

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

Operating manual

ZA cyclonic pre-separator

Item No. 20.820.050 (ZA 50)
Item No. 20.821.100 (ZA 100)
Item No. 20.821.125 (ZA 125)
Item No. 20.821.140 (ZA 140)
Item No. 20.821.160 (ZA 160)
Item No. 20.821.200 (ZA 200)
Item No. 20.822.225 (ZA 225)
Item No. 20.822.250 (ZA 250)
Item No. 20.822.280 (ZA 280)
Item No. 20.822.300 (ZA 300)
Item No. 20.822.315 (ZA 315)
Item No. 20.822.355 (ZA 355)
Item No. 20.822.450 (ZA 450)



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

Translation of the original instructions
20821160-08-00



Warnings and safety instructions



Note



Reference to ESTA customer service



Reference to legal regulations

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1. General safety notes

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



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

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

The cyclonic pre-separator is intended only for dry cleaning.

The device must not be operated or set up in an explosion protection zone.

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

2. Preventing dust hazards



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



3. Intended use

The ESTA cyclonic pre-separator has been manufactured according to the state of the art and in compliance with safety regulations. It is suitable for commercial use, such as in industrial firms and workshops.

When used as intended, the device is suitable for pre-separation of dry, free-flowing coarse dusts.

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

The device must not be used outdoors or under wet conditions if it was not designed for such application.

ESTA sets up the cyclonic pre-separator according to the operator's information.

To guarantee the cyclonic pre-separator's functionality, make no modifications to the geometry of the cyclone or to the cross-sections and radii of the connected tubes or hoses. Modifications can influence the cyclone's filtration efficiency especially negatively. Modifications should only be made after consultation with ESTA.

Above all, be sure not to damage the cyclone.



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



4. Technical data and description

4.1 Cyclonic pre-separator

| Cyclonic pre-separator | Intake port [mm] | Max. airflow volume to [m ³ /h] | Collection container [litres] | Cyclone height [mm] * |
|------------------------|------------------|--|-------------------------------|-----------------------|
| ZA 50 | 50 | 200 | 50 | 1,458 |
| ZA 100 | 100 | 800 | 100 | 2,280 |
| ZA 125 | 125 | 1,100 | 100 | 2,596 |
| ZA 140 | 140 | 1,200 | 100 | 2,578 |
| ZA 160 | 160 | 2,000 | 100 | 2,924 |
| ZA 200 | 200 | 2,500 | 100 | 3,166 |
| ZA 225 | 225 | 3,700 | 200 | 4,128 |
| ZA 250 | 250 | 4,500 | 200 | 4,399 |
| ZA 280 | 280 | 6,000 | 200 | 4,823 |
| ZA 300 | 300 | 6,500 | 200 | 5,086 |
| ZA 315 | 315 | 7,500 | 200 | 5,278 |
| ZA 355 | 355 | 9,300 | 200 | 5,735 |
| ZA 450 | 450 | 12,500 | 200 | 6,449 |

*May vary. See text of order.

Technical changes reserved

4.2 Functional description

The cyclonic pre-separator is a device for separating coarse, dry dusts and particles from an air flow volume using the effects of centrifugal force.

ESTA cyclones reach a filtration efficiency of at least 90% with medium-sized grain sizes of at least 150 microns. With grain sizes of more than 15 µm, a filtration efficiency of 96% is reached.

These percentages represent weight data and are always related to the total apparent density during the separation process.

Depending on the application and the suction assembly, the coarse grains fall into the collection container, while the finer dust is sucked and filtered through the connected dust extractor, for example.



5. Delivery, installation and start-up

5.1 Delivery and transport

At delivery, the cyclonic pre-separator is fastened to a pallet. After the protective cover and the bottom fasteners have been removed, the device can be lifted and set up with a crane. For this purpose, there are lifting straps on the top of the device.

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



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5.2 Installation



Only persons authorized under “General safety instructions” must on set up and install the pre-separator!

The cyclonic pre-separator must be placed on a level, statically permissible surface as near as possible to the processing machine. The three support feet must be bolted to the floor with appropriate fasteners to prevent the cyclone from tilting.

When installing the ZA 450 two-part cyclonic pre-separator, make sure that the transitions to the cyclone’s interior connections are smooth, in order to ensure the cyclonic pre-separator’s functionality and achieve its desired filtration efficiency.

Depending on the model, ZA 50 - ZA 450, install the exhaust hose (spiral hose) or the rigid tube connection airtight to the cyclonic pre-separator.

Then the cyclonic pre-separator must be connected to the processing machine and the suction equipment.



6. Maintenance and troubleshooting

6.1 Maintenance instructions

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

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

If necessary, the device can be cleaned with a damp cloth.

6.2 Inspection and maintenance intervals



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

Regular maintenance consists of 2 intervals:

1. Daily inspection includes:

- ***By the dust extractor's user***

Visual inspection

- for damage to the device or its parts,
- for a full dust collection container (regulations require that the container be emptied if it is more than 2/3 full)

2. Monthly inspection includes:

- ***By expert maintenance personnel***

Visual and functional inspection,

- to make sure there is no damage to the housing
- to make sure that no deposits have built up inside the cyclone. If these are found, they should be removed.
- to determine leaks in the housing or connected tubes (dust trails or deposits)



With the cyclonic pre-separator's two-part version, the connection cable for transferring electrical conductivity must be checked twice a year to see that the earthing braids are in perfect condition and to replace them, if necessary.



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.

If there is a malfunction, the system must be switched off immediately and the responsible maintenance service notified.



Maintenance must be performed according to accident prevention regulations. The device must be disconnected from the suction equipment.

6.3 Troubleshooting

| Problem | Possible cause | Possible solution |
|---|---|---|
| Suction performance diminishes | Connection tubes clogged | Remove the tube and clean it in an environmentally sound manner |
| The suction equipment's filter unit needs cleaning disproportionately often | Dust collection container too full Cyclone's operation is limited by build-up on the interior wall | Empty whenever 2/3 full Clean the interior wall |



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





7. Cleaning



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



During cleaning work, all soiled objects that can no longer be adequately cleaned must be disposed of.

So as not to hamper the cyclonic pre-separator's operation, the interior of the housing must be cleaned on a regular basis, in case there is build-up.



The cyclone must be cleaned only with a damp cloth or with brushes that are gentle to its surface.

It must not be cleaned with flowing water.



8. Disposal



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



8.1 Disposing of collected dust materials

The dust collection container must always be emptied when it reaches the maximum fill level (2/3 of the container). Before it is emptied, the connected suction device must be safely switched off.

The dust collection container is flange mounted to the cyclonic pre-separator with four quick-tension locks. For emptying the dust collection container, the four quick-tension locks are released crosswise in pairs, while the container's locking lever rotates upward and away. The hooks of the quick-tension locks are folded under. Now the container can be emptied.

To attach the container, follow the same sequence in reverse.

8.2 Disposing of the cyclonic pre-separator

Before disposing of the separator, empty the dust collection container and discard according to local regulations.

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

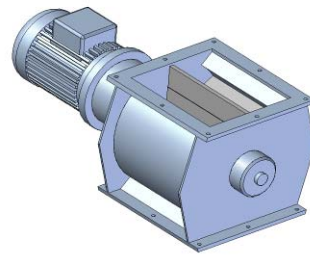
Due to contamination of the device with toxic dust, ESTA cannot take the device back.



9. Optional equipment

9.1 Disposing of dust through other equipment

The cyclonic pre-separator can optionally be equipped with a cellular rotary valve. This is installed on the discharge. Follow the separate operating manual for the cellular rotary valve.

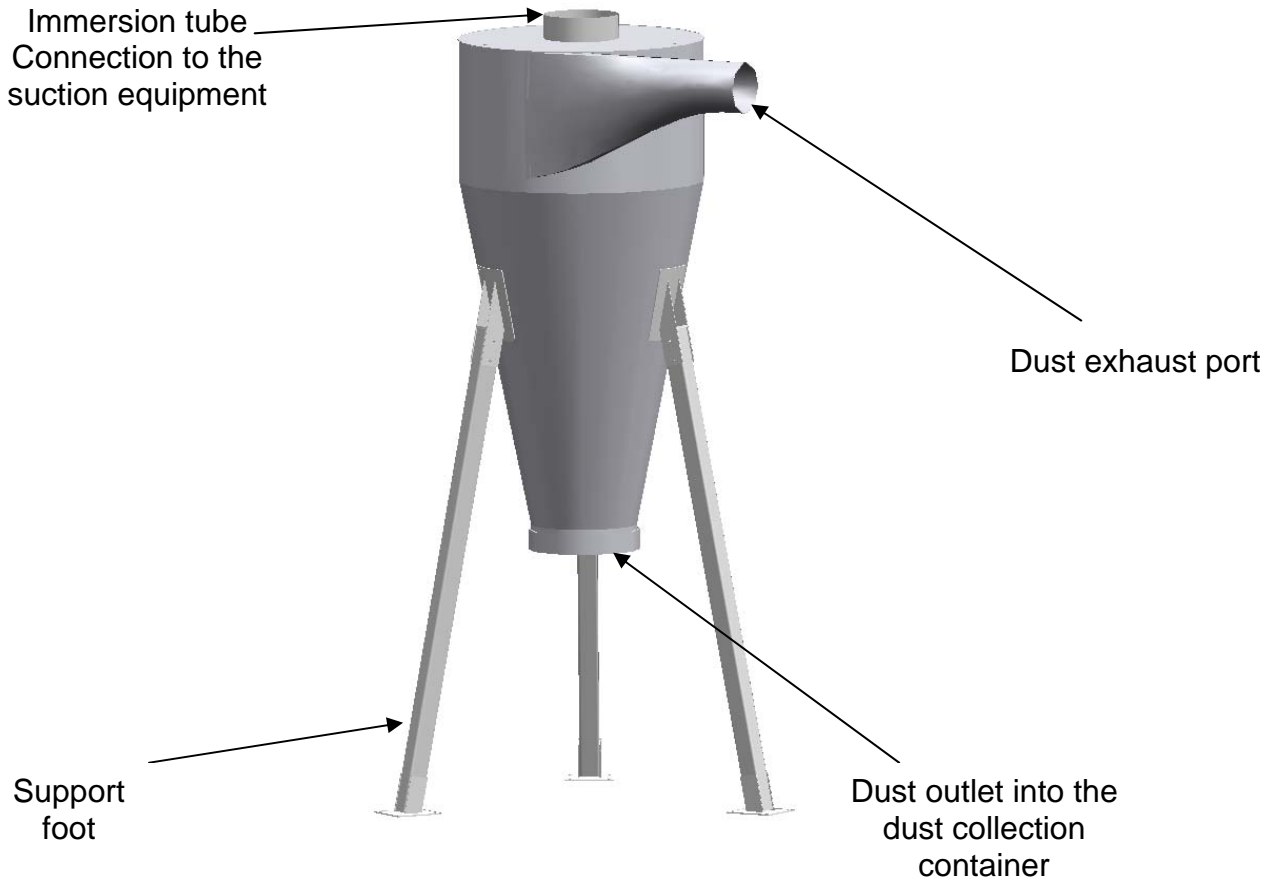


Furthermore, instead of the dust collection container, a Big Bag can be installed on the cyclonic pre-separator for collecting larger dust quantities. This version requires a modified base frame.

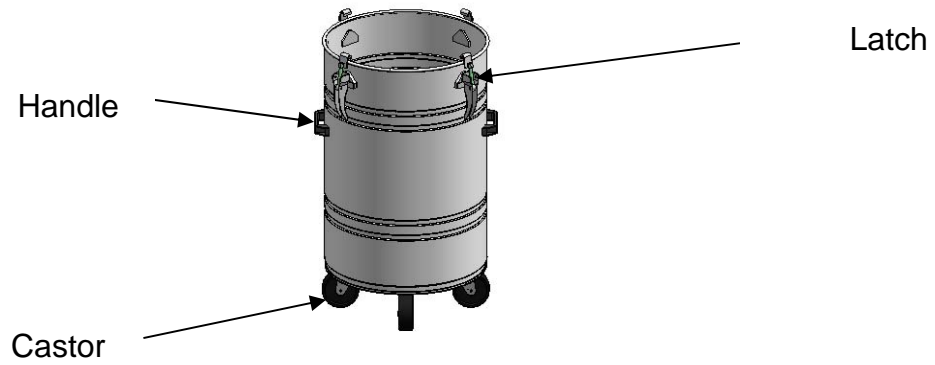


10. Device diagram

ZA cyclonic pre-separator



Dust collection container





11. Declaration of incorporation

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

Mrs. Pflum is authorised to compile the technical file according to Annex VII A.:
Ramona Pflum
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Here we explain that the design of the incomplete machine:

Machine: Dust removal system for exhausting dust

Central units: Cyclonic pre-separator ZA 50 - ZA 450

conforms to the following regulations:

2006/42/EC EC Machine Directive

Reconciled norms used:

EN 12100 Safety of machinery - basic concepts, general propositions (part 1 and part 2)
EN 13857 Safety of machinery, devices and systems; safety distances to prevent hazard zones from being reached
EN 349 Safety of machinery; minimum distances for preventing body parts from being crushed

National norms and technical specifications used:

VDI 3676 Inertia force separator

Note: The incomplete machine can be operated only once it has been determined that the building's capacities meet the specifications in the directives mentioned above.

Senden, 30 December 2009



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