GB

VEX4000 - VDI6022 guide

How to inspect and clean a VEX4000 air handling unit

Original instructions

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EXHAUSTO

1. Inspection and cleaning

1.1 Inspection and cleaning

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 material.

Scope of the guide

These guidelines are intended for the EXHAUSTO air handling unit (in the following termed the VEX unit). For accompanying accessories and additional equipment, please see the product guidelines for the item in question.

The instructions must be fully observed in order to ensure personal safety, protect the equipment, and ensure the correct operation of the VEX unit. EXHAUSTO A/S accepts no liability for accidents caused by a failure to use the product in accordance with the manual's instructions and specifications.

Supply air/extract air

These guidelines use the terms described in DS447-2013:

- Supply air (inlet air)
- Extract air (outlet air)
- Outdoor air
- Exhaust air

Before inspection and/or cleaning, the following must be carried out:

Stop the VEX on the HMI or web server.

Do not open the service doors before the power has been disconnected at the isolation switch (OFF position) and the fans have been stopped. The isolation switch is located on the door of the heat exchanger section. When the isolation switch is in the OFF position, the light inside the VEX can still be switched on and the service socket in the panel can be used. Everything else on the VEX is de-energised.

There is an extra and separate built-in isolation switch on the door to the electric heating coil. *NB: Units with electric heating coils thus have two isolation switches, both of which must be in the OFF position to ensure the unit is de-energised.*

Note

Ensure that the air handling unit has stopped operating for at least five minutes before opening the doors, as there is run-on time on the fans.

Locked doors

The doors are opened and closed using the square key.

2. VDI6022 Guideline

2.1 VDI6022 guideline

Step	Part	Activity	Action	1 month	3 months	6 months	12 months	24 months
0	**Hygiene inspection** (see section 7.4 of VDI6022)							Xa)
1	**Central ventilation plant/units** (See section 7.6.4 of VDI6022)							
	1.1	Check for contamination, damage and corrosion on the air side.	Clean and repair.				X	
	1.2	Check for condensation.	Clean.			X		
	1.3	Check empty sections for contamination, damage and corrosion.	Clean and repair.				X	
2	**Cooling components** (see section 7.6.5 of VDI6022)							
	2.1	Check function and condition of condensate trays and drains.	Clean and repair.			X		
	2.2	Check dewpoint sensor, supply air pipe, circuits and valves for leakage.	Repair.				X	
3	**Filters** (see section 7.6.8 of VDI6022)							
	3.1	Check for unacceptable contamination, damage (leakage) and odours.	Change any filters involved.		X			
	3.2	Check pressure loss.	Change filter stage.			X		
	3.3	Maximum interval for changing first filter stage.					X	
	3.4	Maximum interval for changing second filter stage.						X
4	**Fan** (see section 7.6.12 of VDI6022)							
	4.1	Check for contamination, damage and corrosion.	Clean and repair, check condensate drains.			X		
5	**Heat exchanger (including heat recovery)** (see sections 7.6.13 + 7.6.14 of VDI6022)							
	5.1	Visual inspection of air-to-air plate heat exchangers for contamination, damage and corrosion.	Clean and repair.			X		
	5.2	Visual inspection of rotating heat exchangers for contamination, damage, corrosion and air tightness.	Adjust gaskets, clean and repair.			X		
	5.3	Visual inspection of directly heated heat exchangers for air tightness.	Ensure air tightness.				X	
	5.4	Heaters: Check for contamination, damage, corrosion and air tightness.	Clean, repair and replace.			X		
	5.5	Coolers: Check cooling coil, droplet separator and condensate tray for contamination, damage and leak tightness.	Clean and repair.		X			

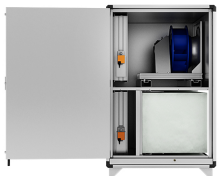
Step	Part	Activity	Action	1 month	3 months	6 months	12 months	24 months
	5.6	Function check of drains and drain pipes.	Clean and repair.		X			
6	**Silencers** (see section 7.6.11 of VDI 6022)							
	6.1	Check silencers for contamination, damage, and corrosion.	Repair or replace; test with contact slides if necessary.				X	

Xa) 36 months where relevant (without humidification and underground components)

3. VEX4000 sections

3.1 VEX4000 sections

3.1.1 Supply air and extract air fan sections



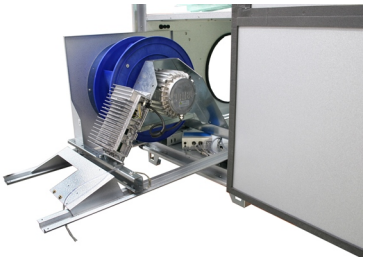
General:
Inspect the section chambers (exhaust/outdoor air + extract/supply air) for dirt and contamination. Clean if necessary.

Filters:

Step	Action	Photo
1	Switch off the power to the air handling unit at the isolation switch before opening the doors.	
2	Open the door and pull out the filters.	
3	Inspect for holes and soiling.	
4	Vacuum clean the interior surfaces free of dust and dirt – be thorough, especially in front of the filters.	
5	Replace the filters if necessary.	

Fan:
It is possible to inspect and clean round the fan without pulling it out.
However, if it seems necessary, the fan can be pulled out as follows.

Step	Action	Photo
1	Switch off the power to the air handling unit at the isolation switch before opening the doors in the section.	

Step	Action	Photo
2	If it seems necessary to pull out the fan, this can be done as follows: 1. Cut all relevant strips. 2. Dismount hoses and sockets in the PTH. 3. Dismount necessary cables from the motor control. 4. The fan can now be pulled out, and remounted in accordance with the supplied diagram.	

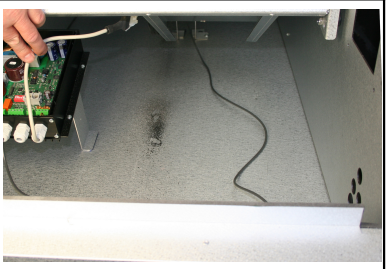
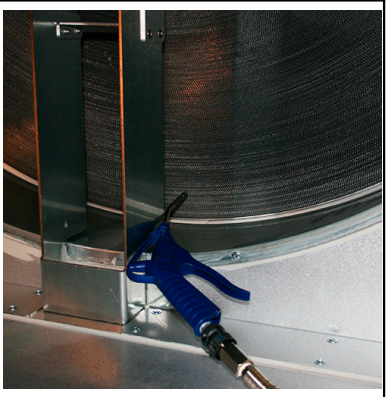
Internal dampers:
Once the filters have been pulled out, the damper can be cleaned as follows:

Step	Action	Photo
1	Place the handle in the button and turn clock-wise until the damper is fully open. Turn the locking button to the right of the handle anti-clockwise. The damper is now locked.	
2	The necessary cleaning and inspection can now be performed.	
3	**NB Remember to unlock the damper once cleaning is complete.**	

3.1.2 ER Rotary heat exchanger section

General:
Inspect the area round the rotor for dust and ejected shavings. (Shavings in the rotor may be ejected once the plant is started up).

Rotor:
Clean the rotor as follows:

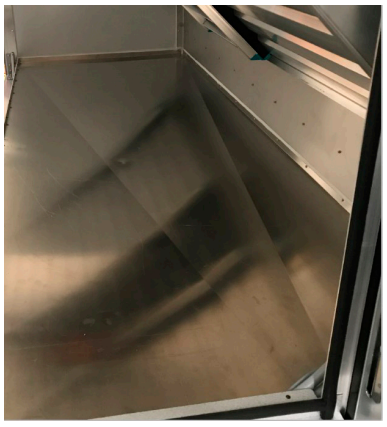
Step	Action	Photo
1	Switch off the power to the unit at the isolation switch before opening the doors	
2	Inspect the area round the rotor for dust and ejected shavings. NB It is completely normal to find shavings from the rotor belt in the bottom of the rotor section, especially if the belt is completely new.	
4	Use a compressed air gun to clean the rotor from the outdoor air side to the supply side. Do this repeatedly while manually rotating the rotor.	
5	Dust and shavings blown through the rotor should be vacuumed up on the other side.	

Step	Action	Photo
6	Check that the fins on the rotor are not deformed. **The fins are sharp.** **Avoid touching the fins in the exchanger with sharp or hard objects – the fins are very soft and can easily be deformed, which will diminish the output of the VEX.**	

3.1.3 EX Crossflow heat exchanger section

General:
Inspect the area round the heat exchanger for dust.

Crossflow heat exchanger:
Clean the heat exchanger as follows:

Step	Action	Photo
1	Switch off the power to the air handling unit at the isolation switch before opening the doors.	
2	Inspect the area round the heat exchanger for dust.	
3	Check that the condensate tray's drain is functioning.	
4	Use a water hose to clean the crossflow heat exchanger from top to bottom on both sides. There is access to the heat exchanger from the two adjacent fan sections.	
5	Water not ending up in the condensate trays under the crossflow heat exchanger should be mopped up before starting the unit.	

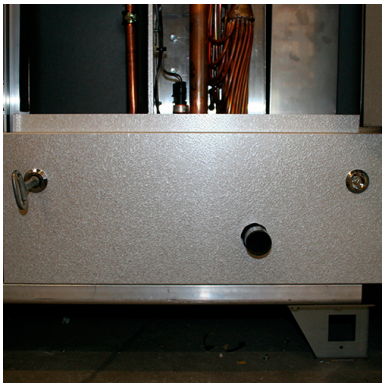
3.1.4 IC + ICC Cooling section & integrated cooling section with rotary heat exchanger

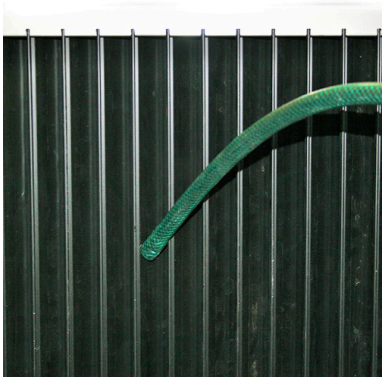
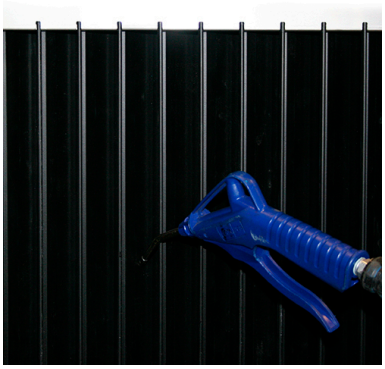
General

Inspect both chambers (extract air and supply air) and clean if necessary.

Droplet separator:

Clean the droplet separator as follows:

Step	Action	
1	Switch off the power to the air handling unit at the isolation switch before opening the doors in the section.	
	Remove the fixed panel and pull out the droplet separators.	 
2	Check that the condensate tray's drain is functioning.	

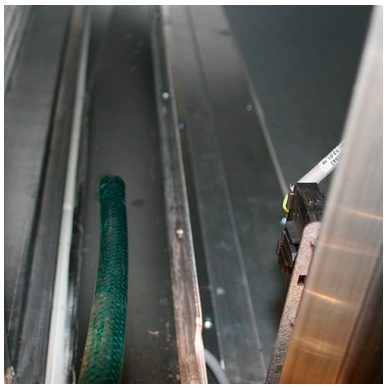
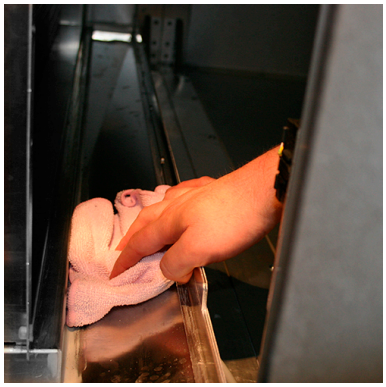
Step	Action	
3	Clean the sections with a water hose and blow dry with a compressed air gun before replacing them.	 
4	Only replace the droplet separator when the cooling coil and condensate tray have been cleaned. **NB: Be sure to insert the droplet separator in the direction of air-flow - see arrow.**	

Cooling coil:
Clean the cooling coil as follows:

Step	Action	Photo
1	Remove the frequency regulator as follows: 1. Loosen the finger screws (with one of them completely removed) 2. The frequency regulator can now be twisted to the side. 3. After cleaning, replace the frequency regulator. **NB: Only applicable to IC section.**	

Step	Action	Photo
2	Use a compressed air gun or water hose to clean the cooling coils from the outdoor air side to the supply side. Blow dry with a compressed air gun.	 

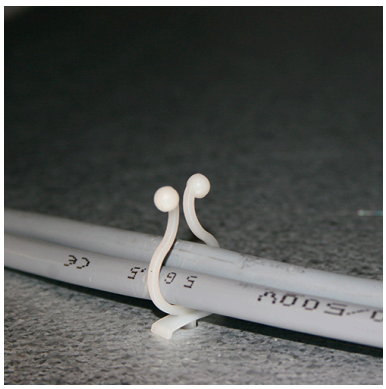
Condensate tray:
Clean the condensate tray as follows:

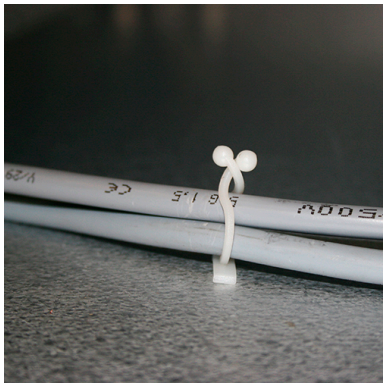
Step	Action	Photo
1	Clean the condensate tray with a water hose.	
2	Mop up excess water in the condensate tray.	

Step	Action	Photo
3	Excess water which has not ended in the condensate tray should be mopped up before starting the unit.	
4	Replace the droplet separator. **NB: Be sure to insert the droplet separator in the direction of airflow - see arrow.**	

3.1.5 SP Inspection section

General:
Inspect both chambers (extract air and supply air) and clean if necessary.

Step	Action	Photo
1	Loosen the cable in the twists	
2	Lift up the cables during cleaning.	

Step	Action	Photo
3	Refix the cables with the twists before starting the unit.	

3.1.6 HWC Hot water coil

General:
Inspect the space in front of the coil, and clean if necessary. Do this in both chambers in the case of a 2-line section.

HW coil:

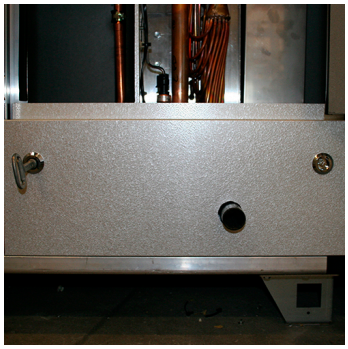
Step	Action	Photo
1	Switch off the power to the air handling unit at the isolation switch before opening the doors.	
2	Blow the coil clean with a compressed air gun. Do this in both chambers in the case of a 2-line section.	
3	**NB: No water must be used for cleaning HW/HWR coils.**	

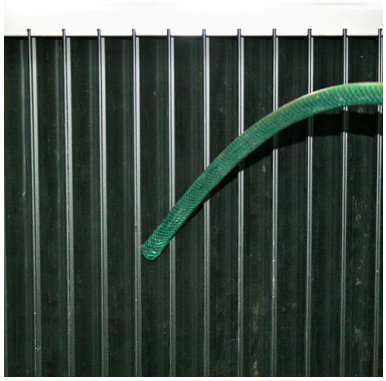
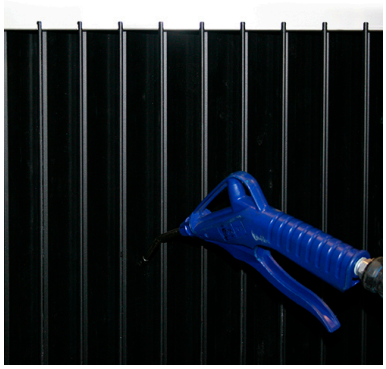
NB: After HWC, an inspection hatch must be installed in the duct.

3.1.7 CWC + DXC Cold water coil and DX coil in housing

General: Inspect both chambers (extract and supply air) and clean if necessary. Do this in both chambers in the case of a 2-line section.

Droplet separator:
Clean the droplet separator as follows:

Step	Action	Photo
1	Switch off the power to the air handling unit at the isolation switch before opening the doors.	
2	Inspect both chambers (extract air and supply air) and clean if necessary. Do this in both chambers in the case of a 2-line section.	
3	Remove the fixed panel and pull out the droplet separators	 

Step	Action	Photo
4	Use a compressed air gun or water hose to clean the cooling coils from the outdoor air side to the supply side. Blow dry with a compressed air gun.	 
5	Only replace the droplet separator when the cooling coil and condensate tray have been cleaned . **NB: Be sure to insert the droplet separator in the direction of airflow - see arrow.**.	

Condensate tray:
Clean the condensate tray as follows:

Step	Action	Photo
1	Remove the fixed panel and pull out the droplet separators.	
2	Clean the condensate tray with a water hose.	
3	Mop up excess water.	
4	Excess water which has not ended in the condensate tray should be mopped up before starting the unit.	
5	Replace the droplet separator.	

3.1.8 HEC Electric heating coil in the housing

General:
Inspect both chambers (extract air and supply air) and clean if necessary. Do this in both chambers in the case of a 2-line section.

HE coil:
Clean the electric heating coil as follows:

Step	Action	Photo
1	Clean the electric heating coil with a dry cloth or brush. **NB: Take care! The elements may be hot if the run-on time is not observed.**	

NB: It is advisable to install an installation hatch immediately after the section to permit cleaning from both sides.

3.1.9 Location of HE and HW generally

HE - Electric heating coil in the duct
Location generally:
The electric heating coil must be located where it is possible to inspect and clean it. When installing an electric heating coil in the duct system, an inspection hatch must also be installed on both sides of the coil to allow for cleaning with a dry cloth or brush. See section on electric heating coil in cabinet for instructions.

HW - Water heating coil in duct
Location generally:
The water heating coil must be located where it is possible to inspect and clean it. When installing a water heating coil in the duct system, an inspection hatch must also be installed on both sides of the coil to allow for cleaning and drying. See section on hot water coil in housing for instructions.

3.1.10 Silencer section (NRC)

General:
Inspect both chambers (extract air and supply air) and clean if necessary. This is done in both chambers in the case of a 2-line section.

Baffles:
Clean the baffles as follows:

Step	Action	Photo
1	Before opening the doors, switch off the power to the air handling unit at the isolation switch.	
2	If the baffles are placed on the bottom line, it may be necessary to remove the cables. If needed, consult the sign on the inside of the door.	
3	Remove the baffles and place them in a dry spot outside of the unit. Do not mix the baffles together if the amount of baffles differs between the two air lines.	
4	Clean and inspect each baffle. Baffles with a damaged canvas should be replaced.	
5	Clean the empty section with a dry cloth or brush.	
6	Reinsert the baffles in their respective air strings and ensure that the attached arrows correspond to the direction of the air flow. **NB:** If the baffles have been disassembled, it is important that the front and rear parts are correctly reassembled.	

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