Series
VENTS PA...E

SAS908 control panel

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

Series
VENTS PA...W

SAS908 control panel

Suspended air supply units with the air capacity 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 aluzink 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) heating coils. 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 capacity 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
The supply units are available in two modifications:
1. No control and automation system supplied. Customer-defined and customer-selected control automation system.
2. Integrated control and automation system for speed (air capacity) 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;

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	_ – no control system **LCD** – integrated control system

Accessories

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- 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 50 °C with automatic reset and 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 (refer RRVA);
- 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.

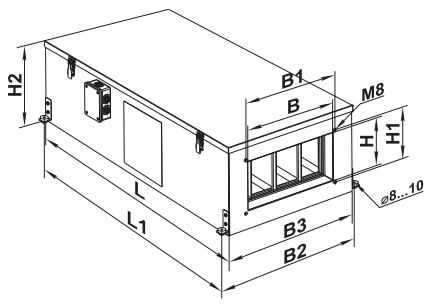
Supplementary equipment

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 (refer RRVA) 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 (refer RRVAF). 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.

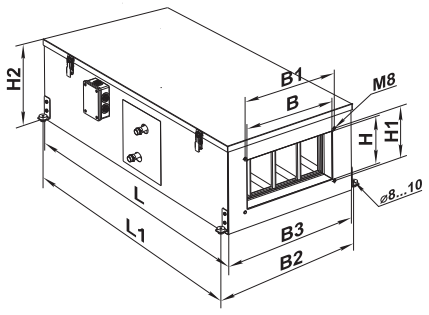
Unit overall dimensions:

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

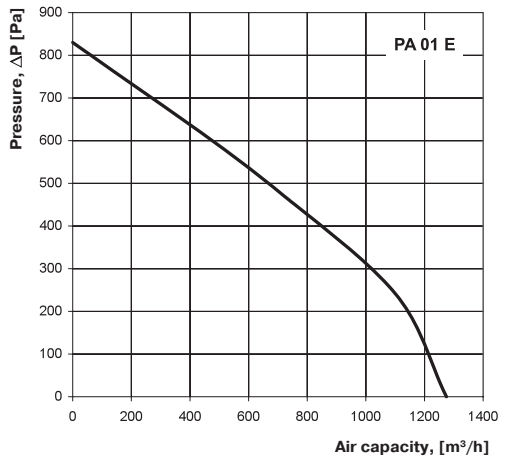


Technical data:

	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 capacity [m³/h]	1275	1200		2500	2350	
RPM	2700			2690		
Noise level at 3m [dBA]	51			54		
Transported air temperature [°C]	-25 up to +55			-25 up to +45		
Casing material	aluzink			aluzink		
Insulation	50 mm mineral wool			50 mm mineral wool		
Filter	panel filter G4	G4 (F7) bag type*		panel filter G4	G4 (F7) bag type*	
Connected air duct size [mm]	400x200			500x300		
Weight [kg]	56	55	57	61	61	63

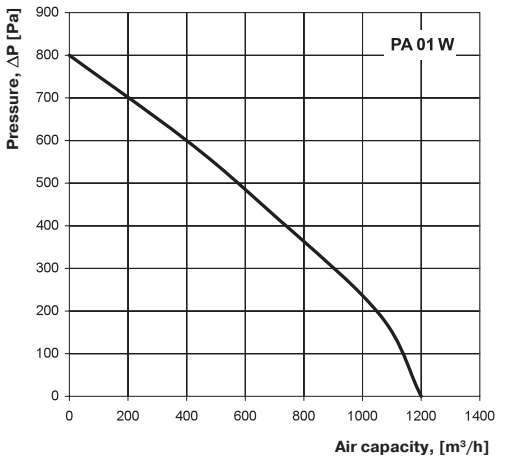
*option

VENTS PA...E



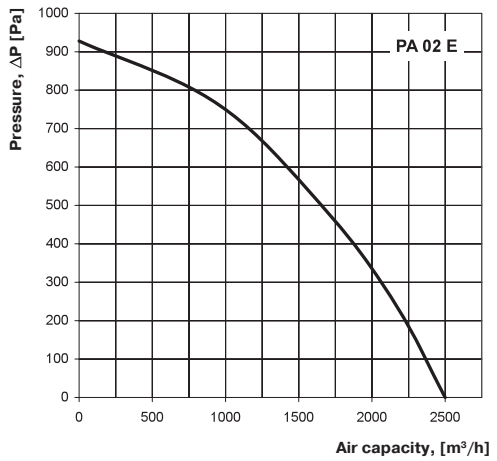
Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L_{WA} to inlet	dB(A)	62	45	62	60	55	45	45	47	35
L_{WA} to outlet	dB(A)	73	48	60	66	71	62	64	62	56
L_{WA} to environment	dB(A)	47	22	40	47	44	30	32	29	19

VENTS PA...W



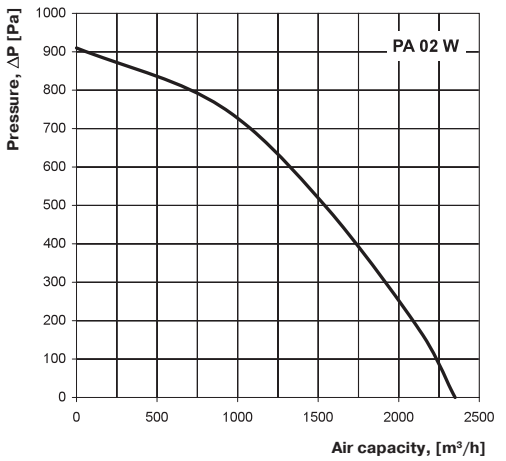
Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L_{WA} to inlet	dB(A)	62	47	62	58	54	43	45	44	37
L_{WA} to outlet	dB(A)	73	49	61	70	70	62	63	61	57
L_{WA} to environment	dB(A)	47	24	39	44	46	33	35	27	19

VENTS PA...E



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

VENTS PA...W



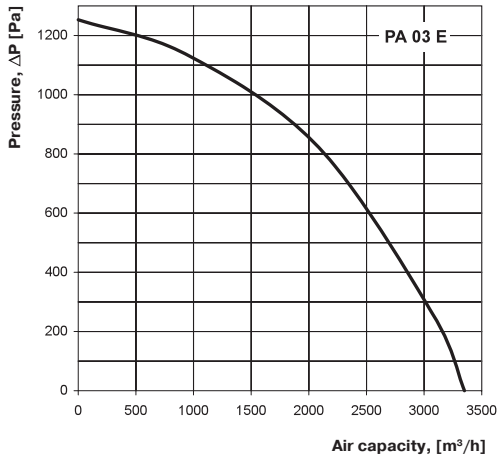
Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L_{WA} to inlet	dB(A)	69	52	69	65	60	58	49	55	49
L_{WA} to outlet	dB(A)	85	57	71	82	77	75	74	73	69
L_{WA} to environment	dB(A)	55	37	58	61	53	51	52	55	52

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 capacity [m³/h]	3350	3260		4100	
RPM		2730		2840	
Noise level at 3m [dBA]		57		58	
Transported air temperature [°C]		-25 up to +45		-25 up to +70	
Casing material		aluzink		aluzink	
Insulation		50 mm mineral wool		50 mm mineral wool	
Filter	panel filter G4	G4 (F7) bag type*		G4 (F7) bag type*	
Connected air duct size [mm]		600x350		700x400	
Weight [kg]	91	91	94	107	110

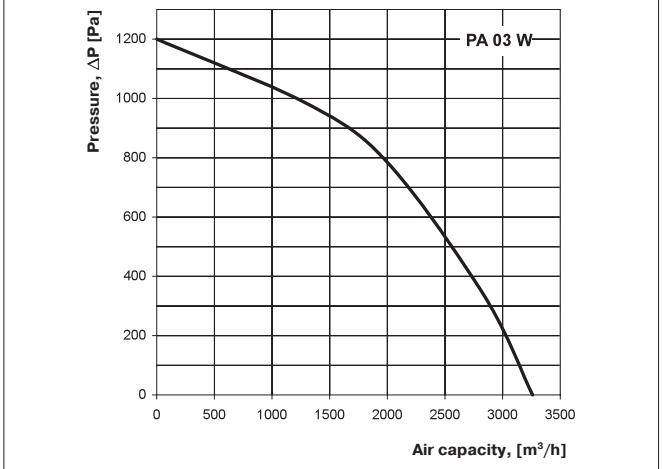
*option

VENTS PA...E



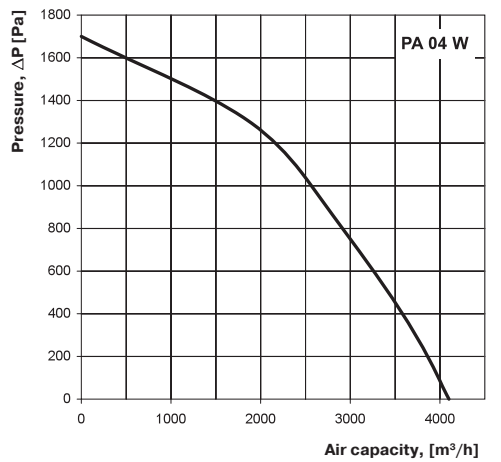
Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dB(A)	72	58	71	67	59	49	51	56	54
L_{wA} to outlet	dB(A)	77	58	71	73	71	70	68	65	55
L_{wA} to environment	dB(A)	58	41	59	62	51	47	53	51	46

VENTS PA...W



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

VENTS PA...W



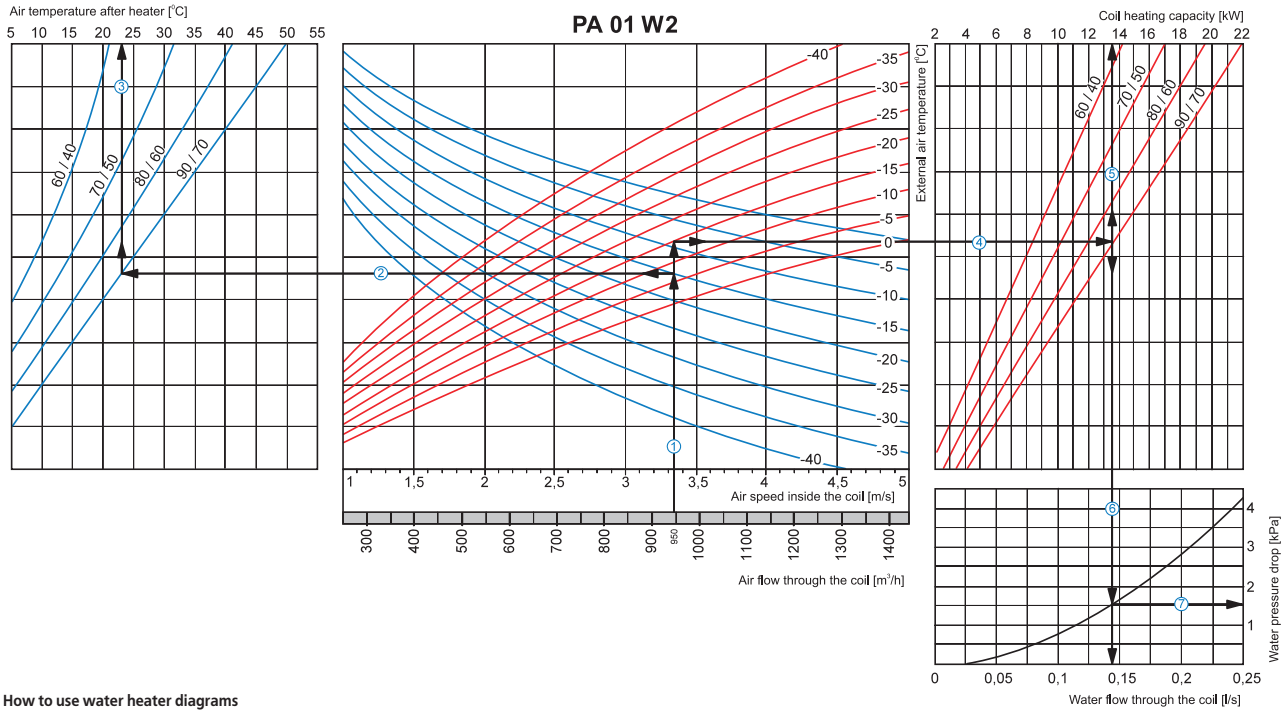
Sound-power level		Octave-frequency band [Hz]								
	Hz	Tot.	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dB(A)	79	57	73	68	68	66	66	64	52
L_{wA} to outlet	dB(A)	85	60	84	82	77	77	72	71	61
L_{wA} to environment	dB(A)	62	47	72	71	59	52	50	55	53

Accessories to supply units:

Type	G4 replaceable filter	F7 replaceable filter	Filter type
PA 01 E	SF PA/VA 01 E G4	-	panel filter
PA 02 E	SF PA/VA 02 E G4	-	panel filter
PA 03 E	SF PA/VA 03 E G4	-	panel filter
PA 01 W2	SFK PA 01 W G4	SFK PA 01 W F7	bag filter
PA 01 W4			
PA 02 W2	SFK PA 02 W G4	SFK PA 02 W F7	bag filter
PA 02 W4			
PA 03 W2	SFK PA 03 W G4	SFK PA 03 W F7	bag filter
PA 03 W4			
PA 04 W2	SFK PA 04 W G4	SFK PA 04 W F7	bag filter
PA 04 W3			

Hot water coil parameters:

VENTS PA...W

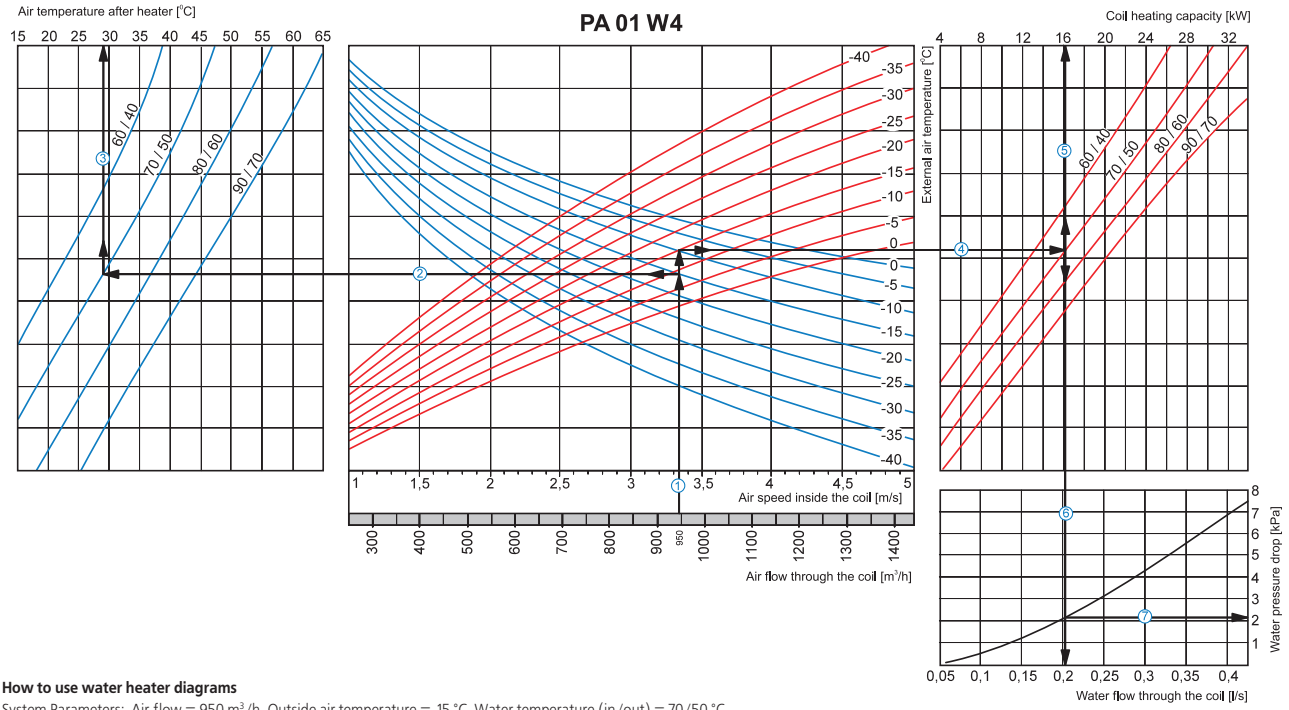


How to use water heater diagrams

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



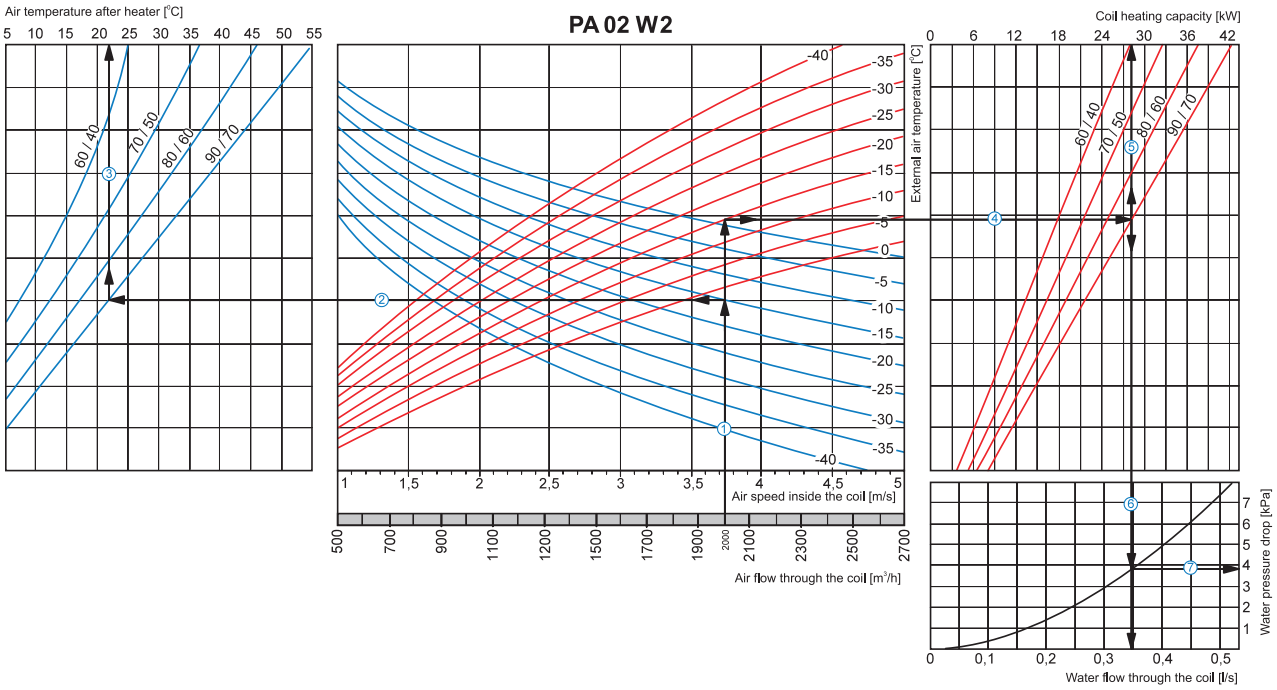
How to use water heater diagrams

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

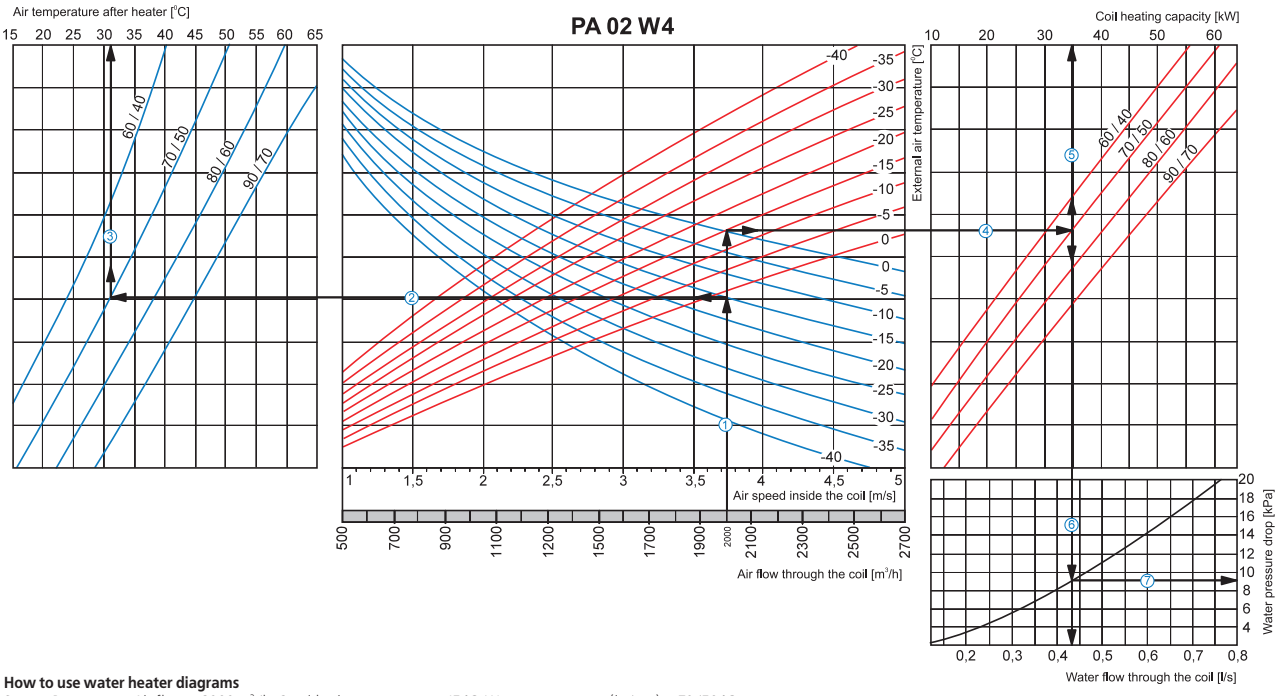


How to use water heater diagrams

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



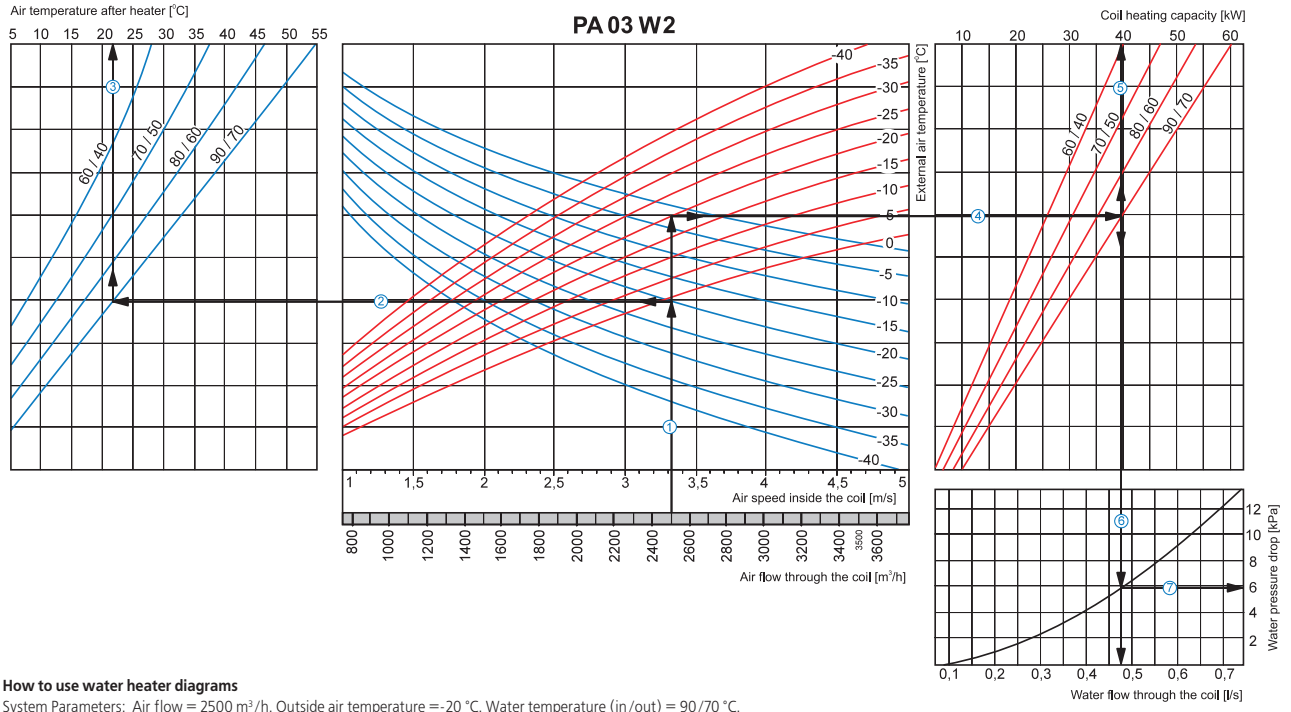
How to use water heater diagrams

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

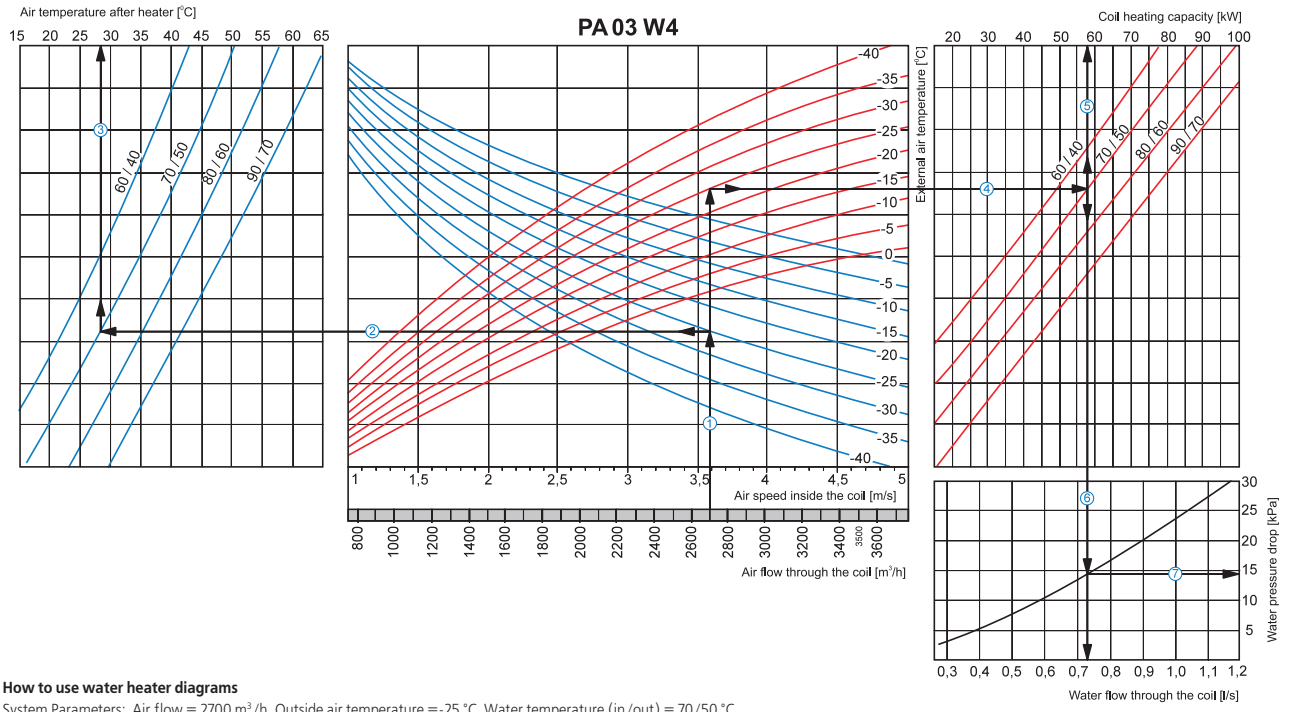


How to use water heater diagrams

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



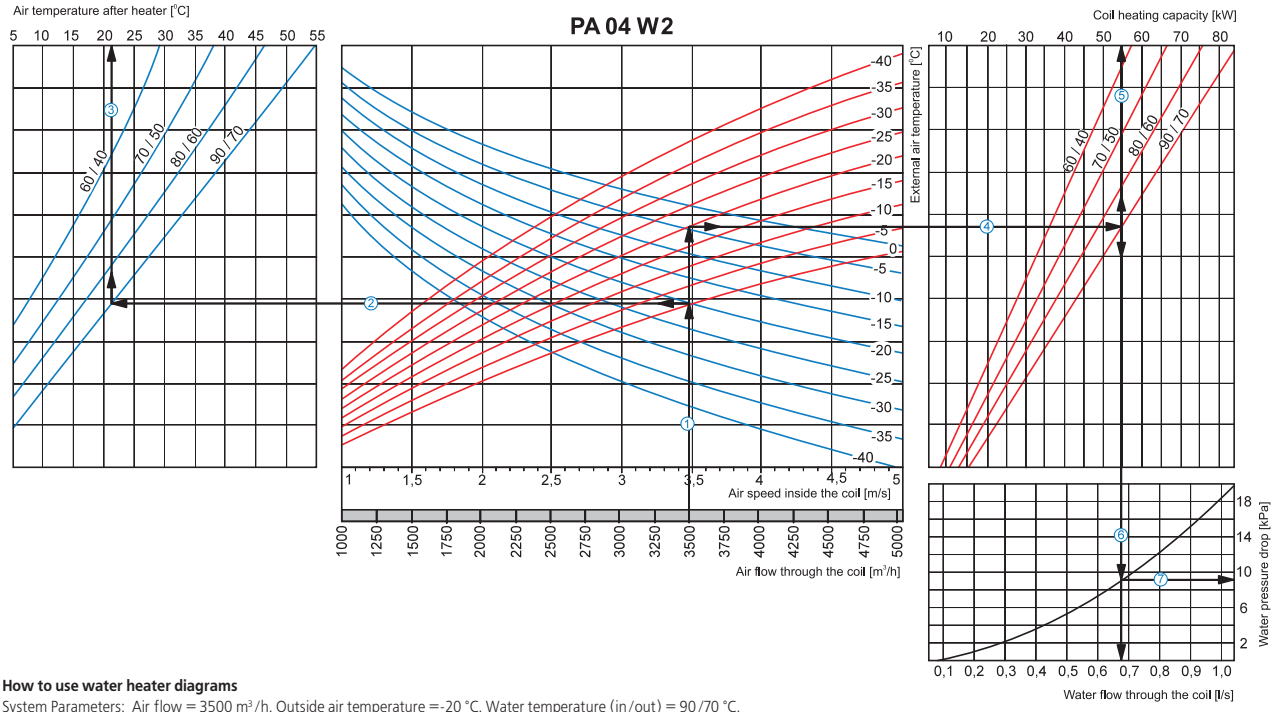
How to use water heater diagrams

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

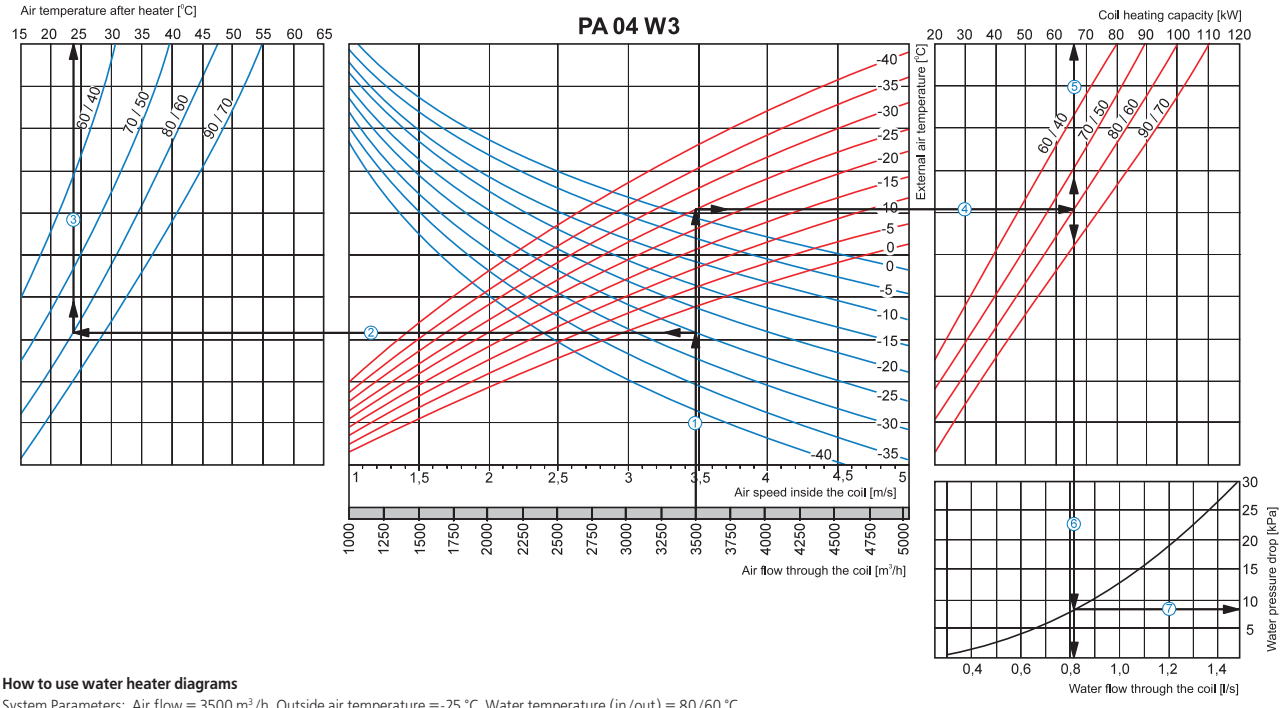


How to use water heater diagrams

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).

VENTS PA...W



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).