

# KOMFORT LW

## Heat recovery air handling units

### Features

- Air handling units for efficient supply and exhaust ventilation in flats, houses, cottages and other buildings.
- Heat recovery minimises ventilation heat losses.
- Control of air exchange for creating comfortable indoor microclimate.
- Compatible with round Ø 250 to 315 mm air ducts.



**Air flow:**  
up to 2100 m<sup>3</sup>/h  
583 l/s



**Heat recovery efficiency:**  
up to 78 %



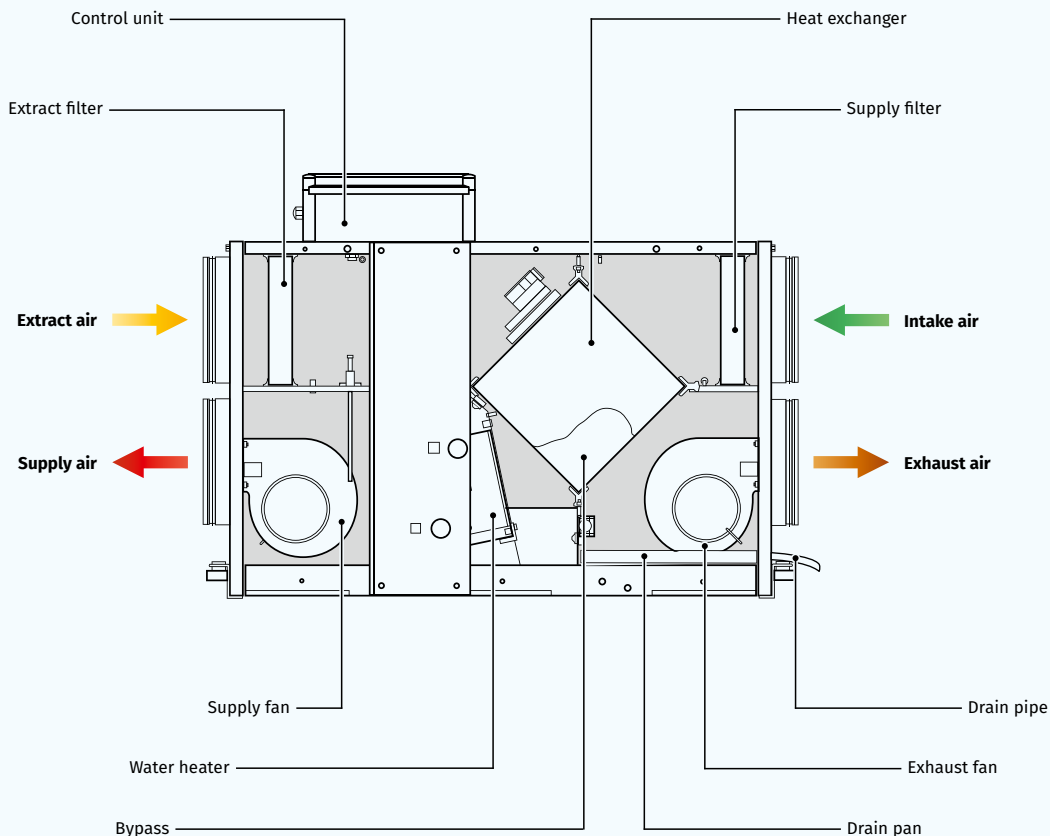
### Design

- The casing is made of double-skinned aluzinc panels, internally filled with 50 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 hinged casing side panels ensure easy access to the internals for cleaning, filter replacement and other maintenance operations.

### Fans

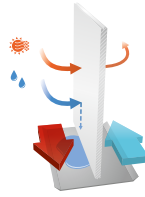
- Asynchronous external rotor motors and centrifugal double-intake impellers with forward curved blades are used for air supply and exhaust.
- Integrated motor overheating protection with automatic restart.
- Dynamically balanced impellers.
- Equipped with ball bearings for longer service life.
- Reliable and quiet operation.

HEAT RECOVERY AIR HANDLING UNITS



### Heat recovery

- The unit is equipped with a plate cross-flow polystyrene heat exchanger for heat recovery. The unit condensate is collected and drained to the drain pan under the heat exchanger.



- The air flows are completely separated in the heat exchanger. Thus smells and contaminants are not transferred from the extract air to the supply air.
- Heat recovery is based on heat and/or humidity transfer through the heat exchanger plates. In the cold season supply air is heated in the heat exchanger by transferring the heat energy of warm and humid extract air to the cold fresh air. Heat recovery minimizes ventilation heat losses and heating costs respectively.
- In the warm season the heat exchanger performs reverse and intake air is cooled in the heat exchanger by the cool extract air. That reduces operation load on air conditioners and saves electricity.
- When the indoor and outdoor temperature difference is insignificant, heat recovery is not reasonable. In this case the heat exchanger can be temporarily replaced with a summer block for the warm season (available as a specially ordered accessory).

### FREEZE PROTECTION

- The electronic protection system based on bypass and heater is used for freezing protection of the unit in cold seasons. The bypass damper is opened and the heater is turned on automatically according to temperature sensor readings. 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 heat exchanger reverts to the normal operation mode.

### 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.
- Heat medium temperature control ensures 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.

### Designation key

Series	Spigot modification	Heater type	Rated air flow [m³/h]	Number of water heater rows
KOMFORT	L: horizontal spigot orientation	W: water heater	800; 1100; 1700; 2100	- 4

### Overall dimensions [mm]

Model	D	B	B1	H	L	L1	L2
KOMFORT LW 800-4	249	613	460	698	1071	1117	1171
KOMFORT LW 1100-4	249	613	460	698	1071	1117	1171
KOMFORT LW 1700-4	314	842	581	814	1345	1388	1445
KOMFORT LW 2100-4	314	842	581	814	1345	1388	1445

### Air filtration

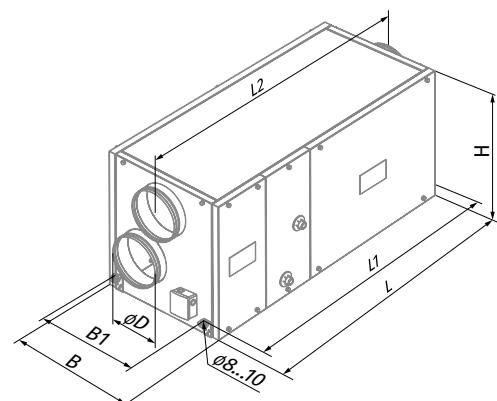
- The built-in G4 supply filter and G4 extract filter provide air filtration.

### Control and automation

- The unit incorporates an integrated control system with a wall-mounted control panel and LCD display.
- The standard delivery set includes a 10 m cable for connection of the unit and the control panel.
- Control panel functions:**
  - Switching on/off.
  - Three-speed fan selection, selecting heating/cooling modes (if connected to duct heater).
  - Temperature display.
- Automation functions:**
  - Maintaining supply air temperature set from the control panel by controlling the circulation pump and actuating the heat medium regulating valve; input from the heat medium flow switch (pump alarm);
  - Safe start-up/ shutdown of the fans, warming up of the water heater before start-up; return heat medium temperature control when the fan is off.
  - Freezing protection of the water heating coils by the exhaust temperature sensor and the return heat medium temperature sensor.
  - Control of the compressor and condensing unit of the water cooler by the room temperature sensor (for the models equipped with a duct air cooler);
  - Actuating the external air dampers with a return spring
  - Unit operation according to week schedule (set at the system setup).
  - Unit shut down at signal from the fire alarm system.
  - Smooth bypass damper control in the bypassing mode to prevent the heat exchanger freezing.

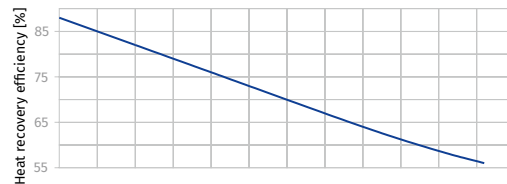
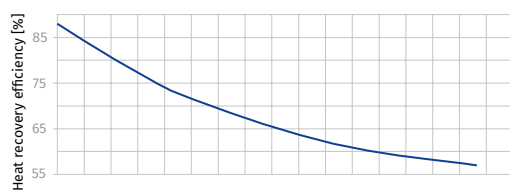
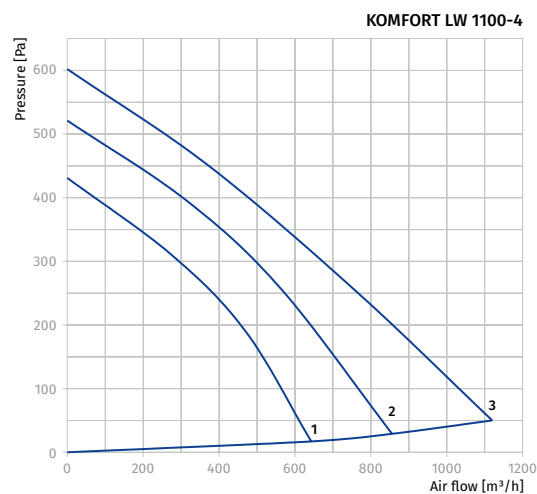
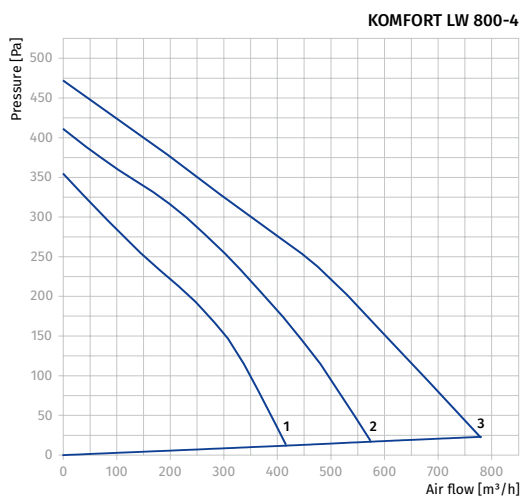
### Mounting

- Mounting to floor, ceiling or wall with fixing brackets.
- The correct mounted unit must provide condensate collecting and drainage and free access to the hinged side panel for servicing and filter replacement.

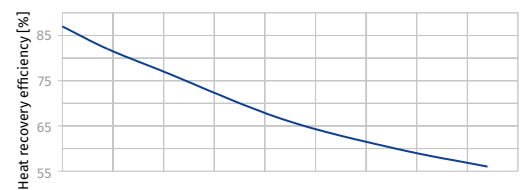
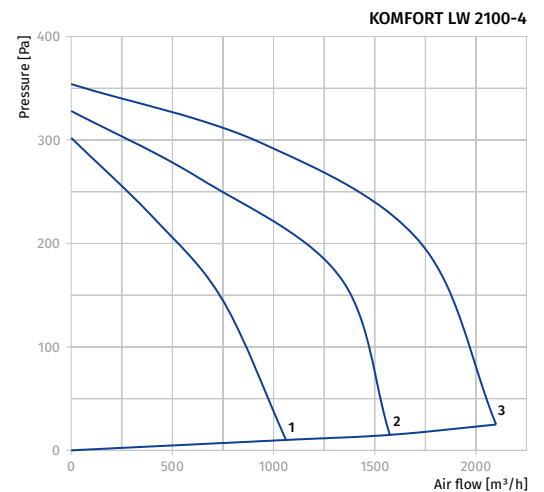
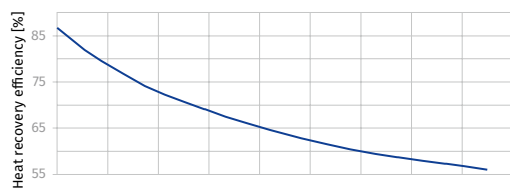
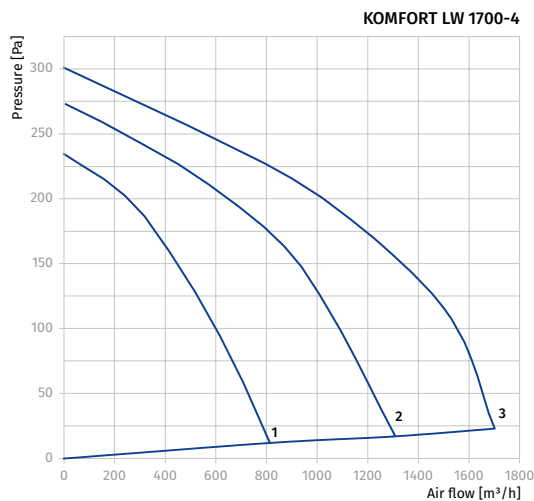


**Technical data**

Parameters	KOMFORT LW 800-4	KOMFORT LW 1100-4
Voltage [V / 50 Hz]	1 ~ 230	1 ~ 230
Number of water heater rows	4	4
Power [W]	490	820
Current [A]	2.16	3.6
Max. air flow [m³/h (l/s)]	780 (217)	1100 (306)
RPM [min <sup>-1</sup> ]	1650	1850
Sound pressure level at 3 m distance [dBA]	48	60
Transported air temperature [°C]	-25...+40	-25...+40
Casing material	aluzinc	aluzinc
Insulation	50 mm mineral wool	50 mm mineral wool
Extract filter	G4	G4
Supply filter	G4	G4
Connected air duct diameter [mm]	250	250
Weight [kg]	88	88
Heat recovery efficiency [%]	up to 78	up to 78
Heat exchanger type	cross-flow	cross-flow
Heat exchanger material	polystyrene	polystyrene
ErP	2016	-



Parameters	KOMFORT LW 1700-4	KOMFORT LW 2100-4
Voltage [V / 50 Hz]	1 ~ 230	1 ~ 230
Number of water heater rows	4	4
Power [W]	980	1300
Current [A]	4.3	5.68
Max. air flow [m³/h (l/s)]	1700 (472)	2100 (583)
RPM [min <sup>-1</sup> ]	1100	1150
Sound pressure level at 3 m distance [dBA]	49	65
Transported air temperature [°C]	-25...+40	-25...+40
Casing material	aluzinc	aluzinc
Insulation	50 mm mineral wool	50 mm mineral wool
Extract filter	G4	G4
Supply filter	G4	G4
Connected air duct diameter [mm]	315	315
Weight [kg]	99	99
Heat recovery efficiency [%]	up to 77	up to 77
Heat exchanger type	cross-flow	cross-flow
Heat exchanger material	polystyrene	polystyrene
ErP	-	-

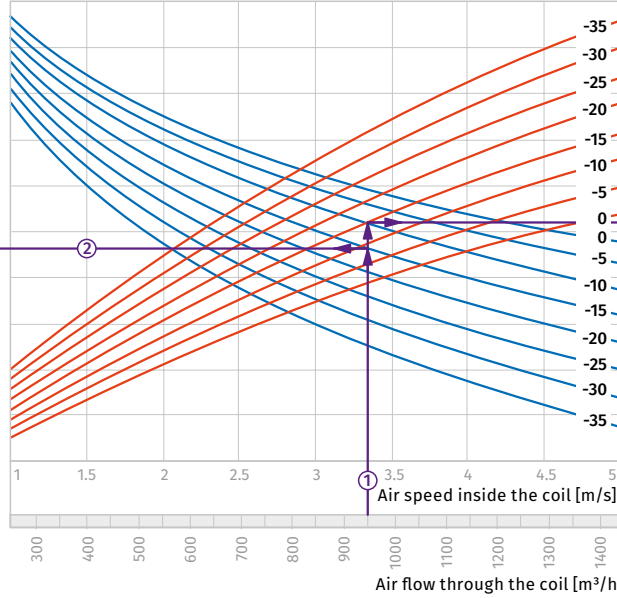
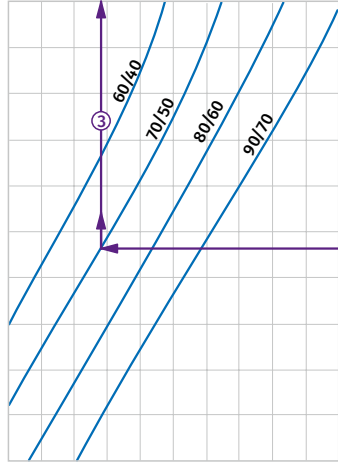


## Hot water coil calculation diagram

### KOMFORT LW 800-4

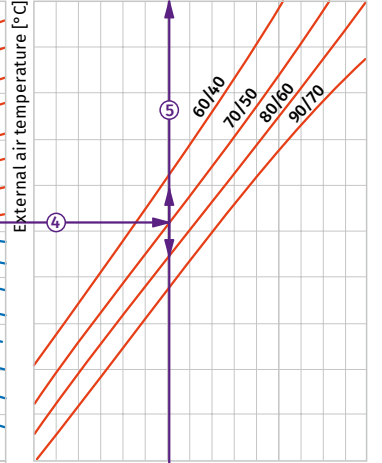
Air temperature downstream of the water heating coils [°C]

15 20 25 30 35 40 45 50 55 60 65



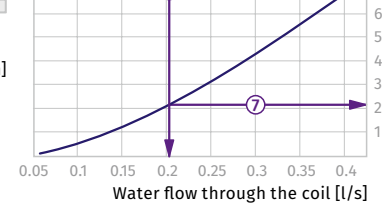
Coil heating capacity [kW]

4 8 12 16 20 24 28 32



External air temperature [°C]

-35 -30 -25 -20 -15 -10 -5 0 0 -5 -10 -15 -20 -25 -30 -35



Water flow through the coil [l/s]

0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4

Water pressure drop [kPa]

8 7 6 5 4 3 2 1

#### How to use water heater diagrams.

The air flow is 950 m<sup>3</sup>/h and the air speed in the heater is 3.35 m/s ①.

- To calculate the maximum air temperature find the intersection point of the air flow line ① with the rated outer temperature shown in blue line (e.g., -15 °C) and draw the line ② to the left until it crosses the water in/out temperature curve (e.g., +70/+50). From this point draw a vertical line to the supply air temperature downstream of the heater (+29 °C) ③.

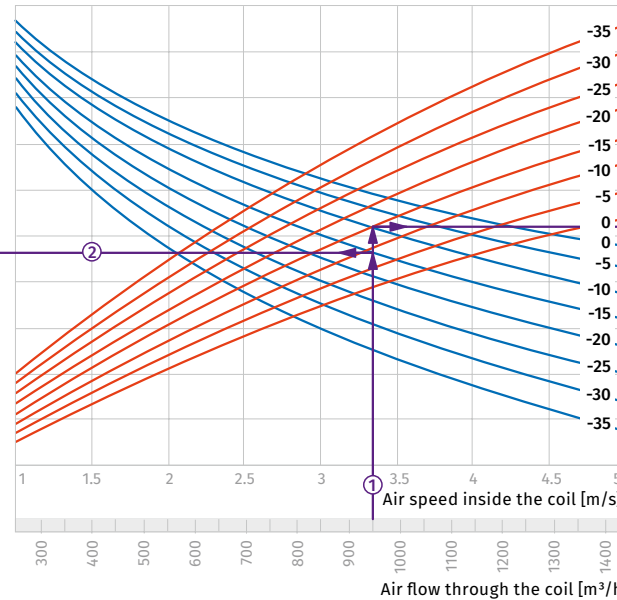
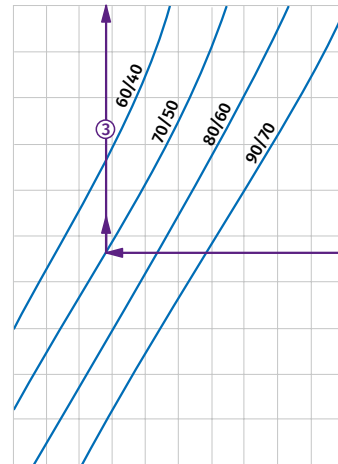
- To calculate the heater power find the intersection point of the air flow ① with the rated winter temperature shown in red line (e.g., -15 °C) and draw the line ④ to the right until it crosses the water in/out temperature curve (e.g., +70/+50). From this point draw a vertical line to the heater power axis (16.0 kW) ⑤.

- To calculate the required water flow in the heater prolong this line ⑥ downwards to the water flow axis (0.2 l/s).
- To calculate the water pressure drop in the heater find the intersection point of the line ⑥ with the pressure loss curve and prolong the line ⑦ to the right on the water pressure drop axis (2.1 kPa).

### KOMFORT LW 1100-4

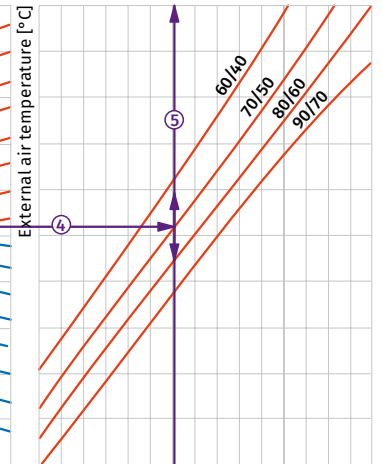
Air temperature downstream of the water heating coils [°C]

15 20 25 30 35 40 45 50 55 60 65



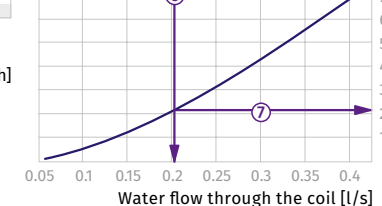
Coil heating capacity [kW]

4 8 12 16 20 24 28 32



External air temperature [°C]

-35 -30 -25 -20 -15 -10 -5 0 0 -5 -10 -15 -20 -25 -30 -35



Water flow through the coil [l/s]

0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4

Water pressure drop [kPa]

8 7 6 5 4 3 2 1

#### How to use water heater diagrams.

The air flow is 950 m<sup>3</sup>/h and the air speed in the heater is 3.35 m/s ①.

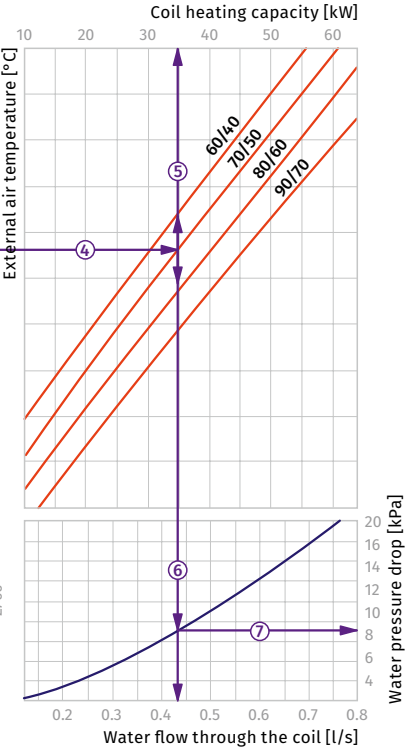
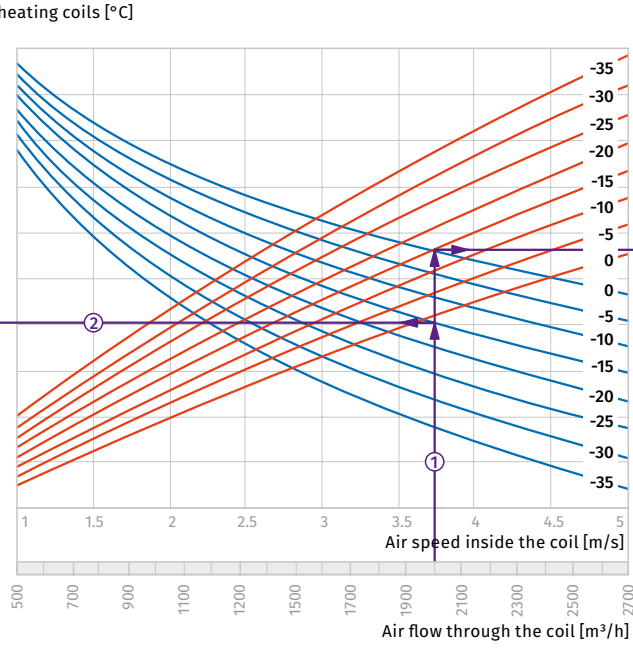
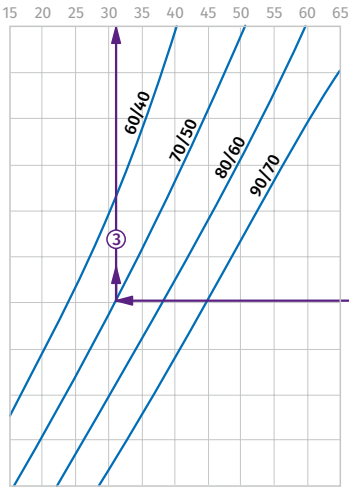
- To calculate the maximum air temperature find the intersection point of the air flow line ① with the rated outer temperature shown in blue line (e.g., -15 °C) and draw the line ② to the left until it crosses the water in/out temperature curve (e.g., +70/+50). From this point draw a vertical line to the supply air temperature downstream of the heater (+29 °C) ③.

- To calculate the heater power find the intersection point of the air flow ① with the rated winter temperature shown in red line (e.g., -15 °C) and draw the line ④ to the right until it crosses the water in/out temperature curve (e.g., +70/+50). From this point draw a vertical line to the heater power axis (16.0 kW) ⑤.

- To calculate the required water flow in the heater prolong this line ⑥ downwards to the water flow axis (0.2 l/s).
- To calculate the water pressure drop in the heater find the intersection point of the line ⑥ with the pressure loss curve and prolong the line ⑦ to the right on the water pressure drop axis (2.1 kPa).

### KOMFORT LW 1700-4

Air temperature downstream of the water heating coils [°C]



**How to use water heater diagrams.**

The air flow is 2000 m<sup>3</sup>/h and the air speed in the heater is 3.75 m/s ①.

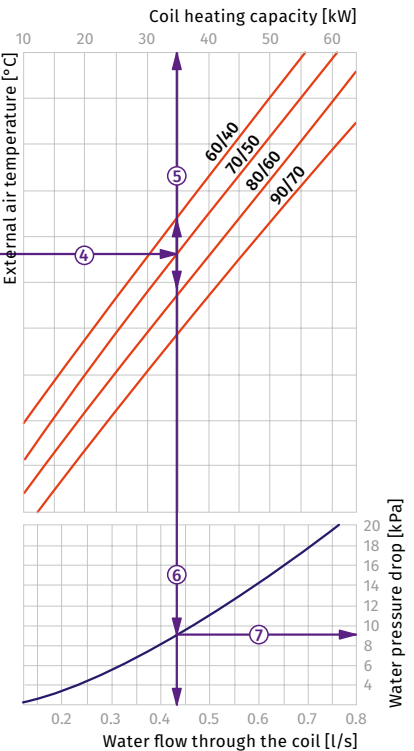
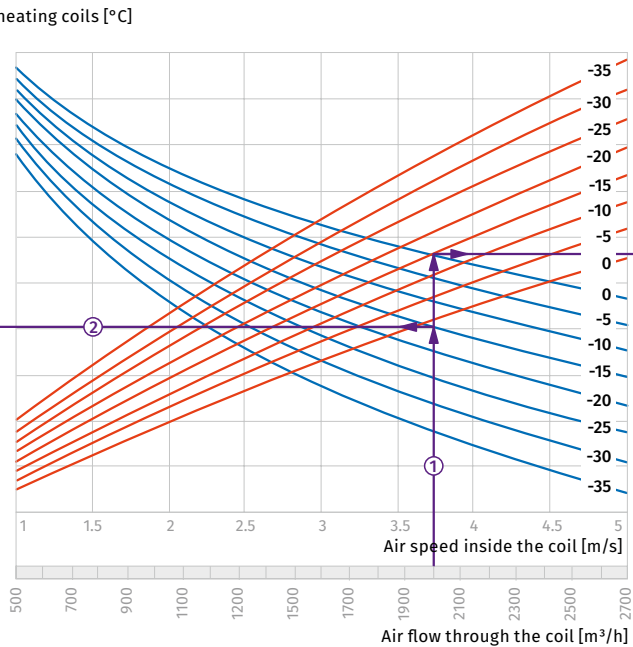
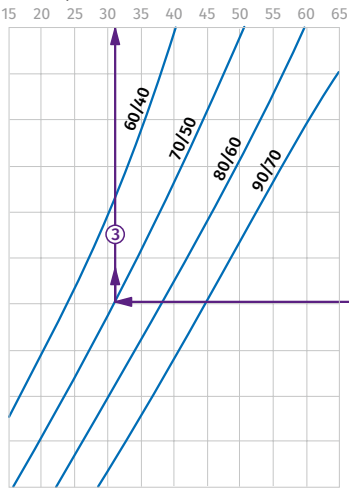
- To calculate the maximum air temperature find the intersection point of the air flow line ① with the rated outer temperature shown in blue line (e.g., -15 °C) and draw the line ② to the left until it crosses the water in/out temperature curve (e.g., +70/+50). From this point draw a vertical line to the supply air temperature downstream of the heater (+31 °C) ③.

- To calculate the heater power find the intersection point of the air flow ① with the rated winter temperature shown in red line (e.g., -15 °C) and draw the line ④ to the right until it crosses the water in/out temperature curve (e.g., +70/+50). From this point draw a vertical line to the heater power axis (35.0 kW) ⑤.

- To calculate the required water flow in the heater prolong this line ⑥ downwards to the water flow axis (0.43 l/s).
- To calculate the water pressure drop in the heater find the intersection point of the line ⑥ with the pressure loss curve and prolong the line ⑦ to the right on the water pressure drop axis (9.0 kPa).

### KOMFORT LW 2100-4

Air temperature downstream of the water heating coils [°C]



**How to use water heater diagrams.**

The air flow is 2000 m<sup>3</sup>/h and the air speed in the heater is 3.75 m/s ①.

- To calculate the maximum air temperature find the intersection point of the air flow line ① with the rated outer temperature shown in blue line (e.g., -15 °C) and draw the line ② to the left until it crosses the water in/out temperature curve (e.g., +70/+50). From this point draw a vertical line to the supply air temperature downstream of the heater (+31 °C) ③.

- To calculate the heater power find the intersection point of the air flow ① with the rated winter temperature shown in red line (e.g., -15 °C) and draw the line ④ to the right until it crosses the water in/out temperature curve (e.g., +70/+50). From this point draw a vertical line to the heater power axis (35.0 kW) ⑤.

- To calculate the required water flow in the heater prolong this line ⑥ downwards to the water flow axis (0.43 l/s).
- To calculate the water pressure drop in the heater find the intersection point of the line ⑥ with the pressure loss curve and prolong the line ⑦ to the right on the water pressure drop axis (9.0 kPa).

**Accessories**

		KOMFORT LW 800-4	KOMFORT LW 1100-4	KOMFORT LW 1700-4	KOMFORT LW 2100-4
G4 panel filter		FP 550x253x48 G4	FP 550x253x48 G4	FP 780x273x48 G4	FP 780x273x48 G4
Silencer		SD 250	SD 250	SD 315	SD 315
Silencer		SDF 250	SDF 250	SDF 315	SDF 315
Backdraft air damper		VRV 250	VRV 250	VRV 315	VRV 315
Air damper		VK 250	VK 250	VK 315	VK 315
Summer block		SB C4 300/384	SB C4 300/384	SB C4 300/300 (2 pcs.)	SB C4 300/300 (2 pcs.)