Series
OKW

Series
OKW1

Applications

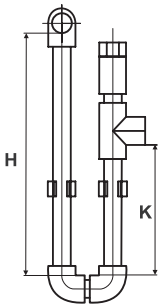
Duct water coil air coolers are designed for cooling of supply air in rectangular ventilation systems and can be applied in supply or supply and exhaust ventilation systems.

Design

The water coolers are available in OKW and OKW1 mofications. The OKW1 cooler has a simplified design.
The cooler casing is made of galvanized steel, the manifold is made of copper tubes and the heat exchange surface is made of aluminium plates. The cooling coils are available in 3 rows modification and designed for the maximum operating pressure 1.5 MPa (15 bar). It is equipped with a droplet separator and a drain pan for condensate collection and removal.
For OKW and OKW1 models by default the service side is located on the right side from the air stream direction. The OKW cooler service side location can be changed by coil turning by 180°. The OKW1 modification does not have this option.

Mounting

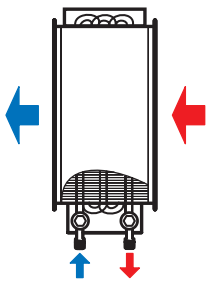
- Mounting is effected by means of flange connection. The water cooling coils can be installed only horizontally to enable the unit deaeration and condensate draining.
- The installation shall be performed in such a way as to enable the uniform air distribution along the entire cross section.
- The air filter shall be installed at the cooler inlet to protect the cooler against dirt and dusting.
- The cooler can be installed both at the fan inlet or outlet. If the cooling coils are located at the fan outlet the air duct between the cooler and the fan shall have the lehgth 1 to 1.5 m to ensure the air flow stabilization.
- To attain the maximum cooling capacity the cooler must be connected on counter-flow basis. All the nomographic charts in the catalogue are valid for such connection.
- If water serves as a cooling agent, the coolers are suitable for indoor installation only in the premises with the indoor temperature not below 0 °C. For outdoor installation use an antifreeze mixture, i.e.ethylene glycol solution.
- The droplet separator is made of polypropylene profile and prevents condensate dripping from the cooling tubes by the cooling air flow. While selecting a cooler type consider that the most suitable speed of the air flow for the efficient droplet separator operation is up to 4 m/s.
- Condensate drain from the cooler shall be performed through the U-trap. The U-trap height depends on the total pressure in the fan and can be calculated using the figures and the table below.



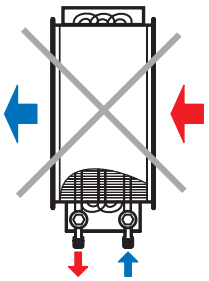
H [mm]	K [mm]	P [Pa]
100	55	600
200	105	1100
260	140	1400

H – U-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.



Counter flow connection



Parallel flow connection

Designation key

Series	Flange dimensions (WxH) [mm]	-	Number of cooling coils
OKW/OKW1	400x200; 500x250; 500x300; 600x300; 600x350; 700x400; 800x500; 900x500; 1000x500		3

Accessories

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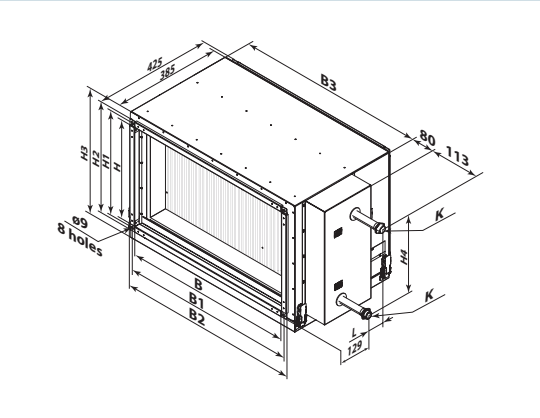
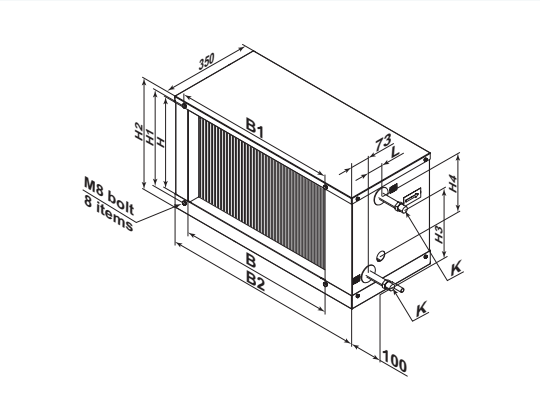
Overall dimensions

Type	Dimensions [mm]										
	B	B1	B2	B3	H	H1	H2	H3	H4	L	K (inch)
OKW 400x200-3	400	420	440	470	200	220	240	295	124	56	G 3/4″
OKW 500x250-3	500	520	540	570	250	270	290	345	188	45	G 3/4″
OKW 500x300-3	500	520	540	570	300	320	340	395	252	56	G 3/4″
OKW 600x300-3	600	620	640	670	300	320	340	395	252	56	G 3/4″
OKW 600x350-3	600	620	640	670	350	370	390	445	268	56	G 3/4″
OKW 700x400-3	700	720	740	770	400	420	440	495	314	56	G 3/4″
OKW 800x500-3	800	820	840	870	500	520	540	595	442	56	G 3/4″
OKW 900x500-3	900	920	940	970	500	520	540	595	442	56	G 3/4″
OKW 1000x500-3	1000	1020	1040	1070	500	520	540	595	442	56	G 1″



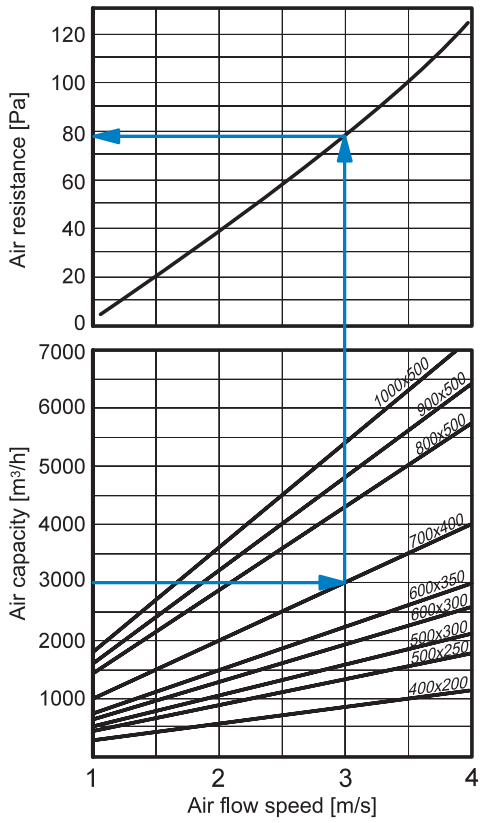
Overall dimensions

Type	Dimensions [mm]									
	B	B1	B2	H	H1	H2	H3	H4	L	K (inch)
OKW1 400x200-3	400	420	580	200	220	270	124	70	56	G 3/4"
OKW1 500x250-3	500	520	680	250	270	320	188	102	45	G 3/4"
OKW1 500x300-3	500	520	680	300	320	370	252	70	56	G 3/4"
OKW1 600x300-3	600	620	780	300	320	370	252	134	56	G 3/4"
OKW1 600x350-3	600	620	780	350	370	420	268	229	56	G 3/4"
OKW1 700x400-3	700	720	880	400	420	470	314	196	56	G 3/4"
OKW1 800x500-3	800	820	980	500	520	570	442	324	56	G 3/4"
OKW1 900x500-3	900	920	1080	500	520	570	442	324	56	G 3/4"
OKW1 1000x500-3	1000	1020	1180	500	520	570	442	324	56	G 1"



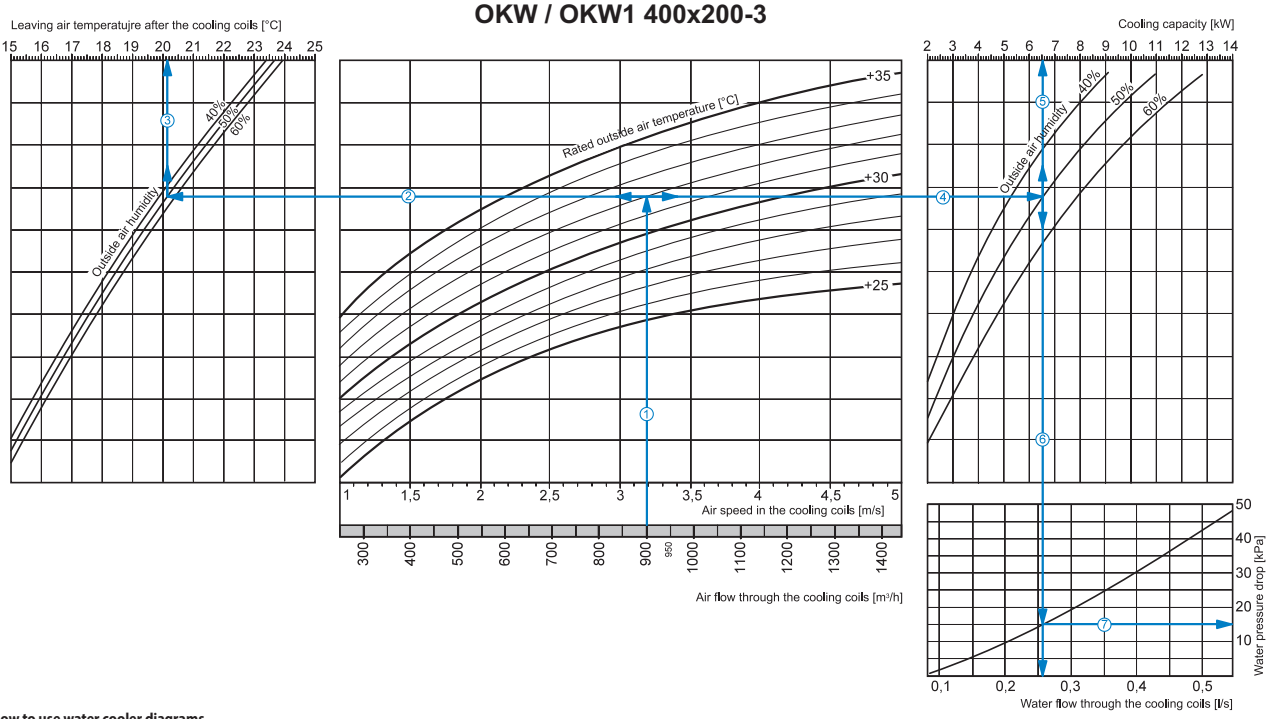
Air pressure loss in water coolers

Rectangular OKW / OKW1 series



OKW/OKW1

OKW / OKW1 400x200-3



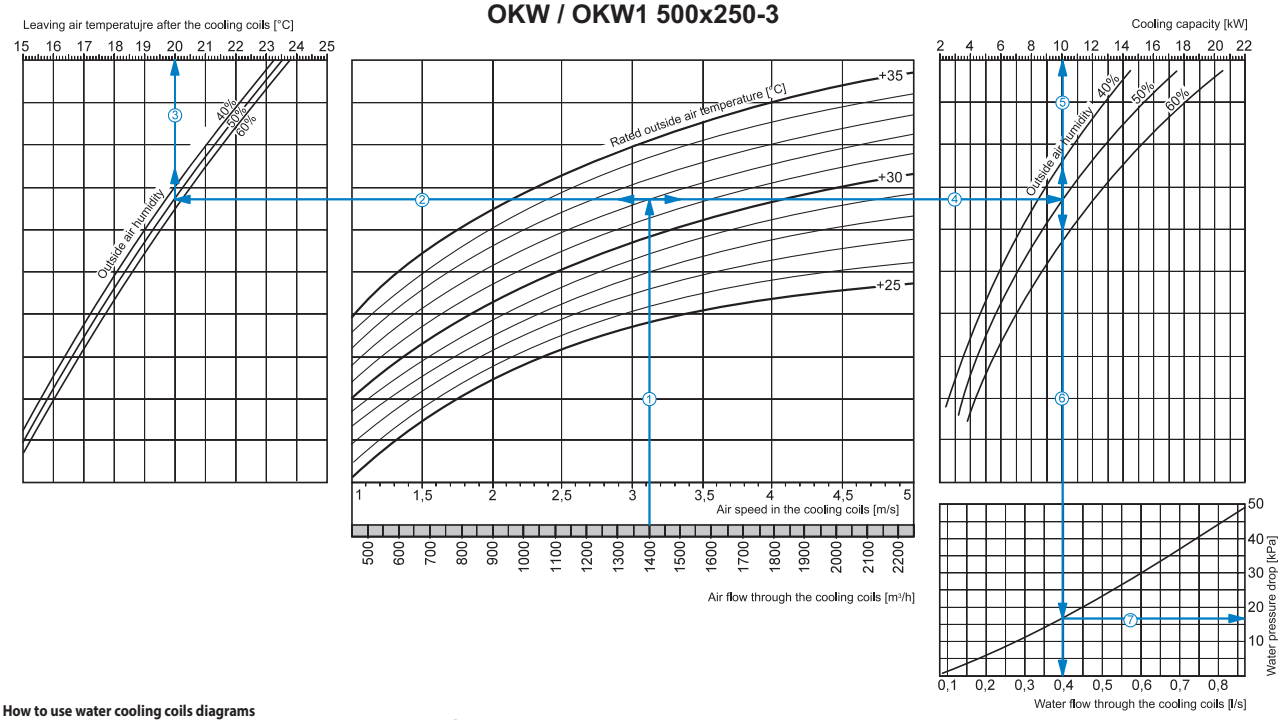
How to use water cooler diagrams

Air Speed. Starting from 900 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 3.2 m/s.

- Supply air temperature. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 (+20.1 °C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 cooler capacity (6.5 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.26 l/s).
- Water pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (15.0 kPa).

OKW/OKW1

OKW / OKW1 500x250-3



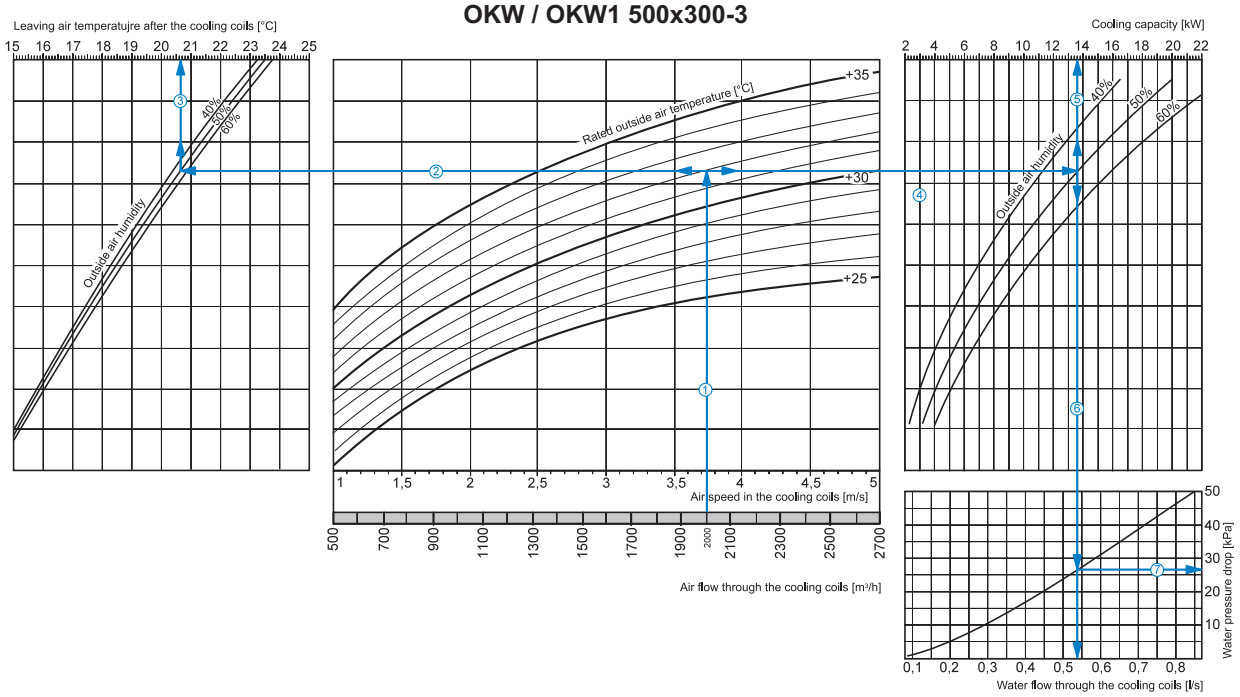
How to use water cooling coils diagrams

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. +32 °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 °C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 (10.0 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.4 l/s).
- Water 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).

OKW/OKW1

OKW / OKW1 500x300-3



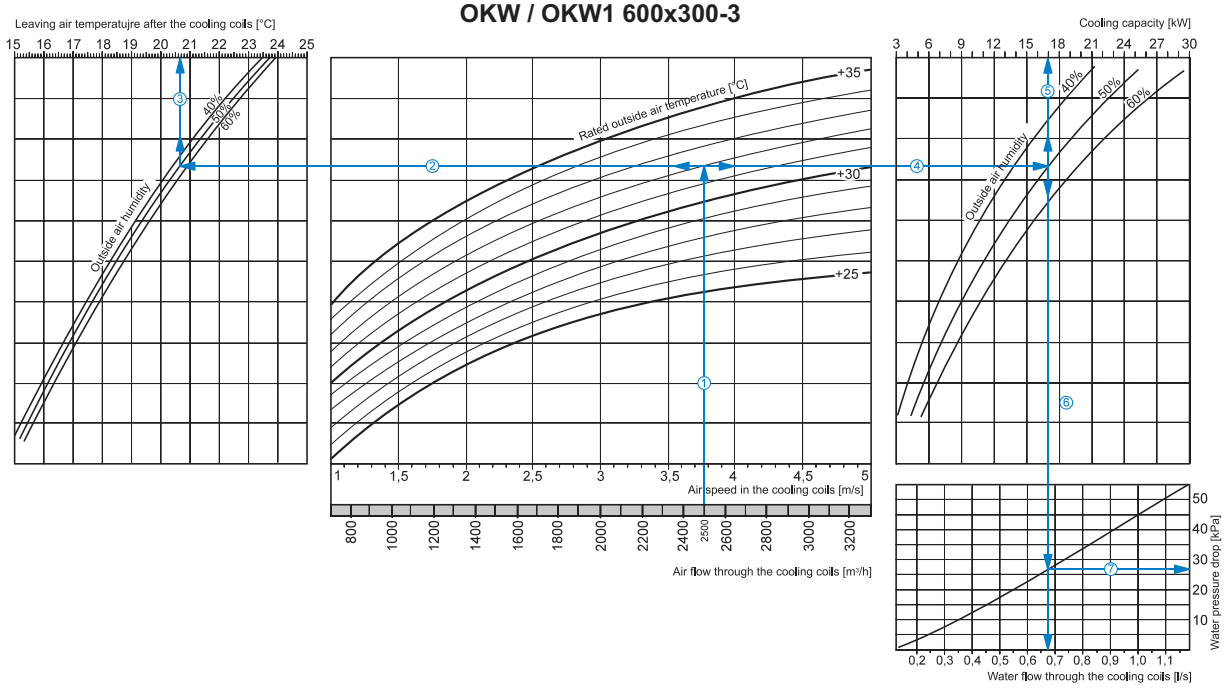
How to use water cooler diagrams

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. +32 °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 (+20.6 °C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 (13.6 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.54 l/s).
- Water pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (27.0 kPa).

OKW/OKW1

OKW / OKW1 600x300-3



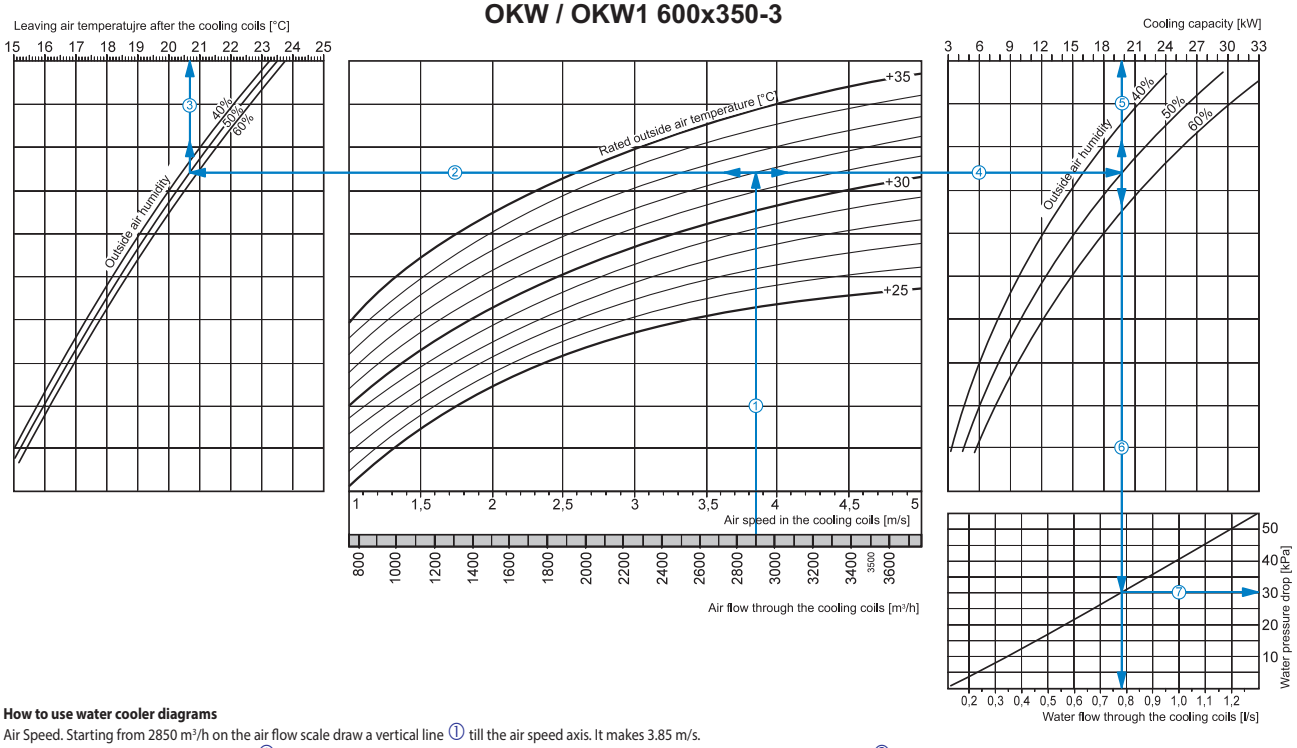
How to use water cooler diagrams

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. +32 °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 capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.68 l/s).
- Water pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (27.0 kPa).

OKW/OKW1

OKW / OKW1 600x350-3



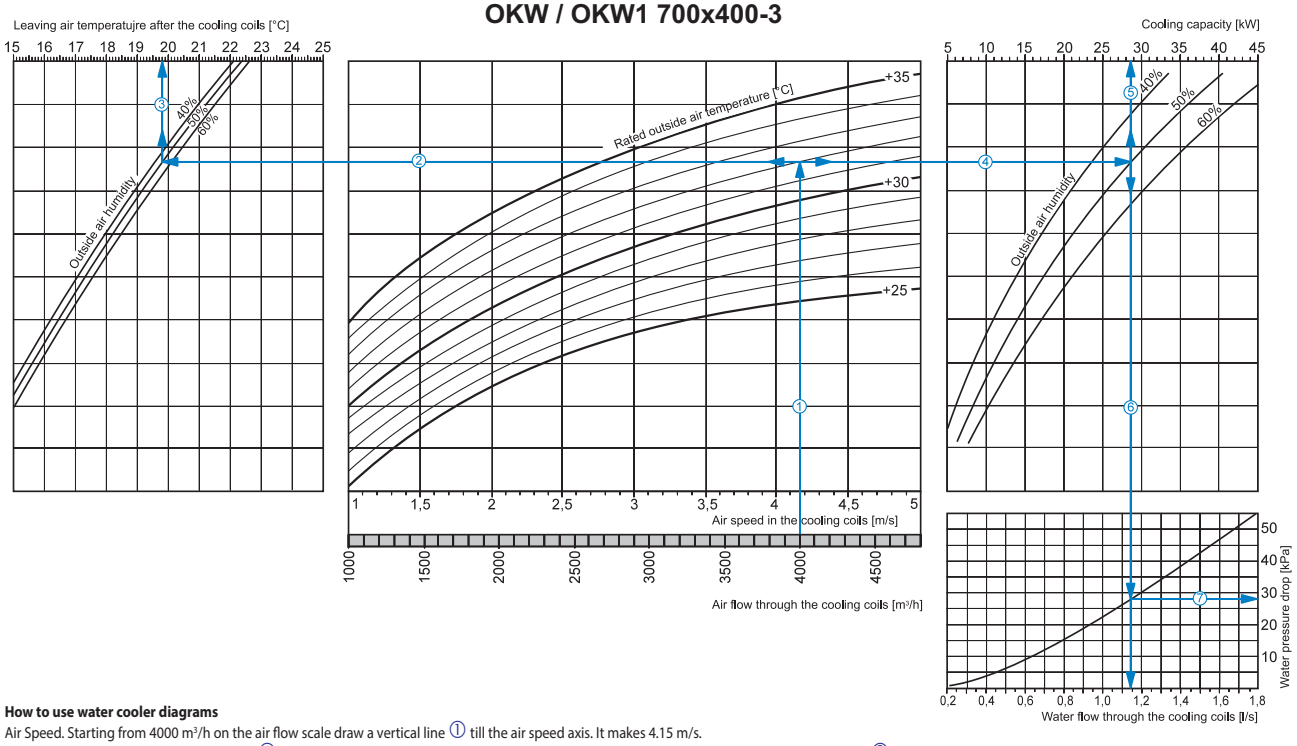
How to use water cooler diagrams

Air Speed. Starting from 2850 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 3.85 m/s.

- Supply air temperature. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 (19.8 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.78 l/s).
- Water 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).

OKW/OKW1

OKW / OKW1 700x400-3



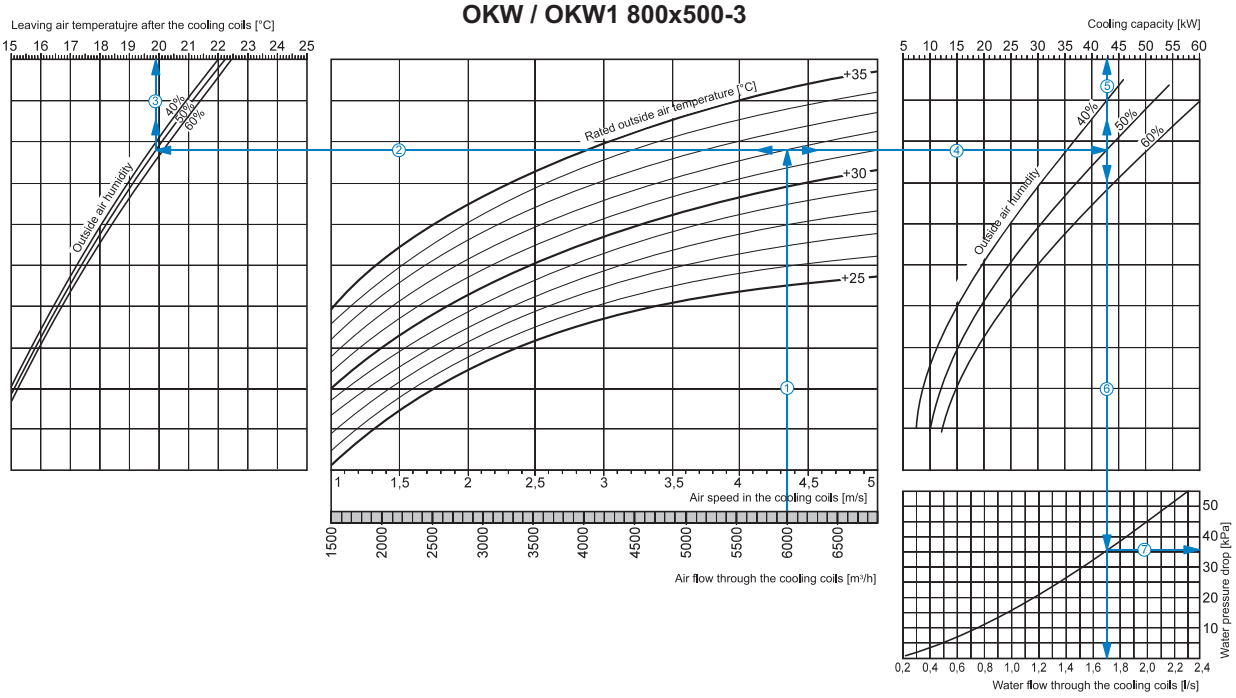
How to use water cooler diagrams

Air Speed. Starting from 4000 m³/h on the air flow scale draw a vertical line ① till the air speed axis. It makes 4.15 m/s.

- Supply air temperature. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 (+19.8 °C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 (28.5 kW).
- water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (1.14 l/s).
- Water pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (28.0 kPa).

OKW/OKW1

OKW / OKW1 800x500-3



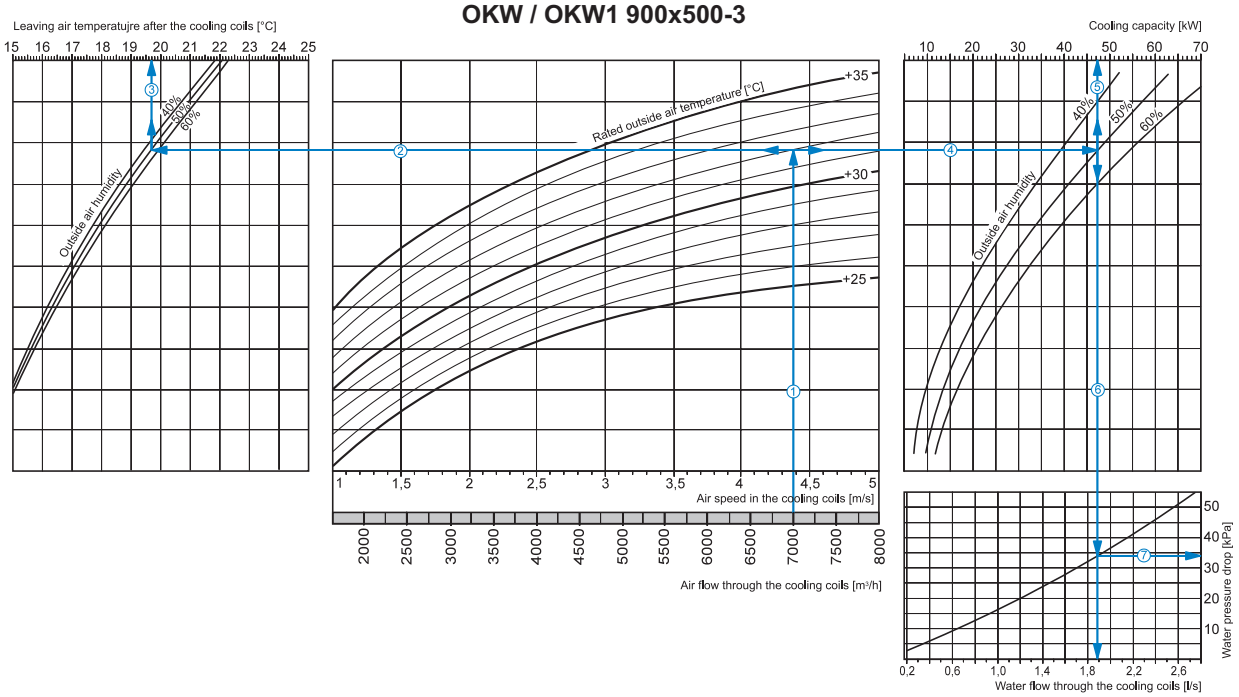
How to use water cooler diagrams

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. +32 °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 (+19.9 °C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 (43 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (1.7 l/s).
- Water pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (36.0 kPa).

OKW/OKW1

OKW / OKW1 900x500-3

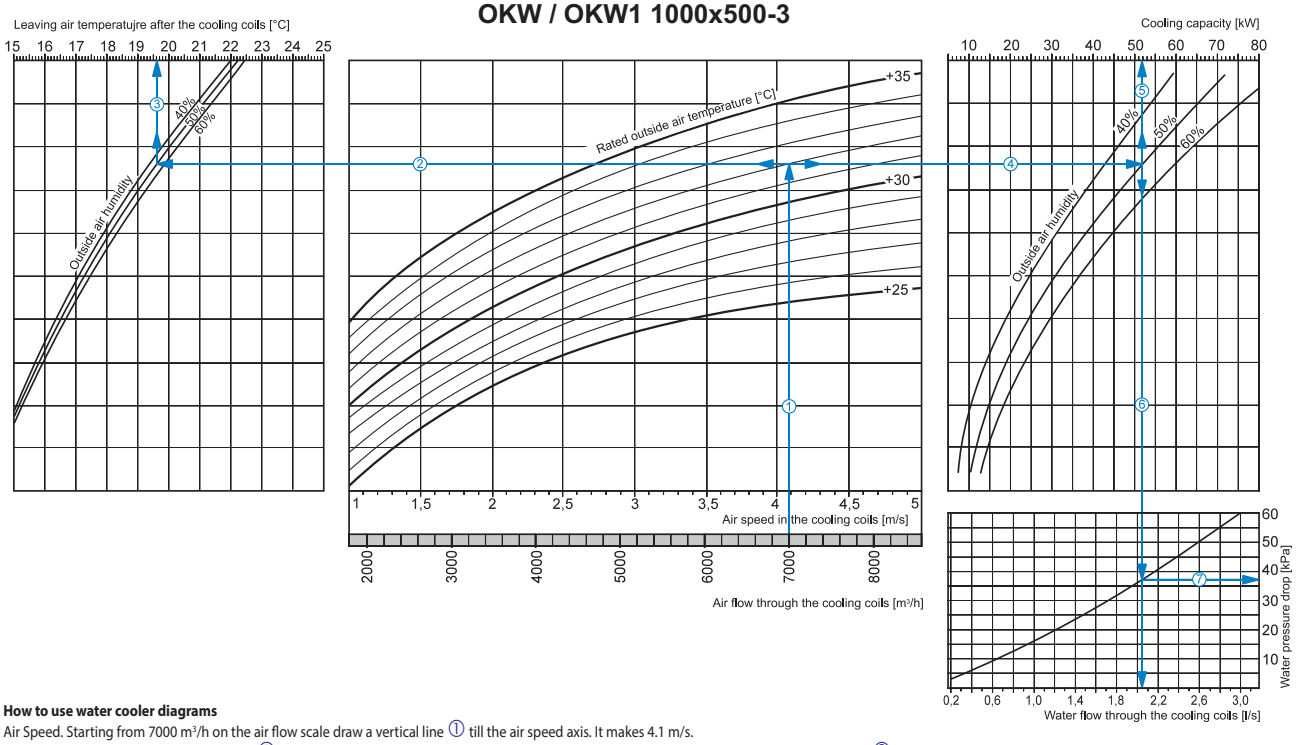


How to use water cooler diagrams

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. +32 °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 (+19.7 °C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 (47.0 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (1.9 l/s).
- Water pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (34.0 kPa).

OKW / OKW1 1000x500-3



How to use water 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. +32 °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 (+19.6 °C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the outside air temperature (e.g. +32 °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 (52.0 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (2.05 l/s).
- Water pressure drop. Draw the line ⑦ from the point where the line ⑥ crosses the black curve to the pressure drop axis. (37.0 kPa).