



Ventilation unit
with heat and moisture recovery

FUTURA

System design guide



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1. Technical specification

1.1. Function and application

The Futura ventilation unit represents HVAC equipment designed for controlled ventilation and treatment of the indoor environment. It ensures heat and humidity recovery, filters supplied air, helps maintain optimum indoor humidity, and provides after-cooling by means of an integrated, fully automatic by-pass in summer in the night mode. The unit is equipped with an enthalpy exchanger able to utilize the latent heat from humidity.

Unit location	The ventilation unit is installed vertically on the wall, in a room with a guaranteed minimal temperature of +10 °C (+50 °F). Sufficient handling space shall be provided in front of the equipment for trouble-free access, maintenance and servicing throughout the entire duration of its operation.
Unit body	The internal structure of the ventilation unit is made of monolithic EPP (expanded polypropylene) without thermal bridges.
Enthalpy exchanger	Enthalpy counter-current exchanger with humidity recovery control.
Filtration	The ventilation unit contains two filters: the F7 filter at the air supply and extraction. The necessity to replace filters is indicated automatically and depends on the outside air quality of the location where the unit is installed (approximately once every 2 - 6 months). The filtration can be supplemented with an optional carbon filter, which is inserted directly into the unit under the air supply filter.
Connecting ducts	The device is equipped with 4 EPP ∅ 150 mm (6") flanges. EPP ducts are required at both the air inlet and outlet to prevent the possibility of unwanted condensation occurring inside the inlet and outlet ducts.
Drying at extremely low outdoor temperature	Drying is activated when the outdoor temperature is lower than -20 °C (-4 °F) for more than 16 minutes. Drying stops when the outdoor temperature is higher than -18 °C (0 °F). <i>Low outdoor temperature</i> and <i>Caution</i> is displayed on the control panel. After drying is finished, ventilation and filter check are blocked, boost ventilation is limited to 2 minutes, and the unit continues to run in circulation mode.
Electrical connection	Power socket 230 V / 50 Hz with separate fuse 16 A type B.
CoolBreeze Electrical connection	The CoolBreeze add-on module requires connection of the outdoor condensation unit to the mains with a fixed 230 V / 50 Hz, 16 A fuse , type B. As an alternative, a preparation for later installation of the CoolBreeze module can be made.
Control	Integration in the MyJABLOTRON mobile application, which supports easy control of all user functions and settings. It enables remote monitoring, system administration and provides automatic alerts for error conditions and dirty filter replacement. Standard supply includes one wall-mounted control panel with an integrated CO ₂ sensor.
Summer functions	Fully automatic 100 % by-pass controlled according to the set preferred temperature.
Optional equipment	CoolBreeze enthalpy heating / cooling module, boost (forced extraction) buttons with operation indication; Rh, SQA, CO ₂ sensors, VAC material and distribution elements.

1.2. Technical parameters

The Futura ventilation unit comes in two power output variants.

Description	M	L
Air flow	50-250 m ³ /h (29-147 CFM)	100-350 m ³ /h (59-206 CFM)
Model identification brand	Futura M	Futura L
Specific energy consumption (SEC) in kWh/(m ² .a) for each applicable climate zone and each applicable SEC class	A+	A+
Dimensions (height x width x depth)	835 x 995 x 522 mm (32.9" x 39.2" x 20.6")	835 x 995 x 522 mm (32.9" x 39.2" x 20.6")
Weight	47 kg (104 lbs)	47.5 kg (105 lbs)
Declared typology	bidirectional	bidirectional
Drive type	variable speed drive	variable speed drive
Heat recovery system type	recuperative	recuperative
Heat recovery efficiency	91.8 %*	91.4 %*
Acoustic power level Lwa	46 dBa**	46 dBa**
Reference flow	175 m ³ /h*** (103 CFM)	245 m ³ /h*** (144 CFM)
Reference pressure difference	50 Pa***	50 Pa***
SPI	0.34 W(m ³ /h)***	0.33 W(m ³ /h)***
Electric power input of the fan including motor control equipment at max. flow and max. pressure	230 W	320 W
Power input of electric post-heater	0 -350 W, continuously regulated	0 -350 W, continuously regulated
Maximum input incl. electrical post-heater	580 W	670 W
Condensate	condensate drain, HT pipe 32 mm (1.26"), siphon	condensate drain, HT pipe 32 mm (1.26"), siphon
Electric connection	230 V / 50 Hz, 16 A; connection to electric mains via power socket	230 V / 50 Hz, 16 A; connection to electric mains via power socket
Operational range without preheating	-19 °C do +45 °C (-2 °F - 113 °F)	-19 °C do +45 °C (-2 °F - 113 °F)

Description	M	L
Fans	2× EBM Papst with integrated electronics and air flow regulation	2× EBM Papst with integrated electronics and air flow regulation
Cooling / heating output of complete set including exchanger heat recovery (Futura + CoolBreeze)	1.5 kW - 3.8 kW / 4.9 kW****	1.7 kW - 4.4 kW / 4.9 kW****
Annual electricity consumption (AEC) (in kWh/m ² electric power/year) „average“, „hot“, „cold“) at reference flow	2.26/1.81/7.63	2.20/1.75/7.57
Annual heat savings (AHS) (in kWh/m ² of primary energy/year) for individual climate zones („average“, „hot“, „cold“) at reference flow	47/92/21	47/92/21
Exchanger	enthalpy counter-current exchanger with humidity recovery control	enthalpy counter-current exchanger with humidity recovery control
Summer functions	fully automatic by-pass controlled by the temperature setpoint	fully automatic by-pass controlled by the temperature setpoint
Control	Integration in the MyJABLOTRON mobile application, which supports easy control of all user functions and settings. It enables remote monitoring, system administration and provides automatic alerts for error conditions and dirty filter replacement. Standard supply includes one wall-mounted control panel with an integrated CO ₂ sensor.	Integration in the MyJABLOTRON mobile application, which supports easy control of all user functions and settings. It enables remote monitoring, system administration and provides automatic alerts for error conditions and dirty filter replacement. Standard supply includes one wall-mounted control panel with an integrated CO ₂ sensor.
Optional equipment	CoolBreeze enthalpy heating / cooling module, forced extraction (boost) buttons with operation indication; Rh, SQA, CO ₂ sensors, VAC material and distribution elements	CoolBreeze enthalpy heating / cooling module, forced extraction (boost) buttons with operation indication; Rh, SQA, CO ₂ sensors, VAC material and distribution elements

* According to Czech norm ČSN EN 308 ** According to Czech norm ČSN EN ISO 3744 *** According to Commission Regulation (EU) No. 1253/2014 **** Cooling output varies depending on the relative humidity and difference between indoor and outdoor temperature. **** Heating output varies depending on the relative humidity and difference between indoor and outdoor temperature. ANY CHANGES RESULTING FROM TECHNICAL DEVELOPMENT ARE RESERVED. WE RESERVE THE RIGHT TO CHANGE THE CONTENTS OF THE MANUAL ANY TIME WITHOUT PRIOR NOTICE.

2. Heating / cooling module CoolBreeze

Description	Outdoor unit	Indoor unit
Dimensions (height x width x depth)	540 x 660 x 290 mm (21.3" x 26" x 11.4")	364 x 254 x 481 mm (14.3" x 10" x 18.9")
Weight	23 kg (51 lbs)	6 kg (13 lbs)
Acoustics *	Equivalent sound pressure level at maximum output in heating mode - 1 m distance - 45,8 dB - 5 m distance - 35,2 dB	
Power input	Cooling mode 460 W, heating mode 660 W	
Refrigerant piping	Min. 5 m (16 ft), max. 20 m (66 ft). The outdoor unit is pre-filled to 15 m (50 ft) pipe. In case of extension add 20 g/m pipe. Maximum height difference shall be 15 m (49 ft).	
Electrical connection	Power supply 230 V / 50 Hz with separate 16 A fuse, type B	

(*) Noise measurement test report no. PM-2020/10-6

2.1. Power input and output characteristics of the unit

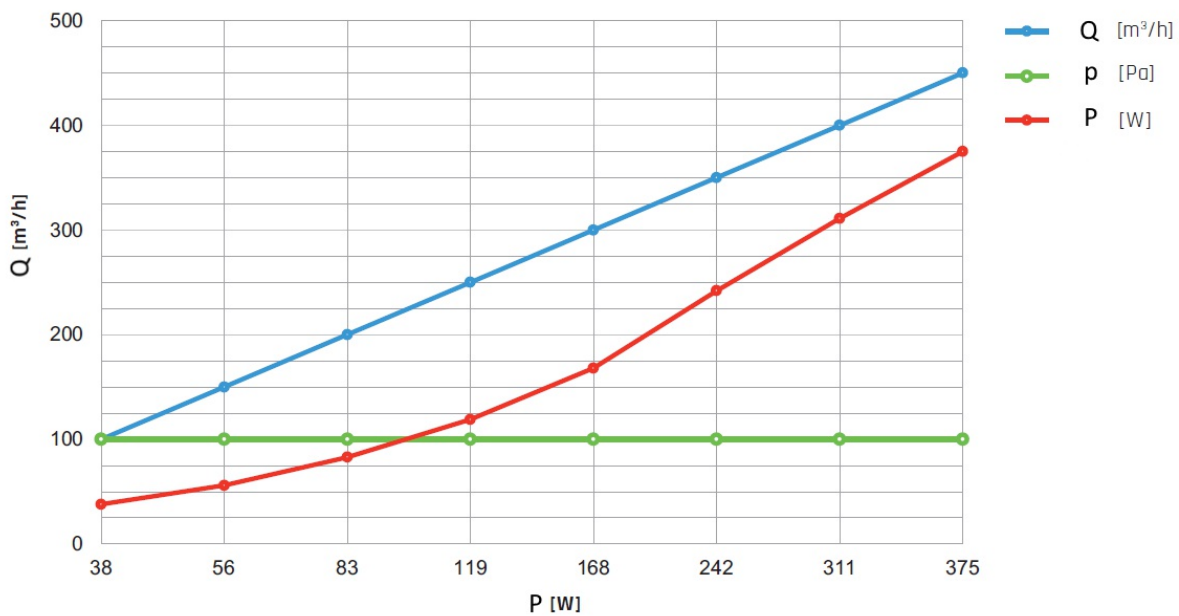


Figure 1: Power input [W] (red) and air flow [m³/h] (blue) at external pressure 100 [Pa] (green)

2.2. CoolBreeze cooling output characteristics

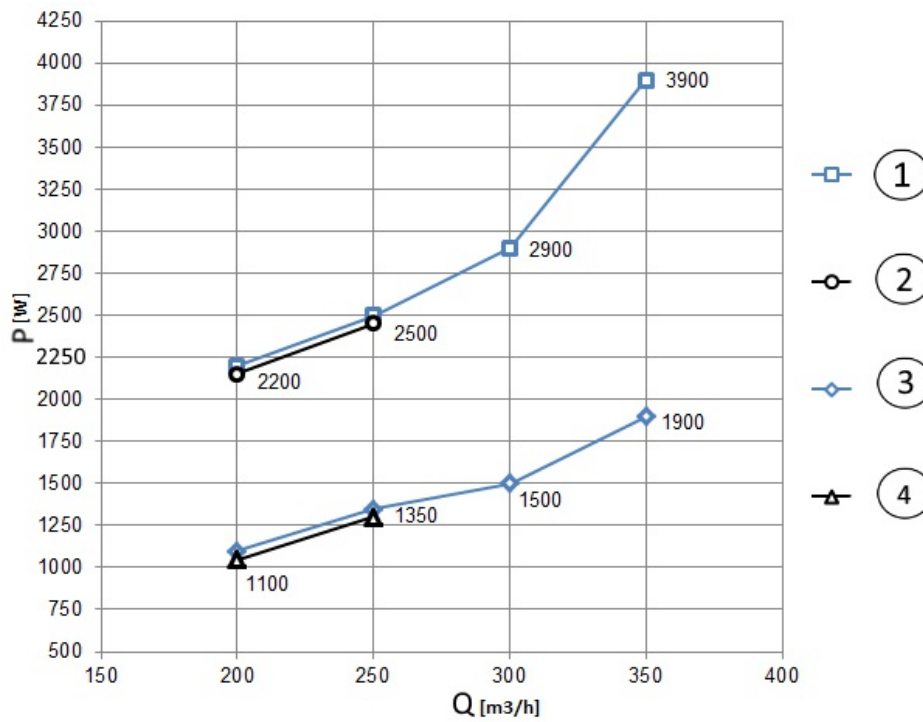


Figure 2: CoolBreeze cooling output characteristics

Measured at 34 °C (93 °F) outdoor temperature and 55 % relative humidity, and 25 °C (77 °F) indoor temperature and 65 % relative humidity.

No.	Description	No.	Description
1	Cooling output of ventilation relative to outdoor environment with Futura L	3	Cooling output of ventilation relative to interior with Futura L
2	Cooling output of ventilation relative to outdoor environment with Futura M	4	Cooling output of ventilation relative to interior with Futura M

2.3. CoolBreeze heating output characteristics

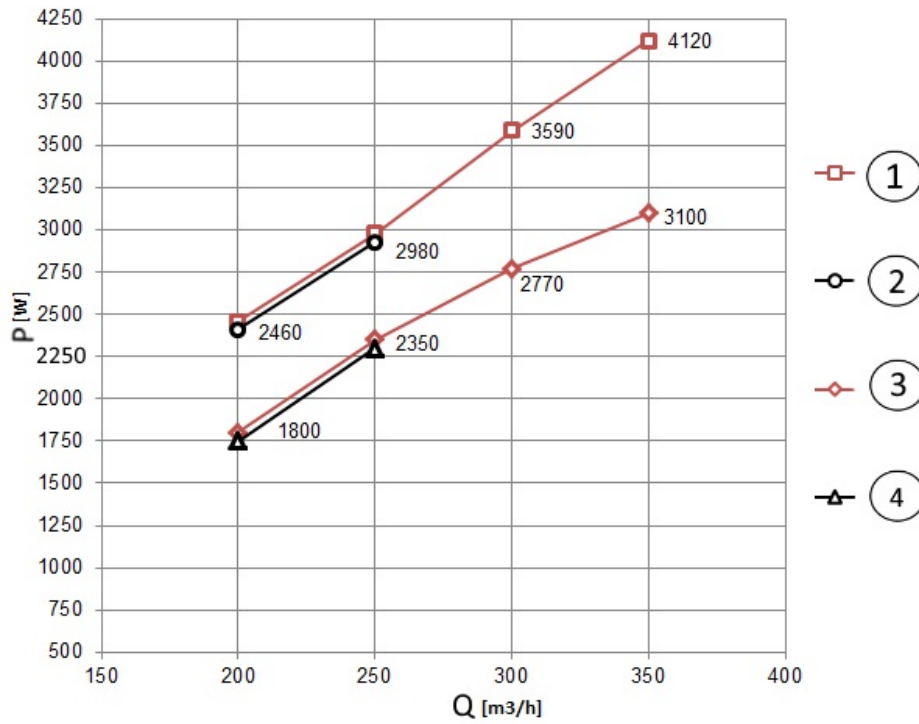


Figure 3: CoolBreeze heating output characteristics

Measured at 5 °C (41 °F) outdoor temperature and 70 % relative humidity, and 21 °C (70 °F) indoor temperature and 50 % relative humidity.

No.	Description	No.	Description
1	Heating output of ventilation relative to outdoor environment with Futura L	3	Heating output of ventilation relative to interior with Futura L
2	Heating output of ventilation relative to outdoor environment with Futura M	4	Heating output of ventilation relative to interior with Futura M

2.4. Acoustic parameters

Filtration	
Use	Supply and extraction
Type	Stringing
Class	F7
Dimensions	328 x 309 x 48 mm (12.9" x 12.2" x 1.9")

Acoustic power level L (dB)*									
Frequency [Hz]	Total	63	125	250	500	1k	2k	4k	8k
Air supply	51,6	41,6	44,4	27,6	22,0	29,1	15,9	10,4	23,8
Air extraction	52,0	42,1	45,0	27,9	22,4	29,5	16,5	10,8	24,6
To the environment	52,0	42,1	45,0	27,9	22,4	29,5	16,5	10,8	<10< b>

- with F7 filters and silencers installed, at air flow of 245 m³/h (144 CFM) and 50 Pa pressure

2.5. Leakage

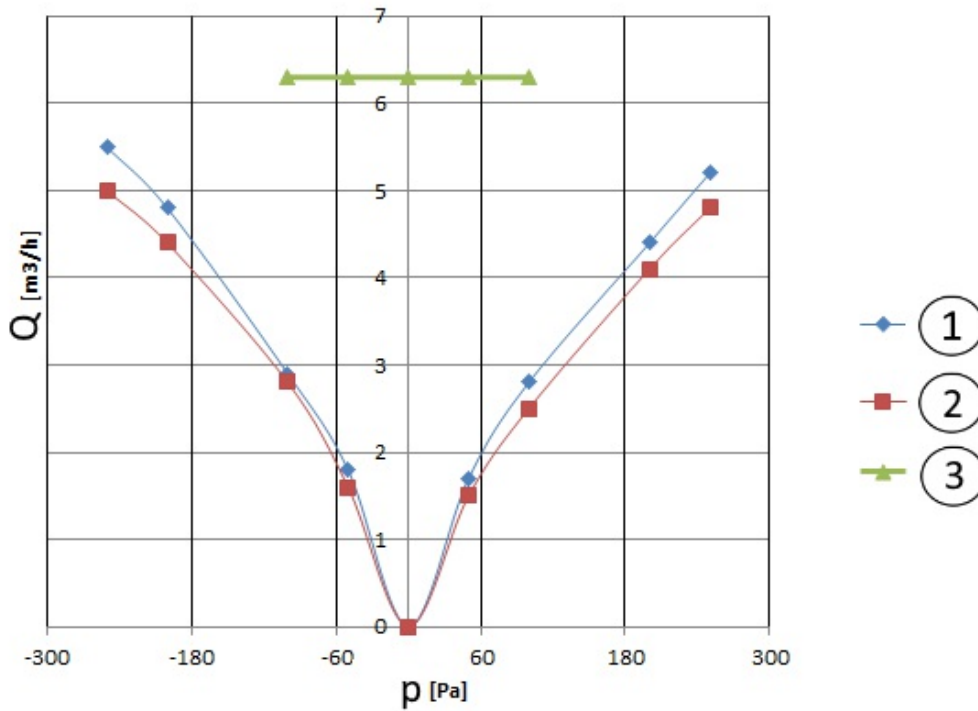


Figure. 4: Internal leakage (blue) and external leakage (red) compared to certification limit (green)

No.	Description	No.	Description
1	Internal leakage	3	Limit
2	External leakage		

2.6. Heat recovery efficiency

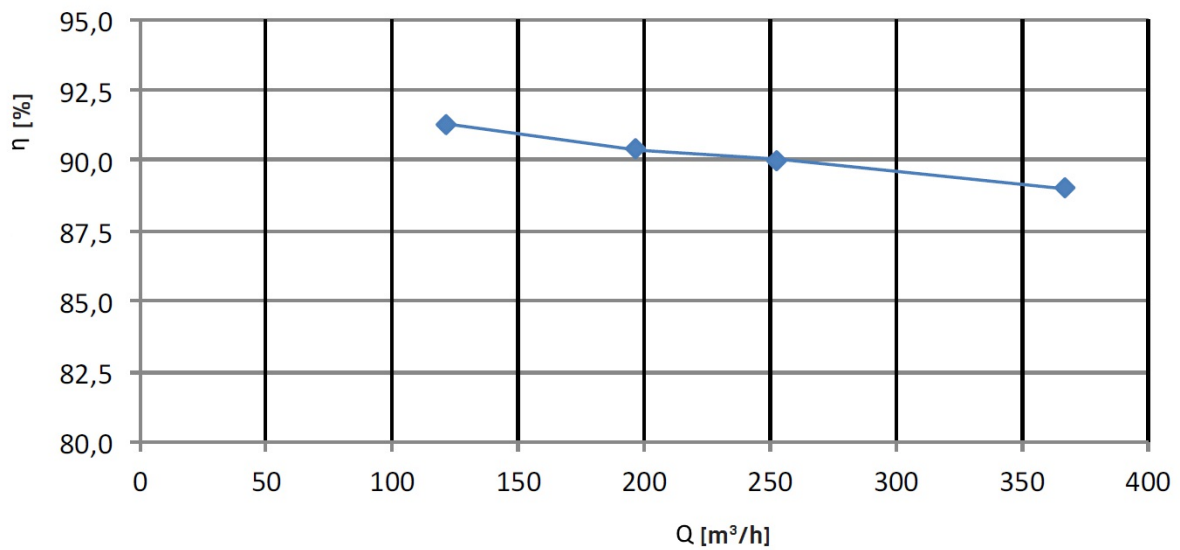


Figure 5: Heat recovery efficiency [%] at air flow [m³/h]

2.7. VAC scheme

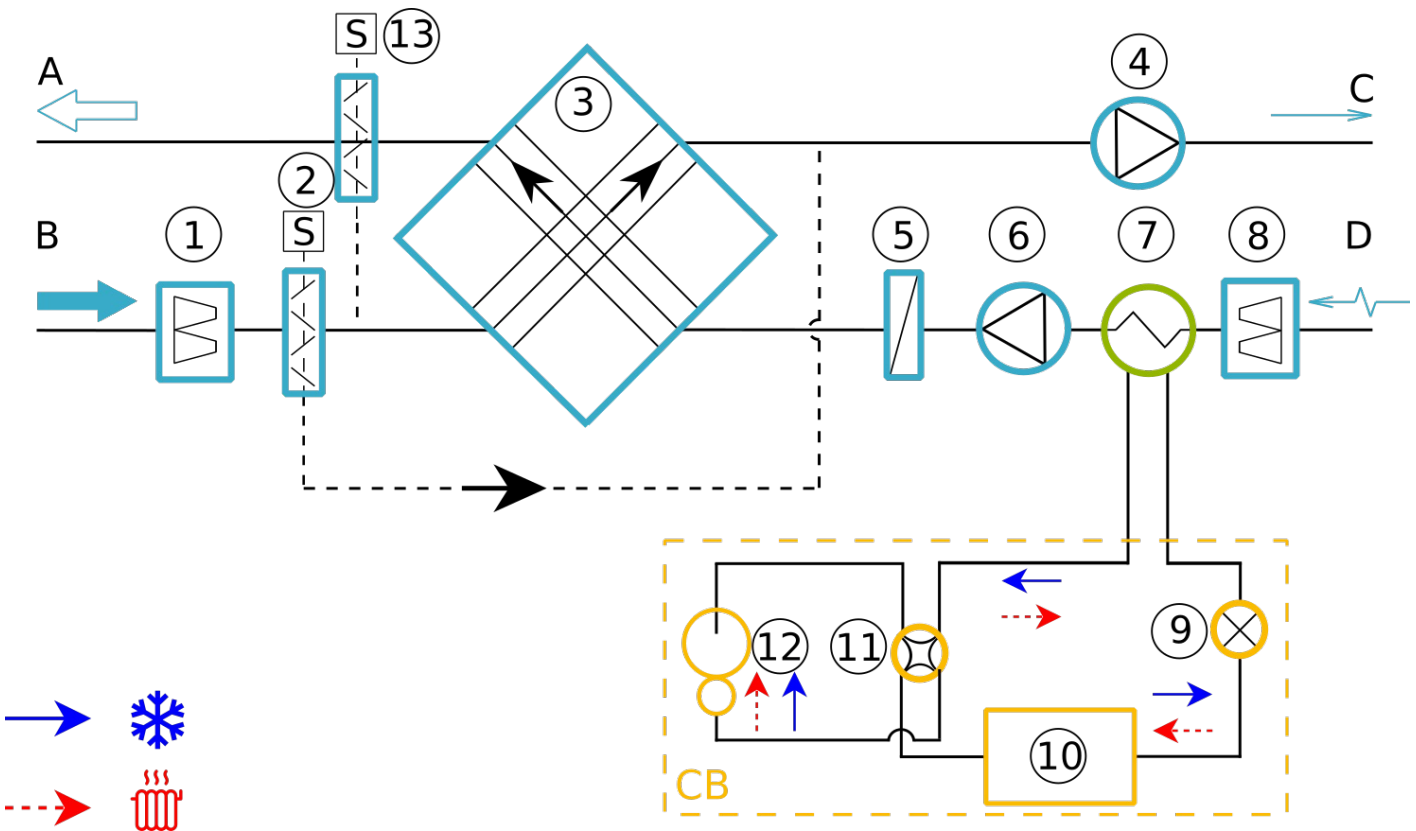


Figure 6: VAC scheme

Description of VAC scheme:

- 1) - F7 filter outdoor air
- 2) - bypass flap controlled by actuator
- 3) - enthalpy exchanger
- 4) - supply fan
- 5) - integrated post heater
- 6) - exhaust fan

- 7) - CoolBreeze indoor evaporator/condenser
- 8) - F7 filter extracted air
- 9) - expansion valve
- 10) - CoolBreeze outdoor evaporator/condenser
- 11) - 4-way valve
- 12) - compressor
- 13) - circulation flap controlled by actuator

Input/output color description:

- A) - air exhaust
- B) - outdoor air intake
- C) - air supply
- D) - air extraction

- CB - CoolBreeze outdoor unit
- Blue - Futura components
- Yellow - CoolBreeze outdoor unit
- Green - CoolBreeze indoor unit

3. Wiring diagram

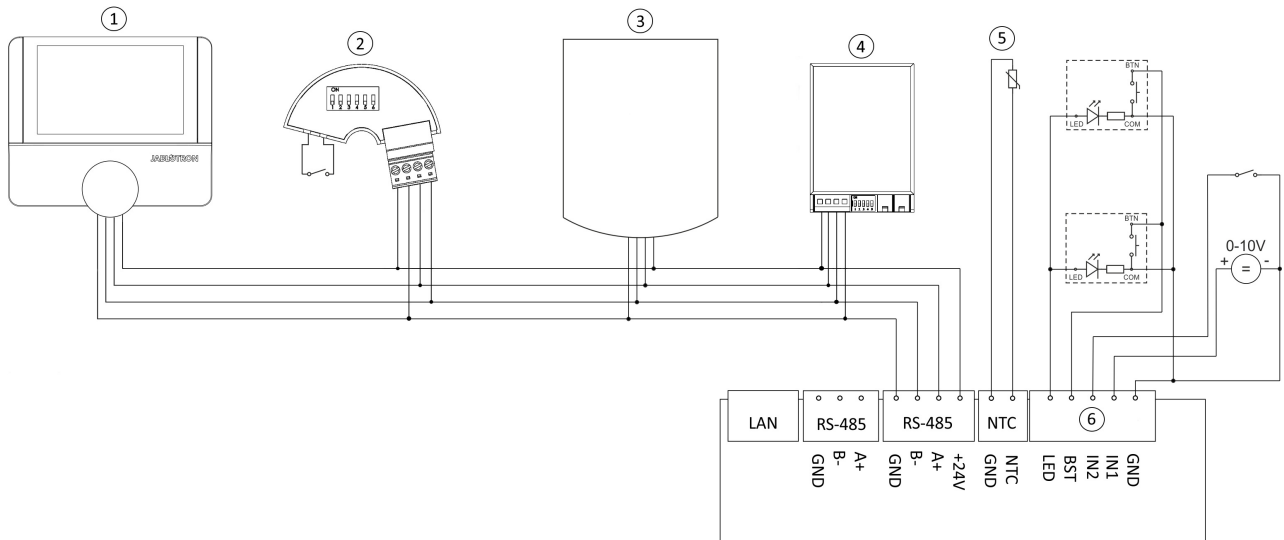


Figure 7: Wiring diagram

No.	Description	No.	Description
1	Alfa control panel, 1 - 8 pcs.	4	VarioBreeze - room-by-room ventilation valve, 1 - 64 pcs.
2	VarioBreeze - room-by-room ventilation button, 1 - 16 pcs.	5	NTC outdoor temperature sensor
3	CO ₂ sensor, 1 - 8 pcs.	6	Inputs and outputs

4. Installation requirements

4.1. Connection of ventilation ducts

OA - Outdoor air intake	∅ 150 inner / ∅ 210 outer	EPP ducts
EA - Exhaust air	∅ 150 inner / ∅ 210 outer	EPP pipes
SA - Supply air	∅ 150	SONOCUT silencer
RA - Extracted air	∅ 150	SONOCUT silencer

The air inlet and outlet openings must remain free and clear! It is necessary to install silencers at the air supply and air extract in the length of approx. 1.5 m (5 ft). Note: It is necessary to leave 10 mm (0.4") gap under the door in all rooms with ventilation.

4.2. Installation

Condensate drain connection

In the heat exchanger, the exhausted air is cooled by the supplied air causing moisture condensation. The resulting condensed water is drained towards the siphon. The condensate drain connection is located at the bottom side of the ventilation unit. A siphon, which is connected to the sewerage system, must be mounted onto the coupling of the condensate drain connection (HT 32 mm (1.26") drain pipe).



Condensate must be allowed to freely flow out of the ventilation unit by gravity!

Recommended topology of connecting peripherals to RS-485 bus

This RS-485 bus is intended to connect only the peripherals of the Futura ventilation unit. The bus is four-wire, with a 24 V supply and a maximum total current of 500 mA. The power supply is resistant to overload or short circuit.

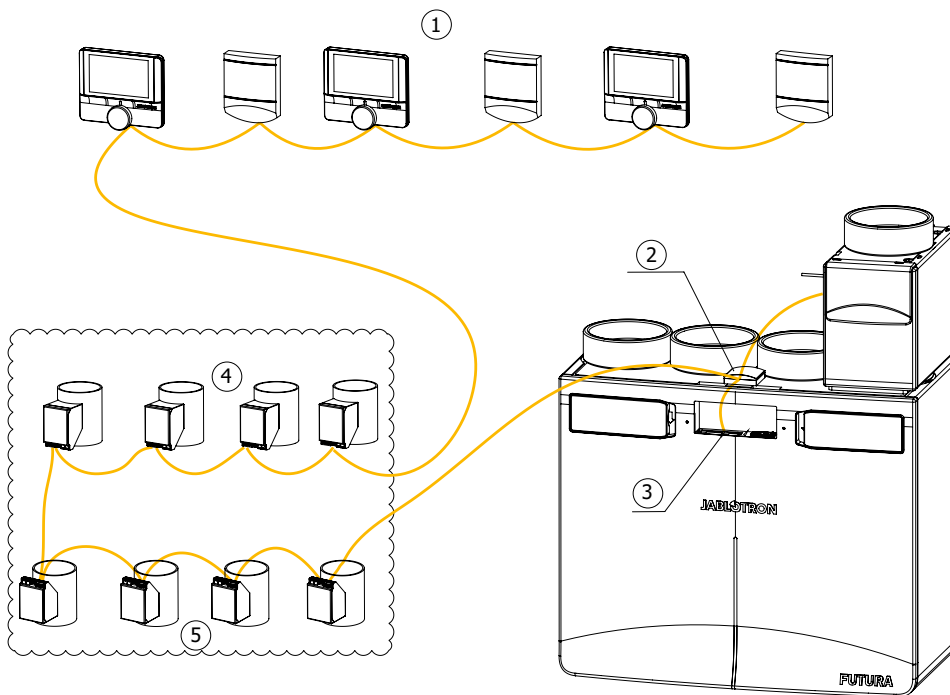


Figure 8: Connection topology

No.	Description	No.	Description
1	Control panels and CO ₂ sensors	4	Room-by-room ventilation valves – supply
2	Installation box JA-190PL and JA-110Z-B hub	5	Room-by-room ventilation valves – exhaust
3	Connected via RS485		

Recommended cable

Four-wire twisted-pair cable, eg. Unitronic PAAR LiYCY 2 × 2 × 0.34 – 0.5 mm² or J-Y(St)Y 2 × 2 × 0.8 mm². It is possible to use UTP or STP cable. The cable must not run parallel to low or high voltage power lines. Occasional crossing is fine.

Bus terminating resistors RS-485

The terminating resistor 120 Ω is connected to the ventilation unit. It is recommended to connect a second terminating resistor to the most remote control panel or sensor. For more convenient wiring, a Jablotron JA-110Z-B RS-485 bus splitter and JA-190PL box can be used. In case of a large number of devices and long wiring in a star connection, a suitable hub must be used.

Enthalpy cooling/heating module CoolBreeze

The CoolBreeze add-on module requires connection of the outdoor condensation unit to the mains with a fixed 230 V / 50 Hz, 16 A fuse, type B.

We recommend using additional protective connection, i.e. connection to the main ground terminal MET according to the ČSN 33 2000-5-54 norm. In case the outdoor unit is installed outside the protective range of the lightning conductor, we recommend installing SPD surge protection of a suitable type according to ČSN 33 2000-5-534.

The internal evaporator of the CoolBreeze module is connected to the outdoor unit with a 4 x 0.75 mm² communication cable. The refrigerant piping should be 6/10 mm². A minimum of 5 m (16.4 ft) and a maximum of 15 m (49 ft) of coolant pipe length must be guaranteed.

5. Energy label

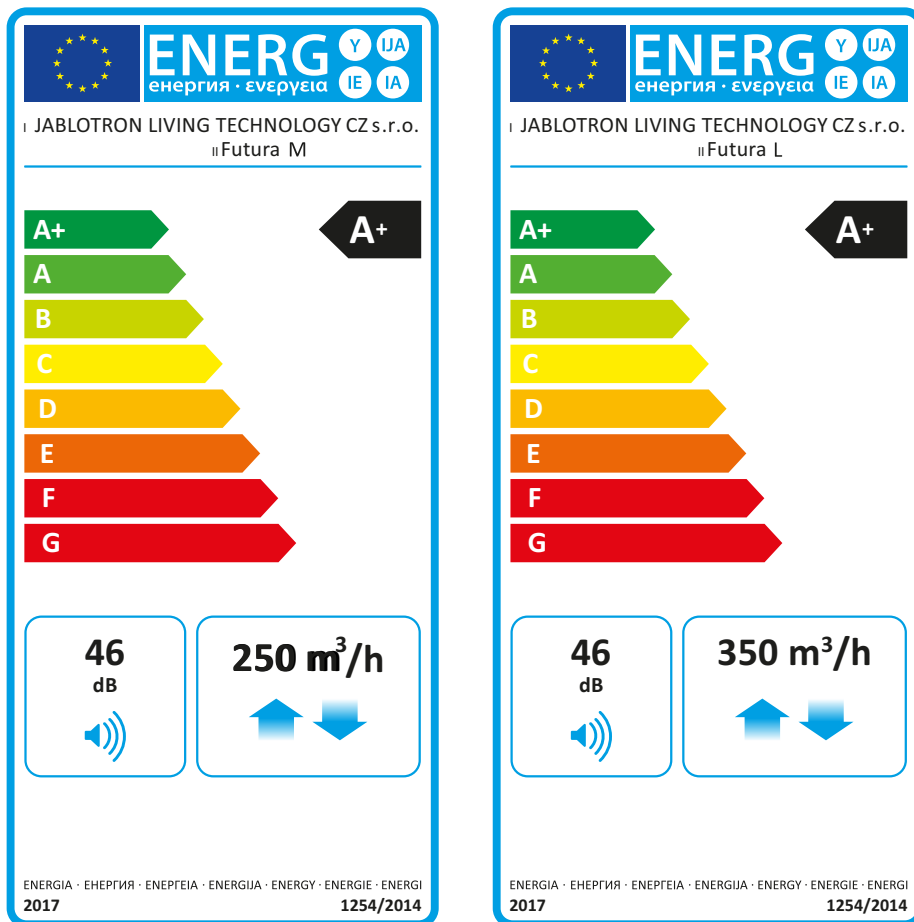
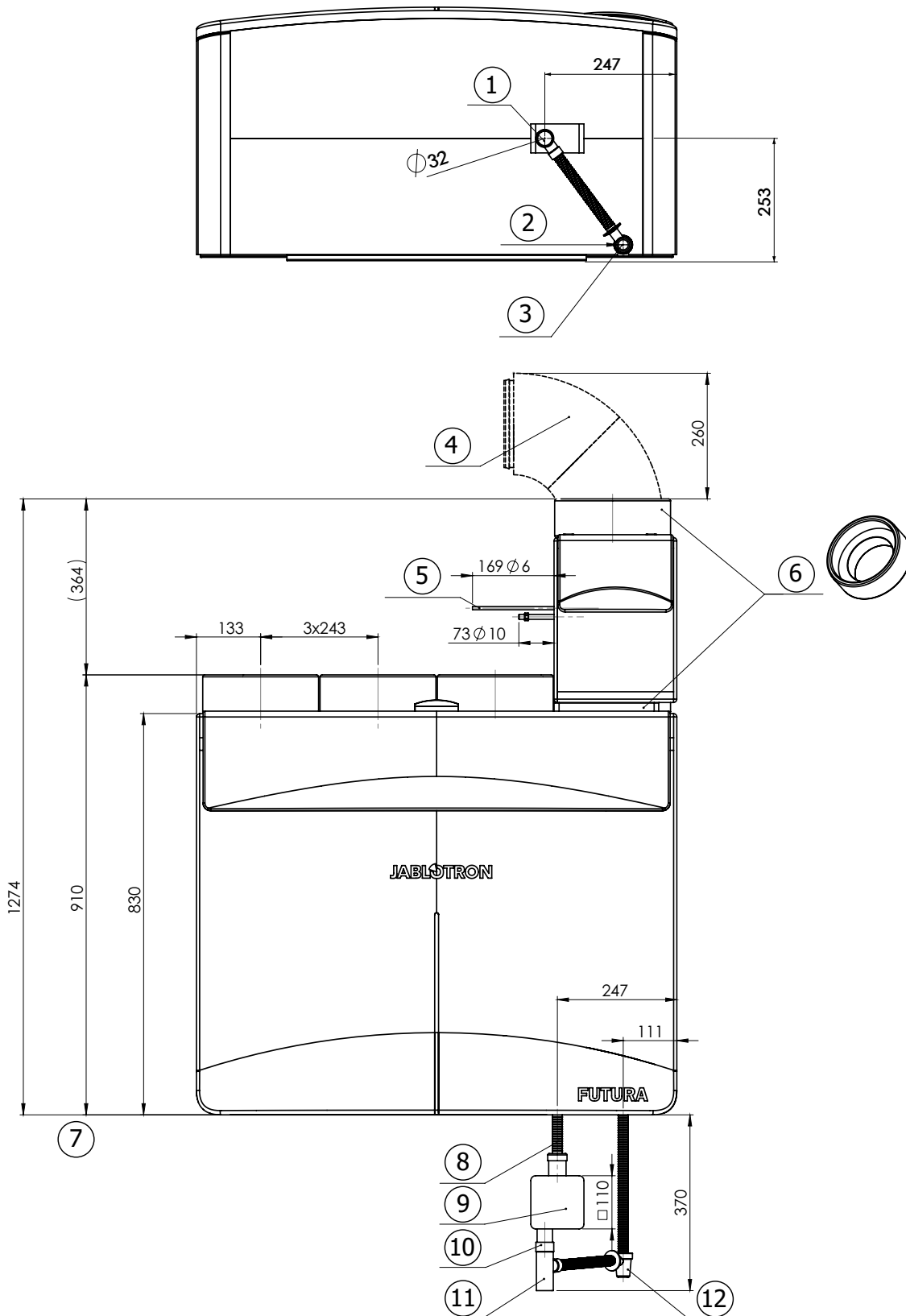
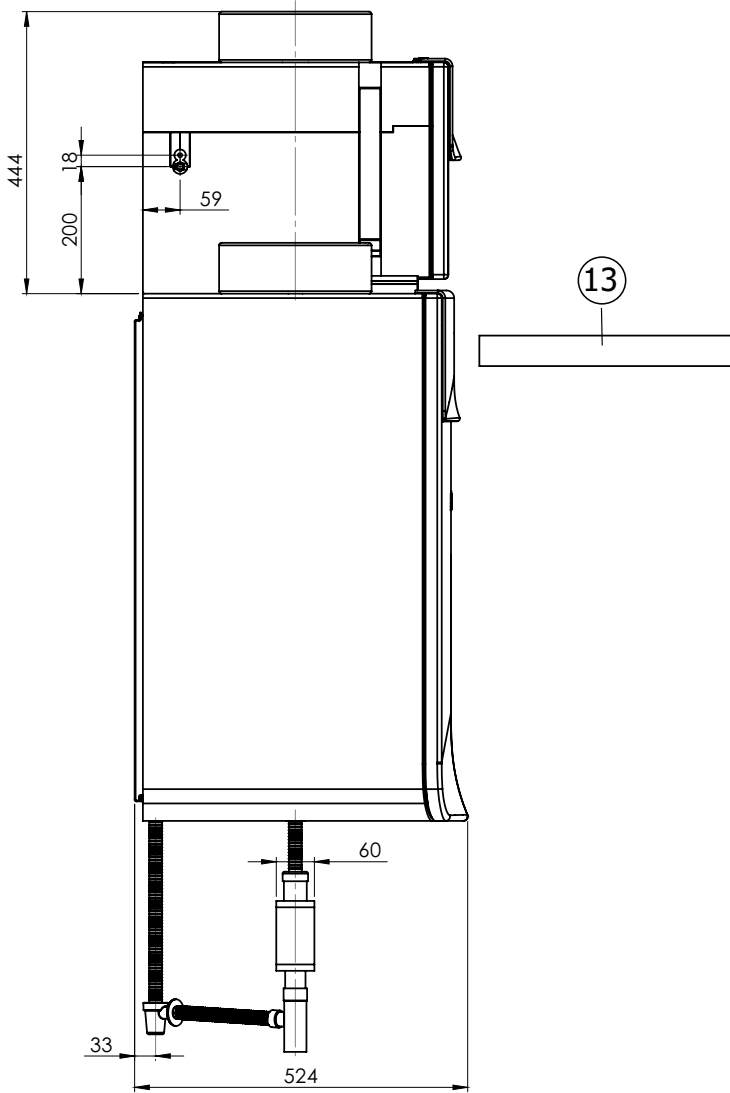
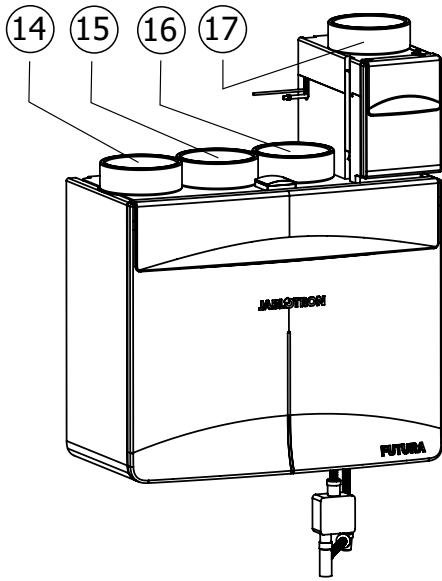


Figure 9: Futura M / Futura L

6. Dimensional drawings

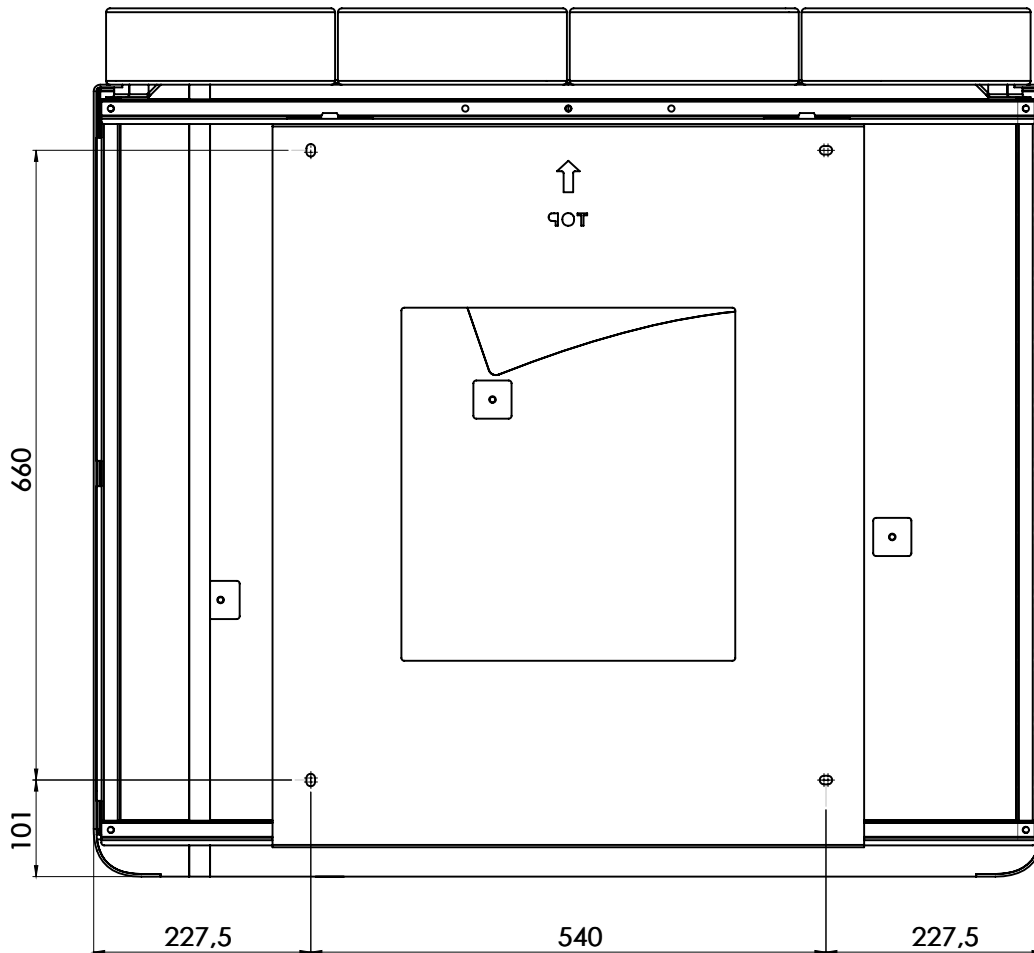
Main dimensions incl. CoolBreeze module





No.	Description	No.	Description
1	Condensate drain connection from Futura	10	Sewer connection
2	Groove (diameter 22 mm, 0.9 in) for CoolBreeze condensate hose	11	T piece HT 32
3	Condensate drain connection from CoolBreeze	12	STY-517-1 siphon (CoolBreeze)
4	When installing, keep space of at least 330 mm / 13 in (distance for fitting the EPP elbow)	13	When installing, keep space of at least 500 mm / 20 in for filters exchange
5	Refrigerant inlet / outlet for CoolBreeze	14	Outdoor air (ambient)
6	When installing CoolBreeze, use a flange from Futura	15	Exhaust air (waste)
7	When installing, keep space of at least 370 mm / 15 in for the condensate drain connection	16	Supply air (fresh)
8	DN 32 hose	17	Extracted air (indoor)
9	HL138 siphon - Futura		

Mounting dimensions for wall mounting



7. Dependence of air flow and external pressure

Futura M

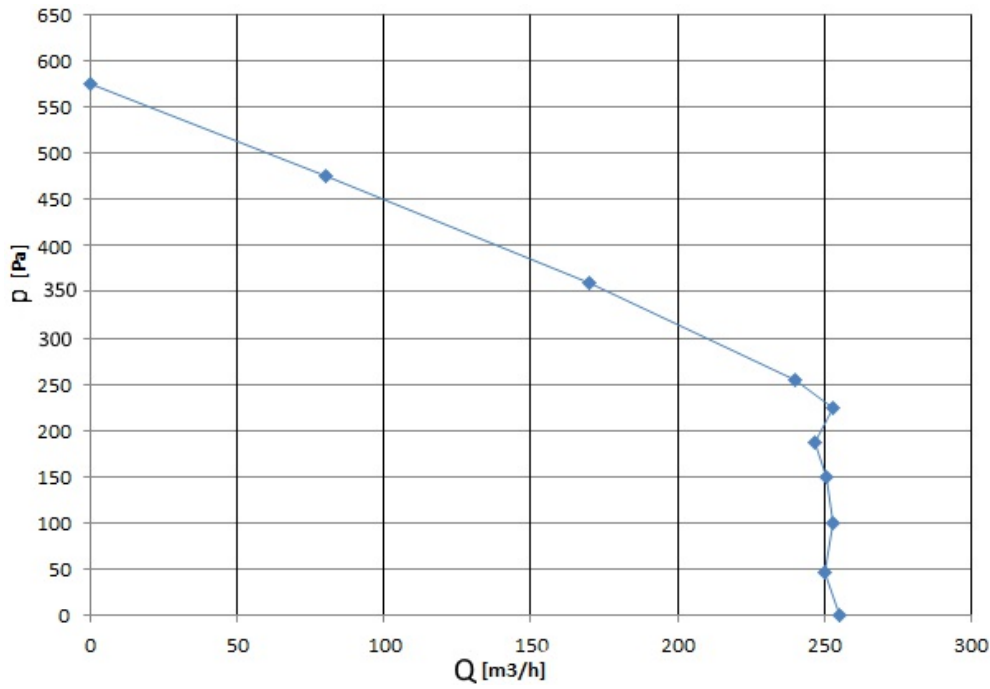


Figure 10: Dependence of air flow [m³/h] and external pressure [Pa] - Futura M

Futura L

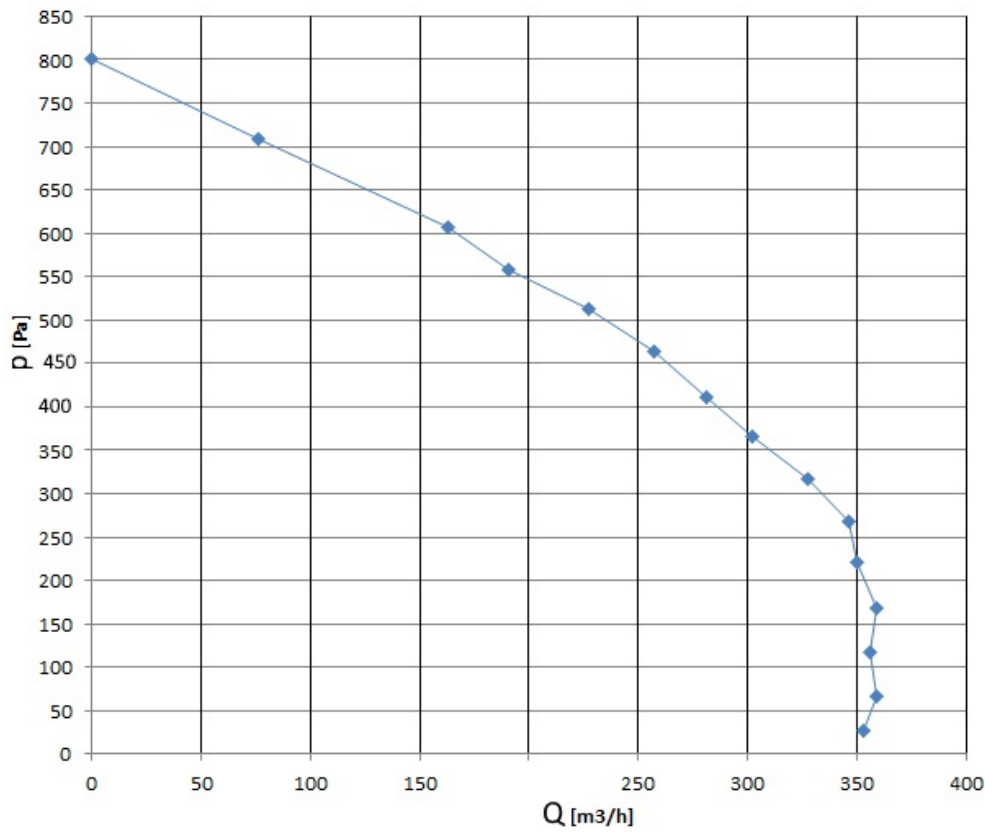


Figure 11: Dependence of air flow [m³/h] and external pressure [Pa] - Futura L

8. CoolBreeze pressure loss

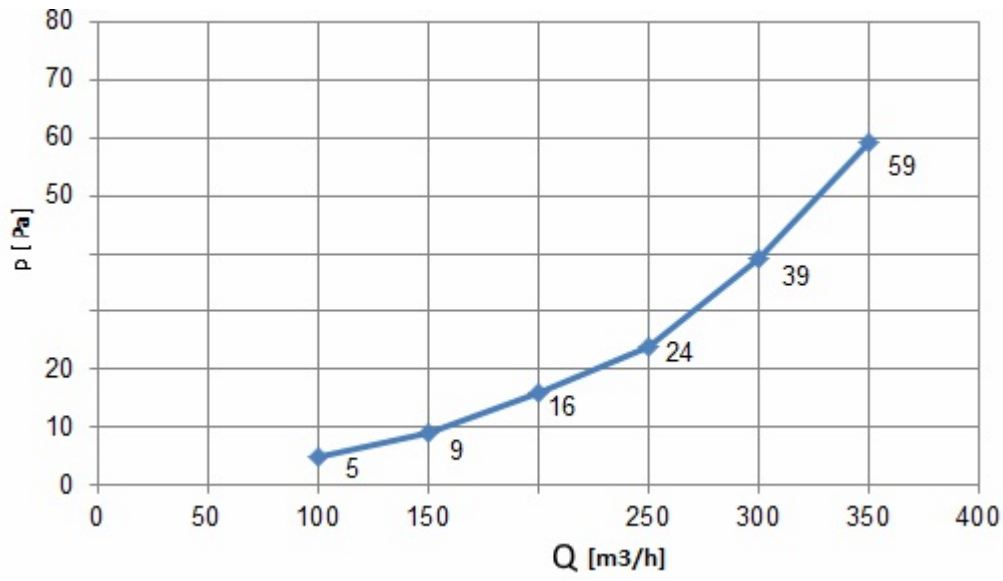


Figure 12: CoolBreeze pressure loss [Pa] at air flow [m³/h]

Your installer/distributor:

