.

ESTA

Operating manual

CE

DUSTOVAC

Item No. 83.109 (DUSTOVAC 5.5 FM)
Item No. 83.110 (DUSTOVAC 5.5FA)
Item No. 83.112 (DUSTOVAC 5.5 Jet)
Item No. 83.103 (DUSTOVAC 7.5 FM)
Item No. 83.105 (DUSTOVAC 7.5 FA)
Item No. 83.107 (DUSTOVAC 7.5 Jet)
Item No. 83.104 (DUSTOVAC 13.0 FM)
Item No. 83.106 (DUSTOVAC 13.0 FA)
Item No. 83.108 (DUSTOVAC 13.0 Jet)

Do not use this device unless you have
read the user manual and understand it.

Original version of the German operating manual
83107-08-01

Warnings and safety instructions

Electrical current hazard

Note

Reference to ESTA customer service

Reference to legal regulations

Contents

1. General safety notes

Before operation, all persons who are to use the dust extractor or perform maintenance on it must be provided with information, instructions and training in using the device and on the substances for which it is to be used, including the procedure for safe disposal of the collected material. Responsibilities must be clearly established for the following:

- **Installation**
- **Start-up**
- **Operation**
- **Maintenance and repair**

The device must be used only by persons who have been instructed in its handling and are explicitly authorized to use it.

Always keep the operating manual at the place where the dust extractor is being used, so that it can be seen by personnel at all times.

The dust extractor is intended only for dry cleaning and must not be used or stored outdoors or under wet conditions.

Only original ESTA replacement parts must be used; use of other products will void the warranty.

During exhaust, the volume flow returned from the dust extractor into the room must be no more than 50% of incoming air. With free room ventilation, the incoming airflow must equal the room volume every hour. This means that the rate of air replacement must be once per hour.

$$\text{Incoming air flow } [m^3/h] = \text{room volume } [m^3] * \text{air replacement rate } [1/h]$$

Example:
When the ESTA dust extractor is operating at the nominal airflow volume of 850 m^3/h, the same volume of fresh air must therefore be fed in. This occurs with natural ventilation if the volume of the work room is 850 m^3 (e.g., 212 m^2 surface with a 4 m ceiling height).

Because the dust extractor / industrial vacuum generates a lot of heat, when selecting a place to operate it, make absolutely sure that the heat exchange is sufficient. The temperature of the location and exhausted air must not exceed 25°C!

No liquids, aggressive gases, easily flammable materials or glowing particles (such as hot embers) may be aspirated.

Make sure that the power cable does not become damaged by being run over, compressed, pulled, etc.

The power cable must be examined regularly for signs of damage or ageing.

The device must not be used if damage to the power cable is determined.

The power cable and plug must be replaced only by an appropriately trained electrical specialist.

For the power supply and the device's power cords, only original ESTA replacement parts must be used. This guarantees that they are spray-proof according to applicable standards and have the necessary mechanical strength.

The power cord must be plugged in only after the dust extractor has been successfully set up at its place of use. For this, a 16-amp CEE wall socket (DUSTOVAC – 5.5) with a 16-amp fuse, or a 20-amp CEE wall socket (DUSTOVAC – 7.5) with a 20-amp fuse, or a 32-amp CEE wall socket (DUSTOVAC – 13.0) with a 32-amp fuse must be in place.

Only plugs and connectors complying with VDE 0165 must be used for connecting electrically driven industrial exhausts and dust extractors. Coupling plugs and connectors or adapters are not permitted.

When replacing the power cable, only a rubber-sheathed cable of the type shown below can be used.

Device	**Power supply cord, type designation**
DUSTOVAC - 5.5	H07RN 5 x 2.5mm²
DUSTOVAC - 7.5	H07RN 5 x 4mm²
DUSTOVAC - 13.0	H07RN 5 x 6mm²

For replacing the electrical plug, a type SH/32 A CEE plug (DUSTOVAC 5.5 kW) with a built-in phase inverter must be used.

When replacement of the power or device connection cables becomes necessary, no deviation from the manufacturer's design is permitted.

The power cord must be plugged in only after the dust extractor / industrial vacuum has been successfully set up at its place of use. The connection is made at a CEE socket (e.g., wall socket) with a time-lag fuse.

Device	Time-delay fuse
DUSTOVAC - 5.5	16 A
DUSTOVAC - 7.5	20 A
DUSTOVAC - 13.0	32 A

After use, before moving the devices to another site and before cleaning, maintenance, or replacement or removal of movable parts, the device must be unplugged and the compressed air disconnected.

2. Preventing mechanical hazards

All movable machine parts driven by electric motors must be covered by fixed, securely fastened protective covers that can be removed only with tools.

Residual risk:
If a covering that can only be unfastened with a tool is removed, there is risk of injury if the machine is running.

3. Preventing electrical hazards

All electrical parts must be covered by fixed, securely fastened protective covers that can be removed only with tools. The device complies with Protection Class I according to EN 60 335.

Residual risk:
If a covering that can only be unfastened with a tool is removed, a hazard is posed by electric current.

4. Preventing dust hazards

Using a one-way dust collection bag with a closable opening guarantees low-dust removal of the collected material.

Residual risk:
When emptying the dust collection bag, it is possible to inhale dust. Following the instructions in section 9 “Disposing of collected materials” will minimize this hazard.

5. Intended use

ESTA dust extractors have been manufactured according to the state of the art and in compliance with safety regulations.

The dust extractors are intended to be used for removing dry, non-flammable, non-toxic dusts or welding fumes.

Aspiration of welding fumes is not permissible with welding of oil-moistened parts.

The dust extractor must not be used or stored outdoors or under wet conditions.

The dust extractors are suitable for commercial use, such as in industrial enterprises and workshops.

DUSTOVAC dust extractors are equipped with a filter for dust class “M” (moderate hazard) for separation of dust/smoke with an exposure limit of more than 0.1 mg/m³.

Other applications are considered unintended use. ESTA is not liable for damages due to unintended use!

ESTA sets up the dust extractor according to the operator’s information.

When connecting a suction hose, make sure to use only electrically conductive hoses and that the electrical connection between the hose and the port is perfect. If a so-called “spiral hose” is used, the metal spirals must be stripped and pressed to the bare wall of the exhaust port with a pipe clamp after the hose is attached.

Only plugs and connectors complying with VDE 0165 must be used for connecting electrically driven industrial exhausts and dust extractors. Extension cords, coupling devices and adapters are not permitted.

6. Technical data and description

6.1 Technical data

DUSTOVAC		5.5	7.5	13.0
Max. airflow volume	[m³/h]	480	850	1,100
Max. vacuum Inlet	[Pa]	24,500	25,000	22,000
Connection voltage	[V]	400		
Drive output	[kW]	5.5	7.5	13
Power frequency	[Hz]	50		
Filter area	[m²]	9.6		
Intake port diameter	[mm]	70	100	125
Dust container	[litres]	200		
Dimensions (L x W x H)	[mm]	1,830 x 782 x 2,040		
Weight	[kg]	230	250	305
Production year		See model plate		

technical changes reserved

6.2 Functional description

Depending on the model, the DUSTOVAC is equipped with a side channel compressor with 5.5 kW, 7.5 kW or 13.0 kW output. The main switch cuts off power to the device, and the device is turned on and off with the red-green double push button.

The vacuum created by the side channel compressor draws air through the suction hose connected to the intake port. A permanent filter set up within the filter housing separates the dust that is in the exhausted air. The purified air is guided back into the room through the exhaust vents.

The DUSTOVAC is equipped with a vacuum monitor as a control device for overseeing minimum airflow volume. This monitoring device measures the vacuum in the filter. With increased dust soiling of the filter, the flow resistance increases along with the vacuum behind the filter. If the value set on the vacuum monitor is reached, a siren sounds. This means that the minimum airflow volume has fallen to the limit and that the filter must be cleaned.

Depending on the model, filter cleaning is handled in various manners. The cleaning clears the filter of dust and refurbishes it. The dust collection container underneath the filter catches the dust that is cleared.
For easier removal of the collected material, the upper part can be tipped backwards and the dust collection container removed from the device complete with its contents.

7. Delivery and commissioning

7.1 Delivery and transport

At delivery, the DUSTOVAC is fastened to a pallet. After the protective cover and the bottom fasteners have been removed, the device can be lifted from the pallet with a forklift. Please use a crane.

Upon delivery, please inspect the device for transportation damage. Damage determined must be reported and documented immediately.

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7.2 Commissioning

Only persons authorized under Section 1 are allowed to turn the dust extractor on or off.

Before setting up the cable connection between the device and the power grid, check to make sure the operating voltage shown on the manufacturer's plate is the same as that of the grid.

The dust extractor must be placed on a level surface as near as possible to the processing machine. Lock the device's two wheels. During operation, the device's location should not be changed.

Jet cleaning
The cleaning equipment for the filter elements requires oil- and water-free compressed air (4-6 bar at the compressed air nozzle) at the attached coupling. The quarter-inch plug nipple can be connected with a DN 7.2 ¼-inch coupling to the compressed air network. For safety, the connection to the compressed air network should not be made until the device is at its set-up area.

Make sure that when the suction equipment is connected the dust extractor is turned on first, and then the dust-producer. When switching off, follow the same procedure in reverse.

Before the dust extractor is used, its operation must be tested.

To start up the dust extractor, the red-yellow main switch is turned to the “I” position. This switch also serves as an emergency shut-off and can be secured with a lock against unintentional activation. Then the device can be started up by pressing the green button on the double push button. The red button is for shut-off.
Optionally, the device can be equipped with an additional rotary switch (see section 12).
During manual operation, this switch must be set to the “HAND” position.
To keep the device’s starting current as low as possible, make sure that the extraction points or the end of the suction hose are not closed.

Pay attention to the direction of rotation.

After turning on the device, make sure that the fan rotor’s direction of rotation is correct. Meanwhile, also look at the red light on the double push button. If this lights up after the device is turned on, the direction of rotation is wrong, and the power supply’s polarity must be reversed. Therefore the CEE plug is equipped with a phase inverter. Using a screwdriver to turn the pole pin built into the insulated part of the plug changes the fan rotor’s direction of rotation.

When the direction of rotation is wrong, the device gets impermissibly hot, the airflow volume gets weaker, and the device’s performance suffers. This can also damage the device.

After connecting the suction hose to the processing machine, first set the dust extractor in motion, and then the processing machine. When switching off, follow the same procedure in reverse.

During operation, the dust extractor’s location should not be changed.

8. Maintenance & troubleshooting

8.1 Maintenance instructions

If the DUSTOVAC is not needed in its location of use for a long time, it must be stored in a dry room. The temperature should not be below 5°C or above 25°C.
Before storage, the DUSTOVAC must be emptied and cleaned.

If necessary, the device can be cleaned with a damp cloth.
It must never be cleaned with flowing water.

For maintenance by qualified personnel, the device must be opened, cleaned and inspected at the given locations, as well as possible, without any hazard being posed to maintenance personnel or other persons. Proper precautions must be taken before cleaning and removal of wearing parts. This includes locally filtered forced-air ventilation in the area in which the device is being maintained, and proper personal protective gear.

During maintenance or repair work, all soiled objects that can no longer be adequately cleaned must be disposed of. Such objects must be discarded in an impermeable bag in compliance with applicable regulations for disposal of such refuse.

The filter on the bypass valve must be cleaned regularly. The cleaning frequency depends on the device's application and environmental conditions.

For cleaning, remove the filter and blow it out with compressed air. The filter is built into the machine housing. For removal, the lid of the machine housing must be removed. The mounting clip of the exhaust silencer must be removed. The filter can be pulled up and screwed off only together with the silencer.

To ensure the device's safe operation and long life, it is both recommended and necessary to inspect it regularly.

8.2 Inspection and maintenance intervals

Regular maintenance consists of 2 intervals:

Daily inspection includes:
By the device's user

Visual inspection for
- damage to the device or its parts,
- mechanical damage to the power cable,
- whether the dust collection container need to be emptied.

Monthly inspection includes:
By expert maintenance personnel

Functional and visual inspection for
- filter leaks (dust trails or deposits on the air outlets)
- whether function of the minimum airflow volume monitor (buzzer) is guaranteed (optional equipment). During inspection, the device's air intake must be closed. If the buzzer sounds, the equipment is in order.

Annual maintenance interval
The operator is obligated to have maintenance performed once per year. During maintenance, the entire system is to be tested by a trained expert for correct operation. A log is to be kept of the main annual inspection in the included maintenance book. It must document the date of inspection, deficiencies determined and the name of the inspector. The date of the next inspection can be read from the test plate installed on the device.

Annual maintenance includes

- Flow volume measurement
- Vacuum measurement
- Current consumption measurement
- Visual check of filters
- Seal inspection

After maintenance, the device receives a new test plate as documentation.

According to work equipment user directives 89/655/EWG and TRGS 560, safety devices for prevention or removal of hazards must be regularly maintained and regularly inspected by an expert for safe, flawless operation.

Maintenance must be performed according to accident prevention regulations. The device must be disconnected from the electrical power and from the compressed air network. Even when the compressed air supply is turned off, the compressed air tank is still under pressure!

Get the most from ESTA's maintenance service!

A maintenance contract ensures long life and top-notch operation for your dust extractor.
We'll make you a great offer — just call us up:

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ESTA replacement part service: +49 (0) 7307 804 – 0

8.3 Troubleshooting

Problem	Possible cause	Possible solution
Motor stalls / motor won't restart	Suction through filter stopped (suction through bypass) Low grid voltage / device overload	Clean the filter, and empty the suction line and dust collection container. Let the device rest for about half an hour; then normal work with the device can resume.
Warning signal for low suction volume persists despite filter cleaning.	Dust collection container too full Filter clogged	Empty Replace filter
Suction performance diminishes /	Suction hose clogged	Clean the exhaust hose in an environmentally sound manner

When emptying the dust collection container, the person performing the work must wear a particle filter class P3 respirator mask, protective clothing and gloves.

9. Monitoring the minimum airflow volume

The device is equipped with a vacuum monitor as a safety device for overseeing minimum airflow volume. This monitoring device measures the vacuum in the filter. With increased dust soiling of the filter, the flow resistance increases along with the vacuum behind the filter. If the value set on the vacuum monitor is reached, a siren sounds. This means that the minimum airflow volume has fallen to the limit and that the filter must be cleaned. For this, the device must be turned off.

10. Cleaning

The people assigned to cleaning work must be instructed on the aspirated toxic materials and wear a breathing protection mask with a class P3 particle filter, as well as protective gloves. All distractions by uninvolved persons must be prevented.

During cleaning work, all soiled objects that can no longer be adequately cleaned must be disposed of. Such objects must be discarded in an impermeable bag in compliance with applicable regulations for disposal of such refuse.

If fine dust is being exhausted, the filter needs to be cleaned more often.

A safety device is built into the device in the form of a pressure controller for monitoring the minimum airflow volume to be exhausted. A signal sounds if the filter must be cleaned (with jet cleaning: when an additional cleaning is needed).

10.1 Manual cleaning

If the filter is to be cleaned, wait about a half minute after turning off the device, to allow the suction assembly to come to a standstill. For cleaning the filter, turn the hand crank on the filter part 60 times rightward and then 60 times leftward.

10.2 Pneumatic compressed air cleaning

Pneumatically operated filter cleaning is built into the device. During filter cleaning, streams of compressed air from the clean air side of the filter remove filter cakes from the dust-laden side. The blow nozzles are driven by an electromagnetic mechanism that leads compressed air streams over the entire surface of the filter. After the suction unit is shut off from the double push button (red button), filter cleaning begins after a delay set at the factory (about 30 seconds). A white light built into the push button blinks to show that it is time for cleaning. The cleaning process is set for about two to three minutes and is signalled by a continuous glow from the white light in the push button. Additionally, filter cleaning can be turned on with the “Start cleaning” push button, e.g., when the filter is heavily soiled. Filter cleaning can be interrupted at any time by turning on the suction unit at the double push button (green button).

10.3 Jet cleaning

Pneumatically operated filter cleaning, so-called jet cleaning, is built into the device. During operation, the four built-in filters are automatically cleaned in sequence, as long as the vacuum set on the differential pressure switch has been reached.

Additionally, the filters can be cleaned manually with the side channel compressor turned off (the main switch must remain on) by pressing the push button marked “Clean”.

Each filter will be cleaned by at least one compressed air blast. The manual cleaning process can be repeated as often as needed. However, cleaning must be done anytime the horn signal sounds.

During inspection to see if the dust collection bag is already full, you must wait about one minute after cleaning so that the removed dust can settle, before the upper part of the filter is tilted back.
If the warning signal still immediately sounds again after the device has been cleaned and started, check the amount of material in the dust collection equipment. If necessary, empty the container (12). If the signal still sounds, replace the main filter (Section 11).

10.4 Cleaning the bypass valve

The filter on the bypass valve must be cleaned regularly. The cleaning frequency depends on the device's application and environmental conditions.

For cleaning, remove the filter from the machine housing and blow it out with compressed air. For removal, the lid of the machine housing must be removed first, and then the mounting clip of the exhaust silencer. The filter can be pulled up and screwed off only together with the silencer.

10.5 Filter replacement

Filter replacement must be performed in a well-ventilated room or outdoors. The people assigned to this work must be instructed on the aspirated toxic materials and wear a breathing protection mask with a class P3 particle filter, as well as protective gloves. All distractions by uninvolved persons must be prevented.

After an extended operation period, the filter pores can be clogged by extremely fine dust. Even the cleaning equipment cannot remove this dust. The filter must be replaced with a new one.
If possible, filter replacement must be done when there is no work going on. Used filters must be discarded in compliance with local regulations.

Before the filter is replaced, it must first be cleared of loose dust using the available cleaning system. The filter is removed as follows:

10.5.1 For devices with manual cleaning

Remove the crank from the cleaning device in order to loosen the threaded fastening pin. Now the crank can be pulled out. After that, loosen the clamping ring that holds the cover plate and remove the cover plate. Loosening the clamping ring can be easier if the device has been turned on and the exhaust port closed. The four fastening bolts of the now-visible bearing block must be removed. The bearing block can be removed along with the shaft. Pull the dust collection bag over the upper part of the vacuum. The upper part will now tilt backwards. On the underside of the filter part, six nuts are visible (M8, SW 13); remove them. Now the used filter can be pulled out of the upper part while being pulled upward against the cleaning shaft. In this way, the dust collection bag turns over the entire filter, so that no dangerous dust enters the environment. Close the dust collection bag with the supplied band so that no dust can escape. Install the new filter by performing the same process in reverse.

10.5.2 For devices with pneumatic filter cleaning

Next loosen the clamping ring that holds the cover plate and remove the cover plate. Loosening the clamping ring can be easier if the device has been turned on and the exhaust port closed.
Tilt the upper part backward, and remove the lock nut in the middle of the filter cartridge. Now remove the six nuts on the filter cartridge, and pull a dust collection bag from under over the upper part. A second person must hold the filter from underneath, so that it won't fall into the dust collection container.

Install the new filter by performing the same process in reverse.

When installing and removing, make sure that the blower device does not become damaged and it doesn't drag against the filter bottom during operation.

10.5.3 For devices with jet cleaning

First loosen the clamping ring that holds the cover plate and remove the cover plate. Loosening the clamping ring can be easier if the device has been turned on and the exhaust port closed.
Remove the compressed air hose, the connecting plug from the compressed air vessel to the power cable, and both bolts below the compressed air vessel, so that the compressed air vessel can be removed.
Now the filter cartridge's three bolts can be removed. Cover the upper part with a dust collection bag (order No. 06000358) and pull the cartridge out. Do the same with each of the cartridges.

Install the new filter by performing the same process in reverse. During installation, make sure to place a new rubber gasket at the bottom of each cartridge.

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ESTA replacement part service: **+49 (0) 7307 804 - 0**

11. Disposal

When emptying the dust collection container, the person performing the work must wear a particle filter class P3 respirator mask, protective clothing and gloves.

11.1 Disposing of collected dust materials

After using the device, always replace the dust collection bag when it has reached the container's maximum fill height, which is identical with the upper edge of the viewing window. If dusts with high apparent density are being exhausted, it must be determined how much content still allows disposal of the dust collection bag dust-free.

Before replacing the dust collection bag, lock both castors and clean the filter by starting the cleaning equipment. Then lift the locating pin and the intake port and remove the suction hose. Tilt the filter portion (upper part) of the device backward after opening the latch. Turn the device's suction unit back on. To remove the dust collection bag, pull it carefully upward, press it together, close it with the included strip, and take it out of the container. To ease removal of the dust collection bag, the dust collection container can be separated from the device's movable stand by releasing both lateral attachment latches. Dispose of the collected material in keeping with local regulations.

After removal of the dust collection bag, attach the dust collection container back to the movable stand, and insert the new dust collection bag while the device is running. Make sure that the bag lies smooth against the container walls and that the upper edge has as few wrinkles as possible. Now turn the device off. Put the upper part back into horizontal position, close the latch, and insert and lock the suction hose. The device is now ready to operate again.

11.2 Disposing of the exhaust device

Before disposing of the exhaust device, empty the dust collection container, remove the filter cartridges, and dispose of both of them in compliance with local regulations.

Pack the device in a suitable manner and dispose of it in compliance with local regulations.

Due to contamination of the device with toxic dust, ESTA cannot take the device back.

12. Optional equipment

Start-up with potential-free contact

Optionally, the device can be equipped with start-up through an external potential-free contact. This means there can be a coupling between the device's fan and a processing machine connected to it. In this case, the processing machine starts and stops the fan. The grey rotary switch on the switch box must be set to "AUTO" for this operating mode. In the "HAND" setting, the device is operated as previously described.

PIN 1 and 2 of the external potential-free contact are connected to the plug (packaged with the device). Pin 3 is reserved for the neutral wire. This is needed only when using special ESTA accessories.
(Please follow the enclosed switching documentation!)

All electrical installations necessary to starting up the DUSTOVAC, as well as electrical modifications and installation work to the processing machines, must be done only by an electrical specialist.

When the processing machines are connected, the device's fan can start running by itself at any time!

When maintenance work is being done to the device, therefore, the control cable to the control box must be disconnected, and the main switch must be set to "0" and secured with a padlock against unintentional start-up! The electrical plug must be pulled.

When maintenance work is being done to the connected processing machines and devices or control units, the control cable to the ESTA device must be disconnected, and all main switches must be set to "0" and secured, if possible, with a padlock against unintentional start-up! Additionally, the electrical plug must be pulled. If this is not possible, take appropriate measures to ensure that all machines are free of current. This applies to all machines connected to the system.

13. Declaration of conformity

Name of manufacturer: ESTA APPARATEBAU GmbH & Co.
Address of manufacturer: Gotenstraße 2 - 6
89250 Senden

Here we explain that the design of the machine

Machine: Mobile dust extractor and industrial vacuum for exhaust of dusts at individual dust sources and for vacuuming deposited dust

Series: DUSTOVAC
Model: **DUSTOVAC - 5.5, ...7.5, ...13.0**

Conforms to the following regulations:

EC Machine Directive 2006/42/EG,
EC Directive on Electromagnetic Compatibility 2004/108/EG

Reconciled norms used:

EN 12100	Safety of machinery - basic concepts, general design principles
Part 1	Basic terminology, methodology
Part 2	Technical principles and specifications
EN 13857	Safety of machinery, devices and systems; safety distances to prevent hazard zones from being reached
EN 349	Safety of machinery; minimum distances for preventing body parts from being crushed
EN 60 335	Safety of electrical appliances for household and similar use
Part 1	General requirements
Part 2-69	Special requirements for dust and water vacuums
EN 60000-6-3	Electromagnetic compatibility Emitted interference in residential areas, commercial and business operations, as well as small enterprises
EN 60000-6-4	Electromagnetic compatibility Interference immunity in industrial applications
EN 61 000-3	Electromagnetic compatibility
Part 11	Limit values - Limiting voltage changes

Senden, 30 December 2010

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Notes

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