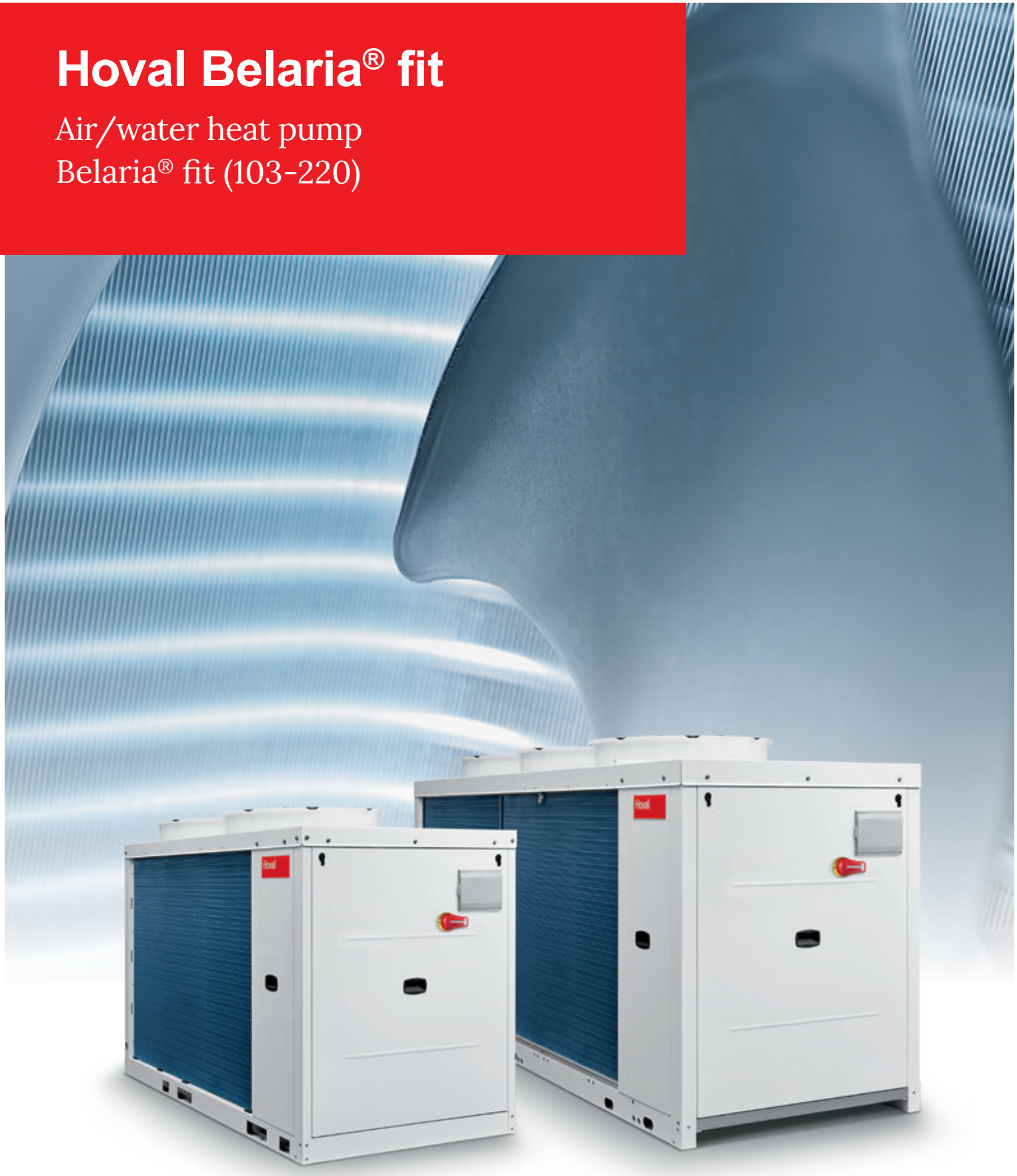
Hoval

CATALOGUE

Hoval Belaria® fit

Air/water heat pump
Belaria® fit (103-220)



Hoval | Responsibility for energy and environment

Heat pumps
Belaria® fit (103-220)

Modulating air/water heat pump in compact design for outdoor installation



Hoval Belaria® fit (103-220) **103-220 kW**

- Description 5
- Part numbers 7
- Technical data 14

Performance data 20

- Dimensions 30

Belaria® fit (103-220)

High-efficiency air-cooled heat pump certified by Eurovent, built according to ISO 9001 quality standards, for outdoor installation.

Compressor
Hermetic rotary/scroll compressors with vapour injection, controlled by an inverter, complete with motor protection against overheating, overcurrent and excessive discharge gas temperatures. Mounted on anti-vibration rubber pads and complete with oil charge. The compressors are equipped with a sound-absorbing cover, which reduces noise emissions and provides thermal insulation.

Structure
The load-bearing structure and base are made entirely of sturdy 1.2 mm thick steel sheet, with hot-dip galvanising and polyester powder coating in RAL9001 for visible parts, which guarantees excellent mechanical characteristics and high resistance to corrosion over time.

Panelling
External panelling in 1.2 mm thick steel sheet, with hot-dip galvanised surface treatment and polyester powder coating in RAL9001, which ensures superior corrosion resistance in outdoor installations and eliminates the need for periodic repainting. Easily removable panels to allow full access to internal components.

Condenser
Direct expansion heat exchanger with brazed stainless steel plates (AISI 316), in a gasketless pack using copper as the brazing material, with low refrigerant content and high heat exchange surface area, complete with: 17 mm thick external anti-condensation thermal insulation in sintered expanded polypropylene; antifreeze resistance to protect the water side of the exchanger to prevent ice formation if the water temperature falls below a preset value.



Model range

Belaria® fit type	Refrigerant	Max. flow temperature °C	Max. heat output A2W35 kW	Max. heat output A7W35 kW	Max. cooling capacity A35W7 kW
(103)	R32	60	103	120	115
(113)	R32	60	113	135	127
(140)	R32	60	140	163	152
(180)	R32	60	180	192	176
(192)	R32	60	192	208	196
(220)	R32	60	220	240	233

Evaporator
Direct expansion finned coil exchanger made with copper pipes placed on staggered rows mechanically expanded to better adhere to the fin collar. The fins are made of hydrophilic aluminium and properly spaced for maximum heat exchange efficiency. A particular refrigerant circuit prevents ice from forming on the base of the exchanger during winter operation.

Fan
Helical fans with profiled sickle-shaped blades in ABS resin ASG-20 with 20 % glass fibre content, directly coupled to an electronically controlled motor (IP23), driven by brushless DC (BLDC) motor. The absence of brushes (brushless) and the special power supply increase both service life and efficiency. This reduces consumption by up to 50 %. The fans are housed in aerodynamically shaped outlets to increase efficiency and minimise noise levels and are equipped with safety grilles. Both the fans and the grilles are designed using CFD technology. Supplied with variable speed control.

Refrigeration circuit
Two independent refrigeration circuits made of copper, brazed and assembled in the factory, complete with:
- Electronic expansion valve
- 4-way cycle reversal valve
- High pressure safety switch
- Low pressure safety switch
- Liquid receiver
- Oil separator
- Liquid separator
- Pressure transducer
- Safety thermostat against compressor discharge overheating
- Temperature sensors
- Low pressure safety valve
- Economiser heat exchanger

Heat recovery
- Configuration that allows free hot water production during cooling operation
- Reduction in condensation temperature: under nominal conditions, cooling capacity increases by approximately 3.2 % and the power absorbed by the compressors is reduced by 3.6 %.

Electrical panel
The power section includes:
- Main disconnect switch
- General protection fuses
- Isolation transformer for the auxiliary circuit power supply
- Auxiliary component protection fuses
- AC filter on the power supply
- Power supply phase sequence protection
- Compressor overcurrent protection
- Compressor overload protection
- Malfunction protection sensor
- Phase monitor

The control section includes:
- Compressor protection and timing
- Relay for remote transmission of cumulative alarm signals
- Defrost cycle optimisation
- Condensation control
- Dry contact for remote on-off control
- Volt free contact for remote SUMMER/WINTER command

The control keypad includes:
- Interface terminal with graphic display
- Multifunction keys for ON/OFF control
- Heat, cool or auto operating mode
- Alarm display and reset
- Daily or weekly programming
- Power supply for remote control

Hydraulic circuit
- Temperature sensors
- Drain valve
- Anti-freeze resistance to protect the water side heat exchanger and prevent ice formation if the water temperature drops below a preset value
- Water side differential pressure switch
- Vent valve

Test
Unit undergoes functional testing at the factory at the end of the production line and pressure testing of the refrigeration circuit pipes (with nitrogen and hydrogen) before shipping.

Including:
- High static pressure inverter pump (only in CP version)
- Anti-hail protection grilles to protect the evaporator
- Drain pan with electric heater
- Refrigerant leak detector
- Serial communication module ModBus
  Enables the serial connection of the supervision system, using ModBus TCP/IP, BACnet/IP, BACnet MS/TP as communication protocol
- Additional board for advanced functions management. Multifunction board installed in the electrical panel of the unit
  Remote functions:
  - on/off
  - heat/cool (summer/winter switch)
  - DHW production
  - Double set-point management
  - SG ready function
  - EVU lock function
  - Demand limit
  - Activation silent/super-silent mode

Warranty – 24 months
Mandatory commissioning and scheduled maintenance by an authorised Hoval Service Centre

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



Reversible heat pump



Hoval Belaria® fit (103-220)
Delivered with nitrogen

Belaria® fit type	Heat output max. A7W35 kW	Cooling capacity max. A35W7 kW	Part No.
(103) CPN	120	115	7020 175
(103) NPN	120	115	7020 176
(113) CPN	135	127	7020 177
(113) NPN	135	127	7020 178
(140) CPN	163	152	7020 199
(140) NPN	163	152	7020 200
(180) CPN	192	176	7020 201
(180) NPN	192	176	7020 202
(192) CPN	208	196	7020 203
(192) NPN	208	196	7020 204
(220) CPN	240	233	7020 205
(220) NPN	240	233	7020 206

CPN: integrated high-end inverter pump, filled with nitrogen
NPN: no integrated high-end inverter pump, filled with nitrogen

Notice
Energy storage must be provided. For suitable energy storage devices, see chapter “Storage tanks”.

For electric heating elements,
see “Calorifiers” - chapter “Electric heating elements”

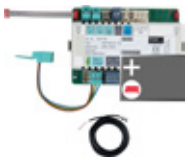
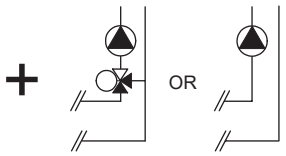
Notice
Optional installations:
- Standalone
- With secondary heat generator
- With a TopTronic® E controller
- With a PLC ...

Notice
Belaria® fit (103-220) comes in “Super-silenced” acoustic configuration.

Notice
Belaria® fit (103-220) CPN/NPN is delivered charged with nitrogen, the heat pump must be evacuated and charged with the specified amount of R32.

TopTronic® E module expansions

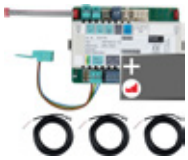
for TopTronic® E basic module heat generator

	Part No.
 	6034 576

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

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

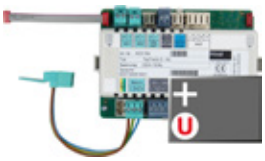


6037 062

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

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



6034 575

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

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

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

Accessories for TopTronic® E







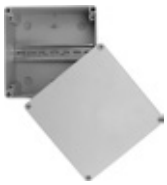














		Part No.
TopTronic® E controller modules		
TTE-HK/WW	TopTronic® E heating circuit/ hot water module	6034 571
TTE-SOL	TopTronic® E solar module	6037 058
TTE-PS	TopTronic® E buffer module	6037 057
TTE-MWA	TopTronic® E measuring module	6034 574
Supplementary plug set		
for basic module heat generator TTE-WEZ		6034 499
for controller modules and module expansion TTE-FE HK		6034 503
TopTronic® E room control modules		
TTE-RBM	TopTronic® E room control modules	
	easy white	6037 071
	comfort white	6037 069
	comfort black	6037 070
Enhanced language package TopTronic® E one SD card required per control module Consisting of the following languages: HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA, NL		6039 253
HovalConnect		
HovalConnect LAN		6049 496
HovalConnect WLAN		6049 498
HovalConnect Modbus		6049 501
HovalConnect KNX		6049 593
TopTronic® E interface modules		
GLT module 0-10 V		6034 578
TopTronic® E sensors		
AF/2P/K	Outdoor sensor H x W x D = 80 x 50 x 28 mm	2055 889
TF/2P/5/6T	Immersion sensor, L = 5.0 m	2055 888
ALF/2P/4/T	Contact sensor, L = 4.0 m	2056 775
TF/1.1P/2.5S/6T	Collector sensor, L = 2.5 m	2056 776
Bivalent switch		
for various release or switching functions		
Bivalent switch 1-piece		2056 858
Bivalent switch 2-piece		2061 826
System 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.
 **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
 **Steel mesh filter** Prevents contaminants in the hydraulic circuit from fouling the heat exchanger. The mechanical filter, made of stainless steel mesh, must be installed in the water supply line. It must be easy to remove for regular maintenance and cleaning.	
Victaulic 2½″ for types (103-140)	6066 905
Victaulic 3″ for types (180-220)	6066 906
 **Anti-vibration mount support** The rubber vibration dampers are attached to the support frame and serve to dampen the vibrations generated by the equipment, thereby reducing the noise transmitted to the supporting structure.	
Types (103-140)	6066 907
Types (180-220)	6066 908
 **Anti-seismic anti-vibration support** The anti-seismic spring antivibration mounts must be fastened in special housings on the supporting metal struts. The containment structure is designed to ensure high resistance multidirectional forces acting on the surface of the unit in the presence of wind and/or telluric movements.	
Types (103-140)	6066 909
Types (180-220)	6066 910

Accessories



Flange set Victaulic
Flange extensions for attachment of standard flanges to the Victaulic connection pipes
Incl. Victaulic couplings

	Part No.
2 ½ ″ PN 6	not yet available
2 ½ ″ PN 10	not yet available
3″ PN 6	6032 295
3″ PN 10	not yet available



Welded-on flanges
Version in black
incl. screws and joints.
2 welded-on flanges
Nominal diameter: DN 65

	Part No.
2 ½ ″ PN 6	6041 219
2 ½ ″ PN 10	6041 220

Welded-on flanges
Version in black
incl. screws and joints.
2 welded-on flanges
Nominal diameter: DN 80

	Part No.
3″ PN 6	6041 221
3″ PN 10	6041 222



Butterfly valve
Without motor

Connection size	k_{vs} m³/h	Part No.
DN 65	170	2031 065
DN 80	260	2031 066



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

Accessories



Sludge separator DM ST with magnet and insulation

For horizontal pipelines with flange connections
Operating media: water, glycol solutions
Maximum glycol content: 50 %
Max. operating pressure: 10 bar
Operating temperature range: 0 ... 110 °C
Particle separation capacity: up to 5 µm
Magnetic flux density: 7 x 0.475 T
Upper connection ¾″ ET (with plug)
Drainage: 1″ IT
with 60 mm insulation made of rigid, closed-cell PUR foam,
density 45 kg/m^3
Thermal conductivity (ISO 2581):
0.023 W/(mK)
Operating temperature range: 0 ... 105 °C
with scratchproof coating made of
0.7 mm raw aluminium
Fire resistance (DIN 4102): class 1

End covers made from thermoformed PS
Thermal conductivity (ISO 2581):
at 0 °C: 0.038 W/(m·K)
at 40 °C: 0.045 W/(m·K)
Diffusion resistance coefficient
(DIN 52615): > 1.300
Operating temperature range: 0 ... 110 °C
Fire resistance (DIN 4102): class B2
Kv: 110 m³/h
Materials:
Casing: outside
Epoxy resin-coated steel
Upper closure:
Brass EN 12164 CW617N
Inside element: stainless steel
EN 10088-3 (AISI 302) and HDPE
Hydraulic seals:
Asbestos-free fibres (upper closure)
Drain valve:
brass EN 12165 CW617N
Drain valve: brass EN 12165 CW617N
Weight: 15 kg
Volume: 7 l

Type	Connection flange	Flow rate at 1.2 m/s flow speed m³/h	k_v value m³/h	Part No.
DM ST	DN 65	14.3	110.0	2085 530
DM ST	DN 80	21.7	160.0	2085 531

	Part No.
 **Automatic quick air vent MC20 MS¾″** High drainage rate Casing and cover made of brass Inside parts made of stainless steel Connection: G ¾″ (ISO 228-1) IT Drain connection: G ⅜″ (ISO 228-1) IT Max. working pressure: 16 bar Max. air outlet pressure: 6 bar Medium temperature range: −20 ... 120 °C Operating medium: glycol solutions that are excluded from the application area of Directive 67/548/EEC Maximum glycol content: 50 % Weight: 3 kg	2085 540
 **Safety set** complete with safety valve Pressure gauge and automatic aspirator with barrier	
DN 25 (3 bar), up to 200 kW, 1″ internal thread	6018 709
DN 32 (3 bar), up to 350 kW, 1¼″ internal thread	6018 710

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 (103-220)

Type		(103)	(113)	(140)	(180)	(192)	(220)
Heating							
• Heating capacity [1]	kW	106	116	149	185	202	236
• Compressor power input [1]	kW	31.5	35.9	45.8	55.6	58.0	73.7
• Total power input [2]	kW	33.7	38.1	48.0	58.9	61.3	77.0
• COP [1]	-	3.15	3.04	3.10	3.14	3.30	3.06
• Water flow rate (user side) [1]	l/s	5.1	5.6	7.2	8.9	9.8	11.4
• Internal plate heat exchanger pressure drop [1]	kPa	17.6	20.6	23	26.7	31.5	41.8
• Heating capacity EN14511:2022 [3]	kW	106	116	150	185	202	236
• Total power input EN 14511:2022 [3]	kW	33.9	38.4	48.4	59.5	62.0	77.9
• COP EN 14511:2022 [3]	-	3.13	3.02	3.10	3.11	3.26	3.03
• SCOP for average climate W35 [4]	-	4.16	4.12	4.07	4.15	4.22	4.11
• SCOP for average climate W55 [4]	-	2.97	2.88	2.88	2.87	2.99	2.93
Cooling							
• Cooling capacity [5]	kW	103	114	136	157	173	208
• Compressor power input [5]	kW	39.4	46.4	60.7	67.9	65.6	90.1
• Total power input [2]	kW	41.6	48.6	62.9	71.2	68.9	93.4
• Partial recovery heating capacity [6]	kW	34.2	38.5	47.3	54	57.3	71.6
• EER [5]	-	2.48	2.35	2.16	2.21	2.52	2.23
• Water flow rate (user side) [5]	l/s	4.9	5.4	6.5	7.5	8.2	9.9
• Internal plate heat exchanger pressure drop [5]	kPa	16.0	19.3	18.9	19.2	22.9	32.2
• Cooling capacity EN 14511:2022 [7]	kW	103	114	136	157	173	208
• Total power input EN 14511:2022 [7]	kW	41.8	48.9	63.2	71.5	69.3	94.1
• EER EN 14511:2022 [6]	-	2.47	2.33	2.15	2.20	2.50	2.21
• SEER [4]	-	4.43	4.40	4.31	4.34	4.37	4.30
• SEPR [8]	-	5.49	5.44	5.38	5.39	5.51	5.25
• Cooling capacity AHRI 550/590 [9]	kW	102	113	134	156	171	206
• Compressor power input AHRI 550/590 [9]	kW	41.7	48.2	60.9	70	67.6	92.5
• COPR [9]	-	2.45	2.34	2.20	2.23	2.53	2.23
• IPLV [9]	-	4.18	4.16	4.06	4.09	4.12	4.08

The Product complies with the European ErP (Energy Related Products) Directive, which includes Commission Delegated Regulation (EU) No. 2016/2281 Commission, also known as Ecodesign LOT21. It contains fluorinated greenhouse gases (GWP 675).

[1] Data referring to the following conditions:
- Internal plate heat exchanger water temperature = 40/45 °C
- Air temperature entering the external plate heat exchanger = 7 °C
- Evaporator fouling factor = 0.44 x 10^{-4} m^2K/W

[2] The Total Power Consumption does not take into account the portion relating to the pumps and necessary to overcome the pressure drops for the circulation of the solution inside the plate heat exchangers.

[3] Data calculated in accordance with EN 14511:2013 referring to the following conditions:
- Internal plate heat exchanger water temperature = 40/45 °C
- Air temperature entering the external plate heat exchanger = 7 °C

[4] Data calculated in accordance with EN 14825:2018

[5] Data refers to the following conditions:
- Water temperature at the internal plate heat exchanger = 12/17 °C
- Air temperature entering the external plate heat exchanger = 35 °C
- Evaporator fouling factor = 0.44 x 10^{-4} m^2K/W

[6] Recovery plate heat exchanger water temperature = 40/45 °C

[7] Data calculated in accordance with Standard EN 14511:2018 referring to the following conditions:
- Water temperature at the internal plate heat exchanger = 12/17 °C
- Air temperature entering the external plate heat exchanger = 35 °C

[8] Data calculated in accordance with EU Regulation 2016/2281

[9] Data calculated in accordance with AHRI Standard 550/590 under the following conditions:
- Water temperature at the internal plate heat exchanger = 6.7 °C
- Water flow rate = 0.043 l/s per kW
- Inlet air temperature at external plate heat exchanger = 35 °C
- Evaporator fouling factor = 0.18 x 10^{-4} m^2K/W

Belaria® fit (103-220)

Type		(103)	(113)	(140)	(180)	(192)	(220)
Compressor							
• Type of inverter compressor		Rotary	Rotary	Rotary/Scroll	Scroll	Scroll	Scroll
• Refrigerant				R-32			
• Number of compressors	No.	4	4	2/2	4	4	4
• Rated power C1	HP	25	25	25	35	45	45
• Rated power C2	HP	25	25	35	35	45	45
• Capacity control steps				Stepless			
• Oil charge C1	l	4.6	4.6	4.6	6.2	7.2	7.2
• Oil charge C2	l	4.6	4.6	6.2	6.2	7.2	7.2
• Refrigerant charge C1	kg	14.5	14.5	14.5	21.0	25.0	25.0
• Refrigerant charge C2	kg	14.5	14.5	16.5	21.0	25.0	25.0
• Refrigerant circuits	No.	2	2	2	2	2	2
Condenser							
• Type of internal plate heat exchanger				Plate heat exchanger			
• Number of internal plate heat exchangers	No.	1	1	1	1	1	1
• Water content	l	10.5	10.5	13.2	15.4	15.4	15.4
• Minimum system water content	l	970	1050	1250	1450	1610	1930
• Max. operating pressure (CP version)	bar			6			
• Max. operating pressure (NP version)	bar			10			
Evaporator							
• Type of external plate heat exchanger		Copper/aluminium condenser coil with hydrophilic treatment					
• Number of coils	No.	2	2	2	2	2	2
Fans							
• Type of fans				Axial			
• Number of fans	No.	2	2	2	3	3	3
• Type of motor				Brushless DC			
• Standard air flow SC	l/s	16667	16667	16667	25000	25000	25000
• Standard air flow LN	l/s	15556	15556	15556	23333	23333	23333
• Standard air flow EN	l/s	14444	14444	14444	21667	21667	21667
Connections							
• Water fittings		2½″	2½″	2½″	3″	3″	3″
Power supply							
• Standard power supply				400/3/50			
Electrical data							
• F.L.A. – total	A	123	129	133	139	173	192
• F.L.I. – total	kW	70.6	74.3	76.4	79.9	99.3	110
• M.I.C. – value	A	59	59	74	89	111	111

M.I.C. = Maximum starting current of the unit. The M.I.C. is obtained by adding the maximum starting current of the largest compressor and the currents absorbed at the maximum permissible conditions (F.L.A.) of the remaining electrical components.

Voltage imbalance between phases: max. 2 %
Voltage variation: max. ± 10 %
The electrical data refer to the standard unit; depending on the accessories installed, the data may vary.

Energy efficiency
SCOP up to 4.15 with low temperature water (LWT 35 °C).
SEER up to 4.40, making it extremely competitive even compared to cooling-only versions.
Capacity modulation from 20 to 100 %.

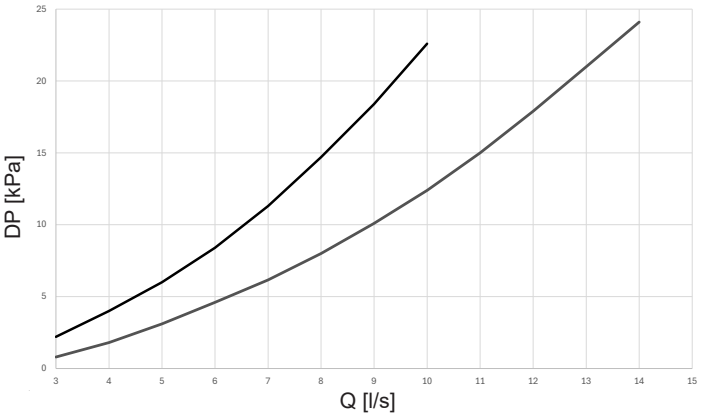
Extended operating limits

Outdoor air temperature	**max.**	**min.**
Heating	44 °C	−20 °C
Domestic hot water production	44 °C	−20 °C
Cooling	48 °C	−15 °C

Water temperature produced by the unit	**max.**	**min.**
Heating	60 °C	25 °C
Domestic hot water production	60 °C	25 °C
Cooling	20 °C	0 °C

Steel mesh filter on the water side
The device prevents the plate heat exchanger from becoming dirty due to any impurities present in the hydraulic circuit. The mechanical filter stainless steel mesh filter must be positioned on the water inlet line. It can be easily removed for periodic maintenance and cleaning.
The filter water connections are Victaulic 2½″ for types (103-140) and 3″ for types (180-220).

Filter pressure drop



Q = Water flow rate [l/s]
Dp = Water side pressure drop [kPa]

Sound levels

Heating

Super Silenced acoustic configuration (EN)

Belaria® fit	Sound power level Octave band (Hz)								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
(103)	58	64	68	71	76	69	63	63	60	78
(113)	58	64	68	71	76	69	63	63	60	78
(140)	59	65	69	72	77	70	64	64	61	79
(180)	77	73	72	75	78	75	69	66	63	81
(192)	78	74	73	76	79	76	70	67	64	82
(220)	78	74	73	76	79	76	70	67	64	82

The sound levels refer to a unit at full load, under nominal test conditions. The sound pressure level refers to 1 m from a standard unit's outer surface operating in open field. Measurements are carried out in accordance with UNI EN ISO 9614-2

Data referred to the following conditions:
- Condenser water temperature = 40/45 °C
- Entering evaporator air temperature = 7/6 °C

Cooling

Super Silenced acoustic configuration (EN)

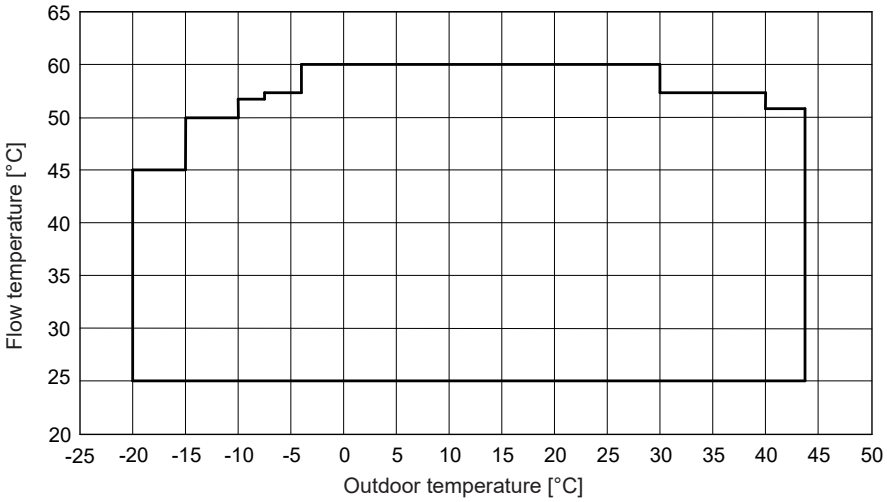
Belaria® fit	Sound power level Octave band (Hz)								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
(103)	57	63	67	70	75	68	62	62	59	77
(113)	57	63	67	70	75	68	62	62	59	77
(140)	58	64	68	71	76	69	63	63	60	78
(180)	76	72	71	74	77	74	68	65	62	80
(192)	77	73	72	75	78	75	69	66	63	81
(220)	77	73	72	75	78	75	69	66	63	81

The sound levels refer to a unit at full load, under nominal test conditions. The sound pressure level refers to 1 m from a standard unit's outer surface operating in open field. Measurements are carried out in accordance with UNI EN ISO 9614-2, in compliance with the requirements of EUROVENT 8/1 certification, which provides for a tolerance of 3 dB(A).

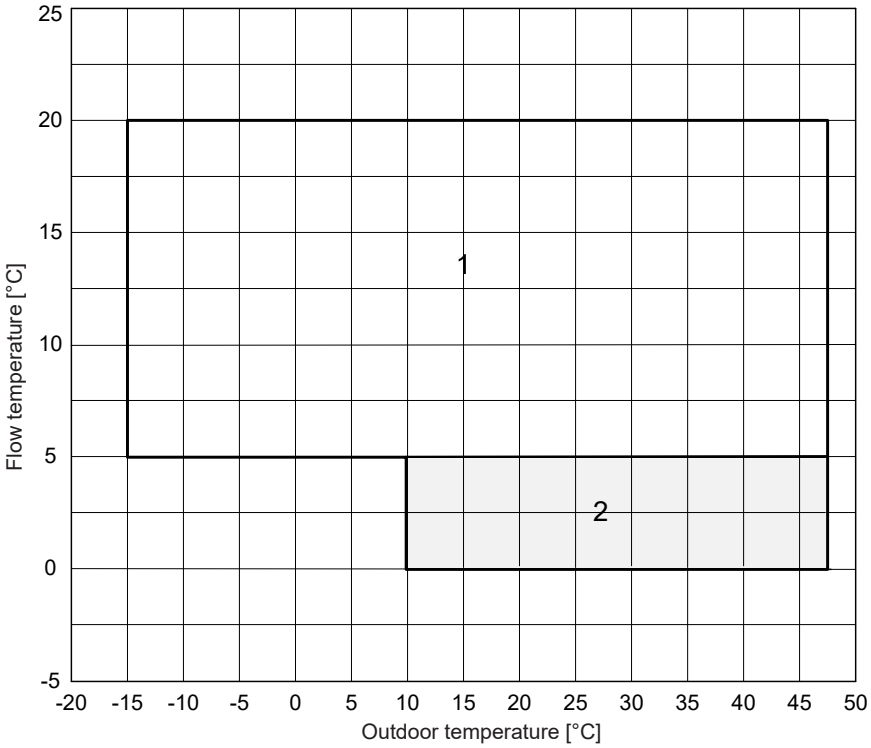
Data referred to the following conditions:
- Condenser water temperature = 12/7 °C
- Entering evaporator air temperature = 35 °C

Diagrams of areas of application

Heating



Cooling



[1] Normal operating range
[2] Operating range where the use of glycol is mandatory, depending on the water outlet temperature from the plate heat exchanger on the use side

Correction factors for ethylene glycol use

% Ethylene glycol by weight		5 %	10 %	15 %	20 %	25 %	30 %	35 %	40 %	45 %	50 %
Freezing temperature	°C	−2	−3.9	−6.5	−8.9	−11.8	−15.6	−19	−23.4	−27.8	−32.7
Safety temperature	°C	3	1	−1	−4	−6	−10	−14	−19	−23.8	−29.4
Cooling capacity factor	No.	0.997	0.994	0.99	0.986	0.981	0.976	0.97	0.964	0.957	0.95
Compressor power input factor	No.	0.999	0.999	0.998	0.997	0.996	0.996	0.995	0.994	0.993	0.993
Internal plate heat exchanger pressure drop factor	No.	1.016	1.035	1.056	1.08	1.106	1.135	1.166	1.2	1.236	1.275

Correction factors for propylene glycol use

% Propylene glycol by weight		5 %	10 %	15 %	20 %	25 %	30 %	35 %	40 %	45 %	50 %
Freezing temperature	°C	−2	−3.9	−6.5	−8.9	−11.8	−15.6	−19	−23.4	−27.8	−32.7
Safety temperature	°C	3	1	−1	−4	−6	−10	−14	−19	−23.8	−29.4
Cooling capacity factor	No.	0.995	0.99	0.983	0.976	0.968	0.96	0.95	0.939	0.928	0.916
Compressor power input factor	No.	0.999	0.997	0.995	0.993	0.991	0.988	0.986	0.983	0.98	0.977
Internal plate heat exchanger pressure drop factor	No.	1.027	1.058	1.093	1.133	1.176	1.224	1.276	1.332	1.393	1.457

Fouling correction factors

	Evaporator	
M2 °C/W	F1	FK1
0.44 x 10^{-4}	1.0	1.0
0.88 x 10^{-4}	0.97	0.99
1.76 x 10^{-4}	0.94	0.98

F1 = Cooling capacity correction factor
FK1 = Compressor power correction factor

Plate heat exchanger operating limits

		Condenser	
		DPR	DPW
Plate heat exchanger	PED (CE)	4500	1000

DPR = Max. operating pressure on the refrigerant side in kPa
DPW = Max. operating pressure on the water side in kPa

Overload and control device calibrations

Refrigerant side		Open	Close	Value
High pressure safety pressure switch	kPa	4200	3200	-
Low pressure safety pressure switch	kPa	140	300	-
Gas-liquid separator safety valve	kPa	-	-	3000
Safety thermostat against compressor drain overheating	°C	75	115	-
Water side				
Antifreeze protection	°C	8	4	-
High pressure safety valve	kPa	-	-	1000

Performance data – heating

Belaria® fit (103-220)

Super-silenced acoustic configuration (EN)

Type		Flow temperature (°C)											
	Ta	35		40		45		50		55		60	
	°C	kW	kWe_tot	kW	kWe_tot	kW	kWe_tot	kW	kWe_tot	kW	kWe_tot	kW	kWe_tot
(103)	−20	49.0	25.3	46.7	26.5	45.1	25.4	-	-	-	-	-	-
	−15	55.9	26.7	54.0	28.2	52.8	27.4	51.3	29.0	-	-	-	-
	−7	75.6	27.6	68.2	30.9	67.3	30.3	65.8	32.3	61.6	34.2	-	-
	−4	78.5	27.0	76.1	29.4	74.1	31.3	72.8	33.4	66.1	36.6	36.4	24.3
	2	92.5	28.3	90.9	30.6	88.5	32.8	87.0	35.1	73.4	40.7	40.4	25.7
	7	108.0	28.9	105.0	31.4	106.0	33.7	101.0	36.3	84.8	42.3	46.6	26.6
	12	123.0	29.4	121.0	32.1	118.0	34.6	115.0	37.4	97.0	43.5	53.3	27.4
	18	139.0	29.4	136.0	32.2	133.0	34.9	130.0	37.8	109.0	44.2	59.9	27.8
(113)	−20	53.5	24.9	50.9	26.0	50.5	28.4	-	-	-	-	-	-
	−15	60.1	26.4	58.0	27.9	58.4	30.8	56.5	32.7	-	-	-	-
	−7	79.5	29.2	75.7	33.8	73.7	34.2	72.2	36.4	67.3	37.5	-	-
	−4	84.5	32.4	82.8	34.9	80.9	35.2	79.4	37.6	73.2	40.6	40.2	25.7
	2	100.0	33.6	98.4	36.3	96.4	36.9	94.7	39.6	79.3	43.1	43.6	27.2
	7	120.0	33.0	115.0	35.4	116.0	38.1	109.0	41.0	91.5	44.9	50.3	28.3
	12	135.0	33.2	132.0	36.2	128.0	39.1	125.0	42.3	105.0	46.2	57.6	29.1
	18	152.0	33.2	149.0	36.4	144.0	39.5	141.0	42.8	117.0	47.0	64.6	29.6
(140)	−20	67.7	34.2	68.1	37.5	71.8	43.3	-	-	-	-	-	-
	−15	78.6	35.5	79.0	39.0	82.9	44.6	71.5	48.5	-	-	-	-
	−7	97.5	35.7	97.5	39.5	102.0	45.9	87.8	49.9	87.8	42.9	-	-
	−4	106.0	36.4	106.0	40.1	111.0	46.4	95.0	50.4	94.7	44.0	52.1	35.1
	2	124.0	37.2	123.0	40.3	128.0	47.3	110.0	51.4	103.0	46.1	56.5	35.7
	7	143.0	38.3	140.0	42.6	149.0	48.0	124.0	52.2	123.0	46.9	67.7	36.3
	12	170.0	40.6	169.0	44.6	164.0	48.6	140.0	53.0	131.0	47.5	72.3	36.9
	18	191.0	40.5	189.0	44.6	184.0	48.7	156.0	53.1	147.0	47.5	80.9	37.0
(180)	−20	71.9	46.9	75.8	52.9	79.9	59.9	-	-	-	-	-	-
	−15	90.0	47.5	93.0	53.1	96.3	59.8	69.7	60.5	-	-	-	-
	−7	122.0	44.5	121.0	53.9	122.0	59.4	92.7	58.7	93.7	57.0	-	-
	−4	133.0	48.8	134.0	53.9	135.0	59.1	114.0	58.3	114.0	62.2	62.9	40.0
	2	160.0	49.1	160.0	53.8	160.0	58.9	131.0	57.9	131.0	63.0	72.0	39.7
	7	169.0	45.6	186.0	55.3	185.0	58.9	147.0	58.0	146.0	63.0	80.5	39.7
	12	211.0	51.0	210.0	55.7	210.0	61.9	164.0	58.3	163.0	63.2	89.8	39.8
	18	236.0	50.9	234.0	55.6	234.0	61.7	182.0	58.1	181.0	62.9	99.5	39.6
(192)	−20	96.2	43.1	100.0	48.5	103.0	53.7	-	-	-	-	-	-
	−15	110.0	44.5	113.0	49.9	114.0	54.6	86.9	54.0	-	-	-	-
	−7	129.0	45.1	135.0	51.1	136.0	55.1	109.0	54.3	110.0	58.8	-	-
	−4	145.0	46.9	145.0	51.3	146.0	55.3	132.0	54.5	133.0	58.9	73.2	37.1
	2	169.0	47.4	168.0	51.8	168.0	55.7	151.0	54.8	151.0	59.2	83.0	37.3
	7	183.0	47.6	200.0	53.3	202.0	61.3	169.0	55.1	169.0	59.5	92.8	37.5
	12	228.0	47.8	226.0	53.6	231.0	57.9	190.0	55.6	189.0	60.0	104.0	37.8
	18	255.0	47.8	253.0	53.7	258.0	58.1	211.0	55.8	210.0	60.4	115.0	38.0
(220)	−20	111.0	56.3	116.0	62.8	120.0	68.5	-	-	-	-	-	-
	−15	128.0	58.3	131.0	63.6	134.0	69.1	105.0	67.3	-	-	-	-
	−7	148.0	62.1	149.0	64.5	151.0	69.8	129.0	68.0	129.0	73.8	-	-
	−4	169.0	60.0	168.0	65.0	169.0	70.3	155.0	68.3	156.0	73.4	86.0	46.3
	2	194.0	60.9	194.0	65.8	193.0	71.0	176.0	69.0	176.0	74.1	96.8	46.7
	7	211.0	57.3	250.0	68.0	236.0	77.0	197.0	69.7	196.0	74.8	108.0	47.1
	12	285.0	63.6	282.0	68.8	283.0	75.6	221.0	70.5	219.0	75.7	121.0	47.7
	18	320.0	63.8	317.0	69.1	316.0	76.1	247.0	71.0	244.0	76.3	134.0	48.1

kW = heat capacity in kW
kWe_tot = total power input in kW
Ta (°C) = temperature of air entering the external plate heat exchanger

Integrated heating capacities

External plate heat exchanger inlet air temperature °C	−7	−5	0	2	Other
Heating capacity multiplication coefficient	0.90	0.89	0.88	0.90	1.00

The integrated heat output represents the effective heat output, including the effect of any defrost cycles.
It is obtained by multiplying the thermal potential value provided in kWt (shown in the heating performance tables) by the coefficients indicated in the table. During prolonged operation in heat pump mode with negative outside air temperatures, it is important to facilitate the evacuation of water produced by the defrost cycles to prevent ice accumulation near the base of the unit. Make sure that this does not pose a danger to people or property.

Performance data – partial load heating

Belaria® fit (103-220)

Super-silenced acoustic configuration (EN)

Type	Load	Outdoor temperature (°C)																	
		−20			−15			−10			−7			−2			7		
		kW	kWe_tot	COP	kW	kWe_tot	COP	kW	kWe_tot	COP	kW	kWe_tot	COP	kW	kWe_tot	COP	kW	kWe_tot	COP
(103)	100	45.1	25.4	1.77	52.8	27.4	1.93	61.1	29.2	2.11	67.3	30.3	2.22	88.5	32.8	2.70	106.0	33.7	3.15
	75	31.4	18.8	1.67	38.8	20.1	1.93	46.7	21.3	2.19	51.9	22.0	2.35	69.6	24.2	2.87	80.9	25.1	3.23
	50	16.8	11.0	1.53	21.9	11.8	1.85	27.2	12.6	2.16	30.4	13.0	2.34	41.5	14.2	2.93	48.2	14.7	3.27
	Min.	6.62	4.83	1.37	8.80	5.20	1.69	11.00	5.53	1.99	12.30	5.70	2.16	16.90	6.14	2.75	19.50	6.32	3.09
(113)	100	50.5	28.4	1.77	58.4	30.8	1.90	67.4	32.9	2.05	73.7	34.2	2.16	96.4	36.9	2.61	116.0	38.1	3.04
	75	33.0	19.3	1.71	40.5	20.7	1.96	48.5	22.0	2.21	53.7	22.7	2.36	71.9	25.0	2.88	83.6	25.8	3.24
	50	19.0	13.3	1.43	24.7	14.3	1.73	30.5	15.2	2.01	34.1	15.7	2.17	46.6	17.1	2.72	49.9	15.7	3.17
	Min.	7.29	5.19	1.41	9.65	5.57	1.73	12.0	5.91	2.04	13.50	6.09	2.21	18.30	6.57	2.79	21.20	6.76	3.13
(140)	100	71.8	43.3	1.66	82.9	44.6	1.86	94.5	45.4	2.08	102.0	45.9	2.22	128.0	47.3	2.72	149.0	48.0	3.10
	75	49.0	30.1	1.63	58.6	30.6	1.91	68.3	31.2	2.19	74.7	31.6	2.36	95.8	32.7	2.93	109.0	33.3	3.29
	50	30.7	21.5	4.43	37.2	21.5	1.73	43.8	21.7	2.02	48.1	21.9	2.20	62.2	22.7	2.75	65.4	20.5	3.18
	Min.	12.50	8.02	1.56	14.90	8.06	1.85	17.40	8.15	2.14	19.10	8.23	2.32	24.50	8.53	2.88	28.00	8.72	3.21
(180)	100	79.9	59.9	1.34	96.3	59.8	1.61	112.0	60.0	1.87	122.0	59.4	2.06	160.0	58.9	2.72	185.0	58.9	3.14
	75	56.8	36.0	1.58	68.2	35.2	1.94	79.4	34.6	2.29	86.6	34.6	2.51	114.0	35.0	3.27	132.0	38.2	3.45
	50	38.3	24.2	1.58	45.0	23.2	1.94	51.8	22.5	2.30	56.2	22.2	2.53	73.5	22.1	3.33	84.5	18.7	4.53
	Min.	18.5	12.4	1.49	21.4	11.9	1.81	24.4	11.5	2.12	26.2	11.4	2.31	33.8	11.2	3.01	38.7	9.4	4.10
(192)	100	103.0	53.7	1.92	114.0	54.6	2.10	127.0	54.9	2.32	136.0	55.1	2.47	168.0	55.7	3.02	202.0	61.3	3.30
	75	71.0	33.4	2.12	81.1	34.1	2.38	92.2	34.6	2.67	100.0	35.0	2.84	130.0	35.5	3.65	150.0	38.7	3.86
	50	42.9	23.2	1.85	50.2	23.5	2.14	57.8	23.7	2.44	62.9	23.9	2.64	82.9	24.2	3.42	95.6	20.4	4.67
	Min.	19.4	12.0	1.61	22.9	12.1	1.89	26.5	12.2	2.17	28.8	12.2	2.36	37.9	12.2	3.11	43.6	10.2	4.29
(220)	100	120.0	68.5	1.76	134.0	69.1	1.95	147.0	69.7	2.11	151.0	69.8	2.16	193.0	71.0	2.72	236.0	77.0	3.06
	75	86.9	41.4	2.10	97.8	42.3	2.31	110.0	42.7	2.57	118.0	43.0	2.74	152.0	43.3	3.52	176.0	47.4	3.71
	50	52.0	27.8	1.87	60.2	28.2	2.14	69.0	28.6	2.41	74.8	28.9	2.59	96.3	29.7	3.31	113.0	25.2	4.50
	Min.	22.9	13.7	1.67	26.9	13.9	1.94	31.0	14.0	2.22	33.8	14.0	2.41	44.5	14.2	3.14	51.3	11.9	4.30

Load = percentage of heat output relative to full load value
kW = heat output in kW
kWe_tot = total power input in kW
Condenser water temperature = outlet 45 °C / inlet 40 °C / Variable flow rate with external plate heat exchanger air temperature

Performance data – cooling

Belaria® fit (103-220)

Super-silenced acoustic configuration (EN)

Type		Outdoor temperature (°C)											
	To	25		30		35		40		45		48	
	°C	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot
	5	100.0	32.7	94.9	36.5	94.7	42.0	76.2	33.8	54.0	27.8	50.9	24.0
	6	104.0	33.0	99.2	36.9	98.9	41.8	79.3	34.1	55.9	28.1	52.6	24.2
	7	108.0	334.0	104.0	37.3	103.0	41.6	82.3	34.4	57.9	28.3	54.3	24.4
(103)	10	114.0	33.9	108.0	37.9	108.0	43.8	87.0	34.9	61.6	28.8	57.9	24.8
	15	125.0	30.9	120.0	34.6	118.0	39.9	101.0	36.2	71.5	29.8	66.9	25.6
	18	130.0	27.3	124.0	30.7	121.0	35.2	109.0	33.1	77.5	30.4	72.3	26.0
	20	133.0	24.9	126.0	28.0	123.0	32.1	116.0	37.4	81.5	30.7	75.9	26.2
	5	114.0	33.6	109.0	36.6	106.0	45.6	82.9	40.7	69.8	37.3	52.2	32.1
	6	119.0	34.0	114.0	37.0	110.0	47.1	86.3	41.2	72.6	37.7	54.1	32.4
	7	124.0	34.3	118.0	37.5	114.0	48.6	89.6	41.6	75.3	38.0	56.0	32.7
(113)	10	132.0	34.9	124.0	38.1	120.0	47.5	94.5	42.2	79.9	38.6	59.6	33.3
	15	134.0	32.9	133.0	36.0	130.0	44.0	107.0	41.0	93.2	40.0	69.2	34.6
	18	135.0	30.3	134.0	33.1	133.0	39.5	112.0	40.2	101.0	40.7	75.0	35.3
	20	132.0	28.5	135.0	31.3	135.0	36.5	116.0	39.6	107.0	41.2	78.8	35.7
	5	118.0	36.6	118.0	41.7	118.0	49.5	105.0	44.9	77.0	35.0	63.4	31.9
	6	123.0	36.9	124.0	42.1	127.0	56.2	109.0	45.3	79.6	35.2	65.5	32.1
	7	127.0	37.2	129.0	42.5	136.0	62.9	113.0	45.6	82.3	35.5	67.5	32.3
(140)	10	133.0	37.7	133.0	43.0	137.0	58.6	119.0	46.1	87.6	35.9	72.2	32.8
	15	146.0	35.6	147.0	40.6	151.0	53.1	129.0	44.5	102.0	36.8	84.0	33.8
	18	151.0	33.0	153.0	37.7	157.0	46.7	138.0	42.7	111.0	37.3	91.6	34.3
	20	154.0	40.3	167.0	46.0	172.0	51.3	152.0	48.3	118.0	37.5	96.9	34.5
	5	160.0	53.3	154.0	58.3	147.0	63.8	134.0	63.0	111.0	54.4	91.3	48.1
	6	166.0	53.7	159.0	58.7	152.0	67.5	138.0	63.4	115.0	54.6	94.4	48.3
	7	172.0	54.1	165.0	59.1	157.0	71.2	143.0	63.7	119.0	54.9	98.0	48.6
(180)	10	180.0	54.7	173.0	59.7	165.0	65.2	151.0	64.2	126.0	55.3	104.0	49.0
	15	202.0	53.4	194.0	58.2	178.0	59.9	168.0	64.1	147.0	56.3	121.0	50.2
	18	213.0	51.6	206.0	56.0	182.0	53.9	180.0	62.2	160.0	56.6	133.0	50.5
	20	221.0	50.3	214.0	54.6	184.0	49.9	188.0	609.0	170.0	56.7	141.0	50.6
	5	190.0	60.1	183.0	64.8	157.0	60.3	152.0	62.5	109.0	48.1	86.0	41.3
	6	197.0	60.5	189.0	65.3	165.0	64.6	157.0	62.9	113.0	48.4	88.7	41.6
	7	203.0	60.9	196.0	65.7	173.0	68.9	163.0	63.4	116.0	48.7	91.5	41.8
(192)	10	215.0	61.7	207.0	66.5	178.0	61.9	171.0	64.0	122.0	49.2	96.3	42.3
	15	230.0	57.2	215.0	62.0	192.0	59.2	189.0	62.9	139.0	50.8	110.0	43.8
	18	236.0	52.2	217.0	56.9	197.0	56.0	199.0	61.4	150.0	52.0	118.0	44.8
	20	237.0	48.9	219.0	53.5	201.0	53.8	207.0	60.5	158.0	52.9	124.0	45.6
	5	211.0	71.7	202.0	77.3	189.0	87.5	169.0	73.8	144.0	66.9	117.0	58.3
	6	218.0	72.3	209.0	77.9	199.0	90.4	175.0	74.3	149.0	67.4	121.0	58.7
	7	225.0	72.9	216.0	78.6	208.0	93.4	182.0	74.9	154.0	67.8	125.0	59.1
(220)	10	239.0	74.1	230.0	79.8	214.0	90.3	191.0	75.7	162.0	68.4	131.0	59.7
	15	248.0	65.8	239.0	71.2	227.0	79.9	205.0	73.0	185.0	70.7	150.0	62.0
	18	248.0	56.8	240.0	61.6	231.0	68.4	215.0	69.1	201.0	72.3	161.0	63.6
	20	248.0	50.7	240.0	55.3	234.0	60.8	221.0	66.6	211.0	73.4	169.0	64.8

kWf = cooling output in kW
kWe_tot = total power input in kW
To (°C) = flow temperature
Performances in function of the inlet/outlet water temperature differential = 5 °C

Performance data – partial load cooling

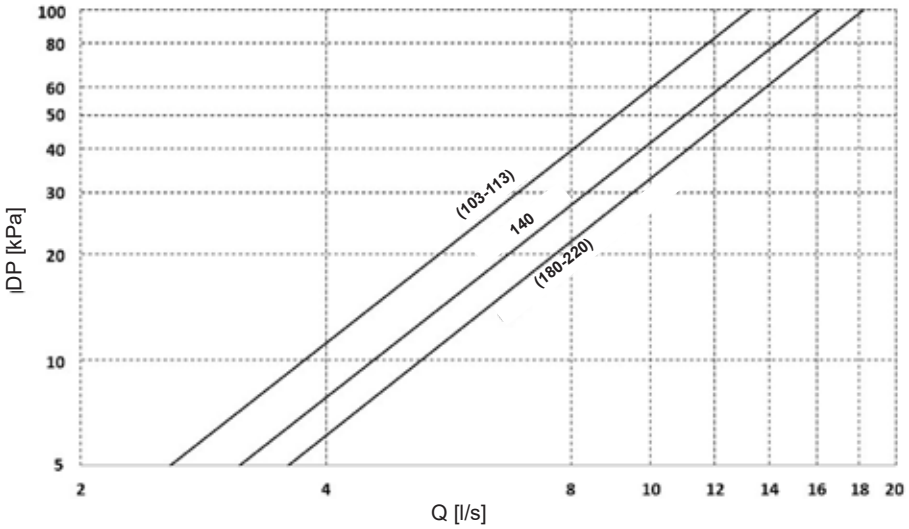
Belaria® fit (103-220)

Super-silenced acoustic configuration (EN)

Type	Load	Outdoor temperature (°C)											
		35 °C			30 °C			25 °C			20 °C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
(103)	100	103.0	41.6	2.48	104.0	37.3	2.78	108.0	33.4	3.24	114.0	30.5	3.74
	75	80.8	26.1	3.10	79.9	23.5	3.39	82.3	21.0	3.91	83.4	19.2	4.34
	50	54.5	13.9	3.91	53.9	12.4	4.36	53.5	10.9	4.91	53.7	9.8	5.48
	Min.	19.1	6.4	2.99	20.3	5.7	3.55	21.8	5.1	4.28	22.1	4.4	5.02
(113)	100	114.0	48.6	2.35	116.0	36.5	3.19	115.0	32.6	3.54	120.0	29.9	4.03
	75	84.0	29.9	2.81	91.0	27.1	3.36	92.6	24.1	3.85	96.9	22.0	4.42
	50	57.5	16.4	3.51	59.0	14.3	4.12	59.1	12.5	4.71	62.4	11.4	5.50
	Min.	20.4	6.5	3.15	25.6	6.9	3.71	25.5	6.2	4.14	25.0	5.4	4.66
(140)	100	136.0	62.9	2.16	129.0	42.5	3.04	127.0	37.2	3.41	126.0	31.7	3.98
	75	98.8	32.2	3.07	95.1	27.2	3.49	94.8	23.9	3.97	94.3	20.4	4.62
	50	66.5	19.4	3.43	64.4	16.2	3.99	64.7	13.9	4.66	64.9	11.7	5.52
	Min.	22.8	7.3	3.12	25.7	7.0	3.69	25.8	6.1	4.23	26.0	5.3	4.94
(180)	100	157.0	71.2	2.21	165.0	59.1	2.79	172.0	54.1	3.18	178.0	49.5	3.60
	75	121.0	41.3	2.93	127.0	37.6	3.37	132.0	34.3	3.85	137.0	31.5	4.35
	50	77.8	24.4	3.19	81.9	21.8	3.76	85.9	19.6	4.39	90.0	17.8	5.05
	Min.	27.0	8.1	3.34	28.6	7.3	3.95	30.3	6.6	4.58	31.9	6.1	5.20
(192)	100	173.0	68.9	2.52	196.0	65.7	2.98	203.0	60.9	3.33	210.0	56.6	3.71
	75	131.0	41.6	3.15	147.0	40.6	3.61	152.0	37.2	4.10	158.0	34.1	4.62
	50	83.9	24.8	3.38	87.9	21.9	4.01	91.8	19.4	4.72	95.6	17.4	5.49
	Min.	30.6	9.5	3.23	32.2	8.3	3.86	33.7	7.4	4.55	35.3	6.7	5.29
(220)	100	208.0	93.4	2.23	216.0	78.6	2.75	225.0	72.9	3.08	233.0	67.7	3.44
	75	152.0	53.5	2.83	161.0	47.5	3.39	167.0	43.6	3.83	173.0	40.2	4.30
	50	95.1	29.5	3.22	99.4	26.3	3.78	104.0	23.5	4.41	108.0	21.1	5.10
	Min.	33.8	9.6	3.52	35.5	8.5	4.16	37.1	7.6	4.87	38.7	6.9	5.63

Load = percentage of cooling capacity relative to full load value
kWf = cooling capacity in kW
kWe_tot = total power input in kW
Condenser water temperature = outlet 7 °C / inlet 12 °C / variable flow-rate with external plate heat exchanger air T

Plate heat exchanger pressure drop



Pressure drops are calculated considering a water temperature of 7 °C

Q = Water flow rate [l/s]
DP = Water side pressure drop [kPa]

The water flow rate can be calculated using the following formula

Q [l/s] = kW / (4.186 x DT)

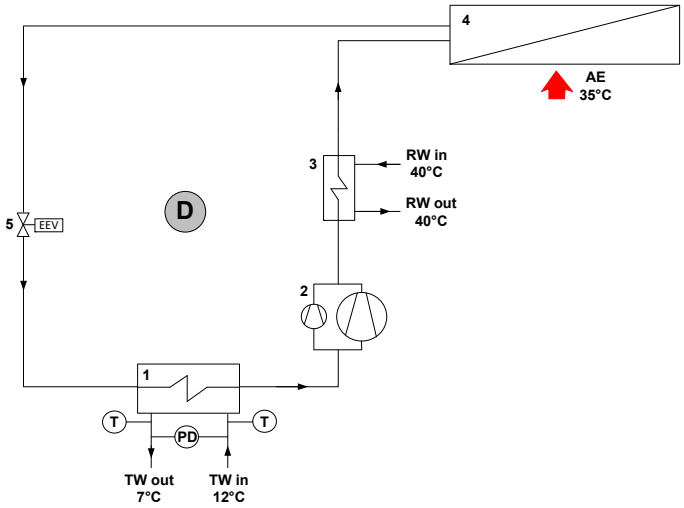
kW = Cooling capacity in kW
DT = Temperature difference between inlet / outlet water

Permissible water flow rates
Minimum (Q_{min}) and maximum (Q_{max}) water flow rates allowed for the unit to work properly.

Size		**(103-113)**	**(140)**	**(180-220)**
Q_{min}	[l/s]	2.6	3.1	3.6
Q_{max}	[l/s]	13.3	16.2	18.3

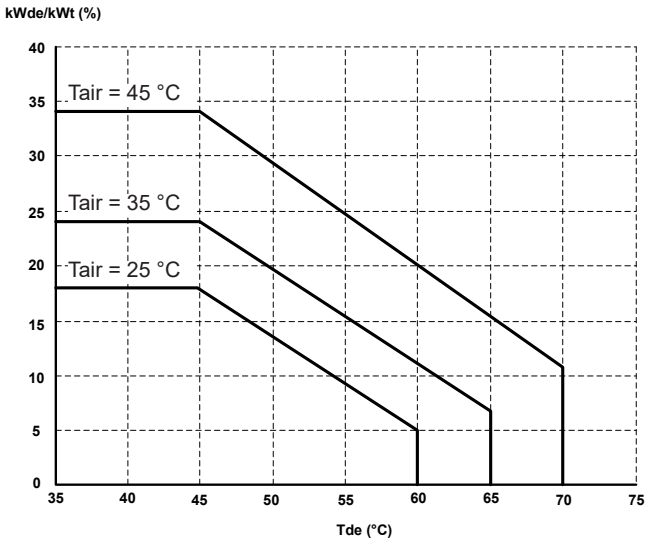
Partial energy recovery

A configuration which enables the production of hot water free-of-charge while operating in the cooling mode, thanks to the partial recovery of condensation heat that would otherwise be disposed of into the external heat source.
This option is also known as “desuperheater”. It is made up of an Inox 316 stainless steel brazed plate heat exchanger, suitable for recovering a part of the capacity dispersed by the unit (the dispersed heating capacity is equal to the sum of the cooling capacity and the electrical input capacity of the compressors).
The partial recovery device is considered to be operating when it is powered by the water flow which is to be heated. This condition improves the unit performance, since it reduces the condensation temperature: in nominal conditions the cooling capacity increases indicatively by 3.2 % and the power input of the compressors is reduced by 3.6 %.
When the temperature of water to be heated is particularly low, it is necessary to control the flow rate to maintain the outlet temperature at recovery above 35 °C and prevent condensation of the refrigerant in the partial energy recovery device.
The water connections of the partial energy recovery device are 1¼″ for all sizes.



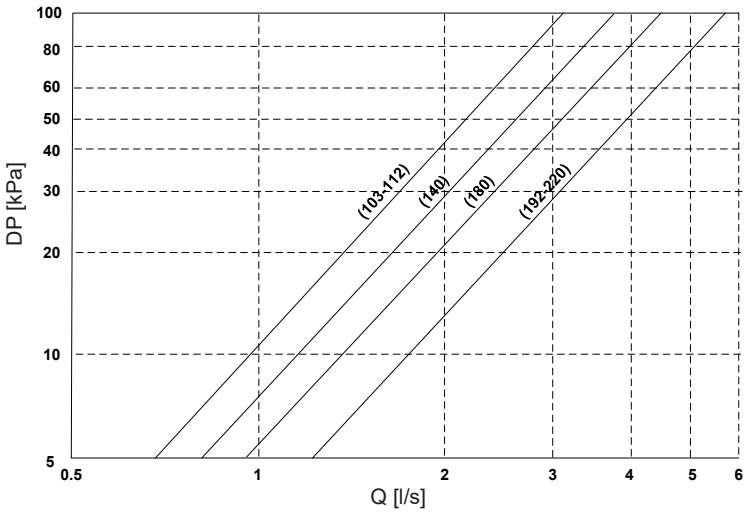
1 Condenser
2 Compressors
3 Recovery plate heat exchanger
4 Evaporator
5 Electronic expansion valve

Partial recovery heating capacity



kWde/kWt = heat recovered/condenser heating capacity (cooling capacity + compressor power input) [%]
Tde = desuperheater water outlet temperature [°C]

Partial energy recovery plate heat exchanger pressure drops



Q = water flow rate [l/s]
DP = water side pressure drops [kPa]

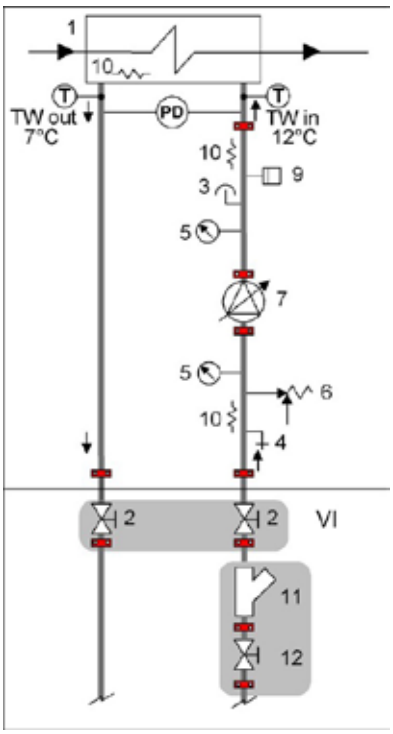
Admissible water flow rates
Minimum (Q_{min}) and maximum (Q_{max}) admissible water flow rates for correct operation of the unit

Type		(103)	(113)	(140)	(180)	(192)	(220)
Q_{min}	[l/s]	2.5	2.5	3	3.4	4.4	4.4
Q_{max}	[l/s]	11.2	11.2	13.7	16.2	20.7	20.7

High static pressure inverter pump (CP version only)

Pump unit consisting of an electric pump regulated by an inverter to adapt to different operating conditions.
Allows automatic reduction of the liquid flow rate in critical conditions, preventing blockages due to overload and consequent intervention by specialised technical personnel.
By adjusting the inverter, supplied as standard, the pump flow rates/heads can be adapted to the system characteristics. Centrifugal electric pump with cast iron pump body and stainless steel or cast iron impeller (depending on model).
Mechanical seal made of ceramic, carbon and EPDM elastomer components.
Three-phase electric motor with IP55 protection rating. Complete with thermoformed insulating shell, quick couplings with insulating shell, safety valve, pressure gauges, system load safety pressure switch, stainless steel immersion-type anti-freeze heating elements located in the suction and delivery lines.
All water connections are Victaulic.

CONNECTION DIAGRAM - Unit with 1 high-head inverter pump



1 Condenser
2 Shut-off valve
3 Vent valve
4 Drain valve
5 Pressure gauge
6 Safety valve (6 bar)
7 Monobloc electric pump with high-efficiency impeller
9 System load safety pressure switch (prevents the pumps from operating in the event of water failure)
10 Anti-freeze heating element
11 Steel mesh filter on the water side
12 Shut-off valve with quick couplings

T Temperature probe
PD Differential pressure switch

TW in Chilled water inlet
TW out Chilled water outlet

The grey area indicates additional optional components.

Notice

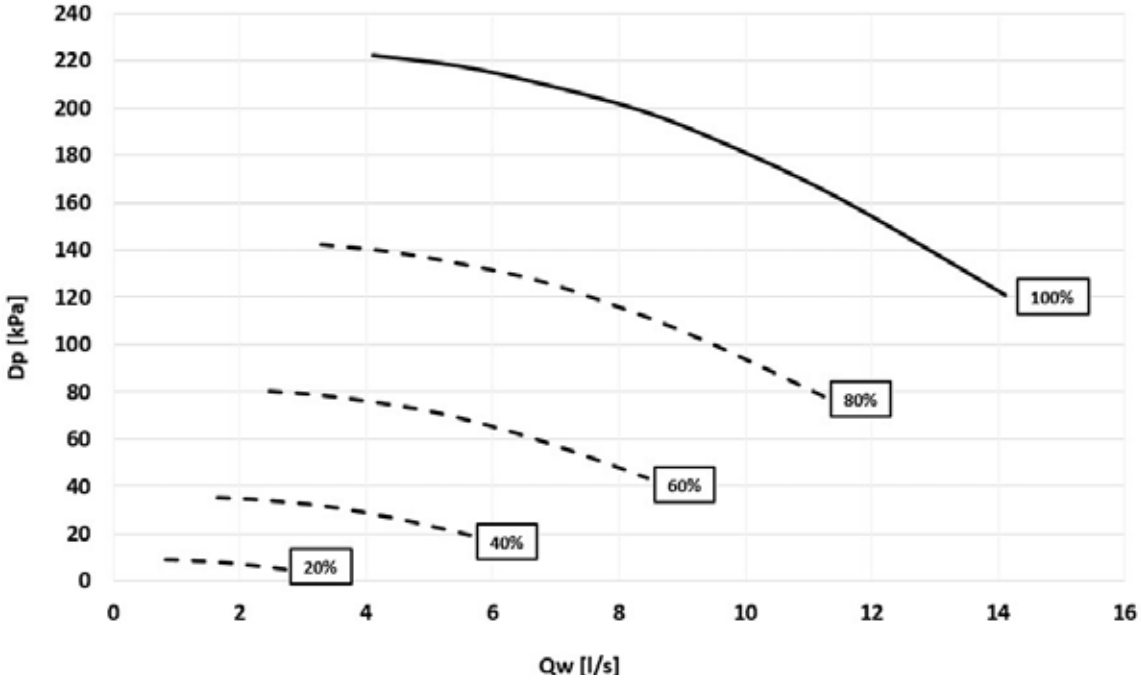
Provide hydraulic shut-off valves outside the unit to facilitate any extraordinary maintenance operations.

A non-return valve must be provided for each unit installed in parallel hydraulically and equipped with a pump unit installed on board (installation by the customer).

Electrical data pump group

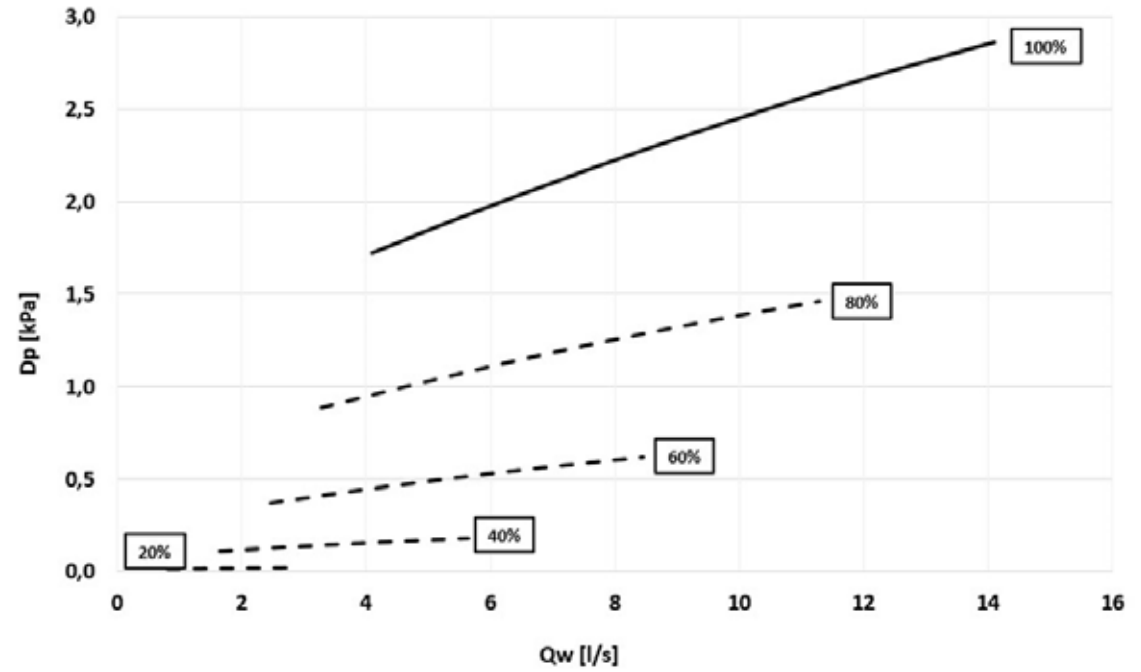
Pump	Nominal power [kW]	Rated absorbed current [A]
(103-140) CP	6.33	3.0
(180-220) CP	7.62	4.0

Head – types (103-140)



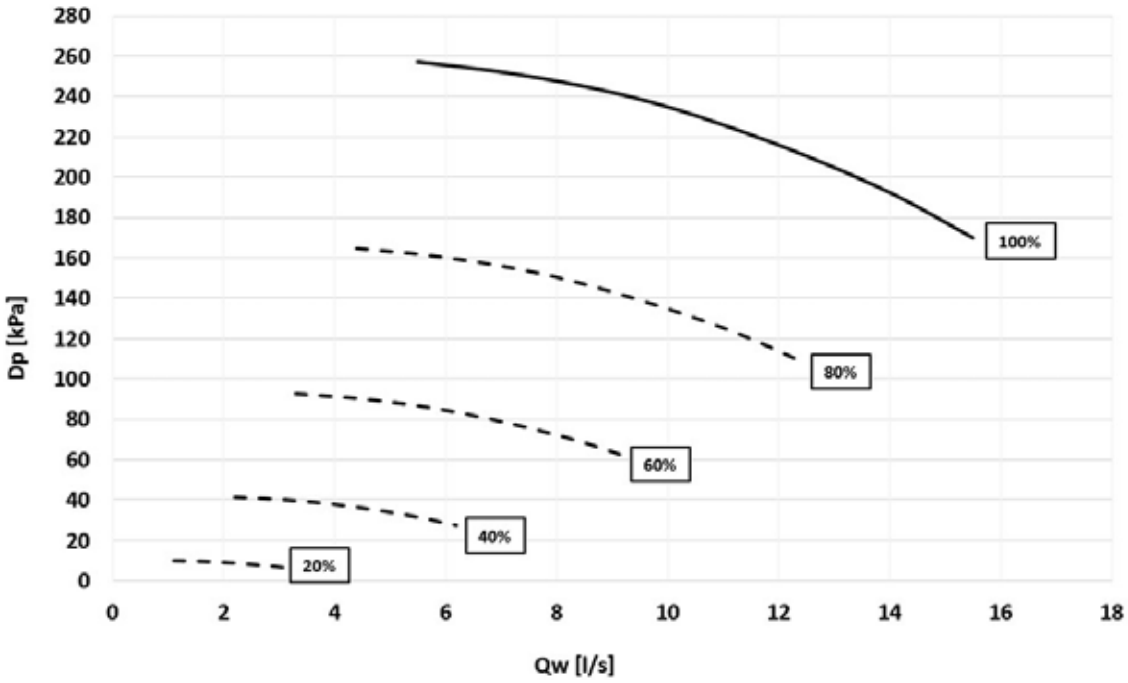
Dp = pump head [kPa]
Qw = water flow rate [l/s]

Power input – types (103-140)



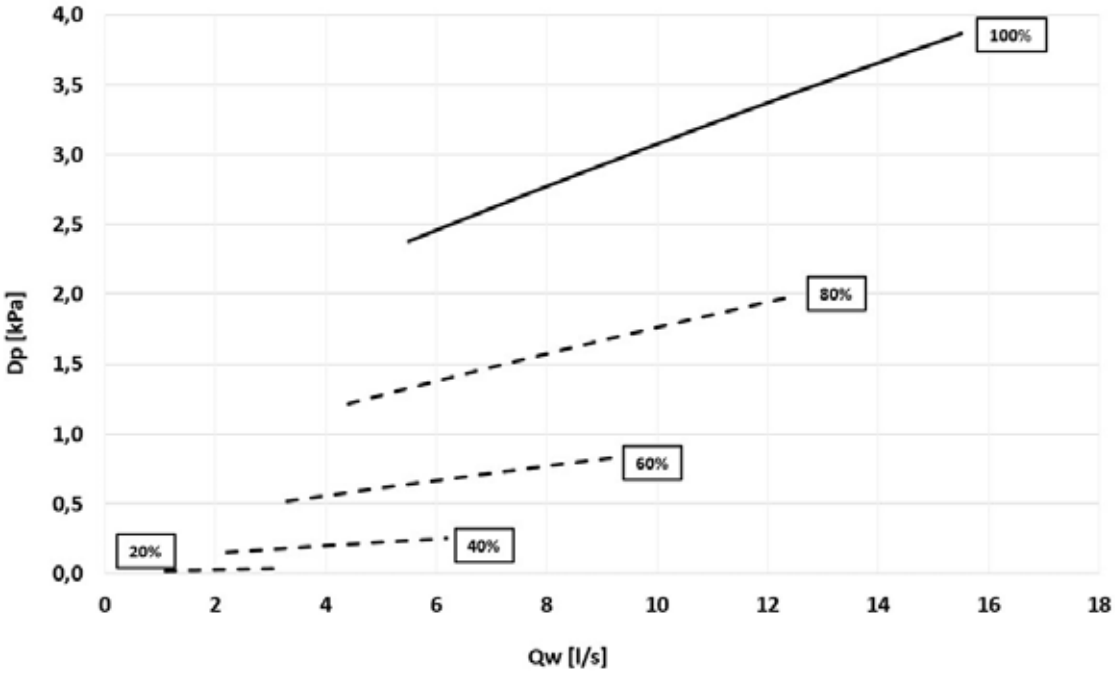
Dp = pump head [kPa]
Qw = water flow rate [l/s]

Head – types (180-220)



Dp = pump head [kPa]
Qw = water flow rate [l/s]

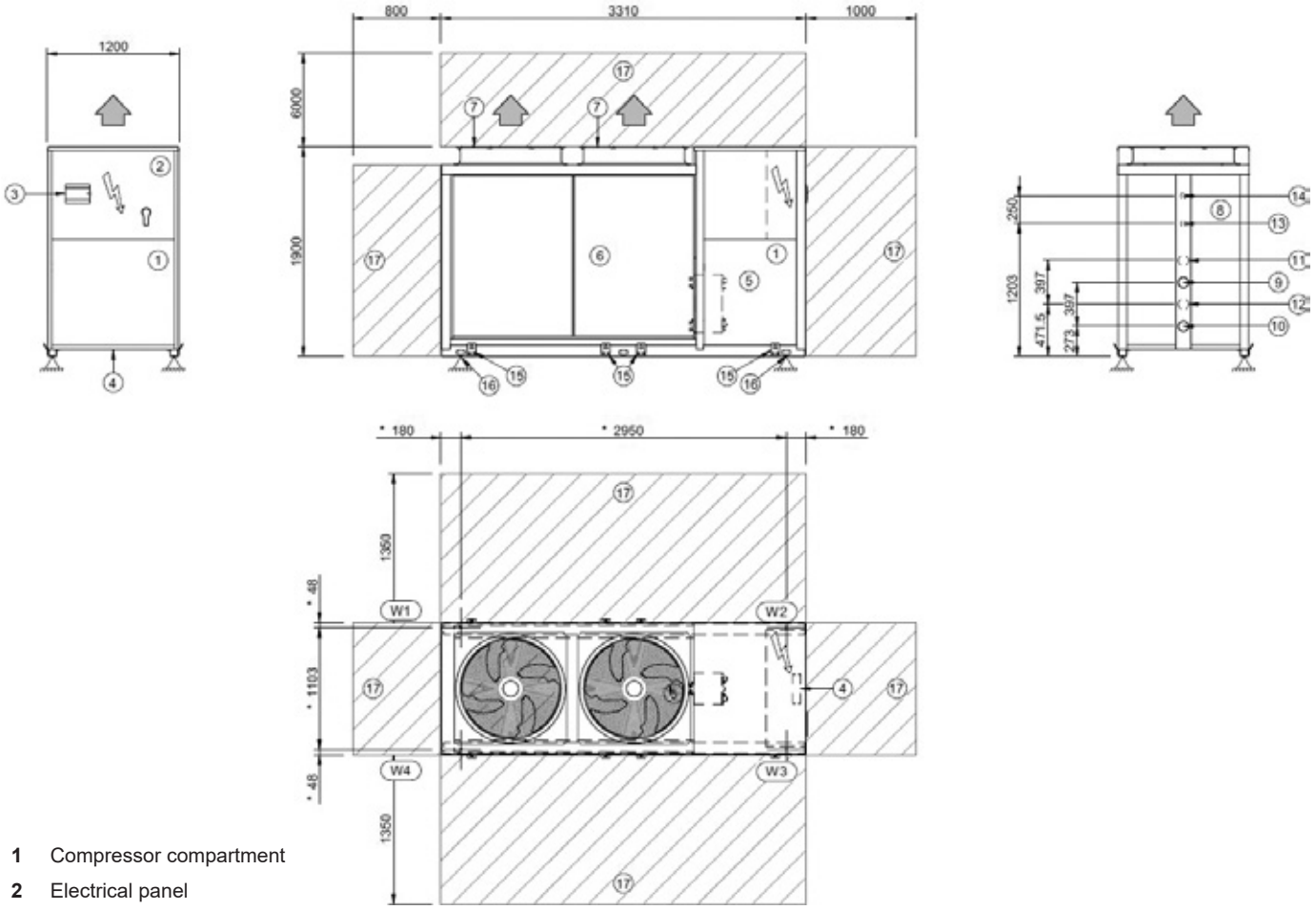
Power input – types (180-220)



Dp = pump head [kPa]
Qw = water flow rate [l/s]

Belaria® fit (103-140)

(Dimensions in mm)

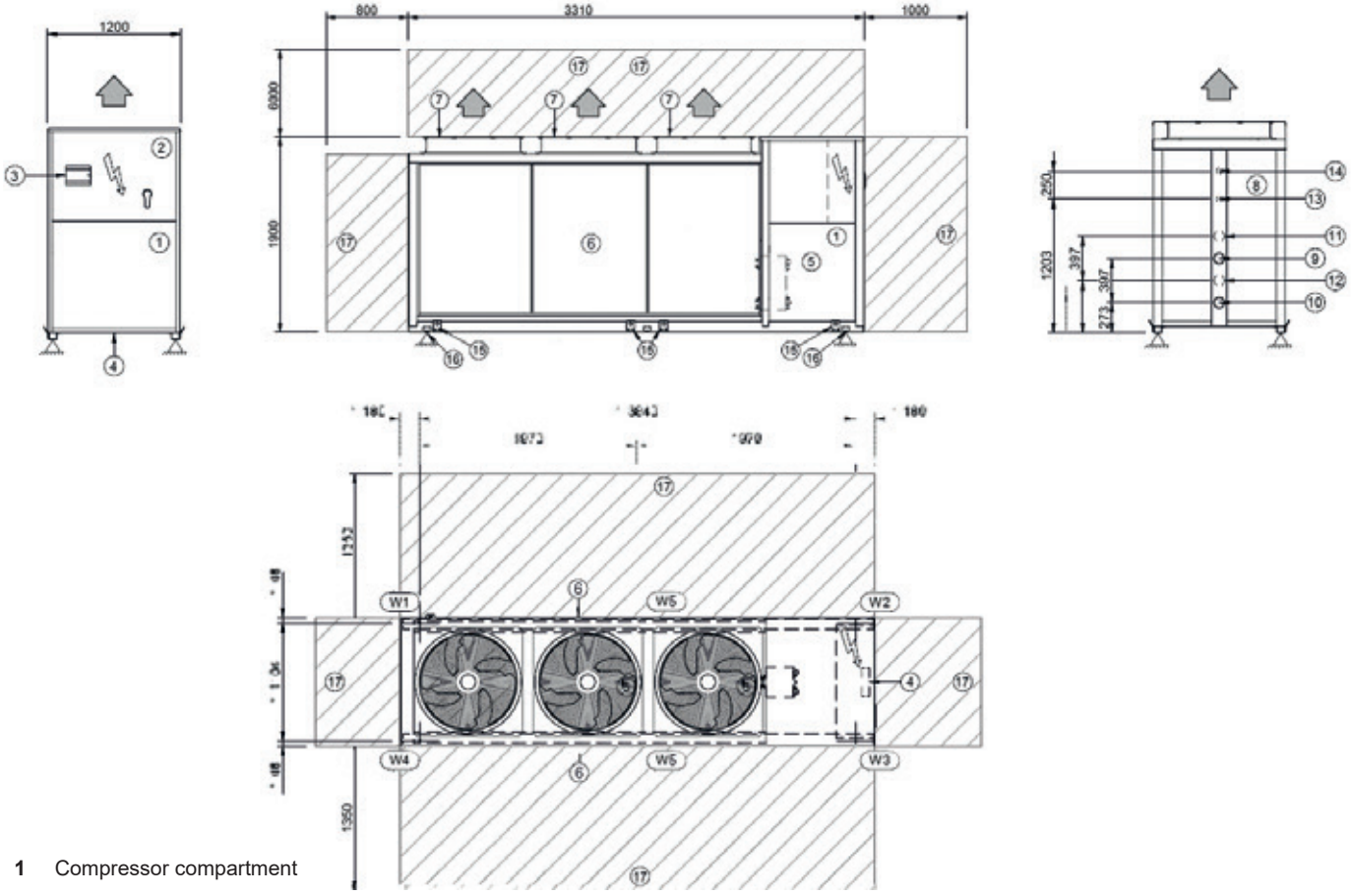


1	Compressor compartment
2	Electrical panel
3	Human Machine Interface
4	Power input
5	Internal plate heat exchanger
6	External plate heat exchanger
7	Fan
8	Rear compartment
9	Victaulic 2½″ water inlet connection
10	Victaulic 2½″ water outlet connection
11	not available
12	not available
13	Victaulic 1¼″ gas partial inlet recovery water connection
14	Victaulic 1¼″ gas partial outlet recovery water connection
15	Lifting bracket (removed)
16	Support points
17	Functional clearances
*	Position of antivibration mounts

Size		**(113)**	**(140)**
Length	mm	3310	3310
Depth	mm	1200	1200
Height	mm	1900	1900
W1 Support point	kg	171	168
W2 Support point	kg	312	323
W3 Support point	kg	312	341
W4 Support point	kg	171	177
Operating weight	kg	966	1009
Shipping weight	kg	952	994

Belaria® fit (180-220)

(Dimensions in mm)



1	Compressor compartment
2	Electrical panel
3	Human Machine Interface
4	Power input
5	Internal plate heat exchanger
6	External plate heat exchanger
7	Fan
8	Rear compartment
9	Victaulic 3″ water inlet connection
10	Victaulic 3″ water outlet connection
11	not available
12	not available
13	Victaulic 1¼″ gas partial inlet recovery water connection
14	Victaulic 1¼″ gas partial outlet recovery water connection
15	Lifting bracket (removed)
16	Support points
17	Functional clearances
*	Position of antivibration mounts

Size		**(180)**	**(220)**
Length	mm	4300	4300
Depth	mm	1200	1200
Height	mm	1900	1900
W1 Support point	kg	210	234
W2 Support point	kg	415	442
W3 Support point	kg	415	442
W4 Support point	kg	210	234
Operating weight	kg	1250	1352
Shipping weight	kg	1231	1334

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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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