Series
VENTS AVU

Air handling unit with a rotary regenerator, air capacity up to **3000 m³/h** and heat recovery efficiency up to 65%

Description
The AVU 03 air handling unit is a fully-featured ventilation unit that ensures air filtration, fresh air supply and stale air extract. Extract air heat energy is recovered by a rotary regenerator. The unit is applied as component of ventilation and air conditioning networks for various premises requiring cost-efficient controllable ventilation. Integrated EC motors provide energy demand decrease by 1.5 to 3 times and ensure low noise level. The AVU air handling unit series is expected to be supplemented with AVU 05, AVU 07, AVU 09, AVU 11 and AVU 14 models with air capacity up to 14 000 m³/h.

Modifications
AVU 03/SE/R – inner modification model.
AVU 03/SE/R/H – inner modification model, water heater.
AVU 03/SE/R/O – outer modification model.
AVU 03/SE/R/OH – outer modification model, water heater.

Casing
The casing is made of sandwich panels, 25 mm thick for inner modifications and 50 mm thick for outer modifications.
The aluzink panels are filled with mineral wool between for reliable sound- and heat insulation. Specially designed swivel side panels of the unit ensure easy access to the unit components and enable the unit mounting in limited service space conditions.
The supply and exhaust air ducts are fitted with electrically actuated air dampers. The outer models are equipped with protecting hoods for fresh air intake and stale air exhaust.

Filters
The unit has two filters, a G4 panel filter and a F7 bag filter. Extract air is purified with a G4 panel filter.

Motor
High-efficient electronically-commutated direct current motors with external motor and impeller with backward curved blades. Such motors are the most state-of-the-art energy-saving solution. EC motors are featured with high performance and total speed controllable range. High efficiency reaching 90% is the premium advantage of the electronically-commutated motors.

Rotary regenerator
Rotary regenerator is a rotating short cylinder filled with corrugated aluminium panels that are laid to enable supply and air streams flow through it. While rotating, the aluminium band inside the regenerator comes in contact first with exhaust and then with supply air flow. So the aluminium band in heated and cooled down in turns and this way the heat and moisture from warm extract air flow is transferred to cold intake air flow.
As compared to plate heat exchangers, advantages of the rotary regenerator include the ability to maintain comfortable air humidity and extremely low

Designation key:

Series	Rated air capacity [m³/h]		Heat exchanger	Function block
VENTS AVU	**03** – 3000 m³/h	/	**SE/R** – rotary regenerator, inner modification; **SE/R /O** – rotary regenerator, outer modification.	**H** - water heater

Accessories


DX3/AVU 03
DX3/AVU 03/O


C3/AVU 03
C3/AVU 03/O


FC/AVU 03/G4


F/AVU 03/F7

freezing danger of the regenerator, which is nearly excluded in case of rated temperature and humidity conditions.

Heater

The unit **AVU 03/...H** is equipped with a water heater for the unit operating conditions at low outside temperatures.

If set supply air temperature is not be attained with heat recovery only, the heater is turned on to warm up air flow supplied to the room.

The water heater is compatible with the systems with maximum operating pressure 1.0 Mpa (10 bar) and maximum heat medium temperature + 95 °C.

Cooler

The unit has connection possibilities for a water cooling block (C3 / AVU 03, special accessory) or DX cooling block (DX3 / AVU 03, special accessory). These blocks are available in outer and inner modifications with a panel width 50 or 25 mm respectively.

Control and automation

The unit is equipped with integrated automation.

Automation functions:

- turning the unit on/off according to set control logic;
- setting supply air temperature and air flow from the remote control panel;
- actuating air dampers;
- filter control with a differential pressure switch;
- supply and control and regulation by actuating the heat medium regulating three-way valve;
- circulation pump control and regulation;
- water heater freezing protection by the temperature sensor downstream of the water heater and the return medium thermostat.

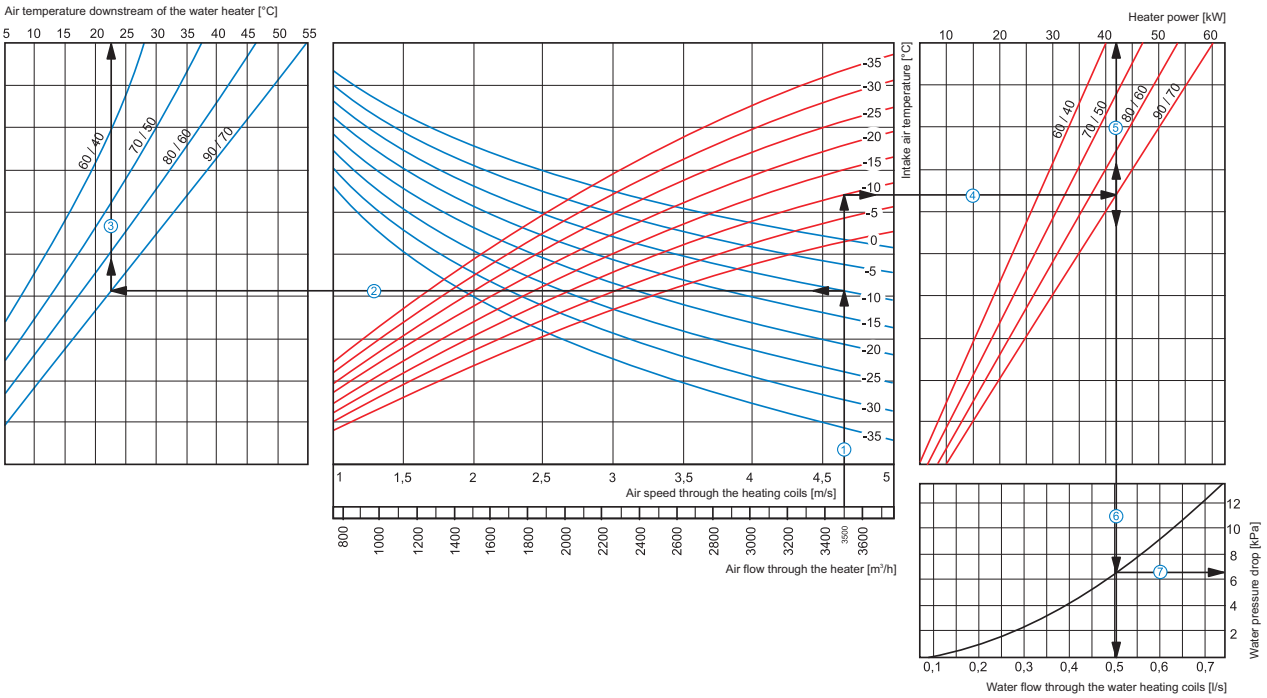
Mounting

The unit is designed for mounting on a horizontal surface. Access for servicing through side panels.

Technical data:

	AVU 03/SE/R	AVU 03/SE/R/H	AVU 03/SE/R/O	AVU 03/SE/R/OH
Unit supply voltage, 50 Hz [V]	3~ 380			
Max. unit power [kW]	2,52			
Max. unit current [A]	4			
Max. air capacity [m^3/h]	3000			
Water cooler block (not included delivery)	C3/AVU 03		C3/AVU 03/O	
DX cooler block (not included delivery)	DX3/AVU 03		DX3/AVU 03/O	
Outer hood	–		in the delivery set	
Max. transported air temperature [°C]	-25...+60			
Casing material	aluzink			
Insulation	25 mm		50 mm	
Extract filter	G4 panel filter			
Supply filter	G4 panel filter and F7 bag filter			
Overall dimensions: Length [mm]	2200			
Width [mm]	970			
Height [mm]	970			
Connected air duct size [mm]	600 x 350			
Heat recovery efficiency [%]	65			
Heat exchanger type	rotary regenerator			
Heat exchanger material	aluminium			

Water heater parameters:

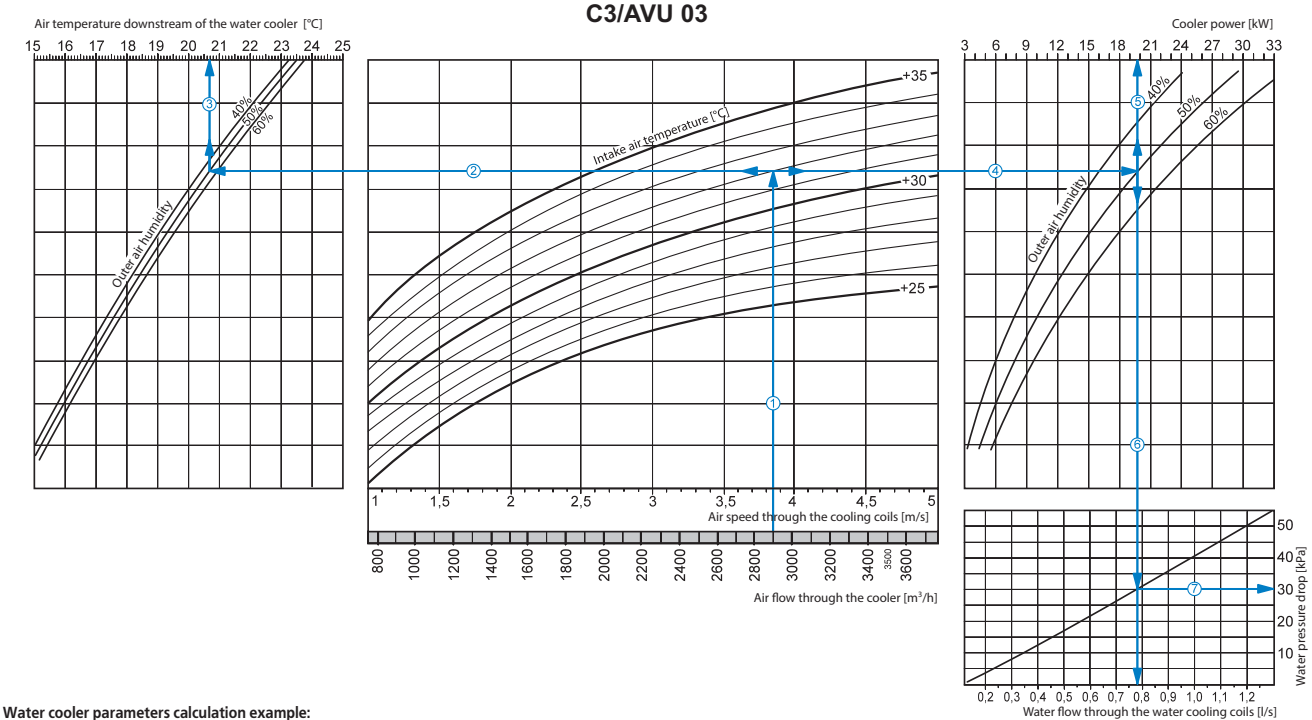


Water heater parameters calculation example:

Air Speed. Starting from 3500 m³/h on the air flow scale draw a vertical line ① till the air speed axis which makes 4.65 m/s.

- Supply air temperature. Prolong the line ① of air flow up to the point where it crosses the outside air temperature (-10°C); then draw a horizontal line ② from this point to the left till crossing water in/out temperature curve (90/70). From this point draw a vertical line ③ to the supply air temperature axis on top of the graphic (+22.5 °C).
- Heating capacity. Prolong the line ① up to the point where it crosses the outside air temperature (red line, -10°C) and draw a horizontal line ④ from this point to the right until it crosses water in/out temperature curve (90/70), from here draw a vertical line ⑤ up to the scale representing the heating coil capacity (42.0 kW).
- Water flow. Prolong the line down to water flow axis at the bottom of the graphic ⑥ (0.5 l/s).
- Water pressure drop. Draw the line ⑦ from the point where line ⑥ crosses the black curve to the pressure drop axis. (6.5 kPa).

Water cooler parameters:

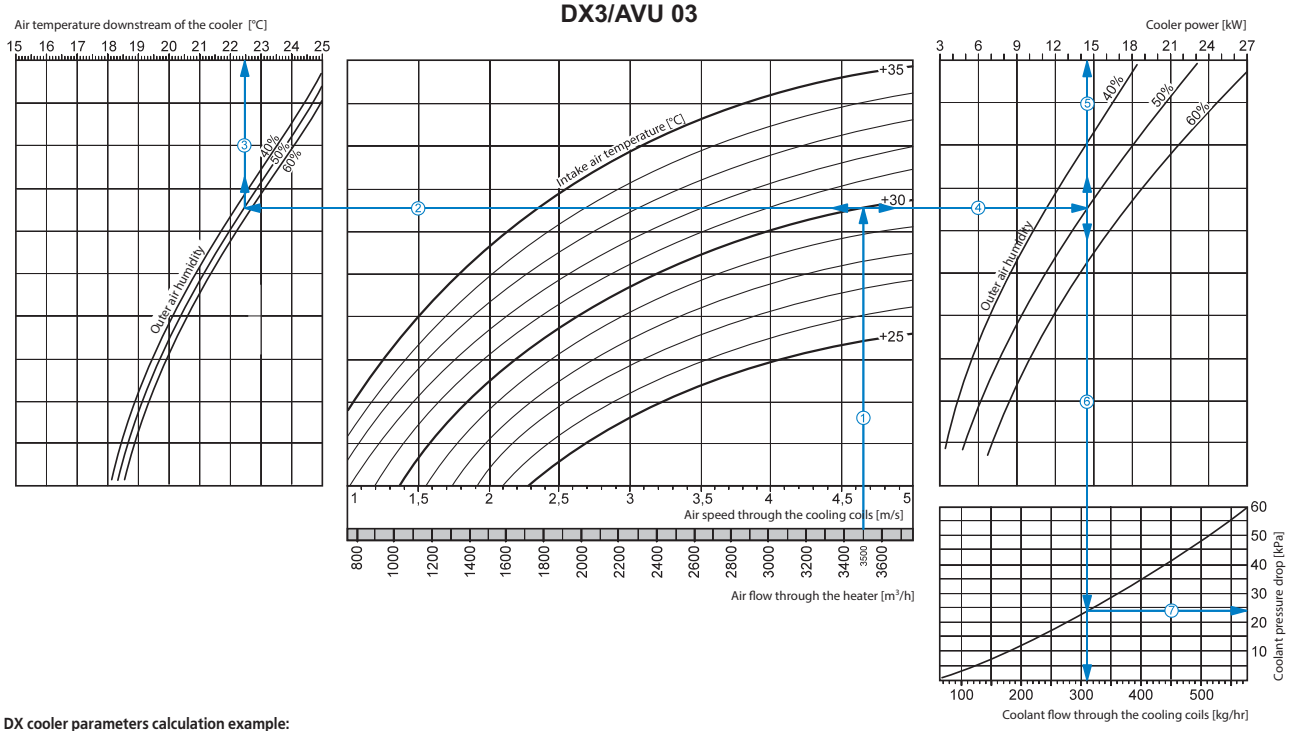


Water cooler parameters calculation example:

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

- Supply air temperature. Prolong the line ① of air flow up to the point where it crosses the outside summer air temperature (+32°C); then draw a horizontal line ② from this point to the left till crossing intake air humidity curve (50%). From this point draw a vertical line ③ to the air temperature downstream of the cooler axis on top of the graphic (+20.7 °C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the summer outside air temperature (+32°C) and draw a horizontal line ④ from this point to the right till crossing intake air humidity curve (50%), from here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (19.8 kW).
- Water flow. Prolong the perpendicular line down to water flow axis at the bottom of the graphic ⑥ (0.78 l/s).
- Water pressure drop. Draw the line ⑦ rightwards from the point where the line ⑥ crosses the curve to the pressure drop axis. (30 kPa).

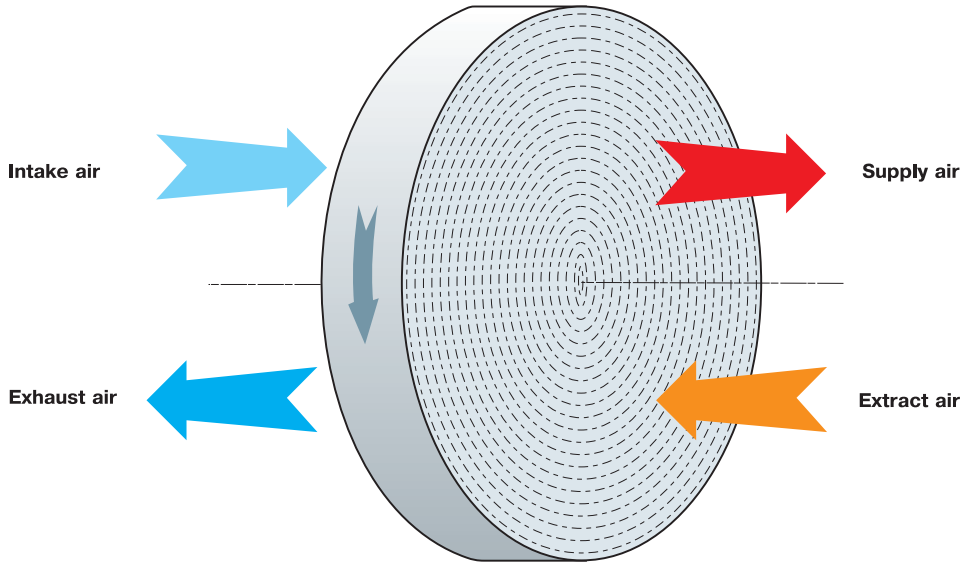
DX cooler parameters calculation example:



DX cooler parameters calculation example:

Air Speed. Starting from 3500 m³/h on the air flow scale draw a vertical line ① till the air speed axis which makes 4.65 m/s.

- Supply air temperature. Prolong the line ① of air flow up to the point where it crosses the outside summer air temperature (+30°C); then draw a horizontal line ② from this point to the left till crossing intake air humidity curve (50%). From this point draw a vertical line ③ to the air temperature downstream of the cooler axis on top of the graphic (+22.5 °C).
- Cooling capacity. Prolong the line ① up to the point where it crosses the summer outside air temperature (+30°C) and draw a horizontal line ④ from this point to the right till crossing intake air humidity curve (50%), from here draw a vertical line ⑤ up to the scale representing the cooling coil capacity (14.5 kW).
- Coolant flow. Prolong the perpendicular line down to coolant flow axis at the bottom of the graphic ⑥ (310 kg/hr).
- Coolant pressure drop. Draw the perpendicular line ⑦ rightwards from the point where the line ⑥ crosses the curve to the pressure drop axis. (24.0 kPa).



Rotary regenerator operating logic