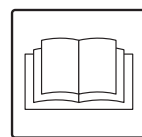


VHC200
VHC200EXP

INSTRUCTIONS MANUAL US

MANUEL D'INSTRUCTIONS F

MANUAL DE INSTRUCCIONES E



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Instructions for use

Read the operating instructions and comply with the important safety recommendations identified by the word **WARNING!**

Operator's safety



WARNING!



Before starting the vacuum cleaner, it is absolutely essential to read these operating instructions and to keep them on hand for consultation.

The vacuum cleaner can only be used by people who are familiar with the way it works and who have been explicitly authorized and trained for the purpose. Before using the vacuum cleaner, the operators must be informed, instructed and trained on how to work it and for which substances its usage is permitted including the safe method for removing and disposing of the vacuumed material.



WARNING!

The use of vacuum cleaner by people (including children) with limited physical and mental capacities or lacking in experience and knowledge is strictly forbidden, unless they are supervised by a person who is experienced in the use and safe handling of the machine.

Children must be supervised to make sure they will not play with the vacuum cleaner.

General information for using the vacuum cleaner

Use the vacuum cleaner in accordance with the laws in force in the country where it is used.

Besides the operating instructions and the laws in force in the country where the device is used, the technical regulations for ensuring safe and correct operation must also be observed (Legislation concerning environmental and labour safety, i.e. European Union Directive 89/391/EC and successive Directives).

Do not perform any operation that could jeopardize the safety of people, property and the environment.

Comply with the safety indications and prescriptions in this instruction manual.

Proper uses

This vacuum cleaner is suitable for commercial use, in hotels, schools, hospitals, factories, shops, offices and apartment buildings for hire and in any case for purposes other than normal domestic use.

This vacuum cleaner is suitable for cleaning and vacuuming solid materials in indoor and outdoor environments.

- Always leave enough room around the vacuum cleaner to reach the controls easily.

Improper Use



WARNING!

The following use of the device is strictly forbidden:

- **Outdoors in case of atmospheric precipitation.**
- **When not placed on horizontal levelled grounds.**
- **When the filtering unit is not installed.**
- **When the vacuum inlet and/or hose are turned to parts of the human body.**
- **Use without the cover on the vacuum unit.**
- **When the dust bag is not installed.**
- **Use without the guards, protective covers and safety systems installed by the manufacturer.**
- **When the vacuum cleaner is covered with plastic or fabric sheets.**
- **Use with the air outlet partially or totally closed.**
- **When used in narrow areas where there is no fresh air.**
- **Vacuuming liquids with vacuum cleaners not equipped with specific original stopping systems.**
- **Vacuuming the following materials:**
 1. **Burning materials (embers, hot ashes, lit cigarettes, etc.).**
 2. **Naked flames.**
 3. **Combustible gas.**
 4. **Flammable liquids, aggressive fuels (gasoline, solvents, acids, alkaline solutions, etc.).**
 5. **Explosive dust/substances and/or ones liable to ignite in a spontaneous way (such as magnesium or aluminium dusts, etc.).**

IMPORTANT: Fraudulent use is not admitted.

Versions and variations

Versions

Optional

LIQUIDS

This vacuum cleaner can be equipped with a mechanical float device for collecting liquids.

The Nilfisk CFM VHC200EXP vacuum cleaner is ATEX-approved (Ex) for use in Zones 1, 2, 21 and 22 and comes with an EC Declaration of Conformity. See fac-simile in Fig. 12. This machine also meets the requirements for use in the following hazardous environments:

Class I/Division I/Group D Atmospheres containing: gasoline, petroleum, naphtha, benzene, butane, propane, alcohol, acetone, benzol, lacquer solvent vapors or natural gas.

Class II/Division I/Group E* Atmospheres containing: metal dusts.

Class II/Division I/Group F Atmospheres containing: carbon, black coal or coke dust.

Class II/Division I/Group G Atmospheres containing: flour, starch or grain dust.

Warning: Do not use this or any other Nilfisk CFM vacuum for the purposes of cleaning or extracting fuel residues from airplanes or ships.

* *Special modifications may be necessary to meet Group E requirements. Nilfisk CFM reserves the right to evaluate on a case-by-case basis.*

NOTE: The standard Nilfisk CFM VHC200 vacuum cleaner is not ATEX-approved and cannot be used in any of the hazardous environments listed above.

[NOTE]

The Declaration of conformity is an important document and should be kept in a safe place to be presented to the Authorities on request.

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General recommendations



WARNING!

If an emergency situation occurs:

- **filter breakage**
- **fire outbreak**
- **etc.**

Request assistance from qualified personnel.



WARNING!

The vacuum cleaners must not be used or stored outdoors, or in damp places.

Only versions with the level sensor can be used for liquids, if not, they can only be used to vacuum dry materials.

Vacuum cleaner description

Vacuum Cleaner Parts and Labels

Figure 1

1. Identification plate which includes:
Model Code, Technical Specifications (see table on page 7), Serial no. CE Marking, Year of manufacture
2. Dust container
3. Dust container release lever
4. Inlet
5. Outlet
6. Attention plate
Draws the operator's attention to the fact that the filter must only be shaken when the vacuum cleaner is turned off (see also par. "Primary filter shaker").
7. Pneumatic system connection fitting.

This vacuum cleaner creates a strong air flow which is drawn in through the inlet (4 - Fig. 1) and blown out through the outlet (5 - Fig. 1).

Before turning on the vacuum cleaner, fit the vacuum hose into the inlet and then fit the required tool on to the end part (refer to the manufacturer's accessory catalogue or Service Centre).

The diameters of the recommended hoses are given in the technical specifications table.

The vacuum cleaner is equipped with a primary filter which enables it to be used for the majority of applications.

Besides the primary filter, which retains the most common types of dust, the vacuum cleaner can be fitted with a HEPA filter with a higher filtering capacity for fine dusts and dusts that are hazardous to health.

Optional kits

Please contact the manufacturer's sales network for information on optionals.

Instructions for installing the optional are included in the conversion kit.

! WARNING! !
Use only supplied and authorized genuine spare parts.

Accessories

Various accessories are available; refer to the manufacturer's accessory catalogue.

! WARNING! !
Use only genuine accessories supplied and authorized by the manufacturer.

Packing and unpacking

Dispose of the packing materials in compliance with the laws in force.

Figure 2

Model	VHC200	VHC200EXP
A (in)	27.6	27.6
B (in)	47.2	47.2
C (in)	66.9	66.9
Weight with packing (lbs)	196	196

Unpacking, moving, use and storage

Operate on flat, horizontal surfaces.

The load-bearing capacity of the surface the vacuum cleaner is placed on must be suitable for bearing its weight).

Setting to work - connection to the pneumatic system



- *Make sure there is no evident sign of damage to the vacuum cleaner before starting work.*
- *Make sure compressed air supply system is sized properly to operate vacuum (see technical data).*
- *Only use 3/4" ID compressed airlines with Chicago "twist-claw" fittings (Figure 13). DO NOT use quick-disconnect airline fittings (these are too restrictive).*



- When the vacuum cleaner is operating, do not:*
- *Crush, pull, damage or tread on the connecting hose.*
 - *Only replace the supply hose with one of the same type as the original.*

Supply pressure adjustment



If the setting procedure below is not followed properly or if the knob is overturned in the maximum pressure direction (clockwise) there is a risk of damage or injury for the user.

1. Check that the supply pipeline is of an appropriate diameter, i.e. not smaller than a nominal inner diameter of 3/4", to allow the proper performances of the vacuum cleaner.
2. Connect the vac to the air supply and then open the On/Off valve (1 - Fig. 13).
3. Adjust the air supply pressure as follows:
 - a. Turn the pressure regulator knob in the minimum pressure direction (counter-clockwise, see figure 13) until the end of the stroke is reached (regulator closed)
 - a. Turn the air regulator knob in the maximum pressure direction (clockwise, see figure 13), reaching the desired pressure and check if it can be kept stable for at least 3 minutes; push the knob to lock it;
 - a. If the clockwise end stroke is reached without reaching the desired pressure, and point 1 and 2 are fulfilled, target a lower supply pressure and repeat the procedure from point a.

Tool and Attachments

Warning: The VHC200EXP is only intended for explosion-proof/dust ignition-proof operation if it is equipped with the proper conductive hose and tools. Any alteration to this equipment by a third party will nullify its warranty.

For a complete list of tools and attachments, please contact Nilfisk CFM.

Wet and dry applications

[NOTE]

The supplied filters and the bag (if applicable) must be installed correctly.

⚠ WARNING! ⚠

Comply with the safety regulations governing the materials for which the vacuum cleaner is used.

⚠ WARNING! ⚠

If the version for liquids is used:

- *Make sure the liquid level mechanism is working correctly before vacuuming liquids.*
- *If foam forms, turn off the vacuum cleaner immediately and empty the container.*
- *Warning: Switch off the vacuum cleaner immediately if foam or liquid leaks out.*
- *Regularly clean the liquid level limiting device and check to make sure that there are no signs of damage.*
- *Warning: Dirty liquid vacuumed up by the vacuum cleaner must be considered conductive.*

Maintenance and repairs

⚠ WARNING! ⚠

Disconnect the vacuum cleaner from its power source before cleaning, servicing, replacing parts or converting it to obtain another version/variant.

- *Carry out only the maintenance operations described in this manual.*
 - *Use only original spare parts.*
 - *Do not modify the vacuum cleaner in any way.*
- Failure to comply with these instructions could jeopardize your safety. Moreover, such action would immediately make the EC declaration of conformity issued with the vacuum cleaner void.*

Technical specifications		VHC200 / VHC200EXP
Parameter	Units	
Recommended air compressor size	hp	18-23
Recommended air pressure	psi	90
Max. waterlift	in. H ₂ O	177
Maximum air flow rate (with hose, length: 3 m, diameter: 70 mm)	cfm	200
Noise level (Lpf) (EN60335-2-69)	dB(A)	70
Inlet (diameter)	mm	70
Recommended vacuum hose size	mm	70 / 50
Capacity	L	100
Chicago coupling size	inches	3/4
Air supply hose length	ft	30
Main filter surface	ft ²	20.99
HEPA filter surface area	ft ²	37.7
HEPA filter efficiency	%	99.995 @ 0.18 microns

Dimensions

Figure 3

Model	VHC200	VHC200EXP
A (in)	35.8	35.8
B (in)	23.6	23.6
C (in)	62.6	62.6

- *Storage conditions:*
T : -10°C ÷ +40°C
Humidity: 85%
- *Operating conditions:*
Maximum altitude: 800 m
(Up to 2,000 m with reduced performances)
T : -10°C ÷ +40°C
Humidity: 85%

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Inspections prior to starting

Figure 5

1. Inlet

Prior to starting, check that:

- the filters are installed;
- all the levers are locked in place;
- the vacuum hose and tools have been correctly fitted to the inlet (1 - Fig. 5);

! WARNING! !
Do not use the device if the filter is faulty.

Under no circumstances may this vacuum cleaner be used safely for the collection of hazardous or toxic materials unless equipped with a HEPA filter. Be sure to install the HEPA filter according to Nilfisk CFM's written instructions. Do not use this cleaner for the removal of hazardous substances unless you are licensed and/or certified to work by all the authorities having jurisdiction.

Ground Continuity Test (VHC200EXP only)

! WARNING! !
Test for continuity before each use.

The compressed airline with the VHC200EXP is impregnated with carbon for the purpose of transferring static charge to an earth ground source. Check to ensure that there is electrical conductivity between the vacuum's inlet and the hose fitting attached to the compressed airline (between items #4 and #7 in Figure 1). The resistance of this grounding continuity path should not exceed 0.1 ohm. If unacceptable results are obtained during the continuity test **DO NOT OPERATE THE VACUUM**. Using a continuity tester, check for continuity between each connection of the vacuum cleaner. Contact Nilfisk CFM's technical department for troubleshooting advice if continuity cannot be restored.

Note: This VHC200EXP vacuum must be connected to an earth ground source. If the vacuum cleaner should malfunction or break down, grounding provides a path of least resistance for electrical current to reduce the risk of electrical shock. For added safety, an **auxiliary grounding clamp** has been included with the machine.

Starting and stopping

Figure 4

! WARNING! !
Lock the castor brakes (1) before starting the vacuum cleaner.

- Open tap "1" (Fig. 4) to start vacuuming.
- Close tap "1" to stop vacuuming.

Vacuum cleaner operation

! WARNING! !
The air speed in the suction tube must not be less than 20 m/s.

! WARNING! !
Consult the "Troubleshooting" chapter if faults occur.

Primary filter shaker

Depending on the quantity of dust cleaned up, shake the main filter by means of the knob "3" (Fig. 4).



Stop the vacuum cleaner before using the filter shaker. Do not shake the filter while the vacuum cleaner is on, as this could damage the filter.

Wait a few seconds before restarting the vacuum cleaner, to allow the dust to settle.

Emptying the dust container

Warning: If this vacuum cleaner is used to collect hazardous materials, do not attempt to open or empty its contents without personal protective clothing and respiratory protection. This procedure must be completed in a contained environment. Contact with the cleaner, filters, and all other accessories used when picking-up hazardous materials must be handled according to federal (EPA, OSHA), state and local regulations valid for the vacuumed substance.



■ **Turn the vacuum cleaner off before performing these operations.**

Before emptying the container it is advisable to clean the filter (see "Primary filter shaker").

- Standard version (not suitable for vacuuming hazardous dust)
 - Release the dust container (2, Fig. 1) using lever (3, Fig. 1), then remove and empty it.
 - Make sure the seal is in perfect condition and correctly positioned.
 - Place the container back in position and secure it again.

Plastic bag

Plastic disposal bags (Figure 6) can be used as an alternate means of collection. Additional equipment must be added to this machine in order to use the plastic bags. Contact Nilfisk CFM to order the necessary equipment.

Liquids vacuuming



Check that the vacuum cleaner is equipped with liquids mechanical stop.

- The filter element will be wet after liquids have been vacuumed. A wet filter element can quickly become clogged if the vacuum cleaner is then used to vacuum dry substances. For this reason, make sure that the filter element is dry or replace it with another one before using the vacuum cleaner for dry materials.

At the end of a cleaning session

- Stop the vacuum cleaner using knob (1 - Fig. 4) and disconnect the hose from the pneumatic system.
- Empty the container as described in the "Emptying the container" paragraph.
- Clean the vacuum cleaner as described in the paragraph "Maintenance, cleaning and decontamination".
- Wash the container with clean water if aggressive substances have been vacuumed.
- Store the vacuum cleaner in a dry place, out of reach of unauthorized persons.

Maintenance, cleaning and decontamination



To guarantee the safety level of the vacuum cleaner, only original spare parts supplied by the manufacturer should be used.



The precautions described below must be taken during all maintenance operations, including cleaning and replacing the primary and HEPA filters.



The maintenance, cleaning and decontamination operations must only be performed with the vacuum cleaner turned off and disconnected from the pneumatic system.

- If the user is performing the maintenance operations, the vacuum cleaner must be disassembled, cleaned and overhauled as far as reasonably possible without hazards for the maintenance personnel or other people. The precautions to take include decontamination before disassembling the vacuum cleaner, filtered ventilation of the exhaust air from the room in which the vacuum cleaner is disassembled, cleaning the maintenance area and suitable protection for personnel.

Primary and HEPA filter disassembly and replacement



WARNING!

When the vacuum cleaner is used to vacuum hazardous substances, the filters become contaminated, therefore:

- *work with care and avoid spilling the vacuumed dust and/or material;*
- *place the disassembled and/or replaced filter in a sealed plastic bag;*
- *dispose of the filter in accordance with the laws in force.*



WARNING!

Filter replacement is a serious matter. The filter must be replaced with one of identical characteristics, filtering surface and category. Otherwise the vacuum cleaner will not operate correctly. Refer to HEPA warnings on page 8.

Primary filter replacement

Figure 7

Before proceeding with these operations, turn the vacuum cleaner off and disconnect it from the pneumatic system.

- Release the stop (1), unscrew the filter shaker knob (2).
- Release the closing band (3).
- Lift cap (4).
- Lift filter (5) and unscrew the filter clamp (6) on bearing ring (7).
- Unscrew cage (8) and overturn the filter, exposing coupling clamp (9).
- Release the clamps and detach the cage from the filter.
- Dispose of the filter according to local laws and regulations.
- Fit the new filter and secure it in the cage with special clamps. Assemble the components in the reverse order of disassembly.



WARNING!

Take care not to raise dust when this operation is carried out. Wear a P3 mask and other protective clothing plus protective gloves (DPI) suited to the hazardous nature of the dust collected, refer to the laws in force.

If necessary contact the manufacturer's Service Center.

HEPA filter assembly or replacement



WARNING!

Do not attempt to clean the HEPA filter. Replace the filter in necessary.

Figure 8

1. Cap
2. Closing band
3. Filter shaker stop
4. Filter shaker knob
5. Ringnut
6. Disc
7. HEPA filter
8. Filter plate

Before proceeding with these operations, turn the vacuum cleaner off and disconnect the pneumatic system.

Assembly

1. Release stop (3) and unscrew filter shaker knob (4), release closing band (2) and remove cap (1).
2. Insert HEPA filter (7) and disc (6) on filter plate (8), then tighten ringnut (5). Replace cap (1), lock it with closing band (2) screw on filter shaker knob (4) and lock with stop (3).

Replacement

1. Proceed as indicated in step 1 of the assembling procedure.
2. Unscrew ringnut (5), and remove disc (6).
3. Change filter (7) and replace the cap by proceeding in the reverse order.

To dispose of the filter put it in a sealed plastic bag and dispose of it in accordance with the laws in force.

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Periodic inspection

Hoses check

Make sure the connecting hoses (Fig. 9) are in a good condition and attached correctly.

If the hoses are damaged, broken or poorly connected, they must be replaced.

When sticky materials are collected, check for possible clogging along the hose, in the inlet and on the baffle plate inside the filtering chamber.

Scrape inlet (2, Fig. 9) from the outside and remove the deposited waste as indicated in the figure.

Check the main filter (and HEPA, if equipped) periodically for clogging and signs of damage (i.e. torn material, damaged gaskets, etc.). Replace any damaged filters before returning the machine to service.

Filtering chamber leak check

If gasket (1, Fig. 10) between container (4) and filter chamber (3) fails to guarantee a good seal:

- Loosen the four screws (2) that lock the filtering chamber (3) against the vacuum cleaner structure.
- Allow the filtering chamber (3) to lower down and tighten the screws (2).

If an optimal seal cannot be obtained and the gasket is torn or cracked, etc. it must be replaced.

Disposing of the vacuum cleaner

Figure 11

Dispose of the vacuum cleaner in compliance with the laws in force.

To prevent damage to the environment or health caused by improper waste disposal, please separate this product from other waste and recycle it responsibly in order to support the sustainable reutilisation of material resources.

This product can not be disposed of together with other commercial waste.

Recommended spare parts

The following is a list of spare parts that should be kept ready at hand in order to speed up maintenance operations.

Refer to the manufacturer's spare parts catalogue when ordering spare parts.

	Description	Model	
		VHC200	VHC200EXP
	Star filter kit	40000338	40000425
	Filter ring gasket	8-17026	8-17126
	Filter chamber gasket	40000762	
	Filter clamp	8-18079	
	HEPA filter	4081700935	

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Troubleshooting

Problem	Cause	Remedy
The vacuum cleaner suddenly stops	Clogged primary filter	Shake the filter. Replace it if necessary
	Clogged vacuum hose	Check and clean the air intake
	Insufficient airflow	Increase air supply pressure. Check the pressure supplied by the pneumatic network is sufficient.
Dust leaks from the vacuum cleaner	The filter is torn	Replace it with another of identical type.
	Inadequate filter	Replace it with another of a suitable category and check.
Electrostatic current on the vacuum cleaner	Non existent or inefficient grounding	Check the ground. The vacuum hose must be conductive.

Warranty

Nilfisk warrants that its equipment will be free of defects in workmanship or material for a period of two years from the date of delivery. If the vacuum fails to meet these warranty standards, Nilfisk shall, upon notification within such time period, correct such non-conformity, at its option, either by repairing any defective part or parts, or by replacing a part or parts provided that the equipment is returned to an authorized Nilfisk service facility. In all cases freight both ways will be at expense of the customer. Equipment shall not be returned without advance notice to, and consent of Nilfisk.

EXCEPT AS SPECIFICALLY SET FORTH HEREIN, NILFISK MAKES NO WARRANTIES, EITHER EXPRESSED OR IMPLIED, AS TO ANY MATTER WHATSOEVER, INCLUDING WITHOUT LIMITATION ANY AND ALL WARRANTIES OF MERCHANTABILITY, FITNESS OF PURPOSE, OR OTHER WARRANTIES, ALL OF WHICH ARE EXPRESSLY DISCLAIMED AND EXCLUDED. NEITHER PARTY SHALL BE LIABLE TO THE OTHER FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PRODUCTION, LOSS OF PROFITS OR ANY OTHER SIMILAR INDIRECT LOSSES WHICH MIGHT OCCUR AS A RESULT OF DEFECTS, PARTIAL OR TOTAL FAILURE OF THE PRODUCT TO PERFORM AS SPECIFIED.

Correction of non-conformities or defects in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of Nilfisk to the customer, whether based on contract, negligence or otherwise with respect to, or arising out of such equipment. The remedies set forth herein are exclusive, and the inability of Nilfisk with respect to this sale or anything done in connection therewith, whether in contract, in tort, under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the equipment or part on which such liability is based.

This warranty does not cover repairs due to normal wear and tear, accident, neglect, misuse or abuse, incorrect installation or use other than as described in the instruction booklet. Breaks in hoses and cables are not covered. This warranty is rendered void if the motor number plate is removed or defaced or if repairs are made or attempted by persons not authorized by Nilfisk. Some states do not allow exclusion of implied warranties or limitations on how long an implied warranty lasts so the above exclusions or limitation of implied warranties may not apply. Some states do not allow exclusion or limitation of incidental or consequential damages so the above exclusion or limitation of incidental or consequential damages may not apply. Limited warranties set forth above give specific legal rights. Customer may have other rights which vary from state to state.

DISCLAIMER

The purchaser and intended user of this Nilfisk EXP vacuum acknowledge that their Authority Having Jurisdiction (AHJ) as defined in Article 100 of the National Electric Code (NEC – NFPA 70) has determined this specific type of vacuum equipment is suitable for use in the intended applications and hazloc rated environments. Nilfisk-Advance, the product manufacturer, is not an AHJ and cannot approve any particular EXP vacuum product for any specific application or use. It is the purchaser's and the intended user's responsibility to ensure that the vacuum is used properly as described in the instruction manual and in accordance with the AHJ's approval. By issuing a purchase order, the purchaser and intended user acknowledge understanding the role of their AHJ along with the capabilities and limitations of the vacuum equipment. If you require assistance in identifying your AHJ, please contact your local Nilfisk District Manager for assistance.

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