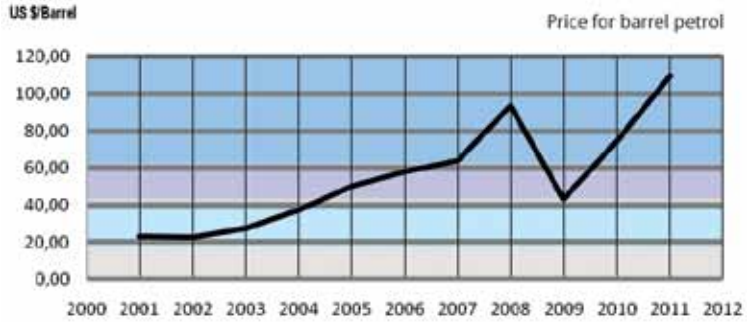
The air we breathe is important for our life!

One can live 3 weeks without food, 3 days without water, 3 minutes without air!

People in industrialized countries spend indoor, on average about 90% of the year. Modern buildings and systems do not allow natural ventilation. This is a major precondition for creation of mechanical ventilation.

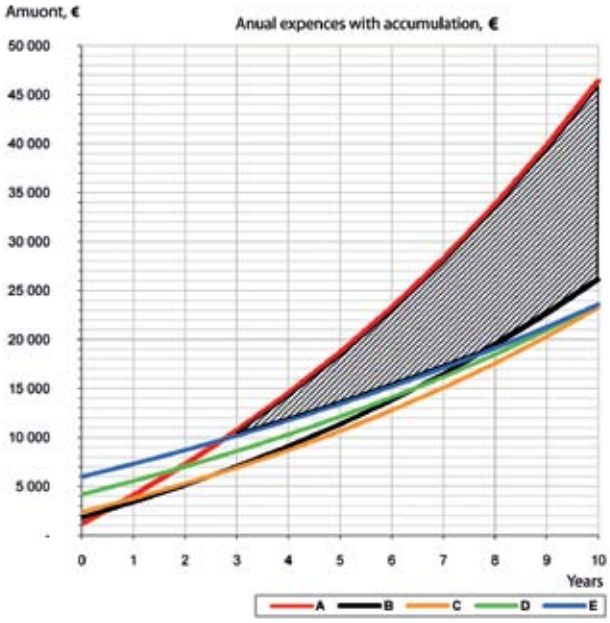
The fresh air must be heated in winter and chilled in summer, and this is related with significant energy costs. There is a preliminary trend for growing of the price of energy resources for the last 10 years:



Human health and productivity are closely connected with the air quality. Our children need fresh air even more than us – it could help to avoid illnesses and allergies.

Energy consumption leads to environmental pollution and exhausting of resources of the planet. It is our duty to protect it for future generation.

Quickly return on investments using heat recovery systems:

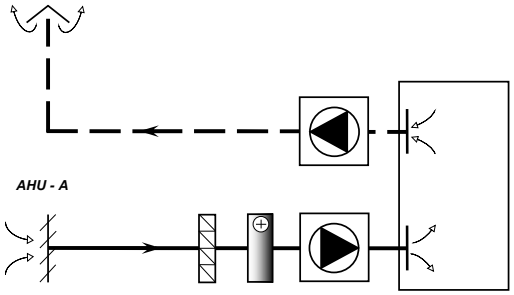


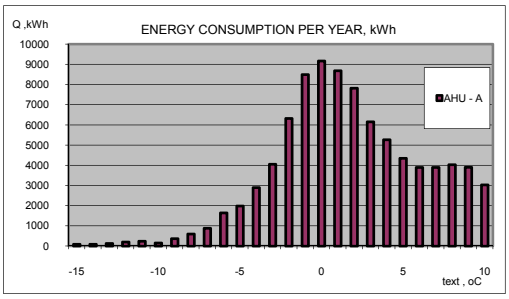
The data shown are not universal. These parameters are valid for the following conditions:

- Bulgaria, Sofia;
- Indoor temperature 22oC;
- Air flow – 3000m3/h;
- Installation working time – 10 of 24h.
- Installation life time – 10 years;
- Energy price – 0.1 Euro/kWh;
- 8% annual maintenance costs;
- Energy price growth – 12% per year;
- The initial expenses are average;

Your lost money!

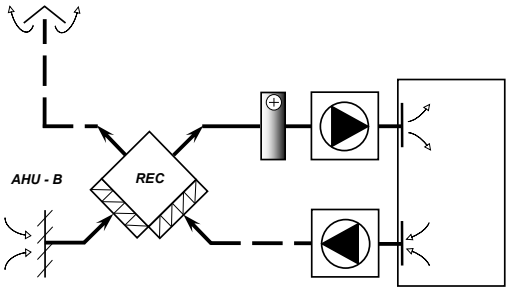
Heat recovery systems are the proper technical and economically acceptable solution:

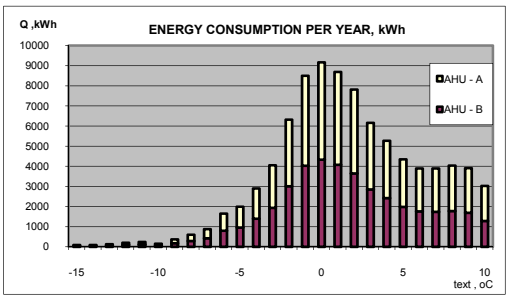




System without recuperation

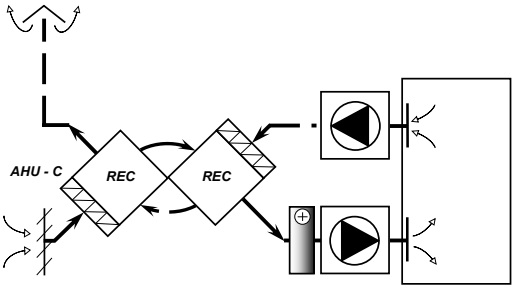
E=0%

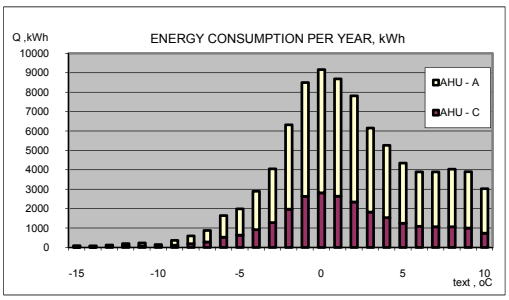




System with plate heat exchanger

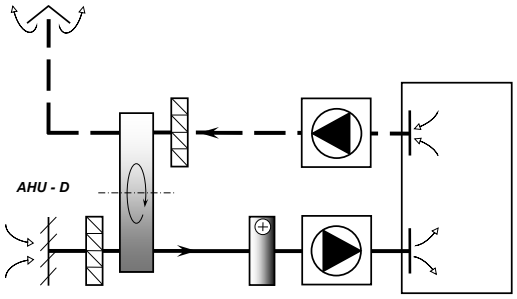
E=45 – 58%

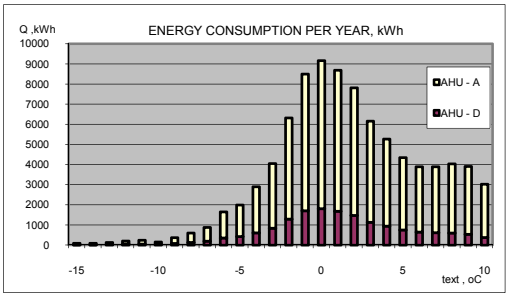




System with high-efficiency plate heat exchanger

E=65 – 70%





System with rotary heat exchanger

E=70 – 83%

E - % percentage of recovered energy

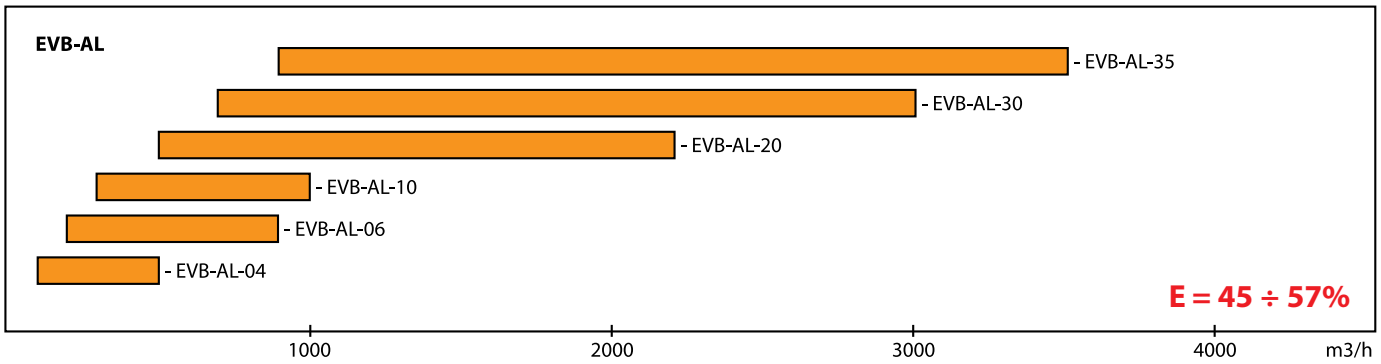
Applications of heat recovery units:

Ventilation and air-conditioning systems, which provide fresh air supply in:

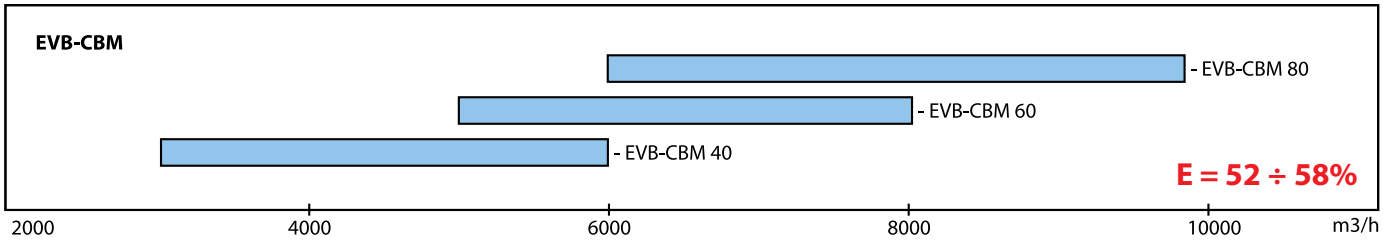
- Office and residential buildings;
- Hotels, restaurants, cafes, nightclubs;
- Sports halls, gyms and swimming pools;
- Hospitals, schools, laboratories;
- Cinemas, theaters, concert halls;
- Food industries – bakeries;
- Technological systems;
- Industrial ventilation.

We reserve the right to introduce alternations both in design and technical data without prior notice, due to continued product development.

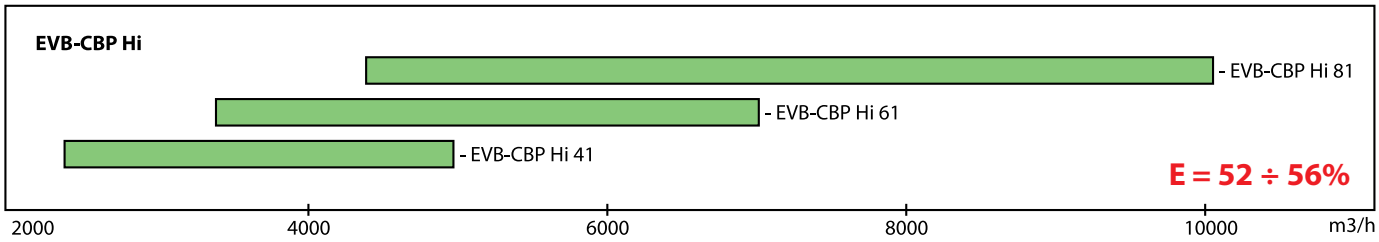
Standard range – EVB-AL



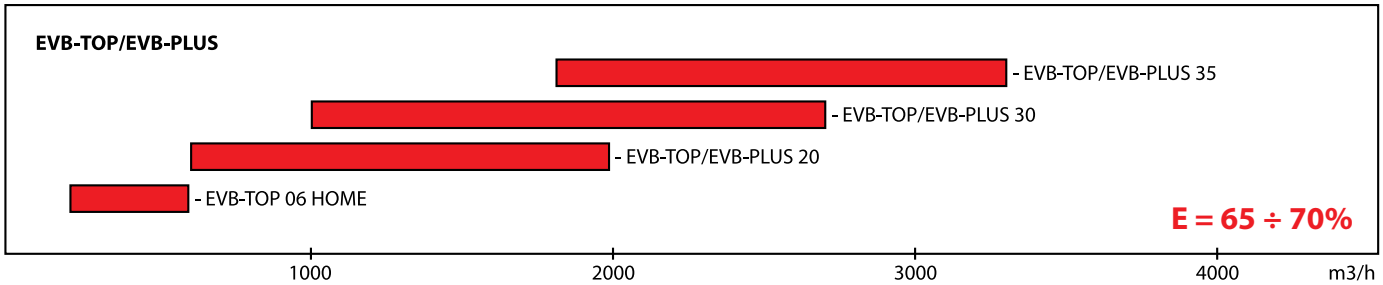
Middle range low pressure - EVB-CBM



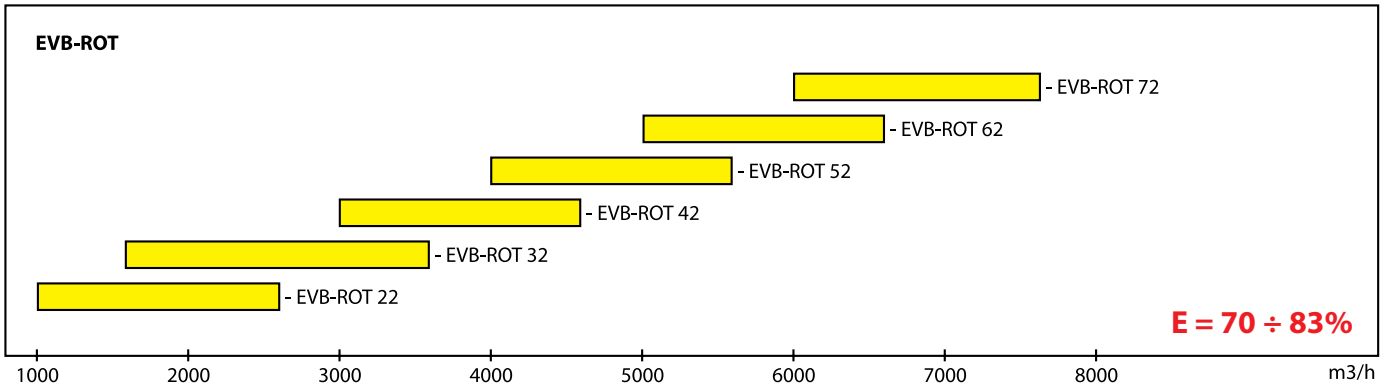
Middle range, high pressure - EVB-CBP



High efficiency range – EVB-TOP/ PLUS



Rotary regenerative exchanger range - EVB-ROT



Note: For flow rate higher than mentioned, see Section 6 – Air handling units.

CONTENTS

05.01	EVB AL	**HEAT RECOVERY UNITS** Air flow: 200 ÷ 3200 м³/ч.	E = 45 ÷ 57 %	7
05.02	EVB AL-CBM	**HEAT RECOVERY UNITS** **MIDDLE RANGE – LOW PRESSURE** Air flow: 3000 ÷ 10 000 м³/ч.	E = 52 ÷ 58 %	17
05.03	EVB AL-CBP	**HEAT RECOVERY UNITS** **MIDDLE RANGE – HIGH PRESSURE** Air flow: 2500 ÷ 10 000 м³/ч.	E = 50 ÷ 56 %	23
05.04	EVB TOP/PLUS	**HIGH EFFICIENCY RANGE** **HEAT RECOVERY UNITS** Air flow: 150 ÷ 2800 м³/ч.	E = 65 ÷ 70 %	27
05.05	EVB ROT	**HEAT RECOVERY UNITS** **WITH ROTARY REGENERATIVE HEAT EXCHANGER** Air flow: 1000 ÷ 7500 м³/ч.	E = 70 ÷ 83 %	37

Note:

* Thermal efficiency data is approximate, calculated at equal mass flow rates of both streams and without condensation.

** For more specific calculations, please, use the software on the website of "Tangra" - www.tangra.bg

EVB AL-CBM – HEAT RECOVERY UNITS MIDDLE RANGE – LOW PRESSURE

Description

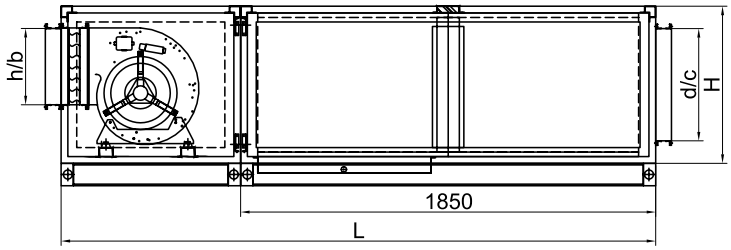
- Units for secondary use of energy of the exhaust air in ventilation and air-conditioning systems.
- Operation temperatures from -20°C to +50°C.
- Designed to work with clean air in non-aggressive and non-sparkling environment.

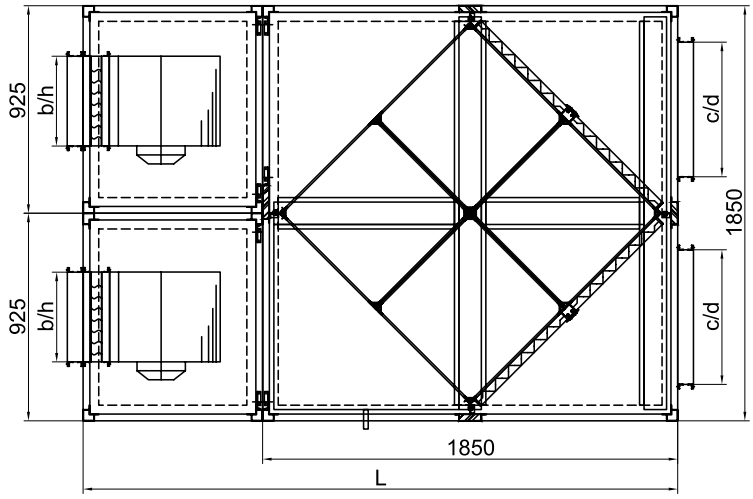
Construction

- Supporting construction, made by anodized aluminium profiles
- Thermo and sound insulated panels, powder coated RAL7035: Sandwich panels – 25 mm with XPS insulation class M1 or fiberglass class M0.
- Cross flow aluminium plate heat exchanger with efficiency up to 55%
- Double inlet direct drive centrifugal fans – 380V, 50 Hz
- Air filters class G4 – EN 779:2002
- Rectangular duct connector
- Drain tray with ½" connection
- Service doors – from the bottom and from the side
- By-pass with paired multiple leaf damper – on request
- Heating/cooling coil – on request
- Support frame or basic steps – on request
- Roof panels for outdoor installation – on request
- Control and management systems - see section 7

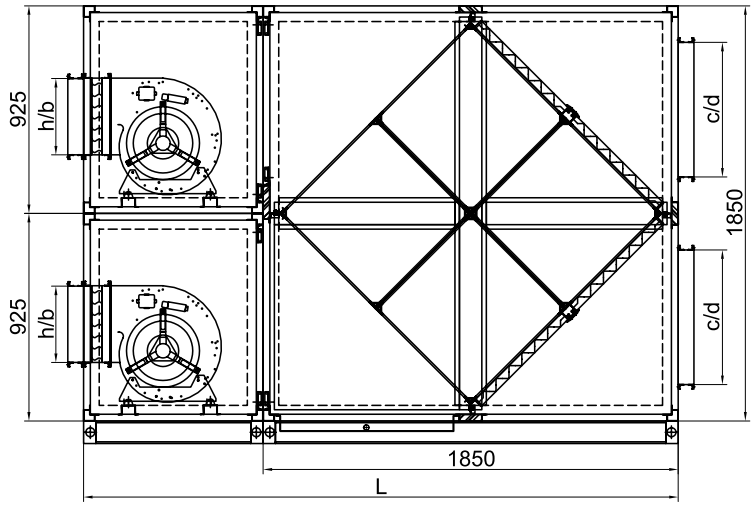
Overall and joined dimensions

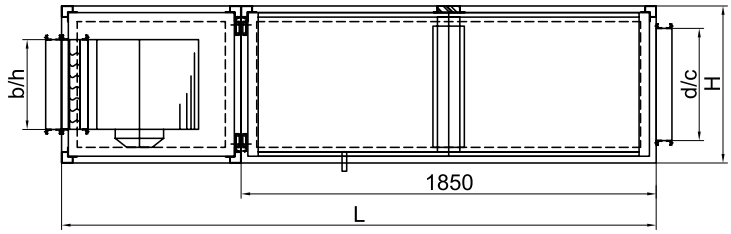
EVB AL-CBM, H – Horizontal installation





EVB AL-CBM, V – Vertical installation

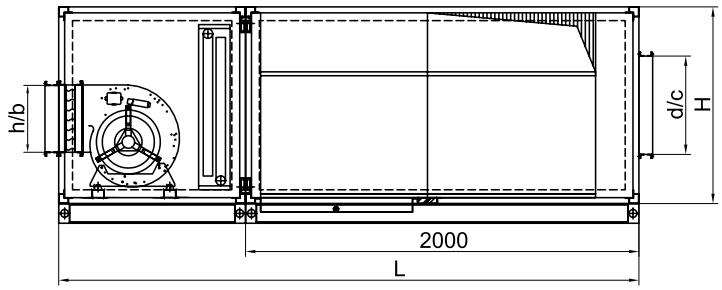


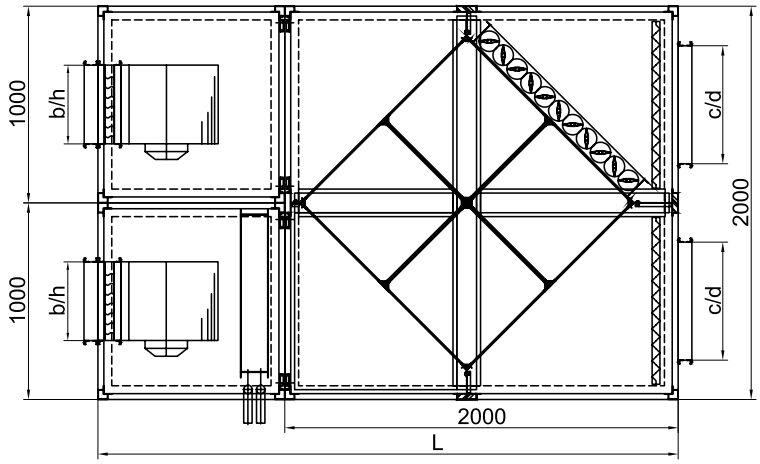


Model	Fan	Recuperative exchanger	H [mm]	L [mm]	b [mm]	h [mm]	c [mm]	d [mm]
EVB AL-40 CBM	CBM 320/320	RECAL-1200/9-070	700	2550	400	340	600	500
EVB AL-60 CBM	CBM 380/380	RECAL-1200/9-080	800	2650	475	400	700	600
EVB AL-80 CBM	CBM 380/380	RECAL-1200/9-110	1000	2650	475	400	700	700

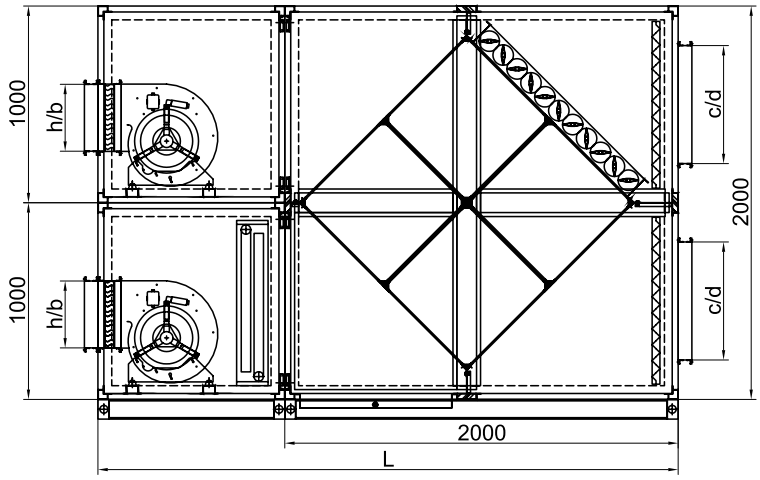
Overall and joined dimensions

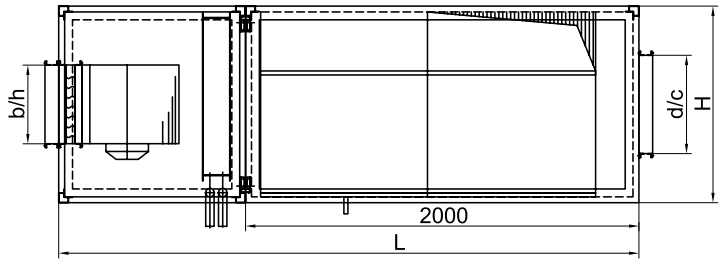
EVB AL-CBM-HBS (heating water coil and by pass), H – Horizontal installation





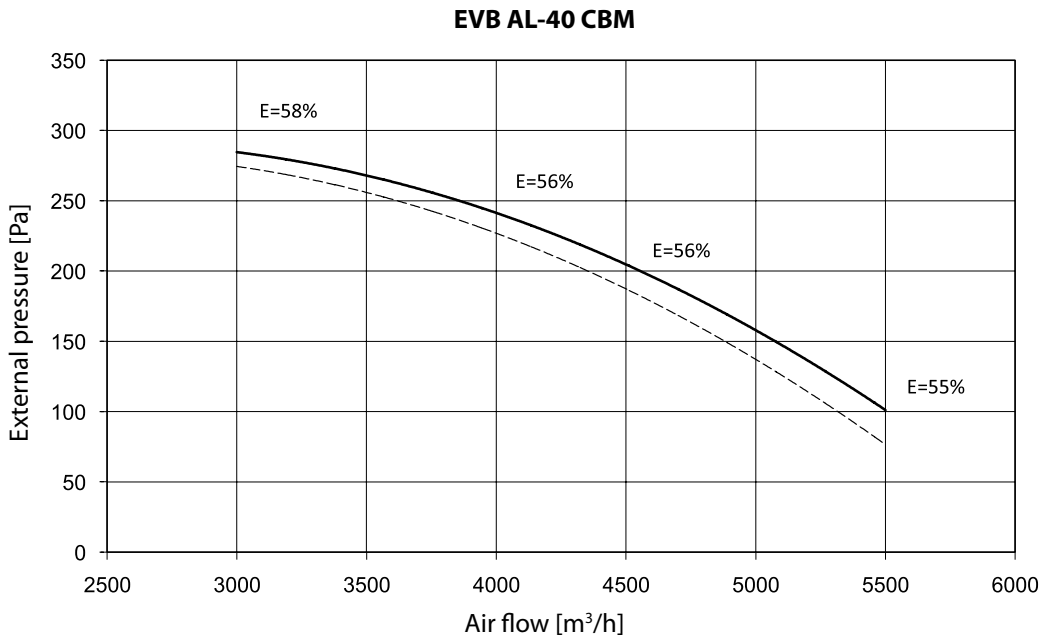
EVB AL-CBM-HBS (heating water coil and by pass), V – Vertical installation



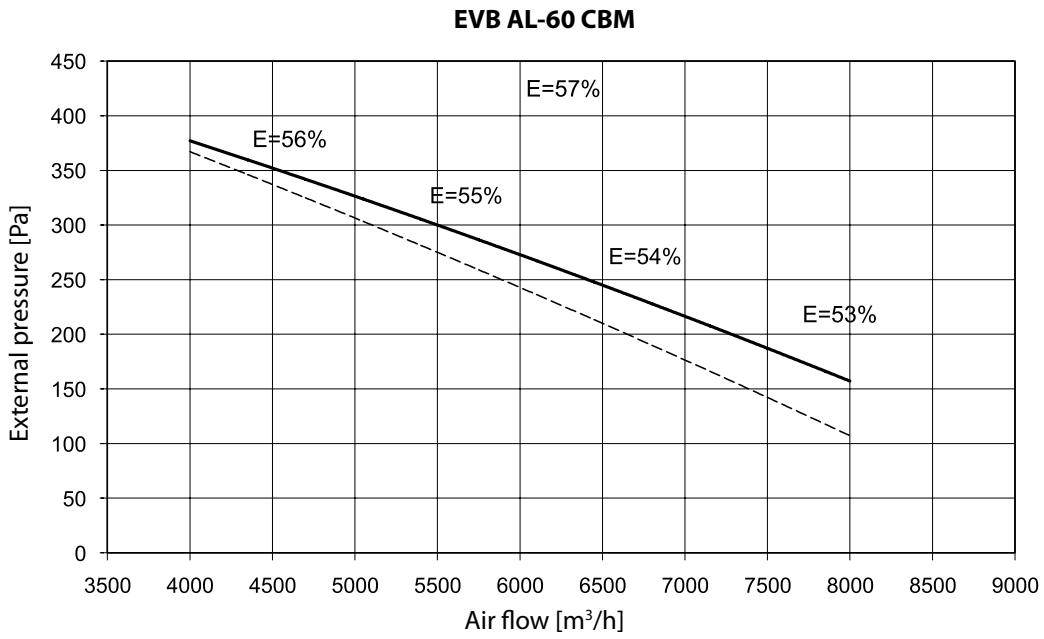


Model	Fan	Recuperative exchanger	H [mm]	L [mm]	b [mm]	h [mm]	c [mm]	d [mm]
EVB AL-40 CBM-HBS	CBM 320/320	RECAL-1200/9-070	1000	3000	400	340	600	500
EVB AL-60 CBM-HBS	CBM 380/380	RECAL-1200/9-080	1100	3100	475	400	700	600
EVB AL-80 CBM-HBS	CBM 380/380	RECAL-1200/9-110	1300	3100	475	400	700	700

Aerodynamic characteristics



Model	Fan	Nominal power [W]	Nominal current [A]
EBV AL-40 CBM	CBM-320/320	2 x 1100	7.2

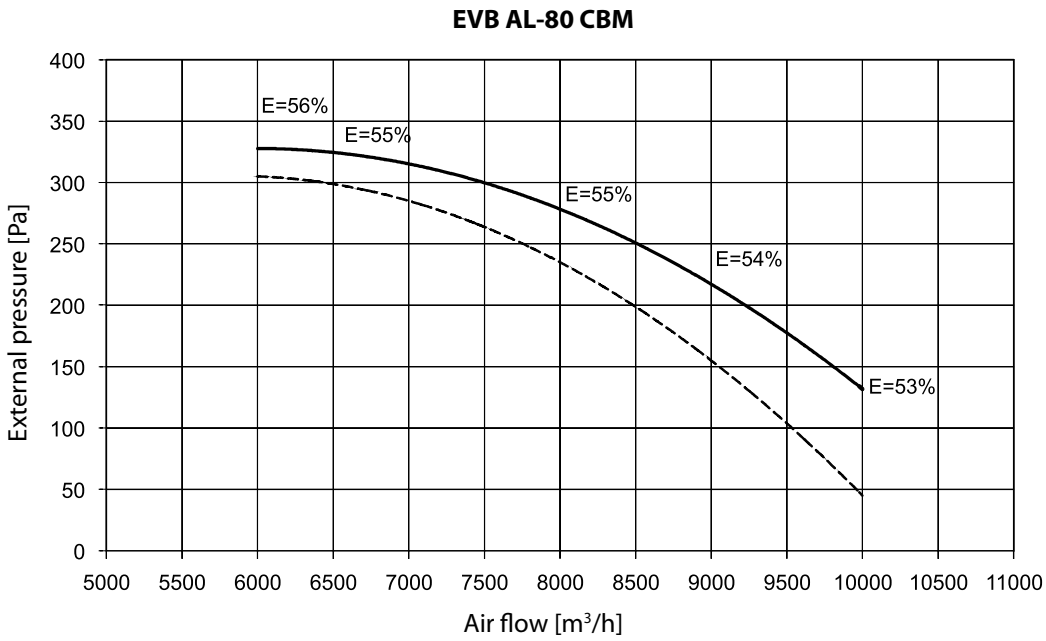


Model	Fan	Nominal power [W]	Nominal current [A]
EBV AL-60 CBM	CBM-380/380	2 x 2200	13.8

—— external – External pressure [Pa]

- - - - external – External pressure (with heating water coil 800/800 2R 80/60°C) [Pa]

Aerodynamic characteristics



Model	Fan	Nominal power [W]	Nominal current [A]
EBV AL-80 CBM	CBM-380/380	2 x 2200	13.8

—— external – External pressure [Pa]

- - - - external – External pressure (with heating water coil 800/800 2R 80/60°C) [Pa]

Sound pressure level on frequency bands [dB]

Model	Hz	63	125	250	500	1000	2000	4000	8000
EBV AL-40 CBM	Inlet	54	64	68	75	67	62	60	51
	Outlet	54	66	71	79	79	80	77	70
	Rad.	52	59	59	62	54	50	45	39
EBV AL-60 CBM	Inlet	56	65	69	73	66	62	60	51
	Outlet	56	67	72	77	78	80	77	70
	Rad.	54	60	60	60	53	50	45	40
EBV AL-80 CBM	Inlet	56	65	69	73	66	62	60	51
	Outlet	56	67	72	77	78	80	77	70
	Rad.	54	60	60	60	53	50	45	40

Note: Measured in free field conditions at a distance 1,5 m.

Order designation

EVB AL - 40 CBM -HBS -H

- -H – horizontal installation
  -V – vertical installation
- heating water coil and by pass
- Model
- Heat recovery unit AL