Series
VENTS PA...E

A16 control panel

Suspended air supply units with the air flow up to **3350 m³/h** in the sound- and heat-insulated casing with the electric heater

Series
VENTS PA...W

A13 control panel

Suspended air supply units with the air flow up to **4100 m³/h** in the sound- and heat-insulated casing with the water heater

Description
The PA unit is a ready to use ventilation unit for air filtration, warming and supply to the room.

Casing
Steel casing covered with aluzinc coating internally filled with 50 mm heat- and sound-insulating layer made of mineral wool.

Filter
Integrated panel G4 filter ensures sufficient supply air purification (optionally F7).

Heater
The PA units are equipped with electric (PA...E model) or water (PA...W model) heater. Depending on the required heating capacity the water heaters are available in two-, three- or four-row modifications. The water heaters are designed for max. operating pressure 1.0 MPa (10 bar) and max. operating temperature 95 °C of the heat medium.

Fan
The unit is equipped with a direct-driven centrifugal fan with backward curved blades and external rotor motor. The fan configuration ensures
the best operating characteristics: high air flow and efficiency combined with low noise level.

Mounting
The unit is designed for indoor installation either on the floor, on the wall or under the ceiling by means of a seat angle with inserted vibration-damping element or attached to a wall with brackets. The unit can be mounted either in service spaces or in main premises above the suspended ceiling, in the pocket or the unit can be placed directly in the room. All the electrical connections are performed through the terminal box placed in the connection box. PA supply units are supplied with the fastening brackets to facilitate mounting. The unit can be mounted in any position but the vertical one with vertical air downstream because the electrical heating elements are not allowed under the fan. Access for the unit maintenance and filter cleaning shall be provided. The PA...W unit design enables to lead the water heater pipes to the right or to the left while mounting. The pipes are directed on the right on supply air side by default.

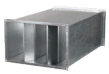
Control and automation
Possible option:
Integrated control and automation system for speed (air flow) control and setting supply air temperature. The unit may be remotely controlled from the external control panel fixed on wire.

PA...E control and protection functions
- control from the control panel: switching the unit on/off, fan speed selection (low/medium/high speed), selecting heating/cooling modes (if connected to duct heater);
- maintaining supply air temperature set from the control panel by smooth heating capacity control;
- smooth frequency speed control of the fan;
- safe start-up/shutdown of the fans;
- Active overheating protection of the electric heating elements by the temperature sensor and by the thermostats activated at 60 °C with automatic reset and

Designation key

Series	Unit standard size	Heater type	Row number of the heater	Integrated control system
VENTS PA	01; 02; 03; 04	**E**: electric **W**: water	**2**: two rows; **3**: three rows; **4**: four rows	**LCD**: integrated automation with A16 control panel (PA...E) or A13 (PA...W)

Accessories


Silencer


Water mixing unit


Air coolers


Air flow controller


Flexible connectors


Electric actuators


Replaceable filters

at 90 °C with manual reset. Blowing of the electric heating elements for heat removal at the end of the heating cycle.

- Filter clogging control with differential pressure sensor.
- Actuating the external air damper.
- Input from the fire alarm system.
- Control of the compressor and condensing block of the water cooler by the room temperature sensor (for models with external duct air cooler).
- Maintaining of set supply air temperature set from the control panel by smooth heating capacity control;
- smooth frequency fan speed control.

PA...W control and protection functions

- Control from the control panel: switching the unit on/off, fan speed selection (low/medium/high speed), selecting heating/cooling modes (if connected to duct cooler).
- 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).
- Filter clogging degree with differential pressure sensor.
- Actuating the external air damper with a return spring.
- Unit shut down at signal from the fire alarm system.

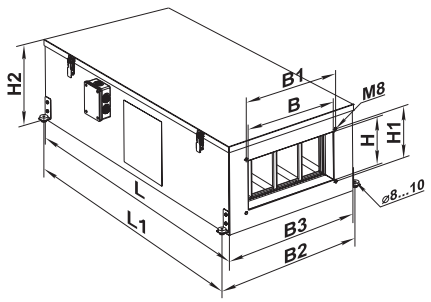
Supplementary equipment

The mixing units USWK are recommended for smooth supply air temperature regulation in the units equipped with water heaters. The mixing unit USWK with three-way heat medium regulating valve and circulation pump provides smooth heating capacity regulation and minimizes the water heater freezing danger. To disable uncontrollable air flow when the fan is off it is recommended to install the air damper with servo actuator from outside at the unit inlet. To protect the water heater against cold intake air in case of power failure for the units with water heaters (PA...W) it is recommended to install the air damper with a return spring. For attenuation of sound generated by the fan it is recommended to install the duct silencer (refer SR). For vibration absorbing it is recommended to install the flexible anti-vibration connectors (refer VVG) on both sides of the unit.

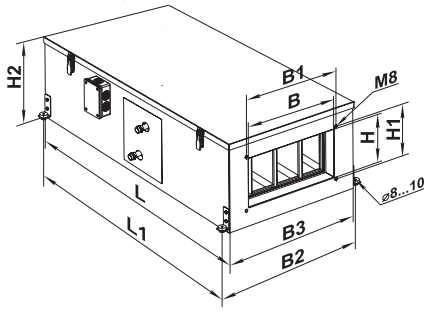
Unit overall dimensions

Type	Dimensions [mm]								
	B	B1	B2	B3	H	H1	H2	L	L1
PA 01 E	400	420	624	582	200	220	374	1145	1106
PA 02 E	500	520	689	646	300	320	447	1250	1212
PA 03 E	600	620	888	744	350	370	500	1252	1212
PA 01 W	400	420	624	582	200	220	374	1145	1106
PA 02 W	500	520	689	646	300	320	447	1250	1212
PA 03 W	600	620	787	744	350	370	500	1252	1212
PA 04 W	700	720	888	844	400	420	546	1302	1262

PA...E



PA...W

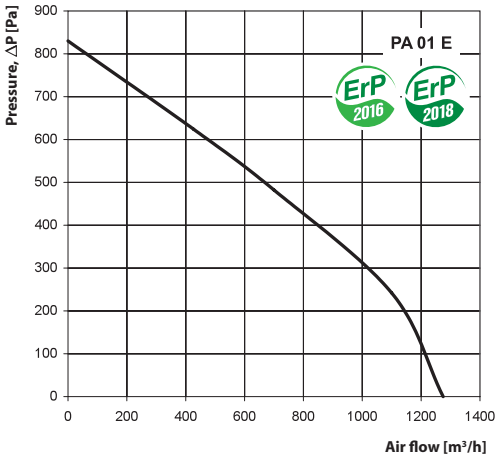


Technical data

	PA 01 E	PA 01 W2	PA 01 W4	PA 02 E	PA 02 W2	PA 02 W4
Voltage [V/50 Hz]	3~400			3~400		
Maximum fan power [W]	320			620		
Fan current [A]	0.55			1.05		
Electric heater power [kW]	12.0	–		18.0	–	
Electric heater current [A]	17.4	–		26.0	–	
Number of water (glycol) coil rows	–	2	4	–	2	4
Total unit power [kW]	12.32	0.32		18.62	0.62	
Total unit current [A]	17.95	0.55		27.05	1.05	
Air flow [m³/h]	1275	1200		2500	2350	
RPM [min⁻¹]	2700			2690		
Noise level at 3m [dBA]	51			54		
Transported air temperature [°C]	-25...+40			-25...+40		
Casing material	aluzinc			aluzinc		
Insulation	50 mm mineral wool			50 mm mineral wool		
Filter	panel filter G4	G4 (F7) pocket type*		panel filter G4	G4 (F7) pocket type*	
Connected air duct size [mm]	400x200			500x300		
Mass [kg]	56	55	57	61	61	63

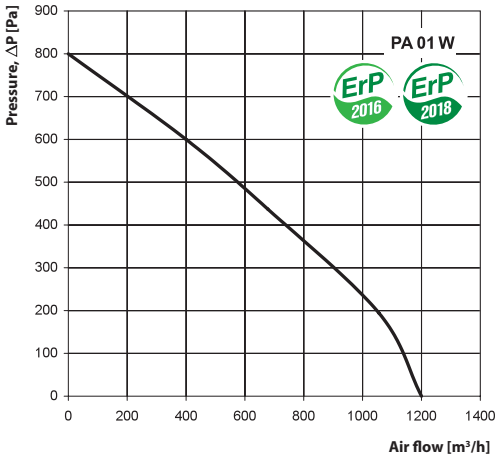
*option

VENTS PA...E



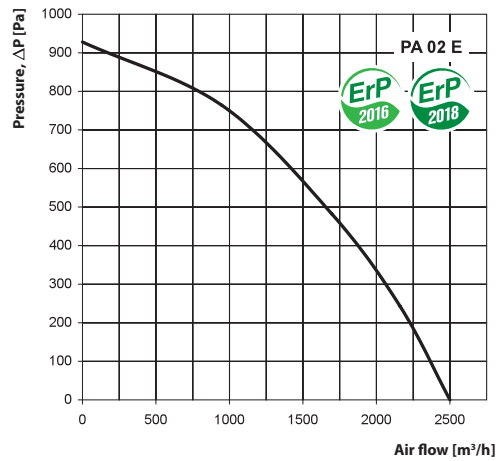
Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{WA} to inlet	dBA	62	45	62	60	55	45	45	47	35
L_{WA} to outlet	dBA	73	48	60	66	71	62	64	62	56
L_{WA} to environment	dBA	47	22	40	47	44	30	32	29	19

VENTS PA...W



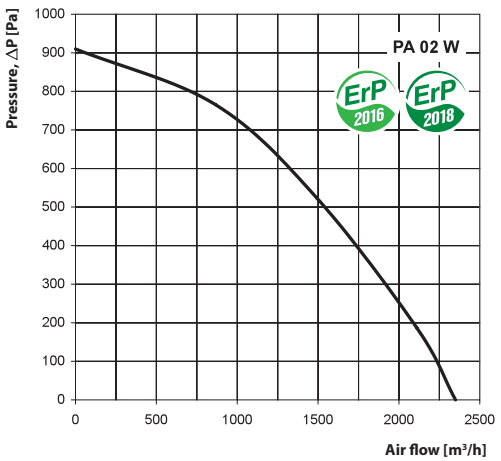
Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{WA} to inlet	dBA	62	47	62	58	54	43	45	44	37
L_{WA} to outlet	dBA	73	49	61	70	70	62	63	61	57
L_{WA} to environment	dBA	47	24	39	44	46	33	35	27	19

VENTS PA...E



Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{WA} to inlet	dBA	70	52	67	67	60	55	51	53	49
L_{WA} to outlet	dBA	84	56	70	81	77	76	74	74	70
L_{WA} to environment	dBA	55	35	57	62	52	48	54	52	53

VENTS PA...W

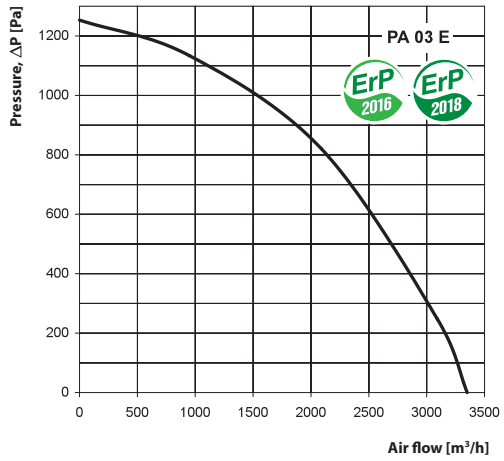


Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{WA} to inlet	dBA	69	52	69	65	60	58	49	55	49
L_{WA} to outlet	dBA	85	57	71	82	77	75	74	73	69
L_{WA} to environment	dBA	55	37	58	61	53	51	52	55	52

Technical data

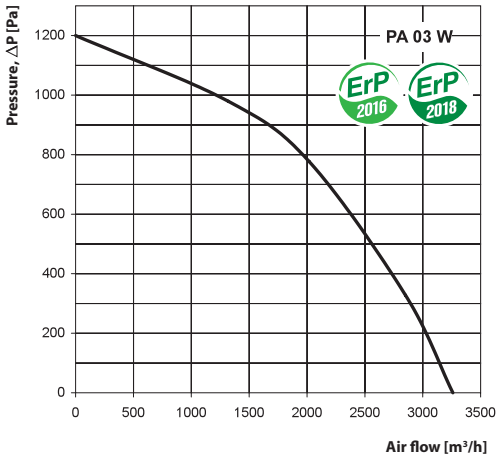
	PA 03 E	PA 03 W2	PA 03 W4	PA 04 W2	PA 04 W3
Voltage [V/50 Hz]		3~400		3~400	
Maximum fan power [W]		1330		2300	
Fan current [A]		2.4		4.3	
Electric heater power [kW]	21.0	–		–	
Electric heater current [A]	30.0	–		–	
Number of water (glycol) coil rows	–	2	4	2	3
Total unit power [kW]	22.33	1.33		2.30	
Total unit current [A]	32.4	2.4		4.3	
Air flow [m³/h]	3350	3260		4100	
RPM [min⁻¹]		2730		2840	
Noise level at 3m [dBA]		57		75	
Transported air temperature [°C]		-25...+40		-25...+40	
Casing material		aluzinc		aluzinc	
Insulation		50 mm mineral wool		50 mm mineral wool	
Filter	panel filter G4	G4 (F7) pocket type*		G4 (F7) pocket type*	
Connected air duct size [mm]		600x350		700x400	
Mass [kg]	91	91	94	107	110
*option					

VENTS PA...E



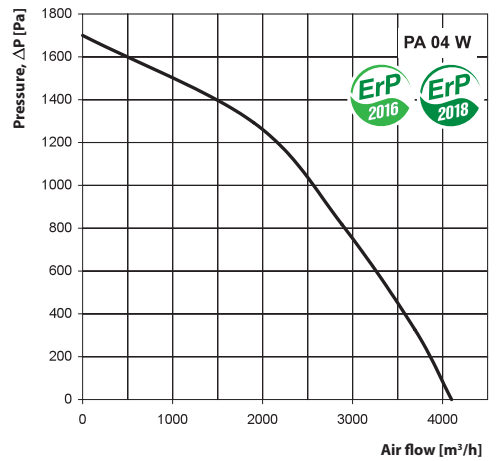
Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dBA	72	58	71	67	59	49	51	56	54
L_{wA} to outlet	dBA	77	58	71	73	71	70	68	65	55
L_{wA} to environment	dBA	58	41	59	62	51	47	53	51	46

VENTS PA...W



Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dBA	71	57	71	66	57	51	50	56	56
L_{wA} to outlet	dBA	78	57	70	73	73	70	67	64	53
L_{wA} to environment	dBA	59	39	58	62	51	44	52	49	46

VENTS PA...W



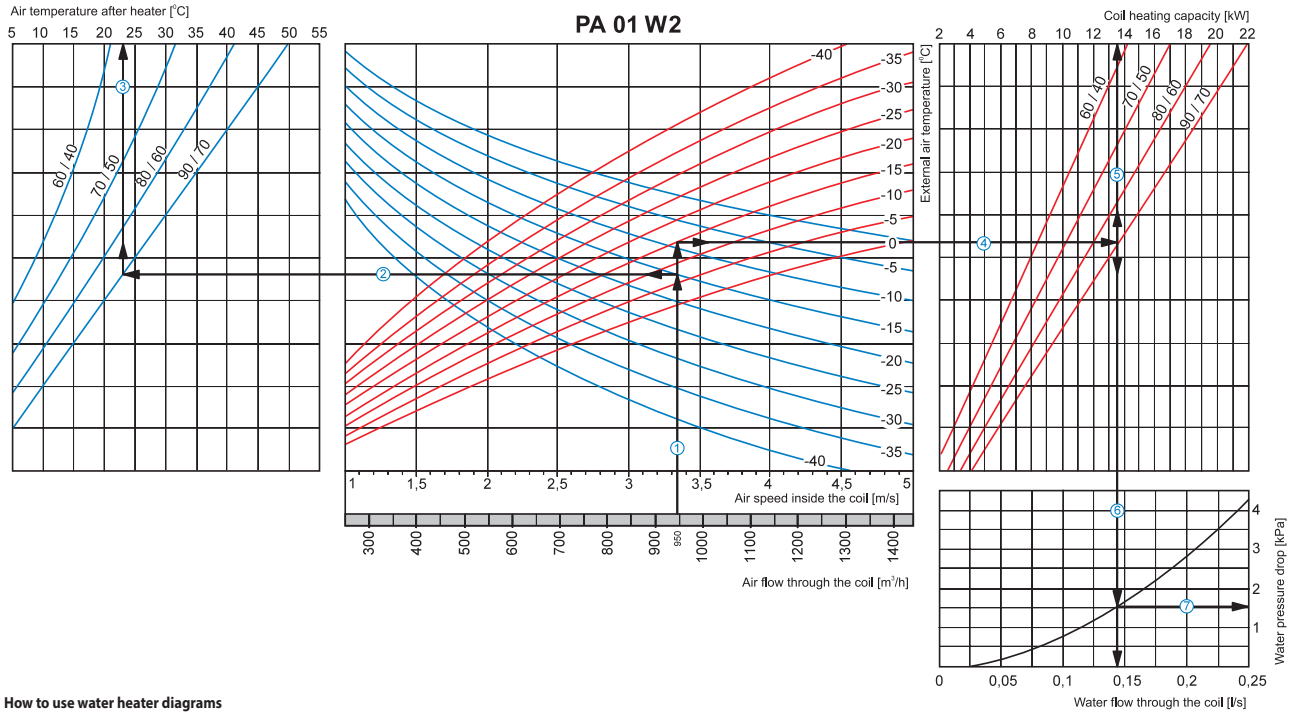
Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dBA	108	83	106	99	99	96	96	93	75
L_{wA} to outlet	dBA	118	82	115	112	105	105	99	97	84
L_{wA} to environment	dBA	95	61	93	92	76	67	65	71	68

Accessories to supply units

Type	G4 replaceable filter	F7 replaceable filter	Filter type
PA 01 E	SF 475x270x48 G4	–	panel filter
PA 02 E	SF 540x340x48 G4	–	panel filter
PA 03 E	SF 635x395x48 G4	–	panel filter
PA 01 W2 PA 01 W4	SFK 474x269x27 G4	SFK 474x269x27 F7	pocket filter
PA 02 W2 PA 02 W4	SFK 538x342x27 G4	SFK 538x342x27 F7	pocket filter
PA 03 W2 PA 03 W4	SFK 637x395x27 G4	SFK 637x395x27 F7	pocket filter
PA 04 W2 PA 04 W3	SFK 737x441x27 G4	SFK 737x441x27 F7	pocket filter

Hot water coil parameters

VENTS PA...W

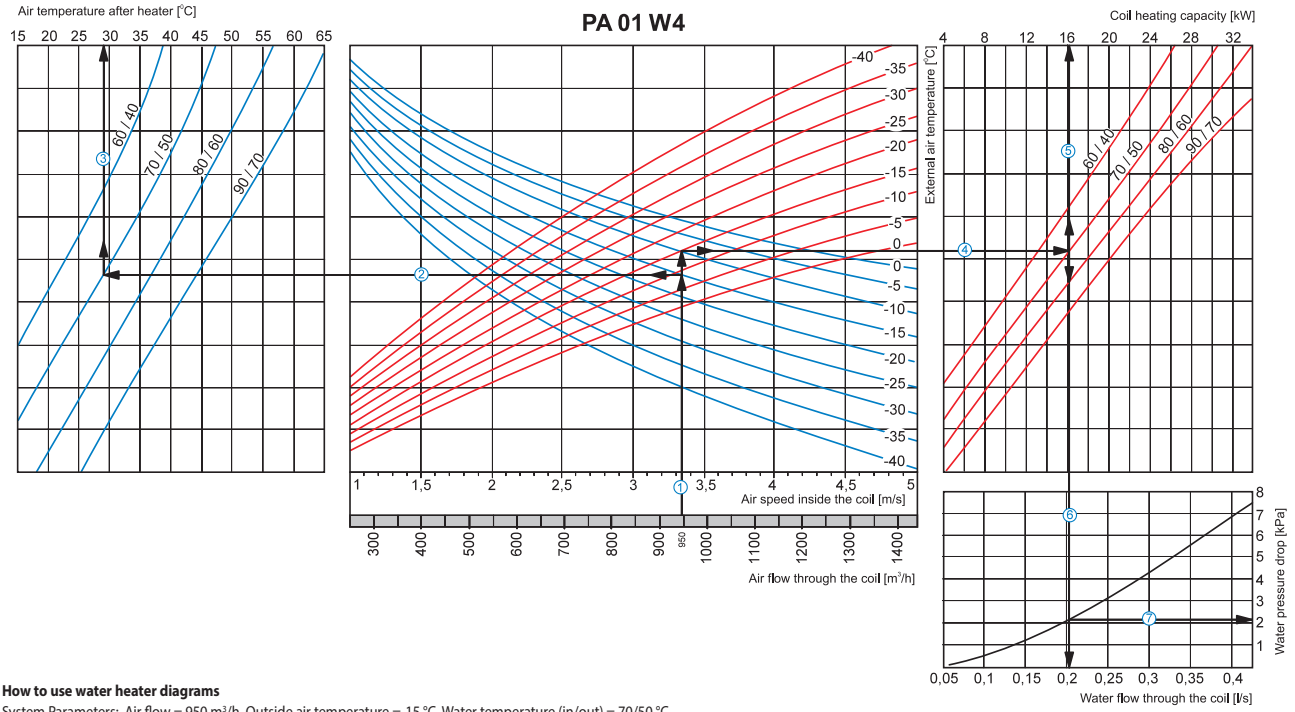


How to use water heater diagrams

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

- Air Speed. Starting from 950 m³/h on the air flow scale draw a vertical line ① till the air speed axis which makes 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 till crossing 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 water in/out temperature curve (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 water flow axis at the bottom of the graphic ⑥ (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).

VENTS PA...W



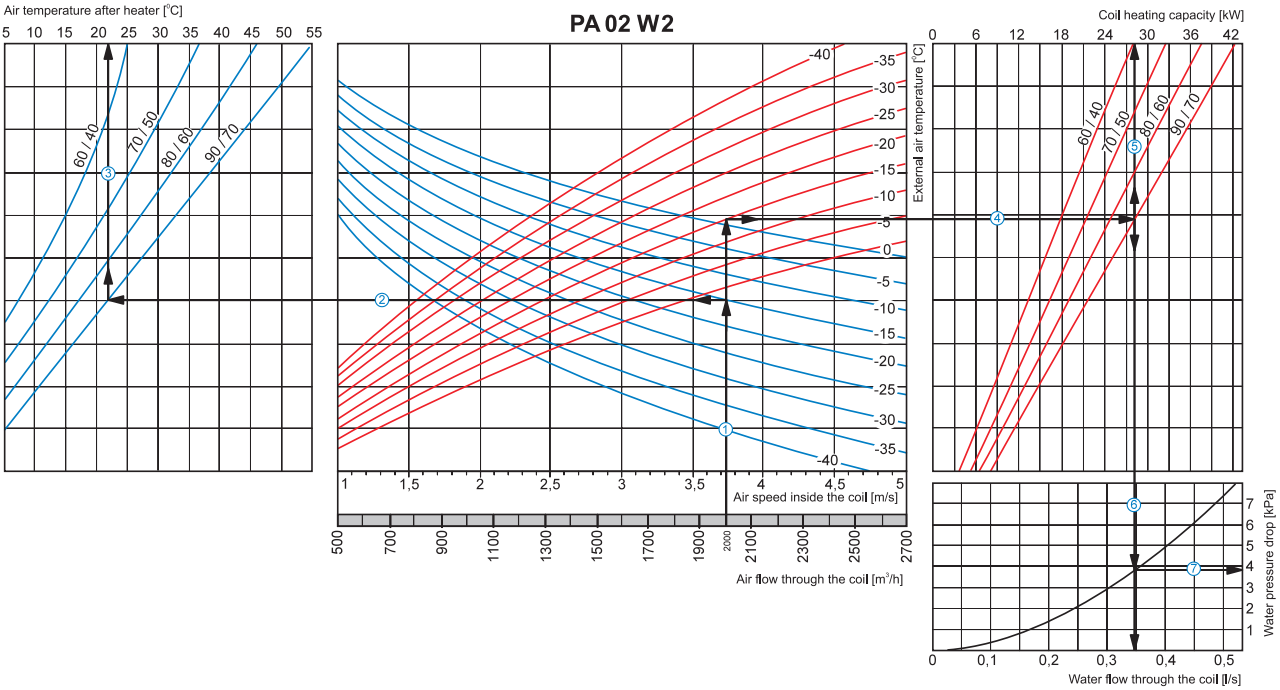
How to use water heater diagrams

System Parameters: Air flow = 950 m³/h. Outside air temperature =-15 °C. Water temperature (in/out) = 70/50 °C.

- Air Speed. Starting from 950 m³/h on the air flow scale draw a vertical line ① till the air speed axis which makes 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 till crossing 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 (+29 °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 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 (16.0 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.2 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. (2.1 kPa).

Hot water coil parameters

VENTS PA...W

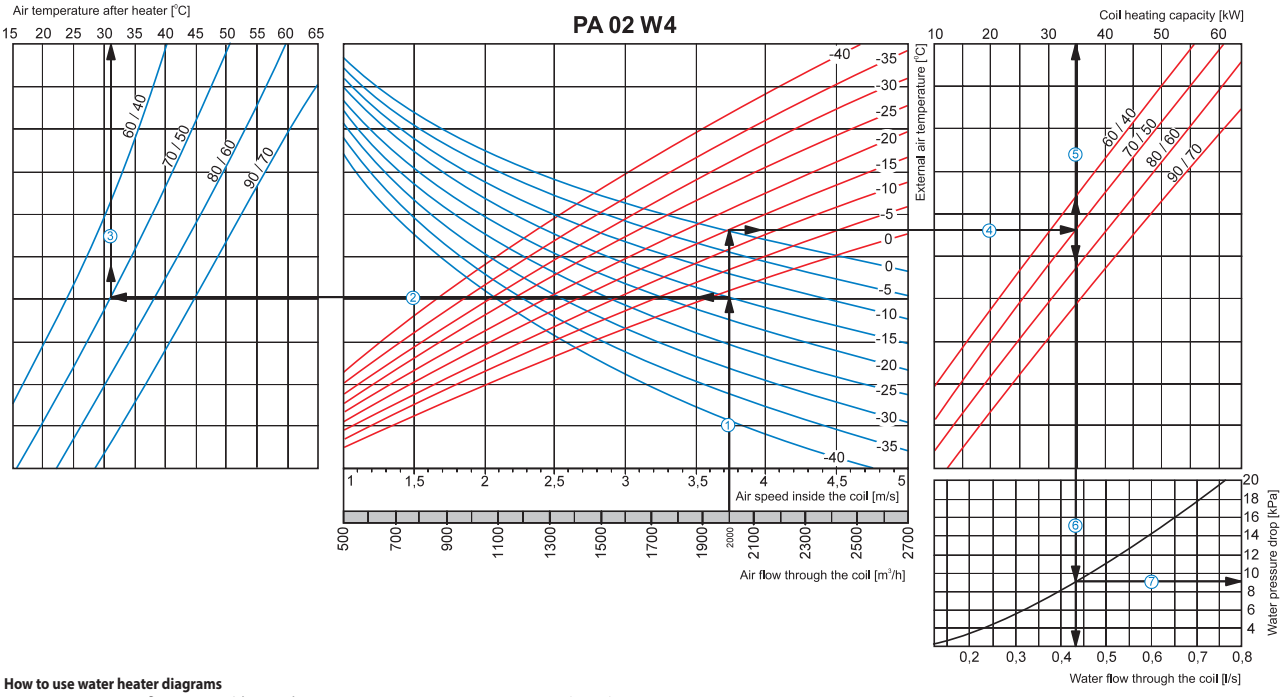


How to use water heater diagrams

System Parameters: Air flow = 2000 m³/h. Outside air temperature =-15 °C. Water temperature (in/out) = 90/70 °C.

- Air Speed. Starting from 2000 m³/h on the air flow scale draw a vertical line ① till the air speed axis which makes about 3.75 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 till crossing 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 °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 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 (28.0 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.35 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. (3.8 kPa).

VENTS PA...W



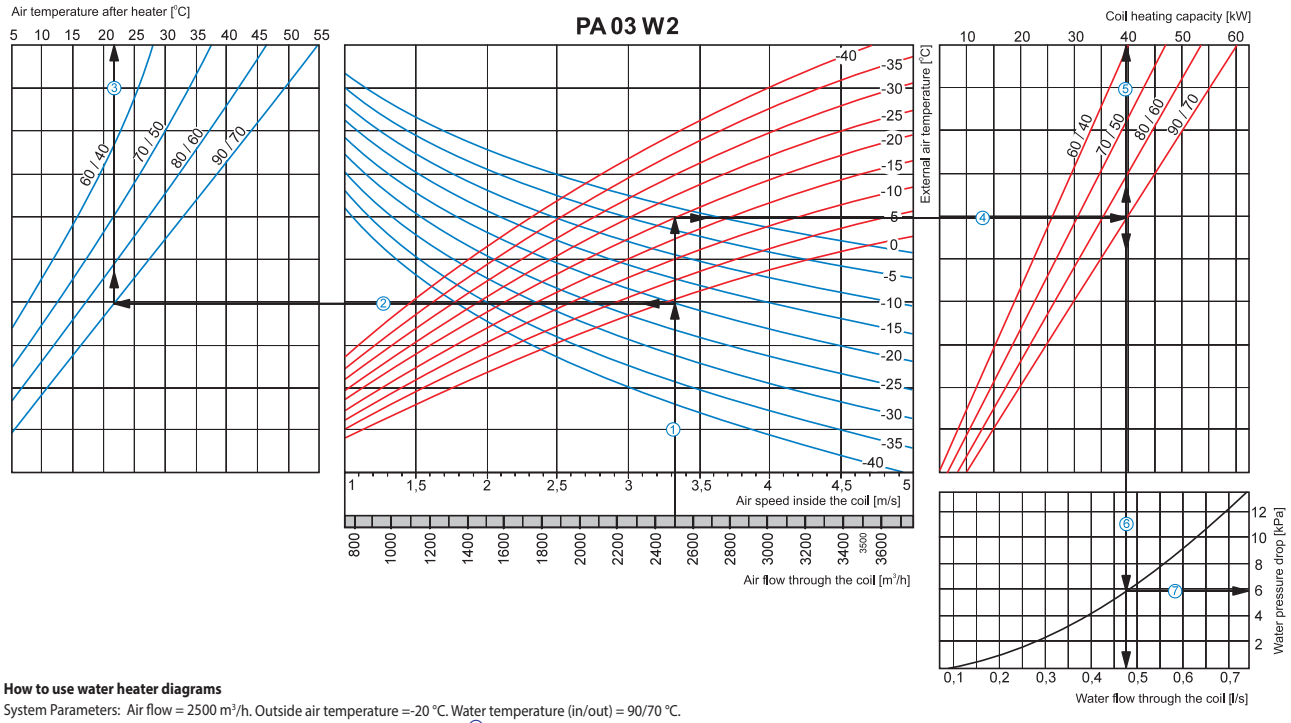
How to use water heater diagrams

System Parameters: Air flow = 2000 m³/h. Outside air temperature =-15 °C. Water temperature (in/out) = 70/50 °C.

- Air Speed. Starting from 2000 m³/h on the air flow scale draw a vertical line ① till the air speed axis which makes about 3.75 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 till crossing 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 (+31 °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 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 (35.0 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.43 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. (9.0 kPa).

Hot water coil parameters

VENTS PA...W

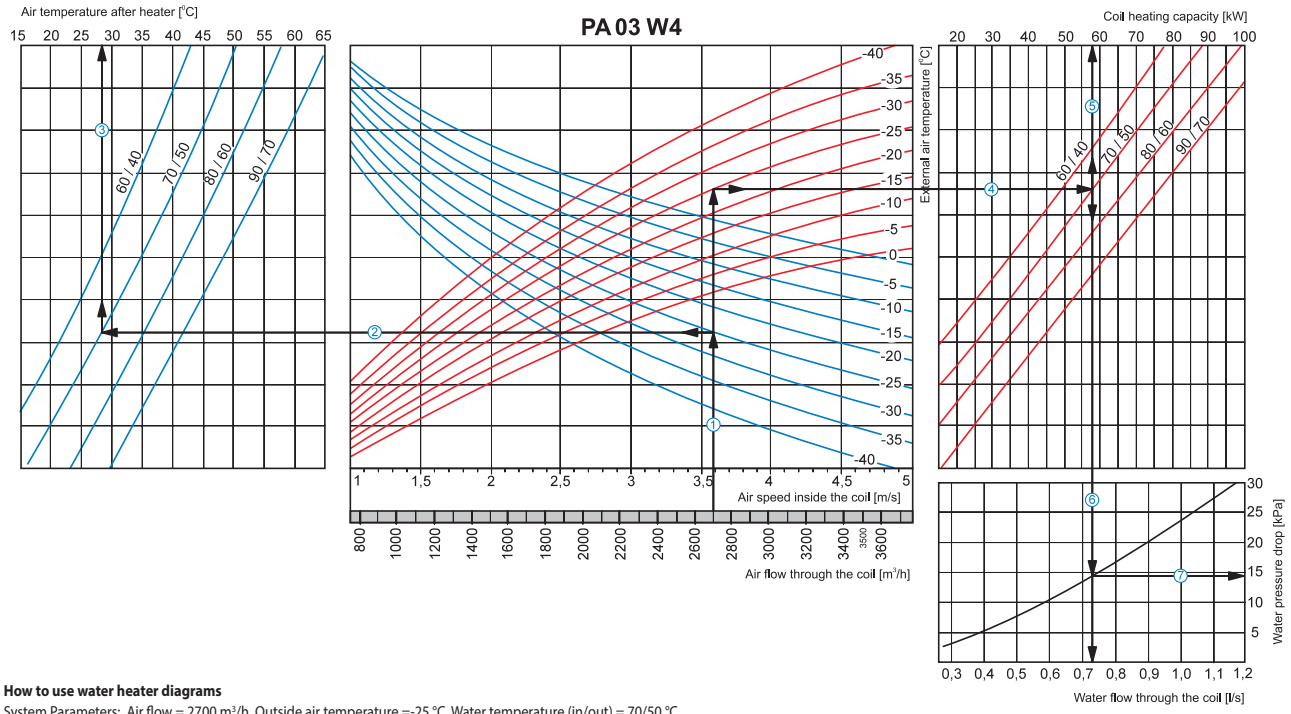


How to use water heater diagrams

System Parameters: Air flow = 2500 m³/h. Outside air temperature =-20 °C. Water temperature (in/out) = 90/70 °C.

- Air Speed. Starting from 2500 m³/h on the air flow scale draw a vertical line ① till the air speed axis which makes about 3.32 m/s.
- Supply air temperature. prolong the line 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 till crossing 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 °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 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 (40.0 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.47 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. (6.0 kPa).

VENTS PA...W



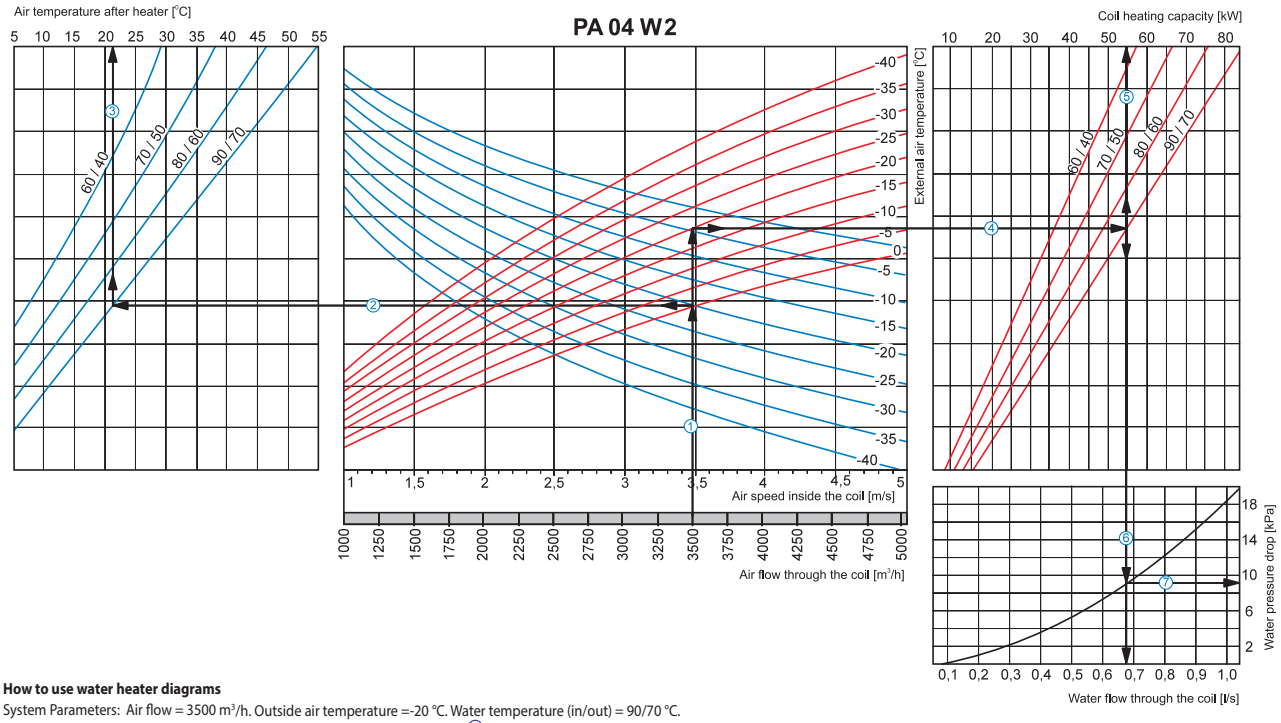
How to use water heater diagrams

System Parameters: Air flow = 2700 m³/h. Outside air temperature =-25 °C. Water temperature (in/out) = 70/50 °C.

- Air Speed. Starting from 2700 m³/h on the air flow scale draw a vertical line ① till the air speed axis which makes about 3.59 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 till crossing 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 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 (58.0 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.73 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. (14.0 kPa).

Hot water coil parameters

VENTS PA...W



How to use water heater diagrams

System Parameters: Air flow = 3500 m³/h. Outside air temperature =-20 °C. Water temperature (in/out) = 90/70 °C.

- Air Speed. Starting from 3500 m³/h on the air flow scale draw a vertical line ① till the air speed axis which makes about 3.48 m/s.
- Supply air temperature. prolong the line 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 till crossing 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 °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 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 (55.0 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. (9.2 kPa).

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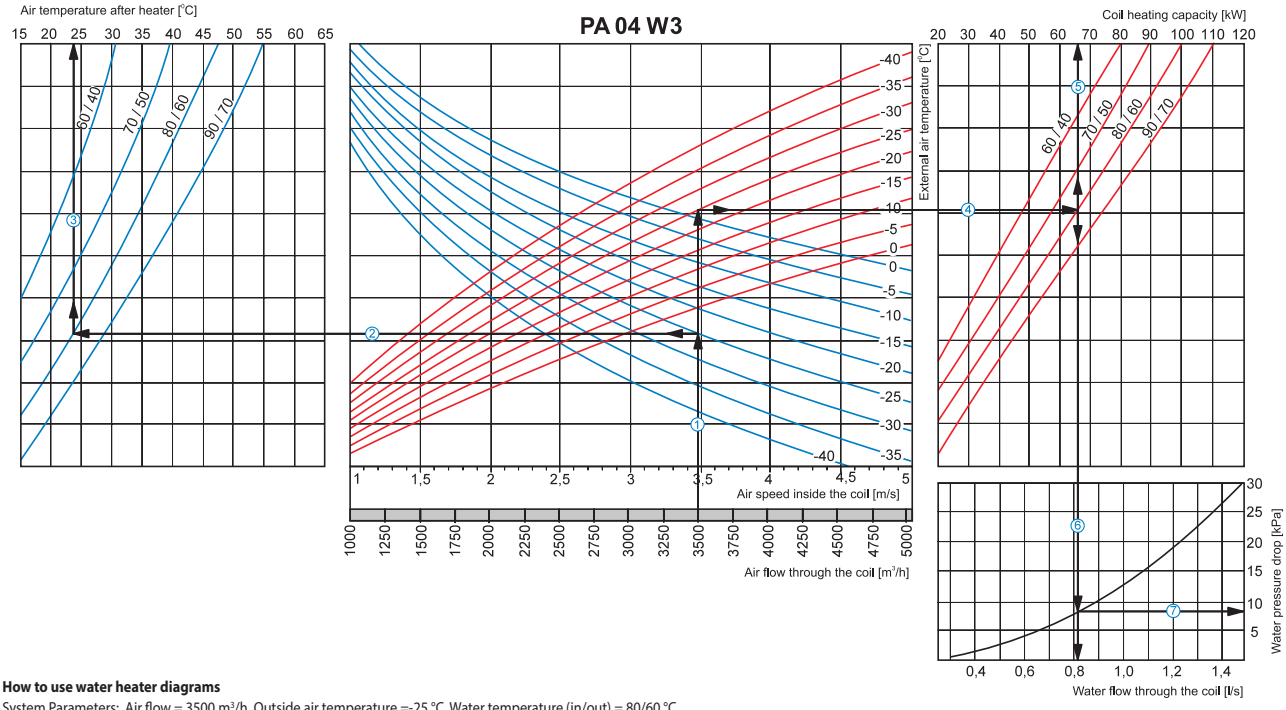

How to use water heater diagrams

System Parameters: Air flow = 3500 m³/h. Outside air temperature =-25 °C. Water temperature (in/out) = 80/60 °C.

- Air Speed. Starting from 3500 m³/h on the air flow scale draw a vertical line ① till the air speed axis which makes about 3.48 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 till crossing water in/out temperature curve (e.g. 80/60 °C). From this point draw a vertical line ③ to the supply air temperature axis on top of the graphic (+24 °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 water in/out temperature curve (e.g., 80/60 °C), from here draw a vertical line ⑤ up to the scale representing the heating coil capacity (65.0 kW).
- Water flow. Prolong the line ⑤ down to water flow axis at the bottom of the graphic ⑥ (0.81 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. (8.0 kPa).