BLAUBERG Direct-expansion coolers

Series
OKF

Applications

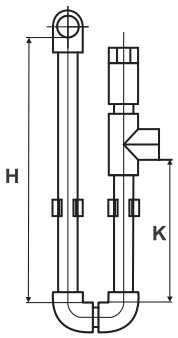
Direct-expansion duct coolers are designed for cooling of supply air in rectangular ventilation systems and can be used either for supply or supply and exhaust units.

Design

The cooler casing is made of galvanized sheet steel, the piping is made of copper tubes and the heat exhange surface is made of aluminium plates. The coolers are available in 3 rows modification and designed for operation with R123, R134a, R152a, R404a, R407c, R410a, R507, R12, R22 cooling agents. The coolers are equipped with the drain pan for condensate collecting and draining.

Mounting

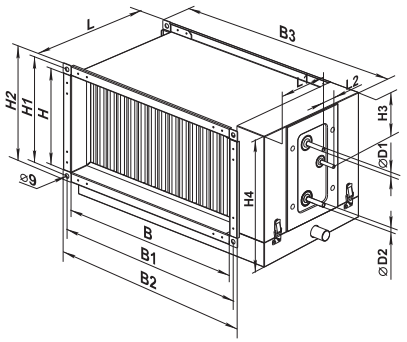
- Mounting is effected by means of flange connection. Direct-expansion cooling coils, can be installed horizontally only to enable the condensate draining.
- Installation shall be performed in such a way as to provide the uniform air srteam distribution along the entire cross section.
- The air filter shall be installed at the cooler inlet to ensure the cooler protection against dirt and dusting.
- The cooler can be installed at the fan inlet or outlet. If the cooler is located at the fan outlet the air duct between the cooler and the fan shall be at least 1-1,5 m long to ensure the air stream stabilization.
- The cooler shall be connected on the counterflow basis to provide its maximum cooling capacity. All the nomographic charts in the catalogue are valid for such connection.
- The droplet separator which is ordered separately can be installed at the cooler outlet if the air speed exceeds 2.5 m/s. That prevents the condensate drop penetration into the air duct system.
- Condensate draining from the cooler shall be performed through the U-trap. The U-trap height depends on the total pressure in the fan. The trap height can be calculated using the figure and the table below.



H [mm]	K [mm]	P [Pa]
100	55	600
200	105	1100
260	140	1400

H – trap height
K – drain height
P – total pressure in the fan

- To ensure the correct and safe cooler operation use the automation system providing the complex control and automatic regulation of the cooling capacity and air cooling temperature.



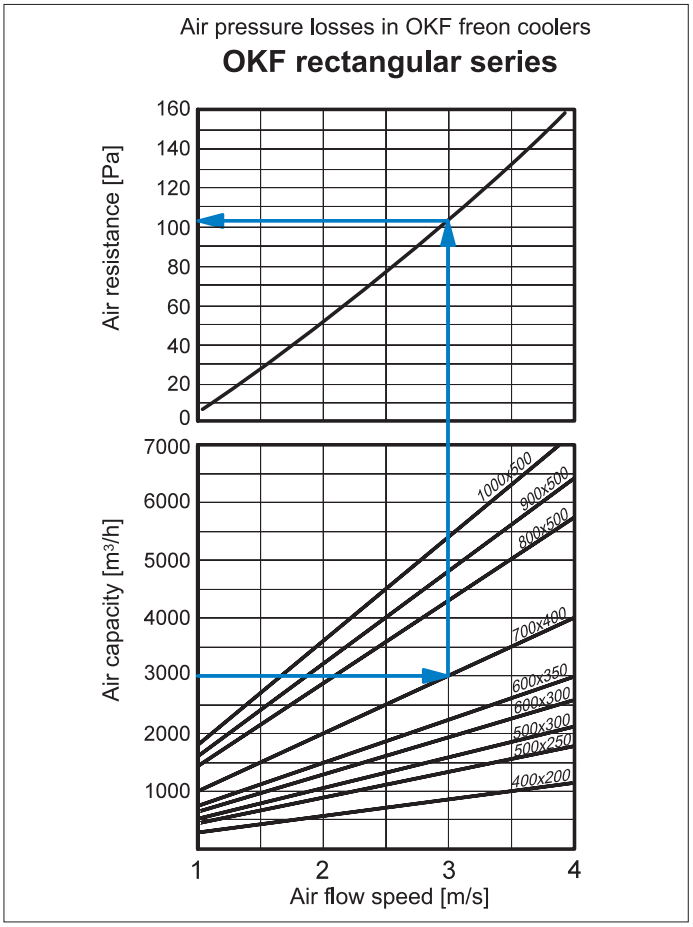
Overall dimensions:

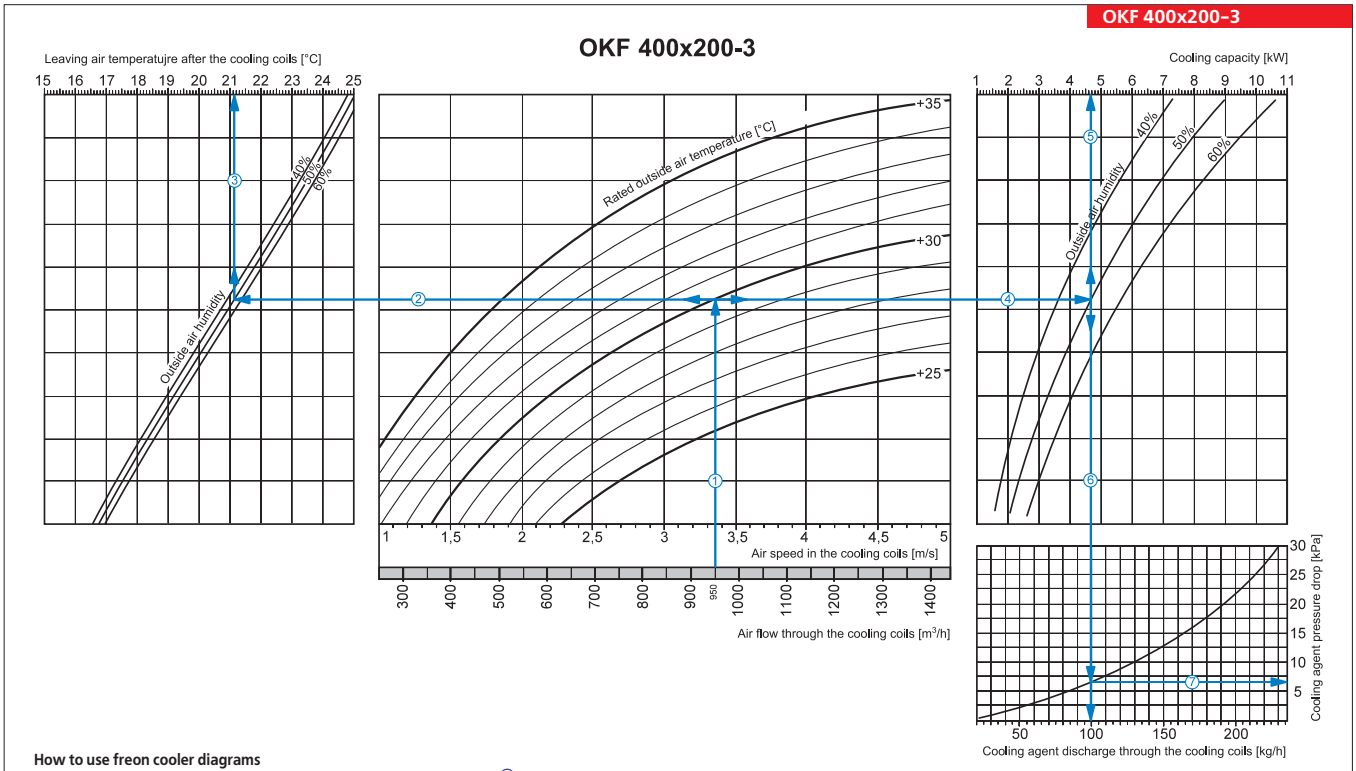
Type	Dimensions [mm]													
	ØD1	ØD2	B	B1	B2	B3	H	H1	H2	H3	H4	L	L1	L2
OKF 400x200-3	12	22	400	420	438	528	200	220	238	70	273	395	165	60
OKF 500x250-3	12	22	500	520	538	628	250	270	288	120	323	395	165	60
OKF 500x300-3	12	22	500	520	538	628	300	320	338	175	373	395	165	60
OKF 600x300-3	18	28	600	620	638	728	300	320	338	170	373	395	165	60
OKF 600x350-3	18	28	600	620	638	728	350	370	388	220	423	395	165	60
OKF 700x400-3	22	28	700	720	738	858	400	420	438	250	473	395	160	75
OKF 800x500-3	22	28	800	820	838	958	500	520	538	340	573	395	160	75
OKF 900x500-3	22	28	900	920	938	1058	500	520	538	350	573	395	160	75
OKF 1000x500-3	22	28	1000	1020	1038	1158	500	520	538	350	573	395	160	75

Designation key:

Series	Flange designation (WxH) [mm]	-	Number of cooling coils
OKF	400x200; 500x250; 500x300; 600x300; 600x350; 700x400; 800x500; 900x500; 1000x500		3

BLAUBERG Direct-expansion coolers





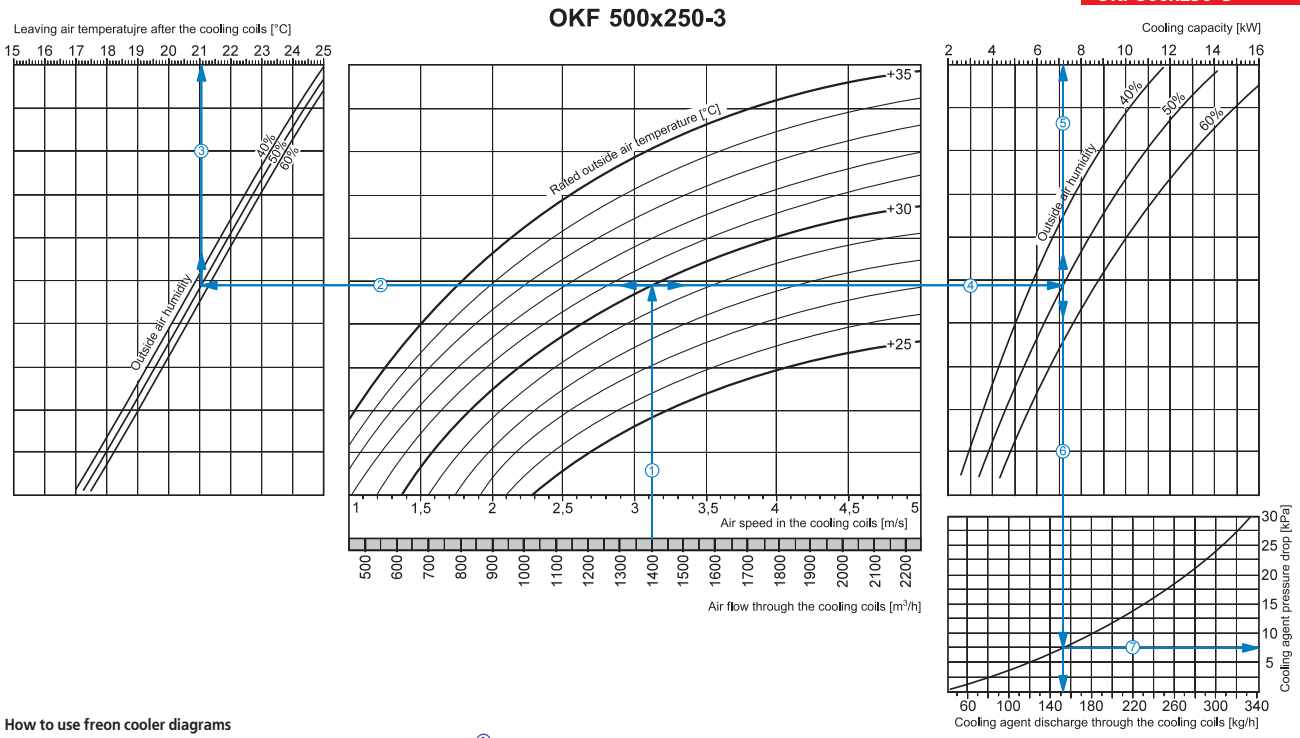
How to use freon cooler diagrams

Air Speed. Starting from 950 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 3.35 m/s.

- Supply air temperature. prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C); then draw a horizontal line ② from this point to the left till crossing the outside air humidity (e.g. 50%). From this point draw a vertical line ③ to the supply air temperature at cooler outlet axis on top of the graphic (+21.1°C)
- Cooling capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C) and draw a horizontal line ④ from this point to the right until it crosses the outside air humidity curve (e.g., 50%), from here draw a vertical line ⑤ up to the scale representing the cooling capacity (4.7 kW).
- Cooling agent discharge. Prolong the line ⑤ down to cooling agent discharge axis at the bottom of the graphic ⑥ (100 kg/hour).
- Cooling agent pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (6.5 kPa).

BLAUBERG Direct-expansion coolers

OKF 500x250-3

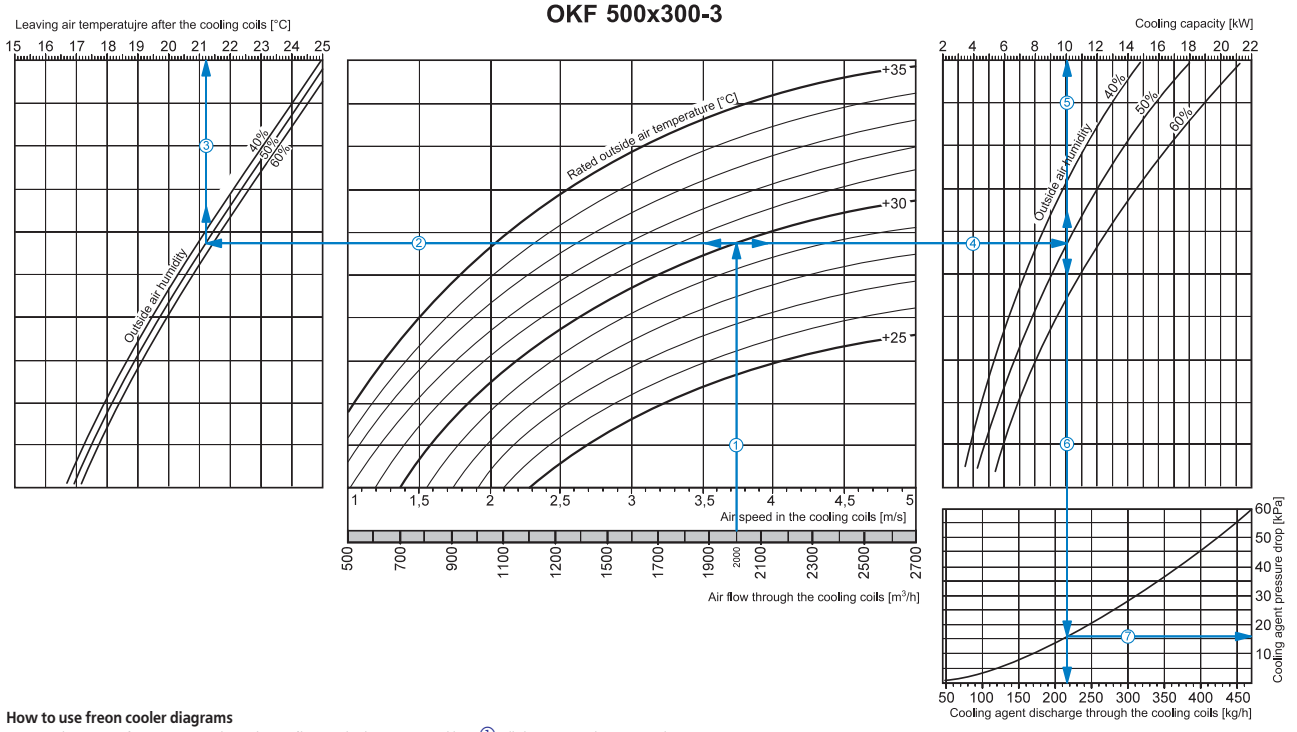


How to use freon cooler diagrams

Air Speed. Starting from 1400 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 3.1 m/s.

- Supply air temperature. prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C); then draw a horizontal line ② from this point to the left till crossing the outside air humidity (e.g. 50%). From this point draw a vertical line ③ to the supply air temperature at cooler outlet axis on top of the graphic (+21.1°C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C) and draw a horizontal line ④ from this point to the right until it crosses the outside air humidity curve (e.g., 50%), from here draw a vertical line ⑤ up to the scale representing the cooling capacity (7.2 kW).
- Cooling agent discharge. Prolong the line ⑤ down to cooling agent discharge axis at the bottom of the graphic ⑥ (152 kg/hour).
- Cooling agent pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (7.5 kPa).

OKF 500x300-3



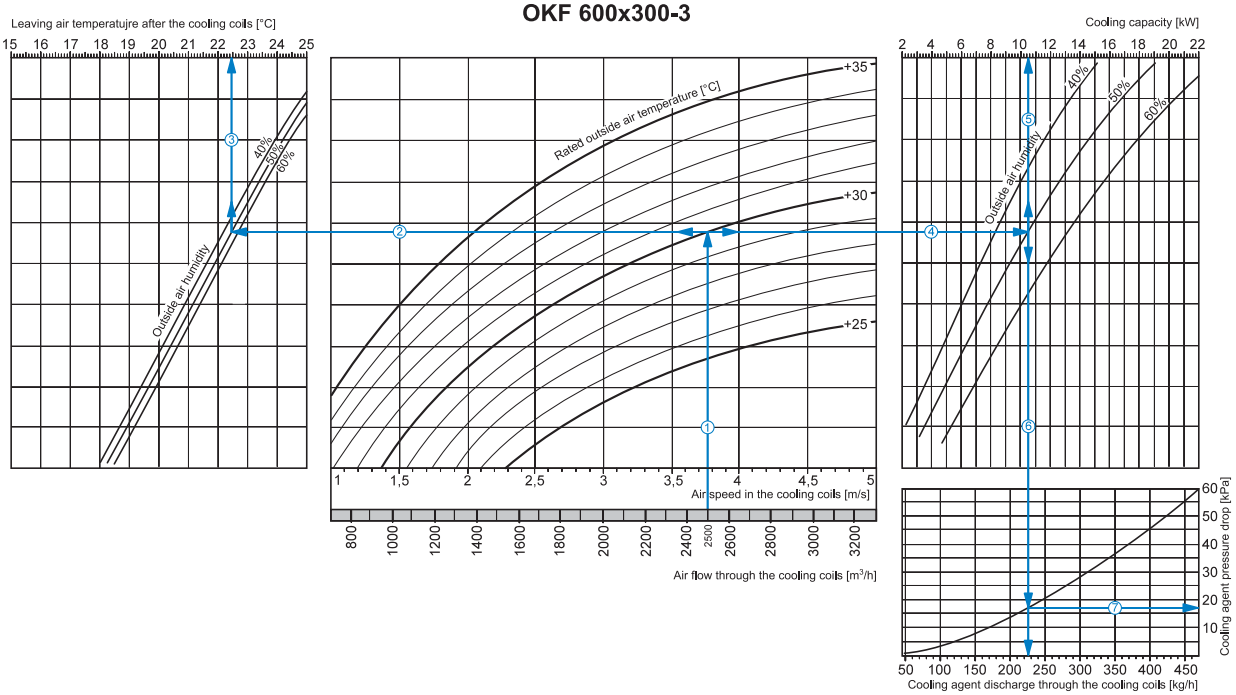
How to use freon cooler diagrams

Air Speed. Starting from 2000 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 3.75 m/s.

- Supply air temperature. prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C); then draw a horizontal line ② from this point to the left till crossing the outside air humidity (e.g. 50%). From this point draw a vertical line ③ to the supply air temperature at cooler outlet axis on top of the graphic (+21.2°C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C) and draw a horizontal line ④ from this point to the right until it crosses the outside air humidity curve (e.g., 50%), from here draw a vertical line ⑤ up to the scale representing the cooling capacity (10 kW).
- Cooling agent discharge. Prolong the line ⑤ down to cooling agent discharge axis at the bottom of the graphic ⑥ (215 kg/hour).
- Cooling agent pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (16.0 kPa).

BLAUBERG Direct-expansion coolers

OKF 600x300-3

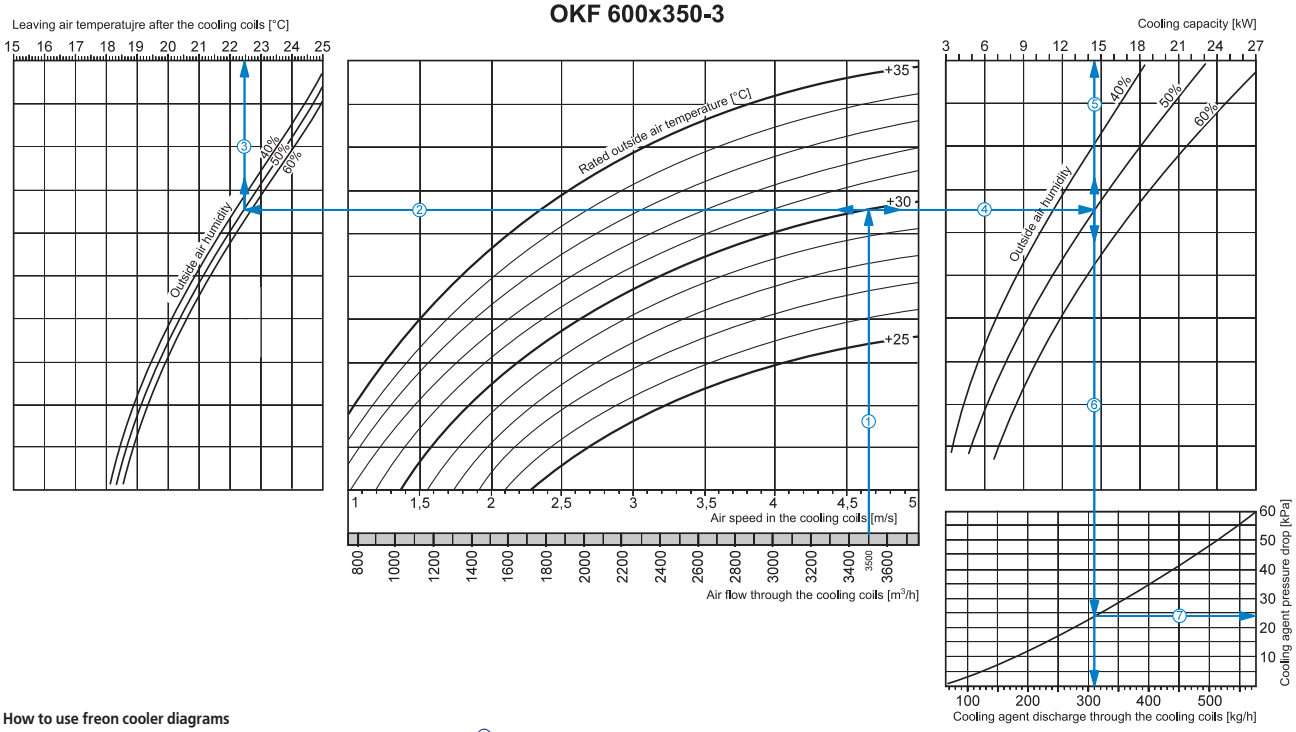


How to use freon cooler diagrams

Air Speed. Starting from 2500 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 3.75 m/s.

- Supply air temperature. prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C); then draw a horizontal line ② from this point to the left till crossing the outside air humidity (e.g. 50%). From this point draw a vertical line ③ to the supply air temperature at cooler outlet axis on top of the graphic (+22.5°C).
- Cooling coil capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C) and draw a horizontal line ④ from this point to the right until it crosses the outside air humidity curve (e.g., 50%), from here draw a vertical line ⑤ up to the scale representing the cooling capacity (10.5 kW).
- Cooling agent discharge. Prolong the line ⑤ down to cooling agent discharge axis at the bottom of the graphic ⑥ (225 kg/hour).
- Cooling agent pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (17.0 kPa).

OKF 600x350-3



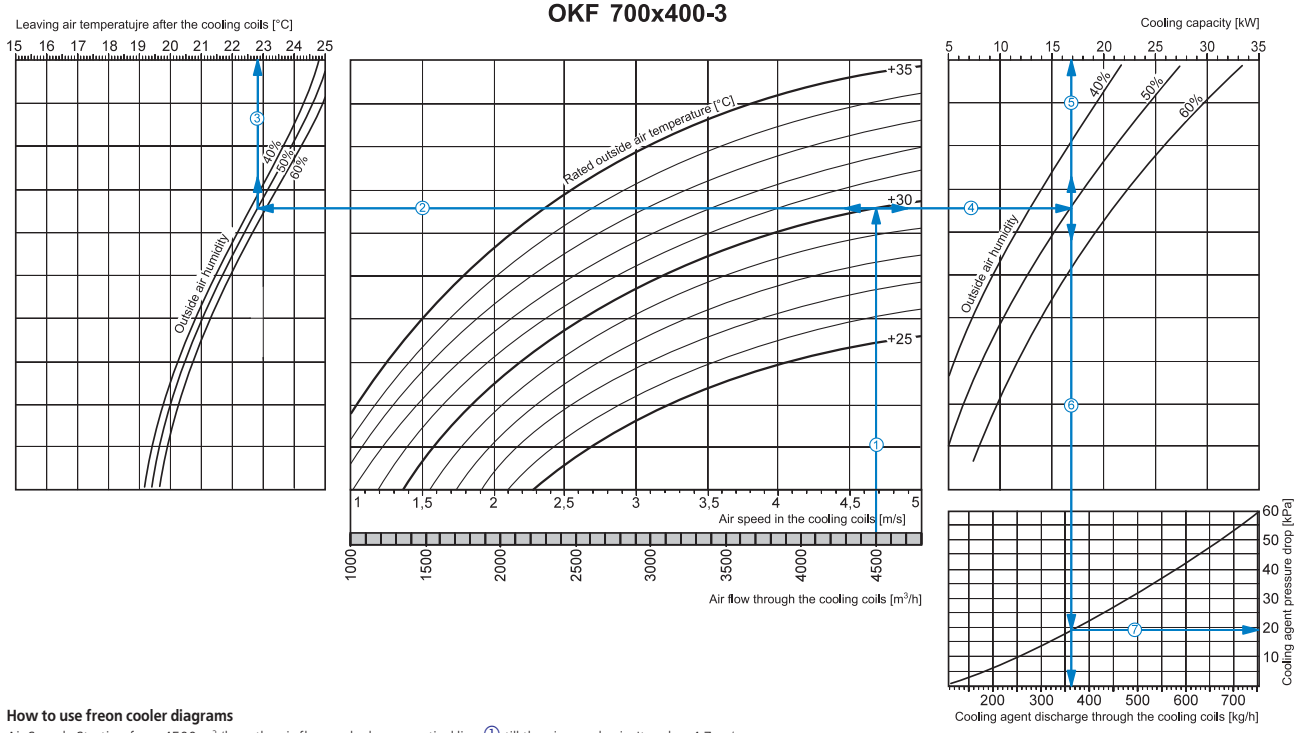
How to use freon cooler diagrams

Air Speed. Starting from 3500 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 4.65 m/s.

- Supply air temperature. prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C); then draw a horizontal line ② from this point to the left till crossing the outside air humidity (e.g. 50%). From this point draw a vertical line ③ to the supply air temperature at cooler outlet axis on top of the graphic (+22.5°C).
- Cooling coil capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C) and draw a horizontal line ④ from this point to the right until it crosses the outside air humidity curve (e.g., 50%), from here draw a vertical line ⑤ up to the scale representing the cooling capacity (14.5 kW).
- Cooling agent discharge. Prolong the line ⑤ down to cooling agent discharge axis at the bottom of the graphic ⑥ (310 kg/hour).
- Cooling agent pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (24.0 kPa).

BLAUBERG Direct-expansion coolers

OKF 700x400-3

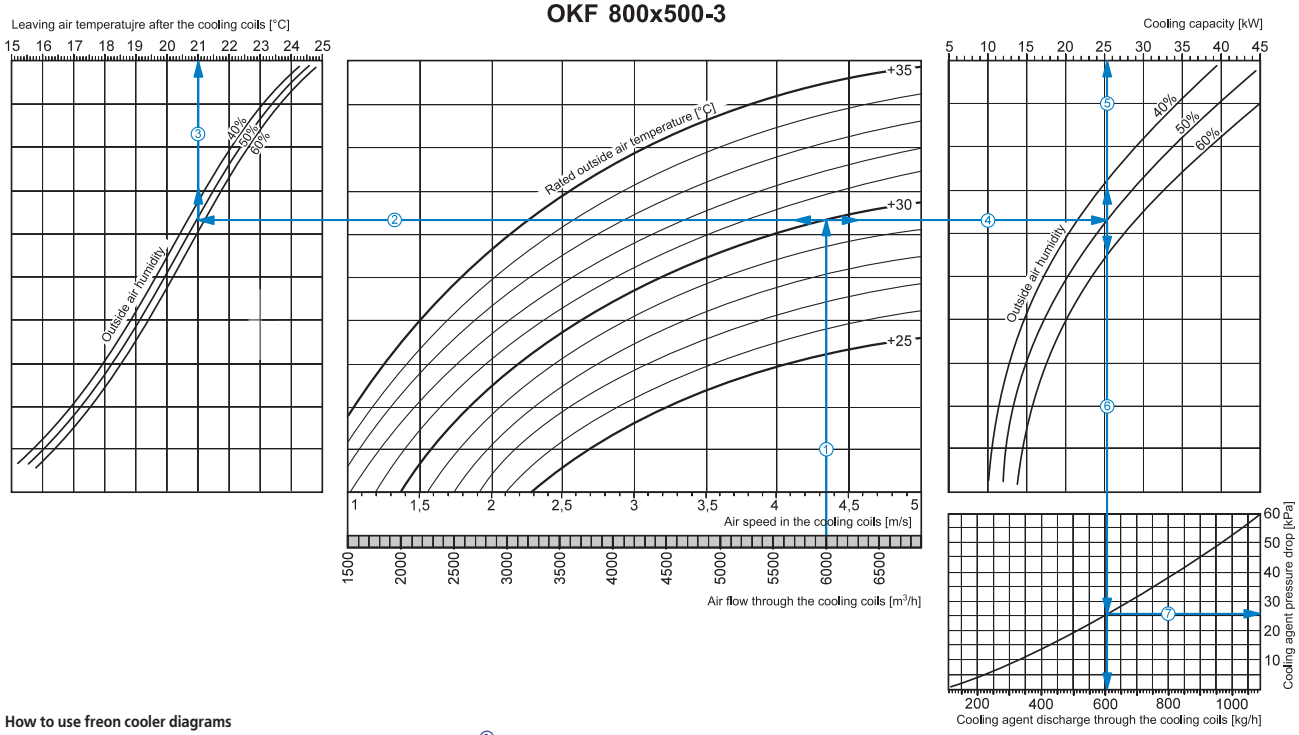


How to use freon cooler diagrams

Air Speed. Starting from 4500 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 4.7 m/s.

- Supply air temperature. prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C); then draw a horizontal line ② from this point to the left till crossing the outside air humidity (e.g. 50%). From this point draw a vertical line ③ to the supply air temperature at cooler outlet axis on top of the graphic (+22.8°C).
- Cooling coil capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C) and draw a horizontal line ④ from this point to the right until it crosses the outside air humidity curve (e.g., 50%), from here draw a vertical line ⑤ up to the scale representing the cooling capacity (17.0 kW).
- Cooling agent discharge. Prolong the line ⑤ down to cooling agent discharge axis at the bottom of the graphic ⑥ (360 kg/hour).
- Cooling agent pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (19.0 kPa).

OKF 800x500-3



How to use freon cooler diagrams

Air Speed. Starting from 6000 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 4.35 m/s.

- Supply air temperature. prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C); then draw a horizontal line ② from this point to the left till crossing the outside air humidity (e.g. 50%). From this point draw a vertical line ③ to the supply air temperature at cooler outlet axis on top of the graphic (+21.0°C).
- Cooling coil capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C) and draw a horizontal line ④ from this point to the right until it crosses the outside air humidity curve (e.g., 50%), from here draw a vertical line ⑤ up to the scale representing the cooling capacity (25.5 kW).
- Cooling agent discharge. Prolong the line ⑤ down to cooling agent discharge axis at the bottom of the graphic ⑥ (605 kg/hour).
- Cooling agent pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (26.0 kPa).

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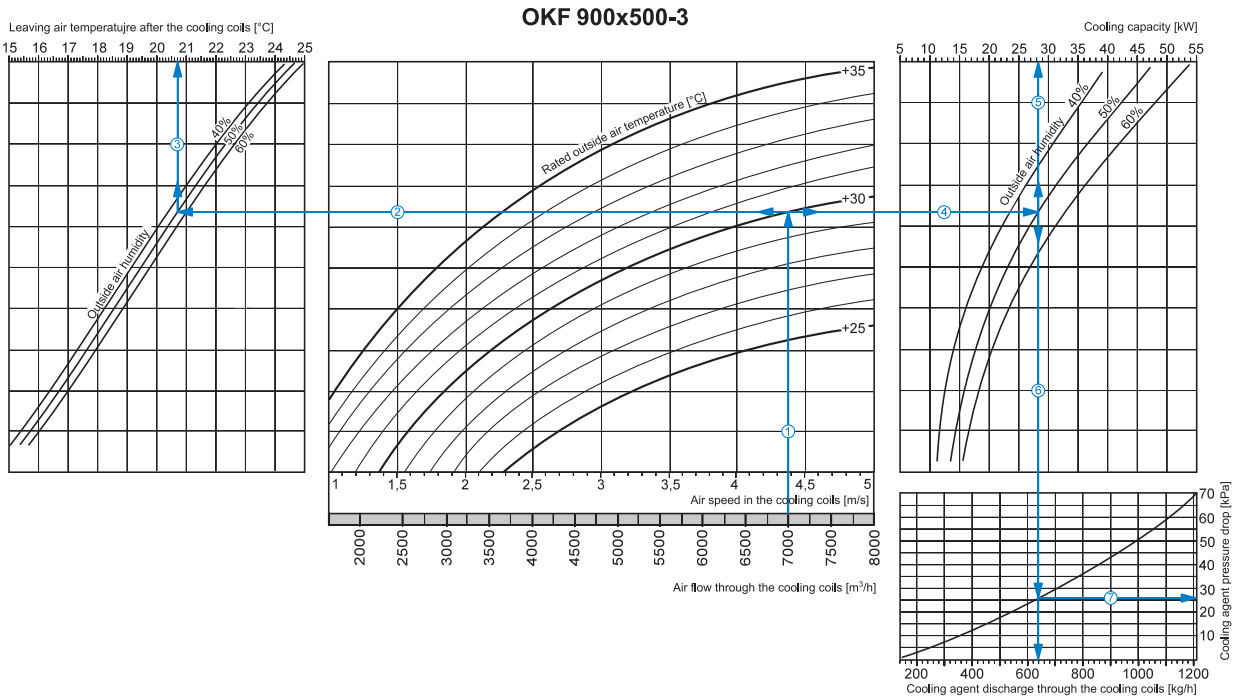
OKF 900x500-3

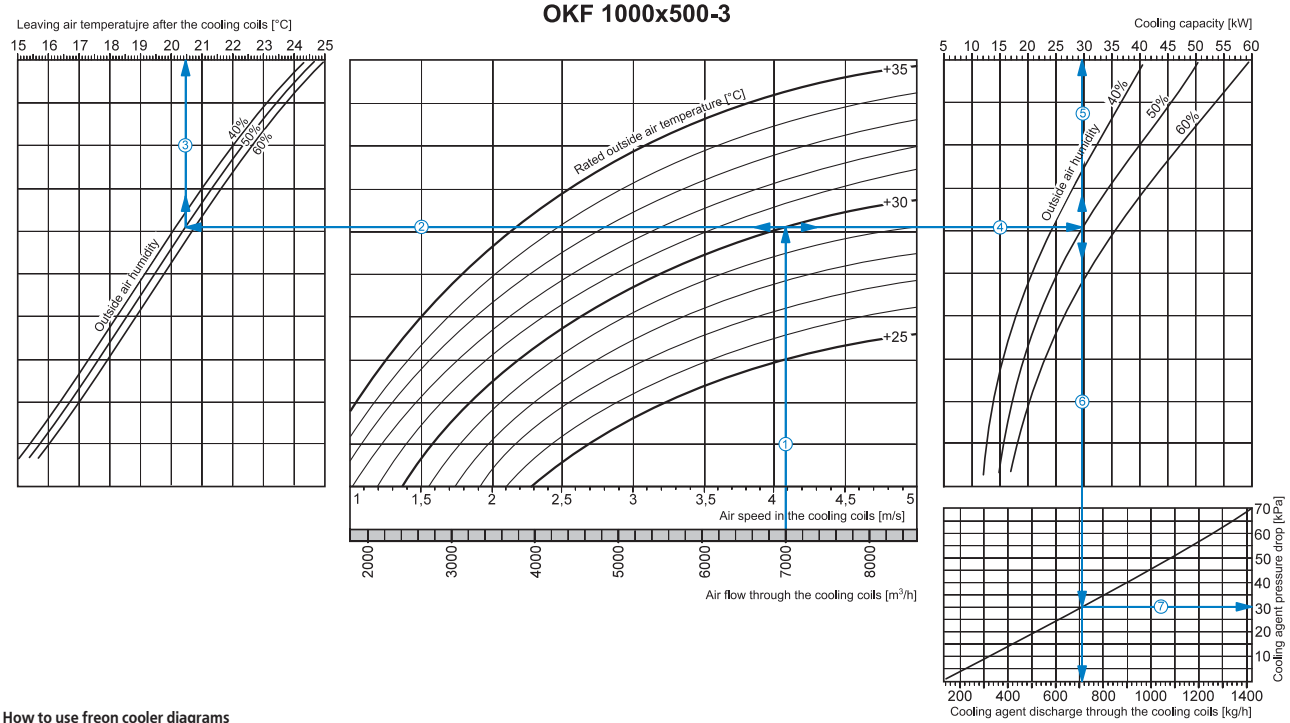


How to use freon cooler diagrams

Air Speed. Starting from 7000 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 4.4 m/s.

- Supply air temperature. prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C); then draw a horizontal line ② from this point to the left till crossing the outside air humidity (e.g. 50%). From this point draw a vertical line ③ to the supply air temperature at cooler outlet axis on top of the graphic (+20.7°C).
- Cooling coil capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C) and draw a horizontal line ④ from this point to the right until it crosses the outside air humidity curve (e.g., 50%), from here draw a vertical line ⑤ up to the scale representing the cooling capacity (28.0 kW).
- Cooling agent discharge. Prolong the line ⑤ down to cooling agent discharge axis at the bottom of the graphic ⑥ (640 kg/hour).
- Cooling agent pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (26.0 kPa).

OKF 1000x500-3



How to use freon cooler diagrams

Air Speed. Starting from 7000 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 4.1 m/s.

- Supply air temperature. prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C); then draw a horizontal line ② from this point to the left till crossing the outside air humidity (e.g. 50%). From this point draw a vertical line ③ to the supply air temperature at cooler outlet axis on top of the graphic (+20.5°C).
- Cooling coil capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +30°C) and draw a horizontal line ④ from this point to the right until it crosses the outside air humidity curve (e.g., 50%), from here draw a vertical line ⑤ up to the scale representing the cooling capacity (30.0 kW).
- Cooling agent discharge. Prolong the line ⑤ down to cooling agent discharge axis at the bottom of the graphic ⑥ (710 kg/hour).
- Cooling agent pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (30.0 kPa).