### (GB)

# VEX150CF Vertical HCE with EXact2 control



#### Unit suplied with (factory fitted):

- Electric heating coil HCE150 12,0kW
- Electric heating coil HCE150 18,0kW  $\square$
- VDI 6022 ( )
- M5-compact filter, FP  $\square$
- F7-compact filter, FP

#### The following accessories are supplied separately:

- pieces, control panel, HMI
- Closing damper, LS400-24, (LSA exhaust)
- Closing damper, LS400-24, (LSF outdoor)
- Closing damper, LSR400-24, with spring-return (LSAR exhaust)
- Closing damper, LSR400-24, with spring-return (LSFR for outdoor)
- pieces, Fire thermostat, BT40
- pieces, Fire thermostat, BT50
- pieces, Fire thermostat, BT70
- pieces, Constant pressure control, MPT-DUCT
- $\square$ Motion sensor, MIO-PIR
- Humidity sensor, MIO-RH
- CO<sub>2</sub>-sensor, MIO-CO2-DUCT
- CO2-sensor, MIO-CO2-ROOM  $\square$
- $\square$ Temperature sensor, MIO-TS-DUCT
- Temperature sensor, MIO-TS-ROOM  $\square$
- Control for external cooling unit, MXCU  $\square$
- $\bigcap$ Mounting base, MSV150V
- TS-RPT-X

 $\square$ 

0	
Prod.order no.:	
Sales order no.:	
Sales order no	

R Product information..... Chapter 1+6 Mechanical assembly..... Chapter 2 + 3 4 Electrical installation.....Chapter 4 P Maintenance.....Chapter 5

Original instructions

**EXHAUSTO** 

EXHAUSTO A/S Odensevej 76 GB-5550 Langeskov

EXHAUSTO

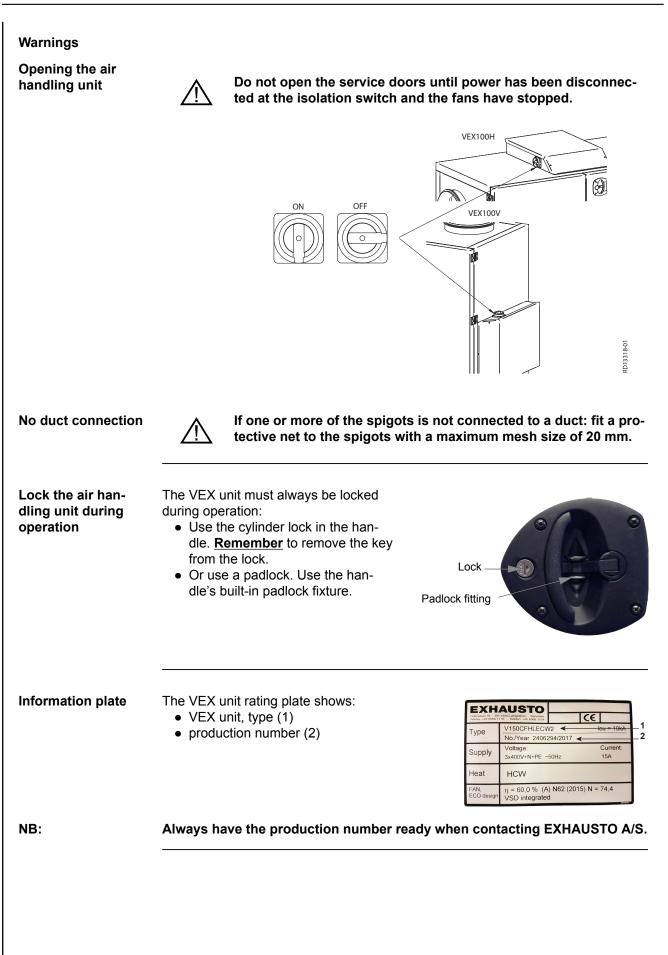
-

Tel. +45 65 66 12 34 Fax +45 65 66 11 10 exhausto@exhausto.dk www.exhausto.dk

Û		
1. Product information	ation	
	1.1. Designations used in these instructions	.6
	1.1.1. Simplified diagram	
	1.2. Application	
	1.3. Location requirements	
	1.3.1. Space requirements	
	1.3.2. Requirements for underlying surface	
	1.3.3. Condensation outlet	
	1.3.4. Requirements for duct system	
	1.4. Description	
	1.4.1. VEX unit construction	
	1.4.2. Parts of the VEX unit	
	1.5. Principal dimensions	
5M2	·····	
- And		
5~S		
2. Handling		
	2.1. Unpacking	
	2.2. Transport	
	2.2.1. Passage through openings	
	2.2.2. Internal transport with reduced weight	15
~~·		
3. Mechanical ass	•	
	3.1. Installation	
	3.1.1. Installation directly on floor	
	3.1.2. Installation on mounting base	
	3.2. Condensation outlet	
	3.2.1. Establishment of condensation outlet	17
4		
4. Electrical instal	lation	
	4.1. Electrical installation	19
EP		-
5 Maintenance h	ygiene and servicing	
J. Maintenance, n	5.1. Operating readings via the HMI panel	20
	5.2. Maintenance	
	5.2.1. Overview of maintenance intervals	
	5.3. Hygiene (VEX100VDI only)	
	5.4. Servicing and cleaning	
	5.4.1. Filter change	
	5.4.2. Cleaning the fans.	
	5.4.3. Cleaning the heating coils	
	5.4.4. Removing and cleaning the counterflow heat exchanger	
	5.4.5. Cleaning the counterflow heat exchanger	
0		
Ũ		
6. Technical data		
	6.1. Weight, corrosion class, temperature ranges, etc	24
	6.2. Compact filters	
	6.3. Electric heating coil	
	6.4. Capacity diagram	
	6.5. Ordering spare parts	

6.6.	Environmental	declaration	.29
0.0.	Liivii Oinneintai		. 23

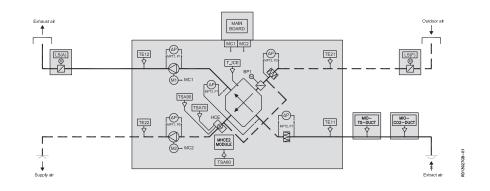
Symbols, terms	and warnings
Prohibition symbol	Failure to observe instructions marked with a prohibition symbol may result in serious or fatal injury.
Danger symbol	Failure to observe instructions marked with a danger symbol may result in personal injury and/or damage to the unit.
Scope	This instruction manual is for use with EXHAUSTO VEX-type air handling units. Please refer to the product instructions regarding accessories and extra equip- ment.
	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 liabil- ity for accidents caused by equipment not used in accordance with the manual's instructions and recommendations.
Supply air/extract air	<ul> <li>This instruction manual uses the following terminology:</li> <li>Supply air (air blown in)</li> <li>Extract air (air removed)</li> <li>Outdoor air</li> <li>Exhaust air</li> </ul>
Front page: Acces- sories	The front page of the instruction manual contains a checklist, detailing the acces- sories delivered with the VEX unit.
NB	When retrofitting EXHAUSTO accessories, please update the checklist on the front page.
Definition	In the type designation <u>R</u> stands for Right, indicating that the supply air is to the right of the unit, as seen from the operating side. Supply air to the left is designated with <u>L</u> for Left



# $\hat{\mathcal{U}}$ **1. Product information**

## **1.1 Designations used in these instructions**

#### 1.1.1 Simplified diagram



Component	Function	Standard/accesso- ry
HCE	Electric heating coil	Standard
TSA70	Overheating protection, electric heating coil (automatic reset)	Standard
TSA80	Overheating protection, electric heating con- trol (manual reset via HMI)	Standard
TSA90	Overheating protection, electric heating con- trol (manual reset via HMI)	Standard
MPT1, P1	Airflow control, extract air	Accessories
MPT1, P2	Airflow control, supply air	Accessories
MPT2, P1	Filter monitor, extract air	Accessories
MPT2, P2	Filter monitor, outdoor air	Accessories
MPT3, P1	Ice detection	Accessories
LS(F)/LS(F)R	Closing damper, outdoor air	Accessories
LS(A)/LS(A)R	Closing damper, exhaust air	Accessories
BP1	Bypass damper	Standard
M1	Extract air motor	Standard
M2	Supply air motor	Standard
MC1	Motor controller, motor 1	Standard
MC2	Motor controller, motor 2	Standard
Main board	Control system	Standard
TE11	Temperature sensor, extract air	Standard
TE12	Temperature sensor, exhaust air	Standard
TE21	Temperature sensor, outdoor air	Standard
TE22	Temperature sensor, supply air	Standard
T <sub>ice</sub>	Temperature sensor for ice in exchanger	Standard



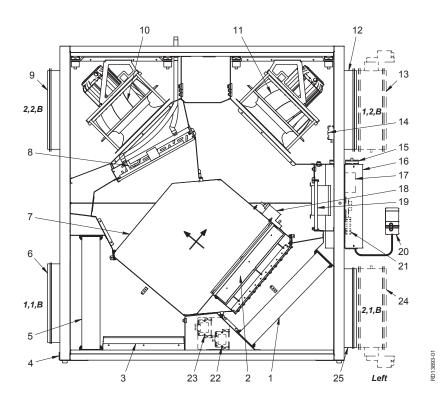
# **1.2 Application** EXHAUSTO VEX is used for comfort ventilation tasks. **Comfort ventilation** Operating temperature range for the unit - see section "Technical data". **Prohibited uses** The VEX unit is not to be used to transport solid particles or in areas where there is a risk of explosive gases. **1.3 Location requirements** Positioning The unit is designed for indoor fitting. 1.3.1 Space requirements The drawing below indicates how much space is needed for opening the doors and servicing the unit, e.g. changing filters, cleaning, servicing, etc. 735 785 RD13896-01 NB: For servicing, the VEX must have a free height of at least 300 mm above the connection box. 1.3.2 Requirements for underlying surface When fitting the unit directly to an existing surface - i.e. without using the mounting base (accessory) - the surface must be: flat level (+/- 3 mm per metre) hard resistant to vibration 1.3.3 Condensation outlet A condensation outlet must be installed in the immediate vicinity of the unit. See also "Mechanical assembly" section.

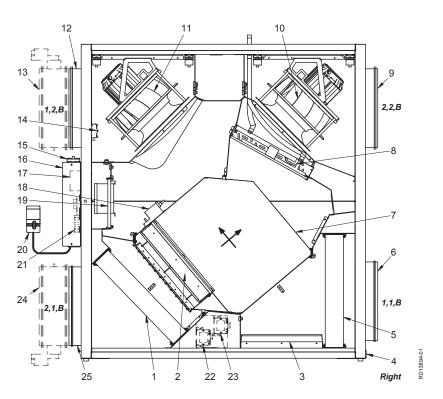
Silencers	The duct system must be fitted with silencers specified by the Project Manager, which meet the requirements of the operating area.
Bends	A duct bend may be fitted immediately after the unit, because the airflow in the spigot has a uniformly moderate speed profile, which results in negligible system pressure loss.
Insulation	The duct system must be insulated against: • condensation • sound leakage • heating/cooling losses
Condensation	Condensation in the ducts may occur when the exhaust/outdoor air has high hu- midity. EXHAUSTO recommends a condensation outlet is also fitted at the lowest point in the ducts.
Outdoor air intake	The outdoor air intake must be dimensioned with sufficiently low airflow to prevent rain and snow being drawn into the duct system.
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 VEX unit construction

The following drawings show an overview of the construction of left and right-hand models of VEX units (shown without doors).

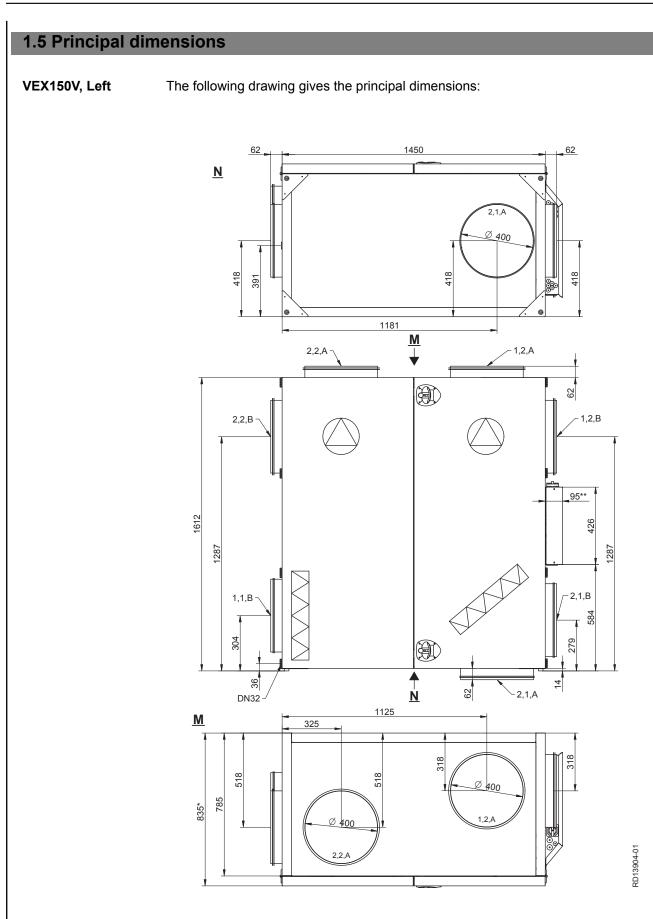




Pos.	Part	Function
1	Outdoor air filter	Filters outdoor air.
2	Bypass damper	For operation with heat recovery, the bypass damper is closed so that the air passes through the counterflow heat exchanger. For bypass operation, the damper is open, and the air bypass- es the heat exchanger.
3	Condensation tray	Collects the condensate and drains it away from the counter- flow heat exchanger to the condensation outlet
4	Condensation outlet	Channels condensate to the drain.
5	Extract air filter	Filters extract air.
6	Spigot 1.1.B	Extract air spigot
7	Counterflow heat exchanger	Conducts heat from extract air to supply air.
8	Electric heating coil	Heats supply air if heat recovery is insufficient.
9	Spigot 2,2,B	Supply air spigot. The spigot can also be positioned on the top of the air handling unit (2,2,A).
10	Supply air fan	For outdoor air/supply air.
11	Extract air fan	For exhaust/extract air.
12	Spigot 1,2,B	Extract air spigot The spigot can also be positioned on the top of the unit (1,2,A).
13	Closing damper LS	Closing damper, exhaust air, LSA (accessory).
14	MPT1 (AFC)	Airflow control (accessory).
15	Isolation switch	Connects/disconnects current.
16	Connection box	Connection of accessories.
17	Terminal row	Connection of accessories to ventilation unit.
18	Bypass motor	Opens/closes bypass damper.
19	Extraction plate	Positioning of motor control components.
20	HMI panel	Control panel.
21	EXact2 control	Control system.
22	MPT3 (DEP)	Ice detection (accessory).
23	MPT2 (MPTF)	Filter monitor (accessory).
24	Closing damper LS	Closing damper, outdoor air, LSF (accessory).
25	Spigot 2,1,B	Outdoor air spigot The spigot can also be positioned at the bot- tom of the air handling unit (2.1.A)

#### 1.4.2 Parts of the VEX unit

Cabinet	The inside and outside of the cabinet is made of Aluzinc® (DC TRANSLATED) Kabinettet er isoleret med 50 mm mineraluld.
Fans	The unit contains two centrifugal fans with backward curved blades for extract air and supply air.
Counterflow heat exchanger	The counterflow heat exchanger in the unit is mounted with a modulating bypass damper. The counterflow heat exchanger can be removed and cleaned.
Filters	The unit includes integral compact filters for both extract air and supply air.

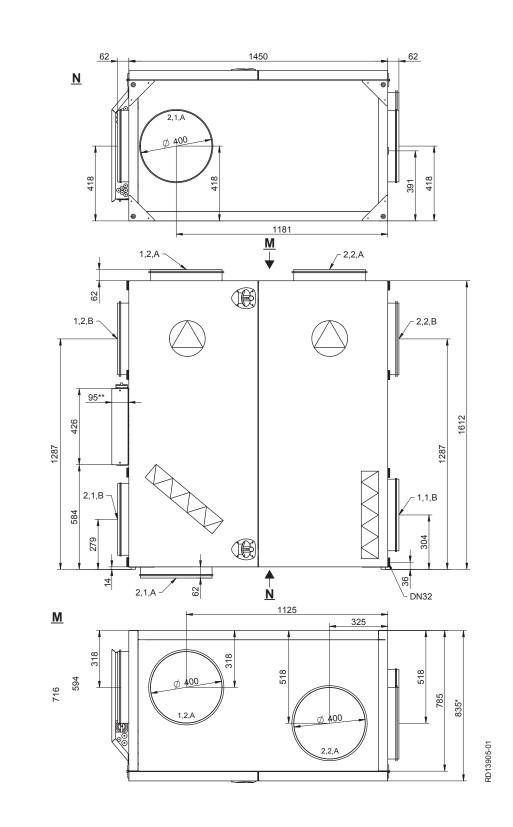


NB:

The drawing shows all of the spigot positioning options. \* Allow a distance for service in front of the unit equivalent to the unit depth. \*\* Allow a min. of 300 mm free height for service.



The following drawing gives the principal dimensions:



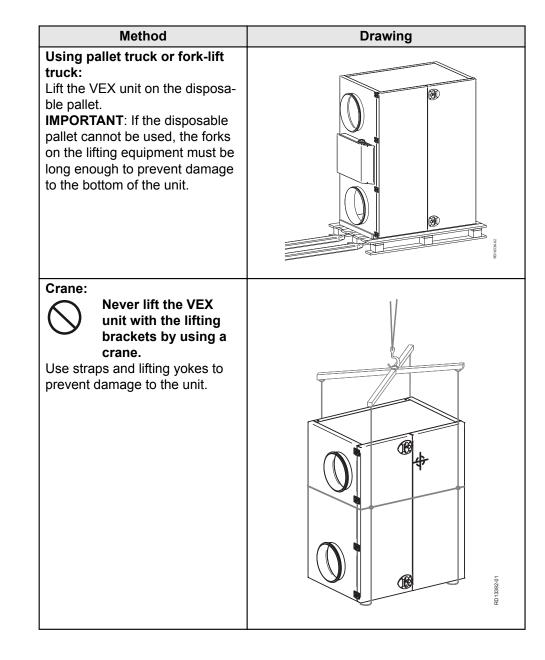
NB:

The drawing shows all of the spigot positioning options.

\* Allow a distance for service in front of the unit equivalent to the unit depth.

\*\* Allow a min. of 300 mm free height for service.

ŝ		
2. Handling		
2.1 Unpacking		
Supplied compo- nents	<ul> <li>The following components are supp</li> <li>VEX unit</li> <li>Supplied accessories (as indic structions).</li> </ul>	blied: ated in the checklist on the front page of the in-
Packaging	The unit is delivered on a disposab	e pallet and packed in clear plastic.
NB	and dust:	
The unit should be cleaned before it is used.	Once the VEX unit is fitted, it must debris and metal shavings must be	be checked and thoroughly cleaned. All dust, vacuumed up.
2.2 Transport		
Transport	Transport the VEX unit on the disport connection box.	esable pallet. Do not lift it with the spigots or
Transport methods	Transport the VEX unit in one of the	e following ways:
	Method	Drawing
	Manual transport: Lifting brackets for manual trans- port can be fitted as shown on the drawing:	The second se



Weight For information about the weight of the unit, see the section "Technical specifications".

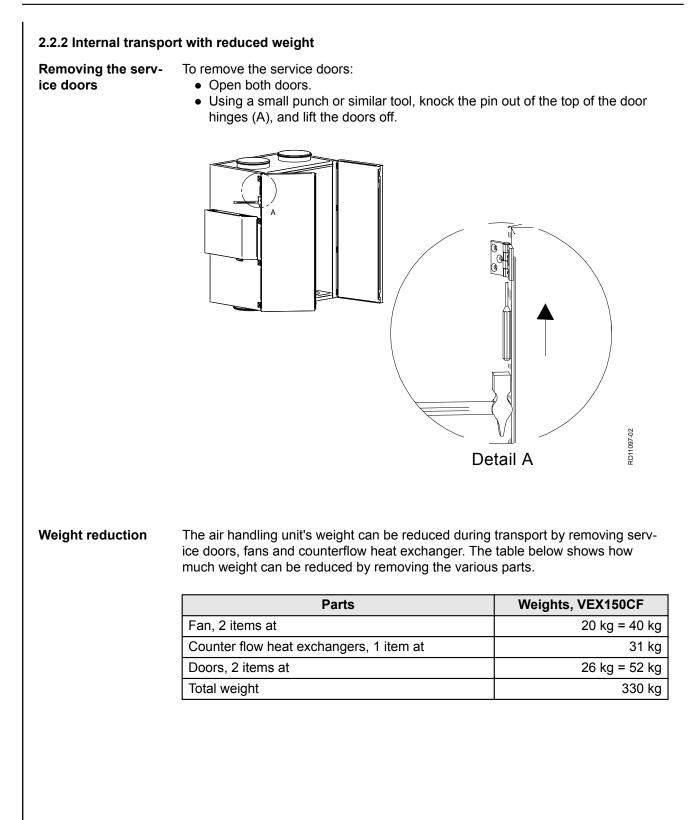
#### 2.2.1 Passage through openings

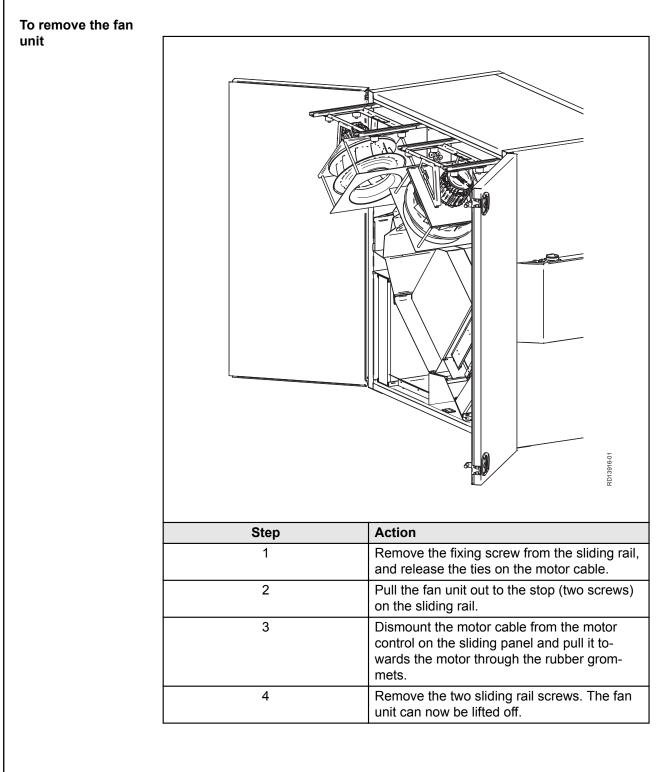
Height VEX height is 1612 mm + any spigot in top (+62 mm) and bottom (+62 mm).

WidthThe list below shows how wide the opening has to be for the VEX unit to pass<br/>through:

If the opening width is*	Then
less than 785 mm	the unit will not pass through.
785–835 mm	remove doors, see relevant section.
greater than 835 mm	the unit can pass through.

\* Measurements are based on the exact dimensions of the air handling unit

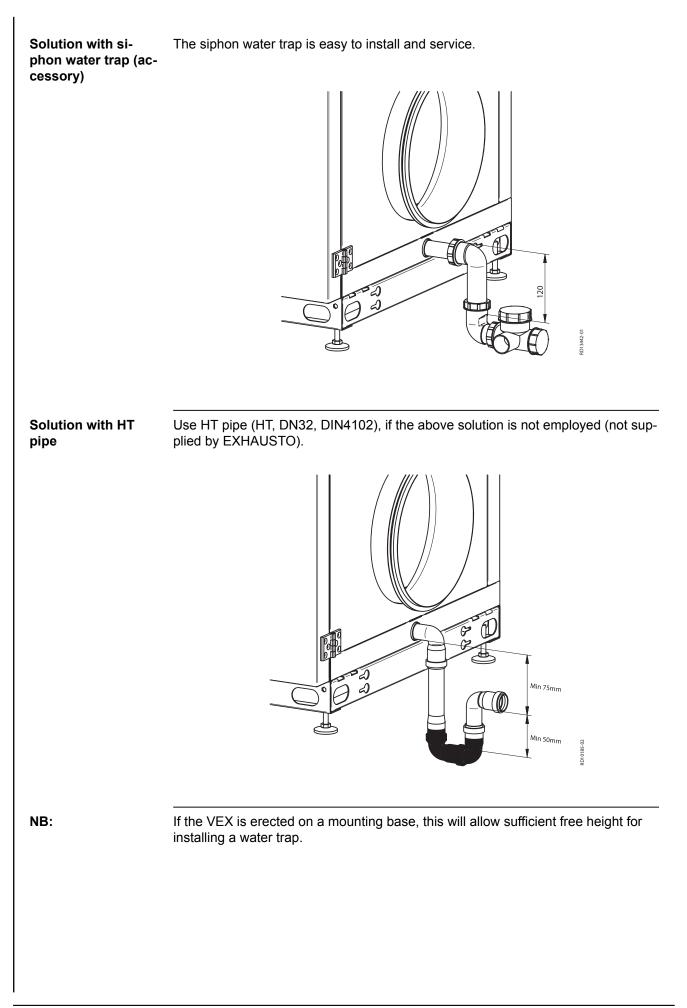




Removal

See section "Maintenance" for instructions for dismounting fans and counterflow heat exchanger and for removal of filters.

3. Mechanical	assembly
3.1 Installation	
Description	It is important that the VEX is installed on a level surface, as this affects the col- lection and draining of the condensate.
3.1.1 Installation dire	ectly on floor The requirements for the floor surface must be met, see the section entitled "Re- quirements for underlying surface".
NB	After installation, check the VEX unit is completely level.
3.1.2 Installation on	mounting base
	The EXHAUSTO mounting base enables the VEX unit to be installed correctly. The base is equipped with adjustable levelling screws, so that the air handling unit can be fitted horizontally on a surface that is not level (+/- 20 mm per metre). See the separate instructions for installing the mounting base.
3.2 Condensatio	on outlet
	Drain the condensation outlet into a floor gully or similar. The condensation outlet must be fitted with a water trap. See below.
Risk of frost	Mhere there is a risk of frost: Insulate the condensation outlet and protect it against frost - if necessary, using a heating cable.
3.2.1 Establishment	of condensation outlet
Location	The following two drawings show examples of how the drain from the condensa- tion outlet can be established and the correct dimensions for the water trap:



# 4. Electrical installation

#### **4.1 Electrical installation**

See the attached instructions "Guide to Electrical Installation of VEX100 CF with electric heating coil and EXact2 control system":

2017-05-03		VEX140-170CF-EXact2
	Electrical Inst ith electric heating col	
4 Electrical installation	nChapter 1	* 2
		Original instructions
EXHAUSTO A/S Ddensevej 76	Tel.: +45 65 66 12 34 Fax: +45 65 66 11 10	

# 5. Maintenance, hygiene and servicing

#### 5.1 Operating readings via the HMI panel

**HMI panel** Refer to the "EXact2 Control System Basic Instructions for VE100/100CF" for instructions on accessing Menu 2 "Operation displays" via the technician menu (access code 1111) to check the unit's operating status.

#### **5.2 Maintenance**

#### 5.2.1 Overview of maintenance intervals

The following chart details the recommended maintenance intervals for the VEX. The intervals are a guide and based on normal operation. EXHAUSTO recommends maintenance is adjusted to match the actual operating requirements.

Component	Procedure	Twice a year	Once a year
Filters*	<ul> <li>Change filters when HMI displays filter alarm</li> <li>Recommended that both filters are replaced at the same time.</li> <li>NB: The control system can issue a warning when the filter is becoming soiled</li> <li>Filters should be replaced at least:</li> </ul>	x	
Filter monitor	Check that all the seals in the filter monitor are tight.		Х
Seals and sealing strips	Check that all the seals are tight.		Х
Fan	<ul> <li>Check that the fan impeller is securely fixed to the shaft.</li> <li>Removal of fan unit. See section "Internal trans- port with reduced weight"</li> <li>Cleaning. See section "Servicing and cleaning"</li> </ul>		X
Counterflow heat exchang- er	Clean the heat exchanger. See section "Cleaning of counterflow heat exchanger"		Х
Bypass damper	Check damper function		Х
Heating coil	Clean the heating coil. See section "Cleaning of heat- ing coil"		Х
Safety functions check	<ul><li>Fire thermostat check</li><li>Temperature sensors on heating pipes</li></ul>		Х
Closing damper	Check damper function		Х
Condensation outlet	Check that the outlet functions by pouring water in the condensation tray		Х

\*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 (VEX100VDI only)		
VDI6022 air hygiene standard	To ensure that the VEX100 meets the requirements of the VDI6022 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 VDI6022 re- quirements.	
5.4 Servicing and	d cleaning	
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 fil- ter.	
	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 Cleaning the fans

Step	Action
1	Switch off the power supply to the unit at the isolation switch before opening the doors.
2	Pull out the fan section: Release the fixing screw on each sliding rail and undo the ties on the motor cables. Pull the fan unit out to the stop (two screws) on the sliding rails.
3	Clean the fan impeller with a vacuum cleaner and wipe down with a damp cloth if necessary. Clean the blades on the fan impeller carefully to avoid disrupting the balance If there are weights on the fan impeller, these must not be removed.
4	After cleaning the fan impeller, check that the unit does not vibrate when operating.

# 5.4.3 Cleaning the heating coils Action Step Switch off the power supply to the unit at the isolation switch before 1 opening the doors. 2 Vacuum clean the heating coil 3 Check that the fins on the heating coil are not deformed. The fins are sharp. 5.4.4 Removing and cleaning the counterflow heat exchanger Warnings Disconnect power at the isolation switch before opening the doors. Take care, as the counterflow heat exchanger is heavy - (see weight under Technical Data) The counterflow heat exchanger fins can be easily damaged avoid contact with the fins. 5.4.5 Cleaning the counterflow heat exchanger Action Step 1 Remove the plug from the bypass motor. Hold down the split pin under the plug using a screw driver as shown on photo Then remove the plug

Step	Action		
2	Carefully remove the bypass (do not wrench it out)		
3	Make sure the Tice sensor/fitting is free of the coun- terflow heat exchanger before extracting it.		
4	Remove the counterflow heat exchanger all the way. Note the weight of the heat exchanger, see technical data – min. two people when lifting.		
5	Clean the counterflow heat exchanger by flushing with	an the counterflow heat exchanger by flushing with hot water or by pressure hosing.	
	Max. water temperature 90°C.	1	
6	Replace the counterflow heat exchanger and then the bypass. Check that the Tice sensor is correctly positioned be- tween the heat exchanger fins, as the sensor will not measure correctly otherwise.		
7	Re-insert the plug for the bypass motor.		

330 kg 2 x 26 kg

31 kg

2 x 20 kg

247 kg

IP20

70°C

50°C

40°C

0°C - +50°C

# 0 B 6. Technical data 6.1 Weight, corrosion class, temperature ranges, etc. Weight VEX total weight Doors Counterflow heat exchanger Fan unit VEX for internal transport (without doors, heat exchanger and fan unit) **Corrosion class** Corrosion class Corrosion class C4 in accordance with EN ISO 12944-2 **Temperature ranges** -40°C to +35℃ Outdoor air temperature -30°C to +50°C Ambient temperature At temperatures below -25°C (with outdoor installation), use of a thermostatically controlled heater in the automated control box is recommended. HMI-panel Ingress protection Ambient temperature At temperatures below 0°C the display may react more slowly than usual. **Fire thermostats** Cut-out temperature, BT70 Cut-out temperature, BT50 Cut-out temperature, BT40

· ·	
Max. ambient temperature, sensor	250°C
Ambient temperature, thermostat housing	0°C - +80°C
Sensor length	125 mm
Ingress protection	IP40

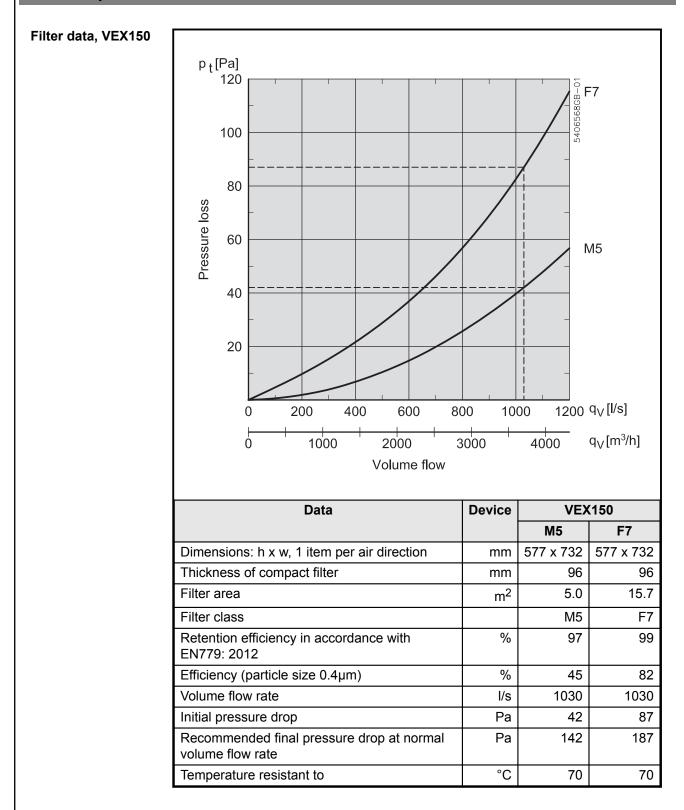
Temperature drop before reconnection possible min. 15°K

#### Motor damper

Motor damper type	LS (closing damper)	LSR (closing damper, spring return)
Туре	LS400-24	LSR400-24
Designation	LSA/LSF	LSFR
Motor type	NM24-F	AF-24
Rotation time	75–150 s	open: 150 s close: 16 s
Ingress protection	IP42	IP42
Ambient temperature	-20°C to +50°C	-30°C to +50°C
Damper depth	100 mm	100 mm

A maximum of two LSFR dampers or four LSA/LSF dampers may be connected.

#### 6.2 Compact filters





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

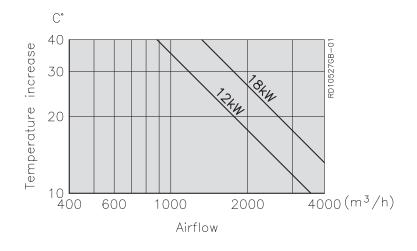
#### 6.3 Electric heating coil

#### Electric heating coil

HCE		
Voltage per electric heating element	1 x 230V	
Output	2.0 kW	
Supply voltage for connection box:		
Star connection	3 x 400V + N	
Thermal fuse, TSA70	<b>70</b> ℃	
Thermal fuse, TSA90	<b>90</b> ℃	
Temperature tolerance	±5 K	
Temperature drop before reconnection possible	15 K	

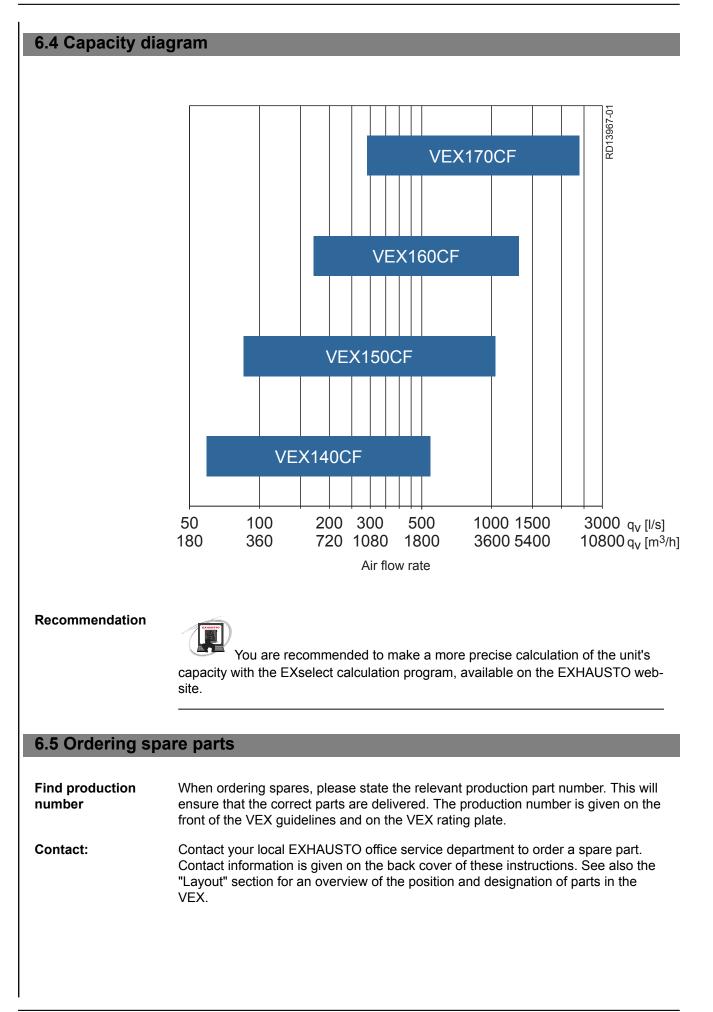
#### Diagram - temperature rise

The diagram below can be used to determine the air temperature increase at a given airflow and electric heating coil size.



drop across electric heating coil

- **Examples: Pressure** At airflow of 2900m<sup>3</sup>/h: • HCE 12 kW : 5 Pa
  - HCE 18 kW: 10 Pa



#### 6.6 Environmental declaration

#### Environmental documentation

The unit can be disassembled into individual product parts when outworn and in need of disposal.

Product parts	Material	Handling
Sheet parts	Aluzinc	For recycling after disassembly
Condensation tray	Stainless steel	For recycling after disassembly
Bypass dampers, heat exchangers and metal sections	Aluminium	For recycling
Insulation	Mineral wool	For recycling after disassembly
Door gasket	CFC and HCFC-free cellular rubber	Dumping or incineration
Fan motors, bypass motors	Aluminium, steel, copper and plastic	For recycling after disassembly
Control unit	Electronic compo- nents	For recycling by an authorised enterprise
Cassette filter	Fibreglass and plas- tic	Dumping or incineration
Unit is supplied on disposable pallets	Wood	Dumping or incineration

#### Percentage weight

Handling	Percentage weight of materials per unit
For recycling	11% (mineral wool)
For recycling	85% (63% Aluzinc, 16% aluminium, 3.5% steel/iron, 2% stainless steel and 1% copper)
Dumping or incin- eration	2% (Wood, filter paper, cellular rubber)
Other	1.5% (electronic components)
Total	100%



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

