Suspended heat recovery air handling units

KOMFORT EC DW

Air capacity – up to 3800 m³/h
Heat recovery efficiency – up to 90 %

Application

- Air handling units for efficient supply and exhaust ventilation in flats, houses, cottages and other buildings.
- Heat recovery minimises ventilation heat losses.
- Provide controllable air exchange to create the best suitable indoor microclimate.
- Compatible with round Ø200 to 400 mm round air ducts.

Design

The casing is made of double-skinned aluzinc panels, internally filled with 20 or 25 mm mineral wool layer for heat and sound insulation.

The casing has fixing brackets with vibration absorbing connectors for easy installation.

The spigots for connection to the air ducts are located at the side of the unit and are rubber sealed for airtight connection to the air ducts.

The service panel ensures easy access to the internals for cleaning, filter replacement and other maintenance operations.

Fans

High-efficient external rotor EC motors and centrifugal impellers with backward curved blades are used for air supply and exhaust.

EC motors have the best power consumption to air capacity ratio and meet the latest demands concerning energy saving and high-efficient ventilation.

EC motors are featured with high performance, low noise level and totally controllable speed range.

Dynamically balanced impellers.

Heat recovery

The **KOMFORT EC DW600/1000** models are equipped with a high-efficient counter-flow polystyrene heat exchangers with a large surface area.

The **KOMFORT EC DW2000/3800** models are equipped with a high-efficient cross-flow aluminium heat exchangers with a large surface area.

The air flows are fully separated within the heat exchanger. Odours and contaminants contained in the extract air are not transferred to the supply air flow.

Heat recovery is based on utilization of heat energy contained in the extract air stream for heating up of supply air stream. Extract air transfers most of its heat to the intake air flow. Heat recovery reduces heat energy losses in cold seasons. In summer the heat exchanger performs reverse and intake air is cooled in the heat exchanger by the cool extract air. This contributes to better performance of the air conditioner in ventilated premises.

The electronic frost protection system based on bypass and heater is used to prevent the heat exchanger freezing in cold seasons. The bypass damper is opened and the heater is turned on automatically according to the feedback from the temperature sensor. Cold intake air passes by the heat exchanger and is warmed up to set temperature in the heat exchanger. Synchronously extract air that passes by the heat exchanger is used for its defrosting. After a freezing danger is over the bypass damper is closed, the heater is turned off. The unit reverts to the normal operation mode.

The drain pan under the heat exchanger block is used for condensate collection and drainage.

Air heater

The unit is equipped with a water (glycol) heater for operation at low outside air temperature.

The integrated water heater is activated to warm up supply air flow if set indoor air temperature may not be reached by means of heat recovery only.

Smooth water heater power control ensures automatic supply air temperature maintaining.

The air temperature sensor downstream of the waterheating coils and the return water temperature sensor are used for freezing protection of the water heater.

Air filtration

KOMFORT EC DW600/1000: the built-in G4 (optionally F7) pocket supply filter and G4 cassette extract filter provide efficient air filtration.

KOMFORT EC DW2000/3800: the built-in G4 supply and extract cassette filters provide efficient air filtration.

Control and automation

The unit incorporates an integrated control system with a wall-mounted control panel and a sensor display.

The standard delivery set includes a 10 m cable for connection of the unit and the control panel.

Automation functions:

- Activating/deactivating the unit.
- Setting required speed for the supply and extract fan for the unit air flow control. Each speed is individually adjusted during set-up.
- Set supply air temperature maintaining by means of the circulating pump and heat medium regulating valve control.
- Water heater freezing protection on feedback from the temperature sensor downstream of the water heating coils and the return water temperature sensor.
- Pre-heating cycle prior to the heater start and maintaining set return

water temperature during the fan shutoff.
• Opening/closing the bypass damper for summer ventilation.
• Setting and maintaining room or duct air temperature.
• Timer activation/deactivation and set-up.
• Setting day- and week-scheduled operation of the unit.
• Operation control on feedback from **FS1** duct humidity sensor (to be ordered separately) or on the humidity sensor in the control panel.
• Filter clogging control.
• System shutdown on signal from the fire alarm panel.
• Controlling supply and exhaust air dampers (to be ordered separately).
• Cooler control (to be ordered separately).

Mounting

❑ Mounting to the ceiling with fixing brackets.
❑ The correct mounted unit must provide free condensate collection and drainage as well as good access for servicing and filter replacement.
❑ Access for maintenance:
• **KOMFORT EC DW600/1000** – on the right or left panel side;
• **KOMFORT EC DW2000/3800** – on the bottom.

Overall dimensions

Model	Dimensions [mm]										Figure №
	ØD	B	B1	B2	B3	B4	H	H1	L	L1	
KOMFORT EC DW600-2	199	827	711	–	294	345	283	120	1238	1286	1
KOMFORT EC DW1000-4	249	1350	1215	607.5	430	655	317	143	1346	1395	1
KOMFORT EC DW2000-2	314	1050	915	457.5	247	575	750	375	1360	1408	2
KOMFORT EC DW3800-2	399	1265	1130	565	297	632.5	830	415	1595	1643	2

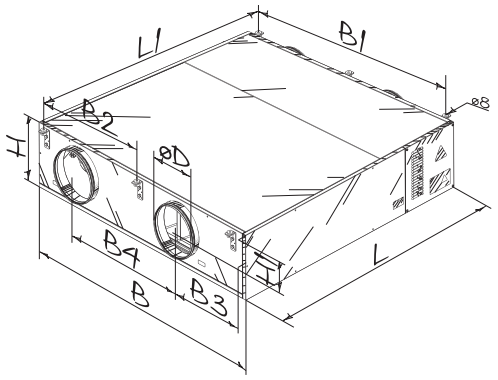


Fig.1

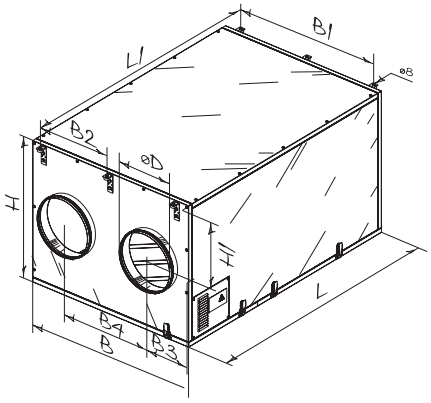


Fig.2

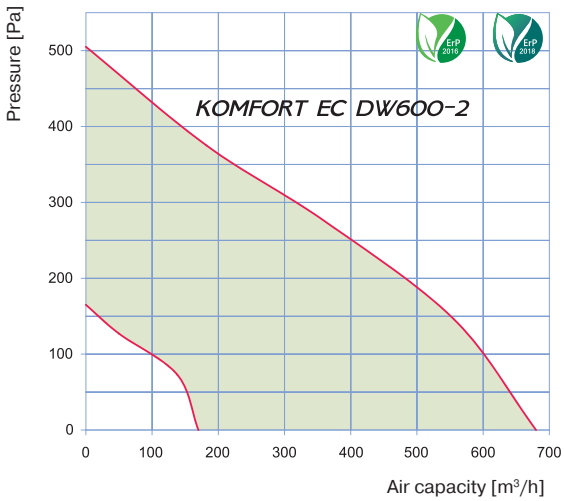
Accessories

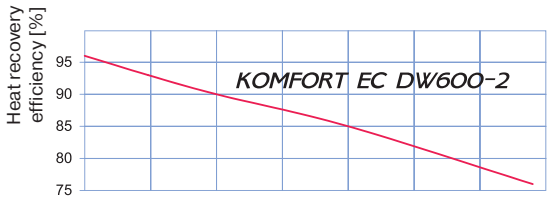
Model	Replaceable filter G4 (pocket)	Replaceable filter F7 (pocket)	Replaceable filter G4 (cassette)	Replaceable filter G4 (cassette)	Duct humidity sensor
KOMFORT EC DW600-2	FPT-EC DW600 G4	FPT-EC DW600 F7	-	FP-EC DW600 G4	FS1 
KOMFORT EC DW1000-4	FPT-EC DW1000 G4	FPT-EC DW1000 F7	-	FP-EC DW1000 G4	
KOMFORT EC DW2000-2	-	-	FP-EC DW2000 G4		
KOMFORT EC DW3800-2	-	-	FP-EC DW3800 G4		

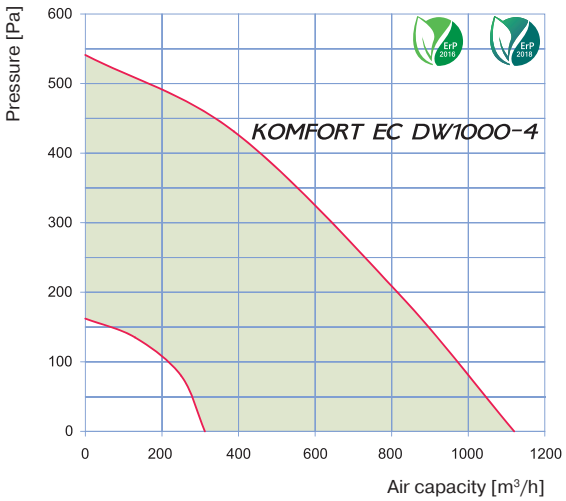
Technical data

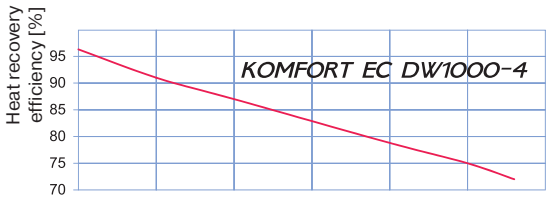
Parameters	KOMFORT EC DW600-2	KOMFORT EC DW1000-4	KOMFORT EC DW2000-2	KOMFORT EC DW3800-2
Voltage [V / 50-60 Hz]	1 ~ 230			3 ~ 400
Number of water (glycol) coil rows	2	4	2	
Power [kW]	0.27	0.4	0.84	1.99
Current [A]	1.6	2.26	5	3.4
Maximum air capacity [m³/h]	600	1000	1950	3800
RPM	3060	2780	2920	2580
Sound pressure level at 3 m [dBA]	53	52	58	59
Transported air temperature [°C]	-25 up to +60		-25 up to +40	-25 up to +50
Casing material	aluzinc			
Insulation	20 mm mineral wool		25 mm mineral wool	
Extract filter	cassette G4			
Supply filter	pocket G4 (F7)*		cassette G4	
Connected air duct diameter [mm]	200	250	315	400
Weight [kg]	77	98	194	295
Heat recovery efficiency [%]**	up to 90		up to 75	
Heat exchanger type	counter-flow		cross-flow	
SEC class***	A	-	-	-
Heat exchanger material	aluminum			

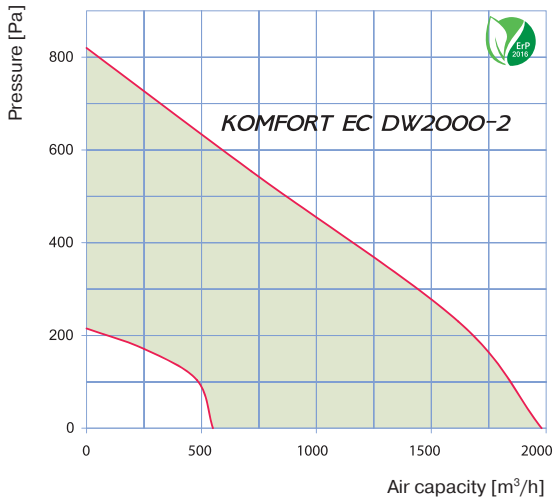
*Option.
** Heat recovery efficiency is specified in compliance with the EN308 EU norms.
*** The EC norm 1254/2014 does not apply if maximum air capacity is >1000 m³/h

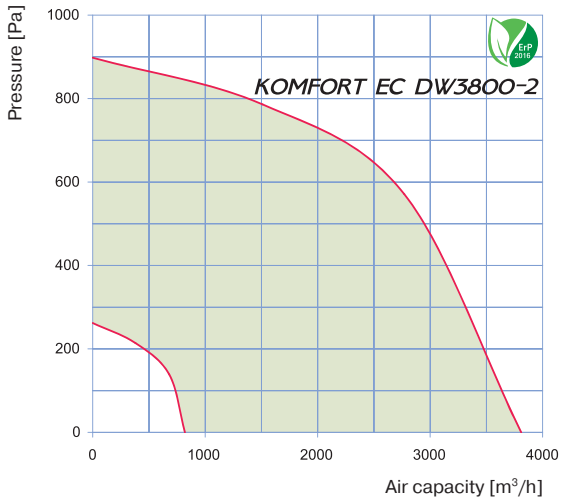


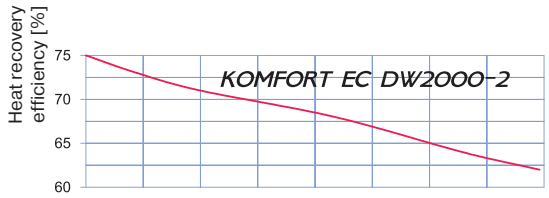


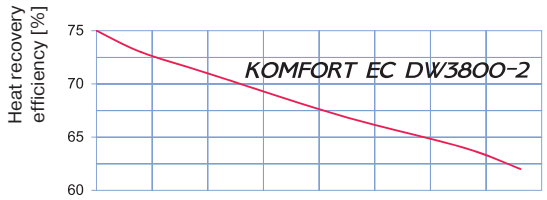




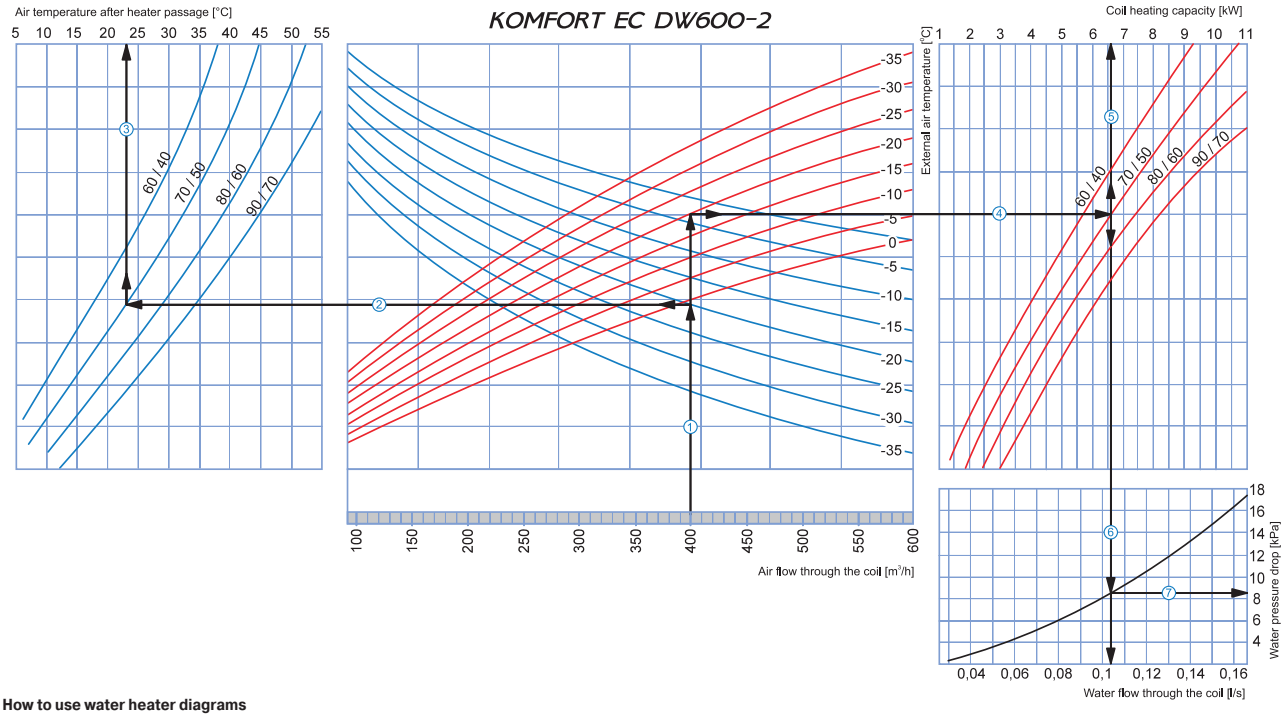








Hot water coil calculation diagram

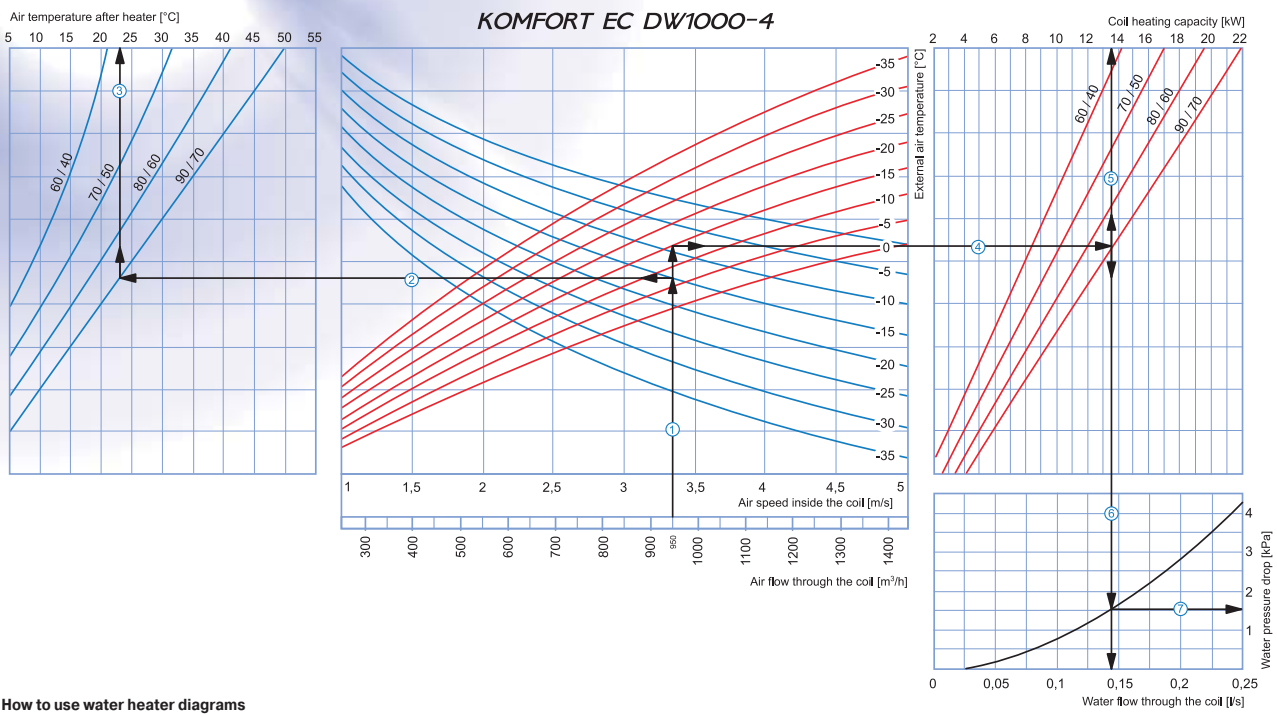


How to use water heater diagrams

Sample parameters: Air flow = 400 m³/h. Outside air temperature =-20°C. Water temperature (in/out) = 70/50 °C.

- **Supply air temperature:** prolong the line of air flow (e.g. 400 m³/h) ① up to the point where it crosses the outside air temperature (blue curve, e.g. -20°C); then draw a horizontal line ② from this point to the left until it crosses the water in/out temperature curve (e.g. 70/50 °C). From this point draw a vertical line ③ to the supply air temperature axis on top of the graphic (+23°C).
- **Heating coil capacity:** Prolong the line ① up to the point where it crosses the outside air temperature (e.g. -20°C, red curve) and draw a horizontal line ④ from this point to the right until it crosses the water in/out temperature curve (e.g., 70/50 °C). From here draw a vertical line ⑤ up to the scale representing the heating coil capacity (6.6 kW).
- **Water flow:** Prolong the line ⑤ down to the water flow axis ⑥ at the bottom of the graphic (0.105 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 (8.5 kPa).

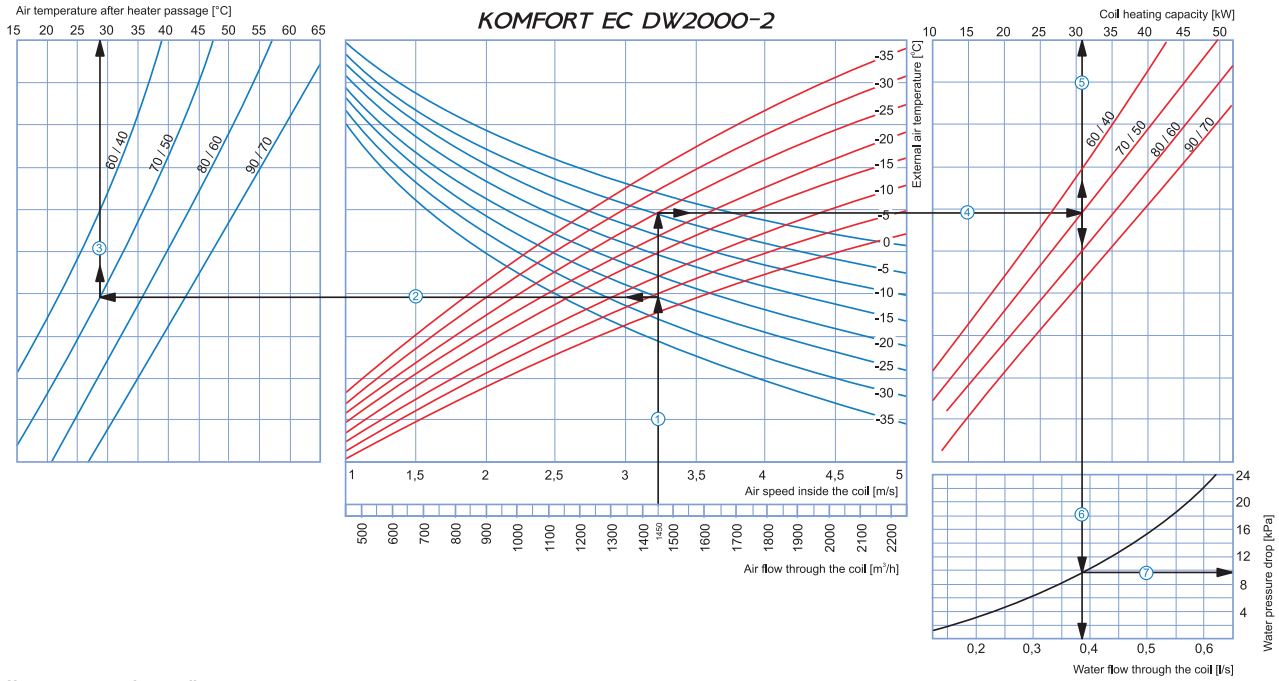
Hot water coil calculation diagram



How to use water heater diagrams

Sample parameters: Air flow = 950 m³/h. Outside air temperature =-15°C. Water temperature (in/out) = 90/70 °C.

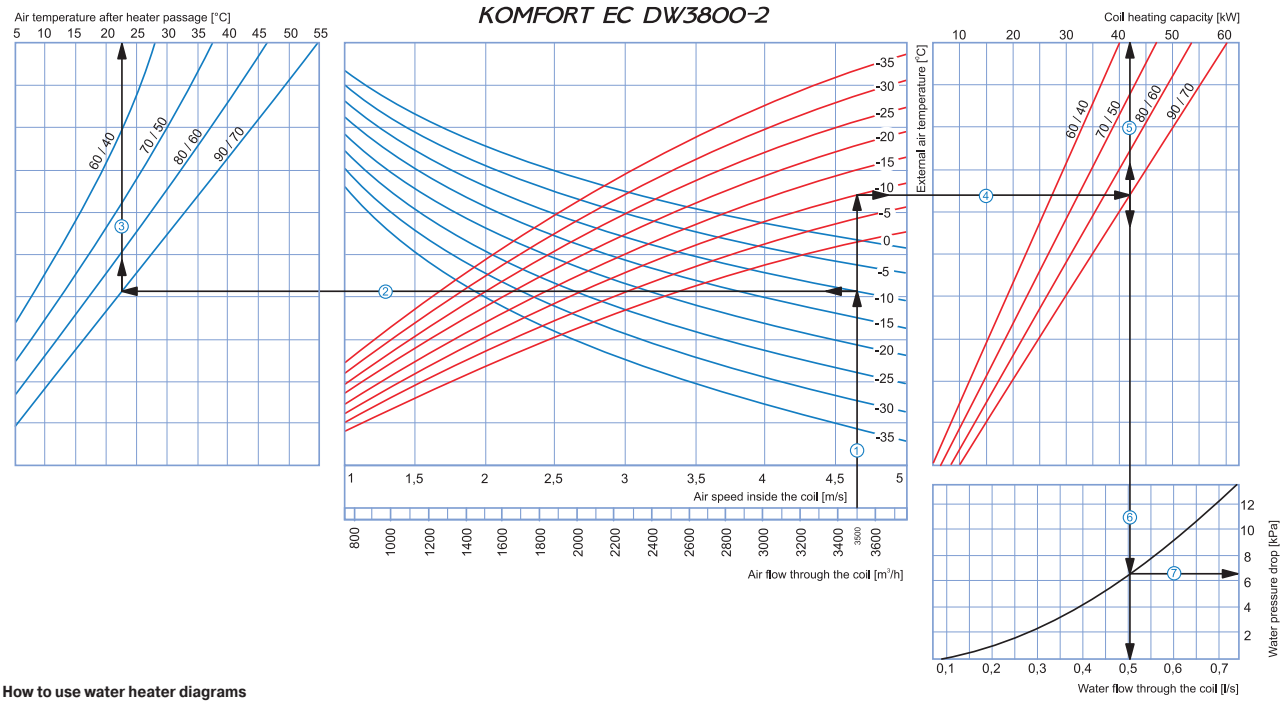
- **Air Speed inside coil:** Starting from 950 m³/h on the air flow scale draw a vertical line ①. This line crosses the air speed axis and shows a value of about 3.35 m/s.
- **Supply air temperature:** prolong the line ① up to the point where it crosses the outside air temperature (blue curve, e.g. -15°C); then draw a horizontal line ② from this point to the left until it crosses the water in/out temperature curve (e.g. 90/70 °C). From this point draw a vertical line ③ to the supply air temperature axis on top of the graphic (+23°C).
- **Heating coil capacity:** Prolong the line ① up to the point where it crosses the outside air temperature (e.g. -15°C, red curve) and draw a horizontal line ④ from this point to the right until it crosses the water in/out temperature curve (e.g., 90/70 °C). From here draw a vertical line ⑤ up to the scale representing the heating coil capacity (13.5 kW).
- **Water flow:** Prolong the line ⑤ down to the water flow axis ⑥ at the bottom of the graphic (0.14 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 (1.5 kPa).



How to use water heater diagrams

Sample parameters: Air flow = 1450 m³/h. Outside air temperature =-25°C. Water temperature (in/out) = 70/50 °C.

- **Air Speed inside coil:** Starting from 1450 m³/h on the air flow scale draw a vertical line ①. This line crosses the air speed axis and shows a value of about 3.2 m/s.
- **Supply air temperature:** prolong the line ① up to the point where it crosses the outside air temperature (blue curve, e.g. -25°C); then draw a horizontal line ② from this point to the left until it crosses the water in/out temperature curve (e.g. 70/50 °C). From this point draw a vertical line ③ to the supply air temperature axis on top of the graphic (+28°C).
- **Heating coil capacity:** Prolong the line ① up to the point where it crosses the outside air temperature (e.g. -25°C, red curve) and draw a horizontal line ④ from this point to the right until it crosses the water in/out temperature curve (e.g., 70/50 °C). From here draw a vertical line ⑤ up to the scale representing the heating coil capacity (31.0 kW).
- **Water flow:** Prolong the line ⑤ down to the water flow axis ⑥ at the bottom of the graphic (0.38 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 (9.8 kPa).



How to use water heater diagrams

Sample parameters: Air flow = 3500 m³/h. Outside air temperature =-10°C. Water temperature (in/out) = 90/70 °C.

- **Air Speed inside coil:** Starting from 3500 m³/h on the air flow scale draw a vertical line ①. This line crosses the air speed axis and shows a value of about 4.65 m/s.
- **Supply air temperature:** prolong the line ① up to the point where it crosses the outside air temperature (blue curve, e.g. -10°C); then draw a horizontal line ② from this point to the left until it crosses the water in/out temperature curve (e.g. 90/70 °C). From this point draw a vertical line ③ to the supply air temperature axis on top of the graphic (+22.5°C).
- **Heating coil capacity:** Prolong the line ① up to the point where it crosses the outside air temperature (e.g. -10°C, red curve) and draw a horizontal line ④ from this point to the right until it crosses the water in/out temperature curve (e.g., 90/70 °C). From here draw a vertical line ⑤ up to the scale representing the heating coil capacity (42.0 kW).
- **Water flow:** Prolong the line ⑤ down to the water flow axis ⑥ at the bottom of the graphic (0.5 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 (6.5 kPa).