T22PLUS - T40PLUS - T40W PLUS

Instructions for use

MANUALE DI ISTRUZIONI
INSTRUCTIONS MANUAL
MANUEL D'INSTRUCTIONS
BETRIEBSANLEITUNG
MANUAL DE INSTRUCCIONES

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GB English
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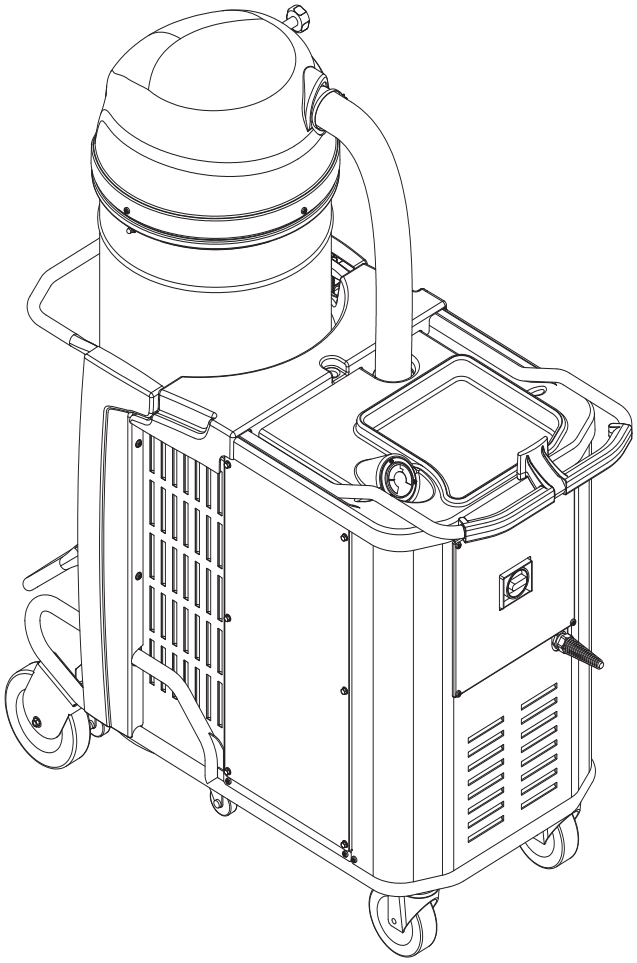

Nilfisk®

Translation of the original instructions

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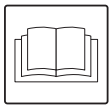
Instructions for use

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

Operator's safety

WARNING!



Before starting the device, it is absolutely essential to read these operating instructions and to keep them ready at 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 authorised and trained for the purpose.
Before using the device, 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 device 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 device.
Children must be supervised to make sure they will not play with the device.

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.

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Proper uses

This vacuum cleaner is suitable for commercial use, in hotels, schools, hospitals, factories, shops, offices and apartment hotels for example, for hire and in any case for purposes other than normal domestic use.
This vacuum cleaner was conceived to clean and collect solid non-flammable materials indoor and outdoor.

WARNING – This vacuum cleaner can only be used to vacuum dry materials if not equipped with specific liquid stop device.

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

The device has been designed to be used by one operator at a time.
This vacuum cleaner consists of an automated vacuum unit, with a filter upstream and a container for collecting the vacuumed material.

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.***
- ***When the dust bag is not installed.***
- ***Use without the guards, protective covers and safety systems installed by the manufacturer.***
- ***When the cooling vents are partially or totally clogged.***
- ***When the vacuum cleaner is covered with plastic or fabric sheets.***
- ***When the air outlet is partially or totally closed.***
- ***When used in narrow areas where there is no fresh air.***
- ***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

WARNING!

Dust classification
Versions for dust harmful to health:
classes L, M, H, the vacuum cleaner is suitable for use with hazardous, non-combustible/non-explosive dust in accordance with standard EN 60335-2-69, Annexe AA.
Check the tolerated dust hazard class on the data plate and on the label on the vacuum cleaner: L (low risk), M (medium risk), H (high risk).

[NOTE]

- *In the case of dust harmful to health, contact the local health and safety authorities, and observe national regulations in force both during use and disposal.*
- *Radioactive substances are not included in the definition of the type of dust dust harmful to health described above.*

Variants

ATEX

The manufacturer produces vacuum cleaners suitable to be used in potentially explosive atmospheres. These variants are manufactured according to directives and standards in force. The relevant additional instructions are supplied together with the device.

[NOTE]

ATEX variants
Refer to the manufacturer's sales network for these versions.
For ATEX industrial devices see the instructions for "ATEX" use.

Asbestos

In the Class H version, this vacuum cleaner can also be produced in the ASBESTOS variant, in accordance with German regulations TRGS 519 for vacuuming asbestos.

Classification in compliance with standard EN 60335-2-69 – Annexe AA

Vacuum cleaners for dust harmful to health are classified according to the following dust classification:

- **L** (low risk) suitable for separating dust with an exposure limit value of over 1 mg/m^3, depending on the volume occupied;
- **M** (medium risk) suitable for separating dust with an exposure limit value of no lower than 0.1 mg/m^3, depending on the volume occupied;
- **H** (high risk) for separating all dust with an exposure limit value lower than 0.1 mg/m^3, depending on the volume occupied, including carcinogenic and pathogenic dusts, such as asbestos.

Dust emissions in the environment

Indicative values of performance:

- normal version (not suitable for vacuuming hazardous dust): retains at least 99% of the vacuumed particles (see EN60335-2-69, Annexe AA);
- version for dust harmful to health (L, M, H classes):
  - **L**: retains at least 99% of the vacuumed particles (see EN60335-2-69, Annexe AA);
  - **M**: retains at least 99.9% of the vacuumed particles (see EN60335-2-69, Annexe AA);
  - **H**: retains at least 99.995% of the vacuumed particles (see EN60335-2-69, Annexe AA).

General recommendations

WARNING!

If an emergency situation occurs:
- ***filter breakage***
- ***fire outbreak***
- ***short-circuit***
- ***motor block***
- ***electric shock***
- ***etc.***

Turn the vacuum cleaner off, unplug it and request assistance from qualified personnel.

[NOTE]

Check the place of work and substances tolerated for the vacuum cleaner in ATEX variant.

WARNING!

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

These devices cannot be used in corrosive environment.

EC Declaration of conformity

Every vacuum cleaner comes with a EC Declaration of conformity. See fac-simile in fig. 39.

[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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Vacuum cleaner description

Parts and labels

Figure 1

1. Identification plate which includes:
   - Manufacturer's name and address
   - Designation and model, including class (L, M or H)
   - EC Mark
   - Technical specifications
   - Serial number
   - Year of manufacture
   - Weight (kg)
2. Warning label
   (For L, M, H, H AA for asbestos version)
3. Panel power plate
   Indicates that the panel is powered by the voltage indicated on the data plate.
4. Attention plate
   Draws the operator's attention to the fact that the filter must only be shaken when the vacuum cleaner is off. Failing this, the shaking would have no effect while the filter itself could be damaged.
5. Inlet
6. Outlet
7. Check valve (Clapet)
8. Vacuuming unit
9. On/off switch (standard versions)
10. Vacuum hose
11. Closing plug (M, H versions)
12. Band latch
13. Container release handle
14. Control and check panel (versions with solid material retaining sensor, cartridge filters or electric filter shaker)

Figure 2

1. L class label
2. M class label
3. H class label
4. asbestos label

The class L and M labels contain pictograms with the following meanings:

WARNING!

This vacuum cleaner contains dust hazardous for the health.
Only authorised personnel wearing suitable personal protective equipment should empty and service the vacuum cleaner, including removing the means used to vacuum the dust. Do not use without the complete filter system in place.

The class H label contains the above text.

This vacuum cleaner creates a strong air flow which is drawn in through the inlet (5, Fig. 1) and blows out through the exhaust (6, Fig. 1). After the hose and tools have been fitted, make sure that the motor turns correctly.
The vacuum cleaner is supplied with a check valve (Clapet) which prevents air and materials from coming out of the dust container, even if the electric motor rotates in the opposite direction than the one expected.
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 authorised 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 main filter which retains the more common types of dust, the vacuum cleaner can be fitted with an upstream absolute filter and a downstream absolute filter, with a higher filtering capacity for fine dust and substances harmful for the 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 genuine optional kits supplied and authorized by the manufacturer.

Accessories

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

WARNING!

Use only genuine accessories supplied and authorised by the manufacturer.

WARNING!

ATEX variants: refer to the manufacturer's sales network.

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Packing and unpacking

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

Figure 3

MODEL T22 Plus		A (mm)	B (mm)	C (mm)	kg
50L	L	1350	700	1850	165
	M				168
	H				170
100L	L	1350	700	1850	168

MODEL T40 Plus		A (mm)	B (mm)	C (mm)	kg
50L	L	1350	700	1850	189
	M				191
	H				194
100L	L	1350	700	1850	192

MODEL T40W Plus		A (mm)	B (mm)	C (mm)	kg
50L	L	1350	700	1850	194
	M				196
	H				199
100L	L	1350	700	1850	197

[NOTE]

Model T40WPLUS H AA for vacuuming asbestos, TRGS 519 regulation.
This model complies with all the technical data of model T40WPLUS H.

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 power supply

WARNING!

- ***Make sure there is no evident sign of damage to the vacuum cleaner before starting work.***
- ***Before plugging the vacuum cleaner into the electrical mains, make sure the voltage rating indicated on the data plate corresponds to that of the electrical mains.***
- ***Plug the vacuum cleaner into a socket with a correctly installed ground contact/connection. Make sure that the vacuum cleaner is turned off.***
- ***The plugs and connectors of the connection cables must be protected against splashes of water.***
- ***Check that for proper connection to the electrical mains.***
- ***Use the vacuum cleaners only when the cables that connect to the electrical mains are in perfect condition (damaged cables could lead to electric shocks!).***
- ***Regularly check there are no signs of damage, excessive wear, cracks or ageing on the electric cable.***

WARNING!

When the vacuum cleaner is operating, do not:

- ***Crush, pull, damage or tread on the cable that connects to the electrical mains.***
- ***Only disconnect the cable from the electrical mains by removing the plug (do not pull the cable).***
- ***Only replace the electric power cable with one of the same type as the original: H07 RN - F. The same rule applies if an extension is used.***
- ***The cable must be replaced by the manufacturer's Service Centre staff or by equivalent qualified personnel.***

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Extensions

If an extension cable is used, make sure it is suitable for the power input and protection degree of the vacuum cleaner.

WARNING!

ATEX variant: extensions, plugged in electrical devices and adapters cannot be used when the vacuum cleaner is used for flammable dust.

Minimum section of extension cables:
Maximum length = 20 m
Cable = H07 RN - F

Max power (kW)	3	5
Minimum section (mm^2)	2.5	4

WARNING!

Sockets, plugs, connectors and installation of the extension cable must maintain the IP protection degree of the vacuum cleaner, as indicated on the data plate.

WARNING!

The vacuum cleaner's power socket must be protected by a differential circuit-breaker with surge current limitation, that shuts off the power supply when the current discharged to the ground exceeds 30 mA for 30 ms or an equivalent protection circuit.

WARNING!

Never spray water on the vacuum cleaner: this could be dangerous for persons exposed and could short circuit the power supply.

WARNING!

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

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.

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, the plug must be removed from the socket.

- ***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 void the EC declaration of conformity issued with the device.

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Technical specifications

Parameter	Units	T22 Plus	T40 Plus	T40W Plus
Dust classes		L - M - H		
Voltage (50 Hz)	V	400	400	400
Power rating (T_Plus / T_Plus Z22)	kW	2.2	4.3	4
Power rating (EN 60335-2-69) (50 Hz) (T_Plus / T_Plus Z22)	kW	2.1	2.7	3.4
Power rating (T_Plus Z2 / T_Plus Z21)	kW	4	7.5	7.5
Power rating (EN 60335-2-69) (50 Hz) (T_Plus Z2 / T_Plus Z21)	kW	-	-	-
Noise level (Lpf) (EN60335-2-69)	dB(A)	67	71	71
Protection	IP	55 / 65(**)	55 / 65(**)	55 / 65(**)
Electrical protection (Insulation)	Class	I	I	I
Insulation class of motor	Class	F	F	F
Container capacity	L	100 | 50	100 | 50	100 | 50
Inlet (diameter)	mm	70	70	70
Max vacuum with limiting valve (T_Plus / T_Plus Z22)	hPa - mbar	210	360	190
Max vacuum with limiting valve (T_Plus Z2 / T_Plus Z21)	hPa - mbar	260	350	230
Maximum air flow rate(without hose and reductions)	m^3/h - L/min'	315 - 5250	315 - 5250	489 - 8150
Maximum air flow rate (with hose, length: 3 m, diameter: 50 mm)	m^3/h - L/min'	270 - 4500	270 - 4500	420 - 7000
Hoses allowed for “L” and “standard” classes (diameter)	mm	70(*)/50	70(*)/50	70(*)/50
Hoses allowed for “M” and “H” classes (diameter)	mm	50	50	70/50
Main filter surface for “standard”, “L” and “M” classes	m^2	1.95	1.95	3.5
Cartridge filter surface	m^2	5.25	5.25	5.25
Upstream absolute “H” filter surface	m^2	3.5	3.5	3.5
Absolute filter efficiency (EN 1822)	%	99.995 (H14)	99.995 (H14)	99.995 (H14)
Downstream “ULPA 15” absolute filter surface	m^2	8	8	8

(*) Only for non-ATEX use
(**) T__ Plus Z21

Dimensions

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Figure 4

Model	T22 Plus		T40 Plus		T40W Plus	
	100L	50L	100L	50L	100L	50L
A (mm)	1290	1290	1290	1290	1290	1290
B (mm)	600	600	600	600	600	600
C (mm)	1540	1260	1540	1260	1640	1360

- *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%

Safety devices

Figure 5

1. Vacuuming unit
2. Limiting valve
3. Clapet

WARNING!

Do not tamper any limiting valve setting.

Controls, indicators and connections

Figure 6

1. Dust container release lever
2. Castor lever
3. Manual filter shaker knob
4. Vacuum gauge
5. Start/stop switch (standard versions)
6. Filter shaker button (only for version with electric filter shaker)
7. Cover band lever
8. Safety bolt (H class)
9. Electric power cable
10. Handle
11. Control and check panel (versions with electric filter shaker, solid material retaining sensor or cartridge filters)
12. Inlet plug (M, H versions)

Inspections prior to starting

Figure 7

1. Inlet

Prior to starting, check that:
- the filters are installed
- all latches are tightly locked
- the vacuum hose and tools have been correctly fitted into the inlet (**1**)
- the bag or safety dust container is installed, if applicable.

WARNING!

Do not use the device if the filter is faulty.

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Starting and stopping

Figure 8

WARNING!

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

Standard version

- Turn the switch (**2**) to “I” position to start the vacuum cleaner.
- Turn the switch to “0” position to turn the vacuum cleaner off.

Versions with electric filter shaker, solid material retaining sensor or cartridge filters

- Turn the main switch (**3**) to “I” position.
- Press the button (**4**) to start the vacuum cleaner.
- Press the button (**5**) to stop the vacuum cleaner.
- Turn the main switch (**3**) to “0” position to turn the vacuum cleaner off.

Checking the rotation direction of the vacuum unit motor

Check the vacuum cleaner operation by putting a hand on the inlet.
If the vacuum cleaner does not vacuum any air, the rotation direction is not correct; remove the plug from the socket and turn the selector inside the plug to perform the correct phase connection.

Vacuum cleaner operation

Figure 9

Vacuum gauge (**2**): green zone (**3**), red zone (**1**)

Check the flow rate:
- when the vacuum cleaner is operating, the pointer of the vacuum gauge must remain in the green zone (**3**) to ensure that the speed of the intake air does not drop below the safety value of 20 m/sec;
- if the pointer is in the red zone (**1**) it means that the speed of the air in the vacuum hose is less than 20 m/s and that the vacuum cleaner is not operating in safety conditions. The filters must be shaken or replaced.
- during normal operation conditions, close the vacuum hose, the pointer of the vacuum gauge must switch from the green zone (**3**) to the red zone (**1**).

WARNING!

If the vacuum cleaner belongs to the M or H class, use only hoses with diameters that comply with the indications in the Technical data table.
This is done in order to prevent the air speed from dropping below 20 m/sec.

WARNING!

When the vacuum cleaner is operating, always check that the vacuum gauge pointer remains in the green zone (3).
Consult the “Troubleshooting” chapter if faults occur.

WARNING!

Class H AA - Asbestos variant:
- ***This variant has a 70 mm diameter exhaust port where the exhaust hose is connected.***
  Only D = 70 mm is tolerated.
  Only an exhaust hose with D = 70 mm and L < 5 m can be used (Fig.14a)
- ***Shut the inlet with an appropriate plug when transporting the vacuum cleaner (Fig.14)***
- ***Comply with all other prescriptions for class H vacuum cleaners.***

Shaking the primary filter

Figure 9-10

Depending on the vacuumed dust quantity and if the pointer of the vacuum gauge switches from the green zone (**3**, Fig. 9) to the red zone (**2**, Fig. 9), turn the vacuum cleaner off and shake the main filter with the knob (**1**, Fig. 10).
If the vacuum cleaner is equipped with electric filter shaker, press and hold for a few seconds the button (**6**, Fig. 6). When releasing the button, the filter shaker stops.

WARNING!

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

Wait a few seconds before restarting the vacuum cleaner, to allow the dust to settle. Replace the filter element if the pointer still remains in the red zone (**1**, Fig. 9) even after the filter has been shaken (consult the “Primary filter replacement” paragraph).

Emergency stopping

Turn the main switch to “0” position.

Emptying the dust container

WARNING!

- ***Before proceeding with these operations, turn off the vacuum cleaner and remove the plug from the power socket.***
- ***Check the class of the vacuum cleaner.***

Before emptying the container it is advisable to shake the filter (see “Shaking the main filter” paragraph).

Plastic bag (Class L only)

A plastic bag can be used to collect dust (see Fig. 11).
In this case, the vacuum cleaner must be equipped with optional accessories [depressor (**3**) and grid (**2**), Fig. 11].

Versions for dusts harmful to health

- Classes L, M, H suitable for vacuuming hazardous and/or carcinogenic dust (H AA class)

Paper bag

Class **M** vacuum cleaners are supplied with the dust bag - code 81584000 (Fig. 11).
Class **M** vacuum cleaners must always be used with this bag installed. If the bag isn’t installed or is installed incorrectly, this could create health risks for persons exposed.

Safe Dust Bag

Class H vacuum cleaners are supplied with the dust bag - code 4084001014 (Fig. 12).
Class H vacuum cleaners must always be used with this bag installed. If the bag isn’t installed or is installed incorrectly, this could create health risks for persons exposed.

Replacement of hazardous dust bags

WARNING!

- ***These operations can only be carried out by trained and qualified personnel who must wear adequate clothing, in compliance with the laws in force.***
- ***Take care not to raise dust when this operation is carried out. Wear a P3 protective mask.***
- ***In case of hazardous and/or harmful dust, use only the bags recommended by the manufacturer (see “Recommended spare parts”).***
- ***The container and/or bag must only be disposed of by qualified personnel and in compliance with the laws in force.***

Replacement of the paper bag (Fig. 12)

- Close the inlet by using the relevant cap (**1**).
- Release the dust container.
- Remove the bag and close it with the relevant cap as shown in figure 11.
- Insert a new bag, making sure the bag inlet is sealed.
- Replace the dust container in the vacuum cleaner.

How to replace the safe bag for class H vacuum cleaners (Fig. 13)

- Remove and put the vacuum hose in a safe and dust-free place.
- Close the inlet by using the relevant cap (**1**).
- Release the dust container.
- Close the Safe Bag by pulling the “guillotine” (**2**) seal.
- Close the plastic bag hermetically using the relevant band (**3**).
- Use the sticky tape (**4**) to close the bottom of the plastic bag.
- Remove the relevant connection (**5**) of the bag from the inlet.
- Insert a new safe bag, making sure the bag inlet is sealed.
- Wrap the plastic bag around the dust container external wall.
- Replace the dust container in the vacuum cleaner.

WARNING!

In case of ATEX industrial vacuum cleaners, ensure that the dust container lock lever is not covered by the plastic bag, and that the container conductivity is checked.

- Set the dust container into the vacuum cleaner again.

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At the end of a cleaning session

- Turn off the vacuum cleaner and remove the plug from the socket.
- Wind the connection cable around the handle (Fig. 14).
- 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 people.
- Shut the inlet with the appropriate plug (**1**, Fig. 14) when the vacuum cleaner is transported or not being used (particularly in the case of M, H versions).

Maintenance, cleaning and decontamination

WARNING!

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

WARNING!

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

- To allow the user to carry out the maintenance operations, the device must be disassembled, cleaned and overhauled as far as is reasonably possible, without causing hazards for the maintenance staff or other people. The suitable precautions include decontamination before disassembling the device, adequate filtered ventilation of the exhaust air from the room in which it is disassembled, cleaning of the maintenance area and suitable personal protection.
- If the vacuum cleaner belongs to the M or H class, the external parts must be decontaminated by cleaning and vacuuming methods, dedusted or treated with sealant before being taken out of a hazardous zone.
  All parts of the device must be considered as contaminated when they are removed from the hazardous zone and appropriate actions must be taken to prevent dust from dispersing.
  When maintenance or repair procedure are carried out, all the contaminated elements that cannot be properly cleaned, must be eliminated.
  These elements must be disposed of in sealed bags in accordance with applicable regulations and local laws on the disposal of such material.
  This procedure must also be followed when the filters are eliminated (main, HEPA and downstream filters).
  Compartments that are not dust-tight must be opened with suitable tools (screwdrivers, wrenches, etc.) and thoroughly cleaned.
- A check must be carried out by the manufacturer or the personnel of the same at least once a year. For example: Check the air filters to find out whether the air-tightness of the vacuum cleaner has been impaired in any way and make sure that the electric control panel operates correctly.

WARNING!

In particular, on Class H vacuum cleaners, the filtering efficiency of the vacuum cleaner must be checked at least once a year, or more often if required by national legislation. The test method for checking the filtering efficiency of the vacuum cleaner is indicated in standard EN 60335-2-69, par. AA.22.201.2.
If the test isn’t passed, it must be repeated after the class H filter has been changed.

Primary and absolute 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;***
- ***close the bag hermetically;***
- ***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.

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Primary filter replacement

Figure 15

1. Vacuum hose
2. Release lever
3. Cover
4. Clamp

WARNING!

Check the vacuum cleaner class (L, M, H).

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.
Before proceeding with these operations, turn off the vacuum cleaner and remove the plug from the power socket.

- Loosen the clamp (**4**).
- Remove the vacuum hose (**1**).
- Use the lever (**2**) to remove the cover (**3**) together with the primary filter.
- Remove the old filter from the cage.
- Fit the new filter and secure it in the cage with special clamps.
- Install the cover and the primary filter in the reverse order of removal.
- Dispose of the old filter according to the laws in force.

If necessary contact the manufacturer's Service Centre.

HEPA filter replacement

Version for dust harmful for the health: Class H

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.

WARNING!

Do not use the Class H filter again after having removed it from the vacuum cleaner.

Primary filter cartridge replacement

Figure 21

1. Vacuum hose
2. Clamp
3. Cap
4. Release lever
5. Filter ring
6. Cartridge assembly
7. Power supply cable
8. Air intake coupling
9. Junction
10. Connector
11. Screws
12. Screws
13. Washer
14. Cartridges

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.

Before performing these procedures, turn off the machine and remove the plug from the power socket, disconnect the compressed air supply by emptying the air tank inside the machine.

- Loosen the clamp (**2**).
- Remove the vacuum hose (**1**).
- Operate the levers (**4**).
- Remove the cover (**3**) and the filter ring (**5**).
- Disconnect the power supply cable (**7**) and the compressed air supply from the air intake coupling (**8**).
- Remove the cartridge assembly (**6**).
- Disconnect the connectors (**10**) and the union (**9**).
- Disassemble the air tank by operating on the screws (**11**).
- Disassemble the cartridges by operating on the screws (**12**) and washers (**13**).
- Assemble the new cartridges.
- Install the cartridge assembly in the in the reverse order of removal.
- Dispose of the old filters according to the laws in force.

If necessary contact the manufacturer's Service Centre.

Upstream HEPA filter replacement

Figure 16

1. -
2. Filter operating knob
3. Cover
4. Lever
5. Safety bolt
6. Stop nut (absolute filter)
7. Absolute filter holder disc
8. Primary filter
9. Clamp fixing screw
10. Primary filter fixing clamp
11. Absolute filter
12. Vacuum hose
13. Vacuum hose clamp

- Stop the vacuum cleaner.
- Loosen the clamp (**13**) with a screwdriver and remove the vacuum hose (**12**).
- Unscrew the knob (**2**).
- Unlock the safety bolt (**5**).
- Use the lever (**4**) to remove the cover (**3**).
- Loosen the screw (**9**) of the primary filter (**8**) fixing clamp (**10**) using a screwdriver.
- Remove the filter holder disc (**7**) with the absolute filter installed and unscrew the nut (**6**).
- Remove the absolute filter (**11**).
- Cover the absolute filter (**11**) with a plastic bag, close the plastic bag hermetically and dispose of the filter in accordance with the laws in force.
- Insert a new filter (**11**) with the same filtering characteristics as the removed one.
- Lock the absolute filter with the nut (**6**).
- Tighten the clamp (**10**) screw (**9**) fixing the primary filter

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(**8**) to the absolute filter holder disc (**7**).
- Insert the cover (**3**) again.
- Close the cover hermetically by means of the lever (**4**) and lock the safety bolt (**5**) again.
- Fit the vacuum hose (**12**) back in place and tighten the calmp (**13**).

[NOTE]

If the vacuum cleaner is ATEX variant: perform galvanic continuity tests as shown in the relevant manual. Standard EN 60335-2-69 prescribes inspections at regular intervals or after repairs or modifications.

Motor cooling fan inspection and cleaning

WARNING!

These operations can only be carried out by trained and qualified personnel.

Periodically clean the motor cooling fan to prevent the motor from overheating, especially if the vacuum cleaner is used in a dusty place. (See Fig. 5)

Tightness inspection

Hoses check

Make sure that connecting hoses are in a good condition and correctly fixed.
If the hoses are damaged, broken or badly connected to the unions, they must be replaced.
When sticky materials are treated, check for possible clogging along the hose (**3**, Fig. 17), in the inlet and on the baffle plate inside the filtering chamber.
Scrape inlet (**3**, Fig. 17) from the outside and remove the deposited waste as indicated in figure 17.

Filtering chamber tightness check

If the gasket (**1**, Fig. 18) between the container and the filtering chamber (**3**) fails to guarantee tightness:
- 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**) once it has reached the tightness position.

If an optimal seal cannot be obtained and the gasket (**1**) is torn or cracked, etc. it must be replaced.

Separator cleaning and replacement (optional)

[NOTE]

If there is only a dust deposit on the separator (3, Fig. 19) allow the dust to drop through the central hole.

The separator (**3**, Fig. 19) should first be disassembled in order to be perfectly cleaned:
- Use the lever (**1**) to remove the cover (**2**) together with the primary filter.
- Unscrew the two screws (**4**) and remove it from the container.

Replace the part if it is excessively worn.
Assemble the components in the reverse order of disassembly.

Device disposal

Figure 20

Dispose of the device in compliance with the laws in force.

- **Proper disposal (electric and electronic waste). (Applicable in the European Union and in countries providing a separate collection system)**

The above symbol (Fig. 20), which is present on the product or in its documentation, indicates that the product cannot be disposed of together with other domestic waste at the end of its life cycle.
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.

Wiring diagrams

Class L, M, H vacuum cleaner

Figure 22

1. Plug
2. Circuit breaker
3. Vacuum cleaner

Vacuum cleaner with cartridge filter and automatic cleaning

Figure 23

1. Power input
2. Phase sequence relay
3. Vacuum cleaner

Figure 24

1. Transformer
2. Voltage indicator
3. White lamp

Figure 25

1. Level check
2. Stop button
3. Start button
4. Motor drive contactor
5. Phase sequence indication
6. Yellow lamp

Figure 26

1. Fuse box
2. Cartridge kit
3. Level check

Figure 27

Item	Type	Description	Q.ty
H1	40000563	White indicator kit	1
H3	40000564	Yellow indicator kit	1
KM1	4083901550	Contactor kW4 24VAC 1NO	1
PA	40000565	Stop button kit (red)	1
PM	40000562	Start button kit (green)	1
Q1	Z8 39915	5.5-8A circuit breaker	1
	Z8 39916	9-12.5A circuit breaker	1
SF1	Z8 391120	Phase sequence relay 400 V	1
TR1	Z8 391050	Transformer 20 VA 400/24 V	1

Figure 28

1. Timer
2. Filter cleaning solenoid valve 1
3. Filter cleaning solenoid valve 2
4. Filter cleaning solenoid valve 3
5. Filter cleaning solenoid valve 4 (presetting)

T1 = Filter cleaning time
T2 = Work hold time
T3 = Time between cleaning cycles

Class L, M, H vacuum cleaner with electric filter shaker or solid material retaining sensor

Figure 29

1. Power input
2. Phase sequence relay
3. Vacuum cleaner
4. Electric filter shaker

Figure 30

1. Transformer
2. Voltage indicator
3. White lamp

Figure 31

1. Level check
2. Stop button
3. Start button
4. Motor drive contactor
5. Phase sequence indication
6. Filter shaker contactor
7. Filter shaker button
8. Yellow lamp

Figure 32

1. Fuse box
2. Level check

Figure 33

Item	Type	Description	Q.ty
H1	40000563	White indicator kit	1
H3	40000564	Yellow indicator kit	1
KM1	4083901550 4083901560	Contactor kW4 24 VAC 1NO	1
KM2	4083901549	Contactor kW3 24 VAC 1NC	1
PA	40000565	Stop button kit (red)	1
PM	40000562	Start button kit (green)	1
PS1	40000598	Yellow button kit	1
Q1	Z8 39915	5.5-8 A circuit breaker	1
	Z8 39916	9-12.5 A circuit breaker	1
Q2	4083901532	Circuit breaker 0.7-1 A S00	1
SF1	Z8 391120	Phase sequence relay 400 V	1
TR1	Z8 391050	Transformer 20 VA 400/24 V	1

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Figure 34

1. Power input
2. Phase sequence relay
3. Vacuum cleaner

Figure 35

1. Transformer
2. Voltage indicator
3. White lamp

Figure 36

1. Stop button
2. Start button
3. Motor drive contactor
4. Phase sequence indication
5. Max level indicator
6. Capacity Sensor
7. Yellow lamp
8. Power input
9. Relay

Figure 37

1. Fuse box
2. Cartridge kit
3. Level check

Figure 38

Item	Type	Description	Q.ty
AL1	Z58 39783	Rectifier stabilized 3A	**1**
H1	40000563	White indicator kit	1
H3	40000564	Yellow indicator kit	1
H4	40000564	Yellow indicator kit	1
K1	Z8 39211 Z8 39118	Relay 24 VDC 2 changes	1
KM1	4083901550	Contactor kW4 24VAC 1NO	1
PA	40000565	Stop button kit (red)	1
PM	40000562	Start button kit (green)	1
Q1	4083901538	5.5-8 A circuit breaker	1
	4083901540	9-12.5 A circuit breaker	1
SF1	Z8 391120	Phase sequence relay 400 V	1
TR1	Z8 391050	Transformer 20 VA 400/24 V	1

Additional information about special versions “Asbestos”

- Asbestos vacuum cleaners (in accordance with German specification TRGS 519)

⚠ WARNING! ⚠

Vacuum cleaner models designed for asbestos are: T40WPLUS H AA.

1. After the asbestos vacuum cleaner has been used in contaminated zones as established by TRGS 519, it cannot be used in a healthy environment. Exceptions are permitted if the asbestos vacuum cleaner has been completely decontaminated (not just the outer casing but also the air cooling zone, the casings where the electric components are assembled (electric panels), the electric components themselves, etc.), by qualified personnel in compliance with TRGS 519 N. 2.7.
   This activity must be reported and recorded in writing by qualified personnel.
2. The filters must be replaced in suitable places (e.g. a decontamination station) by qualified personnel.
3. The filter must only be replaced by qualified personnel in accordance with the instructions given in this manual.
4. When the asbestos vacuum cleaner is being handled and transported, always close the inlet with the relevant plug. If the vacuum cleaner is transported outside the contaminated zone, it must be cleaned as described in point 1.
   Alternatively, the asbestos vacuum cleaner must be carefully closed in a sealed hermetic bag.
   This activity must be reported and recorded in writing by qualified personnel.
5. Fitting the drain hose: insert the hose into the air outlet on the special panel supplied. Fully tighten the supplied screw clamp making sure that the hose is unable to slip off.
6. Only qualified personnel may dispose of the container.

[NOTE]

Also refer to the “Maintenance, cleaning and decontamination” paragraph of this manual for more details about points 2, 3, 4, 6.

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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		
		L	M	H
	Star filter kit	40000338	40000492	
	Star filter kit (T40W Plus)	4089100052	4089100053	
	Filter ring gasket	Z8 17026		
	Filter chamber gasket	40000762		
	Filter clamp	Z8 18079		
	Absolute filter	-	-	4081700935
	Paper Bag - Dust bag (5 bags)	-	81584000	-
	Safe Bag (1 bag)	-	-	4084001014

Troubleshooting

Problem	Cause	Remedy
The vacuum cleaner suddenly stops	Clogged primary filter	Shake the filter. Replace it if necessary
	Clogged vacuum hose	Check the vacuum hose and clean it.
	Circuit breaker activation	Check the setting. Check the motor electrical input. Contact an authorised after-sales service centre if necessary.
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.
The vacuum cleaner blows instead of vacuuming	Incorrect connection to the electrical mains	Ask for assistance from qualified personnel to perform the correct phase connection. See page 8, Starting up chapter
Electrostatic current on the vacuum cleaner	Non existent or inefficient grounding	Check all ground connections. Especially check the inlet.

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