The World of Extraction

ESTA

OPERATING INSTRUCTIONS

OILMAC

Oil Mist Extractor

The World of Extraction ESTA

Welcome to the sphere of suction technology

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

Your **ESTA Absaugtechnik** Team

www.esta.com

ESTA

Operating Instructions

OILMAC 800

OILMAC 1600

with backup filter stage H13

OILMAC 800 (order no.: 56201)
OILMAC 1600 (order no.: 56202)

with backup filter stage combination mesh

OILMAC 800 (order no.: 56211)
OILMAC 1600 (order no.: 56212)

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

Original operating instructions
56201-08-08

Edition notice

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1. General instructions

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

- **Installation**
- **Commissioning**
- **Operation**
- **Maintenance and repairs**

Read the operating instructions carefully before working with the device.

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

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

2. Product identification

2.1 Technical data

2.1.1 With backup filter stage H13

We reserve the right to make technical changes.		OILMAC			
		800		1600	
Item no.		**56201**		**56202**	
Max. volume flow	[m³/h]	840		1,800	
Drive power	[kW]	0.55	**	1.1	**
Connection voltage	[V]	400	**	400	**
Nominal frequency	[Hz]	50	**	50	**
Nominal current	[A]	1.5	**	2.4	**
Circuit breaker	[A]	16	**	16	**
Protection class		IP 54		IP 54	
Intake port ø	[mm]	200		250	
Dimensions (L x W x H)	[mm]	1,140x685x475		1,270x685x805	
Average sound pressure level LpA	[dBA]	69		71	
Weight	[kg]	approx. 80		approx. 130	
Production year		See model plate			

* Using the enveloping surface method DIN EN ISO 3744, measured at minimum volume flow; noise measurement margin of error approx. 4 dBA
** Custom voltage on request

2.1.2 With backup filter stage combination mesh

We reserve the right to make technical changes.		OILMAC			
		800		1600	
Item no.		**56211**		**56212**	
Max. volume flow	[m³/h]	840		1,800	
Drive power	[kW]	0.55	**	1.1	**
Connection voltage	[V]	400	**	400	**
Nominal frequency	[Hz]	50	**	50	**
Nominal current	[A]	1.5	**	2.4	**
Circuit breaker	[A]	16	**	16	**
Protection class		IP 54		IP 54	
Intake port ø	[mm]	200		250	
Dimensions (L x W x H)	[mm]	1,140x685x475		1,270x685x805	
Average sound pressure level LpA	[dBA]	69		71	
Weight	[kg]	approx. 80		approx. 130	
Production year		See model plate			

* Using the enveloping surface method DIN EN ISO 3744, measured at minimum volume flow; noise measurement margin of error approx. 4 dBA
** Custom voltage on request

2.2 Intended application

2.2.1 Ambient conditions

Ambient temperature	[°C]	$+5 \leq \vartheta \leq +40$
Rel. humidity	[%]	30 - 70

2.2.2 Intended use

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

- For commercial use, such as in industrial enterprises and workshops.
- For the separation of aerosols (e.g. cooling lubricant) which arise during the mechanical processing of metallic parts.
- For installation on a processing machine.
- Approved for air recirculation operation with backup filter stage H13.
- Approved for air extraction operation with backup filter stage combination mesh.

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

The manufacturer sets up the device according to the operator's information.

2.2.3 Improper use

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

Therefore:

- **Do not** use or store outdoors.
- **Do not** change the location of the device during suction operation.
- **Do not** set up or operate in dust/gas-explosive areas.
- **Do not** use in painting operations.
- **Do not** use in food operations.
- **Do not** suck up aggressive gases.

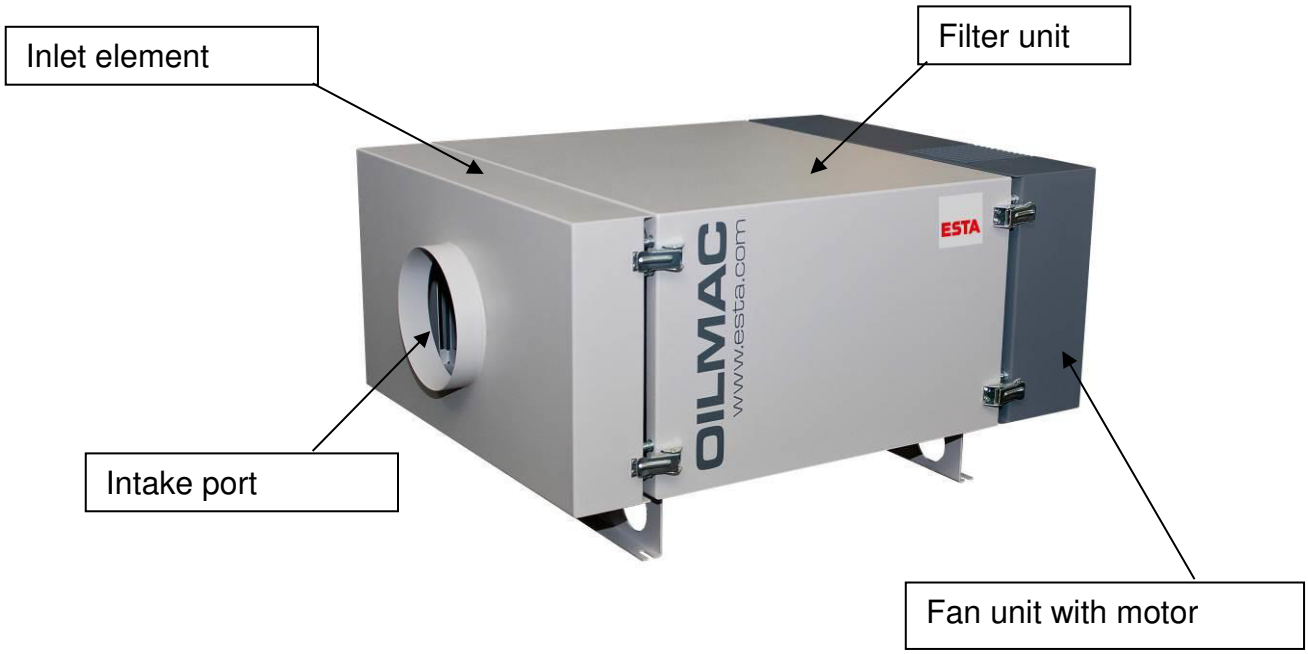
2.2.4 Reasonably foreseeable misuse

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

3. Product Description

3.1 Picture of the device

3.1.1 OILMAC 800



3.1.2 OILMAC 1600

3.2 Separation and filter elements

3.2.1 Pre-filter

The separation and filter elements are designed so that the air is filtered mechanically through several stages of filtration.

The pre-separator consists of the following filter elements:

1. Pre-filter metal mesh
2. Pre-filter fibre mat
3. Main separator labyrinth filter
4. Pre-filter fibreglass mat

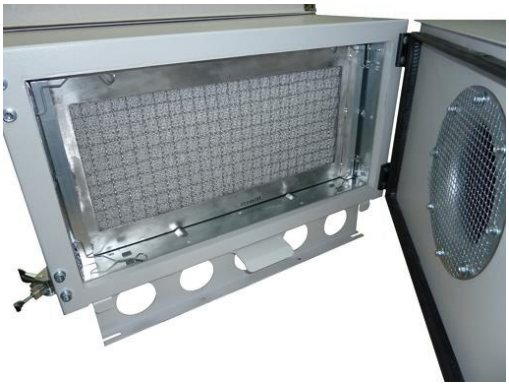
3.2.2 Backup filter stage

The separation and filter elements are designed so that the air is filtered mechanically through several stages of filtration.

Depending on the design, the backup filter is designed as:

1. Backup filter stage H13

2. Backup filter combination mesh



3.3 Functional description

The device is equipped with a three-phase motor which drives a radial fan.

Due to the negative pressure created by the fan, air containing oil and emulsion is drawn from the processing machine through the suction hose connected to the device's intake port. Filters located in the filter housing reliably separate dust particles and oil and emulsion residue. The purified air is returned through outlet openings (with backup filter stage H13) at the top of the device or a corresponding discharge air line (the combination mesh with a backup filter stage.

The housing is designed so that separated, fluid oil and emulsion residue at the bottom of the housing accumulate and can be drained through a siphon connection.

	Separated cooling lubricant can contain impurities which could negatively affect machine availability in closed systems.

4. Safety instructions

4.1 Hazard categories

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

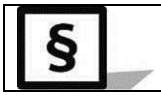
Based on the severity of the hazard, the hazard warnings are categorized as follows:

	**DANGER** Hazard warning about an immediate danger to people. Failure to comply can lead to severe injury or death.

	**WARNING** Warning about a recognisable hazard. Failure to comply can lead to severe injury or death, and can destroy the device or parts thereof.

	**CAUTION** Instruction about a hazard. Failure to comply can lead to mild injury and to damage to the device.

4.2 Symbol explanation

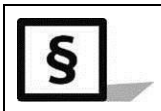
	Further information
	Reference to ESTA customer service
	Reference to legal regulations

4.3 General safety instructions

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

Supply air flow [m^3/h] = room volume [m^3] ∗ air replacement rate [1/h]

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

	According to work equipment user directives 2009/104/EG and TRGS 560, safety devices for prevention or removal of hazards must be regularly maintained and regularly inspected by an expert for safe, flawless operation.

In all emergencies, disconnect the device from the power supply immediately.

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

4.4. Preventing mechanical hazards

DANGER

Risk of injury posed by the drawing-in or catching of hair or loose items (e.g. chains, hair, ties, etc.).

- Observe the safety regulations for work on devices with rotating parts!
- Before working on the device, turn it off and secure it against unintentional reactivation.
- When working on the device, tie back long hair or wear a hairnet!
- When working on the device, do not wear any loose items (chains, ties, etc.).

WARNING

Crushing hazard due to loose or open covers

- Keep covers closed during operation!
- Before working on the device, turn it off and secure it against unintentional reactivation.
- Seal inspection openings securely after working on the device.

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

4.5 Preventing electrical hazards

DANGER

Electric shock from high voltages

- Follow the safety rules for working with electrical devices!
- Before working on the device, disconnect it from the voltage supply.
- Any work on the electrical grid and on live components parts may only be performed by an electrician.

DANGER

Residual hazard from loose or open covers

- Keep covers closed during operation!
- Any work on the electrical grid and on live components parts may only be performed by an electrician.

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.

After use, before moving the device to another site and before cleaning, maintenance, or replacement or removal of movable parts, switch off the device and secure it from reactivation.

4.6 Preventing material and substance hazards

	**CAUTION** Damage from improper handling of separated substances • Maintenance, cleaning, repair and emptying work must be done only by expert personnel. • Observe the instructions of the cooling lubricant manufacturer about handling these substances. • Absorb leaks with binding agents and dispose of them according to local regulations. • Wear personal protective equipment. - Gloves (impermeable and resistant to cooling lubricant) - Aprons (impermeable and resistant to cooling lubricant) - Protective clothing - Respirator mask (particle filter class P3)

	**CAUTION** Damage from improper filter installation • Set up locally filtered forced-air ventilation where the device is being maintained, inspected, cleaned or disposed of. • Operate the device only with the complete filtration system. • Always pay attention to the arrangement and installation location of the filters. • Wear personal protective equipment. - Gloves (impermeable and resistant to cooling lubricant) - Aprons (impermeable and resistant to cooling lubricant) - Protective clothing - Respirator mask (particle filter class P3)

The people assigned to cleaning work must be instructed on the aspirated toxic materials. Harm to bystanders and the environment must be prevented by all means.

5. Delivery and commissioning

5.1 Delivery and transport

	**DANGER** Danger from falling device • Do not walk under heavy loads. • The lifting equipment must be designed for the weight of the device. • Only attach the lifting equipment to the marked points. (See illustration) • Do not suspend from the motor.

	**WARNING** Crushing hazard if the device settles during transport • Secure the device during transport. • Wear safety shoes.

At delivery, the device is fastened to a pallet. Remove the protective cover and floor securing devices. Inspect the delivery for completeness.

Please inspect the device for transportation damage when it arrives. Damage determined must be reported and documented immediately.

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

	Make sure the floor has adequate weight capacity and can be properly driven on when transporting the device.

When transporting to the installation location, transport the device (leave pallet secured below the device) with a forklift or lift truck.

To place it on the processing machine, use
- ➢ suitable slings,
- ➢ guide these under the device,
- ➢ hang these on a suitable crane or the fork of the forklift. Also pay attention here to the illustration!

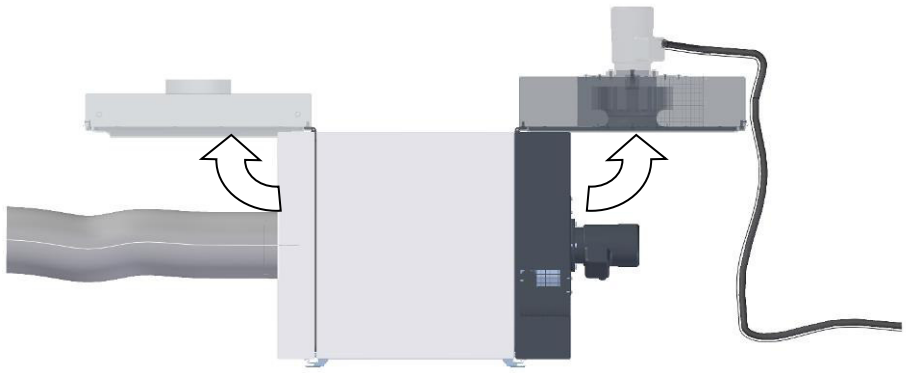
5.2 Connection

	Before establishing cable connections between the device and the mains, check whether the operating voltage specified on the rating plate matches that of the mains.

The device must always be set up horizontally on a rigid, vibration-insulated surface. Bolt the device tightly together with the processing machine.

In so doing, watch out for the minimum required clearances from ceilings and walls.

		OILMAC	
		800	1600
Top of the device (air outlet)	[mm]	> 800	> 800
Fan unit	[mm]	> 800	> 800
Intake port	[mm]	> 800	> 800



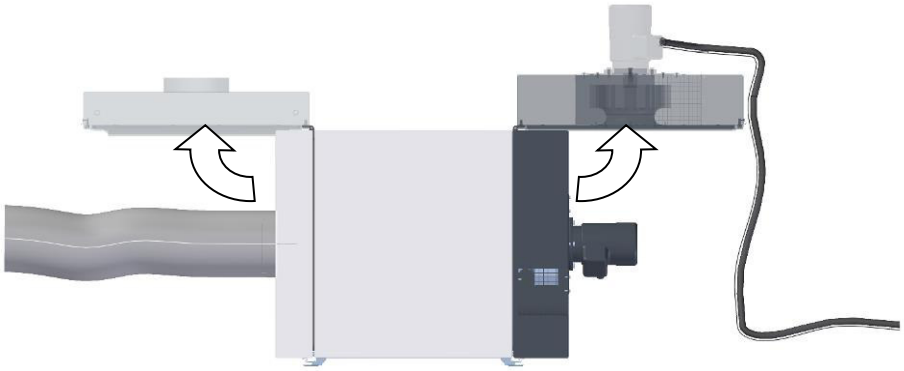
5.2.1 Electrical connection

	**DANGER** Electric shock from high voltages • Follow the safety rules for working with electrical devices! • Only operate the device with a suitable, lockable motor circuit breaker! • When working on the device, disconnect it from the voltage supply! • Any work on the electrical grid and on live components parts may only be performed by an electrician.

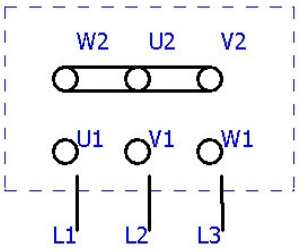
The device power supply requires connection of a customer-side cable connection with a slow-blow fuse and lockable motor protection switch to the device motor. Connection to the building's power supply or a machine control cabinet is made at the installation location.

The device is isolated from the mains during maintenance, cleaning and servicing work via a lockable motor circuit breaker.

When choosing the cable length, remember that the ventilator unit needs to be swung open for maintenance, cleaning and servicing work.



		Domestic	Abroad *
Mains supply		Star 400 V; 50 Hz; 3 N~	Star 400V; 50 Hz; 3~
Fuse	[Amp.]	16 (slow-blow)	16 (slow-blow)



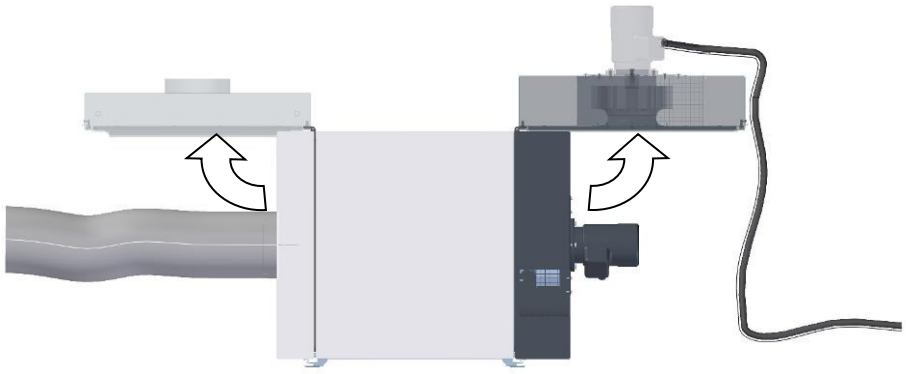
If the device is controlled on site via a control system, this must be designed so that the oil mist separator starts up before the processing machine starts the processing sequence. If the processing sequence has been completed, the oil mist separator must continue running afterwards.

5.2.2 Suction line connection

	You should generally attach baffle plate to the extraction opening of your processing machine. This should keep out cooling lubricant droplets and chips. Wall clearance: Approx. 100 mm Extraction opening cover: Min. 100 mm (all sides)

A suction pipe must be laid on site for connecting the device to the processing machine. Arrange this as follows:

- Connection to the intake port of the oil mist separator with a flexible pipe which is easy to disassemble
- Ensure this is without kinks as much as possible
- Largest possible bending radii (R ≥ 2 x pipe diameter)
- Slightly tilted towards the suction point (for the drainage of condensate fluids)
- Without sagging
- Select the flattest possible angle if pipe branches are required for the connection of several suction points

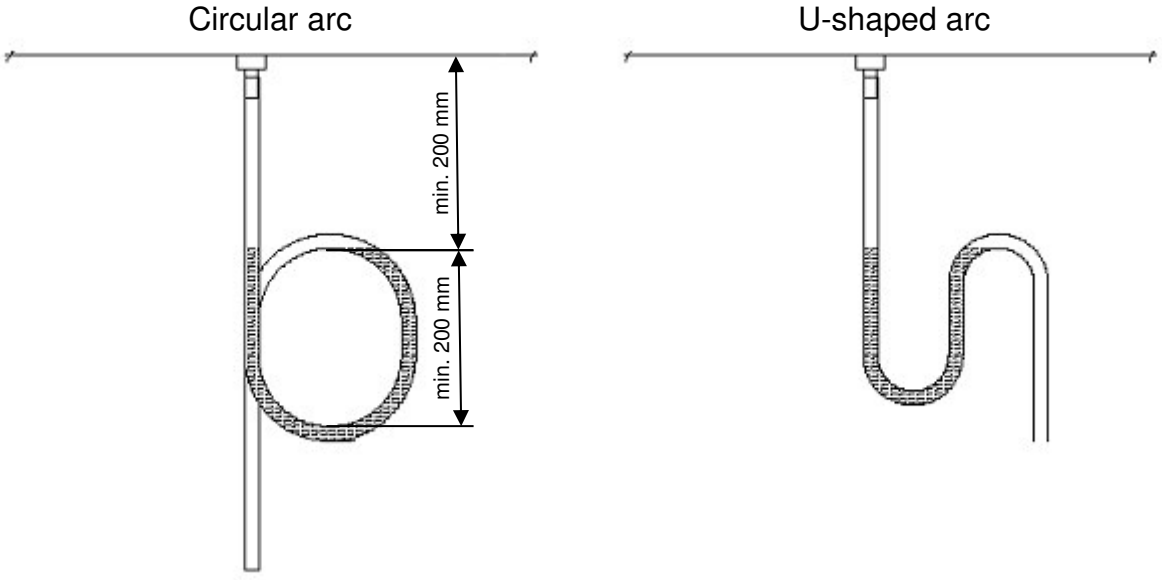


5.2.3 Siphon connection

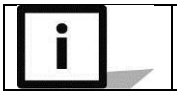
Connection thread	["]	3/4
Spout diameter	[mm]	9

Underneath the device there are outlet openings on the inlet element and on the filter unit for connecting a siphon pipe. Separated cooling lubricant is drained through these. To make sure this cooling lubricant drains properly and to prevent the unwanted intake of false air, a filled siphon connection must be installed at this port.

- To do this use the hose and hose clips enclosed.
- Observe the diagram on this point.
- Have the siphon pipe falling, without the formation of water pockets.
- The siphon connection principle can be implemented as a:



- Fill the siphon with cooling lubricant fluid.
  - During filling, fluid must leak down out of the hose or pipeline.

	Separated cooling lubricant can contain impurities which could negatively affect machine availability in closed systems.

5.3 Function check

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

Switch the device on for a function check.

5.3.1 Rotation direction monitoring

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

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

- Switch the device on and then immediately back off again.
- Perform a visual inspection to check that the fan rotor is turning in the direction indicated by the arrow.
  - If the fan rotor is turning in the wrong direction, the motor must have its electrical polarity reversed.
- The device is ready for operation.

	**DANGER** Electric shock from high voltages • Follow the safety rules for working with electrical devices! • Secure the main switch against reactivation with a padlock when working on the device. • Isolate device! • Any work on the electrical grid and on live components parts may only be performed by an electrician.

5.4 Commissioning

Use original ESTA accessories.

Once a functional inspection has been completed, the connection is made to the processing machine that is to be extracted.

- Install the suction pipe.
- Install the siphon connections.

5.5 Troubleshooting during commissioning

Fault	Possible cause	Possible solution
Motor power consumption is too high.	Direction of motor rotation is incorrect.	Rotation direction change-through rotating the phases
	The resistances in the system are too high	Check the suction pipe. If necessary, use a suction pipe with a large diameter. – Reduce pipe length.
The desired air quantity is not reached	Direction of motor rotation is incorrect.	Rotation direction change-through rotating the phases
	Excessive pressure loss in the suction pipe	Position the device closer to the extraction point – Reduce pipe length.
The motor shuts down before reaching the operating speed.	The switching devices present are incorrectly set up or unsuitable.	Adjust the switching devices accordingly, provide for potential heavy starts

6. Operating instructions

6.1 Operating the device

After connecting the suction hose to the processing machine:

- Switch on the oil mist separator
- Start the processing operation.

During operation, do not change the device's location.

When finishing the processing operation:

- End the processing operation.
- Switch off the oil mist separator

7. Maintenance & troubleshooting

7.1 Maintenance instructions

DANGER

Risk of injury posed by the drawing-in or catching of hair or loose items (e.g. chains, hair, ties, etc.).

- Observe the safety regulations for work on devices with rotating parts!
- Before working on the device, turn it off and secure it against unintentional reactivation.
- When working on the device, tie back long hair or wear a hairnet!
- When working on the device, do not wear any loose items (chains, ties, etc.).

CAUTION

Damage from improper handling of separated substances

- Maintenance, cleaning, servicing and emptying work only by specialist personnel.
- Observe the instructions of the cooling lubricant manufacturer about handling these substances.
- Absorb leaks with binding agents and dispose of them according to local regulations.
- Wear personal protective equipment.
  - Gloves (impermeable and resistant to cooling lubricant)
  - Aprons (impermeable and resistant to cooling lubricant)
  - Protective clothing
  - Respirator mask (particle filter class P3)

CAUTION

Damage from improper filter installation

- Set up locally filtered forced-air ventilation where the device is being maintained, inspected or cleaned.
- Operate the device only with the complete filtration system.
- Always pay attention to the arrangement and installation location of the filters.
- Wear personal protective equipment.
- Wear personal protective equipment.
  - Gloves (impermeable and resistant to cooling lubricant)
  - Aprons (impermeable and resistant to cooling lubricant)
  - Protective clothing
  - Respirator mask (particle filter class P3)

WARNING

Crushing hazard due to loose or open covers

- Keep covers closed during operation!
- Before working on the device, turn it off and secure it against unintentional reactivation.
- Seal inspection openings securely after working on the device.

For maintenance by qualified personnel, the device must be opened, cleaned and inspected at the given locations. During maintenance or repair work, all soiled objects that can no longer be adequately cleaned or which are not intended to be cleaned must be disposed of. Such objects must be packaged and disposed of in accordance with local regulations for the removal of such waste.

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

According to 2009/104/EC (work equipment user directive), TRGS 560 (air recirculation operation), and BGR 143 (activities with cooling lubricants), safety devices for the prevention or removal of hazards must be regularly maintained and regularly inspected by an expert for safe, flawless operation.

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

7.2 Inspection and maintenance intervals

	The service life of the separation and filter elements is heavily determined by the contamination of the extracted air. Following commissioning, conduct an inspection of the separation and filter elements weekly in order to set the plant maintenance intervals.

Regular maintenance consists of at least the following intervals:

1. Daily inspection includes:

➢ ***By the device's user***

Visual inspection

- For damage to the device or its parts
- For mechanical damage to the power cable
- For noticeable leaks to the suction pipe or siphon connections

2. Monthly inspection includes:

➢ ***By expert maintenance personnel***

Functional and visual inspection

- Clean the device.
- Check – and where appropriate, clean or replace – the separation and filter elements
- Check siphon connections for blockages, and clean these if necessary

3. The main annual inspection includes:

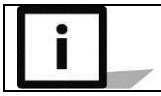
The last test by ESTA is documented on the device.

➢ ***In collaboration with the ESTA maintenance service***

- Flow volume measurement
- Low-pressure measurement
- Power consumption measurement
- Visual check of filters
- Seal inspection

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

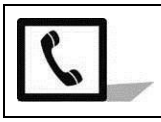
A maintenance contract ensures a long life and top-notch operation for your suction apparatus.
We'll make you a great offer — just call us up:

	Get the most from ESTA's maintenance service!

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

7.2.1 Spare and wear parts

	Use original ESTA replacement and wear parts!

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

Replacement parts	OILMAC series	
	800	1600
Pre-filter aluminium wire mesh	02007624	
Pre-filter filter pad	01000529	
Main separator labyrinth filter	16001826	
Backup filter stage H13 (for air recirculation)	01001013	
Backup filter combination mesh (for air extraction operation)	02000588	
Pre-filter fibreglass mat	01000566	
Siphon hose	06000491 per X metre	
Disposal bag for filters	30000567 [=06000358	1 set 10 pieces]

7.3 Cleaning and replacing the separation and filter elements

After an extended period of operation, the filters clog up by slowly due to the ingress of extremely fine dust (wear debris), chip deposits, resinous oil, and fatty residues in the pores. The filters must be cleaned or replaced. This work may only be performed by trained personnel!

The pre-separator consists of the following filter elements:

1. Pre-filter metal mesh
   - Corrosion-resistant
   - Wear-free
   - Capable of being cleaned/washed

2. Pre-filter fibre mat
   - **Incapable** of being cleaned/washed
   - Replace in the event of soiling

3. Main separator labyrinth filter
   - High self-cleaning performance
   - Capable of being cleaned/washed

4. Pre-filter fibreglass mat
   - **Incapable** of being cleaned/washed
   - Replace in the event of soiling

Wherever possible, work should be carried out during non-working hours.

	The arrangement, quantity, and installation location of the individual separation and filter elements have a significant effect on the device's ability to function. Ensure that all separation and filter elements are used with the correct arrangement, quantity and installation location, through labelling if necessary. Otherwise, all claims on the guarantee and warranty resulting from incorrect installation of the separation and filter elements are voided.

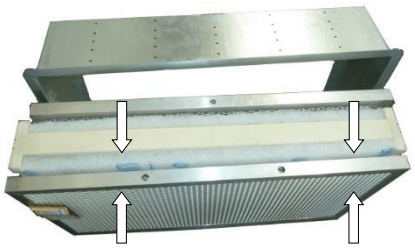
7.3.1 Cleaning and replacement intervals

Separation and filter element	Replacement	Cleaning
1. Pre-filter aluminium wire mesh	As required	At least monthly
2. Pre-filter filter pad	At least monthly	--
3. Main separator labyrinth filter	As required	At least monthly
4. Pre-filter fibreglass mat	As required	--
5a. Backup filter stage H13	As required	--
5b Backup filter combination mesh	As required	At least monthly

7.3.2 Pre-separator

Wherever possible, work should be carried out during non-working hours.

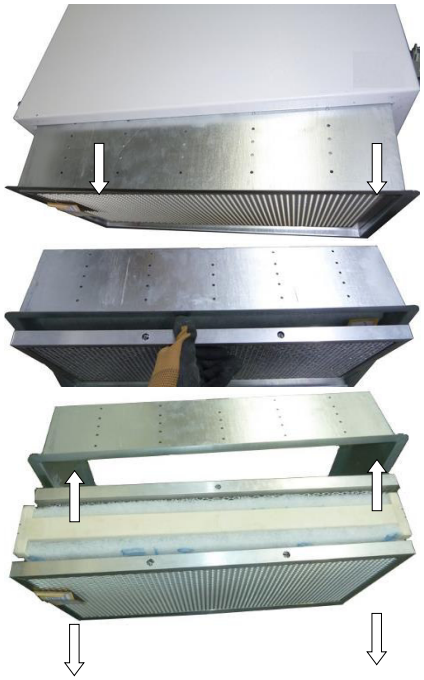
- Switch the device off and secure it against unintentional reactivation.
- If necessary, remove the suction pipe.
- Release the side quick release on the inlet element carefully.
- Swing the inlet element open carefully.
- Reach into the pre-separator from above carefully and apply a little pressure.
  → Pre-separator swings out from below.
- Take the pre-separator out of the device completely and place it in a suitable container.
- The individual filter elements can be taken out of the frame by tipping the pre-separator.



- Replace or clean the individual filter elements as required.
- Arrange all filter elements in the correct order, quantity, and installation location in the pre-separator.
  → **It is imperative that you pay attention to the direction of flow through the labyrinth filter. See arrows on the corners!**
- Push the pre-separator gently into the device.
- Swing the inlet element shut slowly.
- Seal the inlet element through the side quick releases.
- If necessary, attach the suction pipe.
- The device is now ready to operate again.

7.3.3 Pre-filter aluminium wire mesh

Wherever possible, work should be carried out during non-working hours.



- Take the pre-separator out of the device as described and place it in a suitable container.
- The individual filter elements can be taken out of the frame by tipping the pre-separator.
- Remove deposits of oil and emulsion residue, resinous oil, and fine dusts from the pre-filter aluminium wire mesh
  - With warm water
  - With degreasing cleaning agents
  - Spray off with high-pressure cleaners at a distance of 300–500 mm
- Insert the pre-filter aluminium wire mesh and the other separation and filter elements into the pre-separator frame.
- Insert the entire pre-separator into the device as described.

7.3.4 Pre-filter filter pads

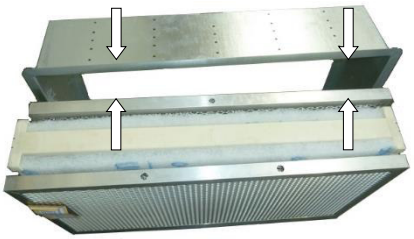
Wherever possible, work should be carried out during non-working hours.

- Take the pre-separator out of the device as described and place it in a suitable container.
- The individual filter elements can be taken out of the frame by tipping the pre-separator.
- Take out the used filter pads.
- Insert new filter pads.
- Insert the fibre mat and the other separation and filter elements into the pre-separator frame.
- Insert the entire pre-separator into the device as described.

7.3.5 Pre-filter labyrinth filter

Wherever possible, work should be carried out during non-working hours.

- Take the pre-separator out of the device as described and place it in a suitable container.
- The individual filter elements can be taken out of the frame by tipping the pre-separator.
- Take out the filter pads.
- Remove deposits of oil and emulsion residue, resinous oil, and fine dusts from the labyrinth filter
  - with warm water
  - With degreasing cleaning agents
  - Spray off with high-pressure cleaners at a distance of 300–500 mm



- Insert new filter pads if necessary.
- Insert the labyrinth filter and the other separation and filter elements into the pre-separator frame.
  → **It is imperative that you pay attention to the direction of flow through the labyrinth filter. See arrows on the corners!**
- Insert the entire pre-separator into the device as described.

7.3.6 Pre-filter labyrinth filter

Wherever possible, work should be carried out during non-working hours.

- Take the pre-separator out of the device as described and place it in a suitable container.
- The individual filter elements can be taken out of the frame by tipping the pre-separator.
- Take out the filter pad.
- Insert new filter pad.
- Insert the labyrinth filter and the other separation and filter elements into the pre-separator frame.
  → **It is imperative that you pay attention to the direction of flow through the labyrinth filter. See arrows on the corners!**
- Insert the entire pre-separator into the device as described.

7.4. Backup filter stage filter element

7.4.1 Backup filter stage H13

Wherever possible, work should be carried out during non-working hours.

- Switch the device off and secure it against unintentional reactivation.
- Wait until the fan has come to a stop.
- Release the quick releases on the fan unit.
- Swing the fan unit open.
- Open the side clamps.
- Take out the backup filter stage.
- Put the backup filter stage in a disposal container.
  → Do not wash!
- Purge the frame in the device of oil and emulsion residue, resinous oil, and fine dust
  - With warm water.
  - With degreasing cleaning agents.
- Insert a new backup filter stage.
- Use the fastening clamps to fix the backup filter stage in the frame
- Close the fan unit.
- Lock the quick releases.
- The device is now ready to operate again.

7.4.2 Backup filter stage combination mesh

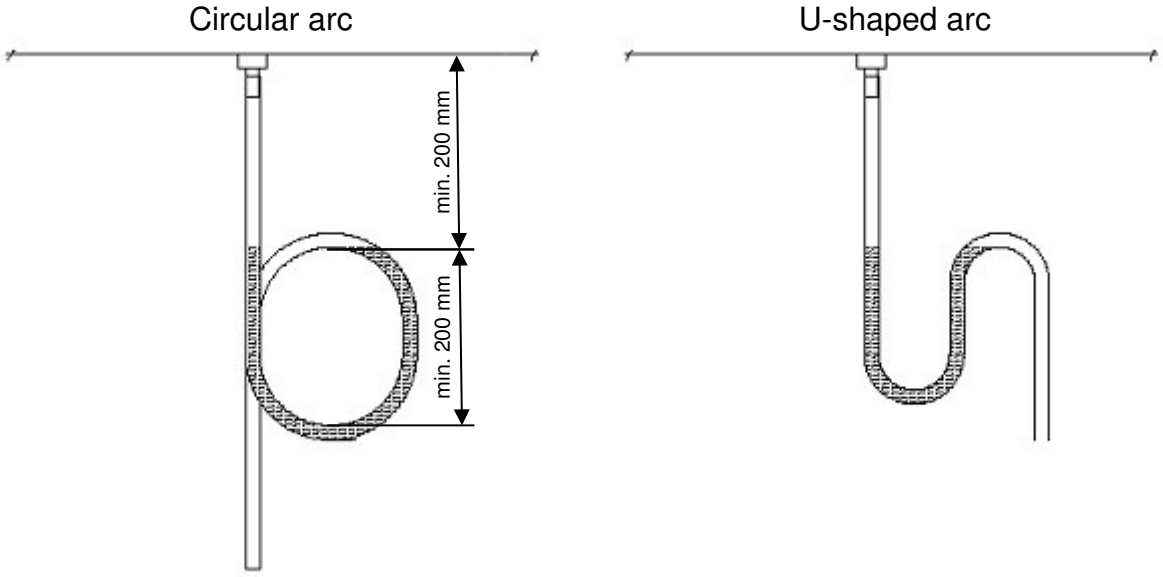
Wherever possible, work should be carried out during non-working hours.

- Switch the device off and secure it against unintentional reactivation.
- Wait until the fan has come to a stop.
- Release the quick releases on the fan unit.
- Swing the fan unit open.
- Open the side clamps.
- Take out the backup filter stage.
- Put the backup filter stage in a disposal container.
  - With warm water
  - With degreasing cleaning agents
  - Spray off with high-pressure cleaners at a distance of 300–500 mm
- Purge the frame in the device of oil and emulsion residue, resinous oil, and fine dust
  - With warm water.
  - With degreasing cleaning agents.
- Insert a cleaned or new backup filter stage.
- Use the fastening clamps to fix the backup filter stage in the frame.
- Close the fan unit.
- Lock the quick releases.
- The device is now ready to operate again.

7.5 Siphon connection maintenance

The siphon connections can get blocked up, especially with sludge-like substances. These must therefore be cleaned regularly.

- Switch the device off and secure it against unintentional reactivation.
- Wait until the fan has come to a stop.
- Release the siphon connections and place the contents in a suitable container.
- Remove blockages.
- Clean the siphon with warm water or degreasing cleaning agents.
- If required, replace the siphon hose.
- Have the siphon pipe falling, without the formation of water pockets.
- The siphon connection principle can be implemented as a:



- Fill the siphon with cooling lubricant fluid.
  - During filling, fluid must leak down out of the hose or pipeline.
- Attach the siphon connection to the device and secure it.
- The device is now ready to operate again.

	Separated cooling lubricant can contain impurities which could negatively affect machine availability in closed systems.

7.6 Cleaning filter and separation elements that can be cleaned

Clean filter and separation elements at the intervals specified. To do this:

- Remove deposits of oil and emulsion residue, resinous oil, and fine dusts
  - With a damp disposable cloth.
  - With warm water.
  - With degreasing cleaning agents.
- Spray off with a water jet at a distance of 300–500mm

7.7 Clean the device

Clean the device regularly and remove dust deposits. To do this:

- Remove the dust build-up with an industrial vacuum cleaner.
- Remove deposits of oil and emulsion residue, resinous oil, and fine dusts inside and out
  - With a damp disposable cloth.
  - Warm water.
  - Degreasing cleaning agents.
- **Do not** spray down with a water jet!

7.8 Store the device

If the device is not needed in its location of use for a long time, it must be stored in a dry room. The temperature should not be below 5°C or above 40°C.

The device must be cleaned before it is stored.

- Take out the filter and dispose of it according to local regulations.
- Clean the device.

7.9 Troubleshooting

DANGER

High-voltage electric shock when working on the open switch box

- Follow the safety rules for working with electrical devices!
- Secure the device against reactivation with a padlock!
- Isolate device!
- Any work on the electrical grid and on live components parts may only be performed by an electrician.

Fault	Possible cause	Possible solution
Suction too weak	Pre-filter and main filter are soiled Backup filter stage is clogged Clog due to deposited residue in the suction pipe system Direction of motor rotation is incorrect.	Clean/replace filter. Clean/replace the backup filter stage. Check the suction pipe system for deposited residue and clogs, and clean it if necessary Rotation direction change-through rotating the phases.
Oil and dust coming out of air outlet openings	Filter breakage	Turn the device off immediately. Then clean the entire device and replace the filters with new ones.

Fault	Possible cause	Possible solution
Smoke development or load running noises of the fan	Imbalance in the fan.	Turn the device off immediately and have ESTA customer service inspect the fan.
	Rotor is scraping on the inlet nozzle or the housing.	Switch off the device immediately and: - Check the fan for tension and transport damage. - Check the position of the motor to the bearing and the screw connections. - Have the fan checked by ESTA customer service.
	Noises from the motor.	- Check hub position - Check motor for bearing damage; replace bearings or motor if necessary.
	Direction of motor rotation is incorrect.	Rotation direction changethrough rotating the phases.

8. Disposal

	**CAUTION** Damage from improper handling of separated substances • Maintenance, cleaning, repair and emptying work may be done only by expert personnel. • Set up locally filtered forced-air ventilation where the device is being maintained, inspected, cleaned or disposed of. • Observe the instructions of the cooling lubricant manufacturer about handling these substances. • Absorb leaks with binding agents and dispose of them according to local regulations. • Wear personal protective equipment. - Gloves (impermeable and resistant to cooling lubricant) - Aprons (impermeable and resistant to cooling lubricant) - Protective clothing - Respirator mask (particle filter class P3)

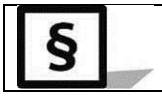
8.1 Disposing of the separation and filter elements

	Separation and filter elements that can no longer be adequately cleaned or which are not intended for cleaning must be packaged and disposed of according to local regulations governing the disposal of such waste.

8.2 Dispose of the device

Before disposing of the device

- Remove the device from service.
- Take out the filter and package according to local regulations.
- Remove the dust build-up with an industrial vacuum cleaner.
- Remove deposits of oil and emulsion residue, resinous oil, and fine dusts inside and out
  - With a damp disposable cloth.
  - Warm water.
  - Degreasing cleaning agents.

	Everything must be packaged and disposed of in accordance with local regulations for the removal of such waste.

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

9. Optional equipment

	Use original ESTA replacement and wear parts!

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

9.1 Start-up with potential-free contact

	**DANGER** Risk of high-voltage electric shock when working on the switch housing • Follow the safety rules for working with electrical devices! • Secure the device against reactivation with a padlock! • Isolate device! Pull the electrical plug! • Any work on the electrical grid and on live components parts may only be performed by an electrician.

	**DANGER** Danger from unintentional activation of the device • When working on the device, switch off all devices connected to the potential-free contact at their main switch and secure them with a padlock against reactivation. • Isolate all devices connected to the potential-free contact; e.g. pull all mains connectors! • Any work on the electrical grid and on live components parts may only be performed by an electrician.

Optionally, the device can be equipped with a start-up through an external potential-free contact. That equates to a coupling option between the suction device and a processing machine connected to it. In this case the processing machine starts and stops the suction device. Pins 1 and 2 of the external, potential-free contact are connected to the plug (packaged with the device). PIN 3 is reserved for the neutral conductor. This is only required when using special ESTA accessories. The potential equalisation is connected to the PIN with the marking for protective ground. (Please observe the circuit documentation enclosed!)

As soon as the main switch is set to “ON”, the contacts to the device’s black socket carry live voltage!

9.2 Air vents

The device can be fitted with an optional discharge air port or upgraded. As a result, it is possible to connect a customer-side discharge air line (hose or pipe) to channel the discharge air out into the open, for example. The outflow must remain free to keep the flow rate constant.

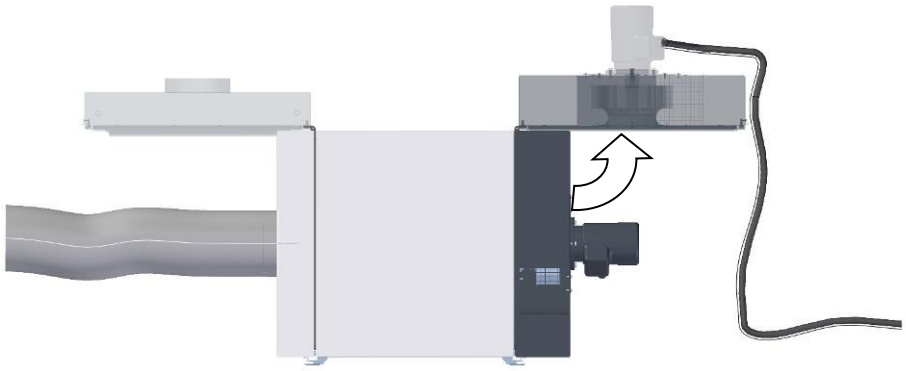
A suitable sound absorber can also be attached to the air vent. This complements the device and helps with noise reduction.

Replacement parts	OILMAC series	
	800	1600
Discharge air ports	30008701 1 piece	30008801 1 piece
Sound absorber 300mm long 50mm insulation	15001846 1 piece	15001854 1 piece
Sound absorber 600 mm long 50mm insulation	15001847 1 piece	15001855 1 piece
Sound absorber 900mm long 50mm insulation	15001848 1 piece	15001856 1 piece
Sound absorber 1200mm long 50mm insulation	15001849 1 piece	15001857 1 piece
Sound absorber 900mm long 100mm insulation	15003132 1 piece	15003136 1 piece
Sound absorber 1200mm long 100mm insulation	15003133 1 piece	15003137 1 piece
Sound absorber arch 90° 100mm insulation	15009374 1 piece	15007492 1 piece

9.2.1 Connecting the discharge airline to discharge air ports

Install the discharge airline as follows:

- Connect the discharge air port of the oil mist separator with a flexible pipe which is easy to disassemble
- Ensure this is without kinks as much as possible
- Largest possible bending radii (R ≥ 2 x pipe diameter)
- Slightly tilted towards the exhaust side (for the drainage of condensate fluids)
- Without sagging
- Select the flattest possible angle if pipe branches are required



9.3 Motor protection switch

Optionally, the device can be set up with a motor circuit breaker.

	**DANGER** Electric shock from high voltages • Follow the safety rules for working with electrical devices! • Before working on the device, disconnect it from the voltage supply. • Any work on the electrical grid and on live components parts may only be performed by an electrician.

	**DANGER** Danger from unintentional activation of the device • Switch off the main switch and secure it against reactivation with a padlock when working on the device.

9.4 Set-up on adjacent stand

You have the option to install the device on a stand near to the processing machine.

9.5 Mobile design

The device can come in an optional mobile design. This version of the device comes with a dolly. The dolly is equipped with casters and brake rollers. This allows the device to be moved easily to a different location. This is an advantage when no suitable lifting device (such as a forklift or indoor crane) is available.

In proper use, the caster's locking device is engaged when stopped, in order to fix the dolly in its position.

Make sure the floor has adequate and weight capacity and dissipation and can be properly driven on when transporting the device to the set-up location.

DANGER

Danger from falling device

- Do not walk under heavy loads.
- The lifting equipment must be designed for the weight of the device.
- If the dolly is already attached, lift the device only for a short time to take it from under the transport pallet, where necessary.

CAUTION

Risk of the device falling over when the inlet element and the outlet unit open simultaneously.

- Only ever open one side of the device for maintenance, cleaning, servicing, and emptying work.
- Watch out for the door stop for restricting the opening angle.

CAUTION

Risk of spontaneous movement due to unsuitable floor

- Make sure that the floor is even, suitable for traffic and has adequate load capacity!

CAUTION

Danger of running over feet due to unintentional movement

- Do not park on a sloping floor!
- Always engage the castor locks when parking the device!
- Always wear safety shoes when moving the device!
- Before moving, dismantle all connections.
  To do this,
  - Disconnect from the mains
  - Disconnect the pipe or hose line.

9.6 Saturation display

The device can be fitted with an optional saturation display or upgraded. This enables read-off of the level of soiling in the filter.
The end pressure for changing the filter, or for filter cleaning if required, is set at the factory so that the maximum filter differential pressure is not exceeded.
If the reading falls below 400, the filter must be changed.

Setting values:	Filter differential pressure [Pa]	Filter differential pressure H13 [Pa]
OILMACOILMAC 800	800	450
OILMACOILMAC 1600	1000	600

10. Declarationen

10.1 Declaration of incorporation for incomplete machines pursuant to EC guideline 2006/42/EC, Appendix II, Part 1 B

10.1.1 OILMAC 800 (<u>without</u> ESTA motor circuit breaker)

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

We hereby declare that the design of the incomplete machine

Machine:	Aerosol separator (e.g. cooling lubricants) which arise during the mechanical processing of metallic parts.
Series:	OILMAC
Model:	**OILMAC 800**

conforms to the following regulations:

2006/42/EC	EC - Machine Directive
2014/30/EU	EU Electromagnetic Compatibility Directive

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

Reconciled norms used:

DIN EN ISO 12100:2011-03	Safety of Machinery – Basic concepts, general principles for design
DIN EN ISO 13857:2008-06	Safety of machinery – Safety distances to prevent danger zones from being reached by upper and lower limbs
DIN EN 349:2008-09	Safety of machinery; minimum distances for preventing body parts from being crushed
DIN EN 61000-6-1:2007-10	EMC generic standard - Immunity for residential, commercial and light-industrial environments
DIN EN 61000-6-2:2006-03	EMC generic standard – Immunity for industrial environments
DIN EN 61000-6-3:2011-09	EMC generic standard - Interference for residential, commercial and light-industrial environments
DIN EN 61000-6-4:2011-09	EMC generic standard - Interference for industrial environments
DIN EN 61000-3-2:2015-03	EMC limits – Limits for harmonic current emissions (device input currents ≤16 A per cable)
DIN EN 61000-3-3:2014-03	EMC limits – limitation of voltage changes, voltage fluctuations and flickers in low-voltage public supply systems for devices and equipment with a rated current ≤16 A per cable, not subject to a special connection

National norms and technical specifications used:

VDI 3677 Filtering separators

Safety and health protection requirements according to 2006/42/EC Appendix I that are applied and observed:
1.1.1; 1.1.2; 1.1.3; 1.1.5; 1.3; 1.3.1; 1.3.2; 1.3.3; 1.3.4;1.3.7; 1.3.9; 1.4; 1.4.1; 1.4.2; 1.4.2.1; 1.4.2.2; 1.5; 1.5.2; 1.5.4; 1.5.5; 1.5.6; 1.5.7; 1.5.8; 1.5.9; 1.5.10; 1.5.13; 1.6; 1.6.1; 1.6.2; 1.6.4; 1.6.5; 1.7; 1.7.1; 1.7.1.1; 1.7.2; 1.7.3; 1.7.4; 1.7.4.1; 1.7.4.2; 1.7.4.3

Safety and health protection requirements according to 2006/42/EC Appendix I that are applied and are still to be observed:
1.2; 1.2.1; 1.2.2; 1.2.3; 1.2.4; 1.2.4.1; 1.2.4.2; 1.2.4.3; 1.2.4.4; 1.2.5; 1.2.6; 1.4.3; 1.5.1; 1.5.9; 1.6.3; 1.7.1.2

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.

Technical documentation was created according to Appendix VII Part B of this guideline. We agree to provide the responsible authorities with this documentation in electronic form upon justified request.

Senden, 11/04/2017

Dr. Peter Kulitz
Managing Director

10.1.2 OILMAC 1600 (<u>without</u> ESTA motor circuit breaker)

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

Name of the authorised
document representative: ESTA Apparatebau GmbH & Co. KG
Gotenstraße 2 - 6
89250 Senden

We hereby declare that the design of the incomplete machine

Machine: Aerosol separator (e.g. cooling lubricants) which arise during the mechanical processing of metallic parts.

Series: OILMAC

Model: **OILMAC 1600**

conforms to the following regulations:

2006/42/EC	EC - Machine Directive
2014/30/EU	EU Electromagnetic Compatibility Directive

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

Reconciled norms used:

DIN EN ISO 12100:2011-03	Safety of Machinery – Basic concepts, general principles for design
DIN EN ISO 13857:2008-06	Safety of machinery – Safety distances to prevent danger zones from being reached by upper and lower limbs
DIN EN 349:2008-09	Safety of machinery; minimum distances for preventing body parts from being crushed
DIN EN 61000-6-1:2007-10	EMC generic standard - Immunity for residential, commercial and light-industrial environments
DIN EN 61000-6-2:2006-03	EMC generic standard – Immunity for industrial environments
DIN EN 61000-6-3:2011-09	EMC generic standard - Interference for residential, commercial and light-industrial environments
DIN EN 61000-6-4:2011-09	EMC generic standard - Interference for industrial environments
DIN EN 61000-3-2:2015-03	EMC limits – Limits for harmonic current emissions (device input currents ≤16 A per cable)
DIN EN 61000-3-3:2014-03	EMC limits – limitation of voltage changes, voltage fluctuations and flickers in low-voltage public supply systems for devices and equipment with a rated current ≤16 A per cable, not subject to a special connection

National norms and technical specifications used:

VDI 3677 Filtering separators

Safety and health protection requirements according to 2006/42/EC Appendix I that are applied and observed:
1.1.1; 1.1.2; 1.1.3; 1.1.5; 1.3; 1.3.1; 1.3.2; 1.3.3; 1.3.4;1.3.7; 1.3.9; 1.4; 1.4.1; 1.4.2; 1.4.2.1; 1.4.2.2; 1.5; 1.5.2; 1.5.4; 1.5.5; 1.5.6; 1.5.7; 1.5.8; 1.5.9; 1.5.10; 1.5.13; 1.6; 1.6.1; 1.6.2; 1.6.4; 1.6.5; 1.7; 1.7.1; 1.7.1.1; 1.7.2; 1.7.3; 1.7.4; 1.7.4.1; 1.7.4.2; 1.7.4.3

Safety and health protection requirements according to 2006/42/EC Appendix I that are applied and are still to be observed:
1.2; 1.2.1; 1.2.2; 1.2.3; 1.2.4; 1.2.4.1; 1.2.4.2; 1.2.4.3; 1.2.4.4; 1.2.5; 1.2.6; 1.4.3; 1.5.1; 1.5.9; 1.6.3; 1.7.1.2

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.

Technical documentation was created according to Appendix VII Part B of this guideline. We agree to provide the responsible authorities with this documentation in electronic form upon justified request.

Senden, 11/04/2017

Dr. Peter Kulitz
Managing Director

10.2 EU/EC Declaration of conformity for machines pursuant to EU/EC guideline 2006/42/EC, Appendix II, Part 1 A

10.2.1 OILMAC 800 (<u>with</u> ESTA motor circuit breaker)

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

We hereby declare that the design of the machine

Machine:	Aerosol separator (e.g. cooling lubricants) which arise during the mechanical processing of metallic parts.
Series:	OILMAC
Model:	**OILMAC 800**

conforms to the following regulations:

2006/42/EC	EC - Machine Directive
2014/30/EU	EU Electromagnetic Compatibility Directive

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

Reconciled norms used:

DIN EN ISO 12100:2011-03	Safety of Machinery – Basic concepts, general principles for design
DIN EN ISO 13857:2008-06	Safety of machinery – Safety distances to prevent danger zones from being reached by upper and lower limbs
DIN EN 349:2008-09	Safety of machinery; minimum distances for preventing body parts from being crushed
DIN EN 61000-6-1:2007-10	EMC generic standard - Immunity for residential, commercial and light-industrial environments
DIN EN 61000-6-2:2006-03	EMC generic standard – Immunity for industrial environments
DIN EN 61000-6-3:2011-09	EMC generic standard - Interference for residential, commercial and light-industrial environments
DIN EN 61000-6-4:2011-09	EMC generic standard - Interference for industrial environments
DIN EN 61000-3-2:2015-03	EMC limits – Limits for harmonic current emissions (device input currents ≤16 A per cable)
DIN EN 61000-3-3:2014-03	EMC limits – limitation of voltage changes, voltage fluctuations and flickers in low-voltage public supply systems for devices and equipment with a rated current ≤16 A per cable, not subject to a special connection

National norms and technical specifications used:

VDI 3677	Filtering separators

Senden, 11/04/2017

Dr. Peter Kulitz
Managing Director

10.2.2 OILMAC 1600 (<u>with</u> ESTA motor circuit breaker)

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

We hereby declare that the design of the machine

Machine:	Aerosol separator (e.g. cooling lubricants) which arise during the mechanical processing of metallic parts.
Series:	OILMAC
Model:	**OILMAC 1600**

conforms to the following regulations:

2006/42/EC	EC - Machine Directive
2014/30/EU	EU Electromagnetic Compatibility Directive

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

Reconciled norms used:

DIN EN ISO 12100:2011-03	Safety of Machinery – Basic concepts, general principles for design
DIN EN ISO 13857:2008-06	Safety of machinery – Safety distances to prevent danger zones from being reached by upper and lower limbs
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DIN EN 61000-6-1:2007-10	EMC generic standard - Immunity for residential, commercial and light-industrial environments
DIN EN 61000-6-2:2006-03	EMC generic standard – Immunity for industrial environments
DIN EN 61000-6-3:2011-09	EMC generic standard - Interference for residential, commercial and light-industrial environments
DIN EN 61000-6-4:2011-09	EMC generic standard - Interference for industrial environments
DIN EN 61000-3-2:2015-03	EMC limits – Limits for harmonic current emissions (device input currents ≤16 A per cable)
DIN EN 61000-3-3:2014-03	EMC limits – limitation of voltage changes, voltage fluctuations and flickers in low-voltage public supply systems for devices and equipment with a rated current ≤16 A per cable, not subject to a special connection

National norms and technical specifications used:

VDI 3677	Filtering separators

Senden, 11/04/2017

Dr. Peter Kulitz
Managing Director

Notes

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