GB

Assembly and installation

VEX310T-320T-330T-340T-350T
for third-party control system

Original instructions

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EXHAUSTO

1. Product information

2. Handling

3. Mechanical installation

4. Electrical installation

5. Maintenance, hygiene and servicing

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

This instruction manual uses the following terminology:

- Supply air
- Extract air
- Outdoor air
- Exhaust air

Accessories

The confirmation of order states which accessories are delivered with the VEX unit.

Definition

In the type designation R 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 L for Left

Opening the air handling unit

Do not remove the detachable doors/panels until the supply voltage has been disconnected at the isolation switch and the fans have stopped.

NB:

The number of service access doors will vary according to the VEX size. See the table below.

VEX size	VEX size	Number of doors on service side
310T	1 (screwed in place)	1 (screwed in place)
320T	1 (screwed in place)	1 (screwed in place)
330T	2 (screwed in place and hinged)	2 (screwed in place)
340T	2 (screwed in place and hinged)	2 (screwed in place)
350T	2 (screwed in place and hinged)	2 (screwed in place)

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.

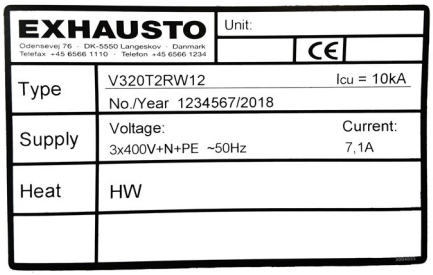
No duct connection

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).

Information plate

The information plate is positioned to the left of the control system box
The VEX unit information plate shows:

- the VEX variant designation
- unit production order no./year

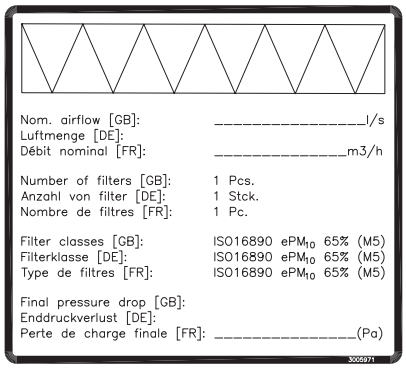


NB: **Always have the production order number ready when contacting EXHAUSTO A/S.**

Filter label

Filter labels are positioned on the front of the VEX unit door opposite each filter.
The VEX unit filter label shows:

- Rated airflow (indicated by installer)
- Number of filters
- Filter class
- Final pressure drop (indicated by installer)



NB: **Quote the product number on the filter when ordering new filters.**

Choose the correct documentation for the task...

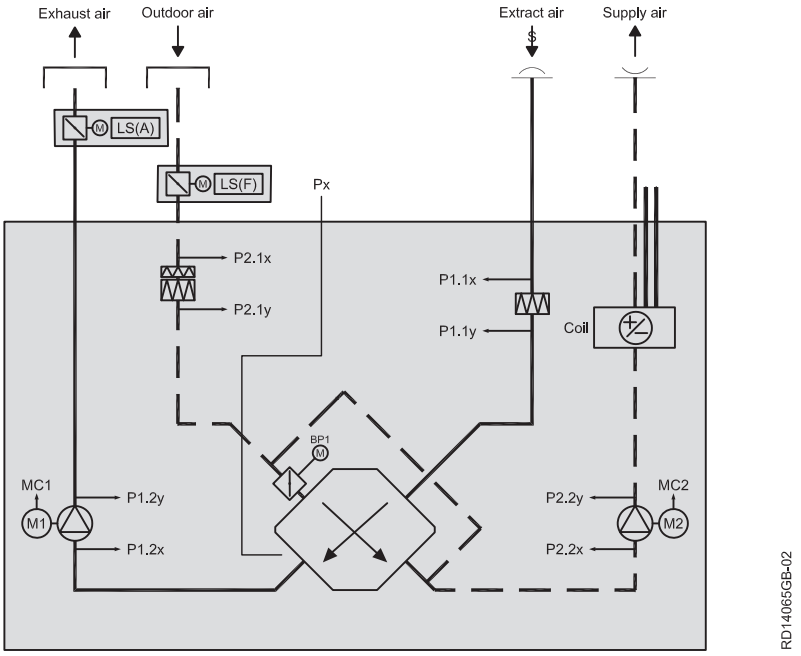
Find your information.

Supplied dokumentation »	Assembly and installation instructions	Electrical installation guide	Print out from calculation program
Mechanical assembly »	✓		✓
Electrical installation »		✓	✓
Start-up - operation »			✓
Maintenance - Service »	✓	✓	✓

1. Product information

1.1 Designations used in these instructions

1.1.1 Simplified diagram



The simplified diagram shows a VEX unit with RIGHT fan placement. See table with designations on next page.

Designations

Component	Function	Standard/ accessories
Coil: HW/CW/DX	Water heating coil, cooling/heating coil, DX cooling coil	Option
LS(F)/LS(F)R	Closing damper, outdoor air	Accessory
LS(A)/LS(A)R	Closing damper, exhaust air	Accessory
BP1	Bypass damper	Standard
M1/MC1	Extract air motor	Standard
M2/MC2	Supply air motor	Standard
P1.2x and P1.2y	Points for measuring pressure rise across extract air fan	Standard
P2.2x and P2.2y	Points for measuring pressure rise across supply air fan	Standard
P2.1x and P2.1y	Points for measuring pressure drop across outdoor air filter	Standard
P1.1x and P1.1y	Points for measuring pressure drop across extract air filter	Standard

1.2 Use

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

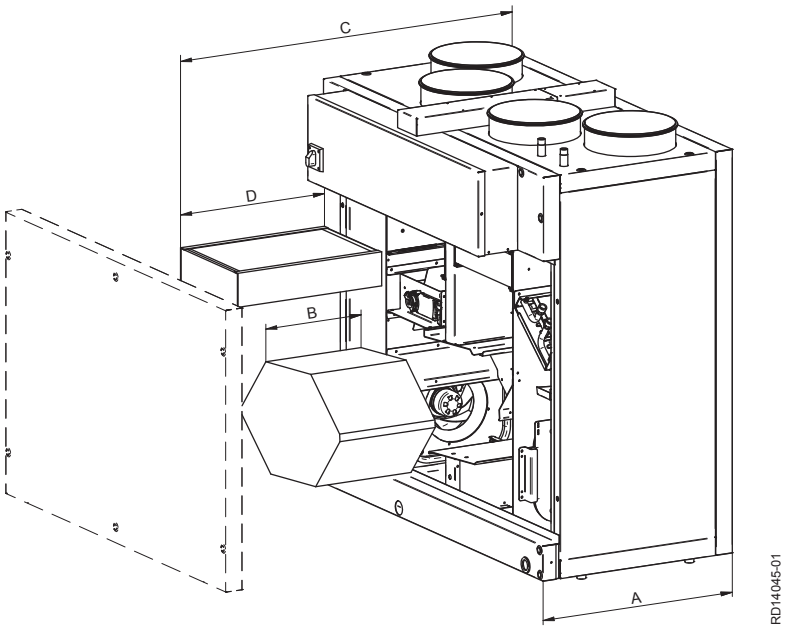
Location The VEX unit is designed for indoor fitting.

1.3.1 Space requirements

The cabinet has detachable or opening doors on each side. The drawing below indicates how much space is needed for servicing the VEX unit, i.e. changing filters, cleaning, servicing, etc.

NB: Space must be reserved for connecting and servicing any water supply to the top, right (R) or left (L).

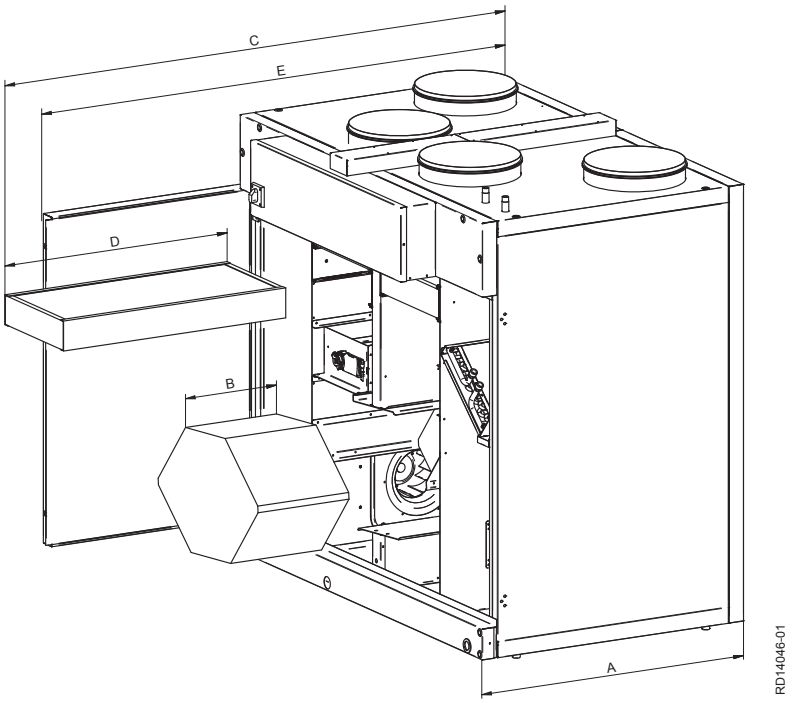
VEX310T/320T



All dimensions in mm.

VEX size	A Depth	B Removing the exchanger	C Removing of filter	D Filter
310T	595	300 (1 item)	1050 (A+D)	455
320T	865	300 (2 items)	1592 (A+D)	725

VEX330T/340T/350T

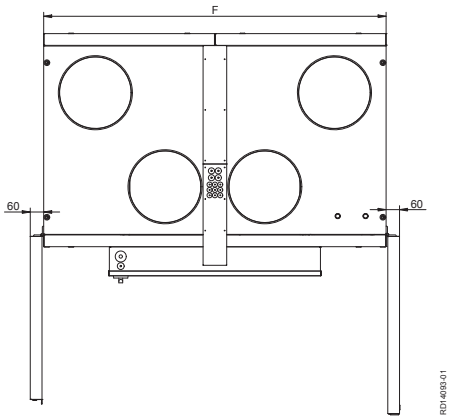


All dimensions in mm.

VEX size	A Depth	B Removing the exchanger	C Removing of filter	D Filter	E Opening of doors	F Width
330T	935	325 (2 items)	1730 (A+D)	795	1675	1500
340T	935	310 (2 items)	1730 (A+D)	795	1880	1900
350T	990	710 (2 items)	1840 (A+D)	850	2180	2400

NB:

For VEX units with hinged/openable doors, there must be space allocated on each side of the VEX unit to ensure that the doors can be fully opened. See sketch.



See section "Principal dimensions" for more VEX unit dimensions.

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

See section "Principal dimensions" for positions of VEX unit feet.

1.3.3 Condensation outlet

The condensation outlets from the condensation tray under the heat exchanger and any cooling coil exit the VEX unit from the front. An outlet for condensation water must be installed in the immediate vicinity of the VEX unit. See section "Mechanical installation"

NB: To ensure space for the water trap, the VEX unit may be mounted an a base (accessory) or otherwise raised by min. 135 mm above floor height.

1.3.4 Requirements for duct system

Duct connection To achieve maximum performance and minimal energy consumption, the VEX unit should be connected to the duct system with a straight duct at least 500 mm long, before and after the unit.

Silencers The duct system must be fitted with silencers specified by the Project Manager, in accordance with the requirements of the operating area.

Insulation

The duct system must be insulated against:

- **Condensation**
- **Sound emission**
- **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.

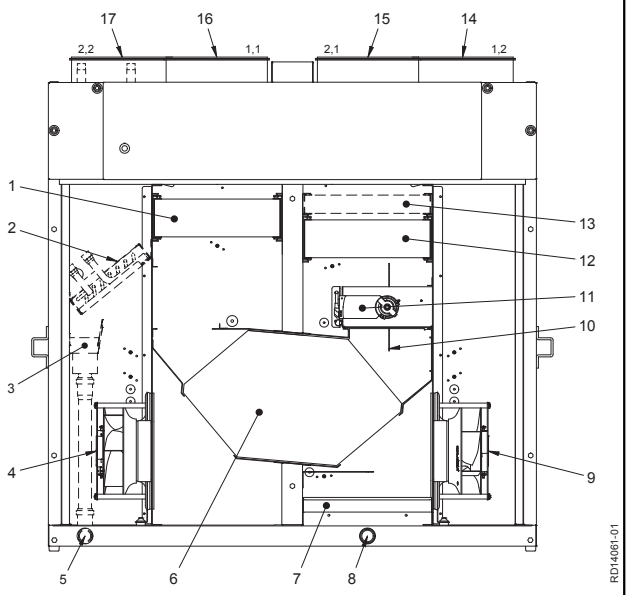
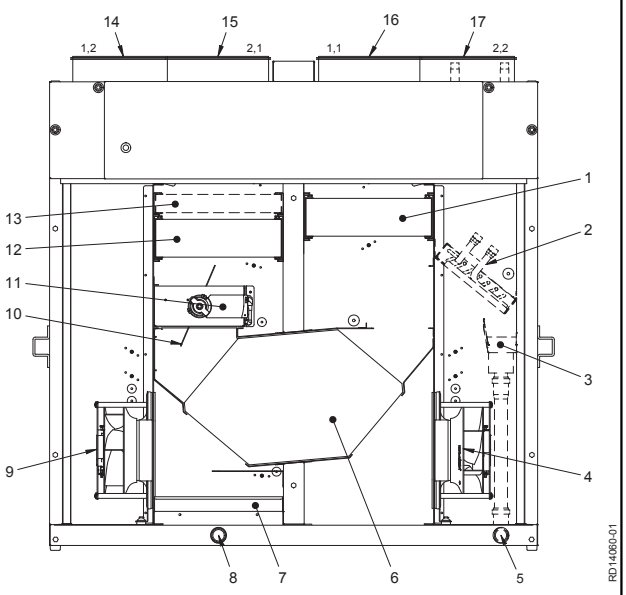
No duct connection

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 illustrates the construction of the VEX unit, without doors:

LEFT	RIGHT
	

Pos.	Part	Function
1	Panel filter for extract air	Filters extract air
2	Heating/cooling coil for supply air (option)	Heats or cools the supply air
3	Condensation tray (option)	Collects the condensate and drains it away from the cooling coil to the condensation outlet
4	Supply air fan	Admits air into the room
5	Spigot for condensation outlet under cooling coil (option)	Conducts condensate away from the cooling coil condensation tray. External condensation outlet connects here.
6	Counterflow heat exchanger	Conducts heat from extract air to supply air
7	Condensation tray	Collects the condensate and drains it away from the counterflow heat exchanger to the condensation outlet
8	Spigot for condensation outlet under counterflow heat exchanger	Collects condensate from counterflow heat exchanger condensation tray. External condensation outlet connects here.
9	Extract air fan (exhaust air)	Removes "stale" air
10	Bypass damper	With closed damper: In operation with heat recovery, the air passes through the counterflow heat exchanger. With open damper: Bypass operation, directs air around the counterflow heat exchanger
11	Bypass motor	Opens/closes bypass damper.
12	Panel filter for outdoor air	Filters outdoor air
13	Pre-filter/coarse filter for outdoor air	Filters outdoor air
14	Spigot 1.2	Exhaust air spigot

Pos.	Part	Function
15	Spigot 2.1	Outdoor air spigot
16	Spigot 1.1	Extract air spigot
17	Spigot 2.2	Supply air spigot

1.4.2 Parts of the VEX unit

Cabinet

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

Fans

The VEX unit contains two centrifugal fans with backward curved blades for extract air and supply air.

Counterflow heat exchanger

The VEX unit's counterflow heat exchanger is made of aluminium and is highly efficient. The counter-flow heat exchanger can be removed and cleaned. See section "Servicing and cleaning".

Filters

The unit includes integral panel filters for both extract air and supply air.

Bypass damper

The VEX unit has an integral variably adjustable bypass, allowing for precise control of the supply air temperature.

***Integrated water heating coil (HW)**

The water heating coil is integrated in the VEX unit and is able to increase the temperature of the sup-ply air.

***Integrated cooling/ heating coil (CW)**

The cooling/heating coil is integrated in the VEX unit and is able to cool or heat the supply air.

***Integrated cooling/ heating coil (DX)**

The DX coil is integrated in the VEX unit and is able to cool or heat the supply air.

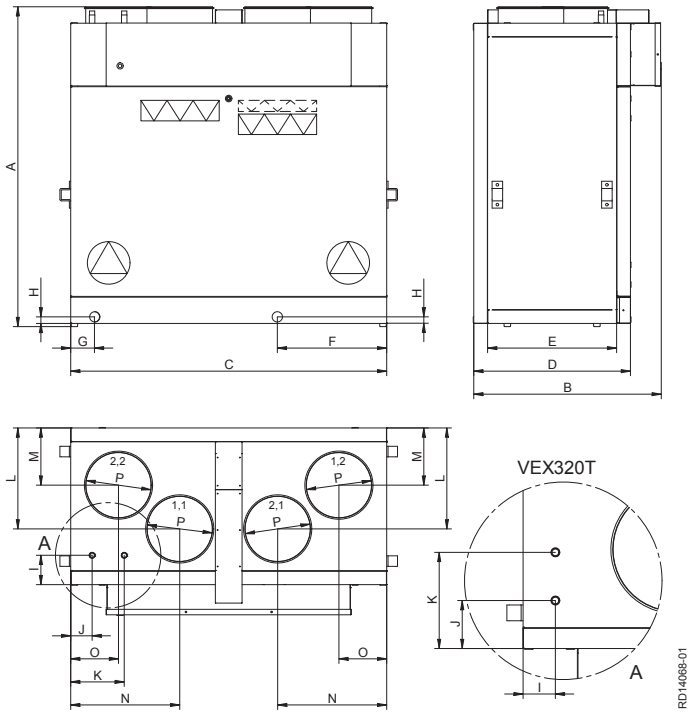
*All VEX sizes can be supplied with one of the above coils as an option.

1.5 Principal dimensions

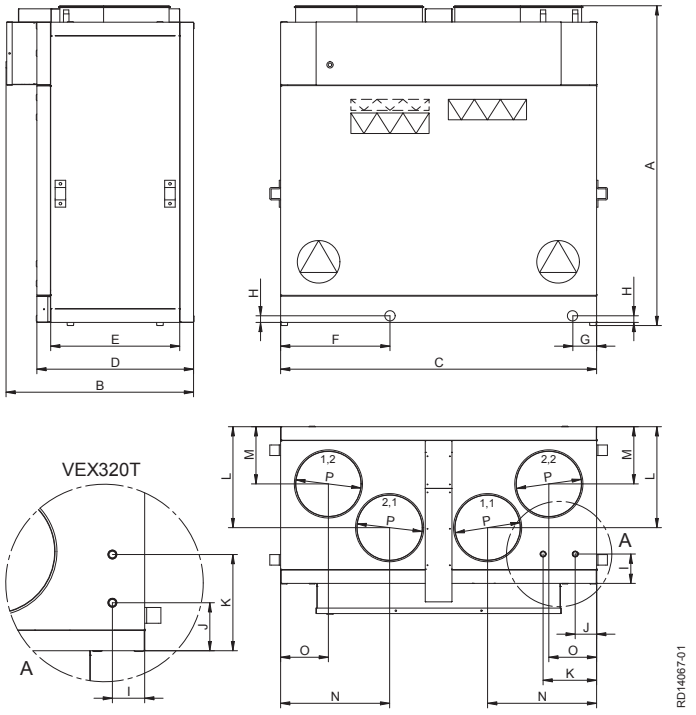
1.5.1 Dimensional drawings

NB: Section A Pipe for water connection has been rotated 90°. This applies only to VEX320T.

LEFT



RIGHT



The indicated dimensions **A-P** are shown on the dimensional drawing and can be read off from the tables next to the given VEX size.

1.5.2 Principal dimensions of VEX unit

VEX size	A Height	B Depth	C Width	D Depth without control box	E Depth without doors/panels
310T	1215	725	1200	595	490
320T	1215	996	1200	865	760
330T	1474	1064	1500	932	827
340T	1775	1064	1900	932	827
350T	1825	1121	2400	990	885

All dimensions in mm.

1.5.3 Dimensions of water connection/outlet

VEX size	F	G	H	I	J	K
310T	415	90	25	112	81	203
320T	415	90	25	82	122	244
330T	540	90	25	134	90	212
340T	685	90	25	132	105	236
350T	864	90	25	133	105	236

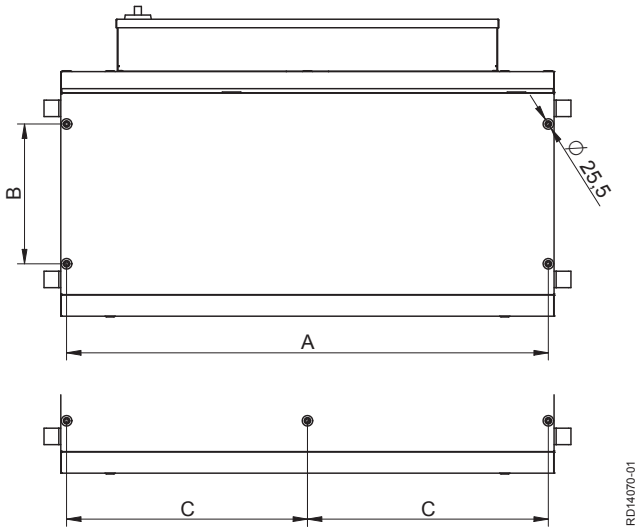
All dimensions in mm.

1.5.4 Dimensions of duct connection

VEX size	L	M	N	O	P
310T	383	217	414	181	250
320T	614	258	385	222	315
330T	671	259	532	226	315
340T	627	303	685	269	400
350T	635	353	884	320	500

All dimensions in mm.

1.5.5 Dimensional sketches, feet



1.5.6 Dimensions of feet

VEX size	A	B	C
310T	1172	340	-
320T	1172	610	-
330T	1472	677	-
340T	-	677	936
350T	-	735	1186

All dimensions in mm.

2. Handling

2.1 Unpacking

Delivery

The following components are supplied:

- VEX unit
- Supplied accessories (as indicated in the checklist on the front page of the instructions)

Packaging

The unit is delivered on wooden blocks 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.**

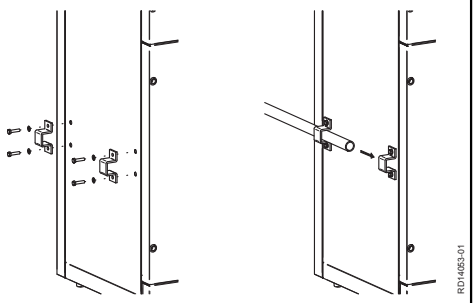
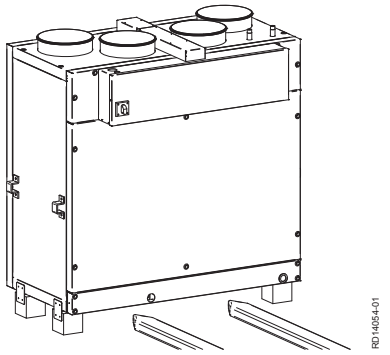
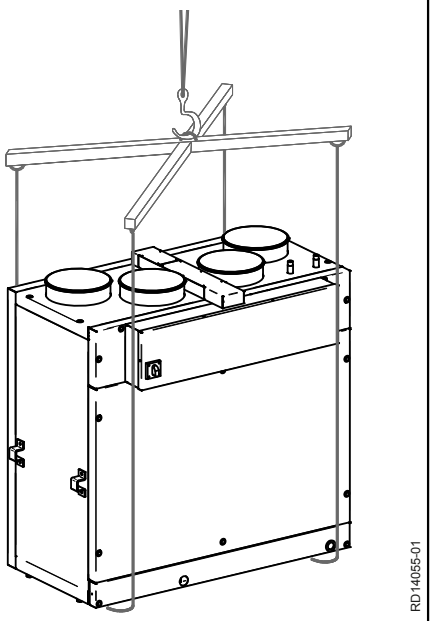
The unit should be cleaned before it is used.

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 methods

Transport the VEX unit in one of the following ways:

Method	Drawing
Manual transport: Lifting brackets for manual transport can be fitted as shown on the drawing:	
Using pallet truck or fork-lift truck: **IMPORTANT**: The forks on the lifting equipment must be long enough to prevent damage to the bottom of the VEX unit. **NB**: VEX350T requires lifting equipment for lowering the VEX unit through the side of the lorry.	
Crane: **Never lift the VEX unit with the lifting brackets by using a crane.** Use straps and lifting yokes to prevent damage to the VEX unit.	

2.2.1 Passage through openings

VEX unit dimensions

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

VEX size	A Height	B Depth	Depth without control box	Depth without doors/panels	C Width
310T	1215	740	595	490	1200
320T	1215	1011	865	760	1200
330T	1474	1079	932	827	1500
340T	1775	1079	932	827	1900
350T	1750	1116	990	885	2400

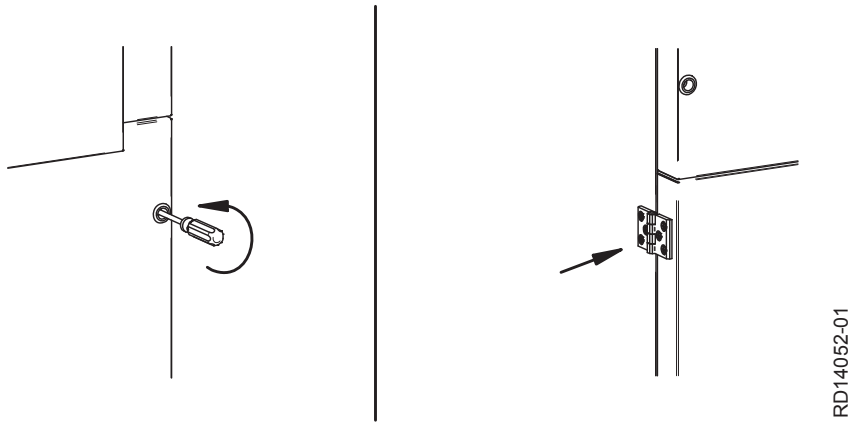
All dimensions in mm.

The figures for Height, Depth and Width (A, B and C) can be seen on the dimensional sketches in the section "Principal dimensions".

2.2.2 Removal of doors

The following tools are needed for removal:

- Screwdriver, electric screwdriver with following bits:
  - Allen key 6mm
  - Allen key 3mm



Disconnect power at the isolation switch before opening VEX unit.

Step	Action
1	Unscrew the bolts from the doors
2	Remove/open the doors
3	**VEX330T/340T/350T**: Unscrew the hinges

Space requirements

See also section "Location requirements" for information on how much space is needed to open the doors.

2.2.3 Internal transport with reduced weight

Weight reduction

The air handling unit's weight can be reduced during transport by removing doors/panels, fan units and counterflow heat exchanger(s).

Parts	310T	320T	330T	340T	350T
VEX total weight	157	204	265	345	530
Counterflow heat exchanger * items	1* 7.2	2* 7.2	2* 10.2	2* 19.8	2* 35
Fan unit * items	2* 4.1	2* 6.4	2* 9.2	2* 9.5	2* 20
Panels/doors	62	62	81	105	175
VEX for internal transport (no doors, heat exchanger or fan units)	80	115	146	182	245

All weights in kg

Removal

See section "Maintenance, hygiene and servicing" for instructions on removing fan unit and counter-flow heat exchanger and for extracting filter.

3. Mechanical installation

3.1 Installing the VEX unit

NB: **It is important that the VEX unit is installed on a level surface, as this affects the collection and draining of the condensate.**

3.1.1 Installation directly on floor

The requirements for the floor surface must be met, see the section entitled "Requirements 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 VEX 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 Condensation outlet

Connection of the condensation outlet must be made by an authorised plumber.

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

<u>Where there is a risk of frost:</u> It is recommended to protect the condensation outlet against frost damage. Fit a SIPHONE electrical heat tracing device on the outlet before the pipes are insulated. For fitting, see the device's fitting instructions.

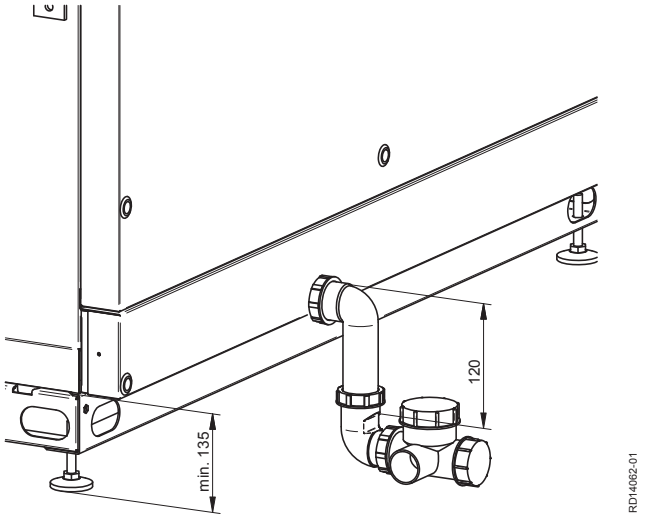
3.2.1 Establishment of condensation outlet

Condensate from the heat exchanger and any cooling coil (option) must be established and mounted with a water trap. See the correct dimensions for water traps in the two examples.

NB: There is negative pressure at the condensation outlet from the heat exchanger and positive pressure at the condensation outlet from the cooling coil. If the condensation outlets from the heat exchanger and the cooling coil are combined, this must be done <u>after</u> the water traps.

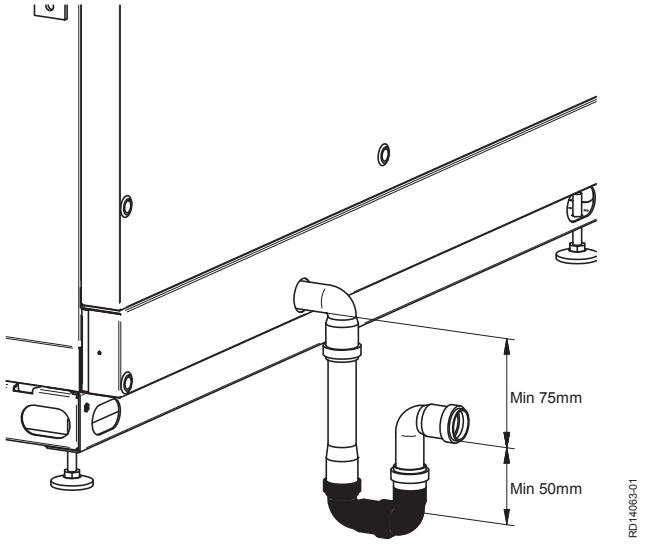
Solution with Siphon water trap (accessory)

The Siphon water trap is easy to install and service.



Solution with HT pipe

Use HT pipe (HT, DN32, DIN4102), if the above solution is not employed (not supplied by EXHAUSTO).



NB:

If the VEX unit is erected on a mounting base (accessory), this will allow sufficient free height for installing a Siphon water trap.

3.3 Control box

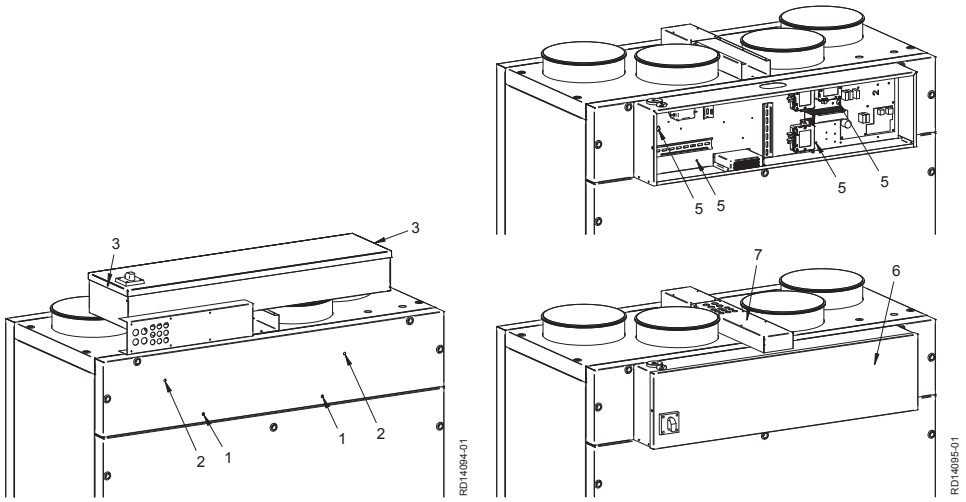
3.3.1 Installation of control box

The control box is removed from the factory and placed on top of the VEX unit.

The following tools are needed for installation:

- Phillips screwdriver

How to install the control box



The VEX unit must not be connected to power when the control box is installed.

Step	Action
1	Remove the 2 lower screws on the top panel of the VEX unit
2	Loosen the 2 upper screws
3	Remove the screws at each end of the control box to loosen the lid/front
4	Turn the control box around and secure it to the loosened screws using the key holes
5	Screw in the 2 lower screws and tighten all 4 screws
6	Fit the lid/front of the control box
7	Remove the screws on the cable rail and then fit the cover with the screws

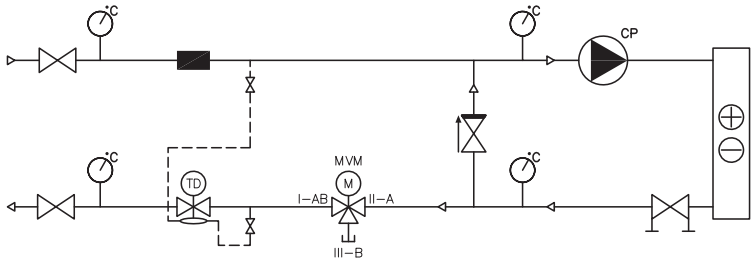
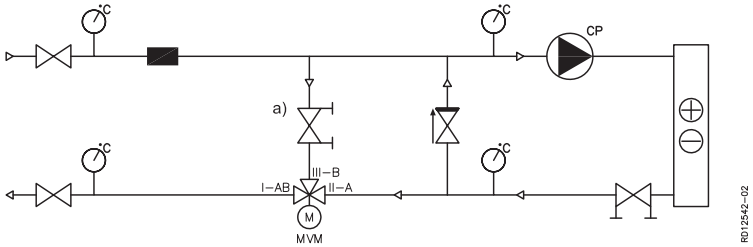
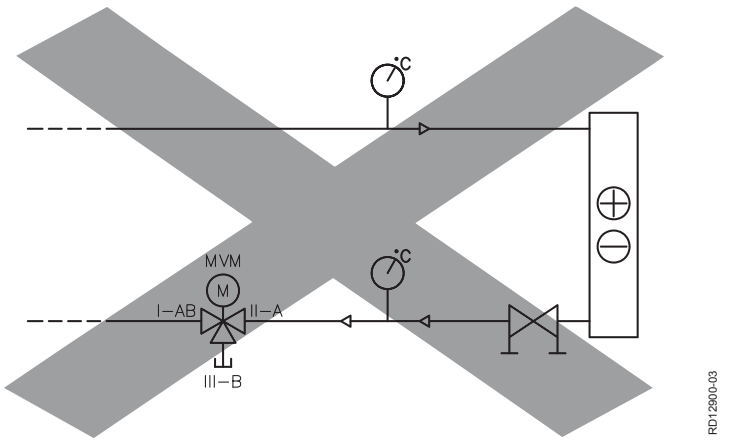
For connecting cables, refer to the Electrical Installation Guidelines.

3.4 Water connection (HW/CW)

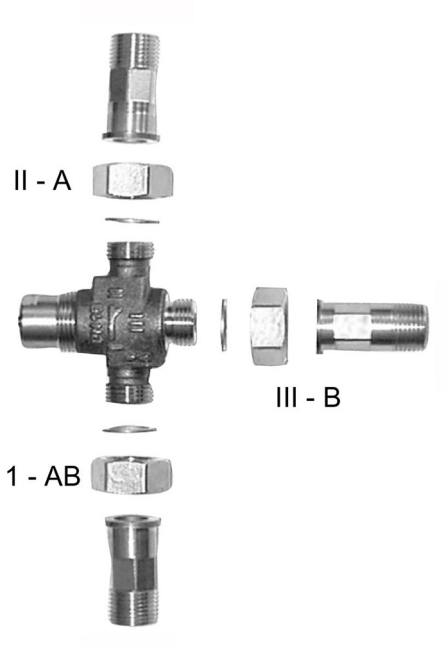
3.4.1 Principles for connecting the cooling/heating coil

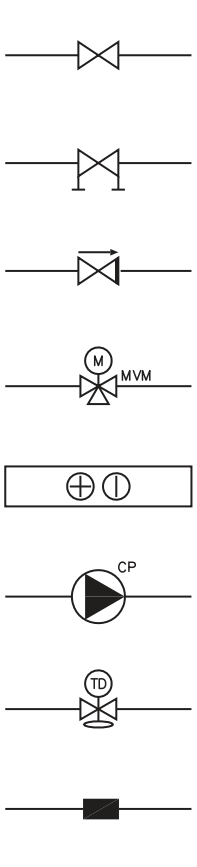
Mixing loop

The diagrams below are simplified. The dimensioning of valves, pipes, etc. and heating coil connection must always be carried out by authorised fitters in accordance with applicable regulations and legislation.

Type	Principle	Simplified diagram
Mixing loop 1	Variable flow in the primary circuit (supply) and constant flow in secondary circuit (VEX unit)	
Mixing loop 2	Constant flow in the primary circuit (supply) and the secondary circuit (VEX unit) a) When there is no heating or cooling requirement, valve adjustment must be based on the required primary circuit water flow	
⚠	Do not connect the water coil like this! Connection without circulation pump risks frost damage!	

Explanation of simplified diagram





Shut-off valve*

Line regulating valve*

Non-return valve*

Three-way motor valve (MVM)

Water heating coil (HW)
Cooling/heating coil (CW)

Circulation pump*

Pressure difference regulator*

Dirt filter*

*) not EXHAUSTO delivery (refer to the technical specifications).

3.4.2 Bleeding of coils

Bleeding

It is the responsibility of the contractor/customer to ensure that the bleeding option is correctly installed and that the building owner is informed of the risk of insufficient bleeding, regardless of whether the coil(s) in question are built into a ventilation system or mounted separately in the duct system.
The following must be observed when bleeding liquid-coupled coils/heating and cooling batteries:

- The heating/cooling system must be arranged in accordance with DS469 so that they can be bled.
- Ventilation systems installed above suspended ceilings or outside on roofs are often the top point of the pipe system and therefore air is often collected in the system here.
- Bleeding points must be easily accessible.
- Bleeding points must be selected so that all air in the system can be bled.
- Air pots and automatic air vents should be considered so that air is collected before it enters the coils, despite the fact that many coils are equipped with a bleeding option.
- A lack of bleeding can lead to a lack of water flow and, ultimately, frost damage to the coils and subsequent water damage to the building.

Following connection of water supply to the unit:

- Bleed the system thoroughly using the upper bleed screw on the water coil.

Air screw	

3.4.3 Installation requirements

Bleeding

Following connection of water supply to the cooling/heating coil, the system must be bled thoroughly.

Insufficient bleeding

Insufficient bleeding can result in still water forming in the system, which may result in frost-induced leaks at cold ambient temperatures.

Fitting motor valve

The valve must not be fitted with the motor facing down

Insulate the feed pipe

The pipes must be insulated according to applicable regulations

Frost protection cooling coil

The cooling coil can be protected against frost by mixing in 25% ethylene glycol. This provides frost protection down to -13°C.

3.4.4 MVM valve

Screening

Screen the valve motor from direct sunlight. Due to heat emissions, the valve motor must not be encapsulated (max. ambient temperature: 50°C).

Insulating the valve

To ensure normal operation at ambient temperatures below 0°C, it is very important that the valve section is insulated according to current standards.

Regulation properties

The motor valve's regulation properties are best when the differential pressure is between 5-20 kPa. See section "Technical specifications" to calculate K_{VS}.

Water supply

The water supply **must** be constant. This applies to both cold and hot water supply.

3.5 Connection to cooling/heating system (DX)

Connection of DX coil

The DX coil integrated in the VEX unit must be connected in accordance with current legislation and regulations for work on cooling and heating pumps, and the work must only be carried out by trained personnel.
Installation errors will reduce coil performance and may lead to malfunction of the unit.

NB:

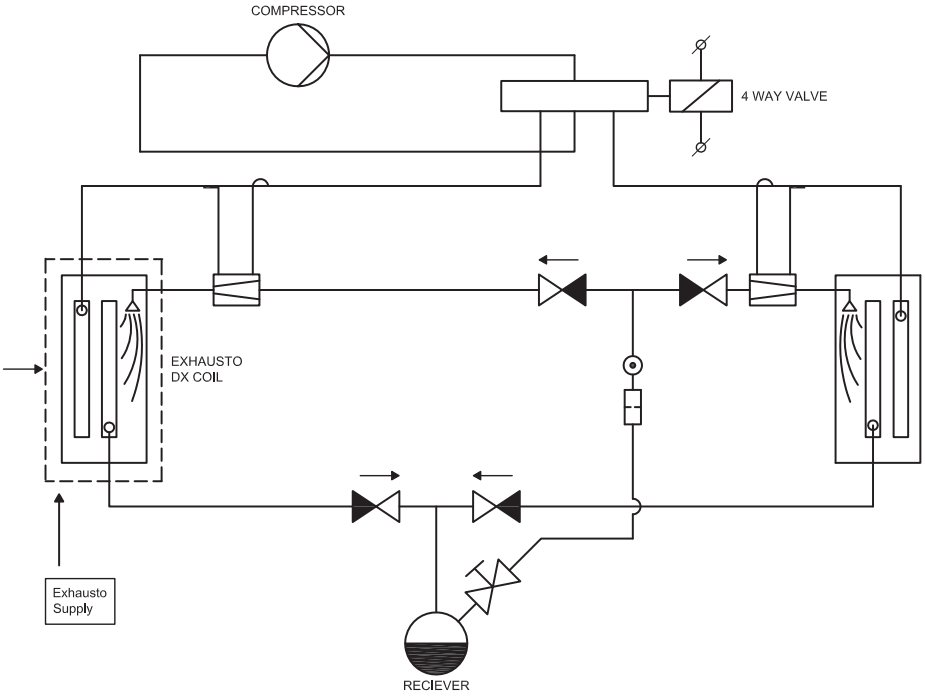
Note the following:

- Execute the connection to the pipe system such that no stresses, linear expansion/expansive forces or vibrations are transferred to the coil's tube system. These could damage the coil tubes.
- Ensure that the DX coil's tubular manifold is not weighed down by the self-weight of the battery.
- Avoid excessive use of heat during pipe connection, as this could damage soldered and welded joints.

3.5.1 Principles for connecting the DX coil

Simplified diagram

Simplified diagram for connecting the VEX unit's integrated DX coil as evaporator and condenser:



3.5.2 Soldering the pipes

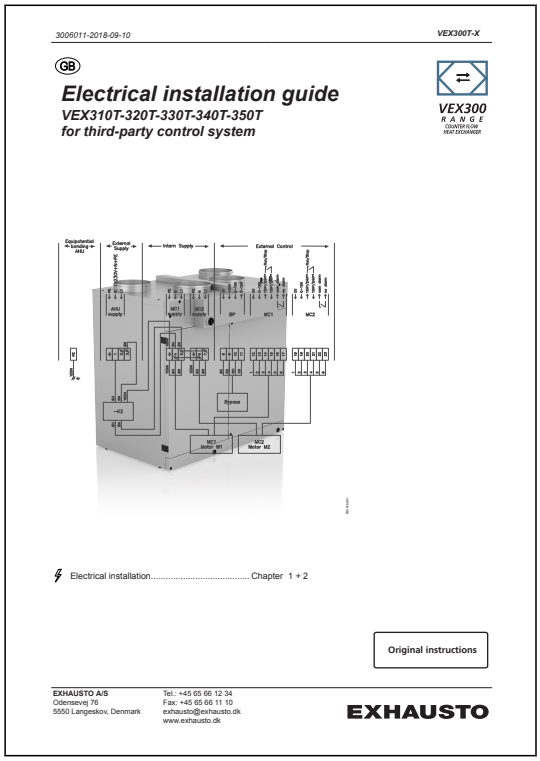
NB:

When soldering connection pipes inside the VEX unit, the coil and internal surfaces must be protected/ shielded.

4. Electrical installation

4.1 Electrical installation

See the attached instructions “Guide to Electrical Installation of VEX300T.



3006011-2018-09-10 VEX300T-X

GB

Electrical installation guide

VEX310T-320T-330T-340T-350T

for third-party control system

VEX300 RANGE COUNTER FLOW HEAT EXCHANGER

Electrical installation..... Chapter 1 + 2

Original instructions

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EXHAUSTO

5. Maintenance, hygiene and servicing

5.1 Opening the VEX unit

The VEX unit's detachable panels must be opened to allow servicing and cleaning.

Removal of doors Refer to the section on “Handling" for more information

5.2 Maintenance

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.

5.2.1 Maintenance Schedule

Component	Procedure	Once a year	Twice a year
Filters*	**Change when the display shows the filter alarm.**. Recommended that both filters are replaced at the same time. **NB:** The control system may give an 'early warning' when a filter is becoming soiled, so that a new filter can be obtained or a service fitter called		X
	The filter should be changed at least		X
Filter monitor	Check that all the seals in the filter guide are tight.	X	
Seals and sealing strips	Check that all the seals are tight.	X	
Fans	For inspection, removal and cleaning of fan unit, see section "Servicing" and "Cleaning"	X	
Cooling/heating coil (HW/HE/CW/DX)**	For inspection, removal and cleaning of the coil, see section "Servicing" and "Cleaning"	X	
Counterflow heat exchanger	For inspection, removal and cleaning of the counterflow heat exchanger, see section "Servicing" and "Cleaning"	X	
Condensation outlet	Inspection and cleaning of: ● Condensation outlet ● Condensation tray ● Water trap See section "Cleaning"	X	
Safety functions**	Inspection of: ● Fire thermostats ● Temperature sensors on heating pipe (accessories) See instructions for the unit	X	
Closing damper**	Function check	X	
Motor valve and circulation pump**	Function check	X	

***Filters**

Only use original EXHAUSTO filters

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

****Accessory/option** This component is an accessory/option and is therefore not present in all VEX units.

5.3 Hygiene

VDI6022 air hygiene standard

To ensure that the VEX300T 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 ePM_1 55%

The outdoor air side of the unit must be fitted with an ePM_1 (F7) filter to meet VDI 6022 requirements.

5.4 Service

5.4.1 Filter change

Warning

Disconnect power via the isolation switch before opening the VEX unit.

For opening the VEX unit, see section "Opening the VEX unit".

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.

5.4.2 Removal of fan unit

Warning

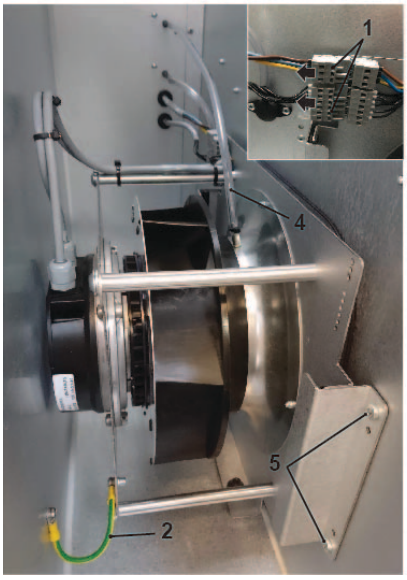
Disconnect power via the isolation switch before opening the VEX unit.

For opening the VEX unit, see section "Opening the VEX unit".

The following tools are needed for removal:

- Phillips screwdriver
- Diagonal cutter
- 2 new strips (assembly)

Removing the fan unit

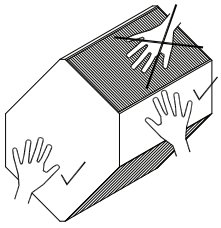
Step	Action	
1	Disconnect the plugs from the fan unit motor	
2	Unscrew the earth wire	
3	Cut the strips on the cables and hoses	
4	Remove the hose for measuring the fan airflow	
5	Unscrew 2 screws and remove the bracket holding the fan unit	
6	Lift the fan unit out of the VEX unit	

5.4.3 Removal of counterflow heat exchanger(s)

Warning

Disconnect power via the isolation switch before opening the VEX unit.

For opening the VEX unit, see section "Opening the VEX unit".



Take care, as the counterflow heat exchanger is heavy - see weight under Technical Data.

The counterflow heat exchanger fins are fragile - avoid touching them during handling

How to remove the counter flow heat exchanger

Step	Action	
1	Check that the T_{ice} sensor/bracket is free of the counterflow heat exchanger before extracting it.	
2	**VEX310T:** Remove the counterflow heat exchanger all the way. **VEX320T-350T:** Pull out the front counterflow heat exchanger and then the rear one.	
Note the weight of the heat exchanger, see technical data – min. two people when lifting.		
3	**VEX310T:** Replace the counterflow heat exchanger. **VEX320T-350T:** Replace both counterflow heat exchangers.	
Check that the sensor T_{ice} is correctly positioned. The sensor must protrude approx. 10 mm between the heat exchanger fins, as otherwise the sensor will not measure correctly.		

5.4.4 Removal of water coil (HW/CW)

NB: Risk of hot surfaces!

The following tools are needed for removal:

- Diagonal cutter
- Medium adjustable wrench
- Polygrip pliers
- Contact paste (assembly)
- 3 new strips (assembly)

Removing the coil

Step	Action
1	Turn off the unit's water supply
2	Place a bucket or bowl under the coil to collect water from the connection hoses
3	Remove insulation, strips and sensors from the connection hoses
4	Undo the union nuts on the water coil
5	Pull out the water coil

NB: Bleed the system after mounting the water coil

5.4.5 Determination of airflow

	Composite		Aluminium	
	[m³/h]	[l/s]	[m³/h]	[l/s]
VEX310T	60	17		
VEX320T	63	18		
VEX330T	60	17	60	17
VEX340T	75	21	95	26
VEX350T	121	34	121	34

Calculation of K factor for operating temperatures other than 20°C:

$$qV = \sqrt{\frac{\rho_{20}}{\rho_{Betr}}} * K_{20} * \sqrt{\Delta P_w}$$

qV: Airflowin m^3/h

ΔP_w: Static pressure in Pa

K_{20}: K factor

ρ_{20}: Standard density, $1.2 kg/m^3$

ρ_{Betr}: Air density at operating point in kg/m^3

5.5 Cleaning

5.5.1 Cleaning the fan unit

If necessary, see "Remove fan unit" for description of how to remove the fan unit from the VEX unit.

Step	Action
1	Clean the fan impellers using 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.
2	After cleaning, check that the VEX unit operates without vibrating.

5.5.2 Cleaning the counterflow heat exchanger

See section "Remove fan unit" for description of how to remove the fan unit from the VEX unit.

Step	Action
1	Clean the counterflow heat exchanger by flushing with hot water or by pressure hosing. (water temperature: max. 90 ºC) **Please note! Take care when pressure washing not to damage the fins.**

Step	Action
2	Check that the fins on the counterflow heat exchanger are not deformed.  **The fins are sharp.**

5.5.3 Cleaning the water coil (HW/CW/DX)

See the section "Removal of water coil" for description of how to remove the water coil. (Applies to HW/CW)

NB: If the coil is cleaned without removal, no water may be used unless there is a condensation tray under the coil (applies to CW/DX).

Step	Action
1	Clean the water coil with one of the following methods: ● Vacuum cleaning ● Blowing with air or steam flushing ● Flushing or rinsing with water **Please note! Take care when pressure washing not to damage the fins.**
2	Check that the fins on the heating coil are not deformed. ⚠ **The fins are sharp.**
3	Clean the condensation tray under the coil (for CW/DX)

5.5.4 Cleaning the condensation outlet

A condensation outlet with water trap must be established from the condensation tray for the heat exchanger and cooling coil (option).

Step	Action
1	Check that the outlet and water trap function correctly by putting water in the condensation tray
2	Clean the condensation tray

6. Technical data

6.1 Weight, corrosion class, temperature ranges, etc.

6.1.1 Weight

Parts	310T	320T	330T	340T	350T
VEX total weight	157	204	265	345	530
Counterflow heat exchanger * items	1* 7.2	2* 7.2	2* 10.2	2* 19.8	2* 35
Fan unit * items	2* 4.1	2* 6.4	2* 9.2	2* 9.5	2* 20
Panels/doors	62	62	81	105	175
VEX for internal transport (no doors, heat exchanger or fan units)	80	115	146	182	245

All weights in kg

6.1.2 Corrosion class cabinet

Corrosion class	Corrosion class C4 in accordance with EN ISO 12944-2

6.1.3 Temperature ranges

Temperature of medium (outdoor air)	-40ºC to +35℃
Ambient temperature (operating)	-30ºC - +40ºC
Ambient temperature when not in operation (storage, transport)	-40ºC - +60ºC

The temperature ranges given are dependent on the type of installation, humidity, airflow, the balance between airflows, ducts and insulation and room temperature.

6.1.4 Fire thermostat

Cut-out temperature BT40/50/70 (adjustable)	40-50-70°C
Max. ambient temperature, sensor	250 °C
Ambient temperature, thermostat housing	0°C - +80°C
Sensor length	125 mm
Enclosure class	IP40

6.1.5 Motor damper

Motor damper data	LS (closing damper)	LSR (closing damper, spring return)
Designation	LSA/LSF	LSFR
Motor type	NM24-F	AF-24
Rotation time	75–150 s	opening: 150 s closing: 16 s
Enclosure class	IP42	IP42
Ambient temperature	-20ºC to +50ºC	-30ºC to +50ºC
Damper depth	100 mm	100 mm

Dimensions

VEX size	Diameter	Damper type
310T	Ø250 mm	LS250-24/LSR250-24
320T	Ø315 mm	LS315-24/LSR315-24
330T	Ø315 mm	LS315-24/LSR315-24
340T	Ø400 mm	LS400-24/LSR400-24
350T	Ø500 mm	LS500-24/LSR500-24

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

6.2 Water coils (HW/CW)

6.2.1 Data VEX310T-350T

VEX310T

Data	Variants/sizes			
	HW 1	HW 2	CW 1	CW 2
Weight without fluid [kg]	1.35	2.0	2.0	3.25
Fluid content [l]	0.192	0.323	0.322	0.581
Number of pipe rows	1	2	2	4
Number of circuits	1	1	2	4
Fin spacing	1.6	2	2	2.5
Face area h x b [mm]	200 x 380			
Connection dimension	DN15 (1/2")			
Test pressure [kPa]	3000			
Max. operating press. [kPa]	1600			

VEX320T

Data	Variants/sizes			
	HW 1	HW 2	CW 1	CW 2
Weight without fluid [kg]	2.15	2.75	3.0	5.25
Fluid content [l]	0.192	0.323	0.322	0.581
Number of pipe rows	1	2	2	4
Number of circuits	1	1	2	4
Fin spacing	1.5	2	2	2.5
Face area (h x b) [mm]	200 x 637			
Connection dimension	DN15 (1/2")			
Test pressure [kPa]	3000			
Max. operating press. [kPa]	1600			

VEX330T

Data	Variants/sizes			
	HW 1	HW 2	CW 1	CW 2
Weight without fluid [kg]	3	4.5	4.0	7.75
Fluid content [l]	0.700	1.315	0.792	2.612
Number of pipe rows	1	2	2	4
Number of circuits	2	2	6	8
Fin spacing	1.5	2	2	2.5
Face area (h x b) [mm]	300 x 702			
Connection dimension	DN15 (1/2")			
Test pressure [kPa]	3000			
Max. operating press. [kPa]	1600			

VEX340T

Data	Variants/sizes			
	HW 1	HW 2	CW 1	CW 2
Weight without fluid [kg]	4.15	5.8	6.0	9.5
Fluid content [l]	0.945	1.218	1.278	2.465
Number of pipe rows	1	2	2	4
Number of circuits	2	4	9	18
Fin spacing	1.5	2	2	2.5
Face area (h x b) [mm]	450 x 696	450 x 710	450 x 675	450 x 675
Connection dimension	DN20 (3/4")			
Test pressure [kPa]	3000			
Max. operating press. [kPa]	1600			

VEX350T

Data	VEX350T			
	HW 1	HW 2	CW 1	CW 2
Weight without fluid [kg]	7,0	9,6	9,7	15,9
Fluid content [l]	1.96	3.37	3.25	6.02
Number of pipe rows	1	2	2	4
Number of circuits	4	5	8	25
Fin spacing	1.4	2	2	2.5
Face area (h x b) [mm]	625 x 750	625 x 750	625 x 750	625 x 750
Connection dimension	DN25 (1")			
Test pressure [kPa]	3000			
Max. operating press. [kPa]	1600			

6.2.2 MVM motor valve

Valve data	Kvs 0.25-4.0	Kvs 6.3
Test pressure [kPa]	1600	1600
Max. differential pressure [kPa]	200	200
Permitted temperature of medium [°C]	5 - 110	5 - 110
The valve will remain open if the differential pressure [kPa] is	> 100	> 200

Motor data	Kvs 0.25-4.0	Kvs 6.3
Protection class IEC529	IP40	
Opening/closing time [s]	34	30
Permitted ambient temperature [°C]	(-30) - (+50)	
Power supply [AC/DC, 50/60Hz]	24VAC ±20% 24VDC ±20%	
Regulation [VDC]	0 - 10	

6.3 Cooling/heating coils (DX)

VEX310T-350T

Data	310T	320T	330T	340T	350T
Weight without fluid [kg]	4	7	10	12	21
Fluid content [l]	0.44	0.72	1.26	1.77	2.8
Number of pipe rows	4	4	4	4	4
Number of circuits	3	5	8	12	16
Fin spacing	2.5	2.5	2.5	2.5	2.5
Face area (h x b) [mm]	200 x 350	200 x 620	300 x 685	450 x 685	625 x 740
Connection dimension	DN15 (1/2")				
Test pressure [kPa]	4500				
Max. oper. pressure [kPa]	4200				

6.4 Panel filters

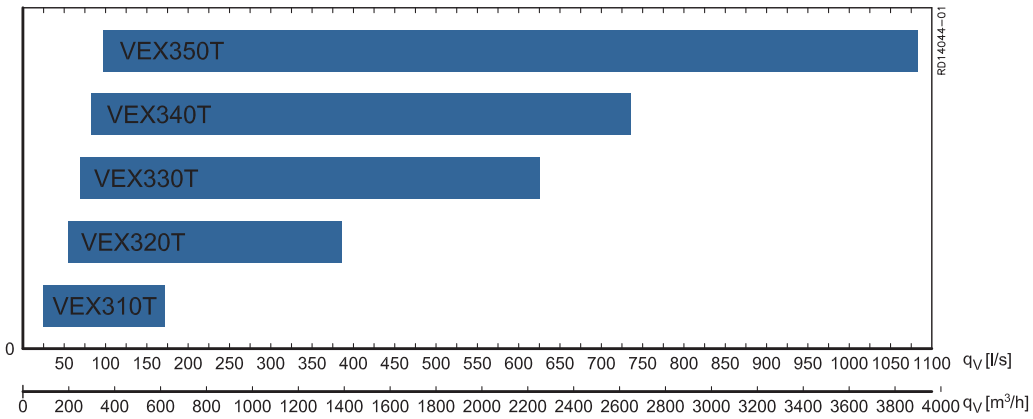
6.4.1 Filter data

Filter class according to ISO 16890 VEX size/Data	Coarse 65%	ePM_{10} [65%]	ePM_1 55%	ePM_1 80%
310T panel h x b [mm]	312 x 453			
320T panel h x b [mm]	312 x 723			
330T panel h x b [mm]	363 x 794			
340T panel h x b [mm]	471 x 794			
350T panel h x b [mm]	614 x 850			
Panel thickness [mm]	48/96	48/96	48/96	96
Filter class according to EN 779	G4	M5	F7	F9
Temperature resistant to	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".

6.5 Capacity diagram



Recommendation

You are recommended to make a more precise calculation of the unit's capacity with the EXselect calculation **EXselect**,
available on the EXHAUSTO website.

6.6 EC Declaration of Conformity

The document is located in the door of the VEX unit. It is also available on the EXHAUSTO website by searching under the document or order number.

6.7 Ordering spare parts

Find production number

When ordering spare parts, the production order number must be stated. This will ensure that the correct parts are delivered. The production order number is given on the front of the VEX instructions and on the VEX unit information plate.

Contact:

Contact your local sales office to order a spare part. Contact information can be obtained by scanning the QR code 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 unit.

6.8 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 components	For recycling by an authorised enterprise
Cassette filter	Fibreglass and plastic	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 incineration	2% (Wood, filter paper, cellular rubber)
Other	1.5% (electronic components)
Total	100%

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