

CMEV air handling unit

## VEX160CFV

**VEX160CF, vertical version**

VEX100CF with built-in heating coil and counterflow heat exchanger, perhaps the most compact unit on the market.



### PRODUCT BENEFITS

- Compact units with counterflow heat exchanger
- Built-in electric or water heating coil
- Flexible spigot positions

### REGULATIONS AND COMPLIANCES

Eurovent Certification no. : 16.01.020

### Principles of operation

VEX100CF brings fresh, filtered air into the building and recovers heat from the exhaust air using its high-efficiency heat exchanger. The incoming air can be heated and/or cooled using a full range of heating/cooling coils.

### Product description

The VEX100CF range consists of the tried and tested VEX100 air handling unit, now with counterflow heat exchanger. As a result, this compact and flexible air handling unit will continue to comply with the applicable energy regulations, as VEX100CF is Erp18-compliant. This is a very flexible range of air handling units, which can be ordered as LEFT or RIGHT versions and with spigot locations in the side, top or bottom.

VEX140CF, VEX150CF and VEX160CF can be ordered as either a Horizontal or Vertical version, whereas VEX170CF can only be ordered as a Horizontal version.

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**VEX160CFV****VEX160CF, vertical version****Fields of application**

New, Refurbishment, Non-residential buildings, Schools

**Accessories**

Description	Variants
Touch panel 3.5	MHI2-350-TOUCH
Base for VEX160CFV	MSV160VCF
Closing damper LS Ø500 24V	LS50024
Closing damper with spring-return Ø500 24V	LSR50024
FLF500-Ø500, flex connection	FLF500
Cover, Belimo damper OD	ACTUATORBVOD
SIPHONUP SR1K1 SR1K3	SIPHONUP
Syphon heating electric heating wire, 2 metres	SIPHONHE02
#V100CFCONTUBE	#V100CFCONTUBE
#SIPHONHE02	#SIPHONHE02
Syphon water trap, overpressure	SIPHONOP
CW065X10004U0UL	CW065X10004U0UL
CW50004R0IC	CW50004R0IC
PHCE5006	PHCE5006
HW050X08002U0UL	AFC100E2
Pressure controlled frost protection	DEP
Control system for CCW – with modbus	MCCW
Module for control of external cool/heat pump	MXHP
Module for control of external changeover cooling/heating coil	MCOCW
Return water sensor for external mounting (extra)	RPTX
Return water sensor for external mounting – external for retrofitting	RPTX-AS
Modbus communications module for analogue and digital inputs and outputs	MIO
Connection cable for direct connection of analogue input signal	AICABLE
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
Pressure sensor for constant pressure regulation	MPTDUCT
Motion sensor - digital - excl. MIO	PIR2
HYRK, room humidity sensor	HYRK
Manual override to comfort mode excl. MIO - incl. cable	TIMERBUTTON3
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
RH sensor for room - analogue 0-10 V (0-100 % RH)	RFF
Web server incl. interface modbus RTU and BACnet MSTP/IP	WEBE
Exact WAP KIT	4000785

**Filters**

Description	Variants
Panel filter for VEX160/-CF – ePM1 55%	FP1602F7
Panel filter for VEX160/-CF – Coarse 85%	FP1602M5

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## VEX160CFV

### VEX160CF, vertical version

#### General data

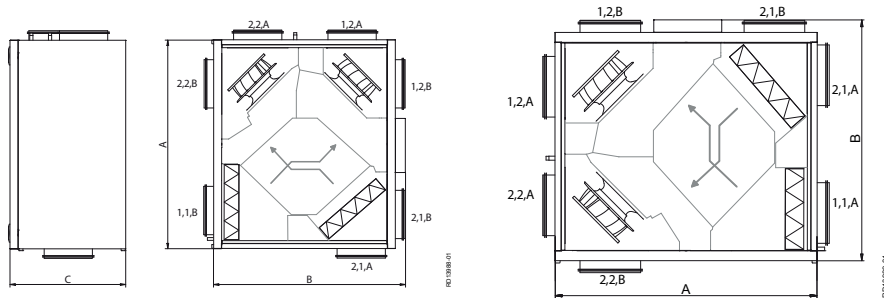
Motor class in accordance with IEC TS 60034-30-2	IE5 (Ultra Premium Efficiency)
Voltage input	1 x 230 V
Regulation	Variable via motor control (MC)
Control signal with control system	Modbus
Control signal with third party control system	0-10 V DC
Fluid temperature (air)	-40°C....+40°C
Ambient temperature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

#### Fan data

Max. Total efficiency (A-D) (%)	57,1
Efficiency level requirements	62N (2015)
ECO efficiency level during optimal operating point	67,2N
Overload protection	Built-in

#### Dimensional data

A (mm)	1820
B (mm)	1745
C (mm)	940
Ø connection (mm)	500
Weight (kg)	410
Weight for transport	242 kg (excl. doors, heat exchanger and fan sections)



#### Airflow data

Minimum airflow	1053
Max. airflow ErP (m³/h)	3275
Max. airflow (m³/h)	4680

#### Electrical datas

Voltage (V)	3x400
Frequency (Hz)	50
Max. power of electrical coil 1 (kW)	14,4
Max. power of electrical coil 2	21,6
Maximum current - unit (A)	15,5
Max current of zero (A)	23,5
Max. electrical output of unit (kW)	4,8
Power consumption (kW)	2,359

#### 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



The VEX100CF range consists of the tried and tested VEX100 air handling unit, now with counterflow heat exchanger. As a result, this compact and flexible air handling unit will continue to comply with the applicable energy regulations, as VEX100CF is Erp18-compliant. This is a very flexible range of air handling units, which can be ordered as LEFT or RIGHT versions and with spigot locations in the side, top or bottom. VEX140CF, VEX150CF and VEX160CF can be ordered as either a Horizontal or Vertical version, whereas VEX170CF can only be ordered as a Horizontal version.

#### Recommendation

As there is a risk of condensate due to the location of the airways, we often recommend the purchase of accessory V100CFCONTUBE (a condensation drain and fitting for the exhaust side).

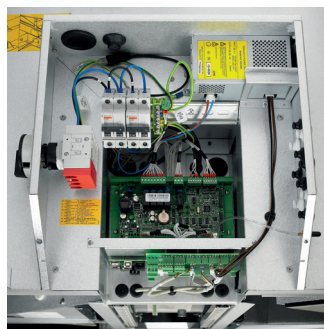


The VEX100CF counter flow heat exchanger is made of aluminium. It is designed to ensure the ratio of heat recovery and pressure loss is at an optimum, i.e. extremely high temperature efficiency is achieved at low levels of energy consumption.

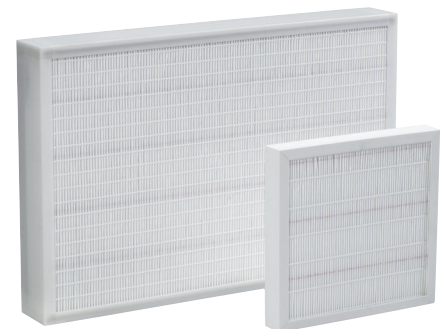
- Efficiency level without condensation: 80–85 %
- Efficiency with condensation: Up to 94 %

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.

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

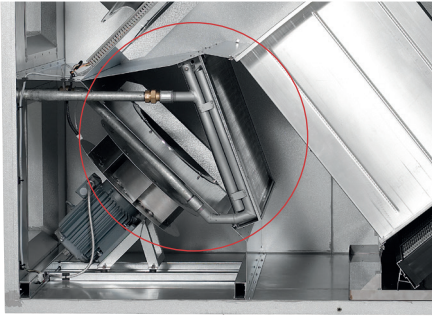


The easily accessible connection box with built-in isolator switch and control fuses ensures easy access for connection and adjustment.



The panel filters are easy to replace and can be ordered as filter class Coarse 85% (M5) or ePM<sub>1</sub> 55% (F7) in acc. with EN779.

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The VEX100CF range is supplied with an integrated heating coil, heated either by water or electricity



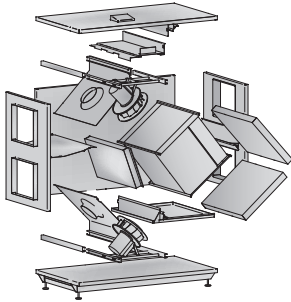
Mounting base is an accessory for VEX140-150-160 and standard on VEX170. The mounting base is equipped with feet that have an adjustable height of 130 - 160 mm.



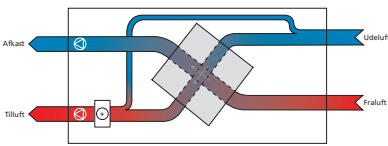
The motor sections are mounted in vibration dampers, which reduces noise in the ducts and eliminates the need to fit flexible connections between the unit and the duct system.

The motor sections can be extracted for easier servicing.

The motors are of type EC and are extremely efficient. They comply with the requirements of the Ecodesign Directive.



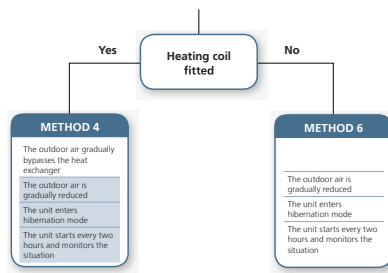
With some projects, limited space means that internal transport of the air handling unit is difficult or impossible. This is why the VEX100CF is available as a split version. It means that the air handling unit can be assembled and tested at the factory as normal – just without sealant. The air handling unit can therefore be easily taken apart at the installation site, transported as single sections, assembled, sealed and commissioned.



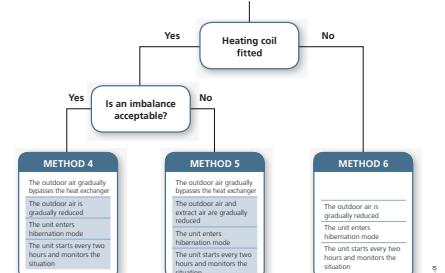
The VEX100CF is designed with a de-icing bypass. If there is a risk of icing, then a certain amount of outdoor air will bypass the heat exchanger and go directly to the after heating coil. This increases the demands on the heating coil's output. However, it avoids a costly preheating coil. The drawing below is an example of a de-icing situation, where 20% of outdoor air is directed through the bypass damper.

**Heating coil and de-icing function:**  
 The de-icing situation is shown above, a heating coil is included here. This is completely necessary, in order for the de-icing function to function correctly. Without the heating coil, the de-icing process would cause the temperature of the supply air to fall, and sooner or later the VEX unit would stop because of icing

The heat exchanger has two forms of frost protection: temperature-controlled or pressure-controlled. The actual de-icing can take place in several ways, depending on whether an after heating coil has been fitted.



These steps only occur if the effect of the after heating coil is insufficient.



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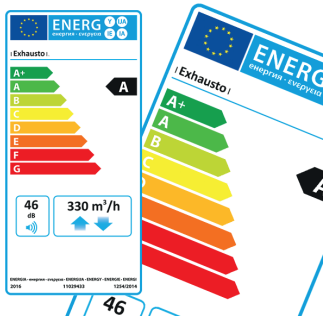
The control system has temperature-controlled frost protection as standard. It is an inexpensive solution and provides sufficient frost-protection in some situations. A temperature sensor is fitted inside the heat exchanger and if the temperature falls to a pre-set value, de-icing begins. This temperature level is factory set to 0 °C but it can also be changed to a new value via the control system. Temperature-controlled frost protection triggers the de-icing process even if there is no ice in the heat exchanger.

The control system monitors the actual airflow and also the pressure drop across the heat exchanger. If ice forms in the heat exchanger, the pressure drop across the heat exchanger will increase and when it exceeds a pre-set value, de-icing begins. Pressure-controlled frost protection only starts de-icing when ice has actually formed, regardless of whether there are sub-zero temperatures.

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## Curve

