Duct DX cooling units

KFK

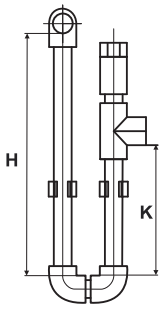
for rectangular air ducts

Use

- Supply air cooling for ventilation systems in various premises.
- Suitable for installation into supply or air handling units to provide air cooling.

Design

- Galvanized steel casing .
- The cooling elements are made of copper tubes and aluminum plates.
- Available in three-coil modifications and rated for operation with R123, R134a, R152a, R404a, R407c, R410a, R507, R12, R22 refrigerants.
- Polypropylene droplet separator and drain pan for condensate drainage and removal included.
- Droplet separator operates efficiently at air flow below 4 m/s.



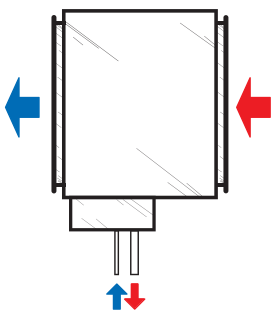
H [mm]	K [mm]	P [Pa]
100	55	600
200	105	1100
260	140	1400

H – U-trap height
K – drainage height
P – total fan pressure

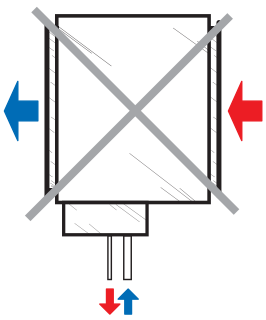
Mounting

- Only horizontal mounting by means of flanged connection. Condensate drainage must be provided.
- Air filter must be installed upstream of the cooling unit to prevent the unit soiling.
- Installation position must ensure uniform air flow distribution through the entire cross section.
- Installation upstream or downstream of the supply fan. The minimum air duct length downstream of the fan must be 1-1.5 m to ensure air flow stabilization.
- The maximum cooling capacity is attained if the cooling unit is connected on counter-flow basis. The attached charts are valid for counter-flow connection.
- While mounting the cooling unit provide condensate drainage through the U-trap. The U-trap height must be selected with respect to the total fan pressure, refer to the table and diagram below.

- For a proper and safe operation of the cooling unit it should be connected to a control system for integral control and automatic cooling capacity regulation.



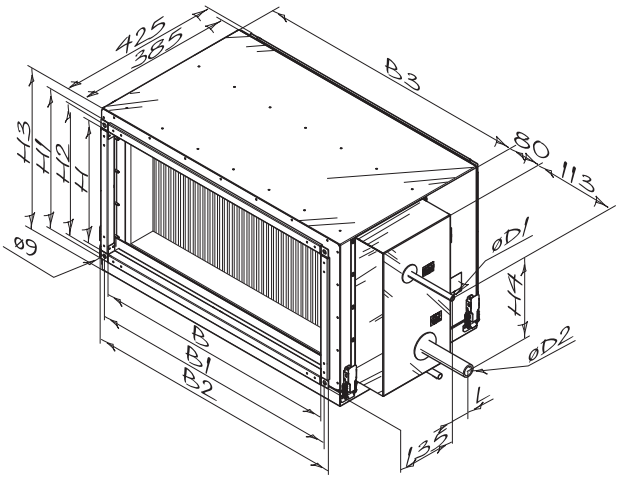
Counter air flow connection



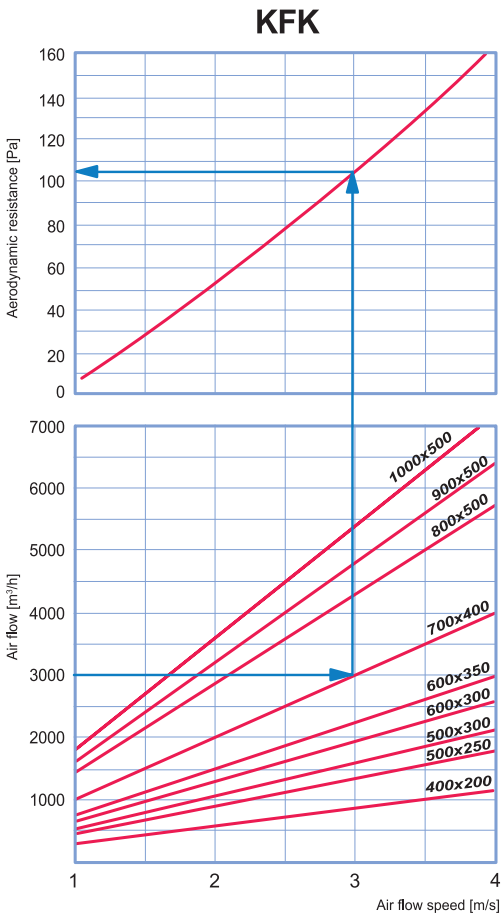
Air flow streamwise connection

Overall dimensions

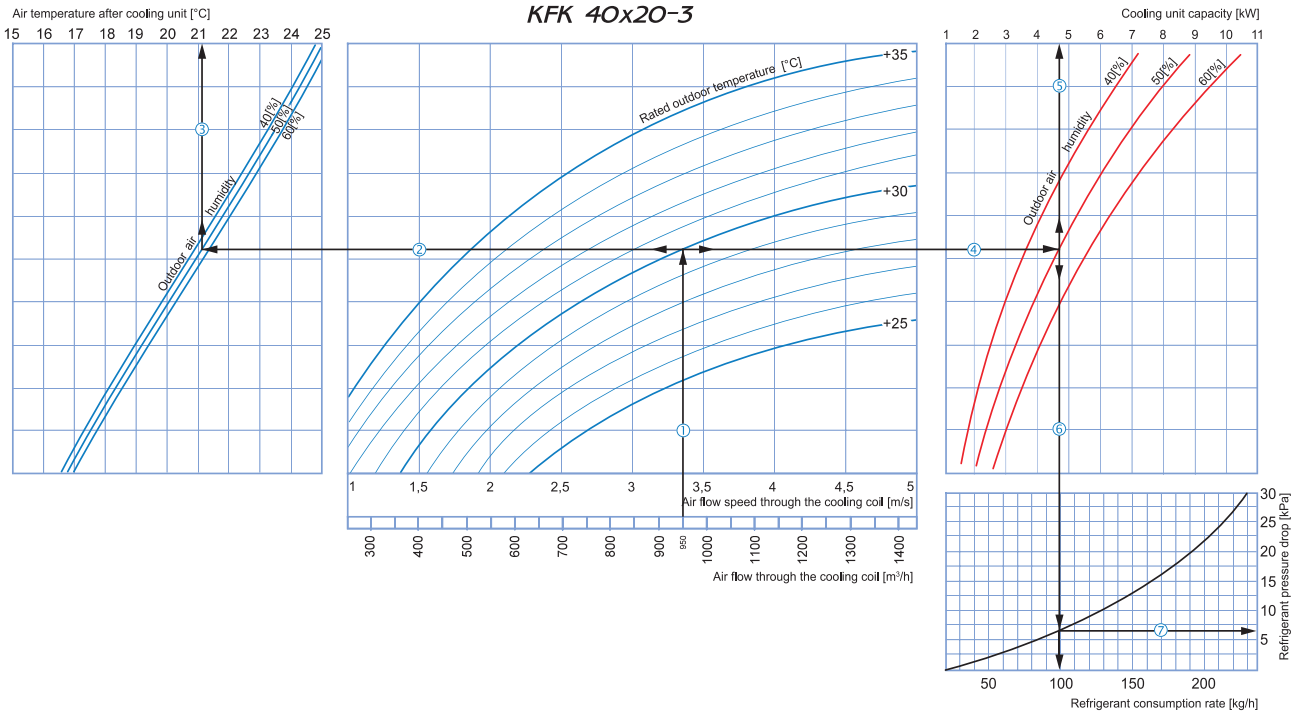
Type	Dimensions [mm]											
	B	B1	B2	B3	H	H1	H2	H3	H4	L	D1	D2
KFK 40x20-3	400	420	440	470	200	220	240	295	103	44	12	22
KFK 50x25-3	500	520	540	570	250	270	290	345	155	44	12	22
KFK 50x30-3	500	520	540	570	300	320	340	395	210	33	12	22
KFK 60x30-3	600	620	640	670	300	320	340	395	199	44	18	28
KFK 60x35-3	600	620	640	670	350	370	390	445	199	44	18	28
KFK 70x40-3	700	720	740	770	400	420	440	495	224	44	22	28
KFK 80x50-3	800	820	840	870	500	520	540	595	340	44	22	28
KFK 90x50-3	900	920	940	970	500	520	540	595	340	44	22	28
KFK 100x50-3	1000	1020	1040	1070	500	520	540	595	325	44	22	28



Air pressure losses in DX cooling coils



Water cooling unit calculation diagram

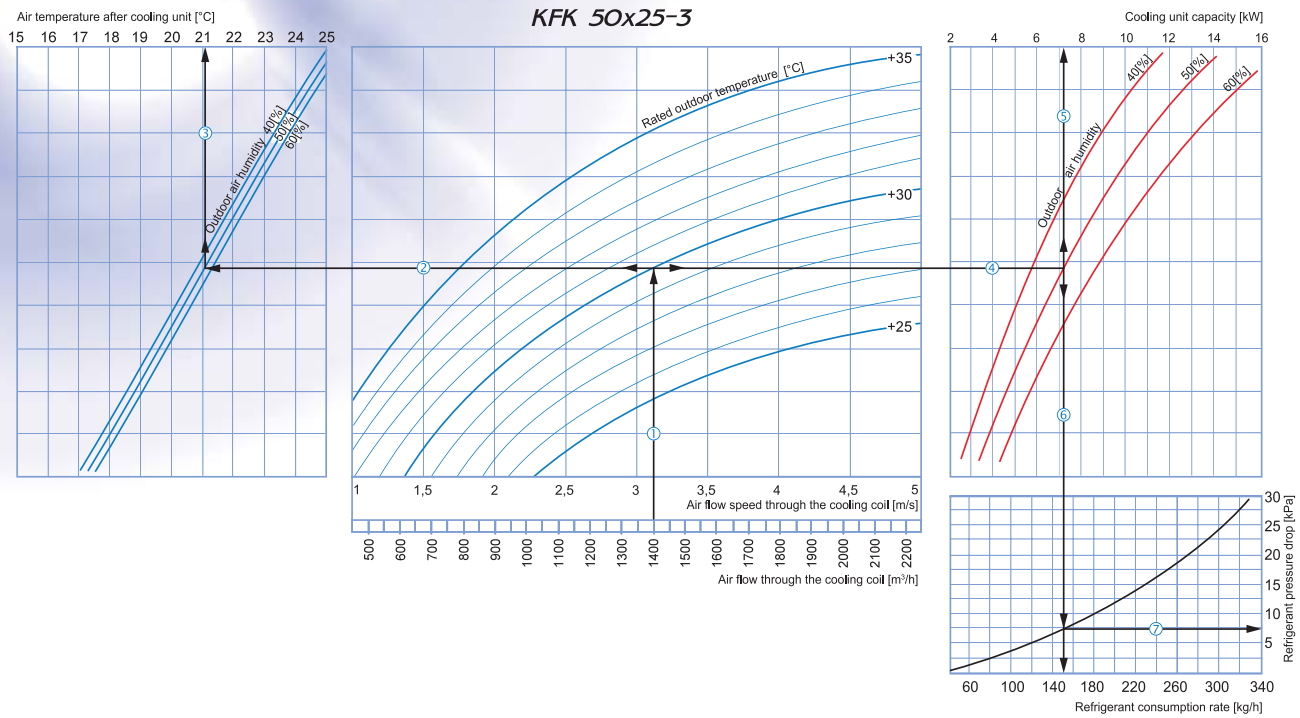


How to use DX cooling coil diagrams:

Sample parameters: Air flow = 950 m³/h, air flow speed through the cooling coil = 3.35 m/s ①.

- **Supply air temperature:** prolong the line of air flow (e.g. 950 m³/h) 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 until it crosses the outdoor air humidity curve (e.g. 50 %). From this point draw a vertical line ③ to the air temperature after cooling unit axis on top of the graphic (+21.1 °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 outdoor air humidity curve (e.g. 50 %). From here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (4.7 kW).
- **Refrigerant consumption through the coil:** Prolong the line ⑤ down to the refrigerant consumption axis ⑥ at the bottom of the graphic (100 kg/h).
- **Refrigerant pressure drop:** Draw the line ⑦ from the point where the line ⑥ crosses the curve to the refrigerant drop axis (6.5 kPa).

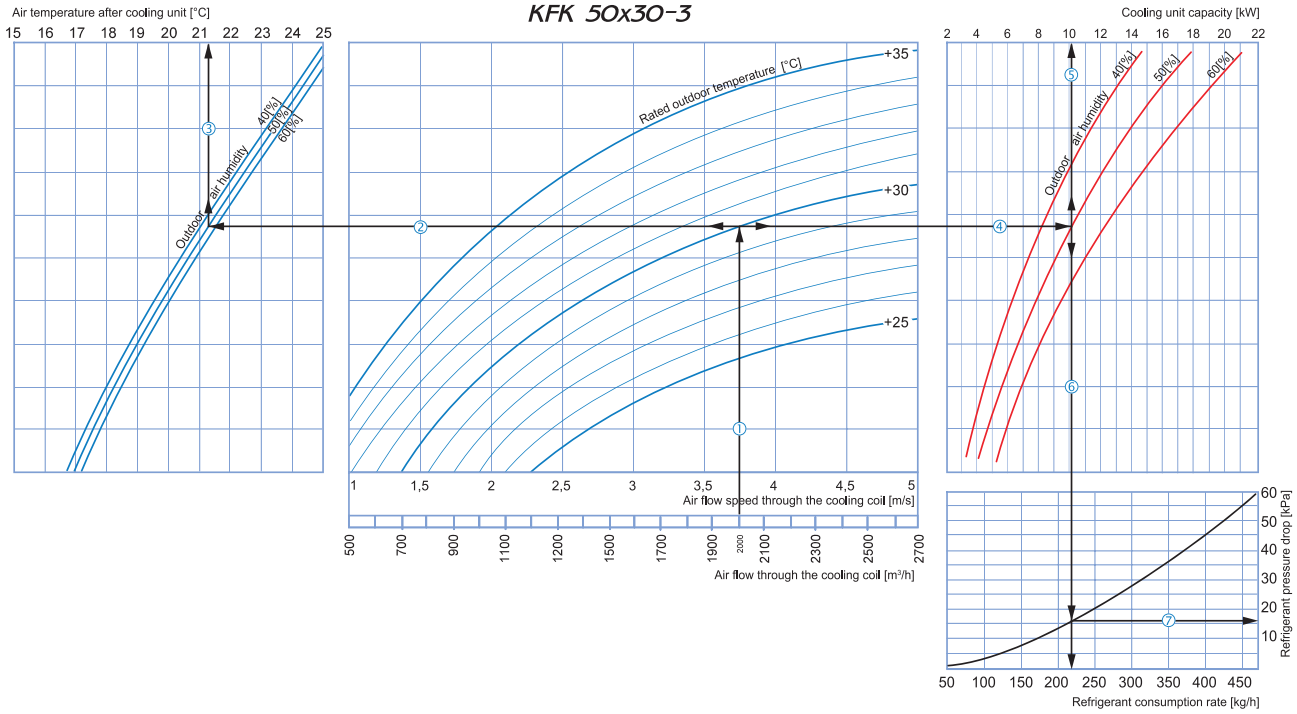
Water cooling unit calculation diagram



How to use DX cooling coil diagrams:

Sample parameters: Air flow = 1400 m³/h, air flow speed through the cooling coil = 3.1 m/s ①.

- **Supply air temperature:** prolong the line of air flow (e.g. 1400 m³/h) 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 until it crosses the outdoor air humidity curve (e.g. 50 %). From this point draw a vertical line ③ to the air temperature after cooling unit axis on top of the graphic (+21.1 °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 outdoor air humidity curve (e.g. 50 %). From here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (7.2 kW).
- **Refrigerant consumption through the coil:** Prolong the line ⑤ down to the refrigerant consumption axis ⑥ at the bottom of the graphic (152 kg/h).
- **Refrigerant pressure drop:** Draw the line ⑦ from the point where the line ⑥ crosses the curve to the refrigerant drop axis (7.5 kPa).

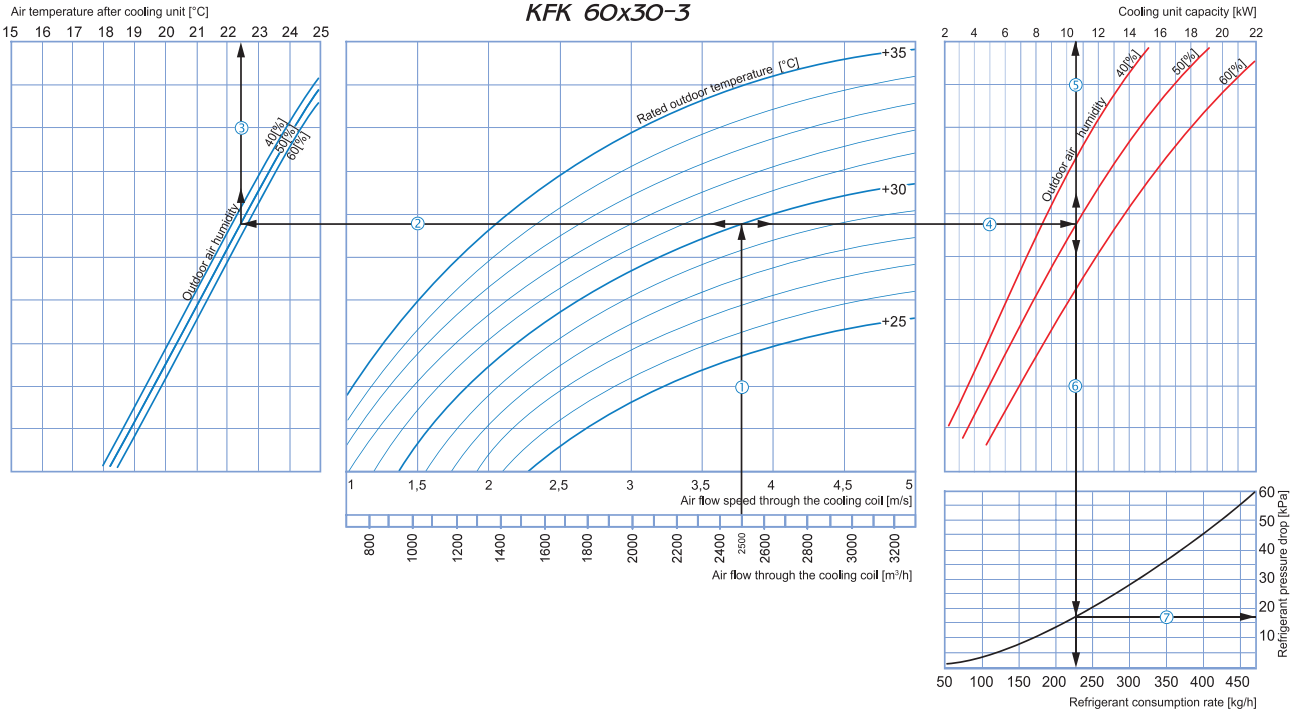


How to use DX cooling coil diagrams:

Sample parameters: Air flow = 2000 m³/h, air flow speed through the cooling coil = 3.75 m/s ①.

- **Supply air temperature:** prolong the line of air flow (e.g. 2000 m³/h) 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 until it crosses the outdoor air humidity curve (e.g. 50 %). From this point draw a vertical line ③ to the air temperature after cooling unit axis on top of the graphic (+21.2 °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 outdoor air humidity curve (e.g. 50 %). From here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (10 kW).
- **Refrigerant consumption through the coil:** Prolong the line ⑤ down to the refrigerant consumption axis ⑥ at the bottom of the graphic (215 kg/h).
- **Refrigerant pressure drop:** Draw the line ⑦ from the point where the line ⑥ crosses the curve to the refrigerant drop axis (16 kPa).

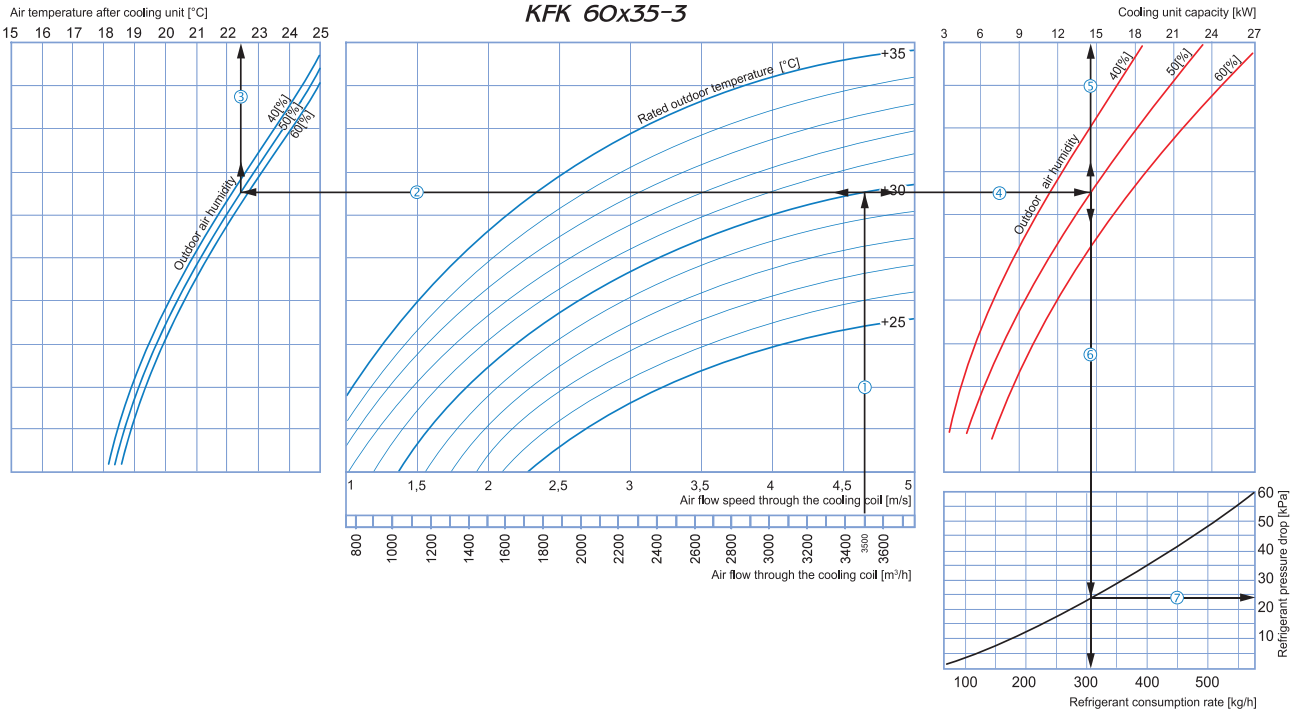
Water cooling unit calculation diagram



How to use DX cooling coil diagrams:

Sample parameters: Air flow = 2500 m³/h, air flow speed through the cooling coil = 3.75 m/s ①.

- **Supply air temperature:** prolong the line of air flow (e.g. 2500 m³/h) 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 until it crosses the outdoor air humidity curve (e.g. 50 %). From this point draw a vertical line ③ to the air temperature after cooling unit 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 outdoor air humidity curve (e.g. 50 %). From here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (10.5 kW).
- **Refrigerant consumption through the coil:** Prolong the line ⑤ down to the refrigerant consumption axis ⑥ at the bottom of the graphic (225 kg/h).
- **Refrigerant pressure drop:** Draw the line ⑦ from the point where the line ⑥ crosses the curve to the refrigerant drop axis (17 kPa).

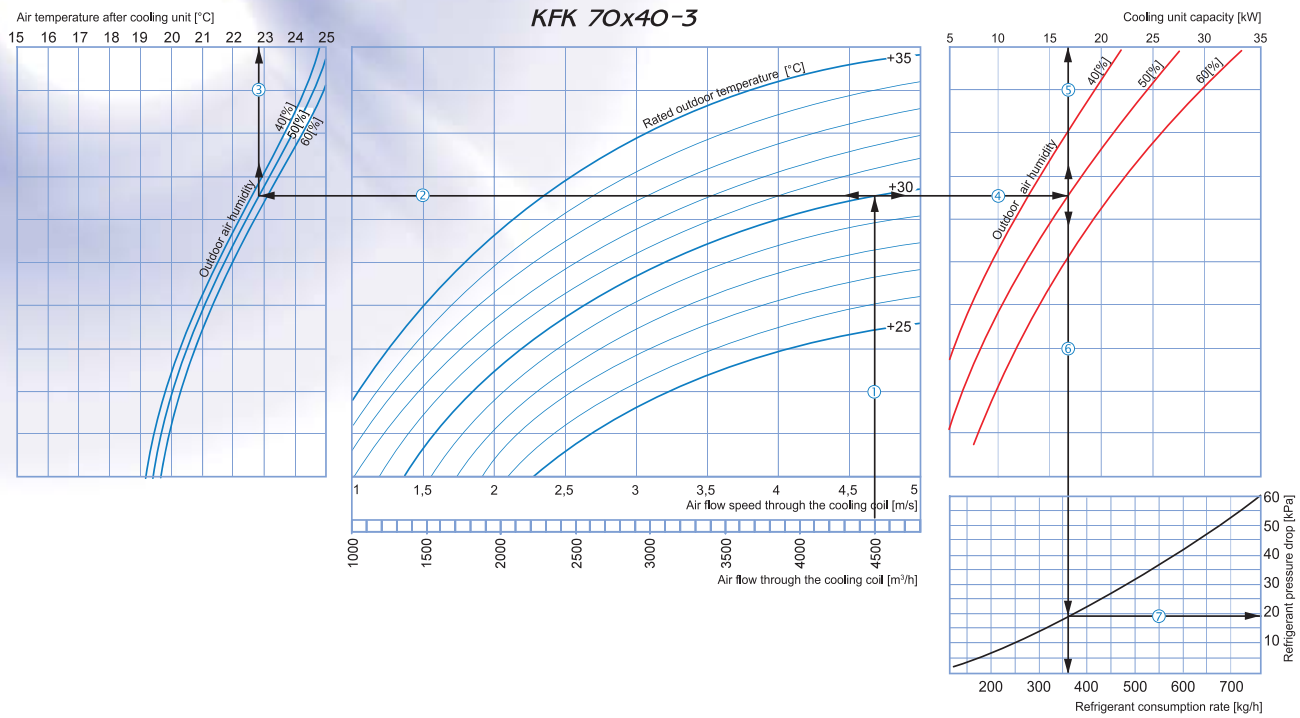


How to use DX cooling coil diagrams:

Sample parameters: Air flow = 3500 m³/h, air flow speed through the cooling coil = 4.65 m/s ①.

- **Supply air temperature:** prolong the line of air flow (e.g. 3500 m³/h) 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 until it crosses the outdoor air humidity curve (e.g. 50 %). From this point draw a vertical line ③ to the air temperature after cooling unit 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 outdoor air humidity curve (e.g. 50 %). From here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (14.5 kW).
- **Refrigerant consumption through the coil:** Prolong the line ⑤ down to the refrigerant consumption axis ⑥ at the bottom of the graphic (310 kg/h).
- **Refrigerant pressure drop:** Draw the line ⑦ from the point where the line ⑥ crosses the curve to the refrigerant drop axis (24 kPa).

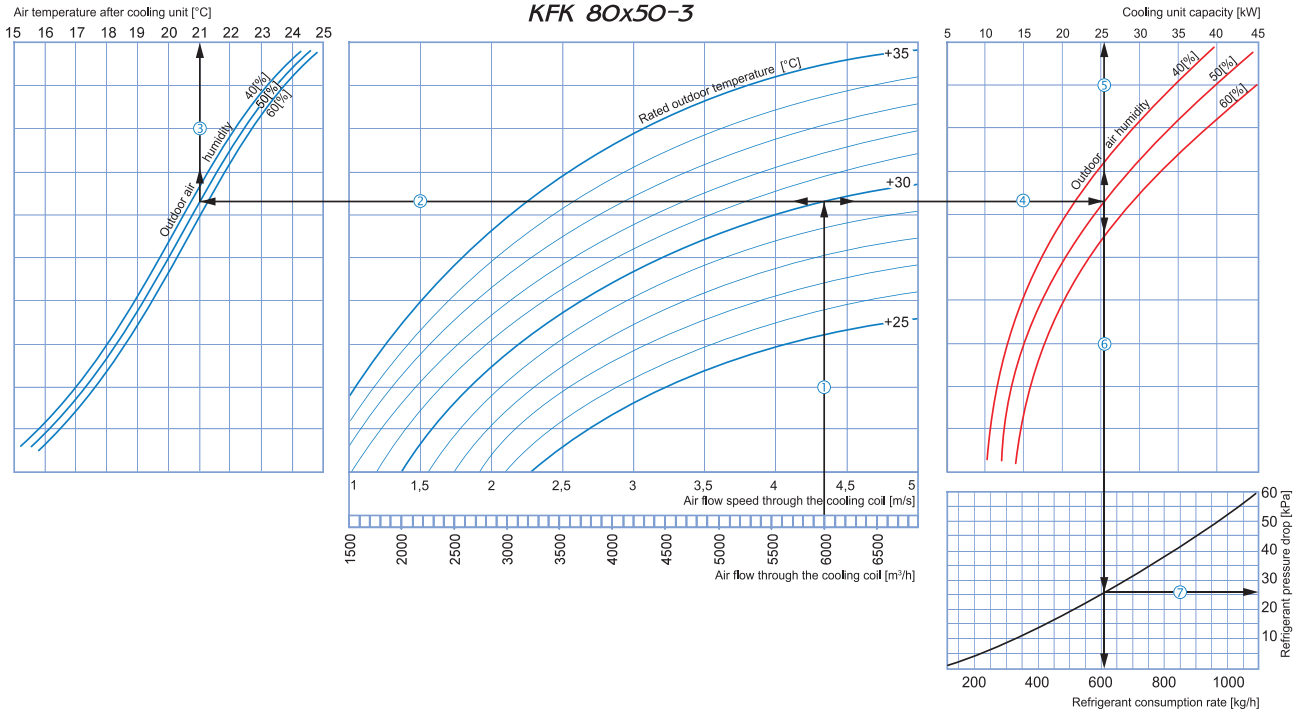
Water cooling unit calculation diagram



How to use DX cooling coil diagrams:

Sample parameters: Air flow = 4500 m³/h, air flow speed through the cooling coil = 4.7 m/s ①.

- **Supply air temperature:** prolong the line of air flow (e.g. 4500 m³/h) 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 until it crosses the outdoor air humidity curve (e.g. 50 %). From this point draw a vertical line ③ to the air temperature after cooling unit 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 outdoor air humidity curve (e.g. 50 %). From here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (17 kW).
- **Refrigerant consumption through the coil:** Prolong the line ⑤ down to the refrigerant consumption axis ⑥ at the bottom of the graphic (360 kg/h).
- **Refrigerant pressure drop:** Draw the line ⑦ from the point where the line ⑥ crosses the curve to the refrigerant drop axis (19 kPa).

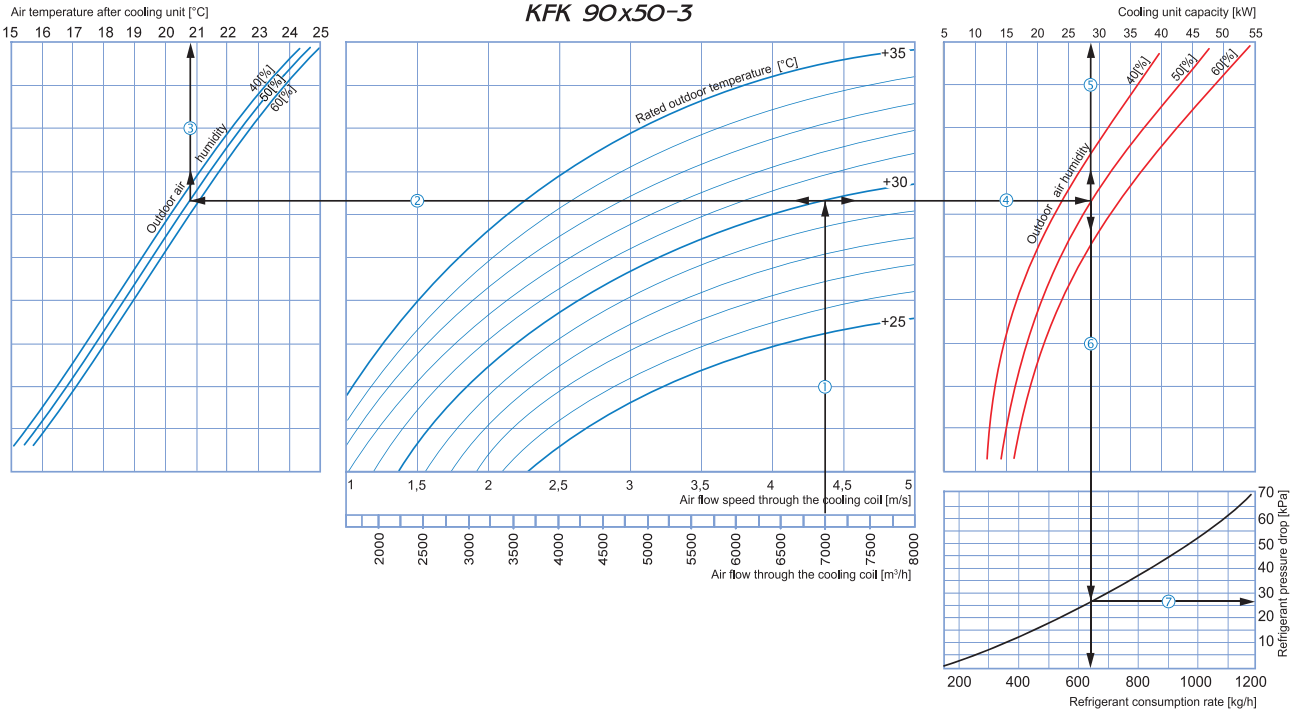


How to use DX cooling coil diagrams:

Sample parameters: Air flow = 6000 m³/h, air flow speed through the cooling coil = 4.35 m/s ①.

- **Supply air temperature:** prolong the line of air flow (e.g. 6000 m³/h) 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 until it crosses the outdoor air humidity curve (e.g. 50 %). From this point draw a vertical line ③ to the air temperature after cooling unit 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 outdoor air humidity curve (e.g. 50 %). From here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (25.5 kW).
- **Refrigerant consumption through the coil:** Prolong the line ⑤ down to the refrigerant consumption axis ⑥ at the bottom of the graphic (605 kg/h).
- **Refrigerant pressure drop:** Draw the line ⑦ from the point where the line ⑥ crosses the curve to the refrigerant drop axis (26 kPa).

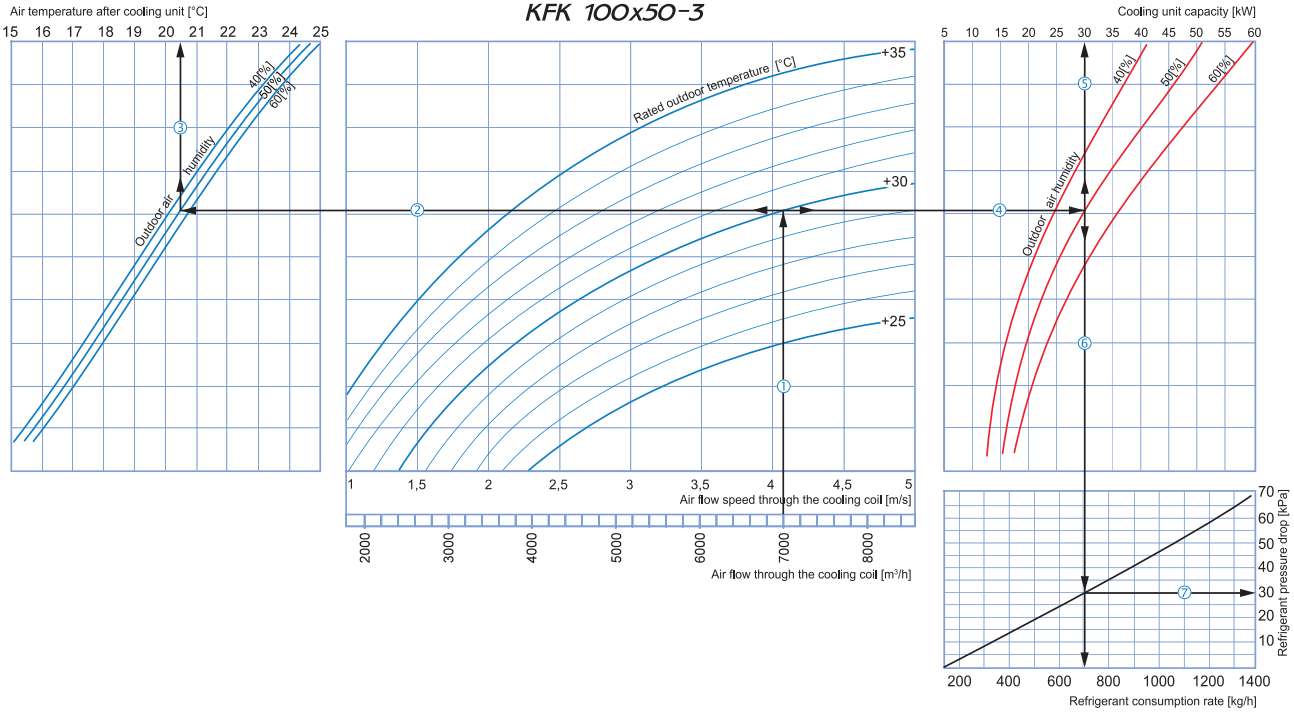
Water cooling unit calculation diagram



How to use DX cooling coil diagrams:

Sample parameters: Air flow = 7000 m³/h, air flow speed through the cooling coil = 4.4 m/s ①.

- **Supply air temperature:** prolong the line of air flow (e.g. 7000 m³/h) 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 until it crosses the outdoor air humidity curve (e.g. 50 %). From this point draw a vertical line ③ to the air temperature after cooling unit 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 outdoor air humidity curve (e.g. 50 %). From here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (28 kW).
- **Refrigerant consumption through the coil:** Prolong the line ⑤ down to the refrigerant consumption axis ⑥ at the bottom of the graphic (640 kg/h).
- **Refrigerant pressure drop:** Draw the line ⑦ from the point where the line ⑥ crosses the curve to the refrigerant drop axis (26 kPa).



How to use DX cooling coil diagrams:

Sample parameters: Air flow = 7000 m³/h, air flow speed through the cooling coil = 4.1 m/s ①.

- **Supply air temperature:** prolong the line of air flow (e.g. 7000 m³/h) 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 until it crosses the outdoor air humidity curve (e.g. 50 %). From this point draw a vertical line ③ to the air temperature after cooling unit 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 outdoor air humidity curve (e.g. 50 %). From here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (30 kW).
- **Refrigerant consumption through the coil:** Prolong the line ⑤ down to the refrigerant consumption axis ⑥ at the bottom of the graphic (710 kg/h).
- **Refrigerant pressure drop:** Draw the line ⑦ from the point where the line ⑥ crosses the curve to the refrigerant drop axis (30 kPa).