



Technical description

Domestic heat pumps

DHP-A
DHP-A Opti
DHP-C
DHP-C Opti
DHP-C Opti W/W
DHP-H
DHP-H Opti
DHP-H Opti Pro
DHP-L
DHP-L Opti
DHP-L Opti Pro

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The English language is used for the original instructions.
Other languages are a translation of the original instructions.
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1 Important parameters

1.1 Heat production - calculating

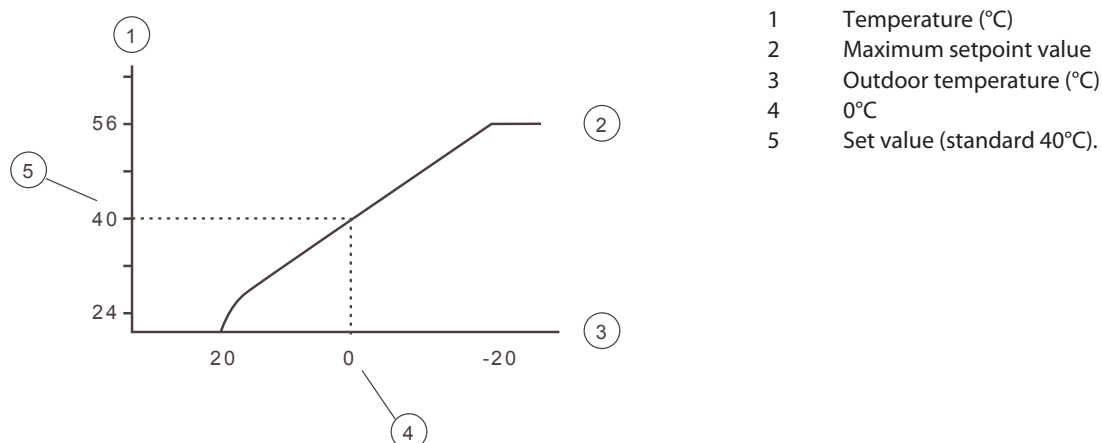
The indoor temperature is adjusted by changing the heat pump's heat curve, which is the control system's tool for calculating what the supply temperature should be for water that is sent out in the heating system. The heat curve calculates the supply temperature depending on the outdoor temperature. The lower the outdoor temperature, the higher the supply temperature. In other words, the supply temperature of the water fed to the heating system will increase linearly as the outdoor air temperature falls.

The heat curve will be adjusted in connection with installation. It must be adapted later on, however, to obtain a pleasant indoor temperature in any weather conditions. A correctly set heat curve reduces maintenance and saves energy.

1.2 CURVE

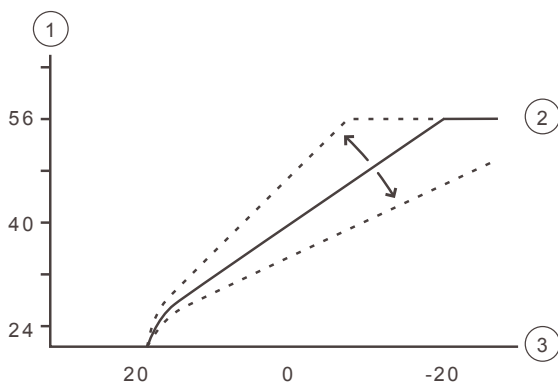
The control computer shows the value for CURVE by means of a graph in the display. The heat curve can be changed by adjusting the CURVE value. The CURVE value indicates the supply temperature of the water that is wanted to the heating system at an outdoor temperature of 0°C.

The set value 40 for CURVE



In the event of outdoor temperatures below 0°C, a higher setpoint value is calculated and in the event of outdoor temperatures greater than 0°C, a lower setpoint value is calculated.

Increasing or reducing the CURVE changes the slope of the curve



- 1 Temperature (°C)
- 2 Maximum setpoint value
- 3 Outdoor temperature (°C)

If the CURVE value is increased, the heat curve will become steeper and if the value is reduced, it will become flatter.

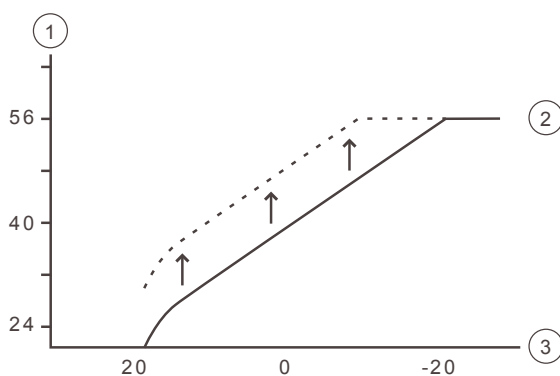
The most energy efficient and cost effective setting is achieved by changing the CURVE value which leads to fewer starts and longer operating times. For a temporary increase or reduction, adjust the ROOM value instead.

1.3 ROOM

If you wish to increase or reduce the indoor temperature, change the ROOM value.

Changing the ROOM value

When changing the ROOM value, the angle of the curve on the system's heat curve does not change, instead the entire heat curve is moved by 3°C for every degree change of the ROOM value. The reason that the curve is adjusted 3°C is that an approximate 3°C increase in supply temperature is usually needed to increase the indoor temperature 1°C.



- 1 Supply temperature (°C)
- 2 Maximum supply temperature
- 3 Outdoor temperature (°C)

Changing the CURVE value

When changing the CURVE value, the angle of the curve on the system's heat curve changes.

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The relationship of the supply temperature to the outdoor temperature will not be affected. The supply temperature will be increased or reduced by the same number of degrees all along the heat curve. I.E. The entire heat curve rises or drops instead of the curve gradient changing.

This method of adjusting the indoor temperatures can be used for a temporary raise or drop. For long term increases or reductions of the indoor temperature, the heat curve should be adjusted.

1.4 HEAT STOP

The HEAT STOP function automatically stops all production of radiator heat when the outdoor temperature is equal to, or higher than, the value entered for heat stop.

When the heat stop function is activated, the circulation pump will be turned off - except when hot water is being produced. The circulation pump will be "exercised" for one minute per day. The factory set value for activating heat stop is an outdoor temperature of 17°C. If the heat stop function is active, the outdoor temperature must drop 3°C when setting, before the heat stop is de-activated.

1.5 MIN and MAX

The MIN and MAX values are the lowest, respectively highest set point values that are allowed for the supply temperature.

Adjusting the minimum and maximum supply temperatures is particularly important if your home has under floor heating.

If your house has under floor heating and parquet floors, the supply line temperature must not exceed 45°C. Otherwise the floor might get damaged. If you have under floor heating and stone tiles, the MIN value should be 22-25°C, even in summer when no heating is required. This is to achieve a comfortable floor temperature.

If your house has a basement, the MIN value should be adjusted to a suitable temperature for the basement in summer. A condition for maintaining the heat in the basement in the summer is that all radiators have thermostat valves that switch off the heat in the rest of the house. It is extremely important that the heating system and the radiator valves are trimmed correctly. As it is usually the end customers themselves who have to carry out trimming, remember to inform them how to carry it out correctly. Also remember that the value for HEAT STOP needs adjusting upwards for summer heating.

1.6 TEMPERATURES

The heat pump can display a graph showing the history of the various sensors' temperatures and you can see how they have changed over 60 measurement points in time. The time interval between the measurement points can be adjusted between one minute and one hour, factory setting is one minute.

History is available for all sensors, but only the set value is shown in the display for the room sensor. The integral value that may appear is the heating system's energy balance.

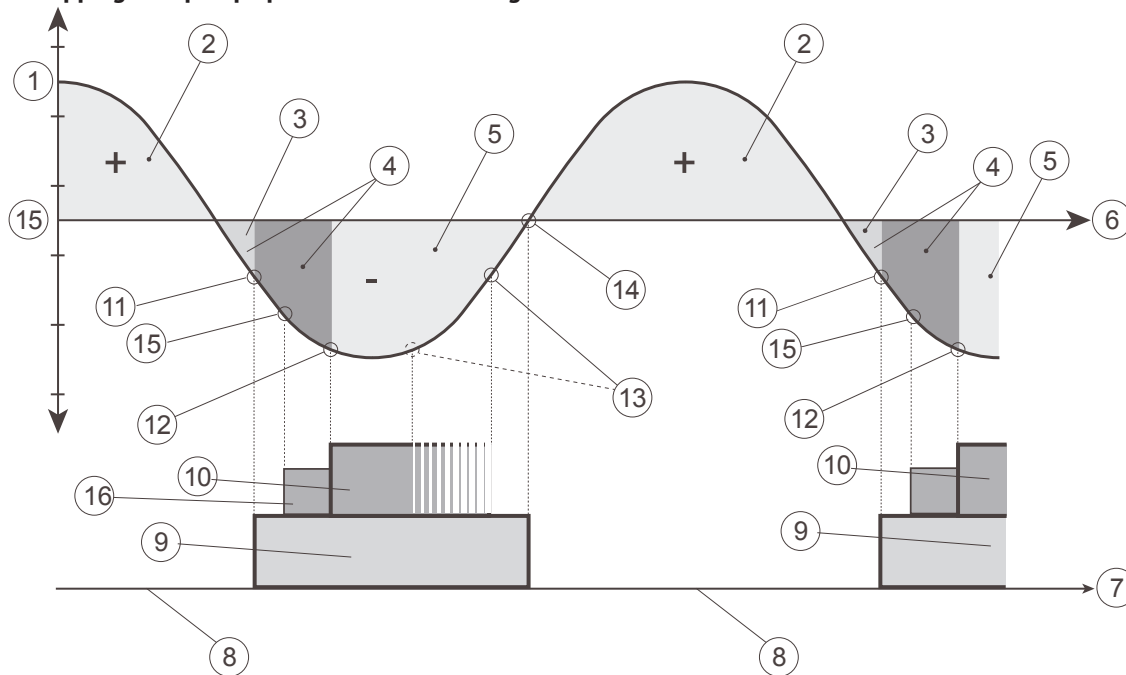
1.7 INTEGRAL

The heat demand in the house depends on the season and weather conditions and is not constant. The heat demand can be expressed as temperature difference over time and can be calculated giving an integral value as a result (heat demand). To calculate the integral value, the control system uses several parameters.

A heat deficit is needed to start the heat pump, and there are two integral values, A1 (default value = -60), which starts the compressor and A2, (factory set = -600), which starts the auxiliary heater and A3, which starts the external auxiliary heater. During heat production, the deficit reduces and when the heat pump stops, the inertia in the system causes a surplus of heat.

The integral value is a measurement of the area under the time axis and is expressed in degree minutes. The figure below shows the factory settings for the integral values that the heat pump has. When the integral value has reached the set value for INTEGRAL A1 the compressor starts. If the integral value does not reduce but continues to increase the internal additional heat will start when the integral value reaches the set value for A2 and the external value at set value for A3

Starting and stopping heat pump operation based on integral values



- 1 Integral
- 2 Heat surplus
- 3 INTEGRAL A1
- 4 INTEGRAL A2
- 5 Heating deficit
- 6 Time
- 7 Heat pump operation
- 8 No operation
- 9 Compressor
- 10 Internal additional heater
- 11 Compressor start (A1)
- 12 Auxiliary heater start A2
- 13 Aux. heater stop (latest by A1)
- 14 Compressor stop (=0)
- 15 INTEGRAL A3
- 16 External auxiliary heater

The calculation of the integral value stops during heat stop. The calculation of the integral value stops when heat stop has stopped.

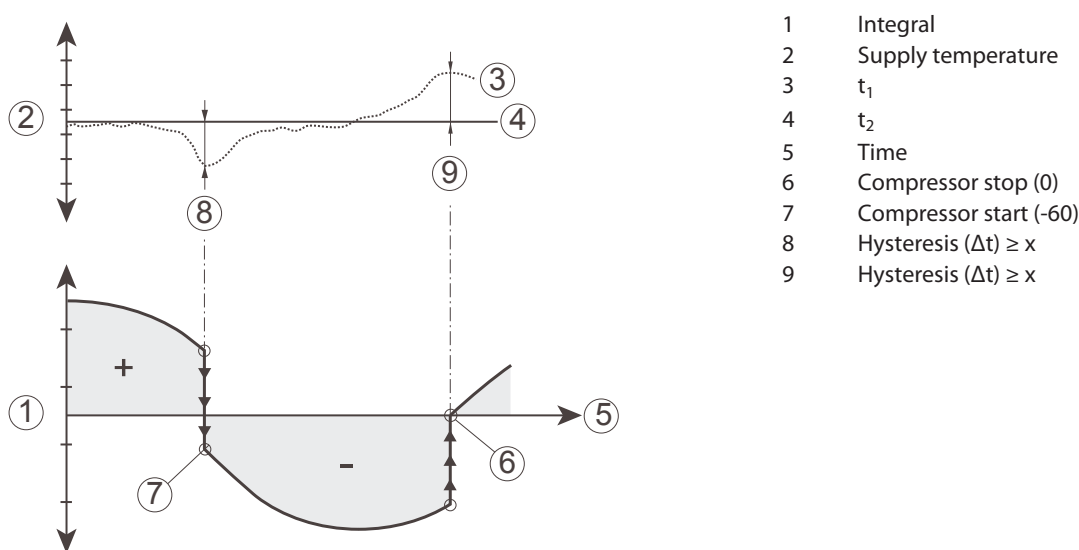
In this example INTEGRAL A3 < INTEGRAL A2. This means that the external addition will be activated earlier than the internal addition. On the condition that these are activated.

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1.8 HYSTERESIS

In order to start the heat in advance during sudden changes of the heat demand, there is a value, HYSTERESIS, which controls the difference between the actual supply temperature, t_1 and the calculated supply temperature, t_2 . If the difference is equal to or greater than the set HYSTERESIS value (x), i.e. there is a heat demand, or the heat demand disappears, quicker than the usual integral calculation, the integral value is forced to either the start value (-60) INTEGRAL A1 or to the stop value (0).

Conditions for HYSTERESIS to force the integral value to change



1.9 DEFR CURVE

To start defrosting the outdoor unit, the control computer makes a calculation using the temperature of the brine return and the outdoor temperature.

The calculation is based on a linear defrosting curve that can be set so that the heat pump and outdoor unit work optimally. The setting of three different values can be changed: DEFR CURVE 0, DEFR CURVE -20 and OUTDOOR STOP. The defrosting sequence starts when the temperature of the brine return reaches the set parameter value for the defrosting curve at an outdoor temperature somewhere along the defrosting curve.

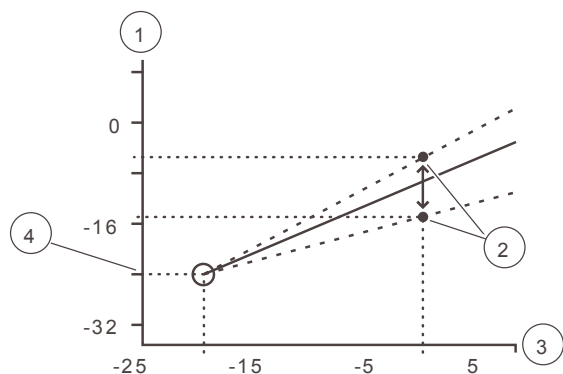
The two parameters that are mainly changed are DEFR CURVE 0 and DEFR CURVE -20. The numbers behind the DEFR CURVE display what outdoor temperature the setting is for, that is to say at 0°C for DEFR CURVE 0 and -20°C for DEFR CURVE -20. The value -20 for DEFR CURVE -20 is the set value for OUTDOOR STOP, so if the value for OUTDOOR STOP changes, the numbers behind DEFR CURVE also change.

Factory setting for OUTDOOR STOP is -20°C. At this outdoor temperature, compressor operation is stopped and the additional heater takes over. Generally the value of OUTDOOR STOP does not need to be changed. Tests and operating cases have shown that -20°C operates very well as the stop temperature. In the text and figures below the value -20°C has been used for OUTDOOR STOP.

The display shows the value for DEFR CURVE 0 and DEFR CURVE -20 by means of a graph.

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How the value for DEFR CURVE 0 can be set



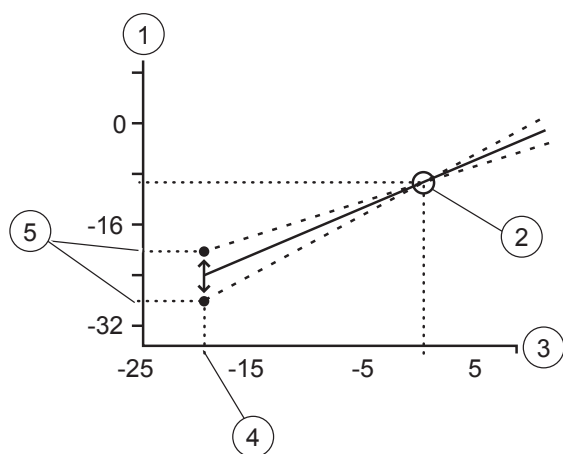
- 1 Temperature, input brine line
- 2 Adjustable interval for DEFR CURVE 0 is a brine return between -5°C and -15°C at 0°C outdoor temperature
- 3 Outdoor temperature
- 4 Set value for DEFR CURVE -20

The value for OUTDOOR STOP corresponds to the fact that the compressor will no longer be used for heating or hot water production if the outdoor temperature is the same as or lower than the value. Heating and hot water production will then be produced with the help of the auxiliary heater.

The value for DEFR CURVE 0 is the temperature that the brine return is permitted to reach when a defrost must start at outdoor temperature 0°C.

In the corresponding way the value for DEFR CURVE -20 is the temperature that the brine return has when a defrost should start at the set outdoor temperature for OUTDOOR STOP. The setting for DEFR CURVE -20 means that the value OUTDOOR STOP (-20°C) is reduced by between 1 and 8 degrees. This also determines how much lower the temperature for the brine return may be than -20°C in this case.

How the value for DEFR CURVE -20 can be set



- 1 Temperature, input brine line
- 2 Set value for DEFR CURVE 0
- 3 Outdoor temperature
- 4 Set value for OUTDOOR STOP, -20°C
- 5 Adjustable value for DEFR CURVE -20 is 1°C to 8°C lower than OUTDOOR STOP

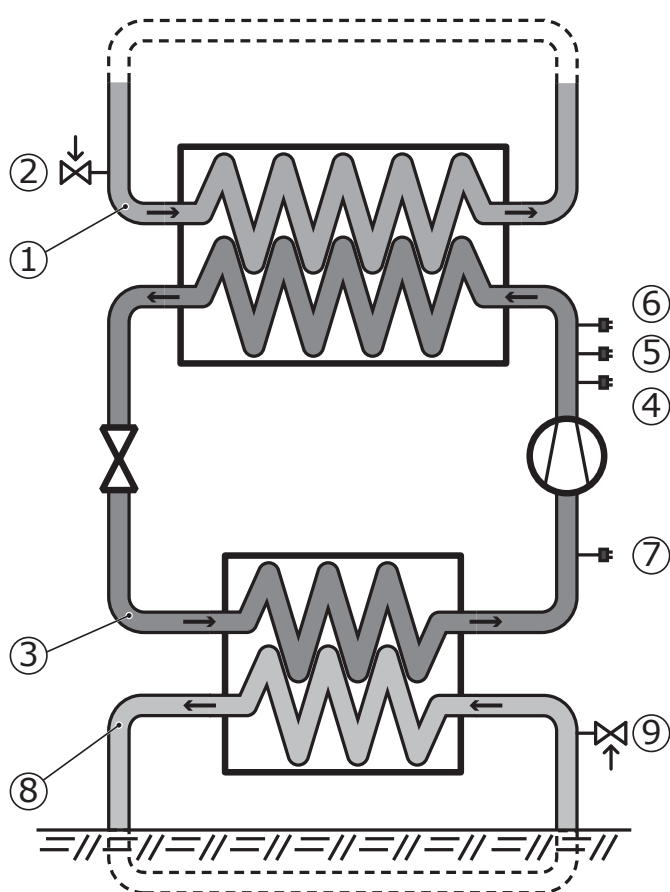
These three settings together create the defrosting curve and all three values have an effect on when defrosting will start, even if it is mainly DEFR CURVE 0 and DEFR CURVE -20 that is changed.

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2 Check and safety functions

The heat pump has a number of check and safety functions to protect the installation against damage during abnormal operating conditions.

The diagram below shows the heat pump's three circuits with respective safety functions.



- 1 Heat transfer fluid circuit
- 2 Safety valve, heat transfer fluid circuit, externally mounted
- 3 Refrigerant circuit
- 4 Operating pressure switch, normal
- 5 Operating pressure switch, alternative (only on certain heat pumps)
- 6 High pressure switch
- 7 Low pressure switch
- 8 Brine circuit
- 9 Safety valve, brine fluid circuit, externally mounted

Heat transfer fluid circuit (1)

If the pressure in this circuit exceeds the opening pressure for the safety valve (2), the valve opens, releases the overpressure and closes again. The safety valve overflow pipe must have an open connection to the drain and visibly flow into this in a frost-free environment.

Refrigerant circuit (3)

The refrigerant circuit's high pressure side is equipped with a high pressure switch (6) and one or two operating pressure switches (4, 5), only one of which is connected. The connected operating pressure switch stops the compressor when the working pressure is reached, which is when sufficient heat energy has been produced.

If the operating pressure switch does not work and the pressure continues to increase in the circuit, the high pressure switch activates when its break pressure is reached, whereupon the compressor stops and the heat pump's normal operation is blocked.

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If the high pressure switch is activated an alarm indicator flashes on the heat pump's control panel and a warning text appears in the display of the control panel. The blocked heat pump is reset by setting the operating mode to OFF and then back to the previously selected mode.

The low pressure switch (7) stops the compressor and blocks the heat pump's operation if the pressure becomes too low in the cooling circuit's low pressure side.

If the low pressure switch is activated, the heat pump's normal operation is blocked, an alarm indicator on the heat pump's control panel flashes and a warning text appears in the display of the control panel. The blocked heat pump is reset by setting the operating mode to OFF and then back to the previously selected mode.

Brine circuit (8)

If the pressure in this circuit exceeds the opening pressure for the safety valve (9), the valve opens, releases the overpressure and closes again. The safety valve overflow pipe must have an open connection to the drain and visibly flow into this in a frost-free environment.

Compressor

The compressor is equipped with a thermal over current relay to protect it against over current.

If the thermal over current relay (position 1 in the image below) is activated, the heat pump's normal operation is blocked, an alarm indicator on the heat pump's control panel flashes and a warning text appears in the display of the control panel.

The blocked heat pump is reset by setting the operating mode to OFF and then back to the previously selected mode.

The compressor is also equipped with an internal protector that stops the compressor if it risks becoming overheated. The internal protector cannot be reset manually, the compressor must cool before it can be restarted. No alarm connected to this protector.

Circulation pumps

The circulation pumps have internal overload protectors, which are reset automatically after cooling.

The overload protectors in circulation pumps for 10 - 16 kW heat pumps (8 - 12 kW air/water heat pumps) also activate the alarm for motor protection and block the heat pump's normal operation. Indication and resetting occur in the same way as for the compressor.

Alarm mode

If an alarm that affects the heat pump's normal operation is activated this will be indicated in the display. In order to further attract attention, the heat pump will not produce hot water.

The heat pump will initially meet the heat demand using the compressor. If this is not possible, the built-in electric heating element engages.

Immersion heater, electric heating element

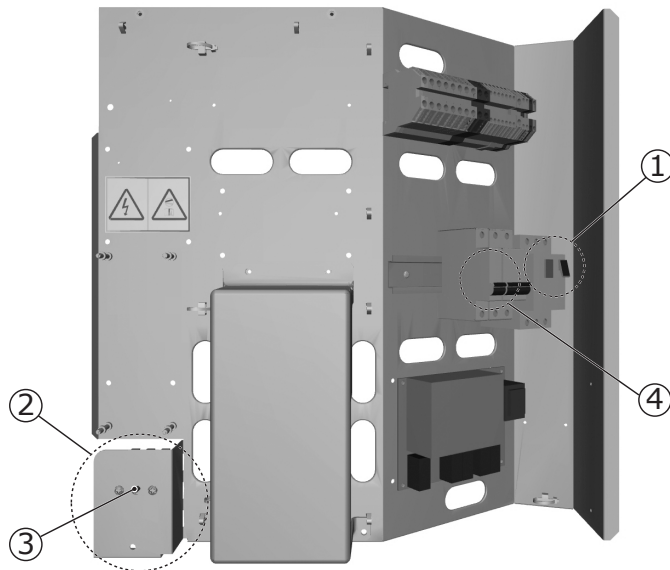
The immersion heater consists of an electric heating element mounted on the heating system supply line. It has an overheat protector that switches off the electric heating element if it is at risk of becoming overheated. The overheat protector's control unit is on the electrical panel (position 2 in the image below).

If the overheat protector is activated an alarm indicator flashes on the heat pump's control panel and a warning text appears.

The overheat protector is reset by pushing the reset button (position 3 in the image below).

Electrical system

The heat pump control is fused with fuse F0 (position 4 in the image below).



- 1 Thermal over current relay F11
- 2 Overheating protection
- 3 Reset button
- 4 Fuse F0

Technical data

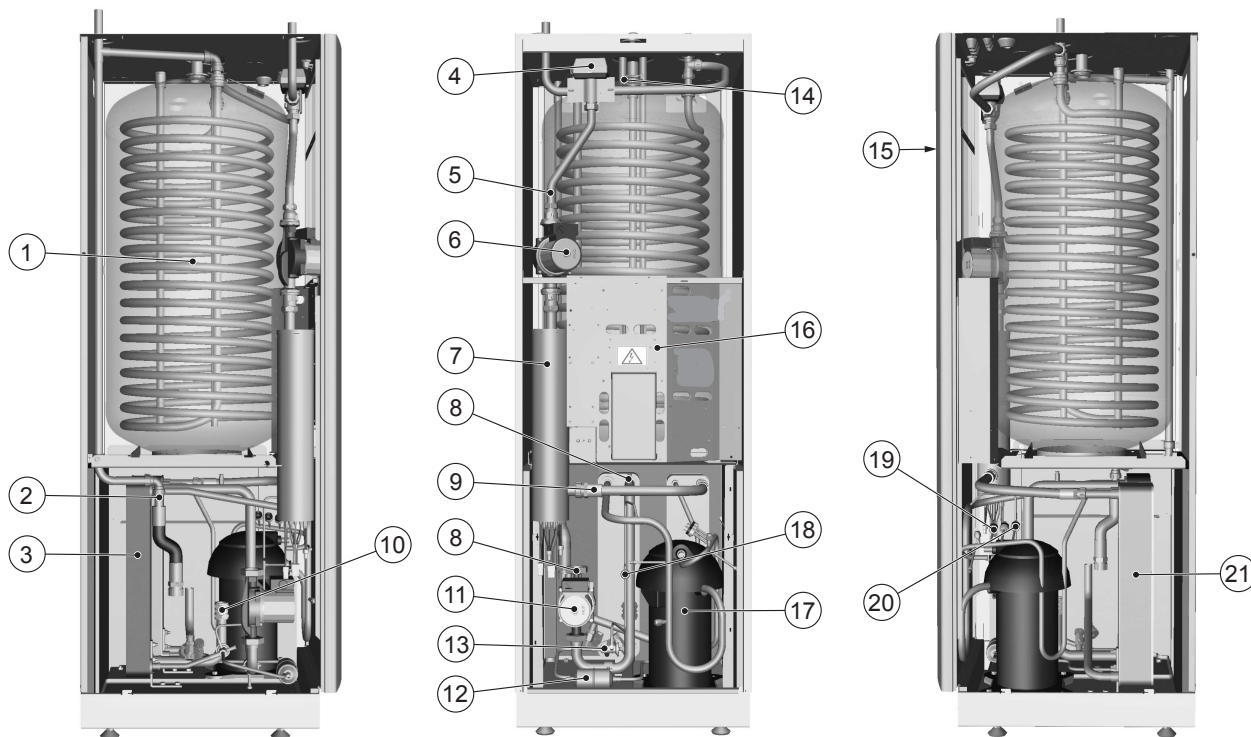
See Technical data for detailed technical specifications.

3 Heat pump data, components



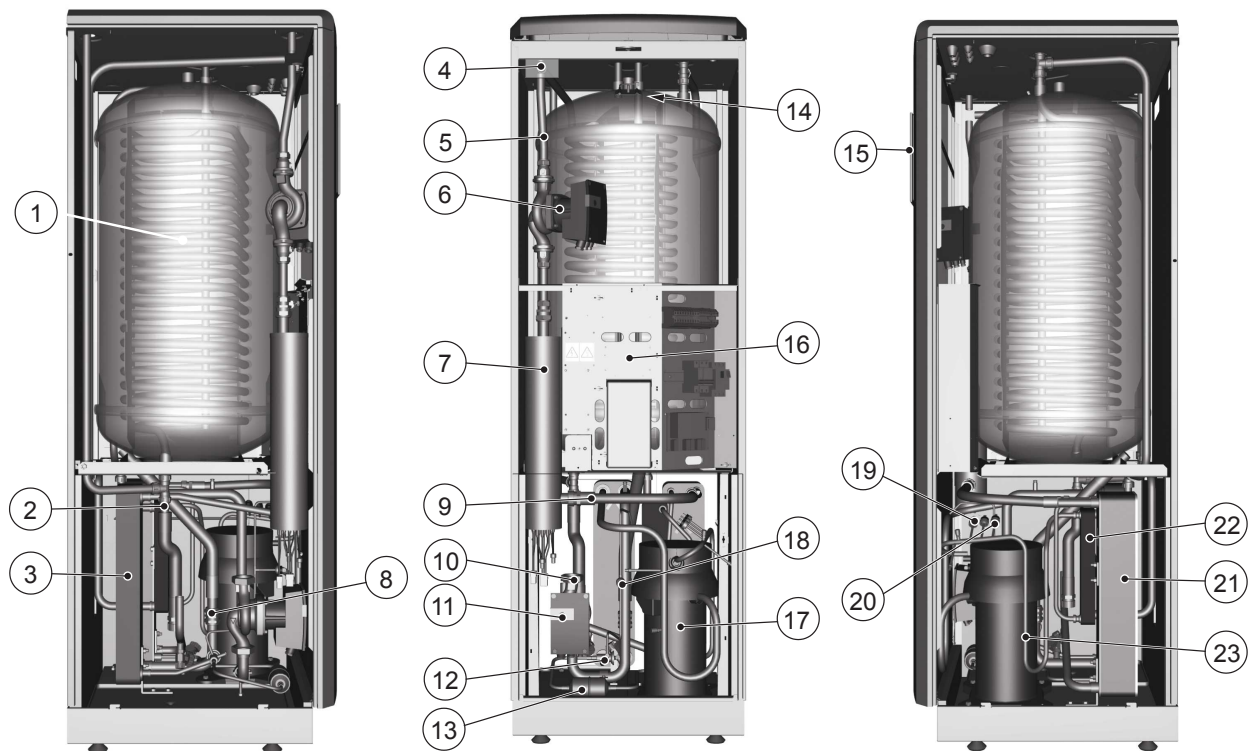
Illustrations of products are not precise drawings and must only be considered as schematic images. Differences in component parts may occur.

3.1 DHP-H, DHP-H Opti



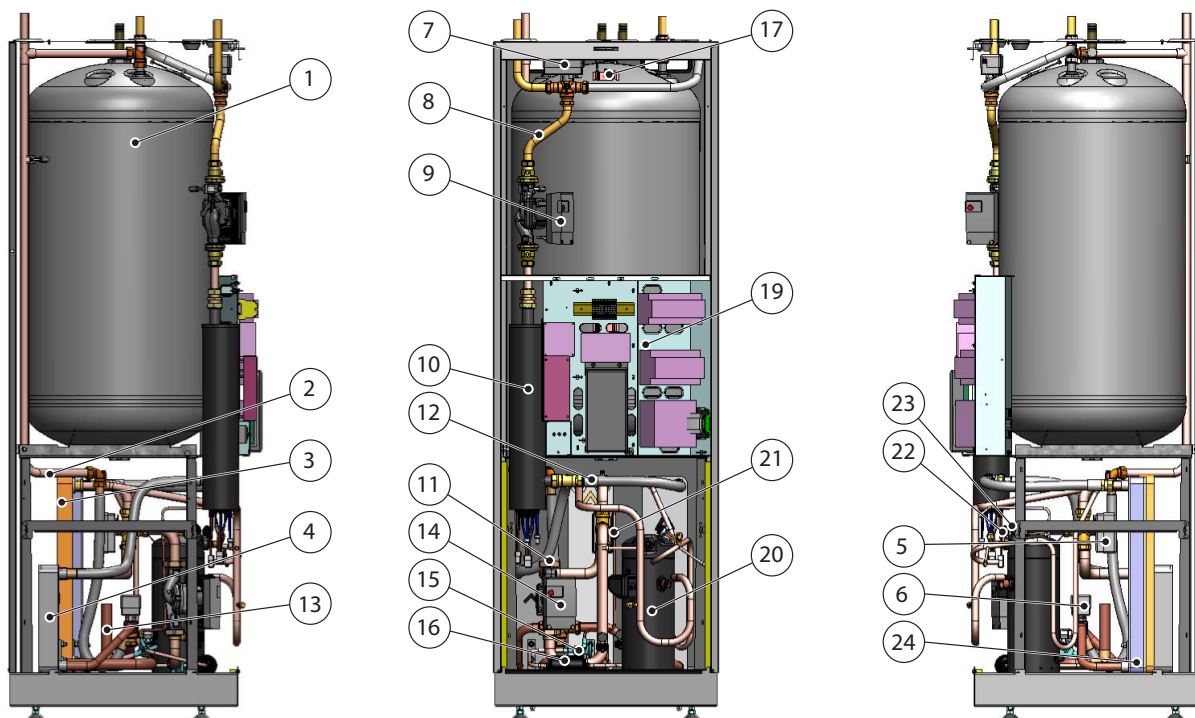
Symbol key		Symbol key	
1	Water heater, 180 litres	12	Drying filter
2	Return pipe sensor, heating system	13	Expansion valve
3	Evaporator, insulated	14	Hot water temperature sensor (displays maximum temperature)
4	Reversing valve	15	Control panel for control equipment
5	Supply line sensor	16	Electrical panel
6	Heating system circulation pump	17	Compressor
7	Auxiliary heating, immersion heater	18	Low pressure switch
8	Brine in	19	Operating pressure switch
9	Heating system supply line	20	High pressure switch
10	Brine out	21	Condenser with primary side drain
11	Circulation pump coolant system		

3.2 DHP-H Opti Pro



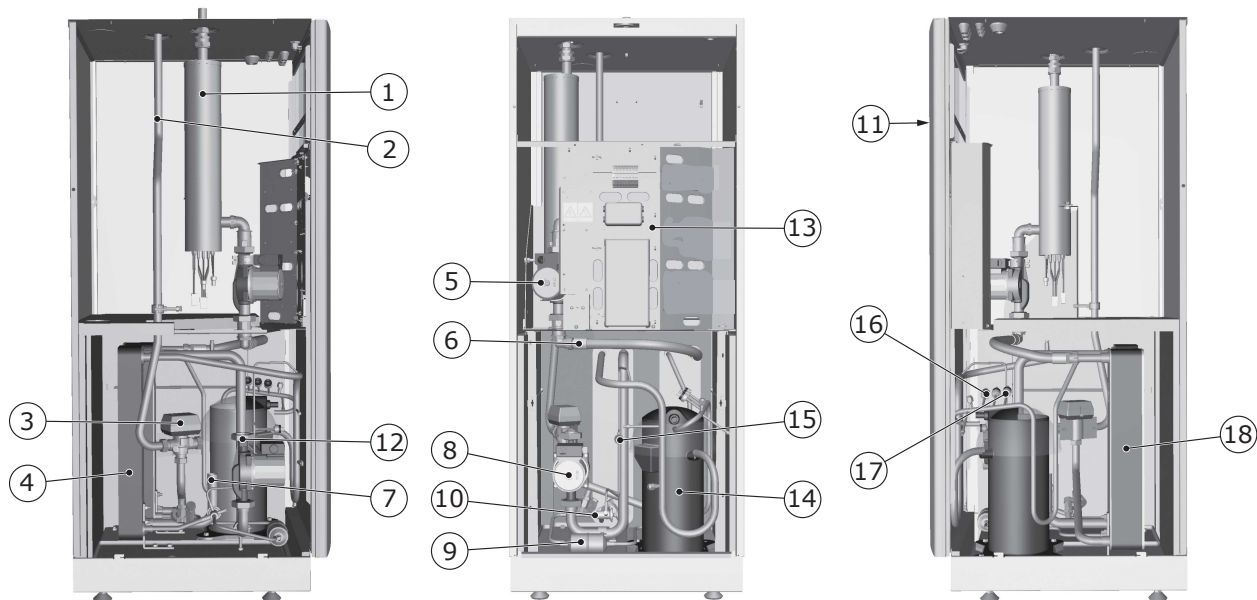
Symbol key		Symbol key	
1	Water heater, 180 litres	13	Drying filter
2	Return pipe sensor, heating system	14	Hot water temperature sensor (displays maximum temperature)
3	Evaporator, insulated	15	Control panel for control equipment
4	HGW shunt valve	16	Electrical panel
5	Supply pipe sensor, heating system	17	Compressor
6	Heating system circulation pump	18	Low pressure switch
7	Auxiliary heating, immersion heater	19	Operating pressure switch
8	Brine out	20	High pressure switch
9	Heating system supply line	21	Condenser with primary side drain
10	Brine in	22	De-superheater
11	Circulation pump coolant system	23	HGW sensor
12	Expansion valve		

3.3 DHP-C Opti



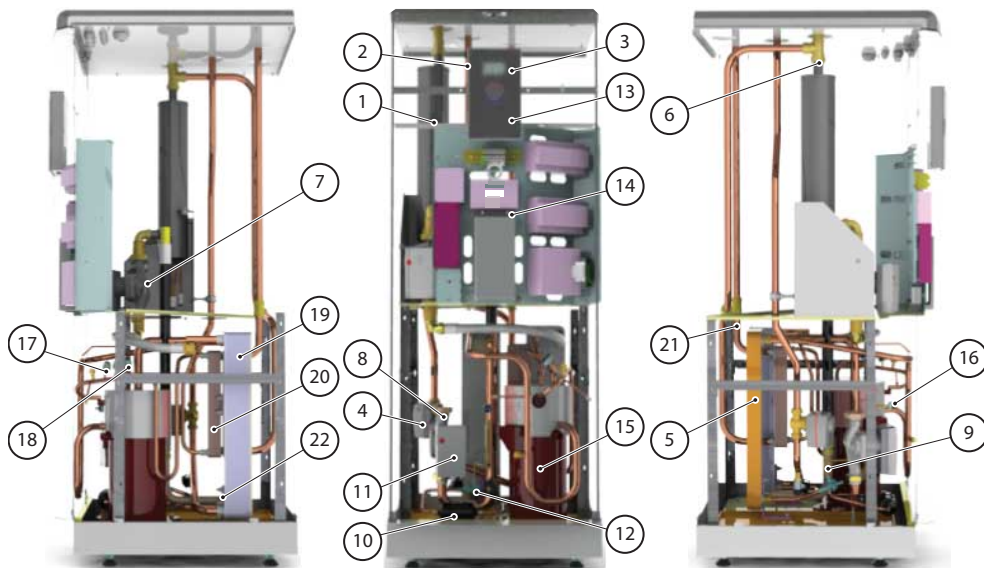
Symbol key		Symbol key	
1	Water heater, 180 litres	13	Brine out
2	Return pipe sensor, heating system	14	Circulation pump coolant system
3	Evaporator, insulated	15	Expansion valve
4	Heat exchanger for coolant	16	Drying filter
5	Exchange valve, cooling/heating	17	Hot water temperature sensor (displays maximum temperature)
6	Exchange valve, cooling/heating	19	Electrical panel
7	Exchange valve, heating/hot water	20	Compressor
8	Supply line sensor	21	Low pressure switch
9	Circulation pump heating system	22	Operating pressure switch
10	Auxiliary heating, immersion heater	23	High pressure switch
11	Brine in	24	Condenser with primary side drain
12	Heating system supply line		

3.4 DHP-L, DHP-L Opti



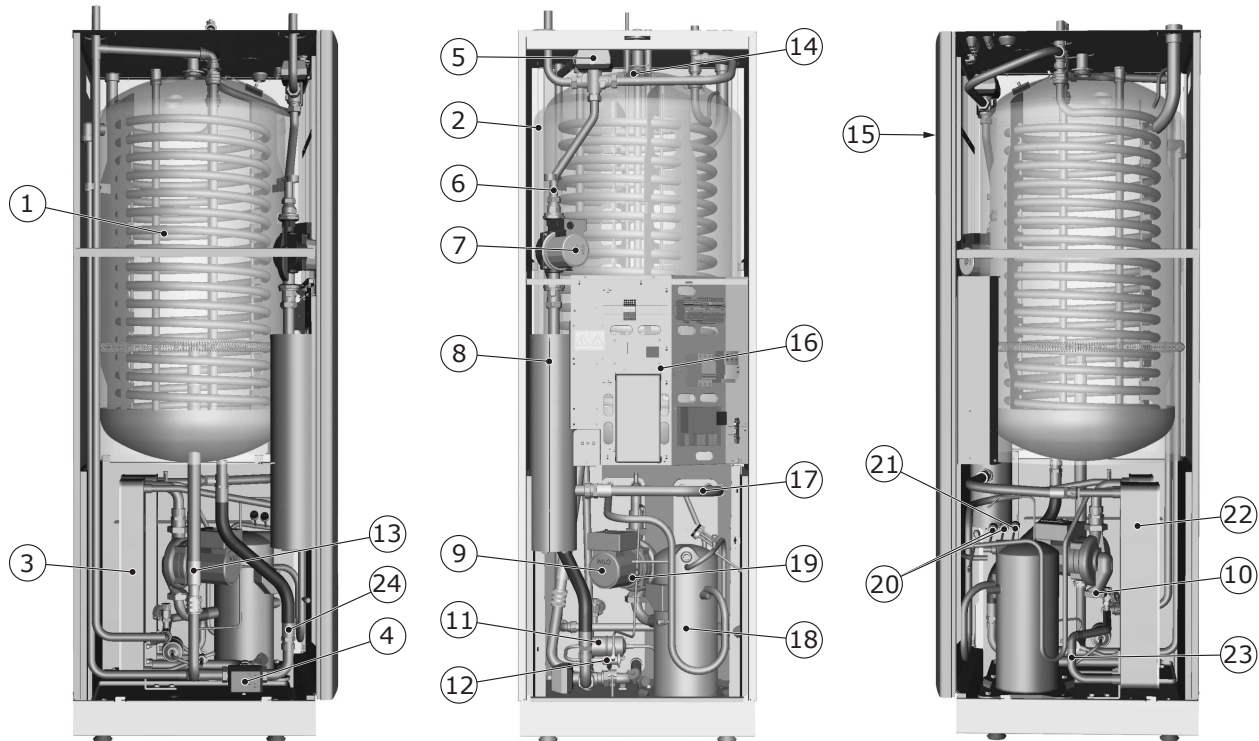
Symbol key		Symbol key	
1	Auxiliary heater, immersion heater on supply line	10	Expansion valve
2	Return pipe, heating system	11	Control panel for control equipment
3	Reversing valve	12	Brine in
4	Evaporator, insulated	13	Electrical panel
5	Heating system circulation pump	14	Compressor
6	Supply pipe sensor, heating system	15	Low pressure switch
7	Brine out	16	Operating pressure switch
8	Circulation pump coolant system	17	High pressure switch
9	Drying filter	18	Condenser with primary side drain

3.5 DHP-L Opti Pro



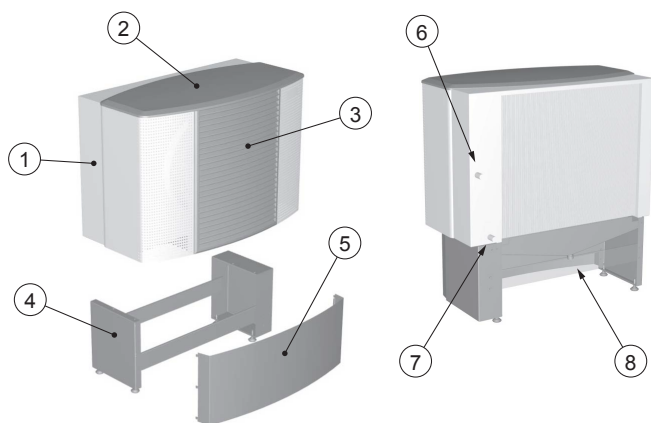
Symbol key		Symbol key	
1	Auxiliary heater, immersion heater on supply line	12	Expansion valve
2	Return pipe, heating system	13	Control panel for control equipment
3	Supply line water heater	14	Electrical panel
4	HGW shunt valve	15	Compressor
5	Evaporator, insulated	16	Low pressure switch
6	Supply pipe sensor, heating system	17	Operating pressure switch
7	Circulation pump, heating system	18	High pressure switch
8	Brine in	19	Condenser with primary side drain
9	Brine out	20	De-superheater
10	Drying filter	21	HGW sensor
11	Circulation pump, brine system	22	Return pipe sensor, heating system

3.6 DHP-A, DHP-A Opti



Symbol key		Symbol key	
1	Water heater, 180 litres	13	Brine out
2	Defrosting tank	14	Hot water temperature sensor (displays maximum temperature)
3	Evaporator, insulated	15	Control panel for control equipment
4	Exchange valve, defrosting	16	Electrical panel
5	Exchange valve, heating system	17	Heating system supply line
6	Supply line sensor	18	Compressor
7	Heating system circulation pump	19	Low pressure switch
8	Auxiliary heating, immersion heater	20	Operating pressure switches
9	Circulation pump coolant system	21	High pressure switch
10	Brine in	22	Condenser with primary side drain
11	Drying filter	23	Return pipe sensor, heating system
12	Expansion valve	24	Brine in to defrosting tank during defrosting

3.7 Outdoor unit DHP-A, DHP-A Opti



- 1 Outdoor unit
- 2 Cover
- 3 Front cover
- 4 Stand
- 5 Cover
- 6 Connection, brine in to outdoor unit
- 7 Connection, brine out from outdoor unit
- 8 Connection, drain drip tray

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4 Technical data

4.1 DHP-H

DHP-H			6	8	10	12	16
Type			Brine/water				
Refrigerant	Type		R407C (GWP = 1650)				
	Amount (400V 3-N)	kg	1,05	1,20	1,40	1,55	2,00
	Amount (230V 1-N)	kg	1,20	1,30	1,45	1,55	2,00
	Test pressure	MPa	3,4				
	Design pressure	MPa	3,1				
Compressor	Type		Scroll				
	Oil (400V 3-N)		PVE	PVE	PVE	POE	PVE
	Oil (230V 1-N)		POE				
Electrical data 3-N, ~50 Hz	Mains power supply	V	400				
	Rated power, compressor	kW	3,0	3,2	4,2	5,0	7,2
	Rated power, circ. pumps	kW	0,2	0,2	0,5	0,5	0,6
	Auxiliary heater, 3 step	kW	3/6/9				
	Start current ³	A	9	10	12	14	20
	Fuse	A	10 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /20 ⁵ /25 ⁶	20 ⁴ /25 ⁵ /25 ⁶
Electrical data 1-N, ~50 Hz	Mains power supply	V	230	230	230	230	*
	Rated power, compressor	kW	3,2	3,6	4,5	5,5	*
	Rated power, circ. pumps	kW	0,2	0,2	0,5	0,5	*
	Auxiliary heater, 3 step	kW	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	*
	Start current ³	A	22	24	26	28	*
	Fuse auxiliary heater	A	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	*
	Fuse compressor	A	16	20	25	32	*
Performance ¹⁰	Heating capacity ¹	kW	5,33	7,51	9,40	11,0	16,4
	COP ¹		4,04	4,34	4,24	4,20	3,99
	Heating capacity ²	kW	5,38	7,40	9,24	10,6	15,6
	COP ²		3,41	3,57	3,51	3,39	3,19
	Electrical power ¹	kW	1,3	1,7	2,2	2,6	4,1
	Operating current ^{1, 13}	A	1,9	2,5	3,2	3,8	5,9
Nominal flow ⁸	Cooling circuit	l/s	0,36	0,48	0,62	0,71	1,02
	Heating circuit	l/s	0,14	0,19	0,24	0,28	0,39
External available pressure ⁷	Cooling circuit	kPa	35	32	76	69	37
	Heating circuit	kPa	48	44	39	58	54
Max/Min temperature**	Cooling circuit	°C	20/-10				
	Heating circuit	°C	60/20				
Pressure switches	Low pressure	MPa	0,08				
	Operation	MPa	2,85				
	High pressure	MPa	3,10				
Water volume	Water heater	l	180				
	Condenser	l	1,7	2,0	2,2	2,2	3,0
	Evaporator	l	0,8	1,3	1,7	1,7	2,3
	De-superheater	l	*	*	*	*	*

Technical description

Domestic heat pumps

Antifreeze ¹²			Ethanol + water solution with freezing point $-17 \pm 2 \text{ }^\circ\text{C}$				
Number of units			1				
Dimensions L x W x H		mm	690x596x1845				
Weight dry		kg	229	229	229	238	242
Weight filled		kg	409	409	409	418	422
Sound power level ¹¹		dB(A)	47	44	46	49	57

Measurements have been carried out on a limited number of heat pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

1) At B0W35 according to EN14511 (including circulation pumps).

2) At B0W45 according to EN14511 (including circulation pumps).

3) According to IEC61000.

4) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW).

5) Heat pump with 6 kW auxiliary heater (1-N 3 kW).

6) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).

7) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow. For the cooling circuit, these valves require pipe dimension $\varnothing 40 \times 2.4$.

8) Nominal flow: Heat circuit $\Delta 10 \text{ K}$, cooling circuit $\Delta 3 \text{ K}$.

10) The values apply to new heat pumps with clean heat exchangers.

11) Sound power level measured according to EN ISO 3741 at B0W45 (EN 12102).

12) Always check local rules and regulations before using antifreeze.

13) Applies only for 400V 3N heat pumps.

*) Not available for this version

**) Note that not all cooling circuit temperatures and heating circuit temperatures can be combined.

4.2 DHP-H Opti

DHP-H Opti			4	6	8	10	12	16
Type			Brine/water					
Refrigerant	Type		R407C (GWP = 1650)					
	Amount (400V 3-N)	kg	0,75	1,05	1,20	1,40	1,55	2,00
	Amount (230V 1-N)	kg	0,75	1,20	1,35	1,45	1,55	2,00
	Test pressure	MPa	3,4					
	Design pressure	MPa	3,1					
Compressor	Type		Scroll					
	Oil (400V 3-N)		POE	PVE	PVE	PVE	POE	PVE
	Oil (230V 1-N)		POE					
Electrical data 3-N, ~50 Hz	Mains power supply	V	400					
	Rated power, compressor	kW	2,3	3,0	3,2	4,2	5,0	7,2
	Rated power, circ. pumps	kW	0,1	0,1	0,1	0,3	0,3	0,5
	Auxiliary heater, 3 step	kW	3/6/9					
	Start current ³	A	15	9	10	12	14	20
	Fuse	A	16 ^{4,9} /20 ^{5,9} / 25 ^{6,9}	10 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /20 ⁵ /25 ⁶	20 ⁴ /25 ⁵ /25 ⁶
Electrical data 1-N, ~50 Hz	Mains power supply	V	230	230	230	230	230	*
	Rated power, compressor	kW	2,3	3,2	3,6	4,5	5,5	*
	Rated power, circ. pumps	kW	0,1	0,1	0,1	0,3	0,3	*
	Auxiliary heater, 3 step	kW	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	*
	Start current ³	A	15	22	24	26	28	*
	Fuse auxiliary heater	A	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	*
	Fuse compressor	A	16	16	20	25	32	*

Technical description Domestic heat pumps

Performance ¹⁰	Heating capacity ¹	kW	4,09	5,33	7,51	9,40	11,0	16,4
	COP ¹		4,09	4,04	4,34	4,24	4,20	3,99
	Heating capacity ²	kW	3,84	5,38	7,40	9,24	10,6	15,6
	COP ²		3,19	3,41	3,57	3,51	3,39	3,19
	Electrical power ¹	kW	1,0	1,3	1,7	2,2	2,6	4,1
	Operating current ^{1, 13}	A	4,4	1,9	2,5	3,2	3,8	5,9
Nominal flow ⁸	Cooling circuit	l/s	0,26	0,36	0,48	0,62	0,71	1,02
	Heating circuit	l/s	0,10	0,14	0,19	0,24	0,28	0,39
External available pressure ⁷	Cooling circuit	kPa	49	37	42	63	45	52
	Heating circuit	kPa	62	63	60	56	58	96
Max/Min temperature**	Cooling circuit	°C	20/-10					
	Heating circuit	°C	60/20					
Pressure switches	Low pressure	MPa	0,08					
	Operation	MPa	2,85					
	High pressure	MPa	3,10					
Water volume	Water heater	l	180					
	Condenser	l	1,1	1,7	2,0	2,2	2,2	3,0
	Evaporator	l	0,9	0,8	1,7	1,7	1,7	2,3
	De-superheater	l	*	*	*	*	*	*
Antifreeze ¹²		Ethanol + water solution with freezing point -17 ±2 °C						
Number of units		1						
Dimensions L x W x H	mm	690x596x1845						
Weight dry	kg	225	229	229	229	238	242	
Weight filled	kg	405	409	409	409	418	422	
Sound power level ¹¹	dB(A)	42	47	44	46	49	57	

Measurements have been carried out on a limited number of circulation pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

1) At B0W35 according to EN14511 (including circulation pumps).

2) At B0W45 according to EN14511 (including circulation pumps).

3) According to IEC61000.

4) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW).

5) Heat pump with 6 kW auxiliary heater (1-N 3 kW).

6) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).

7) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow. For the cooling circuit, these valves require pipe dimension Ø 40 x 2.4.

8) Nominal flow: Heat circuit Δ10 K, cooling circuit Δ3 K.

9) Size 4kW has 1-phase compressor.

10) The values apply to new heat pumps with clean heat exchangers.

11) Sound power level measured according to EN ISO 3741 at B0W45 (EN 12102).

12) Always check local rules and regulations before using antifreeze.

13) Applies only for 400V 3N heat pumps.

*) Not available for this version

**) Note that not all cooling circuit temperatures and heating circuit temperatures can be combined.

4.3 DHP-H Opti Pro

DHP-H Opti Pro		6	8	10	12	16
Type		Brine/water				

Technical description Domestic heat pumps

Refrigerant	Type	R407C (GWP = 1650)						
	Amount	kg	1,15	1,35	1,40	1,55	1,70	
Test pressure	MPa	3,4						
Design pressure	MPa	3,1						
Compressor	Type	Scroll						
	Oil	POE						
Electrical data 3-N, ~50 Hz	Mains power supply	V	400					
	Rated power, compressor	kW	3,0	3,2	4,2	5,0	7,2	
	Rated power, circ. pumps	kW	0,1	0,1	0,3	0,3	0,5	
	Auxiliary heater, 3 step	kW	3/6/9					
	Start current ³	A	9	10	12	14	20	
	Fuse	A	10 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /20 ⁵ /25 ⁶	20 ⁴ /25 ⁵ /25 ⁶	
Electrical data 1-N, ~50 Hz	Mains power supply	V	230	230	230	230	*	
	Rated power, compressor	kW	3,2	3,6	4,5	5,5	*	
	Rated power, circ. pumps	kW	0,1	0,1	0,3	0,3	*	
	Auxiliary heater, 3 step	kW	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	*	
	Start current ³	A	22	24	26	28	*	
	Fuse auxiliary heater	A	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	*	
	Fuse compressor	A	16	20	25	32	*	
Performance ¹⁰	Heating capacity ¹	kW	5,33	7,51	9,40	11,0	16,4	
	COP ¹		4,04	4,34	4,24	4,20	3,99	
	Heating capacity ²	kW	5,38	7,40	9,24	10,6	15,6	
	COP ²		3,41	3,57	3,51	3,39	3,19	
	Electrical power ¹	kW	1,3	1,7	2,2	2,6	4,1	
	Operating current ^{1,13}	A	1,9	2,5	3,2	3,8	5,9	
Nominal flow ⁸	Cooling circuit	l/s	0,36	0,48	0,62	0,71	1,02	
	Heating circuit	l/s	0,14	0,19	0,24	0,28	0,39	
External available pressure ⁷	Cooling circuit	kPa	37	42	63	45	52	
	Heating circuit	kPa	63	60	56	58	96	
Max/Min temperature**	Cooling circuit	°C	20/-10					
	Heating circuit	°C	60/20					
Pressure switches	Low pressure	MPa	0,08					
	Operation	MPa	2,85					
	High pressure	MPa	3,10					
Water volume	Water heater	l	180					
	Condenser	l	1,7	2,2	2,2	2,8	3,0	
	Evaporator	l	0,8	1,7	1,7	1,7	2,3	
	De-superheater	l	0,2					
Antifreeze ¹²		Ethanol + water solution with freezing point -17 ±2 °C						
Number of units		1						
Dimensions L x W x H	mm	690x596x1845						
Weight dry	kg	231	231	231	240	244		
Weight filled	kg	411	411	411	420	424		
Sound power level ¹¹	dB(A)	45	42	45	49	50		

Measurements have been carried out on a limited number of circulation pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

Technical description Domestic heat pumps

- 1) At B0W35 according to EN14511 (including circulation pumps).
 2) At B0W45 according to EN14511 (including circulation pumps).
 3) According to IEC61000.
 4) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW).
 5) Heat pump with 6 kW auxiliary heater (1-N 3 kW).
 6) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).
 7) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow. For the cooling circuit, these valves require pipe dimension $\varnothing 40 \times 2.4$.
 8) Nominal flow: Heat circuit $\Delta 10$ K, cooling circuit $\Delta 3$ K.
 9) The values apply to new heat pumps with clean heat exchangers.
 10) The values apply to new heat pumps with clean heat exchangers.
 11) Sound power level measured according to EN ISO 3741 at B0W45 (EN 12102).
 12) Always check local rules and regulations before using antifreeze.
 13) Applies only for 400V 3N heat pumps.
 *) Not available for this version
 **) Note that not all cooling circuit temperatures and heating circuit temperatures can be combined.

4.4 DHP-L

DHP-L			6	8	10	12	16
Type			Brine/water				
Refrigerant	Type		R407C (GWP = 1650)				
	Amount (400V 3-N)	kg	1,05	1,20	1,40	1,55	2,00
	Amount (230V 1-N)	kg	1,20	1,30	1,45	1,55	2,00
	Test pressure	MPa	3,4				
	Design pressure	MPa	3,1				
Compressor	Type		Scroll				
	Oil (400V 3-N)		PVE	PVE	PVE	POE	PVE
	Oil (230V 1-N)		POE				
Electrical data 3-N, ~50 Hz	Mains power supply	V	400				
	Rated power, compressor	kW	3,0	3,2	4,2	5,0	7,2
	Rated power, circ. pumps	kW	0,2	0,2	0,5	0,5	0,6
	Auxiliary heater, 3 step	kW	3/6/9				
	Start current ³	A	9	10	12	14	20
	Fuse	A	10 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /20 ⁵ /25 ⁶	20 ⁴ /25 ⁵ /25 ⁶
Electrical data 1-N, ~50 Hz	Mains power supply	V	230	230	230	230	*
	Rated power, compressor	kW	3,2	3,6	4,5	5,5	*
	Rated power, circ. pumps	kW	0,2	0,2	0,5	0,5	*
	Auxiliary heater, 3 step	kW	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	*
	Start current ³	A	22	24	26	28	*
	Fuse auxiliary heater	A	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	*
	Fuse compressor	A	16	20	25	32	*
Performance ¹⁰	Heating capacity ¹	kW	5,33	7,51	9,40	11,0	16,4
	COP ¹		4,04	4,34	4,24	4,20	3,99
	Heating capacity ²	kW	5,38	7,40	9,24	10,6	15,6
	COP ²		3,41	3,57	3,51	3,39	3,19
	Electrical power ¹	kW	1,3	1,7	2,2	2,6	4,1
	Operating current ^{1,13}	A	1,9	2,5	3,2	3,8	5,9
Nominal flow ⁸	Cooling circuit	l/s	0,36	0,48	0,62	0,71	1,02
	Heating circuit	l/s	0,14	0,19	0,24	0,28	0,39
External available pressure ⁷	Cooling circuit	kPa	35	32	76	69	37
	Heating circuit	kPa	48	44	39	58	54
Max/Min temperature ^{**}	Cooling circuit	°C	20/-10				
	Heating circuit	°C	60/20				

Technical description Domestic heat pumps

Pressure switches	Low pressure	MPa	0,08				
	Operation	MPa	2,85				
	High pressure	MPa	3,10				
Water volume	Water heater	l	*	*	*	*	*
	Condenser	l	1,7	2,0	2,2	2,2	3,0
	Evaporator	l	0,8	1,3	1,7	1,7	2,3
	De-superheater	l	*	*	*	*	*
Antifreeze ¹²			Ethanol + water solution with freezing point -17 ±2 °C				
Number of units			1				
Dimensions L x W x H		mm	690x596x1538				
Weight dry		kg	145	150	155	165	175
Weight filled		kg	151	157	162	172	184
Sound power level ¹¹		dB(A)	45	44	47	48	50

Measurements have been carried out on a limited number of circulation pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

1) At B0W35 according to EN14511 (including circulation pumps).

2) At B0W45 according to EN14511 (including circulation pumps).

3) According to IEC61000.

4) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW).

5) Heat pump with 6 kW auxiliary heater (1-N 3 kW).

6) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).

7) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow. For the cooling circuit, these valves require pipe dimension Ø 40 x 2.4.

8) Nominal flow: Heat circuit Δ10 K, cooling circuit Δ3 K.

10) The values apply to new heat pumps with clean heat exchangers.

11) Sound power level measured according to EN ISO 3741 at B0W45 (EN 12102).

12) Always check local rules and regulations before using antifreeze.

13) Applies only for 400V 3N heat pumps.

*) Not available for this version

**) Note that not all cooling circuit temperatures and heating circuit temperatures can be combined.

4.5 DHP-L Opti

DHP-L Opti		4	6	8	10	12	16	
Type		Brine/water						
Refrigerant	Type	R407C (GWP = 1650)						
	Amount (400V 3-N)	kg	0,75	1,05	1,20	1,40	1,55	2,00
	Amount (230V 1-N)	kg	0,75	1,20	1,35	1,45	1,55	2,00
	Test pressure	MPa	3,4					
	Design pressure	MPa	3,1					
Compressor	Type	Scroll						
	Oil (400V 3-N)		POE	PVE	PVE	PVE	POE	PVE
	Oil (230V 1-N)		POE					
Electrical data ³ -N, ~50 Hz	Mains power supply	V	400					
	Rated power, compressor	kW	2,3	3,0	3,2	4,2	5,0	7,2
	Rated power, circ. pumps	kW	0,1	0,1	0,1	0,3	0,3	0,5
	Auxiliary heater, 3 step	kW	3/6/9					
	Start current ³	A	15	9	10	12	14	20
	Fuse	A	16 ^{4,9} /20 ^{5,9} / 25 ^{6,9}	10 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /20 ⁵ /25 ⁶	20 ⁴ /25 ⁵ /25 ⁶

Technical description Domestic heat pumps

Electrical data 1-N, ~50 Hz	Mains power supply	V	230	230	230	230	230	*
	Rated power, compressor	kW	2,3	3,2	3,6	4,5	5,5	*
	Rated power, circ. pumps	kW	0,1	0,1	0,1	0,3	0,3	*
	Auxiliary heater, 3 step	kW	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	*
	Start current ³	A	15	22	24	26	28	*
	Fuse auxiliary heater	A	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	*
	Fuse compressor	A	16	16	20	25	32	
Performance ¹⁰	Heating capacity ¹	kW	4,09	5,33	7,51	9,40	11,0	16,4
	COP ¹		4,09	4,04	4,34	4,24	4,20	3,99
	Heating capacity ²	kW	3,84	5,38	7,40	9,24	10,6	15,6
	COP ²		3,19	3,41	3,57	3,51	3,39	3,19
	Electrical power ¹	kW	1,0	1,3	1,7	2,2	2,6	4,1
	Operating current ^{1, 13}	A	4,4	1,9	2,5	3,2	3,8	5,9
Nominal flow ⁸	Cooling circuit	l/s	0,26	0,36	0,48	0,62	0,71	1,02
	Heating circuit	l/s	0,10	0,14	0,19	0,24	0,28	0,39
External available pressure ⁷	Cooling circuit	kPa	49	37	42	63	45	52
	Heating circuit	kPa	62	63	60	56	58	96
Max/Min temperature**	Cooling circuit	°C	20/-10					
	Heating circuit	°C	60/20					
Pressure switches	Low pressure	MPa	0,08					
	Operation	MPa	2,85					
	High pressure	MPa	3,10					
Water volume	Water heater	l	*	*	*	*	*	*
	Condenser	l	1,1	1,7	2,0	2,2	2,2	3,0
	Evaporator	l	0,9	0,8	1,7	1,7	1,7	2,3
	De-superheater	l	*	*	*	*	*	*
Antifreeze ¹²		Ethanol + water solution with freezing point -17 ±2 °C						
Number of units		1						
Dimensions L x W x H	mm	690x596x1538						
Weight dry	kg	140	145	150	155	165	175	
Weight filled	kg	145	151	157	162	172	184	
Sound power level ¹¹	dB(A)	42	45	44	47	48	50	

Measurements have been carried out on a limited number of circulation pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

1) At B0W35 according to EN14511 (including circulation pumps).

2) At B0W45 according to EN14511 (including circulation pumps).

3) According to IEC61000.

4) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW).

5) Heat pump with 6 kW auxiliary heater (1-N 3 kW).

6) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).

7) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow. For the cooling circuit, these valves require pipe dimension Ø 40 x 2.4.

8) Nominal flow: Heat circuit Δ10 K, cooling circuit Δ3 K.

9) Size 4kW has 1-phase compressor.

10) The values apply to new heat pumps with clean heat exchangers.

11) Sound power level measured according to EN ISO 3741 at BOW45 (EN 12102).

12) Always check local rules and regulations before using antifreeze.

13) Applies only for 400V 3N heat pumps.

*) Not available for this version

**) Note that not all cooling circuit temperatures and heating circuit temperatures can be combined.

Technical description Domestic heat pumps

4.6 DHP-L Opti Pro

DHP-L Opti Pro			6	8	10	12	16
Type			Brine/water				
Refrigerant	Type		R407C (GWP = 1650)				
	Amount	kg	1,15	1,35	1,40	1,55	1,70
	Test pressure	MPa	3,4				
	Design pressure	MPa	3,1				
Compressor	Type		Scroll				
	Oil		POE				
Electrical data ^{3-N} , ~50 Hz	Mains power supply	V	400				
	Rated power, compressor	kW	3,0	3,2	4,2	5,0	7,2
	Rated power, circ. pumps	kW	0,1	0,1	0,3	0,3	0,5
	Auxiliary heater, 3 step	kW	3/6/9				
	Start current ³	A	9	10	12	14	20
	Fuse	A	10 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /20 ⁵ /25 ⁶	20 ⁴ /25 ⁵ /25 ⁶
Electrical data ^{1-N} , ~50 Hz	Mains power supply	V	230	230	230	230	*
	Rated power, compressor	kW	3,2	3,6	4,5	5,5	*
	Rated power, circ. pumps	kW	0,1	0,1	0,3	0,3	*
	Auxiliary heater, 3 step	kW	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	1,5/3,0/4,5	*
	Start current ³	A	22	24	26	28	*
	Fuse auxiliary heater	A	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	10 ⁴ /16 ⁵ /25 ⁶	*
	Fuse compressor	A	16	20	25	32	*
Performance ¹⁰	Heating capacity ¹	kW	5,33	7,51	9,40	11,0	16,4
	COP ¹		4,04	4,34	4,24	4,20	3,99
	Heating capacity ²	kW	5,38	7,40	9,24	10,6	15,6
	COP ²		3,41	3,57	3,51	3,39	3,19
	Electrical power ¹	kW	1,3	1,7	2,2	2,6	4,1
	Operating current ^{1, 13}	A	1,9	2,5	3,2	3,8	5,9
Nominal flow ⁸	Cooling circuit	l/s	0,36	0,48	0,62	0,71	1,02
	Heating circuit	l/s	0,14	0,19	0,24	0,28	0,39
External available pressure ⁷	Cooling circuit	kPa	37	42	63	45	52
	Heating circuit	kPa	63	60	56	58	96
Max/Min temperature ^{**}	Cooling circuit	°C	20/-10				
	Heating circuit	°C	60/20				
Pressure switches	Low pressure	MPa	0,08				
	Operation	MPa	2,85				
	High pressure	MPa	3,10				
Water volume	Water heater	l	*	*	*	*	*
	Condenser	l	1,7	2,0	2,2	2,2	3,0
	Evaporator	l	0,8	1,7	1,7	1,7	2,3
	De-superheater	l	0,2				
Antifreeze ¹²			Ethanol + water solution with freezing point -17 ±2 °C				
Number of units			1				
Dimensions L x W x H		mm	690x596x1538				
Weight dry		kg	150	155	160	170	180

Technical description Domestic heat pumps

Weight filled		kg	156	162	167	177	189
Sound power level ¹¹		dB(A)	45	44	47	48	50

Measurements have been carried out on a limited number of circulation pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

1) At B0W35 according to EN14511 (including circulation pumps).

2) At B0W45 according to EN14511 (including circulation pumps).

3) According to IEC61000.

4) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW).

5) Heat pump with 6 kW auxiliary heater (1-N 3 kW).

6) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).

7) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow. For the cooling circuit, these valves require pipe dimension $\varnothing 40 \times 2.4$.

8) Nominal flow: Heat circuit $\Delta 10$ K, cooling circuit $\Delta 3$ K.

10) The values apply to new heat pumps with clean heat exchangers.

11) Sound power level measured according to EN ISO 3741 at BOW45 (EN 12102).

12) Always check local rules and regulations before using antifreeze.

13) Applies only for 400V 3N heat pumps.

*) Not available for this version

**) Note that not all cooling circuit temperatures and heating circuit temperatures can be combined.

4.7 DHP-C, DHP-C Opti

DHP-C			6	8	10	4H	5H	7H
Type			Brine/water					
Refrigerant	Type		R407C (GWP = 1650)			R134A		
	Amount	kg	1,20	1,30	1,45	0,90	1,00	1,10
	Test pressure	MPa	3,4			3,2		
	Design pressure	MPa	3,1			2,45		
Compressor	Type		Scroll					
	Oil		POE					
Electrical data 3-N, ~50 Hz	Mains power supply	V	400					
	Rated power, compressor	kW	3,0	3,2	4,2	3,0	3,2	4,2
	Rated power, circ. pumps	kW	0,2	0,2	0,5	0,2	0,2	0,3
	Auxiliary heater, 3 step	kW	3/6/9					
	Start current ³	A	9	10	12	9	10	12
	Fuse	A	10 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /16 ⁵ /20 ⁶
Electrical data 1-N, ~50 Hz	Mains power supply	V	*	*	*	*	*	*
	Rated power, compressor	kW	*	*	*	*	*	*
	Rated power, circ. pumps	kW	*	*	*	*	*	*
	Auxiliary heater, 3 step	kW	*	*	*	*	*	*
	Start current ³	A	*	*	*	*	*	*
	Fuse	A	*	*	*	*	*	*
Performance ¹⁰	Heating capacity ¹	kW	5,33	7,51	9,40	*	*	*
	COP ¹		4,04	4,34	4,24	*	*	*
	Heating capacity ²	kW	5,38	7,40	9,24	3,20	4,50	5,50
	COP ²		3,41	3,57	3,51	2,70	2,90	2,90
	Electrical power ¹	kW	1,3	1,7	2,2	-	-	-
Nominal flow ⁸	Cooling circuit	l/s	0,36	0,48	0,62	0,20	0,28	0,37
	Heating circuit	l/s	0,14	0,19	0,24	0,08	0,12	0,14
External available pressure ⁷	Cooling circuit	kPa	35	32	76	37	54	60
	Heating circuit	kPa	48	44	39	48	50	43

Technical description

Domestic heat pumps

Max/Min temperature**	Cooling circuit	°C	20/-10					
	Heating circuit	°C	60/20					
Pressure switches	Low pressure	MPa	0,08			0,03		
	Operation	MPa	2,85			1,80		
	High pressure	MPa	3,10			2,45		
Water volume	Water heater	l	180					
	Condenser	l	1,6	1,9	2,1	1,6	1,9	2,1
	Evaporator	l	0,7	1,2	1,6	0,7	1,2	1,6
	De-superheater	l	*	*	*	*	*	*
Antifreeze ¹²			Ethanol + water solution with freezing point -17 ±2 °C					
Number of units			1					
Dimensions L x W x H		mm	690x596x1845					
Weight dry		kg	210	215	225	210	215	225
Weight filled		kg	390	395	405	390	395	405
Sound power level ¹¹		dB(A)	47	44	46	47	44	46

Measurements have been carried out on a limited number of circulation pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

1) At B0W35 according to EN14511 (including circulation pumps).

2) At B0W45 according to EN14511 (including circulation pumps).

3) According to IEC61000.

4) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW).

5) Heat pump with 6 kW auxiliary heater (1-N 3 kW).

6) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).

7) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow. For the cooling circuit, these valves require pipe dimension Ø 40 x 2.4.

8) Nominal flow: Heat circuit Δ10 K, cooling circuit Δ3 K.

9) Size 4kW has 1-phase compressor.

10) The values apply to new heat pumps with clean heat exchangers.

11) Sound power level measured according to EN ISO 3741 at B0W45 (EN 12102).

12) Always check local rules and regulations before using antifreeze.

*) Not available for this version

**) Note that not all cooling circuit temperatures and heating circuit temperatures can be combined.

DHP-C Opti			4	6	8	10
Type			Brine/water			
Refrigerant	Type		R407C (GWP = 1650)			
	Amount	kg	0,75	1,05	1,20	1,40
	Test pressure	MPa	3,4			
	Design pressure	MPa	3,1			
Compressor	Type		Scroll			
	Oil		POE	PVE		
Electrical data 3-N, ~50 Hz	Mains power supply	V	400			
	Rated power, compressor	kW	2,3	3,0	3,2	4,2
	Rated power, circ. pumps	kW	0,1	0,1	0,1	0,3
	Auxiliary heater, 3 step	kW	3/6/9			
	Start current ³	A	15	9	10	12
	Fuse	A	16 ^{4,9} /20 ^{5,9} / 25 ^{6,9}	10 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /16 ⁵ /20 ⁶

Technical description Domestic heat pumps

Performance ¹⁰	Heating capacity ¹	kW	4,09	5,33	7,51	9,40
	COP ¹		4,09	4,04	4,34	4,24
	Heating capacity ²	kW	3,84	5,38	7,40	9,24
	COP ²		3,19	3,41	3,57	3,51
	Electrical power ¹	kW	1,0	1,3	1,7	2,2
Nominal flow ⁸	Cooling circuit	l/s	0,26	0,36	0,48	0,62
	Heating circuit	l/s	0,10	0,14	0,19	0,24
External available pressure ⁷	Cooling circuit	kPa	49	37	42	63
	Heating circuit	kPa	62	63	60	56
Max/Min temperature ^{**}	Cooling circuit	°C	20/-10			
	Heating circuit	°C	60/20			
Pressure switches	Low pressure	MPa	0,08			
	Operation	MPa	2,85			
	High pressure	MPa	3,10			
Water volume	Water heater	l	180			
	Condenser	l	1,1	1,7	2,0	2,2
	Evaporator	l	0,9	0,8	1,7	1,7
	De-superheater	l	*	*	*	*
Antifreeze ¹²		Ethanol + water solution with freezing point -17 ±2 °C				
Number of units		1				
Dimensions L x W x H		mm	690x596x1845			
Weight dry		kg	225	229	229	229
Weight filled		kg	405	409	409	409
Sound power level ¹¹		dB(A)	42	47	44	46

Measurements have been carried out on a limited number of circulation pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

1) At B0W35 according to EN14511 (including circulation pumps).

2) At B0W45 according to EN14511 (including circulation pumps).

3) According to IEC61000.

4) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW).

5) Heat pump with 6 kW auxiliary heater (1-N 3 kW).

6) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).

7) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow. For the cooling circuit, these valves require pipe dimension Ø 40 x 2.4.

8) Nominal flow: Heat circuit Δ10 K, cooling circuit Δ3 K.

9) Size 4kW has 1-phase compressor.

10) The values apply to new heat pumps with clean heat exchangers.

11) Sound power level measured according to EN ISO 3741 at B0W45 (EN 12102).

12) Always check local rules and regulations before using antifreeze.

*) Not available for this version

**) Note that not all cooling circuit temperatures and heating circuit temperatures can be combined.

4.8 DHP-C Opti W/W

DHP-C Opti W/W			4	6	8	10
Type			Water/water			
Refrigerant	Type		R407C (GWP = 1650)			
	Amount	kg	0,75	1,05	1,20	1,40
	Test pressure	MPa	3,4			
	Design pressure	MPa	3,1			
Compressor	Type		Scroll			
	Oil		POE	PVE		

DHP-C Opti W/W			4	6	8	10
Electrical data 3-N, ~50 Hz	Mains power supply	V	400			
	Rated power, compressor	kW	2,3	3,0	3,2	4,2
	Rated power, circulation pumps	kW	0,1	0,1	0,1	0,1
	Auxiliary heater, 3 step	kW	3/6/9			
	Start current ³	A	15	9	10	12
	Fuse	A	16 ^{4,9} /20 ^{5,9} /25 ^{6,9}	10 ⁴ /16 ⁵ /20 ⁶	10 ⁴ /16 ⁵ /20 ⁶	16 ⁴ /16 ⁵ /20 ⁶
Performance ¹⁰	Heating capacity ¹	kW	4,09	5,33	7,51	9,40
	COP ¹		4,09	4,04	4,34	4,24
	Heating capacity ²	kW	3,84	5,38	7,40	9,24
	COP ²		3,19	3,41	3,57	3,51
	Electrical power ¹	kW	1,0	1,3	1,7	2,2
Nominal flow ⁸	Cooling circuit	l/s	0,37	0,48	0,67	0,81
	Heating circuit	l/s	0,13	0,18	0,24	0,30
External available pressure ⁷	Cooling circuit	kPa	N/A	N/A	N/A	N/A
	Heating circuit	kPa	60	58	55	50
Max/Min temperature ^{**}	Cooling circuit	°C	20/10			
	Heating circuit	°C	60/20			
Pressure switches	Low pressure	MPa	0,08			
	Operation	MPa	2,85			
	High pressure	MPa	3,10			
Water volume	Water heater	l	180			
	Condenser	l	1,1	1,7	2,0	2,2
	Evaporator	l	0,9	0,8	1,7	1,7
	De-superheater	l	*	*	*	*
Antifreeze ¹²			N/A			
Number of units			1			
Dimensions L x W x H		mm	690x596x1845			
Weight dry		kg	225	229	229	229
Weight filled		kg	405	409	409	409
Sound power level ¹¹		dB(A)	42	47	44	46

Measurements have been carried out on a limited number of circulation pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

1) At W10W35 according to EN14511.

2) At W10W45 according to EN14511.

3) According to IEC61000.

4) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW).

5) Heat pump with 6 kW auxiliary heater (1-N 3 kW).

6) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).

7) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow. For the cooling circuit, these valves require pipe dimension Ø 40 x 2.4.

8) Nominal flow: Heat circuit Δ10 K, cooling circuit Δ3 K.

9) Size 4kW has 1-phase compressor.

10) The values apply to new heat pumps with clean heat exchangers.

11) Sound power level measured according to EN ISO 3741 at BOW45 (EN 12102).

12) Always check local rules and regulations before using antifreeze.

*) Not available for this version

**) Note that not all cooling circuit temperatures and heating circuit temperatures can be combined.

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4.9 DHP-A

DHP-A			6	8	10	12
Type			Air/water			
Refrigerant	Type		R404A (GWP = 3780)			
	Amount	kg	0,95	1,45	1,50	1,60
	Test pressure	MPa	3,4			
	Design pressure	MPa	3,1			
Compressor	Type		Scroll			
	Oil		POE			
Electrical data 3-N, ~50 Hz	Mains power supply	V	400			
	Rated power, compressor	kW	3,0	3,2	4,2	5,0
	Rated power, circulation pumps and fan	kW	0,4	0,6	0,6	0,7
	Auxiliary heater, 3 step	kW	3/6/9/12/15			
	Start current ¹⁶	A	9	10	12	14
	Fuse	A	10 ³ /16 ⁴ /20 ⁵ /20 ⁶ /25 ⁷ /25 ¹⁴ /30 ¹⁵	10 ³ /16 ⁴ /20 ⁵ /20 ⁶ /25 ⁷ /25 ¹⁴ /30 ¹⁵	16 ³ /16 ⁴ /20 ⁵ /20 ⁶ /25 ⁷ /25 ¹⁴ /30 ¹⁵	16 ³ /20 ⁴ /25 ⁵ /20 ⁶ /25 ⁷ /30 ¹⁴ /35 ¹⁵
Electrical data 1-N, ~50 Hz	Mains power supply	V	230			
	Rated power, compressor	kW	3,2	3,6	4,5	5,5
	Rated power, circulation pumps and fan	kW	0,4	0,6	0,6	0,7
	Auxiliary heater, 3 step	kW	1,5/3,0/4,5			
	Start current ¹⁶	A	22	24	26	28
	Fuse auxiliary heater	A	10 ³ /16 ⁴ /25 ⁵	10 ³ /16 ⁴ /25 ⁵	10 ³ /16 ⁴ /25 ⁵	10 ³ /16 ⁴ /25 ⁵
	Fuse compressor	A	16	20	25	32
Performance ¹⁰	Heating capacity ¹	kW	5,00	7,02	8,20	9,84
	COP ¹		2,85	3,10	2,85	3,00
	Heating capacity ²	kW	5,90	7,96	9,85	11,3
	COP ²		3,26	3,45	3,29	3,35
	Electrical power ¹	kW	1,8	2,3	2,9	3,3
Nominal flow ⁸	Cooling circuit	l/s	0,32	0,49	0,58	0,64
	Heating circuit	l/s	0,14	0,20	0,24	0,28
External available pressure ⁹	Cooling circuit	kPa	46	83	69	95
	Heating circuit	kPa	45	43	40	51
Lowest outdoor temperature for compressor start		°C	-20			
Max/Min temperature	Cooling circuit	°C	20/-25			
	Heating circuit	°C	55/20			
Pressure switches	Low pressure	MPa	0,08			
	Operation	MPa	2,65/2,85			
	High pressure	MPa	3,10			
Water volume	Water heater	l	180			
	Condenser	l	1,3	2,2	2,8	2,8
	Evaporator	l	1,1	1,3	1,3	1,7
Antifreeze ¹³			Ethylene glycol + water solution with freezing point -32±1°C			

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DHP-A			6	8	10	12
Number of units			2			
Indoor unit	Dimensions L x W x H	mm	690x596x1845			
	Weight dry	kg	260	260	260	268
	Weight filled	kg	440	440	440	448
	Sound power level ¹¹	dB(A)	43	48	46	48
Outdoor unit	Dimensions L x W x H	mm	630x1175x1245			
	Weight dry	kg	94			
	Weight filled	kg	99			
	Sound power level, low/high speed ¹¹	dB(A)	53/63	53/63	54/67	54/67
	Fan speed, low/high	r/m	500/650	500/650	500/800	500/800
	Air flow, low/high	m ³ /h	2500/3200	2500/3200	2500/3900	2500/3900
Max pipe length (copper pipe Ø 28 mm between heat pump and outdoor unit)		m	60 (30+30)			

Measurements have been carried out on a limited number of circulation pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

- | | |
|--|---|
| 1) For A2W35 according to EN14511 (including circulation pumps and outdoor units). | 9) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow. |
| 2) For A7W35 according to EN14511 (including circulation pumps and outdoor units). | 10) The values apply to new heat pumps with clean heat exchangers. |
| 3) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW). | 11) Sound power level measured according to EN ISO 3741 at A7W45 (EN 12102). |
| 4) Heat pump with 6 kW auxiliary heater (1-N 3.0 kW). | 13) Do not use propylene glycol or ethanol. |
| 5) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW). | 14) Heat pump with 12 kW additional heater. |
| 6) 12 kW aux. heater (compressor off). | 15) Heat pump with 15 kW additional heater. |
| 7) 15 kW aux. heater (compressor off). | 16) According to IEC61000. |
| 8) Nominal flow: Heat transfer fluid Δ10K, cooling circuit Δ3K. | |

4.10 DHP-A Opti

DHP-A Opti			6	8	10	12
Type			Air/water			
Refrigerant	Type		R404A (GWP = 3780)			
	Amount	kg	0,95	1,45	1,50	1,60
	Test pressure	MPa	3,4			
	Design pressure	MPa	3,1			
Compressor	Type		Scroll			
	Oil		POE			
Electrical data 3-N, ~50 Hz	Mains power supply	V	400			
	Rated power, compressor	kW	3,0	3,2	4,2	5,0
	Rated power, circulation pumps and fan	kW	0,3	0,3	0,4	0,6
	Auxiliary heater, 3 step	kW	3/6/9/12/15			
	Start current ¹⁶	A	9	10	12	14
	Fuse	A	10 ³ /16 ⁴ /20 ⁵ /20 ⁶ / 25 ⁷ /25 ¹⁴ /30 ¹⁵	10 ³ /16 ⁴ /20 ⁵ /20 ⁶ / 25 ⁷ /25 ¹⁴ /30 ¹⁵	16 ³ /16 ⁴ /20 ⁵ /20 ⁶ / 25 ⁷ /25 ¹⁴ /30 ¹⁵	16 ³ /20 ⁴ /25 ⁵ /20 ⁶ / 25 ⁷ /30 ¹⁴ /35 ¹⁵

Technical description Domestic heat pumps

DHP-A Opti			6	8	10	12
Electrical data 1-N, ~50 Hz	Mains power supply	V	230			
	Rated power, compressor	kW	3,2	3,6	4,5	5,5
	Rated power, circulation pumps and fan	kW	0,3	0,3	0,4	0,6
	Auxiliary heater, 3 step	kW	1,5/3,0/4,5			
	Start current ¹⁶	A	22	24	26	28
	Fuse auxiliary heater	A	10 ³ /16 ⁴ /25 ⁵	10 ³ /16 ⁴ /25 ⁵	10 ³ /16 ⁴ /25 ⁵	10 ³ /16 ⁴ /25 ⁵
	Fuse compressor	A	16	20	25	32
Performance ¹⁰	Heating capacity ¹	kW	5,00	7,02	8,20	9,84
	COP ¹		2,85	3,10	2,85	3,00
	Heating capacity ²	kW	5,90	7,96	9,85	11,3
	COP ²		3,26	3,45	3,29	3,35
	Electrical power ¹	kW	1,8	2,3	2,9	3,3
Nominal flow ⁸	Cooling circuit	l/s	0,20	0,30	0,60	0,50
	Heating circuit	l/s	0,14	0,20	0,24	0,28
External available pressure ⁹	Cooling circuit	kPa	88	74	56	98
	Heating circuit	kPa	61	59	57	51
Lowest outdoor temperature for compressor start		°C	-20			
Max/Min temperature	Cooling circuit	°C	20/-25			
	Heating circuit	°C	55/20			
Pressure switches	Low pressure	MPa	0,08			
	Operation	MPa	2,65/2,85			
	High pressure	MPa	3,10			
Water volume	Water heater	l	180			
	Condenser	l	1,3	2,2	2,8	2,8
	Evaporator	l	1,1	1,3	1,3	1,7
Antifreeze ¹³			Ethylene glycol + water solution with freezing point -32±1°C			
Number of units			2			
Indoor unit	Dimensions L x W x H	mm	690x596x1845			
	Weight dry	kg	260	260	260	268
	Weight filled	kg	440	440	440	448
	Sound power level ¹¹	dB(A)	43	48	46	48
Outdoor unit	Dimensions L x W x H	mm	630x1175x1245			
	Weight dry	kg	94			
	Weight filled	kg	99			
	Sound power level. Low/high speed ¹¹	dB(A)	53/63	53/63	54/67	54/67
	Fan speed, low/high	r/m	500/650	500/650	500/800	500/800
	Air flow, low/high	m ³ /h	2500/3200	2500/3200	2500/3900	2500/3900
Max pipe length (copper pipe Ø 28 mm between heat pump and outdoor unit)		m	60 (30+30)			

Measurements have been carried out on a limited number of circulation pumps, which can give variations in results. Tolerances in the measurement methods can also give variations.

- 1) For A2W35 according to EN14511 (including circulation pumps and outdoor units).
- 2) For A7W35 according to EN14511 (including circulation pumps and outdoor units).
- 3) Heat pump with 3 kW auxiliary heater (1-N 1.5 kW).
- 4) Heat pump with 6 kW auxiliary heater (1-N 3.0 kW).
- 5) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).
- 6) 12 kW aux. heater (compressor off).
- 7) 15 kW aux. heater (compressor off).
- 8) Nominal flow: Heat transfer fluid $\Delta 10\text{K}$, cooling circuit $\Delta 3\text{K}$.
- 9) The pressure that must not be exceeded outside the heat pump without falling below the nominal flow.
- 10) The values apply to new heat pumps with clean heat exchangers.
- 11) Sound power level measured according to EN ISO 3741 at A7W45 (EN 12102).
- 13) Do not use propylene glycol or ethanol.
- 14) Heat pump with 12 kW additional heater.
- 15) Heat pump with 15 kW additional heater.
- 16) According to IEC61000.

Danfoss Heat Pumps
Box 950
671 29 ARVIKA
Phone +46 570 81300
E-mail: dhpinfo@danfoss.com
Internet: www.heating.danfoss.com

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