The World of Extraction ESTA





DUSTOMAT-16 M

Mobile Extractor

The World of Extraction ESTA



Welcome to the sphere of suction technology

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Your ESTA Absaugtechnik Team





Operating manual

CE

DUSTOMAT-16M

Item No. 09.420 (DUSTOMAT-16M (230V)) Item No. 09.421 (DUSTOMAT-16M (400V))



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ESTA Apparatebau GmbH & Co. KG Gotenstraße 2-6 89250 Senden Germany Tel.: +49 (0) 73 07 80 4 -0 Fax: +49 (0) 73 07 80 4 -500 E-mail: info@esta.com www.esta.com

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Warnings and safety instructions



Electrical current hazard



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

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

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

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

No liquids, aggressive gases, easily flammable materials or glowing particles (such as hot embers) may be aspirated. For example, it is prohibited to use the DUSTOMAT-16M in painting operations. It is forbidden to exhaust processing machines with active ignition sparks or hot embers (such as multi-blade saws).

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



Installation and operation in dust-explosive or gas-explosive areas is forbidden.

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

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

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

Example:

When the dust extractor is operating at the nominal airflow volume of 1140m³/h the same volume of fresh air must therefore be fed in. This occurs with natural ventilation if the volume of the work room is 1140 m³ (e.g., 380 m² surface with a 3 m ceiling height).

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

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



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



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

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

When transporting the device, always close the damper flap on the intake port to prevent dust from escaping.

The power cord must be plugged in only after the dust extractor has been successfully set up at its place of use. For this a 16-amp Schuko wall socket fuse (for alternating current drive) or a CEE wall socket with a slow-blow fuse (for three-phase drive) must be in place.

Only plugs and connectors complying with EN 61241-14 must be used for connecting electrically driven industrial vacuums and dust extractors. Coupling plugs and connectors or adapters are not permitted.

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



Only original ESTA conductive accessories may be used for operating the dust extractor.



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.



From its first use, the DUSTOMAT contains toxic dust. Emptying and maintenance processes, including removal of the dust collection container, must be performed by expert personnel who are wearing appropriate protective gear. The dust extractor must not be operated without the complete filtration system!



In all emergencies, the device must be disconnected from the power supply immediately, the device turned off at the emergency switch, and the plug pulled immediately. If there is a fire, the fire department is to be alerted immediately, and the fire must be contained by appropriate means.

2. Preventing mechanical hazards

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



Residual risk:

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

3. Preventing electrical hazards

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



Residual risk:

If a covering that can only be unfastened with a tool is removed, a hazard is posed by electric current!

4. Preventing dust hazards

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



Residual risk:

When emptying the dust collection bag, it is possible to inhale dust. Following the instructions in the section "Disposal" will minimize this hazard!

4.1 Devices for dust class M

The device is designed for use with dusts that are hazardous to health. When working on the open device (for maintenance, cleaning, repairs), the operator must take special protective measures, which include wearing special personal protective gear. When the device is being operated, the complete filtration system, consisting of the main filter and backup filter must be used. The following warning is shown on the device.



Open the device only when it has been turned off from the control panel, and when it has been determined by a wait time of about 4 minutes that the filter cleaning process has been performed and that the dust inside the device has settled in the dust collection container. Before opening, turn the device off at the main switch and secure it against unintentional reactivation. Using a one-way dust collection bag with a closable opening guarantees low-dust removal of the collected material.

5. Intended use

The ESTA dust extractor 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.

DUSTOMAT devices are suitable for exhausting dry, free-flowing dusts. They are equipped with a filter for **dust class "M**" (moderate hazard) for separation of dust with an exposure limit of more than 0.1 mg/m³. The purified air can be directed back into the work area.

Version B1 dust extractors:

In terms of safety, model B1 dust extractors are not suitable for exhaust on running processing machines on which sources of ignition have not been eliminated.

Installation and operation in **dust-explosive zones 20 and 21** or **gas-explosive areas** is forbidden!

In terms of safety, the DUSTOMAT is suitable for exhausting dry non-flammable dusts in Zone 22. This does not include dusts known to have extremely low minimum ignition energy (MIE<1mJ). Use with these dusts requires case-by-case safety considerations in connection with other measures, if necessary.

In regard to safety, dust-explosion-protected industrial exhaust devices are not suitable for aspiration of explosive or equivalent materials in the sense of Section 1 of the explosives act, of liquids or of mixtures of flammable dusts with liquids.



Only original, conductive ESTA accessories must be used with industrial exhausts and dust extractors!

Conductive exhaust equipment (e.g., exhaust hoods on machines) and conductive parts of processing machines (e.g., devices in protection class II) that are not earthed (grounded) through the dust extractor must be earthed in some other way to prevent electrostatic charges.



When connecting an electrically conductive suction hose, make sure 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.

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

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

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

6. Technical data and description

6.1 DUSTOMAT 16 M			technical changes reserved
Model (see model plate)		AC current	Three-phase current
Connection voltage	[V]	230	400
Drive output	[kW]	1.3	1.1
Rated current	[A]	7.2	2.6
Nominal frequency	[Hz]	Ę	50
Circuit breaker	[A]	1	16
Max. vacuum	[Pa]	20	000
Environmental conditions	[°C]	5 ≤ 3	$\theta \leq 40$
Air humidity	[%]	6	60
Max. airflow volume	[m³/h]	11	140
Dust collection container	[litres]	4	15
Intake port (dia.)	[mm]	1	25
Dimensions (L x W x H)	[mm]	1,150 x 6	70 x 1,470
Filter area	[m²]	9	.4
Max. sound pressure level*	dB(A)	6	57
Weight	[kg]	1	10
Production year		See mo	del plate

The measurement surface sound pressure level was measured according to DIN EN ISO 3744 in an open area, at maximum volume flow, at a 1 m distance from the surface of the device, at a height of 1.6 m above ground. From the measurement surface sound pressure level and the device dimensions, the sound power level according to DIN EN ISO 3744 was calculated.

6.2 Functional description

The DUSTOMAT is equipped with a 1.3 kW AC motor or a 1.1 kW three-phase motor that drives a radial fan. The device is turned on and off using the red-green double push button.

The vacuum created by the fan draws air through the device's intake port. A permanent filter set up within the filter housing separates the dust that is in the exhausted air. The purified air is guided back into the room through the exhaust vents.

Optionally, the device can be equipped with an exhaust arm for pinpoint accuracy in drawing dust at its source. This frees the workplace of toxic dust.

When using an exhaust arm mounted on the device, fold the exhaust arm together during transport to prevent the device from tipping.

The DUSTOMAT is equipped with a vacuum monitor as a control device. This monitoring device measures the vacuum in the filter. With increased dust soiling the filter, the flow resistance increases along with the vacuum behind the filter. If the value set on the vacuum monitor is reached, a signal sounds, and the filter must be cleaned with the machine off. A pneumatic nozzle cleaning device is provided for this purpose.

This frees the filter surface from dust and renews it. The dust collection container with a collection bag underneath the filter catches the dust that is cleared.

For easier removal of the collected material, the upper part can be tipped backwards and the dust collection container removed from the device complete with its contents.

7. Delivery, installation and start-up

7.1 Delivery and transport

At delivery, the DUSTOMAT is fastened to a pallet. After the protective cover and the bottom fasteners have been removed, it can be picked up with a forklift. Do not use a crane!

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



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

When moving the device, make sure the ground can support it and be driven over.

When using an exhaust arm mounted on the device, fold the exhaust arm together during transport to prevent the device from tipping.

7.2 Installation

Other than perhaps moving a connection for the power necessary, no installation work is needed. Pneumatic cleaning requires a compressed air connection in the device's set-up area (4-6 bar, oil- and water-free).

The optionally included exhaust arm is attached on the lateral exhaust arm holder and is locked into the desired position by the star knob. Insert the nipple on the hose end of the arm into the butterfly valve, which is located on the filter housing. Then, using the included tapping screws (3.5×9.5) and the drilled holes, firmly connect the nipple to the butterfly valve.

7.3 Start-up

Only persons authorized under "General safety instructions" must turn the device on.

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



Before the device is used, its operation must be tested.



On devices driven by three-phase current, check the direction of rotation.



Before a device with three-phase drive is started up (power supplied through a CEE plug) the fan's

ON/OFF switch

Guideline on direction of rotation

direction of rotation must be checked. By briefly turning the device on, you make sure that the fan rotor's direction of rotation agrees with the direction of the arrow.

If the direction of rotation is wrong,

the polarity of the power supply must be reversed. For this purpose, the CEE plug is equipped with a phase inverter. Using a screwdriver to turn the pole pin built into the insulated part of the plug changes the fan rotor's direction of rotation.



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

If the operational check has been done, place the device on a level surface, as close as possible to the work area. Lock two of the device's wheels. Set the exhaust arm's extraction hood as close as possible to the dust source.

Insert the electrical plug into an appropriate socket. Before the dust-producing work begins, the dust extractor must be switched on.

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

8. Maintenance and troubleshooting

8.1 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 discarded in an impermeable bag in compliance with applicable regulations for disposal of such refuse.

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 over 25°C. Before the device is placed into storage, it is recommended that it be cleaned with a damp cloth, that the filter be cleaned, and that the dust container be emptied.



The device must never be cleaned with flowing water.



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

8.2 Inspection and maintenance intervals

Regular maintenance consists of 3 intervals:

1. Daily inspection includes: By the dust extractor's user

Visual inspection

- for damage to the device or its parts
- for mechanical damage to the power cable
- 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,

- for filter leaks (dust trails or deposits on the air outlets)
- to guarantee operation of the minimum airflow volume monitor (siren). During inspection, the device's air intake must be closed. If the siren sounds, the equipment is in order.

3. The main annual inspection includes:

The last test by ESTA is documented on the device! *In collaboration with the ESTA maintenance service*

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

After maintenance, the device receives a new test plate to document that maintenance has been performed.



This inspection must be done once per year.



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 dust extractor must be switched off immediately and the responsible maintenance service notified.



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.



Maintenance must be performed according to accident prevention regulations. The device must be disconnected from the power supply and compressed air network.



Get the most from ESTA's maintenance service!

A maintenance contract ensures a long life and top-notch operation for your dust extractor.

We'll make you a great offer — just call us up:



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

8.3 Troubleshooting

Always use the following checklists if a malfunction is evident. Call the ESTA maintenance service right away if there is a malfunction that is not discussed in these lists. Do not perform any repairs on the device yourself if they are not explicitly specified.



If dust escapes or clouds up from the air outlets, if smoke develops or the fan runs loud, the device must be disconnected from the power immediatelv!



When cleaning, the person doing the work must always wear a respirator mask (filter mask with particle filter, filter class P3) and gloves.



Before opening the switch box, make sure to pull the electrical plug! Work in the switch box must be performed only by an electrical expert or an appropriately trained person.

Problem	Possible cause	Possible solution
Device shuts off	The motor protection relay has been tripped due to low voltage, overload or wrong direction of rotation	Voltage too low Clean filter Change the connection polarity
		Allow to cool for 30 min.
Suction performance diminishes	Filter clogged	Clean filter
or the device produces	Butterfly valve closed	Open the butterfly valve
no suction	Suction hose clogged	Clean the exhaust hose in an environmentally sound manner
Warning signal for low suction volume persists despite filter cleaning.	Fine dust is sucked right back to the filter.	Clean several times with device at rest and let the dust settle (1 min.)
	Pressure controller set too weak	Change the pressure controller after consulting ESTA.
	Dust collection container too full	Replace dust collection bag
	Filter pores clogged	Replace filter

9. Monitoring the minimum airflow volume



At delivery, the vacuum monitor set to sound a horn signal when soiling of the filter causes the air speed to go below the minimum of 20 m/s in the exhaust arm's hoses. At that point it is absolutely necessary to clean the filter before using the machine again (see the "Cleaning" section). The vacuum monitor must absolutely be kept at the set values! Correction must be made only by an appropriately trained person. The adjustment is made with a size 6 Allen wrench.

10. Cleaning



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



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

A safety device is built into the machine for monitoring the minimum airflow volume to be exhausted. A vacuum monitor does the monitoring and activates a signal. After the signal goes on, the filter must be cleaned.

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

10.1 Manual pneumatic filter cleaning



If the filter is to be cleaned, wait about a half minute after turning off the device, to allow the fan's rotor to come to a standstill. Before cleaning begins, close the butterfly valve on the device's intake port to prevent dust from escaping during cleaning. For cleaning, then connect the compressed air supply (4-6 bar, oil- and water-free) to the quarter-inch plug nipple with a DN 7.2 ¼-inch coupling. Then turn the hand wheel counter-clockwise until it stops. Afterwards turn the hand wheel clockwise back to the starting position. During filter cleaning, streams

Compressed air connection

of compressed air from the clean air side of the filter remove filter cakes from the dust-laden side.

If the warning signal still sounds after successful cleaning of the device, check the amount of material in the dust collection equipment after waiting about a minute. No later than when it is 3/4 full, empty the dust collection container (see the section on "Disposal").

If the signal still sounds after the container has been emptied and cleaned, the filter must be replaced.

10.2 Filter replacement



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

After an extended operation period, the filter pores can be clogged by extremely fine dust. Even the cleaning equipment cannot remove this dust. Now the filter must be replaced with a new one.

If possible, filter replacement should be done when there is no work going on. Additionally, the replacement must be done in a suitable area, so that no other personnel are endangered. Used filters must be discarded in compliance with local regulations.



Before the filter is replaced, it must first be cleared of loose dust using the available cleaning system, and the power and compressed air network must be cut off.

This requires the following operations:

First turn the hand wheel for cleaning downward until it stops. Loosen and remove the clamping ring used for securing the lid. The upper part will tilt. Pull the dust collection bag downward over the upper part. Pull the lid, including the hand wheel, upward. This creates an opening between the filter housing and lid. Through this opening, loosen both nuts (all nuts for filter replacement: M8, SW 13) that secure the filter cleaning equipment. Now the lid, including the cleaning equipment, can be pulled out of the device. After that, loosen the 6 interior nuts. Now the filter falls downward into the dust collection bag. Close the dust collection bag containing the used filter with the included strip. Now install the new filter and cleaning equipment in the opposite sequence.



Cleaning the filter cartridge in a dismantled state by blowing it out or beating it is not permissible!

11. 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.









11.1 Disposing of collected dust materials

Replace the dust collection bag with a new one when it has reached the container's maximum fill height (about 3/4) and always after using the dust extractor.

Since the ESTA company does not know what types of dust are being exhausted, it can be necessary to replace the dust collection bag before it has reached its maximum fill level (a large bulk density means heavy weight).

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The dust collection device must not be emptied until about 1 minute after operation or completed cleaning. It takes this long for floating dust in the device to settle.



Before replacing the dust collection bag, lock the castors. When using an exhaust arm mounted on the device, fold the exhaust arm together to prevent the device from tipping while the dust collection container is being emptied. To remove the full dust collection bag, tilt the upper part of the device in the direction of the push handle. For this, tighten the lateral locating pin. Turn the device on. To remove the dust collection

bag, carefully pull the folded edge of the bag upward and

Locating pin press it together about 30 cm below the upper edge of the bag. Tighten this 30 cm to about 15 cm at the upper edge, close it with the band included, remove it from the container, and dispose of it in accordance with local regulations.

When inserting a new dust collection bag, make sure that it lies flat against the walls of the container and overlaps the upper edge as little as possible. Turn the device off again, snap the upper part of the device shut (tighten the lateral locating pin). The device is now ready to operate.

For easier disposal of the collected material, the dust collection container can be detached from the dust extractor. Before the container is detached and transported, the dust collection bag must be closed as described. Then detach the black vacuum hose from the dust collection container, while pressing down on the ring on the upward-pointing side of the hose bracket and pulling the vacuum hose. To attach the container, follow the same sequence in reverse.

Follow applicable regulations when disposing of the collected material!

11.2 Disposing of the dust extractor

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

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

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

12.Optional equipment

12.1 Exhaust arm



In regard to ventilation, the exhaust arms designed for the DUSTOMAT to capture dust sources flexibly and very precisely. The suction port's stable position is easy to adjust using external gas springs.

Two sizes are available: 2 m long Order No: 122029 3 m long Order No: 123029 incl. 1.5m PU connection hose When using an exhaust arm mounted on the device, fold

the exhaust arm together to prevent the device from tipping while the dust collection container is being

emptied.

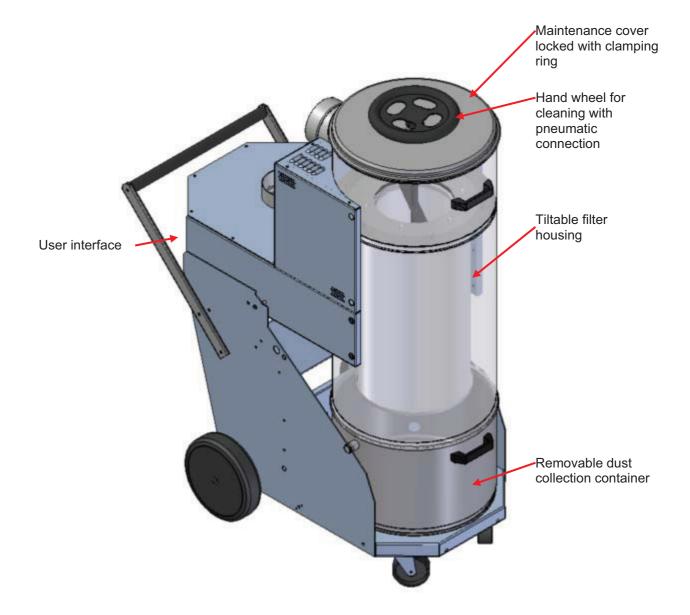
12.2 Pre-separator

The DUSTOMAT can be equipped with an upstream separator. This collects large amounts of coarse dust, in order to prolong the life of the filter cartridge. The following separators suitable for the DUSTOMAT are available.

Order No.	Includ	ed in delivery	Connection size	Application
95.125		Mobile 200-liter vessel with pre- separator head, incl. connection to suction assembly	125 dia.	Dry Heavy, coarse suction material and high dust emission
97.125		Mobile 200-liter vessel with a baffle plate for filling with water, incl. connection to suction assembly	125 dia.	Flying sparks Water separator for exhausting on processing machines that may produce sparks
20821125	Ì	Cyclone with a mobile 100-litre dust collection container, incl. connection to the suction assembly	125 dia.	Lightweight material Large amounts of light material, mainly shavings and dust

13. Device diagram

DUSTOMAT - 16 M (230 V & 400 V)



C.

With the model information, request the ESTA replacement parts you need from the ESTA replacement part service: +49 (0) 7307 804 - 0

14. Declaration of conformity

Name of manufacturer: Address of manufacturer:	ESTA Apparatebau GmbH & Co. KG Gotenstraße 2 - 6 89250 Senden
Name of person in charge of documentation:	Ramona Pflum Gotenstraße 2 - 6 89250 Senden

Here we explain that the design of the machine

Machine:	Dust extractor for collection, transport and elimination of dry, free-flowing dusts from individual sources
Series:	DUSTOMAT
Model:	DUSTOMAT - 16M, 230V/50Hz, 400V/50Hz

conforms to the following regulations:

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

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
EN 60335	Safety of electrical appliances for household and similar use (part 1 and part 2-69)
EN 61000-6-3	Electromagnetic compatibility - Emitted interference in residential areas, commercial and business operations, as well as small enterprises
EN 61000-6-4	Electromagnetic compatibility - Emitted interference for the industrial sector
EN 61000-3 Part 11 EN 61241-14	Electromagnetic compatibility Limit values - Limiting voltage changes Installation of electrical systems in potentially explosive areas

National norms and technical specifications used:

VDI 3677Filtering separatorsDIN 8416Dust extractors for commercial use

h. |/ //-Dr. Peter Kulitz CFO

Senden, 03. January 2012

Notes



ESTA Apparatebau GmbH & Co. KG Gotenstraße 2 - 6 89250 Senden / Ay



Tel.: +49 (0) 7307 804 - 0 Fax: +49 (0) 7307 804 - 500 E-mail: info@esta.com

www.esta.com

Notes



ESTA Apparatebau GmbH & Co. KG Gotenstraße 2 - 6 89250 Senden / Ay



Tel.: +49 (0) 7307 804 - 0 Fax: +49 (0) 7307 804 - 500 E-mail: info@esta.com

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I want to order the following items:

Amount	Order-No.	Item description

My address:

Customer-No.:	
Company:	
Address:	
Contact person:	
Phone:	
Fax:	
E-mail:	

Signature:



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- Mobile Extractors
- Stationary Dust Extractors
- Industrial Vacuum Cleaners
- Welding Fume Filters
- Oil Mist Separators
- Extraction Fans
- Extraction Arms
- Central Extraction Systems
- Pipe Systems

We reserve the right to make technical changes



ESTA Apparatebau GmbH & Co. KG

Gotenstrasse 2 – 6 D-89250 Senden, Germany

Phone: +49 (0) 73 07 - 8 04 - 0 +49 (0) 73 07 - 8 04 - 500 Fax: E-Mail: info@esta.com www.esta.com