

CMEV air handling unit

VEX350H

VEX350H

VEX350/360/370 is a series of ventilation units with counterflow heat exchangers that can deliver airflows of up to 9,200 m³/h. High temperature efficiency and very low SFP



PRODUCT BENEFITS

- Unique energy-saving design with double bypass
- Can be ordered as outdoor version
- Can be transported through a 90-cm wide door, VEX370 only in SPLIT 1 version

REGULATIONS AND COMPLIANCES

Eurovent Certification no. : 16.01.020

Principles of operation

In principle, EXHAUSTO VEX units are designed for use in comfort ventilation - i.e. under ordinary operating conditions.

Where ventilation solutions are required for rooms with high air humidity - e.g. due to humidification, we recommend you make a test calculation with one of our calculation programs. If the calculation shows a risk of condensation after the heat exchanger, an assessment must be made whether the operating conditions can be changed, or whether the unit must be modified to allow condensate to drain off. This is particularly relevant for VEX100CF.

Contact EXHAUSTO for advice on this.

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VEX350H**VEX350H****Product description**

The VEX350/360/370 is range of air- handling units with counterflow heat exchangers that can handle airflows of up to 9200 m³/h.

The design of the air handling units ensures they have a maximum temperature efficiency and a very low SFP figure.

The VEX units have the great benefit of being modular, which means that the VEX350 and VEX360 can be transported through door openings as small as 900 x 2000 cm, and therefore be split into sections.

Accessories

Description	Variants
Modbus communications module for analogue and digital inputs and outputs	MIO
Motion sensor for override at comfort level (MIO)	PIRB-AS
Motion sensor for override at comfort level (Modbus)	MIOPIR2
HW050X08002U0UL	MIOTSROOM
Temperature sensor for duct incl. modbus communications module	MIOTSDUCT
CO2 sensor – room (MIO)	MIOCO2ROOM
CO2 sensor duct (MIO)	MIOCO2DUCT
RH sensor, room (MIO RH-ROOM)	MIORHROOM
Touch panel 3.5	MHI2-350-TOUCH
Pressure sensor for constant pressure regulation	MPTDUCT
CO2 room sensor analogue 0–10 V (can be reprogrammed)	CO2ROOM
CO2 room sensor analogue 0–10 V	RCO2
HW050X08002U0UL	RCO21000
CO2 duct sensor analogue 0–10 V (reprogrammable)	CO2DUCT
CO2 duct sensor analogue 0–10 V	KCO2
HW050X08002U0UL	KCO21000
Air quality sensor - excl. MIO	RLQ
Motion sensor - digital - excl. MIO	PIR2
RH sensor for room - analogue 0-10 V (0-100 % RH)	RFF
V350OD	V350OD
MIO2 module	MIO2-MODUL
Syphon heating electric heating wire, 2 metres	SIPHONHE02
Syphon water trap, overpressure	SIPHONOP
SIPHONUP SR1K1 SR1K3	SIPHONUP
Closing damper LS500X800 24V – LS	LS500X80024
Closing damper LS500X800 24V – METU	LS500X80024OD
Closing damper with spring return 500x800 24V – LS	LSR500X80024
Closing damper with spring return 500x800 24V for outdoor – LS	LSR500X80024OD
Manual override to comfort mode excl. MIO - incl. cable	TIMERBUTTON3
Fire Thermostat	BT40-70
Cover, Belimo damper OD	ACTUATORBVOD
Closing damper LS500X800 24V – METU	LS500X80024D
Closing damper LS500X800 24V for outdoor – METU	LS500X80024DOD
Closing damper with spring-return 500x800 24V - METU	LSR500X80024D
Closing damper with spring return 500x800 24V for outdoor – METU	LSR500X80024DO
HE05X0809BUE	HE05X0809BUE
HE05X0815BUE	HE05X0815BUE
HE05X0824BUE	HE05X0824BUE
Control system for CCW – with modbus	MCCW
CW050X08004R0ID	CW050X08004R0ID
Module for control of external changeover cooling/heating coil	MCOCW
Module for control of external cool/heat pump	MXHP
Return water sensor for external mounting (extra)	RPTX
Return water sensor for external mounting – external for retrofitting	RPTX-AS
Connection cable for direct connection of analogue input signal	AICABLE
Web server incl. interface modbus RTU and BACnet MSTP/IP	WEBE
EXact module for converting Modbus RTU o TCP/IP	MTCP
EXact module for converting Modbus RTU to TCP/IP	MTCP-AS
HYRK, room humidity sensor	HYRK
Exact WAP KIT	4000785
FLF flex connection, LS 500x800	FLF500X800D
HW050X08002U0UL	HW050X08002U0UL
CW065X10004U0UL	CW065X10004U0UL

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Filters

Description	Variants
Panel filter for VEX350 – Coarse 85%	FP350M5
Panel filter for VEX350 – ePM1 55%	FP350F7
Panel filter for VEX350 – ePM1 80%	FP350F9
Bag filter for VEX350 – ePM10 65%	FB350M5
Bag filter for VEX350 – ePM1 65%	FB350F7

General data

Motor class in accordance with IEC TS 60034-30-2	IE5 (Ultra Premium Efficiency)
Voltage input	1 x 230 V
Regulation	Variable via motor control (MC)
Control signal with control system	Modbus
Control signal with third party control system	0-10 V DC
Fluid temperature (air)	-40°C....+40°C
Ambient temperature range	-30°C....+50°C

Fan data

Max. Total efficiency (A-D) (%)	60
Efficiency level requirements	62N (2015)
ECO efficiency level during optimal operating point	74,4N
Overload protection	Built-in

Dimensional data

A (mm)	2632
A1 (mm)	763
A2 (mm)	1106
B (mm)	945
C (mm)	1904
Connection, horizontal measurement (mm)	800
Connection, vertical measurement (mm)	500
Weight (kg)	635
Weight for transport	Heat exchanger section: 260 kg Fan section (qty. 2): 2 x 150 kg Base: 75 kg

Airflow data

Minimum airflow	700
Max. airflow ErP (m³/h)	3740
Max. airflow (m³/h)	3820

Electrical datas

Voltage (V)	3x400
Frequency (Hz)	50
Max. power of electrical coil 1 (kW)	9
Max. power of electrical coil 2	24
Maximum current - unit (A)	11,2
Max current of zero (A)	15
Max. electrical output of unit (kW)	2,9
Power consumption (kW)	1,253

Regulatory data

Strength of unit housing	D2
Tightness at negative pressure of -400 Pa	L1
Tightness at positive pressure of +700 Pa	L1
Filter bypass Leakage	F9
Thermal transmittance	T2
Thermal bridging factor	TB3

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Installation

**MECHANICAL PERFORMANCE:**

According to ds/en 1886 and certified by Eurovent:

- > Structural strength: D1 (M)
- > Air tightness at negative pressure of -400 Pa: L1 (M)
- > Air tightness at positive pressure of +700 Pa: L1 (M)
- > Filter bypass leakage: F9 at negative and positive pressure
- > Thermal transmittance: T2 (M)
- > Thermal bridging factor: TB3

The cabinets are made of Aluzink AZ185 class C4 according to EN/ISO 12 944-2 and insulated with 50 mm mineral wool. This results in a low noise level to the surroundings/installation room.

The panel construction minimizes the formation of cold bridges in the unit.

The motor sections are mounted in vibration dampers, which means less noise and vibration in the ducts, and there is no need to install flexible connections between the unit and the duct system.

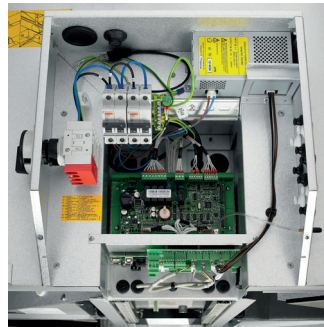
The motor sections are retractable for easier service.

The motors are of the EC type with very high efficiency, meeting the requirements of the EcoDesign directive.

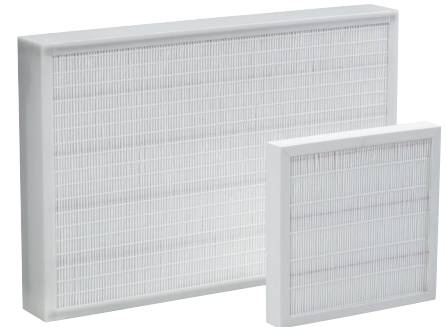
**EXstream performance**

The unit is equipped with EXHAUSTO's EXstream fan wheel, one of the market's leading fan wheels in terms of low energy consumption and low noise levels.

The fan wheel's rotation speed and number of blades are optimized so that noise from the «blade frequency» lies in the 500 Hz band. This means that fewer/smaller sound dampers are needed than usual, as it is cheaper to dampen the noise at 500 Hz than at 125 Hz/250 Hz, where the blade frequency normally lies.

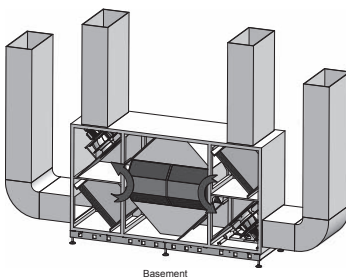


The easily accessible connection box with built-in switch disconnector and control system fuses ensures easy access for connecting and service.



VEX350-360-370 series can be supplied with panel filters and bag filters.

Panel filters: Coarse 85% (M5) or ePM1 55% (F7)
Bag filters: ePM10 60% (M5) or ePM1 60% (F7)

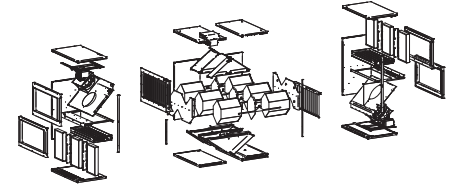
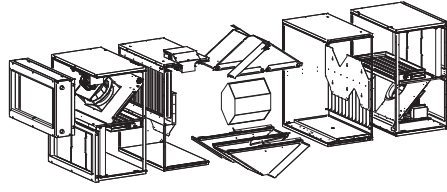
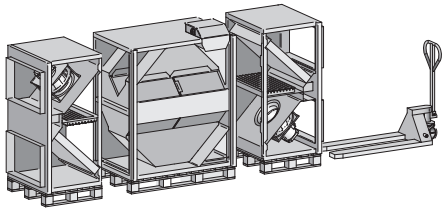


Included as standard is a mounting base with feet, which has an adjustable height of 130 - 160 mm.

The unit is assembled at the bottom using the base and via suitcase fittings at the top.

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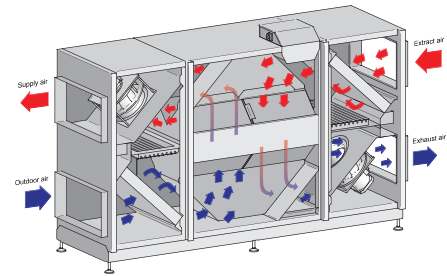
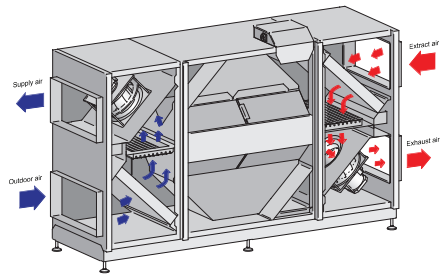


VEX350/360 are modular units, which means they are supplied in sections, so that the units can be transported through door openings as small as 900 x 2000 mm. The units can also be ordered as SPLIT models if there is insufficient room to transport them in sections.

SPLIT 1: The fan sections are supplied ready for operation but the heat exchanger section is not sealed and can be further split into two sections, so that all four sections can be transported through door openings of 900 x 2,000 mm.

SPLIT 2: For internal transport through smaller door openings order the VEX370 SPLIT 2 version. The whole unit is supplied not sealed and can be split into smaller sections so that it may be transported internally and then assembled on site by certified personnel.

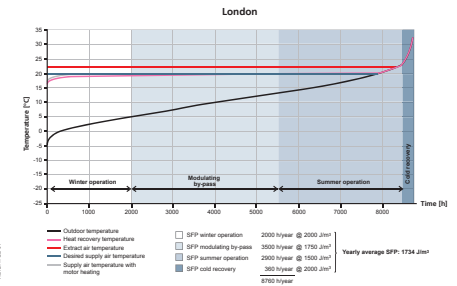
VEX370 is also available as a modular construction and can be supplied in two different split versions.



The design of the units means that in transitional periods and during summer, air can be led around the heat exchanger, via the bypass when their is reduces demand or no demand for heat recovery. The unit has a bypass on both the extract air and supply air side. Extract air and outdoor air is filtered during summer and winter operation.

During summer time, operating without heat/cold recovery, both the outdoor air and the extract air is led around the heat exchanger via the bypass. This reduces internal pressure loss and the system uses less power for the ventilators and reduces the SFP value. In summer time, if cooling recovery is selected via the EXact2 control system, both air streams will be fed through the heat exchanger.

During wintertime operation with heat recovery, extract air enters at the top and is lead vertically down through the counterflow heat exchanger with any condensed water. The outdoor air enters from the bottom and runs up through the heat exchanger – i.e. a counter flow.



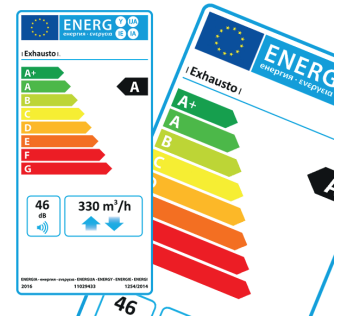
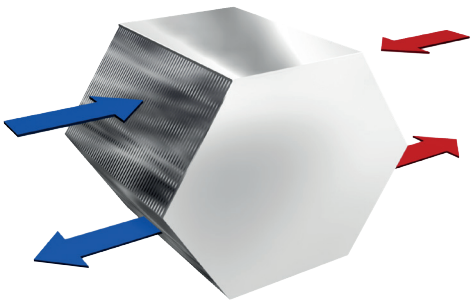
In the given example, the specific power consumption is reduced from 2000 J/m³ to 1823 J/m³ on average over the year. The average specific power consumption can be used in energy framework calculations. The reduction corresponds to a saving of about 9%, a not insignificant saving. The calculation is also highly dependent on the assumptions and should be calculated in each case using the product selection program EXselectPRO.

- In the above example for residential ventilation, the assumptions were:
- > Exhaust air temperature/humidity: 22°C / 33% RH
 - > Desired supply air temperature: 20°C
 - > Temperature efficiency: 80%
 - > Cooling recovery: Active

Energy calculations depend heavily on the current situation, such as expected exhaust air and desired supply air temperature. The energy consumption for de-icing is highly dependent on the humidity of the exhaust air. In residential buildings, icing of the heat exchangers typically begins at an outside temperature around -4°C to -6°C, whereas in offices there is usually no icing.

To minimize energy consumption for de-icing, it is important that ice formation is detected based on pressure drop measurement across the heat exchanger, as is the case with VEX350/VEX360/370.

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An energy label that states the energy class of the unit in relation to defined operating conditions is available via the EXHAUSTO calculation programs.

The counter flow heat exchanger is made of aluminium and the airflows are 100% separated. Their design ensures that the ratio between heat recovery and pressure drop is optimum. I.e. extremely high temperature efficiency is achieved at low levels of energy consumption. There are four counterflow heat exchangers in the VEX350/VEX360 and six counterflow heat exchangers in the VEX370.

The combination of modern EC motors and the EXHAUSTO motor controller delivers extremely low energy consumption and with the EXstream impeller, a high output is achieved.

- Efficiency without condensation: 80 - 85%
- Up to 90% efficiency with condensation

Weight:

- VEX350: 4 x 13,5 kg
- VEX360: 4 x 19,0 kg
- VEX370: 6 x 19,0 kg

Curve

