

TRANSLATION OF THE ORIGINAL OPERATION  
MANUAL

## Stationary deduster

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### FILTOWER L ECO+



## **Welcome to the wide world of extraction technology**

With the purchase of an ESTA product you have chosen a quality product which has been designed to the current state of the art.

ESTA products provide clean air to the work place and consequently guarantee better quality, longer machine running times and above all, provide healthier working conditions.

We will be pleased to answer at any time your questions on any aspect of extraction technology.

Team

ESTA Apparatebau GmbH & Co. KG

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The information in the document must be followed during operation in order to avoid faults or damage. The operator must therefore make it available to all relevant maintenance and operating staff. Subject to alteration.

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The warranty can only be accepted if the following conditions are met:

- Professional transport
- Professional assembly, commissioning and operation using these operating instructions.
- Verifiable compliance with the prescribed maintenance intervals.
- Operation of the product with conveyed media having the specified chemical and physical properties.
- Immediate reporting of damage to the manufacturer.
- Exclusive use of genuine replacement parts.
- Structural modifications to the original condition only to be carried out with the agreement and written approval of the manufacturer.

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# 1 General instructions

## 1.1 General notes prior to use

Before using the ESTA product, it must be ensured that all persons about to use the extraction system or perform maintenance work on it:

- Have received all relevant information, instructions and training courses for using the product and have understood them.
- Are able to perform or fulfil their tasks according to the law and the current operating manual.

## 1.2 Legal information

To reduce potential risks posed by the product, the design and construction of the product conform to the directives and standards listed in the EU/EC declaration of conformity. Potential risks can only be minimised when the user or its authorised representative adheres to the additional, relevant standards for a product ready to install.

## 1.3 Editorial information

### Document structure

- Product description** The product description provides all of the required details applying to your product.
- Safety** Important information on the safe handling of your product is provided here.
- Operation** The manual contains all information required to ensure trouble-free operation of your product.
- Maintenance/servicing** The information on services and maintenance provide you with the knowledge about how and when to service the product or product components.

## 1.4 How to read this document

This document is a component of the product it describes. Keep the instructions easily accessible at the place where the device is being used, so that they can be seen by the staff at all times.

Carefully read this document before any use of the product in any way (commissioning, assembly, maintenance, etc.). Prerequisite for safe work and trouble-free handling is that all relevant information, instructions and training for the use of the product and substances it is used for have been obtained and understood and that you must perform and fulfil your tasks lawfully and in accordance with these instructions.

Please follow the safety and warning instructions in the document and on the product. All plant, operating, and work instructions of the owner-operator apply in addition to this document.

The document also contains graphical examples along with the descriptions. For this reason, the equipment may differ somewhat from the descriptions and representations.

### Target group of the document:

This document is intended for

- Operators trained on the product who are familiar with the extraction process.
- Trained assembly and maintenance personnel.
- Trained electrical specialists

### Highlighting in the text

In order to simplify the legibility and overview, various paragraphs and information are highlighted by distinguishing elements.

The symbols have the following meaning:

- 1st level list
  - 2nd level list
- ✓ Handling requirement
- 1. Handling step
  - ⇒ Intermediate result
- ⇒ Result of the entire handling sequence



Information on the target group for whom the following instructions are intended.

## 1.5 Form and significance of warning information

### **DANGER**



#### **High risk**

indicates an imminent hazard. If this is not averted, death or very serious injury will result.

### **WARNING**



#### **Medium risk**

indicates the possibility of an imminent hazard. If this is not averted, death or very serious injury may result.

### **CAUTION**



#### **Low risk**

indicates the possibility of an imminent hazard. If this is not averted, slight or minimal injury may result.

### **NOTICE**



#### **Material damage**

Foreseeable material damage for the product and environment with a failure to comply with the specified measures.

This warning is displayed when there is a thread of danger or damage. This represents actions which can cause a risk of damage.

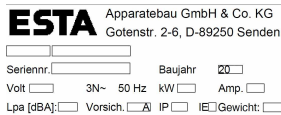
Warnings are indicated by a symbol or signal word. The warning includes information on the type and source of the hazard, the consequences if it occurs, and actions for averting it.

## 2 Product identification

### 2.1 Symbols and labels used



The ESTA service label indicates when and by whom the last service was carried out by the ESTA maintenance service. It also lists when the next service by the ESTA maintenance service is scheduled.



Name plate of the product (sample name plate)



Do not take in glowing dust or other sources of ignition. Do not use in conjunction with spark-generating machinery.

### 2.2 Intended use

The product was designed for use at the following workstations:

- Group work station
- Rooms with several work stations

The product's application is documented in the data sheet and on the name plate. Coordinate any deviating applications with the manufacturer to ensure that the functioning of the product is not compromised.

The product has been manufactured based on state-of-the-art technology and according to recognised safety regulations and must be used appropriately and as follows:

- For commercial use, such as in industrial enterprises and workshops.
- For the extraction of non-explosive dust
- For the extraction of oil and emulsion mist or vapours.
- For the extraction of aerosols (e.g. cooling lubricants), which arise during the mechanical processing of metallic parts.



## 2.3 Improper use

The product may only be used within the scope of the technical data specified by ESTA. Uses that exceed the specifications in "Intended Use" are deemed to be inappropriate. The manufacturer is in this case not liable for resulting damage.

Examples of inappropriate use are:

- Extraction of highly flammable or glowing particles
- Connecting to processing machines that may produce active ignition sparks or hot embers
- Extraction of process air outside the specified temperature range, see Ambient conditions for the product [► 21]
- Use in dust or gas EXPLOSION areas
- Extraction of corrosive gases
- Extraction of corrosive gases
- Installation in paint shops
- Installation in food operations
- Change in the location during operation

## 2.4 Foreseeable misuse

The use of the product in an unintended way, but which can arise from easily foreseeable human behaviour.

This includes:

- Installing outdoors
- Installation or operation in explosive dust and gas environments
- Unauthorised modifications to the product
- Intake of glowing embers such as, e.g., cigarettes
- Start-up of the product despite defects detected on the product or attached parts (e.g., pipeline)
- Intake of items not suitable for suction (e.g., mobile phone, tool, glove, screws, etc.)
- Closing of intake opening

## 2.5 Warranty terms

ESTA accepts no liability for direct damage and consequential damage to products or for personal injuries when the product is not used for its intended purpose. The operating company must prove that the fault was not caused by inappropriate installation, assembly, maintenance or use of the product.

For your own safety, use only genuine replacement parts and accessories. ESTA accepts no liability for any resulting damage if other products are used.

## 2.6 Important information on the product

Responsibility must be clearly stipulated for the following tasks:

- Transport
- Assembly
- Commissioning
- Operation
- Maintenance and repair
- Cleaning
- Decommissioning
- Disposal

## 2.7 Principles of the procedure

The room air is extracted under vacuum in the collection system and then freed from dust in a filter unit. The suction unit attached to the product generates an air current, and the cleaned air is returned to the workspace via the outlet openings.

During suction extraction, there is no way of preventing the escape of dangerous gases, fumes or aerosols. These must be collected fully at their outlet point or place of origin, then directed away and disposed of without endangerment to people and the environment, to the extent that this is technically possible.

## 3 Safety

### 3.1 Hazard prevention



#### **DANGER**

##### **Electric shock from high voltage**

Severe injury including death possible

- ▶ Protect the power supply cables against damage and dimension them according to the power uptake of the drive motor.
- ▶ Perform the electrical installation and connection of the drive motor according to the regionally applicable regulations (e.g. VDE), the legal standards of the country and the rules of the regional power company.
- ▶ Regularly check the power cable for damage and wear.
- ▶ Do not switch on the product if it or the power supply exhibits visible damage and secure it against reactivation (e.g. padlock).
- ▶ Have any damaged cable replaced by specialised staff.
- ▶ Check the protective devices (motor protection relay, earthing resistor, etc.) and set them to the operating conditions of the product.



#### **DANGER**

##### **Danger of fire due to sparks and glowing particles**

Severe injury including death possible

- ▶ Keep combustible, flammable materials away from the work area.
- ▶ Never run away if clothing catches fire. Extinguish flames by rolling on the ground or by smothering them with blankets.
- ▶ If there is a fire, alert the fire department immediately, and contain the fire by appropriate means.
- ▶ Keep a suitable extinguishing agent (not included in scope of delivery) near the product before start-up and during operation.



## **DANGER**

### **Risk of falling and tripping**

Danger to life from falling objects or loads

- ▶ Do not stand under suspended loads.
- ▶ Secure the assembly area and mark it out (e.g., with barrier tape).
- ▶ Always lift the product vertically during loading and assembly work.
- ▶ Suitable, approved hoisting and transportation equipment may only be attached to the red transport lugs.
- ▶ Only transport the product with suitable, approved means of lifting and transport.
- ▶ Keep a sufficient distance from the product while it is being installed. Distance at least 1.5 times the height of the product.
- ▶ Have set-up observed and coordinated by a qualified supervisor.
- ▶ Wear personal protective equipment.

## **WARNING**



### **Danger of crushing due to loose or open covers**

Injuries to the limbs

- ▶ Keep covers tightly closed during operation.
- ▶ Ensure that inspection doors are firmly closed.
- ▶ Check regularly that fastening screws and component connections are secure.
- ▶ Only start up the product after the assembly is complete and correct.



## ⚠ CAUTION

### Harmful separated substances

Effects on respiration, organs, skin and eyes

- ▶ Maintenance, cleaning, repair, and emptying work may only be completed by expert personnel.
- ▶ Wear personal protective equipment.
- ▶ Personal protective equipment must be impermeable and resistant to harmful substances.
- ▶ Ensure that the ball valve of the collection tank is closed.
- ▶ Ensure that the collection container is attached to the discharge opening.
- ▶ Ensure that inspection doors are firmly closed.
- ▶ Stop leaks with binding agents and dispose of them according to local regulations.
- ▶ When handling separated harmful substances, observe the manufacturer's safety data sheets with regard to components and effects.

## NOTICE



### Danger of fire on air guide plate

Deposits of dust trails and particles can cause a fire on the air guide plate

- ▶ Remove adhesions and deposits from the guide plate and the inspection cover regularly.
- ▶ Prevent spark ingress into the air guide plate.

## 3.2 Workstation ventilation



The provisions of DGUV rule 109-002 must be complied with.

During extraction, the volume flow returned from the product into the room should be no more than 50% of the supply air. With open room ventilation, supply air flow should be assumed as equal to 1x the room volume every hour. This means that the rate of air replacement must be 1/h.

**Calculation** Supply air flow [m<sup>3</sup>/h] = room volume [m<sup>3</sup>] x air replacement rate [1/h]

Example:

When the product 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 x 3 m ceiling height).

### 3.3 Product safety

The following points have to be considered in order to avoid injuries and other risk due to inappropriate use and operation of the product:
















- Assembly, electrical connection, maintenance, initial operation, cleaning, repair and other work in connection with the product may only be performed by trained specialists.
- The product must be checked for faulty or damaged supply lines (cables, pipe systems, etc.), connections and open system parts (inspection door, discharge opening). Do not use the product in such cases and immediately notify the maintenance personnel responsible.
- The product may only be operated when it is ready for operation, when the inspection doors are shut and when the toggle-type fasteners of the collection container are firmly closed.
- Ensure before any work is performed on the product or before inspection doors are opened that the product is disconnected from the power supply and secured against unauthorised reactivation.
- Disconnect the compressed air supply and empty the compressed air tank before carrying out any work.
- Connect the product to the electrical power supply properly and in precise compliance with the safety instructions and use it exclusively in accordance with the specifications.
- In all emergencies, the product must be disconnected immediately from the power supply, turned off at the main switch and the plug pulled immediately.

### 3.4 Qualified personnel

**Trained personnel** Trained personnel are those who have been instructed in the correct handling of the product and who are aware of the risks presented by improper use. Personnel must receive instruction on safety equipment. Knowledge of this manual is mandatory.

**Qualified semi-skilled technicians** An employee with appropriate technical training, knowledge and experience who is able to identify and avoid hazards. Knowledge of this manual is mandatory.

**Trained skilled worker** Qualified technician in a qualified profession. Knowledge of this manual is mandatory.

Target group	Task	Qualification	Protective equipment
Transport personnel	Transport Set-up	Qualified semi-skilled technicians	 
Installation personnel	Installation	Trained skilled worker	
Commissioning personnel	Commissioning	Trained skilled worker	 
Operating personnel	Operation	Qualified semi-skilled technicians	   
Maintenance personnel	Inspection Maintenance Repair work	Trained skilled worker	   
Maintenance, cleaning personnel	Maintenance Clean	Trained personnel	 

## 4 Structure and function

### 4.1 Illustration

### 4.2 Functional description

- Filter unit** Filter elements are installed in the filter unit. When the extraction system is switched on, the air flows through the raw gas collection container and passes the filter elements, where it is cleaned of particles. The purified air is guided back through the product outlet.
- Air guide plate** The air guide plate acts as a pre-separator for the filter. This air guide plate is installed in the intake duct and separates out coarse particles, preventing them from damaging the filter elements. It has an air-channelling function, with which the service life of the filter cartridges is improved.
- The extraction process starts when the product is turned on at the ESTA EasyControl controller.
- Control unit** A control unit is integrated into the product. The control unit monitors the volume flow. 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.
- Disposal unit** The disposal unit located below the filters is designed so that separated, fluid oil and emulsion residue at the bottom of the housing accumulate and can be drained via a ball valve connection.
- Frequency converter** The product is fitted with a frequency converter start-up to control suction extraction operation.

### 4.3 Safety and monitoring devices

- Main switch** Main switch for turning the product on and off. EMERGENCY-OFF switch, which can be secured with a lock against unintentional activation.
- Differential pressure measurement** The minimum volumetric flow is monitored by differential pressure measurement on the control unit.
- Fill level sensor on collection container** The product is fitted with a fill level sensor for the collection container. The fill level is sensed and when the maximum fill level is reached, a message is displayed on the control unit.
- Clean gas dust sensor** The product is fitted with a dust sensor in the clean gas area. The sensor measures the dust content in the discharge area (after the filters) and operates other optional functions in the control unit.
- Raw gas dust sensor** The product is fitted with a dust sensor in the raw gas area. The sensor measures the dust content in the intake area (before the filters) and operates other optional functions in the control unit.
- Motor protection switch** If the motor protection switch has tripped, the extraction operation stops and reactivation of the extraction is not possible.



## 5 Transport and installation



TARGET GROUP: Transport personnel

### 5.1 Transport



#### **! DANGER**

##### **Risk of falling and tripping**

Danger to life from falling objects or loads

- ▶ Do not stand under suspended loads.
- ▶ Secure the assembly area and mark it out (e.g., with barrier tape).
- ▶ Always lift the product vertically during loading and assembly work.
- ▶ Suitable, approved hoisting and transportation equipment may only be attached to the red transport lugs.
- ▶ Only transport the product with suitable, approved means of lifting and transport.
- ▶ Keep a sufficient distance from the product while it is being installed. Distance at least 1.5 times the height of the product.
- ▶ Have set-up observed and coordinated by a qualified supervisor.
- ▶ Wear personal protective equipment.

#### **NOTICE**



##### **Material damage due to improper transport**

Damage to the housing, lines and product components

- ▶ Do not push or pull the product across the floor if it does not have any rollers.
- ▶ Pay attention to any protruding components when setting down the product.
- ▶ Note the centre of gravity (which is not in the centre) when setting down the product.
- ▶ When loading by crane: the weight, centre of gravity and permissible suspension angle (60°) of the lifting load must be taken into account.
- ▶ Only transport the product with suitable, approved means of lifting and transport.

The product is delivered fastened to a pallet. After the protective covers and the floor fixing have been removed, the device can be lifted and transported using suitable lifting equipment.

After the packaging has been removed, the product must be inspected for damage and completeness. The product must not be put into operation if there is any damage, or if the delivery is incomplete. Contact ESTA in such cases. Any foreign objects inside the product must be removed before start-up.

## 5.2 Set-up

<b>Space requirement</b>	Operating side, front (mm)	1,500
	Right (mm)	1,000
	Left (mm)	1,000
	Rear (mm)	1,500
	Top (mm)	1,000

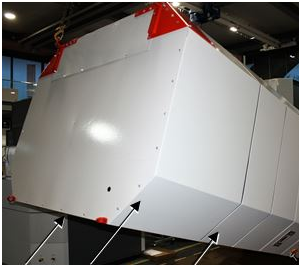
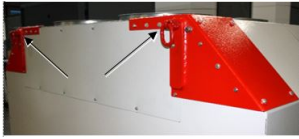
1. Check that the delivery is complete.
2. Release the transport locks and remove the protective cover.
3. Attach suitable lifting gear to the crane eyelets on the top of the product.
4. Horizontally align the product using its adjustable support feet.

⇒ The product is set up and ready to connect to the electrical, pneumatic, or hydraulic supply system.

**Set-up** The product is assembled by qualified personnel. Equipment and materials must be provided. The lifting gear and other tools listed are recommendations only. The lists make no claim to completeness, the operator must provide all the necessary tools.

- Work preparation**
- Assembly personnel must be equipped with and wear personal protective equipment.
  - Crane operators must undergo all necessary training and have the requisite skills.
  - A qualified supervisor appointed before setup must supervise and coordinate the setup process from a distance of 3-4 metres.
  - The setup location must be cordoned off with tape or fencing to prevent unauthorised access.
  - Place the pallet with extraction product at the installation site on level ground and in a non-slip area, use anti-slip mats if necessary.

**Handling steps** ✓ Sling gear: Transport chain



✓ Transport equipment: Crane

1. Attach suitable and tested lifting equipment (lifting chains designed to accommodate the transport weight) to the upper load attachment points
2. Align the extraction product slowly.  
⇒ The chains must run obliquely; observe a suspension angle of 60°.
3. If necessary, follow-up and control with the crane must take place.
4. Raise the extraction product until it is no longer in contact with the ground.
5. Check the feet for correct seating and adjust as necessary.
6. The extraction product must be guided and swivelled in front of the pallet by means of two persons from the transport staff.
7. Position the extraction product and slowly lower it to the ground and completely set it down.
8. Always attach the chains to all four attachment points when moving the product to another installation site.

## 6 Commissioning



TARGET GROUP: Commissioning personnel

### **DANGER**



#### **Electric shock from high voltage**

Severe injury including death possible

- ▶ Protect the power supply cables against damage and dimension them according to the power uptake of the drive motor.
- ▶ Perform the electrical installation and connection of the drive motor according to the regionally applicable regulations (e.g. VDE), the legal standards of the country and the rules of the regional power company.
- ▶ Regularly check the power cable for damage and wear.
- ▶ Do not switch on the product if it or the power supply exhibits visible damage and secure it against reactivation (e.g. padlock).
- ▶ Have any damaged cable replaced by specialised staff.
- ▶ Check the protective devices (motor protection relay, earthing resistor, etc.) and set them to the operating conditions of the product.

### **WARNING**



#### **Danger of crushing due to loose or open covers**

Injuries to the limbs

- ▶ Keep covers tightly closed during operation.
- ▶ Ensure that inspection doors are firmly closed.
- ▶ Check regularly that fastening screws and component connections are secure.
- ▶ Only start up the product after the assembly is complete and correct.

### **CAUTION**



#### **Risk of injury when the fan impeller starts up**

Risk of crushing limbs

- ▶ Only work on the drive motor / fan impeller when the system is switched off.
- ▶ Ensure a freely accessible discharge opening with a protective grid.



The switch cabinet must have an assured supply of cooling air.

The following technical documentation is required for commissioning:

- Product operating instructions
- Any supplier documentation
- Any circuit diagrams
- Any pipe-system installation diagrams (suction, discharge, intermediate piping)
- Site plan of the product's place of installation

## 6.1 Ambient conditions for the product

Ambient temperature	[°C]	+5 ≤ ≥ +40
Humidity	[%]	30 - 70

## 6.2 Electrical connection

### CAUTION



**Starting up the drive motor / fan impeller when the extraction and outlet pipe are not correctly connected**

Risk of crushing limbs

- ▶ Check correct connection of the intake and outlet pipe.

### NOTICE



#### **Fault caused by residual current**

In accordance with DIN VDE 0100-530, a residual current circuit breaker or residual current circuit breaker RCD AC/DC sensitive Type B must be used with a three-phase current frequency converter.

To supply the product with electricity, a CEE coupling provided by the customer must be available with a CEE connector plug.

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

## 6.3 Operating and display elements



For further information, see the Control manual.



**Main switch** Main switch for turning the product on and off. EMERGENCY-OFF switch, which can be secured with a lock against unintentional activation.

**Panel** Touch display for displaying and selecting functions.



### Switch on the extraction function

The button lights green when extraction is active.



### Switch off the extraction function

The button lights red when there is a fault pending. Observe the instructions and messages on the display.

Within the menu:

- BACK function to the previous menu



### Volume flow

If the volume flow is lower than the preset minimum volume flow, the button flashes yellow.



### INTERNAL

Selects internal control system (manual mode).

Within the menu:

- Navigation in the sub-menu
- Adjustment of values



### EXTERNAL or TIMER

Selection of external control unit (optional; automatic operation via potential-free contact).

Selects the timer function (optional).

Within the menu:

- Navigation in the sub-menu
- Adjustment of values



### SERVICE

Accessing the main service menu

Within the menu:

- ENTER function

## 6.4 Monitoring rotation direction

### **DANGER**



#### **Electric shock from high voltage**

Severe injury including death possible

- ▶ Any work on the electrical grid and on live components may only be performed by an electrician.
- ▶ Follow the safety rules for working with electrical products.

When the direction of rotation is incorrect, the product becomes impermissibly hot, the volume increases, the airflow volume falls, and the suction performance suffers. Damage to the product cannot be ruled out. After first switching on the product, the fan rotor's direction of rotation must be checked:

#### **Check the rotation direction**

1. Switch on the product at the main switch.
2. Compare the rotation speed of the fan impeller with the rotation direction arrow on the housing.

#### **Change rotation direction**

1. Turn the product off at the main switch.
  2. Have phases reversed by an electrical technician.
  3. Switch on the product at the main switch.
  4. Compare the rotation speed of the fan impeller with the rotation direction arrow on the housing.
  5. Turn the product off at the main switch.
- ⇒ The product is ready for operation.

## 6.5 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 be overloaded. Please observe the table for activation operations:

Motor output kW	Power-ups / h
1 - 4	< 8 starts
4 - 7.5	< 6 starts
7.5 - 15	< 4 starts
15 - 30	< 3 starts
From 30	Electronically controlled overrun time

## 7 Operation



**TARGET GROUP:** Operating personnel

### 7.1 Operating modes

#### Internal mode (manual operation)

**INTERN**

Selects manual mode.

"Internal" mode is a manual mode.

The extraction is started and stopped manually.

#### Timer mode (optional)

**TIMER**

Selects automatic mode via the timer function

If the device is in timer mode, the extraction will be started and stopped via adjustable switching times when the main switch is switched on.

If the product is already in this mode when switched on, a countdown of approx. 10 seconds takes place before start-up to allow the operating mode to be changed.

#### Pre-coat mode (optional)

If the product is in pre-coat mode at the time of delivery, the system will stay in that mode until the filter saturation has reached the adjusted value. For further information, see the software manual.

No cleaning can take place before or after extraction if pre-coat mode is active. The product cannot be manually cleaned either.

### 7.2 Operating the product

**Compressed air** 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 that the system is in a safe and operational state.

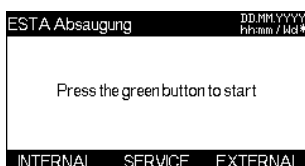
**Collection container ball valve** Always check the ball valve of the collection container for tight closure before putting it into operation. For this purpose, open the lid of the disposal unit. For the procedure, see chapter Emptying the collection container [▶ 36].

**Switching on**

1. Switch on the product at the main switch.

⇒ The product is ready for operation after activation via the main switch. Now, the extraction can be activated.

1. Select manual operation.



**INTERN**





2. Switch on the extraction function with the control unit.

⇒ The extraction system is operational and the processing step can be started.

**Switch off the extraction function**



1. Switch off extraction on the control panel.

⇒ The automatic post-cleaning starts. The main switch must remain switched on for around 5 minutes.

**Switch product off**

1. Turn the product off at the main switch.

⇒ The product is not in operation.

### 7.3 Symbol description



**ESTA Absaugung**

Product name



Warning message present.



System runs via external operation.



System runs in manual operation.



System runs via timer clock.



SD card inserted (optional).



No SD card inserted (optional).



Recording on the SD card (optional).



Booster function activated (optional).



Max. fill level in the disposal carton / collection container has been reached (optional).

**DD.MM.YYYY  
hh:mm / Wd\***

Date (day, month, year) and time (hour:minute / day of week)



Summer time: Summer / winter time changeover (automatic).

**INTERN**

Manual operation. If the extraction is started externally or via timer clock, the control unit can be switched to internal.

**EXTERN**

Selects automatic operation (optional potential-free contact).

**SERVICE**

Accessing the service menu.

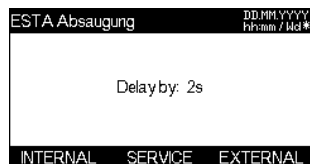
**TIMER**

Selects automatic operation via timer function (optional timer clock).

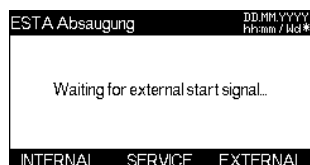
### 7.3.1 Operation with potential-free contact (optional)

**EXTERN**

The product is connected to a potential-free contact.

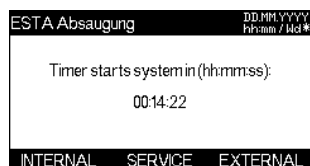


The countdown is displayed in order to change the operating mode, if necessary.



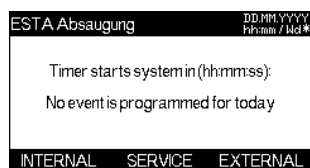
The extraction starts after the countdown has elapsed.

### 7.3.2 Operation with timer function (optional)



Indicator of when the timer function in the product is released and switching times are programmed.

After the countdown has elapsed, the extraction starts according to the programmed switching times.

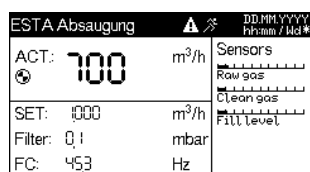


Indicator of when the timer function in the product is released and **no** switching time is programmed.

### 7.3.3 During operation in all operating modes

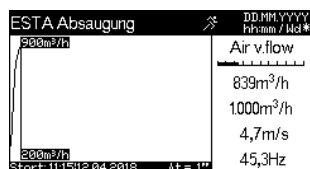


The display switches to show "sensors".



The displayed data relates to various optional sensors.

On start-up of the system, additional operating parameters, such as actual and setpoint volume flow, frequency and differential filter pressure are displayed in run mode.



Currently measured values during operation.



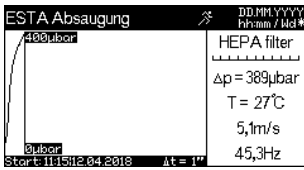
Adapt specified volume flow (m<sup>3</sup>/h) to be achieved with the cursor.



< 5,000 m <sup>3</sup> /h	Increments of 50
> 5,000 m <sup>3</sup> /h	Increments of 100
> 10,000 m <sup>3</sup> /h	Increments of 150



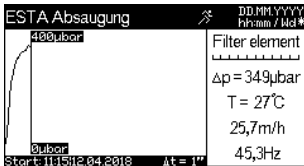
The display switches to show "inlet nozzle".



The displayed data relates to the inlet nozzle.



The display switches to show "filter element".



The displayed data relates to integrated filter elements.

### 7.3.4 Service menu



Various settings of the product can be viewed or changed in the main service menu. Certain areas are password-protected and identified with a lock symbol. After successful CODE entry, these areas can be opened and corresponding parameters can be changed.

- If no activity takes place in the main service menu for 1 minute, the control unit ends the process and the main menu is exited automatically.
- If no activity takes place in the submenus for 1 minute, the control unit ends the process and the main menu is exited automatically.
- Changes are saved without confirmation when the submenus are exited.

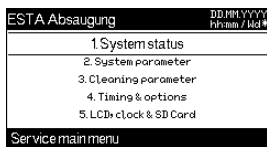
#### Main service menu access



Briefly press the button.



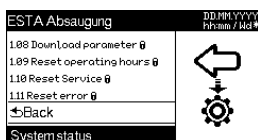
The main service menu appears.



Navigate in the main service menu with the cursor.



Select the menu item.



Press 'Previous' to return to main screen.

## CODE entry



In order to be able to change parameter settings, access to some sub-menu items in the main service menu is only possible after CODE entry. These areas are identified with a lock symbol.

CODE entry applies for the following levels:

- USER mode** Parameters can be viewed, but no changes can be made.
- ADMIN mode** Released parameters can be viewed and changed. Only for trained, specialist personnel.
- SERVICE mode** ESTA service area.

Proceed as follows:



1. Press and hold the button for approx. 3 seconds.

2. Release the button when the display blinks.

3. CODE entry is activated.

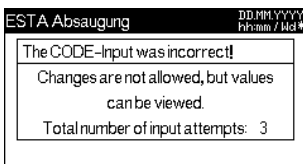
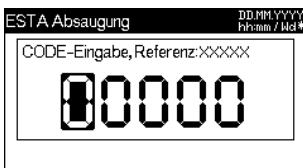
4. Notify ESTA customer service of the displayed reference (XXXXX). You receive a 5-digit access code.

5. The access code is valid in ADMIN mode for approx. 1 operating hour. If the system is switched off with the main switch, the CODE entry must take place again.

6. Enter the 4-digit access code with the cursor buttons.



Within the menu function: Selection / ENTER function.



The following messages appears when an incorrect entry is made. You remain in USER status.

## 8 Servicing and maintenance



TARGET GROUP: Maintenance and cleaning staff



### ⚠ CAUTION

#### Harmful separated substances

Effects on respiration, organs, skin and eyes

- ▶ Maintenance, cleaning, repair, and emptying work may only be completed by expert personnel.
- ▶ Wear personal protective equipment.
- ▶ Personal protective equipment must be impermeable and resistant to harmful substances.
- ▶ Ensure that the ball valve of the collection tank is closed.
- ▶ Ensure that the collection container is attached to the discharge opening.
- ▶ Ensure that inspection doors are firmly closed.
- ▶ Stop leaks with binding agents and dispose of them according to local regulations.
- ▶ When handling separated harmful substances, observe the manufacturer's safety data sheets with regard to components and effects.



All 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.

All maintenance tasks should be carefully performed within the given time-scales. Preventative maintenance of the components prolongs the life of the product. So does regular cleaning and preventative exchange of wearing parts.

Safety devices for prevention or removal of hazards (e.g. according to the 2009/104/EC work equipment user devices and TRGS 560) must be regularly maintained and inspected by an expert for safe and appropriate operation.

Shut down the product immediately if malfunctions and defects are discovered and notify the responsible maintenance and repair staff.

## 8.1 Operating and auxiliary materials



### NOTICE

#### Material damage caused by aggressive cleaning agents and incorrect cleaning methods

Damage to seals, surfaces or plastics on the product

- ▶ Do not use any aggressive cleaning agents which might attack seals, surfaces or plastics.
- ▶ Use damp disposable cloths for cleaning.
- ▶ Use industrial vacuum cleaners approved for the application.
- ▶ Do not use any sharp objects or cleaning material with a rough surface.

**Cleaning agents** The following are suitable as cleaning agents for all metal parts:

- Mild detergent
- Damp disposable cloths

The following are suitable as cleaning agents for deposited dusts and coarse soiling on surfaces:

- Industrial vacuum cleaner
- Broom

## 8.2 Maintenance table

		Daily	Weekly	Monthly	Annually	As required
8.3	Visual inspection	1				
8.10	Clean the air guide plate		1			
8.4	Functional check			1		
8.5	Check the filter elements			1		
8.6	Checking the filter mat			1		
8.11	Cleaning the product			1		
8.3	Visual inspection				1	
8.4	Functional check				1	
8.7	Changing the filter cartridge					1
8.8	Changing filter mats					1
8.9	Emptying the collection container					1

1 - Maintenance personnel

### 8.3 Visual inspection

Parts and components on the product exhibiting damage must be replaced immediately with new original ESTA parts.

- Daily**
- Check the complete product and its parts for damage
  - Check the product and its parts for dirt and clean as necessary, see Cleaning the product [▶ 38]
  - Leakage of media (e.g. trails of dust) at the interfaces
  - Trails of dust or deposits at the outlet openings
  - Check for electrical cables for damage such as open cable insulation, crushing, visible wiring or heavy soiling.
  - Fan impeller noise / check drive motor start-up
    - non-circular running
    - flapping
    - grinding
    - pounding
1. Switch the product off immediately if the noise indicates an unusual fault of the fan impeller.
  2. Determine and eliminate the cause of the fault or initiate its removal by a specialist, e.g. have the drive motor and / or fan impeller replaced by a specialist.
- Annually**
- Check the sealing of the complete product
  - Check the fan:
    - Proper fitting of the fixing screws and connections to the product
    - Cracks of the housing / sealing

## 8.4 Functional check

- Monthly**
- Check all moving parts for firm seating
  - Check hoses and connections for sealing
  - Check operating and display elements (buttons, switches) for function
  - Check the volume flow control for function
  - Check the mains connection line for damage and replace damaged parts as necessary
  - Check the safety devices (motor protection relay, earthing resistor, etc.) and initiate adjustments by service personnel
  - Check all pipe fittings and bearings for firm seating
  - Check the pipeline system for damage, deposits and leaks
  - Tighten externally accessible screw connections
  - Check optionally available equipment according to the manufacturer's instructions
- Annually**
- Check all electrical devices in accordance with VDE 0701 - 0702, VDE 0600
  - Contact ESTA maintenance service to check the volume flow, vacuum and current consumption

## 8.5 Check the filter elements

- Condition of the filter elements
- Damage and level of soiling
- Soiling in the interior between the filter elements and the discharge

## 8.6 Checking the filter mat

### CAUTION



#### Damage due to dust release

- ▶ Only operate the product with the complete filtration system.
- ▶ Regularly check the filter mats for soiling.
- ▶ Wear personal protective equipment.

Filter mats are installed on the side outlet elements. These must be checked regularly and replaced when necessary.

- Degree of contamination and filter mat deposits
- Proper fitting of the filter mats on the outlet elements



Proceed as follows:

1. Switch off extraction on the control panel, refer to the chapter Operating the product [▶ 24].
2. Switch off the product at the main switch and secure it from re-operation (e.g. with a padlock).
3. Loosen and remove the fastening screws.
4. Disconnect potential compensation from the cover (optional).
5. Remove the outlet element cover.
6. Perform a visual inspection. If the filter mat is saturated and exhibits clear signs of sedimentation, it must be replaced, see chapter Changing filter mats [▶ 35].



7. Reinstall cover.
8. Connect potential compensation to the cover (optional).
9. Insert the cover fastening screws and tighten them by hand.
10. Switch on the product again, refer to the chapter Operating the product [▶ 24].

## 8.7 Changing the filter cartridge

After an extended period of operation, the filter elements clog up slowly due to the ingress of extremely fine dust (wear debris), dust deposits, resinous oil, and fatty residues in the pores. Filters must be replaced with new ones.

1. Switch off extraction on the control panel, refer to the chapter Operating the product [▶ 24].
2. Switch off the product at the main switch and secure it from re-operation (e.g. with a padlock).

### Removal



1. Unlock and open the inspection door.
2. If the anti-static version of filter cartridge is used, disconnect the earthing cable from the earthing screw on the filter cartridge (optional).



3. Unfasten retaining screws slightly and tilt the holder downwards.
4. Wrap a disposal bag around the front filter cartridge and secure it with cable ties.



5. Loosen the front and middle screws on both the left and right of the guide rail.  
⇒ The guide rail will drop to the end stop.
6. Remove the packaged filter cartridge from the guide rail.



7. Close the disposal bag around the filter cartridge.
8. Repeat the procedure with all filter cartridges.  
⇒ Used filter cartridges are removed and can be disposed of.
9. Clean the accessible interior with a hand broom or industrial vacuum cleaner.

### Installation

1. Unpack new, original ESTA filter cartridges.
2. Check the fit of the seal on the filter cartridge and adjust as needed.  
⇒ Install filter cartridge with rubber seal at top.



3. Insert the filter cartridges one after another into the guide rail and push them in as far as the end stop.
4. Screw in the front and middle screws on both the left and right of the guide rail.
  - ⇒ The guide rail is raised to the end stop.
5. If the anti-static version of filter cartridge is used, reconnect the earthing cable to the earthing screw (optional).
6. Close and lock the inspection door.
  - ⇒ The filter cartridges are replaced
7. Switch on the product again, refer to the chapter Operating the product [▶ 24].

## 8.8 Changing filter mats

1. Switch off extraction on the control panel, refer to the chapter Operating the product [▶ 24].
2. Switch off the product at the main switch and secure it from re-operation (e.g. with a padlock).
3. Loosen and remove the fastening screws.
4. Disconnect potential compensation from the cover (optional).
5. Remove the outlet element cover.
6. Carefully withdraw the filter mat from the interior.



7. Place the filter mat in the disposal bag provided.
8. Repeat the procedure with all filter mats.
  - ⇒ Used filter mats have been removed and are ready for disposal.
9. Unpack and insert the new, genuine ESTA filter mat.
10. Repeat the procedure with all filter mats.
  - ⇒ The filter mat has been replaced.
11. Reinstall cover.
12. Connect potential compensation to the cover (optional).
13. Insert the cover fastening screws and tighten them by hand.
14. Switch on the product again, refer to the chapter Operating the product [▶ 24].

## 8.9 Emptying the collection container

### CAUTION

#### Harmful separated substances

Effects on respiration, organs, skin and eyes

- ▶ Maintenance, cleaning, repair, and emptying work may only be completed by expert personnel.
- ▶ Wear personal protective equipment.
- ▶ Personal protective equipment must be impermeable and resistant to harmful substances.
- ▶ Ensure that the ball valve of the collection tank is closed.
- ▶ Ensure that the collection container is attached to the discharge opening.
- ▶ Ensure that inspection doors are firmly closed.
- ▶ Stop leaks with binding agents and dispose of them according to local regulations.
- ▶ When handling separated harmful substances, observe the manufacturer's safety data sheets with regard to components and effects.



After an extended period of operation, the collection container fills with separated, viscous oil and emulsion residues. The collection container is emptied via the ball valve connection.

- ✓ Switch off extraction on the control panel, refer to the chapter "Operating the product".
  - ✓ Provide a drip tray
1. Open the lid of the disposal unit.
  2. Push the lifting device lever down.
    - ⇒ Collection container lowers.



3. Take the collection container out of the housing carefully.
4. Position the drip tray under the ball valve.
5. Open the ball valve.



- ⇒ Oil and emulsion residues flow off.
- 6. Remove the drip tray and dispose of it according to local regulations.
- 7. Close the ball valve and clean it with a damp disposable cloth.
- 8. Push the collection container back into the housing.
- 9. Push the lifting device lever up.
- 10. Attach the lid of the disposal unit again.
- 11. Lock the disposal unit.
  - ⇒ The collection container is emptied.
- 12. Switch on the product again, refer to the chapter Operating the product [▶ 24].

## 8.10 Clean the air guide plate

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

1. Switch off extraction on the control panel, refer to the chapter Operating the product [▶ 24].
2. Switch off the product at the main switch and secure it from re-operation (e.g. with a padlock).
3. Open rear inspection door of the filter unit.
4. Clean the accessible interior and drawer area with a hand brush, damp disposable cloth or a suitable industrial vacuum cleaner, towards the ground
5. Close and lock the inspection door of the filter unit.
6. Switch on the product again, refer to the chapter Operating the product [▶ 24].



## 8.11 Cleaning the product



### NOTICE

#### Danger of fire on air guide plate

Deposits of dust trails and particles can cause a fire on the air guide plate

- ▶ Remove adhesions and deposits from the guide plate and the inspection cover regularly.
- ▶ Prevent spark ingress into the air guide plate.

Clean the product regularly inside and out:

1. Remove severe soiling and large amounts of deposits with an industrial vacuum cleaner.
2. Thoroughly remove deposits of oil and emulsion residue, resinous oil, and fine dusts with a damp disposable cloth, warm water and mild fat-soluble cleaning agents.
3. Do **NOT** spray down with a water jet.

## 9 Faults and Rectification



TARGET GROUP: Maintenance staff




### DANGER

#### Electric shock from high voltage

Severe injury including death possible

- ▶ Protect the power supply cables against damage and dimension them according to the power uptake of the drive motor.
- ▶ Perform the electrical installation and connection of the drive motor according to the regionally applicable regulations (e.g. VDE), the legal standards of the country and the rules of the regional power company.
- ▶ Regularly check the power cable for damage and wear.
- ▶ Do not switch on the product if it or the power supply exhibits visible damage and secure it against reactivation (e.g. padlock).
- ▶ Have any damaged cable replaced by specialised staff.
- ▶ Check the protective devices (motor protection relay, earthing resistor, etc.) and set them to the operating conditions of the product.

### 9.1 Product

Fault	possible cause	fault clearance
Suction too weak	Filter wearing out.	Replace filter.
Suction too weak,  flashing	Filter wearing out.	Replace filter.
The “Filter saturated” light lights up continuously after switching on the product	Filter wearing out.	Replace filter.
	Collection drawer full.	Empty the collection drawer.
	Volume flow control set too low.	Notify ESTA customer service.
The system does not start up.	The overload protection of the product has responded.	Notify ESTA customer service.

### 9.2 Complete cleaning system

Fault	possible cause	fault clearance
Motor protection trips.	Motor was switched on and off too often within a short time.	Adhere to the "Switch on and off too often within a procedures for motors" short time.
Dust leaks and dust trails at air outlet openings.	Filter elements worn out.	Replace filter elements.
	Filter elements inadequately attached.	Check the assembly of the filter elements.



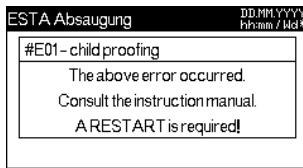
### 9.3 Fan and drive motor

Fault	possible cause	fault clearance
Leakage at the shaft passage	Sealing element worn.	Notify ESTA customer service.
The desired air quantity is not reached	Rotation direction not correct.	Change rotation direction.
	Throttle is closed in the system.	Open throttle element accordingly.
The motor shuts down before reaching the operating speed.	The switching devices present are incorrectly set up or unsuitable.	Adjust the switching device accordingly; possibly provide for heavy start-ups.
Smoke development or loud running noises of the fan	Imbalance in the fan.	Immediately switch off.
	Impeller scrapes against the housing. Noises from the motor.	Have fan checked by ESTA customer service.
Vibrational speed too high	Fan has been installed in a strained condition.	Have fan checked by ESTA customer service.
	The impeller is unbalanced.	
The power uptake is too high.	Direction of rotation is wrong.	Change turning direction.
	The resistances in the entire system are too low.	Close the existing throttle element until the desired air volume has been reached.
The fan does not run smoothly	The impeller wheel is imbalanced due to deposits.	Immediately switch off. Carefully and thoroughly remove the deposits.
	Imbalance due to material corrosion at the impeller, e.g. caused by the transport of aggressive media.	Notify ESTA customer service.
	Imbalance due to deformation of the impeller wheel due to overheating.	
	Fan has been installed in a strained condition.	
	Imbalance due to wear of the impeller wheel.	
The supply cable's preliminary fuse has tripped.	Motor was switched on/off too often within a short period of time.	Observe table "Switch-on procedures for motors"



## 9.4 Error messages on the control panel

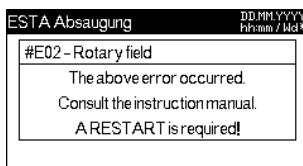
### E01 – Cycle protection



The control unit recognises when the extraction has been activated and deactivate repeatedly in rapid succession over a short time. This is not permissible operation.

1. Switch off the system at the main switch.
2. Switch on the system at the main switch.

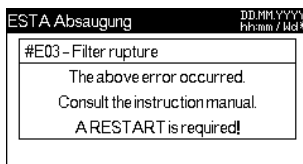
### E02 - Rotary field



The control unit checks the rotary field of the feed each time the main switch is switched on. If the rotary field is incorrect, this message appears and operation of the system is not possible. The rotary field must be changed.

1. Switch off the system at the main switch.
2. Change the rotary field on the supply line, see the chapter Monitoring rotation direction [► 23].
3. Switch on the system at the main switch.

### E03 – Filter rupture (optional / clean gas dust sensor)

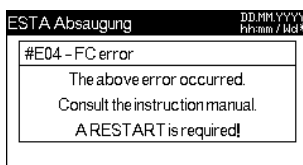


The control unit recognises when an increased concentration of dust particles arises. This indicates a filter rupture! During extraction mode, the control unit interrupts the extraction, which cannot be restarted, and this message appears.

The threshold for recognition of the unfiltered particles in the clean gas area for recognition of a filter rupture.

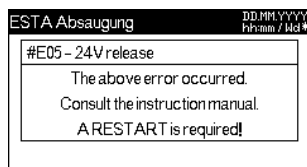
1. Switch off the system at the main switch.
2. Check the system for a filter rupture, clean the overall system as necessary and replace all filter elements.
3. Switch on the system at the main switch.

### E04 – FC error (optional / frequency converter)



There is a fault in the frequency converter.

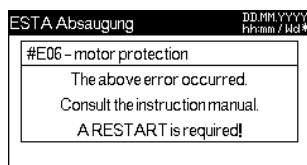
1. Switch off the system at the main switch.
2. Correct the error with the FC manual.
3. Switch on the system at the main switch.



### E05 – 24 V release

The control unit recognises if the system door(s) are not completely closed. During extraction mode, the control unit interrupts the extraction, which cannot be restarted, and this message appears.

1. Switch off the system at the main switch.
2. Close all doors.
3. Switch on the system at the main switch.



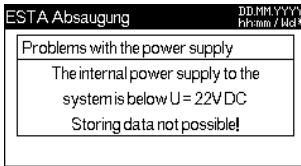
### E06 – Motor protection

The motor fault input on the power unit is activated. During extraction mode, the control unit interrupts the extraction, which cannot be restarted, and this message appears. Extraction mode cannot be switched on again until the motor fault has been eliminated.

1. Switch off the system at the main switch.
2. Troubleshoot and eliminate the cause of the motor fault.
3. Switch on the system at the main switch.

## 9.5 Fault messages on the control panel

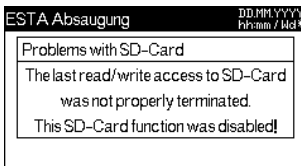
### Power supply



The control unit recognises when the internal voltage supply is below 22V DC. Parts of the control unit will be damaged or rendered unusable. The extraction cannot be started.

Inform the ESTA maintenance service.

### SD card (option)



The error has occurred due to impermissible operation. No data can be stored on the SD card.

Inform the ESTA maintenance service.

## 9.6 Messages on the control panel

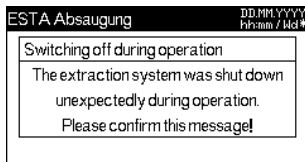
### Service / maintenance



The permissible operating hours until the next maintenance have been reached.

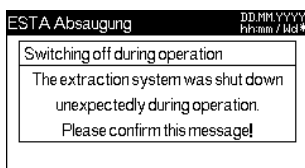
Inform the ESTA maintenance service.

### System clock



Inform the ESTA maintenance service to replace the support battery.

### Switching off during operation

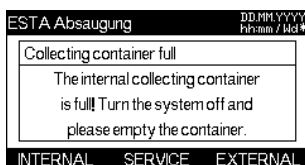


When switching on, the control unit recognises when the dust system has been switched off directly at the main switch during operation. This is not permissible operation. Always observed the prescribed shut-down procedure!

Acknowledge message.

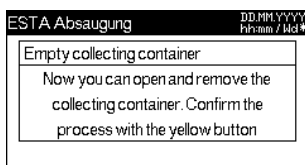


### Collection container (optional fill level sensor)



If the system is equipped with a fill level sensor, this message is shown in the display as soon as the collecting container / disposal carton has reached the max. permissible fill level.

Follow the instructions on the display.



1. Switch off the extraction function.
2. Switch off the system at the main switch.
3. Emptying the collection container, see chapter Emptying the collection container [▶ 36].
4. Switch on the system at the main switch.
5. Acknowledge the message after emptying the collecting container.



## 9.7 Error codes on the display

Error code	Possible cause	Possible solution
E00 – N. D.	Another error was present briefly and could not be identified.	If this occur frequently, contact ESTA Customer Service.
E01 – Cycle protection	Motor was switched on/off too often within a short period of time.	Observe permissible Switch-on procedures for motors.
E02 - Rotary field	Incorrect rotating direction.	Have the rotating direction checked by an electrician and reverse the phases, if necessary.
E03 – Filter rupture	Filter element broken.	Replace the filter.
	Sensor defect.	Have an electrician test the sensor.
E04 – FC error	FC causes an error.	Refer to the manual for the FC to eliminate the error.
E05 – 24 V release	System doors not closed correctly.	Close all system doors correctly.
E06 – Motor protection+	Motor protection adjusted incorrectly.	Have an electrician adjust the motor circuit breaker, incorporate a gentle start-up, if necessary.
	Incorrect rotating direction.	Have the rotating direction checked by an electrician and reverse the phases, if necessary.
	Overload due to inadequate air resistance in the system.	Check the extraction line, if applicable. <ul style="list-style-type: none"> <li>● Use an extraction line with a larger diameter.</li> <li>● Reduce the line length.</li> <li>● Incorporate throttling devices.</li> </ul>
	Short-circuit.	Have an electrician check the cable connections of the motor.
	Motor blocked.	Inspect the motor.
	Motor was switched on/off too often within a short period of time.	Observe permissible Switch-on procedures for motors.
	FC consumes too much current.	Contact ESTA customer service.

## 10 Decommissioning



TARGET GROUP: Commissioning personnel

### CAUTION

#### Harmful separated substances

Effects on respiration, organs, skin and eyes

- ▶ Maintenance, cleaning, repair, and emptying work may only be completed by expert personnel.
- ▶ Wear personal protective equipment.
- ▶ Personal protective equipment must be impermeable and resistant to harmful substances.
- ▶ Ensure that the ball valve of the collection tank is closed.
- ▶ Ensure that the collection container is attached to the discharge opening.
- ▶ Ensure that inspection doors are firmly closed.
- ▶ Stop leaks with binding agents and dispose of them according to local regulations.
- ▶ When handling separated harmful substances, observe the manufacturer's safety data sheets with regard to components and effects.



Proceed as follows:

1. Disconnect the product from the mains supply and secure it against re-activation (e.g. with a padlock).
  2. Take out the filter and package according to local regulations.
  3. Empty the collection container.
  4. Clean the product inside and out.
  5. Disconnect the cleaning-controller cable from the switch cabinet.
  6. Disconnect the fan's drive-motor cable from the switch cabinet.
  7. Remove the intake and outlet pipes from the product's ports.
  8. Securely fasten all loose hoses, pipes and cables on the product.
  9. Use approved lifting gear to place the product onto a pallet and secure it with transport locks.
- ⇒ Product prepared for relocation, storage or transport.

## 11 Packing and storage



TARGET GROUP: Transport personnel

### 11.1 Packaging



#### **! DANGER**

##### **Risk of falling and tripping**

Danger to life from falling objects or loads

- ▶ Do not stand under suspended loads.
- ▶ Secure the assembly area and mark it out (e.g., with barrier tape).
- ▶ Always lift the product vertically during loading and assembly work.
- ▶ Suitable, approved hoisting and transportation equipment may only be attached to the red transport lugs.
- ▶ Only transport the product with suitable, approved means of lifting and transport.
- ▶ Keep a sufficient distance from the product while it is being installed. Distance at least 1.5 times the height of the product.
- ▶ Have set-up observed and coordinated by a qualified supervisor.
- ▶ Wear personal protective equipment.

#### **NOTICE**



##### **Material damage due to improper transport**

Damage to the housing, lines and product components

- ▶ Do not push or pull the product across the floor if it does not have any rollers.
- ▶ Pay attention to any protruding components when setting down the product.
- ▶ Note the centre of gravity (which is not in the centre) when setting down the product.
- ▶ When loading by crane: the weight, centre of gravity and permissible suspension angle (60°) of the lifting load must be taken into account.
- ▶ Only transport the product with suitable, approved means of lifting and transport.

1. Decommission the product, refer to the chapter Decommissioning [▶ 46].
2. Fasten the product to an adequately dimensioned pallet.
3. Wrap the product in tear-proof packaging foil and pack it to prevent slipping and damage.
4. Clearly mark the packaged product.

**Transport** The product is transported in accordance with general logistics guidelines.

## 11.2 Storage

Store the product in a dry room if it is not required for a longer period of time.

Storage temperature	[°C]	+5 ≤ ≥ +25
Humidity	[%]	30 - 70

**Fan** To prevent "sticking" of the bearings in the drive motor of the fan, the impeller wheel of the fan must be manually turned during storage at intervals of approx. two weeks.



## 11.3 Disposal



### CAUTION

#### Harmful separated substances

Effects on respiration, organs, skin and eyes

- ▶ Maintenance, cleaning, repair, and emptying work may only be completed by expert personnel.
- ▶ Wear personal protective equipment.
- ▶ Personal protective equipment must be impermeable and resistant to harmful substances.
- ▶ Ensure that the ball valve of the collection tank is closed.
- ▶ Ensure that the collection container is attached to the discharge opening.
- ▶ Ensure that inspection doors are firmly closed.
- ▶ Stop leaks with binding agents and dispose of them according to local regulations.
- ▶ When handling separated harmful substances, observe the manufacturer's safety data sheets with regard to components and effects.

### NOTICE



#### Contamination

Due to contamination of the extraction system with dust hazardous to health, the system or its parts cannot be returned to ESTA. Dispose of collected material and filter elements according to the country-specific and regional laws and regulations.

Proceed as follows:

1. Remove the filter elements and package them air-tight.
2. Take the removable parts, e.g. motor, fan, cover, etc., out of the product.
3. Package the product and the detachable parts as specified by local regulations.
4. Dispose of everything according to local regulations.

## 12 Technical data

We reserve the right to make technical changes.

	672100	672160	672200
Type	FILTOWER L-100 eco+	FILTOWER L-160 eco+	FILTOWER L-200 eco+
Power (kW)	2x3,0	2x4,0	2x7,5
Voltage (V)	400	400	400
Frequency (Hz)	50	50	50
Power input (A)	11,5	15,3	28,2
Fuse (A)	C16A	C16A	C32A
Protection class	IP 54	IP 54	IP 54
max. air flow (m <sup>3</sup> /h)	10.000	15.000	20.000
max. neg. pressure (Pa)	2.800	2.800	2.800
Intake (mm)	1.295 x 295	1.295 x 295	1.295 x 295
Dimensions (mm)	2.060x1.515x 2.910	2.060x1.510x 3.400	2.060x1.510x 3.850
Collection bin (l)	100-150	100-150	100-150
Weight (kg)	1.030	1.150	1.250
Sound pressure level (LpA)	68	77	78
No. of filter elements (Pc)	4	4	4
Filter type	FP	FP	FP
Filter material	M	M	M

FC = filter cartridge

### 12.1 Replacement parts list

Spare part	FILTOWER L-100	FILTOWER L-160	FILTOWER R L-200
Filter cartridge	01001081 (4 unit)	01001083 (4 unit)	01001082 (4 unit)
Filter mat	15016227	15016219	15016244
Disposal box with cover	30008311 (1 set) = 06001074 (8 units)		
Filter cartridge disposal bag	30000567 (1 set) = 06000358 (10 units)		

## 13 Optional equipment

### Potential-free contact operation

The product can be fitted with a potential-free contact for operation. For this, consult the circuit diagram.

### Active carbon filter

The product can be fitted with active carbon inserts at the outlet openings to filter out odours.

### Timer function

The product can be fitted with a timer function. Suction times and pause times can be adjusted variably with this timer function.

### Pre-coating powder

Pre-coating powder can be provided for the product. Pre-coating powder increases the effectiveness of the filter, reduces caking, improves cleaning and can extend the service life of filter elements.

It forms a filter coat on the surface of the filter elements and reduces the ingress of dust particles into the filter. It is therefore used to prevent clogging or caking of the dust particles.

The pre-coating powder is introduced into the product via the intake duct during initial commissioning as well as after replacing filter cartridges.

### ecotemp

The product can be fitted with a heating and cooling coil with external water connection. This enables temperature control of the purified, outflowing air. The temperature is set via the controller next to the display. The room temperature remains constant by cooling the outflowing air in the working area.

### Fire-extinguishing appliance

The product can be fitted with a fire-extinguishing appliance. This switches the product off in the event of fire and automatically starts an extinguishing process.

## 14 EC/EU Declaration of Conformity

pursuant to EC Machinery Directive 2006/42/EC Appendix II, Part 1 A

Name of manufacturer:	ESTA Apparatebau GmbH & Co. KG
Address:	Gotenstr. 2 – 6 89250 Senden / GERMANY

Name of the authorised documentation manager:	ESTA Apparatebau GmbH & Co. KG
Address:	Gotenstr. 2 – 6 89250 Senden / GERMANY

We hereby declare that the

Machine:	Stationary deduster
Type:	FILTOWER L eco+

was developed, designed and manufactured in compliance with the EC directives specified in this declaration.

It also fulfils the protection goals of the following EC/EU directives:

2014/30/EU	EU – Electromagnetic Compatibility Directive
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2014/68/EU	EU - Pressure Equipment Directive
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The protective goals 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.

Applied harmonised standards:

- DIN EN ISO 12100:2011-03
- DIN EN ISO 13857:2008-06
- DIN EN 349:2008-09
- DIN EN 60335-1:2012-10
- DIN EN 60335-2-69:2015-07
- DIN EN 60204-1:2014-10

Applied national standards and technical specifications:

- VDI 3677

**Place and date** Senden, 23/01/2019

**Signature** Philipp Raunitschke  
Managing Director





## ESTA maintenance service - *Think about tomorrow today!*

### ESTA MAINTENANCE SERVICE OFFERS THESE ADVANTAGES!

- Check of your extraction system by an experienced and well trained team of ESTA service technicians
- Ensuring optimum functionality and efficiency of your extraction equipment and system, even many years after the initial operation
- Minimising the risk of a product failure
- Short response times
- Reduction of risk of costly repair expenses
- Preserving the value retention of your system
- Compliance with statutory provisions
- Detailed maintenance documentation as verification of compliance with statutory regulations
- Relieving the workload for internal service employees
- Permanent cleanliness in the work stations

Service phone +49 (0) 7307 804-0

Online support [www.esta.com/en](http://www.esta.com/en)

#### Office hours

Monday to Thursday 08:00 to 17:00

Friday 08:00 to 16:00



## ESTA maintenance contract - *Your Plus in terms of service!*

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