

Technical description

# **Diplomat Inverter/Diplomat Duo Inverter**

## **Including Diplomat Inverter Mini Diplomat Duo Inverter Mini**



Thermia Värmepumpar is not liable or bound by warranty if these instructions are not adhered to during installation or service.

The English language is used for the original instructions.  
Other languages are a translation of the original instructions.  
(Directive 2006/42/EC)

© Copyright Thermia Värmepumpar

## Table of Contents

<b>1</b>	<b>Appendix</b>	<b>4</b>
1.1	Calculating heat production	4
1.2	Heat curve	4
1.3	Heating Settings	5
1.4	Comfort settings	6
<b>2</b>	<b>Heat pump data and dimensions</b>	<b>7</b>
2.1	Technical data	7
2.2	Min/Max operation temperature R410A	17
<b>3</b>	<b>Estimated flow and pressure, brine</b>	<b>19</b>
3.1	Estimated flow and pressure for brine, Diplomat Inverter L Diplomat Duo Inverter L	19
3.2	Estimated flow and pressure for brine, Diplomat Inverter M Diplomat Duo Inverter M	20
3.3	Estimated flow and pressure for brine, Diplomat Inverter Mini Diplomat Duo Inverter Mini	20
<b>4</b>	<b>Estimated flow and pressure, heating circuit</b>	<b>22</b>
4.1	Estimated flow and pressure for heating circuit, Diplomat Inverter L Diplomat Duo Inverter L	22
4.2	Estimated flow and pressure for heating circuit, Diplomat Inverter M Diplomat Duo Inverter M	23
4.3	Estimated flow and pressure for heating circuit, Diplomat Inverter Mini Diplomat Duo Inverter Mini	23
<b>5</b>	<b>Output diagrams</b>	<b>25</b>
5.1	Supply line temp 35°C for Diplomat Inverter L Diplomat Duo Inverter L	25
5.2	Supply line temp 55°C for Diplomat Inverter L Diplomat Duo Inverter L	26
5.3	Supply line temp 35°C for Diplomat Inverter M Diplomat Duo Inverter M	27
5.4	Supply line temp 55°C for Diplomat Inverter M Diplomat Duo Inverter M	28
5.5	Supply line temp 35°C for Diplomat Inverter Mini Diplomat Duo Inverter Mini	29
5.6	Supply line temp 55°C for Diplomat Inverter Mini Diplomat Duo Inverter Mini	30

## 1 Appendix

### 1.1 Calculating heat production

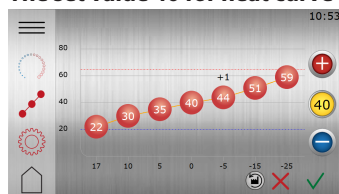
The heat curve settings are adjusted by the installer during installation/commissioning, and fine tuning to the specific house conditions and individual preferences may be required after some time to obtain a pleasant indoor climate in all weather conditions. A correctly set heat curve reduces maintenance and saves energy.

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 as the outdoor air temperature falls.

### 1.2 Heat curve

#### The set value 40 for heat curve



The heat curve number is indicating the temperature of the water supplied to the heating system ("supply line temperature") at an outdoor temperature of 0 °C.

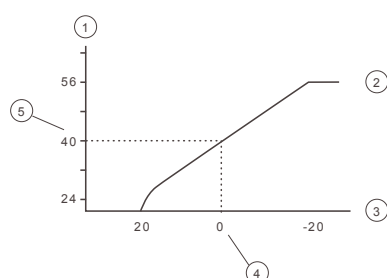
The factory settings for the heat curve before adjustment is "40". This setting is suitable for many heating systems with radiators, but generally unsuitable for systems with floor heating. For systems with underfloor heating a standard heat curve setting is "30". Combination systems with both underfloor heating and radiators may need different heat curves. This can be obtained with, for example, an additional distribution circuit if that has been prepared by the installer.

The heat curve provides very good adjustment possibilities and may also be further customized to individual needs at seven different outdoor temperatures.

If a room sensor is installed (accessory), this will enhance the control of how warm the water supplied to the heating system should be based on the measured indoor temperature.

To ensure that the supply line temperature is not too warm (or cold) for the heating system, max and min supply line temperature boundaries should be set. See chapter Heating Settings (Supply line min and max) in this appendix.


The simplified working principle for the heat curve is as follows:



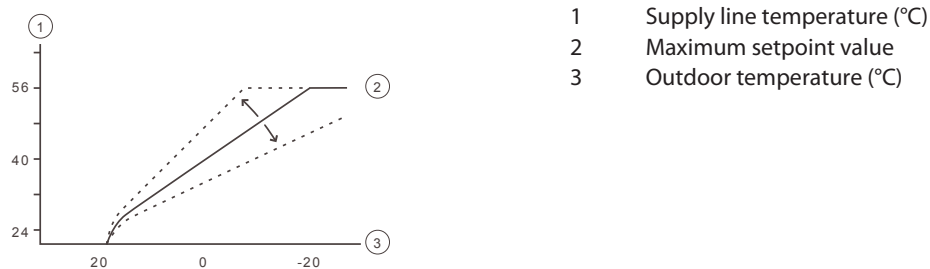
- 1 Supply line temperature (°C)
- 2 Maximum setpoint value
- 3 Outdoor temperature (°C)
- 4 0°C
- 5 Set value (standard 40°C).

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.

## Moving the heat curve as one unit

When the curve indicator  is lit, the curve is moved as one unit and the slope of the curve is adjusted.

The simplified working principle for this is as follows:

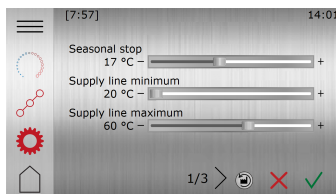


If the curve is moved upwards, the heat curve will become steeper and if the curve is moved downwards, it will become flatter.

The most energy efficient and cost effective setting is achieved by changing the curve settings which leads to fewer starts and longer operating times, while obtaining the desired indoor climate.

## 1.3 Heating Settings

For a temporary increase or decrease of the indoor heat, adjust the Comfort setting instead. See Comfort settings in this appendix.



### Seasonal stop

*Seasonal stop* is at which outdoor temperature the heat pump will be blocked, or allowed, to produce heat.

The time it takes for the heat pump to switch from, or to, the heat season mode when it reaches the seasonal stop value is determined by a calculation in the heat pump control system. E.g. the bigger heat increase of the outdoor temperature over time, the faster the heat pump will decide to stop producing heat on the supply line.

The seasonal stop is set to 17 °C by default.

### Supply line min and max

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

*Supply line min* is the minimum permitted supply temperature, if the temperature for seasonal stop has been reached and the heat pump has stopped.

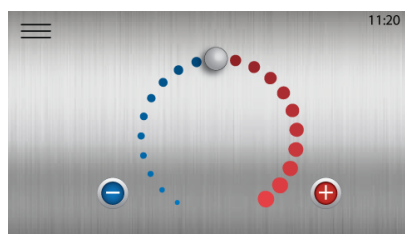
Adjusting the minimum and maximum supply temperatures is particularly important if your home has underfloor heating.

If your house has underfloor heating and wooden floors, the supply line temperature must not exceed the max temperature specified by the floor producer. Otherwise the floor might get damaged. If you have underfloor 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 can 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 tuned correctly. Also remember that the value for seasonal stop needs adjusting upwards for summer heating.

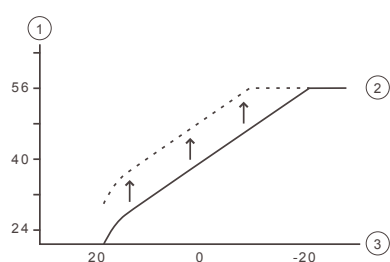
## 1.4 Comfort settings

If you temporarily wish to increase or reduce the indoor temperature.



When changing the comfort setting, 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 comfort setting. 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.

The simplified working principle for Comfort Settings is as follows:



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

If a larger change than +/- 3 steps on the comfort wheel is required to obtain the desired indoor temperature, or corrective adjustments are needed at different outdoor temperatures, the more advanced heating settings may need adjustments. See the Heating Settings chapter in this Appendix for details.

Please note that lowering the comfort adjustments too low may cause very low indoor temperatures. Also be aware that it may take up to one day before the result of the changes you make have full impact, due to the space heating system inertia.

Contact your installer if you are uncertain about how to adjust the heat pump settings.

## Technical description

## Diplomat Inverter/Diplomat Duo Inverter

### 2 Heat pump data and dimensions

#### 2.1 Technical data

Diplomat Inverter L		Unit	5-17 kW
Refrigerant	Type		R410A
	GWP		2088
	Amount	kg	2,0
	CO <sup>2</sup> equivalent	kg	4176
	Design pressure	MPa	4,3
Compressor	Type		Scroll
	Oil		POE
Electrical data 3-N	Mains power supply	Volt	400
	Max working power, compressor	kW	5,9
	Rated power, circulation pumps	kW	0,3
	Auxiliary heater, 3 steps	kW	3/6/9
	Fuse <sup>1</sup>	A	16/20/25/32
Performance	SCOP (0/35, Pdesign 12 kW) <sup>2</sup>		5,4
	SCOP (0/55, Pdesign 12 kW) <sup>2</sup>		4,2
	SCOP (0/35, Pdesign 16 kW) <sup>2</sup>		5,4
	SCOP (0/55, Pdesign 16 kW) <sup>2</sup>		4,3
	COP <sup>3</sup>		5,0
	COP <sup>4</sup>		4,7
	Energy efficiency class seasonal space heating high temperature heat pump		A++
	Energy efficiency class built in temperature control package (high temperature)		A+++
	Energy efficiency class seasonal space heating low temperature heat pump		A++
	Energy efficiency class built in temperature control package (low temperature)		A+++
Max/min temperature	Cooling circuit	°C	20/-10
	Heating circuit	°C	65/20
Water mains	Maximum inlet water pressure	MPa(g)	0,9
Anti-freeze <sup>5</sup>			Ethanol + water solution -17°C ±2
Max/min refrigerant circuit	Low pressure	MPa(g)	0,21
	Operating pressure	MPa(g)	4,18
	High pressure	MPa(g)	4,30
Sound power level <sup>6</sup>	Diplomat Inverter L	dB(A)	39-49
Water tank volume	Diplomat Inverter L	litres	180
Weight	Diplomat Inverter L, empty	kg	200
	Diplomat Inverter L, filled	kg	380

The measurements are performed on a limited number of heat pumps which can cause variations in the results. Tolerances in the measuring methods can also cause variations.

1) Fuse size depends on auxiliary heater (0/3/6/9 kW)

2) SCOP according to EN14825, Cold climate (Helsinki)

3) At B0W35 Δ10K warm side (excluding circulation pumps)

4) At B0W35 according to EN14511 (including circulation pumps)

5) Always check local rules and regulations before using anti-freeze

6) At B0W35 and compressor speed 1800-5800 rpm according to EN12102 and ISO EN 3741

## Technical description

## Diplomat Inverter/Diplomat Duo Inverter

Diplomat Duo Inverter L		Unit	5-17 kW
Refrigerant	Type		R410A
	GWP		2088
	Amount	kg	2,0
	CO <sup>2</sup> equivalent	kg	4176
	Design pressure	MPa	4,3
Compressor	Type		Scroll
	Oil		POE
Electrical data 3-N	Mains power supply	Volt	400
	Max working power, compressor	kW	5,9
	Rated power, circulation pumps	kW	0,3
	Auxiliary heater, 3 steps	kW	3/6/9
	Fuse <sup>1</sup>	A	16/20/25/32
Performance	SCOP (0/35, Pdesign 12 kW) <sup>2</sup>		5,4
	SCOP (0/55, Pdesign 12 kW) <sup>2</sup>		4,2
	SCOP (0/35, Pdesign 16 kW) <sup>2</sup>		5,4
	SCOP (0/55, Pdesign 16 kW) <sup>2</sup>		4,3
	COP <sup>3</sup>		5,0
	COP <sup>4</sup>		4,7
	Energy efficiency class seasonal space heating high temperature heat pump		A++
	Energy efficiency class built in temperature control package (high temperature)		A+++
	Energy efficiency class seasonal space heating low temperature heat pump		A++
	Energy efficiency class built in temperature control package (low temperature)		A+++
	Heat factor <sup>4</sup>	kW	8,93
	Incoming power <sup>4</sup>	kW	1,91
Max/min temperature	Cooling circuit	°C	20/-10
	Heating circuit	°C	65/20
Water mains	Maximum inlet water pressure	MPa(g)	0,9
Anti-freeze <sup>5</sup>			Ethanol + water solution -17°C ±2
Max/min refrigerant circuit	Low pressure	MPa(g)	0,21
	Operating pressure	MPa(g)	4,18
	High pressure	MPa(g)	4,30
Sound power level <sup>6</sup>	Diplomat Duo Inverter L	dB(A)	41-51
Water tank volume	Diplomat Duo Inverter L	litres	optional
Weight	Diplomat Duo Inverter L	kg	160

The measurements are performed on a limited number of heat pumps which can cause variations in the results. Tolerances in the measuring methods can also cause variations.

1) Fuse size depends on auxiliary heater (0/3/6/9 kW)

2) SCOP according to EN14825, Cold climate (Helsinki)

3) At B0W35 Δ10K warm side (excluding circulation pumps)

4) At B0W35 according to EN14511 (including circulation pumps)

5) Always check local rules and regulations before using anti-freeze

6) At B0W35 and compressor speed 1800-5800 rpm according to EN12102 and ISO EN 3741



## Technical description

## Diplomat Inverter/Diplomat Duo Inverter

Diplomat Inverter M		Unit	3-12 kW
Refrigerant	Type		R410A
	GWP		2088
	Amount	kg	1,8
	CO <sup>2</sup> equivalent	kg	3758
	Design pressure	MPa	4,3
Compressor	Type		Scroll
	Oil		POE
Electrical data, 400V, 3-N	Mains power supply	Volt	400
	Max working power, compressor	kW	4,6
	Rated power, circulation pumps	kW	0,3
	Auxiliary heater, 3 steps	kW	3/6/9
	Fuse <sup>1</sup>	A	10/16/20/25
Electrical data, 230V, 3-P	Mains power supply	Volt	230
	Max working power, compressor	kW	4,6
	Rated power, circulation pumps	kW	0,3
	Auxiliary heater, 3 steps	kW	3/6/9
	Fuse <sup>1</sup>	A	25/32/40/50
Electrical data, 230V, 1-N	Mains power supply	Volt	230
	Max working power, compressor	kW	4,6
	Rated power, circulation pumps	kW	0,3
	Auxiliary heater, 3 steps	kW	1,5/3/4,5
	Fuse <sup>2</sup>	A	25/32/40/50
Performance	SCOP (0/35, Pdesign 12 kW) <sup>3</sup>		5,6
	SCOP (0/55, Pdesign 11 kW) <sup>3</sup>		4,3
	COP <sup>4</sup>		5,0
	COP <sup>5</sup>		4,6
	Energy efficiency class seasonal space heating high temperature heat pump	A++	
	Energy efficiency class built in temperature control package (high temperature)	A+++	
	Energy efficiency class seasonal space heating low temperature heat pump	A++	
	Energy efficiency class built in temperature control package (low temperature)	A+++	
	Heat factor <sup>5</sup>	kW	5,08
	Incoming power <sup>5</sup>	kW	1,01
Max/min temperature	Cooling circuit	°C	20/-10
	Heating circuit	°C	65/20
Water mains	Maximum inlet water pressure	MPa(g)	0,9
Anti-freeze <sup>6</sup>			Ethanol + water solution -17°C ±2
Max/min refrigerant circuit	Low pressure	MPa(g)	0,21
	Operating pressure	MPa(g)	4,18
	High pressure	MPa(g)	4,30
Sound power level <sup>7</sup>	Diplomat Inverter M	dB(A)	36-45
Water tank volume	Diplomat Inverter M	litres	180
Weight	Diplomat Inverter M, empty	kg	195
	Diplomat Inverter M, filled	kg	375

The measurements are performed on a limited number of heat pumps which can cause variations in the results. Tolerances in the measuring methods can also cause variations.

## Technical description

## Diplomat Inverter/Diplomat Duo Inverter

---

- |  |   |
|--|---|
| 1) Fuse size depends on auxiliary heater (0/3/6/9 kW)            | 5) At B0W35 according to EN14511 (including circulation pumps)                      |
| 2) Fuse size depends on auxiliary heater (0/1,5/3/4,5 kW)        | 6) Always check local rules and regulations before using anti-freeze                |
| 3) SCOP according to EN14825, Cold climate (Helsinki)            | 7) At B0W35 and compressor speed 1200-4300 rpm according to EN12102 and ISO EN 3741 |
| 4) At B0W35 $\Delta$ 10K warm side (excluding circulation pumps) |   |

## Technical description

## Diplomat Inverter/Diplomat Duo Inverter

Diplomat Duo Inverter M		Unit	3-12 kW
Refrigerant	Type		R410A
	GWP		2088
	Amount	kg	1,8
	CO <sup>2</sup> equivalent	kg	3758
	Design pressure	MPa	4,3
Compressor	Type		Scroll
	Oil		POE
Electrical data, 400V, 3-N	Mains power supply	Volt	400
	Max working power, compressor	kW	4,6
	Rated power, circulation pumps	kW	0,3
	Auxiliary heater, 3 steps	kW	3/6/9
	Fuse <sup>1</sup>	A	10/16/20/25
Electrical data, 230V, 3-P	Mains power supply	Volt	230
	Max working power, compressor	kW	4,6
	Rated power, circulation pumps	kW	0,3
	Auxiliary heater, 3 steps	kW	3/6/9
	Fuse <sup>1</sup>	A	25/32/40/50
Electrical data, 230V, 1-N	Mains power supply	Volt	230
	Max working power, compressor	kW	4,6
	Rated power, circulation pumps	kW	0,3
	Auxiliary heater, 3 steps	kW	1,5/3/4,5
	Fuse <sup>2</sup>	A	25/32/40/50
Performance	SCOP (0/35, Pdesign 12 kW) <sup>3</sup>		5,6
	SCOP (0/55, Pdesign 11 kW) <sup>3</sup>		4,3
	COP <sup>4</sup>		5,0
	COP <sup>5</sup>		4,6
	Energy efficiency class seasonal space heating high temperature heat pump	A++	
	Energy efficiency class built in temperature control package (high temperature)	A+++	
	Energy efficiency class seasonal space heating low temperature heat pump	A++	
	Energy efficiency class built in temperature control package (low temperature)	A+++	
	Heat factor <sup>5</sup>	kW	5,08
	Incoming power <sup>5</sup>	kW	1,01
Max/min temperature	Cooling circuit	°C	20/-10
	Heating circuit	°C	65/20
Water mains	Maximum inlet water pressure	MPa(g)	0,9
Anti-freeze <sup>6</sup>			Ethanol + water solution -17°C ±2
Max/min refrigerant circuit	Low pressure	MPa(g)	0,21
	Operating pressure	MPa(g)	4,18
	High pressure	MPa(g)	4,30
Sound power level <sup>7</sup>	Diplomat Duo Inverter M	dB(A)	38-49
Water tank volume	Diplomat Duo Inverter M	litres	optional
Weight	Diplomat Duo Inverter M	kg	155

The measurements are performed on a limited number of heat pumps which can cause variations in the results. Tolerances in the measuring methods can also cause variations.

1) Fuse size depends on auxiliary heater (0/3/6/9 kW)

## Technical description

## Diplomat Inverter/Diplomat Duo Inverter

2) Fuse size depends on auxiliary heater (0/1,5/3/4,5 kW)

3) SCOP according to EN14825, Cold climate (Helsinki)

4) At B0W35 Δ10K warm side (excluding circulation pumps)

5) At B0W35 according to EN14511 (including circulation pumps)

6) Always check local rules and regulations before using anti-freeze

7) At B0W35 and compressor speed 1200-4300 rpm according to EN12102 and ISO EN 3741

Diplomat Inverter Mini		Unit	1,5-7 kW
Refrigerant	Type		R410A
	GWP		2088
	Amount <sup>1</sup>	kg	0,95
	CO <sup>2</sup> equivalent	kg	1984
	Design pressure	MPa	4,3
Compressor	Type		Scroll
	Oil		POE
Electrical data 3-N	Mains power supply	Volt	400
	Max working power, compressor	kW	2,63
	Rated power, circulation pumps	kW	0,12
	Auxiliary heater, 3 steps	kW	2/4/6
	Fuse <sup>2</sup>	A	13/13/13/16
Performance	SCOP (0/35, Pdesign 7,11 kW) <sup>3</sup>		5,77
	SCOP (0/55, Pdesign 6,39 kW) <sup>3</sup>		4,12
	COP <sup>4</sup>		4,65
	Energy efficiency class seasonal space heating high temperature heat pump <sup>5</sup>		A++
	Energy efficiency class built in temperature control package (high temperature) <sup>5</sup>		A+++
	Energy efficiency class seasonal space heating low temperature heat pump <sup>5</sup>		A++
	Energy efficiency class built in temperature control package (low temperature) <sup>5</sup>		A+++
	Domestic hot water <sup>5</sup>		A
	Heat factor <sup>4</sup>	kW	4,45
Max/min temperature	Cooling circuit	°C	20/-10
	Heating circuit	°C	65/20
Water mains	Maximum inlet water pressure	MPa(g)	0,9
Anti-freeze <sup>6</sup>			Ethanol + water solution -17°C ±2
Max/min refrigerant circuit	Low pressure	MPa(g)	0,21
	Operating pressure	MPa(g)	4,18
	High pressure	MPa(g)	4,30
Sound power level <sup>7</sup>	Diplomat Inverter Mini	dB(A)	29-43
Water tank volume	Diplomat Inverter Mini	litres	180
Weight	Diplomat Inverter Mini, empty	kg	156
	Diplomat Inverter Mini, filled	kg	336

The measurements are performed on a limited number of heat pumps which can cause variations in the results. Tolerances in the measuring methods can also cause variations.

1) The refrigerant circuit is hermetically sealed and subject to the F-gas directive. Global Warming Potential (GWP) for R410A according to EC 517/2014 is 2088.

2) The recommended fuse group size depends on auxiliary heater setting (0/2/4/6 kW). Auxiliary heater, controller and circulation pumps are connected by L1 and L2, the frequency converter for the compressor is connected by L3.

3) SCOP according to EN14825, Cold climate (Helsinki).

4) At B0W35 according to EN14511 (@ 2750 rpm, measuring point).

5) According to Eco-design Directive 811/2013.

6) Always check local rules and regulations before using anti-freeze.

7) According to EN12102 and EN ISO 3741 (B0W55).

## Technical description

## Diplomat Inverter/Diplomat Duo Inverter

Diplomat Duo Inverter Mini		Unit	1,5-7 kW
Refrigerant	Type		R410A
	GWP		2088
	Amount <sup>1</sup>	kg	0,95
	CO <sup>2</sup> equivalent	kg	1984
	Design pressure	MPa	4,3
Compressor	Type		Scroll
	Oil		POE
Electrical data 3-N	Mains power supply	Volt	400
	Max working power, compressor	kW	2,63
	Rated power, circulation pumps	kW	0,12
	Auxiliary heater, 3 steps	kW	2/4/6
	Fuse <sup>2</sup>	A	13/13/13/16
Performance	SCOP (0/35, Pdesign 7,11 kW) <sup>3</sup>		5,77
	SCOP (0/55, Pdesign 6,39 kW) <sup>3</sup>		4,12
	COP <sup>4</sup>		4,65
	Energy efficiency class seasonal space heating high temperature heat pump <sup>5</sup>		A++
	Energy efficiency class built in temperature control package (high temperature) <sup>5</sup>		A+++
	Energy efficiency class seasonal space heating low temperature heat pump <sup>5</sup>		A++
	Energy efficiency class built in temperature control package (low temperature) <sup>5</sup>		A+++
	Domestic hot water <sup>5</sup>		A
	Heat factor <sup>4</sup>	kW	4,45
	Incoming power <sup>4</sup>	kW	0,96
Max/min temperature	Cooling circuit	°C	20/-10
	Heating circuit	°C	65/20
Water mains	Maximum inlet water pressure	MPa(g)	0,9
Anti-freeze <sup>6</sup>			Ethanol + water solution -17°C ±2
Max/min refrigerant circuit	Low pressure	MPa(g)	0,21
	Operating pressure	MPa(g)	4,18
	High pressure	MPa(g)	4,30
Sound power level <sup>7</sup>	Diplomat Duo Inverter Mini	dB(A)	31-45
Water tank volume	Diplomat Duo Inverter Mini	litres	Optional
Weight	Diplomat Duo Inverter Mini	kg	104

The measurements are performed on a limited number of heat pumps which can cause variations in the results. Tolerances in the measuring methods can also cause variations.

1) The refrigerant circuit is hermetically sealed and subject to the F-gas directive. Global Warming Potential (GWP) for R410A according to EC 517/2014 is 2088.

2) The recommended fuse group size depends on auxiliary heater setting (0/2/4/6 kW). Auxiliary heater, controller and circulation pumps are connected by L1 and L2, the frequency converter for the compressor is connected by L3.

3) SCOP according to EN14825, Cold climate (Helsinki).

6) Always check local rules and regulations before using anti-freeze.

4) At B0W35 according to EN14511 (@ 2750 rpm, measuring point)..

7) According to EN12102 and EN ISO 3741 (B0W55).

5) According to Eco-design Directive 811/2013.

## Technical description

## Diplomat Inverter/Diplomat Duo Inverter

Diplomat Inverter Mini 230		Unit	1,5-7 kW
Refrigerant	Type		R410A
	GWP		2088
	Amount <sup>1</sup>	kg	0,95
	CO <sup>2</sup> equivalent	kg	1984
	Design pressure	MPa	4,3
Compressor	Type		Scroll
	Oil		POE
Electrical data 3-P	Mains power supply	Volt	230
	Max working power, compressor	kW	2,63
	Rated power, circulation pumps	kW	0,12
	Auxiliary heater, 3 steps	kW	2/4/6
	Fuse <sup>2</sup>	A	16/20/25/32
Electrical data 1-N	Mains power supply	Volt	230
	Max working power, compressor	kW	2,63
	Rated power, circulation pumps	kW	0,12
	Auxiliary heater, 3 steps	kW	2/4/6
	Fuse <sup>2</sup>	A	16/25/32/40
Performance	SCOP (0/35, Pdesign 7,11 kW) <sup>3</sup>		5,77
	SCOP (0/55, Pdesign 6,39 kW) <sup>3</sup>		4,12
	COP <sup>4</sup>		4,65
	Energy efficiency class seasonal space heating high temperature heat pump <sup>5</sup>		A++
	Energy efficiency class built in temperature control package (high temperature) <sup>5</sup>		A+++
	Energy efficiency class seasonal space heating low temperature heat pump <sup>5</sup>		A++
	Energy efficiency class built in temperature control package (low temperature) <sup>5</sup>		A+++
	Domestic hot water <sup>5</sup>		A
	Heat factor <sup>4</sup>	kW	4,45
Max/min temperature	Cooling circuit	°C	20/-10
	Heating circuit	°C	65/20
Water mains	Maximum inlet water pressure	MPa(g)	0,9
Anti-freeze <sup>6</sup>			Ethanol + water solution -17°C ±2
Max/min refrigerant circuit	Low pressure	MPa(g)	0,21
	Operating pressure	MPa(g)	4,18
	High pressure	MPa(g)	4,30
Sound power level <sup>7</sup>	Diplomat Inverter Mini	dB(A)	29-43
Water tank volume	Diplomat Inverter Mini	litres	180
Weight	Diplomat Inverter Mini, empty	kg	156
	Diplomat Inverter Mini, filled	kg	336

The measurements are performed on a limited number of heat pumps which can cause variations in the results. Tolerances in the measuring methods can also cause variations.

1) The refrigerant circuit is hermetically sealed and subject to the F-gas directive. Global Warming Potential (GWP) for R410A according to EC 517/2014 is 2088.

2) The recommended fuse group size depends on auxiliary heater setting (0/2/4/6 kW).

3) SCOP according to EN14825, Cold climate (Helsinki).

4) At B0W35 according to EN14511 (@ 2750 rpm, measuring point)..

5) According to Eco-design Directive 811/2013.

6) Always check local rules and regulations before using anti-freeze.

7) According to EN12102 and EN ISO 3741 (B0W55).

## Technical description

## Diplomat Inverter/Diplomat Duo Inverter

Diplomat Duo Inverter Mini 230		Unit	1,5-7 kW
Refrigerant	Type		R410A
	GWP		2088
	Amount <sup>1</sup>	kg	0,95
	CO <sup>2</sup> equivalent	kg	1984
	Design pressure	MPa	4,3
Compressor	Type		Scroll
	Oil		POE
Electrical data 3-P	Mains power supply	Volt	230
	Max working power, compressor	kW	2,63
	Rated power, circulation pumps	kW	0,12
	Auxiliary heater, 3 steps	kW	2/4/6
	Fuse <sup>2</sup>	A	16/20/25/32
Electrical data 1-N	Mains power supply	Volt	230
	Max working power, compressor	kW	2,63
	Rated power, circulation pumps	kW	0,12
	Auxiliary heater, 3 steps	kW	2/4/6
	Fuse <sup>2</sup>	A	16/25/32/40
Performance	SCOP (0/35, Pdesign 7,11 kW) <sup>3</sup>		5,77
	SCOP (0/55, Pdesign 6,39 kW) <sup>3</sup>		4,12
	COP <sup>4</sup>		4,65
	Energy efficiency class seasonal space heating high temperature heat pump <sup>5</sup>		A++
	Energy efficiency class built in temperature control package (high temperature) <sup>5</sup>		A+++
	Energy efficiency class seasonal space heating low temperature heat pump <sup>5</sup>		A++
	Energy efficiency class built in temperature control package (low temperature) <sup>5</sup>		A+++
	Domestic hot water <sup>5</sup>		A
	Heat factor <sup>4</sup>	kW	4,45
Max/min temperature	Cooling circuit	°C	20/-10
	Heating circuit	°C	65/20
Water mains	Maximum inlet water pressure	MPa(g)	0,9
Anti-freeze <sup>6</sup>			Ethanol + water solution -17°C ±2
Max/min refrigerant circuit	Low pressure	MPa(g)	0,21
	Operating pressure	MPa(g)	4,18
	High pressure	MPa(g)	4,30
Sound power level <sup>7</sup>	Diplomat Duo Inverter Mini	dB(A)	31-45
Water tank volume	Diplomat Duo Inverter Mini	litres	Optional
Weight	Diplomat Duo Inverter Mini	kg	104

The measurements are performed on a limited number of heat pumps which can cause variations in the results. Tolerances in the measuring methods can also cause variations.

1) The refrigerant circuit is hermetically sealed and subject to the F-gas directive. Global Warming Potential (GWP) for R410A according to EC 517/2014 is 2088.

2) The recommended fuse group size depends on auxiliary heater setting (0/2/4/6 kW).

3) SCOP according to EN14825, Cold climate (Helsinki).

4) At B0W35 according to EN14511 (@ 2750 rpm, measuring point)..

5) According to Eco-design Directive 811/2013.

6) Always check local rules and regulations before using anti-freeze.

7) According to EN12102 and EN ISO 3741 (B0W55).

## 2.1.1 Space requirement

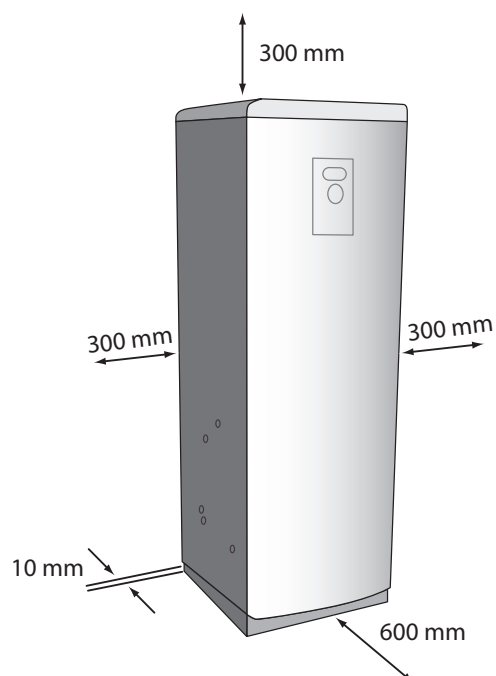
### Caution



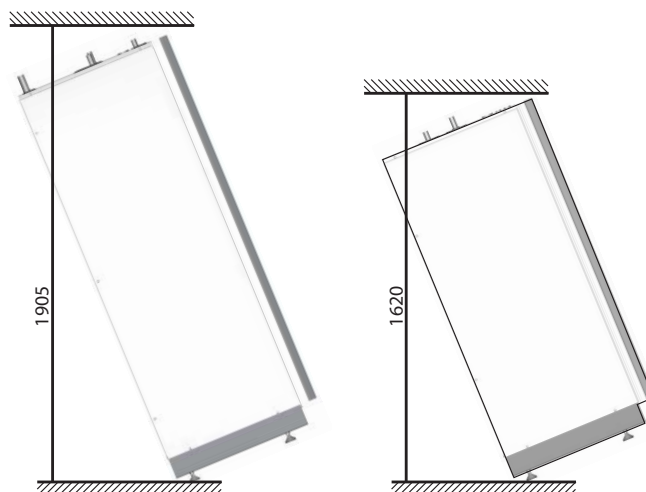
The heat pump must not be enclosed as the temperature inside the cabinet becomes extremely high.

To facilitate the fitting, installation and subsequent testing and maintenance there must be sufficient free space around the heat pump in accordance with the following dimensions:

### Diplomat Inverter

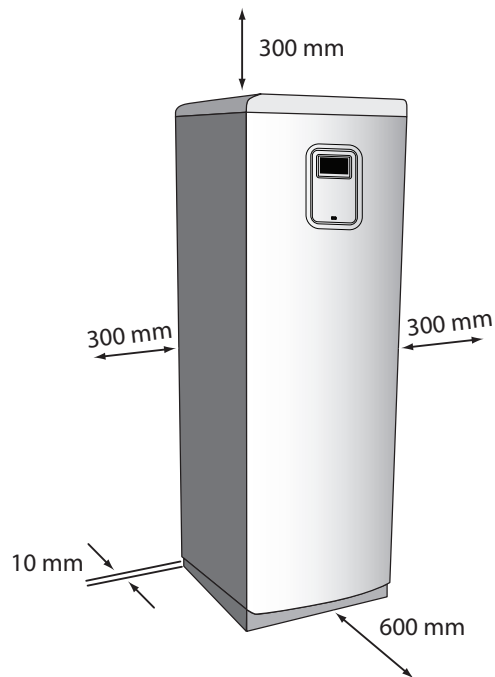


### Diplomat Duo Inverter

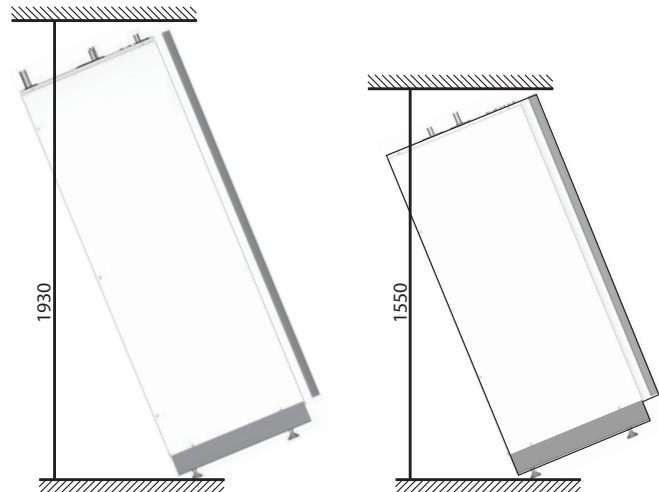




## Diplomat Inverter Mini



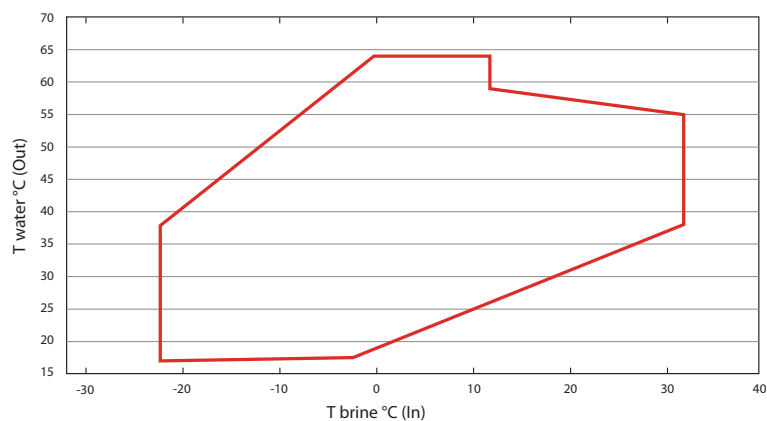
## Diplomat Duo Inverter Mini



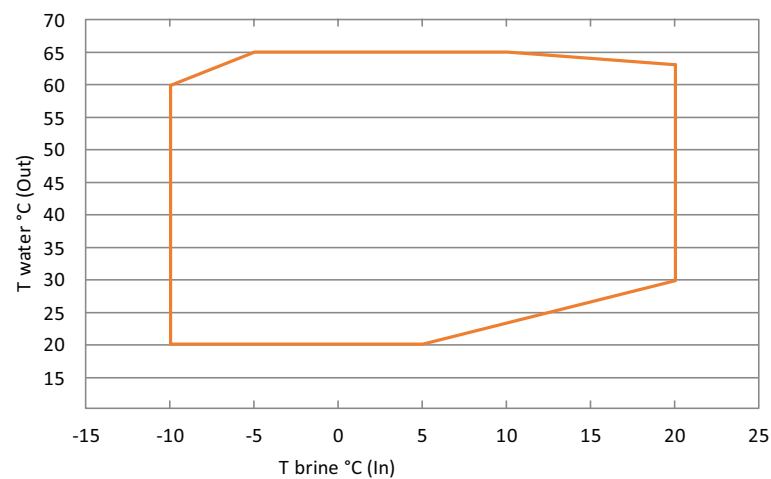
## 2.2 Min/Max operation temperature R410A

Pictures are showing the maximum working envelope as an example. Actual working envelope is different at different compressor speeds.

Diplomat Inverter L  
Diplomat Duo Inverter L  
Diplomat Inverter M  
Diplomat Duo Inverter M



Diplomat Inverter Mini  
Diplomat Duo Inverter Mini



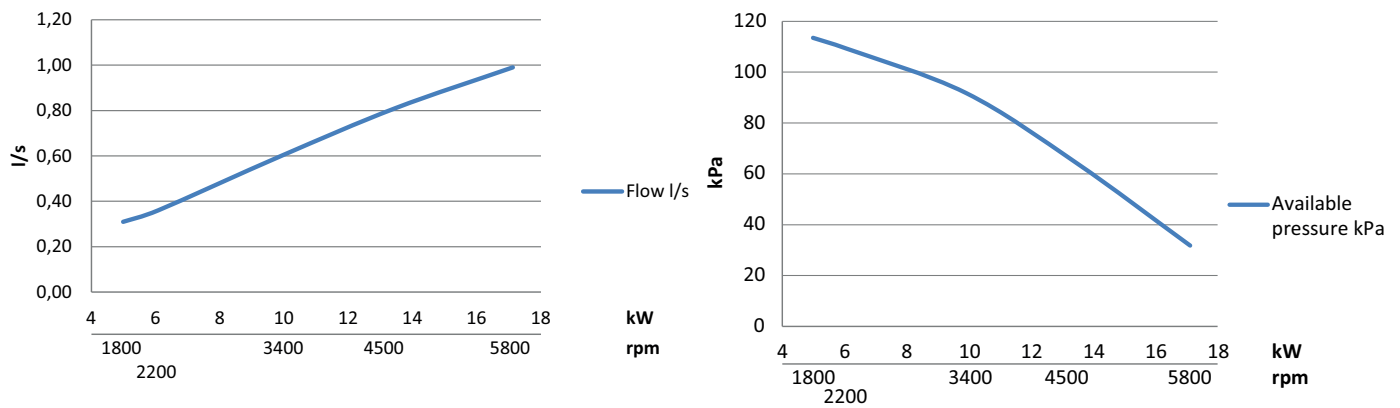
## Technical description

## Diplomat Inverter/Diplomat Duo Inverter

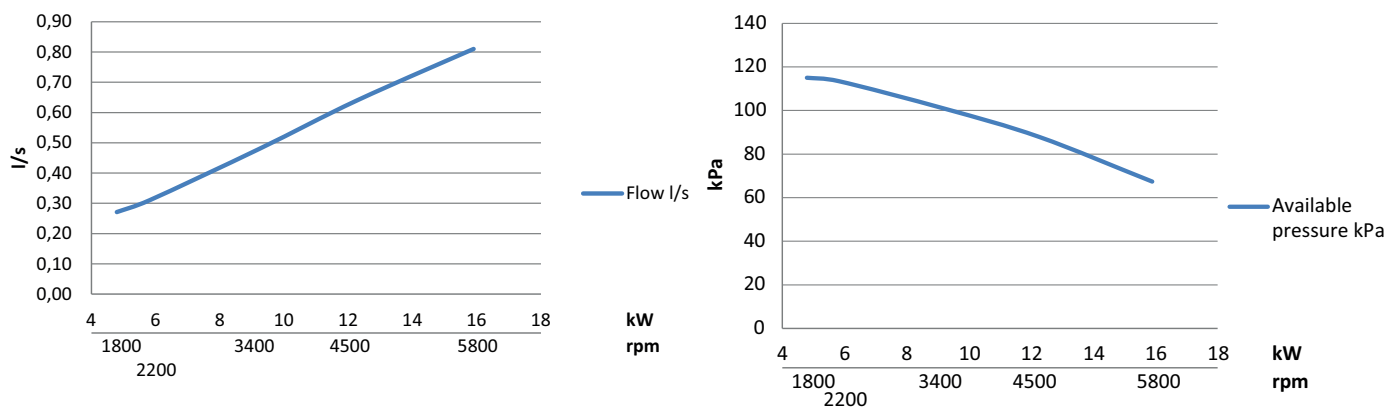
### 3 Estimated flow and pressure, brine

#### 3.1 Estimated flow and pressure for brine, Diplomat Inverter L Diplomat Duo Inverter L

##### Flow brine and external available pressure B0W35 ( $\Delta t$ 3 )



##### Flow brine and external available pressure B0W55 ( $\Delta t$ 3 )

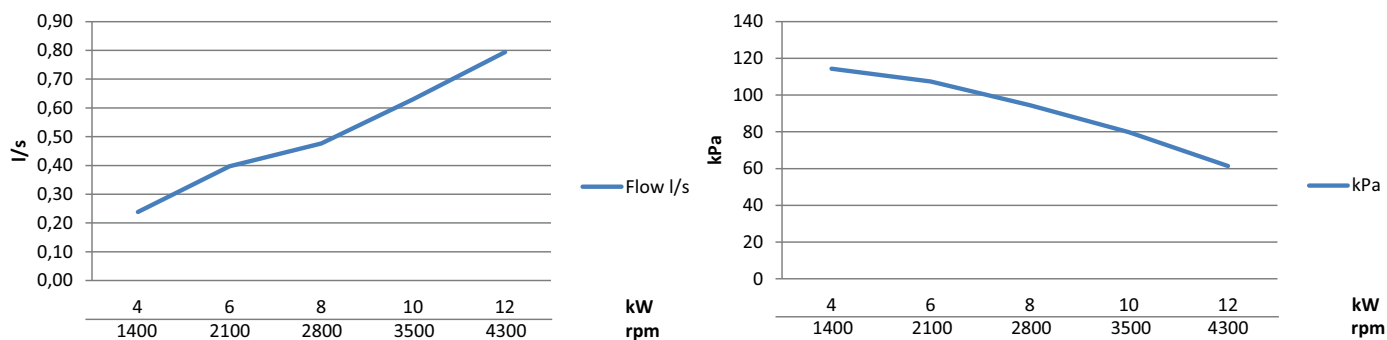


## Technical description

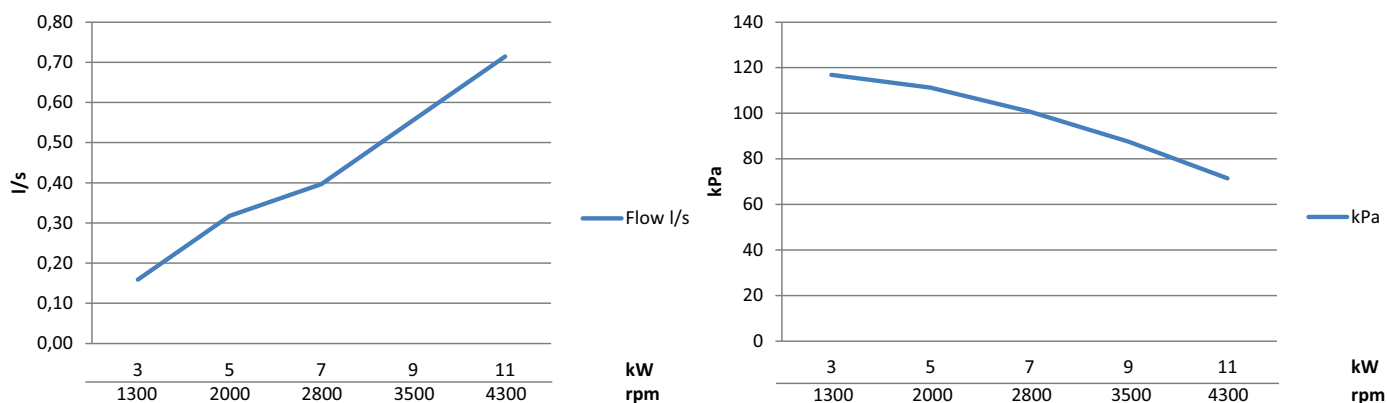
## Diplomat Inverter/Diplomat Duo Inverter

### 3.2 Estimated flow and pressure for brine, Diplomat Inverter M Diplomat Duo Inverter M

#### Flow brine and external available pressure B0W35 ( $\Delta t$ 3 )

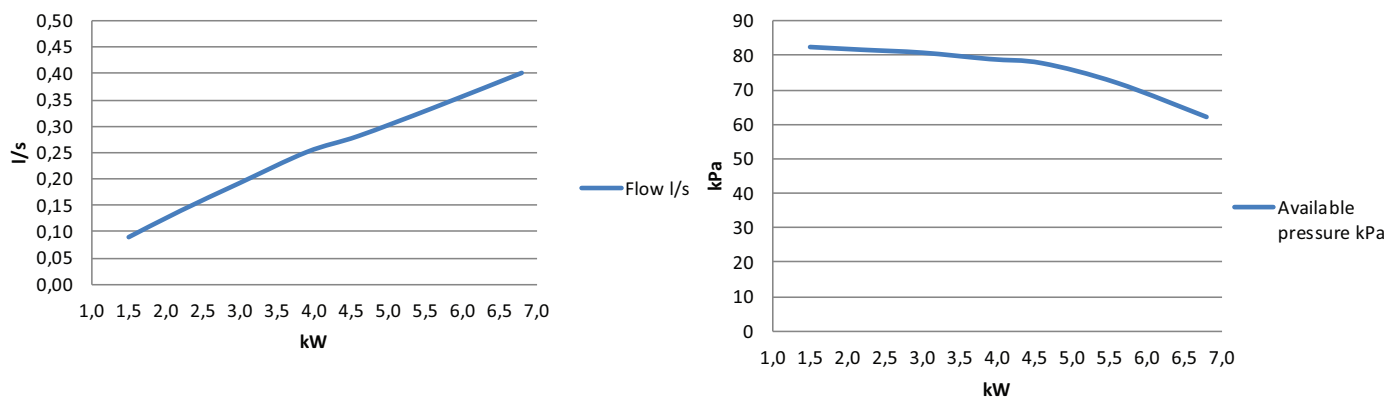


#### Flow brine and external available pressure B0W55 ( $\Delta t$ 3 )

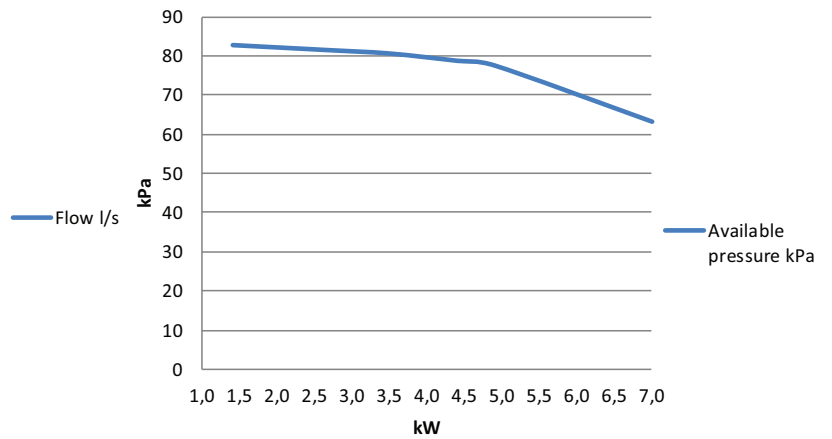
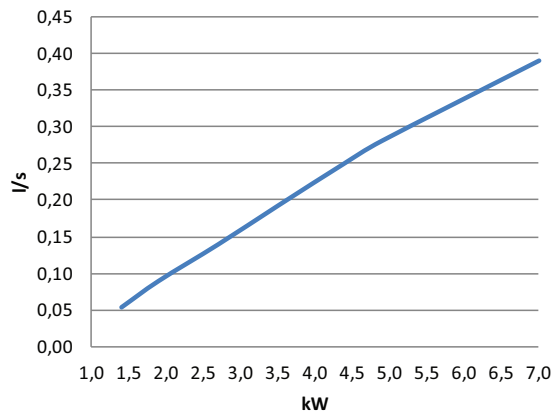


### 3.3 Estimated flow and pressure for brine, Diplomat Inverter Mini Diplomat Duo Inverter Mini

#### Flow brine and external available pressure B0W35 ( $\Delta t$ 3 )



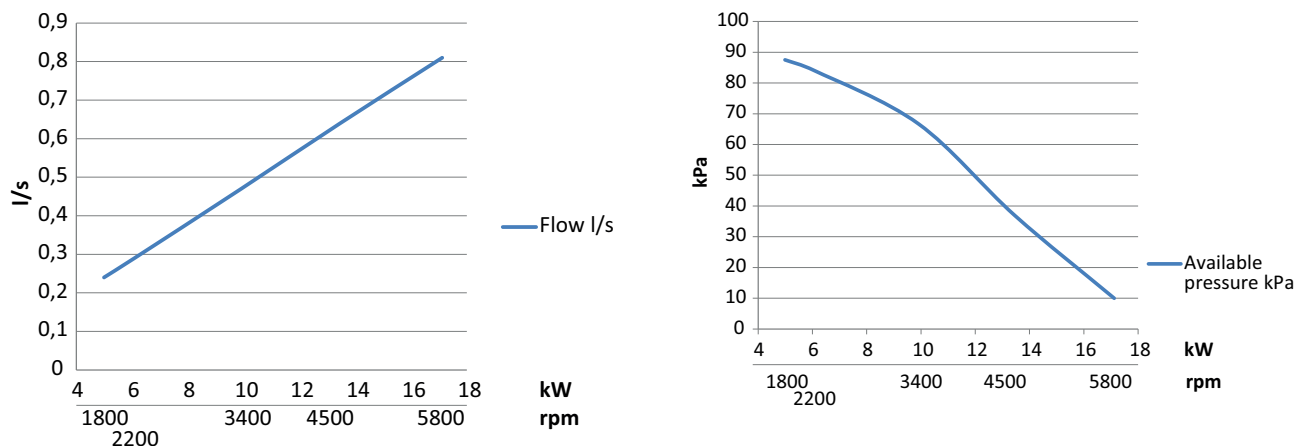
### Flow brine and external available pressure B0W55 ( $\Delta t$ 3 )



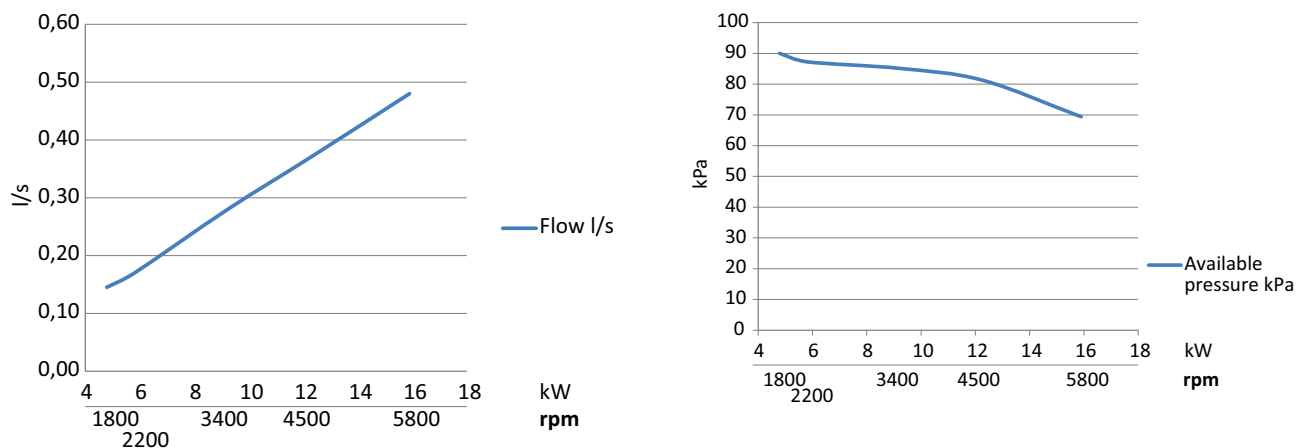
## 4 Estimated flow and pressure, heating circuit

### 4.1 Estimated flow and pressure for heating circuit, Diplomat Inverter L Diplomat Duo Inverter L

#### Flow heating circuit and external available pressure B0W35 ( $\Delta t$ 5 )



#### Flow heating circuit and external available pressure B0W55 ( $\Delta t$ 8 )

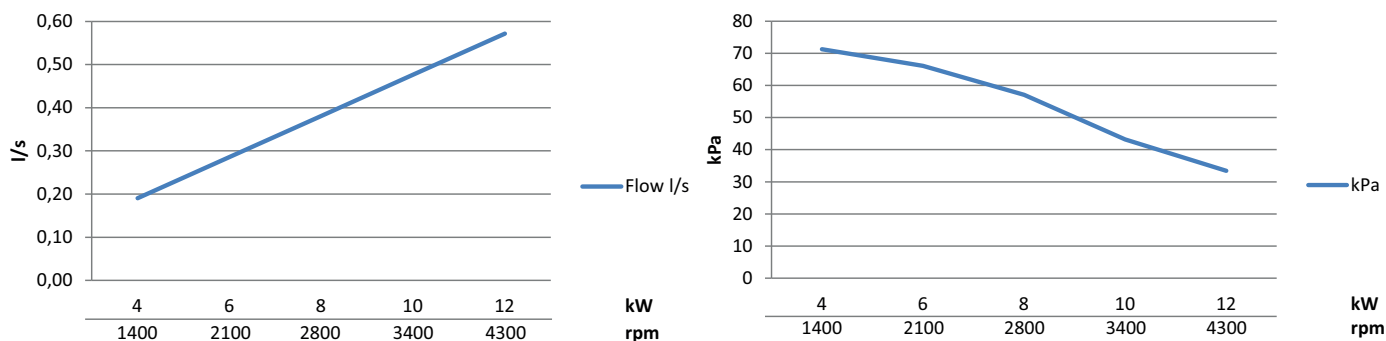


## Technical description

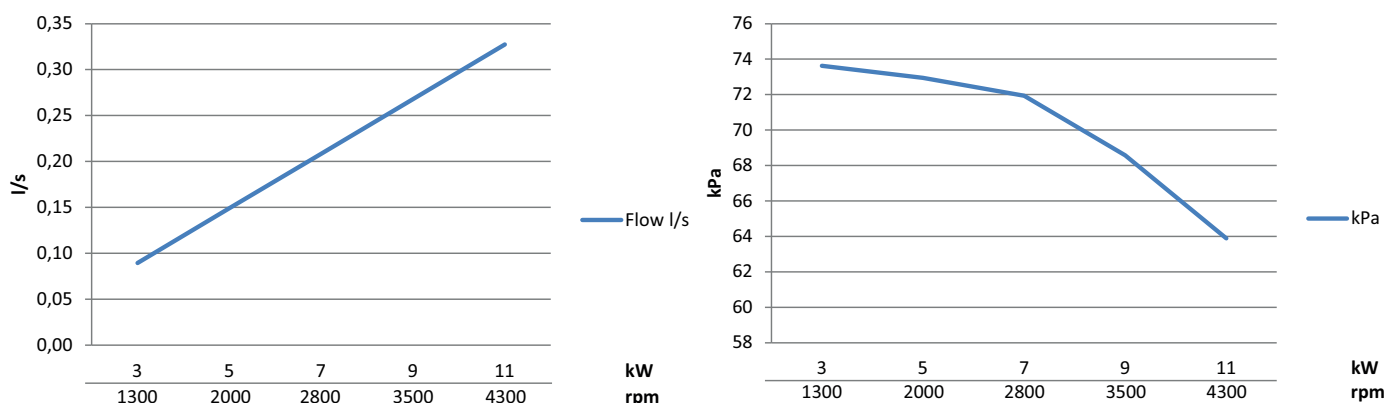
## Diplomat Inverter/Diplomat Duo Inverter

### 4.2 Estimated flow and pressure for heating circuit, Diplomat Inverter M Diplomat Duo Inverter M

#### Flow heating circuit and external available pressure B0W35 ( $\Delta t$ 5 )

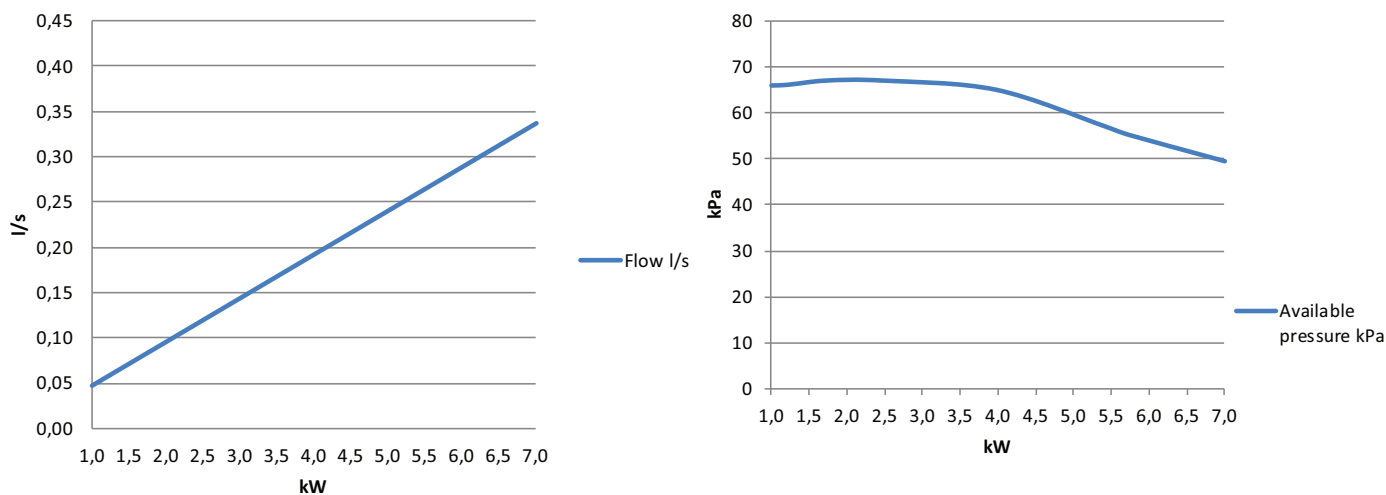


#### Flow heating circuit and external available pressure B0W55 ( $\Delta t$ 8 )

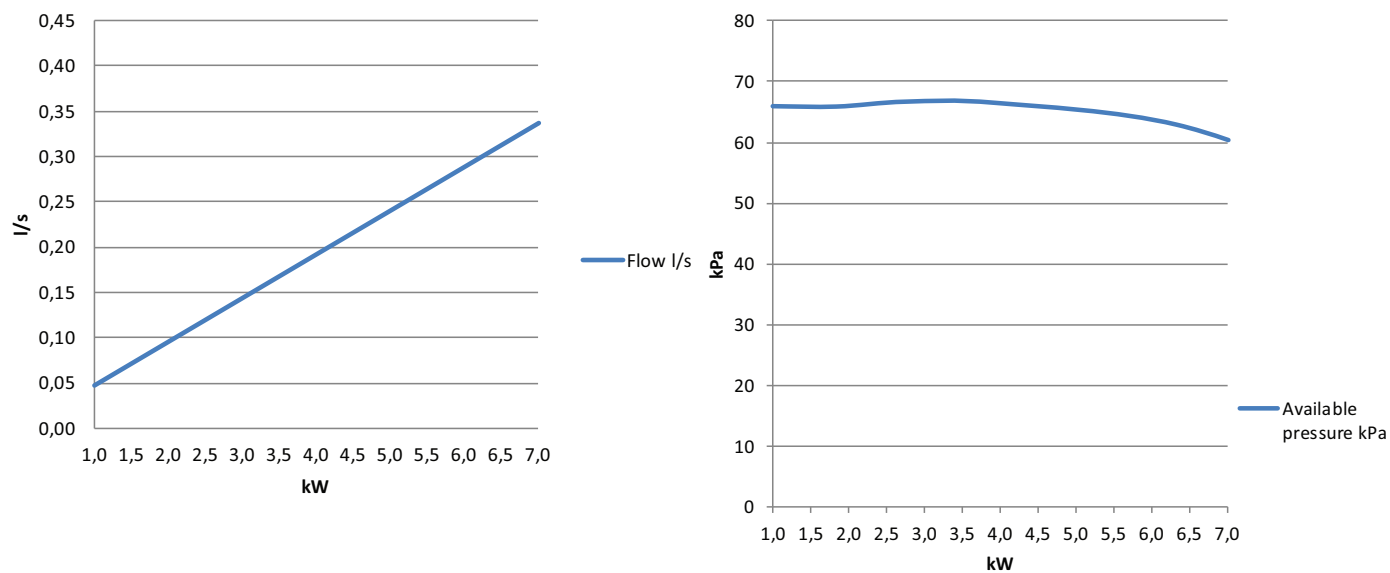


### 4.3 Estimated flow and pressure for heating circuit, Diplomat Inverter Mini Diplomat Duo Inverter Mini

#### Flow heating circuit and external available pressure B0W35 ( $\Delta t$ 5 )



### Flow heating circuit and external available pressure B0W55 ( $\Delta t$ 8 )

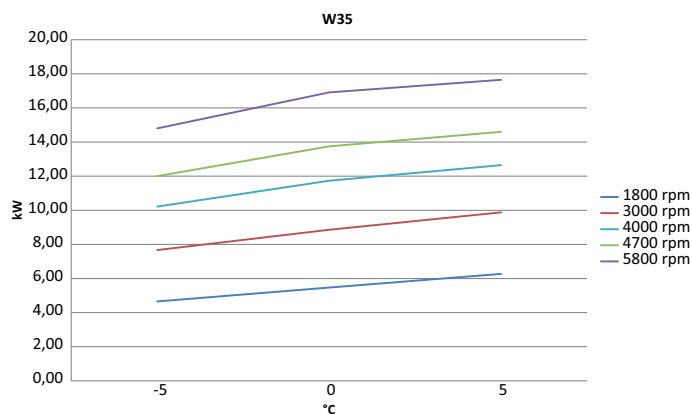




## 5 Output diagrams

### 5.1 Supply line temp 35°C for Diplomat Inverter L Diplomat Duo Inverter L

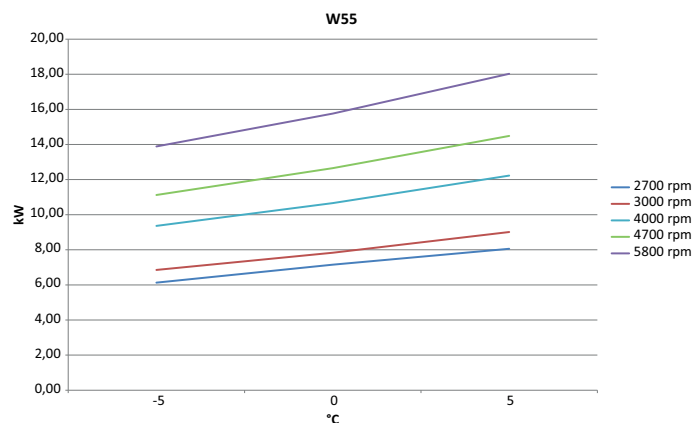
Heating capacity with a desired supply line temperature at 35°C at different compressor speed and brine temperature.



RPM	Brine temp.	-5	0	+5
1800	Heating capacity (kW)	4,7	5,5	6,3
	Input power (kW)	1,1	1,1	1,1
	COP	4,2	4,9	5,6
3000	Heating capacity (kW)	7,7	8,9	9,9
	Input power (kW)	1,9	1,9	1,9
	COP	4,1	4,6	5,1
4000	Heating capacity (kW)	10,2	11,7	12,7
	Input power (kW)	2,5	2,6	2,6
	COP	4,0	4,5	4,8
4700	Heating capacity (kW)	12,0	13,8	14,6
	Input power (kW)	3,0	3,1	3,1
	COP	4,0	4,4	4,7
5800	Heating capacity (kW)	14,8	16,9	17,7
	Input power (kW)	3,7	3,9	3,9
	COP	4,0	4,4	4,6

## 5.2 Supply line temp 55°C for Diplomat Inverter L Diplomat Duo Inverter L

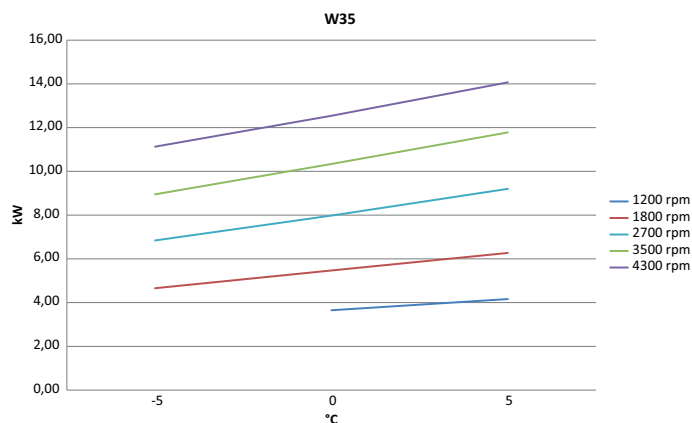
Heating capacity with a desired supply line temperature at 55°C at different compressor speed and brine temperature.



RPM	Brine temp.	-5	0	+5
2700	Heating capacity (kW)	6,1	7,2	8,1
	Input power (kW)	2,4	2,4	2,5
	COP	2,6	2,9	3,2
3000	Heating capacity (kW)	6,9	7,8	9,0
	Input power (kW)	2,6	2,7	2,8
	COP	2,6	2,9	3,2
4000	Heating capacity (kW)	9,4	10,7	12,2
	Input power (kW)	3,6	3,7	3,8
	COP	2,6	2,9	3,3
4700	Heating capacity (kW)	11,1	12,7	14,5
	Input power (kW)	4,2	4,3	4,5
	COP	2,7	2,9	3,3
5800	Heating capacity (kW)	13,9	15,8	18,0
	Input power (kW)	5,2	5,4	5,5
	COP	2,7	2,9	3,3

## 5.3 Supply line temp 35°C for Diplomat Inverter M Diplomat Duo Inverter M

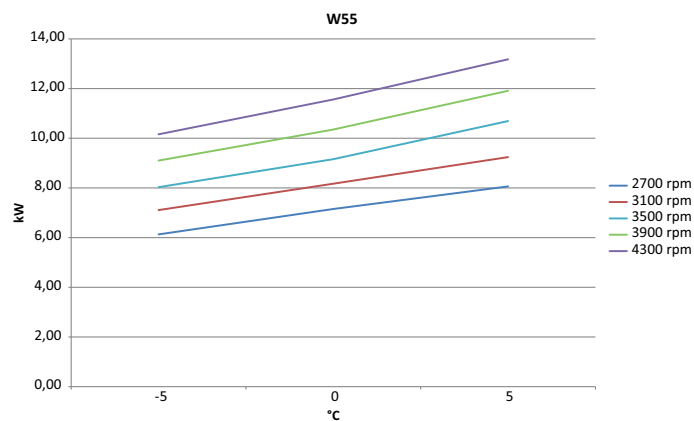
Heating capacity with a desired supply line temperature at 35°C at different compressor speed and brine temperature.



RPM	Brine temp.	-5	0	+5
1200	Heating capacity (kW)	n/a	3,7	4,2
	Input power (kW)	n/a	0,8	0,8
	COP	n/a	4,6	4,9
1800	Heating capacity (kW)	4,7	5,5	6,3
	Input power (kW)	1,1	1,1	1,1
	COP	4,2	4,9	5,6
2700	Heating capacity (kW)	6,8	8,0	9,2
	Input power (kW)	1,7	1,7	1,7
	COP	4,1	4,8	5,4
3500	Heating capacity (kW)	9,0	10,3	11,8
	Input power (kW)	2,2	2,2	2,3
	COP	4,1	4,6	5,2
4300	Heating capacity (kW)	11,1	12,5	14,1
	Input power (kW)	2,8	2,9	2,8
	COP	4,0	4,4	5,1

## 5.4 Supply line temp 55°C for Diplomat Inverter M Diplomat Duo Inverter M

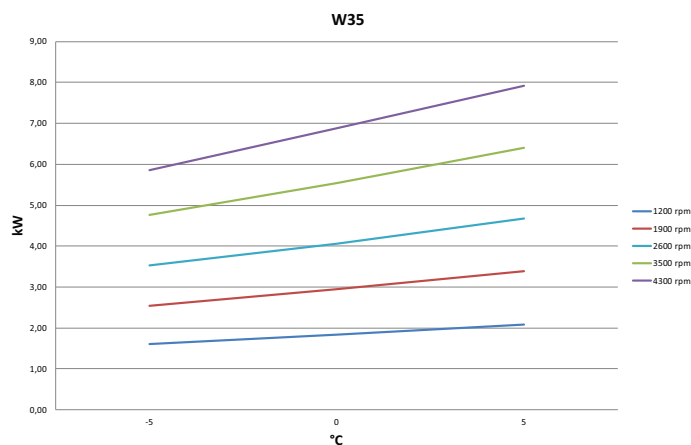
Heating capacity with a desired supply line temperature at 55°C at different compressor speed and brine temperature.



RPM	Brine temp.	-5	0	+5
2700	Heating capacity (kW)	6,1	7,2	8,1
	Input power (kW)	2,4	2,4	2,5
	COP	2,6	2,9	3,2
3100	Heating capacity (kW)	7,1	8,2	9,2
	Input power (kW)	2,7	2,8	2,9
	COP	2,6	2,9	3,2
3500	Heating capacity (kW)	8,0	9,2	10,7
	Input power (kW)	3,1	3,2	3,3
	COP	2,6	2,9	3,3
3900	Heating capacity (kW)	9,1	10,4	11,9
	Input power (kW)	3,5	3,6	3,7
	COP	2,6	2,9	3,3
4300	Heating capacity (kW)	10,2	11,6	13,2
	Input power (kW)	3,8	3,9	4,1
	COP	2,7	2,9	3,2

## 5.5 Supply line temp 35°C for Diplomat Inverter Mini Diplomat Duo Inverter Mini

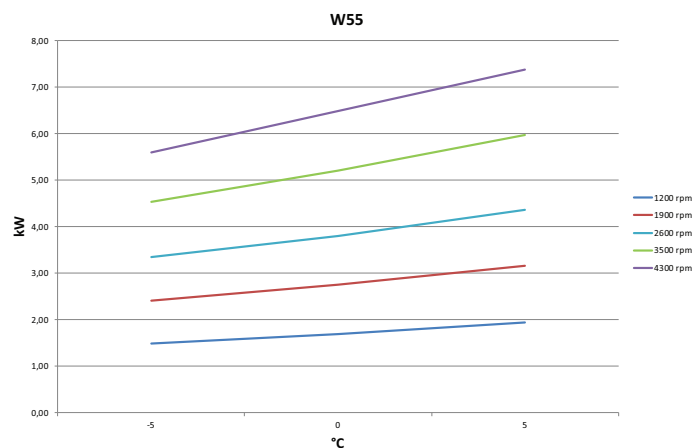
Heating capacity with a desired supply line temperature at 35°C at different compressor speed and brine temperature.



RPM	Brine temp.	-5	0	+5
1200	Heating capacity (kW)	1,6	1,8	2,1
	Input power (kW)	0,5	0,5	0,5
	COP	3,1	3,7	4,4
1900	Heating capacity (kW)	2,6	2,9	3,4
	Input power (kW)	0,7	0,7	0,7
	COP	3,8	4,4	5,2
2600	Heating capacity (kW)	3,5	4,1	4,7
	Input power (kW)	0,9	0,9	0,9
	COP	4,0	4,6	5,3
3500	Heating capacity (kW)	4,8	5,5	6,4
	Input power (kW)	1,2	1,2	1,2
	COP	3,9	4,5	5,2
4300	Heating capacity (kW)	5,9	7,1	7,9
	Input power (kW)	1,6	1,6	1,6
	COP	3,7	4,3	4,9

## 5.6 Supply line temp 55°C for Diplomat Inverter Mini Diplomat Duo Inverter Mini

Heating capacity with a desired supply line temperature at 55°C at different compressor speed and brine temperature.



RPM	Brine temp.	-5	0	+5
1200	Heating capacity (kW)	1,5	1,7	1,9
	Input power (kW)	0,8	0,8	0,8
	COP	2,0	2,2	2,5
1900	Heating capacity (kW)	2,4	2,8	3,2
	Input power (kW)	1,0	1,0	1,0
	COP	2,4	2,7	3,1
2600	Heating capacity (kW)	3,4	3,8	4,4
	Input power (kW)	1,3	1,3	1,4
	COP	2,6	2,9	3,2
3500	Heating capacity (kW)	4,5	5,2	6,0
	Input power (kW)	1,8	1,8	1,8
	COP	2,6	2,9	3,3
4300	Heating capacity (kW)	5,6	6,5	7,4
	Input power (kW)	2,2	2,3	2,3
	COP	2,5	2,8	3,2



Thermia Heat Pumps  
Box 950  
SE 671 29 ARVIKA  
Phone +46 570 81300  
E-mail: [info@thermia.com](mailto:info@thermia.com)  
Internet: [www.thermia.com](http://www.thermia.com)

---

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without consequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Thermia Värmepumpar and the Thermia Värmepumpar logotype are trademarks of Danfoss A/S. All rights reserved.

---