GB

VEX340H

with EXact2 control system

VEX300 RANGE
COUNTER FLOW HEAT EXCHANGER

Unit supplied with (factory fitted):

- ☐ VEX340H
- ☐ FP compact filte
- ☐ OD - roof for outdoor

The following accessories are supplied separately:

- ☐ HCW external heating coil (water)
- ☐ HCE external heating coil (electrical)
- ☐ CCW cold water coil
- ☐ Closing damper, LS400 (LSF outdoor air)
- ☐ Closing damper, LS400, (LSA exhaust air)
- ☐ Closing damper, LSR400, with spring-return (LSF outdoor air)
- ☐ closing damper, LSR400, with spring-return (LSA exhaust air)

- ___ pieces, BT40 fire thermostat
- ___ pieces, BT50 fire thermostat
- ___ pieces, BT70 fire thermostat
- ___ pieces, HMI control panel
- ___ pieces, MIO-PIR motion sensor
- ___ pieces, MPT-DUCT constant pressure control

- ☐ MIO-RH humidity sensor
- ☐ MIO-CO2-ROOM, CO_2-sensor
- ☐ MIO-CO2-DUCT, CO_2-sensor
- ☐ MIO-TS-DUCT temperature sensor
- ☐ MIO-TS-ROOM , temperature sensor
- ☐ MXCU control for external cooling unit
- ☐ _____

Prod. order no.: _____

Sales order no.: _____

Original instructions

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EXHAUSTO

1. Product information

2. Handling

3. Mechanical assembly

4. Electrical installation

5. Maintenance

6. Technical data

Symbols, terms and warnings

Prohibition symbol

Failure to observe instructions marked with a prohibition symbol may result in serious or fatal injury.

Danger symbol

Failure to observe instructions marked with a danger symbol may result in personal injury and/or damage to the unit.

Scope

This instruction manual is for use with EXHAUSTO VEX-type air handling units. Please refer to the product instructions regarding accessories and extra equipment.

The instructions must be fully observed to ensure personal safety and to protect the equipment and ensure its correct operation. EXHAUSTO A/S accepts no liability for accidents caused by equipment not used in accordance with the manual's instructions and recommendations.

Supply air/extract air

These instructions use the following terms as given in DS447-2013:

- Supply air (air blown in)
- Extract air (air removed)
- Outdoor air
- Exhaust air

Left/Right

The term R for Right, indicates the supply air is to the right of the cooling unit, as seen from the operating side. The term L for Left, indicates the supply air is to the left.

Front page: Accessories

The front page of the instruction manual contains a checklist, detailing the accessories delivered with the VEX unit.

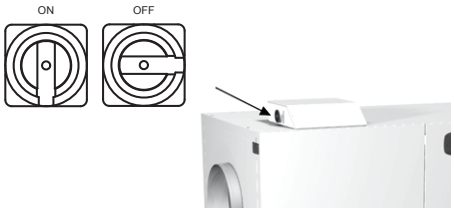
NB

When retrofitting EXHAUSTO accessories, please update the checklist on the front page.

Warnings

Opening the air handling unit

Do not open the service doors until the supply voltage has been disconnected at the isolation switch and the fans have stopped. The isolation switch is positioned on the left side of the connection box on top of the unit.



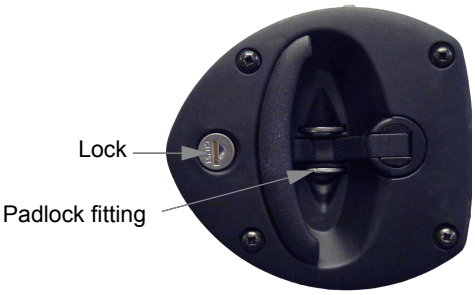
No duct connection

If one or more of the spigots is not connected to a duct: Fit a protective net to the spigots with a maximum mesh width of 20 mm (in accordance with EN294).

Lock the air handling unit during operation

The VEX unit must always be locked during operation:

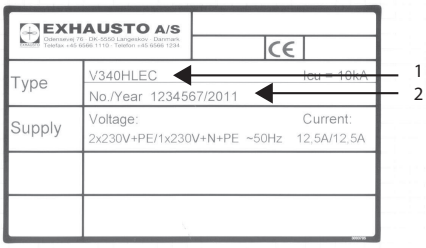
- Use the cylinder lock in the handle. **Remember** to remove the key from the lock.
- Or use a padlock. Use the handle's built-in padlock fixture



Information plate

The VEX unit information plate shows:

- VEX model type (1)
- Unit production no. (2)

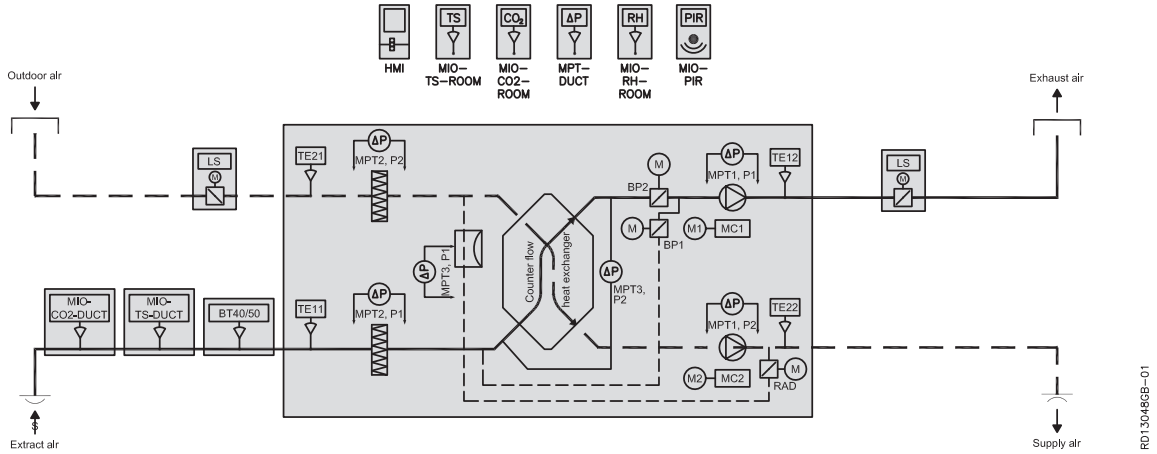


NB: **Have the production number ready at all times when contacting EXHAUSTO A/S.**

1. Product information

1.1 Designations used in these instructions

The VEX unit shown is a VEX340R



Component	Function
BP1	Bypass damper extract air/exhaust air
BP2	Bypass damper outdoor air/supply air
BT40/BT50	Fire thermostat, 40□/50□ (extract air)
BT70	Fire thermostat 70□ (supply air)
HMI	Control panel
LS	Closing damper, outdoor air/exhaust air
M1	Extract air motor
M2	Supply air motor
MC1	Motor control, motor 1 (extract air)
MC2	Motor control, motor 2 (supply air)
MIO-CO_2-DUCT	CO_2 sensor, duct
MIO-CO_2-ROOM	CO_2 sensor, room
MIO-PIR	PIR sensor
MIO-RH-ROOM	Humidity sensor
MIO-TS-ROOM	Temperature sensor, room
MIO-TS-DUCT	Temperature sensor, extract air (external)
MPT1, P1	Airflow control, extract air
MPT1, P2	Filter monitor, extract air
MPT2, P1	Airflow control, supply air
MPT2, P2	Filter monitor, outdoor air
MPT3, P1	Airflow control, return air
MPT3, P2	Pressure loss measurement, ice detection

Component	Function
MPT-DUCT	Pressure transmitter, constant pressure regulation
RAD	Damper motor, return air
TE11	Temperature sensor, extract air
TE12	Temperature sensor, exhaust air
TE21	Temperature sensor, outdoor air
TE22	Temperature sensor, supply air

1.2 Application

Comfort ventilation EXHAUSTO VEX is used for comfort ventilation tasks. Operating temperature range for the unit – see section "Technical data".

Prohibited uses The VEX unit is not to be used to transport solid particles or in areas where there is a risk of explosive gases.

1.3 Location requirements

Positioning The air handling unit is designed for indoor fitting. The air handling unit can be ordered for outdoor installation (accessory Outdoor, OD).

1.3.1 Spatial requirements

The cabinet has two doors.

The table below indicates how much space is needed for servicing, replacing filters, cleaning, etc.

	Unit dimensions	Spatial requirements	Total
Height	1,907 mm	200 mm free height above the connection box	2,207 mm
Width	1,765 mm excl. spigots		1,765 mm
Depth	946 mm	900 mm space required to open doors	1,846 mm

See section "Principal dimensions VEX340H" for more details.

1.3.2 Requirements for underlying surface

When floor-mounting the unit, the surface must be:

- level (+/- 10 mm per metre)
- hard
- resistant to vibration

The VEX unit leg height can be adjusted: 55–110 mm.

1.3.3 Outlet

A condensation outlet must be installed in the immediate vicinity of the unit. See also “Mechanical fitting” section.

1.3.4 Requirements for duct system

Connection to duct system

To achieve maximum performance and minimal energy consumption, the unit should be connected to a straight duct at least 750 mm long, before and after the unit.

Silencers

The duct system must be fitted with silencers specified by the Project Manager, which meet the requirements of the operating area.

Insulation

⚠ **The duct system must be insulated against:**

- **condensation**
- **sound**
- **thermal loss**

Condensation

Condensation in the ducts may occur when the exhaust/outdoor air has high humidity. EXHAUSTO recommends a condensation outlet is also fitted at the lowest point in the ducts.

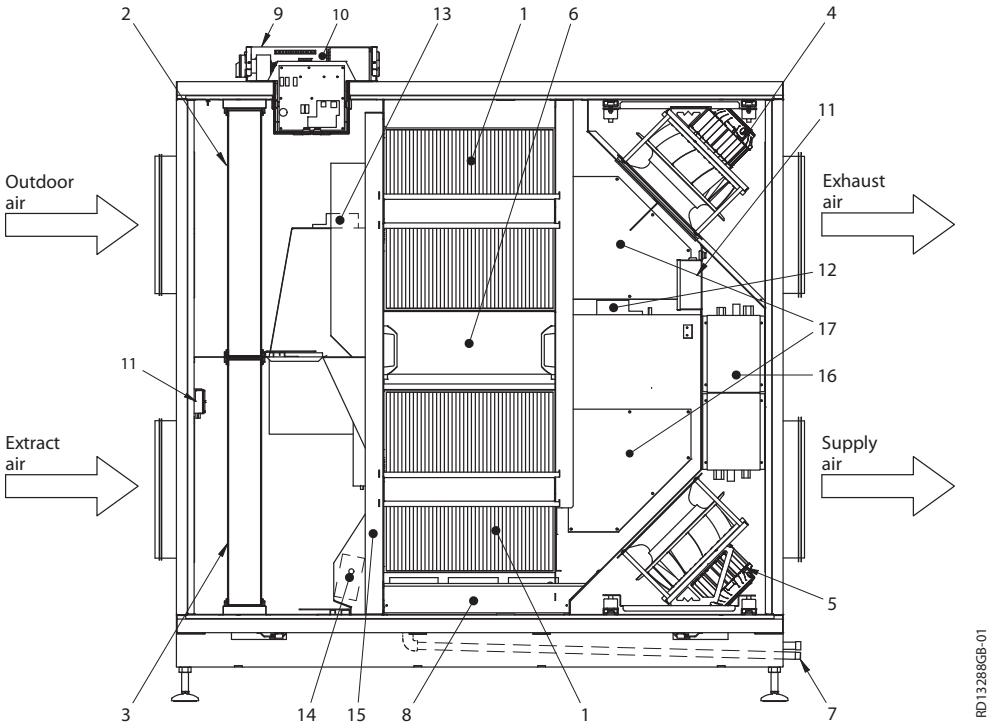
No duct connection

⚠ **If one or more of the spigots is not connected to a duct: Fit a protective net to the spigots with a maximum mesh width of 20 mm.**

1.4 Description

1.4.1 Design

General drawing The drawing below shows the unit's design (VEX340H-R with doors open):



Pos. no.	Part	Function
1	Counter flow heat exchanger	Conducts heat from extract air to supply air
2	Outdoor air filter	Filters outdoor air
3	Extract air filter	Filters extract air
4	Exhaust air fan	Removes "stale" air
5	Supply air fan	Blows air into the room
6	Return air duct	Returns warm supply air for mixing with cold outdoor air
7	Condensation outlet spigot	Conducts condensate away from the condensation tray
8	Condensation tray	Collects the condensate and drains it away from the cross-flow heat exchanger to the condensation outlet
9	Connection box	Connection box for supply voltage, external ventilation components, control panels and PC connection
10	Control fuses	For overload protection

Pos. no.	Part	Function
11	MPT	For pressure and temperature measurement. Pressure measurement determines: • pressure fall across filters • airflow across fans • airflow in return air duct • ice detection
12	Damper motor, return air	Opens and closes extract air damper
13	Damper motor, rear bypass	Opens and closes rear bypass damper
14	Damper motor, lowest bypass	Opens and closes lowest bypass damper
15	Bypass section	Part of the bypass construction
16	Box with motor controls	Variably adjusts fans
17	Inspection access	Allows access for monitoring and cleaning

Cabinet

The inside and outside of the cabinet is made of Aluzinc® The cabinet is insulated with 50 mm mineral wool.

Fans

The unit contains two centrifugal fans for exhaust air and supply air.

Counter flow heat exchangers

The unit's counterflow heat exchangers are made of aluminium and are highly efficient. The counterflow heat exchangers can be taken out and cleaned. See section "Servicing".

Filters

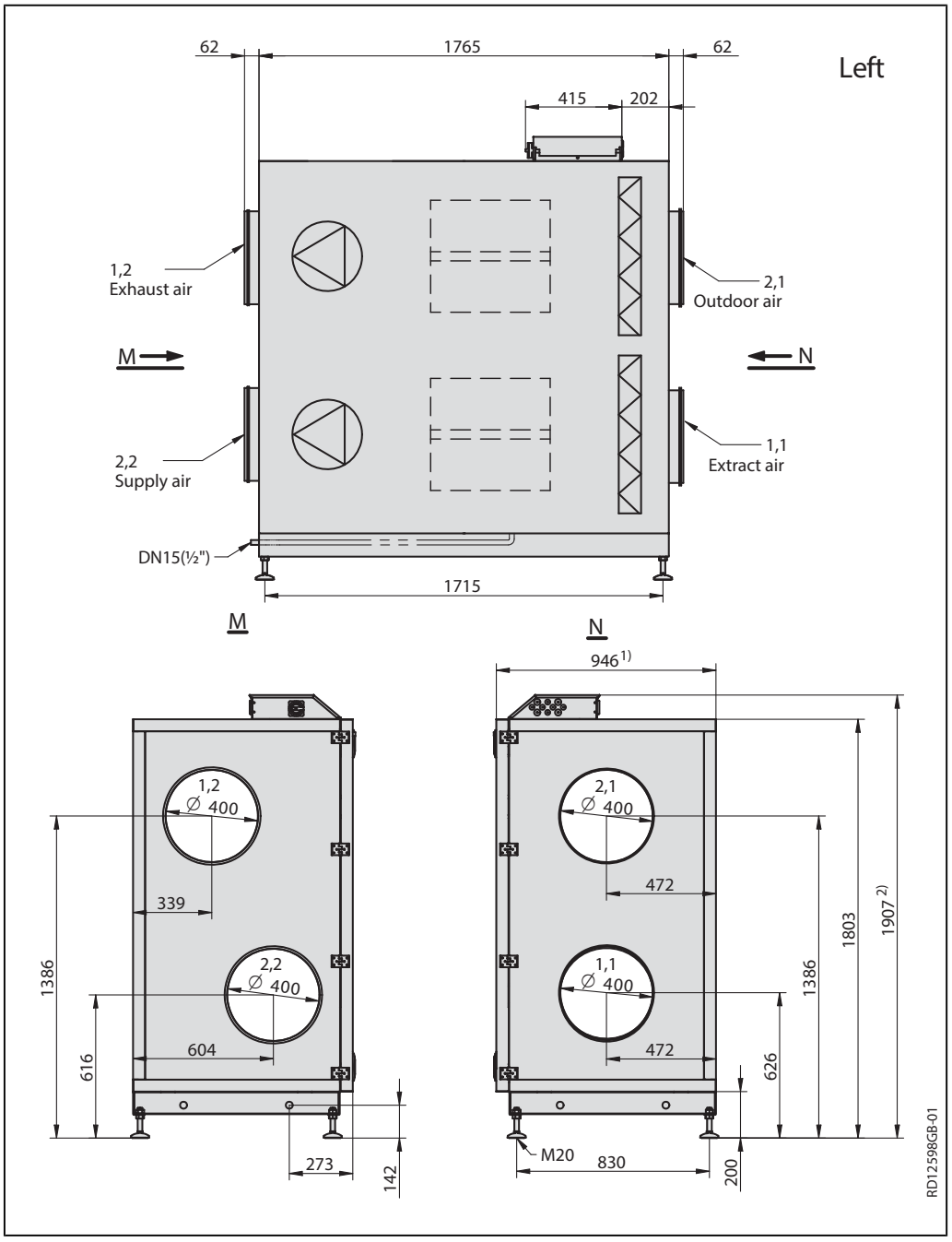
The unit includes built-in panel filters for both extract air and outdoor air.

Bypass design

The unit has a built-in, variably regulated, bypass function to ensure that the combination of outdoor air and heat exchange is correct. Depending on the need for heat recovery, the bypass circulates the extract air around the counter flow exchanger to maintain the desired supply air temperature.

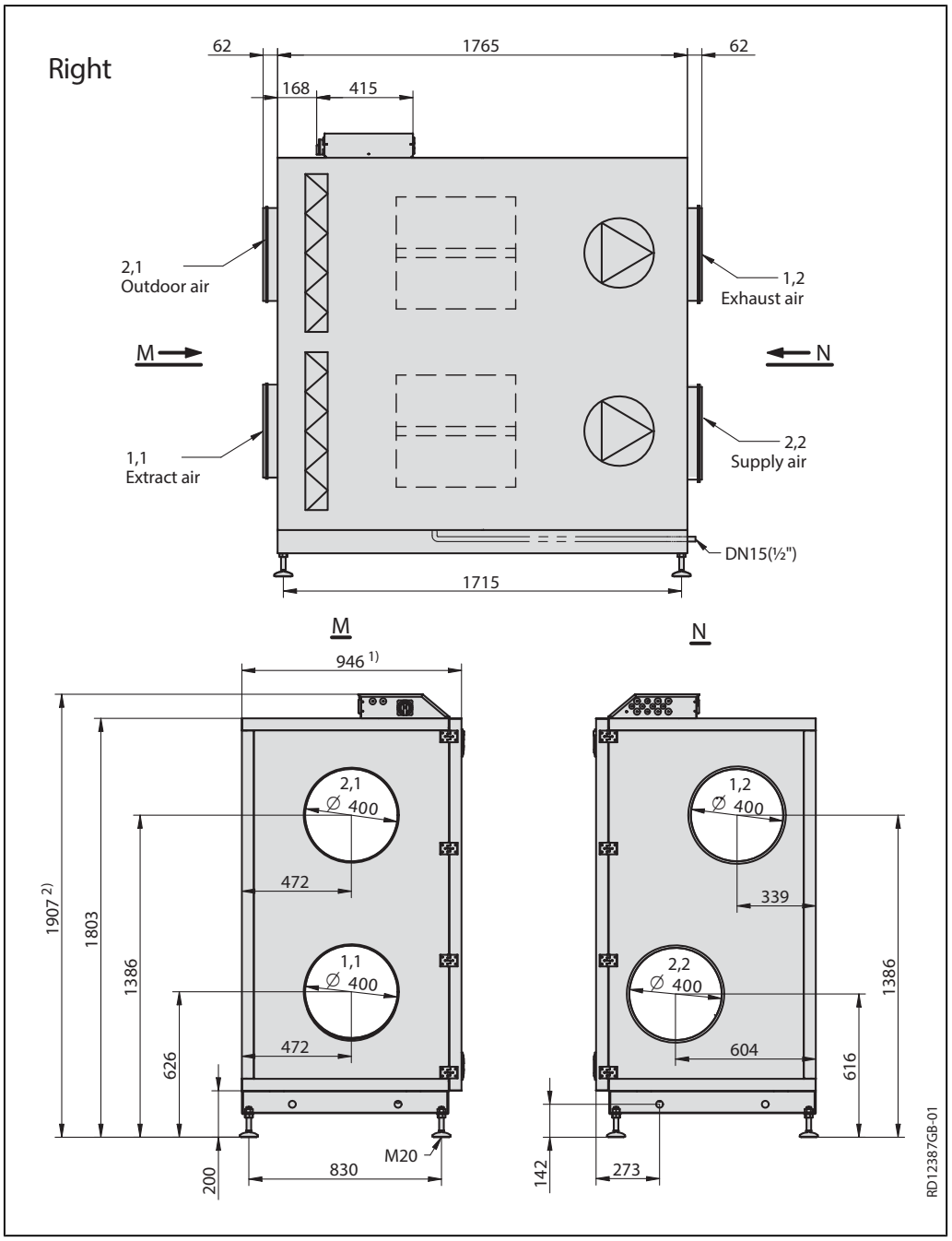
1.5 Principal dimensions

VEX340H, Left



1) Ensure there is space in front of the VEX to open the doors
2) Ensure there is enough free height above the VEX so the connection box can be serviced (see also "Space Requirements")

VEX340H, Right



1) Ensure there is space in front of the VEX to open the doors
2) Ensure there is enough free height above the VEX so the connection box can be serviced (see also "Space Requirements")

2. Handling

2.1 Unpacking

Supplied components

The following components are supplied:
- VEX unit
- Supplied with accessories (as indicated in the checklist on the front page of the instructions)

Packaging

The unit is delivered attached to a disposable pallet and packed in clear plastic.

NB

Once the plastic has been removed, the unit must be protected against dirt and dust:
- **The covers on the spigots must not be removed until the spigots are connected to the ventilation ducts.**
- **Whenever possible, keep the unit closed during fitting.**

The unit should be cleaned before it is used.

Once the VEX unit is fitted, it must be checked and thoroughly cleaned. All dust, debris and metal shavings must be vacuumed up.

2.2 Transport

Transport equipment

Move the VEX unit using a lifting or fork-lift truck or crane, as described in the instructions "Manual - transport of VEX340".

2.2.1 Passage through openings

Width

The list (below) shows the unit's dimensions, and is intended to indicate how large an opening has to be for the unit to pass through:

If the opening width is*	Then
Less than 900 mm	The unit will not pass through
Between 900 and 955 mm	Remove the doors as described in the section "Internal transport with reduced weight"
Greater than 955 mm	The unit can pass through

*Measurements are based on the exact dimensions of the VEX unit.

2.2.2 Internal transport with reduced weight

Weight reduction

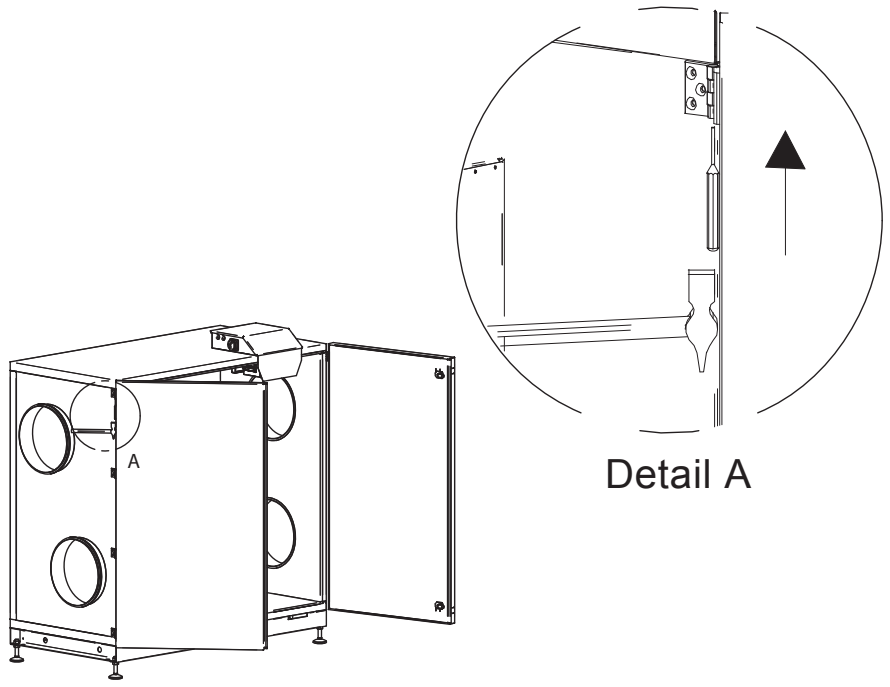
The weight can be reduced during transport by removing the service doors and fan units.

The table below shows how much weight is reduced when the service doors and fan units are removed.

Weight, subcomponents	VEX340H
Total weight	450 kg
Reduced weight - internal transport Doors, counter flow heat exchanger, motor sections and filters removed	284 kg
Bypass section	32 kg
Doors	2 x 23.5 kg
Counter flow heat exchangers	2 x 22 kg
Motor sections	2 x 16.5 kg
Filters	2 x 5 kg

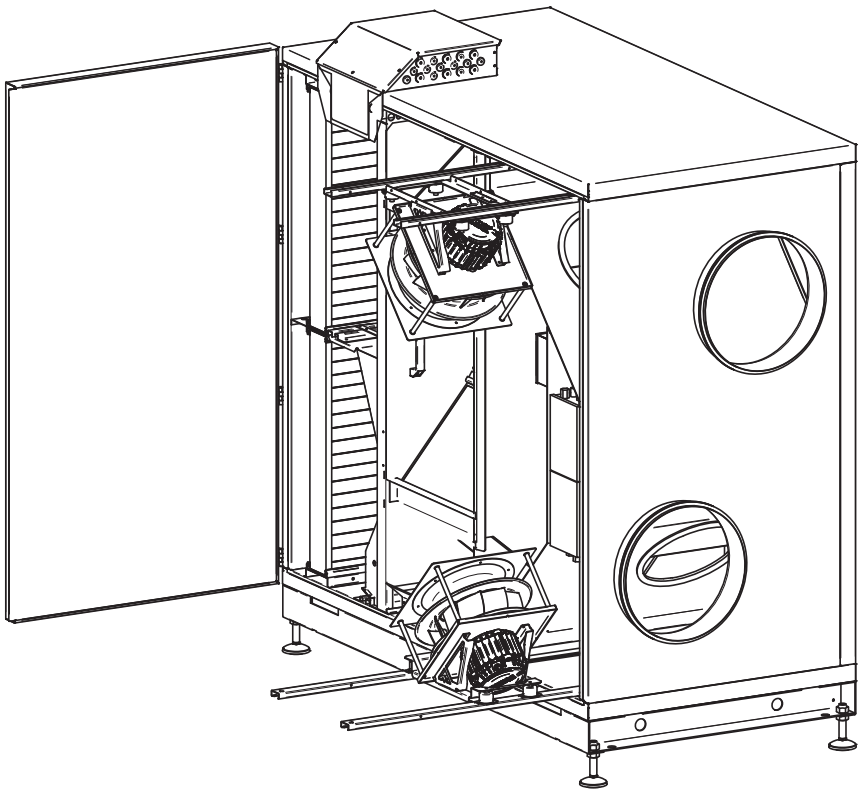
Removing the service doors

To remove the service doors:



A	• Open both doors • Tap the hinge door pin out from below using a small pin bolt or similar • Lift the doors off

To remove the fan unit



Step	Action
1	Remove the fixing screws on the sliding rail (out towards the operating side)
2	Loosen the ties on the motor cable and the measuring hose
3	Pull the fan unit out to the end-stop (a screw on each rail acts as a stop)
4	Remove the supply cable from the motor terminal box
5	Remove the two end-stop screws (one on each rail). The fan unit can now be lifted off. **NB: A single fan unit weighs 16.5 kg.**

Removing the counter flow heat exchangers

See section "Servicing"

3. Mechanical assembly

3.1 Installing the unit

NB Floors must meet the requirements in section "Requirements for underlying surface".

After installation, check the VEX unit is completely level.

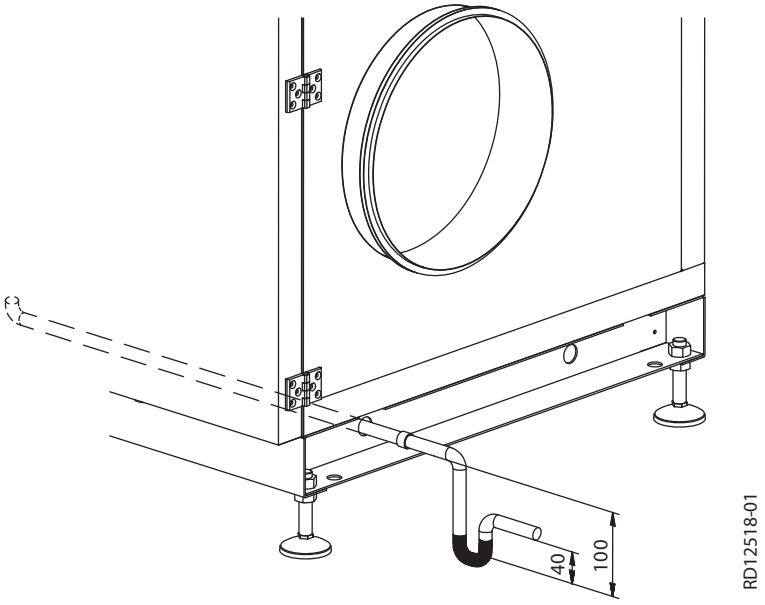
3.2 Condensation drain

3.2.1 Condensation outlet

Connection ⚠ **Drain the condensation outlet into a floor gully or similar. The condensation outlet must be fitted with a water trap.**

Risk of frost ⚠ **<u>Where there is a risk of frost:</u> Insulate the condensation outlet and protect it against frost - if necessary, using a heating cable. Both the condensation pipe under the VEX unit and the condensation outlet need insulating.**

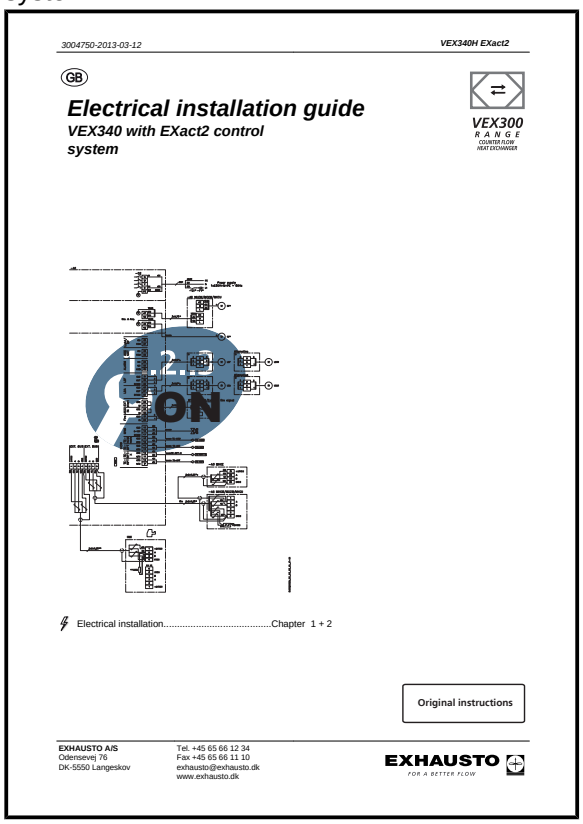
Dimensioning See the correct dimensions for the water trap on the drawing below.



4. Electrical installation

4.1 Electrical installation

See the attached instructions “Electrical Installation Guide VEX340 with EXact2 control system”.



3004750-2013-03-12 VEX340H EXact2

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Electrical installation guide

VEX340 with EXact2 control system

VEX300 RANGE COUNTER FLOW HEAT EXCHANGER

Electrical installation.....Chapter 1 + 2

Original instructions

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5. Maintenance

5.1 Operating readings via the HMI panel

HMI panel

Refer to the "EXact Basic Instructions for the VEX320-330-340-350-360-370" for instructions on accessing Menu 2 "Operating readings" via the technician menu (access code 1111) to check the unit's operating status.

5.2 Maintenance chart

Recommended intervals

The following chart details the recommended maintenance intervals, under normal operating conditions. EXHAUSTO recommends maintenance is adjusted to suit the actual operating requirements.

Component	Procedure	Once a year	Twice a year
Filters*	**Change when the display shows the filter alarm**. We recommend that both filters are changed at the same time. **NB:** The control system can issue a warning when the filter is becoming soiled.		
	The filter should be changed at least		X
Filter monitor	Check that all the seals in the filter monitor are tight	X	
Seals and sealing strips	Check that all the seals are tight	X	
Fans	● Check that the fan impeller is securely fixed to the shaft. Remove the fan unit. See section "Internal transport with reduced weight" ● Cleaning. See section "Servicing and cleaning"	X	
Heating coil/cold water coil (accessory)	Cleaning. See section "Servicing and cleaning"	X	
Counter flow heat exchanger	Cleaning. See section "Servicing and cleaning"	X	
Checking the safety functions	Check: ● Fire thermostats ● Temperature sensors on heating pipe (accessories)	X	
Closing damper	Function inspection	X	
Motor valve and circulation pump (accessories)	Function inspection	X	

As and when required

Following parts are cleaned as and when required

Component	As and when required
Condensation tray	Cleaning and inspection of outlet and water trap
Counter flow heat exchanger	Cleaning. See next section

***Filters**

Only use original filters

- The provided filter data and pressure loss graphs (section "Technical data") are based on the use of original filters
- EUROVENT certification is only valid if original filters are used
- Use of non-original filters may cause leakage in the VEX and impair filter function
- EXHAUSTO recommends that you register the filter replacement date to ensure filters are replaced at the correct intervals

5.3 Hygiene

VDI6022 air hygiene standard

To ensure that the VEX300 meets the requirements of the VDI 6022 hygiene standard, its design ensures that:

- bacterial growth and dirt accumulation are minimal
- conditions for cleaning are optimum

Filter F7

The outdoor air side of the unit must be fitted with a F7 filter to meet VDI 6022 requirements.

5.4 Service

5.4.1 Filter change

Disconnect power at the isolation switch before opening the door.

Pull the filters out. Remember to check the flow direction - see the arrows on the filter. Discarded filters must be stored immediately in sealed plastic bags and disposed of responsibly.

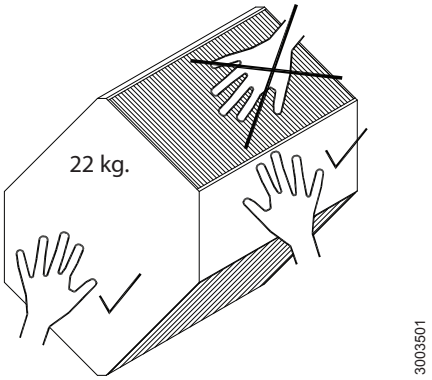
Filter change in menu 8.1

After filter change (timer operation only): Go to menu 8.1 in the EXact control system and select "Yes" next to filter change to reset the operating days counter.

5.4.2 Removing the exchanger

Disconnect power at the isolation switch before opening the door.

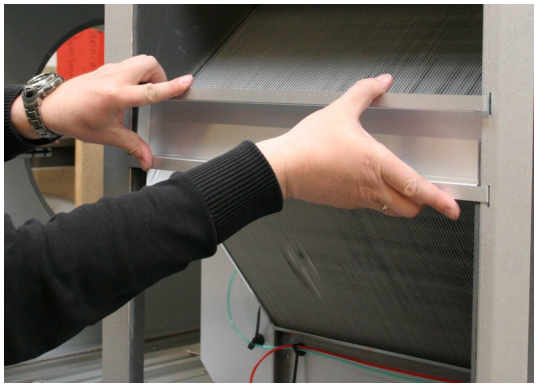
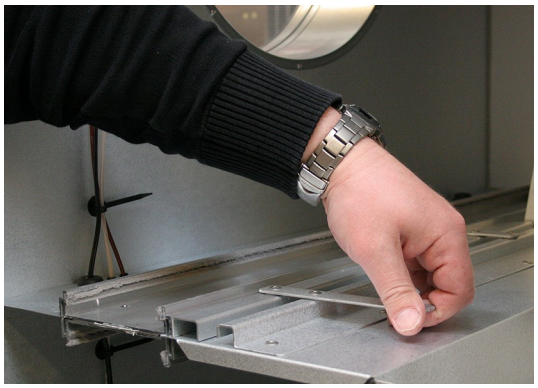
The counter flow heat exchanger fins can be easily damaged - avoid contact with the fins.

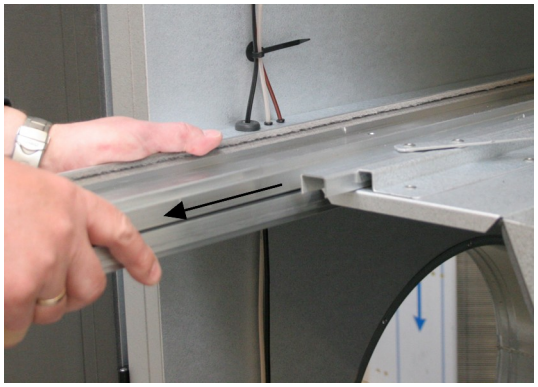
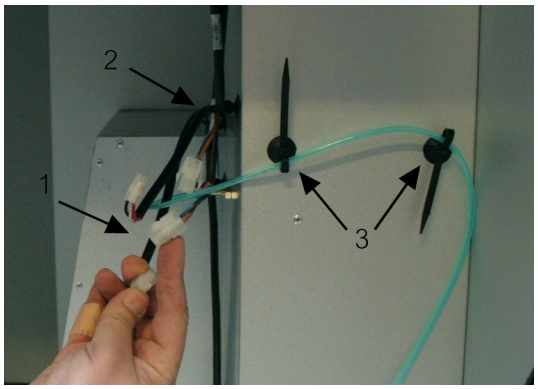
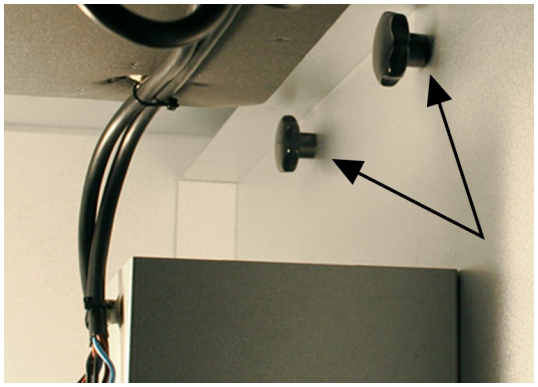


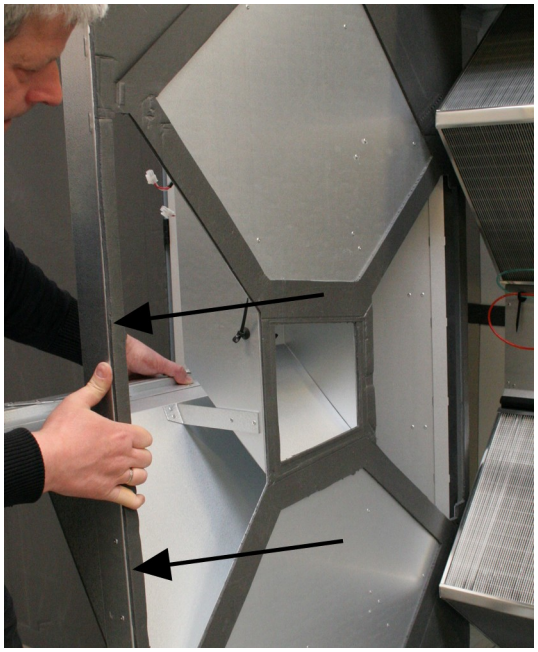
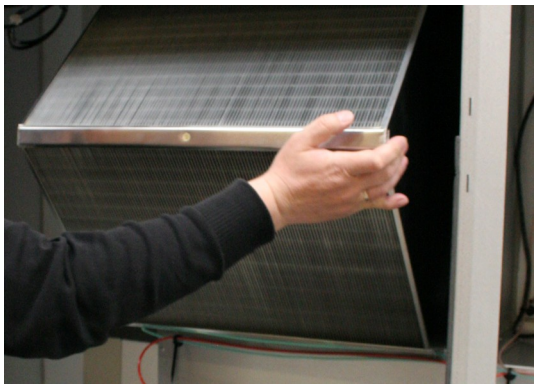
How to remove the counter flow heat exchanger

Before removing the counter flow heat exchanger:

- remove the filters
- remove the sealing bar in front of the heat exchanger (photo 1)
- extract the bypass section (photos 2 - 7)

Step		Action
1.		• Remove the sealing bar in front of the top and bottom counter flow heat exchanger by squeezing and pulling
2.		• Loosen the centre slide lock by pushing it inwards

Step		Action
3.		• Pull out the aluminium rail
4.		• Unplug connector from socket (1) • Loosen the cable tie from the cabinet (2) • Pull the hose back through the holders (3) past the bypass section
5.		• Loosen the finger screws (positioned between the connection box and the bypass section) • Remove the finger screws
6.		• Loosen the bottom slide lock by pushing it inwards

Step		Action
7.		• Pull the bypass section out **NB: Bypass section weighs 32 kg**
8.		• Now carefully remove the top and bottom counter flow heat exchangers **NB: A single counter flow heat exchanger weighs 22 kg**.

To refit the counter flow heat exchanger

	Follow steps 1 to 8 in reverse order Once the counter flow heat exchanger is in place: • Push the exchanger in using both hands to ensure it is put back correctly

5.4.3 Servicing and cleaning

Cleaning the counter flow heat exchanger:

- Clean the exchanger by flushing with hot water
- Water temperature max. 90ºC.

How to clean the fan

See section "Internal transport with reduced weight" for details on how to remove the fan units.

Step	Action
1	Switch off the power supply to the unit at the isolation switch
2	Clean the fan impellers with a vacuum cleaner and by wiping with a damp cloth **NB: Clean the impellers carefully to avoid disturbing the balance**
3	Once re-fitted, check the unit operates without vibrating

Cleaning cold water coil/heating coil

Step	Action
1	Switch off the power supply to the unit at the isolation switch
2	Vacuum clean the heating coil
3	Cold water coil: clean the condensation tray

6. Technical data

6.1 Weight, corrosion class, temperature ranges

Weight

Weight	450 kg

Corrosion class

Corrosion class	Corrosion class C4 in accordance with EN ISO 12944-2 Environmental class M3 in accordance with VVS AMA 98

Temperature ranges (without pre-heating)

Fluid temperature (air)	-40ºC to +40°C
Ambient temperature (operating)	-30ºC to +40ºC
Ambient temperature (short term operation, less than six hours)	-30ºC to +50ºC
Ambient temperature when not in operation (storage, transport)	-40ºC to +60ºC

The temperature ranges given are dependent on the type of installation, humidity, airflow, the balance between airflows, ducts and insulation and room temperature. If using pre-heating coils, the ambient temperature can be reduced.

At temperatures below -25˚C (with outdoor installation), use of a thermostatically controlled heater in automated control box is recommended.

HMI-panel

Ingress protection	IP20
Ambient temperature	0°C - +50°C

At temperatures below 0˚C the display may react more slowly than usual.

Fire thermostats

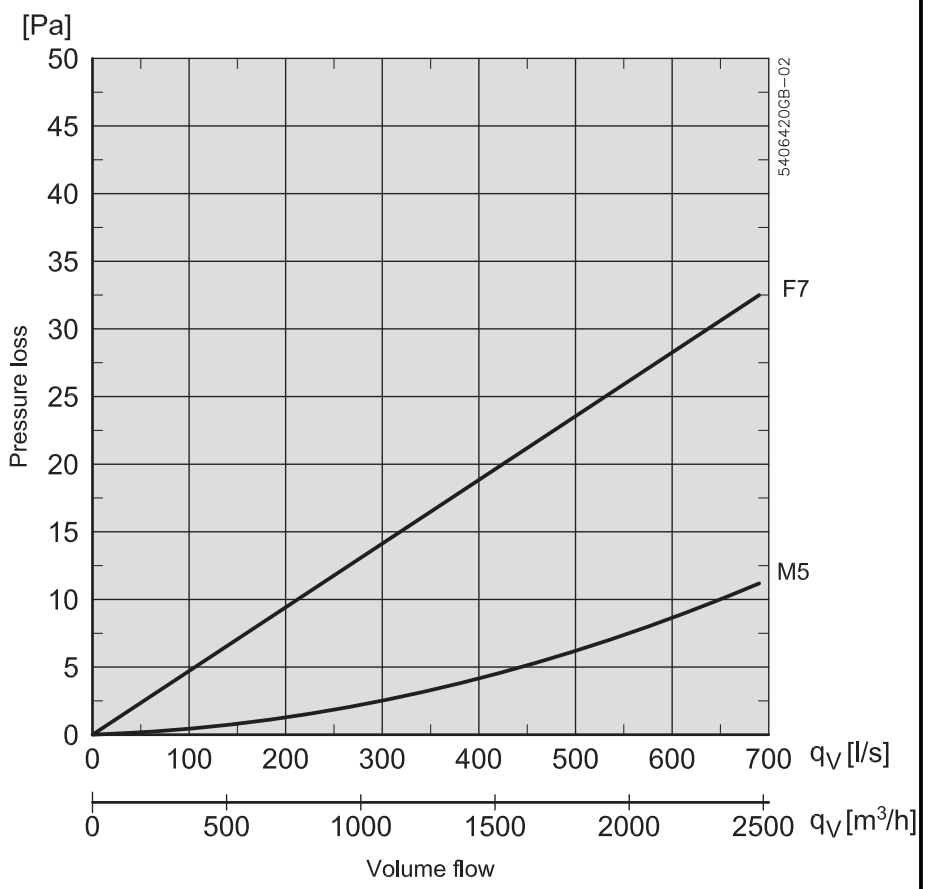
Cut-out temperature, BT70	70°C
Cut-out temperature, BT50	50°C
Cut-out temperature, BT40	40°C
Max. ambient temperature, sensor	250°C
Ambient temperature, thermostat housing	0°C - +80°C
Sensor length	125 mm
Ingress protection	IP40

Motor damper

Motor damper type	LS400-24	LSR400-24
Designation	LSA/LSF	LSFR
Motor type	NM24-F	AF-24
Rotation time	75–150 s	open/close: 50 s
Ingress protection	IP42	IP42
Ambient temperature	-20ºC to +50ºC	-30ºC to +50ºC

6.2 Compact filters

Pressure loss curves for M5 and F7 filters



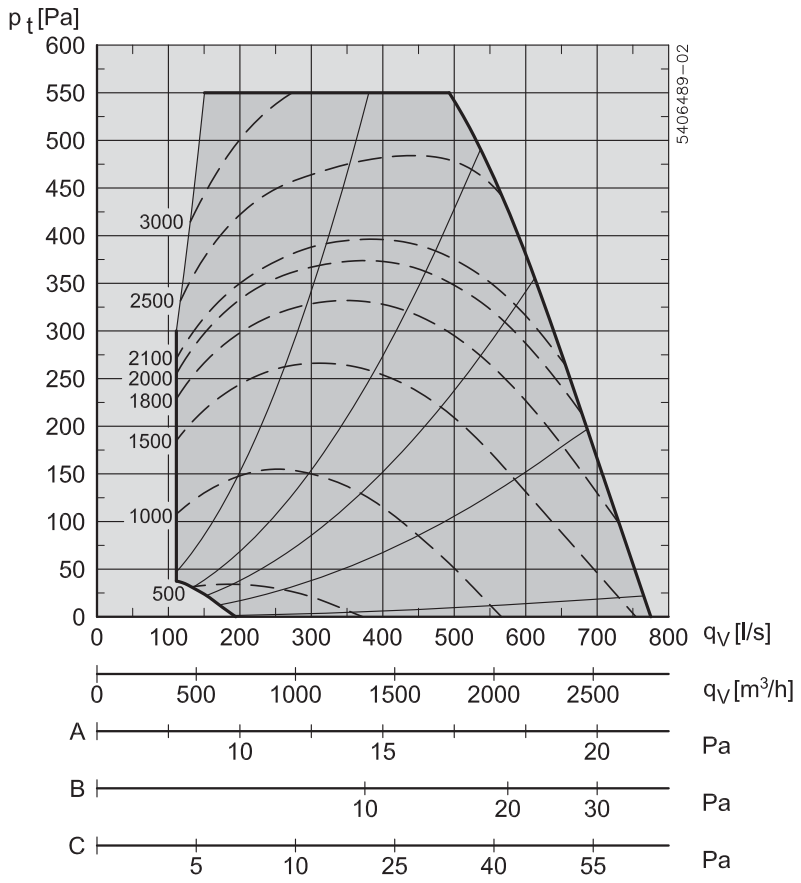
Filter data	M5	F7
Panel filter h x w	716 x 836 mm 2 x 1	716 x 836 mm 2 x 1
Panel filter thickness	96	96
Filter area	6.9 m^2	21.6 m^2
Filter class	M5	F7
Retention efficiency in accordance with EN779	96 %	> 99 %
Efficiency	45 %	85 %
Volume flow rate	2,200 m³/h	2,200 m³/h
Initial pressure drop	9 Pa	29 Pa
Recommended final pressure drop at normal volume flow rate	109 Pa	129 Pa
Temperature resistant to	70 □	70 □

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

EUROVENT certification is only valid if original filters are used. For more details about original filters, see section "Maintenance".

6.3 Capacity diagram

Capacity diagram for VEX340H



Capacity diagram with M5 filters

SFP-curve (J/m^3)

Operating curves

A: Pressure supplement with F7 filters
B: Pressure supplement with heating coil (HCE/HCW)
C: Pressure supplement with CCW

6.4 Ordering spare parts

Find production number

When ordering spares, please state the relevant production part number. This will ensure that the correct parts are delivered. The production number is given on the front of the VEX guidelines and on the VEX rating plate.

Contact:

Contact your local EXHAUSTO office service department to order a spare part. Contact information is given on the back cover of these instructions. See also the "Layout" section for an overview of the position and designation of parts in the VEX.

Scan code and go to addresses at
www.exhausto.com

EXHAUSTO