0 | 21.8 | 2.7 | 12.6 | 4.5 | 2.8 |

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

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

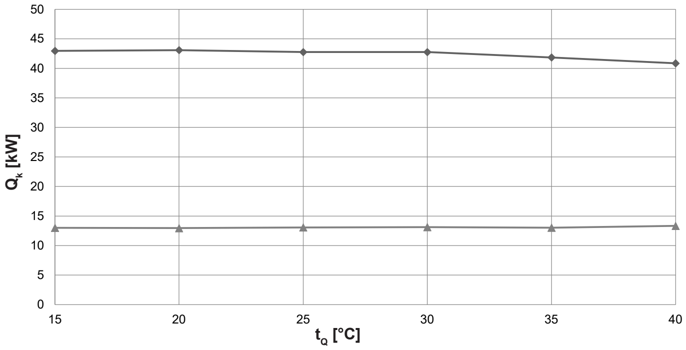
## Performance data – cooling

Maximum cooling capacity

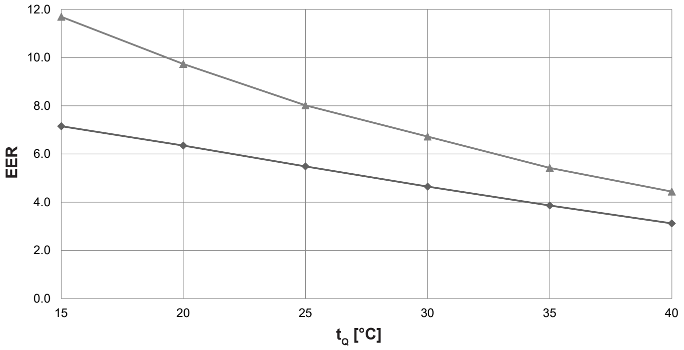
### Belaria® pro (40)

Data according to EN 14511

**Cooling capacity – $t_{VL}$ 18 °C**



**Energy efficiency ratio – $t_{VL}$ 18 °C**



◆ Maximum output
▲ Minimum output

### Belaria® pro (40)

Data according to EN 14511

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER |
| 7 | 15 | 42.4 | 10.0 | 4.2 | 13.1 | 1.8 | 7.3 |
| | 20 | 43.0 | 12.6 | 3.4 | 13.3 | 2.3 | 5.8 |
| | 25 | 41.4 | 13.9 | 3.0 | 13.1 | 2.7 | 4.8 |
| | 30 | 40.2 | 14.7 | 2.7 | 12.9 | 3.7 | 3.5 |
| | 35 | 38.2 | 16.0 | 2.4 | 12.3 | 4.3 | 2.8 |
| | 40 | 33.3 | 16.2 | 2.1 | 11.4 | 5.4 | 2.1 |
| 12 | 15 | 43.2 | 7.9 | 5.5 | 13.0 | 1.4 | 9.0 |
| | 20 | 42.8 | 8.9 | 4.8 | 13.1 | 1.7 | 7.5 |
| | 25 | 42.9 | 10.5 | 4.1 | 13.3 | 2.2 | 6.2 |
| | 30 | 43.1 | 12.9 | 3.3 | 13.4 | 2.7 | 5.1 |
| | 35 | 42.0 | 15.2 | 2.8 | 13.3 | 3.2 | 4.2 |
| | 40 | 38.6 | 17.0 | 2.3 | 12.4 | 3.6 | 3.4 |
| 18 | 15 | 43.0 | 6.0 | 7.2 | 13.0 | 1.1 | 11.7 |
| | 20 | 43.1 | 6.8 | 6.4 | 13.0 | 1.3 | 9.7 |
| | 25 | 42.8 | 7.8 | 5.5 | 13.1 | 1.6 | 8.0 |
| | 30 | 42.8 | 9.2 | 4.6 | 13.1 | 2.0 | 6.7 |
| | 35 | 41.8 | 10.8 | 3.9 | 13.0 | 2.4 | 5.4 |
| | 40 | 40.9 | 13.1 | 3.1 | 13.3 | 3.0 | 4.4 |

$t_{VL}$ = 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 for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

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

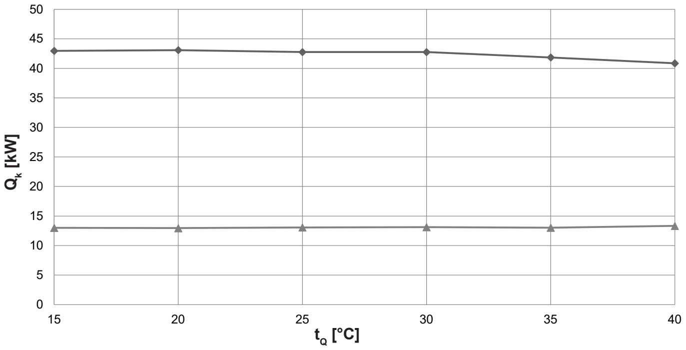
## Performance data – cooling

Maximum cooling capacity

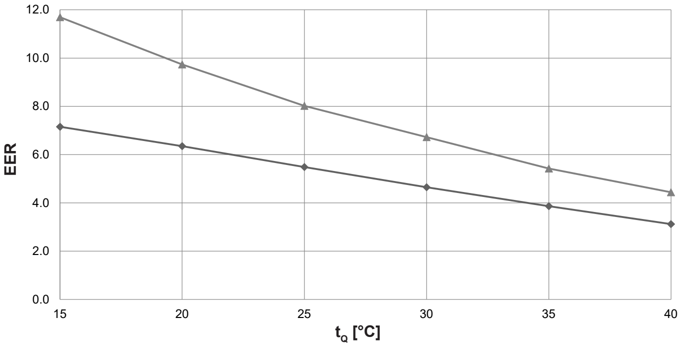
### Belaria® pro (50)

Data according to EN 14511

**Cooling capacity – $t_{VL}$ 18 °C**



**Energy efficiency ratio – $t_{VL}$ 18 °C**



◆ Maximum output

▲ Minimum output

### Belaria® pro (50)

Data according to EN 14511

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER |
| 7 | 15 | 42.4 | 10.0 | 4.2 | 13.1 | 1.8 | 7.3 |
| | 20 | 43.0 | 12.6 | 3.4 | 13.3 | 2.3 | 5.8 |
| | 25 | 41.4 | 13.9 | 3.0 | 13.1 | 2.7 | 4.8 |
| | 30 | 40.2 | 14.7 | 2.7 | 12.9 | 3.7 | 3.5 |
| | 35 | 38.2 | 16.0 | 2.4 | 12.3 | 4.3 | 2.8 |
| | 40 | 33.3 | 16.2 | 2.1 | 11.4 | 5.4 | 2.1 |
| 12 | 15 | 43.2 | 7.9 | 5.5 | 13.0 | 1.4 | 9.0 |
| | 20 | 42.8 | 8.9 | 4.8 | 13.1 | 1.7 | 7.5 |
| | 25 | 42.9 | 10.5 | 4.1 | 13.3 | 2.2 | 6.2 |
| | 30 | 43.1 | 12.9 | 3.3 | 13.4 | 2.7 | 5.1 |
| | 35 | 42.0 | 15.2 | 2.8 | 13.3 | 3.2 | 4.2 |
| | 40 | 38.6 | 17.0 | 2.3 | 12.4 | 3.6 | 3.4 |
| 18 | 15 | 43.0 | 6.0 | 7.2 | 13.0 | 1.1 | 11.7 |
| | 20 | 43.1 | 6.8 | 6.4 | 13.0 | 1.3 | 9.7 |
| | 25 | 42.8 | 7.8 | 5.5 | 13.1 | 1.6 | 8.0 |
| | 30 | 42.8 | 9.2 | 4.6 | 13.1 | 2.0 | 6.7 |
| | 35 | 41.8 | 10.8 | 3.9 | 13.0 | 2.4 | 5.4 |
| | 40 | 40.9 | 13.1 | 3.1 | 13.3 | 3.0 | 4.4 |

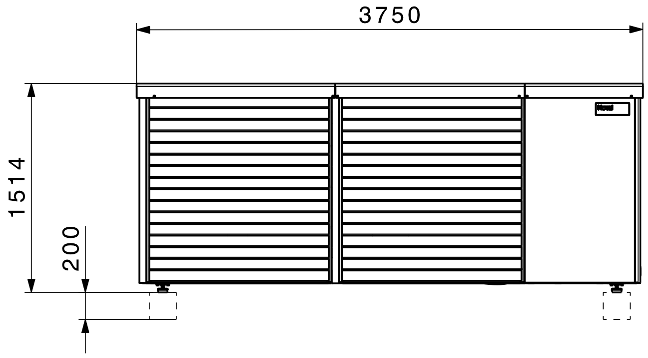
$t_{VL}$ = cooling water flow temperature (°C)
$t_Q$ = source temperature (°C)
$Q_k$ = cooling capacity (kW), measured in accordance with standard EN 14511
P = power consumption for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

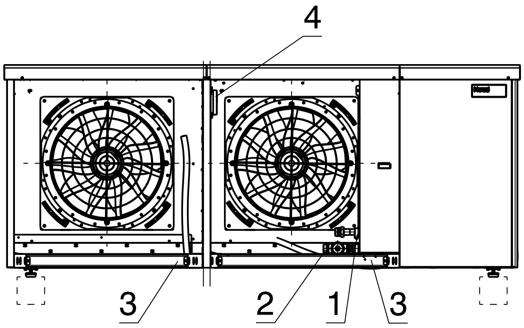
**Observe daily power interruptions!**
see "Engineering heat pumps general"

## Belaria® pro
## Outdoor unit

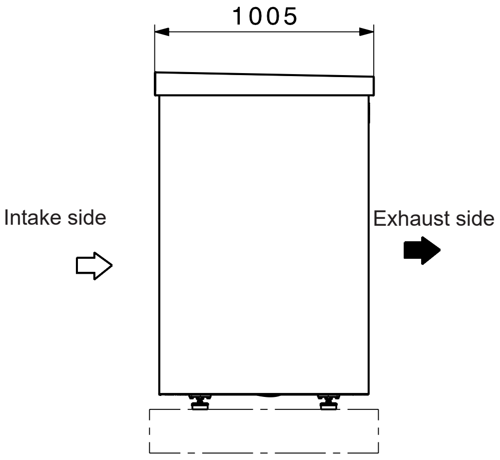
(Dimensions in mm)

### Front view

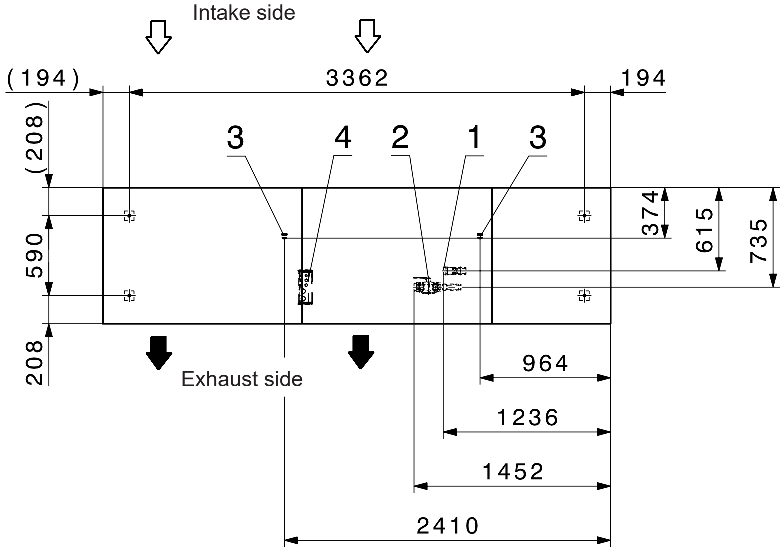




### View from the left

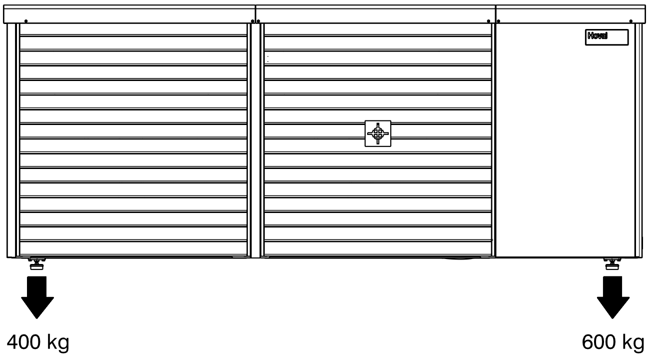


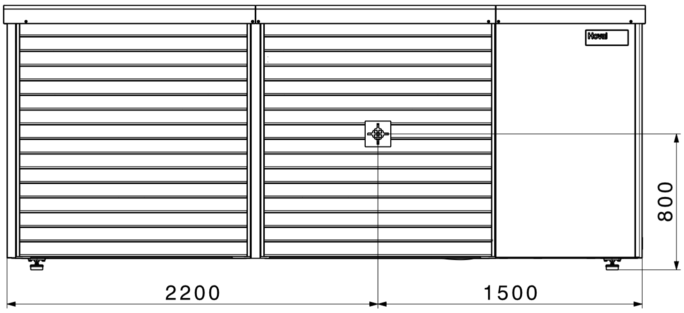
### View from top



| | | |
|---|---|---|
| 1 | Connection hydraulic connection line flow | 2″ ET |
| 2 | Connection hydraulic connection line return | 2″ ET |
| 3 | Condensate drain 1 + 2 | 1″ |
| 4 | Electrical connection | |

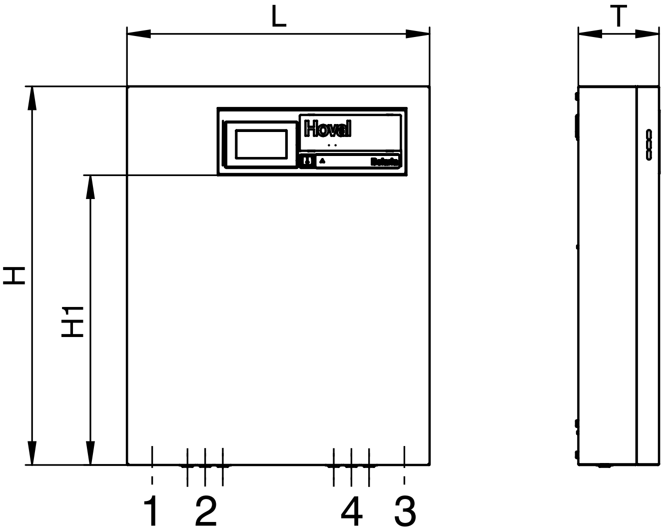
### Centre of gravity





## Belaria® pro (40,50)
## Electrical box

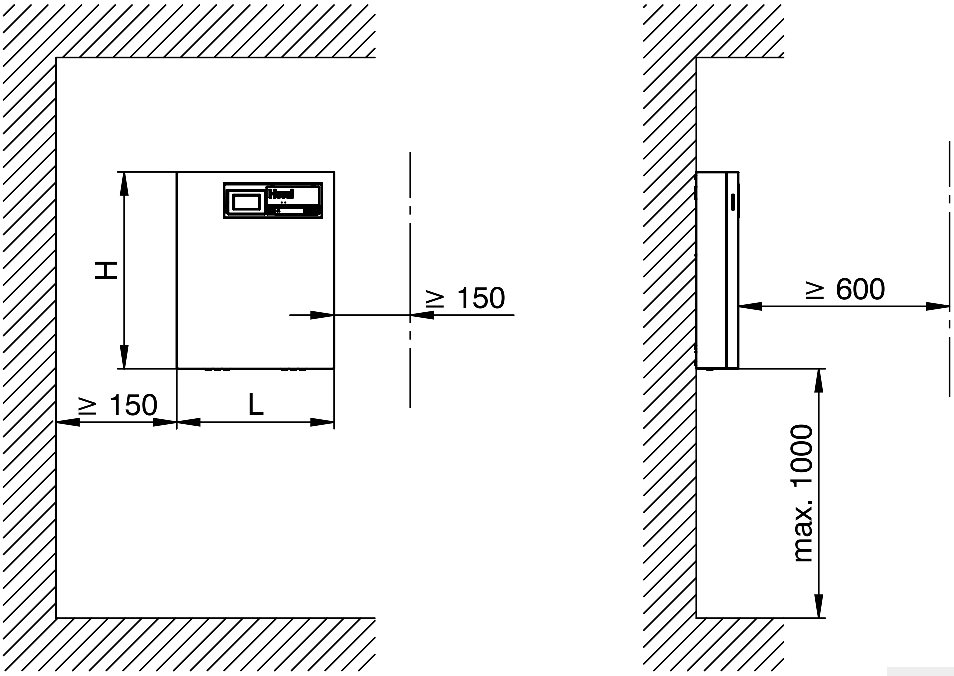
(Dimensions in mm)



| Type | L | H | H1 | T |
|---|---|---|---|---|
| Belaria® pro (40,50) | 600 | 750 | 574 | 160 |

1 Cable feed-in control current, main current
2 Optional: Cable feed-in control current, main current
3 Cable feed-in sensors, RS485
4 Optional: Cable feed-in sensors, RS485

**Belaria® pro (40,50)**
**Electrical box**

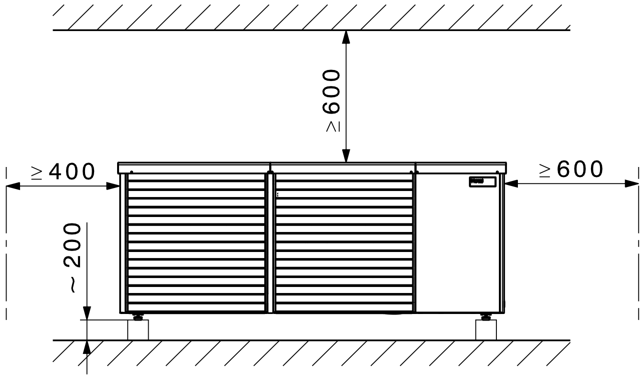


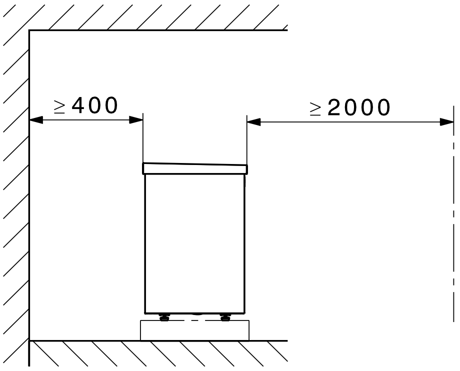
To ensure good operability and accessibility to the electrical connections, a clearance of max. 1000 mm must be provided from the ground to the lower edge of the electrical box.

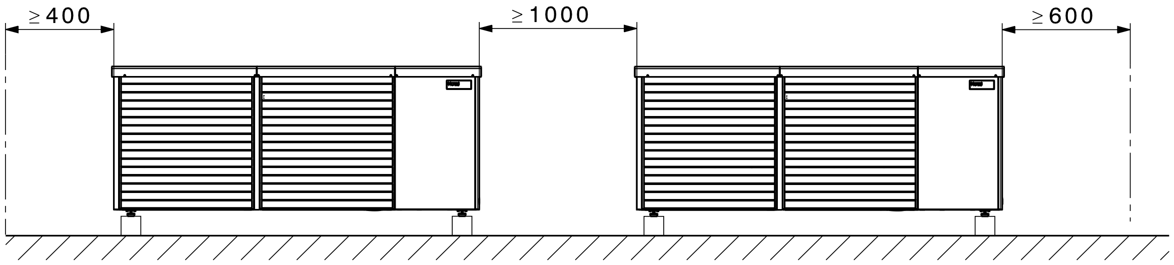
## Space requirement

(Dimensions in mm)

**Belaria® pro**
**Outdoor unit**





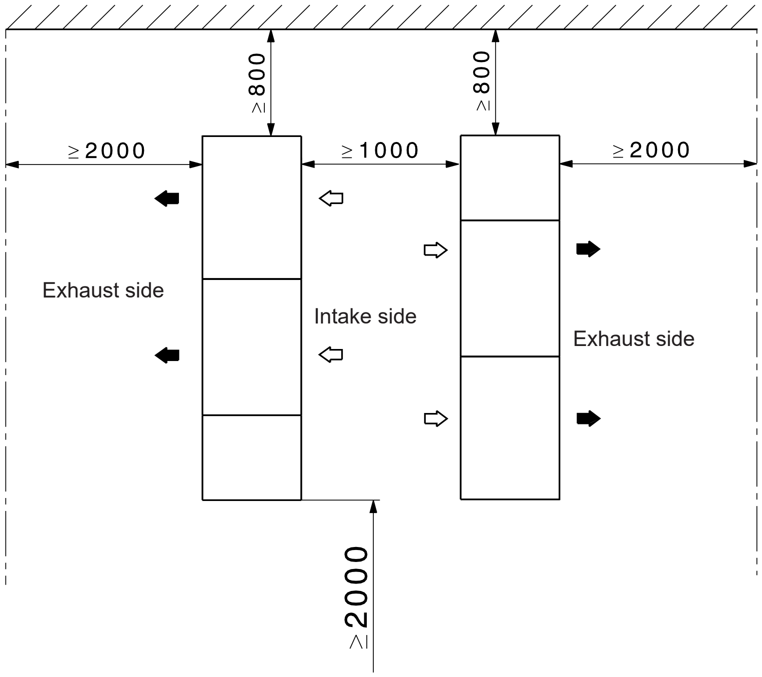


Any possible openings/recesses and ignition sources must be avoided within a radius of one meter around the outdoor unit.

In order to ensure accessibility during maintenance, a clearance of at least 600 mm upwards must be maintained. For any service work, the minimum clearances at the rear and sides of the heat pump must be observed.

**Belaria® pro**
**Outdoor unit**

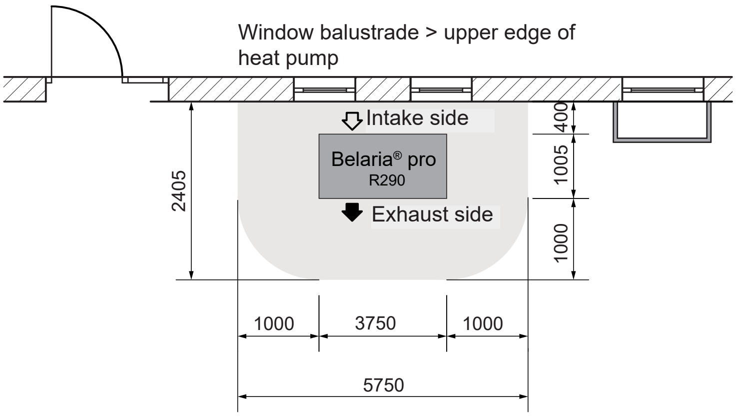
**View from above**

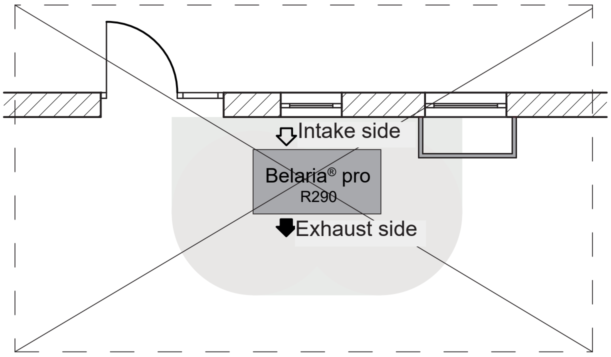


## Presentation of protection areas

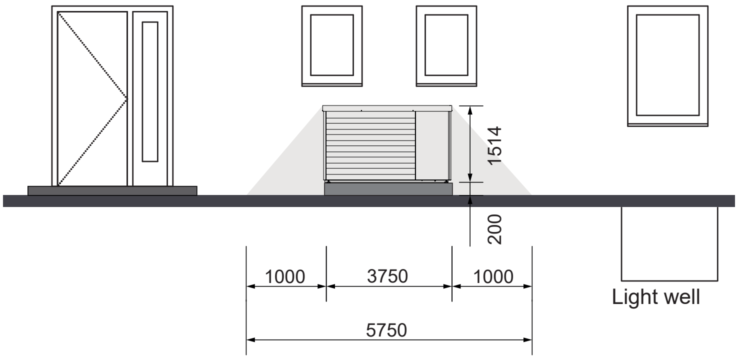
Belaria® pro (40,50) with refrigerant R290
(Dimensions in mm)

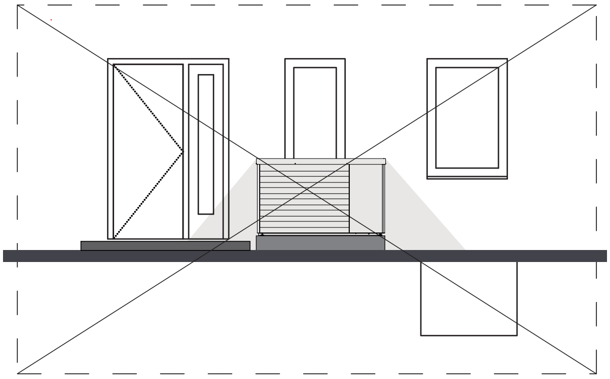
### Floor plan – protection area when installed in front of a wall





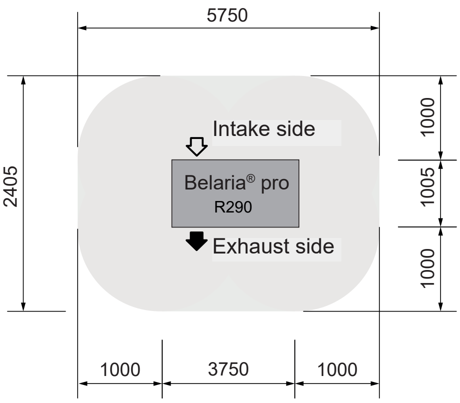
### View – protection area when installed in front of a wall

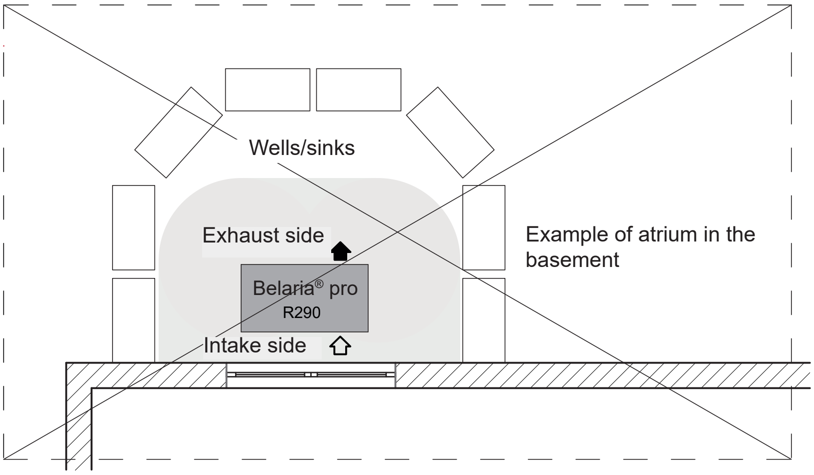




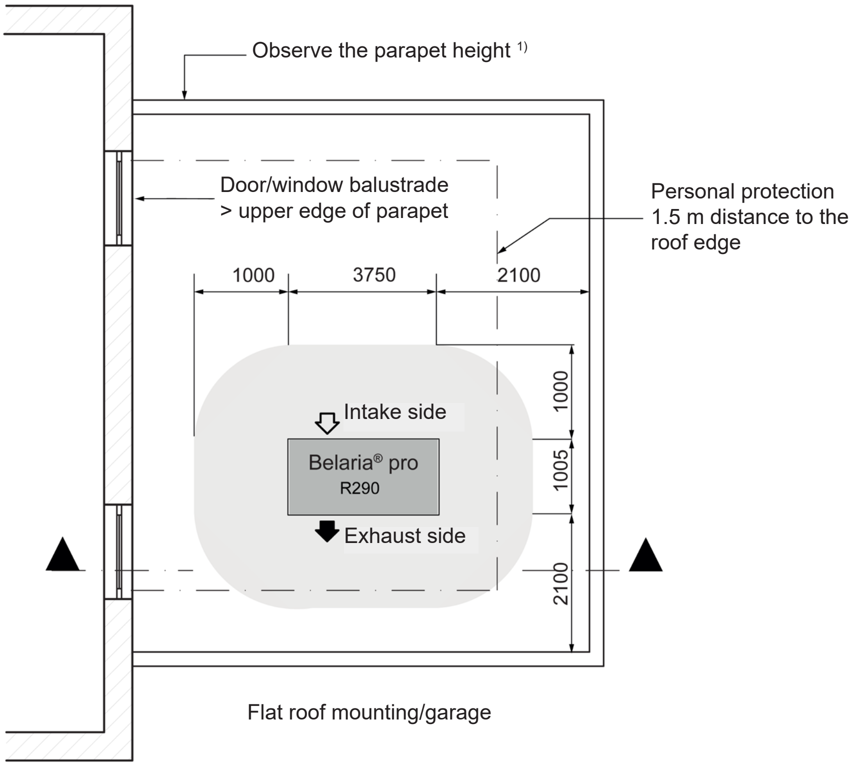
- The heat pump (outdoor unit) is only allowed to be placed outdoors and under no circumstances indoors.
- The outdoor unit is filled with the non-toxic, odourless and colourless but flammable refrigerant R290 (propane), which is heavier than air. If this escapes, there is a danger of fire/explosion. Therefore, all potential sources of ignition must be kept at least 1 m away in all directions. Smoking and the use of naked flames is prohibited in this area.
- Window balustrades must be higher than the upper edge of the outdoor unit in the protection area!
- The heat pump must be at least 1 m from the property boundary; observe building regulations!
- At the entrances to properties, it must be ensured that no vehicle can enter the protection area.
- To prevent the heat pump from being touched by vehicles, a collision guard must be installed if necessary. This must be located outside the protected area.

### Floor plan – protection area when installed outdoors



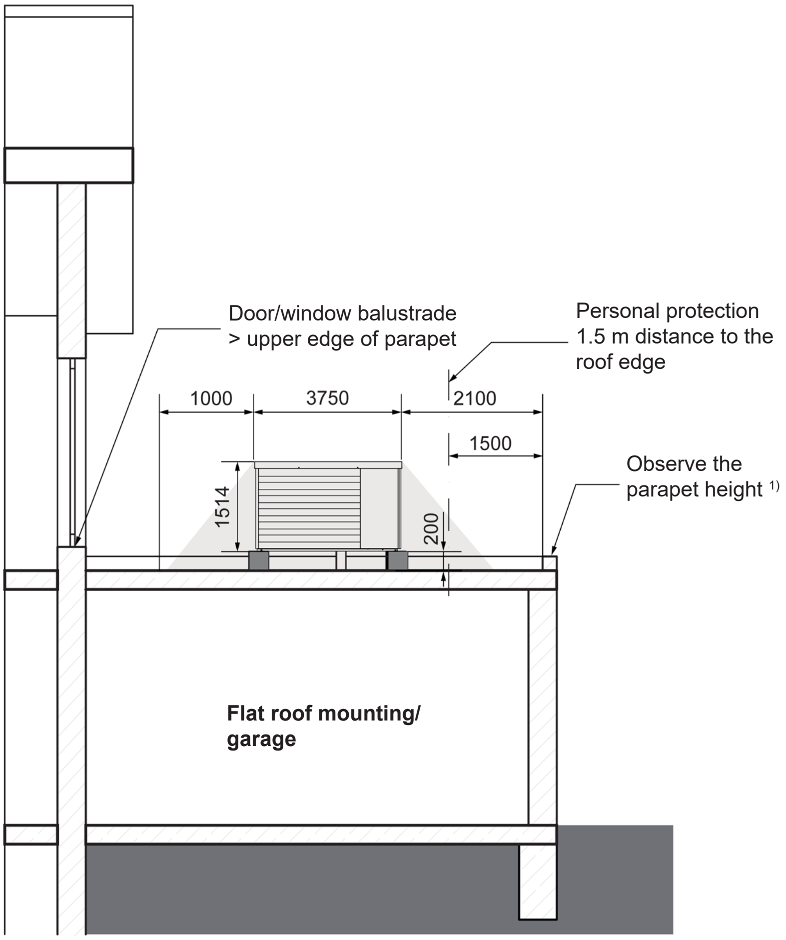


### Floor plan flat roof – protection area



[1] In case of flat roof installation, the parapet must not represent a potential sink in which refrigerant could accumulate.

### Section flat roof – protection area

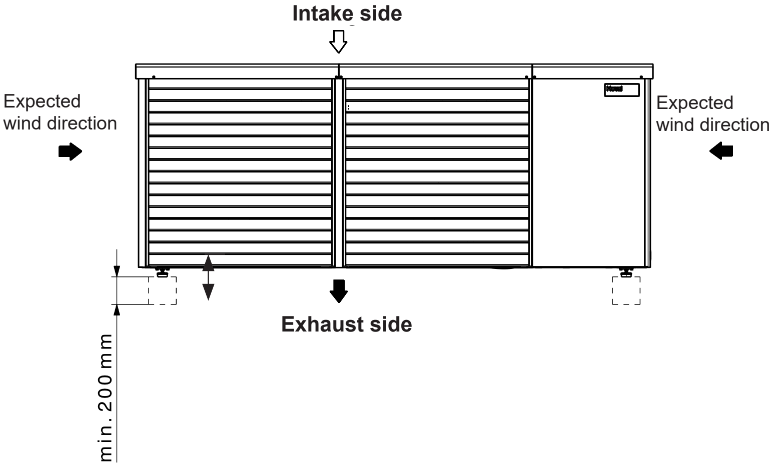


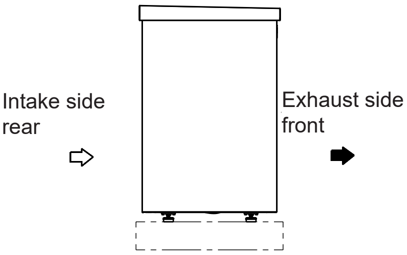
- Strict compliance with safety measures regarding combustible refrigerants.
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. strip foundation). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.6 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.
- There must be no floor-to-ceiling doors/ windows to the flat roof, or balustrade must be higher than the parapet.
- Protection areas around windows must be complied with.
- There must not be any pipe vents, skylights or the like on the flat roof within a radius of 1 m from the heat pump.
- If there is a risk of frost, a siphon must be installed in the shaft immediately before the condensate drain is introduced into the downpipe.
- Condensate drain into the sewage system via a frost-proof siphon or allow it to seep away freely.

## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

**Firm strip foundation or floor plate (1) on site**





The base must not form a sink. A circumferential base is therefore not permitted.

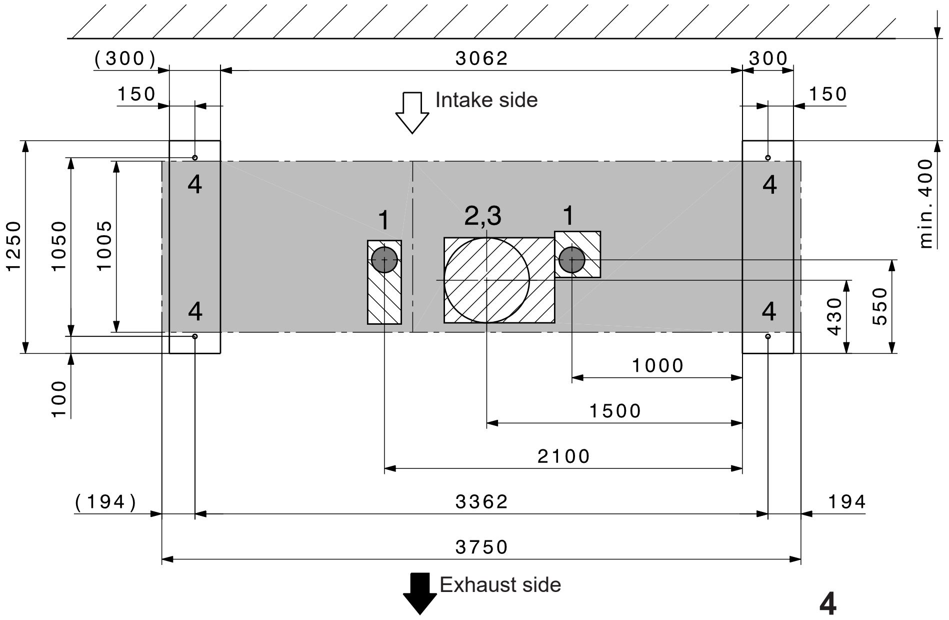
## Installation variants for Belaria® pro outdoor unit

(Dimensions in mm)

**Strip foundation**

Plan

(view from above)



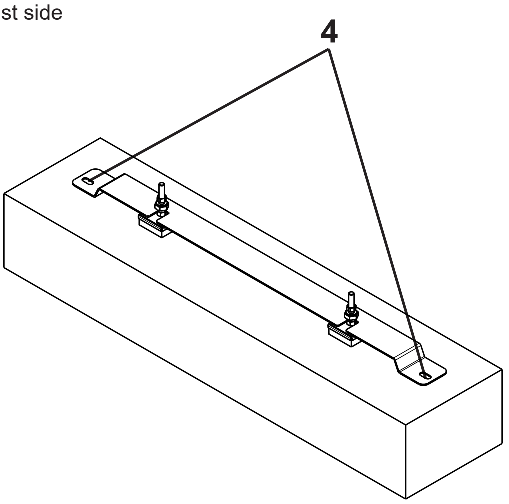
1 Condensate drain area

2 Area Flow hydraulics

Return hydraulics

3 Electrics area

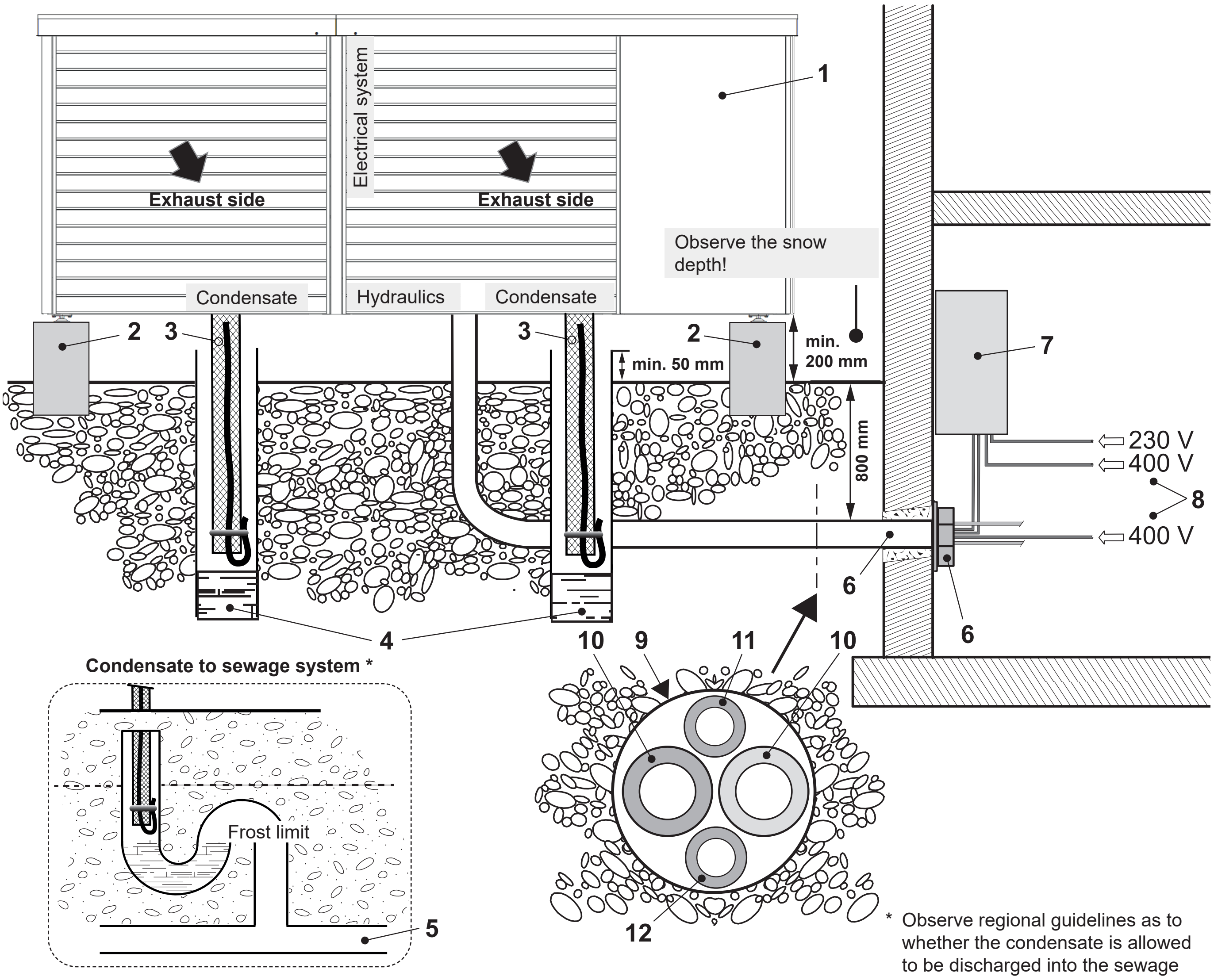
4 Attachment points on the strip foundation (dowels included in scope of delivery)



▨ Possible area for empty tubes in the strip foundation

▨ Possible area for condensate drain in the strip foundation

## Configuration and connection diagram Belaria® pro (40,50)



* Observe regional guidelines as to whether the condensate is allowed to be discharged into the sewage system.

1 Outdoor unit
2 Stip foundation
3 Condensate drain heat pump Ø 28 mm, drain pipe DN 100
4 Variant 1: Seepage (duct/gravel layer)
5 Variant 2: Discharging into the sewage system (penetration into the soil must be made leak-tight)
6 Wall lead-through (hydraulic and electrical connections)
7 Electrical box
8 Main current: 3 x 400 V/50 Hz
Control current: 1 x 230 V/50 Hz
Data bus RS485
9 Empty tube for hydraulics and electrics
10 Connection line flow and return
11 Empty tube for electrical connections for outdoor unit
Main current outdoor unit: 3 x 400 V/50 Hz
Control current outdoor unit: 1 x 230 V/50 Hz
12 Empty tube for data bus RS485

### Requirements and directives

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

### Set-up

- The distance between the outdoor unit and the buffer storage tank must be as short as possible. Only short and simple routing of lines guarantees cost effectiveness and low heat losses.
- The maximum permitted single cable length is 30 m between the outdoor unit and the buffer storage tank. This must not be exceeded.
  In general, the customer must assess whether the next larger pipe dimension is more suitable due to the pressure drop.
- There must be no building openings (windows, doors, shafts, ventilation openings, etc.) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Wall ducts into the building must be airtight.
- The outdoor unit must not be placed in or near floor recesses.
- The outdoor unit must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air exhaust sides must not be narrowed or blocked. The air exhaust side must be unobstructed (> 2 m).
- When using glycol (antifreeze) – primary and/or secondary – a separating system must be used.
- Filling the entire system with glycol or a frost protection agent/water mixture is considered improper use and is not permitted. If this is nevertheless desired for frost protection reasons, the system must be designed with a system separation. Only environmental compatible frost protection agent is allowed to be used.

### Outdoor unit

**Important safety instruction**

The heat pump (outdoor unit) is only allowed to be placed outdoors and under no circumstances indoors.

The outdoor unit is filled with the non-toxic, odourless and colourless but flammable refrigerant R290 (propane), which is heavier than air. If this occurs, there is a danger of fire/explosion. Therefore, all potential sources of ignition must be kept at least 1 m away in all directions. Smoking and the use of naked flames is prohibited in this area.

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

- The maximum line length must not be exceeded.
- The connection lines must be laid insulated and frost-proof.
- 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.
- 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 unit is installed at wind-prone locations, the alignment of the heat pump must be selected in such a way that the expected wind direction is crossways to the intake direction of the outdoor unit.
- If an alternative installation in areas subject to strong winds cannot be avoided, an additional wind shield in the form of a hedge, for example, should be installed, or additional fastening should be provided for the outdoor unit.
- At exposed installation locations prone to wind load, e.g. on building roofs, the surface load on the upper horizontal cover surface of the heat pump caused by wind suction must not exceed a value of 2000 N/m². The heat pump casing might be damaged if this value is not complied with.
- The permitted surface load must be determined in accordance with the specifications of standard EN 1991-1-1. Compliance must be checked by a qualified specialist. A professional inspection of the actual conditions on site is mandatory and must be carried out by a qualified specialist.
- When planning and installing the heat pump in locations exposed to wind load, please contact your sales consultant in good time.
- Notice on installing the cover: If the cover of the heat pump has been removed, it must be properly reinstalled after the work has been completed. Make sure that the cover is fully connected to the heat pump using all the screw holes provided, to ensure stability and tightness.
- If the installation location is not protected against snowfall, it must be chosen in such a way that the evaporator remains free of snow.
- The outdoor unit must always be installed on a solid surface in a horizontal position. This can be achieved by means of a strip foundation.
- The load-bearing capability must be adequate. The unit must be fixed with 4 M12 screws.
- Air heat pumps generate condensate during operation. This can amount to 15 litres per evaporator unit per defrost cycle within 2 minutes for the outdoor unit of the Belaria® pro.
- The condensate drain must be frost-proof so that the condensate can flow away without problems even at outdoor temperatures below 0 °C.
- If the discharge is into the sewage system, a siphon must be provided and the duct lead-through into the ground must be sealed so that no refrigerant can enter the sewage system uncontrolled.
- If there is a risk of frost, a siphon must be installed in the shaft immediately before the condensate drain is introduced into the downpipe.
- The condensate drip trays integrated in the outdoor unit are already equipped with tray heating at the factory that thus prevents freezing.
- The condensate drain lines are also secured with the pre-installed heating tapes.
- The air exhaust has increased susceptibility to frost. Gutters, water pipes and water containers must not be situated right next to the exhaust.
- 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.
- The hydraulic lines from the heat pump can transmit structure-borne noise. Therefore, structure-borne noise decoupling should be provided, e.g. with sound-insulating hoses.

A strainer is located in the outdoor unit. At least one sludge and magnetite separator must be installed in the heating return.

### Flat roof installation

Flat roof installation of the Belaria® pro is possible under the following conditions:

- Strict compliance with safety measures regarding flammable refrigerants (see below).
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. strip foundation). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.6 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.
- At exposed installation locations prone to wind load, e.g. on building roofs, the surface load on the upper horizontal cover surface of the heat pump caused by wind suction must not exceed a value of 2000 N/m². The heat pump casing might be damaged if this value is not complied with.
- The permitted surface load must be determined in accordance with the specifications of standard EN 1991-1-1. Compliance must be checked by a qualified specialist. A professional inspection of the actual conditions on site is mandatory and must be carried out by a qualified specialist.
- When planning and installing the heat pump in locations exposed to wind load, please contact your sales consultant in good time.

- Notice on installing the cover: If the cover of the heat pump has been removed, it must be properly reinstalled after the work has been completed. Make sure that the cover is fully connected to the heat pump using all the screw holes provided, to ensure stability and tightness.
- The heat pump contains electrically operated components and must be integrated in the structural lightning and surge protection for roof structures.

Safety measures to be complied with
- There must be no building openings (windows, doors, shafts, ventilation openings, etc.) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Wall ducts into the building must be airtight.
- The outdoor unit must not be placed in or near floor recesses.
- The outdoor unit must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air exhaust sides must not be narrowed or blocked. The air exhaust side must be unobstructed (> 2 m).
- The condensate is allowed to be directed into a shaft. A siphon must be installed upstream of the connection to the downpipe. The siphon must be located inside the building.

**Electrical box**
- The installation location must be selected in accordance with the valid requirements and directives.
- The electrical box must be installed in a room protected against frost, by an approved specialist company. Room temperature must be between 5 °C and 25 °C.
- Installation in wet rooms, dusty rooms or rooms with a potentially explosive atmosphere is not permitted.
- The electrical connections can be introduced from the bottom with the electrical box of the Belaria® pro.
- To ensure accessibility to the electrical box, the distances must be maintained on all sides (see Dimensions/Space requirement).

**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 connection lines specified in the technical data must be checked by the electrical company carrying out the work depending on the line length, the routing type and the type of line.
- A fault-current circuit breaker is recommended. Country-specific requirements must be complied with. If the “fault-current circuit breaker” safeguard measure is implemented by the electrical company, a separate fault-current circuit breaker is recommended for the heat pump.
- This fault-current circuit breaker must be of the all-current-sensitive type B (IΔN ≥ 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 connection and feeder lines must be copper cables.
- Please refer to the circuit diagrams for electrical details.
- 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.

**Routing of the hydraulic connection lines**
- If the hydraulic connection 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 350 mm.
- Wall ducts must be sealed to the outside on site.
- After the hydraulic connection lines have been laid, they must be checked for damage and reinsulated. In case of cooling, condensate can form on the pipes.
- The hydraulic connection lines must be laid decoupled from the building and must never be laid flush-mounted.
- Care must be taken to ensure that water pipes do not pass through the sleeping or living areas.
- Shut-off valves must be installed on site in accordance with the corresponding hydraulic diagram. The shut-off valves are not allowed to be opened until immediately before commissioning.
- The danger of frost damage must be taken into account if there are prolonged power outages.
- 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.

**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.
- If panel heating is used for room cooling, various criteria such as temperatures below the dewpoint or the temperature profiles 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.

**Further guidelines**
see “Engineering”

**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 data 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 must 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.
- A strainer is located in the outdoor unit. At least one sludge and magnetite separator must be installed in the heating return.
- 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 and given pressure drops.
- Ventilation possibilities must be provided at the highest points and drainage possibilities at the lowest points of the connection lines.
- To prevent energy losses, the connection lines must be insulated with suitable material in accordance with local regulations.

### Transport and storage

- When removing the packaging, check the outdoor unit for damage. If the outdoor unit was damaged during transport or storage, contact Hoval customer service, a service partner or a licensed specialist immediately. They must carry out a leak test with a suitable leak detector. In the event of a leak, the outdoor unit must be repaired.
- Store the outdoor unit in a cool place without fire hazard and without direct exposure to heat sources. The ambient temperature must not exceed 43 °C.
- The same regulations apply for storage as for installation (no recesses, ventilation pipes, ignition sources in the storage area).
- The outdoor unit must not be stored in closed rooms, cellars or garages.
- The outdoor unit is only allowed to be stored outdoors.
- During transport, ensure sufficient ventilation in the closed vehicle, also when parking and stopping.
- Storage in passageways, escape routes or in front of entrances or exits is not permitted.
- Ignition sources such as naked flames, switched-on gas appliances, electric heaters, etc. must be kept away from the unit.
- Transport and storage only in upright position. Protect from mechanical damage and from falling over or falling down (make sure the load is secure).
- To prevent damage during transport, the outdoor unit should be moved to its final installation location as far as possible in packed state on the wooden pallet with a forklift or lift truck.
- Transport by crane: The outdoor unit can be lifted by a crane and transported to the installation site. For this purpose, there are three crane hooks below the cover with openings for the passage of the transport straps.

### Prerequisites for commissioning

- Commissioning at cold outdoor temperatures is only possible if the system is preheated on site (e.g. with an electric bake-out device). During commissioning, the room temperature of the heated rooms must be at least 15 °C (compressor operation is not possible below this temperature, as there would be too little energy for defrosting). If a buffer storage tank is provided, its heating water temperature is not allowed to be less than 20 °C during commissioning.
- A heat pump should not be used for drying out of the building (screed heating), as this can significantly reduce the service life of the device. Alternatively, heating via a mobile heating station or E-set is a sensible option. This is particularly true for air/water heat pumps, since the heating output here is strongly dependent on the outdoor temperature and drying out of the building is not possible at temperatures below the frost line in the building carcass.

Hoval

# **Hoval quality.**
You can count on us.

Hoval is one of the leading international companies for heating and indoor climate solutions. Drawing on more than 80 years of experience and benefiting from a close-knit team culture, the Hoval Group delivers exciting solutions and develops technically superior products. This leadership role requires a sense of responsibility for energy and the environment, which is expressed in an intelligent combination of different heating technologies and customised indoor climate solutions.

Hoval also provides personal consultations and comprehensive customer service. With around 2500 employees in 15 companies around the world, Hoval sees itself not as a conglomerate, but as a large family that thinks and acts globally.
Hoval heating and indoor climate solutions are currently exported to more than 50 countries.

## Responsibility for energy and environment

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2026 - 04 | Subject to modifications

Your Hoval partner

Hoval

CATALOGUE

# Hoval Belaria® fit

## Air/water heat pump
## Belaria® fit (8-26)

**Hoval** | Responsibility for energy and environment

## Table of contents

## Hoval Belaria® fit (8-26)

**Modulating monoblock heat pump for heating and cooling in the living area.**

- For heating and cooling in cascades and domestic hot water production
- Modulating air/water heat pump in compact design for outdoor installation
- Smart Grid-ready
- Cladding made from painted, galvanised sheet steel (RAL 9001)
- Speed-controlled axial fans
    - Belaria® fit (8,13) 1 piece
    - Belaria® fit (20,26) 2 pieces
- Hermetic, inverter-controlled rotary compressor mounted on vibration-damping rubber mounts to ensure vibration-free operation under all operating conditions
- Silenced casing
- Oil sump heater
- Finned heat exchanger with hydrophilic Blue Fin coating
- Copper-soldered plate heat exchanger made of stainless steel with polypropylene insulation and frost protection heating
- Electronic expansion valve
- 4-way valve for refrigeration circuit switching
- Liquid separator and collector
- Filter dryer
- High and low-pressure switches
- Circulating pump
    - Belaria® fit (8,13) self-regulating
    - Belaria® fit (20,26) 3-stage
- Automatic bleeder valve
- Diaphragm pressure expansion tank
    - Usable volume 4.8 l
- Safety valve
- Flow monitor
- Electrical box internally wired ready for connection
- External operator terminal with display and function keys

*Condensate drain*

- It must be ensured that the condensate produced can be absorbed to a sufficient extent by a gravel bed (see configuration and connection diagram).
- Condensate drip tray see accessories

*Hydraulic connections*

- Heating connections

*Electrical connections*

- See installation instructions

*Delivery*

- Belaria® fit
- 1 temperature sensor (further temperature sensors see accessories)
- Operator terminal

*On site*

- Wall openings for water-side connection lines
- Water-side connection lines
- Electrical connection lines

**Model range**

| Belaria® fit type | | | Heat output A-7W35 | Heat output A2W35 | Cooling capacity A35W18 |
|---|---|---|---|---|---|
| | 35 °C | 55 °C | kW | kW | kW |
| (8) 1PH | A+++ | A++ | 7.3 | 8.7 | 11.1 |
| (13) 1PH | A+++ | A++ | 12.7 | 13.2 | 15.3 |
| (13) 3PH | A+++ | A++ | 12.7 | 13.2 | 15.3 |
| (20) 3PH | A+++ | A++ | 19.9 | 20.2 | 21.7 |
| (26) 3PH | A++ | A+ | 23.3 | 26.0 | 31.9 |
| | A+++ → D | A+++ → D | | | |

1PH = 1-phase electrical connection 230 V/50 Hz
3PH = 3-phase electrical connection 400 V/50 Hz

Energy efficiency class of the compound system with control

*Operator terminal*

- Operator terminal with graphical display and function keys
- Control and monitoring of the modulating heat pumps
- Setting the heating and cooling curves
- Selection of the operating mode: Standard, Silent and Supersilent
- Display of the current operating parameters
- The operator terminal can be installed in any room.
- Can also be used as thermostat
- Control also possible via Modbus
- Operation available in 16 languages
- Included in the scope of delivery of the Belaria® fit

## Air/water heat pump

### Hoval Belaria® fit (8-26)

| Belaria® fit<br>type | Heat output<br>A-7W35<br>kW | <br>A2W35<br>kW | Cooling capacity<br>A35W18<br>kW | Part No. |
|---|---|---|---|---|
| (8) 1PH | 7.3 | 8.7 | 11.1 | 7019 241 |
| (13) 1PH | 12.7 | 13.2 | 15.3 | 7019 242 |
| (13) 3PH | 12.7 | 13.2 | 15.3 | 7019 243 |
| (20) 3PH | 19.9 | 20.2 | 21.7 | 7019 244 |
| (26) 3PH | 23.3 | 26.0 | 31.9 | 7019 245 |

1PH = 1-phase electrical connection
230 V/50 Hz
3PH = 3-phase electrical connection
400 V/50 Hz

**Notice**
A buffer storage tank must be provided. Suitable buffer storage tanks see “Calorifiers” and Engineering Belaria® fit (8-26).

**Further accessories can be found under the following rubrics:**

- Calorifiers/buffer storage tanks:
  - Calorifiers
  - Buffer storage tanks
  - Combination storage tanks
  - Electric heating elements
- Heating armature groups/heating distributors
- Various system components:
  - 2-way and 3-way valves
  - 3-way mixers
  - 2-way and 3-way ball valves
  - Motor drives and butterfly valves
  - Diaphragm pressure expansion tanks
  - Fittings
  - Plate heat exchangers
- Circulating pumps

**Part No.**

## Accessories for Belaria® fit (8,13)

**HP line insul. WA-HP 125-32**
**with connector set**
Flexible, pre-insulated and self-compensating line with two heating pipes and two empty pipes.
With connector set consisting of:
- 4 clamping couplings WA DN 32 1″ ET 32 x 2.9 mm
- 1 end cap WA-HP 125-32
- 1 protective cap WA-HP 125-32
- 1 protective cap set WA-HP protection tube DN 25
- 1 split ring seal 125/200

Outside diameter: 125 mm
Fluid pipes: 2 x 32 mm / 2.9 mm (DN 25)
Outside diameter empty pipe 1: 32 mm
Outside diameter empty pipe 2: 25 mm
Bending radius: 0.3 m
Operating temperature: −10 ... 85 °C
Maximum temperature: 95 °C
Nominal pressure: 6 bar

| Dimension inside/outside | Line length m | Part No. |
|---|---|---|
| DN 25/32 | 5 | 6065 263 |
| DN 25/32 | 10 | 6065 264 |
| DN 25/32 | 15 | 6065 265 |
| DN 25/32 | 20 | 6065 266 |
| DN 25/32 | 25 | 6065 267 |

**Lining pipe DN 200 D210/D200 x 400** 2080 584
for HP line insulated WA-HP
Lining pipe for feeding the HP lines through ceilings, walls and floors.
Suitable for walling in and cementing in.
Lining pipe material: PVC
Outer Ø: 210 mm
Internal Ø: 200 mm
Length: 400 mm

**Adhesive tape IKB** 2023 563
for thermal insulation made of EPDM
Thickness: 3 mm
Width: 50 mm
Roll: 15 m

**Part No.**

## Accessories for Belaria® fit (20,26)

**HP line insul. WA-HP 160-40**
**with connector set**
Flexible, pre-insulated and self-compensating line with two heating pipes and two empty pipes.
With connector set consisting of:
- 4 clamping couplings WA DN 40 1¼″ ET 40 x 3.7 mm
- 1 end cap WA-HP 160-40
- 1 protective cap WA-HP 160-40
- 1 protective cap set WA-HP protection tube DN 32
- 1 split ring seal 160/250

Outside diameter: 160 mm
Fluid pipes: 2 x 40 mm / 3.7 mm (DN 32)
Outside diameter empty pipe 1: 32 mm
Outside diameter empty pipe 2: 32 mm
Bending radius: 0.6 m
Operating temperature: −10 ... 85 °C
Maximum temperature: 95 °C
Nominal pressure: 6 bar

| Dimension inside/outside | Line length m | Part No. |
|---|---|---|
| DN 32/40 | 5 | 6065 268 |
| DN 32/40 | 10 | 6065 269 |
| DN 32/40 | 15 | 6065 270 |
| DN 32/40 | 20 | 6065 271 |
| DN 32/40 | 25 | 6065 272 |

**Lining pipe DN 250 D280/D250 x 400** 2087 112
for HP line insulated WA-HP
Lining pipe for feeding the HP lines through ceilings, walls and floors.
Suitable for walling in and cementing in.
Lining pipe material: PVC
Outer Ø: 280 mm
Internal Ø: 250 mm
Length: 400 mm

**Adhesive tape IKB** 2023 563
for thermal insulation made of EPDM
Thickness: 3 mm
Width: 50 mm
Roll: 15 m

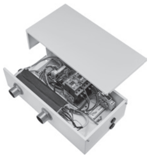
**Part No.**

## Accessories

**Frost protection valve FS108-32**
**G 1¼" BS**
Drains the heating system if the temperature of the heating water falls below 3 °C.
Casing made of brass EN 12165 CW724R-M
Springs made of stainless steel EN 10270-3
EPDM seals
- Connection: G 1¼" (ISO 228-1) flat-sealing
- Operating medium: water
- Operating pressure: max. 10 bar
- Operating temperature: 0 ... 65 °C
- Ambient temperature: −30 °C / 60 °C
- Opening temperature (water): 3 ± 1 °C
- Closing temperature (water) 4 ± 1 °C
- Kv (passage) = 70 m³/h
- Discharge capacity at 3 bar: 0.5-1 l/h

2075 998

**At least 2 pieces are required!**
Drains the heating system if the temperature of the heating water falls below 3 °C (± 1 °C).
Not below 7 °C for cooling.
Observe downward slope, more drain valves may be necessary (flow, return, water traps).



**Electric auxiliary heater**
Electric auxiliary heater with output power that can be selected locally in three levels, with power supply 230 V/50 Hz or 400 V+N/50 Hz.
The kit includes contactors and safety devices for proper operation.
Thermostat with manual reset, thermostat with automatic reset and fuses for protection against abnormal overcurrents.

| Type | Output power kW | Part No. |
|---|---|---|
| Belaria® fit (8,13) 1PH | 2/4/6 | 6061 315 |
| Belaria® fit (13-26) 3PH | 3/6/9 | 6061 316 |

**Vibration damper set**
for Belaria® fit (8-26)
for reducing the transmission of solid-borne noise in installation
**without** condensate drip tray
Consisting of:
- 6 vibration-damping adjustable feet
- 6 threaded rods M10

incl. fitting accessories

6061 180

**Vibration damper set**
for Belaria® fit
for reducing the transmission of solid-borne noise in installation
**without** condensate drip tray
Consisting of:
- 6 vibration-damping adjustable feet
- 6 threaded rods M10

incl. fitting accessories

| Type | Part No. |
|---|---|
| Belaria® fit (8,13) | 6061 321 |
| Belaria® fit (20,26) | 6061 322 |

**Part No.**

**Condensate drip tray** 6061 314

for Belaria® fit (8-26)
Condensate drip tray with electric heater for collecting and draining the condensate, with connection for the siphon.
The drip tray is equipped with an automatically activated frost protection heater that prevents freezing of the condensate and is controlled by a thermostat.

**Notice**
When using the condensate drip tray, the corresponding vibration damper set must also be ordered.

**Condensate hose set** 6061 156

Hose 2 m incl. clip
2 pieces are required.

**Temperature sensor**

Temperature sensor for recording the following temperatures:
- Thermal solar circuit
- Boiler or external electric heating
- Hot water storage tank
- Mixer circuit
- Low loss header

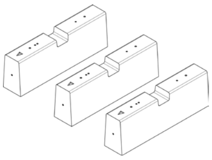
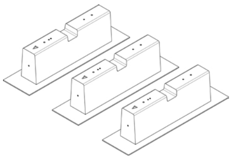
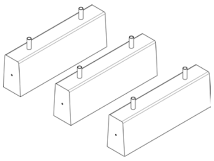
| | |
|---|---|
| Length 10 m | 6061 317 |
| Length 30 m | 6061 318 |

**Switching ball valve VBI60.32-13L; PN 40** 6052 445

Internal thread Rp 1¼″
Leakage rate: 0 ... 0.0001 % of kvs value
Permitted media: cold water,
cooling water, DHW, hot water,
water with frost protection
Recommendation:
water treatment according to VDI 2035
DN 32
kvs value: 13 m$^3$/h
Medium temperature: −10 ... 120 °C
Ball valve body: brass
Ball: brass chrome-plated
Tappet: brass
Gland: EPDM O-rings

**Motor drive GLB341.9E** 2070 331

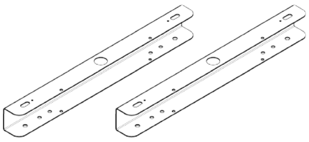
For straight-way ball valves VAG60.. and switching ball valves VBI60.. DN 15-50
Operating voltage: 230 V, 50/60 Hz
Control signal 2-point/3-point
Single-wire/2 wire control
Operating time: 150 s
Nominal torque: 10 Nm
Permitted ambient temperature:
−32 ... 55 °C

| | | Part No. |
|---|---|---|
|  | **Concrete base set BSW01-FU3**<br>for Belaria® fit (8-26)<br>for safe installation of the heat pump<br>on a firm base<br>Consisting of:<br>3 concrete bases with cast-in<br>fastening sleeves, screw set<br>Dimensions (H x W x D):<br>250 x 750 x 150 mm<br>Weight: 3 pieces of 58 kg | 6061 176 |
|  | **Concrete base set BSW01-FD3**<br>for Belaria® fit (8-26)<br>for safe installation of the heat pump<br>on the flat roof<br>Consisting of:<br>3 concrete bases with cast-in<br>fastening sleeves, protective mats with<br>aluminium lining, screw set<br>Dimensions (H x W x D):<br>250 x 750 x 150 mm<br>Weight: 3 pieces of 58 kg | 6061 177 |
|  | **Concrete base set BSW01-ZS3**<br>for Belaria® fit (8-26)<br>for safe installation of the heat pump<br>in gravel bed for gardens and meadows.<br>Additional base height 250 mm for plug<br>combination with concrete base set<br>BSW01-FU3<br>Consisting of:<br>3 additional concrete bases,<br>screw set<br>Dimensions (H x W x D):<br>250 x 750 x 150 mm<br>Weight: 3 pieces of 58 kg | 6061 178 |

**Notice**
For fastening the Belaria® fit (8-26) on the concrete base sets BSW01, the base set SWK02-3 must also be ordered.

**Notice**
In a flat roof installation, all standards concerning statics, wind load and access to roofs must be complied with.

**Further information**
see “Engineering” chapter

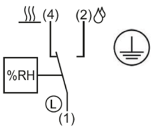
| | | |
|---|---|---|
|  | **Base set SKW02-3**<br>for concrete base set BSW01<br>for safe installation of an<br>outdoor unit on a firm base<br>or on the flat roof<br>Consisting of:<br>- 3 mounting rails<br>- 3 fastening sets | 6061 179 |
|  | **Wired room thermostat**<br>for Daikin Altherma 3 H HT W (14,18) and<br>Belaria® fit (8-26)<br>Simple and convenient regulation of the<br>indoor temperature for ideal comfort and<br>energy savings.<br>Various time programs can be selected.<br>Installation of the room thermostat on<br>the inside wall in the living area,<br>electrical connection to the<br>operator terminal on site.<br>Voltage-free on/off contact (230 V) | 6023 044 |

**Part No.**

**Vibration decoupler**
for reducing structure-borne noise from heat pumps indoors, cannot be shortened
Consisting of:
- 1 vibration decoupler insulated for heating and brine side flat-sealing with union nut
- 2 flat seals

Nominal pressure: PN 10

| Dimension | Connection inches | Nominal length mm | Part No. |
|---|---|---|---|
| DN 32 | 1¼″ | 300 | 2082 224 |
| DN 32 | 1¼″ | 500 | 2082 225 |
| DN 32 | 1¼″ | 1000 | 2080 796 |



**Dewpoint monitor (TPW)** 2070 911
for monitoring the formation of condensation in a compartment, with gold contacts, can be installed as required for pipes up to Ø 50 mm
The installation location must be selected in such a way that a representative humidity measurement is guaranteed i.e. the room air must flow unhindered through the slots in the housing to the measuring element inside the casing.
The TPW does not require supply voltage or auxiliary energy and should be mounted in an air flow with an air velocity of at least 0.2 m/s.
Control range: 50 ... 90 % RH
Max. switch power: 100 mA/250 V AC
Operating temperature: 0 … 60 °C
Dimensions: 85 x 55 x 33 mm
Weight: approx. 92 g
Type of protection: IP20

**Notice**
The dewpoint monitor is the only safety equipment in cooling systems and is always mandatory, to prevent damage caused by condensing water in surface cooling systems (floor, wall, ceiling cooling)!
This applies to both active and passive cooling systems.

**Safety set SGK15-PN3 IT 1″ insulated** 6063 905
Safety group made of composite material (glass fiber reinforced polyamide) complete with safety valve (3 bar), quick air vent and pressure gauge
Connection IT 1″ (ISO228-1)
with insulating caps
Medium temperature range: 5 ... 90 °C
Setting (pressure): 3 bar
Area of application up to 50 kW

**Part No.**

## Services

**Services and associated scope of services**
see separate catalogue “Hoval Services”

Commissioning by Hoval customer service is a prerequisite for warranty/guarantee activation.

### Belaria® fit (8-26)

| **Type** | | **(8)<br>1 PH** | **(13)<br>1 PH** | **(13)<br>3 PH** | **(20)<br>3 PH** | **(26)<br>3 PH** |
|---|---|---|---|---|---|---|
| • Energy efficiency class of the compound system with control ( A+++ → D) | 35 °C/55 °C | A+++ / A++ | A+++ / A++ | A+++ / A++ | A+++ / A++ | A++ / A+ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 206 | 186 | 186 | 181 | 165 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 131 | 135 | 135 | 125 | 123 |
| • Seasonal coefficient of performance moderate climate 35 °C | SCOP | 5.2 | 4.7 | 4.7 | 4.6 | 4.2 |
| • Seasonal coefficient of performance moderate climate 55 °C | SCOP | 3.4 | 3.5 | 3.5 | 3.2 | 3.2 |
| **Max. performance data heating and cooling in acc. with EN 14511** | | | | | | |
| • Heat output A2W35 | kW | 8.7 | 13.2 | 13.2 | 20.2 | 26.0 |
| • Coefficient of performance A2W35 | COP | 4.1 | 3.5 | 3.5 | 3.2 | 2.9 |
| • Heat output A-7W35 | kW | 7.3 | 12.7 | 12.7 | 19.9 | 23.3 |
| • Coefficient of performance A-7W35 | COP | 3.2 | 2.8 | 2.8 | 2.4 | 2.3 |
| • Cooling capacity A35W18 | kW | 11.1 | 15.3 | 15.3 | 21.7 | 31.9 |
| • Energy efficiency ratio A35W18 | EER | 4.7 | 3.3 | 3.3 | 4.4 | 3.7 |
| • Cooling capacity A35W7 | kW | 7.9 | 11.7 | 11.7 | 17.1 | 12.7 |
| • Energy efficiency ratio A35W7 | EER | 3.5 | 2.3 | 2.3 | 2.9 | 2.3 |
| **Sound data** | | | | | | |
| • Sound power level “Standard” | dB(A) | 59 | 65 | 65 | 71 | 77 |
| • Sound power level “Silent” [1] | dB(A) | 56 | 61 | 61 | 66 | 75 |
| • Sound power level “Supersilent” [1] | dB(A) | 54 | 59 | 59 | 63 | 73 |
| **Hydraulic data** | | | | | | |
| • Maximum flow temperature | °C | 65 | 65 | 65 | 60 | 60 |
| • Max. operating pressure on the heating side | bar | 3 | | | | |
| • Built-in fan | | 1 axial fan | | | 2 axial fans | |
| **Cooling technical data** | | | | | | |
| • Compressor stages | | modulating | | | | |
| • Refrigerant | | R32 | R32 | R32 | R32 | R32 |
| • Refrigeration circuits | | 1 | | | | |
| • Refrigerant filling quantity | kg | 1.40 | 1.75 | 1.75 | 5.00 | 5.00 |
| • Compressor oil type | | DAPHNE HERMETIC OIL FW68S | | | | |
| **Electrical data** | | | | | | |
| • Connections | V/Hz | 1~230/50 | | 3~400/50 | | |
| • Starting current (compressor and fan) [2] | A | 16 | 26 | 11 | 21 | 28.5 |
| **Dimensions/Weight** | | | | | | |
| • Dimensions (H x W x D) | mm | 864 x 1385 x 523 | | | 1557 x 1120 x 528 | |
| • Weight | kg | 105 | 129 | 144 | 177 | 177 |

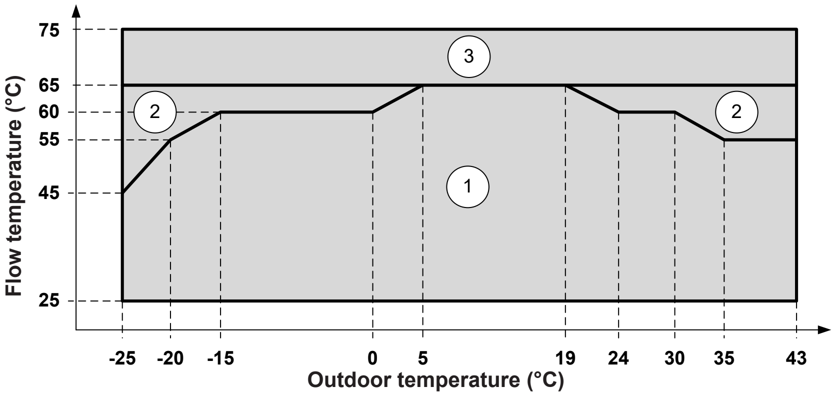
[1] Reduced outputs according to performance data.

[2] Country-specific regulations must be observed. Selection of the fuse size by the electrician.

The use of a fast-acting fault-current circuit breaker (< 0.1 s) IΔn ≥ 30 mA is recommended.
Country-specific regulations must be observed.

## Diagrams of areas of application

### Heating and hot water Belaria® fit (8,13)

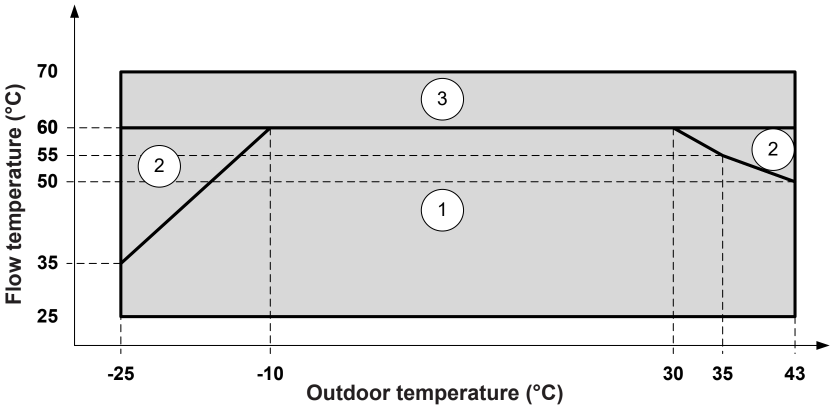


1 Area of application of the heat pump for heating and domestic hot water

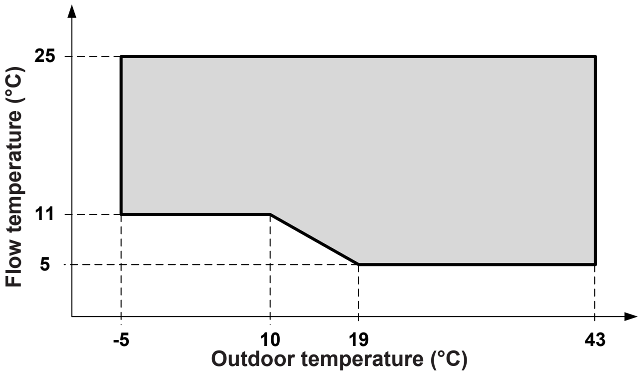
2 Extended area of application of the heat pump for heating and domestic hot water including electric heating element

3 Extended area of application of the heat pump for heating and domestic hot water including boiler

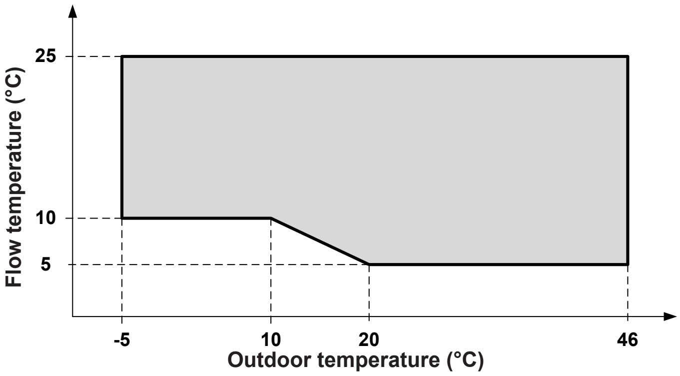
### Heating and hot water Belaria® fit (20,26)



### Cooling Belaria® fit (8,13)



### Cooling Belaria® fit (20,26)



## Sound pressure level

| Type | Sound power level frequency band [Hz] | | | | | | | | Sound power level 1) | Sound pressure level 1) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | dB(A) | dB(A) |
| Belaria® fit (8) 1PH | 68 | 69 | 58 | 56 | 52 | 49 | 48 | 39 | 59 / 56 / 54 | 45 / 42 / 40 |
| Belaria® fit (13) 1PH | 73 | 68 | 62 | 63 | 59 | 57 | 50 | 44 | 65 / 61 / 59 | 50 / 46 / 44 |
| Belaria® fit (13) 3PH | 71 | 72 | 64 | 60 | 58 | 57 | 57 | 54 | 65 / 61 / 59 | 50 / 46 /44 |
| Belaria® fit (20) 3PH | 71 | 79 | 70 | 67 | 64 | 61 | 53 | 50 | 70 / 66 / 63 | 55 / 51 / 49 |
| Belaria® fit (26) 3 PH | 75 | 81 | 77 | 73 | 71 | 69 | 61 | 57 | 77 / 75 / 73 | 61 / 59 / 57 |

1) Standard / Silent (low noise / Super Silent (whisper mode)

The sound data refers to units under full load with nominal test conditions.
Reference conditions: water inlet/outlet temperature 47/55 °C, outdoor temperature 7 °C, dry bulb / 6 °C wet bulb
The sound pressure level refers to a distance of 1 metre from the outer surface of the unit during operation in the open.
The sound power level is determined according to the tensiometric method (EN ISO 9614-2).

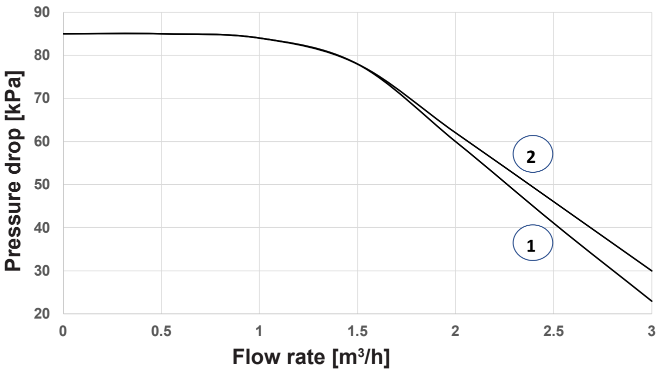
In Silent mode, the maximum outputs must be reduced by the correction factor 0.8.
In Supersilent mode, the maximum outputs must be reduced by the correction factor 0.6.

**Notice:** The Silent and Supersilent functions are designed for temporary operation of the unit.

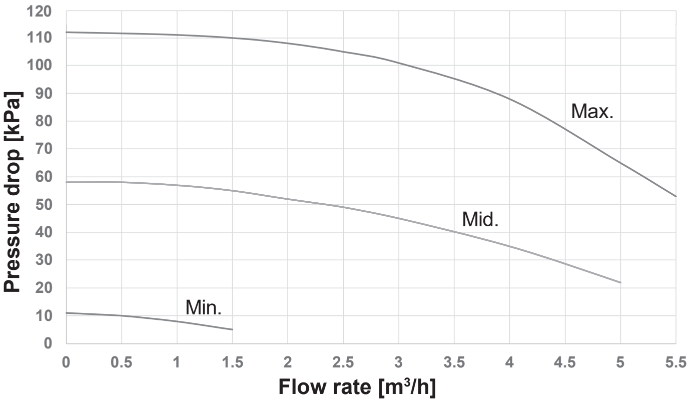
| Sound pressure level [dB(A)] | Distance [m] | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 10 |
| Belaria® fit (8) 1PH | 44.0 | 40.9 | 38.1 | 36.0 | 34.4 | 32.9 | 29.0 |
| Belaria® fit (13) 1PH | 50.0 | 45.9 | 43.1 | 41.0 | 39.4 | 37.9 | 34.0 |
| Belaria® fit (13) 3PH | 50.0 | 45.9 | 43.1 | 41.0 | 39.4 | 37.9 | 34.0 |
| Belaria® fit (20) 3PH | 57.0 | 52.9 | 50.2 | 48.1 | 46.4 | 51.0 | 47.0 |
| Belaria® fit (26) 3PH | 63.0 | 58.9 | 56.2 | 54.1 | 52.4 | 51.0 | 47.0 |

## Residual overpressure

**Belaria® fit (8,13)**



**Belaria® fit (20,26)**



1 Belaria® fit (8) 1PH
2 Belaria® fit (13) 1PH / 3PH

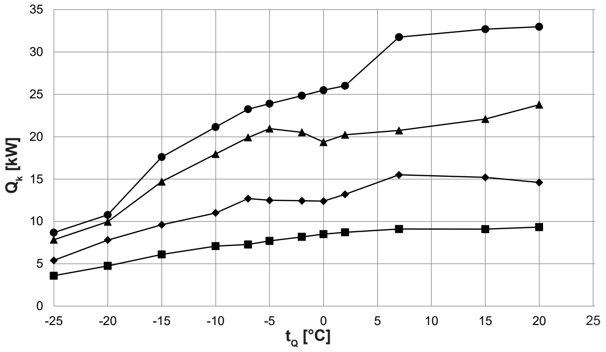
**Notice**
It is recommended for a buffer storage tank to be installed.

## Performance data – heating

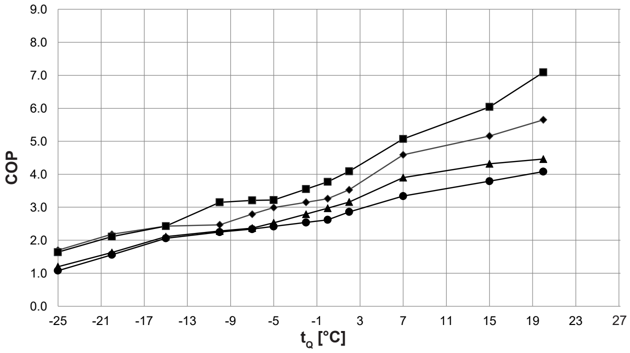
Maximum heat output allowing for defrosting losses

Data according to EN 14511

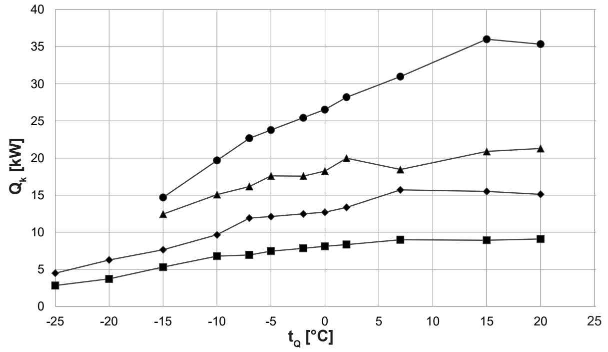
### Heat output – $t_{VL}$ 35 °C



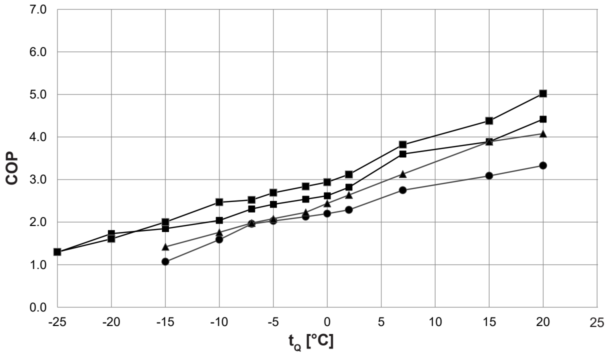
### Coefficient of performance – $t_{VL}$ 35 °C



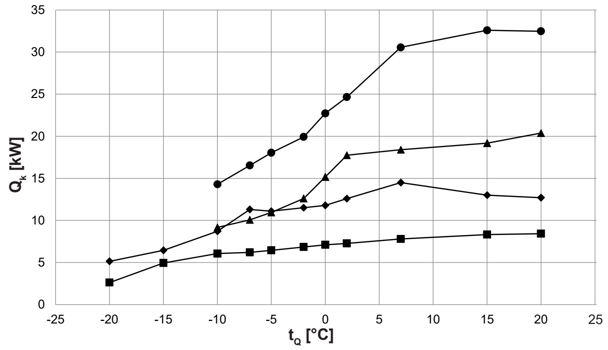
### Heat output – $t_{VL}$ 45 °C



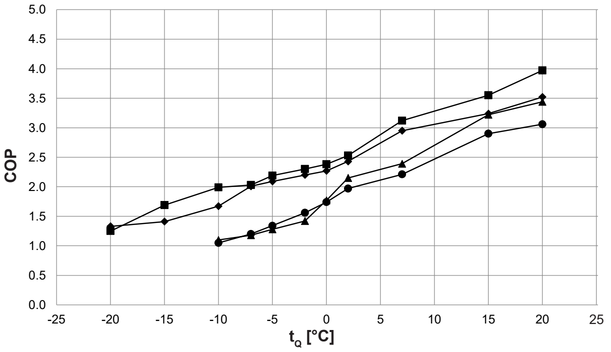
### Coefficient of performance – $t_{VL}$ 45 °C



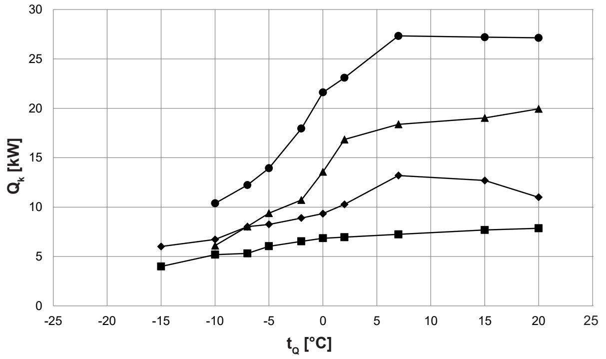
### Heat output – $t_{VL}$ 55 °C



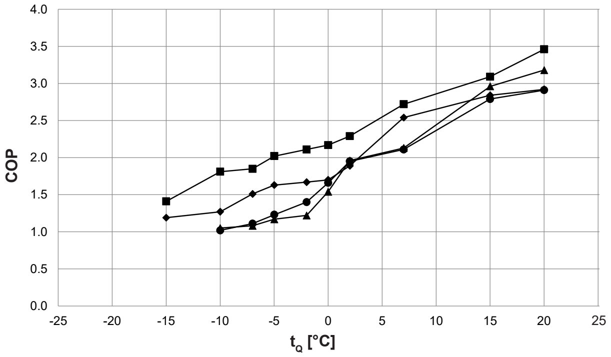
### Coefficient of performance – $t_{VL}$ 55 °C



### Heat output – $t_{VL}$ 60 °C



### Coefficient of performance – $t_{VL}$ 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

■ Belaria® fit (8) 1PH
◆ Belaria® fit (13) 1PH/3PH
▲ Belaria® fit (20) 3PH
● Belaria® fit (26) 3PH

## Performance data – heating

Data according to EN 14511

| | | Belaria® fit (8) | | | Belaria® fit (13) | | | Belaria® fit (20) | | | Belaria® fit (26) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | −25 | 3.6 | 2.2 | 1.6 | 5.4 | 3.2 | 1.7 | 7.8 | 6.5 | 1.2 | 8.7 | 8.0 | 1.1 |
| | −20 | 4.7 | 2.2 | 2.1 | 7.8 | 3.6 | 2.2 | 10.0 | 6.1 | 1.6 | 10.8 | 6.9 | 1.6 |
| | −15 | 6.1 | 2.5 | 2.4 | 9.6 | 4.0 | 2.4 | 14.7 | 7.0 | 2.1 | 17.6 | 8.5 | 2.1 |
| | −10 | 7.1 | 2.2 | 3.2 | 11.0 | 4.5 | 2.5 | 18.0 | 7.9 | 2.3 | 21.1 | 9.4 | 2.3 |
| | −7 | 7.3 | 2.3 | 3.2 | 12.7 | 4.6 | 2.8 | 19.9 | 8.4 | 2.4 | 23.3 | 9.9 | 2.3 |
| | −5 | 7.7 | 2.4 | 3.2 | 12.5 | 4.2 | 3.0 | 21.0 | 8.3 | 2.5 | 23.9 | 9.9 | 2.4 |
| | −2 | 8.2 | 2.3 | 3.6 | 12.4 | 3.9 | 3.2 | 20.5 | 7.4 | 2.8 | 24.9 | 9.8 | 2.5 |
| | 0 | 8.5 | 2.3 | 3.8 | 12.4 | 3.8 | 3.3 | 19.4 | 6.5 | 3.0 | 25.5 | 9.7 | 2.6 |
| | 2 | 8.7 | 2.1 | 4.1 | 13.2 | 3.7 | 3.5 | 20.2 | 6.4 | 3.2 | 26.0 | 9.1 | 2.9 |
| | 7 | 9.1 | 1.8 | 5.1 | 15.5 | 3.4 | 4.6 | 20.7 | 5.3 | 3.9 | 31.8 | 9.5 | 3.3 |
| | 15 | 9.1 | 1.5 | 6.0 | 15.2 | 2.9 | 5.2 | 22.1 | 5.1 | 4.3 | 32.7 | 8.6 | 3.8 |
| | 20 | 9.3 | 1.3 | 7.1 | 14.6 | 2.6 | 5.7 | 23.8 | 5.3 | 4.5 | 33.0 | 8.1 | 4.1 |
| 45 | −25 | 2.8 | 2.2 | 1.3 | 4.5 | 3.5 | 1.3 | - | - | - | - | - | - |
| | −20 | 3.7 | 2.3 | 1.6 | 6.3 | 3.6 | 1.7 | - | - | - | - | - | - |
| | −15 | 5.3 | 2.6 | 2.0 | 7.6 | 4.1 | 1.9 | 12.4 | 8.8 | 1.4 | 14.7 | 13.7 | 1.1 |
| | −10 | 6.8 | 2.7 | 2.5 | 9.6 | 4.7 | 2.0 | 15.1 | 8.6 | 1.8 | 19.7 | 12.4 | 1.6 |
| | −7 | 6.9 | 2.8 | 2.5 | 11.9 | 5.2 | 2.3 | 16.2 | 8.2 | 2.0 | 22.7 | 11.6 | 2.0 |
| | −5 | 7.4 | 2.8 | 2.7 | 12.1 | 5.0 | 2.4 | 17.6 | 8.5 | 2.1 | 23.8 | 11.7 | 2.0 |
| | −2 | 7.8 | 2.8 | 2.8 | 12.5 | 4.9 | 2.5 | 17.6 | 7.9 | 2.2 | 25.4 | 11.9 | 2.1 |
| | 0 | 8.1 | 2.8 | 2.9 | 12.7 | 4.8 | 2.6 | 18.2 | 7.5 | 2.4 | 26.5 | 12.1 | 2.2 |
| | 2 | 8.3 | 2.7 | 3.1 | 13.3 | 4.7 | 2.8 | 20.0 | 7.6 | 2.6 | 28.2 | 12.3 | 2.3 |
| | 7 | 9.0 | 2.4 | 3.8 | 15.7 | 4.4 | 3.6 | 18.5 | 5.9 | 3.1 | 31.0 | 11.3 | 2.8 |
| | 15 | 8.9 | 2.0 | 4.4 | 15.5 | 4.0 | 3.9 | 20.9 | 5.4 | 3.9 | 36.0 | 11.7 | 3.1 |
| | 20 | 9.1 | 1.8 | 5.0 | 15.1 | 3.4 | 4.4 | 21.3 | 5.2 | 4.1 | 35.3 | 10.6 | 3.3 |
| 55 | −25 | - | - | - | - | - | - | - | - | - | - | - | - |
| | −20 | 2.6 | 2.1 | 1.3 | 5.1 | 3.9 | 1.3 | - | - | - | - | - | - |
| | −15 | 4.9 | 2.9 | 1.7 | 6.5 | 4.6 | 1.4 | - | - | - | - | - | - |
| | −10 | 6.1 | 3.1 | 2.0 | 8.7 | 5.2 | 1.7 | 9.2 | 8.3 | 1.1 | 14.3 | 13.6 | 1.1 |
| | −7 | 6.2 | 3.1 | 2.0 | 11.3 | 5.6 | 2.0 | 10.1 | 8.5 | 1.2 | 16.5 | 13.8 | 1.2 |
| | −5 | 6.5 | 2.9 | 2.2 | 11.1 | 5.3 | 2.1 | 11.0 | 8.6 | 1.3 | 18.0 | 13.5 | 1.3 |
| | −2 | 6.8 | 3.0 | 2.3 | 11.5 | 5.2 | 2.2 | 12.6 | 8.9 | 1.4 | 19.9 | 12.8 | 1.6 |
| | 0 | 7.1 | 3.0 | 2.4 | 11.8 | 5.2 | 2.3 | 15.2 | 8.6 | 1.8 | 22.7 | 13.1 | 1.7 |
| | 2 | 7.3 | 2.9 | 2.5 | 12.6 | 5.2 | 2.4 | 17.7 | 8.3 | 2.2 | 24.7 | 12.5 | 2.0 |
| | 7 | 7.8 | 2.5 | 3.1 | 14.5 | 4.9 | 3.0 | 18.4 | 7.7 | 2.4 | 30.6 | 13.8 | 2.2 |
| | 15 | 8.3 | 2.3 | 3.6 | 13.0 | 4.0 | 3.2 | 19.2 | 6.0 | 3.2 | 32.6 | 11.2 | 2.9 |
| | 20 | 8.4 | 2.1 | 4.0 | 12.7 | 3.6 | 3.5 | 20.4 | 5.9 | 3.4 | 32.5 | 10.6 | 3.1 |
| 60 | −25 | - | - | - | - | - | - | - | - | - | - | - | - |
| | −20 | - | - | - | - | - | - | - | - | - | - | - | - |
| | −15 | 4.0 | 2.8 | 1.4 | 6.0 | 5.1 | 1.2 | - | - | - | - | - | - |
| | −10 | 5.2 | 2.9 | 1.8 | 6.7 | 5.3 | 1.3 | 6.1 | 5.8 | 1.1 | 10.4 | 10.2 | 1.0 |
| | −7 | 5.3 | 2.9 | 1.9 | 8.0 | 5.3 | 1.5 | 8.0 | 7.4 | 1.1 | 12.2 | 11.0 | 1.1 |
| | −5 | 6.0 | 3.0 | 2.0 | 8.3 | 5.1 | 1.6 | 9.4 | 8.0 | 1.2 | 13.9 | 11.3 | 1.2 |
| | −2 | 6.5 | 3.1 | 2.1 | 8.9 | 5.3 | 1.7 | 10.7 | 8.8 | 1.2 | 18.0 | 12.8 | 1.4 |
| | 0 | 6.9 | 3.2 | 2.2 | 9.3 | 5.5 | 1.7 | 13.6 | 8.8 | 1.5 | 21.6 | 13.0 | 1.7 |
| | 2 | 7.0 | 3.0 | 2.3 | 10.3 | 5.4 | 1.9 | 16.8 | 8.6 | 2.0 | 23.1 | 11.8 | 2.0 |
| | 7 | 7.2 | 2.7 | 2.7 | 13.2 | 5.2 | 2.5 | 18.4 | 8.6 | 2.1 | 27.3 | 13.0 | 2.1 |
| | 15 | 7.7 | 2.5 | 3.1 | 12.7 | 4.5 | 2.8 | 19.0 | 6.4 | 3.0 | 27.2 | 9.7 | 2.8 |
| | 20 | 7.9 | 2.3 | 3.5 | 11.0 | 3.8 | 2.9 | 19.9 | 6.3 | 3.2 | 27.1 | 9.3 | 2.9 |

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

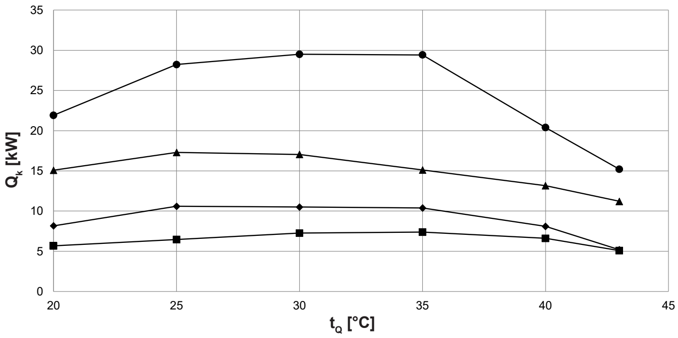
**Observe daily power interruptions!**
see “Engineering heat pumps general”

## Performance data – cooling

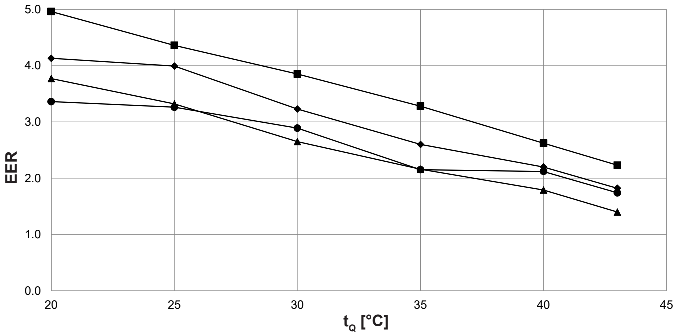
Maximum cooling capacity

Data according to EN 14511

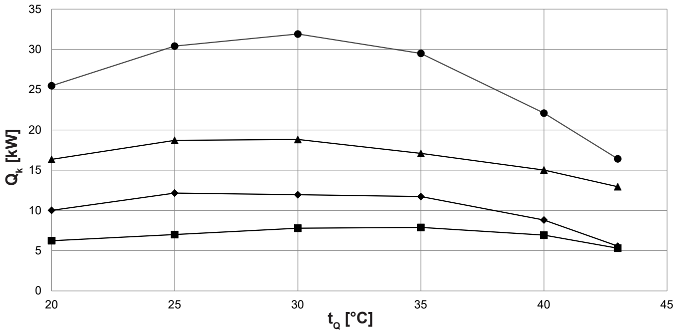
### Cooling capacity – $t_{VL}$ 5 °C



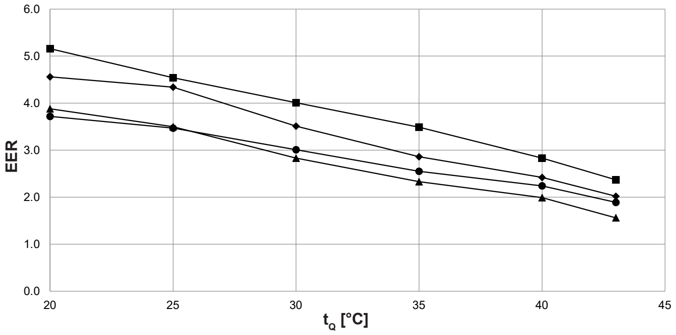
### Energy efficiency ratio – $t_{VL}$ 5 °C



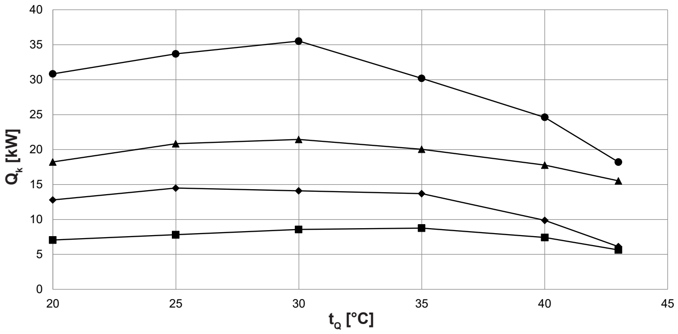
### Cooling capacity – $t_{VL}$ 7 °C



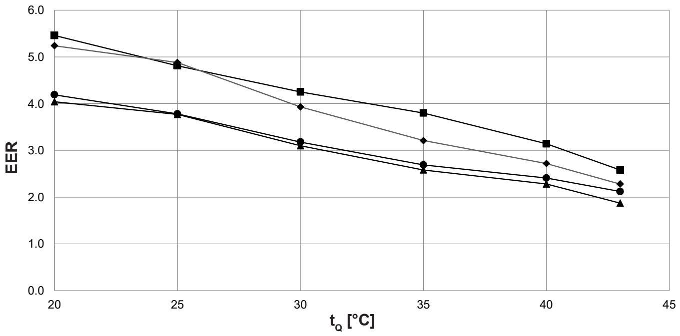
### Energy efficiency ratio – $t_{VL}$ 7 °C



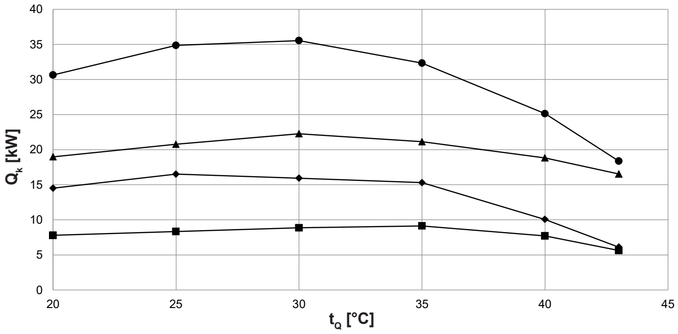
### Cooling capacity – $t_{VL}$ 10 °C



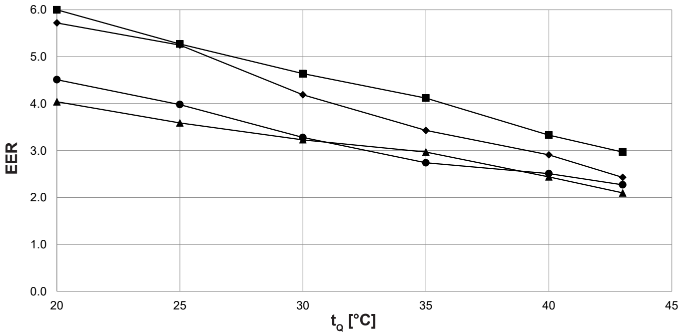
### Energy efficiency ratio – $t_{VL}$ 10 °C



### Cooling capacity – $t_{VL}$ 12 °C



### Energy efficiency ratio – $t_{VL}$ 12 °C



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

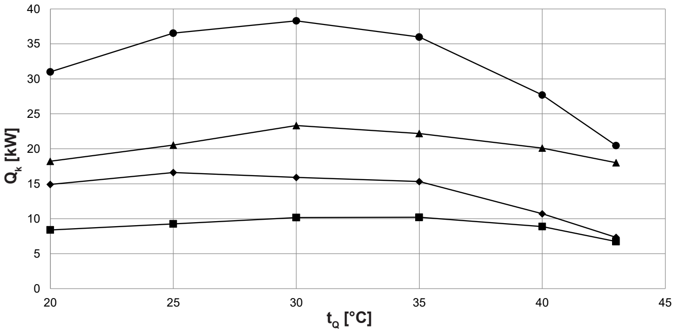
- ■ Belaria® fit (8) 1PH
- ◆ Belaria® fit (13) 1PH/3PH
- ▲ Belaria® fit (20) 3PH
- ● Belaria® fit (26) 3PH

## Performance data – cooling

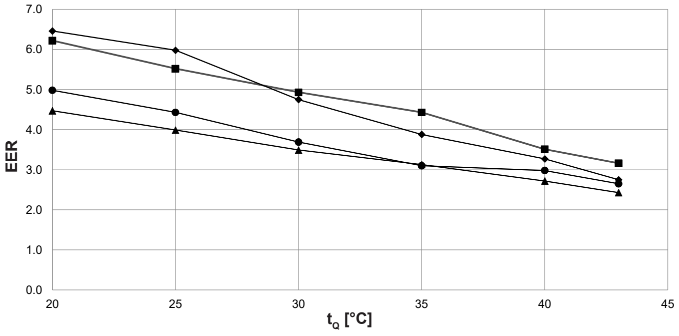
Maximum cooling capacity

Data according to EN 14511

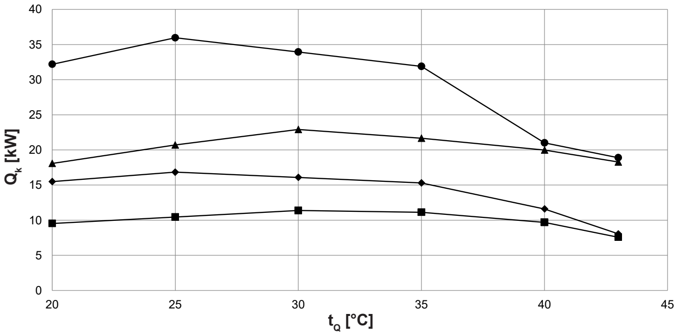
### Cooling capacity – $t_{VL}$ 15 °C



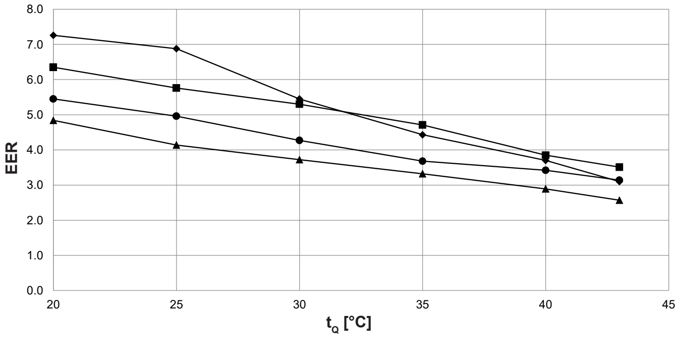
### Energy efficiency ratio – $t_{VL}$ 15 °C



### Cooling capacity – $t_{VL}$ 18 °C



### Energy efficiency ratio – $t_{VL}$ 18 °C



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

■ Belaria® fit (8) 1PH
◆ Belaria® fit (13) 1PH/3PH
▲ Belaria® fit (20) 3PH
● Belaria® fit (26) 3PH

## Performance data – cooling

Data according to EN 14511

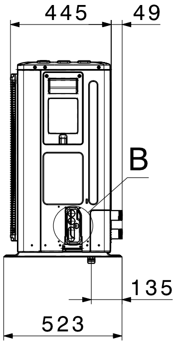
| $t_{VL}$ °C | $t_Q$ °C | Belaria® fit (8) | | | Belaria® fit (13) | | | Belaria® fit (20) | | | Belaria® fit (26) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $Q_h$ kW | P kW | EER | $Q_h$ kW | P kW | EER | $Q_h$ kW | P kW | EER | $Q_h$ kW | P kW | EER |
| 5 | 20 | 5.7 | 1.1 | 5.0 | 8.2 | 2.2 | 3.8 | 15.1 | 3.7 | 4.1 | 21.9 | 6.5 | 3.4 |
| | 25 | 6.5 | 1.5 | 4.4 | 10.6 | 3.2 | 3.3 | 17.3 | 4.3 | 4.0 | 28.2 | 8.7 | 3.3 |
| | 30 | 7.3 | 1.9 | 3.9 | 10.5 | 4.0 | 2.7 | 17.1 | 5.3 | 3.2 | 29.5 | 10.2 | 2.9 |
| | 35 | 7.4 | 2.3 | 3.3 | 10.4 | 4.8 | 2.2 | 15.1 | 5.8 | 2.6 | 29.4 | 13.7 | 2.2 |
| | 40 | 6.6 | 2.5 | 2.6 | 8.1 | 4.5 | 1.8 | 13.2 | 6.0 | 2.2 | 20.4 | 9.6 | 2.1 |
| | 43 | 5.1 | 2.3 | 2.2 | 5.2 | 3.7 | 1.4 | 11.2 | 6.2 | 1.8 | 15.2 | 8.7 | 1.7 |
| 7 | 20 | 6.2 | 1.2 | 5.2 | 10.0 | 2.6 | 3.9 | 16.3 | 3.6 | 4.6 | 25.5 | 6.8 | 3.7 |
| | 25 | 7.0 | 1.5 | 4.5 | 12.2 | 3.5 | 3.5 | 18.7 | 4.3 | 4.3 | 30.4 | 8.8 | 3.5 |
| | 30 | 7.8 | 1.9 | 4.0 | 11.9 | 4.2 | 2.8 | 18.8 | 5.4 | 3.5 | 31.9 | 10.6 | 3.0 |
| | 35 | 7.9 | 2.3 | 3.5 | 11.7 | 5.0 | 2.3 | 17.1 | 6.0 | 2.9 | 29.5 | 11.6 | 2.6 |
| | 40 | 6.9 | 2.4 | 2.8 | 8.8 | 4.4 | 2.0 | 15.0 | 6.2 | 2.4 | 22.1 | 9.9 | 2.2 |
| | 43 | 5.3 | 2.2 | 2.4 | 5.6 | 3.6 | 1.6 | 12.9 | 6.4 | 2.0 | 16.4 | 8.7 | 1.9 |
| 10 | 20 | 7.1 | 1.3 | 5.5 | 12.8 | 3.2 | 4.0 | 18.2 | 3.5 | 5.2 | 30.8 | 7.4 | 4.2 |
| | 25 | 7.8 | 1.6 | 4.8 | 14.5 | 3.8 | 3.8 | 20.8 | 4.3 | 4.9 | 33.7 | 8.9 | 3.8 |
| | 30 | 8.6 | 2.0 | 4.3 | 14.1 | 4.5 | 3.1 | 21.5 | 5.5 | 3.9 | 35.5 | 11.2 | 3.2 |
| | 35 | 8.8 | 2.3 | 3.8 | 13.7 | 5.3 | 2.6 | 20.1 | 6.2 | 3.2 | 30.2 | 11.2 | 2.7 |
| | 40 | 7.4 | 2.4 | 3.1 | 9.9 | 4.3 | 2.3 | 17.8 | 6.5 | 2.7 | 24.6 | 10.2 | 2.4 |
| | 43 | 5.6 | 2.2 | 2.6 | 6.1 | 3.3 | 1.9 | 15.5 | 6.8 | 2.3 | 18.2 | 8.6 | 2.1 |
| 12 | 20 | 7.8 | 1.3 | 6.0 | 14.5 | 3.6 | 4.0 | 19.0 | 3.3 | 5.7 | 30.6 | 6.8 | 4.5 |
| | 25 | 8.3 | 1.6 | 5.3 | 16.5 | 4.6 | 3.6 | 20.8 | 4.0 | 5.3 | 34.9 | 8.8 | 4.0 |
| | 30 | 8.9 | 1.9 | 4.6 | 15.9 | 4.9 | 3.2 | 22.3 | 5.3 | 4.2 | 35.5 | 10.8 | 3.3 |
| | 35 | 9.1 | 2.2 | 4.1 | 15.3 | 5.2 | 3.0 | 21.1 | 6.2 | 3.4 | 32.3 | 11.8 | 2.7 |
| | 40 | 7.7 | 2.3 | 3.3 | 10.1 | 4.1 | 2.4 | 18.8 | 6.5 | 2.9 | 25.1 | 10.0 | 2.5 |
| | 43 | 5.6 | 1.9 | 3.0 | 6.1 | 2.9 | 2.1 | 16.5 | 6.8 | 2.4 | 18.4 | 8.1 | 2.3 |
| 15 | 20 | 8.4 | 1.3 | 6.2 | 14.9 | 3.3 | 4.5 | 18.2 | 2.8 | 6.5 | 31.0 | 6.2 | 5.0 |
| | 25 | 9.3 | 1.7 | 5.5 | 16.6 | 4.2 | 4.0 | 20.5 | 3.4 | 6.0 | 36.5 | 8.2 | 4.4 |
| | 30 | 10.2 | 2.1 | 4.9 | 15.9 | 4.6 | 3.5 | 23.3 | 4.9 | 4.8 | 38.3 | 10.4 | 3.7 |
| | 35 | 10.2 | 2.3 | 4.4 | 15.3 | 4.9 | 3.1 | 22.2 | 5.7 | 3.9 | 36.0 | 11.6 | 3.1 |
| | 40 | 8.9 | 2.5 | 3.5 | 10.7 | 3.9 | 2.7 | 20.1 | 6.1 | 3.3 | 27.7 | 9.3 | 3.0 |
| | 43 | 6.7 | 2.1 | 3.2 | 7.3 | 3.0 | 2.4 | 18.0 | 6.5 | 2.8 | 20.5 | 7.7 | 2.7 |
| 18 | 20 | 9.5 | 1.5 | 6.4 | 15.5 | 3.2 | 4.8 | 18.1 | 2.5 | 7.3 | 32.2 | 5.9 | 5.5 |
| | 25 | 10.5 | 1.8 | 5.8 | 16.8 | 4.1 | 4.1 | 20.7 | 3.0 | 6.9 | 36.0 | 7.2 | 5.0 |
| | 30 | 11.4 | 2.1 | 5.3 | 16.1 | 4.3 | 3.7 | 22.9 | 4.2 | 5.5 | 33.9 | 7.9 | 4.3 |
| | 35 | 11.1 | 2.4 | 4.7 | 15.3 | 4.6 | 3.3 | 21.7 | 4.9 | 4.4 | 31.9 | 8.7 | 3.7 |
| | 40 | 9.7 | 2.5 | 3.9 | 11.6 | 4.0 | 2.9 | 20.0 | 5.4 | 3.7 | 21.0 | 6.1 | 3.4 |
| | 43 | 7.6 | 2.2 | 3.5 | 8.1 | 3.1 | 2.6 | 18.3 | 5.9 | 3.1 | 18.9 | 6.0 | 3.1 |

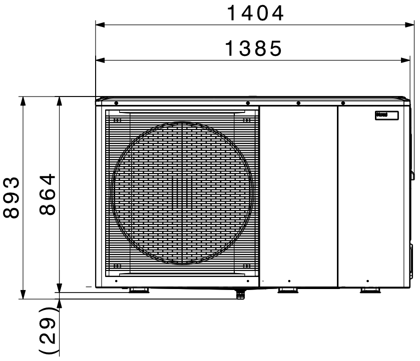
$t_{VL}$ = cooling water flow temperature (°C)
$t_Q$ = source temperature (°C)
$Q_k$ = cooling capacity at full load (kW), measured in accordance with standard EN 14511
P = power consumption for the overall unit (kW)
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

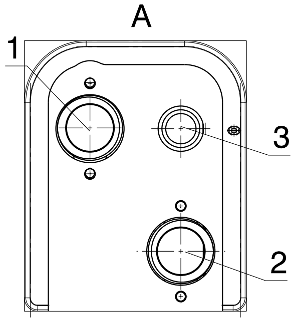
**Observe daily power interruptions!**
see “Engineering heat pumps general”

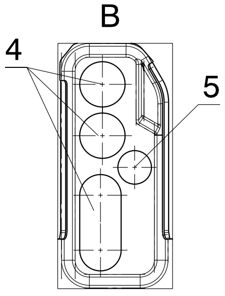
## Belaria® fit (8,13)

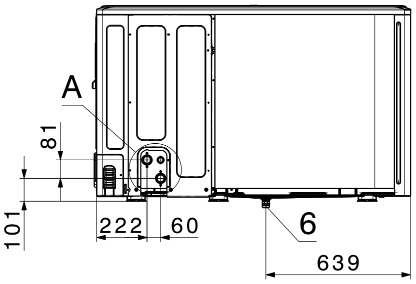
(Dimensions in mm)

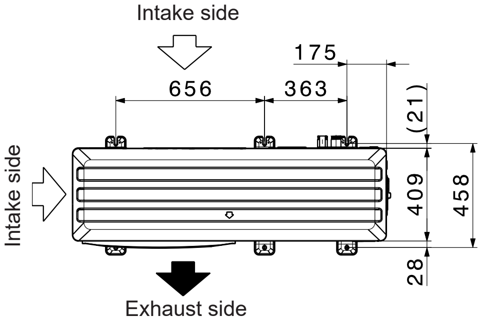








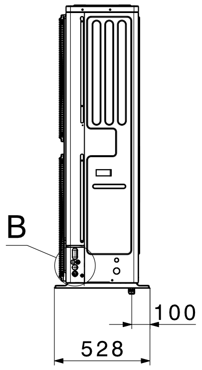


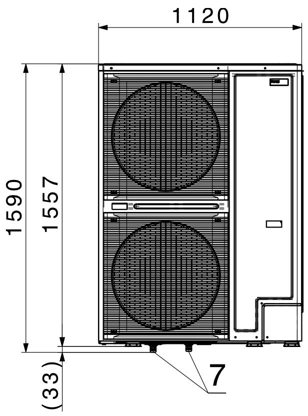


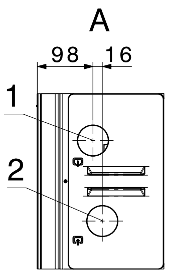
| | | |
|---|---|---|
| 1 | Heating flow | 1¼" ET |
| 2 | Heating return | 1¼" ET |
| 3 | Drainage safety valve | |
| 4 | Electrical connection – power supply | |
| 5 | Electrical connection – control and signal cables | |
| 6 | Condensate drain | Ø 32 mm |

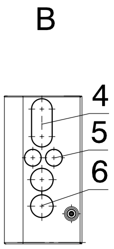
## Belaria® fit (20,26)

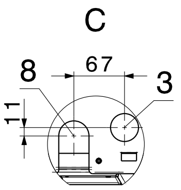
(Dimensions in mm)

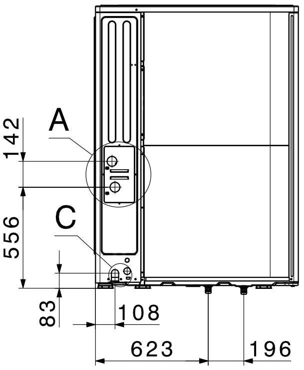


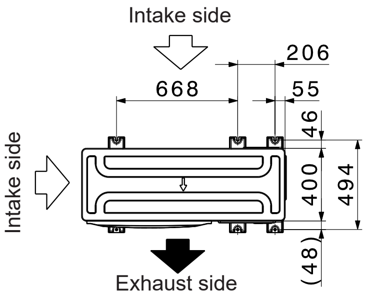








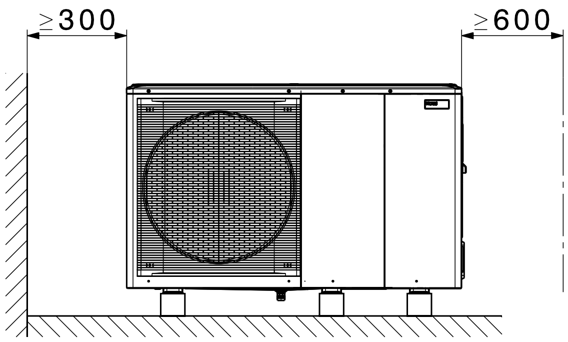


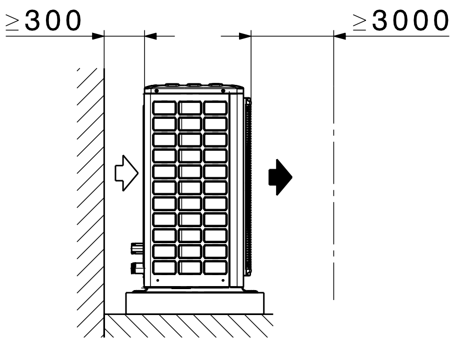


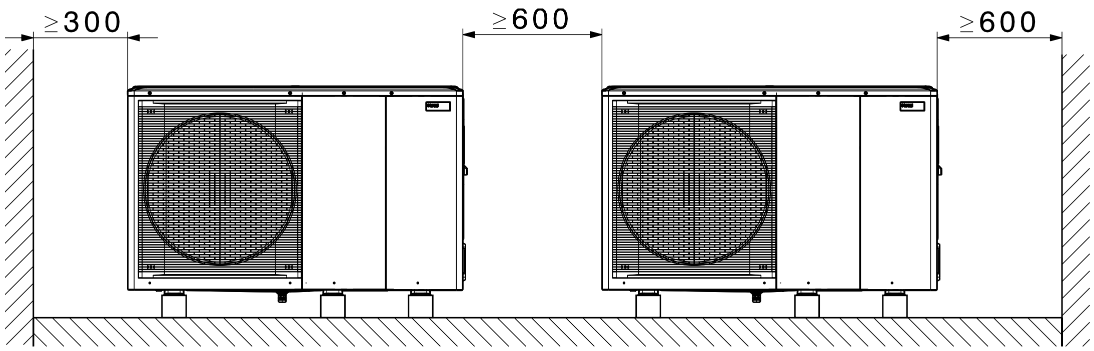
| | | |
|---|---|---|
| 1 | Heating flow | 1¼" ET |
| 2 | Heating return | 1¼" ET |
| 3 | Drainage safety valve | |
| 4 | Electrical connection – high voltage | |
| 5 | Electrical connection – low voltage | |
| 6 | Electrical connection – control and signal cables | |
| 7 | Condensate drain | Ø 32 mm |
| 8 | PHE drain plug | |

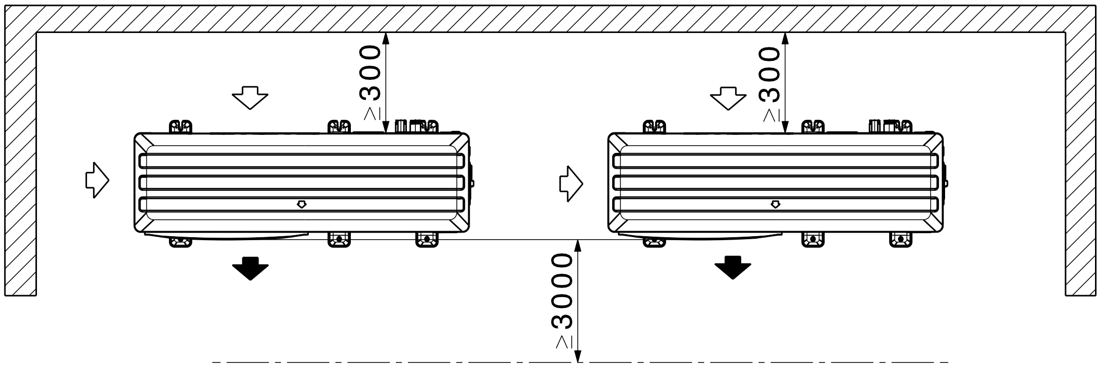
## Space requirement Belaria® fit (8,13)

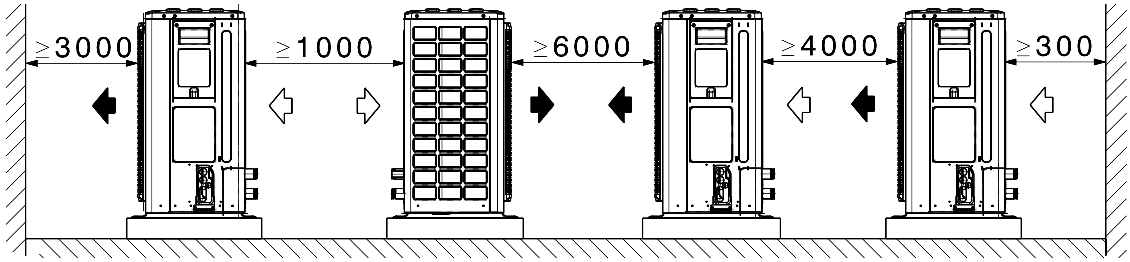
(Dimensions in mm)





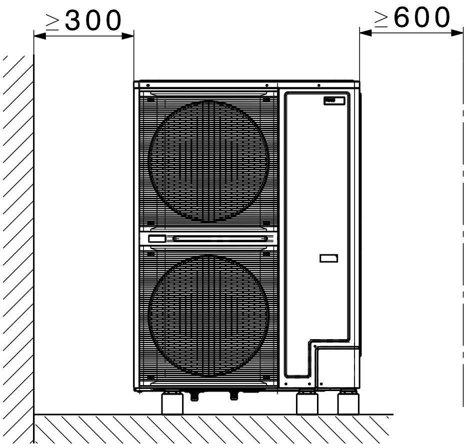


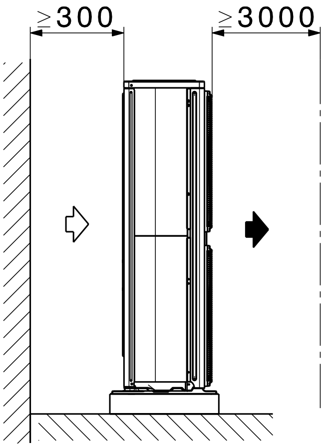


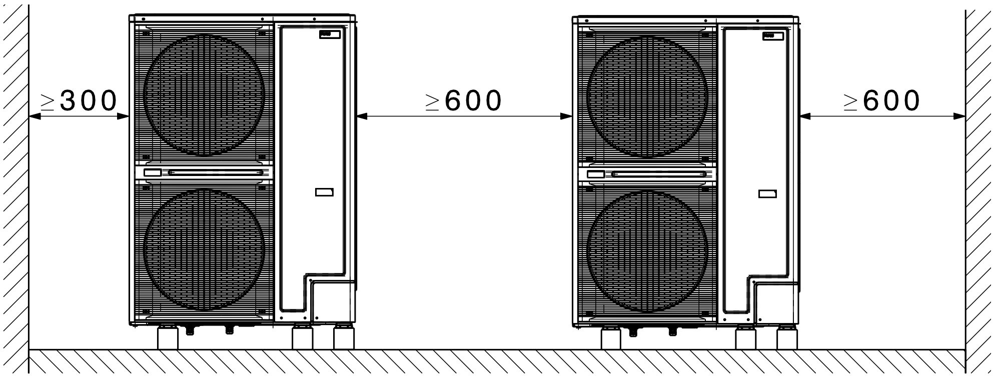


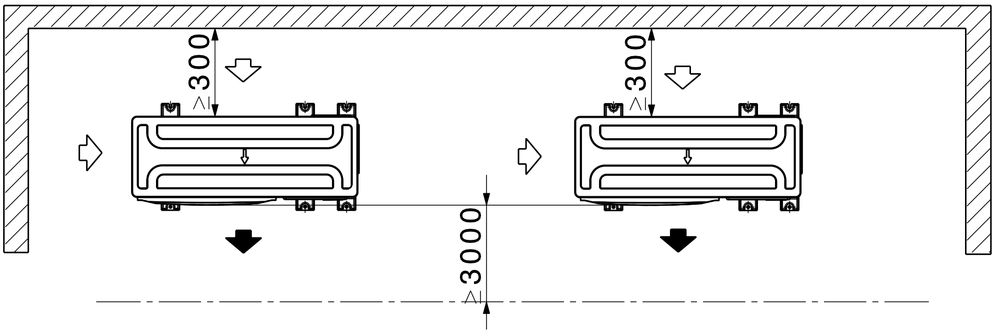
## Space requirement Belaria® fit (20,26)

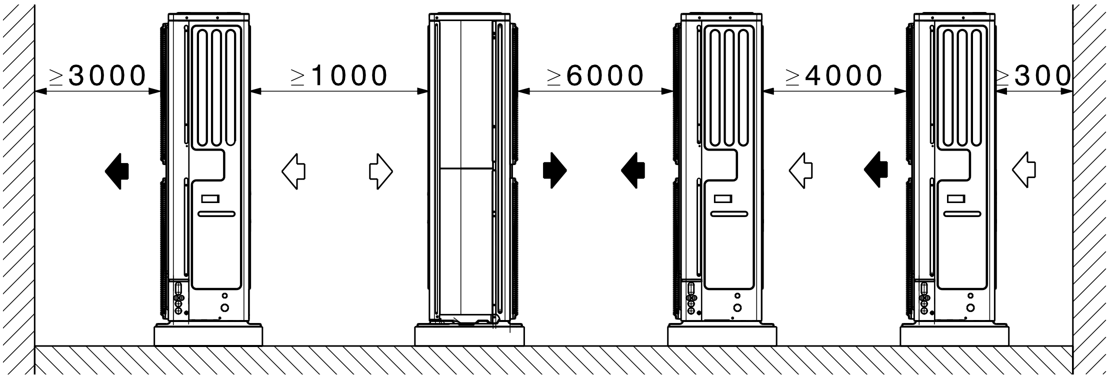
(Dimensions in mm)





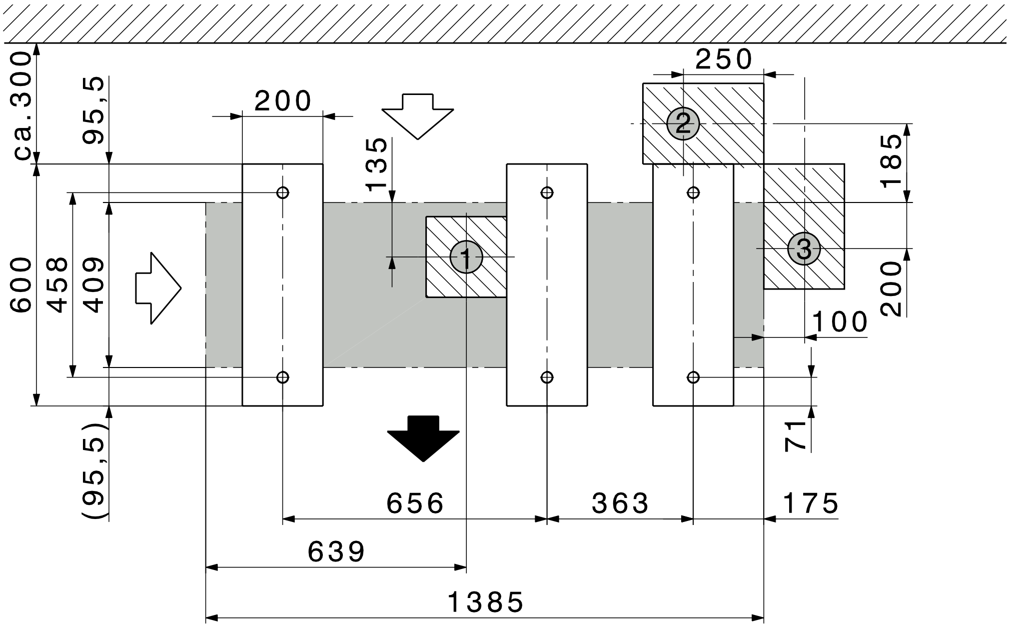


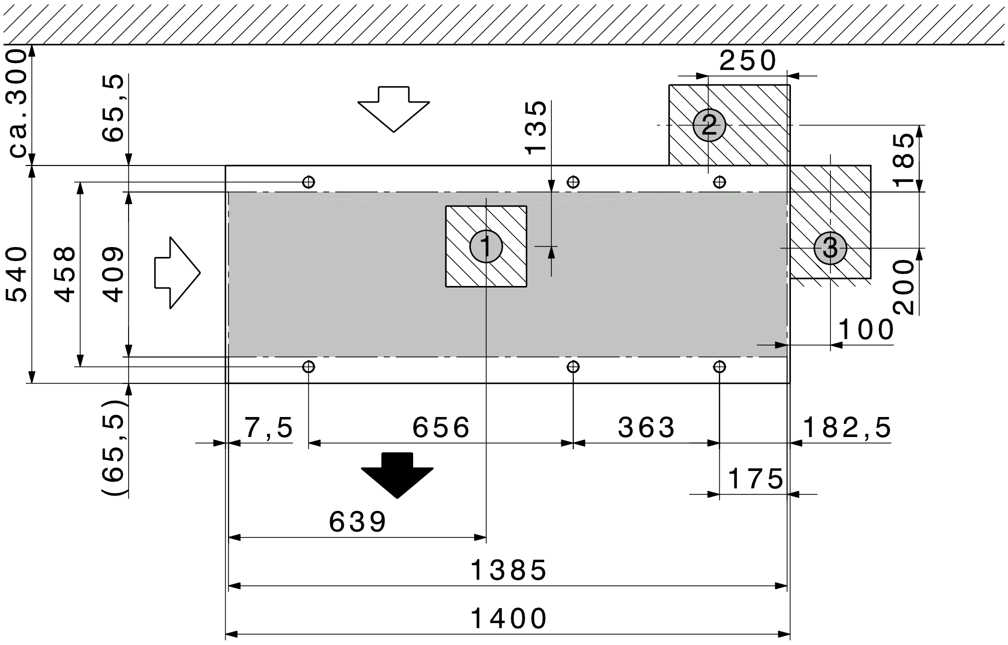




## Installation of Belaria® fit

(Dimensions in mm)

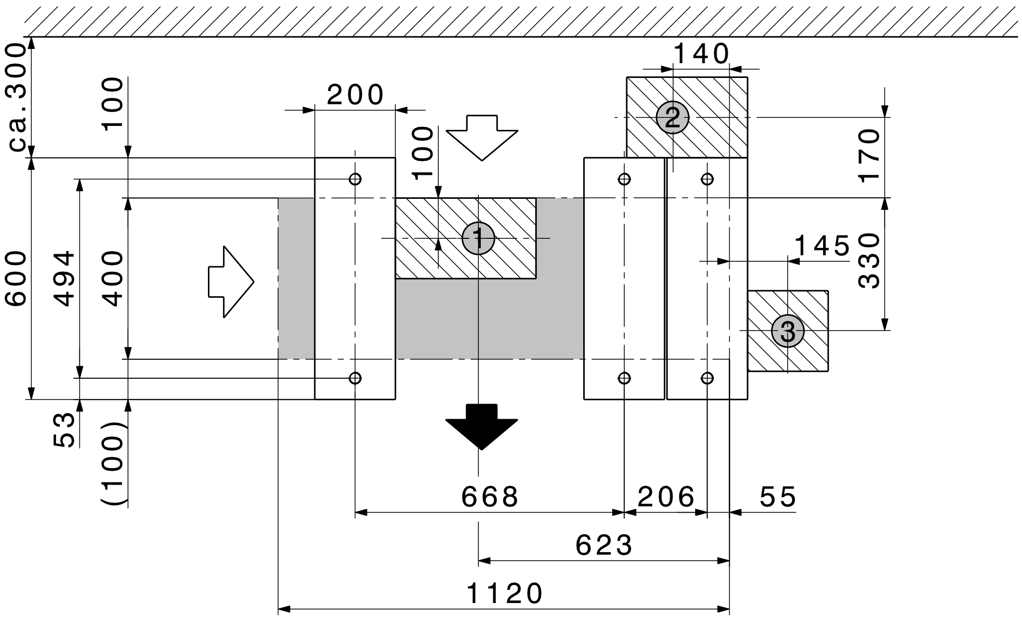


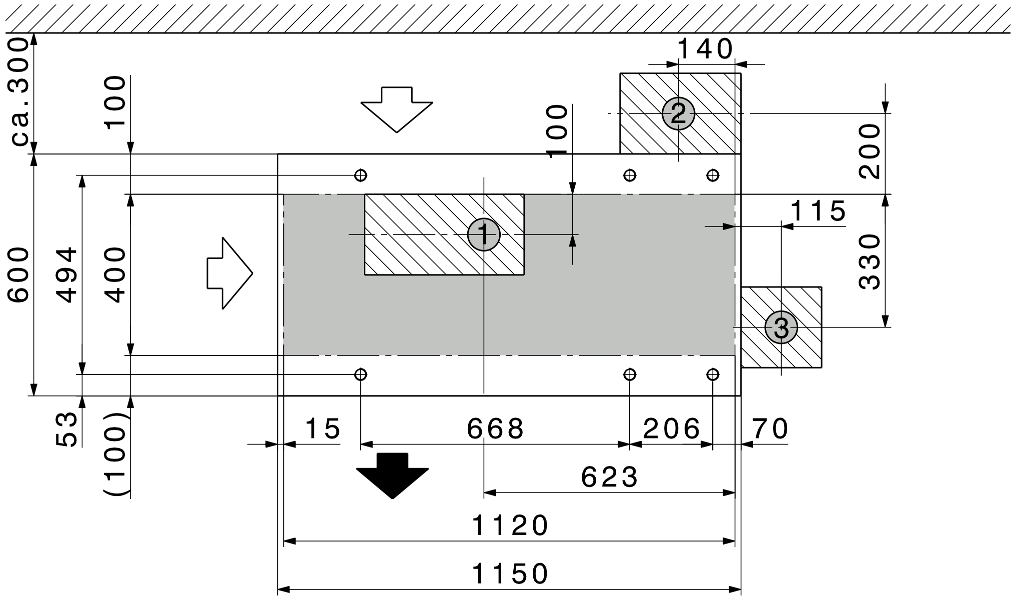


1 Condensate drain area
2 Flow/return area
3 Electrical connection

## Installation of Belaria® fit (20,26)

(Dimensions in mm)

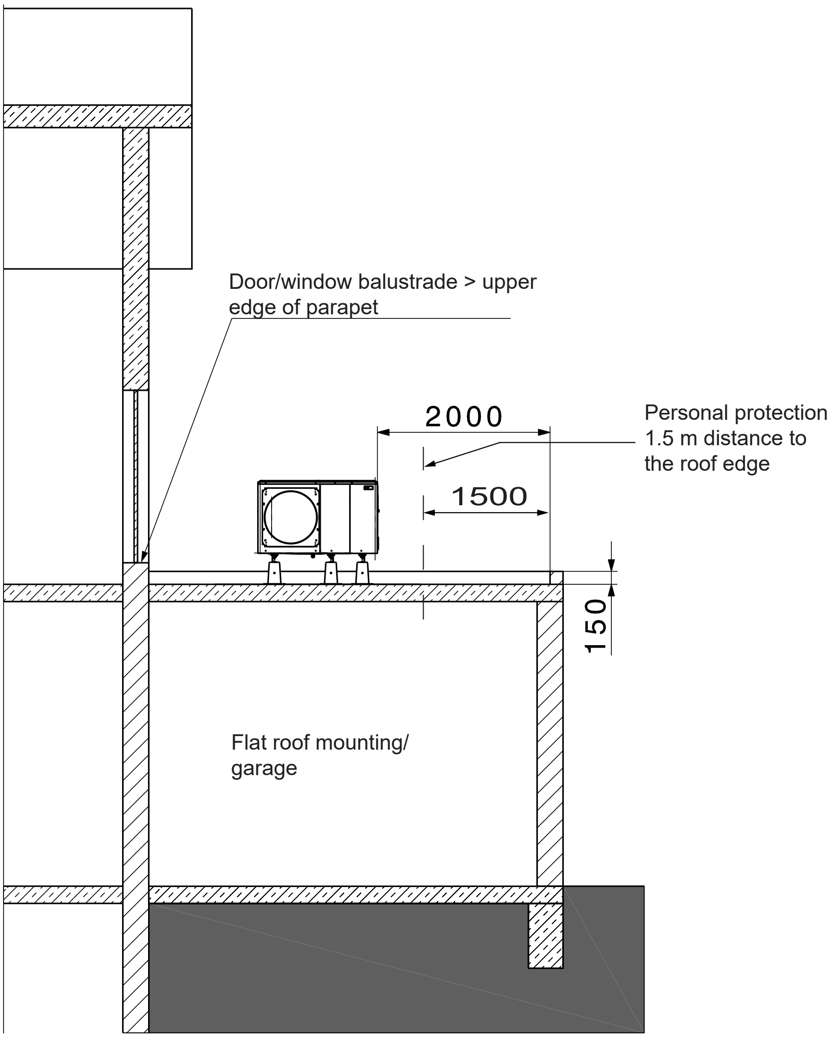


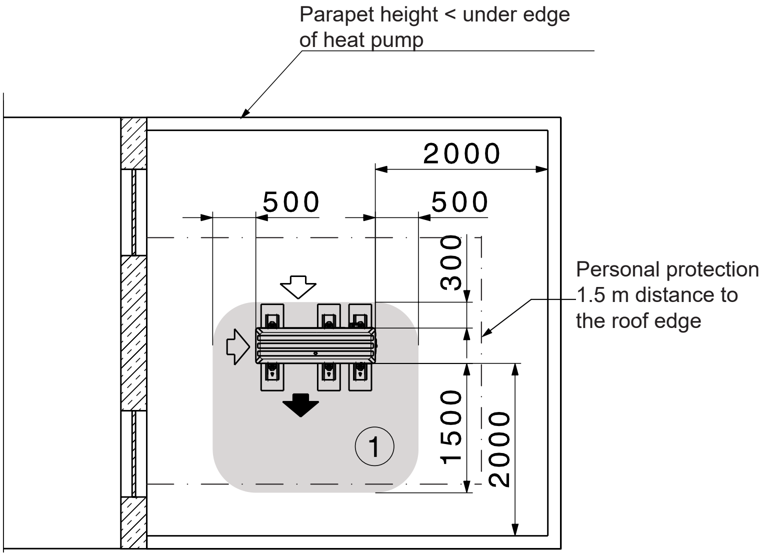


1 Condensate drain area
2 Flow/return area
3 Electrical connection

## Installation of Belaria® fit (8,13)

(Dimensions in mm)



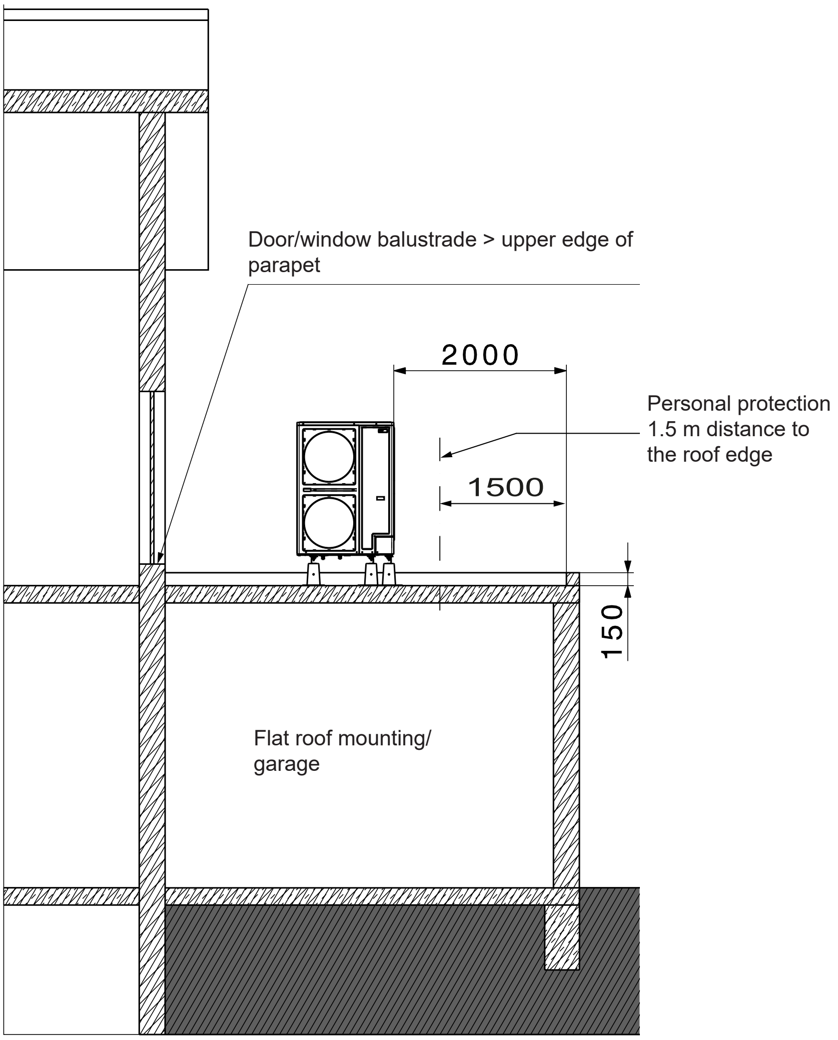


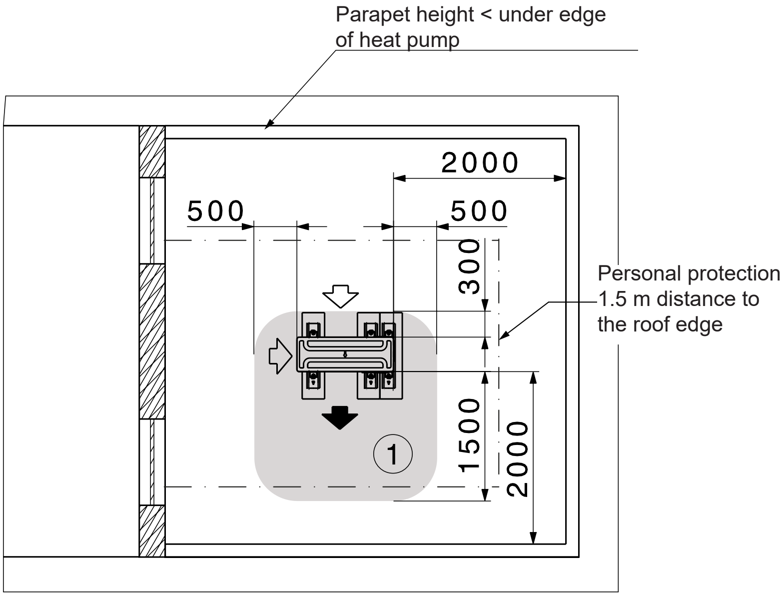
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 2 m (personal protection + working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.

1 Operating range

## Installation of Belaria® fit (20,26)

(Dimensions in mm)





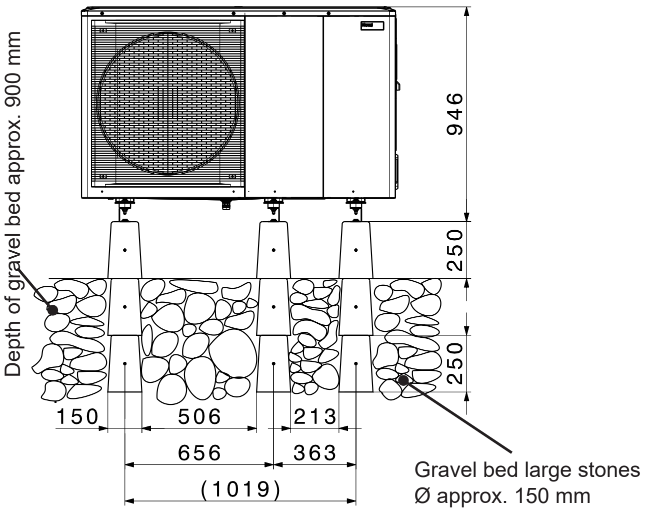
- All standards concerning statics, wind load and access to roofs must be complied with. The outdoor unit must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 2 m (personal protection + working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.

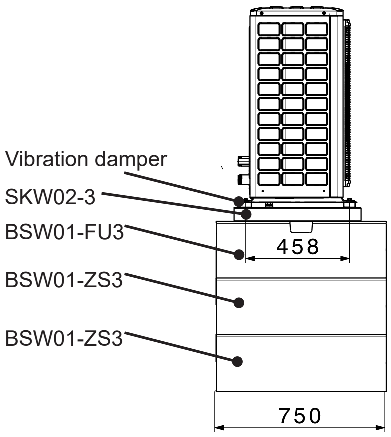
1 Operating range

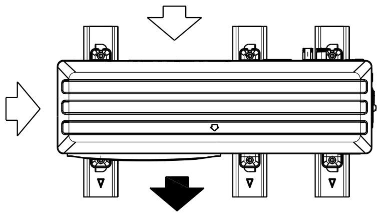
## Installation concrete base – gravel bed

### Belaria® fit (8,13)

(Dimensions in mm)



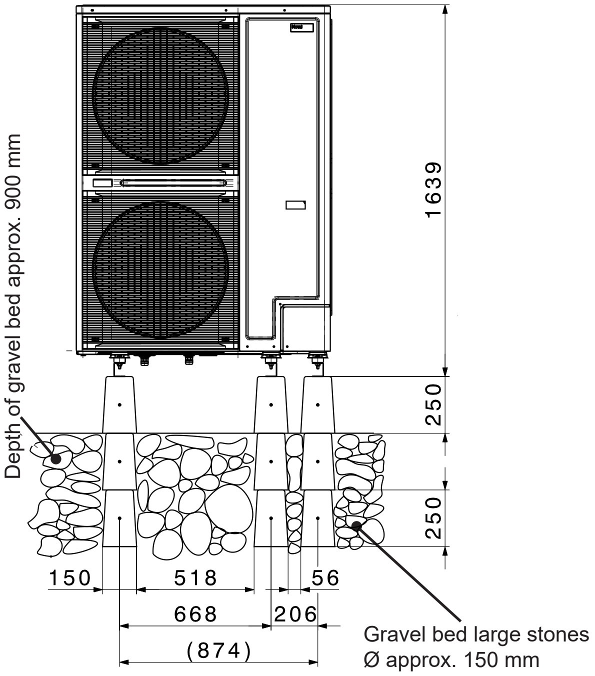


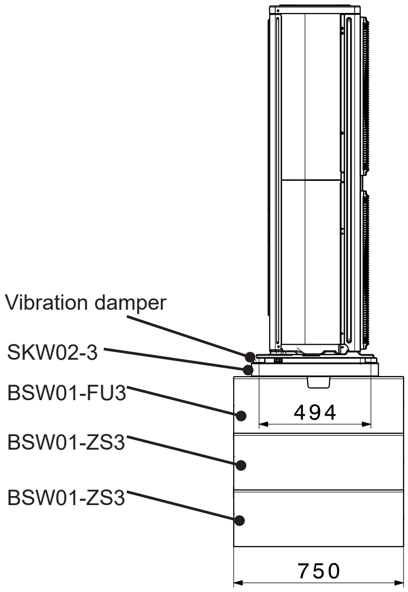


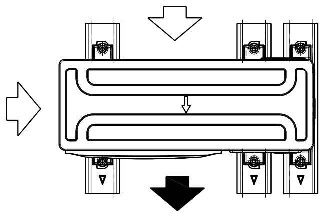
**Notice**
Use 6 sets of M10 anchor bolts, nuts and washers to secure the unit to the base set. Provide a free space of at least 150 mm under the unit. Place the unit on suitable vibration dampers appropriate to the weight of the unit, to effectively dampen vibrations.

### Belaria® fit (20,26)

(Dimensions in mm)





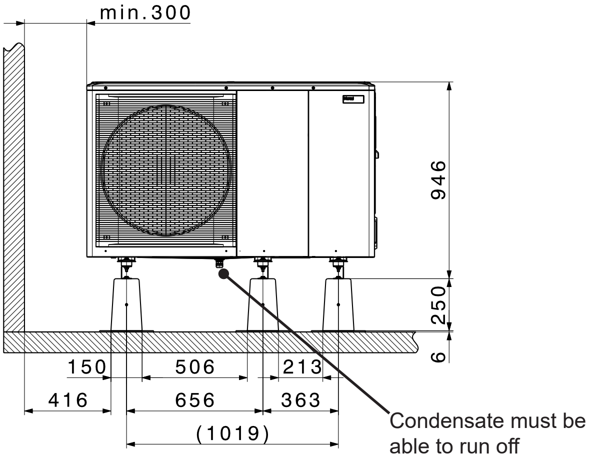


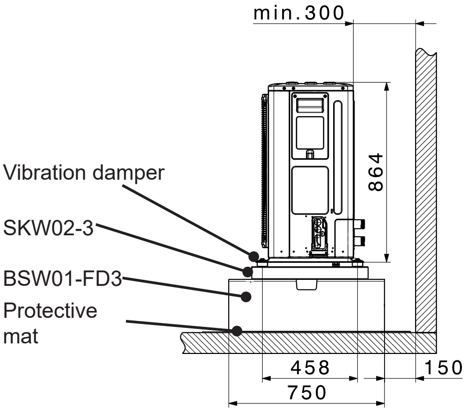
**Notice**
Use 6 sets of M10 anchor bolts, nuts and washers to secure the unit to the base set. Provide a free space of at least 150 mm under the unit. Place the unit on suitable vibration dampers appropriate to the weight of the unit, to effectively dampen vibrations.

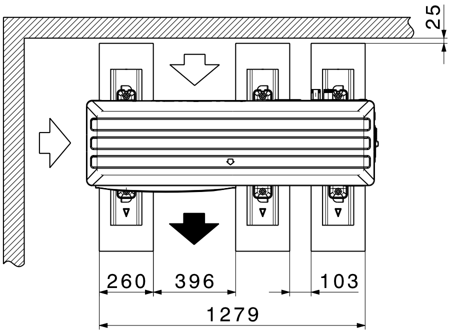
## Installation concrete base – flat roof

### Belaria® fit (8,13)

(Dimensions in mm)



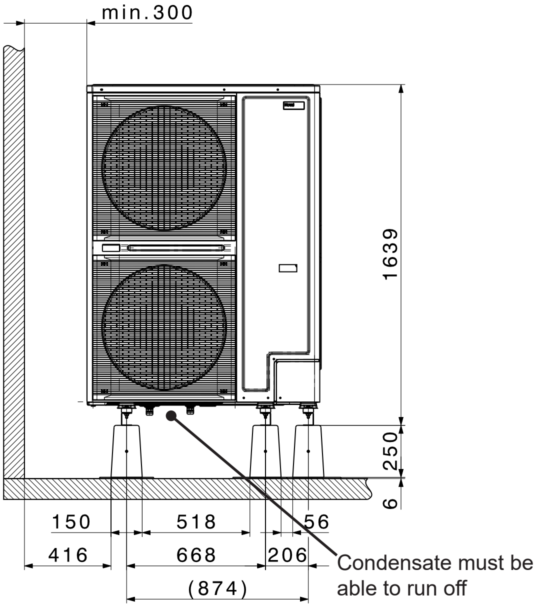


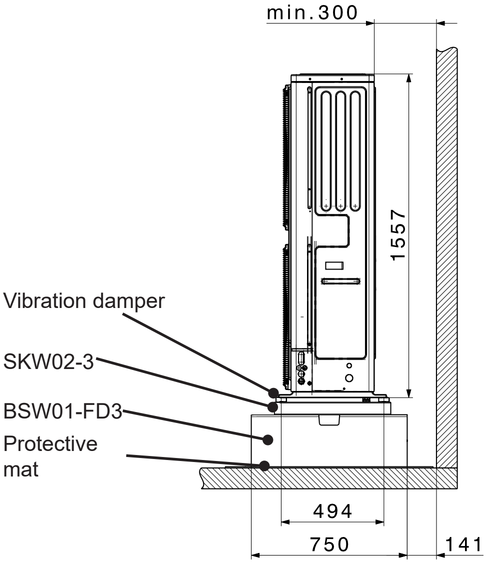


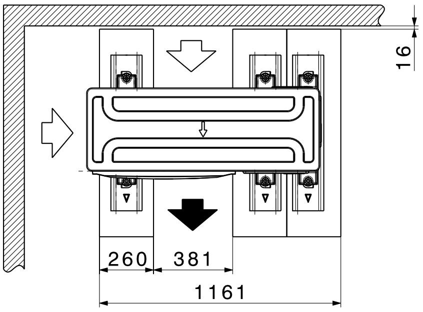
**Notice**
Use 6 sets of M10 anchor bolts, nuts and washers to secure the unit to the base set. Provide a free space of at least 150 mm under the unit. Place the unit on suitable vibration dampers appropriate to the weight of the unit, to effectively dampen vibrations.

### Belaria® fit (20,26)

(Dimensions in mm)





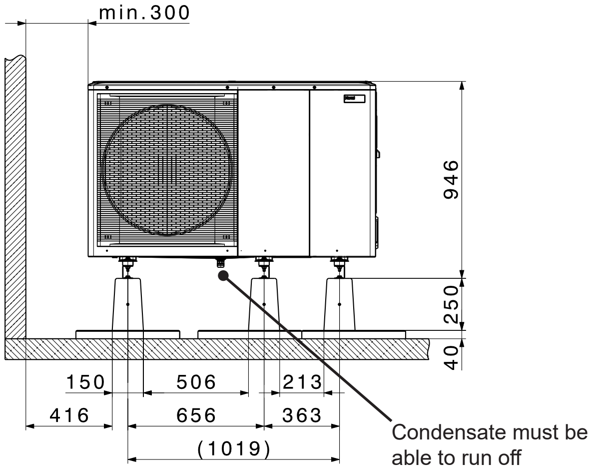


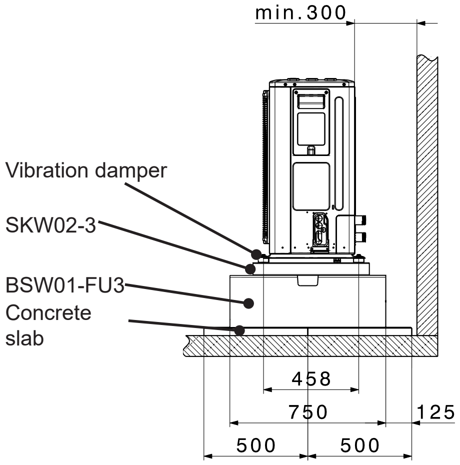
**Notice**
Use 6 sets of M10 anchor bolts, nuts and washers to secure the unit to the base set. Provide a free space of at least 150 mm under the unit. Place the unit on suitable vibration dampers appropriate to the weight of the unit, to effectively dampen vibrations.

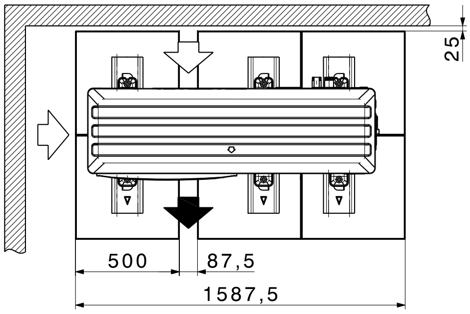
## Installation concrete base – firm base

### Belaria® fit (8,13)

(Dimensions in mm)



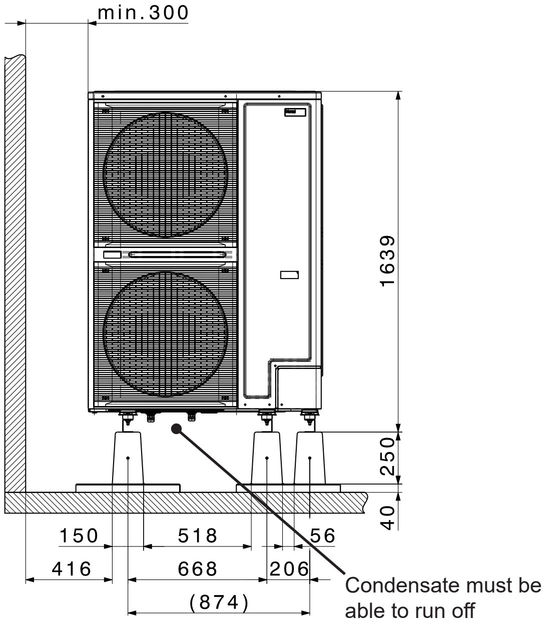


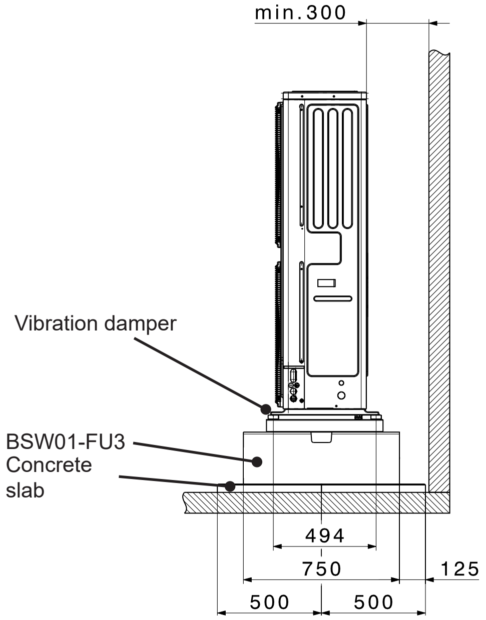


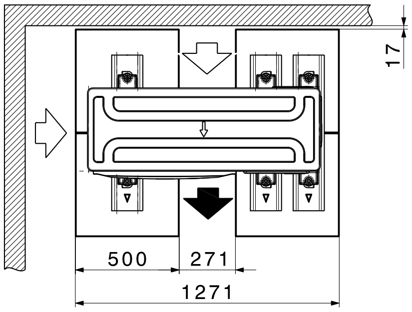
**Notice**
Use 6 sets of M10 anchor bolts, nuts and washers to secure the unit to the base set. Provide a free space of at least 150 mm under the unit. Place the unit on suitable vibration dampers appropriate to the weight of the unit, to effectively dampen vibrations.

### Belaria® fit (20,26)

(Dimensions in mm)





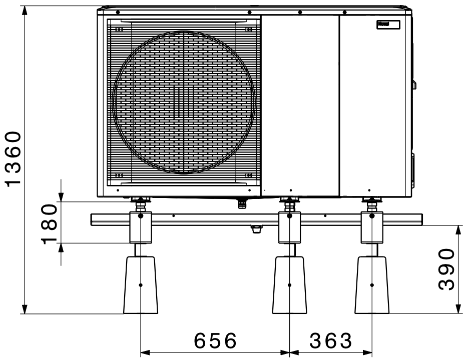


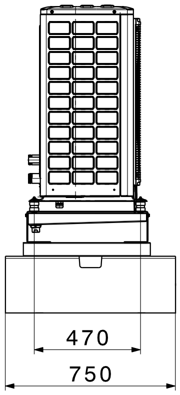
**Notice**
Use 6 sets of M10 anchor bolts, nuts and washers to secure the unit to the base set. Provide a free space of at least 150 mm under the unit. Place the unit on suitable vibration dampers appropriate to the weight of the unit, to effectively dampen vibrations.

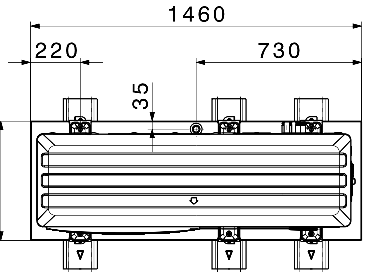
## Installation concrete base – condensate drip tray

### Belaria® fit (8,13)

(Dimensions in mm)



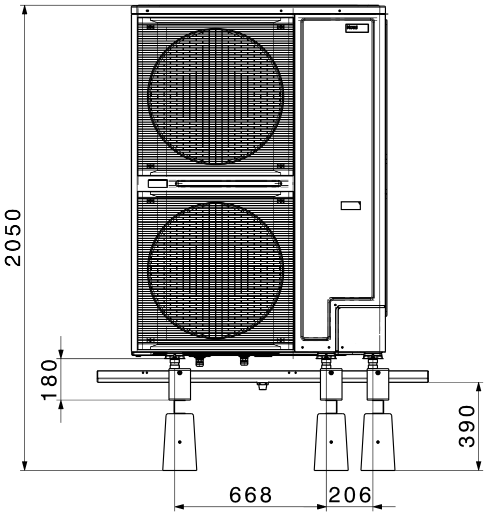


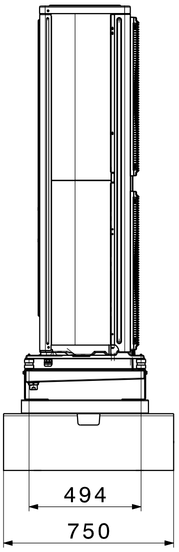


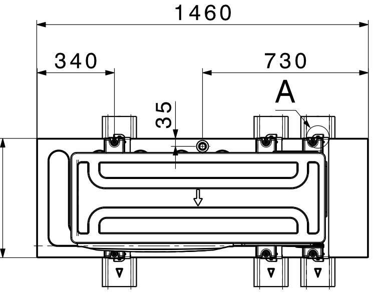
**Notice**
Use 6 sets of threaded rods M8, nuts and washers to secure the unit to the base set. Provide a free space of at least 150 mm under the unit. Place the unit on suitable vibration dampers appropriate to the weight of the unit, to effectively dampen vibrations.

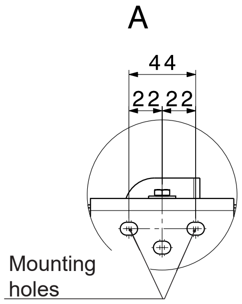
### Belaria® fit (20,26)

(Dimensions in mm)



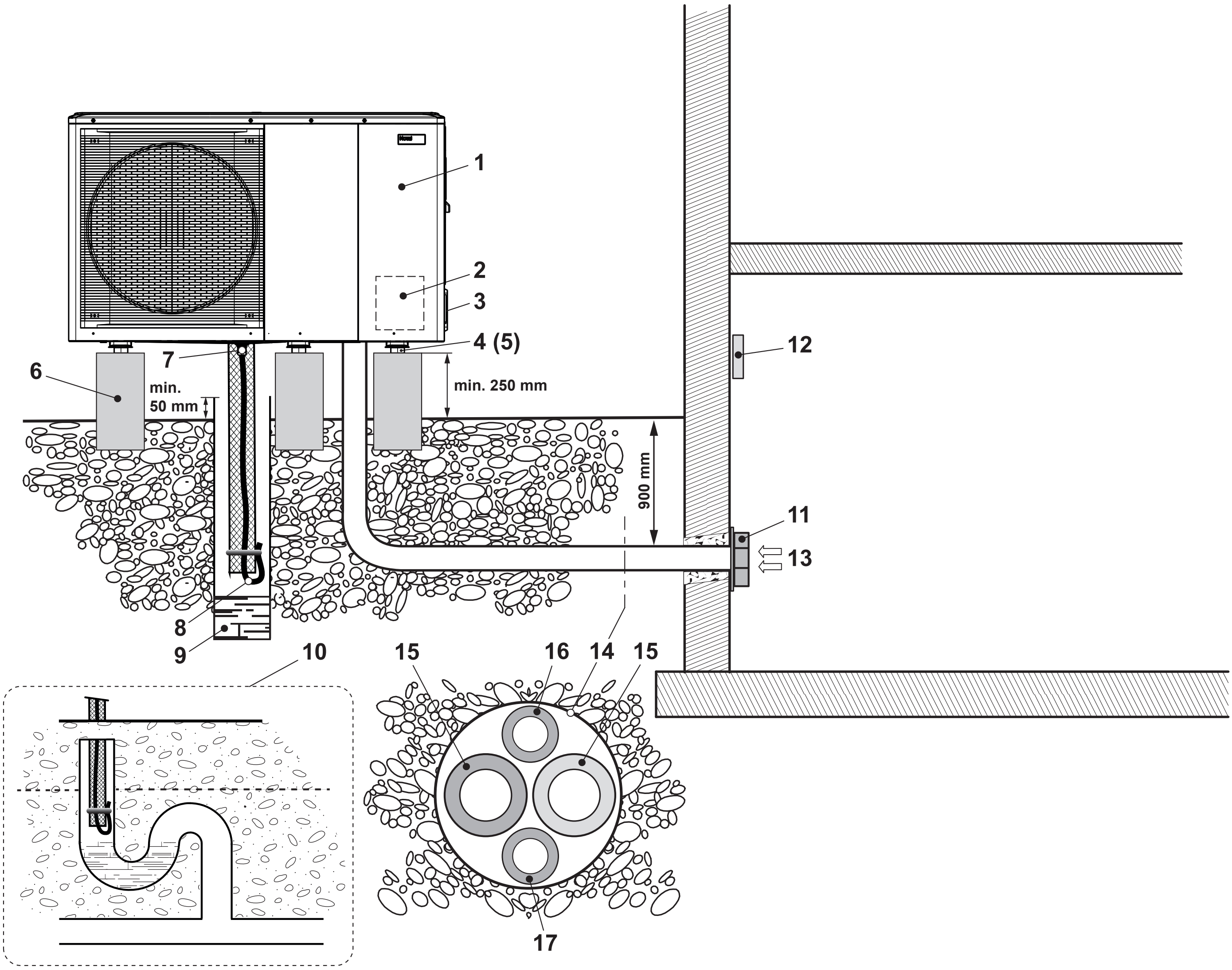






**Notice**
Use 6 sets of threaded rods M8, nuts and washers to secure the unit to the base set. Provide a free space of at least 150 mm under the unit. Place the unit on suitable vibration dampers appropriate to the weight of the unit, to effectively dampen vibrations.

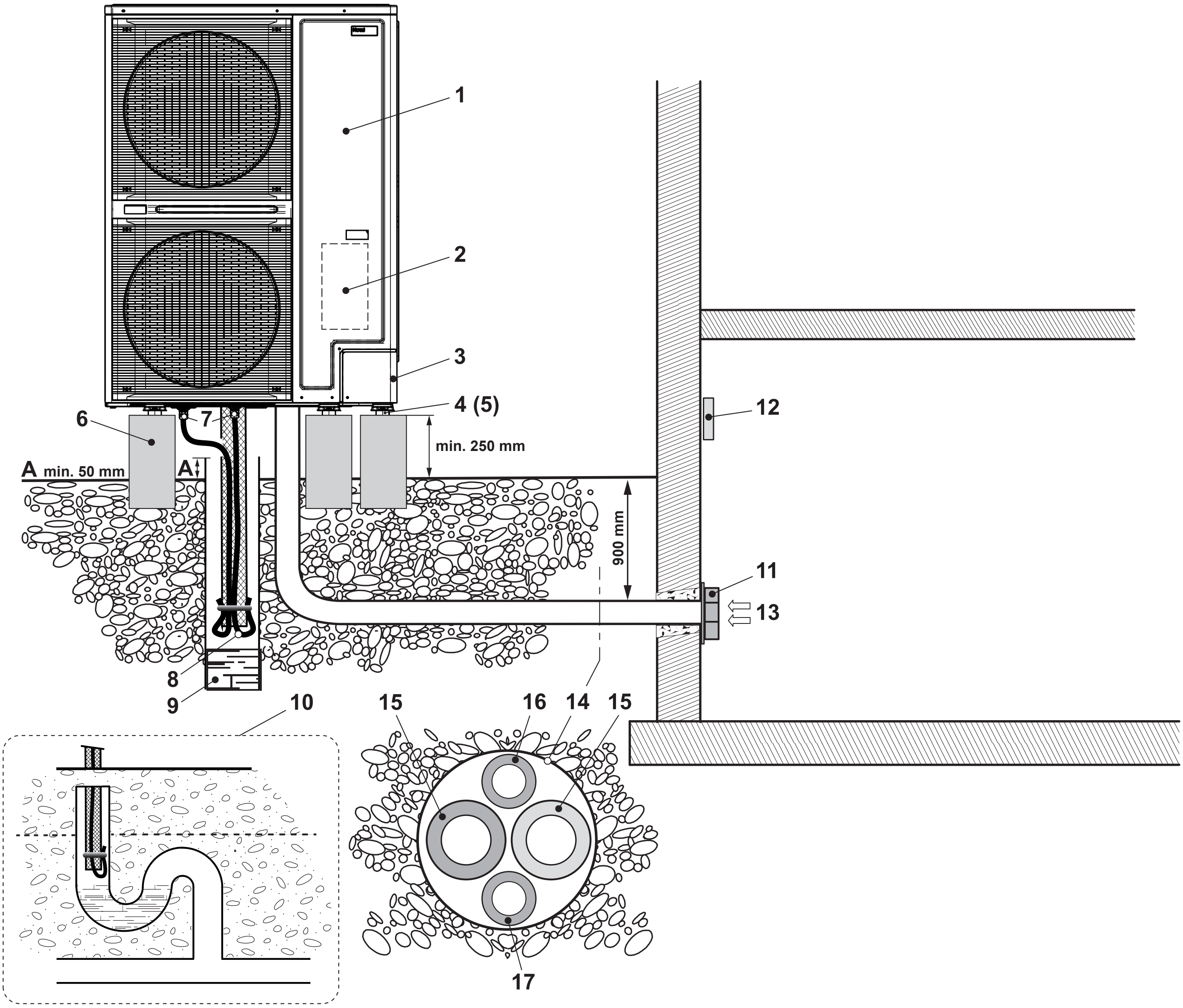
## Configuration and connection diagram
## Belaria® fit (8,13)



| | | |
|---|---|---|
| 1 | Belaria® fit (8,13) | |
| 2 | Hydraulic connection | |
| 3 | Electrical connection (electrical power supply, control and signal cables) | |
| 4 | Vibration damper | |
| 5 | Base kit | |
| 6 | Concrete base | |
| 7 | Condensate drain | |
| 8 | Condensate drain hose | |
| 9 | Absorbing well | |
| 10 | Discharging into the sewage system (penetration into the soil must be made leak-tight) | |
| 11 | Wall lead-through | |
| 12 | Operator terminal | |
| 13 | Main current | 3 x 400 V/50 Hz |
| | Control current | 1 x 230 V/50 Hz |
| 14 | Heat pump line or empty tube | |
| 15 | Connection pipe FL + RT | |
| 16 | Empty tube for electrical power supply | |
| 17 | Empty tube for control and signal cables | |

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

## Configuration and connection diagram
## Belaria® fit (20,26)



| | |
|---|---|
| 1 | Belaria® fit (20,26) |
| 2 | Hydraulic connection |
| 3 | Electrical connection (electrical power supply, control and signal cables) |
| 4 | Vibration damper |
| 5 | Base kit |
| 6 | Concrete base |
| 7 | Condensate drain |
| 8 | Condensate drain hose |
| 9 | Absorbing well |
| 10 | Discharging into the sewage system (penetration into the soil must be made leak-tight) |
| 11 | Wall lead-through |
| 12 | Operator terminal |
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| 14 | Heat pump line or empty tube |
| 15 | Connection pipe FL + RT |
| 16 | Empty tube for electrical power supply |
| 17 | Empty tube for control and signal cables |

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

## Requirements and directives

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

## Installation

- The Belaria® fit must be mounted outdoors. The installation location must be selected in accordance with the valid requirements and directives.
- Lines carrying water must be laid insulated and frost-proof.
- The installation location must be selected as close to the building as possible. Only short and simple routing of lines guarantees cost effectiveness and low heat losses.
- 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).
- Make sure that the installation location is well ventilated.
- DO NOT install the unit in the following places or locations:
  - In a potentially explosive atmosphere.
  - In places where there is a risk of fire due to escaping flammable gases (e.g. thinner or petrol) or airborne carbon fibres or flammable dust particles.
  - In places where corrosive gases (example: sulphuric acid gas) are produced.
- Wall ducts into the building must be airtight.
- The heat pump must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air exhaust sides must not be narrowed or covered.
- The air supply and the air exhaust must be without obstruction.
- 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 heat pump must be installed on a load-bearing fixed structure.
- If the heat pump is installed at wind-prone locations, the alignment of the heat pump must be selected in such a way that the expected wind direction is at right angles to the intake direction.
- If an alternative installation in areas subject to strong winds cannot be avoided, an additional wind shield in the form of a hedge, for example, should be installed.
- The heat pump must always be installed on a solid surface in a horizontal position. This can be achieved by means of concrete bases.
- The load-bearing capacity must be adequate. The unit is mounted with 6 vibration-damping adjustable feet.
- Air/water heat pumps generate condensate during operation. It must be ensured that the condensate produced can be absorbed to a sufficient extent by a gravel bed (see configuration and connection diagram).
- When air is discharged upwards, there is an increased frost hazard. Gutters, water pipes and water containers must not be situated in the immediate vicinity.
- The condensate drain must be discharged outside the building and must not be led into or through a building.
- To prevent damage caused by animals such as rodents or insects, all cable ducts must be properly sealed.
- The hydraulic lines from the heat pump can transmit structure-borne noise. Therefore, structure-borne noise decoupling should be provided, e.g. with compensators.

## Flat roof installation

Flat roof installation of the Belaria® fit is possible under the following conditions:

- All standards concerning statics, wind load and access to roofs must be complied with.
- The heat pump must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 2 m (personal protection) + 0.5 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.

## Room cooling

- Room cooling can be provided by fan convectors and is recommended. The connection lines for the fan convectors must have condensation-tight insulation.
- In addition, the condensate from the fan convectors must be drained off.
- If panel heating is used for room cooling, various criteria such as temperatures below the dewpoint or the temperature profiles 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.

## Installation on heating side

- All pertinent laws, regulations and standards for heating house pipework and for heat pump systems must be complied with.
- A sludge separator must be installed in the heating flow and a filter ball valve in the heating return.
- 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 and given pressure drops.
- Ventilation must be provided at the highest points and drainage at the lowest points of the connection lines.
- To prevent energy losses, the connection lines must be insulated with suitable material.

## 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 conductor cross-sections of the connection line must be checked by the electrical company carrying out the work.
- A fast-acting fault-current circuit breaker (< 0.1 s / IΔN ≥ 30 mA) is recommended. Country-specific requirements must be complied with. If the “fault-current circuit breaker” safeguard measure is implemented by the electrical company, a separate fault-current circuit breaker is recommended for the heat pumps. The specified RCCB types apply to the heat pump regardless of externally connected components (refer to assembly instructions, data sheets).
- Circuit breakers must be provided for the main circuit. The starting currents must be taken into account in the design.
- The electrical connection and feeder lines must be copper cables.
- Please refer to the wiring diagram for electrical details.
- 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 in compliance with fire protection regulations!
- The distance between the high and low voltage cables should be at least 50 mm.

### Routing of the hydraulic connection lines

- If the hydraulic connection 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 250 mm.
- Wall ducts must be sealed to the outside on site.
- After the hydraulic connection lines have been laid, they must be checked for damage and reinsulated. In case of cooling, condensate can form on the pipes.
- The hydraulic connection lines must be laid decoupled from the building and must never be laid flush-mounted.
- Care must be taken to ensure that water pipes do not pass through the sleeping or living areas.
- Shut-off valves must be installed on site in accordance with the corresponding hydraulic diagram. Opening the shut-off valves is only allowed immediately before commissioning!
- The danger of frost damage must be taken into account if there are prolonged power outages.
- 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.

**Notice**
To protect against frost damage to the heat exchanger of the heat pump, frost protection valves must be installed in the supply and return of the heat pump.
At least 2 pieces are required!
Observe downward slope, more drain valves may be necessary (flow, return, water traps).

### Buffer storage tank

A 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

A buffer storage tank is mandatory for Hoval air/water heat pumps. A buffer storage tank can be dispensed with if a direct heating or cooling circuit with storage capacity is involved, and there is always a constant flow rate (⅔ must be unblockable).
For Hoval heat pumps, the following minimum sizes of the buffer storage tank (EnerVal) must be observed. The minimum running times of the heat pumps are taken into account.
For air/water heat pumps, the energy required for defrosting the heat pump is included.
The volumes for power company off-periods shall be added on a project-by-project basis in accordance with local regulations.

Minimum sizes of buffer storage tank

| | **EnerVal type** |
|---|---|
| Belaria® fit (8) | 300 |
| Belaria® fit (13) | 500 |
| Belaria® fit (20) | 800 |
| Belaria® fit (26) | 1000 |

### Transport and storage

- When removing the packaging, check the heat pump for damage. If the heat pump was damaged during transport or storage, contact Hoval customer service, a service partner or a licensed specialist immediately. They must carry out a leak test with a suitable leak detector. In the event of a leak, the heat pump must be repaired.
- Store the outdoor unit in a cool place without fire hazard and without direct exposure to heat sources. The ambient temperature must not exceed 43 °C.
- The same regulations apply for storage as for installation (no recesses, ventilation pipes, ignition sources in the storage area).
- The heat pump must not be stored in closed rooms, cellars or garages.
- The heat pump is only allowed to be stored outdoors.
- During transport, ensure sufficient ventilation in the closed vehicle, also when parking and stopping.
- Storage in passageways, escape routes or in front of entrances or exits is not permitted
- Ignition sources such as naked flames, switched-on gas appliances, electric heaters, etc. must be kept away from the unit.
- Transport and storage only in upright position. Protect from mechanical damage and from falling over or falling down (make sure the load is secure).

## **Hoval quality.**
## You can count on us.

Hoval

Hoval is one of the leading international companies for heating and indoor climate solutions. Drawing on more than 80 years of experience and benefiting from a close-knit team culture, the Hoval Group delivers exciting solutions and develops technically superior products. This leadership role requires a sense of responsibility for energy and the environment, which is expressed in an intelligent combination of different heating technologies and customised indoor climate solutions.

Hoval also provides personal consultations and comprehensive customer service. With around 2500 employees in 15 companies around the world, Hoval sees itself not as a conglomerate, but as a large family that thinks and acts globally.
Hoval heating and indoor climate solutions are currently exported to more than 50 countries.

## Responsibility for energy and environment

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2026 - 04 | Subject to modifications

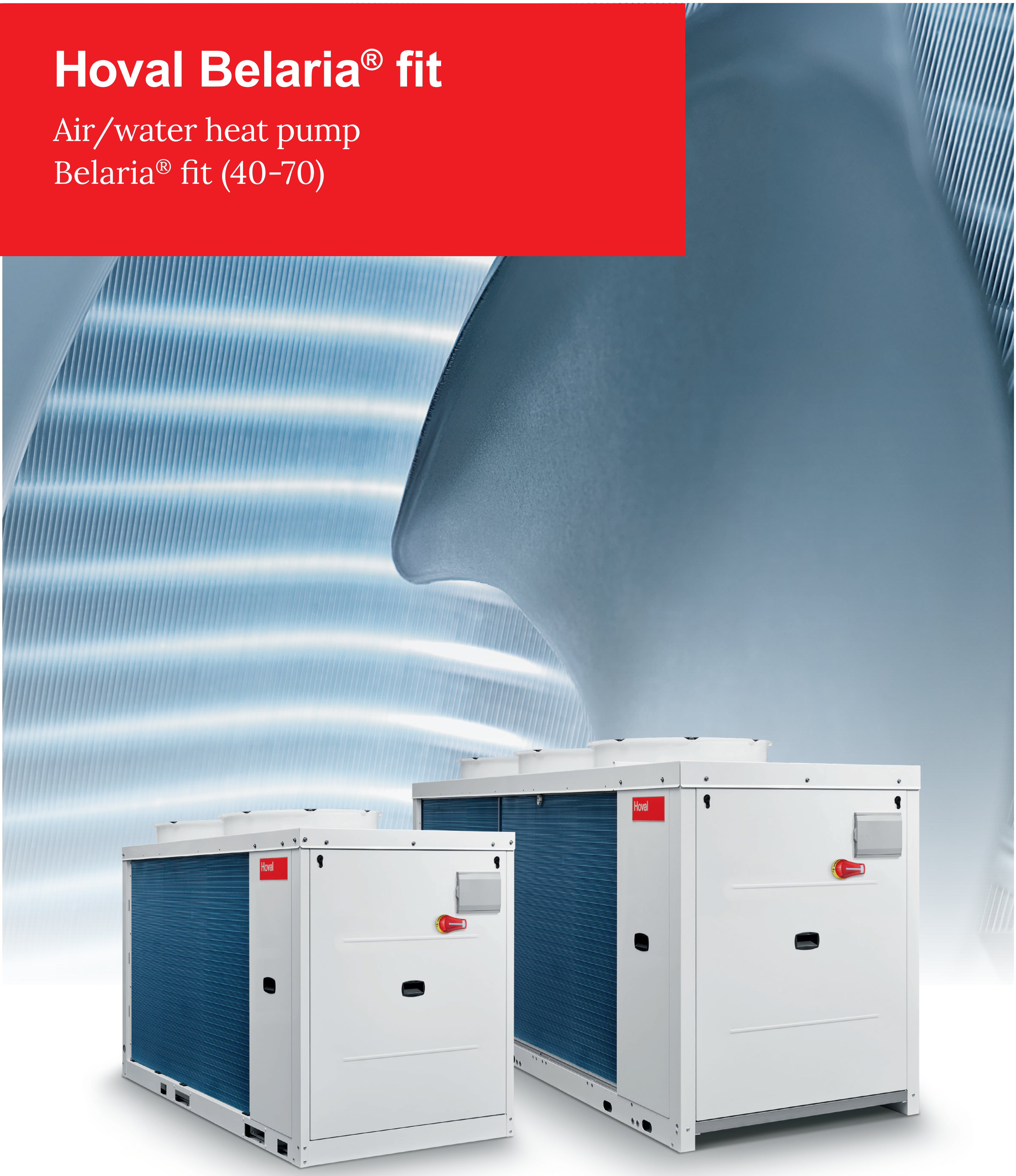
Your Hoval partner

Hoval

CATALOGUE

# Hoval Belaria® fit

Air/water heat pump
Belaria® fit (40-70)



**Hoval** | Responsibility for energy and environment

## Table of contents

## Hoval Belaria® fit (40-70)

**Air/water heat pump**

- Modulating air/water heat pump in compact design for outdoor installation
- For heating and cooling in cascades up to 16 machines
- Output modulation 30-100 %
- Flow temperatures up to 60 °C
- Supporting frame structure with powder coating (RAL 9001)
- External cladding made of surface-coated steel sheet (RAL 9001)
- Multi-row fin evaporator with large surface area with hydrophilic coating and speed-controlled axial fans
- Condense drip tray with electrical heating
- Safety valve 6 bar
- Flow switch
- Drain valve
- Temperature sensor
- Pressure relief valve
- Refrigerant R32
- Hermetically sealed compressors with inverter control
- Copper-soldered plate heat exchanger made of stainless steel with polypropylene insulation and frost protection heating
- Main switch
- Electrical box internally wired ready for connection
- Voltage-free contact for ON/OFF
- Voltage-free contact for summer/winter changeover

Including additional PCB for expanded functions
The available digital contacts enable the following remote functions:
- remote switch-on/off
- heating/cooling (summer/winter switch)
- water heating
- two-zone management
- SG ready
- energy supply company lock (remote operation on/off)
- demand limit
- activation of “Super Silent” version (whisper mode, can be selected on user interface)

The additional PCB does not allow the simultaneous use of digital inputs and Modbus signals.

*Condensate drain*
- It must be ensured that the condensate produced can be absorbed to a sufficient extent by a gravel bed (see configuration and connection diagram).

*Hydraulic connections*
- Heating connections with supplied Victaulic couplings

*Electrical connections*
- See installation instructions

*TopTronic® E controller (option)*

For enabling the Belaria® fit and regulating the plant

**Model range**

| Belaria® fit<br>type | 35 °C | 55 °C | Max. flow<br>°C | Heat output 1)<br>A2W35<br>kW | Cooling capacity 1)<br>A35W18<br>kW |
|---|---|---|---|---|---|
| (40) | $A^{+++}$ | $A^{++}$ | 60 | 22.7-40.6 | 33.8-59.3 |
| (53) | $A^{++}$ | $A^{++}$ | 60 | 25.4-53.2 | 37.5-78.0 |
| (70) | $A^{++}$ | $A^{+}$ | 60 | 41.0-71.0 | 58.5-104.0 |
|  | $A^{+++}$ → D | $A^{+++}$ → D |  |  |  |

1) Modulation range

*Operator terminal*
- Operator terminal with graphical display and function keys
- Control and monitoring of the modulating heat pumps
- Setting the heating and cooling curves
- Selection of the operating mode: Standard, Silent and Super Silent
- Display of the current operating parameters
- The operator terminal can be installed in any room.
- Can also be used as thermostat
- Control also possible via Modbus
- Operation available in 16 languages
- Included in the scope of delivery of the Belaria® fit

## Air/water heat pump – modulating

### Hoval Belaria® fit

| Belaria® fit type | Heat output [1] A2W35 kW | Cooling capacity [1] A35W18 kW | Part No. |
|---|---|---|---|
| (40) | 22.7-40.6 | 33.8-59.3 | 7019 246 |
| (53) | 25.4-53.2 | 37.5-78.0 | 7019 247 |
| (70) | 41.0-71.0 | 58.5-104.0 | 7019 248 |

[1] Modulation range

**Notice**
A buffer storage tank must be provided. Suitable buffer storage tanks see “Calorifiers” and Engineering Belaria® fit.

**Notice**
Plants can optionally be installed:
- stand-alone
- with a secondary heat generator
- with a TopTronic® E controller
- with a PLC.

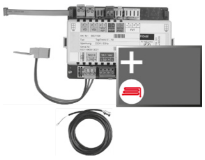
**Further accessories can be found under the following rubrics:**

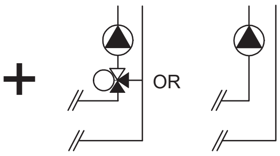
- Calorifiers/buffer storage tanks:
  - Calorifiers
  - Buffer storage tanks
  - Combination storage tanks
  - Electric heating elements
- Heating armature groups/heating distributors
- Various system components:
  - 2-way and 3-way valves
  - 3-way mixers
  - 2-way and 3-way ball valves
  - Motor drives and butterfly valves
  - Diaphragm pressure expansion tanks
  - Fittings
  - Plate heat exchangers
- Circulating pumps

**Part No.**

## TopTronic® E module expansions

for TopTronic® E basic module heat generator



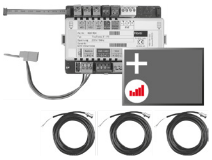


**TopTronic® E module expansion heating circuit TTE-FE HK**
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer

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

6034 576

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

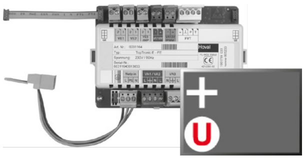


**TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ**
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer incl. energy balancing in each case

Consisting of:
- Fitting accessories
- 3 contact sensors ALF/2P/4/T, L = 4.0 m
- Plug set FE module

6037 062

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



**TopTronic® E module expansion Universal TTE-FE UNI**
Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

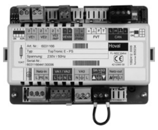
Consisting of:
- Fitting accessories
- Plug set FE module

6034 575

**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

## Accessories for TopTronic® E



**TopTronic® E controller modules**

| | | Part No. |
|---|---|---|
| TTE-HK/WW | TopTronic® E heating circuit/ hot water module | 6034 571 |
| TTE-SOL | TopTronic® E solar module | 6037 058 |
| TTE-PS | TopTronic® E buffer module | 6037 057 |
| TTE-MWA | TopTronic® E measuring module | 6034 574 |

**Supplementary plug set**

| | |
|---|---|
| for basic module heat generator TTE-WEZ | 6034 499 |
| for controller modules and module expansion TTE-FE HK | 6034 503 |

**TopTronic® E room control modules**

| | | |
|---|---|---|
| TTE-RBM | TopTronic® E room control modules | |
| | easy white | 6037 071 |
| | comfort white | 6037 069 |
| | comfort black | 6037 070 |

**Enhanced language package TopTronic® E** 6039 253

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

**HovalConnect**

| | |
|---|---|
| HovalConnect LAN | 6049 496 |
| HovalConnect WLAN | 6049 498 |
| HovalConnect Modbus | 6049 501 |
| HovalConnect KNX | 6049 593 |

**TopTronic® E interface modules**

| | |
|---|---|
| GLT module 0-10 V | 6034 578 |

**TopTronic® E sensors**

| | | |
|---|---|---|
| AF/2P/K | Outdoor sensor<br>H x W x D = 80 x 50 x 28 mm | 2055 889 |
| TF/2P/5/6T | Immersion sensor, L = 5.0 m | 2055 888 |
| ALF/2P/4/T | Contact sensor, L = 4.0 m | 2056 775 |
| TF/1.1P/2.5S/6T | Collector sensor, L = 2.5 m | 2056 776 |

**Bivalent switch**

for various release or switching functions

| | |
|---|---|
| Bivalent switch 1-piece | 2056 858 |
| Bivalent switch 2-piece | 2061 826 |

**System casing**

| | |
|---|---|
| System casing 182 mm | 6038 551 |
| System casing 254 mm | 6038 552 |

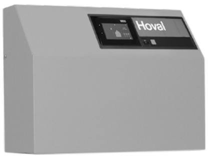
**TopTronic® E wall casing**

| | | |
|---|---|---|
| WG-190 | Wall casing small | 6052 983 |
| WG-360 | Wall casing medium | 6052 984 |
| WG-360 BM | Wall casing medium with control module cut-out | 6052 985 |
| WG-510 | Wall casing large | 6052 986 |
| WG-510 BM | Wall casing large with control module cut-out | 6052 987 |

**Further information**
see “Controls”

**Part No.**

## Accessories



**Electrical box**
for wall installation in building
interiors with built-in
Hoval TopTronic® E controller
Integrated control functions for
- 1 heating/cooling circuit with mixer
- 1 heating/cooling circuit without mixer
- 1 hot water charging circuit
- Bivalent and cascade management

Can be optionally expanded by max.
1 module expansion and 1 controller
module or 2 controller modules:
- Module expansion heating circuit or
- Module expansion heat balancing or
- Module expansion Universal

Can be optionally networked with up to
16 controller modules in total
(incl. solar module)
Incl. outdoor sensor, immersion sensor
(calorifier sensor), contact sensor
(flow temperature sensor) and RAST 5
basic plug set

6058 626

**Flange set Victaulic MH50-DN50-50**
Flange extensions DN 50/PN 6
for attachment of standard flanges
to the Victaulic connection pipes
Incl. Victaulic couplings DN 50

6032 293

**Welded-on flanges**
Version in black
incl. screws and joints.
2 welded-on flanges
Nominal diameter: DN 50
Nominal pressure: PN 6

6041 217

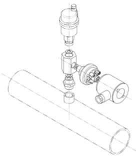
**Vibration damper set**
for Belaria® fit
for reducing the transmission of
solid-borne noise
Consisting of:
- 4 vibration-damping adjustable feet
- 4 threaded rods

Incl. fitting accessories

| Type | Version | Part No. |
|---|---|---|
| Belaria® fit (40,53) | plastic | 6059 770 |
| Belaria® fit (70) | metal springs | 6059 771 |

**Condensate hose set**
Hose 2 m incl. clip
2 pieces are required.

6061 156



**Pressure monitor set**
for installation in the return line.
- Consisting of:

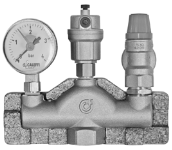
Pressure monitor 0.5/1 bar ¼″ ET
Protective cap for pressure monitor
Mounting fitting with seals

6063 617

**Part No.**

**Sludge separator DM ST with magnet and insulation**

| Type | Connection flange | Flow rate at 1.2 m/s flow speed m³/h | $k_v$ value m³/h | Part No. |
|---|---|---|---|---|
| DM ST | DN 50 | 8.5 | 60.5 | 2085 529 |
| DM ST | DN 65 | 14.3 | 110.0 | 2085 530 |
| DM ST | DN 80 | 21.7 | 160.0 | 2085 531 |
| DM ST | DN 100 | 33.9 | 216.0 | 2085 532 |



**Safety set SG20-1″** 6014 390

Area of application up to 100 kW
complete with safety valve (3 bar)
Pressure gauge and automatic
aspirator with shut-off valve.
Connection: DN 20-1″ internal thread

**Vibration decoupler**

for reducing structure-borne noise from heat pumps indoors, cannot be shortened

Consisting of:

- 1 vibration decoupler insulated for heating and brine side flat-sealing with union nut
- 2 flat seals

Nominal pressure: PN 10

| Dimension | Connection inches | Nominal length mm | Part No. |
|---|---|---|---|
| DN 50 | 2″ | 500 | 2082 227 |
| DN 50 | 2″ | 1000 | 2080 800 |

## Services

**Services and associated scope of services**
see separate catalogue “Hoval Services”

Commissioning by Hoval customer service is a prerequisite for warranty/guarantee activation.

## Belaria® fit (40-70)

| **Type** | | **(40)** | **(53)** | **(70)** |
|---|---|---|---|---|
| • Energy efficiency class of the compound system with control ( A+++ → D) | 35 °C/55 °C | A+++ / A++ | A++ / A++ | A++ / A+ |
| • Energy efficiency heating “moderate climate” 35/55 °C ηS,h 1) | % | 175 / 127 | 173 / 125 | 169 / 123 |
| • Seasonal coefficient of performance heating moderate climate 35/55 °C | SCOP | 4.46 / 3.24 | 4.41 / 3.19 | 4.29 / 3.16 |
| • Energy efficiency cooling ηS,c | % | 170.0 | 167.0 | 166.0 |
| • Seasonal energy efficiency cooling | SEER | 4.3 | 4.3 | 4.2 |
| **Max. performance data heating and cooling in acc. with EN** | | | | |
| • Heat output A2W35 | kW | 40.6 | 53.2 | 71 |
| • Coefficient of performance A2W35 | COP | 3.6 | 3.4 | 3.1 |
| • Heat output A-7W35 | kW | 30.7 | 40.5 | 59.2 |
| • Coefficient of performance A-7W35 | COP | 2.9 | 2.8 | 2.7 |
| • Cooling capacity A35W18 | kW | 59.3 | 78 | 104 |
| • Energy efficiency ratio A35W18 | EER | 4.2 | 3.5 | 3.7 |
| • Cooling capacity A35W7 | kW | 43.9 | 56.9 | 80.4 |
| • Energy efficiency ratio A35W7 | EER | 3.1 | 2.9 | 2.9 |
| **Sound data according to EN ISO 9614-2** | | | | |
| • Sound power level “Standard” | dB(A) | 75 | 78 | 81 |
| • Sound power level “Supersilent” 2) | dB(A) | 71 | 72 | 75 |
| **Hydraulic data** | | | | |
| • Maximum flow temperature | °C | 60 | 60 | 60 |
| • Nominal heating water quantity heating ΔT 5 K (A7W35) | $m^3/h$ | 9.4 | 11.5 | 15.0 |
| • Nominal heating water quantity heating ΔT 8 K (A7W35) | $m^3/h$ | 5.9 | 7.2 | 9.4 |
| • Nominal heating water quantity cooling ΔT 4 K (A35W7) | $m^3/h$ | 9.5 | 12.3 | 17.3 |
| • Nominal heating water quantity cooling ΔT 4 K (A35W18) | $m^3/h$ | 12.8 | 16.8 | 22.4 |
| • Max. operating pressure on the heating side | bar | | 6 | |
| • Flow/return connection heating | | 2" | 2″ | 2″ |
| • Built-in fan | | 2 axial fans | 2 axial fans | 3 axial fans |
| • Nominal air quantity | $m^3/h$ | 23040 | 27000 | 40500 |
| **Cooling technical data** | | | | |
| • Compressor stages | | modulating | modulating | modulating |
| • Refrigerant | | R32 | R32 | R32 |
| • Refrigeration circuits | | 1 | 1 | 1 |
| • Refrigerant filling quantity | kg | 14 | 14 | 17.5 |
| • Compressor oil type | | | DAPHNE HERMETIC OIL FW68S | |
| • Compressor oil filling quantity | l | 4.6 | 4.6 | 6 |
| **Electrical data** | | | | |
| • Connections | V/Hz | 3~400/50 | 3~400/50 | 3~400/50 |
| • Starting current (compressor and fan) | A | 20.3 | 20.3 | 31 |
| • Main current fuse 3) | A | 50 | 50 | 80 |
| **Dimensions/Weight** | | | | |
| • Dimensions (H x W x D) | mm | 1480 x 2300 x 1060 | | 1505 x 3325 x 1100 |
| • Weight | kg | 513 | 513 | 830 |

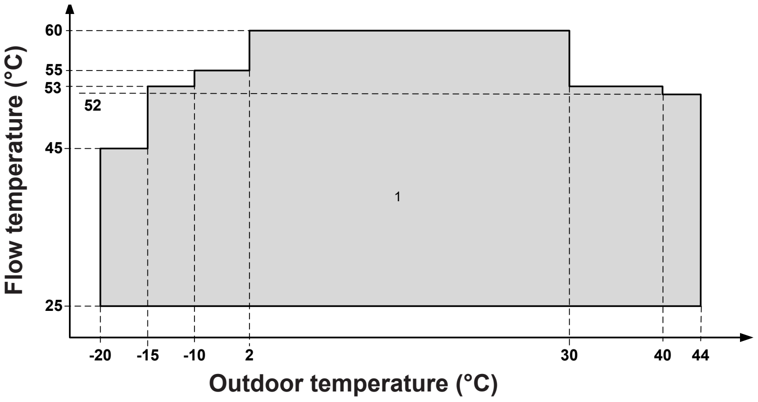
1) 2 % can be added for class II heat pump incl. control.

2) Reduced heat outputs according to heating performance data

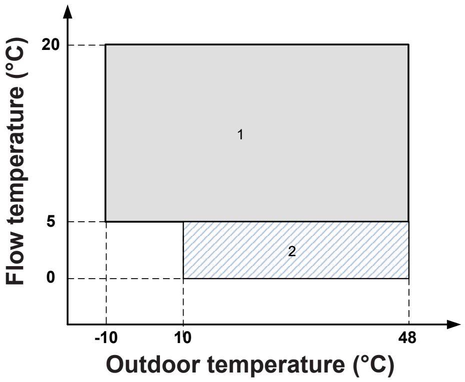
3) Country-specific regulations must be observed. Selection of the fuse size by the electrician.

## Diagrams of areas of application

### Heading and hot water Belaria® fit (40-70)



### Cooling Belaria® fit (40-70)



| | |
|---|---|
| 1 | Normal operating range |
| 2 | Operating range in which the use of ethylene glycol is mandatory |

## Sound pressure level

**Standard**

| Type | Sound pressure level frequency band [Hz] | | | | | | | | Sound pressure level | Sound power level |
|---|---|---|---|---|---|---|---|---|---|---|
| | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** | **8000** | **dB(A)** | **dB(A)** |
| Belaria® fit (40) | 76 | 75 | 70 | 71 | 73 | 65 | 60 | 50 | 58 | 75 |
| Belaria® fit (53) | 76 | 75 | 68 | 72 | 76 | 69 | 62 | 52 | 61 | 78 |
| Belaria® fit (70) | 59 | 67 | 70 | 75 | 79 | 73 | 68 | 60 | 63 | 81 |

**Super Silent (whisper mode)**

| Type | Sound pressure level frequency band [Hz] | | | | | | | | Sound pressure level | Sound power level |
|---|---|---|---|---|---|---|---|---|---|---|
| | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** | **8000** | **dB(A)** | **dB(A)** |
| Belaria® fit (40) | 50 | 62 | 67 | 67 | 69 | 62 | 57 | 48 | 54 | 71 |
| Belaria® fit (53) | 73 | 72 | 67 | 68 | 70 | 62 | 57 | 47 | 55 | 72 |
| Belaria® fit (70) | 56 | 69 | 69 | 72 | 69 | 67 | 67 | 59 | 57 | 75 |

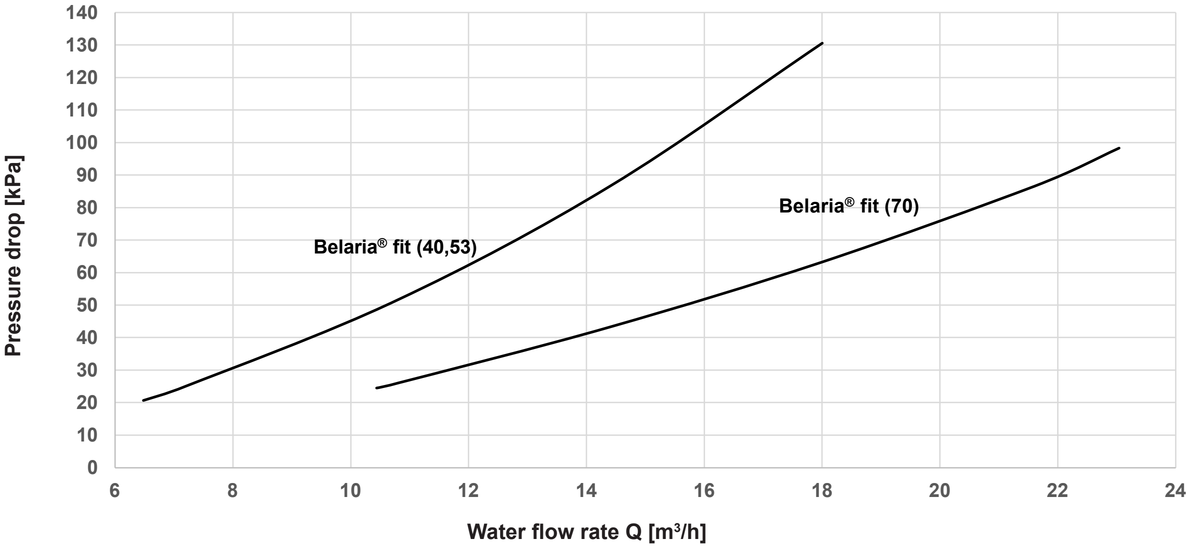
The sound levels refer to the nominal conditions of the heat pumps.
The sound pressure level refers to a distance of 1 meter from the outer surface of the unit during operation in the open.
The noise levels are determined according to the tensiometric method (EN ISO 9614-2).
The data refers to the following conditions in heating mode:

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

The data refers to the following conditions in cooling mode:

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

## Pressure drop of the internal heat exchanger



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

### Permitted water flow rates

| | | Belaria® fit (40,53) | Belaria® fit (70) |
|---|---|---|---|
| Minimum flow rate | [m³/h] | 6.5 | 10.4 |
| Maximum flow rate | [m³/h] | 18.0 | 23.0 |

### Correction factors when using glycol

| ETHYLENE GLYCOL percentage by weight % | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| Freezing point °C | −2 | −3.9 | −6.5 | −8.9 | −11.8 | −15.6 | −19 | −23.4 | −27.8 | −32.7 |
| Safety temperature | 3 | 1 | −1 | −4 | −6 | −10 | −14 | −19 | −23.8 | −29.4 |
| Correction factor for the refrigerating capacity/heat output of the unit | 0.997 | 0.994 | 0.990 | 0.986 | 0.981 | 0.976 | 0.970 | 0.964 | 0.957 | 0.950 |
| Correction factor for power consumption of the compressor | 0.999 | 0.999 | 0.998 | 0.997 | 0.996 | 0.996 | 0.995 | 0.994 | 0.993 | 0.993 |
| Correction factor for the pressure drop in the system | 1.016 | 1.035 | 1.056 | 1.080 | 1.106 | 1.135 | 1.166 | 1.200 | 1.236 | 1.275 |

| PROPYLENE GLYCOL percentage by weight % | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| Freezing point °C | −2 | −3.9 | −6.5 | −8.9 | −11.8 | −15.6 | −19 | −23.4 | −27.8 | −32.7 |
| Safety temperature | 3 | 1 | −1 | −4 | −6 | −10 | −14 | −19 | −23.8 | −29.4 |
| Correction factor for the refrigerating capacity/heat output of the unit | 0.995 | 0.990 | 0.983 | 0.976 | 0.968 | 0.960 | 0.950 | 0.939 | 0.928 | 0.916 |
| Correction factor for power consumption of the compressor | 0.999 | 0.997 | 0.995 | 0.993 | 0.991 | 0.988 | 0.986 | 0.983 | 0.980 | 0.977 |
| Correction factor for the pressure drop in the system | 1.027 | 1.058 | 1.093 | 1.133 | 1.176 | 1.224 | 1.276 | 1.332 | 1.393 | 1.457 |

The specified correction factors refer to water-glycol mixtures that are used to prevent frost formation on the heat exchangers of the water circuit during the winter break.

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

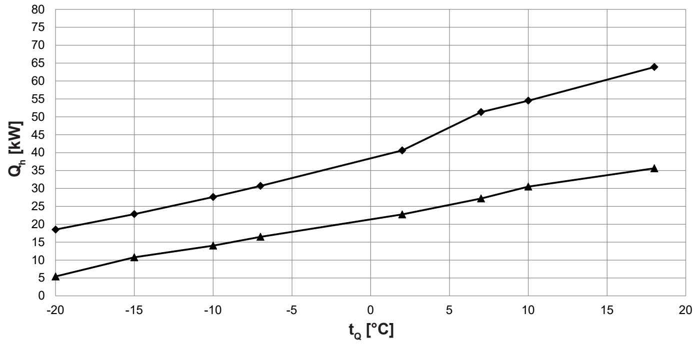
## Performance data – heating

Maximum heat output allowing for defrosting losses

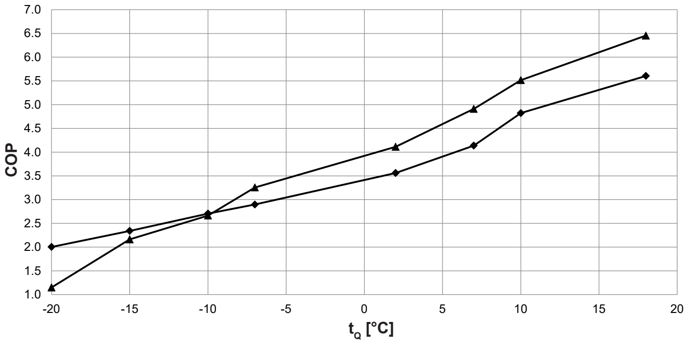
Data according to EN 14511:2018

## Belaria® fit (40)

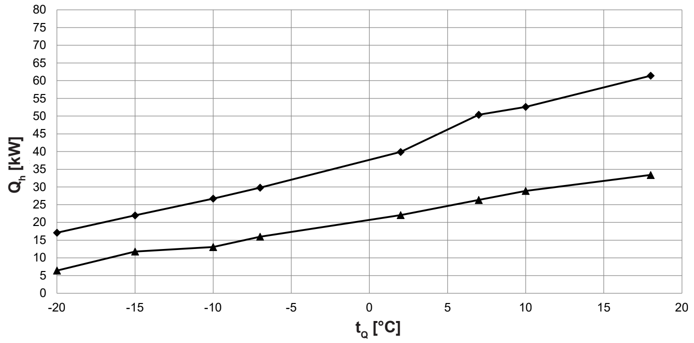
### Heat output – $t_{VL}$ 35 °C



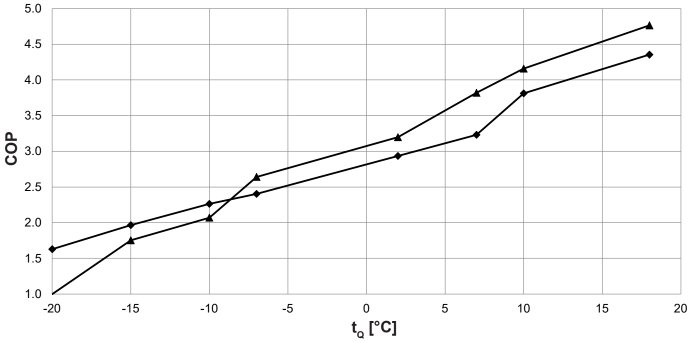
### Coefficient of performance – $t_{VL}$ 35 °C



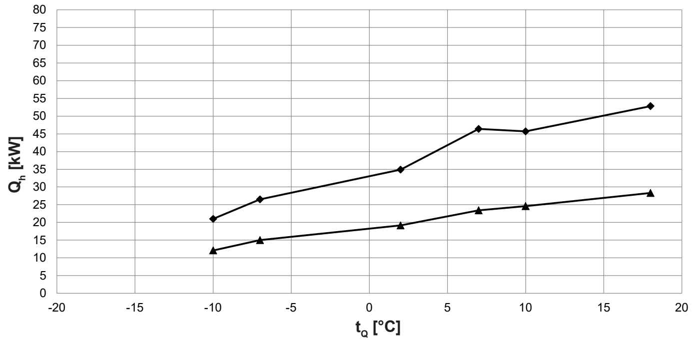
### Heat output – $t_{VL}$ 45 °C



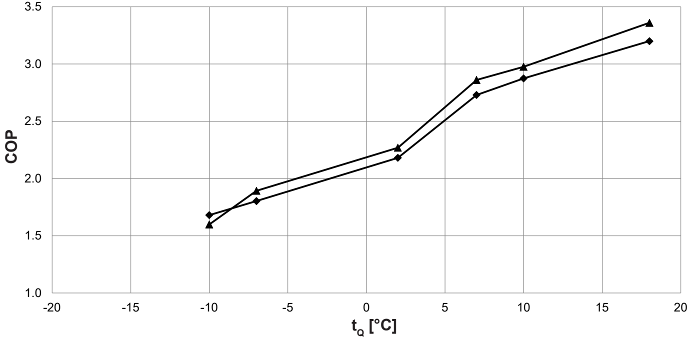
### Coefficient of performance – $t_{VL}$ 45 °C



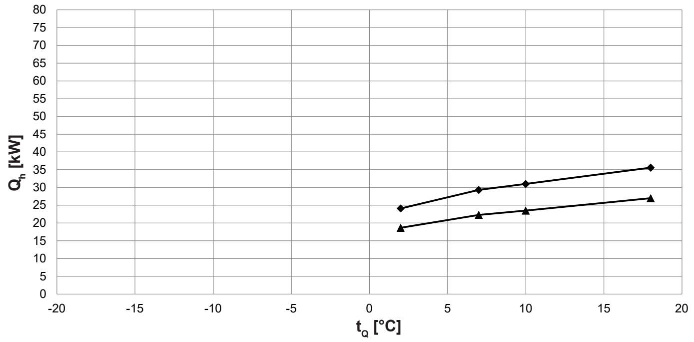
### Heat output – $t_{VL}$ 55 °C



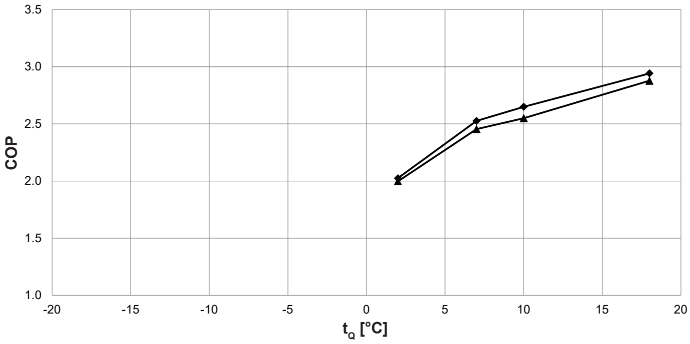
### Coefficient of performance – $t_{VL}$ 55 °C



### Heat output – $t_{VL}$ 60 °C



### Coefficient of performance – $t_{VL}$ 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

◆ maximum output
▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

| Flow temperature | °C | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|
| Heat output factor | - | 0.87 | 0.83 | 0.83 | 0.80 | 0.80 | 0.60 |
| Power consumption factor | - | 0.88 | 0.84 | 0.84 | 0.77 | 0.77 | 0.60 |
| COP factor | - | 1.00 | 1.00 | 1.00 | 1.03 | 1.03 | 1.00 |

## Performance data – heating

Maximum heat output allowing for defrosting losses

Data according to EN 14511:2018

### Belaria® fit (40)

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | −20 | 18.5 | 9.2 | 2.0 | 5.4 | 4.7 | 1.1 |
| | −15 | 22.8 | 9.7 | 2.3 | 10.7 | 5.0 | 2.2 |
| | −10 | 27.6 | 10.2 | 2.7 | 14.0 | 5.3 | 2.7 |
| | −7 | 30.7 | 10.6 | 2.9 | 16.5 | 5.1 | 3.3 |
| | 2 | 40.6 | 11.4 | 3.6 | 22.7 | 5.5 | 4.1 |
| | 7 | 51.3 | 12.4 | 4.1 | 27.2 | 5.5 | 4.9 |
| | 10 | 54.5 | 11.3 | 4.8 | 30.5 | 5.5 | 5.5 |
| | 18 | 63.9 | 11.4 | 5.6 | 35.6 | 5.5 | 6.5 |
| 40 | −20 | 17.8 | 9.7 | 1.8 | 7.5 | 5.9 | 1.3 |
| | −15 | 22.3 | 10.4 | 2.1 | 10.2 | 5.3 | 1.9 |
| | −10 | 27.1 | 11.0 | 2.5 | 13.5 | 5.7 | 2.4 |
| | −7 | 30.2 | 11.4 | 2.6 | 16.3 | 5.5 | 2.9 |
| | 2 | 39.9 | 12.4 | 3.2 | 22.2 | 6.2 | 3.6 |
| | 7 | 50.8 | 12.4 | 4.1 | 28.1 | 6.2 | 4.6 |
| | 10 | 53.5 | 12.5 | 4.3 | 29.6 | 6.2 | 4.8 |
| | 18 | 62.7 | 12.7 | 4.9 | 34.5 | 6.2 | 5.6 |
| 45 | −20 | 17.1 | 10.5 | 1.6 | 6.4 | 6.4 | 1.0 |
| | −15 | 22.0 | 11.2 | 2.0 | 11.8 | 6.7 | 1.8 |
| | −10 | 26.7 | 11.8 | 2.3 | 13.1 | 6.3 | 2.1 |
| | −7 | 29.8 | 12.4 | 2.4 | 16.0 | 6.0 | 2.6 |
| | 2 | 39.9 | 13.6 | 2.9 | 22.1 | 6.9 | 3.2 |
| | 7 | 50.4 | 15.6 | 3.2 | 26.4 | 6.9 | 3.8 |
| | 10 | 52.6 | 13.8 | 3.8 | 28.9 | 7.0 | 4.2 |
| | 18 | 61.4 | 14.1 | 4.4 | 33.4 | 7.0 | 4.8 |
| 50 | −20 | - | - | - | - | - | - |
| | −15 | 19.7 | 12.4 | 1.6 | 11.4 | 7.4 | 1.5 |
| | −10 | 24.1 | 13.2 | 1.8 | 12.5 | 6.7 | 1.9 |
| | −7 | 27.1 | 13.6 | 2.0 | 15.3 | 6.8 | 2.3 |
| | 2 | 35.6 | 14.7 | 2.4 | 19.6 | 7.6 | 2.6 |
| | 7 | 44.2 | 14.3 | 3.1 | 24.2 | 7.4 | 3.3 |
| | 10 | 46.8 | 14.5 | 3.2 | 25.5 | 7.4 | 3.4 |
| | 18 | 54.4 | 14.9 | 3.7 | 29.4 | 7.5 | 3.9 |
| 55 | −20 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | 21.0 | 12.5 | 1.7 | 12.1 | 7.6 | 1.6 |
| | −7 | 26.5 | 14.7 | 1.8 | 15.0 | 7.9 | 1.9 |
| | 2 | 34.9 | 16.0 | 2.2 | 19.1 | 8.4 | 2.3 |
| | 7 | 46.4 | 17.0 | 2.7 | 23.4 | 8.2 | 2.9 |
| | 10 | 45.7 | 15.9 | 2.9 | 24.6 | 8.3 | 3.0 |
| | 18 | 52.8 | 16.5 | 3.2 | 28.3 | 8.4 | 3.4 |
| 60 | −20 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | - | - | - | - | - | - |
| | −7 | - | - | - | - | - | - |
| | 2 | 24.1 | 11.9 | 2.0 | 18.7 | 9.3 | 2.0 |
| | 7 | 29.3 | 11.6 | 2.5 | 22.3 | 9.1 | 2.5 |
| | 10 | 31.0 | 11.7 | 2.6 | 23.5 | 9.2 | 2.6 |
| | 18 | 35.6 | 12.1 | 2.9 | 27.0 | 9.4 | 2.9 |

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

Output correction factors in Super Silent mode (whisper mode)

| Flow temperature | °C | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|
| Heat output factor | - | 0.87 | 0.83 | 0.83 | 0.80 | 0.80 | 0.60 |
| Power consumption factor | - | 0.88 | 0.84 | 0.84 | 0.77 | 0.77 | 0.60 |
| COP factor | - | 1.00 | 1.00 | 1.00 | 1.03 | 1.03 | 1.00 |

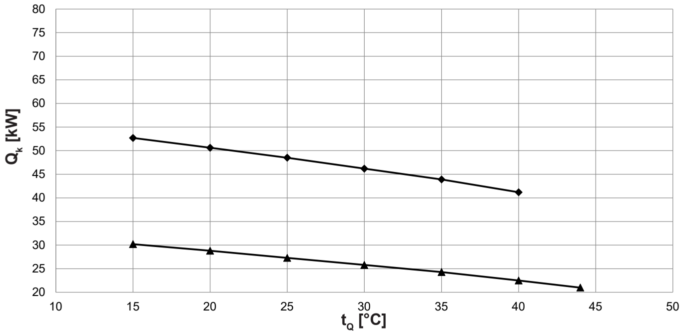
## Performance data – cooling

Maximum cooling capacity

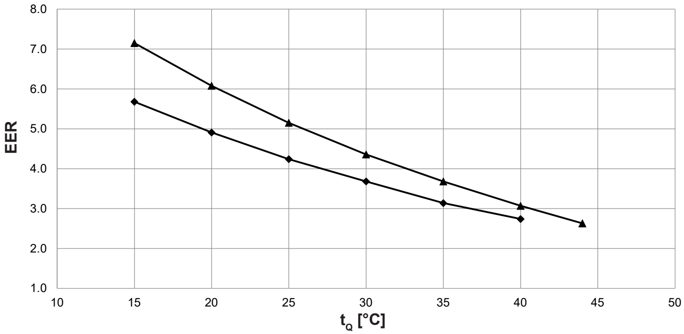
Data according to EN 14511:2018

### Belaria® fit (40)

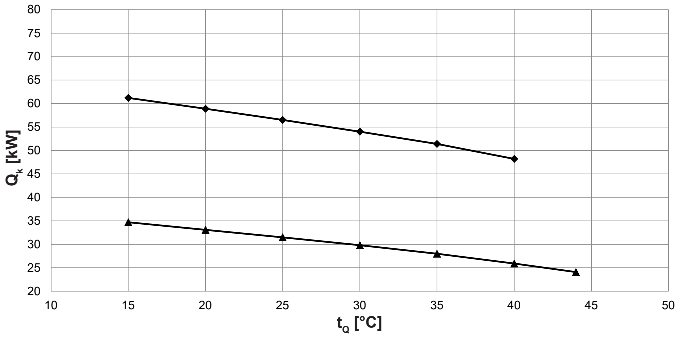
**Cooling capacity – $t_{VL}$ 7 °C**



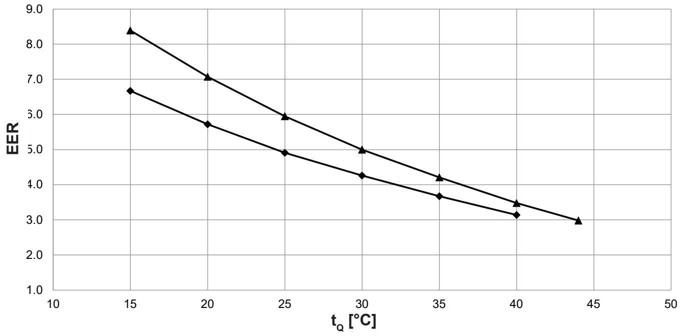
**Energy efficiency ratio – $t_{VL}$ 7 °C**



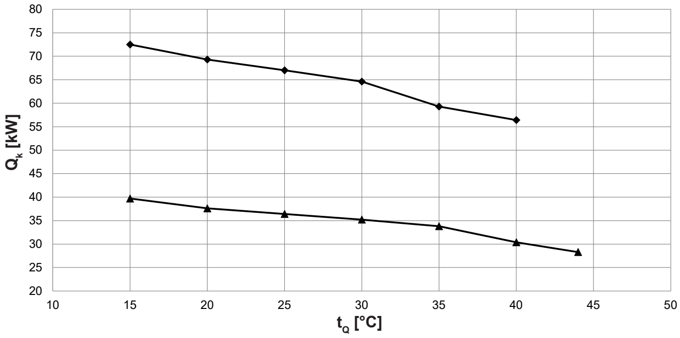
**Cooling capacity – $t_{VL}$ 12 °C**



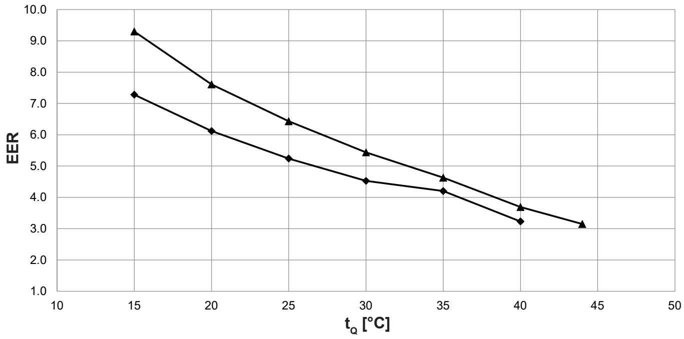
**Energy efficiency ratio – $t_{VL}$ 12 °C**



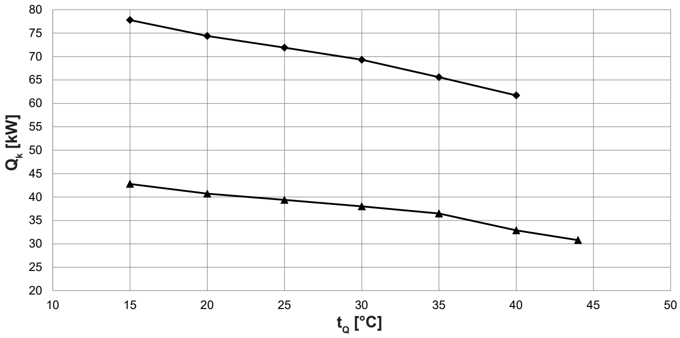
**Cooling capacity – $t_{VL}$ 18 °C**



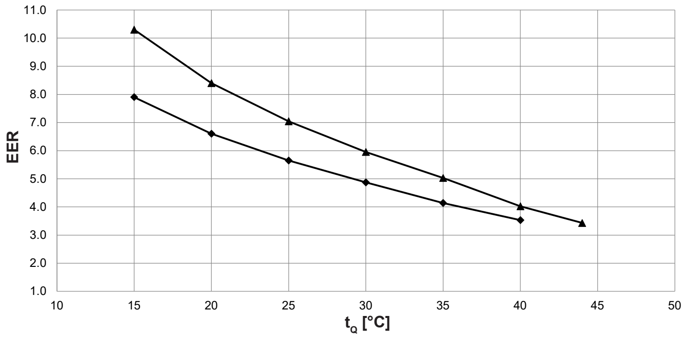
**Energy efficiency ratio – $t_{VL}$ 18 °C**



**Cooling capacity – $t_{VL}$ 20 °C**



**Energy efficiency ratio – $t_{VL}$ 20 °C**



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

◆ maximum output
▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

| | | |
|---|---|---|
| Cooling capacity factor | - | 0.87 |
| Power consumption factor | - | 0.87 |
| EER factor | - | 1.00 |

## Performance data – cooling

Maximum cooling capacity

Data according to EN 14511:2018

### Belaria® fit (40)

| | | | Maximum output | | | Minimum output | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER |
| 7 | 15 | 52.7 | 9.3 | 5.7 | 30.2 | 4.2 | 7.2 |
| | 20 | 50.6 | 10.3 | 4.9 | 28.8 | 4.7 | 6.1 |
| | 25 | 48.5 | 11.4 | 4.2 | 27.3 | 5.3 | 5.2 |
| | 30 | 46.2 | 12.6 | 3.7 | 25.8 | 5.9 | 4.4 |
| | 35 | 43.9 | 14.0 | 3.1 | 24.3 | 6.6 | 3.7 |
| | 40 | 41.2 | 15.0 | 2.7 | 22.5 | 7.3 | 3.1 |
| | 44 | - | - | - | 21.0 | 8.0 | 2.6 |
| 10 | 15 | 57.8 | 9.2 | 6.3 | 32.9 | 4.2 | 7.9 |
| | 20 | 55.6 | 10.3 | 5.4 | 31.4 | 4.7 | 6.7 |
| | 25 | 53.3 | 11.5 | 4.6 | 29.8 | 5.3 | 5.6 |
| | 30 | 50.9 | 12.7 | 4.0 | 28.2 | 5.9 | 4.7 |
| | 35 | 48.4 | 13.9 | 3.5 | 26.5 | 6.6 | 4.0 |
| | 40 | 45.4 | 15.2 | 3.0 | 24.5 | 7.4 | 3.3 |
| | 44 | - | - | - | 22.9 | 8.1 | 2.8 |
| 12 | 15 | 61.2 | 9.2 | 6.7 | 34.7 | 4.1 | 8.4 |
| | 20 | 58.9 | 10.3 | 5.7 | 33.1 | 4.7 | 7.1 |
| | 25 | 56.5 | 11.5 | 4.9 | 31.5 | 5.3 | 6.0 |
| | 30 | 54.0 | 12.7 | 4.3 | 29.8 | 6.0 | 5.0 |
| | 35 | 51.4 | 14.0 | 3.7 | 28.0 | 6.7 | 4.2 |
| | 40 | 48.2 | 15.4 | 3.1 | 25.9 | 7.4 | 3.5 |
| | 44 | - | - | - | 24.1 | 8.1 | 3.0 |
| 15 | 15 | 68.2 | 10.1 | 6.8 | 36.5 | 4.4 | 8.3 |
| | 20 | 65.2 | 11.4 | 5.7 | 34.6 | 5.1 | 6.8 |
| | 25 | 62.1 | 12.8 | 4.9 | 32.5 | 5.8 | 5.7 |
| | 30 | 60.0 | 14.2 | 4.2 | 31.3 | 6.5 | 4.8 |
| | 35 | 57.7 | 15.8 | 3.7 | 30.3 | 7.4 | 4.1 |
| | 40 | 54.4 | 17.3 | 3.1 | 28.0 | 8.2 | 3.4 |
| | 44 | - | - | - | 26.2 | 9.0 | 2.9 |
| 18 | 15 | 72.5 | 10.0 | 7.3 | 39.7 | 4.3 | 9.3 |
| | 20 | 69.3 | 11.3 | 6.1 | 37.6 | 4.9 | 7.6 |
| | 25 | 67.0 | 12.8 | 5.2 | 36.4 | 5.7 | 6.4 |
| | 30 | 64.6 | 14.3 | 4.5 | 35.2 | 6.5 | 5.4 |
| | 35 | 59.3 | 14.1 | 4.2 | 33.8 | 7.3 | 4.6 |
| | 40 | 56.4 | 17.5 | 3.2 | 30.4 | 8.2 | 3.7 |
| | 44 | - | - | - | 28.3 | 9.0 | 3.2 |
| 20 | 15 | 77.8 | 9.8 | 7.9 | 42.8 | 4.2 | 10.3 |
| | 20 | 74.4 | 11.3 | 6.6 | 40.7 | 4.8 | 8.4 |
| | 25 | 71.9 | 12.7 | 5.7 | 39.4 | 5.6 | 7.0 |
| | 30 | 69.3 | 14.2 | 4.9 | 38.0 | 6.4 | 6.0 |
| | 35 | 65.6 | 15.8 | 4.1 | 36.5 | 7.3 | 5.0 |
| | 40 | 61.7 | 17.5 | 3.5 | 32.9 | 8.2 | 4.0 |
| | 44 | - | - | - | 30.8 | 9.0 | 3.4 |

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

Output correction factors in Super Silent mode (whisper mode)

| | | |
|---|---|---|
| Cooling capacity factor | - | 0.87 |
| Power consumption factor | - | 0.87 |
| EER factor | - | 1.00 |

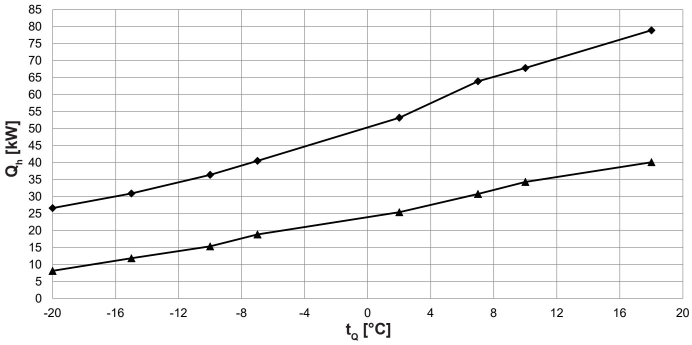
## Performance data – heating

Maximum heat output allowing for defrosting losses

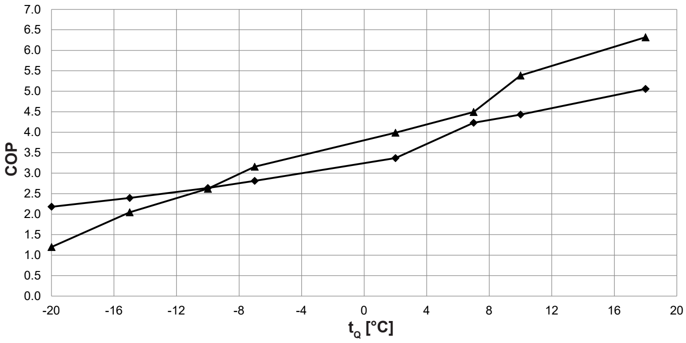
Data according to EN 14511:2018

### Belaria® fit (53)

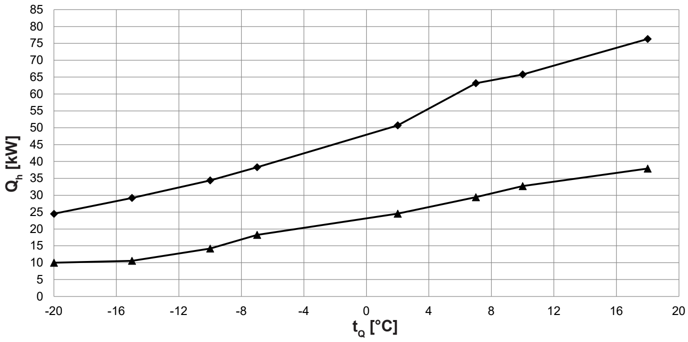
#### Heat output – $t_{VL}$ 35 °C



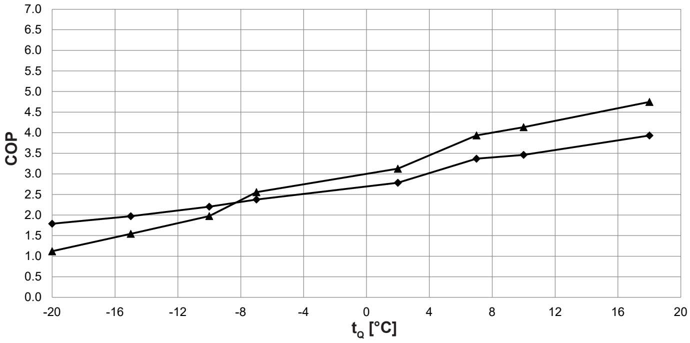
#### Coefficient of performance – $t_{VL}$ 35 °C



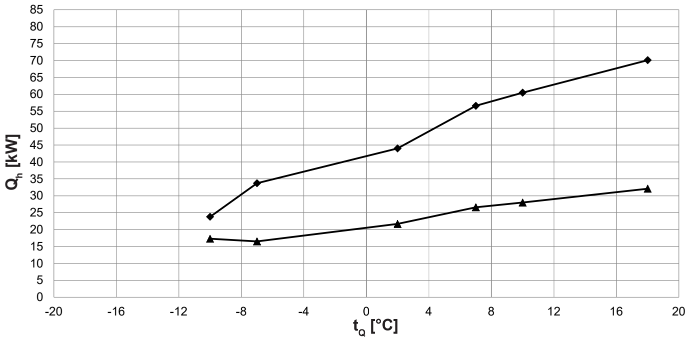
#### Heat output – $t_{VL}$ 45 °C



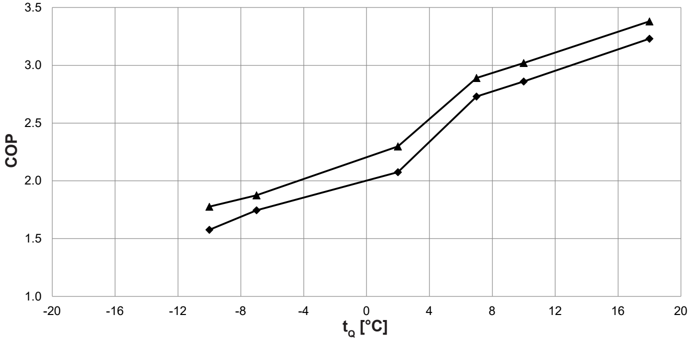
#### Coefficient of performance – $t_{VL}$ 45 °C



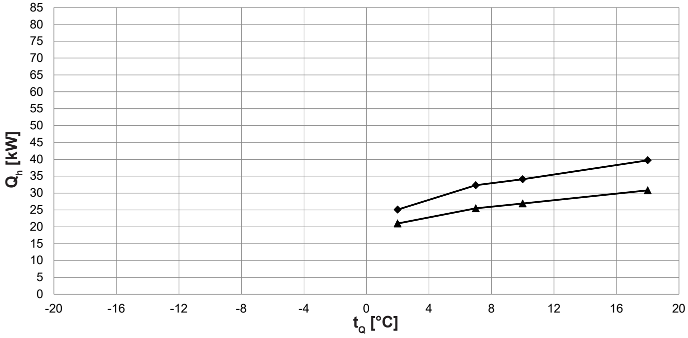
#### Heat output – $t_{VL}$ 55 °C



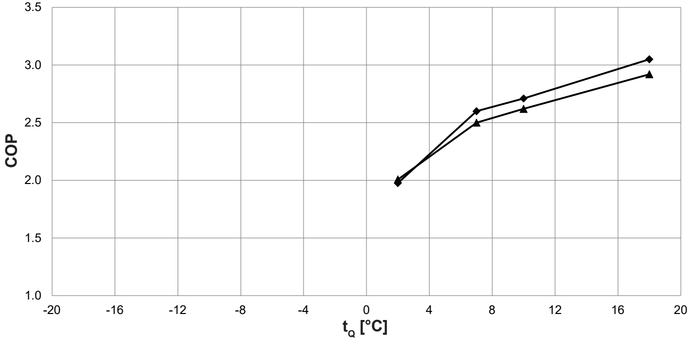
#### Coefficient of performance – $t_{VL}$ 55 °C



#### Heat output – $t_{VL}$ 60 °C



#### Coefficient of performance – $t_{VL}$ 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

◆ maximum output
▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

| Flow temperature | °C | **35** | **40** | **45** | **50** | **55** | **60** |
|---|---|---|---|---|---|---|---|
| Heat output factor | - | 0.87 | 0.79 | 0.79 | 0.80 | 0.80 | 0.82 |
| Power consumption factor | - | 0.80 | 0.74 | 0.74 | 0.80 | 0.80 | 0.80 |
| COP factor | - | 1.04 | 1.07 | 1.07 | 1.02 | 1.02 | 1.03 |

## Performance data – heating

Maximum heat output allowing for defrosting losses

Data according to EN 14511:2018

### Belaria® fit (53)

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | −20 | 26.6 | 12.2 | 2.2 | 8.1 | 6.8 | 1.2 |
| | −15 | 30.9 | 12.9 | 2.4 | 11.9 | 5.8 | 2.0 |
| | −10 | 36.4 | 13.8 | 2.6 | 15.3 | 5.9 | 2.6 |
| | −7 | 40.5 | 14.4 | 2.8 | 18.9 | 6.0 | 3.2 |
| | 2 | 53.2 | 15.8 | 3.4 | 25.4 | 6.4 | 4.0 |
| | 7 | 63.9 | 15.1 | 4.2 | 30.8 | 6.8 | 4.5 |
| | 10 | 67.8 | 15.3 | 4.4 | 34.3 | 6.4 | 5.4 |
| | 18 | 78.9 | 15.6 | 5.1 | 40.1 | 6.3 | 6.3 |
| 40 | −20 | 25.5 | 12.9 | 2.0 | 11.0 | 8.5 | 1.3 |
| | −15 | 30.0 | 13.8 | 2.2 | 11.3 | 6.3 | 1.8 |
| | −10 | 35.1 | 14.5 | 2.4 | 14.9 | 6.6 | 2.3 |
| | −7 | 39.5 | 14.9 | 2.7 | 18.7 | 6.5 | 2.9 |
| | 2 | 51.7 | 16.6 | 3.1 | 25.0 | 7.0 | 3.5 |
| | 7 | 63.5 | 16.8 | 3.8 | 31.6 | 7.0 | 4.5 |
| | 10 | 66.8 | 17.0 | 3.9 | 33.5 | 7.1 | 4.7 |
| | 18 | 77.7 | 17.4 | 4.5 | 39.0 | 7.1 | 5.5 |
| 45 | −20 | 24.5 | 13.7 | 1.8 | 10.0 | 8.9 | 1.1 |
| | −15 | 29.2 | 14.8 | 2.0 | 10.6 | 6.8 | 1.5 |
| | −10 | 34.4 | 15.6 | 2.2 | 14.2 | 7.2 | 2.0 |
| | −7 | 38.3 | 16.1 | 2.4 | 18.3 | 7.1 | 2.6 |
| | 2 | 50.7 | 18.2 | 2.8 | 24.5 | 7.8 | 3.1 |
| | 7 | 63.2 | 18.7 | 3.4 | 29.4 | 7.8 | 3.9 |
| | 10 | 65.8 | 19.0 | 3.5 | 32.7 | 7.9 | 4.1 |
| | 18 | 76.3 | 19.4 | 3.9 | 37.9 | 8.0 | 4.7 |
| 50 | −20 | - | - | - | - | - | - |
| | −15 | 26.5 | 16.1 | 1.6 | 9.5 | 7.4 | 1.3 |
| | −10 | 31.4 | 17.2 | 1.8 | 13.5 | 7.8 | 1.7 |
| | −7 | 34.6 | 17.8 | 1.9 | 17.4 | 8.0 | 2.2 |
| | 2 | 44.9 | 19.4 | 2.3 | 22.2 | 8.6 | 2.6 |
| | 7 | 58.6 | 19.0 | 3.1 | 27.3 | 8.6 | 3.4 |
| | 10 | 61.8 | 19.3 | 3.2 | 28.9 | 8.4 | 3.5 |
| | 18 | 71.7 | 19.9 | 3.6 | 33.4 | 8.5 | 3.9 |
| 55 | −20 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | 23.8 | 15.1 | 1.6 | 17.3 | 9.7 | 1.8 |
| | −7 | 33.7 | 19.3 | 1.7 | 16.5 | 8.8 | 1.9 |
| | 2 | 44.0 | 21.2 | 2.1 | 21.7 | 9.4 | 2.3 |
| | 7 | 56.6 | 20.7 | 2.7 | 26.6 | 9.2 | 2.9 |
| | 10 | 60.5 | 21.2 | 2.9 | 28.0 | 9.3 | 3.0 |
| | 18 | 70.1 | 21.7 | 3.2 | 32.1 | 9.5 | 3.4 |
| 60 | −20 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | - | - | - | - | - | - |
| | −7 | - | - | - | - | - | - |
| | 2 | 25.1 | 12.7 | 2.0 | 21.0 | 10.5 | 2.0 |
| | 7 | 32.3 | 12.4 | 2.6 | 25.5 | 10.2 | 2.5 |
| | 10 | 34.1 | 12.6 | 2.7 | 26.9 | 10.3 | 2.6 |
| | 18 | 39.7 | 13.0 | 3.1 | 30.8 | 10.5 | 2.9 |

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

Output correction factors in Super Silent mode (whisper mode)

| Flow temperature | °C | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|
| Heat output factor | - | 0.87 | 0.79 | 0.79 | 0.80 | 0.80 | 0.82 |
| Power consumption factor | - | 0.80 | 0.74 | 0.74 | 0.80 | 0.80 | 0.80 |
| COP factor | - | 1.04 | 1.07 | 1.07 | 1.02 | 1.02 | 1.03 |

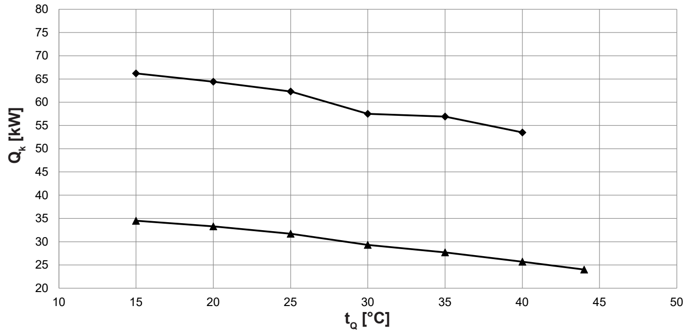
## Performance data – cooling

Maximum cooling capacity

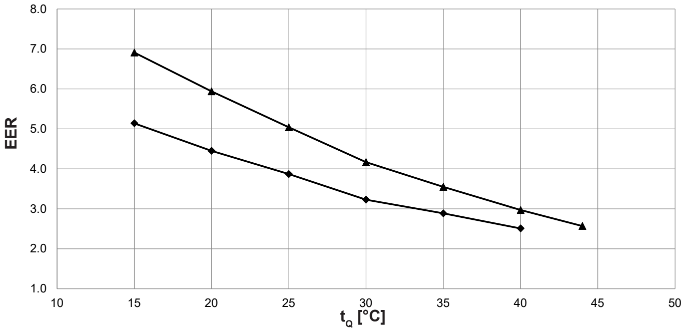
Data according to EN 14511:2018

### Belaria® fit (53)

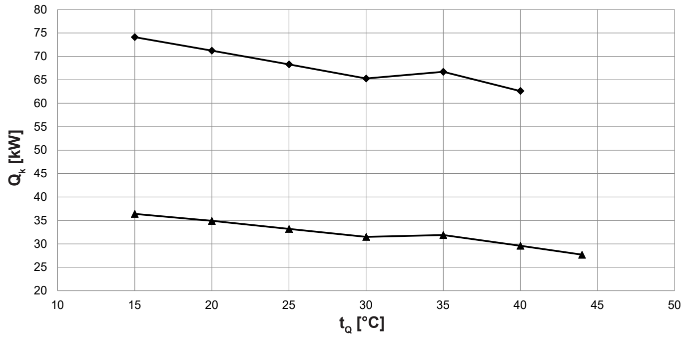
#### Cooling capacity – $t_{VL}$ 7 °C



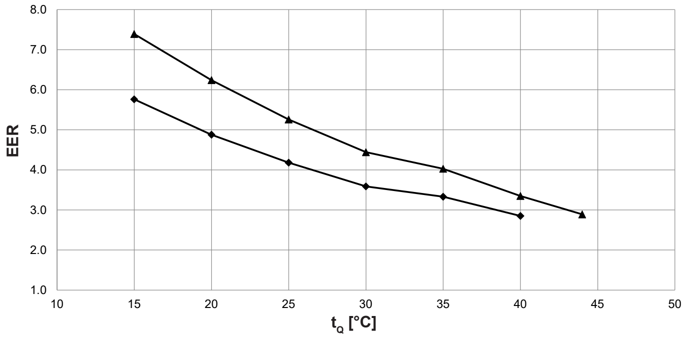
#### Energy efficiency ratio – $t_{VL}$ 7 °C



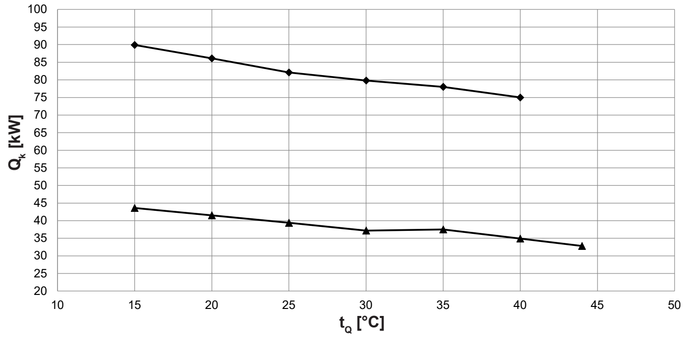
#### Cooling capacity – $t_{VL}$ 12 °C



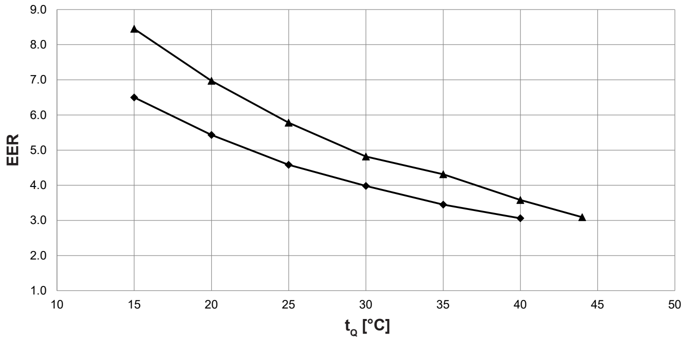
#### Energy efficiency ratio – $t_{VL}$ 12 °C



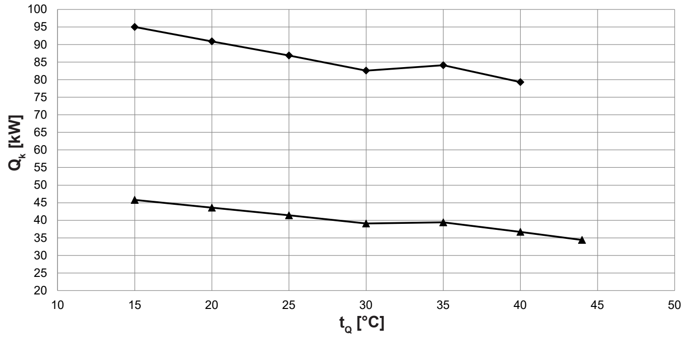
#### Cooling capacity – $t_{VL}$ 18 °C



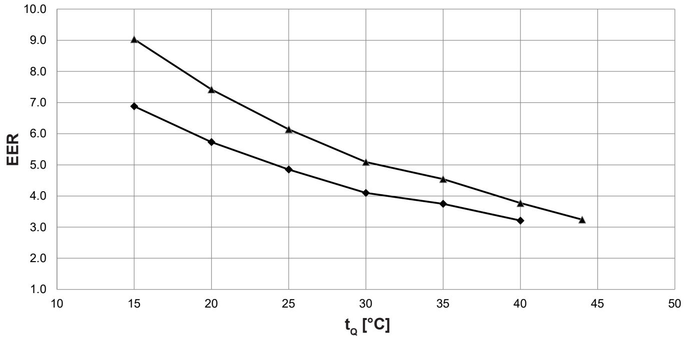
#### Energy efficiency ratio – $t_{VL}$ 18 °C



#### Cooling capacity – $t_{VL}$ 20 °C



#### Energy efficiency ratio – $t_{VL}$ 20 °C



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

◆ maximum output
▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

| | | |
|---|---|---|
| Cooling capacity factor | - | 0.83 |
| Power consumption factor | - | 0.80 |
| EER factor | - | 1.06 |

## Performance data – cooling

Maximum cooling capacity

Data according to EN 14511:2018

### Belaria® fit (53)

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER |
| 7 | 15 | 66.2 | 12.9 | 5.1 | 34.5 | 5.0 | 6.9 |
| | 20 | 64.4 | 14.5 | 4.5 | 33.3 | 5.6 | 5.9 |
| | 25 | 62.3 | 16.1 | 3.9 | 31.7 | 6.3 | 5.0 |
| | 30 | 57.5 | 17.8 | 3.2 | 29.3 | 7.0 | 4.2 |
| | 35 | 56.9 | 19.7 | 2.9 | 27.7 | 7.8 | 3.6 |
| | 40 | 53.5 | 21.3 | 2.5 | 25.7 | 8.7 | 3.0 |
| | 44 | - | - | - | 24.0 | 9.3 | 2.6 |
| 10 | 15 | 70.0 | 12.9 | 5.4 | 34.6 | 5.0 | 7.0 |
| | 20 | 67.3 | 14.5 | 4.6 | 33.0 | 5.6 | 5.9 |
| | 25 | 64.4 | 16.3 | 4.0 | 31.5 | 6.3 | 5.0 |
| | 30 | 61.5 | 18.0 | 3.4 | 29.8 | 7.1 | 4.2 |
| | 35 | 62.9 | 19.8 | 3.2 | 30.3 | 7.9 | 3.8 |
| | 40 | 58.9 | 21.7 | 2.7 | 28.1 | 8.8 | 3.2 |
| | 44 | - | - | - | 26.3 | 9.5 | 2.8 |
| 12 | 15 | 74.1 | 12.9 | 5.8 | 36.4 | 4.9 | 7.4 |
| | 20 | 71.2 | 14.6 | 4.9 | 34.9 | 5.6 | 6.2 |
| | 25 | 68.3 | 16.3 | 4.2 | 33.2 | 6.3 | 5.3 |
| | 30 | 65.3 | 18.2 | 3.6 | 31.5 | 7.1 | 4.4 |
| | 35 | 66.7 | 20.0 | 3.3 | 31.9 | 7.9 | 4.0 |
| | 40 | 62.6 | 22.0 | 2.9 | 29.6 | 8.8 | 3.4 |
| | 44 | - | - | - | 27.7 | 9.6 | 2.9 |
| 15 | 15 | 82.5 | 13.9 | 6.0 | 40.3 | 5.0 | 8.1 |
| | 20 | 78.6 | 15.8 | 5.0 | 38.4 | 5.7 | 6.7 |
| | 25 | 75.3 | 17.8 | 4.2 | 36.4 | 6.5 | 5.6 |
| | 30 | 72.0 | 19.9 | 3.6 | 34.6 | 7.3 | 4.7 |
| | 35 | 73.7 | 22.1 | 3.3 | 35.0 | 8.2 | 4.3 |
| | 40 | 69.2 | 24.3 | 2.9 | 32.4 | 9.2 | 3.5 |
| | 44 | - | - | - | 30.3 | 10.2 | 3.0 |
| 18 | 15 | 89.9 | 13.8 | 6.5 | 43.6 | 5.2 | 8.5 |
| | 20 | 86.1 | 15.9 | 5.4 | 41.5 | 6.0 | 7.0 |
| | 25 | 82.1 | 17.9 | 4.6 | 39.4 | 6.8 | 5.8 |
| | 30 | 79.8 | 20.1 | 4.0 | 37.2 | 7.7 | 4.8 |
| | 35 | 78.0 | 22.6 | 3.5 | 37.5 | 8.7 | 4.3 |
| | 40 | 75.0 | 24.5 | 3.1 | 34.9 | 9.7 | 3.6 |
| | 44 | - | - | - | 32.8 | 10.6 | 3.1 |
| 20 | 15 | 95.0 | 13.8 | 6.9 | 45.8 | 5.1 | 9.0 |
| | 20 | 90.9 | 15.9 | 5.7 | 43.6 | 5.9 | 7.4 |
| | 25 | 86.9 | 17.9 | 4.9 | 41.4 | 6.7 | 6.1 |
| | 30 | 82.6 | 20.1 | 4.1 | 39.1 | 7.7 | 5.1 |
| | 35 | 84.1 | 22.4 | 3.8 | 39.4 | 8.7 | 4.5 |
| | 40 | 79.3 | 24.7 | 3.2 | 36.7 | 9.7 | 3.8 |
| | 44 | - | - | - | 34.4 | 10.6 | 3.2 |

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

Output correction factors in Super Silent mode (whisper mode)

| | | |
|---|---|---|
| Cooling capacity factor | - | 0.83 |
| Power consumption factor | - | 0.80 |
| EER factor | - | 1.06 |

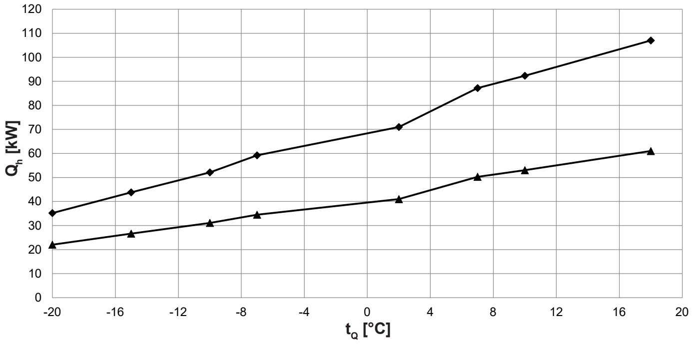
## Performance data – heating

Maximum heat output allowing for defrosting losses

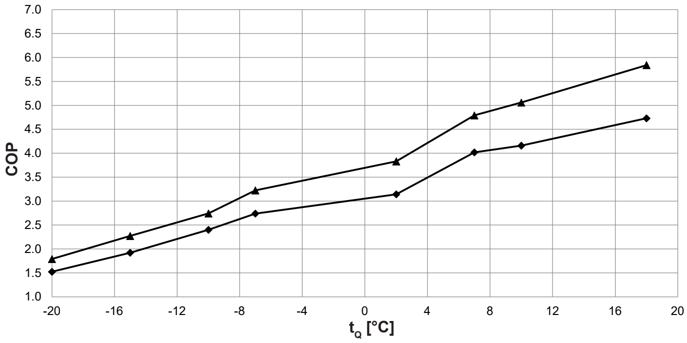
Data according to EN 14511:2018

## Belaria® fit (70)

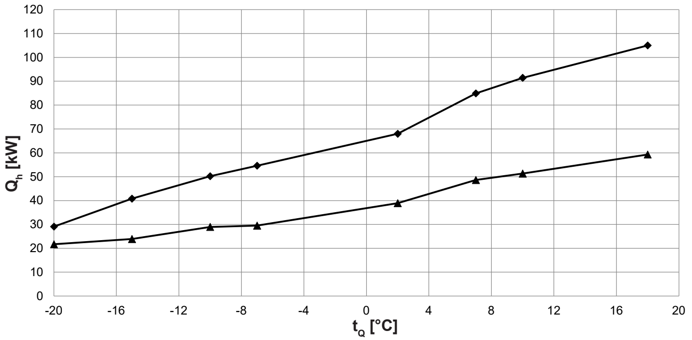
### Heat output – $t_{VL}$ 35 °C



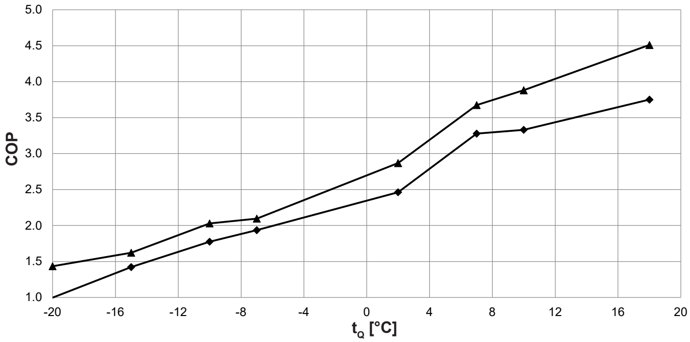
### Coefficient of performance – $t_{VL}$ 35 °C



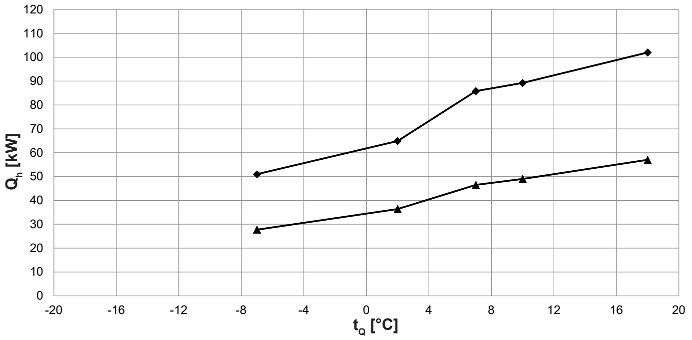
### Heat output – $t_{VL}$ 45 °C



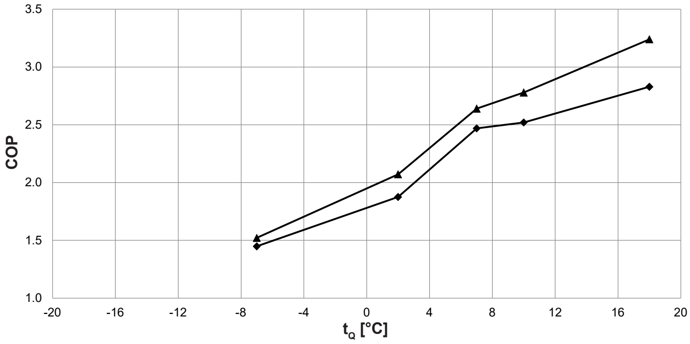
### Coefficient of performance – $t_{VL}$ 45 °C



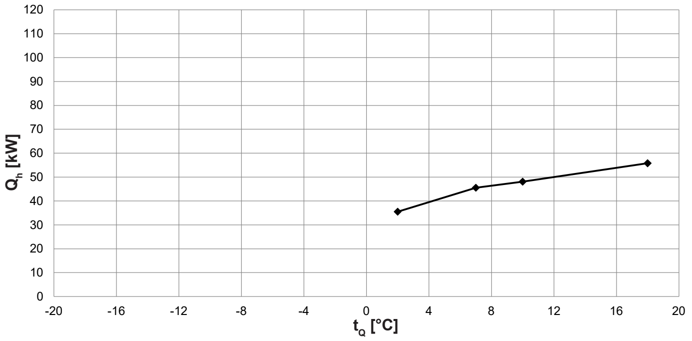
### Heat output – $t_{VL}$ 55 °C



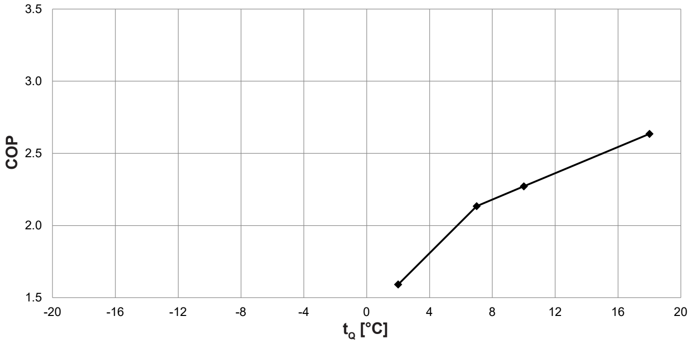
### Coefficient of performance – $t_{VL}$ 55 °C



### Heat output – $t_{VL}$ 60 °C



### Coefficient of performance – $t_{VL}$ 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

◆ maximum output
▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

| Flow temperature | °C | **35** | **40** | **45** | **50** | **55** | **60** |
|---|---|---|---|---|---|---|---|
| Heat output factor | - | 0.83 | 0.82 | 0.81 | 0.80 | 0.80 | 0.80 |
| Power consumption factor | - | 0.83 | 0.72 | 0.72 | 0.74 | 0.74 | 0.74 |
| COP factor | - | 1.02 | 1.14 | 1.14 | 1.08 | 1.08 | 1.08 |

## Performance data – heating

Maximum heat output allowing for defrosting losses

Data according to EN 14511:2018

### Belaria® fit (70)

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | −20 | 35.2 | 23.1 | 1.5 | 22.0 | 12.3 | 1.8 |
| | −15 | 43.8 | 22.8 | 1.9 | 26.6 | 11.7 | 2.3 |
| | −10 | 52.1 | 21.7 | 2.4 | 31.1 | 11.3 | 2.7 |
| | −7 | 59.2 | 21.6 | 2.7 | 34.5 | 10.7 | 3.2 |
| | 2 | 71.0 | 22.6 | 3.1 | 41.0 | 10.7 | 3.8 |
| | 7 | 87.2 | 21.7 | 4.0 | 50.3 | 10.5 | 4.8 |
| | 10 | 92.3 | 22.2 | 4.2 | 53.0 | 10.5 | 5.1 |
| | 18 | 107.0 | 22.6 | 4.7 | 61.0 | 10.4 | 5.8 |
| 40 | −20 | 34.1 | 26.1 | 1.3 | 20.6 | 14.7 | 1.4 |
| | −15 | 42.2 | 25.6 | 1.6 | 24.7 | 13.0 | 1.9 |
| | −10 | 51.0 | 25.3 | 2.0 | 30.0 | 12.6 | 2.4 |
| | −7 | 55.8 | 25.2 | 2.2 | 31.6 | 12.4 | 2.5 |
| | 2 | 69.7 | 24.8 | 2.8 | 40.3 | 12.0 | 3.4 |
| | 7 | 86.0 | 24.2 | 3.6 | 49.4 | 11.7 | 4.2 |
| | 10 | 91.8 | 24.6 | 3.7 | 52.0 | 11.7 | 4.5 |
| | 18 | 106.0 | 25.1 | 4.2 | 60.0 | 11.6 | 5.2 |
| 45 | −20 | 29.1 | 29.2 | 1.0 | 21.7 | 15.1 | 1.4 |
| | −15 | 40.8 | 28.7 | 1.4 | 23.9 | 14.7 | 1.6 |
| | −10 | 50.2 | 28.3 | 1.8 | 29.0 | 14.3 | 2.0 |
| | −7 | 54.6 | 28.2 | 1.9 | 29.5 | 14.1 | 2.1 |
| | 2 | 68.0 | 27.6 | 2.5 | 38.9 | 13.6 | 2.9 |
| | 7 | 84.9 | 25.9 | 3.3 | 48.6 | 13.2 | 3.7 |
| | 10 | 91.4 | 27.4 | 3.3 | 51.3 | 13.2 | 3.9 |
| | 18 | 105.0 | 28.0 | 3.8 | 59.3 | 13.1 | 4.5 |
| 50 | −20 | - | - | - | - | - | - |
| | −15 | 36.2 | 32.2 | 1.1 | 22.9 | 14.1 | 1.6 |
| | −10 | 43.5 | 31.7 | 1.4 | 28.0 | 16.1 | 1.7 |
| | −7 | 52.7 | 31.5 | 1.7 | 28.6 | 15.9 | 1.8 |
| | 2 | 66.3 | 30.9 | 2.1 | 37.6 | 15.4 | 2.4 |
| | 7 | 86.2 | 31.3 | 2.8 | 47.7 | 15.5 | 3.1 |
| | 10 | 90.2 | 31.5 | 2.9 | 50.3 | 15.5 | 3.2 |
| | 18 | 103.0 | 32.1 | 3.2 | 58.2 | 15.4 | 3.8 |
| 55 | −20 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | - | - | - | - | - | - |
| | −7 | 51.0 | 35.2 | 1.4 | 27.7 | 18.2 | 1.5 |
| | 2 | 64.9 | 34.6 | 1.9 | 36.4 | 17.6 | 2.1 |
| | 7 | 85.8 | 34.7 | 2.5 | 46.5 | 17.6 | 2.6 |
| | 10 | 89.2 | 35.4 | 2.5 | 49.0 | 17.6 | 2.8 |
| | 18 | 102.0 | 36.0 | 2.8 | 57.0 | 17.6 | 3.2 |
| 60 | −20 | - | - | - | - | - | - |
| | −15 | - | - | - | - | - | - |
| | −10 | - | - | - | - | - | - |
| | −7 | - | - | - | - | - | - |
| | 2 | 35.5 | 22.3 | 1.6 | - | - | - |
| | 7 | 45.5 | 21.3 | 2.1 | - | - | - |
| | 10 | 48.1 | 21.2 | 2.3 | - | - | - |
| | 18 | 55.8 | 21.2 | 2.6 | - | - | - |

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

Output correction factors in Super Silent mode (whisper mode)

| Flow temperature | °C | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|
| Heat output factor | - | 0.83 | 0.82 | 0.81 | 0.80 | 0.80 | 0.80 |
| Power consumption factor | - | 0.83 | 0.72 | 0.72 | 0.74 | 0.74 | 0.74 |
| COP factor | - | 1.02 | 1.14 | 1.14 | 1.08 | 1.08 | 1.08 |

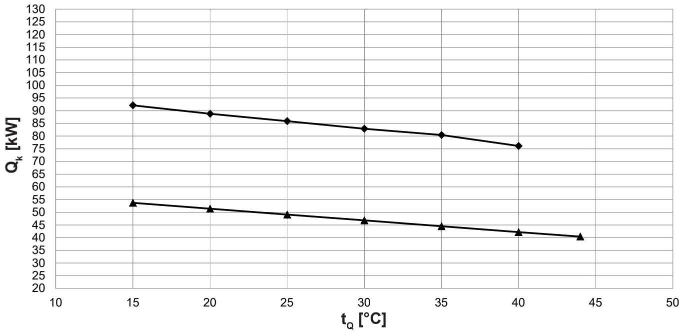
## Performance data – cooling

Maximum cooling capacity

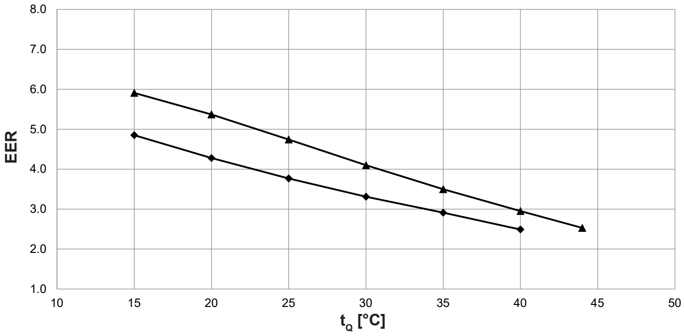
Data according to EN 14511:2018

### Belaria® fit (70)

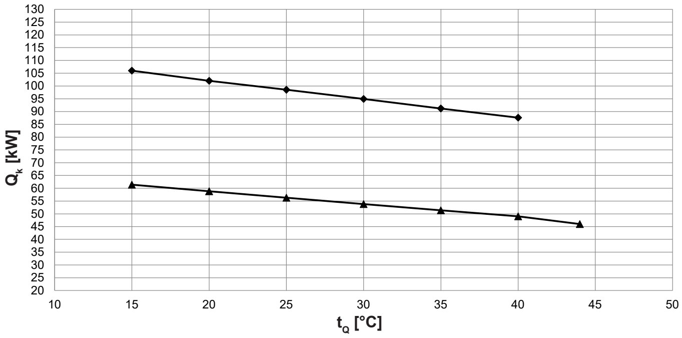
**Cooling capacity – $t_{VL}$ 7 °C**



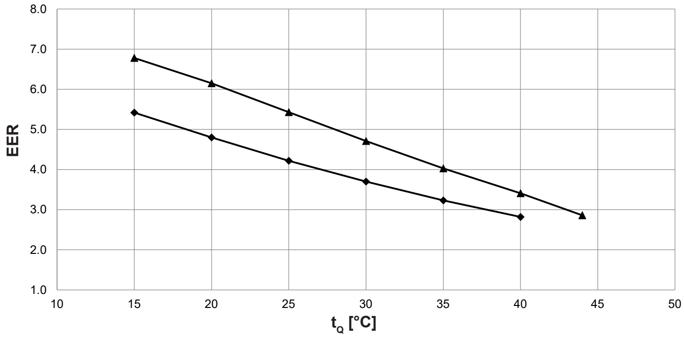
**Energy efficiency ratio – $t_{VL}$ 7 °C**



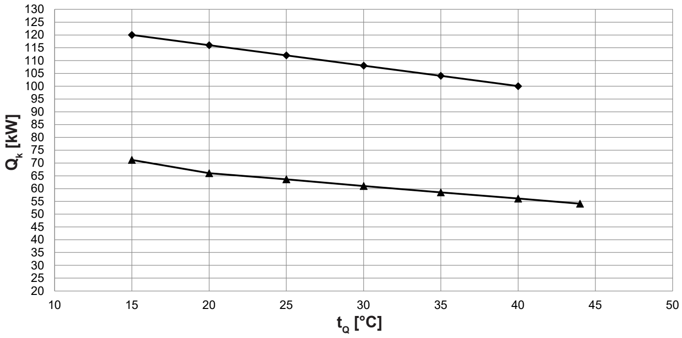
**Cooling capacity – $t_{VL}$ 12 °C**



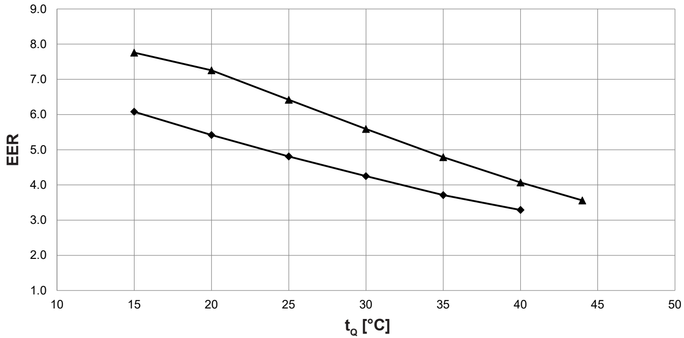
**Energy efficiency ratio – $t_{VL}$ 12 °C**



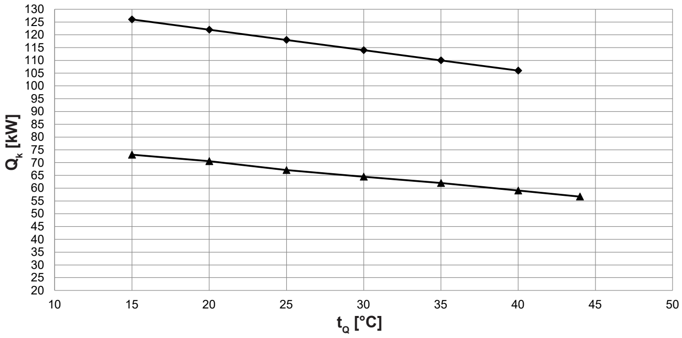
**Cooling capacity – $t_{VL}$ 18 °C**



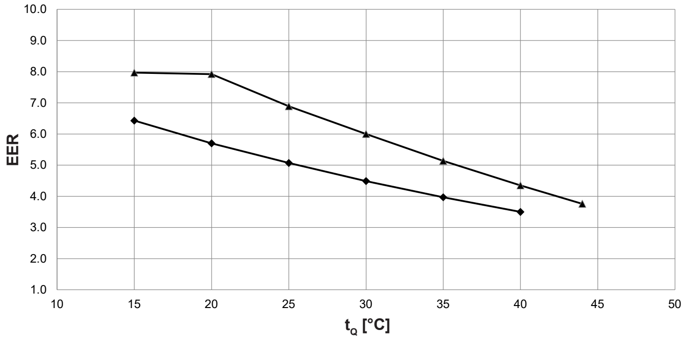
**Energy efficiency ratio – $t_{VL}$ 18 °C**



**Cooling capacity – $t_{VL}$ 20 °C**



**Energy efficiency ratio – $t_{VL}$ 20 °C**



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

◆ maximum output
▲ minimum output

Output correction factors in Super Silent mode (whisper mode)

| | | |
|---|---|---|
| Cooling capacity factor | - | 0.80 |
| Power consumption factor | - | 0.78 |
| EER factor | - | 1.04 |

## Performance data – cooling

Maximum cooling capacity

Data according to EN 14511:2018

### Belaria® fit (70)

| | | Maximum output | | | Minimum output | | |
|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | $t_Q$ °C | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER |
| 7 | 15 | 92.1 | 19.0 | 4.9 | 53.7 | 9.1 | 5.9 |
| | 20 | 88.8 | 20.7 | 4.3 | 51.4 | 9.6 | 5.4 |
| | 25 | 85.9 | 22.8 | 3.8 | 49.1 | 10.4 | 4.7 |
| | 30 | 82.9 | 25.0 | 3.3 | 46.8 | 11.4 | 4.1 |
| | 35 | 80.4 | 27.6 | 2.9 | 44.5 | 12.7 | 3.5 |
| | 40 | 76.1 | 30.6 | 2.5 | 42.2 | 14.3 | 3.0 |
| | 44 | 47.0 | 18.6 | 2.5 | 40.4 | 16.0 | 2.5 |
| 10 | 15 | 100.0 | 19.3 | 5.2 | 58.2 | 9.1 | 6.4 |
| | 20 | 96.7 | 21.1 | 4.6 | 55.0 | 9.5 | 5.8 |
| | 25 | 93.1 | 23.1 | 4.0 | 7.0 | 1.4 | 5.1 |
| | 30 | 89.6 | 25.5 | 3.5 | 53.3 | 12.0 | 4.5 |
| | 35 | 86.1 | 28.0 | 3.1 | 50.9 | 13.4 | 3.8 |
| | 40 | 82.5 | 30.9 | 2.7 | 48.5 | 15.1 | 3.2 |
| | 44 | 51.5 | 19.3 | 2.7 | 46.1 | 16.6 | 2.8 |
| 12 | 15 | 106.0 | 19.6 | 5.4 | 61.4 | 9.1 | 6.8 |
| | 20 | 102.0 | 21.3 | 4.8 | 58.8 | 9.6 | 6.2 |
| | 25 | 98.5 | 23.3 | 4.2 | 56.3 | 10.4 | 5.4 |
| | 30 | 94.9 | 25.6 | 3.7 | 53.8 | 11.4 | 4.7 |
| | 35 | 91.2 | 28.2 | 3.2 | 51.4 | 12.8 | 4.0 |
| | 40 | 87.6 | 31.1 | 2.8 | 49.0 | 14.4 | 3.4 |
| | 44 | 54.7 | 18.7 | 2.9 | 46.0 | 16.1 | 2.9 |
| 15 | 15 | 110.0 | 19.3 | 5.7 | 64.2 | 9.1 | 7.0 |
| | 20 | 106.0 | 21.0 | 5.1 | 61.1 | 9.3 | 6.6 |
| | 25 | 103.0 | 23.1 | 4.5 | 58.6 | 10.1 | 5.8 |
| | 30 | 99.0 | 25.3 | 3.9 | 56.1 | 11.1 | 5.1 |
| | 35 | 95.3 | 27.7 | 3.4 | 53.7 | 12.4 | 4.3 |
| | 40 | 91.8 | 30.5 | 3.0 | 51.3 | 13.9 | 3.7 |
| | 44 | 56.1 | 18.3 | 3.1 | 48.2 | 15.8 | 3.1 |
| 18 | 15 | 120.0 | 19.7 | 6.1 | 71.2 | 9.2 | 7.8 |
| | 20 | 116.0 | 21.4 | 5.4 | 66.0 | 9.1 | 7.3 |
| | 25 | 112.0 | 23.3 | 4.8 | 63.6 | 9.9 | 6.4 |
| | 30 | 108.0 | 25.4 | 4.3 | 61.0 | 10.9 | 5.6 |
| | 35 | 104.0 | 28.0 | 3.7 | 58.5 | 12.2 | 4.8 |
| | 40 | 100.0 | 30.4 | 3.3 | 56.1 | 13.8 | 4.1 |
| | 44 | 62.2 | 18.0 | 3.5 | 54.1 | 15.2 | 3.6 |
| 20 | 15 | 126.0 | 19.6 | 6.4 | 73.1 | 9.2 | 8.0 |
| | 20 | 122.0 | 21.4 | 5.7 | 70.6 | 8.9 | 7.9 |
| | 25 | 118.0 | 23.3 | 5.1 | 67.1 | 9.7 | 6.9 |
| | 30 | 114.0 | 25.4 | 4.5 | 64.5 | 10.8 | 6.0 |
| | 35 | 110.0 | 27.7 | 4.0 | 62.0 | 12.1 | 5.1 |
| | 40 | 106.0 | 30.3 | 3.5 | 59.1 | 13.6 | 4.4 |
| | 44 | 64.5 | 17.9 | 3.6 | 56.7 | 15.1 | 3.8 |

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

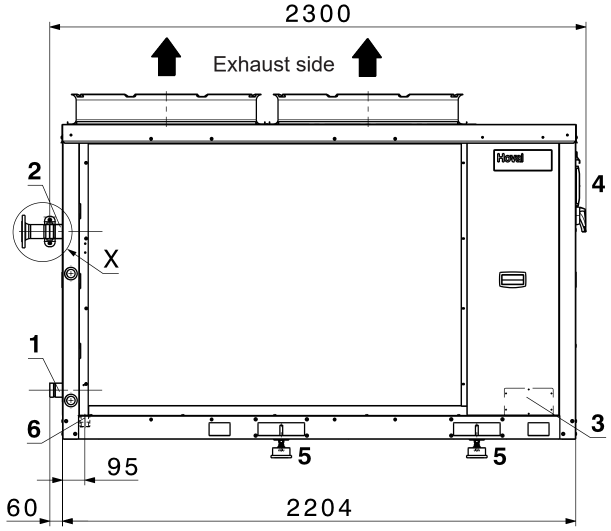
Output correction factors in Super Silent mode (whisper mode)

| | | |
|---|---|---|
| Cooling capacity factor | - | 0.80 |
| Power consumption factor | - | 0.78 |
| EER factor | - | 1.04 |

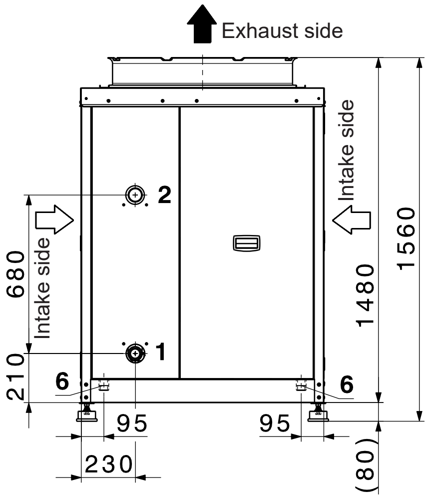
## Belaria® fit (40,53)

(Dimensions in mm)

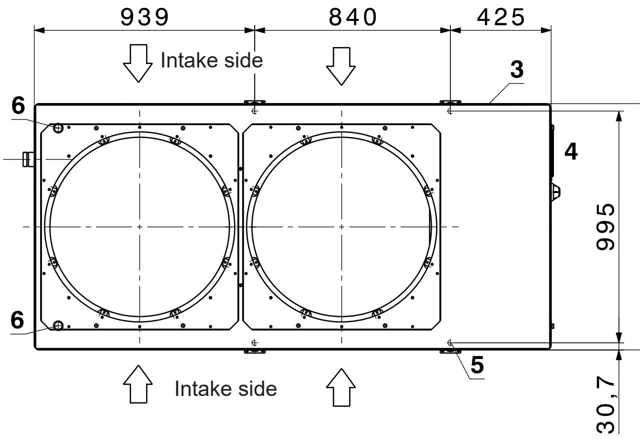
Front view



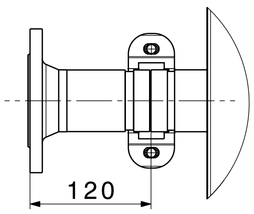
Side view



Rear



X (1:5)



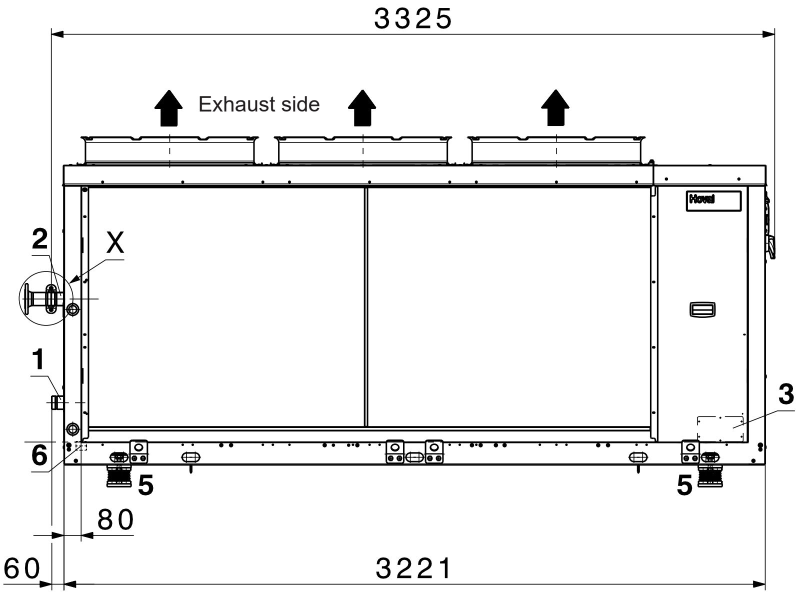
Optional accessory:
flange set Victaulic

1 Flow heating DN 50
2 Return heating DN 50
3 Electrical connection
4 Operator terminal bracket
5 Hole for attachment of the heat pump
6 Condensate drain DN 32

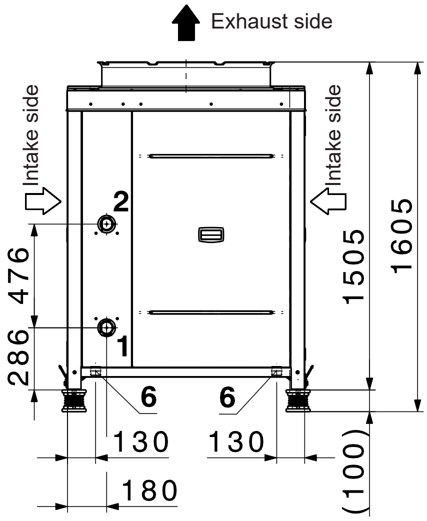
## Belaria® fit (70)

(Dimensions in mm)

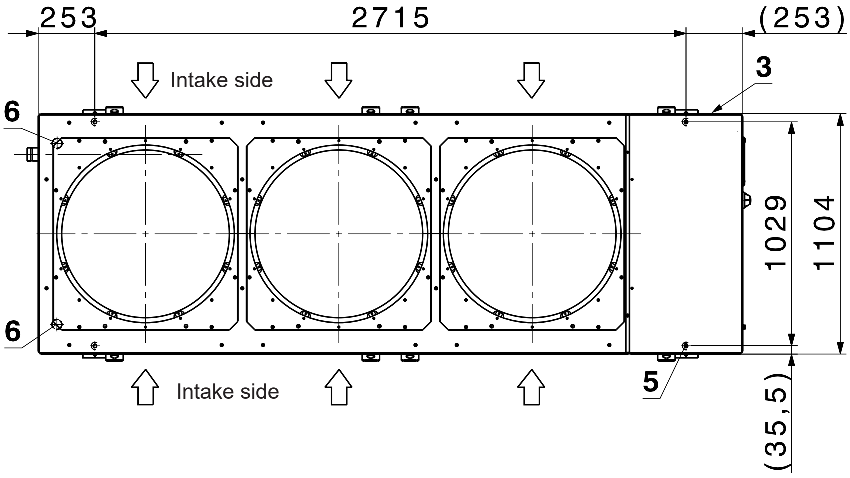
Front view

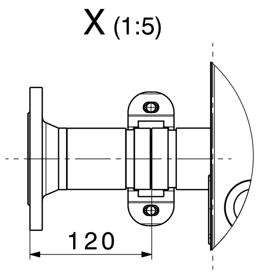


Side view



Rear

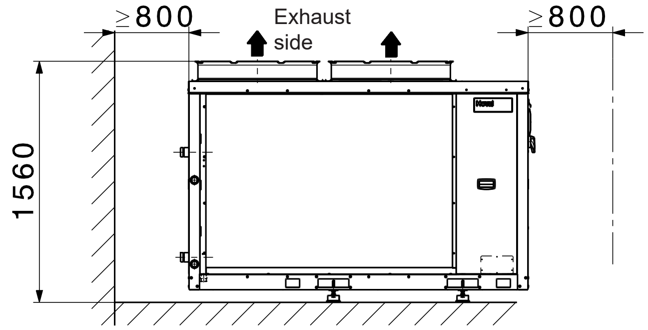


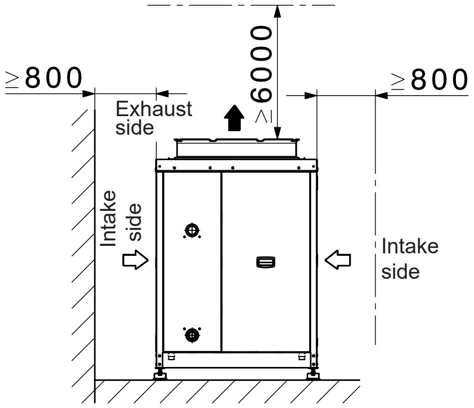


Optional accessory:
flange set Victaulic

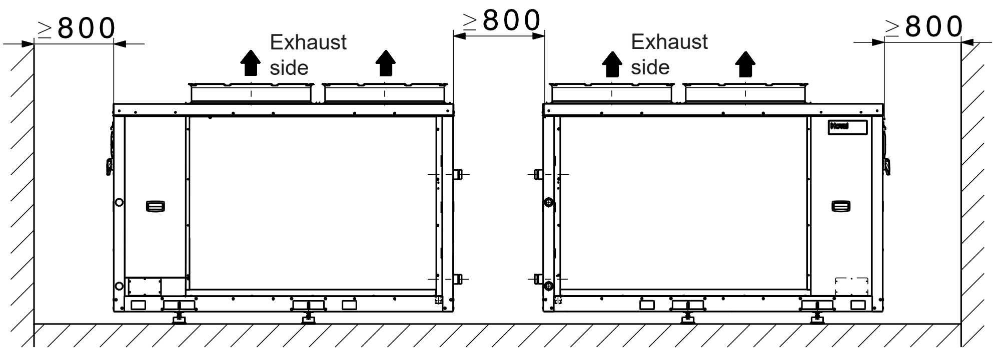
1 Flow heating DN 50
2 Return heating DN 50
3 Electrical connection
4 Operator terminal bracket
5 Hole for attachment of the heat pump
6 Condensate drain DN 32

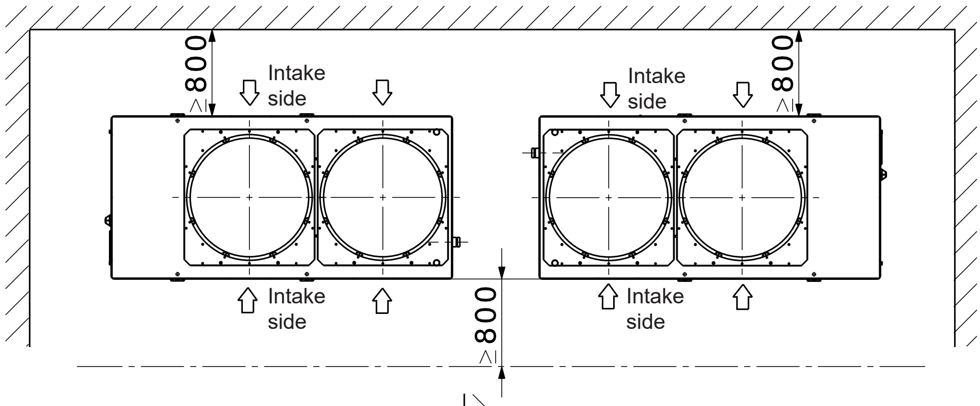
### Space requirement Belaria® fit (40,53)
(Dimensions in mm)

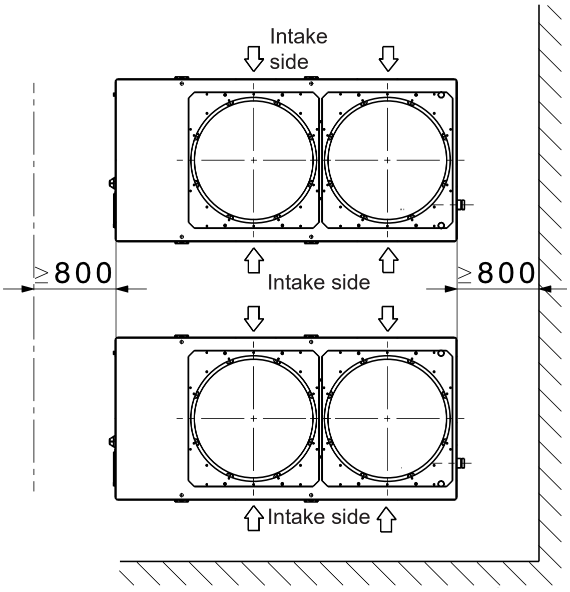


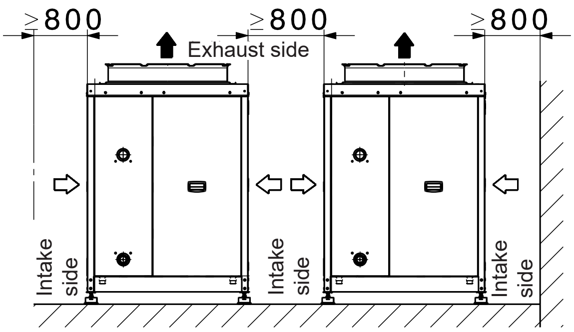


### Minimum distances for cascade systems Belaria® fit (40,53)
(Dimensions in mm)



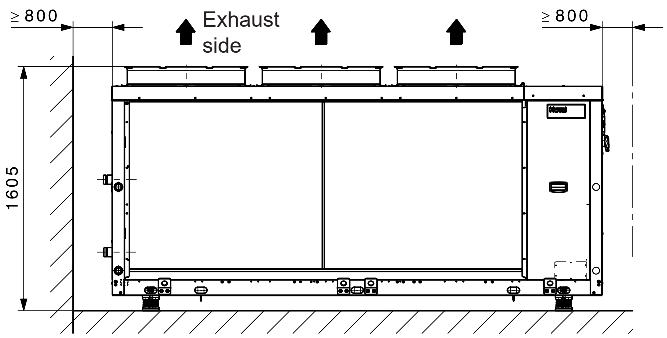


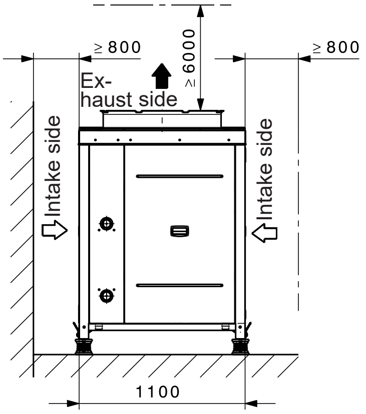




## Space requirement Belaria® fit (70)

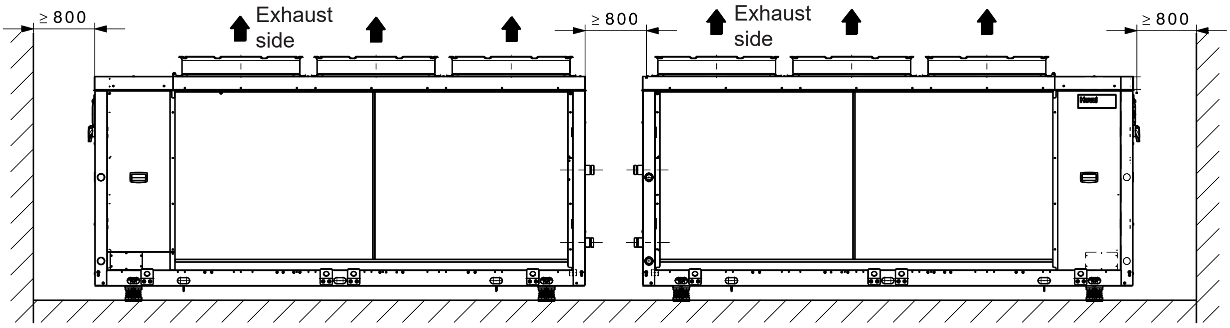
(Dimensions in mm)

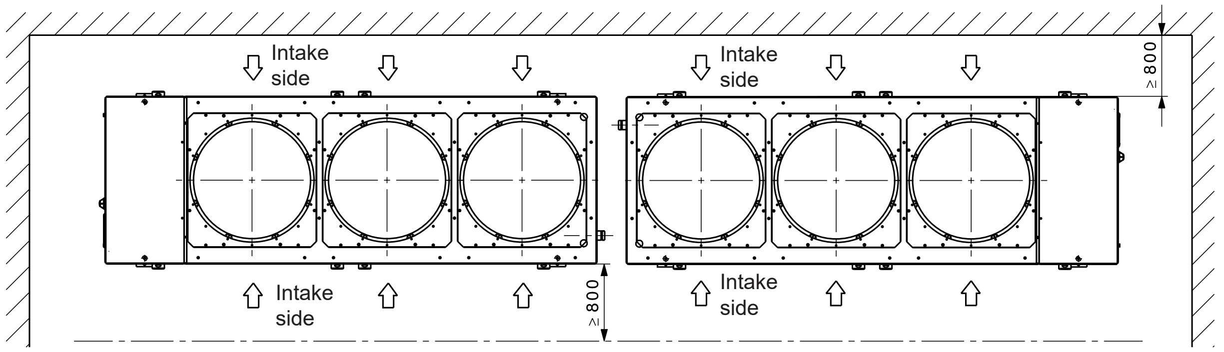


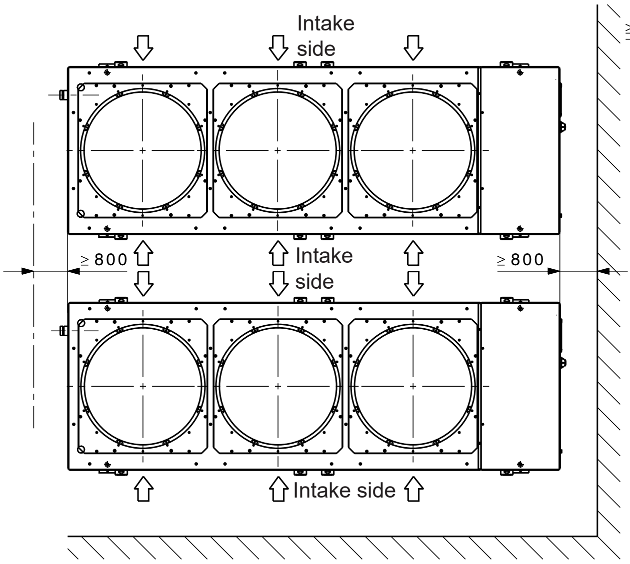


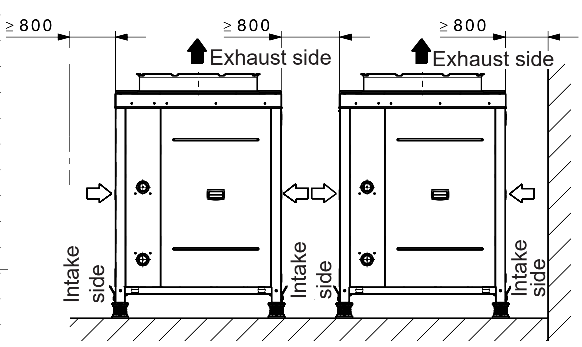
## Minimum distances for cascade systems Belaria® fit (70)

(Dimensions in mm)





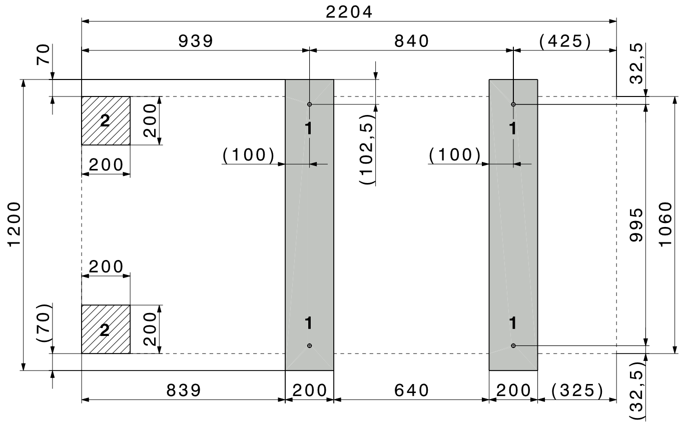




## Base design Belaria® fit (40,53)

(Dimensions in mm)

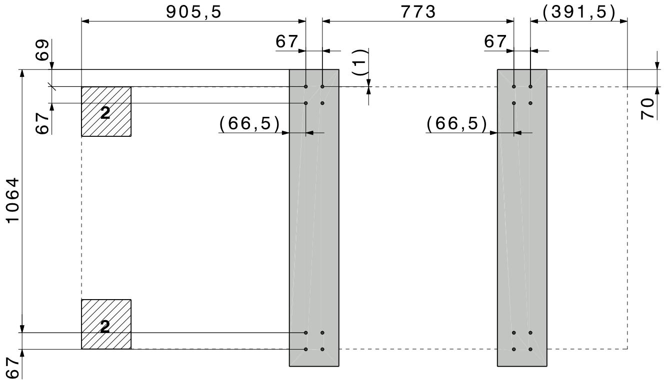
Base plan feet



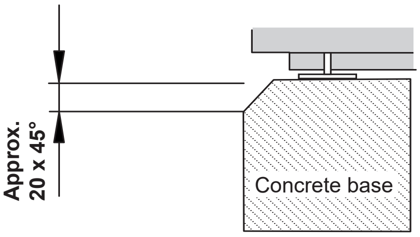
1 Hole for attachment of the heat pump M12

2 Condensate drain area

Base plan set of vibration-damping feet



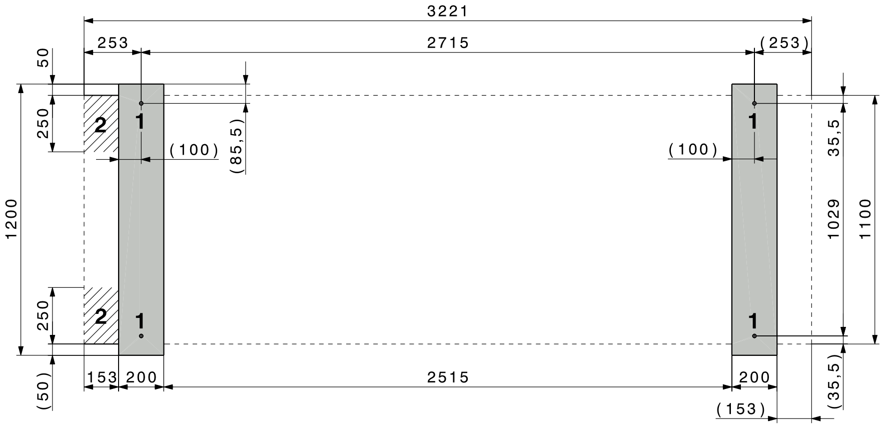
The concrete base must have a level surface the size of the Belaria® fit. The base should have chamfered edges.



## Base design Belaria® fit (70)

(Dimensions in mm)

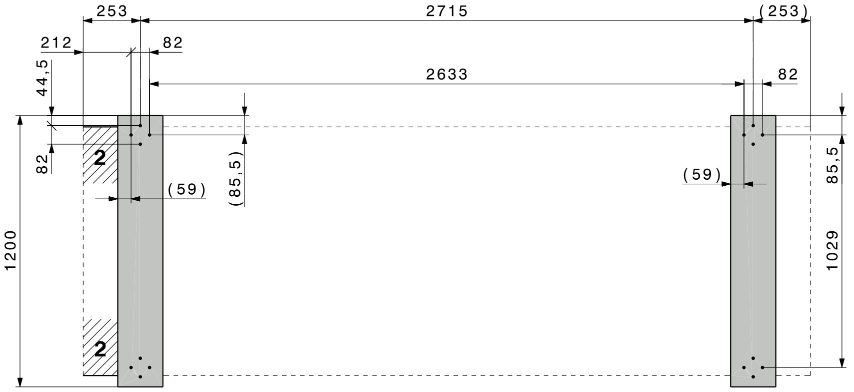
Base plan feet



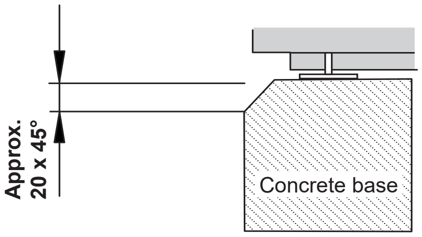
1 Hole for attachment of the heat pump M16

2 Condensate drain area

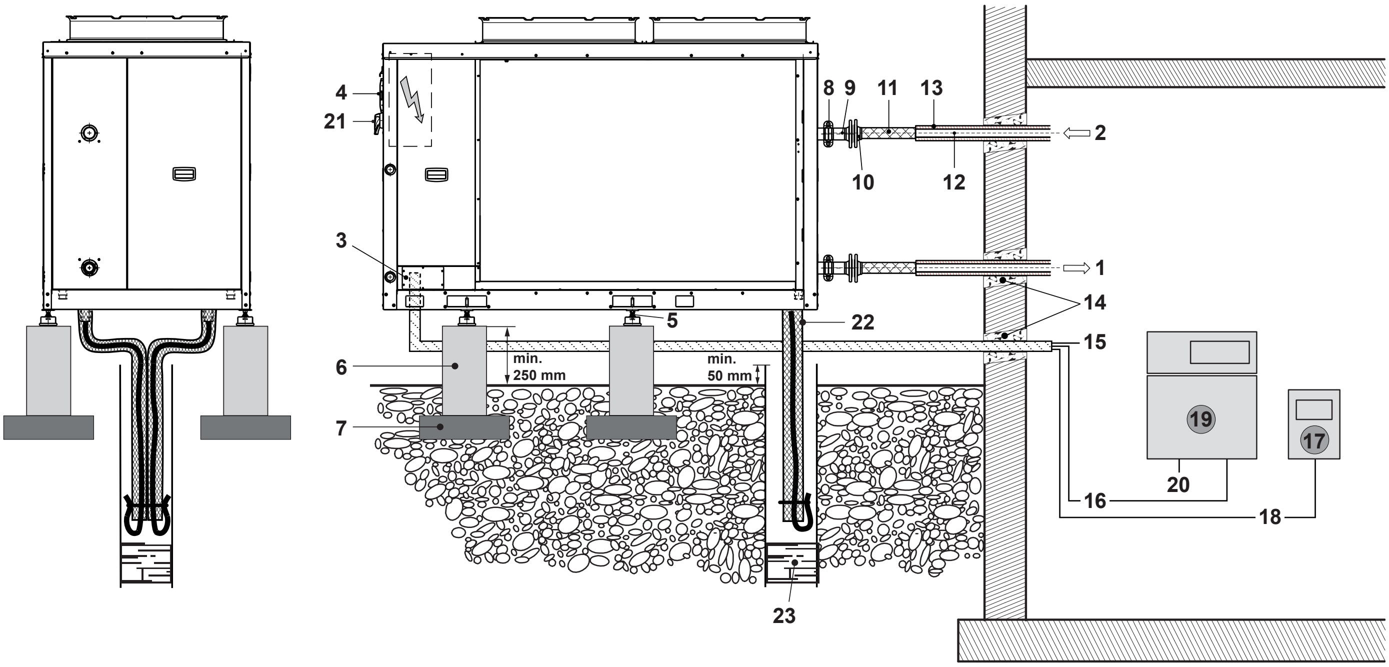
Base plan set of vibration-damping feet



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



## Configuration and connection diagram for the Belaria® fit



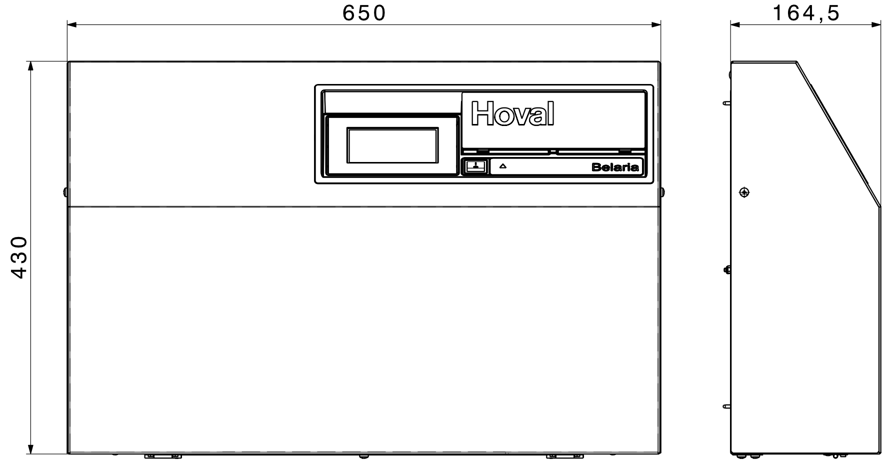
| | | |
|---|---|---|
| 1 | Heating flow DN 50 | |
| 2 | Heating return DN 50 | |
| 3 | Electrical system feed-through | |
| 4 | Operator terminal bracket (installation possible on site) | |
| 5 | Vibration dampers (option) | |
| 6 | Concrete base (on site) | |
| 7 | Vibration decouplers (on site) | |
| 8 | Victaulic coupling (included in the scope of delivery) | |
| 9 | Victaulic connection pipe (included in the scope of delivery) | |
| 10 | Set of welded-on flanges (option) | |
| 11 | Vibration decouplers (option) | |
| 12 | Hydraulic line (on site) | |
| 13 | Insulation (on site) | |
| 14 | Feed-throughs (on site) | |
| 15 | Main current | 400 V/5-pin (configuration of cross-section on site) |
| 16 | Connection to heat pump | |
| | Request On/Off | 230 V/2-pin (see wiring diagram) |
| | Cooling mode On/Off | 230 V/2-pin (see wiring diagram) |
| | Alarm | 230 V/2-pin (see wiring diagram) |
| 17 | Operator terminal | |
| 18 | Connection of heat pump operator terminal<br>(on-site<br>line length < 40 m: 5 x 0.75 mm² shielded<br>line length < 300 m: 3 x 0.75 mm² shielded – mains adapter is also supplied) | |
| 19 | Electrical box (option) | |
| 20 | Control current | 230 V/13 A/3-pin (see wiring diagram) |
| 21 | Main switch | |
| 22 | Condensate drain DN 32 | |
| 23 | Seepage (duct/gravel layer) | |

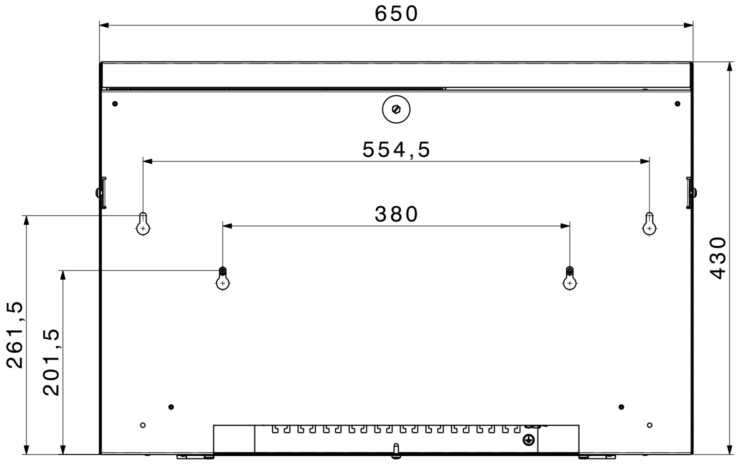
The piping from the boiler room to the heat pump must be configured by the installer. Connecting pipes are not included.

**Notice**
If the operator terminal is installed at a distance of more than 40 metres from the heat pump, the power supply unit supplied must be used.

## Electrical box for Belaria® fit

(Dimensions in mm)





**Requirements and directives**

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

**Set-up**

- The Belaria® fit must be mounted outdoors. The installation location must be selected in accordance with the valid requirements and directives.
- Lines carrying water must be laid insulated and frost-proof.
- The installation location must be selected as close to the building as possible. Only short and simple routing of lines guarantees cost effectiveness and low heat losses.
- 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).
- There must be no building openings (windows, doors, shafts, ventilation openings or the like) within a radius of 1 m from the outdoor unit and no potential ignition sources must be present.
- Make sure that the installation location is well ventilated.
- DO NOT install the unit in the following places or locations:
  - In a potentially explosive atmosphere.
  - In places where there is a risk of fire due to escaping flammable gases (e.g. thinner or petrol) or airborne carbon fibres or flammable dust particles.
  - In places where corrosive gases (example: sulphuric acid gas) are produced.

  Corrosion of copper pipes and solder joints can lead to leaks in the refrigerant circuit.
- Wall ducts into the building must be airtight.
- The heat pump must not be placed in or near floor recesses.
- The heat pump must not be placed closer than 1 m to the boundary of the property. Country-specific regulations must be observed.
- The air intake and air exhaust sides must not be narrowed or covered.
- The lateral air supply and the air outlet to the top must be without obstruction.
- 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 heat pump must be installed on a load-bearing fixed structure.
- If the heat pump is installed at wind-prone locations, the alignment of the heat pump must be selected in such a way that the expected wind direction is at right angles to the intake direction.
- If an alternative installation in areas subject to strong winds cannot be avoided, an additional wind shield in the form of a hedge, for example, should be installed.
- The heat pump must always be installed on a solid surface in a horizontal position. This can be achieved by means of concrete bases.
- The load-bearing capability must be adequate. The unit can be mounted with 4 vibration-damping adjustable feet.
- Air/water heat pumps generate condensate during operation. It must be ensured that the condensate produced can be absorbed to a sufficient extent by a gravel bed (see configuration and connection diagram).
- When air is discharged upwards, there is an increased frost hazard. Gutters, water pipes and water containers must not be situated in the immediate vicinity.
- The condensate drain must be discharged outside the building and must not be led into or through a building.
- To prevent damage caused by animals such as rodents or insects, all cable ducts must be properly sealed.
- The hydraulic lines from the heat pump can transmit structure-borne noise. Therefore, structure-borne noise decoupling should be provided, e.g. with compensators.

**Flat roof installation**

Flat roof installation of the Belaria® fit is possible under the following conditions:

- Strict compliance with safety measures regarding combustible refrigerants (see safety measures to be complied with).
- All standards concerning statics, wind load and access to roofs must be complied with.
- The heat pump must be firmly bolted onto the substructure (e.g. concrete base). The heat pump must be prevented from tilting.
- Minimum distance of the heat pump to the roof edge: 1.5 m (personal protection) + 0.8 m (working area refrigeration circuit).
- Accessibility for maintenance and repair work must be ensured. For work on the heat pump, a measuring case and test equipment, refrigerant bottle, etc. must be transported to the site, amongst other things. In addition to the safety equipment (fall protection devices, anchoring devices, etc.), this must also be taken into account for skylights, stairs, railings, etc.

**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 conductor cross-sections of the connection line must be checked by the electrical company carrying out the work.
- This fault-current circuit breaker must be of the all-current-sensitive type B (IΔN ≥ 300 mA). Country-specific requirements must be complied with. If the “fault-current circuit breaker” safeguard measure is implemented by the electrical company, a separate fault-current circuit breaker is recommended for the heat pumps. The specified RCCB types apply to the heat pump regardless of externally connected components (refer to assembly instructions, data sheets).
- Circuit breakers must be provided for the main circuit. The starting currents must be taken into account in the design.
- The electrical connection and feeder lines must be copper cables.
- Please refer to the wiring diagram for electrical details.
- 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 in compliance with fire protection regulations!
- The distance between the high and low voltage cables should be at least 50 mm.

**Routing of the hydraulic connection lines**

- If the hydraulic connection lines are laid in the ground, this must be done in a protective tube.
- Wall ducts must be sealed to the outside on site.
- After the hydraulic connection lines have been laid, they must be checked for damage and reinsulated. In case of cooling, condensate can form on the pipes.
- The hydraulic connection lines must be laid decoupled from the building and must never be laid flush-mounted.
- Shut-off valves must be installed on site in accordance with the corresponding hydraulic diagram. Opening the shut-off valves is only allowed immediately before commissioning!
- The danger of frost damage must be taken into account if there are prolonged power outages.
- 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.

**Notice**

If the main flow is interrupted during the utility lock, it is mandatory for the primary circuit to be implemented with a frost protection agent mixture.

**Buffer storage tank**

A 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

The Hoval Belaria® fit air/water heat pump requires a buffer storage tank.

Minimum sizes of buffer storage tank

| | EnerVal type |
|---|---|
| Belaria® fit (40) | 2000 |
| Belaria® fit (53) | 2000 |
| Belaria® fit (70) | 1500 + 1500 |

The 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.

**Further guidelines**
see "Engineering"

### Installation on heating side

- All pertinent laws, regulations and standards for heating house pipework and for heat pump systems must be complied with.
- A sludge separator must be installed in the heating flow and a filter ball valve in the heating return.
- 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 and given pressure drops.
- Ventilation must be provided at the highest points and drainage at the lowest points of the connection lines.
- To prevent energy losses, the connection lines must be insulated with suitable material.

### Transport and storage

- When removing the packaging, check the heat pump for damage. If the heat pump was damaged during transport or storage, contact Hoval customer service, a service partner or a licensed specialist immediately. They must carry out a leak test with a suitable leak detector. In the event of a leak, the heat pump must be repaired.
- Store the outdoor unit in a cool place without fire hazard and without direct exposure to heat sources. The ambient temperature must not exceed 43 °C.
- The same regulations apply for storage as for installation (no recesses, ventilation pipes, ignition sources in the storage area).
- The heat pump must not be stored in closed rooms, cellars or garages.
- The heat pump is only allowed to be stored outdoors.
- During transport, ensure sufficient ventilation in the closed vehicle, also when parking and stopping.
- Storage in passageways, escape routes or in front of entrances or exits is not permitted.
- Ignition sources such as naked flames, switched-on gas appliances, electric heaters, etc. must be kept away from the unit.
- Transport and storage only in upright position. Protect from mechanical damage and from falling over or falling down (make sure the load is secure).

**Hoval Qualität.**
Darauf können Sie sich verlassen.

Hoval

Hoval zählt international zu den führenden Unternehmen für Heiz- und Raumklima-Lösungen. Mit mehr als 80 Jahren Erfahrung und einer familiär geprägten Teamkultur gelingt es der Firmengruppe immer wieder, mit aussergewöhnlichen Lösungen und technisch überlegenen Entwicklungen zu begeistern. Diese Führungsrolle verpflichtet zu Verantwortung für Energie und Umwelt, der das Unternehmen mit einer intelligenten Kombination unterschiedlicher Heiz-Technologien und individueller Raumklima-Lösungen entspricht.

Darüber hinaus sind persönliche Beratung und ein umfassender Kundenservice typisch für die Welt von Hoval. Mit rund 2.500 Mitarbeitenden in 15 Gruppengesellschaften weltweit versteht sich Hoval nicht als Konzern, sondern als eine grosse, global denkende und agierende Familie. Hoval Heiz- und Raumklima-Systeme werden heute in über 50 Länder exportiert.

Verantwortung
für Energie und Umwelt

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2026 - 04 | Änderungen vorbehalten

Ihr Hoval Partner

CATALOGUE

# Hoval Thermalia® comfort

## Brine/water-water/water heat pump
## Thermalia® comfort (8-17)
## Thermalia® comfort H (7,10)

**Hoval** | Responsibility for energy and environment

## Table of contents

## Hoval Thermalia® comfort

**Heat pump system for heating in the living area.**

- Compact floor-standing brine/water or water/water heat pumps
- Stable casing made of powder-coated sheet steel with removable and sound-insulated side walls
  Colour brown red (RAL 3011)
- Front made of powder-coated sheet steel, removable and sound-insulated
  Colour flame red (RAL 3000)
- Acoustically insulated casing with triple mounting of the compressor
- Sound-insulated floor mat
- Spiral (scroll) compressor
- Evaporator and plate-type condenser made of stainless steel/copper
- Electronic expansion valve
- Electronic starting current limiter with rotating field and phase monitoring
- Speed-controlled, highly efficient heating and brine pump
- 3-way switching ball valve for heating/domestic hot water with drive
- Integrated brine pressure monitoring
- Hydraulic connections at rear:
  Thermalia® comfort (8-17): 1″
  Thermalia® comfort H (7,10): 1″
- TopTronic® E control installed
- Sensor set consisting of outdoor sensor, flow sensor and domestic hot water sensor included in the scope of delivery.
- Heat pump delivered pre-wired and ready for connection
- Electrical connections at rear
- Refrigerant:
  Thermalia® comfort (8-17): R410A
  Thermalia® comfort H (7,10): R134a
- Brine connections at rear:
  Thermalia® comfort (8-17): 1″
  Thermalia® comfort H (7,10): 1″

*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)

**Model range**

| Thermalia® comfort type | Water/water 35 °C | Water/water 55 °C | Brine/water 35 °C | Brine/water 55 °C | Refrigerant | Max. flow °C | Heat output B0W35 kW | Heat output W10W35 kW |
|---|---|---|---|---|---|---|---|---|
| (8) | A$^{+++}$ | A$^{+++}$ | A$^{+++}$ | A$^{++}$ | R410A | 62 | 7.6 | 9.6 |
| (10) | A$^{+++}$ | A$^{+++}$ | A$^{+++}$ | A$^{++}$ | R410A | 62 | 10.6 | 12.7 |
| (13) | A$^{+++}$ | A$^{+++}$ | A$^{+++}$ | A$^{++}$ | R410A | 62 | 13.4 | 17.5 |
| (17) | A$^{+++}$ | A$^{+++}$ | A$^{+++}$ | A$^{++}$ | R410A | 62 | 17.2 | 22.3 |
| H (7) | A$^{+++}$ | A$^{+++}$ | A$^{+++}$ | A$^{++}$ | R134a | 67 | 6.5 | 9.1 |
| H (10) | A$^{+++}$ | A$^{+++}$ | A$^{+++}$ | A$^{++}$ | R134a | 67 | 9.1 | 12.8 |
|  | A$^{+++}$ → D | A$^{+++}$ → D | A$^{+++}$ → D | A$^{+++}$ → D |  |  |  |  |

Energy efficiency class of the compound system with control

*TopTronic® E basic module heat generator TTE-WEZ*

- Integrated control functions for
  - 1 heating/cooling circuit with mixer
  - 1 heating/cooling circuit without mixer
  - 1 hot water charging circuit
  - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

*Options for TopTronic® E controller*

- Can be expanded by max. 1 module expansion:
  - module expansion heating circuit or
  - module expansion Universal 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

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

**For further information about the TopTronic® E,**
see “Controls” section

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

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

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

*Options*
- Connection set heating
- Connection set domestic hot water

**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems
With Hoval Integrate, Hoval heat pumps with TopTronic® E control can be integrated into home automation and energy management systems via open, standardised interfaces.
Predefined templates, plugins and Smart Grid integrations simplify implementation and enable intelligent decisions.
Functions such as PV surplus utilisation, dynamic electricity tariffs, grid-friendly control, load management or simple visualisations for analysis purposes can be created and operated individually.
System integrators are free to choose their desired system and benefit from broad compatibility and future-proof sector coupling.
Thanks to integrated building automation, end customers benefit from operating cost savings and cross-system functions.
Practical guide videos provide additional support for integration and commissioning – step by step and with a practical orientation.

**Notice**
Only available in Austria, Germany and Switzerland

# Hoval Thermalia® comfort (8-17), comfort H (7,10)

## Brine/water-water/water heat pump

### Hoval Thermalia® comfort

Refrigerant R410A

**Flow temperature max. 62 °C**

| Thermalia® comfort type | Heat output B0W35 kW | Heat output W10W35 kW | Part No. |
|---|---|---|---|
| (8) | 7.6 | 9.6 | 7018 562 |
| (10) | 10.6 | 12.7 | 7018 563 |
| (13) | 13.4 | 17.5 | 7018 564 |
| (17) | 17.2 | 22.3 | 7018 565 |

### Hoval Thermalia® comfort H

Refrigerant R410A

**Flow temperature max. 67 °C**

| Thermalia® comfort H type | Heat output B0W35 kW | Heat output W10W35 kW | Part No. |
|---|---|---|---|
| (7) | 6.5 | 9.1 | 7018 566 |
| (10) | 9.1 | 12.8 | 7018 567 |

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

**Further information**
see "Description"

**Further accessories can be found under the following rubrics:**
- Calorifiers/buffer storage tanks:
  - Calorifiers
  - Buffer storage tanks
  - Combination storage tanks
  - Electric heating elements
- Heating armature groups/heating distributors
- Various system components:
  - 2-way and 3-way valves
  - 3-way mixers
  - 2-way and 3-way ball valves
  - Motor drives and butterfly valves
  - Diaphragm pressure expansion tanks
  - Fittings
  - Plate heat exchangers
- Circulating pumps

**Notice**
Only available in Austria, Germany and Switzerland

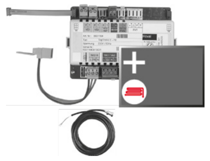
**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems

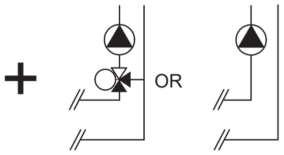
**Further information**
see "Description"

**Part No.**

## TopTronic® E module expansions

for TopTronic® E basic module heat generator





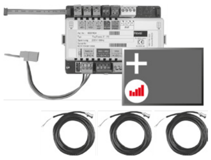
**TopTronic® E module expansion heating circuit TTE-FE HK**

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

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

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



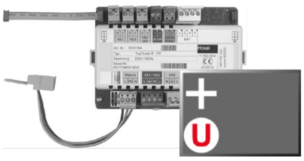
**TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ**

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

Consisting of:
- Fitting accessories
- 3 contact sensors ALF/2P/4/T, L = 4.0 m
- Plug set FE module

**Notice**
Suitable flow rate sensors (pulse sensors) must be provided on site.



**TopTronic® E module expansion Universal TTE-FE UNI**

6034 575

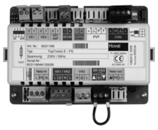
Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

Consisting of:
- Fitting accessories
- Plug set FE module

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

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

## Accessories for TopTronic® E



**TopTronic® E controller modules**

| | | Part No. |
|---|---|---|
| TTE-HK/WW | TopTronic® E heating circuit/ hot water module | 6034 571 |
| TTE-SOL | TopTronic® E solar module | 6037 058 |
| TTE-PS | TopTronic® E buffer module | 6037 057 |
| TTE-MWA | TopTronic® E measuring module | 6034 574 |

**Supplementary plug set**

| | |
|---|---|
| for basic module heat generator TTE-WEZ | 6034 499 |
| for controller modules and module expansion TTE-FE HK | 6034 503 |

**TopTronic® E room control modules**

| | | |
|---|---|---|
| TTE-RBM | TopTronic® E room control modules | |
| | easy white | 6037 071 |
| | comfort white | 6037 069 |
| | comfort black | 6037 070 |

| | |
|---|---|
| **Enhanced language package TopTronic® E** | 6039 253 |

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

**HovalConnect**

| | |
|---|---|
| HovalConnect LAN | 6049 496 |
| HovalConnect WLAN | 6049 498 |
| HovalConnect Modbus | 6049 501 |
| HovalConnect KNX | 6049 593 |

**TopTronic® E interface modules**

| | |
|---|---|
| GLT module 0-10 V | 6034 578 |

**TopTronic® E sensors**

| | | |
|---|---|---|
| AF/2P/K | Outdoor sensor<br>H x W x D = 80 x 50 x 28 mm | 2055 889 |
| TF/2P/5/6T | Immersion sensor, L = 5.0 m | 2055 888 |
| ALF/2P/4/T | Contact sensor, L = 4.0 m | 2056 775 |
| TF/1.1P/2.5S/6T | Collector sensor, L = 2.5 m | 2056 776 |

**Bivalent switch**

for various release or switching functions

| | |
|---|---|
| Bivalent switch 1-piece | 2056 858 |
| Bivalent switch 2-piece | 2061 826 |

**System casing**

| | |
|---|---|
| System casing 182 mm | 6038 551 |
| System casing 254 mm | 6038 552 |

**TopTronic® E wall casing**

| | | |
|---|---|---|
| WG-190 | Wall casing small | 6052 983 |
| WG-360 | Wall casing medium | 6052 984 |
| WG-360 BM | Wall casing medium with control module cut-out | 6052 985 |
| WG-510 | Wall casing large | 6052 986 |
| WG-510 BM | Wall casing large with control module cut-out | 6052 987 |

**Further information**
see “Controls”

## Accessories

| | | Part No. |
|---|---|---|
|  | **Hose set SCH25-25-12-4**<br>for Thermalia® comfort (8-17) and<br>Thermalia® comfort H (7,10)<br>Consisting of:<br>- 4 reinforced hoses PN 10 DN 25 1″ IT<br>insulated for brine and heating side<br>flat-sealing with union nut<br>- Length: 1.2 m<br>- 4 brackets DN 25<br>- Seals | 6055 133 |
|  | **Domestic hot water set SW25-25-12-1**<br>for Thermalia® comfort (8-17) and<br>Thermalia® comfort H (7,10)<br>Consisting of:<br>- 1 reinforced hose PN 10 DN 25 1″ IT<br>insulated for domestic hot water side<br>flat-sealing with union nut<br>- Length: 1.2 m<br>- 2 brackets DN 25<br>- Seals | 6055 122 |

**Flow rate sensor sets**
Plastic casing
Balancing by means of pulse output and PT1000 sensor element

| Size | Connection inches | Flow rate l/min | Part No. |
|---|---|---|---|
| DN 15 | G 1″ | 3.5-50 | 6038 508 |
| DN 20 | G 1¼″ | 5-85 | 6038 509 |

Brass casing
Balancing by means of pulse output and PT1000 sensor element

| Size | Connection inches | Flow rate l/min | Part No. |
|---|---|---|---|
| DN 10 | G 1″ | 2-40 | 6042 949 |

**Notice**
With the flow sensors, heat balancing is possible via TopTronic® E module expansion.

**Flow rate sensor sets**
Plastic casing
Balancing by means of analogue output 0-10 V

| Size | Connection inches | Flow rate l/min | Part No. |
|---|---|---|---|
| DN 20 | G 1¼″ | 5-85 | 6060 598 |

**Notice**
With the flow sensors, heat balancing is possible via the automatic heat pump device.

**Notice**
Installation of a flow rate sensor set is recommended. Freezing of the heating circuit can be prevented with the help of flow rate sensors and further technical measures. In order to protect the heat pump from frost in the event of a power failure or for example in bivalence mode, a system separation or other technical measures must be provided on site.

**Part No.**

**Safety set SGK15-PN3 IT 1″ insulated**
Safety group made of composite material
(glass fiber reinforced polyamide)
complete with safety valve (3 bar),
quick air vent and pressure gauge
Connection IT 1″ (ISO228-1)
with insulating caps
Medium temperature range: 5 ... 90 °C
Setting (pressure): 3 bar
Area of application up to 50 kW

6063 905

**Differential pressure relief valve DN 20**
for free installation
with flexible centre distance
Connections at both ends 1″ ET
Operating pressure: max. 10 bar
Operating temperature: max. 120 °C
Setting range: 0.05-0.5 bar
Length: 93 mm
Casing made of brass with setting handle
made of plastic

240 554

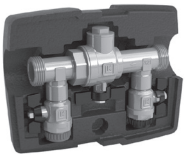
**Vibration decoupler**
for reducing structure-borne noise from
heat pumps indoors, cannot be shortened
Consisting of:
- 1 vibration decoupler insulated for heating and brine side flat-sealing with union nut
- 2 flat seals

Nominal pressure: PN 10

| Dimension | Connection inches | Nominal length mm | Part No. |
|---|---|---|---|
| DN 25 | 1″ | 300 | 2082 222 |
| DN 25 | 1″ | 500 | 2082 223 |
| DN 25 | 1″ | 1000 | 2080 794 |

| | | Part No. |
|---|---|---|
| | *Necessary at boiler room temperatures < 10 °C* | |
|  | **Crankcase heater**<br>for Belaria® twin I/IR (20-30),<br>Thermalia® comfort (8-17),<br>Thermalia® comfort H (7,10)<br>(1 piece required per heat pump)<br><br>Thermalia® twin (20-42),<br>Thermalia® twin H (13-22),<br>Thermalia® dual, dual H, dual R<br>(2 pieces required per heat pump) | 6019 718 |
|  | **Instantaneous water heater kit DN 50**<br>consisting of electrical box ready for connection for electrical protection incl. assembly fittings.<br>for combination with all screw-in electric heating elements EP.<br>Screw-in electric heating element must be ordered separately. | 6044 070 |
|  | **Ground water immersion sensor TF/1.1P/5S/5T/H-WP L = 5 m silicone**<br>Ground water sensor for heat pumps,<br>Cable length: 5 m (silicone)<br>without plug<br>Sensor sleeve diameter: 5 x 60 mm<br>Unaffected by condensation<br>Sensor characteristic: PT1000<br>Circuit board construction<br>Double-curved contact-pressure spring<br>Operating temperature: −50 ... 200 °C<br>Protection class: IP65 | 6048 378 |
|  | **Immersion sensor TF/1.1P/2.5/6T, L = 2.5 m FW**<br>for TopTronic® E basic module district heating/fresh water, basic module district heating com<br>Sensor for district heating applications (PT1000)<br>Cable length: 2.5 m without plug<br>(plug supplied with controller module/module expansion)<br>Sensor sleeve diameter: 6 x 50 mm<br>Dewpoint-proof<br>Sensor may already be included in scope of supply of heat generator/controller module/module expansion<br>Operating temperature: −50 ... 105 °C<br>Protection class: IP67 | 2056 777 |

*Accessories water/water*

| | | Part No. |
|---|---|---|
|  | **Brine filling station in compact design DN 25**<br>with shut-off valves,<br>filter and EPS insulation.<br>Application temperatures: −20 ... 60 °C<br>Frost protection: max. 50 %<br>Connections: DN 25 G 1″<br>kvs value: 12.5 m³/h<br>Max. operating pressure: 1.0 MPa (10 bar)<br>Dirt screen integrated | 6037 537 |
|  | **Float body flow meter**<br>Bistable Reed contact as NC contact<br>Area of application 300-3000 l/h<br>Temperature range: 0 ... 80 °C<br>Nominal pressure: 10 bar<br>Connection: Rp 1½″<br>Pressure drop: 25 mbar<br>Installation length: 335 mm<br>Max. voltage: 230 V<br>Max. continuous current: 0.2 A | 2040 707 |
|  | **Float body flow meter**<br>Bistable Reed contact as NC contact<br>Area of application 600-6000 l/h<br>Temperature range: 0 ... 80 °C<br>Nominal pressure: 10 bar<br>Connection: Rp 1½″<br>Pressure drop: 25 mbar<br>Installation length: 335 mm<br>Max. voltage: 230 V<br>Max. continuous current: 0.2 A | 2040 708 |
|  | **Frost protection concentrate PowerCool DC 924-PXL**<br>on basis propylene glycol<br>completely mixable with water<br>with corrosion protection<br>Frost protection: −20 °C with<br>40 % mixture ratio<br>Content plastic container: 10 kg | 2009 987 |

**Part No.**

## Services

**Services and associated scope of services**
see separate catalogue “Hoval Services”

Commissioning by Hoval customer service is a prerequisite for warranty/guarantee activation.

## Thermalia® comfort (8-17) with R410A

| **Type** | | **(8)** | **(10)** | **(13)** | **(17)** |
|---|---|---|---|---|---|
| **Brine/water application B0W35** | | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A++ | A+++/A++ | A+++/A++ | A+++/A++ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 185 | 199 | 199 | 195 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 137 | 138 | 143 | 142 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C/55 °C | SCOP | 4.8/3.6 | 5.1/3.6 | 5.1/3.7 | 5.0/3.8 |
| **Water/water application W10W35** | | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A+++ | A+++/A+++ | A+++/A+++ | A+++/A+++ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 242 | 255 | 263 | 246 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 168 | 176 | 186 | 177 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C/55 °C | SCOP | 6.2/4.4 | 6.5/4.5 | 6.7/4.8 | 6.3/4.6 |
| **Max. performance data heating in acc. with EN 14511** | | | | | |
| • Heat output B0W35 | kW $^{1)}$ | 7.6 | 10.6 | 13.4 | 17.2 |
| • Coefficient of performance B0W35 | COP | 4.6 | 4.8 | 4.8 | 4.7 |
| • Heat output W10W35 | kW | 9.6 | 12.7 | 17.5 | 22.3 |
| • Coefficient of performance W10W35 | COP | 5.9 | 6.1 | 6.3 | 5.9 |
| **Nominal volume flow rate and pressure drop brine/water** | | | | | |
| *Heating (ΔT = 5 K)* | m$^3$/h | 1.3 | 1.8 | 2.3 | 3.0 |
| • ΔP Pressure drop condenser | kPa | 7 | 8 | 9 | 10 |
| • Residual overpressure | kPa | 63 | 49 | 56 | 41 |
| *Heat source (ΔT = 3 K)* | m$^3$/h | 2.0 | 2.8 | 3.5 | 4.5 |
| • ΔP Pressure drop evaporator (glycol) | kPa | 16 | 19 | 21 | 19 |
| • Residual overpressure | kPa | 59 | 67 | 91 | 93 |
| **Nominal volume flow rate and pressure drop water/water** | | | | | |
| *Heating (ΔT = 5 K)* | m$^3$/h | 1.7 | 2.2 | 3.0 | 3.8 |
| • ΔP Pressure drop condenser | kPa | 11 | 12 | 16 | 14 |
| • Residual overpressure | kPa | 49 | 36 | 34 | 21 |
| *Heat source (ΔT = 5 K)* $^{2)}$ | m$^3$/h | 1.4 | 1.9 | 2.6 | 3.2 |
| • ΔP Pressure drop evaporator | kPa | 9 | 10 | 15 | 12 |
| • Residual overpressure | kPa | 81 | 98 | 101 | 105 |
| **Operating limit values** | | | | | |
| • Heating | | see diagrams of areas of application | | | |
| • Hot water | | see diagrams of areas of application | | | |
| • Operating pressure max. water side | bar | 6 | 6 | 6 | 6 |
| • Operating pressure max. brine side | bar | 6 | 6 | 6 | 6 |
| • Installation place operation $^{3)}$ | °C (min./max.) | 5/35 | 5/35 | 5/35 | 5/35 |
| • Storage | °C (min./max.) | −15/46 | −15/46 | −15/46 | −15/46 |
| **Cooling technical data** | | | | | |
| • Compressor | | 1 x spiral (scroll), hermetic | | | |
| • Refrigerant | | R410A | R410A | R410A | R410A |
| • Compressor oil filling quantity | kg | 1.6 | 1.9 | 2.1 | 2.4 |
| • Refrigerant filling quantity | | Emkarate RL32-3MAF | | | |
| • Type of compressor oil | l | 1.24 | 1.24 | 1.98 | 1.98 |
| • Condenser/evaporator | | Plate heat exchanger | | | |
| • Material | | Stainless steel V4A, AISI 316, 1.4401 | | | |
| • Pipe connections at rear | G | 1″ | 1″ | 1″ | 1″ |

| **Type** | | **(8)** | **(10)** | **(13)** | **(17)** |
|---|---|---|---|---|---|
| **Electrical data** [4] | | | | | |
| • Voltage | V | 3~400 | 3~400 | 3~400 | 3~400 |
| • Frequency | Hz | 50 | 50 | 50 | 50 |
| • Voltage range | V | 380-420 | 380-420 | 380-420 | 380-420 |
| • Max. compressor operating current | A | 6.2 | 7.4 | 9.7 | 13 |
| • Starting current with starting current limiter [5] | A | 12.4 | 14.8 | 19.4 | 26 |
| • Principal current (external protection) with brine systems | A | 13 | 13 | 13 | 16 |
| - Type | | C,D,K | C,D,K | C,D,K | C,D,K |
| • Principal current (external protection) with ground water systems | A | 13 | 13 | 13 | 16 |
| - Type | | C,D,K | C,D,K | C,D,K | C,D,K |
| • Control current (external protection) | A | 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 |
| **Dimensions/weight** | | | | | |
| • Dimensions (H x W x D) | mm | see Dimensions | | | |
| • Minimum sizes of installation room (without ventilation) [6] | $m^3$ | 3.6 | 4.3 | 4.8 | 5.5 |
| • Operating weight approx. | kg | 155 | 160 | 165 | 170 |

[1] kW = standard values according to EN 14511; values for B0W35 with 25 % monopolypropylene

[2] 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.

[3] < 10 °C: Crankcase heater is necessary

[4] Values for electrical data apply for supply voltage of 3~400 V

[5] Effective value

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

## Thermalia® comfort H (7,10) with R134a

| **Type** | | **H (7)** | **H (10)** |
|---|---|---|---|
| **Brine/water application B0W35** | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A++ | A+++/A++ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 188 | 194 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 141 | 146 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C/55 °C | SCOP | 4.8/3.7 | 5.0/3.8 |
| **Water/water application W10W35** | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A+++ | A+++/A+++ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 251 | 256 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 188 | 194 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C/55 °C | SCOP | 6.4/4.8 | 6.6/4.9 |
| **Max. performance data heating in acc. with EN 14511** | | | |
| • Heat output B0W35 | kW [1)] | 6.5 | 9.1 |
| • Coefficient of performance B0W35 | COP | 4.5 | 4.6 |
| • Heat output W10W35 | kW | 9.1 | 12.8 |
| • Coefficient of performance W10W35 | COP | 5.9 | 6.0 |
| **Nominal volume flow rate and pressure drop brine/water** | | | |
| *Heating (ΔT = 5 K)* | $m^3/h$ | 1.1 | 1.6 |
| • ΔP Pressure drop condenser | kPa | 6.0 | 7.0 |
| • Residual overpressure | kPa | 70 | 55 |
| *Heat source (ΔT = 3 K)* | $m^3/h$ | 1.7 | 2.3 |
| • ΔP Pressure drop evaporator (glycol) | kPa | 4.0 | 4.0 |
| • Residual overpressure | kPa | 76 | 91 |
| **Nominal volume flow rate and pressure drop water/water** | | | |
| *Heating (ΔT = 5 K)* | $m^3/h$ | 1.6 | 2.2 |
| • ΔP Pressure drop condenser | kPa | 13 | 14 |
| • Residual overpressure | kPa | 49 | 33 |
| *Heat source (ΔT = 5 K)* [2)] | $m^3/h$ | 1.3 | 1.8 |
| • ΔP Pressure drop evaporator | kPa | 4 | 4 |
| • Residual overpressure | kPa | 86 | 104 |
| **Operating limit values** | | | |
| • Heating | | see diagrams of areas of application | |
| • Hot water | | see diagrams of areas of application | |
| • Operating pressure max. water side | bar | 6 | 6 |
| • Operating pressure max. brine side | bar | 6 | 6 |
| • Installation place operation [3)] | °C (min./max.) | 5/35 | 5/35 |
| • Storage | °C (min./max.) | −15/46 | −15/46 |
| **Cooling technical data** | | | |
| • Compressor | | 1 x spiral (scroll), hermetic | |
| • Refrigerant | | R134a | R134a |
| • Compressor oil filling quantity | kg | 2.8 | 3.2 |
| • Refrigerant filling quantity | | Emkarate RL32-3MAF | |
| • Type of compressor oil | l | 1.5 | 2.0 |
| • Condenser/evaporator | | Plate heat exchanger | |
| • Material | | Stainless steel V4A, AISI 316, 1.4401 | |
| • Pipe connections at rear | G | 1″ | 1″ |

| **Type** | | **H (7)** | **H (10)** |
|---|---|---|---|
| **Electrical data** [4] | | | |
| • Voltage | V | 3~400 | 3~400 |
| • Frequency | Hz | 50 | 50 |
| • Voltage range | V | 380-420 | 380-420 |
| • Max. compressor operating current | A | 6.8 | 10.1 |
| • Starting current with starting current limiter [5] | A | 13.6 | 20.2 |
| • Principal current (external protection) with brine systems | A | 13 | 13 |
| - Type | | C,D,K | C,D,K |
| • Principal current (external protection) with ground water systems | A | 13 | 13 |
| - 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 |
| **Dimensions/weight** | | | |
| • Dimensions (H x W x D) | mm | see Dimensions | |
| • Minimum sizes of installation room (without ventilation) [6] | $m^3$ | 11.2 | 12.8 |
| • Operating weight approx. | kg | 160 | 170 |

[1] kW = standard values according to EN 14511; values for B0W35 with 25 % monopolypropylene

[2] ∆T 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.

[3] < 10 °C: Crankcase heater is necessary

[4] Values for electrical data apply for supply voltage of 3~400 V

[5] Effective value

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

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

**Sound emission**

The effective sound pressure level in the installation room depends on various factors such as room size, absorption capacity, reflection, free sound propagation, etc.

Therefore it is important that the installation room lies, if possible, outside the noise-sensitive range and is supplied with sound-absorbing doors.

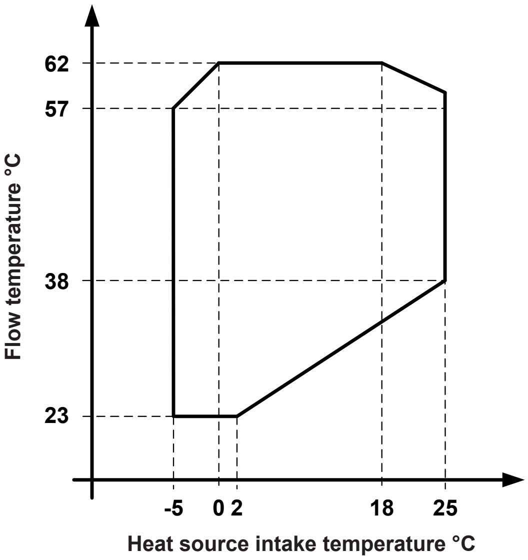
Ducts and pipes must be fixed to walls and ceiling in a way that no structure-borne sound is being transmitted to the system.

| Thermalia® comfort (8-17)<br>Thermalia® comfort H (7,10) | (8) | (10)<br>(7) | (13) | (17)<br>(10) |
|---|---|---|---|---|
| Sound power level dB(A) | 44 | 45 | 45 | 46 |

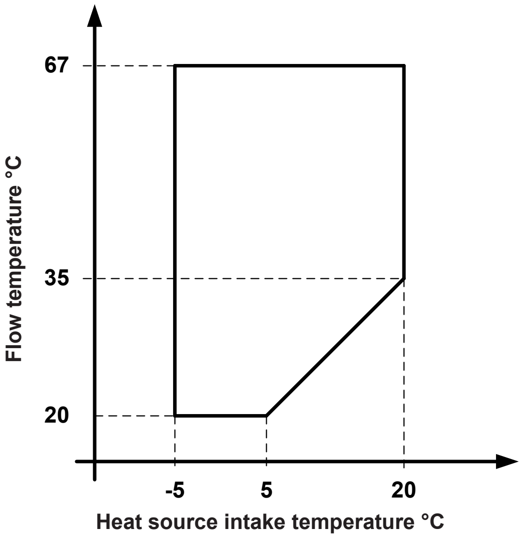
## Diagrams of areas of application

### Heating and hot water

**Thermalia® comfort (8-17)**



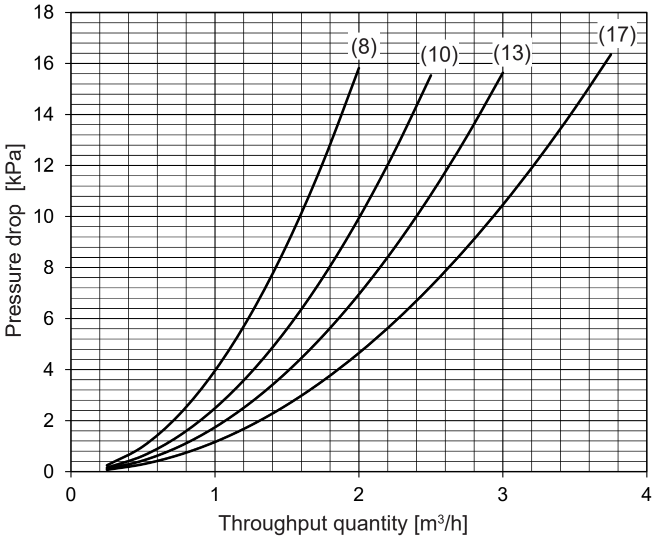
**Thermalia® comfort H (7,10)**



### Thermalia® comfort (8-17)

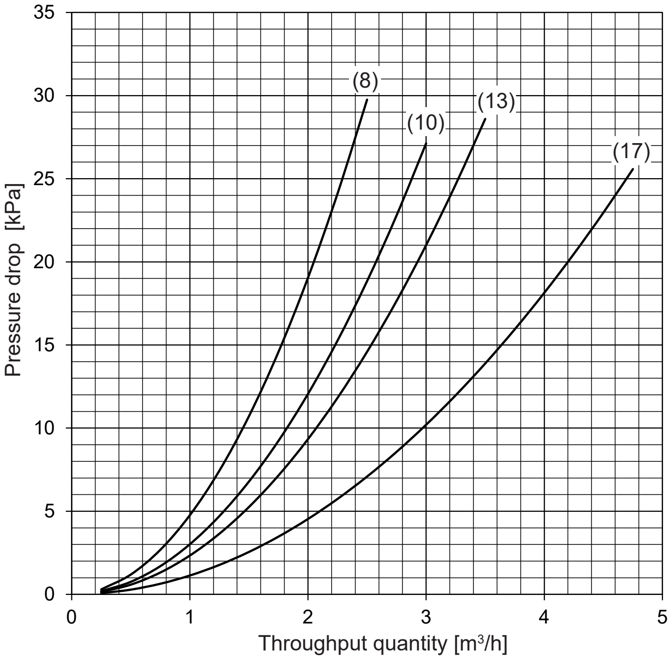
### Heating

**Pressure drop condenser** with water



### Heat source

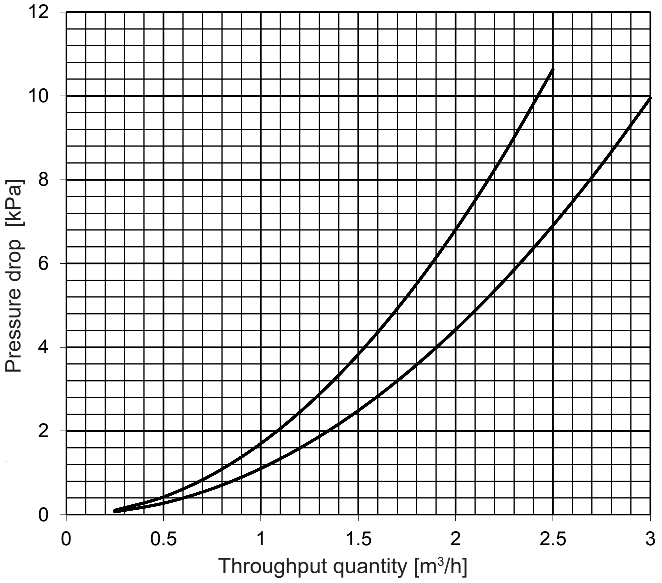
**Pressure drop evaporator** with ethylene glycol 25 % (Antifrogen N)



### Thermalia® comfort H (7,10)

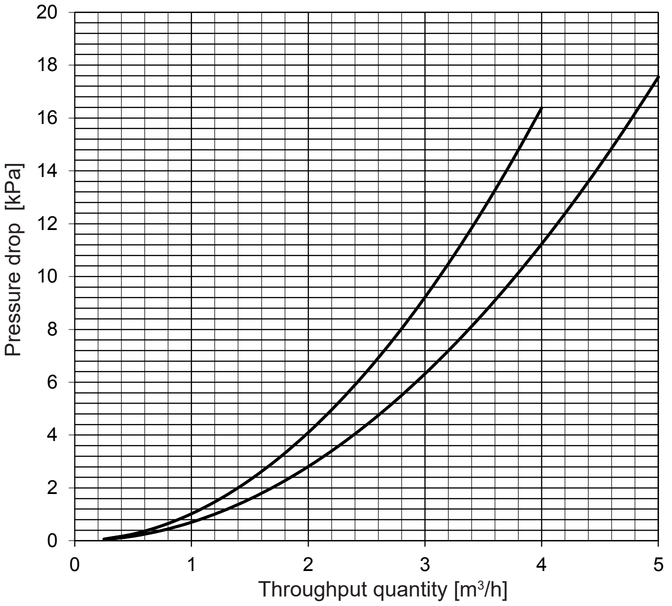
### Heating

**Pressure drop condenser** with water



### Heat source

**Pressure drop evaporator** with ethylene glycol 25 % (Antifrogen N)



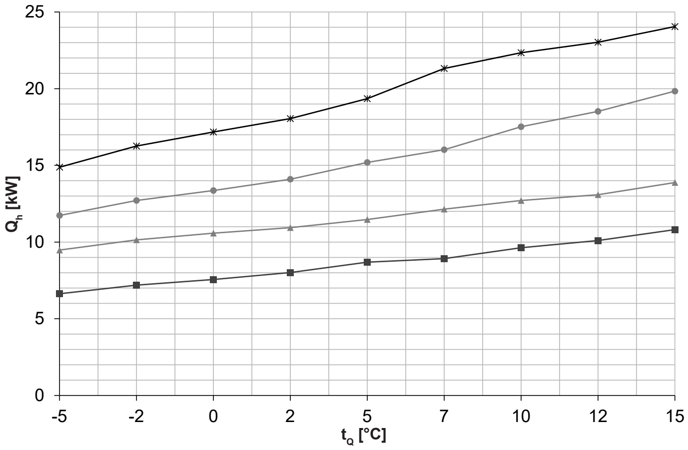
## Performance data – heating

Maximum heat output

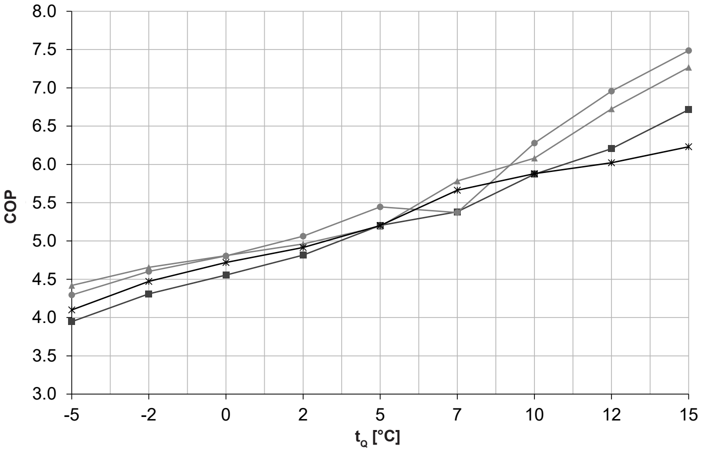
### Thermalia® comfort (8-17)

Data according to EN 14511

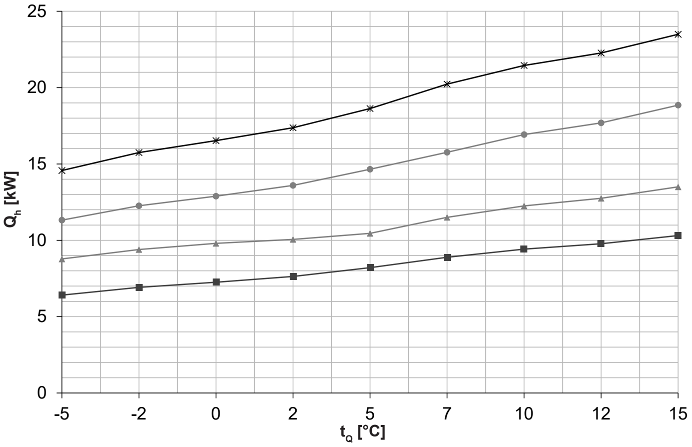
**Heat output – $t_{VL}$ 35 °C**



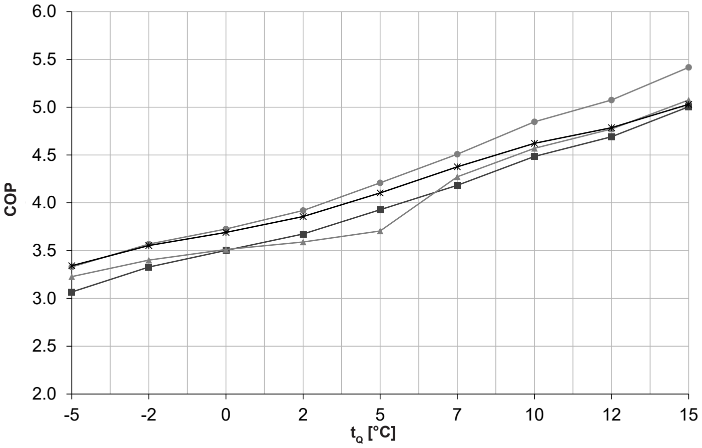
**Coefficient of performance – $t_{VL}$ 35 °C**



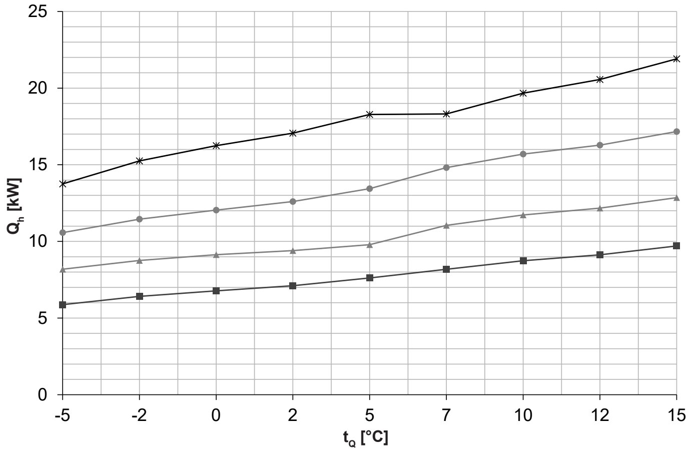
**Heat output – $t_{VL}$ 45 °C**



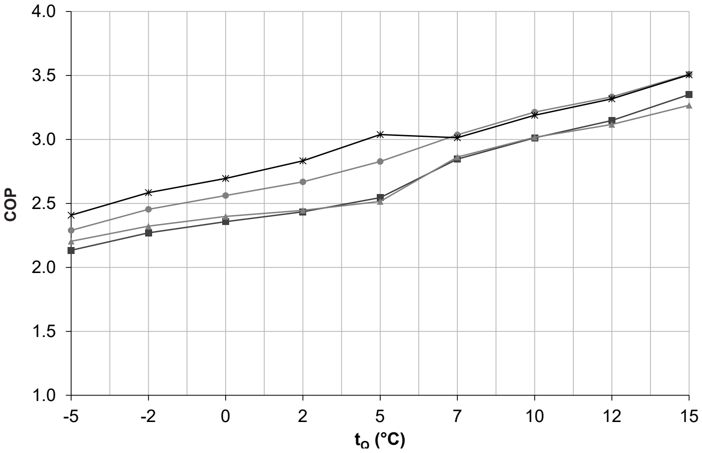
**Coefficient of performance – $t_{VL}$ 45 °C**



**Heat output – $t_{VL}$ 62 °C**



**Coefficient of performance – $t_{VL}$ 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® comfort (8)
▲ Thermalia® comfort (10)
● Thermalia® comfort (13)
× Thermalia® comfort (17)

## Performance data – heating
## Thermalia® comfort (8-17)

Data according to EN 14511

| | | | | (8) | | | (10) | | | (13) | | | (17) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 30 | Brine | −5 | 6.7 | 1.5 | 4.3 | 9.7 | 2.0 | 5.0 | 11.9 | 2.5 | 4.7 | 15.0 | 3.4 | 4.4 |
| | | −2 | 7.3 | 1.5 | 4.8 | 10.4 | 2.0 | 5.2 | 12.9 | 2.5 | 5.1 | 16.4 | 3.4 | 4.9 |
| | | 0 | 7.7 | 1.5 | 5.0 | 10.8 | 2.0 | 5.4 | 13.5 | 2.6 | 5.3 | 17.4 | 3.4 | 5.2 |
| | | 2 | 8.1 | 1.5 | 5.3 | 11.2 | 2.0 | 5.6 | 14.3 | 2.6 | 5.6 | 18.3 | 3.4 | 5.4 |
| | | 5 | 8.9 | 1.5 | 5.8 | 11.8 | 2.0 | 5.9 | 15.4 | 2.6 | 6.0 | 19.6 | 3.4 | 5.7 |
| | Water | 7 | 8.9 | 1.5 | 6.0 | 12.4 | 1.9 | 6.5 | 16.1 | 2.7 | 6.0 | 21.7 | 3.5 | 6.2 |
| | | 10 | 9.7 | 1.5 | 6.5 | 12.9 | 1.9 | 6.8 | 17.7 | 2.6 | 6.9 | 22.6 | 3.5 | 6.4 |
| | | 12 | 10.2 | 1.5 | 6.9 | 13.2 | 1.7 | 7.8 | 18.8 | 2.4 | 7.9 | 23.3 | 3.5 | 6.6 |
| | | 15 | 11.0 | 1.5 | 7.5 | 14.0 | 1.7 | 8.4 | 20.2 | 2.4 | 8.5 | 24.2 | 3.6 | 6.8 |
| 35 | Brine | −5 | 6.6 | 1.7 | 4.0 | 9.5 | 2.1 | 4.4 | 11.7 | 2.7 | 4.3 | 14.9 | 3.6 | 4.1 |
| | | −2 | 7.2 | 1.7 | 4.3 | 10.1 | 2.2 | 4.7 | 12.7 | 2.8 | 4.6 | 16.3 | 3.6 | 4.5 |
| | | 0 | 7.6 | 1.7 | 4.6 | 10.6 | 2.2 | 4.8 | 13.4 | 2.8 | 4.8 | 17.2 | 3.6 | 4.7 |
| | | 2 | 8.0 | 1.7 | 4.8 | 10.9 | 2.2 | 5.0 | 14.1 | 2.8 | 5.1 | 18.0 | 3.7 | 4.9 |
| | | 5 | 8.7 | 1.7 | 5.2 | 11.5 | 2.2 | 5.2 | 15.2 | 2.8 | 5.4 | 19.4 | 3.7 | 5.2 |
| | Water | 7 | 8.9 | 1.7 | 5.4 | 12.1 | 2.1 | 5.8 | 16.0 | 3.0 | 5.4 | 21.3 | 3.8 | 5.7 |
| | | 10 | 9.6 | 1.6 | 5.9 | 12.7 | 2.1 | 6.1 | 17.5 | 2.8 | 6.3 | 22.3 | 3.8 | 5.9 |
| | | 12 | 10.1 | 1.6 | 6.2 | 13.1 | 1.9 | 6.7 | 18.5 | 2.7 | 7.0 | 23.0 | 3.8 | 6.0 |
| | | 15 | 10.8 | 1.6 | 6.7 | 13.9 | 1.9 | 7.3 | 19.8 | 2.7 | 7.5 | 24.1 | 3.9 | 6.2 |
| 40 | Brine | −5 | 6.5 | 1.9 | 3.5 | 9.1 | 2.4 | 3.8 | 11.5 | 3.1 | 3.8 | 14.7 | 4.0 | 3.7 |
| | | −2 | 7.1 | 1.9 | 3.8 | 9.8 | 2.5 | 4.0 | 12.5 | 3.1 | 4.0 | 16.0 | 4.0 | 4.0 |
| | | 0 | 7.4 | 1.9 | 4.0 | 10.2 | 2.5 | 4.1 | 13.1 | 3.1 | 4.2 | 16.9 | 4.1 | 4.2 |
| | | 2 | 7.8 | 1.9 | 4.2 | 10.5 | 2.5 | 4.2 | 13.8 | 3.1 | 4.4 | 17.7 | 4.1 | 4.3 |
| | | 5 | 8.5 | 1.9 | 4.5 | 11.0 | 2.5 | 4.4 | 14.9 | 3.1 | 4.8 | 19.0 | 4.1 | 4.6 |
| | Water | 7 | 8.9 | 1.9 | 4.7 | 11.8 | 2.4 | 4.9 | 15.9 | 3.2 | 4.9 | 20.8 | 4.2 | 5.0 |
| | | 10 | 9.5 | 1.9 | 5.1 | 12.5 | 2.4 | 5.2 | 17.2 | 3.1 | 5.5 | 21.9 | 4.2 | 5.2 |
| | | 12 | 9.9 | 1.9 | 5.4 | 12.9 | 2.3 | 5.6 | 18.1 | 3.1 | 5.9 | 22.6 | 4.2 | 5.3 |
| | | 15 | 10.6 | 1.8 | 5.8 | 13.7 | 2.3 | 6.0 | 19.3 | 3.1 | 6.3 | 23.8 | 4.3 | 5.6 |
| 45 | Brine | −5 | 6.4 | 2.1 | 3.1 | 8.8 | 2.7 | 3.2 | 11.3 | 3.4 | 3.3 | 14.6 | 4.4 | 3.3 |
| | | −2 | 6.9 | 2.1 | 3.3 | 9.4 | 2.8 | 3.4 | 12.3 | 3.4 | 3.6 | 15.7 | 4.4 | 3.6 |
| | | 0 | 7.3 | 2.1 | 3.5 | 9.8 | 2.8 | 3.5 | 12.9 | 3.5 | 3.7 | 16.5 | 4.5 | 3.7 |
| | | 2 | 7.6 | 2.1 | 3.7 | 10.1 | 2.8 | 3.6 | 13.6 | 3.5 | 3.9 | 17.4 | 4.5 | 3.9 |
| | | 5 | 8.2 | 2.1 | 3.9 | 10.5 | 2.8 | 3.7 | 14.7 | 3.5 | 4.2 | 18.6 | 4.5 | 4.1 |
| | Water | 7 | 8.9 | 2.1 | 4.2 | 11.5 | 2.7 | 4.3 | 15.8 | 3.5 | 4.5 | 20.2 | 4.6 | 4.4 |
| | | 10 | 9.4 | 2.1 | 4.5 | 12.3 | 2.7 | 4.6 | 16.9 | 3.5 | 4.9 | 21.5 | 4.6 | 4.6 |
| | | 12 | 9.8 | 2.1 | 4.7 | 12.8 | 2.7 | 4.8 | 17.7 | 3.5 | 5.1 | 22.3 | 4.7 | 4.8 |
| | | 15 | 10.3 | 2.1 | 5.0 | 13.5 | 2.7 | 5.1 | 18.9 | 3.5 | 5.4 | 23.5 | 4.7 | 5.0 |
| 50 | Brine | −5 | 6.2 | 2.3 | 2.7 | 8.6 | 3.0 | 2.9 | 11.1 | 3.8 | 3.0 | 14.3 | 4.8 | 3.0 |
| | | −2 | 6.7 | 2.3 | 2.9 | 9.2 | 3.1 | 3.0 | 12.0 | 3.8 | 3.2 | 15.6 | 4.9 | 3.2 |
| | | 0 | 7.1 | 2.3 | 3.1 | 9.6 | 3.1 | 3.1 | 12.6 | 3.8 | 3.3 | 16.4 | 5.0 | 3.3 |
| | | 2 | 7.4 | 2.3 | 3.2 | 9.9 | 3.1 | 3.2 | 13.3 | 3.8 | 3.5 | 17.3 | 5.0 | 3.5 |
| | | 5 | 8.0 | 2.3 | 3.4 | 10.3 | 3.1 | 3.3 | 14.3 | 3.9 | 3.7 | 18.6 | 5.0 | 3.7 |
| | Water | 7 | 8.6 | 2.4 | 3.6 | 11.4 | 3.0 | 3.7 | 15.5 | 3.9 | 4.0 | 19.6 | 5.1 | 3.8 |
| | | 10 | 9.2 | 2.4 | 3.9 | 12.1 | 3.0 | 4.0 | 16.6 | 3.9 | 4.3 | 20.9 | 5.1 | 4.1 |
| | | 12 | 9.5 | 2.4 | 4.1 | 12.6 | 3.0 | 4.2 | 17.3 | 3.9 | 4.4 | 21.7 | 5.2 | 4.2 |
| | | 15 | 10.1 | 2.3 | 4.3 | 13.3 | 3.0 | 4.4 | 18.4 | 3.9 | 4.7 | 23.0 | 5.2 | 4.4 |
| 55 | Brine | −5 | 5.9 | 2.5 | 2.4 | 8.4 | 3.3 | 2.6 | 10.9 | 4.1 | 2.6 | 14.0 | 5.3 | 2.7 |
| | | −2 | 6.5 | 2.5 | 2.6 | 9.0 | 3.4 | 2.7 | 11.8 | 4.2 | 2.8 | 15.4 | 5.4 | 2.9 |
| | | 0 | 6.9 | 2.5 | 2.7 | 9.4 | 3.4 | 2.8 | 12.4 | 4.2 | 3.0 | 16.3 | 5.4 | 3.0 |
| | | 2 | 7.2 | 2.6 | 2.8 | 9.7 | 3.4 | 2.8 | 13.0 | 4.2 | 3.1 | 17.2 | 5.5 | 3.2 |
| | | 5 | 7.8 | 2.6 | 3.0 | 10.1 | 3.5 | 2.9 | 13.9 | 4.2 | 3.3 | 18.5 | 5.5 | 3.4 |
| | Water | 7 | 8.4 | 2.6 | 3.2 | 11.2 | 3.4 | 3.3 | 15.2 | 4.3 | 3.5 | 19.0 | 5.6 | 3.4 |
| | | 10 | 8.9 | 2.6 | 3.4 | 11.9 | 3.4 | 3.5 | 16.2 | 4.3 | 3.8 | 20.3 | 5.7 | 3.6 |
| | | 12 | 9.3 | 2.6 | 3.5 | 12.4 | 3.4 | 3.7 | 16.9 | 4.3 | 3.9 | 21.1 | 5.7 | 3.7 |
| | | 15 | 9.9 | 2.6 | 3.8 | 13.1 | 3.4 | 3.9 | 17.9 | 4.3 | 4.1 | 22.4 | 5.7 | 3.9 |
| 62 | Brine | −5 | 5.9 | 2.8 | 2.1 | 8.2 | 3.7 | 2.2 | 10.6 | 4.6 | 2.3 | 13.8 | 5.7 | 2.4 |
| | | −2 | 6.4 | 2.8 | 2.3 | 8.8 | 3.8 | 2.3 | 11.5 | 4.7 | 2.5 | 15.3 | 5.9 | 2.6 |
| | | 0 | 6.8 | 2.9 | 2.4 | 9.1 | 3.8 | 2.4 | 12.0 | 4.7 | 2.6 | 16.3 | 6.0 | 2.7 |
| | | 2 | 7.1 | 2.9 | 2.4 | 9.4 | 3.8 | 2.5 | 12.6 | 4.7 | 2.7 | 17.1 | 6.0 | 2.8 |
| | | 5 | 7.6 | 3.0 | 2.5 | 9.8 | 3.9 | 2.5 | 13.4 | 4.8 | 2.8 | 18.3 | 6.0 | 3.0 |
| | Water | 7 | 8.2 | 2.9 | 2.9 | 11.0 | 3.9 | 2.9 | 14.8 | 4.9 | 3.0 | 18.3 | 6.1 | 3.0 |
| | | 10 | 8.7 | 2.9 | 3.0 | 11.7 | 3.9 | 3.0 | 15.7 | 4.9 | 3.2 | 19.7 | 6.2 | 3.2 |
| | | 12 | 9.1 | 2.9 | 3.2 | 12.2 | 3.9 | 3.1 | 16.3 | 4.9 | 3.3 | 20.6 | 6.2 | 3.3 |
| | | 15 | 9.7 | 2.9 | 3.4 | 12.9 | 3.9 | 3.3 | 17.2 | 4.9 | 3.5 | 21.9 | 6.2 | 3.5 |

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

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

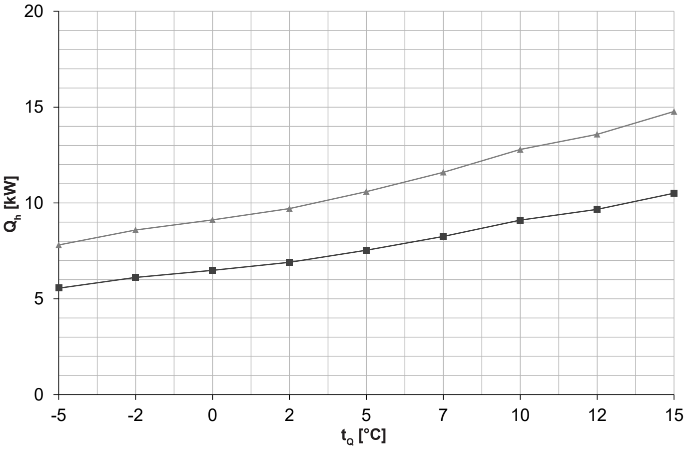
## Performance data – heating

Maximum heat output

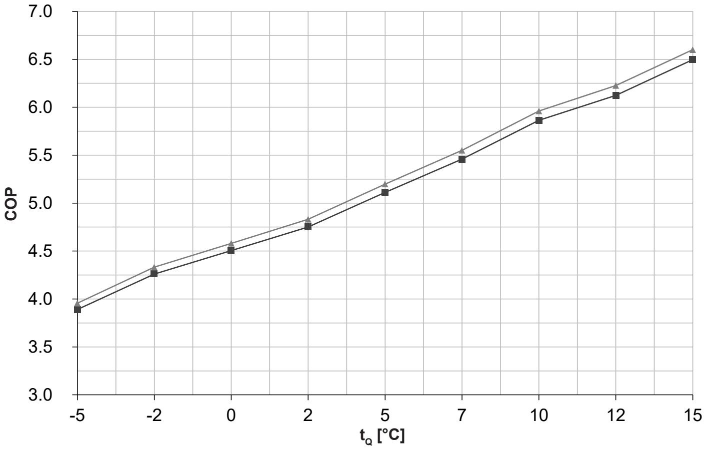
## Thermalia® comfort H (7,10)

Data according to EN 14511

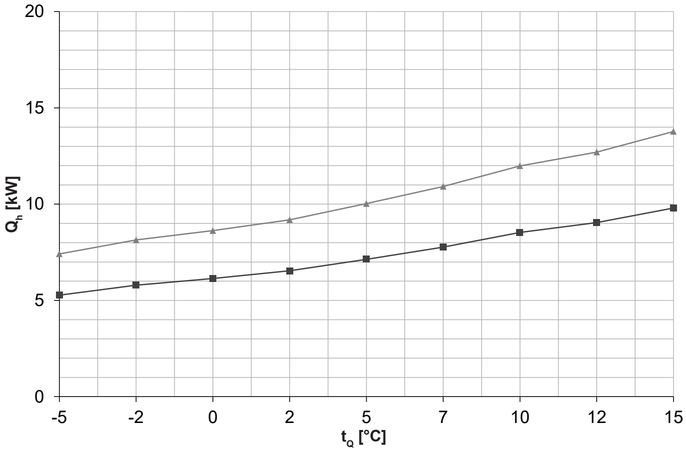
### Heat output – $t_{VL}$ 35 °C



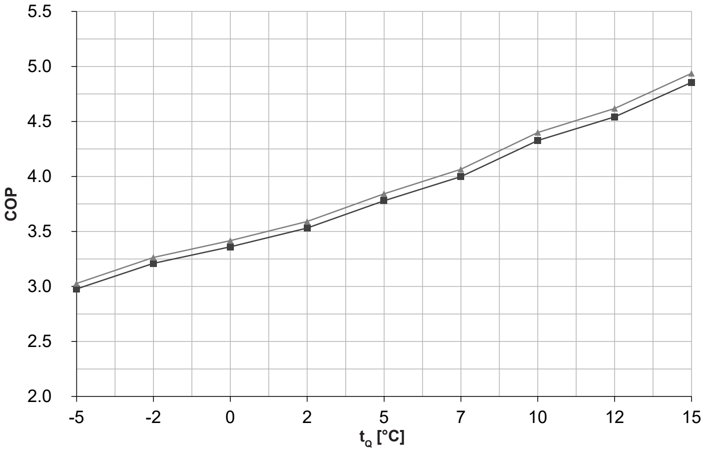
### Coefficient of performance – $t_{VL}$ 35 °C



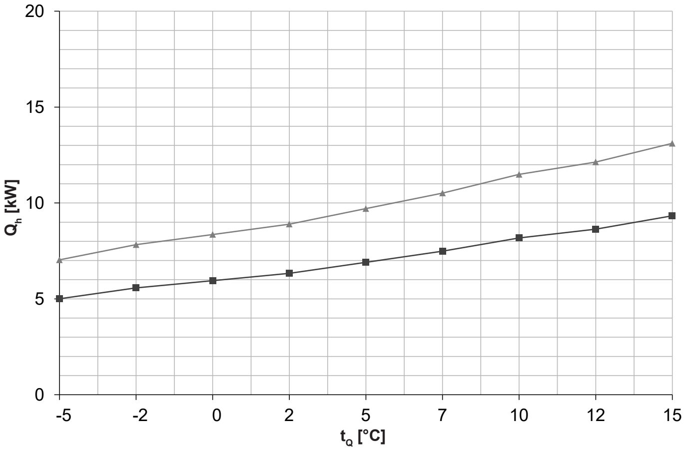
### Heat output – $t_{VL}$ 50 °C



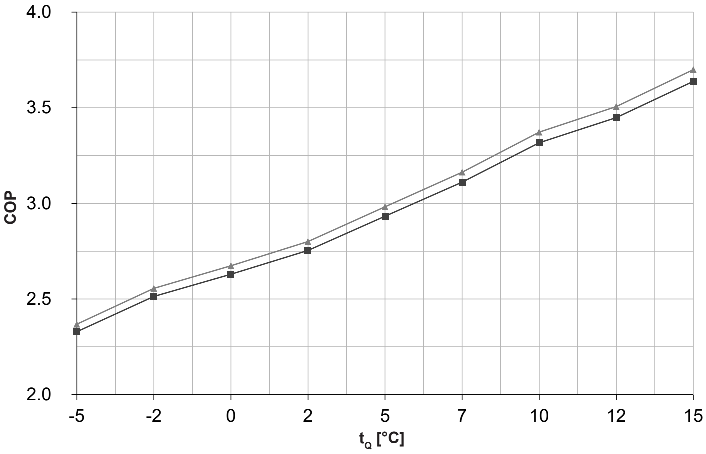
### Coefficient of performance – $t_{VL}$ 50 °C



### Heat output – $t_{VL}$ 65 °C



### Coefficient of performance – $t_{VL}$ 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)

## Performance data – heating
## Thermalia® comfort H (7,10)

Data according to EN 14511

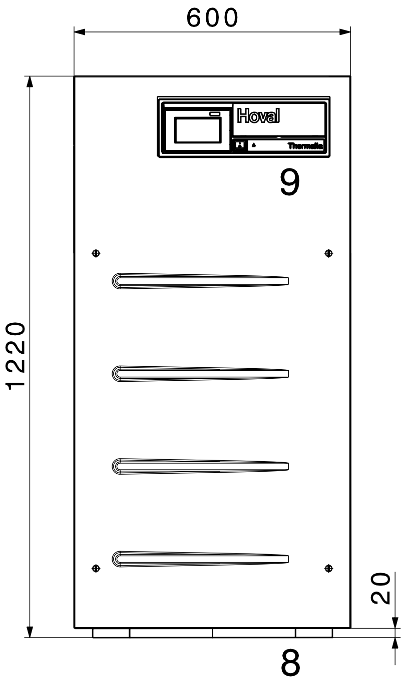
| | | | | H (7) | | | H (10) | |
|---|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 30 | Brine | −5 | 5.6 | 1.4 | 4.2 | 7.9 | 1.9 | 4.2 |
| | | −2 | 6.2 | 1.4 | 4.6 | 8.7 | 1.9 | 4.7 |
| | | 0 | 6.6 | 1.4 | 4.9 | 9.2 | 1.9 | 4.9 |
| | | 2 | 7.0 | 1.4 | 5.1 | 9.8 | 1.9 | 5.2 |
| | | 5 | 7.6 | 1.4 | 5.5 | 10.7 | 1.9 | 5.6 |
| | Water | 7 | 8.4 | 1.4 | 5.9 | 11.8 | 2.0 | 6.0 |
| | | 10 | 9.3 | 1.5 | 6.3 | 13.0 | 2.0 | 6.4 |
| | | 12 | 9.8 | 1.5 | 6.6 | 13.8 | 2.1 | 6.7 |
| | | 15 | - | - | - | - | - | - |
| 35 | Brine | −5 | 5.6 | 1.4 | 3.9 | 7.8 | 2.0 | 4.0 |
| | | −2 | 6.1 | 1.4 | 4.3 | 8.6 | 2.0 | 4.3 |
| | | 0 | 6.5 | 1.4 | 4.5 | 9.1 | 2.0 | 4.6 |
| | | 2 | 6.9 | 1.5 | 4.8 | 9.7 | 2.0 | 4.8 |
| | | 5 | 7.5 | 1.5 | 5.1 | 10.6 | 2.0 | 5.2 |
| | Water | 7 | 8.3 | 1.5 | 5.5 | 11.6 | 2.1 | 5.6 |
| | | 10 | 9.1 | 1.6 | 5.9 | 12.8 | 2.1 | 6.0 |
| | | 12 | 9.7 | 1.6 | 6.1 | 13.6 | 2.2 | 6.2 |
| | | 15 | 10.5 | 1.6 | 6.5 | 14.8 | 2.2 | 6.6 |
| 40 | Brine | −5 | 5.5 | 1.5 | 3.5 | 7.7 | 2.1 | 3.6 |
| | | −2 | 6.0 | 1.6 | 3.9 | 8.4 | 2.2 | 3.9 |
| | | 0 | 6.3 | 1.6 | 4.1 | 8.9 | 2.2 | 4.1 |
| | | 2 | 6.8 | 1.6 | 4.3 | 9.5 | 2.2 | 4.3 |
| | | 5 | 7.4 | 1.6 | 4.6 | 10.4 | 2.2 | 4.7 |
| | Water | 7 | 8.1 | 1.7 | 4.9 | 11.3 | 2.3 | 4.9 |
| | | 10 | 8.9 | 1.7 | 5.3 | 12.5 | 2.3 | 5.4 |
| | | 12 | 9.4 | 1.7 | 5.5 | 13.2 | 2.4 | 5.6 |
| | | 15 | 10.2 | 1.7 | 5.9 | 14.4 | 2.4 | 6.0 |
| 45 | Brine | −5 | 5.4 | 1.7 | 3.2 | 7.5 | 2.3 | 3.4 |
| | | −2 | 5.9 | 1.7 | 3.5 | 8.2 | 2.3 | 3.6 |
| | | 0 | 6.2 | 1.7 | 3.7 | 8.7 | 2.3 | 3.7 |
| | | 2 | 6.6 | 1.7 | 3.9 | 9.3 | 2.4 | 3.9 |
| | | 5 | 7.2 | 1.7 | 4.1 | 10.1 | 2.4 | 4.2 |
| | Water | 7 | 7.9 | 1.8 | 4.4 | 11.1 | 2.5 | 4.4 |
| | | 10 | 8.7 | 1.8 | 4.8 | 12.2 | 2.5 | 4.8 |
| | | 12 | 9.2 | 1.8 | 5.0 | 12.9 | 2.5 | 5.1 |
| | | 15 | 10.0 | 1.9 | 5.4 | 14.0 | 2.6 | 5.5 |
| 50 | Brine | −5 | 5.3 | 1.8 | 3.0 | 7.4 | 2.4 | 3.0 |
| | | −2 | 5.8 | 1.8 | 3.2 | 8.1 | 2.5 | 3.3 |
| | | 0 | 6.1 | 1.8 | 3.4 | 8.6 | 2.5 | 3.4 |
| | | 2 | 6.5 | 1.9 | 3.5 | 9.2 | 2.6 | 3.6 |
| | | 5 | 7.1 | 1.9 | 3.8 | 10.0 | 2.6 | 3.8 |
| | Water | 7 | 7.8 | 1.9 | 4.0 | 10.9 | 2.7 | 4.1 |
| | | 10 | 8.5 | 2.0 | 4.3 | 12.0 | 2.7 | 4.4 |
| | | 12 | 9.0 | 2.0 | 4.5 | 12.7 | 2.8 | 4.6 |
| | | 15 | 9.8 | 2.0 | 4.9 | 13.8 | 2.8 | 4.9 |
| 55 | Brine | −5 | 5.2 | 1.9 | 2.8 | 7.3 | 2.6 | 2.8 |
| | | −2 | 5.7 | 1.9 | 3.0 | 8.0 | 2.7 | 3.0 |
| | | 0 | 6.1 | 2.0 | 3.1 | 8.5 | 2.7 | 3.2 |
| | | 2 | 6.5 | 2.0 | 3.3 | 9.1 | 2.7 | 3.3 |
| | | 5 | 7.1 | 2.0 | 3.5 | 9.9 | 2.8 | 3.5 |
| | Water | 7 | 7.7 | 2.1 | 3.7 | 10.8 | 2.9 | 3.8 |
| | | 10 | 8.4 | 2.1 | 4.0 | 11.8 | 2.9 | 4.0 |
| | | 12 | 8.9 | 2.1 | 4.2 | 12.5 | 3.0 | 4.2 |
| | | 15 | 9.6 | 2.2 | 4.4 | 13.5 | 3.0 | 4.5 |
| 62 | Brine | −5 | 5.1 | 2.1 | 2.4 | 7.1 | 2.9 | 2.5 |
| | | −2 | 5.6 | 2.1 | 2.6 | 7.9 | 2.9 | 2.7 |
| | | 0 | 6.0 | 2.2 | 2.8 | 8.4 | 3.0 | 2.8 |
| | | 2 | 6.4 | 2.2 | 2.9 | 9.0 | 3.0 | 2.9 |
| | | 5 | 7.0 | 2.3 | 3.1 | 9.8 | 3.1 | 3.1 |
| | Water | 7 | 7.5 | 2.3 | 3.3 | 10.6 | 3.2 | 3.3 |
| | | 10 | 8.2 | 2.4 | 3.5 | 11.6 | 3.3 | 3.6 |
| | | 12 | 8.7 | 2.4 | 3.6 | 12.2 | 3.3 | 3.7 |
| | | 15 | 9.4 | 2.4 | 3.9 | 13.2 | 3.4 | 3.9 |
| 65 | Brine | −5 | 5.0 | 2.1 | 2.3 | 7.0 | 3.0 | 2.4 |
| | | −2 | 5.6 | 2.2 | 2.5 | 7.8 | 3.1 | 2.6 |
| | | 0 | 5.9 | 2.3 | 2.6 | 8.4 | 3.1 | 2.7 |
| | | 2 | 6.3 | 2.3 | 2.8 | 8.9 | 3.2 | 2.8 |
| | | 5 | 6.9 | 2.4 | 2.9 | 9.7 | 3.3 | 3.0 |
| | Water | 7 | 7.5 | 2.4 | 3.1 | 10.5 | 3.3 | 3.2 |
| | | 10 | 8.2 | 2.5 | 3.3 | 11.5 | 3.4 | 3.4 |
| | | 12 | 8.6 | 2.5 | 3.5 | 12.1 | 3.5 | 3.5 |
| | | 15 | 9.3 | 2.6 | 3.6 | 13.1 | 3.5 | 3.7 |
| | | 25 | - | - | - | - | - | - |

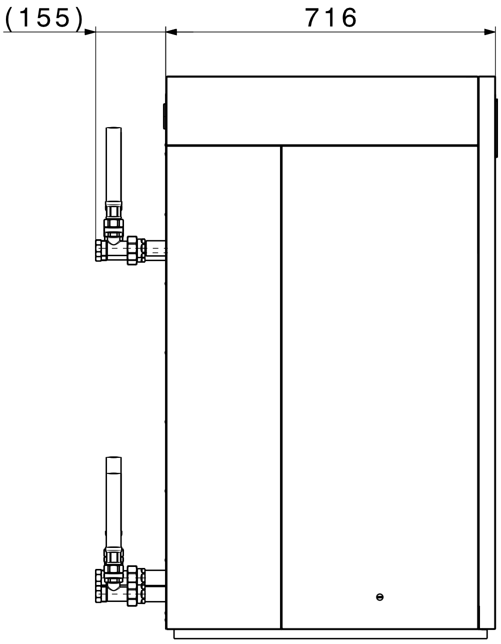
$t_{VL}$ = heating flow temperature (°C)
$t_Q$ = source temperature (°C)
$Q_h$ = heat output at full load (kW), measured in accordance with standard EN 14511
P = power consumption of the overall unit (kW)
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

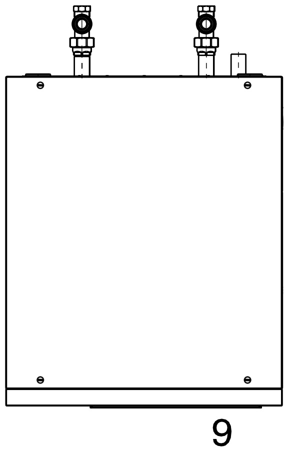
**Observe daily power interruptions!**
see “Engineering heat pumps general”

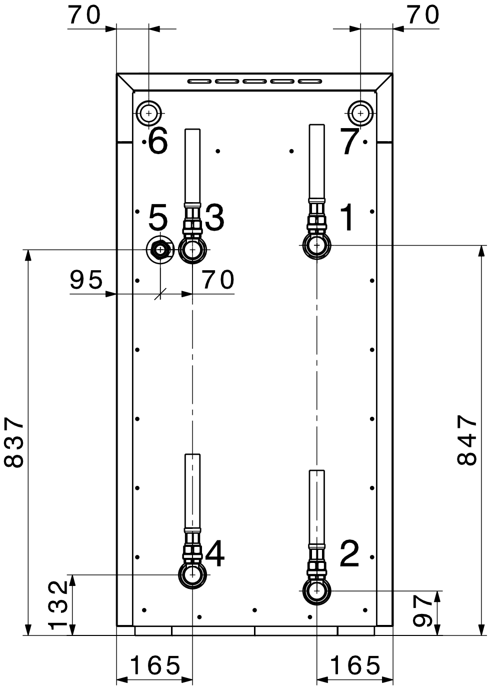
## Thermalia® comfort (8-17) and comfort H (7,10)

(Dimensions in mm)









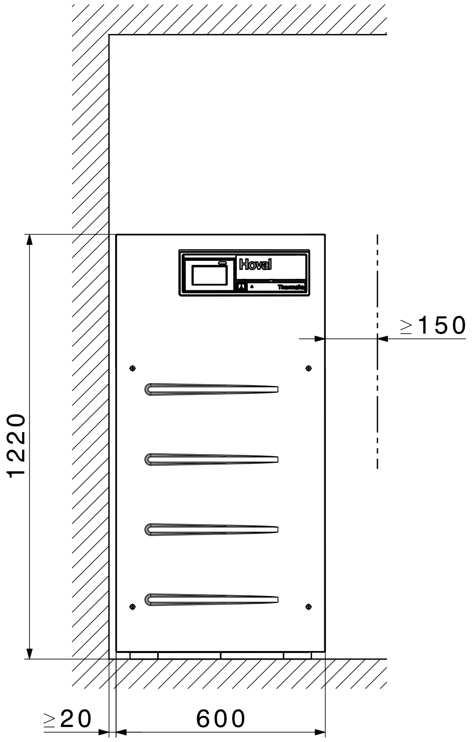
1 Heat source inlet into the heat pump R 1″
2 Heat source outlet from the heat pump R 1″
3 Heating flow R 1″
4 Heating return R 1″
5 Hot water R 1″
6 Cable feedthrough for main current
7 Cable feedthrough for sensors
8 Vibration damping
9 Control panel

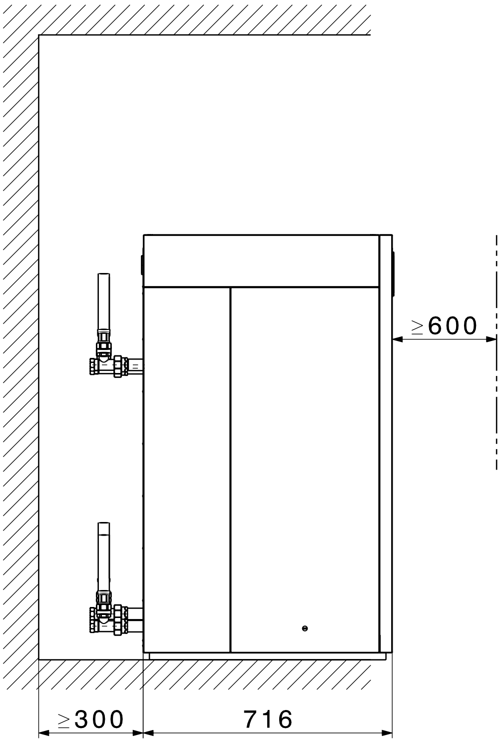
The 4 flexible hoses 1″ can be extracted from the heat pump by at least 300 mm.

## Space requirement

Required wall distance in mm for operation and maintenance
(Dimensions in mm)

| Front | Rear | Right or left side |
|---|---|---|
| min. 600 | min. 300 | min. 150 |





Hoval

# Hoval quality.
You can count on us.

Hoval is one of the leading international companies for heating and indoor climate solutions. Drawing on more than 80 years of experience and benefiting from a close-knit team culture, the Hoval Group delivers exciting solutions and develops technically superior products. This leadership role requires a sense of responsibility for energy and the environment, which is expressed in an intelligent combination of different heating technologies and customised indoor climate solutions.

Hoval also provides personal consultations and comprehensive customer service. With around 2500 employees in 15 companies around the world, Hoval sees itself not as a conglomerate, but as a large family that thinks and acts globally.
Hoval heating and indoor climate solutions are currently exported to more than 50 countries.

## Responsibility for energy and environment

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hoval.co.uk

2026 - 04 | Subject to modifications

Your Hoval partner

CATALOGUE

# Hoval Thermalia® twin

Brine/water-water/water heat pump
Thermalia® twin (20-42)
Thermalia® twin H (13-22)

**Hoval** | Responsibility for energy and environment

## Table of contents

## 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
- 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

*Electrical connections*
- Connection to the rear

*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)

**Model range**

| Thermalia® twin type | Water/water 35 °C | Water/water 55 °C | Brine/water 35 °C | Brine/water 55 °C | Refrigerant | Max. flow °C | Heat output B0W35 kW | Heat output W10W35 kW |
|---|---|---|---|---|---|---|---|---|
| (20) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{++}$ | R410A | 62 | 20.4 | 27.3 |
| (26) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{++}$ | R410A | 62 | 26.2 | 35.1 |
| (36) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | R410A | 62 | 35.3 | 46.4 |
| (42) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{++}$ | R410A | 62 | 42.0 | 55.4 |
| H (13) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{++}$ | R134a | 67 | 12.3 | 17.0 |
| H (19) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{++}$ | R134a | 67 | 16.1 | 24.7 |
| H (22) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{++}$ | R134a | 67 | 20.9 | 28.8 |
|  | $A^{+++}$ → D | $A^{+++}$ → D | $A^{+++}$ → D | $A^{+++}$ → D |  |  |  |  |

Energy efficiency class of the compound system with control

*TopTronic® E basic module heat generator TTE-WEZ*
- Control functions integrated for
  - 1 heating/cooling circuit with mixer
  - 1 heating/cooling circuit without mixer
  - 1 hot water charging circuit
  - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

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

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

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

**Further information about the TopTronic® E**
see “Controls”

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

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

*Delivery*
- Heat pump on pallet, plastic hood and floor plate separately packed
- Flexible hoses included
- Sensor set separately packed

**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems
With Hoval Integrate, Hoval heat pumps with TopTronic® E control can be integrated into home automation and energy management systems via open, standardised interfaces.
Predefined templates, plugins and Smart Grid integrations simplify implementation and enable intelligent decisions.
Functions such as PV surplus utilisation, dynamic electricity tariffs, grid-friendly control, load management or simple visualisations for analysis purposes can be created and operated individually.
System integrators are free to choose their desired system and benefit from broad compatibility and future-proof sector coupling.
Thanks to integrated building automation, end customers benefit from operating cost savings and cross-system functions.
Practical guide videos provide additional support for integration and commissioning – step by step and with a practical orientation.

**Notice**
Only available in Austria, Germany and Switzerland

## Brine/water-water/water heat pump

### Hoval Thermalia® twin

Refrigerant R410A

**Flow temperature max. 62 °C**

| Thermalia® twin type | Heat output B0W35 kW | Heat output W10W35 kW | Part No. |
|---|---|---|---|
| (20) | 20.4 | 27.3 | 7018 990 |
| (26) | 26.2 | 35.1 | 7018 991 |
| (36) | 35.3 | 46.4 | 7018 992 |
| (42) | 42.0 | 55.4 | 7018 993 |

### Hoval Thermalia® twin H

Refrigerant R410A

**Flow temperature max. 67 °C**

| Thermalia® twin H type | Heat output B0W35 kW | Heat output W10W35 kW | Part No. |
|---|---|---|---|
| (13) | 12.3 | 17.0 | 7018 994 |
| (19) | 18.0 | 24.7 | 7018 995 |
| (22) | 20.9 | 28.8 | 7018 996 |

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

**Further information**
see “Description”

**Further accessories can be found under the following rubrics:**

- Calorifiers/buffer storage tanks:
  - Calorifiers
  - Buffer storage tanks
  - Combination storage tanks
  - Electric heating elements
- Heating armature groups/heating distributors
- Various system components:
  - 2-way and 3-way valves
  - 3-way mixers
  - 2-way and 3-way ball valves
  - Motor drives and butterfly valves
  - Diaphragm pressure expansion tanks
  - Fittings
  - Plate heat exchangers
- Circulating pumps

**Installation**
The heat pump may be tilted by a maximum of 30° during transportation and installation.

**Notice**
Only available in Austria, Germany and Switzerland

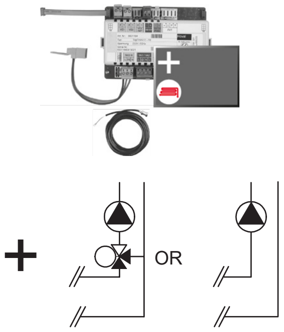
**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems

**Further information**
see “Description”

**Part No.**

## TopTronic® E module expansions

for TopTronic® E basic module heat generator



**TopTronic® E module expansion heating circuit TTE-FE HK**

6034 576

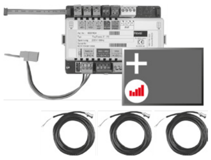
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

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

Consisting of:

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

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



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

6037 062

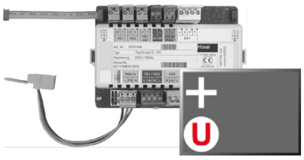
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

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

Consisting of:

- Fitting accessories
- 3 contact sensors ALF/2P/4/T, L = 4.0 m
- Plug set FE module

**Notice**
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

Consisting of:

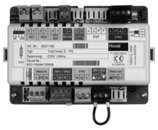
- Fitting accessories
- Plug set FE module

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

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

**Part No.**

## Accessories for TopTronic® E



**TopTronic® E controller modules**

| | | |
|---|---|---|
| TTE-HK/WW | TopTronic® E heating circuit/ hot water module | 6034 571 |
| TTE-SOL | TopTronic® E solar module | 6037 058 |
| TTE-PS | TopTronic® E buffer module | 6037 057 |
| TTE-MWA | TopTronic® E measuring module | 6034 574 |

**Supplementary plug set**

| | |
|---|---|
| for basic module heat generator TTE-WEZ | 6034 499 |
| for controller modules and module expansion TTE-FE HK | 6034 503 |

**TopTronic® E room control modules**

| | | |
|---|---|---|
| TTE-RBM | TopTronic® E room control modules | |
| | easy white | 6037 071 |
| | comfort white | 6037 069 |
| | comfort black | 6037 070 |

| | |
|---|---|
| **Enhanced language package TopTronic® E** | 6039 253 |

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

**HovalConnect**

| | |
|---|---|
| HovalConnect LAN | 6049 496 |
| HovalConnect WLAN | 6049 498 |
| HovalConnect Modbus | 6049 501 |
| HovalConnect KNX | 6049 593 |

**TopTronic® E interface modules**

| | |
|---|---|
| GLT module 0-10 V | 6034 578 |

**TopTronic® E sensors**

| | | |
|---|---|---|
| AF/2P/K | Outdoor sensor<br>H x W x D = 80 x 50 x 28 mm | 2055 889 |
| TF/2P/5/6T | Immersion sensor, L = 5.0 m | 2055 888 |
| ALF/2P/4/T | Contact sensor, L = 4.0 m | 2056 775 |
| TF/1.1P/2.5S/6T | Collector sensor, L = 2.5 m | 2056 776 |

**Bivalent switch**

for various release or switching functions

| | |
|---|---|
| Bivalent switch 1-piece | 2056 858 |
| Bivalent switch 2-piece | 2061 826 |

**System casing**

| | |
|---|---|
| System casing 182 mm | 6038 551 |
| System casing 254 mm | 6038 552 |

**TopTronic® E wall casing**

| | | |
|---|---|---|
| WG-190 | Wall casing small | 6052 983 |
| WG-360 | Wall casing medium | 6052 984 |
| WG-360 BM | Wall casing medium with control module cut-out | 6052 985 |
| WG-510 | Wall casing large | 6052 986 |
| WG-510 BM | Wall casing large with control module cut-out | 6052 987 |

**Further information**
see “Controls”

Part No.

## Accessories

**Hose set SPCH40-40-10-4**
for Thermalia® twin (20,26)
Consisting of:
- 4 reinforced hoses PN 10 DN 40 1½″ IT insulated for brine and heating side flat-sealing with union nut
- Length: 1.0 m
- 4 brackets DN 40
- Seals

6058 823

**Hose set SPCH50-50-10-4**
for Thermalia® twin (36,42) and
Thermalia® twin H (13-22)
Consisting of:
- 4 reinforced hoses PN 10 DN 50 2″ IT insulated for brine and heating side flat-sealing with union nut
- Length: 1.0 m
- 4 brackets DN 50
- Seals

6058 824

**Flow rate sensor sets**
Plastic casing
Balancing by means of pulse output and
PT1000 sensor element

| Size | Connection inches | Flow rate l/min | Part No. |
|---|---|---|---|
| DN 25 | G 1½″ | 9-150 | 6038 510 |

Brass casing
Balancing by means of pulse output and
PT1000 sensor element

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

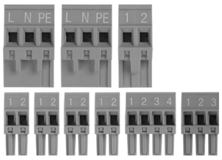
**Flow rate sensor DN 50 2-1000 l/min**
G 2½″ incl. connection cable 1 metre
For water + glycol mix
kvs 226.8 $m^3$/h
0.5-4.5 V: output (2-1000 l/min)
Pulse output: 20 pulses/litre
Medium temperature −20 ... 110 °C < 5 min
Ambient temperature: −20 ... 80 °C
IP44, max. 25 bar
Brass casing
H x W x D: 93.9 x 107.5 x 170 mm
Seal not included in
delivery (70 x 59 x 2 mm)
During installation,
take account of settling section
5 x ID (inlet) and 1 x ID (outlet)

2084 981

Installation of a flow rate sensor set is recommended. Flow rate sensors and other technical measures can be used to prevent the heat exchanger from freezing. In order to protect the heat pump from frost in the event of a power failure or for example in bivalence mode, a system separation or other technical measures must be provided on site.

| | | Part No. |
|---|---|---|
|  | **Switching ball valve VBI60.40-25L; PN 40**<br>Internal thread Rp 1½″<br>Leakage rate: 0 ... 0.0001 % of kvs value<br>Permitted media: cold water,<br>cooling water, DHW, hot water,<br>water with frost protection<br>Recommendation:<br>water treatment according to VDI 2035<br>DN 40<br>kvs value: 25 m³/h<br>Medium temperature: −10 ... 120 °C<br>Ball valve body: brass<br>Ball: brass chrome-plated<br>Tappet: brass<br>Gland: EPDM O-rings | 6052 446 |
|  | **Switching ball valve VBI60.50-37L; PN 40**<br>Internal thread Rp 2″<br>Leakage rate: 0 ... 0.0001 % of kvs value<br>Permitted media: cold water,<br>cooling water, DHW, hot water,<br>water with frost protection<br>Recommendation:<br>water treatment according to VDI 2035<br>DN 50<br>kvs value: 37 m³/h<br>Medium temperature: −10 ... 120 °C<br>Ball valve body: brass<br>Ball: brass chrome-plated<br>Tappet: brass<br>Gland: EPDM O-rings | 6052 447 |
|  | **Motor drive GLB341.9E**<br>For straight-way ball valves VAG60.. and<br>switching ball valves VBI60.. DN 15-50<br>Operating voltage: 230 V, 50/60 Hz<br>Control signal 2-point/3-point<br>Single-wire/2 wire control<br>Operating time: 150 s<br>Nominal torque: 10 Nm<br>Permitted ambient temperature:<br>−32 ... 55 °C | 2070 331 |

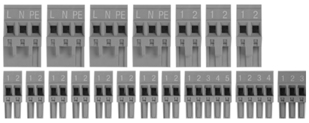
**Part No.**



**Expansion connector set** — 6032 509

for the automatic heat pump device ECR461
Use for additional function:
- Flow monitor
- Crankcase bottom heating
- Condensation drain heating
- Heat quantity metering

Plugs:
- 1 230 V digital input
- 2 230 V outputs
- 4 low-voltage inputs
- 1 ratio. Input
- 1 4-pin low-voltage input



**Universal plug set** — 6032 510

for automatic heat pump device ECR461
Plugs:
- 3 digital 230 V inputs
- 4 230 V outputs
- 6 low-voltage inputs
- 2 low-voltage outputs
- 1 ratio. input
- 1 electronic expansion valve
- 1 4-pin low-voltage input

*Necessary at boiler room temperatures < 10 °C*

**Crankcase heater** — 6019 718

for Belaria® twin I/IR (20-30),
Thermalia® comfort (8-17),
Thermalia® comfort H (7,10)
(1 piece required per heat pump)

Thermalia® twin (20-42),
Thermalia® twin H (13-22),
Thermalia® dual, dual H, dual R
(2 pieces required per heat pump)

**Instantaneous water heater kit DN 50** — 6044 070

consisting of electrical box ready for connection for electrical protection incl. assembly fittings. for combination with all screw-in electric heating elements EP. Screw-in electric heating element must be ordered separately.

**Safety set SGK15-PN3 IT 1″ insulated** — 6063 905

Safety group made of composite material
(glass fiber reinforced polyamide)
complete with safety valve (3 bar),
quick air vent and pressure gauge
Connection IT 1″ (ISO228-1)
with insulating caps
Medium temperature range: 5 ... 90 °C
Setting (pressure): 3 bar
Area of application up to 50 kW

**Part No.**

**Differential pressure relief valve DN 20**
for free installation
with flexible centre distance
Connections at both ends 1″ ET
Operating pressure: max. 10 bar
Operating temperature: max. 120 °C
Setting range: 0.05-0.5 bar
Length: 93 mm
Casing made of brass with setting handle
made of plastic

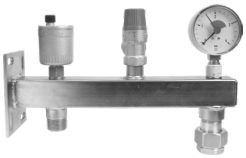
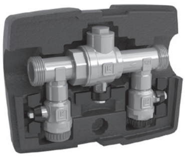
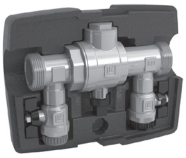
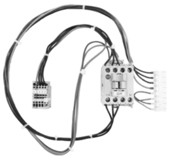
240 554

**Vibration decoupler**
for reducing structure-borne noise from
heat pumps indoors, cannot be shortened
Consisting of:
- 1 vibration decoupler insulated for heating and brine side flat-sealing with union nut
- 2 flat seals

Nominal pressure: PN 10

| Dimension | Connection inches | Nominal length mm | Part No. |
|---|---|---|---|
| DN 40 | 1½″ | 500 | 2082 226 |
| DN 40 | 1½″ | 1000 | 2080 798 |
| DN 50 | 2″ | 500 | 2082 227 |
| DN 50 | 2″ | 1000 | 2080 800 |

*Accessories water/water*

| | | Part No. |
|---|---|---|
|  | **Safety group SG15-¾″**<br>Retaining bar incl. safety valve,<br>pressure gauge, air vent and connection<br>fittings for expansion chambers | 2015 354 |
|  | **Brine filling station in compact design DN 25**<br>with shut-off valves,<br>filter and EPS insulation.<br>Application temperatures: −20 ... 60 °C<br>Frost protection: max. 50 %<br>Connections: DN 25 G 1″<br>kvs value: 12.5 m³/h<br>Max. operating pressure: 1.0 MPa (10 bar)<br>Dirt screen integrated | 6037 537 |
|  | **Brine filling station in compact design DN 32**<br>with shut-off valves,<br>filter and EPS insulation.<br>Application temperatures: −20 ... 60 °C<br>Frost protection: max. 50 %<br>Connections: DN 32 G 1¼″<br>kvs value: 22 m³/h<br>Max. operating pressure: 1.0 MPa (10 bar)<br>Dirt screen integrated | 6033 364 |
|  | **Float body flow meter**<br>Bistable Reed contact as NC contact<br>Area of application 1500-15000 l/h<br>Temperature range: 0 ... 80 °C<br>Nominal pressure: 10 bar<br>Connection: Rp 2″<br>Pressure drop: 30 mbar<br>Installation length: 335 mm<br>Max. voltage: 230 V<br>Max. continuous current: 0.2 A | 2040 709 |
|  | **Bimetallic thermometer**<br>Used for brine/ground water<br>Flow and return<br>Class 1 acc. to DIN 16203<br>Nominal size 63 x 63 mm<br>Display range: −20 ... 40 °C<br>Protective sleeve PN 40,<br>G ½″ B x 9 mm BS<br>Price per item | 2030 440 |
|  | **Ground water pump kit SB-GWP**<br>for Thermalia® twin (20-42),<br>twin H (13-22)<br>Contactor for actuation of a 3-phase ground water pump.<br>Ready to connect without thermal overload protection | 6041 092 |
|  | **Frost protection concentrate PowerCool DC 924-PXL**<br>on basis propylene glycol<br>completely mixable with water<br>with corrosion protection<br>Frost protection: −20 °C with<br>40 % mixture ratio<br>Content plastic container: 10 kg | 2009 987 |

**Part No.**

## Services

**Services and associated scope of services**
see separate catalogue “Hoval Services”

Commissioning by Hoval customer service is a prerequisite for warranty/guarantee activation.

## Thermalia® twin (20-42) with R410A

| **Type** | | **(20)** | **(26)** | **(36)** | **(42)** |
|---|---|---|---|---|---|
| **Brine/water application B0W35** | | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A++ | A+++/A++ | A+++/A+++ | A+++/A++ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 215 | 210 | 207 | 203 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 145 | 145 | 149 | 141 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C | SCOP | 5.3/3.7 | 5.2/3.7 | 5.4/3.9 | 5.3/3.6 |
| **Water/water application W10W35** | | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A+++ | A+++/A+++ | A+++/A+++ | A+++/A+++ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 280 | 276 | 272 | 260 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 183 | 180 | 192 | 176 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C | SCOP | 7.2/4.8 | 7.1/4.7 | 7.0/5.0 | 6.7/4.6 |
| **Max. performance data heating in acc. with EN 14511** | | | | | |
| • Heat output B0W35 | kW 1) | 20.4 | 26.2 | 35.3 | 42.0 |
| • Coefficient of performance B0W35 | COP | 4.9 | 4.8 | 5.0 | 4.8 |
| • Heat output W10W35 | kW | 27.3 | 35.1 | 46.4 | 55.4 |
| • Coefficient of performance W10W35 | COP | 6.6 | 6.4 | 6.4 | 6.1 |
| **Nominal volume flow rate and resistance brine/water heat pump** | | | | | |
| *Heating (Δt = 7 K)* | $m^3/h$ | 2.5 | 3.2 | 4.3 | 5.2 |
| • ΔP Pressure drop condenser | kPa | 5.3 | 7.3 | 5 | 5.3 |
| *Heat source (Δt = 3 K)* | $m^3/h$ | 5.3 | 6.7 | 9.2 | 10.8 |
| • ΔP Pressure drop evaporator | kPa | 12 | 13 | 14 | 14 |
| **Nominal volume flow rate and resistance water/water heat pump** | | | | | |
| *Heating (Δt = 7 K)* | $m^3/h$ | 3.4 | 4.3 | 5.7 | 6.8 |
| • ΔP Pressure drop condenser | kPa | 9.8 | 12.5 | 8.5 | 9.0 |
| *Heat source (Δt = 5 K)* 2) | $m^3/h$ | 4.0 | 5.1 | 6.8 | 8.0 |
| • ΔP Pressure drop evaporator | kPa | 5.0 | 5.5 | 6.5 | 6.0 |
| **Operating limit values** | | see diagrams of areas of application | | | |
| • Operating pressure max. water side | bar | 6 | 6 | 6 | 6 |
| • Operating pressure max. brine side | bar | 6 | 6 | 6 | 6 |
| • Installation place operation 3) | °C (min./max.) | 5/35 | 5/35 | 5/35 | 5/35 |
| • Storage | °C (min./max.) | −15/50 | −15/50 | −15/50 | −15/50 |
| **Cooling technical data** | | | | | |
| • Compressor | | 2 x spiral (scroll), hermetic | | | |
| • Refrigerant | | R410A | R410A | R410A | R410A |
| • Refrigerant filling quantity | kg | 6.5 | 7.1 | 8.2 | 9.0 |
| • Type of compressor oil | | Emkarate RL32 3MAF | | | |
| • Compressor oil filling quantity | l | 2.48 | 2.48 | 3.78 | 3.50 |
| • Condenser/evaporator | | Plate heat exchanger | | | |
| • Material | | Stainless steel V4A, AISI 316, 1.4401 | | | |
| • Connections | R | 1½″ | 1½″ | 2″ | 2″ |
| • Piping connections with flex. connecting hose | Rp | 1½″ | 1½″ | 2″ | 2″ |

| **Type** | | **(20)** | **(26)** | **(36)** | **(42)** |
|---|---|---|---|---|---|
| **Electrical data** [4] | | | | | |
| • Voltage | V | 3~400 | 3~400 | 3~400 | 3~400 |
| • Frequency | Hz | 50 | 50 | 50 | 50 |
| • Voltage range | V | 380-420 | 380-420 | 380-420 | 380-420 |
| • Max. compressor operating current | A | 13.1 | 16.9 | 24 | 29.3 |
| • Starting current with starting current limiter [5] | A | 25.4 | 32.7 | 44.5 | 55.1 |
| • Principal current (external protection) with brine systems | A | 16 | 20 | 32 | 32 |
| - Type | | C,D,K | C,D,K | C,D,K | C,D,K |
| • Principal current (external protection) with ground water systems | A | 20 | 25 | 32 | 40 |
| - Type | | C,D,K | C,D,K | C,D,K | C,D,K |
| • Control current (external protection) | A | 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 |
| **Weight** | | | | | |
| • Dimensions (H x W x D) | mm | see Dimensions | | | |
| • Minimum sizes of installation room (without ventilation) [6] | m³ | 14.8 | 16.1 | 18.6 | 20.5 |
| • Operating weight approx. | kg | 280 | 286 | 298 | 310 |

[1] kW = standard values according to EN 14511; values for B0W35 with 25 % monopolypropylene

[2] ∆T in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.

[3] < 10 °C: Crankcase heater is necessary

[4] Values for electrical data apply for supply voltage of 3~400 V

[5] Effective value, operating current compressor 1 + starting current with starting current limiter

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

## Thermalia® twin H (13-22) with R134a

| **Type** | | **H (13)** | **H (19)** | **H (22)** |
|---|---|---|---|---|
| **Brine/water application B0W35** | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A++ | A+++/A++ | A+++/A++ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 190 | 181 | 185 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 135 | 136 | 136 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C | SCOP | 5.0/3.6 | 4.7/3.6 | 4.8/3.6 |
| **Water/water application W10W35** | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A+++ | A+++/A+++ | A+++/A+++ |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 229 | 231 | 242 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 173 | 174 | 180 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C | SCOP | 5.9/4.5 | 6.0/4.5 | 6.2/4.7 |
| **Max. performance data heating in acc. with EN 14511** | | | | |
| • Heat output B0W35 | kW [1)] | 12.3 | 16.1 | 20.9 |
| • Coefficient of performance B0W35 | COP | 4.5 | 4.2 | 4.6 |
| • Heat output W10W35 | kW | 17.0 | 24.7 | 28.8 |
| • Coefficient of performance W10W35 | COP | 5.7 | 5.6 | 5.9 |
| **Nominal volume flow rate and resistance brine/water heat pump** | | | | |
| *Heating (Δt = 7 K)* | $m^3/h$ | 1.5 | 2 | 2.6 |
| • ΔP Pressure drop condenser | kPa | 1.6 | 2.0 | 2.3 |
| *Heat source (Δt = 3 K)* | $m^3/h$ | 3.1 | 4 | 5.3 |
| • ΔP Pressure drop evaporator | kPa | 4 | 5 | 6 |
| **Nominal volume flow rate and resistance water/water heat pump** | | | | |
| *Heating (Δt = 7 K)* | $m^3/h$ | 2.9 | 3.8 | 5 |
| • ΔP Pressure drop condenser | kPa | 3.1 | 3.9 | 4.4 |
| *Heat source (Δt = 5 K)* [2)] | $m^3/h$ | 2.4 | 3.1 | 4.1 |
| • ΔP Pressure drop evaporator | kPa | 2.4 | 3.0 | 3.6 |
| **Operating limit values** | | see diagrams of areas of application | | |
| • Operating pressure max. water side | bar | 6 | 6 | 6 |
| • Operating pressure max. brine side | bar | 6 | 6 | 6 |
| • Installation place operation [3)] | °C (min./max.) | 5/35 | 5/35 | 5/35 |
| • Storage | °C (min./max.) | −15/50 | −15/50 | −15/50 |
| **Cooling technical data** | | | | |
| • Compressor | | 2 x spiral (scroll), hermetic | | |
| • Refrigerant | | R134a | R134a | R134a |
| • Refrigerant filling quantity | kg | 4.8 | 5.9 | 6.5 |
| • Type of compressor oil | | Emkarate RL32 3MAF | | |
| • Compressor oil filling quantity | l | 2.90 | 3.78 | 3.78 |
| • Condenser/evaporator | | Plate heat exchanger | | |
| • Material | | Stainless steel V4A, AISI 316, 1.4401 | | |
| • Connections | R | 2″ | 2″ | 2″ |
| • Piping connections with flex. connecting hose | Rp | 2″ | 2″ | 2″ |

| **Type** | | **H (13)** | **H (19)** | **H (22)** |
|---|---|---|---|---|
| **Electrical data** [4] | | | | |
| • Voltage | V | 3~400 | 3~400 | 3~400 |
| • Frequency | Hz | 50 | 50 | 50 |
| • Voltage range | V | 380-420 | 380-420 | 380-420 |
| • Max. compressor operating current | A | 9.4 | 13.3 | 15.8 |
| • Starting current with starting current limiter [5] | A | 21.7 | 27.1 | 37.4 |
| • Principal current (external protection) with brine systems | A | 16 | 16 | 20 |
| - Type | | C,D,K | C,D,K | C,D,K |
| • Principal current (external protection) with ground water systems | A | 16 | 20 | 25 |
| - Type | | C,D,K | C,D,K | C,D,K |
| • Control current (external protection) | A | 13 | 13 | 13 |
| - Type | | B,C,D,K,Z | B,C,D,K,Z | B,C,D,K,Z |
| **Weight** | | | | |
| • Dimensions (H x W x D) | mm | | see Dimensions | |
| • Minimum sizes of installation room (without ventilation) [6] | m³ | 19.2 | 23.6 | 26.0 |
| • Operating weight approx. | kg | 273 | 283 | 293 |

[1] kW = standard values according to EN 14511; values for B0W35 with 25 % monopolypropylene

[2] ∆T in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.

[3] < 10 °C: Crankcase heater is necessary

[4] Values for electrical data apply for supply voltage of 3~400 V

[5] Effective value, operating current compressor 1 + starting current with starting current limiter

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

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

**Sound emission**
The effective sound pressure level [1] in the installation room depends on various factors such as room size, absorption capacity, reflection, free sound propagation, 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.

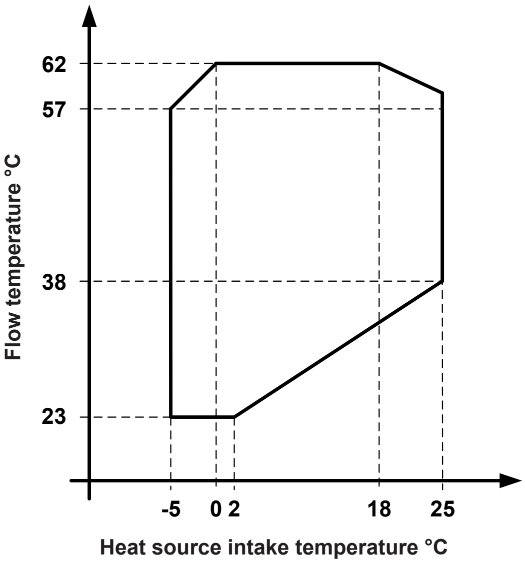
| Thermalia® twin (20-42) | | (20) | | (26) | | (36) | | (42) | |
|---|---|---|---|---|---|---|---|---|---|
| Thermalia® twin H (13-22) | | (13) | | (19) | | (22) | | | |
| Stage | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Sound power level dB(A) | dB(A) | 47 | 50 | 49 | 51 | 52 | 55 | 53 | 56 |
| Sound pressure 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)

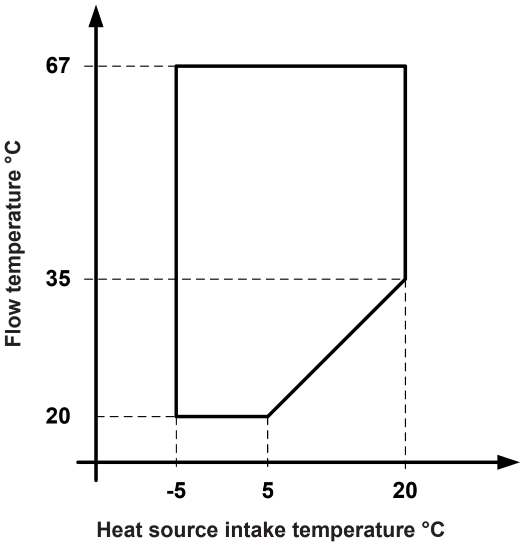
## Diagrams of areas of application

### Heating and hot water

**Thermalia® twin (20-42)**

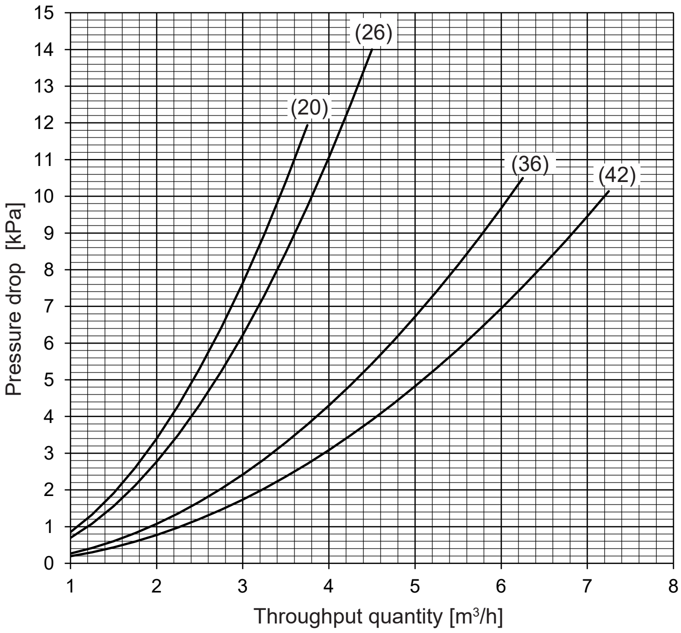


**Thermalia® twin H (13-22)**



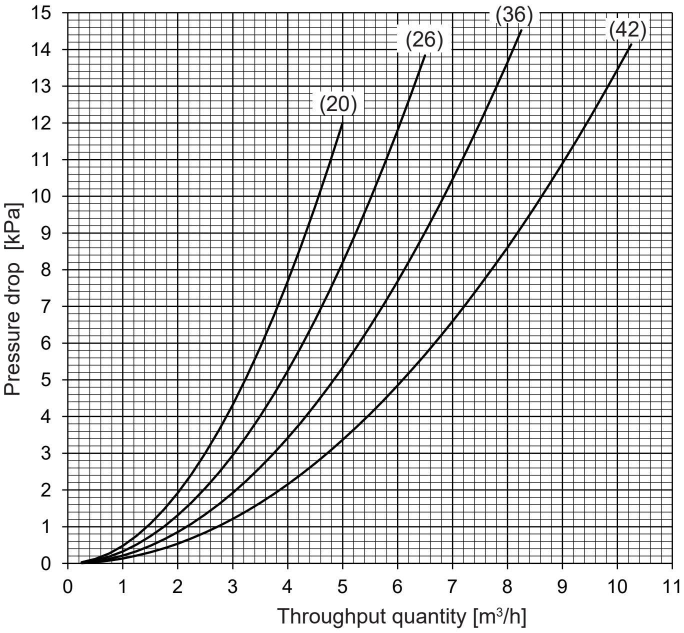
## Thermalia® twin (20-42)
## Heating

**Pressure drop condenser** with water



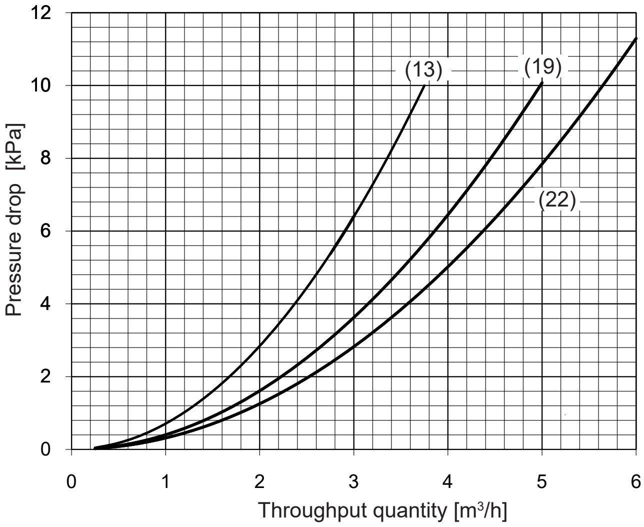
## Heat source

**Pressure drop evaporator**
with ethylene glycol 25 % (Antifrogen N)



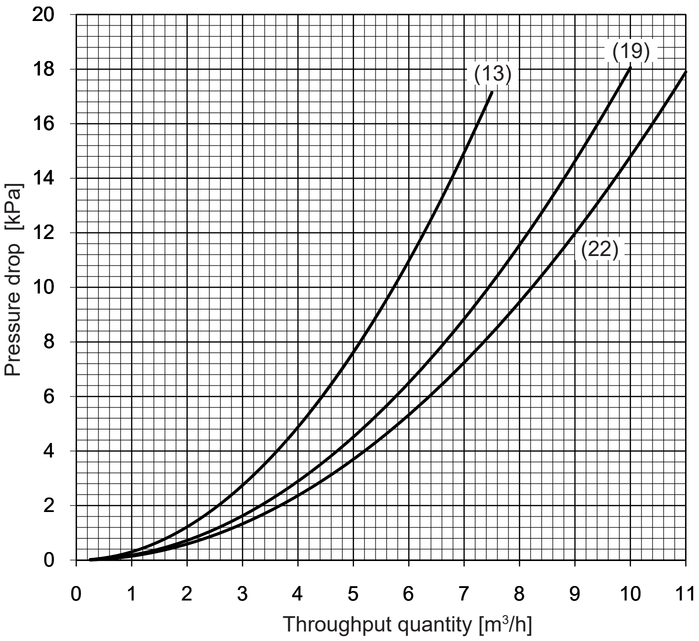
## Thermalia® twin H (13-22)
## Heating

**Pressure drop condenser** with water



## Heat source

**Pressure drop evaporator**
with ethylene glycol 25 % (Antifrogen N)



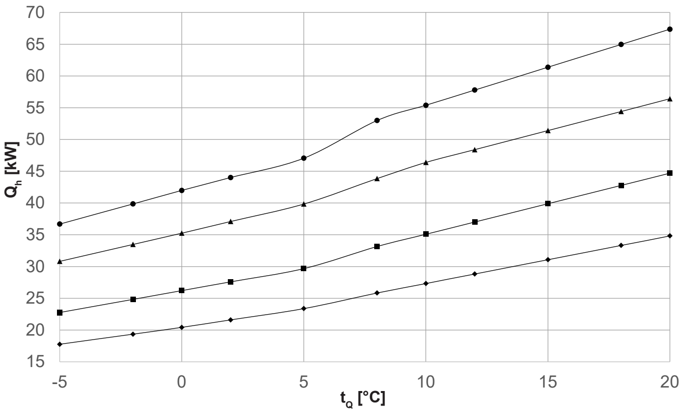
## Performance data – heating

Maximum heat output

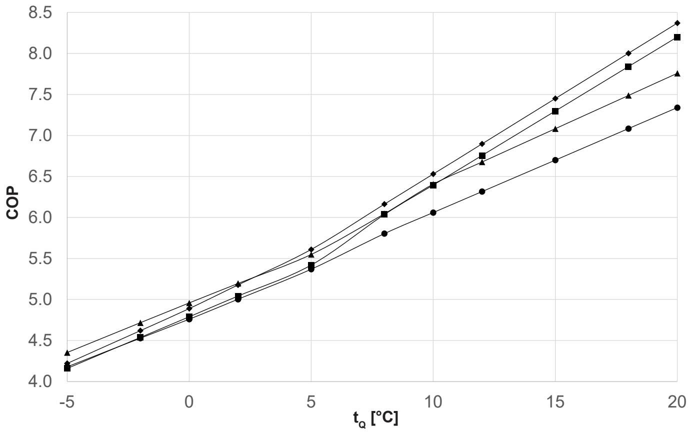
## Thermalia® twin (20-42)

Data according to EN 14511

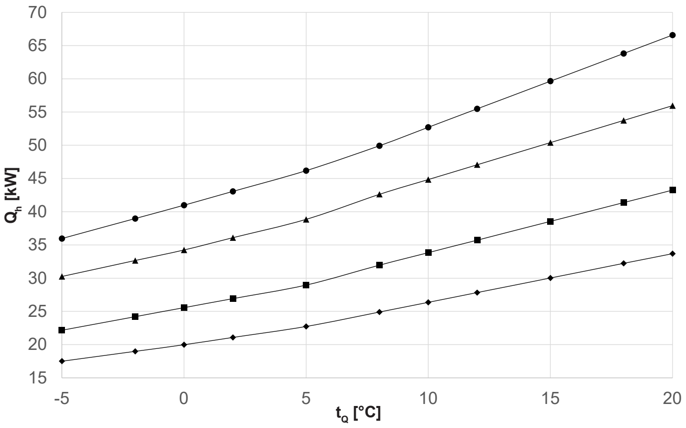
### Heat output – $t_{VL}$ 35 °C



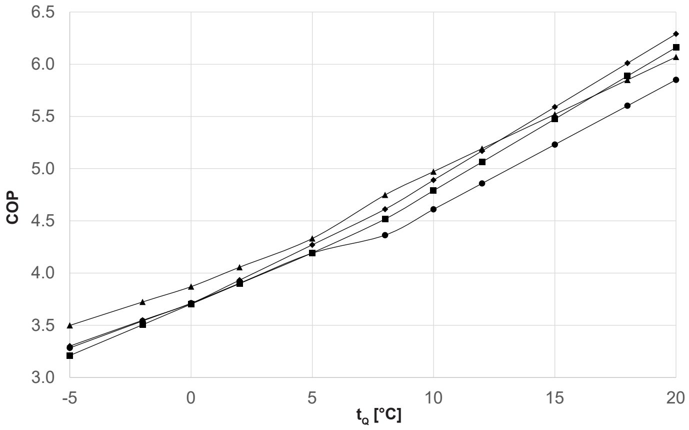
### Coefficient of performance – $t_{VL}$ 35 °C



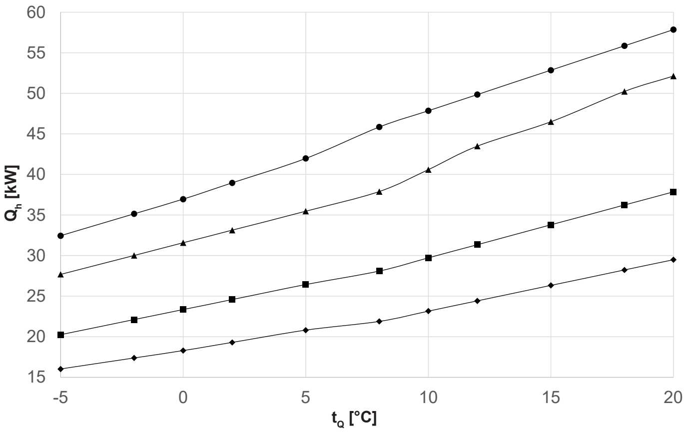
### Heat output – $t_{VL}$ 45 °C



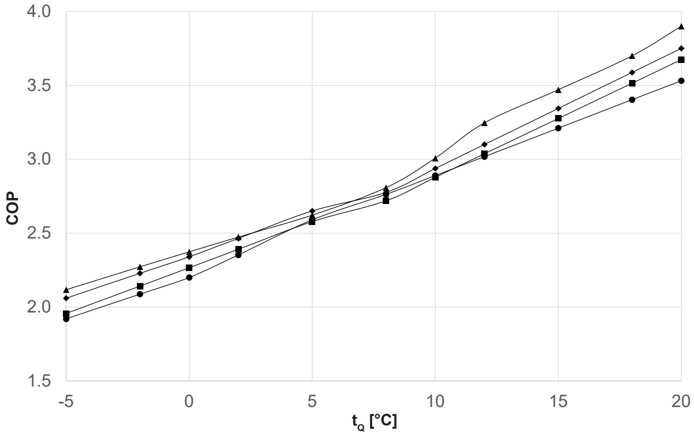
### Coefficient of performance – $t_{VL}$ 45 °C



### Heat output – $t_{VL}$ 60 °C



### Coefficient of performance – $t_{VL}$ 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)

## Performance data – heating
## Thermalia® twin (20-42)

Data according to EN 14511

| | | | | (20) | | | (26) | | | (36) | | | (42) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Stage 2 | | | Stage 2 | | | Stage 2 | | | Stage 2 | |
| $t_{VL}$ °C | | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 30 | Brine | −5 | 18.1 | 3.7 | 4.9 | 23.3 | 4.9 | 4.8 | 31.4 | 6.3 | 5.0 | 36.8 | 7.9 | 4.7 |
| | | −2 | 19.8 | 3.7 | 5.3 | 25.4 | 4.9 | 5.2 | 34.2 | 6.3 | 5.4 | 40.3 | 7.9 | 5.1 |
| | | 0 | 20.9 | 3.7 | 5.6 | 26.8 | 4.9 | 5.5 | 36.1 | 6.3 | 5.7 | 42.5 | 7.9 | 5.4 |
| | | 2 | 22.0 | 3.7 | 6.0 | 28.2 | 4.8 | 5.8 | 38.0 | 6.3 | 6.0 | 44.8 | 7.9 | 5.7 |
| | | 5 | 23.8 | 3.7 | 6.5 | 30.4 | 4.8 | 6.3 | 40.8 | 6.3 | 6.5 | 48.1 | 7.9 | 6.1 |
| | Water | 8 | 26.3 | 3.6 | 7.3 | 33.7 | 4.7 | 7.2 | 44.4 | 6.4 | 7.0 | 54.5 | 8.0 | 6.8 |
| | | 10 | 27.8 | 3.6 | 7.8 | 35.7 | 4.7 | 7.6 | 47.2 | 6.4 | 7.4 | 56.7 | 8.0 | 7.1 |
| | | 12 | 29.3 | 3.6 | 8.2 | 37.6 | 4.7 | 8.0 | 49.0 | 6.3 | 7.7 | 58.9 | 8.0 | 7.4 |
| | | 15 | 31.6 | 3.6 | 8.8 | 40.5 | 4.7 | 8.7 | 51.9 | 6.3 | 8.2 | 62.2 | 8.0 | 7.7 |
| | | 18 | 33.9 | 3.6 | 9.5 | 43.5 | 4.7 | 9.3 | 54.7 | 6.3 | 8.7 | 65.5 | 8.1 | 8.1 |
| | | 20 | 35.4 | 3.6 | 9.9 | 45.4 | 4.7 | 9.7 | 56.6 | 6.3 | 9.0 | 67.7 | 8.1 | 8.4 |
| 35 | Brine | −5 | 17.8 | 4.2 | 4.2 | 22.8 | 5.5 | 4.2 | 30.8 | 7.1 | 4.4 | 36.7 | 8.8 | 4.2 |
| | | −2 | 19.4 | 4.2 | 4.6 | 24.8 | 5.5 | 4.5 | 33.5 | 7.1 | 4.7 | 39.9 | 8.8 | 4.5 |
| | | 0 | 20.4 | 4.2 | 4.9 | 26.2 | 5.5 | 4.8 | 35.3 | 7.1 | 5.0 | 42.0 | 8.8 | 4.8 |
| | | 2 | 21.6 | 4.2 | 5.2 | 27.6 | 5.5 | 5.0 | 37.1 | 7.1 | 5.2 | 44.0 | 8.8 | 5.0 |
| | | 5 | 23.4 | 4.2 | 5.6 | 29.7 | 5.5 | 5.4 | 39.8 | 7.2 | 5.5 | 47.0 | 8.8 | 5.4 |
| | Water | 8 | 25.8 | 4.2 | 6.2 | 33.1 | 5.5 | 6.0 | 43.8 | 7.3 | 6.0 | 53.0 | 9.1 | 5.8 |
| | | 10 | 27.3 | 4.2 | 6.5 | 35.1 | 5.5 | 6.4 | 46.4 | 7.2 | 6.4 | 55.4 | 9.1 | 6.1 |
| | | 12 | 28.8 | 4.2 | 6.9 | 37.0 | 5.5 | 6.8 | 48.4 | 7.2 | 6.7 | 57.8 | 9.1 | 6.3 |
| | | 15 | 31.1 | 4.2 | 7.5 | 39.9 | 5.5 | 7.3 | 51.4 | 7.3 | 7.1 | 61.4 | 9.2 | 6.7 |
| | | 18 | 33.3 | 4.2 | 8.0 | 42.8 | 5.5 | 7.8 | 54.4 | 7.3 | 7.5 | 65.0 | 9.2 | 7.1 |
| | | 20 | 34.8 | 4.2 | 8.4 | 44.7 | 5.4 | 8.2 | 56.4 | 7.3 | 7.8 | 67.4 | 9.2 | 7.3 |
| 40 | Brine | −5 | 17.6 | 4.8 | 3.7 | 22.5 | 6.2 | 3.6 | 30.5 | 7.9 | 3.9 | 36.3 | 9.9 | 3.7 |
| | | −2 | 19.2 | 4.8 | 4.0 | 24.5 | 6.2 | 4.0 | 33.1 | 7.9 | 4.2 | 39.4 | 9.9 | 4.0 |
| | | 0 | 20.2 | 4.8 | 4.2 | 25.9 | 6.2 | 4.2 | 34.8 | 8.0 | 4.4 | 41.5 | 9.9 | 4.2 |
| | | 2 | 21.3 | 4.8 | 4.5 | 27.3 | 6.2 | 4.4 | 36.6 | 8.0 | 4.6 | 43.5 | 9.9 | 4.4 |
| | | 5 | 23.0 | 4.7 | 4.9 | 29.3 | 6.2 | 4.7 | 39.3 | 8.1 | 4.9 | 46.6 | 9.9 | 4.7 |
| | Water | 8 | 25.4 | 4.8 | 5.3 | 32.6 | 6.3 | 5.2 | 43.2 | 8.1 | 5.3 | 51.5 | 10.3 | 5.0 |
| | | 10 | 26.8 | 4.8 | 5.6 | 34.5 | 6.3 | 5.5 | 45.6 | 8.1 | 5.6 | 54.0 | 10.3 | 5.3 |
| | | 12 | 28.3 | 4.8 | 5.9 | 36.4 | 6.3 | 5.8 | 47.7 | 8.2 | 5.9 | 56.6 | 10.3 | 5.5 |
| | | 15 | 30.5 | 4.8 | 6.4 | 39.2 | 6.3 | 6.3 | 50.9 | 8.2 | 6.2 | 60.5 | 10.3 | 5.9 |
| | | 18 | 32.8 | 4.8 | 6.9 | 42.1 | 6.2 | 6.7 | 54.1 | 8.2 | 6.6 | 64.4 | 10.3 | 6.3 |
| | | 20 | 34.3 | 4.8 | 7.2 | 44.0 | 6.2 | 7.1 | 56.2 | 8.3 | 6.8 | 67.0 | 10.3 | 6.5 |
| 45 | Brine | −5 | 17.5 | 5.3 | 3.3 | 22.2 | 6.9 | 3.2 | 30.3 | 8.7 | 3.5 | 36.0 | 11.0 | 3.3 |
| | | −2 | 19.0 | 5.4 | 3.5 | 24.2 | 6.9 | 3.5 | 32.7 | 8.8 | 3.7 | 39.0 | 11.0 | 3.5 |
| | | 0 | 20.0 | 5.4 | 3.7 | 25.6 | 6.9 | 3.7 | 34.3 | 8.9 | 3.9 | 41.0 | 11.0 | 3.7 |
| | | 2 | 21.1 | 5.4 | 3.9 | 26.9 | 6.9 | 3.9 | 36.1 | 8.9 | 4.1 | 43.1 | 11.0 | 3.9 |
| | | 5 | 22.7 | 5.3 | 4.3 | 29.0 | 6.9 | 4.2 | 38.9 | 9.0 | 4.3 | 46.2 | 11.0 | 4.2 |
| | Water | 8 | 24.9 | 5.4 | 4.6 | 32.0 | 7.1 | 4.5 | 42.6 | 9.0 | 4.7 | 49.9 | 11.4 | 4.4 |
| | | 10 | 26.4 | 5.4 | 4.9 | 33.8 | 7.1 | 4.8 | 44.8 | 9.0 | 5.0 | 52.7 | 11.4 | 4.6 |
| | | 12 | 27.8 | 5.4 | 5.2 | 35.7 | 7.1 | 5.1 | 47.1 | 9.1 | 5.2 | 55.5 | 11.4 | 4.9 |
| | | 15 | 30.0 | 5.4 | 5.6 | 38.5 | 7.0 | 5.5 | 50.4 | 9.1 | 5.5 | 59.6 | 11.4 | 5.2 |
| | | 18 | 32.2 | 5.4 | 6.0 | 41.4 | 7.0 | 5.9 | 53.7 | 9.2 | 5.8 | 63.8 | 11.4 | 5.6 |
| | | 20 | 33.7 | 5.4 | 6.3 | 43.2 | 7.0 | 6.2 | 56.0 | 9.2 | 6.1 | 66.6 | 11.4 | 5.9 |
| 50 | Brine | −5 | 17.0 | 6.0 | 2.8 | 21.8 | 7.8 | 2.8 | 29.6 | 9.6 | 3.1 | 34.5 | 12.5 | 2.8 |
| | | −2 | 18.4 | 6.0 | 3.1 | 23.6 | 7.8 | 3.0 | 32.1 | 9.7 | 3.3 | 37.4 | 12.6 | 3.0 |
| | | 0 | 19.4 | 6.1 | 3.2 | 24.9 | 7.8 | 3.2 | 33.8 | 9.8 | 3.4 | 39.4 | 12.6 | 3.1 |
| | | 2 | 20.4 | 6.1 | 3.4 | 26.1 | 7.7 | 3.4 | 35.2 | 9.8 | 3.6 | 41.6 | 12.6 | 3.3 |
| | | 5 | 22.0 | 6.0 | 3.6 | 28.0 | 7.7 | 3.6 | 37.2 | 9.7 | 3.8 | 44.7 | 12.4 | 3.6 |
| | Water | 8 | 24.0 | 6.1 | 3.9 | 30.8 | 8.0 | 3.8 | 42.1 | 10.1 | 4.2 | 48.7 | 13.0 | 3.8 |
| | | 10 | 25.4 | 6.1 | 4.2 | 32.6 | 8.0 | 4.1 | 44.2 | 10.1 | 4.4 | 51.3 | 12.9 | 4.0 |
| | | 12 | 26.8 | 6.1 | 4.4 | 34.4 | 8.0 | 4.3 | 46.3 | 10.2 | 4.6 | 53.8 | 12.9 | 4.2 |
| | | 15 | 28.9 | 6.1 | 4.7 | 37.1 | 8.0 | 4.6 | 49.5 | 10.3 | 4.8 | 57.6 | 12.9 | 4.5 |
| | | 18 | 31.1 | 6.1 | 5.1 | 39.9 | 8.0 | 5.0 | 52.7 | 10.3 | 5.1 | 61.5 | 12.9 | 4.8 |
| | | 20 | 32.5 | 6.1 | 5.3 | 41.7 | 8.0 | 5.2 | 54.8 | 10.4 | 5.3 | 64.0 | 12.8 | 5.0 |

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

Further performance data – heating
see next page

**Observe daily power interruptions!**
see "Engineering heat pumps general"

## Performance data – heating
## Thermalia® twin (20-42)

Data according to EN 14511

| $t_{VL}$ °C | | $t_Q$ °C | $Q_h$ kW | (20) Stage 2 P kW | COP | $Q_h$ kW | (26) Stage 2 P kW | COP | $Q_h$ kW | (36) Stage 2 P kW | COP | $Q_h$ kW | (42) Stage 2 P kW | COP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55 | Brine | −5 | 16.4 | 6.6 | 2.5 | 21.4 | 8.8 | 2.4 | 29.0 | 10.6 | 2.7 | 33.0 | 14.1 | 2.3 |
| | | −2 | 17.8 | 6.7 | 2.7 | 23.1 | 8.7 | 2.7 | 31.6 | 10.7 | 3.0 | 35.9 | 14.2 | 2.5 |
| | | 0 | 18.8 | 6.7 | 2.8 | 24.2 | 8.6 | 2.8 | 33.3 | 10.8 | 3.1 | 37.9 | 14.2 | 2.7 |
| | | 2 | 19.8 | 6.7 | 2.9 | 25.3 | 8.6 | 2.9 | 34.2 | 10.6 | 3.2 | 40.1 | 14.1 | 2.8 |
| | | 5 | 21.3 | 6.7 | 3.2 | 26.9 | 8.5 | 3.2 | 35.6 | 10.4 | 3.4 | 43.3 | 13.9 | 3.1 |
| | Water | 8 | 23.1 | 6.9 | 3.4 | 29.7 | 9.0 | 3.3 | 41.5 | 11.2 | 3.7 | 47.5 | 14.5 | 3.3 |
| | | 10 | 24.5 | 6.9 | 3.6 | 31.4 | 9.0 | 3.5 | 43.6 | 11.2 | 3.9 | 49.9 | 14.5 | 3.5 |
| | | 12 | 25.8 | 6.9 | 3.8 | 33.2 | 9.0 | 3.7 | 45.6 | 11.3 | 4.0 | 52.2 | 14.4 | 3.6 |
| | | 15 | 27.9 | 6.8 | 4.1 | 35.8 | 9.0 | 4.0 | 48.6 | 11.4 | 4.3 | 55.7 | 14.4 | 3.9 |
| | | 18 | 29.9 | 6.8 | 4.4 | 38.3 | 9.0 | 4.3 | 51.7 | 11.5 | 4.5 | 59.1 | 14.3 | 4.1 |
| | | 20 | 31.2 | 6.8 | 4.6 | 40.1 | 8.9 | 4.5 | 53.7 | 11.5 | 4.7 | 61.5 | 14.3 | 4.3 |
| 60 | Brine | −5 | 16.0 | 7.8 | 2.1 | 20.3 | 10.4 | 2.0 | 27.7 | 13.1 | 2.1 | 32.5 | 16.9 | 1.9 |
| | | −2 | 17.4 | 7.8 | 2.2 | 22.1 | 10.3 | 2.1 | 30.0 | 13.2 | 2.3 | 35.2 | 16.8 | 2.1 |
| | | 0 | 18.3 | 7.8 | 2.3 | 23.3 | 10.3 | 2.3 | 31.6 | 13.3 | 2.4 | 37.0 | 16.8 | 2.2 |
| | | 2 | 19.3 | 7.8 | 2.5 | 24.6 | 10.3 | 2.4 | 33.1 | 13.4 | 2.5 | 39.0 | 16.6 | 2.4 |
| | | 5 | 20.8 | 7.9 | 2.6 | 26.4 | 10.3 | 2.6 | 35.5 | 13.5 | 2.6 | 42.0 | 16.2 | 2.6 |
| | Water | 8 | 21.9 | 7.9 | 2.8 | 28.1 | 10.3 | 2.7 | 37.9 | 13.5 | 2.8 | 45.9 | 16.6 | 2.8 |
| | | 10 | 23.2 | 7.9 | 2.9 | 29.7 | 10.3 | 2.9 | 40.6 | 13.5 | 3.0 | 47.9 | 16.6 | 2.9 |
| | | 12 | 24.4 | 7.9 | 3.1 | 31.4 | 10.3 | 3.0 | 43.5 | 13.4 | 3.2 | 49.9 | 16.5 | 3.0 |
| | | 15 | 26.3 | 7.9 | 3.3 | 33.8 | 10.3 | 3.3 | 46.5 | 13.4 | 3.5 | 52.9 | 16.5 | 3.2 |
| | | 18 | 28.2 | 7.9 | 3.6 | 36.2 | 10.3 | 3.5 | 50.2 | 13.0 | 3.7 | 55.9 | 16.4 | 3.4 |
| | | 20 | 29.5 | 7.9 | 3.8 | 37.9 | 10.3 | 3.7 | 52.1 | 13.1 | 3.9 | 57.9 | 16.4 | 3.5 |

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

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

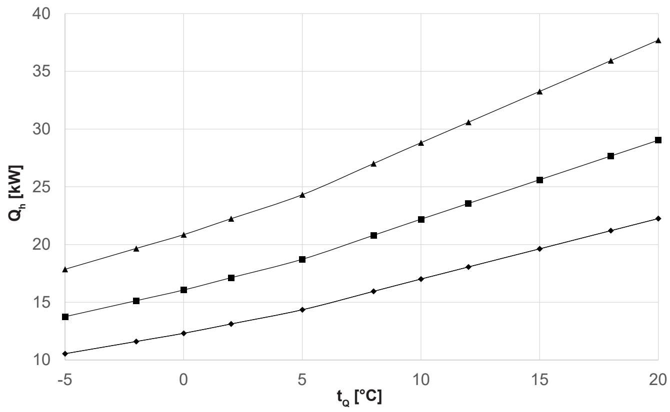
## Performance data – heating

Maximum heat output

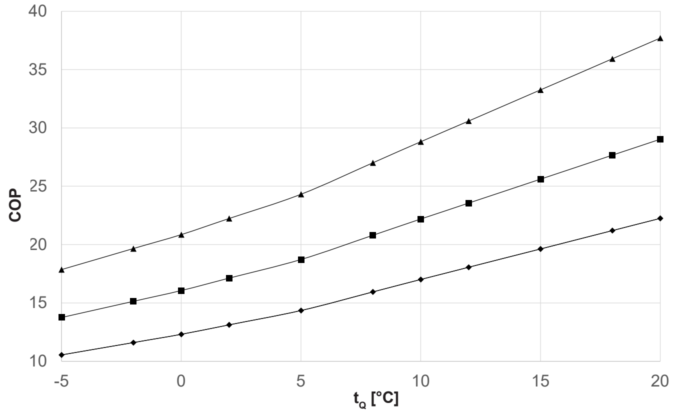
### Thermalia® twin H (13-22)

Data according to EN 14511

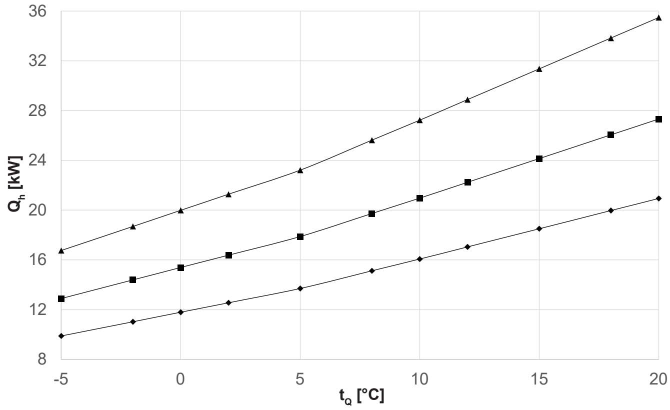
### Heat output – $t_{VL}$ 35 °C



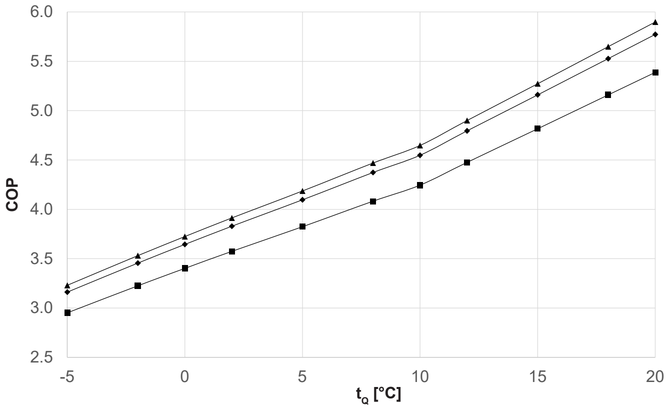
### Coefficient of performance – $t_{VL}$ 35 °C



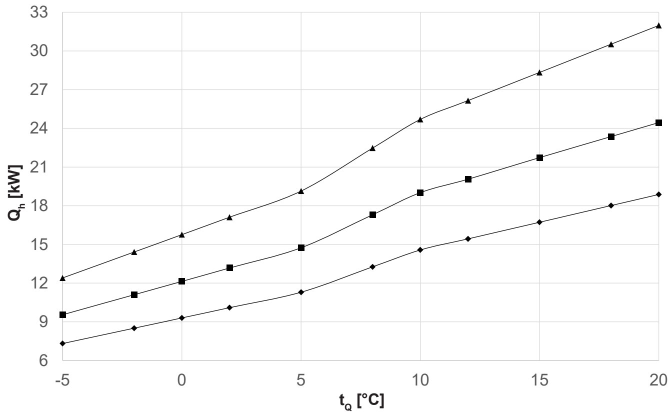
### Heat output – $t_{VL}$ 45 °C



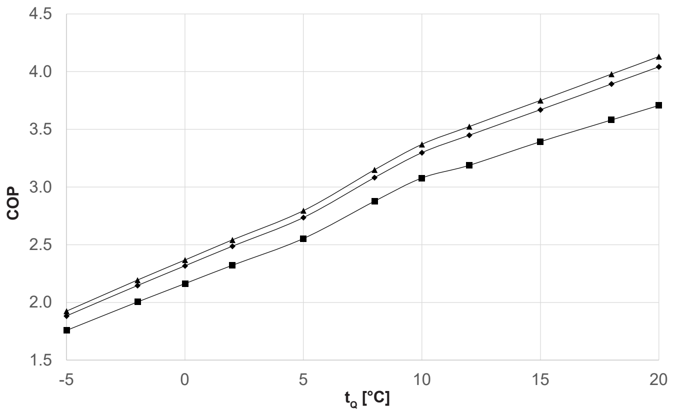
### Coefficient of performance – $t_{VL}$ 45 °C



### Heat output – $t_{VL}$ 60 °C



### Coefficient of performance – $t_{VL}$ 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)

## Performance data – heating
## Thermalia® twin H (13-22)

Data according to EN 14511

| | | | | H (13) Stage 2 | | | H (19) Stage 2 | | | H (22) Stage 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 30 | Brine | −5 | 10.9 | 2.4 | 4.5 | 14.1 | 3.5 | 4.0 | 18.4 | 4.0 | 4.6 |
| | | −2 | 11.9 | 2.5 | 4.8 | 15.4 | 3.6 | 4.3 | 20.1 | 4.1 | 4.9 |
| | | 0 | 12.6 | 2.5 | 5.0 | 16.3 | 3.7 | 4.5 | 21.3 | 4.1 | 5.1 |
| | | 2 | 13.4 | 2.5 | 5.3 | 17.4 | 3.7 | 4.7 | 22.7 | 4.2 | 5.4 |
| | | 5 | 14.7 | 2.5 | 5.8 | 19.1 | 3.7 | 5.1 | 24.9 | 4.2 | 5.9 |
| | Water | 8 | 16.4 | 2.6 | 6.3 | 21.2 | 3.8 | 5.6 | 27.7 | 4.3 | 6.4 |
| | | 10 | 17.5 | 2.7 | 6.6 | 22.7 | 3.9 | 5.8 | 29.6 | 4.4 | 6.7 |
| | | 12 | - | - | - | - | - | - | - | - | - |
| | | 15 | - | - | - | - | - | - | - | - | - |
| | | 18 | - | - | - | - | - | - | - | - | - |
| | | 20 | - | - | - | - | - | - | - | - | - |
| 35 | Brine | −5 | 10.5 | 2.7 | 4.0 | 13.8 | 3.7 | 3.7 | 17.9 | 4.4 | 4.0 |
| | | −2 | 11.6 | 2.7 | 4.3 | 15.1 | 3.8 | 4.0 | 19.7 | 4.5 | 4.4 |
| | | 0 | 12.3 | 2.7 | 4.5 | 16.1 | 3.8 | 4.2 | 20.9 | 4.6 | 4.6 |
| | | 2 | 13.1 | 2.8 | 4.7 | 17.1 | 3.9 | 4.4 | 22.2 | 4.6 | 4.8 |
| | | 5 | 14.3 | 2.8 | 5.1 | 18.7 | 3.9 | 4.8 | 24.3 | 4.7 | 5.2 |
| | Water | 8 | 15.9 | 2.9 | 5.5 | 20.8 | 4.0 | 5.1 | 27.0 | 4.8 | 5.6 |
| | | 10 | 17.0 | 3.0 | 5.8 | 22.2 | 4.1 | 5.4 | 28.8 | 4.9 | 5.9 |
| | | 12 | 18.1 | 3.0 | 6.1 | 23.6 | 4.2 | 5.7 | 30.6 | 4.9 | 6.2 |
| | | 15 | 19.6 | 3.0 | 6.5 | 25.6 | 4.2 | 6.1 | 33.3 | 5.0 | 6.6 |
| | | 18 | 21.2 | 3.1 | 6.9 | 27.7 | 4.3 | 6.5 | 35.9 | 5.1 | 7.1 |
| | | 20 | 22.2 | 3.1 | 7.2 | 29.0 | 4.3 | 6.7 | 37.7 | 5.1 | 7.4 |
| 45 | Brine | −5 | 9.9 | 3.1 | 3.2 | 12.9 | 4.4 | 3.0 | 16.8 | 5.2 | 3.2 |
| | | −2 | 11.0 | 3.2 | 3.5 | 14.4 | 4.5 | 3.2 | 18.7 | 5.3 | 3.5 |
| | | 0 | 11.8 | 3.2 | 3.6 | 15.4 | 4.5 | 3.4 | 20.0 | 5.4 | 3.7 |
| | | 2 | 12.6 | 3.3 | 3.8 | 16.4 | 4.6 | 3.6 | 21.3 | 5.4 | 3.9 |
| | | 5 | 13.7 | 3.3 | 4.1 | 17.9 | 4.7 | 3.8 | 23.2 | 5.5 | 4.2 |
| | Water | 8 | 15.1 | 3.5 | 4.4 | 19.7 | 4.8 | 4.1 | 25.6 | 5.7 | 4.5 |
| | | 10 | 16.1 | 3.5 | 4.5 | 21.0 | 4.9 | 4.2 | 27.2 | 5.9 | 4.6 |
| | | 12 | 17.0 | 3.6 | 4.8 | 22.2 | 5.0 | 4.5 | 28.9 | 5.9 | 4.9 |
| | | 15 | 18.5 | 3.6 | 5.2 | 24.1 | 5.0 | 4.8 | 31.4 | 5.9 | 5.3 |
| | | 18 | 20.0 | 3.6 | 5.5 | 26.0 | 5.1 | 5.2 | 33.8 | 6.0 | 5.6 |
| | | 20 | 20.9 | 3.6 | 5.8 | 27.3 | 5.1 | 5.4 | 35.5 | 6.0 | 5.9 |
| 50 | Brine | −5 | 9.0 | 3.4 | 2.7 | 11.8 | 4.7 | 2.5 | 15.3 | 5.6 | 2.7 |
| | | −2 | 10.2 | 3.4 | 3.0 | 13.8 | 4.8 | 2.8 | 17.3 | 5.7 | 3.0 |
| | | 0 | 11.0 | 3.5 | 3.1 | 14.3 | 4.9 | 2.9 | 18.6 | 5.8 | 3.2 |
| | | 2 | 11.7 | 3.5 | 3.3 | 15.3 | 4.9 | 3.1 | 19.9 | 5.9 | 3.4 |
| | | 5 | 12.9 | 3.6 | 3.6 | 16.8 | 5.0 | 3.3 | 21.9 | 6.0 | 3.7 |
| | Water | 8 | 14.5 | 3.7 | 3.9 | 18.9 | 5.2 | 3.6 | 24.6 | 6.2 | 4.0 |
| | | 10 | 15.6 | 3.8 | 4.1 | 20.3 | 5.4 | 3.8 | 26.4 | 6.3 | 4.2 |
| | | 12 | 16.5 | 3.9 | 4.3 | 21.5 | 5.4 | 4.0 | 28.0 | 6.4 | 4.4 |
| | | 15 | 17.9 | 3.9 | 4.6 | 23.4 | 5.5 | 4.3 | 30.3 | 6.5 | 4.7 |
| | | 18 | 19.3 | 4.0 | 4.9 | 25.2 | 5.5 | 4.6 | 32.7 | 6.6 | 5.0 |
| | | 20 | 20.2 | 4.0 | 5.1 | 26.4 | 5.6 | 4.8 | 34.3 | 6.6 | 5.2 |
| 55 | Brine | −5 | 8.2 | 3.6 | 2.2 | 10.7 | 5.1 | 2.1 | 13.9 | 6.0 | 2.3 |
| | | −2 | 9.3 | 3.7 | 2.5 | 12.2 | 5.2 | 2.4 | 15.8 | 6.1 | 2.6 |
| | | 0 | 10.1 | 3.8 | 2.7 | 13.2 | 5.2 | 2.5 | 17.2 | 6.2 | 2.8 |
| | | 2 | 10.9 | 3.8 | 2.9 | 14.2 | 5.3 | 2.7 | 18.5 | 6.3 | 2.9 |
| | | 5 | 12.1 | 3.9 | 3.1 | 15.8 | 5.4 | 2.9 | 20.5 | 6.4 | 3.2 |
| | Water | 8 | 13.9 | 4.0 | 3.5 | 18.1 | 5.6 | 3.2 | 23.5 | 6.7 | 3.5 |
| | | 10 | 15.1 | 4.1 | 3.7 | 19.7 | 5.8 | 3.4 | 25.5 | 6.8 | 3.7 |
| | | 12 | 16.0 | 4.2 | 3.8 | 20.8 | 5.9 | 3.5 | 27.1 | 6.9 | 3.9 |
| | | 15 | 17.3 | 4.2 | 4.1 | 22.5 | 6.0 | 3.8 | 29.3 | 7.0 | 4.2 |
| | | 18 | 18.7 | 4.3 | 4.4 | 24.2 | 6.1 | 4.0 | 31.6 | 7.1 | 4.4 |
| | | 20 | 19.6 | 4.3 | 4.5 | 25.3 | 6.1 | 4.2 | 33.1 | 7.2 | 4.6 |

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

Further performance data – heating
see next page

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

## Performance data – heating
## Thermalia® twin H (13-22)

Data according to EN 14511

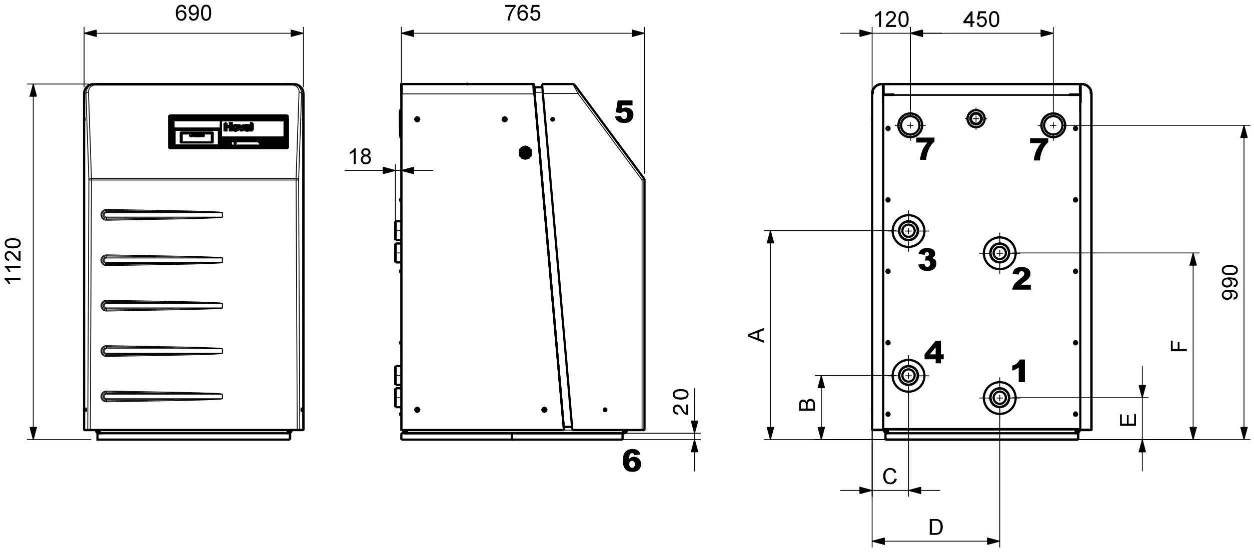
| | | | | H (13)<br>Stage 2 | | | H (19)<br>Stage 2 | | | H (22)<br>Stage 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 60 | Brine | −5 | 7.3 | 3.9 | 1.9 | 9.5 | 5.4 | 1.8 | 12.4 | 6.4 | 1.9 |
| | | −2 | 8.5 | 4.0 | 2.1 | 11.1 | 5.5 | 2.0 | 14.4 | 6.6 | 2.2 |
| | | 0 | 9.3 | 4.0 | 2.3 | 12.1 | 5.6 | 2.2 | 15.8 | 6.7 | 2.4 |
| | | 2 | 10.1 | 4.1 | 2.5 | 13.2 | 5.7 | 2.3 | 17.1 | 6.7 | 2.5 |
| | | 5 | 11.3 | 4.1 | 2.7 | 14.7 | 5.8 | 2.6 | 19.1 | 6.8 | 2.8 |
| | Water | 8 | 13.3 | 4.3 | 3.1 | 17.3 | 6.0 | 2.9 | 22.5 | 7.1 | 3.1 |
| | | 10 | 14.6 | 4.4 | 3.3 | 19.0 | 6.2 | 3.1 | 24.7 | 7.3 | 3.4 |
| | | 12 | 15.4 | 4.5 | 3.4 | 20.1 | 6.3 | 3.2 | 26.2 | 7.4 | 3.5 |
| | | 15 | 16.7 | 4.6 | 3.7 | 21.7 | 6.4 | 3.4 | 28.3 | 7.6 | 3.7 |
| | | 18 | 18.0 | 4.6 | 3.9 | 23.4 | 6.5 | 3.6 | 30.5 | 7.7 | 4.0 |
| | | 20 | 18.9 | 4.7 | 4.0 | 24.5 | 6.6 | 3.7 | 32.0 | 7.8 | 4.1 |
| 65 | Brine | −5 | 6.5 | 4.1 | 1.6 | 8.4 | 5.8 | 1.5 | 11.0 | 6.9 | 1.6 |
| | | −2 | 7.7 | 4.2 | 1.8 | 10.0 | 5.9 | 1.7 | 13.0 | 7.0 | 1.9 |
| | | 0 | 8.5 | 4.3 | 2.0 | 11.1 | 6.0 | 1.9 | 14.4 | 7.1 | 2.0 |
| | | 2 | 9.3 | 4.3 | 2.1 | 12.1 | 6.0 | 2.0 | 15.7 | 7.2 | 2.2 |
| | | 5 | 10.5 | 4.4 | 2.4 | 13.7 | 6.1 | 2.2 | 17.8 | 7.3 | 2.4 |
| | Water | 8 | 12.6 | 4.6 | 2.8 | 16.5 | 6.4 | 2.6 | 21.4 | 7.6 | 2.8 |
| | | 10 | 14.1 | 4.7 | 3.0 | 18.4 | 6.6 | 2.8 | 23.9 | 7.8 | 3.1 |
| | | 12 | 14.9 | 4.8 | 3.1 | 19.4 | 6.7 | 2.9 | 25.2 | 7.9 | 3.2 |
| | | 15 | 16.1 | 4.9 | 3.3 | 21.0 | 6.9 | 3.1 | 27.3 | 8.1 | 3.4 |
| | | 18 | 17.4 | 5.0 | 3.5 | 22.6 | 7.0 | 3.2 | 29.4 | 8.3 | 3.6 |
| | | 20 | 18.2 | 5.0 | 3.6 | 23.6 | 7.1 | 3.3 | 30.8 | 8.4 | 3.7 |

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

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

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

(Dimensions in mm)



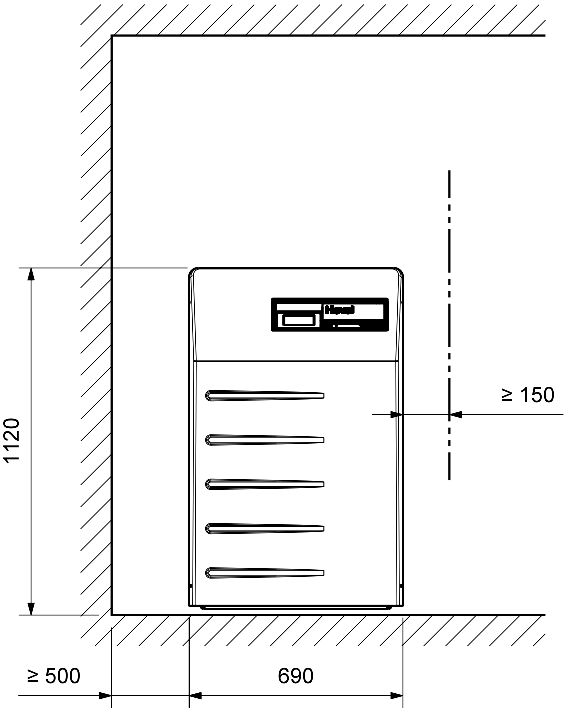
| Type | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Thermalia® twin (20-42) | 741 | 222 | 274.5 | 481.5 | 170 | 689 |
| Thermalia® twin H (13-22) | 658 | 202 | 114 | 401 | 132 | 588 |

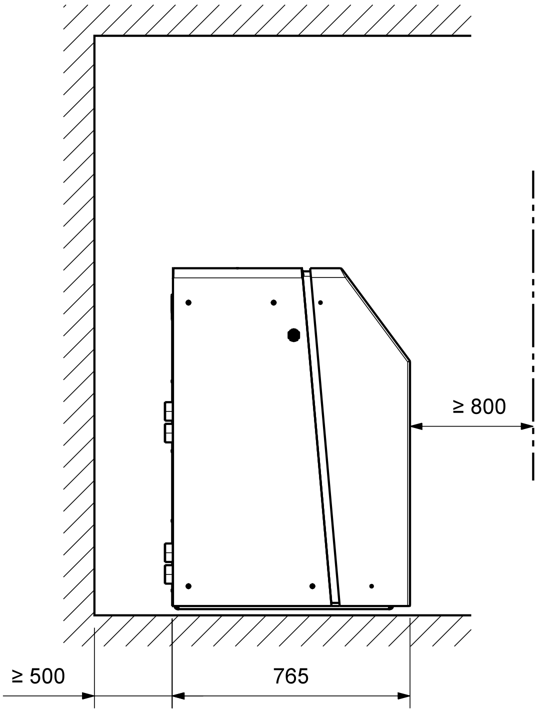
1 Heat source outlet from the heat pump
Thermalia® twin (20,26): R 1½″
Thermalia® twin (36,42), twin H (13,19,22): R 2″
2 Heat source inlet into the heat pump
Thermalia® twin (20,26): R 1½″
Thermalia® twin (36,42), twin H (13,19,22): R 2″
3 Heating flow
Thermalia® twin (20,26): R 1½″
Thermalia® twin (36,42), twin H (13,19,22): R 2″
4 Heating return
Thermalia® twin (20,26): R 1½″
Thermalia® twin (36,42), twin H (13,19,22): R 2″
5 Operating panel
6 Vibration damping
7 Electrical connection

### Space requirement

Required wall distance in mm for operation and maintenance
(Dimensions in mm)

| Front | Rear | Right or left side |
|---|---|---|
| min. 800 | min. 500 | min. 500 |





Hoval

# Hoval quality.
You can count on us.

Hoval is one of the leading international companies for heating and indoor climate solutions. Drawing on more than 80 years of experience and benefiting from a close-knit team culture, the Hoval Group delivers exciting solutions and develops technically superior products. This leadership role requires a sense of responsibility for energy and the environment, which is expressed in an intelligent combination of different heating technologies and customised indoor climate solutions.

Hoval also provides personal consultations and comprehensive customer service. With around 2500 employees in 15 companies around the world, Hoval sees itself not as a conglomerate, but as a large family that thinks and acts globally.
Hoval heating and indoor climate solutions are currently exported to more than 50 countries.

## Responsibility for energy and environment

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Newark Notts. NG 24 1JN
+44 1636 672 711
hoval.co.uk

2026 - 04 | Subject to modifications

Your Hoval partner

Hoval

CATALOGUE

# Hoval Thermalia® dual

## Brine/water-water/water heat pump
Thermalia® dual (55-140)
Thermalia® dual H (35-90)
Thermalia® dual R (55-140)

**Hoval** | Responsibility for energy and environment

## Table of contents

## 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 refrigeration 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
- Refrigerants
  Thermalia® dual, dual R (55-140) with 410A
  Thermalia® dual H (35-90) with R134a
- Heat pump wired and ready to connect
- Operating side on front with integrated TopTronic® E controller

*Electrical connections*

- Connection at rear

*Delivery*

- Heat pump pre-assembled and packed

*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)

**Model range**

| Thermalia® dual type | Water/ water | | Brine/ water | | 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 |
| (55) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{++}$ | 2 x R410A | - | 62 | 57.9 | 76.9 | - | - |
| (70) | | | $A^{+++}$ | $A^{++}$ | 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 | - | - |
| H (35) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{++}$ | 2 x R134a | - | 70 | 34.9 | 49.3 | - | - |
| H (50) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{++}$ | 2 x R134a | - | 70 | 52.5 | 71.8 | - | - |
| H (70) | | | $A^{+++}$ | $A^{++}$ | 2 x R134a | - | 70 | 70.9 | 97.1 | - | - |
| H (90) | | | | | 2 x R134a | - | 70 | 87.3 | 119.5 | - | - |
| R (55) | $A^{+++}$ | $A^{+++}$ | $A^{+++}$ | $A^{++}$ | 2 x R410A | 7 | 62 | 57.9 | 76.7 | 64.7 | 81.1 |
| R (70) | | | $A^{+++}$ | $A^{++}$ | 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 |
| | $A^{+++}$ → D | $A^{+++}$ → D | $A^{+++}$ → D | $A^{+++}$ → D | | | | | | | |

Energy efficiency class of the compound system with control

*TopTronic® E basic module heat generator TTE-WEZ*

- Control functions integrated for
  - 1 heating/cooling circuit with mixer
  - 1 heating/cooling circuit without mixer
  - 1 hot water charging circuit
  - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- RAST 5 basic plug set

*Options for TopTronic® E controller*

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

*Number of modules that can be additionally installed in the heat generator:*

- 1 module expansion and 1 controller module
  **or**
- 2 controller modules

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

**Further information about the TopTronic® E**
see “Controls”

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

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

**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems
With Hoval Integrate, Hoval heat pumps with TopTronic® E control can be integrated into home automation and energy management systems via open, standardised interfaces.
Predefined templates, plugins and Smart Grid integrations simplify implementation and enable intelligent decisions.
Functions such as PV surplus utilisation, dynamic electricity tariffs, grid-friendly control, load management or simple visualisations for analysis purposes can be created and operated individually.
System integrators are free to choose their desired system and benefit from broad compatibility and future-proof sector coupling.
Thanks to integrated building automation, end customers benefit from operating cost savings and cross-system functions.
Practical guide videos provide additional support for integration and commissioning – step by step and with a practical orientation.

**Notice**
Only available in Austria, Germany and Switzerland

## Brine/water or water/water heat pump

### Hoval Thermalia® dual

Refrigerant R410A, 2 circuits
**Max. flow temperature 62 °C**

| Thermalia® dual type | Heat output B0W35 kW | W10W35 kW | Part No. |
|---|---|---|---|
| (55) | 57.9 | 76.9 | 7018 997 |
| (70) | 73.2 | 97.2 | 7018 998 |
| (85) | 84.8 | 112.8 | 7018 999 |
| (110) | 113.4 | 149.1 | 7014 294 |
| (140) | 137.8 | 181.1 | 7014 295 |

### Hoval Thermalia® dual H

Refrigerant R134a, 2 circuits.
**Max. flow temperature 70 °C**

| Thermalia® dual H type | Heat output B0W35 kW | W10W35 kW | Part No. |
|---|---|---|---|
| H (35) | 34.9 | 49.3 | 7019 003 |
| H (50) | 52.5 | 71.8 | 7019 004 |
| H (70) | 70.9 | 97.1 | 7019 005 |
| H (90) | 87.3 | 119.5 | 7014 299 |

### Hoval Thermalia® dual R

Refrigerant R410A, 2 circuits
**Max. flow temperature 62 °C**

| Thermalia® dual R type | Cooling capacity [1] B17W9 kW | B25W18 kW | Part No. |
|---|---|---|---|
| R (55) | 64.7 | 81.1 | 7019 000 |
| R (70) | 86.2 | 108.3 | 7019 001 |
| R (85) | 107.0 | 127.7 | 7019 002 |
| R (110) | 138.1 | 165.0 | 7016 553 |
| R (140) | 156.9 | 183.9 | 7016 554 |

[1] Heat output: see Hoval Thermalia® dual

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

**Further information**
see “Description”

**Further accessories can be found under the following rubrics:**
- Calorifiers/buffer storage tanks:
  - Calorifiers
  - Buffer storage tanks
  - Combination storage tanks
  - Electric heating elements
- Heating armature groups/heating distributors
- Various system components:
  - 2-way and 3-way valves
  - 3-way mixers
  - 2-way and 3-way ball valves
  - Motor drives and butterfly valves
  - Diaphragm pressure expansion tanks
  - Fittings
  - Plate heat exchangers
- Circulating pumps

**Installation**
The heat pump may be tilted by a maximum of 30° during transportation and installation.

**Notice**
Only available in Austria, Germany and Switzerland

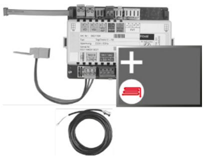
**Hoval Integrate**
For seamless integration into intelligent home automation and energy management systems

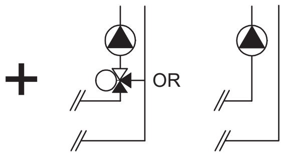
**Further information**
see “Description”

**Part No.**

## TopTronic® E module expansions

for TopTronic® E basic module heat generator



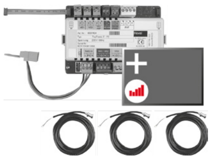


**TopTronic® E module expansion heating circuit TTE-FE HK**
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer

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

6034 576

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

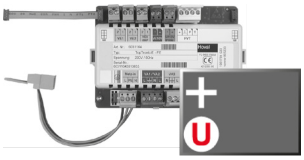


**TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ**
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit without mixer or
- 1 heating/cooling circuit with mixer incl. energy balancing in each case

Consisting of:
- Fitting accessories
- 3 contact sensors ALF/2P/4/T, L = 4.0 m
- Plug set FE module

6037 062

**Notice**
Suitable flow rate sensors (pulse sensors) must be provided on site.



**TopTronic® E module expansion Universal TTE-FE UNI**
Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

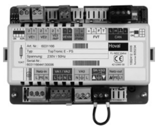
Consisting of:
- Fitting accessories
- Plug set FE module

6034 575

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

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

## Accessories for TopTronic® E



**TopTronic® E controller modules**

| | | Part No. |
|---|---|---|
| TTE-HK/WW | TopTronic® E heating circuit/ hot water module | 6034 571 |
| TTE-SOL | TopTronic® E solar module | 6037 058 |
| TTE-PS | TopTronic® E buffer module | 6037 057 |
| TTE-MWA | TopTronic® E measuring module | 6034 574 |

**Supplementary plug set**

| | Part No. |
|---|---|
| for basic module heat generator TTE-WEZ | 6034 499 |
| for controller modules and module expansion TTE-FE HK | 6034 503 |

**TopTronic® E room control modules**

| | | Part No. |
|---|---|---|
| TTE-RBM | TopTronic® E room control modules | |
| | easy white | 6037 071 |
| | comfort white | 6037 069 |
| | comfort black | 6037 070 |

**Enhanced language package TopTronic® E** 6039 253

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

**HovalConnect**

| | Part No. |
|---|---|
| HovalConnect LAN | 6049 496 |
| HovalConnect WLAN | 6049 498 |
| HovalConnect Modbus | 6049 501 |
| HovalConnect KNX | 6049 593 |

**TopTronic® E interface modules**

| | Part No. |
|---|---|
| GLT module 0-10 V | 6034 578 |

**TopTronic® E sensors**

| | | Part No. |
|---|---|---|
| AF/2P/K | Outdoor sensor<br>H x W x D = 80 x 50 x 28 mm | 2055 889 |
| TF/2P/5/6T | Immersion sensor, L = 5.0 m | 2055 888 |
| ALF/2P/4/T | Contact sensor, L = 4.0 m | 2056 775 |
| TF/1.1P/2.5S/6T | Collector sensor, L = 2.5 m | 2056 776 |

**Bivalent switch**

for various release or switching functions

| | Part No. |
|---|---|
| Bivalent switch 1-piece | 2056 858 |
| Bivalent switch 2-piece | 2061 826 |

**System casing**

| | Part No. |
|---|---|
| System casing 182 mm | 6038 551 |
| System casing 254 mm | 6038 552 |

**TopTronic® E wall casing**

| | | Part No. |
|---|---|---|
| WG-190 | Wall casing small | 6052 983 |
| WG-360 | Wall casing medium | 6052 984 |
| WG-360 BM | Wall casing medium with control module cut-out | 6052 985 |
| WG-510 | Wall casing large | 6052 986 |
| WG-510 BM | Wall casing large with control module cut-out | 6052 987 |

**Further information**
see “Controls”

**Part No.**

## Accessories

**Hose set SPCH50-50-10-4**
for Thermalia® dual (55-85),
dual H (35-70), dual R (55-85)
Consisting of:
- 4 reinforced hoses PN 10 DN 50 2″ IT
insulated for brine and heating side
flat-sealing with union nut,
diffusion-proof
- Length: 1.0 m
- Seals

6058 825

**Set of sound attenuation feet 65/75**
for Thermalia® dual (55,70),
dual 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
Casing material: galvanised steel,
chromated

6045 228

**Set of sound attenuation feet 45/55**
for Thermalia® dual (85-140),
dual H (70,90), dual R (85-140)
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
Casing material: galvanised steel,
chromated

6045 229

*Accessories water/water and passive cooling*

**Flange compensator set DN 80 PN 6**
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
DN 80 PN 6 without fittings
Structural length: 130 mm

6040 025

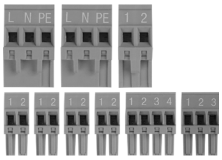
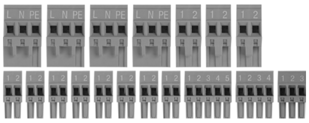
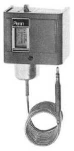
**Bimetallic thermometer**
Used for brine/ground water
Flow and return
Class 1 acc. to DIN 16203
Nominal size 63 x 63 mm
Display range: −20 ... 40 °C
Protective sleeve PN 40,
G ½″ B x 9 mm BS
Price per item

2030 440

**Float body flow meter**
Bistable Reed contact as NC contact
Nominal pressure: 10 bar
Installation length: 335 mm

| Area of application<br>l/h | °C | Connection | Part No. |
|---|---|---|---|
| 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. |
|---|---|---|
|  | **Flow rate sensor DN 50 2-1000 l/min**<br>G 2½″ incl. connection cable 1 metre<br>For water + glycol mix<br>kvs 226.8 m³/h<br>0.5-4.5 V: output (2-1000 l/min)<br>Pulse output: 20 pulses/litre<br>Medium temperature −20 ... 110 °C < 5 min<br>Ambient temperature: −20 ... 80 °C<br>IP44, max. 25 bar<br>Brass casing<br>H x W x D: 93.9 x 107.5 x 170 mm<br>Seal not included in<br>delivery (70 x 59 x 2 mm)<br>During installation,<br>take account of settling section<br>5 x ID (inlet) and 1 x ID (outlet) | 2084 981 |
|  | **Expansion connector set**<br>for the automatic heat pump device ECR461<br>Use for additional function:<br>- Flow monitor<br>- Crankcase bottom heating<br>- Condensation drain heating<br>- Heat quantity metering<br>Plugs:<br>- 1 230 V digital input<br>- 2 230 V outputs<br>- 4 low-voltage inputs<br>- 1 ratio. Input<br>- 1 4-pin low-voltage input | 6032 509 |
|  | **Universal plug set**<br>for automatic heat pump device ECR461<br>Plugs:<br>- 3 digital 230 V inputs<br>- 4 230 V outputs<br>- 6 low-voltage inputs<br>- 2 low-voltage outputs<br>- 1 ratio. input<br>- 1 electronic expansion valve<br>- 1 4-pin low-voltage input | 6032 510 |
|  | **Frost protection temperature switch 270XT-95068**<br>to heat source ground water<br>Type of protection: IP40<br>Area of application: −24 ... 18 °C | 2007 313 |

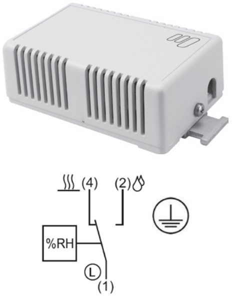
**Part No.**

*Necessary at boiler room temperatures < 10 °C*

**Crankcase heater**
for Belaria® twin I/IR (20-30),
Thermalia® comfort (8-17),
Thermalia® comfort H (7,10)
(1 piece required per heat pump)

Thermalia® twin (20-42),
Thermalia® twin H (13-22),
Thermalia® dual, dual H, dual R
(2 pieces required per heat pump)

6019 718



**Dewpoint monitor (TPW)**
for monitoring the formation of condensation in a compartment, with gold contacts, can be installed as required for pipes up to Ø 50 mm
The installation location must be selected in such a way that a representative humidity measurement is guaranteed i.e. the room air must flow unhindered through the slots in the housing to the measuring element inside the casing.
The TPW does not require supply voltage or auxiliary energy and should be mounted in an air flow with an air velocity of at least 0.2 m/s.
Control range: 50 ... 90 % RH
Max. switch power: 100 mA/250 V AC
Operating temperature: 0 … 60 °C
Dimensions: 85 x 55 x 33 mm
Weight: approx. 92 g
Type of protection: IP20

2070 911

**Notice**
The dewpoint monitor is the only safety equipment in cooling systems and is always mandatory, to prevent damage caused by condensing water in surface cooling systems (floor, wall, ceiling cooling)!
This applies to both active and passive cooling systems.

**Part No.**

## Services

**Services and associated scope of services**
see separate catalogue “Hoval Services”

Commissioning by Hoval customer service is a prerequisite for warranty/guarantee activation.

## Thermalia® dual (55-140) with R410A

| **Type** | | **(55)** | **(70)** | **(85)** | **(110)** | **(140)** |
|---|---|---|---|---|---|---|
| **Brine/water application B0W35** | | | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A++ | A+++/A++ | - | - | - |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 195 | 193 | 194 | 194 | 193 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 143 | 140 | 142 | 141 | 141 |
| • 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 |
| **Water/water application W10W35** | | | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A+++ | - | - | - | - |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 257 | 249 | 250 | 242 | 245 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 185 | 180 | 181 | 177 | 178 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C/55 °C | SCOP | 6.6/4.8 | 6.4/4.7 | 6.5/4.7 | 6.2/4.6 | 6.3/4.7 |
| **Max. performance data heating in acc. with EN 14511** | | | | | | |
| • Heat output B0W35 | kW 1) | 57.9 | 73.2 | 84.8 | 113.4 | 137.8 |
| • Coefficient of performance B0W35 | COP | 4.63 | 4.6 | 4.63 | 4.62 | 4.61 |
| • Heat output W10W35 | kW | 76.9 | 97.2 | 112.8 | 149.1 | 181.1 |
| • Coefficient of performance W10W35 | COP | 6.1 | 5.9 | 5.9 | 5.7 | 5.8 |
| **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 B0W35** | | | | | | |
| • Maximum flow temperature | °C | 62 | 62 | 62 | 62 | 62 |
| • Maximum operating pressure | bar | 16 | 16 | 16 | 6 | 6 |
| • Heating water spread | K | 5 | 5 | 5 | 5 | 5 |
| • Required volume flow | $m^3$/h | 9.9 | 12.6 | 14.6 | 19.5 | 23.7 |
| • Pressure drop, condenser | kPa | 5.7 | 6.2 | 5.4 | 7.6 | 8.1 |
| • Condenser connections | R (ext. thread) | 2″ | 2“ | 2″ | DN 80/PN 6 | DN 80/PN 6 |
| • Brine spread | K | 3 | 3 | 3 | 3 | 3 |
| • Required volume flow | $m^3$/h | 14.8 | 18.7 | 21.7 | 28.9 | 35.2 |
| • Pressure drop, evaporator | kPa | 15.8 | 15.8 | 18 | 20.1 | 24.7 |
| • Evaporator connections | R (ext. thread) | 2″ | 2″ | 2″ | DN 80/PN 6 | DN 80/PN 6 |
| **Hydraulic data water/water W10/W35 (intermediate circuit)** | | | | | | |
| • Maximum flow temperature | °C | 62 | 62 | 62 | 62 | 62 |
| • Maximum operating pressure | bar | 16 | 16 | 16 | 6 | 6 |
| • Heating water spread | K | 5 | 5 | 5 | 5 | 5 |
| • Required volume flow | $m^3$/h | 13.2 | 16.7 | 19.4 | 25.6 | 31.1 |
| • Pressure drop, condenser | kPa | 9.8 | 10.6 | 9.3 | 12.6 | 13.4 |
| • Condenser connections | R (ext. thread) | 2″ | 2″ | 2″ | DN 80/PN 6 | DN 80/PN 6 |
| • Brine spread in intermediate circuit 2) | K | 3 | 3 | 3 | 3 | 3 |
| • Required volume flow GW | $m^3$/h | 18.4 | 23.1 | 26.9 | 35.3 | 43 |
| • Pressure drop, evaporator | kPa | 28.3 | 28.3 | 32.8 | 36.8 | 41.9 |
| • Evaporator connections | R (ext. thread) | 2″ | 2″ | 2″ | DN 80/PN 6 | DN 80/PN 6 |

| **Type** | | **(55)** | **(70)** | **(85)** | **(110)** | **(140)** |
|---|---|---|---|---|---|---|
| **Refrigerating data** | | | | | | |
| • Compressor | | 2 | 2 | 2 | 2 | 2 |
| • Refrigerant | | R410A | R410A | R410A | R410A | R410A |
| • Refrigerant filling quantity | kg | 2 x 6.0 | 2 x 7.4 | 2 x 8.2 | 2 x 10.0 | 2 x 10.7 |
| • Type of compressor oil | | DAPHNE HERMETIC OIL FVC32D | Emkarate RL 32HB/160SZ/160Z | Emkarate RL 32HB/160SZ/160Z | Emkarate RL 32HB/160SZ/160Z | Emkarate RL 32HB/160SZ/160Z |
| • Compressor oil filling quantity | l | 2 x 2.5 | 2 x 3.3 | 2 x 3.6 | 2 x 6.7 | 2 x 6.7 |
| **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) [3] | $m^3$ | 27.3 | 33.6 | 37.3 | 45.5 | 48.6 |
| • Weight | kg | 560 | 620 | 700 | 770 | 820 |

[1] kW = standard values according to EN 14511; values for B0W35 with 25 % monopolypropylene

[2] 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.

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

## Thermalia® dual H (35-90) with R134a

| **Type** | | **H (35)** | **H (50)** | **H (70)** | **H (90)** |
|---|---|---|---|---|---|
| **Brine/water application B0W35** | | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A++ | A+++/A++ | A+++/A++ | - |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 184 | 182 | 190 | 178 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 135 | 140 | 136 | 131 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C/55 °C | SCOP | 4.8/3.6 | 4.8/3.7 | 5.0/3.6 | 4.7/3.5 |
| **Water/water application W10W35** | | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A+++ | A+++/A+++ | - | - |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 256 | 246 | 245 | 240 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 180 | 179 | 177 | 174 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C/55 °C | SCOP | 6.6/4.7 | 6.3/4.7 | 6.3/4.6 | 6.2/4.6 |
| **Max. performance data heating in acc. with EN 14511** | | | | | |
| • Heat output B0W35 | kW [1)] | 34.9 | 52.5 | 70.9 | 87.3 |
| • Coefficient of performance B0W35 | COP | 4.3 | 4.4 | 4.4 | 4.3 |
| • Heat output W10W35 | kW | 49.3 | 71.8 | 97.1 | 119.5 |
| • Coefficient of performance W10W35 | COP | 6.0 | 5.8 | 5.8 | 5.7 |
| **Sound data according to EN 12102** | | | | | |
| • Sound power level | dB(A) | 55.2 | 60.2 | 63.2 | 63.2 |
| **Hydraulic data brine/water B0W35** | | | | | |
| • Maximum flow temperature | °C | 70 | 70 | 70 | 70 |
| • Maximum operating pressure | bar | 16 | 16 | 16 | 6 |
| • Heating water spread | K | 5 | 5 | 5 | 5 |
| • Required volume flow | $m^3/h$ | 6.0 | 9.0 | 12.2 | 15.0 |
| • Pressure drop, condenser | kPa | 4.2 | 3.3 | 3.9 | 4.7 |
| • Condenser connections | R (ext. thread) | 2″ | 2″ | 2″ | DN 80/PN 6 |
| • Brine spread | K | 3 | 3 | 3 | 3 |
| • Required volume flow | $m^3/h$ | 8.7 | 13.2 | 17.7 | 21.7 |
| • Pressure drop, evaporator | kPa | 8.9 | 9.1 | 8.3 | 8.8 |
| • Evaporator connections | R (ext. thread) | 2″ | 2″ | 2″ | DN 80/PN 6 |
| **Hydraulic data water/water W10/W35 (intermediate circuit)** | | | | | |
| • Maximum flow temperature | °C | 70 | 70 | 70 | 70 |
| • Maximum operating pressure | bar | 16 | 16 | 16 | 6 |
| • Heating water spread | K | 5 | 5 | 5 | 5 |
| • Required volume flow | $m^3/h$ | 8.5 | 12.3 | 16.7 | 20.5 |
| • Pressure drop, condenser | kPa | 7.8 | 6.0 | 7.0 | 8.4 |
| • Condenser connections | R (ext. thread) | 2″ | 2″ | 2″ | DN 80/PN 6 |
| • Brine spread in intermediate circuit [2)] | K | 3 | 3 | 4 | 4 |
| • Required volume flow GW | $m^3/h$ | 11.8 | 17.1 | 23.0 | 28.2 |
| • Pressure drop, evaporator | kPa | 18.2 | 16.8 | 15.2 | 15.9 |
| • Evaporator connections | R (ext. thread) | 2″ | 2″ | 2″ | DN 80/PN 6 |

| Type | | H (35) | H (50) | H (70) | H (90) |
|---|---|---|---|---|---|
| **Refrigerating data** | | | | | |
| • Compressor | | 2 | 2 | 2 | 2 |
| • Refrigerant | | R134a | R134a | R134a | R134a |
| • Refrigerant filling quantity | kg | 2 x 5.4 | 2 x 8.0 | 2 x 8.2 | 2 x 9.0 |
| • Type of compressor oil | | Emkarate RL 32HB/160SZ/160Z | Emkarate RL 32HB/160SZ/ 160Z | Emkarate RL 32HB/160SZ/ 160Z | Emkarate RL 32HB/160SZ/ 160Z |
| • Compressor oil filling quantity | l | 2 x 3.3 | 2 x 6.2 | 2 x 8.0 | 2 x 8.0 |
| **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) [3] | $m^3$ | 43 | 64 | 66 | 72 |
| • Weight | kg | 670 | 700 | 770 | 800 |

[1] kW = standard values according to EN 14511; values for B0W35 with 25 % monopolypropylene

[2] ∆T 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.

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

## Thermalia® dual R (55-140) with R410A

| **Type** | | **R (55)** | **R (70)** | **R (85)** | **R (110)** | **R (140)** |
|---|---|---|---|---|---|---|
| **Brine/water application B0W35** | | | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A++ | A+++/A++ | - | - | - |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 195 | 193 | 194 | 194 | 193 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 143 | 140 | 142 | 141 | 141 |
| • 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 |
| **Water/water application W10W35** | | | | | | |
| • Energy efficiency class of the compound system with control (A+++ → D) | 35 °C/55 °C | A+++/A+++ | - | - | - | - |
| • Room heating energy efficiency “moderate climate” 35 °C ηS | % | 257 | 249 | 250 | 242 | 245 |
| • Room heating energy efficiency “moderate climate” 55 °C ηS | % | 185 | 180 | 181 | 177 | 178 |
| • Seasonal coefficient of performance moderate climate (brine) 35 °C/55 °C | SCOP | 6.6/4.8 | 6.4/4.7 | 6.5/4.7 | 6.2/4.6 | 6.3/4.7 |
| **Max. performance data heating and cooling in acc. with EN 14511** | | | | | | |
| • Heat output B0W35 | kW 1) | 57.9 | 73.2 | 84.8 | 113.4 | 137.8 |
| • Coefficient of performance B0W35 | COP | 4.63 | 4.6 | 4.63 | 4.62 | 4.61 |
| • Heat output W10W35 | kW | 76.9 | 97.2 | 112.8 | 149.1 | 181.1 |
| • Coefficient of performance W10W35 | COP | 6.07 | 5.87 | 5.91 | 5.73 | 5.79 |
| • Cooling capacity B17W9 | kW | 64.7 | 86.2 | 107 | 138.1 | 156.9 |
| • Energy efficiency ratio B17W9 | EER | 6.12 | 6.6 | 7.21 | 6.51 | 6.05 |
| • Cooling capacity B25W18 | kW | 81.1 | 108.3 | 127.7 | 165 | 183.9 |
| • Energy efficiency ratio 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 B0W35** | | | | | | |
| • Maximum flow temperature | °C | 62 | 62 | 62 | 62 | 62 |
| • Maximum operating pressure | bar | 16 | 16 | 16 | 6 | 6 |
| • Heating water spread | K | 5 | 5 | 5 | 5 | 5 |
| • Required volume flow | m$^3$/h | 9.9 | 12.6 | 14.6 | 19.5 | 23.7 |
| • Pressure drop, condenser | kPa | 8.9 | 9.3 | 8 | 11 | 11.6 |
| • Condenser connections | R (ext. thread) | 2″ | 2“ | 2″ | DN 80/PN 6 | DN 80/PN 6 |
| • Brine spread | K | 3 | 3 | 3 | 3 | 3 |
| • Required volume flow | m$^3$/h | 14.8 | 18.7 | 21.7 | 28.9 | 35.2 |
| • Pressure drop, evaporator | kPa | 15.5 | 15.5 | 17.9 | 21.4 | 25.3 |
| • Evaporator connections | R (ext. thread) | 2″ | 2″ | 2″ | DN 80/PN 6 | DN 80/PN 6 |
| **Hydraulic data water/water W10/W35 (intermediate circuit)** | | | | | | |
| • Maximum flow temperature | °C | 62 | 62 | 62 | 62 | 62 |
| • Maximum operating pressure | bar | 16 | 16 | 16 | 6 | 6 |
| • Heating water spread | K | 5 | 5 | 5 | 5 | 5 |
| • Required volume flow | m$^3$/h | 13.2 | 16.7 | 19.4 | 25.6 | 31.1 |
| • Pressure drop, condenser | kPa | 15.4 | 16.2 | 13.7 | 18.5 | 19.6 |
| • Condenser connections | R (ext. thread) | 2″ | 2″ | 2″ | DN 80/PN 6 | DN 80/PN 6 |
| • Brine spread in intermediate circuit 2) | K | 3 | 3 | 3 | 3 | 3 |
| • Required volume flow GW | m$^3$/h | 18.4 | 23.1 | 26.9 | 35.3 | 43 |
| • Pressure drop, evaporator | kPa | 29.6 | 29.5 | 34.4 | 40.1 | 47.9 |
| • Evaporator connections | R (ext. thread) | 2″ | 2″ | 2″ | DN 80/PN 6 | DN 80/PN 6 |

| **Type** | | **R (55)** | **R (70)** | **R (85)** | **R (110)** | **R (140)** |
|---|---|---|---|---|---|---|
| **Refrigerating data** | | | | | | |
| • Compressor | | 2 | 2 | 2 | 2 | 2 |
| • Refrigerant | | R410A | R410A | R410A | R410A | R410A |
| • Refrigerant filling quantity | kg | 2 x 6.0 | 2 x 7.4 | 2 x 8.2 | 2 x 10.0 | 2 x 10.7 |
| • Type of compressor oil | | DAPHNE HERMETIC OIL FVC32D | Emkarate RL 32HB − 160SZ − 160Z | Emkarate RL 32HB − 160SZ − 160Z | Emkarate RL 32HB − 160SZ − 160Z | Emkarate RL 32HB − 160SZ − 160Z |
| • Compressor oil filling quantity | l | 2 x 2.5 | 2 x 3.3 | 2 x 3.6 | 2 x 6.7 | 2 x 6.7 |
| **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) [3] | $m^3$ | 27.3 | 33.6 | 37.3 | 45.5 | 48.6 |
| • Weight | kg | 560 | 620 | 700 | 770 | 820 |

[1] kW = standard values according to EN 14511; values for B0W35 with 25 % monopolypropylene

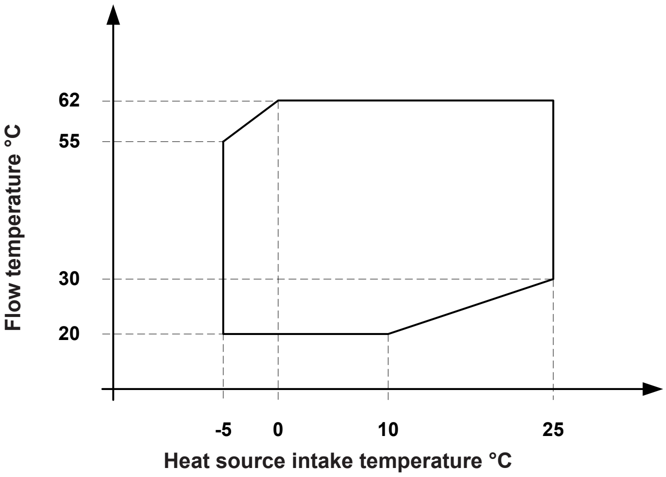
[2] $\Delta$T in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin. The pump regulates the volumetric current to the set temperature difference.

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

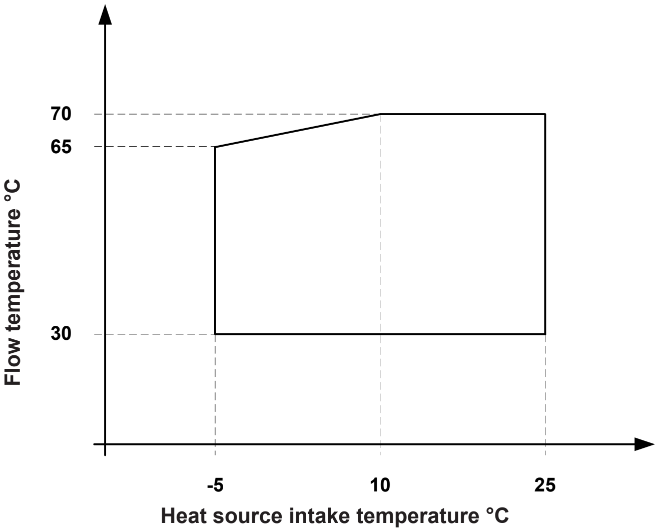
## Diagrams of areas of application

### Heating and hot water

**Thermalia® dual (55-140), dual R (55-140)**

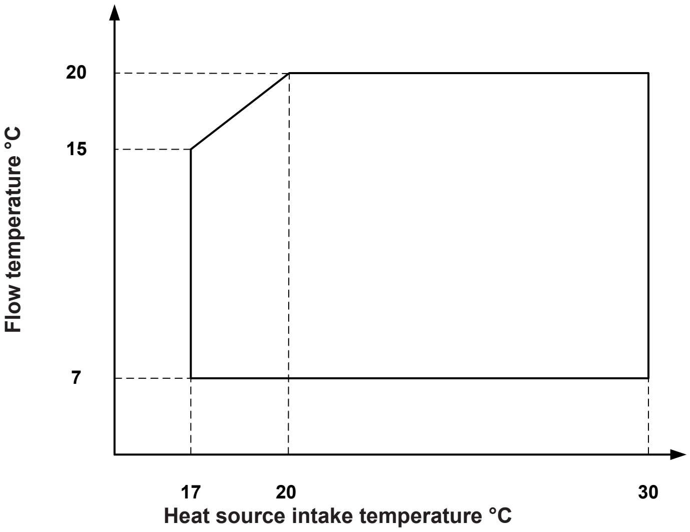


**Thermalia® dual H (35-90)**



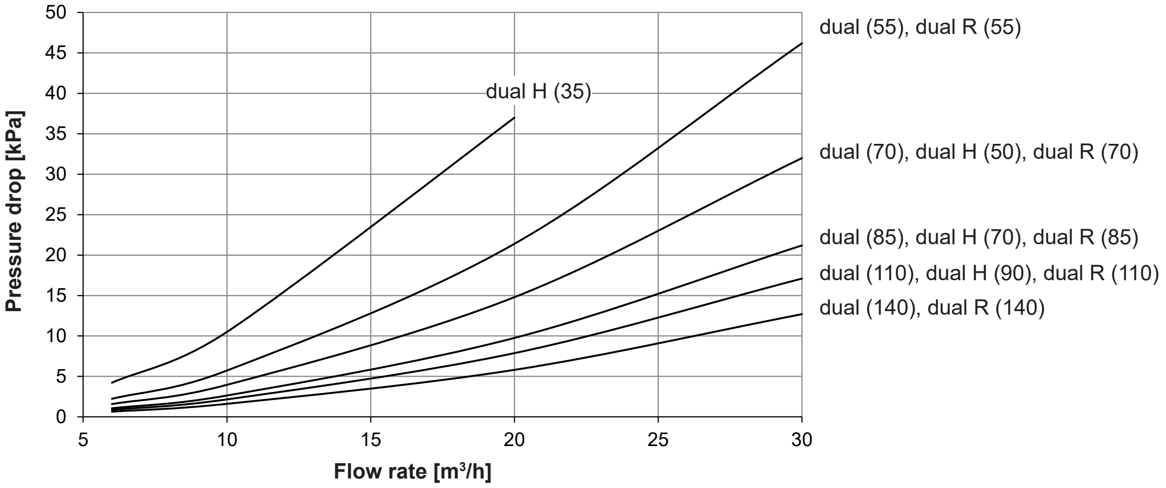
### Cooling

**Thermalia® dual R (55-140)**



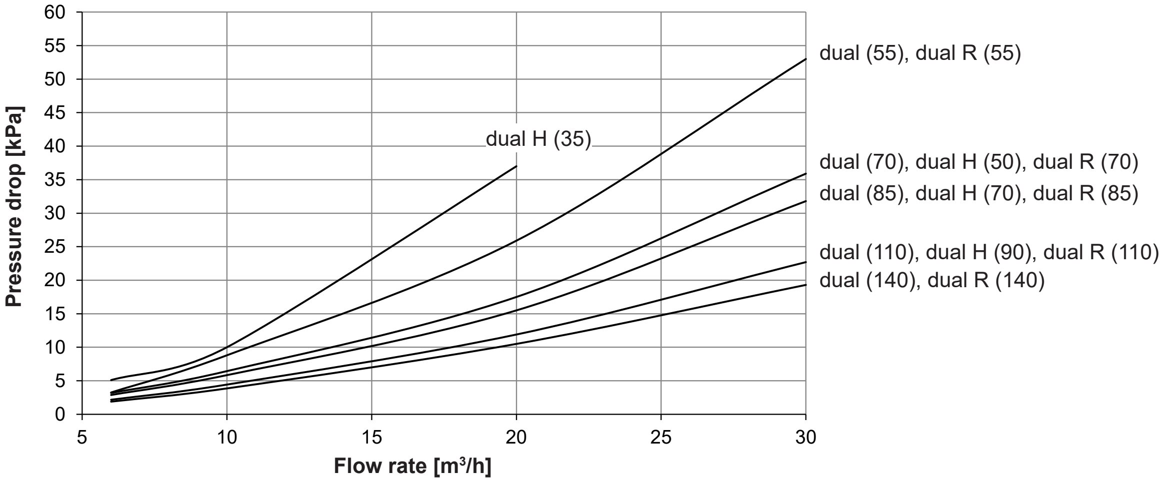
## Heating

**Pressure drop condenser**
with water



## Heat source

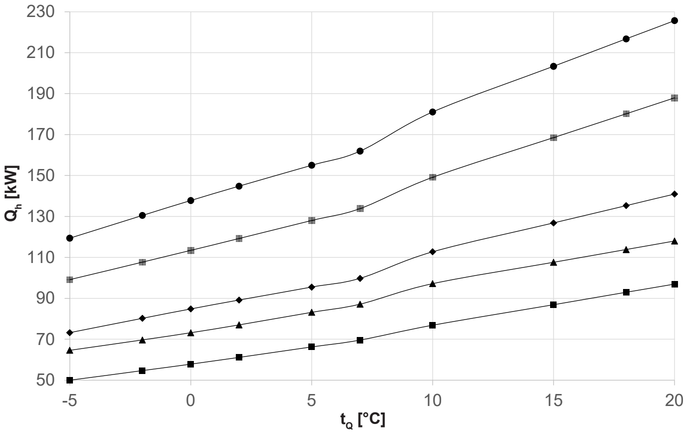
**Pressure drop evaporator**
with ethylene glycol 25 %
(antifrogen N)



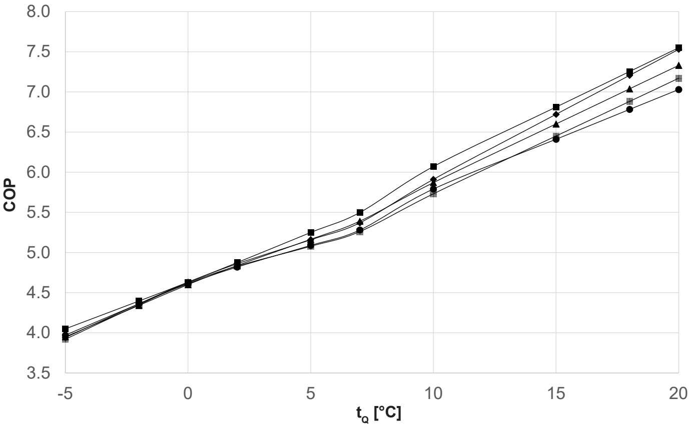
## Performance data – heating
Maximum heat output

### Thermalia® dual (55-140), dual R (55-140) with R410A
Data according to EN 14511

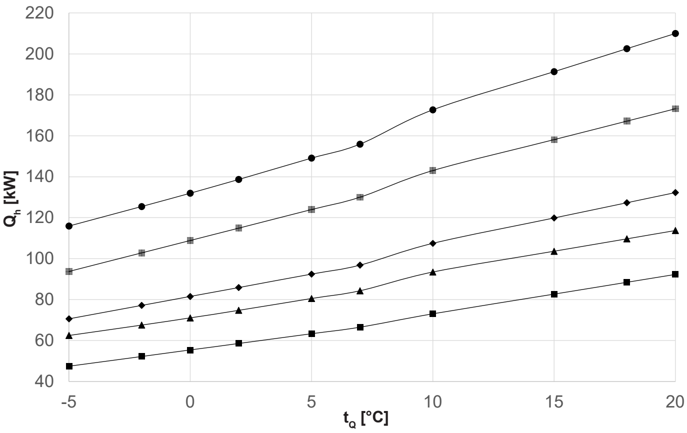
**Heat output – $t_{VL}$ 35 °C**



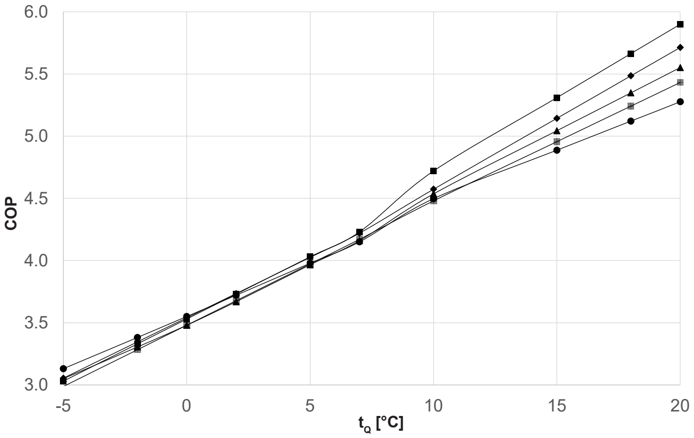
**Coefficient of performance – $t_{VL}$ 35 °C**



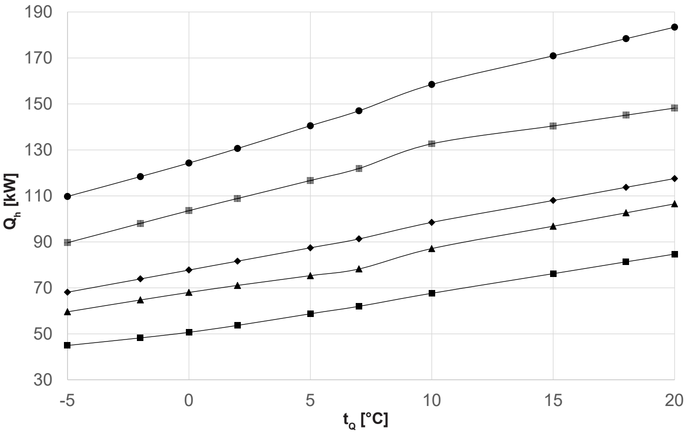
**Heat output – $t_{VL}$ 45 °C**



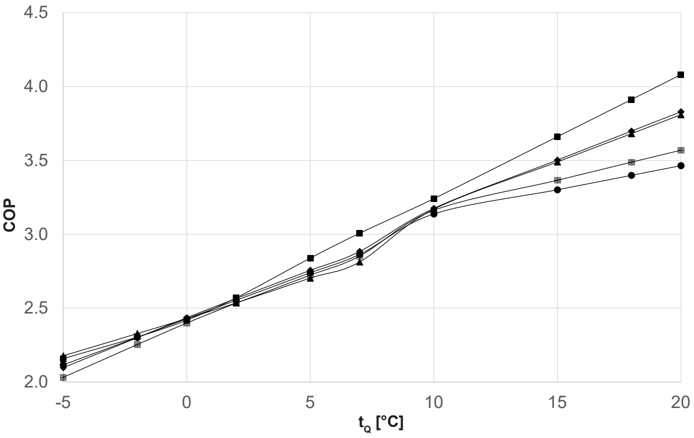
**Coefficient of performance – $t_{VL}$ 45 °C**



**Heat output – $t_{VL}$ 62 °C**



**Coefficient of performance – $t_{VL}$ 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)

## Performance data – heating

### Thermalia® dual (55-140), dual R (55-140)

Data according to EN 14511

| | | | (55), R (55) Stage 2 | | | (70), R (70) Stage 2 | | | (85), R (85) Stage 2 | | | (110), R (110) Stage 2 | | | (140), R (140) Stage 2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 30 | Brine | −5 | 50.6 | 10.9 | 4.7 | 65.6 | 14.3 | 4.6 | 74.0 | 15.6 | 4.7 | 100.1 | 21.2 | 4.7 | 121.5 | 25.4 | 4.8 |
| | | −2 | 55.9 | 10.9 | 5.1 | 70.6 | 13.8 | 5.1 | 81.2 | 15.5 | 5.2 | 109.0 | 20.9 | 5.2 | 132.6 | 25.3 | 5.2 |
| | | 0 | 59.3 | 11.0 | 5.4 | 74.1 | 13.6 | 5.5 | 86.0 | 15.5 | 5.6 | 115.0 | 20.8 | 5.5 | 139.9 | 25.4 | 5.5 |
| | | 2 | 62.6 | 11.0 | 5.7 | 78.2 | 13.5 | 5.8 | 90.5 | 15.5 | 5.8 | 121.1 | 20.9 | 5.8 | 147.0 | 25.5 | 5.8 |
| | | 5 | 67.6 | 11.2 | 6.1 | 84.9 | 13.7 | 6.2 | 97.1 | 15.7 | 6.2 | 130.3 | 21.5 | 6.1 | 157.5 | 26.0 | 6.1 |
| | | 7 | 70.9 | 11.2 | 6.3 | 89.2 | 13.8 | 6.5 | 101.5 | 15.8 | 6.4 | 136.5 | 21.7 | 6.3 | 164.5 | 26.2 | 6.3 |
| | Water | 10 | 78.4 | 11.0 | 7.1 | 99.1 | 14.5 | 6.8 | 115.4 | 16.9 | 6.8 | 152.2 | 23.1 | 6.6 | 185.3 | 27.7 | 6.7 |
| | | 15 | 88.8 | 11.2 | 7.9 | 109.6 | 14.2 | 7.7 | 130.3 | 16.7 | 7.8 | 173.7 | 23.2 | 7.5 | 209.4 | 28.0 | 7.5 |
| | | 18 | 95.0 | 11.3 | 8.4 | 115.9 | 14.0 | 8.3 | 139.3 | 16.5 | 8.4 | 186.7 | 23.3 | 8.0 | 223.9 | 28.2 | 7.9 |
| | | 20 | 99.2 | 11.3 | 8.8 | 120.1 | 13.8 | 8.6 | 145.3 | 16.5 | 8.8 | 195.3 | 23.4 | 8.4 | 233.5 | 28.3 | 83 |
| 35 | Brine | −5 | 50.0 | 12.3 | 4.1 | 64.6 | 16.4 | 4.0 | 73.2 | 18.6 | 3.9 | 99.1 | 25.3 | 3.9 | 119.4 | 30.1 | 4.0 |
| | | −2 | 54.7 | 12.4 | 4.4 | 69.7 | 16.1 | 4.3 | 80.2 | 18.4 | 4.4 | 107.7 | 24.8 | 4.3 | 130.5 | 29.9 | 4.4 |
| | | 0 | 57.9 | 12.5 | 4.6 | 73.2 | 15.9 | 4.6 | 84.8 | 18.3 | 4.6 | 113.4 | 24.6 | 4.6 | 137.8 | 29.9 | 4.6 |
| | | 2 | 61.2 | 12.6 | 4.9 | 77.0 | 15.9 | 4.8 | 89.2 | 18.4 | 4.9 | 119.2 | 24.7 | 4.8 | 144.8 | 30.0 | 4.8 |
| | | 5 | 66.3 | 12.6 | 5.3 | 83.2 | 16.1 | 5.2 | 95.5 | 18.5 | 5.2 | 128.0 | 25.2 | 5.1 | 155.0 | 30.5 | 5.1 |
| | | 7 | 69.6 | 12.7 | 5.5 | 87.2 | 16.2 | 5.4 | 99.8 | 18.6 | 5.4 | 133.9 | 25.4 | 5.3 | 161.9 | 30.7 | 5.3 |
| | Water | 10 | 76.9 | 12.7 | 6.1 | 97.2 | 16.6 | 5.9 | 112.8 | 19.1 | 5.9 | 149.1 | 26.0 | 5.7 | 181.1 | 31.3 | 5.8 |
| | | 15 | 86.9 | 12.8 | 6.8 | 107.6 | 16.3 | 6.6 | 126.8 | 18.9 | 6.7 | 168.5 | 26.1 | 6.5 | 203.4 | 31.7 | 6.4 |
| | | 18 | 92.9 | 12.8 | 7.3 | 113.8 | 16.1 | 7.0 | 135.3 | 18.8 | 7.2 | 180.2 | 26.2 | 6.9 | 216.7 | 32.0 | 6.8 |
| | | 20 | 97.0 | 12.9 | 7.6 | 118.0 | 16.0 | 7.3 | 140.9 | 18.7 | 7.5 | 187.9 | 26.2 | 7.2 | 225.7 | 32.2 | 7.0 |
| 40 | Brine | −5 | 48.9 | 14.0 | 3.5 | 63.7 | 18.4 | 3.5 | 72.2 | 20.9 | 3.5 | 96.8 | 28.4 | 3.4 | 117.8 | 33.6 | 3.5 |
| | | −2 | 53.5 | 14.0 | 3.8 | 68.8 | 18.2 | 3.8 | 78.9 | 20.7 | 3.8 | 105.6 | 28.0 | 3.8 | 128.1 | 33.5 | 3.8 |
| | | 0 | 56.6 | 14.1 | 4.0 | 72.2 | 18.1 | 4.0 | 83.4 | 20.6 | 4.0 | 111.4 | 27.8 | 4.0 | 135.0 | 33.4 | 4.0 |
| | | 2 | 59.8 | 14.1 | 4.2 | 76.0 | 18.1 | 4.2 | 87.7 | 20.6 | 4.3 | 117.3 | 27.8 | 4.2 | 141.9 | 33.6 | 4.2 |
| | | 5 | 64.8 | 14.1 | 4.6 | 81.9 | 18.1 | 4.5 | 94.1 | 20.7 | 4.5 | 126.1 | 28.2 | 4.5 | 152.2 | 33.9 | 4.5 |
| | | 7 | 68.1 | 14.2 | 4.8 | 85.7 | 18.2 | 4.7 | 98.3 | 20.7 | 4.7 | 131.9 | 28.3 | 4.7 | 159.0 | 34.1 | 4.7 |
| | Water | 10 | 75.0 | 14.1 | 5.3 | 95.3 | 18.6 | 5.1 | 110.1 | 21.3 | 5.2 | 146.1 | 29.0 | 5.0 | 176.9 | 34.8 | 5.1 |
| | | 15 | 84.8 | 14.2 | 6.0 | 105.6 | 18.4 | 5.7 | 123.4 | 21.1 | 5.8 | 163.3 | 29.0 | 5.6 | 197.4 | 35.4 | 5.6 |
| | | 18 | 90.7 | 14.3 | 6.4 | 111.8 | 18.3 | 6.1 | 131.3 | 21.0 | 6.3 | 173.7 | 29.0 | 6.0 | 209.6 | 35.8 | 5.9 |
| | | 20 | 94.7 | 14.3 | 6.6 | 115.9 | 18.3 | 6.3 | 136.6 | 20.9 | 6.5 | 180.6 | 29.1 | 6.2 | 217.8 | 36.0 | 6.1 |
| 45 | Brine | −5 | 47.5 | 15.7 | 3.0 | 62.5 | 20.5 | 3.1 | 70.6 | 23.1 | 3.1 | 93.7 | 31.4 | 3.0 | 115.9 | 37.0 | 3.1 |
| | | −2 | 52.2 | 15.7 | 3.3 | 67.6 | 20.4 | 3.3 | 77.2 | 23.1 | 3.3 | 102.8 | 31.3 | 3.3 | 125.5 | 37.1 | 3.4 |
| | | 0 | 55.4 | 15.7 | 3.5 | 71.1 | 20.4 | 3.5 | 81.5 | 23.0 | 3.5 | 108.9 | 31.3 | 3.5 | 132.0 | 37.2 | 3.6 |
| | | 2 | 58.6 | 15.7 | 3.7 | 74.8 | 20.4 | 3.7 | 85.9 | 23.0 | 3.7 | 114.9 | 31.2 | 3.7 | 138.7 | 37.3 | 3.7 |
| | | 5 | 63.3 | 15.7 | 4.0 | 80.5 | 20.3 | 4.0 | 92.5 | 23.0 | 4.0 | 124.0 | 31.2 | 4.0 | 149.1 | 37.5 | 4.0 |
| | | 7 | 66.5 | 15.7 | 4.2 | 84.3 | 20.3 | 4.2 | 96.8 | 22.9 | 4.2 | 130.0 | 31.2 | 4.2 | 155.9 | 37.6 | 4.2 |
| | Water | 10 | 73.1 | 15.5 | 4.7 | 93.5 | 20.6 | 4.5 | 107.5 | 23.5 | 4.6 | 143.0 | 31.9 | 4.5 | 172.7 | 38.4 | 4.5 |
| | | 15 | 82.7 | 15.6 | 5.3 | 103.6 | 20.5 | 5.0 | 119.9 | 23.3 | 5.1 | 158.1 | 31.9 | 5.0 | 191.3 | 39.2 | 4.9 |
| | | 18 | 88.5 | 15.6 | 5.7 | 109.7 | 20.5 | 5.3 | 127.3 | 23.2 | 5.5 | 167.2 | 31.9 | 5.2 | 202.5 | 39.6 | 5.1 |
| | | 20 | 92.3 | 15.7 | 5.9 | 113.8 | 20.5 | 5.6 | 132.3 | 23.1 | 5.7 | 173.2 | 31.9 | 5.4 | 210.0 | 39.9 | 5.3 |
| 50 | Brine | −5 | 47.1 | 17.1 | 2.8 | 61.8 | 22.5 | 2.8 | 70.3 | 26.1 | 2.7 | 93.5 | 35.5 | 2.6 | 114.2 | 41.9 | 2.7 |
| | | −2 | 51.1 | 17.2 | 3.0 | 66.9 | 22.5 | 3.0 | 76.6 | 25.9 | 3.0 | 102.2 | 35.0 | 2.9 | 123.7 | 41.6 | 3.0 |
| | | 0 | 53.9 | 17.2 | 3.1 | 70.3 | 22.6 | 3.1 | 80.8 | 25.8 | 3.1 | 107.9 | 34.8 | 3.1 | 130.1 | 41.5 | 3.1 |
| | | 2 | 57.0 | 17.2 | 3.3 | 73.7 | 22.6 | 3.3 | 84.9 | 25.7 | 3.3 | 113.5 | 34.7 | 3.3 | 136.8 | 41.6 | 3.3 |
| | | 5 | 62.1 | 17.1 | 3.6 | 78.9 | 22.6 | 3.5 | 91.0 | 25.7 | 3.5 | 121.8 | 34.8 | 3.5 | 146.9 | 41.8 | 3.5 |
| | | 7 | 65.3 | 17.1 | 3.8 | 82.3 | 22.5 | 3.7 | 95.1 | 25.7 | 3.7 | 127.4 | 34.9 | 3.7 | 153.6 | 41.9 | 3.7 |
| | Water | 10 | 71.7 | 17.2 | 4.2 | 91.6 | 22.6 | 4.1 | 104.8 | 25.7 | 4.1 | 140.0 | 34.9 | 4.0 | 168.5 | 42.0 | 4.0 |
| | | 15 | 80.9 | 17.2 | 4.7 | 101.6 | 22.7 | 4.5 | 116.4 | 25.5 | 4.6 | 152.9 | 34.8 | 4.4 | 185.3 | 42.9 | 4.3 |
| | | 18 | 86.4 | 17.2 | 5.0 | 107.6 | 22.7 | 4.7 | 123.3 | 25.4 | 4.8 | 160.7 | 34.7 | 4.6 | 195.4 | 43.4 | 4.5 |
| | | 20 | 90.1 | 17.2 | 5.2 | 111.6 | 22.7 | 4.9 | 127.9 | 25.3 | 5.0 | 165.9 | 34.7 | 4.8 | 202.2 | 43.8 | 4.6 |

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

Further performance data – heating
see next page

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

## Performance data – heating

### Thermalia® dual (55-140), dual R (55-140)

Data according to EN 14511

| | | | (55), R (55) | | | (70), R (70) | | | (85), R (85) | | | (110), R (110) | | | (140), R (140) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Stage 2 | | | Stage 2 | | | Stage 2 | | | Stage 2 | | | Stage 2 | |
| $t_{VL}$ °C | | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 55 | Brine | −5 | 46.5 | 18.6 | 2.5 | 62.1 | 24.2 | 2.6 | 70.5 | 28.3 | 2.5 | 92.8 | 38.5 | 2.4 | 113.7 | 45.5 | 2.5 |
| | | −2 | 49.9 | 18.7 | 2.7 | 66.8 | 24.2 | 2.8 | 76.6 | 27.7 | 2.8 | 101.7 | 37.4 | 2.7 | 122.0 | 44.4 | 2.7 |
| | | 0 | 52.5 | 18.7 | 2.8 | 70.0 | 24.1 | 2.9 | 80.6 | 27.4 | 2.9 | 107.4 | 36.8 | 2.9 | 127.8 | 43.9 | 2.9 |
| | | 2 | 55.5 | 18.7 | 3.0 | 73.2 | 24.1 | 3.0 | 84.4 | 27.3 | 3.1 | 112.8 | 36.7 | 3.1 | 134.2 | 43.9 | 3.1 |
| | | 5 | 60.7 | 18.6 | 3.3 | 77.9 | 24.1 | 3.2 | 90.1 | 27.3 | 3.3 | 120.5 | 37.0 | 3.3 | 144.5 | 44.3 | 3.3 |
| | | 7 | 64.0 | 18.5 | 3.5 | 81.1 | 24.1 | 3.4 | 93.9 | 27.3 | 3.4 | 125.7 | 37.1 | 3.4 | 151.2 | 44.5 | 3.4 |
| | Water | 10 | 70.2 | 18.8 | 3.7 | 89.7 | 24.6 | 3.6 | 102.2 | 27.9 | 3.7 | 136.9 | 37.8 | 3.6 | 164.3 | 45.5 | 3.6 |
| | | 15 | 79.0 | 18.8 | 4.2 | 99.6 | 24.8 | 4.0 | 112.9 | 27.7 | 4.1 | 147.7 | 37.7 | 3.9 | 179.3 | 46.6 | 3.9 |
| | | 18 | 84.4 | 18.8 | 4.5 | 105.5 | 24.9 | 4.2 | 119.3 | 27.6 | 4.3 | 154.2 | 37.6 | 4.1 | 188.3 | 47.2 | 4.0 |
| | | 20 | 87.9 | 18.7 | 4.7 | 109.5 | 24.9 | 4.4 | 123.6 | 27.6 | 4.5 | 158.5 | 37.5 | 4.2 | 194.3 | 47.6 | 4.1 |
| 62 | Brine | −5 | 45.0 | 20.8 | 2.2 | 59.6 | 27.4 | 2.2 | 68.1 | 32.5 | 2.1 | 89.6 | 44.1 | 2.0 | 109.8 | 51.9 | 2.1 |
| | | −2 | 48.2 | 20.9 | 2.3 | 64.7 | 27.8 | 2.3 | 73.9 | 32.1 | 2.3 | 98.0 | 43.5 | 2.3 | 118.4 | 51.4 | 2.3 |
| | | 0 | 50.7 | 20.9 | 2.4 | 68.0 | 28.0 | 2.4 | 77.8 | 31.9 | 2.4 | 103.6 | 43.2 | 2.4 | 124.3 | 51.2 | 2.4 |
| | | 2 | 53.7 | 20.9 | 2.6 | 71.0 | 28.0 | 2.5 | 81.6 | 31.8 | 2.6 | 108.9 | 43.0 | 2.5 | 130.6 | 51.2 | 2.6 |
| | | 5 | 58.7 | 20.7 | 2.8 | 75.3 | 27.9 | 2.7 | 87.4 | 31.7 | 2.8 | 116.7 | 42.8 | 2.7 | 140.5 | 51.3 | 2.7 |
| | | 7 | 62.0 | 20.6 | 3.0 | 78.2 | 27.8 | 2.8 | 91.3 | 31.6 | 2.9 | 121.9 | 42.7 | 2.9 | 147.0 | 51.3 | 2.9 |
| | Water | 10 | 67.6 | 20.9 | 3.2 | 87.1 | 27.5 | 3.2 | 98.5 | 31.0 | 3.2 | 132.7 | 42.0 | 3.2 | 158.4 | 50.5 | 3.1 |
| | | 15 | 76.2 | 20.8 | 3.7 | 96.8 | 27.7 | 3.5 | 108.0 | 30.8 | 3.5 | 140.4 | 41.7 | 3.4 | 170.9 | 51.8 | 3.3 |
| | | 18 | 81.3 | 20.8 | 3.9 | 102.6 | 27.9 | 3.7 | 113.7 | 30.7 | 3.7 | 145.1 | 41.6 | 3.5 | 178.4 | 52.5 | 3.4 |
| | | 20 | 84.7 | 20.7 | 4.1 | 106.5 | 28.0 | 3.8 | 117.5 | 30.7 | 3.8 | 148.2 | 41.5 | 3.6 | 183.4 | 53.0 | 3.5 |

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

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

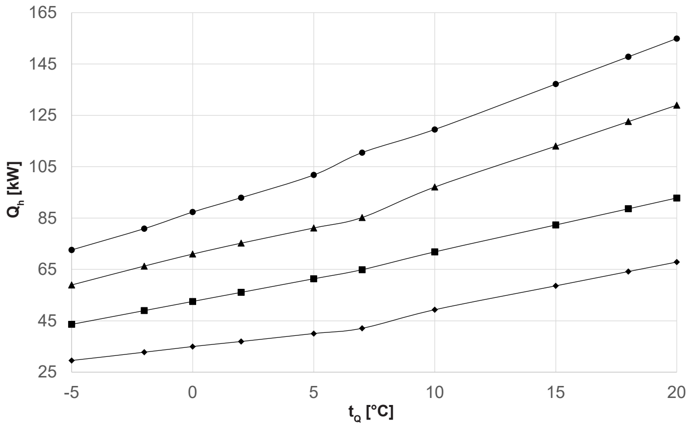
## Performance data – heating

Maximum heat output

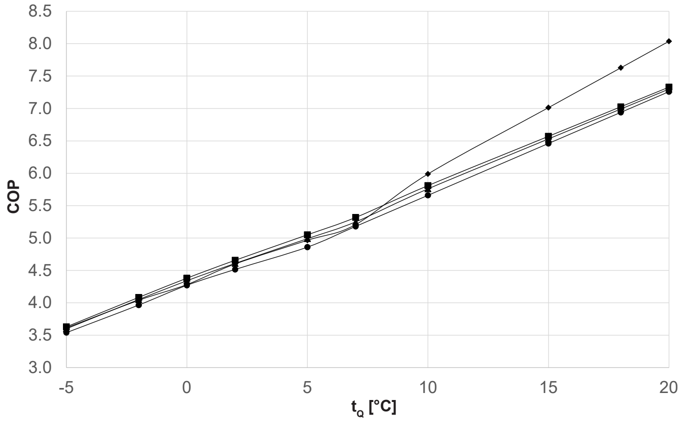
### Thermalia® dual H (35-90) with R134a

Data according to EN 14511

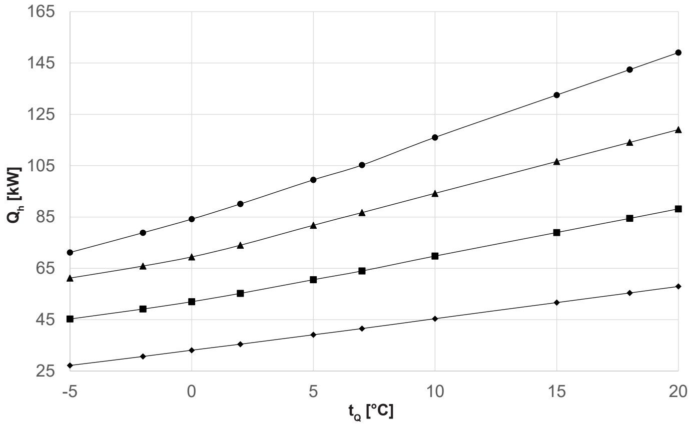
**Heat output – $t_{VL}$ 35 °C**



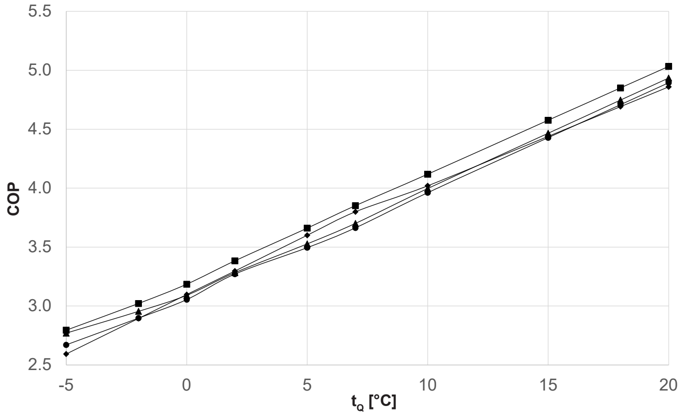
**Coefficient of performance – $t_{VL}$ 35 °C**



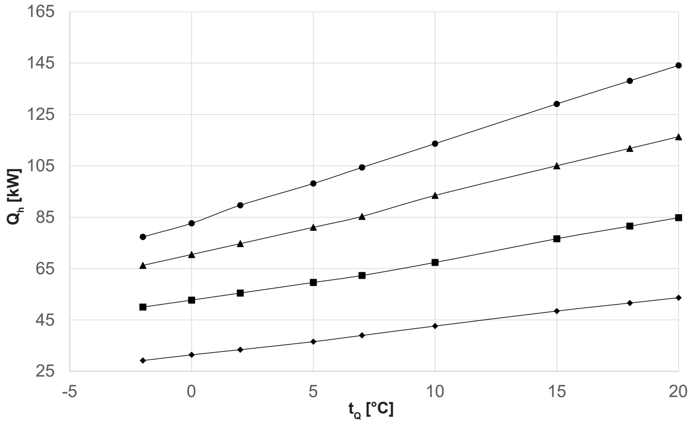
**Heat output – $t_{VL}$ 50 °C**



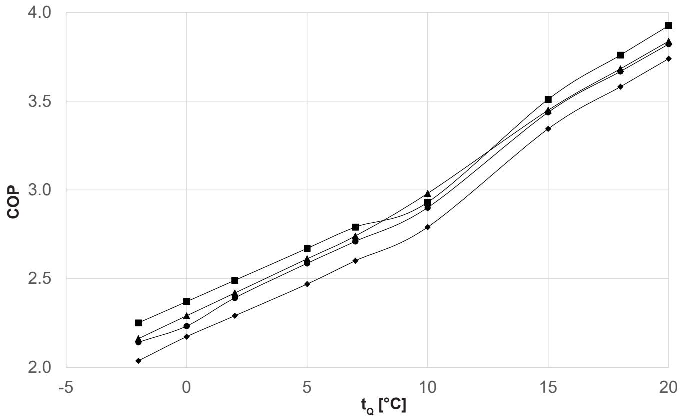
**Coefficient of performance – $t_{VL}$ 50 °C**



**Heat output – $t_{VL}$ 65 °C**



**Coefficient of performance – $t_{VL}$ 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)

## Performance data – heating

### Thermalia® dual H (35-90)

Data according to EN 14511

| | | | | H (35) Stage 2 | | | H (50) Stage 2 | | | H (70) Stage 2 | | | H (90) Stage 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 35 | Brine | −5 | 29.5 | 8.2 | 3.6 | 43.6 | 12.0 | 3.6 | 59.0 | 16.4 | 3.6 | 72.6 | 20.5 | 3.5 |
| | | −2 | 32.8 | 8.1 | 4.0 | 49.0 | 12.0 | 4.1 | 66.3 | 16.4 | 4.1 | 80.9 | 20.4 | 4.0 |
| | | 0 | 35.0 | 8.2 | 4.3 | 52.5 | 12.0 | 4.4 | 71.0 | 16.4 | 4.3 | 87.4 | 20.5 | 4.3 |
| | | 2 | 37.0 | 8.0 | 4.6 | 56.1 | 12.0 | 4.7 | 75.2 | 16.3 | 4.6 | 92.9 | 20.6 | 4.5 |
| | | 5 | 40.0 | 8.1 | 5.0 | 61.4 | 12.2 | 5.1 | 81.2 | 16.3 | 5.0 | 101.8 | 20.9 | 4.9 |
| | | 7 | 42.1 | 8.1 | 5.2 | 64.9 | 12.2 | 5.3 | 85.2 | 16.2 | 5.3 | 110.5 | 21.3 | 5.2 |
| | Water | 10 | 49.3 | 8.2 | 6.0 | 71.8 | 12.4 | 5.8 | 97.1 | 16.9 | 5.8 | 119.5 | 21.1 | 5.7 |
| | | 15 | 58.6 | 8.4 | 7.0 | 82.3 | 12.6 | 6.6 | 113.0 | 17.5 | 6.5 | 137.2 | 21.3 | 6.5 |
| | | 18 | 64.2 | 8.5 | 7.6 | 88.6 | 12.7 | 7.0 | 122.6 | 17.8 | 7.0 | 147.8 | 21.4 | 6.9 |
| | | 20 | 67.9 | 8.6 | 8.0 | 92.8 | 12.8 | 7.3 | 129.0 | 18.0 | 7.3 | 154.9 | 21.4 | 7.3 |
| 40 | Brine | −5 | 28.7 | 9.0 | 3.2 | 44.4 | 13.2 | 3.4 | 60.0 | 18.0 | 3.3 | 71.9 | 22.4 | 3.2 |
| | | −2 | 32.1 | 9.1 | 3.6 | 49.1 | 13.2 | 3.7 | 66.1 | 18.0 | 3.7 | 80.2 | 22.4 | 3.6 |
| | | 0 | 34.5 | 9.1 | 3.8 | 52.4 | 13.3 | 3.9 | 70.2 | 18.1 | 3.9 | 86.1 | 22.5 | 3.8 |
| | | 2 | 36.7 | 9.0 | 4.1 | 55.8 | 13.3 | 4.2 | 74.6 | 18.1 | 4.1 | 91.7 | 22.4 | 4.1 |
| | | 5 | 40.1 | 9.0 | 4.5 | 61.0 | 13.5 | 4.5 | 81.4 | 18.5 | 4.4 | 100.4 | 23.3 | 4.3 |
| | | 7 | 42.4 | 9.1 | 4.7 | 64.5 | 13.5 | 4.8 | 85.9 | 18.6 | 4.6 | 107.2 | 23.6 | 4.5 |
| | Water | 10 | 47.5 | 9.2 | 5.2 | 71.2 | 13.7 | 5.2 | 95.8 | 19.0 | 5.0 | 118.1 | 23.7 | 5.0 |
| | | 15 | 50.8 | 9.1 | 5.6 | 76.2 | 13.7 | 5.6 | 102.3 | 19.1 | 5.3 | 127.0 | 23.9 | 5.3 |
| | | 18 | 56.4 | 9.1 | 6.2 | 84.5 | 13.6 | 6.2 | 113.0 | 19.4 | 5.8 | 141.8 | 24.2 | 5.9 |
| | | 20 | 58.6 | 9.1 | 6.5 | 87.9 | 13.6 | 6.5 | 117.3 | 19.5 | 6.0 | 147.7 | 24.4 | 6.1 |
| 45 | Brine | −5 | 27.8 | 9.7 | 2.9 | 45.1 | 14.6 | 3.1 | 61.0 | 19.9 | 3.1 | 71.4 | 24.4 | 2.9 |
| | | −2 | 31.5 | 9.8 | 3.2 | 49.7 | 14.7 | 3.4 | 66.0 | 19.9 | 3.3 | 79.5 | 24.7 | 3.2 |
| | | 0 | 33.9 | 9.9 | 3.4 | 52.8 | 14.7 | 3.6 | 69.7 | 19.9 | 3.5 | 85.0 | 24.9 | 3.4 |
| | | 2 | 36.4 | 9.9 | 3.7 | 55.8 | 14.8 | 3.8 | 74.0 | 20.2 | 3.7 | 90.8 | 25.3 | 3.6 |
| | | 5 | 40.1 | 10.2 | 3.9 | 60.3 | 14.9 | 4.0 | 81.2 | 20.9 | 3.9 | 99.6 | 25.8 | 3.9 |
| | | 7 | 42.6 | 10.3 | 4.1 | 63.3 | 15.0 | 4.2 | 85.8 | 21.2 | 4.0 | 105.5 | 26.1 | 4.0 |
| | Water | 10 | 46.6 | 10.2 | 4.6 | 70.4 | 15.3 | 4.6 | 94.6 | 21.4 | 4.4 | 116.9 | 26.4 | 4.4 |
| | | 15 | 53.1 | 10.1 | 5.2 | 80.6 | 15.6 | 5.2 | 108.0 | 21.8 | 5.0 | 134.2 | 27.1 | 5.0 |
| | | 18 | 57.0 | 10.1 | 5.6 | 86.7 | 15.8 | 5.5 | 116.0 | 22.1 | 5.3 | 144.5 | 27.5 | 5.3 |
| | | 20 | 59.6 | 10.1 | 5.9 | 90.7 | 16.0 | 5.8 | 121.4 | 22.3 | 5.5 | 151.4 | 27.7 | 5.5 |
| 50 | Brine | −5 | 27.1 | 10.5 | 2.6 | 45.3 | 16.2 | 2.8 | 61.2 | 22.1 | 2.8 | 71.2 | 26.7 | 2.7 |
| | | −2 | 30.7 | 10.6 | 2.9 | 49.1 | 16.3 | 3.0 | 65.9 | 22.3 | 3.0 | 78.9 | 27.2 | 2.9 |
| | | 0 | 33.1 | 10.7 | 3.1 | 52.0 | 16.3 | 3.2 | 69.5 | 22.5 | 3.1 | 84.2 | 27.6 | 3.1 |
| | | 2 | 35.5 | 10.8 | 3.3 | 55.2 | 16.3 | 3.4 | 74.0 | 22.5 | 3.3 | 90.1 | 27.5 | 3.3 |
| | | 5 | 39.1 | 10.9 | 3.6 | 60.6 | 16.5 | 3.7 | 81.8 | 23.2 | 3.5 | 99.5 | 28.5 | 3.5 |
| | | 7 | 41.5 | 10.9 | 3.8 | 64.0 | 16.6 | 3.9 | 86.7 | 23.4 | 3.7 | 105.3 | 28.7 | 3.7 |
| | Water | 10 | 45.4 | 11.3 | 4.0 | 69.8 | 16.9 | 4.1 | 94.2 | 23.6 | 4.0 | 116.0 | 29.3 | 4.0 |
| | | 15 | 51.7 | 11.7 | 4.4 | 79.0 | 17.3 | 4.6 | 106.6 | 24.0 | 4.5 | 132.5 | 30.1 | 4.4 |
| | | 18 | 55.4 | 12.0 | 4.7 | 84.5 | 17.6 | 4.9 | 114.1 | 24.2 | 4.7 | 142.5 | 30.6 | 4.7 |
| | | 20 | 57.9 | 12.1 | 4.9 | 88.2 | 17.7 | 5.0 | 119.0 | 24.3 | 4.9 | 149.1 | 30.9 | 4.9 |

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

Further performance data – heating
see next page

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

## Performance data – heating

### Thermalia® dual H (35-90)

Data according to EN 14511

| | | | | H (35) Stage 2 | | | H (50) Stage 2 | | | H (70) Stage 2 | | | H (90) Stage 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | | $t_Q$ °C | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP | $Q_h$ kW | P kW | COP |
| 55 | Brine | −5 | 26.4 | 11.5 | 2.3 | 45.1 | 18.0 | 2.5 | 61.0 | 24.5 | 2.5 | 71.2 | 29.1 | 2.5 |
| | | −2 | 29.9 | 11.7 | 2.6 | 48.6 | 18.0 | 2.7 | 65.8 | 25.0 | 2.6 | 78.3 | 30.0 | 2.6 |
| | | 0 | 32.2 | 11.8 | 2.7 | 51.3 | 18.1 | 2.8 | 69.5 | 25.3 | 2.8 | 83.5 | 30.5 | 2.7 |
| | | 2 | 34.5 | 11.9 | 2.9 | 54.8 | 18.2 | 3.0 | 74.2 | 25.5 | 2.9 | 89.7 | 30.9 | 2.9 |
| | | 5 | 38.1 | 12.0 | 3.2 | 60.8 | 18.3 | 3.3 | 82.2 | 25.6 | 3.2 | 99.9 | 31.3 | 3.2 |
| | | 7 | 40.4 | 12.1 | 3.4 | 64.6 | 18.4 | 3.5 | 87.3 | 25.7 | 3.4 | 106.5 | 31.5 | 3.4 |
| | Water | 10 | 44.8 | 12.5 | 3.6 | 69.0 | 18.8 | 3.7 | 94.1 | 25.9 | 3.6 | 115.4 | 32.2 | 3.6 |
| | | 15 | 47.9 | 12.5 | 3.8 | 73.9 | 18.7 | 4.0 | 100.4 | 26.1 | 3.8 | 124.1 | 32.5 | 3.8 |
| | | 18 | 53.2 | 12.4 | 4.3 | 82.0 | 18.6 | 4.4 | 111.0 | 26.4 | 4.2 | 138.6 | 32.9 | 4.2 |
| | | 20 | 55.3 | 12.4 | 4.5 | 85.2 | 18.6 | 4.6 | 115.2 | 26.5 | 4.4 | 144.4 | 33.1 | 4.4 |
| 65 | Brine | −5 | - | - | - | - | - | - | - | - | - | - | - | - |
| | | −2 | 29.2 | 14.3 | 2.0 | 50.0 | 22.2 | 2.2 | 66.2 | 30.6 | 2.2 | 77.3 | 36.1 | 2.1 |
| | | 0 | 31.4 | 14.5 | 2.2 | 52.7 | 22.2 | 2.4 | 70.5 | 30.8 | 2.3 | 82.6 | 37.0 | 2.2 |
| | | 2 | 33.4 | 14.6 | 2.3 | 55.5 | 22.3 | 2.5 | 74.7 | 30.9 | 2.4 | 89.6 | 37.5 | 2.4 |
| | | 5 | 36.5 | 14.8 | 2.5 | 59.6 | 22.3 | 2.7 | 81.0 | 31.0 | 2.6 | 98.1 | 37.9 | 2.6 |
| | | 7 | 39.0 | 15.0 | 2.6 | 62.3 | 22.3 | 2.8 | 85.3 | 31.1 | 2.7 | 104.4 | 38.5 | 2.7 |
| | Water | 10 | 42.6 | 15.3 | 2.8 | 67.4 | 23.0 | 2.9 | 93.5 | 31.4 | 3.0 | 113.6 | 39.2 | 2.9 |
| | | 15 | 48.4 | 14.5 | 3.3 | 76.6 | 21.8 | 3.5 | 105.0 | 30.4 | 3.4 | 129.1 | 37.6 | 3.4 |
| | | 18 | 51.6 | 14.4 | 3.6 | 81.5 | 21.7 | 3.8 | 111.8 | 30.4 | 3.7 | 138.1 | 37.6 | 3.7 |
| | | 20 | 53.6 | 14.3 | 3.7 | 84.8 | 21.6 | 3.9 | 116.3 | 30.3 | 3.8 | 144.1 | 37.7 | 3.8 |
| 70 | Water | 13 | 46.2 | 15.6 | 3 | 73 | 23.5 | 3.1 | 100.5 | 32.6 | 3.1 | 122.7 | 40 | 3.1 |
| | | 15 | 48.3 | 15.5 | 3.1 | 76.3 | 23.4 | 3.3 | 105 | 32.4 | 3.2 | 128.7 | 39.9 | 3.2 |
| | | 18 | 51.4 | 15.4 | 3.4 | 81.2 | 23.1 | 3.5 | 111.8 | 32.2 | 3.5 | 137.6 | 39.9 | 3.5 |
| | | 20 | 53.5 | 15.3 | 3.5 | 84.5 | 23 | 3.7 | 116.3 | 32 | 3.6 | 143.6 | 39.8 | 3.6 |
| | | 25 | 58.6 | 15.1 | 3.9 | 92.7 | 22.7 | 4.1 | 127.6 | 31.7 | 4 | 158.6 | 39.7 | 4 |

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

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

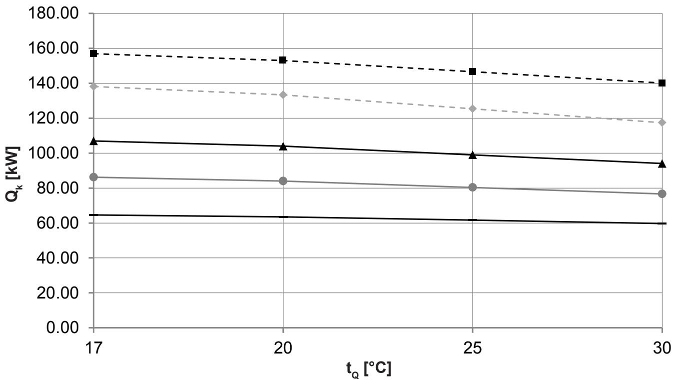
## Performance data – cooling

Maximum cooling capacity

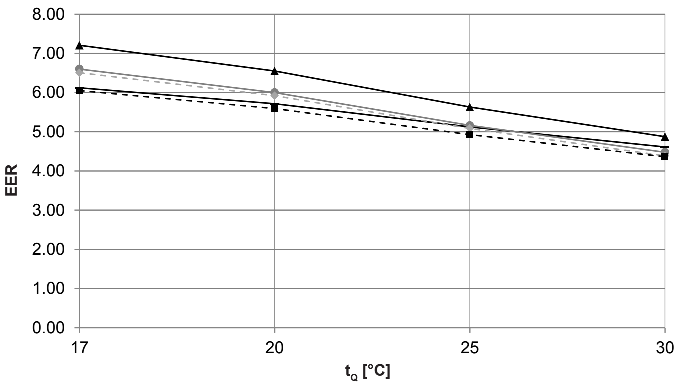
### Thermalia® dual R (55-140) with R410A

Data according to EN 14511

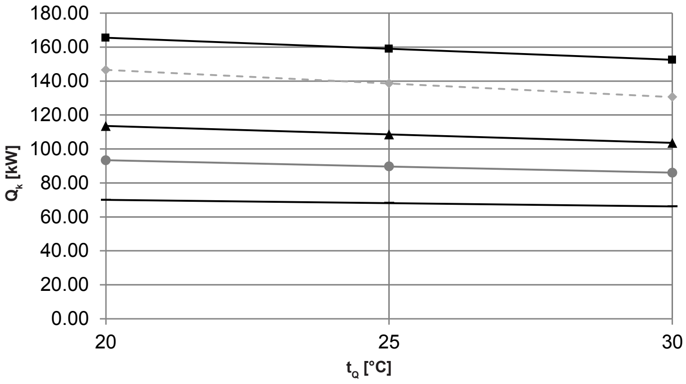
**Cooling capacity – $t_{VL}$ 9 °C**



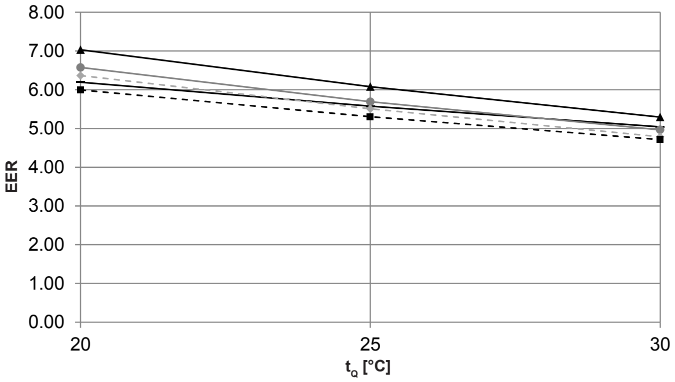
**Energy efficiency ratio – $t_{VL}$ 9 °C**



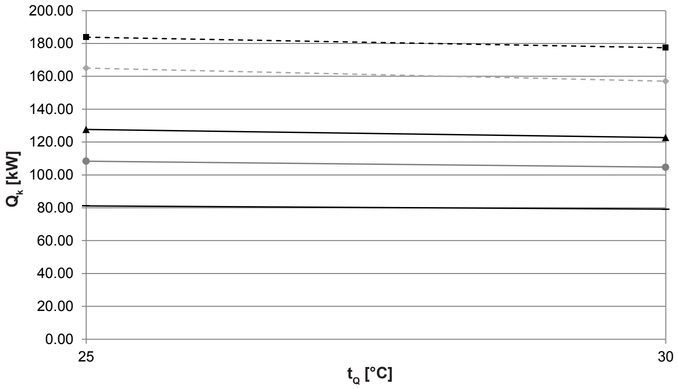
**Cooling capacity – $t_{VL}$ 12 °C**



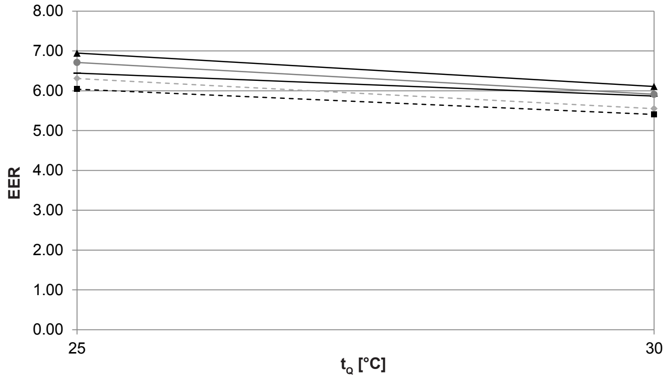
**Energy efficiency ratio – $t_{VL}$ 12 °C**



**Cooling capacity – $t_{VL}$ 18 °C**



**Energy efficiency ratio – $t_{VL}$ 18 °C**



$t_{VL}$ = cooling water flow temperature (°C)
$t_Q$ = source temperature (°C)
$Q_k$ = cooling capacity (kW), measured in accordance with standard EN 14511
EER = Energy Efficiency Ratio 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)

## Performance data – cooling

### Thermalia® dual R (55-140)

Data according to EN 14511

| | Heat source | | | R (55)<br>Stage 2 | | | R (70)<br>Stage 2 | | | R (85)<br>Stage 2 | | | R (110)<br>Stage 2 | | | R (140)<br>Stage 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $t_{VL}$ °C | Medium t1 | $t_Q$ °C | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER | $Q_k$ kW | P kW | EER |
| 9 | Brine (Sole) | 17 | 64.7 | 10.6 | 6.1 | 86.2 | 13.1 | 6.6 | 107.0 | 14.8 | 7.2 | 138.1 | 21.2 | 6.5 | 156.9 | 25.9 | 6.1 |
| | | 20 | 63.5 | 11.1 | 5.7 | 84.0 | 14.0 | 6.0 | 104.0 | 15.9 | 6.6 | 133.3 | 22.5 | 5.9 | 153.0 | 27.4 | 5.6 |
| | | 25 | 61.6 | 12.0 | 5.1 | 80.3 | 15.6 | 5.2 | 99.0 | 17.6 | 5.6 | 125.4 | 24.7 | 5.1 | 146.6 | 29.7 | 4.9 |
| | | 30 | 59.7 | 12.9 | 4.6 | 76.7 | 17.1 | 4.5 | 94.0 | 19.3 | 4.9 | 117.4 | 26.8 | 4.4 | 140.1 | 32.1 | 4.4 |
| 12 | Brine (Sole) | 20 | 70.0 | 11.3 | 6.2 | 93.3 | 14.2 | 6.6 | 113.6 | 16.1 | 7.0 | 146.5 | 23.0 | 6.4 | 165.5 | 27.6 | 6.0 |
| | | 25 | 68.1 | 12.2 | 5.6 | 89.7 | 15.8 | 5.7 | 108.6 | 17.9 | 6.1 | 138.6 | 25.2 | 5.5 | 159.0 | 30.0 | 5.3 |
| | | 30 | 66.2 | 13.1 | 5.0 | 86.0 | 17.3 | 5.0 | 103.6 | 19.6 | 5.3 | 130.6 | 27.3 | 4.8 | 152.5 | 32.4 | 4.7 |
| 15 | Brine (Sole) | 25 | 74.6 | 12.4 | 6.0 | 99.0 | 16.0 | 6.2 | 118.2 | 18.1 | 6.5 | 151.8 | 25.7 | 5.9 | 171.4 | 30.2 | 5.7 |
| | | 30 | 72.7 | 13.3 | 5.5 | 95.3 | 17.5 | 5.4 | 113.2 | 19.8 | 5.7 | 143.8 | 27.8 | 5.2 | 165.0 | 32.6 | 5.1 |
| 18 | Brine (Sole) | 25 | 81.1 | 12.6 | 6.4 | 108.3 | 16.2 | 6.7 | 127.7 | 18.4 | 7.0 | 165.0 | 26.2 | 6.3 | 183.9 | 30.4 | 6.0 |
| | | 30 | 79.2 | 13.5 | 5.9 | 104.7 | 17.7 | 5.9 | 122.7 | 20.1 | 6.1 | 157.0 | 28.3 | 5.6 | 177.4 | 32.8 | 5.4 |

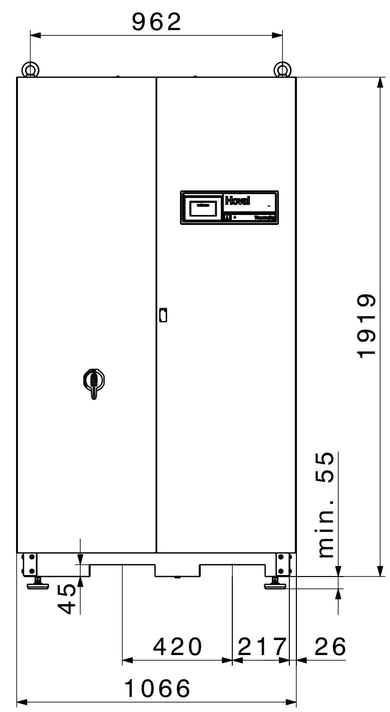
$t_{VL}$ = cooling water flow temperature (°C)
$t_Q$ = source temperature (°C)
$Q_k$ = cooling capacity (kW), measured in accordance with standard EN 14511
P = power consumption of the overall unit (kW) incl. high-efficiency pump, measured in accordance with EN 14511
EER = Energy Efficiency Ratio for the overall unit in accordance with standard EN 14511

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

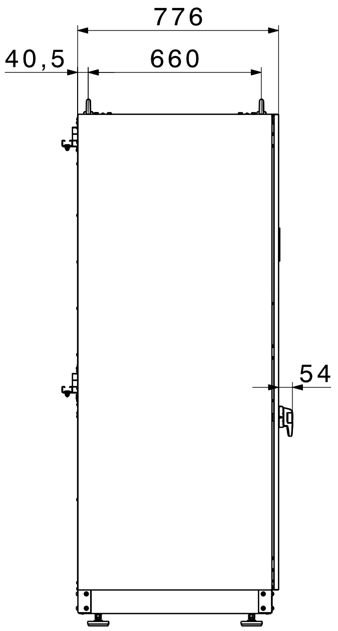
## Thermalia® dual (55-85), dual H (35), dual R (55-85)

(Dimensions in mm)

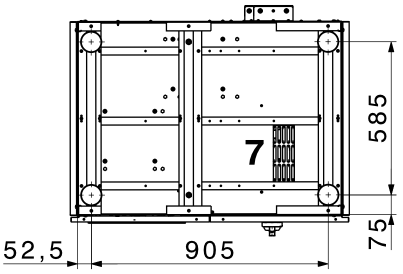
Front view



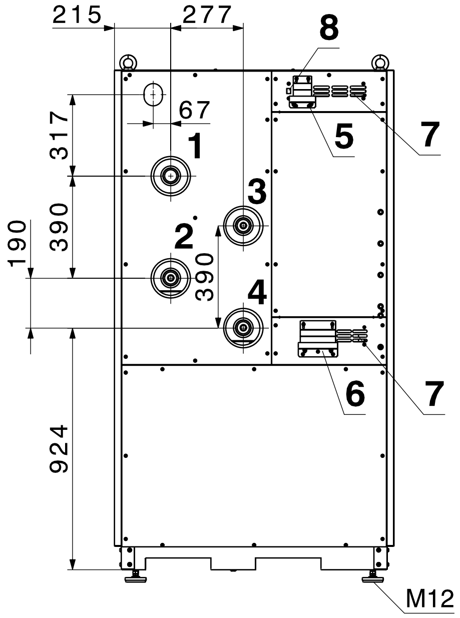
Side view



View from below



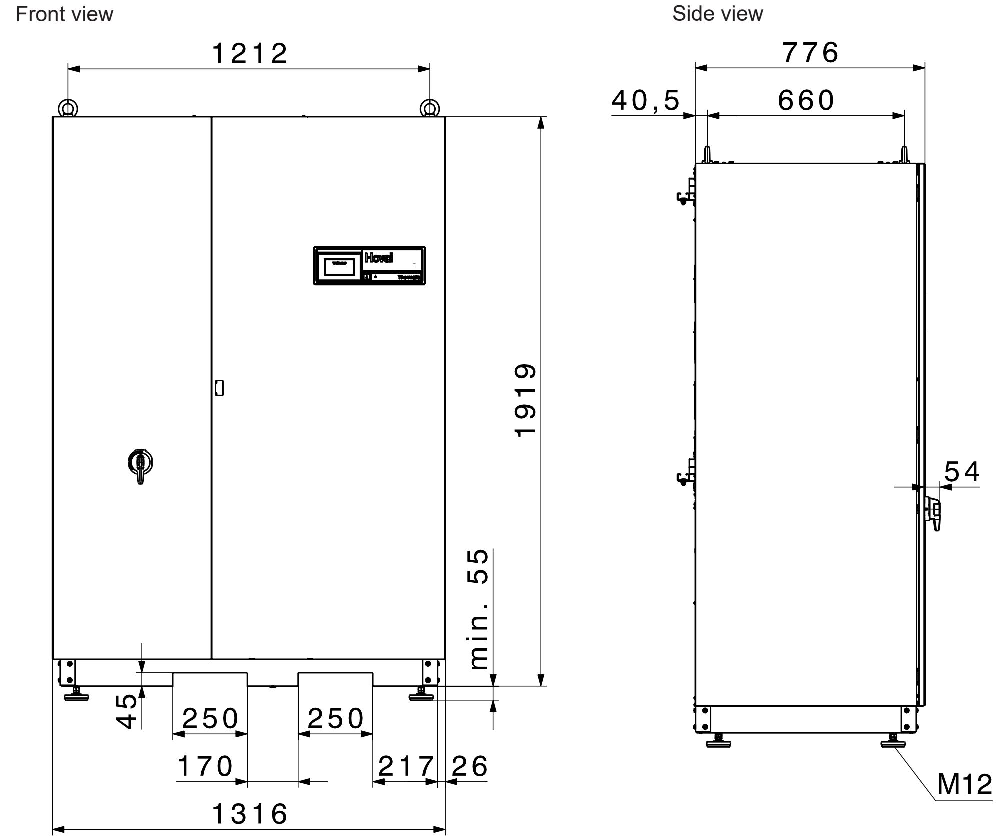
Rear view

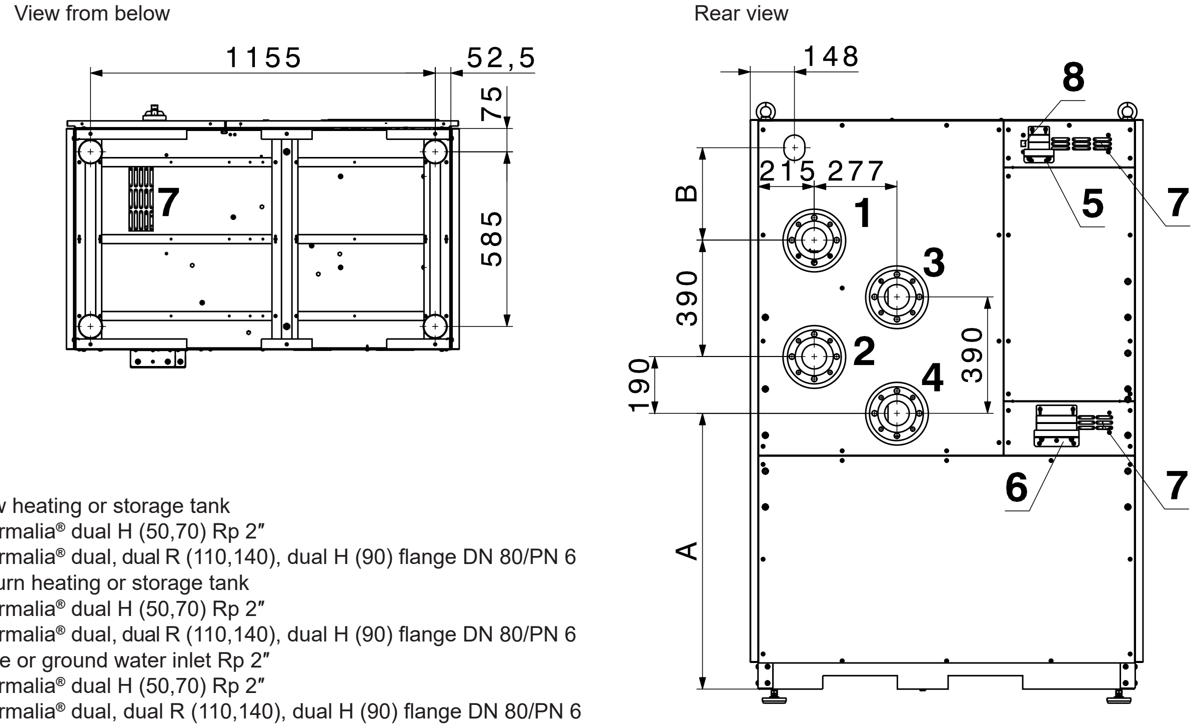


1 Flow heating or storage tank Rp 2″
2 Return heating or storage tank Rp 2″
3 Brine or ground water inlet Rp 2″
4 Brine or ground water outlet Rp 2″
5 Cable feedthrough
for sensors and actuators
6 Cable feedthrough
for the mains supply and connection
to the main circuit
7 Vent opening
8 LAN interface

## Thermalia® dual (110-140), dual H (50-90), dual R (110-140)

(Dimensions in mm)





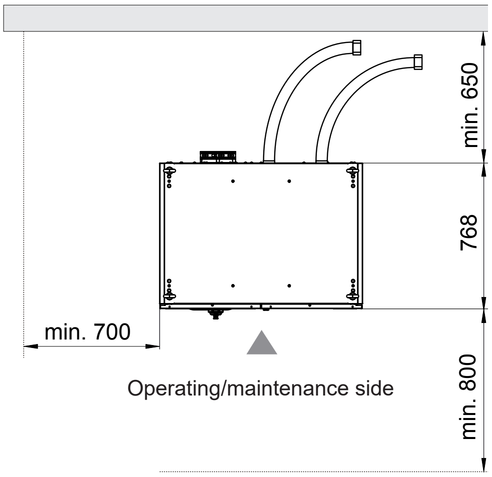
1 Flow heating or storage tank
Thermalia® dual H (50,70) Rp 2″
Thermalia® dual, dual R (110,140), dual H (90) flange DN 80/PN 6
2 Return heating or storage tank
Thermalia® dual H (50,70) Rp 2″
Thermalia® dual, dual R (110,140), dual H (90) flange DN 80/PN 6
3 Brine or ground water inlet Rp 2″
Thermalia® dual H (50,70) Rp 2″
Thermalia® dual, dual R (110,140), dual H (90) flange DN 80/PN 6
4 Brine or ground water outlet Rp 2″
Thermalia® dual H (50,70) Rp 2″
Thermalia® dual, dual R (110,140), dual H (90) flange DN 80/PN 6
5 Cable feedthrough
for sensors and actuators
6 Cable feedthrough
for the mains supply and connection to the main circuit
7 Vent opening
8 LAN interface

| Type | A | B |
|---|---|---|
| Thermalia dual/dual R (110,140) | 924 | 311 |
| Thermalia dual H (50-90) | 1044 | - |

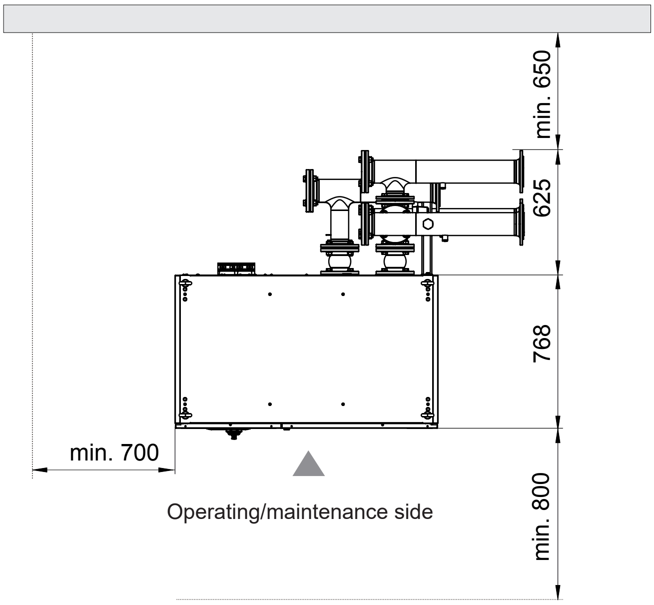
## Space requirement

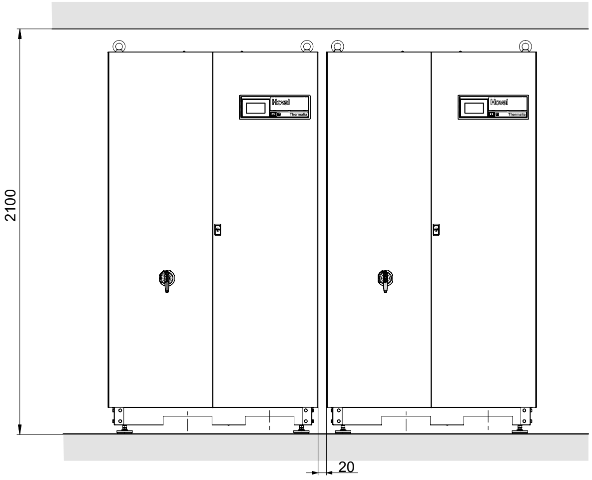
Required wall clearance for operation and maintenance
(Dimensions in mm)

**Thermalia® dual (55-85), dual H (35-70), dual R (55-85)**



**Thermalia® dual (110-140), dual H (90), dual R (110-140)**





## **Hoval quality.**
## You can count on us.

Hoval

Hoval is one of the leading international companies for heating and indoor climate solutions. Drawing on more than 80 years of experience and benefiting from a close-knit team culture, the Hoval Group delivers exciting solutions and develops technically superior products. This leadership role requires a sense of responsibility for energy and the environment, which is expressed in an intelligent combination of different heating technologies and customised indoor climate solutions.

Hoval also provides personal consultations and comprehensive customer service. With around 2500 employees in 15 companies around the world, Hoval sees itself not as a conglomerate, but as a large family that thinks and acts globally.
Hoval heating and indoor climate solutions are currently exported to more than 50 countries.

## Responsibility for energy and environment

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2026 - 04 | Subject to modifications

Your Hoval partner

## Requirements and directives

The following requirements and directives must be complied with:

- Technical information and assembly 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.
- 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
- SIA 384/1: Heating systems in buildings

*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 casing

*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 HE301-01 guidelines “Safety engineering installations for heating systems”
- Bivalent systems: 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 emissions 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 12828: 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
- LAI acoustic guidelines
- ISO 9613-2

*Electrical connection*

- VDE directives
- Technical connection condition (TAB 2019) for connecting to the low voltage grid
- DIN 8947: Heat pumps; heat pump units with electric driven compressors for heating of water
- §14a Energy Industry Act: Grid-serving connection (operation as controllable consumption appliance)

*Planning and design*

- Building Energy Act GEG
- Drinking Water Ordinance (TrinkwV)
- DVGW worksheets W 551 and W 553
- DIN EN 15450: Heating systems in buildings – Design of heat pump heating systems
- VDI 4640
- VDI 4650
- VDI 6044 Heating water
- VDI 4645 Heating systems in buildings – Design of heat pump heating systems

## Buffer storage tank

A 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

A buffer storage tank is mandatory for Hoval air/water heat pumps (defrost energy).

A buffer storage tank can be dispensed with if a direct heating or cooling circuit with storage capacity is involved, and there is always a constant flow rate (⅔ must be unblockable).

For Hoval heat pumps, the following minimum sizes of the buffer storage tank (EnerVal) must be observed. The minimum running times of the heat pumps are taken into account.
For air/water heat pumps, the energy required for defrosting the heat pump is included.

The volumes for power company off-periods shall be added on a project-by-project basis in accordance with local regulations.

## Recommeded minimum sizes of buffer storage tank

| | EnerVal type | DuoVal E/C (100/300) |
|---|---|---|
| UltraSource® B comfort C (8) | **100** | ● |
| UltraSource® B compact C (8/200) | **100** | |
| UltraSource® B comfort C (11) | **100** | ● |
| UltraSource® B compact C (11/200) | **100** | |
| UltraSource® B comfort C (17) | **300** | |
| Belaria® pro comfort (8) | **100** | ● |
| Belaria® pro comfort (13) | **100** | ● |
| Belaria® pro comfort (15) | **300** | |
| Belaria® pro (20) | **500** | |
| Belaria® pro (25) | **500** | |
| Belaria® pro (40) | **1000** | |
| Belaria® pro (50) | **1000** | |
| Belaria® comfort ICM (8) | **100** | ● |
| Belaria® comfort ICM (13) | **100** | ● |
| Belaria® twin I/IR (20) | **500** | |
| Belaria® twin I/IR (25) | **500** | |
| Belaria® twin I/IR (30) | **800** | |
| Daikin Altherma (14) | **100** | ● |
| Daikin Altherma (18) | **100** | ● |
| Belaria® fit (8) | **300** | |
| Belaria® fit (13) | **500** | |
| Belaria® fit (20) | **800** | |
| Belaria® fit (26) | **1000** | |
| Belaria® fit (40) | **2000** | |
| Belaria® fit (53) | **2000** | |
| Belaria® fit (70) | **1500 + 1500** | |

| | EnerVal type | DuoVal E/C (100/300) |
|---|---|---|
| UltraSource® T comfort (8) | **100** | ● |
| UltraSource® T compact (8/200) | **100** | |
| UltraSource® T comfort (13) | **100** | ● |
| UltraSource® T compact (13/200) | **100** | |
| UltraSource® T comfort (17) | **200** | |
| Thermalia® comfort (8) | **300** | |
| Thermalia® comfort (10) | **500** | |
| Thermalia® comfort (13) | **500** | |
| Thermalia® comfort (17) | **800** | |
| Thermalia® comfort H (7) | **300** | |
| Thermalia® comfort H (13) | **500** | |
| Thermalia® twin (20) | **500** | |
| Thermalia® twin (26) | **500** | |
| Thermalia® twin (36) | **800** | |
| Thermalia® twin (42) | **1000** | |
| Thermalia® twin H (13) | **300** | |
| Thermalia® twin H (19) | **300** | |
| Thermalia® twin H (22) | **500** | |
| Thermalia® dual (55) | **1500** | |
| Thermalia® dual (70) | **1500** | |
| Thermalia® dual (85) | **2000** | |
| Thermalia® dual (110) | **1500 + 1000** | |
| Thermalia® dual (140) | **1500 + 1500** | |
| Thermalia® dual H (35) | **800** | |
| Thermalia® dual H (50) | **1000** | |
| Thermalia® dual H (70) | **1500** | |
| Thermalia® dual H (90) | **2000** | |
| Thermalia® dual R (55) | **1500** | |
| Thermalia® dual R (70) | **1500** | |
| Thermalia® dual R (85) | **2000** | |
| Thermalia® dual R (110) | **1500 + 1000** | |
| Thermalia® dual R (140) | **1500 + 1500** | |

**Notice**
Check the availability of the respective units in different countries

## 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 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.

The volumes for power company off-periods shall be added to the minimum sizes of the buffer storage tanks on a project-by-project basis in accordance with local regulations.

## Set-up

In the case of floating screed or underlay, a recess should be cut in the screed and the impact sound insulation around the heat pump.

- 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 heat pumps installed inside can be mounted on the floor in the boiler room
- 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

### Indoors

- **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 room must be frost-free
- The space around the indoor unit must allow for adequate air circulation
- If water is discharged through the safety valve, precautions must be taken to ensure that this water is drained away
- The indoor unit is not allowed to be installed where there could be a potentially explosive atmosphere
- The heat pump must not be installed in a room that is also used as a workplace or workshop. If construction work which generates a lot of dust is carried out in the installation room of the heat pump, 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
- 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

It is imperative that a sludge separator is installed in the heating return upstream from the heat pump.

### Outdoors

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 must 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 under the outdoor unit that is sensitive to moisture
- 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 systems at risk of frost damage are allowed to be on the exhaust side
- It is essential to avoid air short-circuiting. The space necessary for intake and exhaust must always be provided (see “Space required”)
- The installation location must be selected so that the air intake and exhaust are not blocked or obstructed by snow, leaves, etc.
- Installation in wall niches is not recommended (air short circuit, sound reflection)
- Several units must not be installed directly 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.
- 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
- The outdoor unit must be protected from heavy snowfall
- Install the unit at sufficient height above the ground to ensure that the unit is not covered by snow and freezing condensate cannot impair operation (see separate base plans)

## Sound emissions

### Indoor installation

The effective sound pressure level 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 sound emissions are not perceived as a disruptive. 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.

### Outdoor installation

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.

## 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.

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 $m^2$ 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 line to the heat pump.

### Baking out

The baking out of buildings and floors (underlays) must not be done with Hoval heat pumps. If this instruction is not observed, the additional load can lead to irreparable damage to the heat source. Failure to do so may result in losses of guarantee/warranty. Alternative heat sources should thus be used for the baking out.
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.

Bivalent parallel and single energy source:
The heat pump alone heats until the switch-on point (bivalent point) is reached. An additional heat generator then heats the water in parallel to this. If this additional heat generator is an electric heating element, 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.

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.

Bivalent semi-parallel:
The heat pump alone heats until the switch-on point (bivalent point) is reached. An additional heat generator 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.

## 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:

Imax (A) = max. current consumption of the heat pump. Used for setting the dimensions of the feeder cable and fusing.

Starting current (A) = current consumption on direct starting with external starting current limiter

cos φ = 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.

**Switzerland:**
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 (system), a frequency converter must be supplied or installed by the client.

## Water quality in heating systems

**Filling and replacement water, heating water**

**The following applies:**

- For Germany VDI 2035
- For Austria ÖNORM H5195
- In addition, the EN 14868 standard must be applied, **as well as the manufacturer-specific specifications**

**Manufacturer-specific specifications**

**Filling and replacement water**

The filling and replacement water can be both fully demineralised and also merely softened.

**Heating water**

- In the case of full demineralisation of the filling and replacement water, the electrical conductivity of the heating water must not exceed the value of 100 µS/cm.
- In the case of softening the filling and replacement water, the following conditions must be complied with:
  - Electrical conductivity of the heating water for operation with water containing salts: > 100 µS/cm to ≤ 1500 µS/cm
  - pH value of the heating water for systems without aluminium alloy as water-side material 8.2 to 10.0 (measurement 10 weeks after commissioning at the earliest)
- The sum of the chloride, nitrate and sulphate contents in the heating water must not exceed 50 mg/l in total.

**Additional notices**

- Hoval heat pumps and calorifiers are suitable for heating systems without significant oxygen intake (system type I in accordance with EN 14868.)
- Systems with continual oxygen intake (e.g. underfloor heating without diffusion-proof plastic piping) or intermittent oxygen intake (e.g. requiring frequent topping-up) must be equipped with a system separation.
- If only the heat pump is replaced in an existing system, it is not recommended for the entire heating system to be refilled, provided that the heating water already contained in the system complies with the relevant directives or standards.
- Before filling new systems and, where necessary, existing heating systems containing heating water that does not comply with the directives or standards, the heating system must be professionally cleaned and flushed. The heat pump must not be filled until the heating system has been flushed.

## Water composition

## Water quality

**Heating water:**

- The requirements of European standard EN 14868 and the SWKI directive BT 102-01 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 **separate circuits**
- Treated heating water must be tested at least once every 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 BT 102-01, re-filling the system is not recommended
- 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
- The pH value of the heating water should be between 8.2 and 10.0 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

**Filling and replacement water:**

- As a rule, the best filling and replacement water for a system with Hoval heat generator is untreated domestic water. 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
- SWKI BT 102-01 applies to the protection of the heating system, and it makes the exact specifications for the filling water quality.

## Engineering checklist for heat pump systems

- Definition of hydraulic diagram according to Hoval standard for heating, possibly hot water and cooling
- Dimensions of heat pump type selected according to Qh, flow temperature and operating method and application limits (tables/heat output curves/bivalence point)
- Define minimum size of buffer storage tank
- Observe placement and bringing in possibility of heat pump, buffer storage tank and calorifier
- 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

### Air/water heat pumps
**Split version**

- Installation location of outdoor unit/position: air exhaust and intake must be clear
- No parts and systems at risk of frost damage are allowed to be on the exhaust 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 complied with (country-specific requirements)
- There must be a condensate drain for 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
- Avoid direct connection to the heating network, and if this is not possible, then only by differential pressure relief valve (minimum flow rate) and intermediate tank (minimum water volume)
- Possible selection of type with cooling function
- Cooling with fan convectors (caution: condensate drain for fan convectors)

### Brine/water heat pumps
Clarification of heat source

- Installation location (not under bedroom)
- Dimensioning of geothermal probe/flat collector (domestic hot water supplement/number of probes/pressure drop calculation (aim for minimum current consumption of brine pump))

### Air/water heat pumps
**Monoblock**

- Installation location (indoor or outdoor). Air exhaust and intake must be clear. Comply with notes on air guidance
- No parts and systems at risk of frost damage are allowed to be on the exhaust 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 complied with (country-specific requirements). Provide damping measures if required
- There must be a condensate drain

### Ground water heat pumps
Clarification of ground water approval

- Geological water inspection report
- Ground water temperatures summer + winter/quantity in l/min or m$^3$/h
- Installation location (not under bedroom)
- Connection of ground water only via separating heat exchanger (intermediate carrier circuit). Separating heat exchanger is configured according to the heat pump type (table). Caution: 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
- The intermediate circuit is filled with frost protection agent for frost protection of −15 °C

**Notice**
In ground water applications, the ground water pump (submersible pump) cannot be directly connected in the heat pump.
Here, corresponding connections must be provided on site.

## Version and commissioning

**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 heat pumps
- Access for the purpose of operation and maintenance
- Dimensions and position of the masonry openings
- Position of heating connections and condensate drain
- Position of the condensate drain
- Drainage of the air ducts or set-up area for the heat pump and acoustic insulation of the air ducts
- Setting up the heat pump (clearances, minimum distances)

### Hydraulics

- Check the hydraulic piping of the system according to be selected hydraulic schematic
- Clarify any open issues before installation
- The wiring diagram does not serve as a hydraulic schematic, 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 accordance with Hoval's and the country's specific regulations. Do not attach any rigid connections (e.g. cable duct) to the heat pump casing
- The information on the system 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 2019)
- If a frequency converter is required (starting current), it must be supplied by the client

### Checks before commissioning

The following items must be checked before notifying Hoval that the system is ready for commissioning:
- Hydraulic piping
- Positioning and installation of the instruments and fittings
- Positioning and installation of the sensors according to the corresponding wiring 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 frost protection agent and water:
- Fully demineralised water must be used
- The concentration of frost protection agent 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 frost protection agent manufacturer is maintained (protection against sludge formation and corrosion). However, the frost protection concentrations should be kept as low as possible with a view to improved heat transmission and lower pump output
- The frost protection agent 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. The heating water must be treated according to the recommendations of the professional associations.

### Hydraulic balancing/setting the flow rates

- The flow rates are calibrated by the installer. This should the 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 must not be greater than the flow rate in the buffer circuit, otherwise the colder heating water return will overflow through the buffer 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 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 (provide buffer storage tank with an electric heating element). The heat pump is not allowed to be used in the building carcass for drying out of the structure or for routing underfloor heating pipes (provide buffer storage tank with an electric heating element for example).
  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 buffer storage tank is provided, its heating water temperature is not allowed to be less than 17 °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. On commissioning, the technical room should have a temperature of more than 15 °C and the return temperature should be at least 12 °C.

### 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 set-points of the system 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. Hoval service only prepares the commissioning protocol of the heat pump or the system parts supplied by Hoval. The operating instructions for the Hoval heat pumps and the accessories supplied by Hoval are delivered with the articles or handed over during commissioning.

**Caution!**
If Hoval is required to undertake 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 system is responsible for the operating instructions and for providing instruction in third-party products and/or the entire system!
All Hoval hydraulic schematics and engineering guidelines serve as aids during planning. The planner/installer of the system is responsible for its correct functioning.

### Heat sources

The heat source (with the exception of the temperature level of the heating system) significantly determines the efficiency, 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 water
- Surface water (lakes, rivers)

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:
- Area of application of the heat pump
- Output fluctuations of the heat pump due to temperature fluctuations of the heat source
- Defrosting losses of the heat pump
- Sound emission
- Condensation formation
- In coastal regions or other areas with salty air, corrosion can decrease the lifetime of the evaporator

Heat pumps have clearly defined application limits, which means it is essential to consider the application limits when designing the system.

### Ground

Setting up and operating geothermal probes and ground source collectors requires official approval. The heat capacity and thermal 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 must always be significantly less 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 (90 kWh per metre of geothermal probe length)

### Geothermal probes

The planning criteria are:
- The specific heat extraction rate which depends on the thermal conductivity (λ) of the underground; a specific cooling capacity of max. 47 W/m probe length can be assumed as guidance values
- The max. heat extraction per year should not exceed 90-100 kWh per metre 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 geothermal probe system**

### 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, an alternative heat source must be sought

For further details see:
Heat source use/ground collectors.

### Ground water

If the temperature of the ground water 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:
- The min. heat source temperature during the utilisation period
- The min. permitted evaporator outlet temperature of the selected heat pump
- The specifications of the authorities, such as the type of use, the design of the withdrawal and return well, etc.
- A qualified specialist company must be contacted for planning and installing the heat source system

In addition, the following aspects must be considered for the planning:
- VDI 4640
- Min. heat source temperature and flow rate during the utilisation period
- Official regulations such as type of use, configuration of the withdrawal and return well, etc.
- Possibility of infiltration through water from rivers or lakes
- The design must be based on reliable temperature data
- 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.

**Surface water**
If the temperature of the surface water is below 8 °C in the seasonal profile, this must be taken into account in the planning.

Planning a heat source system with sweet/river water, etc. as the heat source is a challenging task and demands great experience from the planner. Surface water use must be via an intermediate carrier circuit (separating heat exchanger). 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 ground water use.

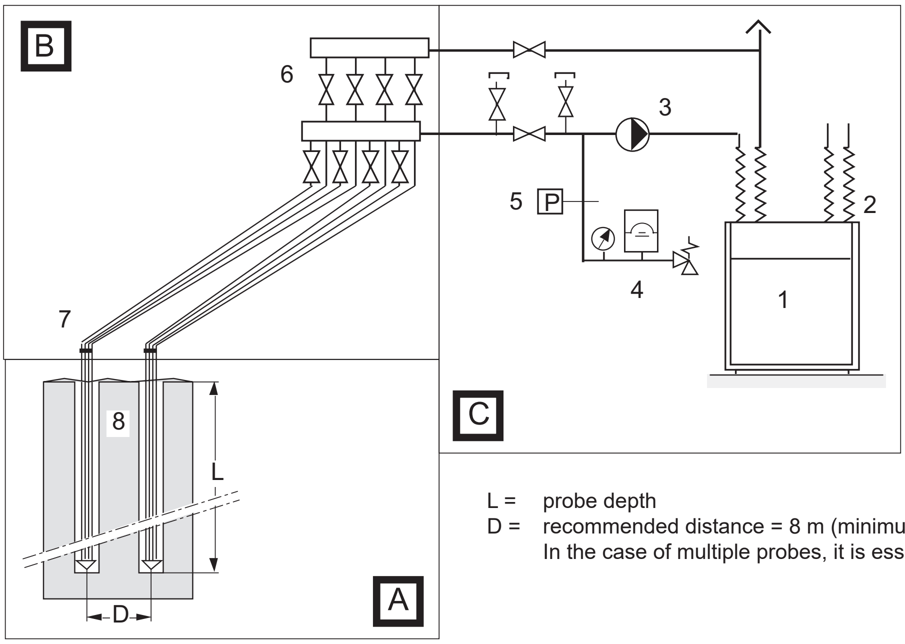
A qualified specialist company must be contacted for planning and installing the heat source system.

## Heat sources

### Geothermal probes

**Schematic diagram heat sources/geothermal probes**

- Geothermal probe system



**Field A) Geothermal probes**
Drilling of geothermal probes including delivery and installation of the probe pipes. Backfilling with bentonite.

**Field B) Connections**
Manifolds/collectors, connection lines, making penetrations in walls and trenching.

**Field C) Heat pump connection**
Connecting pipes between manifold/collector and heat pumps incl. heat source feed pump, safety devices and fittings.

L = probe depth
D = recommended distance = 8 m (minimum 5 m)
In the case of multiple probes, it is essential to clarify the placement.

| Legend | | Field | Delivery | Installation |
|---|---|---|---|---|
| 1 | Heat pump | C | Hoval | Installer |
| 2 | Flexible connections | C | Hoval | Installer |
| 3 | Heat source feed pump<br>(Cold water version) | C | Hoval | Installer |
| 4 | Diaphragm pressure expansion tank | C | Hoval | Installer |
| 5 | Pressure monitor | C | Hoval | Installer |
| 6 | Distributor/collector (PVC/C) | B | Installer | Installer |
| 7 | Connecting line (HDPE 32 or 40 mm Ø) | B | Drilling company or installer | on behalf of the installer |
| 8 | Geothermal probes | A | Certified drilling company | Drilling company on behalf of the client |

If the heat source system is filled with water only, it must be specially dimensioned. It is mandatory to install a flow monitor and a frost protection thermostat.

## Heat sources

### Ground water

**Preliminary information required**

- Suitability regarding quantities and temperatures (t ≥ 6 °C)
- Official approval
- Hydro-geological report
- Water analysis
- The effective minimum ground water temperature

**Indirect utilisation with ground water**

- The minimum ground water temperature during the utilisation period determines the tapping volume (required flow rate)
- In the case of river or sweet water, it is imperative to determine the precise temperature progression during the heating period
- The intermediate heat exchanger must be suitable for use with river or sweet water. Strainers and, if necessary, backwash filters are necessary to protect against contaminating particles such as sand. It must be possible to clean the heat exchangers.
- A filter must be installed upstream of the plate heat exchanger
- The hydraulic piping of the system must be carried out according to the selected hydraulic schematic.
- The intermediate circuit is filled with frost protection agent according to the engineering guidelines. The output of the heat pump can thus be read off for brine 5 °C.
- The intermediate circuit pump must be planned in a cold-water design

**Direct utilisation of ground water**

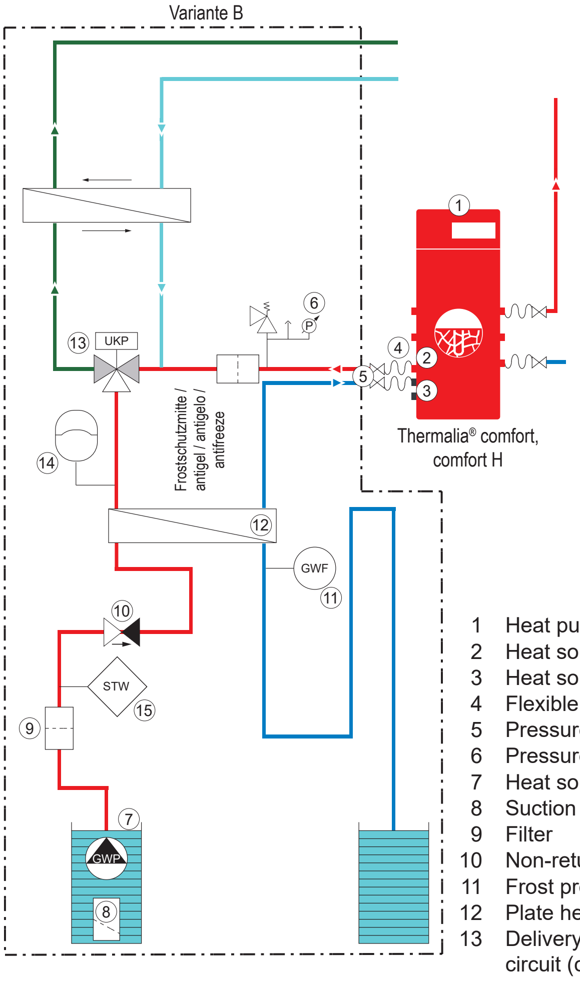
State-of-the-art evaporator design (soldered plate heat exchangers) makes applications with a direct throughflow of ground water inadvisable

- 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 towards the refrigeration circuit. This can cause irreparable damage to a machine
- Flow monitors and frost protection thermostats cannot detect obstructions, as the deviations are too slight to be registered
- Upstream fine filters can only solve the problem of obstructions to a certain extent, and need frequent cleaning
- The somewhat lower performance coefficient is more than compensated for by the high operational reliability
- In such cases, Hoval will not accept liability for damage to the evaporator

Notices:

- The ground water temperature varies according to location.
- The design must be based on reliable temperature data
- The heat source system, (withdrawal and return well) must be installed by a specialist company

*The heat source must be free of chemical or mechanical contamination.*



| | |
|---|---|
| 1 | Heat pump |
| 2 | Heat source inlet |
| 3 | Heat source outlet |
| 4 | Flexible connections |
| 5 | Pressure measurement nozzle ⅜" |
| 6 | Pressure monitor |
| 7 | Heat source feed pump |
| 8 | Suction filter |
| 9 | Filter |
| 10 | Non-return valve |
| 11 | Frost protection temperature monitor |
| 12 | Plate heat exchanger |
| 13 | Delivery pump in heat source intermediate circuit (cold-water design) |
| 14 | Diaphragm pressure expansion tank |
| 15 | Flow monitor |

Other recommended components:

- Flow jacket (when in use)
- Securing/recovery rope
- Rope clamp
- Dry running protection
- Wall anchor
- Water quantity meter
- Vacuum breaker or pressure holding valve

**Notice**

In the case of systems without an intermediate heat exchanger, Hoval accepts no liability for damage caused by soiling or freezing of the evaporator!

# Heating

## Heat utilisation system (heat sink)

**Heating**
The heat pump is a compression cooling machine and behaves very dynamically.
This requires suitable flow rates through the heat exchangers of the heat pump on both the heat source and heat utilisation side. Since the heat exchangers of the heat pump have very low water contents, the constantly changing heat output demand of the system (predominant time of the heating period!) leads to excessive switching frequencies. However, short intervals mean insufficient time for stabilisation of the refrigeration circuit (loss of efficiency) on the one hand, and can lead to compressor failures on the other. In addition, there is the requirement of the electricity companies, which limit the switching frequency to 3 times per hour due to grid stability considerations.
Therefore, suitable measures must be taken or the system must be planned in such a way that the boundary conditions of the heat pump and the requirement of the electricity company can be met at all times.
The most important criteria for meeting the boundary conditions are:

- Correct flow rate through the heat pump during the entire time of use
- Sufficient storage capacity and a minimum water volume of the heat utilisation side (heating)

Underfloor heating systems without thermostatic valves can meet these requirements in most cases.
If the boundary conditions cannot be met, the heat pump must be hydraulically decoupled from the heat utilisation system (heating). A buffer storage tank is required for this. The buffer storage tank ensures that the boundary conditions of the heat pump can be met in any load condition of the system.

**Water heating**
Generous dimensioning of the calorifier in terms of heat exchanger and drinking water volume is recommended. The maximum heat output of the heat pump is decisive for setting the size of the heat exchanger.

- Recommended heat exchanger area 0.3-0.4 m$^2$ per kW max. heat output of the heat pump during the operating time of the system (air/water heat pumps at A20/W50)
- Min. drinking water volume = daily requirement
- In two-stage heat pumps, the output of the first stage can be used.

## Example Heating

### System example: Brine/water and water/water heat pumps without buffer storage tank

**Application**
Underfloor heating with heat storage capacity, low temperature heating system with heating group without thermostatic valves

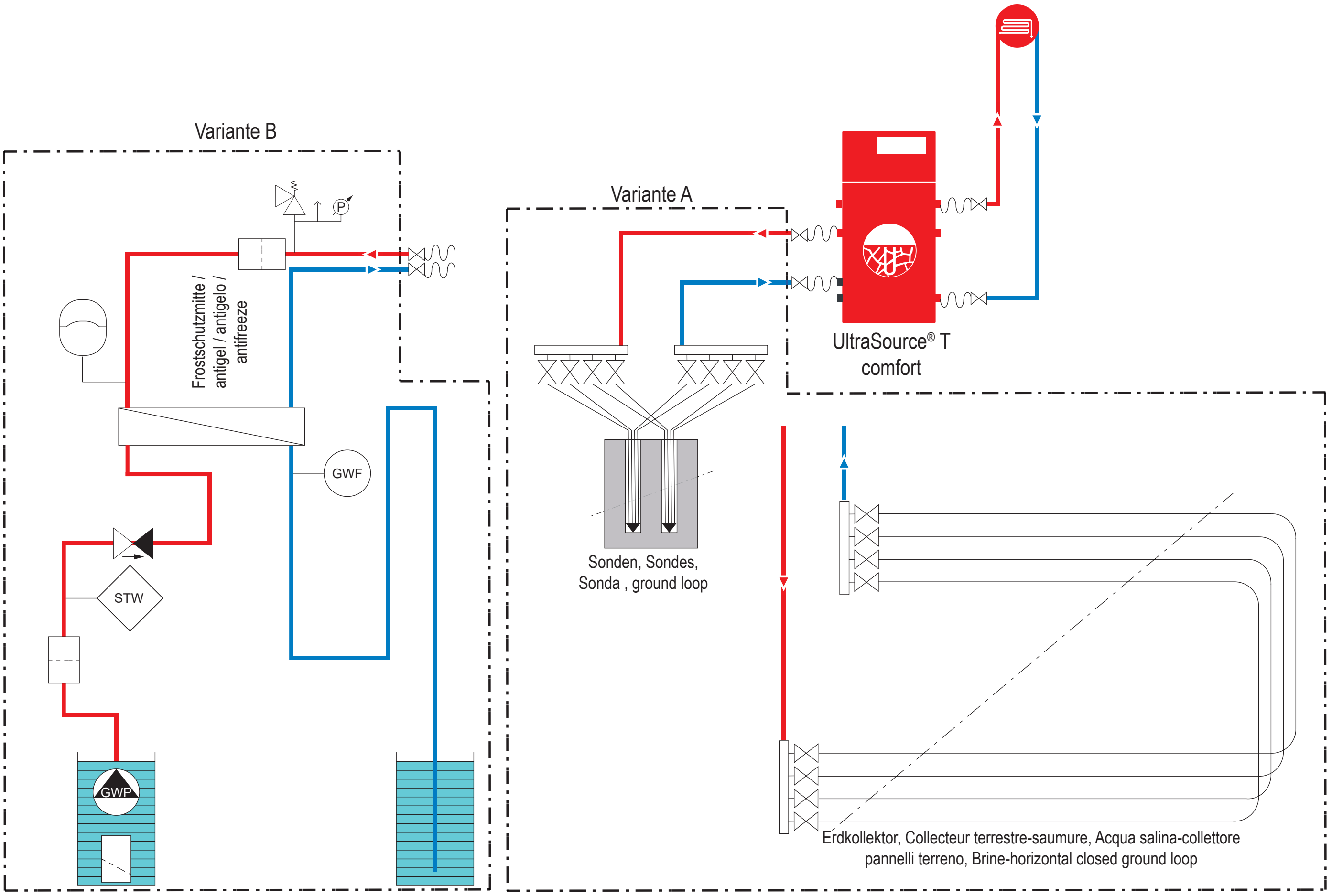
**Heat pump function**
The heat pump works in dependence on the outdoor temperature (2-point regulator) with continuously controlled operating mode. The underfloor heating balances unfavourable output/load ratios.

The heat pump is put into operation when the temperature level in the return falls below a preset level. Switch-on and switch-off command via return sensor.
The switching difference is adjustable.
The additional re-switching delay allows a maximum of 3 starts per hour.
The switching function is controlled by a microprocessor, allows long runtimes and ensures a higher annual coefficient of performance for the heat pump.

**Heating controller**
The weather-controlled heating controller (2-point controller) guarantees a good heat supply to the heating system and works in a user-defined manner.

Ensure a minimum system water content.

If the heating circuits are equipped with thermostatic valves, a bypass with a relief valve must be installed.



**Notice**
The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.

## Example Heating

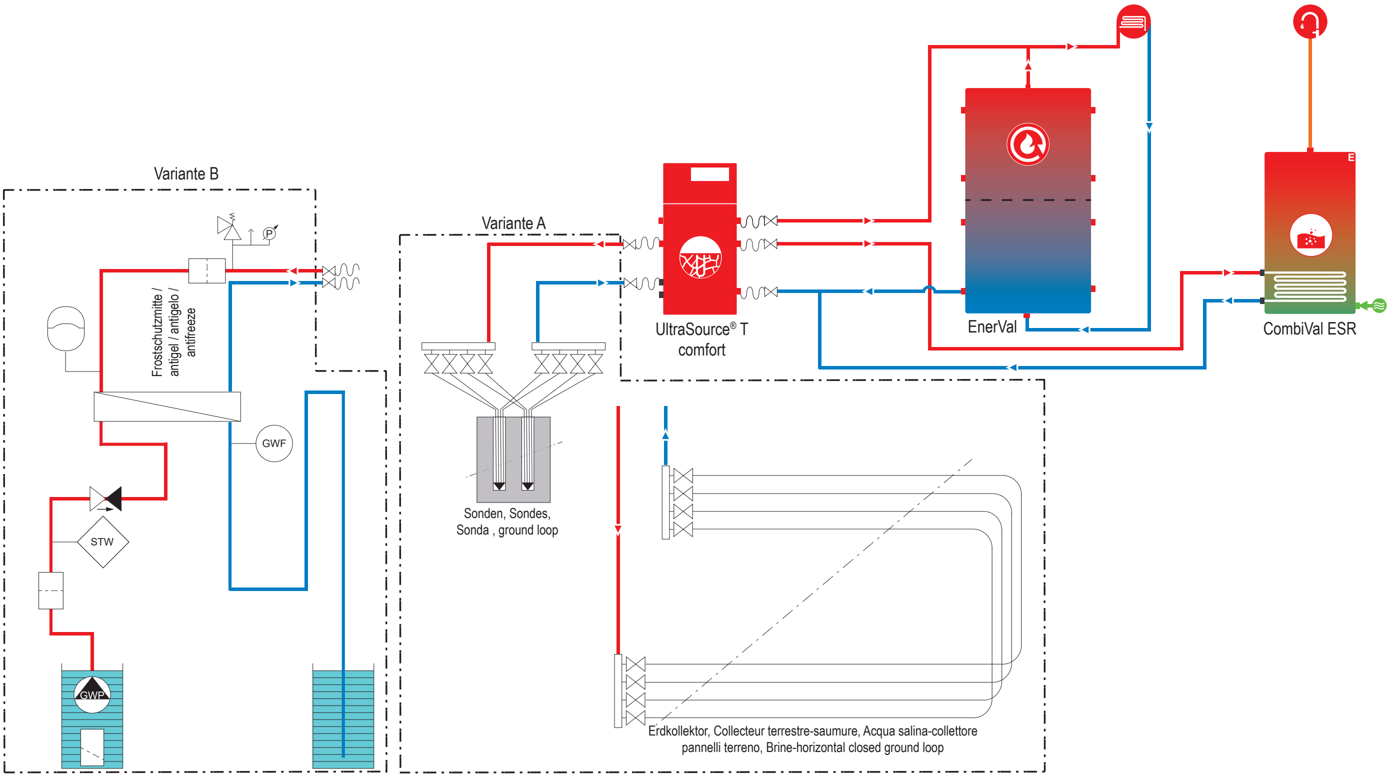
### System example:
### Brine/water and water/water heat pumps with buffer storage tank and calorifier

**Application**
Low temperature heating system with max. 2 heating groups, one buffer storage tank and one calorifier

**Heat pump function**
The heat pump works in dependence on the outdoor temperature (2-point regulator) with continuously controlled operating mode. The buffer storage tank balances unfavourable output/load ratios, allows energy-efficient and user-defined discharge and has a positive influence on the service life of the heat pump.

The heat pump is only put into operation when the temperature level in the buffer storage tank no longer meets heating system requirements and is taken out of operation when the additional output can no longer be absorbed by the buffer storage tank.
The switching difference is adjustable and allows long runtimes.
The additional re-switching delay allows a maximum of 3 start-ups per hour and guarantees a long service life. The switching functions are controlled by a microprocessor, ensuring long runtimes and a high annual Coefficient of Performance for the heat pump.

**Heating controller**
The weather-controlled heating controller (3-point controller) as a discharge control guarantees an optimum heat supply to the heating system and works in a user-defined manner for maximum convenience.



**Notice**
The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.

### 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 frost protection agent 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 guide 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 if the annual runtime is extended (greater annual extraction).

### 3 Laying/drilling depth

The boreholes are made according to calculation 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 Bringing in 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-frost protection agent mixture with a frost protection of −15 °C (when using the 33 % in vol. Hoval frost protection concentrate). 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, etc.). 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.

The following dimensions are recommended (material PE-HD PN 10):

UltraSource® T (8), Thermalia® comfort (8-10), comfort H (7,10): DA 40
UltraSource® T (13,17), Thermalia® comfort (13,17), twin H (13): DA 50
Thermalia® twin (20,26), twin H (19,22): DA 63
Thermalia® twin (36-42), dual (55), dual H (35,50), dual R (55): DA 75
Thermalia® dual (70,85), dual H (50-90), dual R (70,85): DA 90

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.

### 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 system filled, well flushed and vented. After commissioning, the customer receives a completion certificate.

### 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 (brazed plate heat exchangers with very narrow plate spacing for high transfer rates) is such that applications with direct ground water through-flow are not allowed. 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 monitors 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 **piping** of the system must be carried out according to the selected hydraulic schematic. The intermediate circuit is filled with frost protection agent for frost protection of −15 °C (corresponds to 33 % in vol. Hoval frost protection concentrate). The output of the heat pump can thus be read off for brine 7 °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 must be observed during the entire operating time of the heat pump (groundwater analyses are essential, the water quality can change constantly):

| | |
|---|---|
| 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 [1] |
| Manganese | < 0.1 mg/l [1] |
| Oxygen | < 2 mg/l [1] |
| Electric conductivity | 50-600 µS/cm |

[1] If the limit value for iron or manganese is exceeded, the presence of oxygen leads to silting up of the heat exchanger or formation of iron and manganese oxide deposits in the injection well.

### 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 pipes 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 monitor, a throttle valve is to be installed to adjust the flow rate. The connection pipes are also to be laid in a sand bed.

The following dimensions are recommended (material PE-HD PN 10):

UltraSource® T (8), Thermalia® comfort (8-10), comfort H (7,10): DA 40
UltraSource® T (13,17), Thermalia® comfort (13,17), twin H (13): DA 50
Thermalia® twin (20,26), twin H (19,22): DA 63
Thermalia® twin (36-42), dual (55), dual H (35,50), dual R (55): DA 75
Thermalia® dual (70,85), dual H (50-90), dual R (70,85): DA 90

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

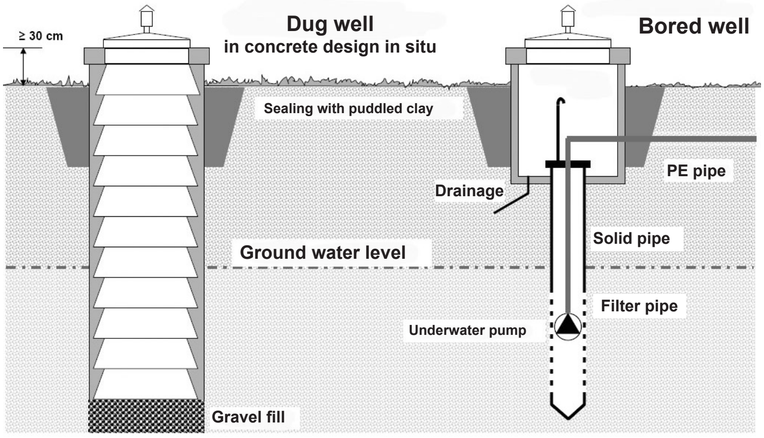
$$m_W = \frac{(Q_K \text{ x } 3600)}{(c \text{ x } \Delta T)} \quad [\text{kg/h}]$$

$m_W$ = mass flow [kg/h] (corresponds approx. to a water flow rate [l/h])
$Q_K$ = refrigerating capacity of the heat pump = heat output – electrical output [kW]
c = specific thermal capacity [kJ/kg.K] (c = 4.187 kJ/kg.K)
$\Delta T$ = 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 flap 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 system filled, well flushed and vented. After commissioning, the customer receives a commissioning report.



## 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 a good idea 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, heating via underfloor heating or partial cooling via fan 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*

- In panel cooling, the surfaces enclosing the room (ceilings, floors or walls) are cooled by the following systems:
  - Underfloor heating, wall 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 motorised mixer.
- A dewpoint monitor is required so as to avoid condensation formation (dropping below the dewpoint) on the cooling surfaces.

*Cooling by fan convectors*

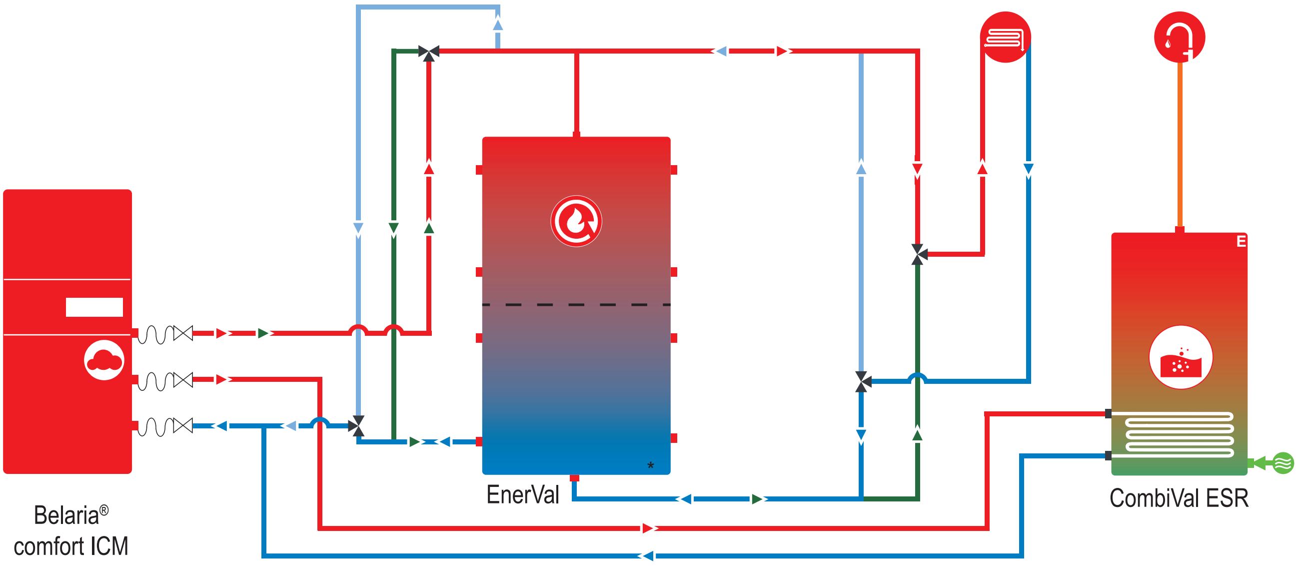
- Recommended use only with active cooling
- The heat pump must be equipped with a flow monitor.
- Fan convectors can cool and dehumidify the room air. This increases the comfort level
- In fan convectors, cold water flows in the cooling circuit at a temperature below the dewpoint. The resulting condensation 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



**Notice**
The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.

## Example Cooling

### Active cooling

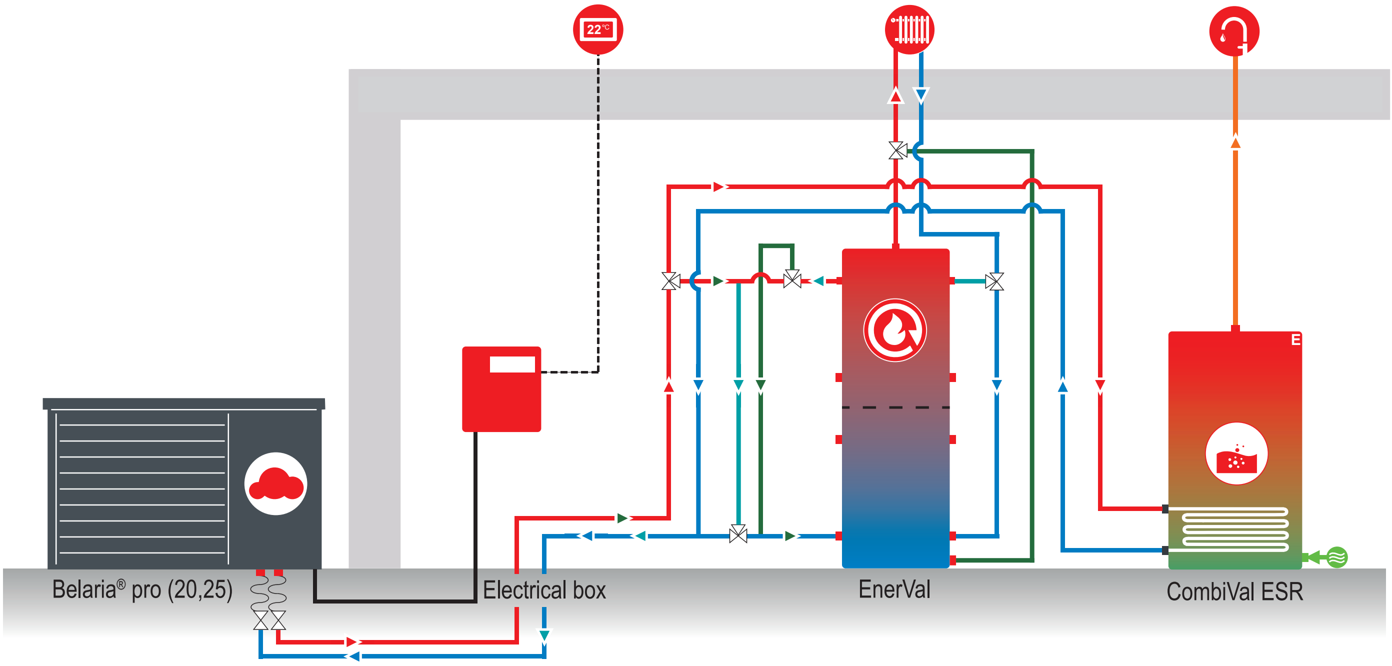
The cooling energy is produced actively with the heat pump for the purpose of cooling. To achieve this, process reversal is carried out in cooling operation. In this case, the heat utilisation side (condenser) becomes the heat absorption side (evaporator). In contrast to passive cooling, the compressor energy must be produced additionally. Cooling/heating operation cannot take place simultaneously. To ensure that the heat pump does not receive too many on/off switching and switchover commands to water heating, we recommend the use of a cooling buffer tank in every case. Depending on the system concept, the buffer storage tank can also be used as a cooling storage tank.

### General notes on cooling

- Cooling operation must always be monitored. If the room temperature is cooled in an unlimited manner, condensation will form. This, in turn, can damage components. We recommend monitoring the flow temperature in combination with the moisture (dewpoint limit thermostat).
- 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, heating via underfloor heating or partial cooling via fan convectors is also possible.
- The water flow must be guaranteed, otherwise no cooling can take place. In case of cooling via the heating surfaces, individual thermostatic controls must be used, which can be switched to cooling mode. Otherwise the valves are closed in the summer and cooling cannot take place.

### Planning

- Hydraulic integration is ideally via a cooling buffer.
- A mixer is required for adjustment of the cooling load of the rooms to the outdoor temperature.
- To prevent the formation of condensation, the buffer and all brine and cold water pipes must be rendered vapour-impermeable and thermally insulated in accordance with recognised engineering practices.
- Cooling mode is switched on or off manually
- To protect against frost damage in the condenser, it is mandatory to install a flow monitor in the pump circuit (see schematic).



**Notice**
The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.

## Example Cooling

### Passive cooling via geothermal probes

Increasingly, at our latitudes, cooling of living areas is offered with the geothermal probe via the panel heating (underfloor or wall heating). The following instructions should be followed for careful planning and also to ensure that the user is fully aware of the limitations of this equipment technology, and operates the system correctly.

**Planning**

- The dewpoint in the floor or wall must not be undershot at any time.
- This is achieved by a fixed value regulation of the flow temperature.
- The fixed value must be set high enough to ensure that the dewpoint is not undershot.
- The flow temperature setpoint is limited to min. 18 °C.
- The cooling must be switched on and off manually.

**The following must be observed for systems with cooling by floor or wall surfaces:**

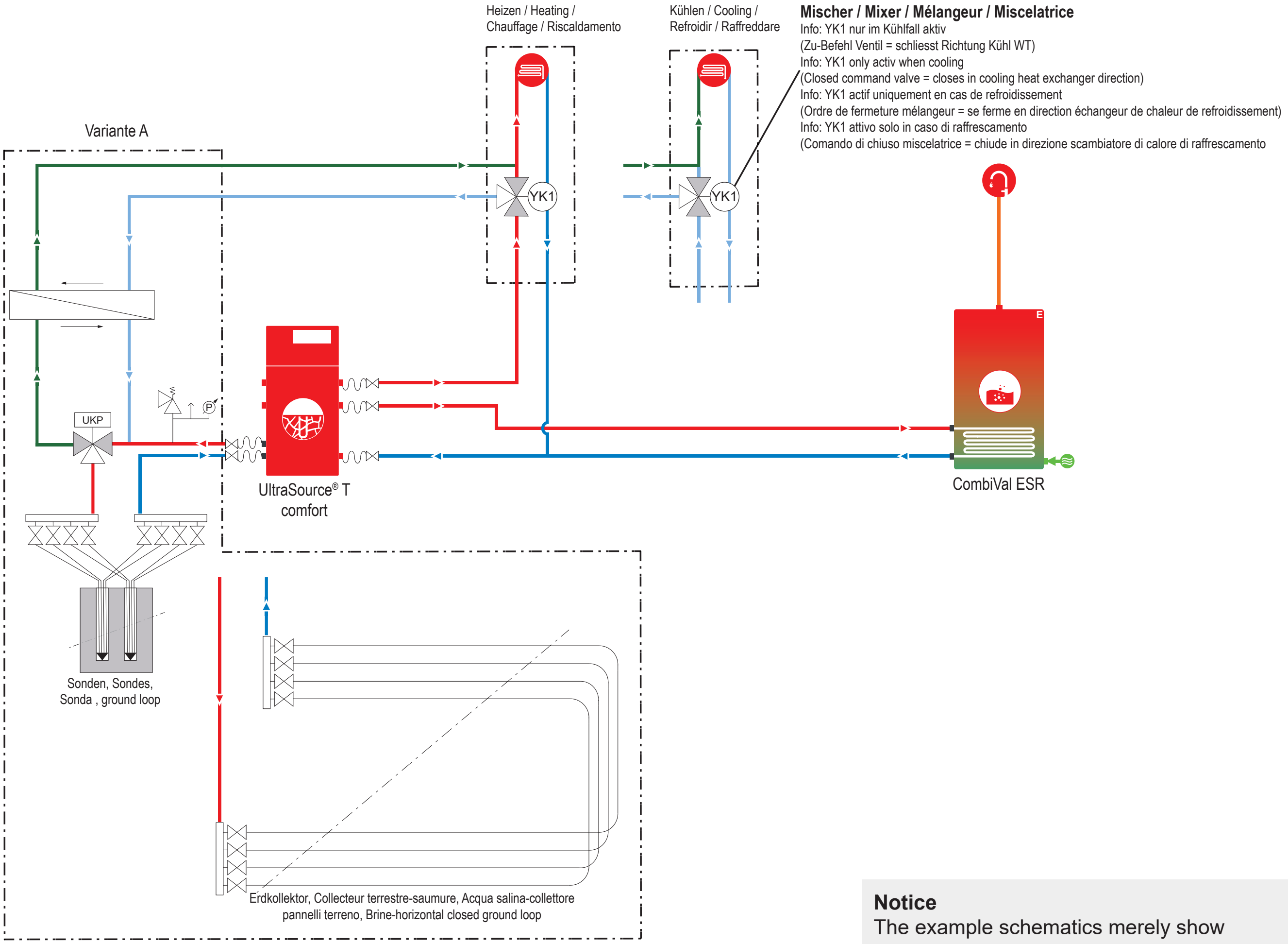
- The cold remains largely on the floor.
- This temperature distribution can be perceived as uncomfortable: the occupant has cold feet and a warm head.
- The temperature difference between the cooling surface and the air is very small.
- No guaranteed cooling capacity can be specified.
- Like panel heating, panel cooling also responds slowly.
- No condensate is discharged; thus the relative humidity in the room increases.
- The lower room temperature combined with the high relative humidity scarcely improves comfort. A humid climate is created.
- The minimum limit of 18 °C is not allowed to be reduced by the user.

**Note the following in comparison with a small air conditioner:**

- The energy savings compared to the air conditioner are small.
- An air conditioner dehumidifies the air; a humid climate is not created.
- An air conditioner delivers a cooling effect rapidly after being switched on.
- The costs of an air conditioner are comparatively low.

**Comparison with other cooling systems:**

Surface cooling systems are also used in some cases for cooling office buildings. However, these are usually ceiling cooling systems in conjunction with ventilation. So it is a combination of cooling by radiation (ceiling) and bringing in cool air (with dehumidification). This convenient system technology is usually too complicated and expensive for residential use. Ventilation convectors with condensate drip tray represent another option for air conditioning. Cooled and dehumidified air is introduced at certain places via the convectors (there should be no draughts). In this case, a reversible heat pump that can provide active cooling can also be used.



**Notice**

The example schematics merely show the basic principle and do not contain all information required for installation. The installation must be done according to local conditions, dimensioning and regulations.

## Smart Grid (PV function)
## Load management with heat pumps

Heat pumps are currently the most efficient method of storing electricity from volatile generation (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 the building's own PV system/small wind turbine with Smart Grid-capable inverter or PV load manager (own electricity consumption)
- Heat pump
- TopTronic® E
- Sufficiently large buffer storage tank
- Mixer circuit
- Possibly additional electrical heating

The heat pump is switched on and off or controlled depending on atmospheric conditions. Moreover, it is switched on when a particular green electricity surplus is reached and charges the buffer storage tank and any calorifiers to a higher temperature.
At times when no green electricity is available any longer, the heating is supplied from the charged buffer storage tank. The heat pump needs to be operated less frequently during periods when no or only a little internal current is being generated.

**SG Ready standard:**
This defines the following 4 functions depending on the PV surplus:
- Normal operation (no influence)
- Heat pump inhibit
- Preferential operation (increased operation)
- Forced acceptance (max. operation)

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 to the heat pump is required for this. The information must be provided potential-free.

**0-10 V control:**
An on-site energy manager provides a 0-10 V signal which is dependent on the PV surplus. Preferential operation (increased operation) and forced acceptance (max. operation) are activated by adjustable thresholds in the TopTronic® E depending on the available electrical output (PV surplus).

**Hoval EnergyManager PV smart:**
In addition to the remote monitoring function, the online connection (HovalConnect) of the heat pump system also has the Hoval EnergyManager PV smart integrated in it.
The Hoval EnergyManager PV smart operates with the solar radiation indicated in the weather forecast, and acts either on the preferential operation (increased operation) or forced acceptance (max. operation).

**Belaria® air/water heat pumps**

| | | | | | UltraSource® B comfort C | | | Belaria® pro comfort | | | Daikin Altherma 3 H HT W | | Belaria® pro | | | | Belaria® comfort ICM | | Belaria® twin I, twin IR | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat generator type | | | | | (8) | (11) | (17) | (8) | (13) | (15) | (14) | (18) | (20) | (25) | (40) | (50) | (8) | (13) | (20) | (25) | (30) |
| Mate-rial | Calorifier type | | | Heating surface [m²] | | | | | | | | | | | | | | | | | |
| Enamel | CombiVal (= CV) | ER | **200** | 0.95 | ■ | | | | | | | | | | | | ■ | | | | |
| | | | **300** | 1.45 | ■ | ■ | | ■ | | | | | | | | | ■ | | | | |
| | | | **400** | 1.80 | | ■ | | ■ | ■ | | | | | | | | ■ | ■ | | | |
| | | | **500** | 1.90 | | ■ | ■ | ■ | ■ | | | | | | | | | ■ | | | |
| | | | **800** | 3.70 | | | ■ | | | ■ | | ■ | | | | | | | | | |
| | | | **1000** | 4.50 | | | | | | | | | | | | | | | | | |
| | | ESR | **200** | 1.80 | ■ | ■ | | ■ | ■ | | | | | | | | ■ | ■ | | | |
| | | | **300** | 2.60 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | ■ | ■ | | | |
| | | | **400** | 3.80 | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | ■ | ■ | | | |
| | | ESSR | **500** | 5.90 | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ |
| | | | **800** | 7.00 | | | ■ | | | ■ | | ■ | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ |
| | | | **1000** | 9.15 | | | | | | | | | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ |
| | MultiVal (= MV) | ERR | **300** | 0.80 | ■ | | | | | | | | | | | | ■ | | | | |
| | | | **400** | 1.00 | ■ | | | | | | | | | | | | ■ | | | | |
| | | | **500** | 1.30 | ■ | ■ | | | | | | | | | | | ■ | | | | |
| | | ESRR | **500** | 4.30 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | ■ | ■ | | | |
| | | | **800** | 5.20 | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | |
| | | | **1000** | 6.10 | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ |
| Stainless steel | CombiVal (= CV) | CR | **200** | 1.28 | ■ | ■ | | | | | | | | | | | ■ | | | | |
| | | | **300** | 1.28 | ■ | ■ | | | | | | | | | | | ■ | | | | |
| | | | **500** | 1.70 | | ■ | | ■ | ■ | | | | | | | | | ■ | | | |
| | | | **800** | 2.63 | | | ■ | | | ■ | | ■ | | | | | | | | | |
| | | | **1000** | 2.63 | | | | | | | | | | | | | | | | | |
| | | CSR | **300** | 2.56 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | ■ | ■ | | | |
| | | | **400** | 3.40 | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | ■ | ■ | | | |
| | | | **500** | 5.26 | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | |
| | | | **800** | 6.30 | | | ■ | | | ■ | | ■ | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ |
| | | | **1000** | 10.00 | | | | | | | | | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ |
| | | | **1250** | 10.00 | | | | | | | | | ■ | ■ | ■ | ■ | | | | ■ | ■ |
| | | | **1500** | 11.30 | | | | | | | | | | | | | | | | ■ | ■ |
| | | | **2000** | 12.70 | | | | | | | | | | | | | | | | | |

The allocation of the calorifiers to the heat pumps is based on the heating surface of the storage tank coil, heat output of the heat pump for domestic hot water charging, maximum duration of domestic hot water charging and other parameters. For this reason, this allocation table only contains standard values.

**Notice**
The suggested combinations of heat pump with calorifier are a recommendation according to the suitable coil size and duration of domestic hot water charging (120 minutes). It is possible to deviate from the recommended combinations depending on how the customer uses it.

**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).

**Thermalia® brine/water heat pumps**

| | | | | | **UltraSource® T comfort** | | | **Thermalia® comfort, comfort H** | | | | | | **Thermalia® twin, twin H** | | | | | | | **Thermalia® dual, dual H, dual R** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat generator type | | | | | (8) | (13) | (17) | (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) |
| Mate-rial | Calorifier type | | | Heating surface [m²] | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Enamel** | **CombiVal (= CV)** | **ER** | **200** | 0.95 | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | | |
| | | | **300** | 1.45 | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | |
| | | | **400** | 1.80 | | ■ | ■ | | | | | | | | | | | ■ | | | | | | | | | | | |
| | | | **500** | 1.90 | | ■ | ■ | | | | | | | | | | | ■ | | | | | | | | | | | |
| | | | **800** | 3.70 | | | ■ | | | | | | | ■ | | | | | ■ | ■ | | | | | | | | | |
| | | | **1000** | 4.50 | | | | | | | | | | ■ | ■ | | | | | | | | | | | | | | |
| | | **ESR** | **200** | 1.80 | ■ | ■ | ■ | | | | | | | | | | | ■ | | | | | | | | | | | |
| | | | **300** | 2.60 | ■ | ■ | ■ | ■ | | | | | | | | | | ■ | | | | | | | | | | | |
| | | | **400** | 3.80 | | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ | | | | ■ | ■ | ■ | | | | | | | | | |
| | | **ESSR** | **500** | 5.90 | | ■ | ■ | | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | | | | | | ■ | | | |
| | | | **800** | 7.00 | | | ■ | | | | ■ | | | ■ | ■ | ■ | ■ | | ■ | ■ | | | | | | ■ | | | |
| | | | **1000** | 9.15 | | | | | | | ■ | | | ■ | ■ | ■ | ■ | | | | ■ | | | | | ■ | ■ | | |
| | **MultiVal (= MV)** | **ERR** | **300** | 0.80 | ■ | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | **400** | 1.00 | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | | |
| | | | **500** | 1.30 | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | |
| | | **ESRR** | **500** | 4.30 | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ | | | | | | | | | |
| | | | **800** | 5.20 | | ■ | ■ | | ■ | ■ | | | ■ | ■ | ■ | | | ■ | ■ | ■ | | | | | | | | | |
| | | | **1000** | 6.10 | | ■ | ■ | | ■ | ■ | ■ | | | ■ | ■ | ■ | | ■ | ■ | ■ | | | | | | ■ | | | |
| **Stainless steel** | **CombiVal (= CV)** | **CR** | **200** | 1.28 | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | |
| | | | **300** | 1.28 | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | |
| | | | **500** | 1.70 | | ■ | ■ | | | | | | | | | | | ■ | | | | | | | | | | | |
| | | | **800** | 2.63 | | | ■ | | | | | | | | | | | | | | | | | | | | | | |
| | | | **1000** | 2.63 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | **CSR** | **300** | 2.56 | ■ | ■ | ■ | ■ | | | | ■ | | | | | | ■ | | | | | | | | | | | |
| | | | **400** | 3.40 | | ■ | ■ | ■ | ■ | | | | ■ | ■ | | | | ■ | ■ | ■ | | | | | | | | | |
| | | | **500** | 5.26 | | ■ | ■ | | ■ | ■ | | | ■ | ■ | ■ | | | ■ | ■ | ■ | | | | | | | | | |
| | | | **800** | 6.30 | | | ■ | | | | ■ | | | ■ | ■ | ■ | | | ■ | ■ | | | | | | ■ | | | |
| | | | **1000** | 10.00 | | | | | | | ■ | | | ■ | ■ | ■ | ■ | | | | ■ | | | | | ■ | ■ | | |
| | | | **1250** | 10.00 | | | | | | | | | | | ■ | ■ | ■ | | | | ■ | | | | | ■ | ■ | | |
| | | | **1500** | 11.30 | | | | | | | | | | | | ■ | ■ | | | | ■ | ■ | | | | ■ | ■ | | |
| | | | **2000** | 12.70 | | | | | | | | | | | | | ■ | | | | ■ | ■ | | | | | ■ | ■ | |

The allocation of the calorifiers to the heat pumps is based on the heating surface of the storage tank coil, heat output of the heat pump for domestic hot water charging, maximum duration of domestic hot water charging and other parameters. For this reason, this allocation table only contains standard values.

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**Thermalia® water/water heat pumps**

|  |  |  |  |  | UltraSource® T comfort |  |  | Thermalia® comfort, comfort H |  |  |  |  |  | Thermalia® twin, twin H |  |  |  |  |  |  | Thermalia® dual, dual H, dual R |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat generator type |  |  |  |  | (8) | (13) | (17) | (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) |
| Material | Calorifier type |  |  | Heating surface [$m^2$] |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Enamel | CombiVal (= CV) | ER | 200 | 0.95 | ■ | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 300 | 1.45 | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 400 | 1.80 | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 500 | 1.90 |  | ■ | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 800 | 3.70 |  | ■ | ■ |  |  |  |  |  |  | ■ |  |  |  | ■ | ■ |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 1000 | 4.50 |  |  | ■ |  |  |  |  |  |  | ■ | ■ |  |  |  | ■ | ■ |  |  |  |  |  |  |  |  |  |
|  |  | ESR | 200 | 1.80 | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 300 | 2.60 | ■ | ■ | ■ |  |  |  |  | ■ |  |  |  |  |  | ■ |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 400 | 3.80 | ■ | ■ | ■ | ■ | ■ |  |  | ■ | ■ | ■ |  |  |  | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |
|  |  | ESSR | 500 | 5.90 |  | ■ | ■ | ■ | ■ | ■ |  |  | ■ | ■ | ■ |  |  | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |
|  |  |  | 800 | 7.00 |  | ■ | ■ |  |  | ■ | ■ |  |  | ■ | ■ | ■ |  | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |
|  |  |  | 1000 | 9.15 |  |  | ■ |  |  |  | ■ |  |  | ■ | ■ | ■ | ■ |  | ■ | ■ |  |  |  |  |  | ■ |  |  |  |
|  | MultiVal (= MV) | ERR | 300 | 0.80 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 400 | 1.00 | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 500 | 1.30 | ■ | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | ESRR | 500 | 4.30 | ■ | ■ |  | ■ | ■ |  |  | ■ | ■ | ■ |  |  |  | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |
|  |  |  | 800 | 5.20 | ■ | ■ | ■ | ■ | ■ | ■ |  | ■ | ■ | ■ | ■ |  |  | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |
|  |  |  | 1000 | 6.10 | ■ | ■ | ■ |  | ■ | ■ | ■ |  | ■ | ■ | ■ | ■ |  | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |
| Stainless steel | CombiVal (= CV) | CR | 200 | 1.28 |  | ■ | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 300 | 1.28 | ■ | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 500 | 1.70 | ■ | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 800 | 2.63 |  | ■ | ■ |  |  |  |  |  |  |  |  |  |  | ■ |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 1000 | 2.63 |  | ■ | ■ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | CSR | 300 | 2.56 |  |  | ■ |  |  |  |  | ■ |  |  |  |  |  | ■ |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 400 | 3.40 | ■ | ■ | ■ | ■ |  |  |  | ■ |  |  |  |  |  | ■ | ■ |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 500 | 5.26 | ■ | ■ | ■ | ■ | ■ | ■ |  |  | ■ | ■ | ■ |  |  | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |
|  |  |  | 800 | 6.30 |  | ■ | ■ |  |  | ■ | ■ |  |  | ■ | ■ | ■ |  | ■ | ■ | ■ |  |  |  |  |  |  |  |  |  |
|  |  |  | 1000 | 10.00 |  | ■ | ■ |  |  |  | ■ |  |  | ■ | ■ | ■ | ■ |  | ■ | ■ |  |  |  |  |  | ■ |  |  |  |
|  |  |  | 1250 | 10.00 |  |  | ■ |  |  |  |  |  |  | ■ | ■ | ■ | ■ |  |  | ■ |  |  |  |  |  | ■ |  |  |  |
|  |  |  | 1500 | 11.30 |  |  |  |  |  |  |  |  |  |  | ■ | ■ | ■ |  |  |  |  |  |  |  |  | ■ |  |  |  |
|  |  |  | 2000 | 12.70 |  |  |  |  |  |  |  |  |  |  |  | ■ | ■ |  |  |  | ■ |  |  |  |  | ■ | ■ |  |  |

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Hoval

# **Hoval quality.**
# You can count on us.

Hoval is one of the leading international companies for heating and indoor climate solutions. Drawing on more than 80 years of experience and benefiting from a close-knit team culture, the Hoval Group delivers exciting solutions and develops technically superior products. This leadership role requires a sense of responsibility for energy and the environment, which is expressed in an intelligent combination of different heating technologies and customised indoor climate solutions.

Hoval also provides personal consultations and comprehensive customer service. With around 2500 employees in 15 companies around the world, Hoval sees itself not as a conglomerate, but as a large family that thinks and acts globally.
Hoval heating and indoor climate solutions are currently exported to more than 50 countries.

## Responsibility for energy and environment

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