

# OPERATING INSTRUCTIONS



## **FILTOWER F**

Hall Ventilation System

## Welcome to the sphere of suction technology

Your purchase of an **ESTA** machine has been a good decision. The design of our quality products complies with the latest state of the art. **ESTA** products have been devised to provide for clean air at the workplaces at which they are applied. This results in an even more enhanced level of quality and longer machine times and, particularly, healthier working conditions. Should you have any questions pertaining to suction technology issues, please feel free to contact us at any time. Our experts will be gladly at your disposal.

Your **ESTA Absaugtechnik** Team

**DEDUSTING  
EXTRACTION  
CLEANING**

The logo for ESTA, consisting of the word "ESTA" in red, bold, uppercase letters, centered within a gray square background.

# Operating Instructions



## FILTOWER F Fan unit

FILTOWER F-100 (Order no.: 667,100)

FILTOWER F-160 (Order no.: 667,160)

FILTOWER F-200 (Order no.: 667,200)

and variations



Do not use this device unless you have read the operating instructions and understood them.

Original operating instructions  
667100A-08-02

## Edition notice

Original operating instructions

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# 1 General instructions

## 1.1 Target group

This guide is aimed at the following target groups:

Task	Target group	Qualification	Protective equipment
Transportation	Warehouse and logistics staff	Essential knowledge of the warehouse and transport industry	<ul style="list-style-type: none"> <li>- Safety shoes</li> <li>- Safety helmet</li> <li>- Work gloves</li> </ul>
Installation Commissioning Operation	Trained operating personnel	Basic knowledge of the extraction process and the extracted material	<ul style="list-style-type: none"> <li>- Hearing protection</li> <li>- Safety shoes</li> <li>- Safety helmet</li> <li>- Work gloves</li> </ul>
Troubleshooting	Electrical specialist	Technical training with knowledge and experience for identifying and preventing hazards posed by electricity	<ul style="list-style-type: none"> <li>- Hearing protection</li> <li>- Safety shoes</li> <li>- Work gloves</li> </ul>
Servicing / Cleaning	Trained cleaning personnel	Essential knowledge of the extracted materials and how these should be handled in accordance with local regulations	<ul style="list-style-type: none"> <li>- Hearing protection</li> <li>- Safety shoes</li> <li>- Work gloves</li> <li>- Particle filter masks</li> </ul>
Maintenance	Trained maintenance personnel	Essential knowledge of the extracted materials and how these should be handled in accordance with local regulations	<ul style="list-style-type: none"> <li>- Hearing protection</li> <li>- Safety shoes</li> <li>- Work gloves</li> <li>- Particle filter masks</li> </ul>
	Electrical specialist	Technical training with knowledge and experience for identifying and preventing hazards posed by electricity	<ul style="list-style-type: none"> <li>- Safety shoes</li> <li>- Hearing protection</li> <li>- Work gloves</li> </ul>

## 1.2 Tips

Before operation, all persons who are to use the device 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**
- **Commissioning**
- **Operation**
- **Maintenance and repairs**



Read the instructions carefully before working with the device.

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

Always keep the instructions at the place where the device is being used, so that they can be seen by personnel at all times.

These instructions describe the device at the time of first delivery following manufacture.

- Keep the documents throughout the device's service life.
- Pass these and other supplementary documents on to any subsequent owners or users.
- Add all changes to the documents that they obtain.

Check the completeness of the documents and pay attention to their content.

Further documents are available on top of these instructions. You can request any documents required from ESTA.

- Fan unit control manual
- additional maintenance instructions for the filter unit filter
- Additional maintenance instructions for the filter unit: disposal
- Where applicable, instructions on optional equipment



## 2 Product identification

### 2.1 Technical Data

We reserve the right to make technical changes // Observe the specifications on the rating plate

<b>Item no.</b>		<b>667100</b>		<b>667160</b>		<b>667200</b>	
<b>Model</b> <b>FILTOWER</b>		<b>F-100</b>		<b>F-160</b>		<b>F-200</b>	
Drive power	[kW]	2 x 3.0		2 x 4.0		2 x 7.5	
Connection voltage	[V]	400					
Nominal frequency	[Hz]	50	60	50	60	50	60
Nominal current	[A]	8.5	___**	12		20.2	___**
Circuit breaker	[A]	C16A			C32A		
Protection class		IP 54					
Max. vacuum	[Pa]	2,800	___**	2,800	___**	2,800	___**
Max. volume flow	[m <sup>3</sup> /h]	10,000	___**	15,000	___**	20,000	___**
Average sound pressure level LpA*	[dBA]	68		75		78 / 63*	
Dimensions L x W x H	[mm]	2,060 x 1,515 x 3,000		2,060 x 1,515 x 3,310		2,060 x 1,515 x 3,810	
Total weight	[kg]	approx. 900		approx. 1,100		approx. 1,400	
Production year		See model plate					

\* using the enveloping surface method DIN EN ISO 3744, measured at minimum volume flow; noise measurement margin of error approx. 4 dBA

\*\* Custom voltage on request

## 2.2 Intended application

### 2.2.1 Ambient conditions

Ambient temperature	[°C]	5≤9≤40
Rel. humidity	[%]	30 - 70
Min. spatial requirement around the device		1,500
Operator's side (front)		1,000
Right	[mm]	1,000
Left		1,500
Rear		1,000
Top		

### 2.2.2 Intended use

The device has been manufactured based on state-of-the-art technology and according to recognized safety regulations and must be used as intended:

- For commercial use, such as in industrial enterprises and workshops.
- For the separation of dry, non-flammable welding fumes.
- For the separation of smoke from unalloyed and low-alloy steels; e.g. with low nickel and chrome content.
- As a central extraction system for multiple welding workstations.
- Only for dry cleaning.

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

### 2.2.3 Improper use

The device has been manufactured according to the state of the art and recognized safety regulations. Unintended use may cause hazards.

Therefore:

- **Not** for the extraction of flammable welding fumes.
- **Do not** use or store outdoors or in wet conditions.
- **Do not** change the location of the device during suction operation.
- **Do not** set up or operate in dust/gas-explosive areas.
- **Do not** use in painting operations.
- **Do not** connect to processing machines that may produce active ignition sparks or hot embers.
- **Do not** suck up liquids.
- **Do not** suck up aggressive gases.

### 2.2.4 Reasonably foreseeable misuse

- **Do not** suck up hot embers, such as cigarette butts.
- **Do not** cause complete closure of the suction openings.

### 3 Product description

#### 3.1 Device image FILTOWER F



## 3.2 Functional description

### 3.2.1 FILTOWER F-100 & F-160

The device is equipped with two three-phase motors which each drive a radial fan. The device is supplied with or disconnected from the requisite power via the device's main switch. After activation with the device's main switch and switching on at the two motor circuit breakers, the device starts up immediately.

The vacuum created by the fans draws in air through the inlet opening of the device. Permanent filters located in the filter unit separate the dust and welding fumes contained in the air which is sucked in. The purified air is guided back into the room through the outlets.

The device is fitted with a pre-separator / air guide plate. This pre-separator/air guide plate is installed in the intake port, which pre-separates coarse particles and thus prevents these coarse particles being sucked against the filter.

A control unit is integrated into the device. The control unit monitors the volume flow and controls the cleaning of the filter. If the value set in the control system for the minimum volume flow is reached during operation, this is visually displayed on the control panel. At the same time, the filter cartridges are cleaned automatically with compressed air. A pneumatic jet pulse cleaning device is integrated within the device's filter unit for this very purpose. The filters are freed from dust and regenerated through this cleaning.

The disposal unit attached below the filter collects the dust that has been cleaned off. The collection drawer is lowered and pulled out for easier disposal of the collected material. Depending on the material collected, disposal cartons can be inserted into the collection drawer, which are disposed of together with the collected material.

### 3.2.2 FILTOWER F-200

The device is equipped with two three-phase motors which each drive a radial fan. The device is supplied with or disconnected from the requisite power via the device's main switch. After activation with the device's main switch and switching on at the On/Off switch, the device starts up immediately.


Its other functions are the same as the FILTOWER F-100 and F-160.


## 4 Safety


### 4.1 Hazard categories

Safety instructions and cross-topic information are indicated in this manual by symbols.

Based on the severity of the hazard, the hazard warnings are categorized as follows:


	<p><b>DANGER</b></p> <p>Hazard warning about an immediate danger to people. Failure to comply can lead to severe injury or death.</p>
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	<p><b>WARNING</b></p> <p>Warning about a recognisable hazard. Failure to comply can lead to severe injury or death, and can destroy the device or parts thereof.</p>
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	<p><b>CAUTION</b></p> <p>Instruction about a hazard. Failure to comply can lead to mild injury and to damage to the device.</p>
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<p><b>NOTE</b></p> <p>Instruction about a hazard. Failure to comply can lead to damage to the device.</p>
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### 4.2 Symbol explanation

	Further information
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	Reference to ESTA customer service
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	Reference to legal regulations
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### 4.2.1 Symbols on the device



Before commissioning, read and observe the operating instructions and safety instructions (as per ISO 11684).



1. Switch off the device.
2. Wait 5 minutes.
3. Then pull out the collection drawer or open the device.



ESTA service label. Show when and by whom the last maintenance was carried out by the ESTA maintenance service and when maintenance is next planned by the ESTA maintenance service.


### 4.3 General safety instructions

During extraction, the volume flow returned from the device into the room should be no more than 50% of the air supplied. With open room ventilation, supply air flow should be assumed as equal to the room volume every hour. This means that the rate of air replacement must be once per hour.

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

Example:


When the device is operating at the nominal airflow volume of 1,060 m<sup>3</sup>/h, the same volume of fresh air must be fed in. This occurs with natural ventilation if the volume of the work room is 1,060 m<sup>3</sup> (e.g., 353 m<sup>2</sup> surface with a 3 m ceiling height).


	According to work equipment user directives 2009/104/EG 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.
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In all emergencies, the device must be disconnected from the power supply immediately, turned off at the main switch and the plug pulled immediately.

If there is a fire, alert the fire department immediately, and contain the fire by appropriate means. Therefore keep a suitable extinguishing agent near the device before start-up and during operation.

### 4.4 Preventing mechanical hazards





	<b>WARNING</b>
	Crushing hazard due to loose or open covers during operation <ul style="list-style-type: none"> <li>• Keep covers tightly closed during operation!</li> </ul>

	<b>WARNING</b>
	Tripping hazard when collection drawer is pulled out. <ul style="list-style-type: none"> <li>• Always pay attention to the local accident prevention regulations.</li> <li>• Keep a distance from the device when you are not working with it.</li> </ul>

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



## 4.5 Preventing electrical hazards

	<p><b>DANGER</b></p> <p>Electric shock from high voltages</p> <ul style="list-style-type: none"> <li>• Follow the safety rules for working with electrical devices!</li> <li>• Secure the device against reactivation with a padlock!</li> <li>• Isolate device!</li> <li>• Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.</li> </ul>
	<p><b>DANGER</b></p> <p>Electric shock from high voltages if customer's power cable is damaged</p> <ul style="list-style-type: none"> <li>• Do not damage by running over, crushing, straining, etc.</li> <li>• Regularly check the local power cable for damage and ageing.</li> <li>• Do not use if damage has been found on the power cable!</li> <li>• Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.</li> <li>• Use only original ESTA replacement parts.</li> </ul>
	<p><b>DANGER</b></p> <p>High-voltage electric shock when working on the open switch box</p> <ul style="list-style-type: none"> <li>• Turn off at the device's main switch and secure with a padlock against re-activation!</li> <li>• Isolate device!</li> <li>• Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.</li> </ul>
	<p><b>DANGER</b></p> <p>Residual hazard from loose or open covers</p> <ul style="list-style-type: none"> <li>• Keep covers closed during operation!</li> <li>• Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.</li> </ul>

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 60335.

After use, before moving the device to another site and before cleaning, maintenance, or replacement or removal of movable parts, switch off the device at the device's main switch and cut it off from the mains.

### 4.6 Preventing dust hazards

	<p><b>CAUTION</b></p>
	<p>Damage due to dust release</p> <ul style="list-style-type: none"> <li>• Maintenance, cleaning, repair and emptying work must be done only by expert personnel.</li> <li>• Wear personal protective gear.                             <ul style="list-style-type: none"> <li>- Respirator mask (particle filter class P3)</li> <li>- Protective clothing</li> <li>- Protective gloves</li> </ul> </li> <li>• Set up locally filtered forced-air ventilation where the device is being maintained, inspected or cleaned.</li> <li>• Operate the device only with the complete filtration system.</li> </ul>

	<p><b>CAUTION</b></p>
	<p>Damage from dust build-up in the device.</p> <ul style="list-style-type: none"> <li>• Observe the minimum air speed required for your application and the resulting minimum airflow volume.</li> </ul>

When removing the dust collection cartons and the collection drawer, dust inhalation cannot be ruled out. That is why all servicing, cleaning and maintenance procedures, including the removal and emptying of the collection drawer, are only to be performed by specialist personal with personal protective equipment.


The people assigned to cleaning work must be instructed on the aspirated toxic materials. Harm to bystanders and the environment must be prevented by all means. Clean the maintenance area thoroughly once maintenance is complete.



### 4.7 Fire prevention

	<p><b>WARNING</b></p>
	<p>Fire hazard due to welding of oil-covered parts.</p> <ul style="list-style-type: none"> <li>• Carry out internal measures (checks, cleaning) to prevent oily, flammable deposits from forming on the inside.</li> </ul>

## 4.8 Preventing noise hazards


	<b>CAUTION</b>
	<p>Danger of hearing damage from release of compressed air impulses when filter elements are being cleaned</p> <ul style="list-style-type: none"> <li>• Keep device covers closed.</li> <li>• Wear hearing protection.</li> <li>• Only open the device with the compressed air tank depressurised.</li> </ul> <p>To do this:</p> <ul style="list-style-type: none"> <li>- Switch off suction on the control unit.</li> <li>- Wait for the automatic post-cleaning to end</li> <li>- Disconnect the compressed air supply from the device.</li> <li>- Empty the compressed air tank – through the control system if necessary.</li> </ul> <ul style="list-style-type: none"> <li>• Only open the device when stopped.</li> </ul> <p>To do this:</p> <ul style="list-style-type: none"> <li>- Turn the device off at the main switch.</li> <li>- Cut off the power supply.</li> </ul>


The manometer attached to the compressed air tank is used for monitoring the pressure in the tank.


After use, before moving the device to another site and before cleaning, maintenance, or replacement or removal of movable parts, disconnect the compressed air.


## 5 Delivery and commissioning

### 5.1 Delivery and transport

	<b>DANGER</b>
	<p>Danger from falling device</p> <ul style="list-style-type: none"> <li>• Do not walk under heavy loads.</li> <li>• The lifting and transporting equipment must be designed for the weight of the device.</li> </ul>

	<b>WARNING</b>
	<p>Crushing hazard if the device settles during transport</p> <ul style="list-style-type: none"> <li>• Secure the device during transport.</li> <li>• Wear safety shoes.</li> </ul>

	<p><b>CAUTION</b></p> <p>Risk of damaging the device due to improper transport.</p> <ul style="list-style-type: none"> <li>• Do not push the device over the floor if it does not have any rollers.</li> <li>• Use only suitable lifting and transport equipment (such as a forklift or lift truck) when transporting the device to its set-up location.</li> <li>• Watch out for the centre of gravity – which is not in the centre – when positioning.</li> </ul>
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	<p>Make sure the floor has adequate weight capacity and can be properly driven on when transporting the device.</p>
---	---

Permitted sling gear:

- Lifting belt
- Round sling


Permitted lifting gear:

- Forklift trucks
- Crane
- Pallet truck


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

At delivery, the device is fastened to a pallet.

- Remove the protective cover and floor securing devices.
- Check the delivery is complete.
- Attach the device to a permitted sling gear (e.g. lifting belt, round sling) at the positions provided by the eye bolts on the roof.
- Lift the device from the pallet using a crane, and place it upright on the immediately adjacent floor.
- Pay attention to the weight of the device and its centre of gravity during all transport work.

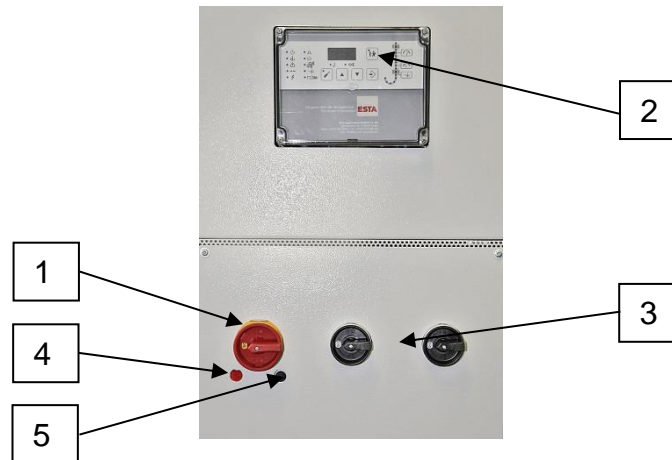
	<p>ESTA customer service:                      +49 (0) 7307 804 - 0</p>
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## 5.2 Connection

	<p>Before establishing cable connections between the device and the mains, check whether the operating voltage specified on the rating plate matches that of the mains.</p>
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Place the device on an even surface as close as possible to the dust source. Ensure the device is aligned horizontally when setting it up.

### 5.2.1 FILTOWER F-100 & F-160 control unit description



The control unit is equipped with the following elements.

#### 1) DEVICE MAIN SWITCH

Device main switch for turning the device on and off.

This switch is also used as the EMERGENCY-OFF facility and renders the device currentless following deactivation. The switch can be secured with a lock against unintentional reactivation.

#### 2) CLEANING CONTROL SYSTEM

The cleaning control system is used as a display and control element for the cleaning. The differential pressure of the filter is displayed. If a set cleaning point is reached, this initiates automatic cleaning.

#### 3) CONTROL PANEL

Suction is started/stopped individually using the motor circuit breakers on the control panel.

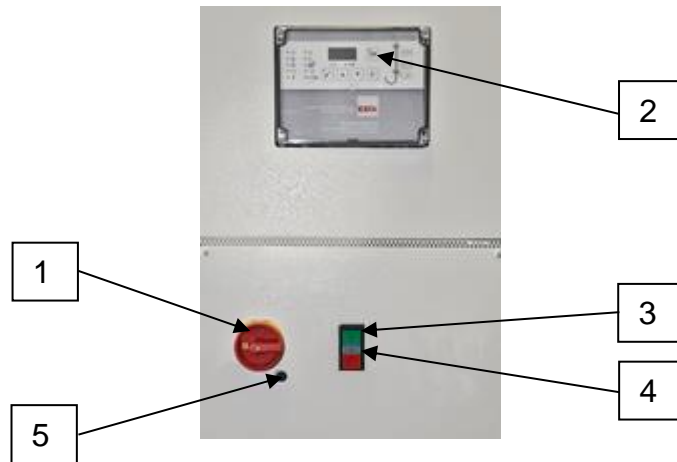
#### 4) PHASE SEQUENCE CONTROL (light)

Lights up when the electrical rotating field is incorrect at start-up.

#### 5) MICROFUSE

Protects the control circuit from overvoltage in the event of a fault.

## 5.2.2 FILTOWER F-200 control unit description



The control unit is equipped with the following elements.

### 1) DEVICE MAIN SWITCH

Device main switch for turning the device on and off.

This switch is also used as the EMERGENCY-OFF facility and renders the device currentless following deactivation. The switch can be secured with a lock against unintentional reactivation.

### 2) CLEANING CONTROL SYSTEM

The cleaning control system is used as a display and control element for the cleaning. The differential pressure of the filter is displayed. If a set cleaning point is reached, this initiates automatic cleaning.

### 3) CONTROL PANEL

Suction is started/stopped using the On/Off switch on the control panel.

### 4) PHASE SEQUENCE CONTROL (light)

Lights up when the electrical rotating field is incorrect at start-up.

### 5) MICROFUSE

Protects the control circuit from overvoltage in the event of a fault.

### 5.2.3 Pneumatic connection

**NOTE**

Risk of corrosion to the compressed air tank or damage to the filter elements when using unfiltered compressed air.

- Use a compressed air maintenance unit to make sure that only oil- and water-free compressed air is fed to the device.

Compressed air is required for the pneumatic jet pulse cleaning of the filter elements in the filter unit. Connect oil and water-free compressed air to ensure operational safety and machine availability.

The connection to the compressed air system is made at the installation location.

		FILTOWER F		
		100	160	200
Compressed air quality (ISO 8573-1:2010-04)		Class 3.2.2		
Pressure	[bar]	3 - 5		
Connection-ø	["]	1/4 (ø9mm)		
Compressed air consumption *	[l/pulse]	approx. 70		

\* at 4 bar with a valve opening time of 0.12 sec.



### 5.2.4 Electrical connection

	<b>DANGER</b>
	<p>Electric shock from high voltages</p> <ul style="list-style-type: none"> <li>Follow the safety rules for working with electrical devices!</li> <li>Secure the main switch against reactivation with a padlock when working on the device.</li> <li>Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.</li> </ul>

A CEE wall socket with a CEE connection plug must be provided on site to supply the device with power.

Connection to the building's power supply is made at the installation location.

		FILTOWER F		
		100	160	200
Device plug	CEE	16	32	
Poles	[Number]	5		
Mains (standard)*		Three-phase current 400V/50Hz 3N ~		
Fuse	[Amp]	C16	C32	

\* Custom voltage on request; observe the specifications on the rating plate.



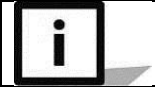
### 5.2.5 Activation operations for motors:

Motors with high output without frequency converters should be not be switched on and off within a short period of time too frequently. Otherwise, electrical components could overload as a result. Please observe the table for activation operations:

Motor output	Activation operations per hour
1 – 4 KW	Up to 8 starts
4 – 7.5 KW	Up to 6 starts
7.5 – 15 KW	Up to 4 starts
15 – 30 KW	Up to 3 starts
From 30 KW	Electronically controlled overrun time



## 5.3 Function check



Before the device is first used, a function check must be performed.

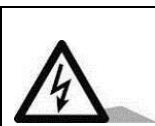
Turn the device's main switch to position "I" for a device function check.

### 5.3.1 Rotation direction monitoring

When the direction of rotation is incorrect, the device becomes impermissibly hot, the volume increases, the airflow volume falls, and the device's suction performance suffers. Damage to the device cannot be ruled out.

After first switching on the device, you should check that the fan rotor's direction of rotation is correct.

1. Switch on the device at the main switch.
2. The signal light of the phase sequence control lights up.
  - Switch off the device at the main switch and secure it against reactivation.



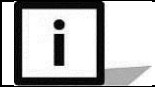
#### **DANGER**

Electric shock from high voltages

- Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.

- Pull the power plug.
  - Turn the phase inverter in the CEE plug.
  - Insert the power plug.
  - Switch on the device at the main switch.
  - The signal light of the phase sequence control no longer lights up.
3. Turn the device off at the main switch.
4. The device is ready for operation.

## 5.4 Commissioning



Use original ESTA accessories.

When the function check is complete, put the device into operation.

For putting into operation:

1. Insert empty disposal cartons (without lid) into the collection drawer. To do this:
  - Pull the lowest cover upwards by the handles.
  - Tip the cover towards you from the top.
  - Remove the cover from the anchoring point.
  - Place the cover in the retaining position in the upper anchoring point.



If no disposal cartons are required in the collection drawer due to the nature of the material collected, the device can also be operated without these.

- Lift up the levers of the lifting device to lower the collection drawer.
- Pull out the collection drawer slowly and carefully.
- Insert new, empty disposal cartons into the bracket of the collection drawer.
- Push the collection drawer fully back into the device.
- Push the lifting device lever down so that the collection drawer is closed upwards tightly.
- Remove the cover from the upper retaining position.
- Place the cover in the lower anchoring point.
- Shut the flap and lock it in a closed position by gently pushing it downwards.



## 5.5 Troubleshooting during commissioning

Fault	Possible cause	Possible solution
The motor shuts down before reaching the operating speed.	The switching devices present are incorrectly set up or unsuitable.	Adjust the switching devices accordingly, provide for potential heavy starts
	Time for star-delta switch incorrectly set.	Check time relay; reset if necessary.
Motor power consumption is too high.	Direction of motor rotation is incorrect.	Rotation direction change by rotating the phases in the supply feed
The desired air quantity is not reached	Direction of motor rotation is incorrect.	Rotation direction change by rotating the phases in the supply feed
The supply cable's preliminary fuse has tripped.	Motor was switched on/off too often within a short period of time.	Please consult the "Activation operations for motors" table.

## 6 Operating instructions

### 6.1 Operating the device

#### 6.1.1 FILTOWER F-100 & F-160

Prior to putting the extraction system into operation each time, you must check that the compressed air is connected, pressure is applied (3–5 bar) and the system is in a safe and operational state.

When starting the suction operation:

1. Turn the suction device on at the device main switch.
2. Switch on the suction by pressing the motor circuit breakers approx. 5 seconds apart.
3. Start the processing operation.

When finishing the suction operation:

1. End the processing operation.
2. Switch off the suction by pressing the motor circuit breakers one by one.  
→ The automatic post-cleaning starts. The device's main switch must remain switched on for around 5 minutes!
3. After a waiting time of around 5 minutes, switch the suction device off at the main switch.  
→ Device is currentless!

### 6.1.2 FILTOWER F-200

Prior to putting the extraction system into operation each time, you must check that the compressed air is connected, pressure is applied (3–5 bar) and the system is in a safe and operational state.

When starting the suction operation:

1. Turn the suction device on at the device main switch.
2. Turn on the suction using the On/Off switch.
3. Start the processing operation.

When finishing the suction operation:

1. End the processing operation.
2. Turn off the suction using the On/Off switch.  
→ The automatic post-cleaning starts. The device's main switch must remain switched on for around 5 minutes!
3. After a waiting time of around 5 minutes, switch the suction device off at the main switch.  
→ Device is currentless!

## 6.2 Jet pulse cleaning



### CAUTION

Danger of hearing damage from release of compressed air impulses when filter elements are being cleaned

- Do not open the device during the cleaning cycle.

A pneumatically-operated filter cleaning system, so-called jet pulse cleaning, is built in to the device. This works in the following ways:

- Automatic cleaning during suction operation
- Automatic post-cleaning
- Manual cleaning

### 6.2.1 Automatic cleaning during suction operation

#### When?

- Suction power weakens.
- The device reaches the preset minimum airflow volume.

#### How?

1. Cleaning cycle starts automatically during suction operation.
2. Pulse-like surges of compressed air are successively introduced into the filter cartridge.
  - Wait at least 5 minutes until the cleaning cycle is complete.

### 6.2.2 Automatic post-cleaning

#### When?

- The suction is switched off at the control unit by pressing the motor circuit breakers.

#### How?

1. Cleaning cycle starts automatically while the suction assembly is still running.
2. Pulse-like surges of compressed air are successively introduced into the filter cartridge.
  - Wait at least 5 minutes until the cleaning cycle is complete.

### 6.2.3 Manual cleaning

#### When?

- At any time during operation.
- The device is switched off and the automatic post-cleaning cycle is complete.
  - E.g. to empty the compressed air tank prior to opening the device.

#### How?


1. Perform a "test function" on the control panel. (See control system manual)
2. Pulse-like surges of compressed air are successively introduced into the filter cartridge.
  - Wait at least 5 minutes until the cleaning cycle is complete.




In the event of manual cleaning, dust may leak from the suction points during cleaning due to the pulse-like introduction of compressed air if the suction assembly is not running.


## 7 Maintenance & troubleshooting

### 7.1 Maintenance instructions

	<b>CAUTION</b>
	<p>Damage due to dust release</p> <ul style="list-style-type: none"> <li>• Maintenance, cleaning, repair and emptying work must be done only by expert personnel.</li> <li>• Wear personal protective gear.                             <ul style="list-style-type: none"> <li>- Respirator mask (particle filter class P3)</li> <li>- Protective clothing</li> <li>- Protective gloves</li> </ul> </li> <li>• Set up locally filtered forced-air ventilation where the device is being maintained, inspected or cleaned.</li> </ul>

	<b>CAUTION</b>
	<p>Danger of hearing damage from release of compressed air impulses when filter elements are being cleaned</p> <ul style="list-style-type: none"> <li>• Keep device covers closed.</li> <li>• Wear hearing protection.</li> <li>• Only open the device with the compressed air tank depressurised.                             <p>To do this:</p> <ul style="list-style-type: none"> <li>- Switch off suction on the control panel.</li> <li>- Wait for the automatic post-cleaning to end</li> <li>- Disconnect the compressed air supply from the device.</li> <li>- Empty the compressed air tank – through the control system if necessary.</li> </ul> </li> <li>• Only open the device when stopped.                             <p>To do this:</p> <ul style="list-style-type: none"> <li>- Turn the device off at the main switch.</li> <li>- Cut off the power supply.</li> </ul> </li> </ul>

For maintenance by qualified personnel, the device must be opened, cleaned and inspected at the given locations. During maintenance or repair work, all soiled objects that can no longer be adequately cleaned must be disposed of. Dispose of such objects in bags impermeable to dust in compliance with the applicable regulations for disposal of such waste.

	<p>Conduct annual repeat examinations VDE 0701 – 0702, VDE 0600. Depending on the mode of operation, the time intervals could be shorter. In this process, the entire system must be checked for its seamless functioning by trained specialist personnel. Keep written proof of the main annual inspection in the maintenance book enclosed. The date of the inspection, detected deficiencies and the name of the auditor must be visible from this. The date of the next maintenance session can be read on the inspection plate installed on the device.</p>
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According to work equipment user directives 2009/104/EG 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.



The maintenance work must be recorded in writing in the maintenance book provided. This must make clear the equipment inspected and, if necessary, the deficiencies found, along with the name of the inspector and the date of the inspection. When there is a malfunction, switch the device off immediately and contact the responsible maintenance service!



Detailed descriptions of the maintenance work are contained in the supplementary maintenance instructions. Please consult them!





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

## 7.2 Inspection and maintenance intervals

<p>The inspection and maintenance intervals specified here refer to normal application conditions.</p> <p>In the event of difficult conditions (e.g. heavy dust accrual, etc.) and longer daily hours of operation:</p> <ul style="list-style-type: none"> <li>Shorten the intervals specified</li> </ul> <p>In the event of occasional use of the device:</p> <ul style="list-style-type: none"> <li>Extend the intervals specified</li> </ul>		Daily Operator	Weekly Operator; specialist maintenance personnel	monthly Specialist maintenance personnel	Half-yearly Specialist maintenance personnel	Annually In collaboration with the ESTA maintenance	In the event of damage	As required
		Whole device	Visual inspection	X				
	Clean			X				
Power cable	Visual inspection	X						
	Replace						X	
Collection container fill level	Visual inspection	X						
	Empty							X
Air guide plate	Visual inspection		X					
	Clean							X
Filter mat on outlet element	Visual inspection				X			
	Replace							X
Volume flow control	Function check			X				
	Configure							X
Trails of dust or deposits on air outlet openings	Visual inspection			X				
Volume flow	Measurement					X		
Negative pressure	Measurement					X		
Power consumption	Measurement					X		
Filter	Visual inspection					X		
	Replace							X
Whole device tightness	Function check					X		
Compressed air tank	Visual inspection					X		
	Discharge condensation					X		X


### 7.2.1 Spare and wear parts

 Use original ESTA replacement and wear parts!

 With the device's model information and serial number, request the replacement parts you need from  
 ESTA replacement part service: +49 (0) 7307 804 - 0

Replacement parts	FILTOWER F-Series		
	100	160	200
Filter cartridge	01001074 4 piece	01001076 4 piece	01001075 4 piece
ePTFE filter cartridge	01001077 4 piece	01001078 4 piece	01001079 4 piece
Disposal carton with lid	30008311 1 set [=06001074 8 pieces]		
Filter mat, outlet	01001089 1 set	01001090 1 set	01001091 1 set
Disposal bag for filters	30000567 1 set [=06000358 10 pieces]		

## 7.3 Filter mat, outlet element

	<p style="background-color: yellow; margin: 0;"><b>CAUTION</b></p> <p>Damage due to dust release</p> <ul style="list-style-type: none"> <li>• Operate the device only with the complete filtration system.</li> <li>• Regularly check whether the filter mats have clogged.</li> </ul>
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Filter mats are installed on the outlet elements at the sides. These must be checked regularly and replaced where necessary. Perform a visual inspection when you remove the outlet elements from the device during cleaning, repair or maintenance work.

### 7.3.1 Visual inspection

Perform this work when operations are not running as far as possible. This work should only be performed by an expert with personal protective equipment who has been trained for this task.

Required tools:

- Ring spanner
- Broom, damp disposal cloth or industrial vacuum cleaner

1. Switch off the suction on the control panel and wait for the post-cleaning.
2. Disconnect the compressed air supply.
3. Empty the compressed air tank – through manual cleaning, if necessary – on the control panel.
4. Disconnect the device from the mains by pressing the main switch.
5. Loosen and remove the fastening screws.
6. If present → detach the potential equalisation from the cover.
7. Take the outlet element cover off.
8. Carry out the visual inspection. If the filter mat is saturated and showing clear deposits it must be replaced. Continue with “7.3.2 Disassembly”
9. Place the cover on the device.
10. If available → Attach potential equalisation to the cover.
11. Insert the fastening screws of the cover and tighten them.
12. Re-attach the compressed air supply.
13. Re-insert the power plug.
14. The device is now ready to operate again.



### 7.3.2 Disassembly

Perform this work when operations are not running as far as possible. This work should only be performed by an expert with personal protective equipment who has been trained for this task.

If during the visual inspection the filter mats were found to require replacing, proceed as follows.

Required tools:

- Ring spanner
  - Cable tie or string (L ~1.5 metres)
  - Disposal bag (ESTA article no.: 06000358)
  - Broom, damp disposal cloth or industrial vacuum cleaner
1. Loosen and remove the fastening screws.
  2. If present → detach the potential equalisation from the cover.
  3. Take the outlet element cover off.
  4. Remove the old filter mat without residue, place it immediately in a disposal bag and seal it.
  5. Attach the new filter mat into the cover.
  6. Place the cover on the device.
  7. If available → Attach potential equalisation to the cover.
  8. Insert the fastening screws of the cover and tighten them.
  9. Re-attach the compressed air supply.
  10. Re-insert the power plug.
  11. The device is now ready to operate again.

## 7.4 Clean the air guide plate

The air guide plate acts as a filter pre-separator. This prevents the ingress of coarse particles into the filter space. Furthermore, it has an air-channelling function, with which the service life of the filter cartridges is improved.

The air guide plate must be checked regularly for adhesions and cleaned where possible. Depending on the type of application, a weekly check of the accessible sides of the air guide plate is necessary. If adhesions are detected in this process, these must be removed.

Perform this work when operations are not running as far as possible. This work should only be performed by an expert with personal protective equipment who has been trained for this task.

Also pay attention here to the supplementary maintenance instructions!

## 7.5 Replacing filter cartridges

After an extended period of operation, the filters clog up slowly due to the ingress of extremely fine dust in the pores. Jet pulse cleaning can no longer remove this penetrated dust. Filters must be replaced with new ones.

Perform this work when operations are not running as far as possible. This work should only be performed by an expert with personal protective equipment who has been trained for this task.

Also pay attention here to the supplementary maintenance instructions!

## 7.6 Clean the device

Clean the device regularly and remove dust deposits, especially on the device cover. To do this:

1. Remove the dust build-up with an industrial vacuum cleaner.
2. Wipe down thoroughly with a damp disposable cloth.
3. **Do not** spray down with a water jet!


### 7.7 Store the device

If the device 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 40°C.

Before the device is stored away,


1. Clean the filter cartridges; install new ones if necessary.
2. Empty the collection drawer and dispose of the collected material according to local regulations.
3. Clean the device inside and out.
  - With a damp disposable cloth.
  - With an industrial vacuum cleaner.
  - **Do not** spray down with a water jet!


### 7.8 Eliminating faults

	<b>DANGER</b>
	<p>High-voltage electric shock when working on the open switch cabinet</p> <ul style="list-style-type: none"> <li>Follow the safety rules for working with electrical devices!</li> <li>Isolate device!</li> <li>Any work on the electrical grid and on voltage-conducting parts may only be performed by an electrical specialist.</li> </ul>

Fault	Possible cause	Possible solution
Suction too weak	Filter soiled.	Clean the filter with manual cleaning "test function"
	Cleaning point set too high, meaning no cleaning of the filter	Contact ESTA customer services to adjust the cleaning point.
Automatic cleaning always starts after switching on the device.	Filter worn.	Perform filter change.
	Collection drawer full.	Replace disposal carton; empty collection drawer if necessary.
	Cleaning point set too low.	Contact ESTA customer services to adjust the cleaning point.
Motor protection trips.	Motor was switched on/off too often within a short period of time.	Please consult the "Activation operations for motors" table.


Fault	Possible cause	Possible solution
Device will not switch on.	Microfuse has blown.	Contact ESTA customer service.
Dust leaks and dust trails at air outlet openings.	Filter breakage	Turn the device off immediately. Then clean the entire device and replace the filter elements (filter cartridges, filter mats, etc.) with new ones.
	Filter inadequately attached.	Check installation of filter elements (filter cartridges, filter mats, etc.).
Smoke development or loud running noises of the fan	Imbalance in the fan.	Turn the device off immediately and have ESTA customer service inspect the fan
	Rotor is scraping on the inlet nozzle or the housing.	Turn the device off immediately and have ESTA customer service inspect the fan
	Noises from the motor.	Turn the device off immediately and have ESTA customer service inspect the fan

	<b>CAUTION</b>
	Damage from dust leaks and dust trails at air outlet openings. <ul style="list-style-type: none"> <li>• Turn off the device immediately using the Emergency-Stop.</li> </ul>


	<b>CAUTION</b>
	Danger from the fan producing smoke and loud running noises <ul style="list-style-type: none"> <li>• Turn off the device immediately using the Emergency-Stop.</li> </ul>



## 8 Disposal

	<b>CAUTION</b>
	<p>Damage due to dust release</p> <ul style="list-style-type: none"> <li>• Emptying and disposal work only to be performed by specialist staff.</li> <li>• Wear personal protective gear.             <ul style="list-style-type: none"> <li>- Respirator mask (particle filter class P3)</li> <li>- Protective clothing</li> <li>- Protective gloves</li> </ul> </li> <li>• Set up locally filtered forced-air ventilation where the device is being maintained, inspected or cleaned.</li> </ul>


### 8.1 Disposal of collected material

	<b>CAUTION</b>
	<p>Damage due to the release of the dust from used filter elements</p> <ul style="list-style-type: none"> <li>• Do not clean by blowing or beating dust out.</li> <li>• Dispose of used filter element in air-tight-sealed disposal bags in accordance with local regulations.</li> </ul>

### 8.2 Dispose of the device

Before disposing of the device

1. Take the disposal carton out of the device and seal it tightly.
2. Remove the filter cartridges and package them tightly.
3. Take the removable parts (e.g. motor, fan, cover, etc.) out of the device.
4. Package the device and the detachable parts as specified by local regulations.
5. Dispose of everything according to local regulations.

	<p>Due to contamination of the device with toxic dusts, ESTA cannot take the device or individual parts of it back.</p>
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## 9 Optional equipment

The device can be fitted with different equipment options. The following optional equipment is available for this device.

### 9.1 Potential-free contact

Optionally, the device can be equipped with a start-up through an external potential-free contact.

When so doing, observe the supplementary instructions on this optional equipment.

### 9.2 Operation with a frequency converter

Optionally, the device can be equipped with a start-up through a frequency converter. In this case, this controls the suction operation.

When so doing, observe the supplementary instructions on this optional equipment.

### 9.3 Activated carbon inserts in outlet

The device can optionally be equipped with activated carbon inserts at the outlet elements. These additionally help remove gases and odorous substances from the return air.

When so doing, observe the supplementary instructions on this optional equipment.

### 9.4 W3-Box for minimum volume flow check

Optionally, the device can be equipped with a W3 Box for minimum volume flow control.

When so doing, observe the supplementary instructions on this optional equipment.

## 10 EC/EU Declaration of Conformity

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

Responsible for documentation: ESTA Apparatebau GmbH & Co. KG  
 Gotenstraße 2 - 6  
 89250 Senden

### We hereby declare that the design of the machine

**Machine:** Dust extractor for the collection, transport and separation of dry, loose dust and welding fumes

**Series:** Welding smoke extraction device

**Model:** **FILTOWER F-100**  
**FILTOWER F-160**  
**FILTOWER F-200**

**and variants with optional equipment**

### conforms to the following regulations:

<b>2006/42/EC</b>	EC - Machine Directive
<b>2014/30/EU</b>	EC Electromagnetic Compatibility Directive
<b>2014/68/EU</b>	EU - Pressure-vessel directive

The protective aims of the **2014/35/EU Low Voltage Directive** have been accomplished in accordance with Appendix I, No. 1.5.1 of the 2006/42/EC Machinery Directive.

### Reconciled norms used:

<b>DIN EN ISO 12100:2011-03</b>	Safety of Machinery – Basic concepts, general principles for design
<b>DIN EN ISO 13857:2008-06</b>	Safety of Machinery – Safety distances to prevent danger zones from being reached by upper and lower limbs
<b>DIN EN 349:2008-09</b>	Safety of machinery - minimum distances for preventing body parts from being crushed
<b>DIN EN 60335-1:2012-10</b>	Safety of electrical appliances for household and similar use - general requirements
<b>DIN EN 60335-2-69:2015-07</b>	Safety of electrical appliances for household and similar use – Special requirements for dust and water suction systems including power brushes for commercial use
<b>DIN EN 61000-6-1:2007-10</b>	EMC generic standard - Immunity for residential, commercial and light-industrial environments
<b>DIN EN 61000-6-2:2006-03</b>	EMC generic standard – Immunity for industrial environments
<b>DIN EN 61000-6-3:2011-09</b>	EMC generic standard - Interference for residential, commercial and light-industrial environments
<b>DIN EN 61000-6-4:2011-09</b>	EMC generic standard - Interference for industrial environments
<b>DIN EN 61000-3-2:2015-03</b>	EMC limits – Limits for harmonic current emissions (device input currents $\leq 16$ A per cable)
<b>DIN EN 61000-3-3:2014-03</b>	EMC limits – limitation of voltage changes, voltage fluctuations and flickers in low-voltage public supply systems for devices and equipment with a rated current $\leq 16$ A per cable, not subject to a special connection

### National norms and technical specifications used:

**VDI 3677** Filtering separators

Senden, 15.11.2016

Dr. Peter Kulitz  
 Managing Director









ESTA-FAX: **+49 (0) 73 07 - 80 45 00**

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