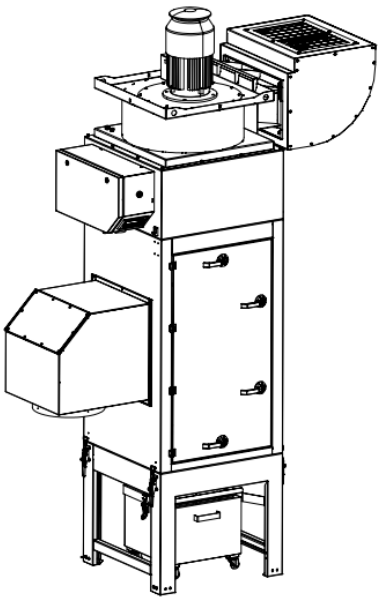
Operating instructions

(Translation of the original operating instructions)

EcoCube



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1. General

Congratulations on purchasing the product from TEKA.

Our engineers ensure that our devices reflect the state of the art through continuous development. Nevertheless, misuse or misconduct can endanger your safety. Please observe the following for a successful use of the device:

Only authorised and instructed personnel can carry out transport, operation, maintenance and repair of the device. The operator must ensure that the operating personnel take note of these instructions.

Please read these instructions before operating the device, and observe the safety precautions to avoid injury!

Store this manual in a safe place! These instructions are to be regarded as a component of the product!

Adhere to all product notes!

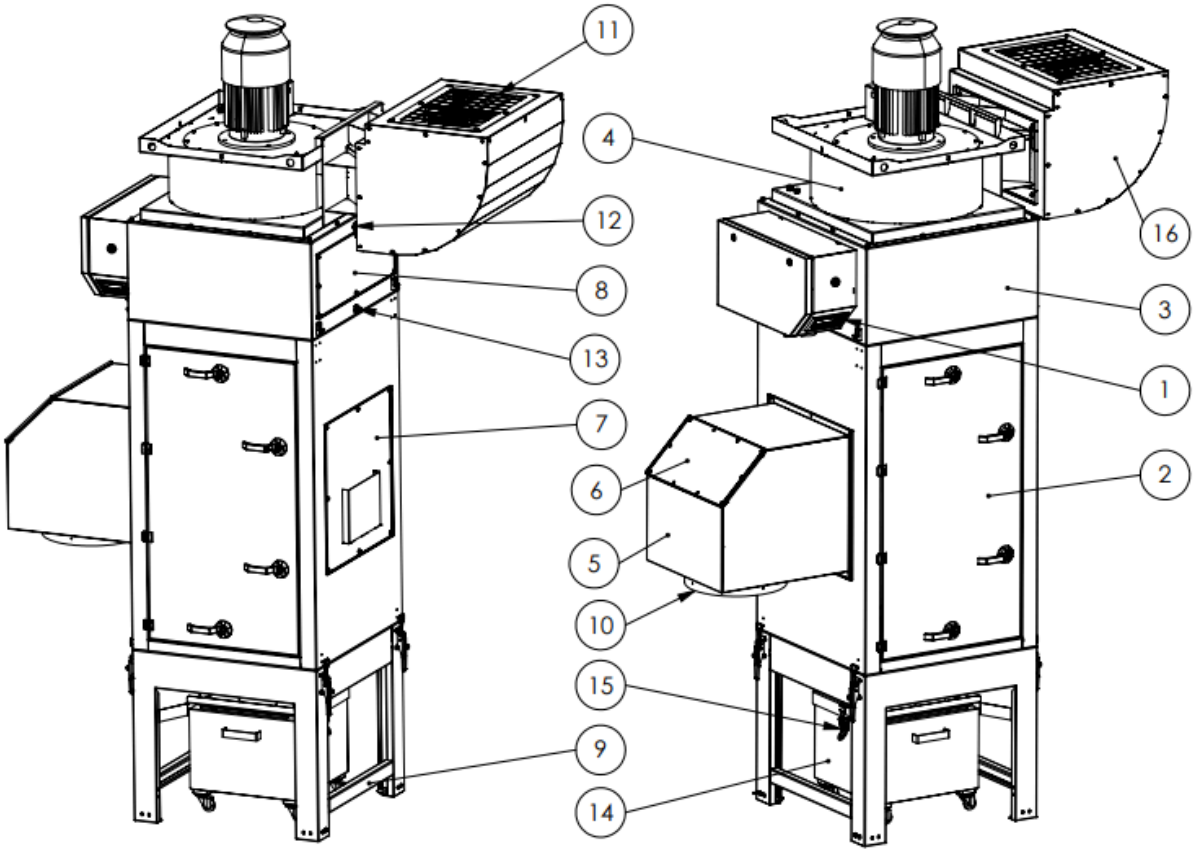
Modifications or conversions that the operator carries out at the device without the consent of the manufacturer, can lead to new safety hazards or to the loss of warranty claims.

Observe the manufacturer's instructions. Contact the manufacturer in case of any uncertainty:
Tel: +49 2541-84841-0
E-mail: info@teka.eu

2. Description of the system elements

2.1. Illustration of the system elements

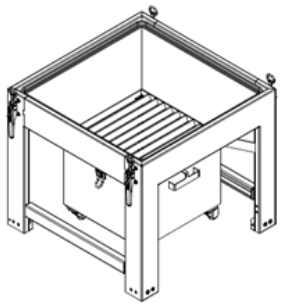
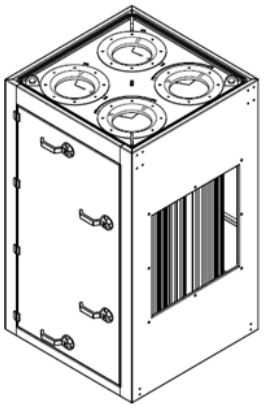
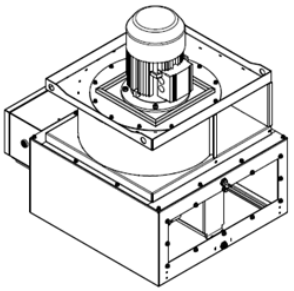
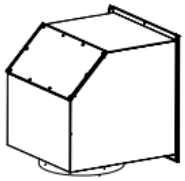
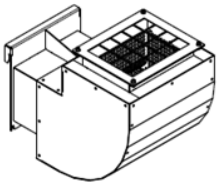
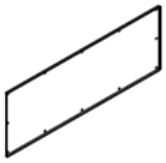
Installation example:

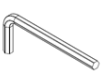


Z.Nr. 26038319

Pos.1	Operating panel of the control	Pos.9	Cross brace
Pos.2	Filter housing	Pos.10	Suction nozzle
Pos.3	Cleaning housing	Pos.11	Exhaust grille
Pos.4	Fan	Pos.12	Connection for compressed air
Pos.5	Spark labyrinth	Pos.13	Drain valve for compressed air
Pos.6	Service flap of spark labyrinth	Pos.14	Dust collecting tank
Pos.7	Cover plate	Pos.15	Toggle lever
Pos.8	Service plate	Pos.16	Silencer

2.2. Parts list of supplied parts

 1x	 1x	 1x
 1x	 1x	 2x
 1x	 1x	 5x

 56x ISO 7380, M6x12	 2x ISO 7380, M8x20	 8x	 8x
 24x ISO 7380, M6x16	 8x DIN 1587, M6	 4x DIN 125, A8,4	 24x Sealing shim Ø7
 4x DIN 7504, 3,5x13	 L=200 mm 1x	 4x M8	 2x DIN 934, M8
 4x DIN 571, M8x80	 4x S10	 16x DIN 125, A6,4	 SW 5 1x	 SW 4 1x

2.3. Functionality of the system

The filter unit serves to suck off and filter polluted air (according to the intended use). The air is purified on the surface of the filter cartridge in the filter section of the unit. The separated dust is collected in a dust collecting tank. An automatic filter monitoring indicates when a cleaning or a replacement of the filters is necessary. The purified air is led outside via the exhaust air pipe or back into the working room.

2.4. Intended use

The device is intended for commercial use. If the device is made publicly accessible, it must never be operated unsupervised by authorized personnel, authorized by the operator.

The filter unit is mainly used to extract and filter dust and fumes.

WARNING

Improper use can damage parts and be a danger to life and limb!
The device must not be used for the extraction of oil-laden welding fume, explosive dust and gases, hybrid mixtures, glowing or burning substances, gases, water, etc. The device must not be operated in explosive zones.

Dangers arising from fire.
If the sucked medium is combustible fume or dust, the operator must determine beforehand which fire protection measures are to be taken.

2.5. Residual risk

CAUTION

Danger due to possible hazardous materials in the exhaust air flow.
Because the unit does not monitor the quality of the air in the exhaust air flow, we recommend that you always guide the exhaust air flow exiting our unit to areas (e.g. to the outside into the open air) in which there is no danger to any living being. To do this, it is necessary to fit a suitable exhaust air line at the filter unit.

3. Safety instructions

3.1. Definition of the hazard symbols

The device is constructed according to the state of the art and the recognised safety regulations. Nevertheless, during use threats to life and limb of the user or other persons may arise. The impairment of the machine or other property are also possible. In these instructions we warn by using corresponding indications.

WARNING

WARNING
These instructions are made in case of risks that can lead to injury or death.

CAUTION

CAUTION
These instructions are made in case of risks that can lead to injury.

NOTICE

NOTICE
These instructions are made in case of risks that can lead to material damages.

Information notes are no hazard warnings; they call attention to useful information.

3.2. General safety instructions

WARNING

Dangers arising from improper use / unauthorised operations.
The operator must ensure that their authorised personnel are familiar with all the safety indications in this manual in advance. The operator is responsible for ensuring that all work is carried out by authorised and qualified personnel. We therefore recommend using the training protocol on the last page for that purpose (see chapter “Training protocol”).
Laymen are allowed to operate the device after having received the necessary instructions. But they are not allowed to carry out any installation, repair or maintenance work.

Dangers arising from fire.
In case of fire, if possible, switch the unit immediately off or disconnect it from the power supply. Fire extinguishing measures which the operator is obliged to determine beforehand must be initiated immediately.
If the filter unit is equipped with the version "preparation for CO2-extinguishing installation", please refer to the instructions in chapter "Version preparation for CO2-extinguishing installation.”

WARNING

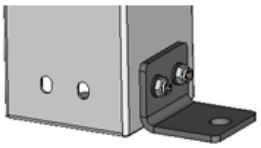
Dangers arising from electricity.
The operator must ensure that electrical plants and equipment are only built, modified and maintained by a qualified electrician or under the direction and supervision of a qualified electrician. Do not work on components if you are not sure that these are disconnected. If necessary, disconnect the device from the electric power supply and secure it against unauthorized restarting.

4. Storage, transport and installation of the device

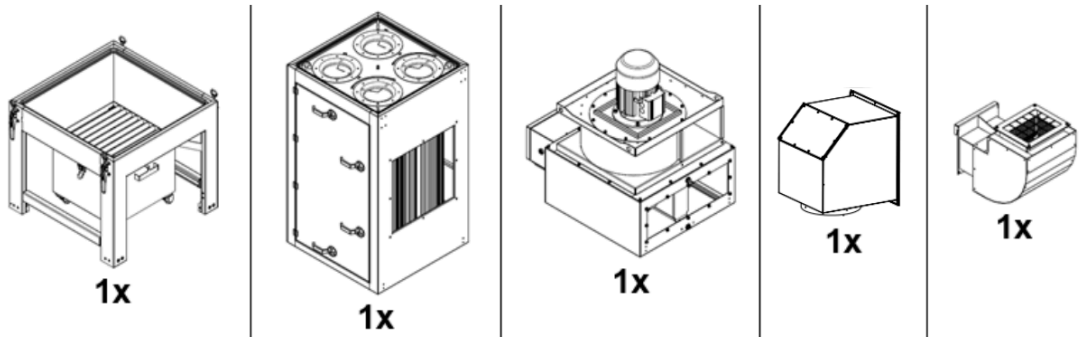
WARNING

Risk of injury from tilting or unmounted components when stored or transported.
The device must be secured against tilting and slipping when it is stored or transported. Do not stand under or next to the floating load. Lift trucks, forklift trucks and transport cranes must have a sufficient minimum load bearing capacity.

Dangers arising from titling or functional impairments at its destination.
The unit may only be set up on a suitable surface. The unit may only be set up on a suitable surface. The surface must be vibration-free and horizontal. The operator must check the bearing capacity of the surface. The unit must be secured on the surface. For this use the lag bolts DIN 571 – M8x80, in connection with the dowels S10.
Alternatively, the mounting brackets at the inside of the feet can be used. Therefore the mounting brackets must be mounted outside to the feet.



An assembly of the main components only is allowed after transport. Otherwise, the system may be damaged by transport actions.
Check before transport, that the main components (see picture) are not assembled together. If the system should be transported again after installation, the main components must be disassembled again.



NOTICE

Damage or functional impairment of the unit due to climatic influences.
The unit must be stored in a dry place and protected against moisture during transport. As a matter of principle, the filter unit is not designed to be installed outdoors. In this case contact the manufacturer in order to find out if a caping or a trace heating system are necessary.

4.1. Installation of the unit

The „EcoCube“ filter system is delivered as a modular kit in separate system parts. These are assembled on site. The following should be noted:

- The final position of the filter system is determined with the setting up of the dust collector housing.The front side of the dust collecting housing is the one from which the dust collection container can be removed. The front side must later concord with the front of the filter housing and the cleaning device. Note the representation in chapter "Illustration of the system elements”.
  NOTICE **The cross braces (see chapter 2.1.) can be used to transport the unit to the final destination after the final assembly by means of a lifting implement (e.g. load platform).**
  This can make sense when e.g. the final destination is not suitable for an assembly.
  CAUTION **But when the cross braces are used, it may only be transported a short distance. The unit can only be slightly lifted. Be careful - danger of tipping over!**

- Before attaching the filter housing it must be checked that the seal in the dust collector housing ("A") is clean fitted all round. The lifting eyes ("B") must be used to attach the filter housing.

- In conclusion, the housing units must be connected by closing the toggle lever (“G”).These are supplied unassembled and must be assembled on site. These are to be screwed onto the filter housing of the locking hook ("E") and the dust collector housing of the toggle lever (”G”). The assembly of the toggle catches and closing hooks occurs with screws M6x12. The toggle closures finally have to be secured against accidental opening with safety screws M6x12 ("H") and matching nuts and washers.

- Before attaching the cleaning device housing it must be checked that the seal in the filter housing ("C") is clean fitted all round. The lifting eyes ("D") of the fan must be used to attach the cleaning device housing.
  The crane openings ("D") may only be used for lifting the cleaning housing. The crane openings are not suitable to lift the weight of the entire system.

- In conclusion, the housing units must be connected by closing the toggle lever (“G”).These are supplied unassembled and must be assembled on site. These are to be screwed onto the cleaning device housing of the locking hook ("E") and the filter housing of the toggle lever (”G”). The assembly of the toggle catches and closing hooks occurs with screws M6x12. The toggle closures finally have to be secured against accidental opening with safety screws M6x12 ("H") and matching nuts and washers.

- A measuring tube must be connected now. The measuring tube is located in the dedusting housing. The loose end of the measuring tube must be attached to the bulkhead connection ("F") of the filter housing. Therefore loosen the threaded nut, throw it over the measuring tube, pull the measuring tube on the bulkhead connection, and screw the threaded nut back on the bulkhead connection.

- The service door (see chapter 2.1.) must be mounted on the dedusting housing. The mounting is effected using screws M6x16 and corresponding full face gaskets.

- The spark labyrinth with suction nozzle (see chapter 2.1.) must be mounted on the required side – left or right - of the filter housing. Assembly is with screws M6x16 and sealing shims. On the opposite side the opening has to be closed by mounting the cover plate (see chapter 2.1.).
- The curved silencer (see chapter 2.1.) must be mounted to the vent opening of the fan. Therefore the curved silencer must be hung in the upper edging of the fan so that the 2 holes ("J") are positioned over the thread openings. Screw the curved silencer on these 2 holes with screws M8x20.
- On the back of the filter housing 2 mounting brackets for supply lines ("M") have to be mounted, 1x left , 1x right . It is mounted at the upper and lower toggle levers ("G"). For this 2 screws M6x12 per toggle lever briefly have to be solved, then screw again including the mounting brackets.

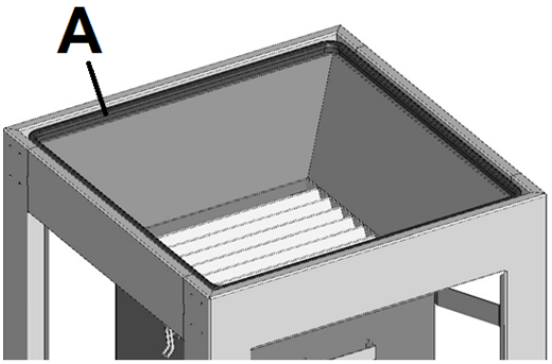


Fig.: dust collector housing

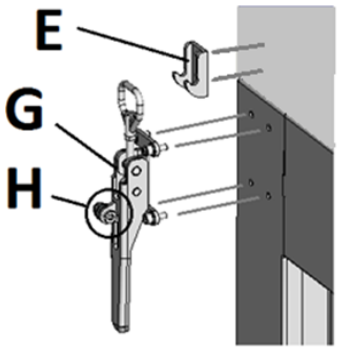


Fig.: connecting the housings

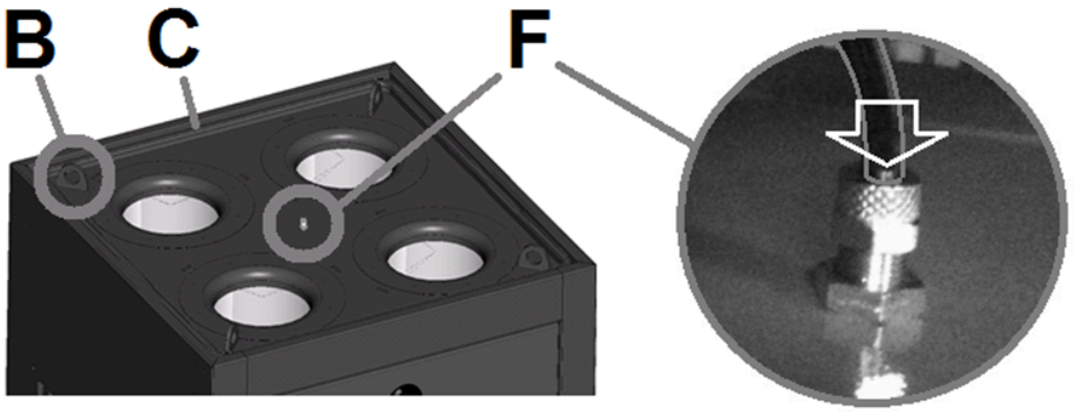


Fig.: filter housing

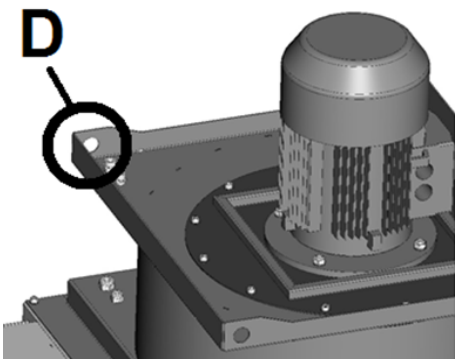


Fig.: cleaning device housing with fan

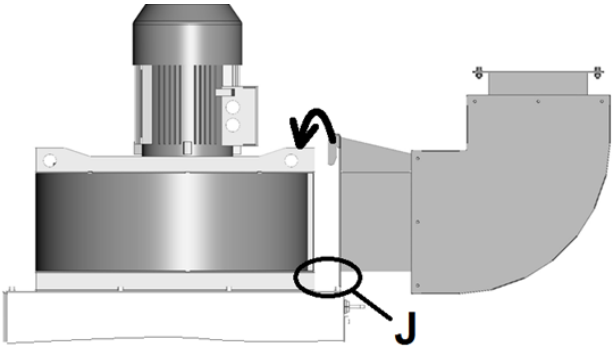


Fig.: Installation of the curved silencer

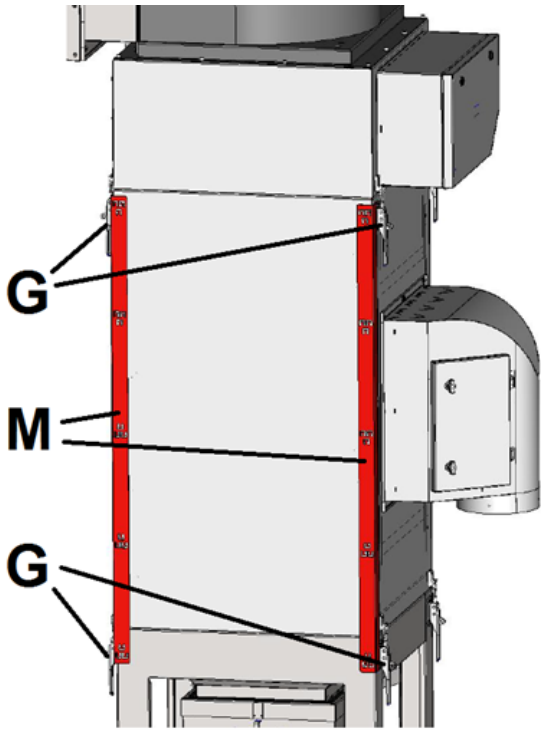


Fig.: Installation of the mounting brackets for supply lines

5. Commissioning

WARNING

Dangers arising from a defective condition of the unit.
Make sure that the measures described in this chapter are completed before the commissioning of the unit. All doors of the unit must be closed and all necessary connections must be attached before turning the unit on. Do not operate the unit if any components are defective, missing or damaged. Check the orderly condition of the unit before switching it on. The unit must not be operated without a filter element.

NOTICE

Damaged supply lines.
Make sure that the supply lines are protected against damage by forklift trucks and similar events. Protect all supply lines from heat, moisture, oil and sharp edges.

5.1. Connecting the suction line and exhaust air line

For extracting the contaminated air, a suction line must be connected to the suction nozzle (see chapter 2.1), which is to be fixed with 4 screws DIN 7504 (3,5x13).

CAUTION

Danger for the respiratory tract arising from polluted ambient air. Dust deposits in the suction pipe are possible.
Only operate the system if the necessary suction line is fitted. The suction line must be dimensioned according to the application in such a way that, if possible, no dust deposits occur in the suction line. If this has not already been carried out by TEKA, a suitably qualified employee must be consulted. If the suction line includes extraction elements (e.g. suction arms, pipe grills, etc.), these must also be included in the layout. If this is the case then users must be informed of whether extraction elements can be used simultaneously and, if this is possible, then which. The regulating devices (e.g. throttle valves) of each single extraction element must also be set appropriately during the final commissioning.
Inspection flaps shall be provided in the pipelines. They should be placed at key points in the pipelines (for example in front of conduit elbows). The number of inspection flaps depends on the length of the pipeline.

Depending on the application, the suction pipe must be equipped with extraction elements (suction arm, extraction hose, round duct grille, etc.). When using a capture element with an extractor cowl, the extractor cowl must follow the weld seam, if possible by using the movement of the welding fume caused be thermal influences.

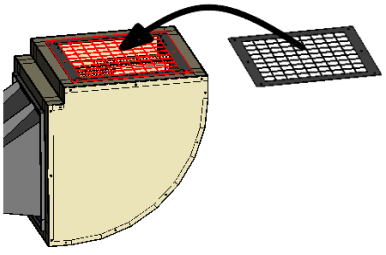
CAUTION **You have to make sure that connections between the workpiece and the suction hood (and in general between the workpiece and the filter unit) are avoided in order to prevent the welding current from flowing back to the welding machine via the protective conductor of the filter unit.**

If the air shall be directly sucked off by an upstream machine, the suction line must be connected to the capture opening of the upstream machine.

The purified air is led back into the working environment via the exhaust air grille (see chapter 2.1) (recirculation mode). If it is desired to lead the purified air out of the working environment, an exhaust air pipe must be attached at the discharge grille.

WARNING

Danger to life when reaching the fan impeller.
The exhaust air pipe must be attached before the commissioning.
If no exhaust air pipe is attached, the protective grille of the silencer must be installed.



5.2. Electrical connection

WARNING

Risk of electric shock.
Electrical plants and equipment may only be built, modified and maintained by a qualified electrician or under the direction and supervision of a qualified electrician. Do not work on live electrical components and elements if you are not sure that these are indeed disconnected. If necessary, disconnect the device from the mains. The operator is responsible for a potential-free balance of the equipment. For this use the earthing strap (M8x200) and the 4 contact washers (M8) and the 2 nuts (DIN934 – M8). Finally you have to proof, if in cause of this a potential-free balance really has been created.
Since the unit is equipped with a frequency converter, it may only be operated on networks with an AC/DC sensitive RCCB. The AC/DC sensitive residual current circuit breaker (type B) must tolerate at least a permissible residual current of 100mA. For frequency converter operation, the cross section of the protective conductor

- must be at least 10mm²,
- and must be at least equal to the size of the operator side outer conductor cross-section.

CAUTION

Health hazard arising from unintentional cleaning processes.
Switch on the control only if the unit is in operational condition.

NOTICE

Electric malfunction possible in cause of an incorrect power supply.
Pay attention to the admissible supply voltage. Please observe the specifications on the type plate.

If the filter unit is equipped with the version *"preparation for CO2-extinguishing installation"*, a particle sensor must be connected.
The procedure is described in chapter *"Mounting and connecting the particle sensor"*.

- Connect all visible cables and hoses are according to their functions. When delivered they are labelled according to their functions. When connecting to the control, please observe the specifications on the circuit diagram which is attached to the control.
- Connect the unit to the power supply.

5.3. Connecting the compressed air supply

NOTICE

The compressed air must be dry and oil-free.
According to ISO 8573-1:2010 the compressed air quality must at least meet: [7:4:4]
- ➔ Particle size: <40µm
- ➔ Pressure dew point: <= +3°C
- ➔ Oil content: <=5mg/m³

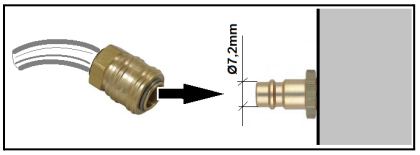
5.3.1. Compressed air supply for the cleaning of the filter cartridges

The filter cartridges of the system are automatically cleaned. Cleaning is carried out pneumatically via a built-in compressed air tank.

Without compressed air supply the filter cartridges will become dirty very quickly.

- The external compressed air supply must be assured with an approved compressed air hose. For the connection to the device, the compressed air hose must be equipped with a quick coupling for an insert sleeve DN 7.2.

  NOTICE **The compressed air must be dry and oil-free.**



- Connect the compressed air hose to the insert sleeve (see chapter 2.1).
- The operating pressure of the compressed air supply must be a minimum of 5 bars and maximum of 10 bars.

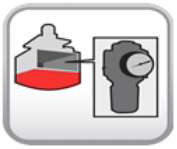
CAUTION **For the purpose of maintenance the compressed air supply sometimes must be disconnected. For this it is necessary to assemble a separator in the compressed air pipeline.**

- The operating pressure inside the compressed air tank must be a minimum of 4 bars and maximum of 5 bars. For this the pressure reducer inside the cleaning housing (see chapter 2.1.) factory-set is preset to 5 bar.

NOTICE **In case of the pressure being too low, the compressed air tank does not reach quickly enough the operating pressure for the following cleaning. There is a risk of**

material damage when the pressure is too high.

NOTICE **The pressure reducer is reached by opening the service plate (see chapter 2.1.) on the cleaning housing. This is only necessary for the operator in case of doubt, e.g. in case of an insufficient dedusting.**



6. Operating the system

6.1. Explanation of the operating elements

Control functions, setting options for programs, menu navigation, error messages, etc. are described in the enclosed operating manual of the unit control. There is also an explanation of the elements of the control panel.

Operating elements for the device control		
Representation	**Designation**	**Description / function**
	Main switch	• **OFF:** The device is disconnected from the power supply. • **ON:** The device is connected to the power supply and ready to operate.
	Frequency converter	The unit is equipped with a frequency inverter that has already been preset ex works. If possible, do not make any changes. Otherwise, contact the manufacturer.

Operating elements for status and error messages		
Representation	**Designation**	**Description / function**
	Signal horn	Honking signals that the unit signals an error. Please refer to the error message shown on the display of the control.

7. Maintenance

In accordance with national regulations, the operator is obliged to carry out repeat and functional tests. Unless otherwise specified by national regulations, we recommend regular visual inspections and functional tests of the device as described in the chapter “Maintenance intervals”.

You find the chapter “Maintenance intervals” at the end of the document. The general maintenance (visual inspection, etc.) is also explained there.

In the chapter “Maintenance intervals” there is information on the maintenance intervals of the filter elements. But these are only recommendations. Depending on the application (multi-shift operation, dust generation, ...) it may be necessary for the operator to change the maintenance intervals.

In this chapter the maintenance work which is caused by wear caused during operation is described.

WARNING

Work on the open system entails the risk of electrical shock or accidental restart the system. Both pose a danger to life and limb.
When cleaning and servicing equipment during the replacement of parts or when changing to another function, set the device to maintenance condition first (see chapter “Reset to maintenance state”).
A recommissioning of the device must only occur if it is ensured that the device is functionally equivalent to the original state.

Dangers to life and limb when non-original spare parts are used
Only original TEKA spare parts must be used.

CAUTION

Hazards to the respiratory tracts are possible.
All maintenance work must only be carried out in well-ventilated rooms and while wearing an appropriate respiratory mask! We recommend: respiratory protection half mask DIN EN 141/143 protection level P3. For all maintenance work ensure a cautious handling of filter elements and components in order to avoid whirling up dust.

The operator is obliged to store and dispose of the collected dust in accordance with national or regional regulations. For all maintenance or cleaning work please refer to the applying environmental regulations. Pollutants and filter elements must be disposed of or stored according to the regulations as well. If you have any doubts, we recommend contacting a disposal contractor in your area.

7.1. Reset to maintenance state

- Switch off the unit. Then disconnect the unit from the power supply by setting the main switch in the “OFF” position. Secure the unit against unauthorized restarting during maintenance.

- Disconnect the compressed air hose of the external compressed air supply from the insert sleeve (see chapter 2.1). Empty the compressed air tank by opening the drain valve (see chapter 2.1) with a suitable screwdriver. Minor quantities of condensation water can leak out when opening the drain valve. Close the drain valve when the compressed air tank is entirely empty.

  CAUTION **When opening the drain valve a compressed air blast can occur!**

- After completion of all maintenance work the unit can be reconnected to the power supply and the external compressed air supply.

7.2. Cleaning the filter cartridges

⚠	**CAUTION** **A sudden jet of compressed air and huge amounts of whirled up dust are possible due to an automatic cleaning with an opened service door.** During the operation of the device, the service door of the filter housing must not be opened. The same applies to the ready to operate condition (standby) as there is also the possibility of an automatic cleaning (subsequent cleaning).

The filter cartridges are reusable filters and can be cleaned. The cleaning of the filter cartridges is automatically carried out.

The degree of pollution of the filter cartridges is electronically monitored. In order to assure the required extraction capacity of the device, the cleaning of the filter cartridges starts automatically when a preset differential pressure value is reached. If the preset differential pressure value is not undercut after the cleaning of the filter cartridges, another cleaning starts. The filter unit remains in operation during the automatic cleaning. The compressed air blast is produced in opposite direction to the intake. The cleaned dust falls downwards in the dust collecting tank.
Depending on the setting of the control unit there can be automatic postcleanings of the filter cartridges even when the unit is switched off.

When the maximal admissible differential pressure value is reached, the device triggers an alarm (see chapter “description of the control elements”). If despite of the automatic cleaning of the filter cartridge the alarm value is not undercut anymore, the filter cartridge must be replaced. (see chapter: “Replacing the filter cartridges”).
The differential pressure values in the control unit that initiate a cleaning or a filter alarm are preset values adapted to the filter unit. Please find detailed information concerning the functioning in the enclosed operating instructions of the control unit.

When using optional extraction elements with a suction hood, their throttle valve must be closed as soon as the device is switched off. Otherwise dust can escape from the suction hood in case of possible automatic subsequent cleanings.

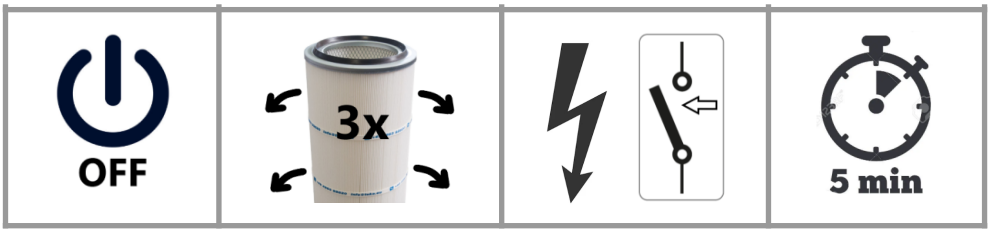
7.3. Replacing the filter cartridges

Replacing the filter cartridges becomes necessary when the filter cartridges are saturated with dirt in a manner that despite of the cleaning the filter alarm is triggered again at very short intervals or permanently. (The filter alarm is described in chapter “Cleaning the filter cartridges”.)

CAUTION

Whirling up dust is possible due to the polluted filter cartridges. Danger of unintentional automatic cleaning with the unit switched off.

The filter cartridges must be cleaned before being replaced. This is done by carrying out 3 manual cleanings via the unit control (see separate operating instructions). The filter unit must be switched off beforehand but without disconnecting the unit from the power supply. After the cleaning, disconnect the filter unit from the power supply and secure it against being switched on again. After cleaning the filter cartridges wait about 5 minutes before opening the service door of the filter housing.

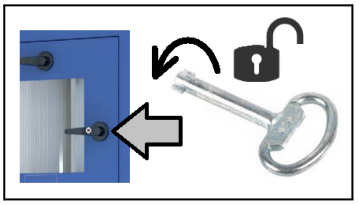


- We recommend that two people work together to replace the filter cartridges.
- We recommend spreading out a protective film in order to keep the area around the unit clean.

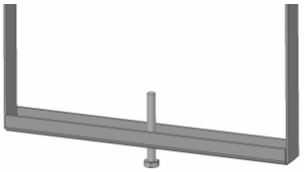
- **CAUTION The filter cartridges may only be replaced in well-ventilated rooms and while wearing an appropriate respiratory mask! We recommend: Respiratory protection half mask DIN EN 141/143 protection level P3.**
- We also recommend using additional protective clothing such as gloves, disposable overalls and protective eyewear.

- Make available an original disposal bag already before changing the filter cartridges (see list of spare parts). We recommend to stock up disposal bags in good time.

- Open the filter housing's service door by opening the door handles. When doing this, it is necessary to use a double-bit key to open the door handle that is equipped with a lock.

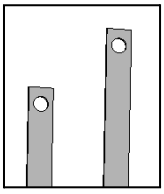
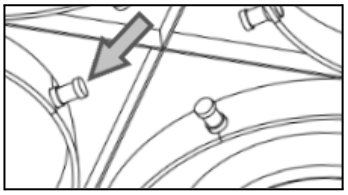


- Loosen the fixing screw. This is located at the bottom of the cartridge holder. Loosen the fixing screw but do not unscrew it from the cartridge holder It is important that the cartridge holder is still held loosely.



- Pull the disposal bag over the cartridge holder and filter cartridge.


- Unhook the cartridge holder from the cartridge guides.

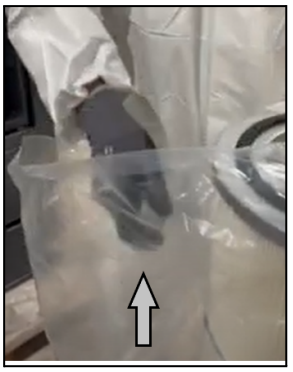



- Remove the cartridge holder with the filter cartridge and the disposal bag from the filter housing.

- Briefly lift the filter cartridge in order to release it from the cartridge holder.
- Next, pull the cartridge holder slowly and with little dust on it out of the disposal bag and past the filter cartridge.


- Insert the bag into the inside of the filter cartridge at the top.
- Then place the filter cartridge on its side.


- Undo the cylindrical nut. This is located at the base of the filter cartridge. When doing this, do not grip the cylindrical nut directly with your hands but from outside through the bag.



- Place the filter cartridge upright again. Remove the cylindrical nut from the bag.

- Remove the displacer from the filter cartridge.

- Seal the disposal bag (e.g. with cable ties).

> The operator is obliged to store and dispose of contaminated filter cartridges in accordance with national or regional regulations.

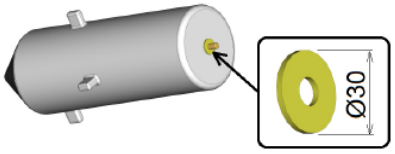
- First of all, remove <u>all</u> the filter cartridges as described in the steps above.

- Only then should you start to install the new filter cartridges.

NOTICE **Only use TEKA replacement filters. Otherwise the correct functioning of the unit is not guaranteed, and there is a danger to life and limb.**

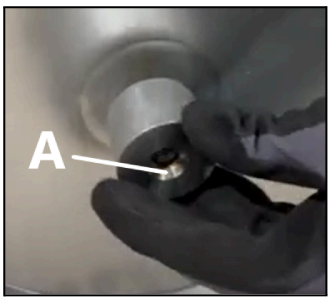
- Insert the displacer into the new filter cartridge in such a way that the displacer's screw passes through the opening in the base of the filter cartridge.

  NOTICE **Check whether the seal is in contact at the thread of the displacer and that it is undamaged. Otherwise, it is necessary to use a replacement seal (see spare parts list).**

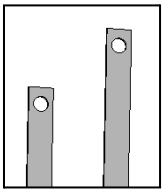


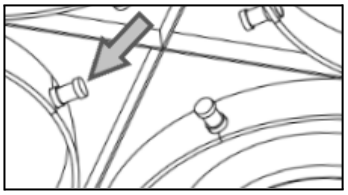
- Screw the displacer tight with the cylindrical nut.

  NOTICE **When you do this, the side of the large chamfer (A) of the cylindrical nut must face outwards.**

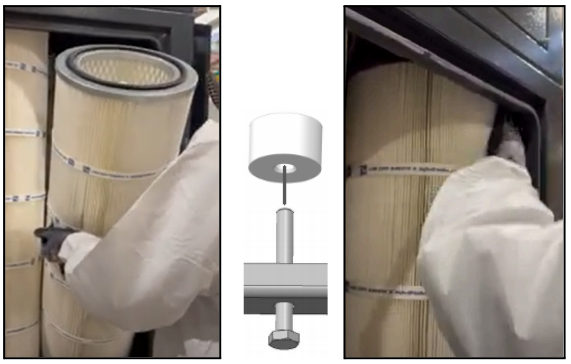


- Insert the cartridge holder without a new filter cartridge in one of the cartridge guides. However, only do this for one side. The other side of the cartridge holder should continue to hang freely.



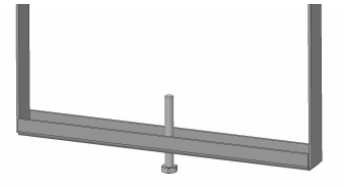


- Insert the new filter cartridge in the cartridge holder. When you do this, the cylindrical nut must be placed on the fixing screw.
- Then insert the second, loose side of the cartridge holder in the corresponding cartridge guide.

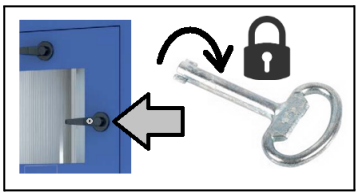


- Screw the fixing screw tight.

NOTICE **If the fixing screw is not properly tightened then the seal at the top of the filter cartridge may not be pressed on sufficiently.**



- Close the service door by closing the door handles. When doing this, it is necessary to lock the door handle that is equipped with a lock again.

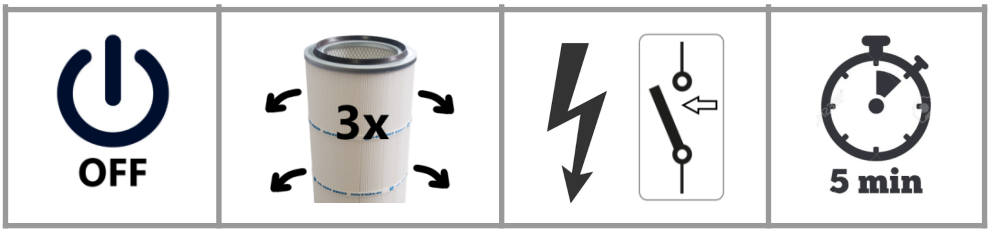


7.4. Emptying the dust collecting tank

The dust collection container must be cleaned after a certain number of operating hours. This range depends on the amount of dust. The dust collecting tank may only be filled up to a maximum of 25%. The filling level has to be proofed at least once a week.

CAUTION

Whirling up dust is possible due to the polluted filter cartridges. Danger of unintentional automatic cleaning with the unit switched off.
The filter cartridges must be cleaned before emptying the dust collecting tank.This is done by carrying out 3 manual cleanings via the unit control (see separate operating instructions).The filter unit must be switched off beforehand but without disconnecting the unit from the power supply.After the cleaning, disconnect the filter unit from the power supply and secure it against being switched on again. After cleaning the filter cartridges wait about 5 minutes before opening the service door.



Make available an original dust collection bag already before emptying the dust collecting tank (see spare parts list). We recommend to stock up dust collection bags in good time.

- Open the toggle levers of the dust collection container (see chapter 2.1).
  CAUTION **Risk of contusion when opening the toggle levers.**
- Carefully pull the dust collecting tank from under the device.
- Close the dust collection bag (e.g. with a cable fastener).
- Remove the dust collection bag and store or dispose of it according to the regulations.
- Place a new dust collection bag in the dust collection container so that the bag is put over the edge of the dust collection container.
- Push the dust collecting tank back under the device.
- Close the toggle levers so that the dust collection container is pressed tightly against the above chute.

7.5. Draining the condensate

Operation with compressed air can result in condensation water being gradually deposited in the compressed air tank. The condensed water must be emptied regularly. The maintenance interval depends heavily on the quality of the compressed air and cannot, therefore, be determined in advance.

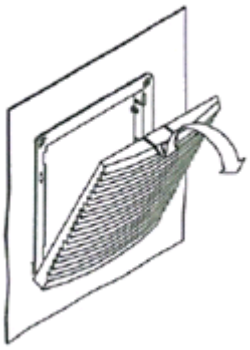
⚠	**CAUTION**
	When opening the drain valve a blast of compressed air is possible. Open the drain valve slowly.

- Empty the compressed air tank by opening the drain valve (see chapter 2.1) with a suitable screwdriver. Let the escaping condensate flow into a suitable container.

- Close the drain valve.

7.6. Replacing the filter mats for the air outlet grille

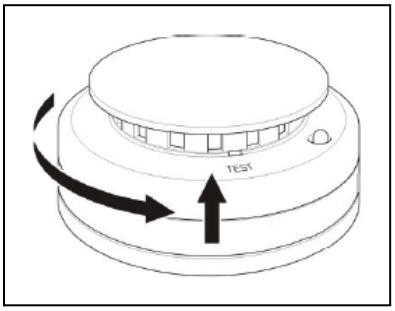
The filter mat is located in the ventilation grille of the control cabinet. The filter mat must be checked regularly and changed if necessary. This check depends on the degree of contamination. We recommend to stock with filter mats early on (see spare parts list).



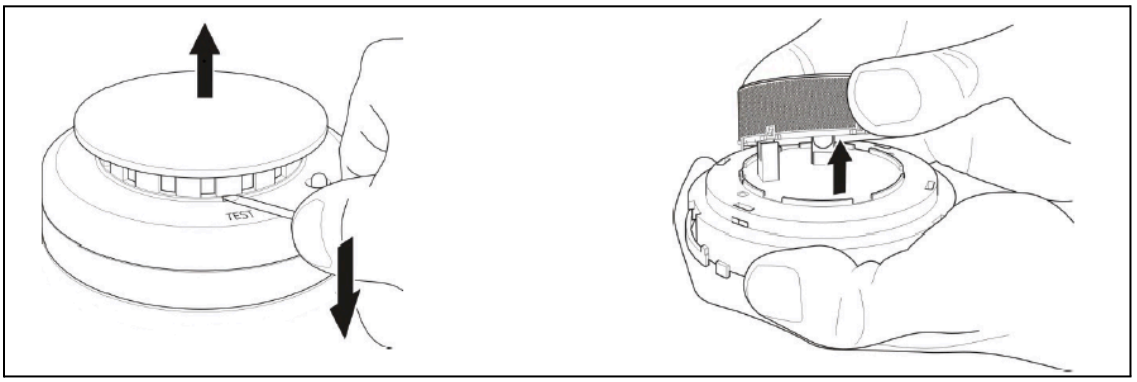
7.7. Cleaning/replacing the particle sensor

This section is only relevant, if the unit is equipped with the version "preparation for CO2-extinguishing installation" containing a particle sensor. Cleaning is then only necessary if the controller reports a "particle sensor" error message which persists after being acknowledged even though clearly no smoke is present. In such cases, it is probable that the particle sensor is too highly contaminated or faulty.

- The particle sensor is located inside the cleaning housing (see section 2.1).
- Remove the detector head from the assembly base. To do this, turn the detector head anticlockwise slightly.



- Remove the cover. To do this insert a screwdriver and lift the cover. It is then necessary to pull the black cover off the smokebox.



- Use compressed air to expel dust from the smokebox.
  NOTICE **Do not use a dust cloth.**
- Mount the covers. Replace the detector head on the assembly base.

If the controller now still reports a “particle sensor” error message then the detector head must be replaced.

NOTICE **Replacement parts are available from TEKA, see the spare parts list. In this case, it is not necessary to replace the assembly base which is screwed to the unit.**

8. Dismantling / Disposal

Only authorised personnel may disassemble the machine.

WARNING

Dangers arising from electricity.
Before the dismantling of the machine it has to be disconnected from the power supply and all supply lines.

CAUTION

Whirling up dust is possible due to the deposited dust.
During all work a suitable respiratory protection and protective clothing have to be worn.

The operator is obliged to store and dispose of the collected dust in accordance with national or regional regulations.

9. Diagnostics and troubleshooting

A list of possible system errors is provided in the table.

Error messages of the control unit are described in the enclosed operating manual of the control unit.

Faults indicated by control elements are explained in the chapter “Description of the control elements”.

A recommissioning of the device must only occur if it is ensured that the system is functionally equivalent to the original state. Repairs may only be carried out by TEKA personnel or, after consultation with TEKA, by the personnel authorised by the operator.

Adhere to the instructions in the chapter "Safety instructions" and " Maintenance" when carrying out any repairs. If in doubt, contact our TEKA service department:

Tel: +49 2541-84841-0
E-mail: info@teka.eu

Fault	Cause	Removal
System does not start.	Plug power supply is missing or incorrectly inserted.	Plug connector check power supply / plug in correctly.
	No power at outlet.	Check the mains, remove error if possible.
Dust at the dust collecting tank.	There is too much dust in the dust collection container.	Empty the dust collecting tank.

Fault	Cause	Removal
	The toggle closures are not closed.	Close the toggle closers.
	The seal of the dust collecting tank is damaged.	The seal must be replaced.
	The compressed air for the dedusting is set too high.	Reduce the compressed air.
Dust at the service door of the filter housing.	The door is not correctly closed.	Close the door.
	The seal between the service door and filter housing is damaged.	The seal must be replaced.
	The compressed air for the dedusting is set too high.	Reduce the compressed air.
	Escape of dust at the hinge.	The hinge must be reoriented or replaced.
Suction power too low (smoke hardly extracted).	Filter element is saturated.	Replace the filter package, dispose of old filter properly!
	Filter elements are saturated because no compressed air is connected.	Connect compressed air.
	Damage at the extraction elements.	Replace the extraction elements.
	The motor rotates in the wrong direction.	The rotating field of mains connection point must be changed.
	Suction line contracted.	Check and fix.
	Exhaust line contracted.	Check and fix.
	Maybe throttle valves are used in the suction line.	Adjust throttle valves.
The system is very noisy.	The motor rotates in the wrong direction.	The rotating field of mains connection point must be changed.
	There is no silencer mounted.	Mount the silencer.
	The suction line or exhaust line are not mounted.	Mount the line.
	The unit is untight.	Check and fix.

10. List of spare parts

WARNING

Dangers to life and limb when non-original spare parts are used.
Only original TEKA spare parts must be used.

Filter element	**Article no.**
Filter cartridge, Type *"easy clean nano"*, 25,3m² (Ø327 x 1200 mm) *(4 pieces of these filter elements are required for the device)*	6161200325308
Filter mats for the air outlet grille (10 pieces)	5020007079
Disposal elements	**Article no.**
PE-bag for the disposal of filter cartridges (4 pieces)	10030251702
PE-bag for inserting into the dust collecting tank (10 pieces)	100302501
Other parts	**Article no.**
Seal for displacer (Ø30 mm / 10 pieces)	9400000010
Particle sensor (detector head)	999204

11. Technical data

Version		EcoCube 5,5 kW	EcoCube 7,5 kW	EcoCube 11,0 kW
Supply voltage	V	400 - 480		
Frequency	Hz	50 / 60		
Type of current	Ph	3		
Engine power	kW	5,5	7,5	11,0
Air flow volume (possible operation point)	m³/h	3800	4200	8140
Negative pressure (possible operation point)	Pa	3250	3800	2700
Protection class		IP54		
Filter surface	m²	100		
Extraction performance	%	> 99		
Width Depth Height	mm mm mm	800 800 3200		
Weight	kg	ca. 490		
Sound pressure level	dB(A)	75		
Allowed ambient temperature	°C	+5 to +35 *(during operations)* -10 to +40 *(during transport and storage)*		
Max. temperature of polluted air at the capture point	°C	+50		
Allowed max. humidity	%	70		
Compressed air supply		dry / oil-free		
Necessary external pressure	bar	see chapter *“Connecting the compressed air supply”*		
Compressed air consumption	L/min	80		

12. Versions of the unit

In addition to the basic version, the filter unit can be ordered in an extended or modified version by adding different functionalities:

➔ Version „Preparation for CO2-extinguishing installation“

12.1. Version “Preparation for CO2-extinguishing installation”

The version is equipped with an extinguishing installation that can support a manual extinguishing of a fire within the filter unit by means of CO^2. The service door of the filter cartridges must be replaced by a special door with a fire-fighting pipeline.

NOTICE **It is possible, that the service door still has been mounted by factory.**

In addition, the filter unit is equipped with a particle sensor that detects an excessive smoke development (fire, break of the filter, etc.) inside the filter unit.
When the particle sensor is triggered, the filter units switches off as a precaution, the signal hooter is activated and the error message "particle sensor" is shown on the display of the control.

CAUTION **In this case the operator must immediately switch off the upstream machine unit.**

WARNING

Inappropriate handling of the extinguishing installation may lead to significant risks. There is a threat of icing and asphyxiation.
The operator must clarify in advance which measures must be taken in case of fire. The CO2-extinguishing installation must only be used when detecting a fire inside the filter unit if there is no danger outside the filter unit that contradicts it. Follow the instructions in chapter *"Behaviour in case of fire"*.

The particle sensor must not be used as basis of a fire protection concept. It is not indented to be a part of a fire detection system.
The particle sensor is intended to detect excessive smoke or dust development. This does not necessarily mean that the cause is a fire. Therefore an activation of the particle sensor may not automatically trigger the CO2-extinguishing action. It must be checked via visual inspection through the window of the service door if there is a fire, flames or pockets of embers.

12.1.1. Replacing the filter door

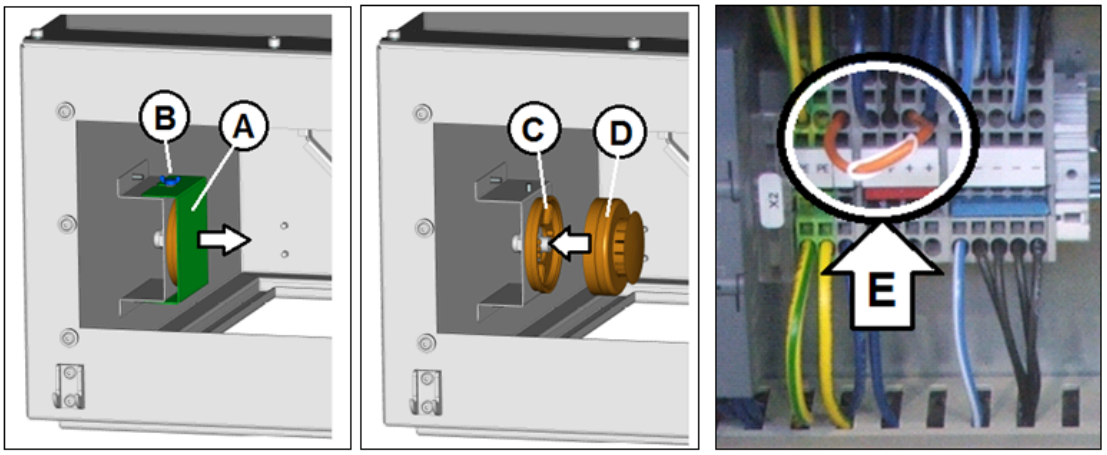
The filter door for the CO2-extinguishing installation is not factory-mounted, but must be mounted at the point of destination.

NOTICE **It is possible, that the service door still has been mounted by factory. This can be seen in the fact that the door is equipped with viewing windows and a connecting hose.**

- Therefore, demount the original filter door by loosen the filter door from the hinges.
  NOTICE **The original filter door is not needed anymore and can be disposed of.**
- Mount the new filter door. The new filter door is already equipped with a fire-fighting pipeline to which a CO^2 bottle must be connected.
  NOTICE **A CO^2 bottle is not part of the delivery of the filter unit. Use a suitable CO^2 bottle.**
  The CO^2 bottle must be protected against tilting. A 3/8“ internal thread serves as an interface for the CO^2 bottle.
- A laminated DIN-A4 notice-board is part of the delivery. Attach it to the CO2-extinguishing installation.

12.1.2. Mounting and connecting the particle sensor

Mount the particle sensor in the cleaning device housing (see chapter 2.1.). A plug-in connection is located there.



- Open the service door (see chapter 2.1.).
- Disassemble the protective plate (pos. A) by loosening the wing nut (pos. B).
- Mount the particle sensor (pos. D) on the sensor base (pos.C). The mounting is carried out by placing and turning a bit clockwise.
- In the basic version a "cable bridge" (pos. E) is installed in the control housing. It must be **removed** when using the particle sensor

12.1.3. Behaviour in case of fire

1. Keep calm.
2. Initiate the internal and/or external rescue chain (fire brigade, etc.).
3. Immediately instruct all unauthorized people to leave the danger zone.
4. Disconnect the filter unit from the power supply.
5. Remove the lock pin of the extinguishing bottle.
6. Now actuate a rush extinguishing of 2-3 seconds by pulling the lever of the extinguishing bottle.
   ⚠WARNING **Do not discharge the CO^2 bottle at once! Extinguishing in intervals is more effective! A permanent blow off may lead to icing of the fire-extinguishing equipment and to excessive release of CO^2 gas.**
7. Wait during the reaction period, carry out visual inspection through the door window of the service door, (visible pockets of embers or flames), then repeat number 6 if necessary until the extinguishing is fully completed.
8. After the flames are extinguished the doors of the filter unit may only be opened by authorized persons. Wait at least 5 minutes before the opening.
   ⚠WARNING **Excessive release of CO^2 gas may lead to asphyxiation! Ventilate the room after making sure that the fire has been extinguished.**

13. EC declaration of conformity

according to the Machinery Directive 2006/42/EG, Annex II, 1 A

TEKA Absaug- und Entsorgungstechnologie GmbH
Millenkamp 9, D-48653 Coesfeld
Tel.:+49 2541-84841-0 E-Mail: info@teka.eu Internet: www.teka.eu

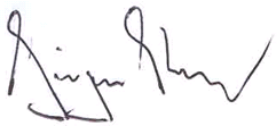
Designation of the device: EcoCube

We hereby declare under our sole responsibility that the product mentioned above, from the serial number A24200010011001 resp. P63500010011001 on, conforms to the following directives:

Machinery directive:	2006/42/EC
Electromagnetic compatibility directive:	2014/30/EU
Pressure equipment directive:	2014/68/EU
RoHS directive:	2011/65/EU

This declaration will become void if the device is exposed to modifications that are not approved by the manufacturer in written form.

Authorized representative for the technical documentation:
TEKA Absaug- und Entsorgungstechnologie GmbH, Millenkamp 9, D-48653 Coesfeld



(Jürgen Kemper, managing director)

Coesfeld, 3rd january 2024

14. Training protocol

Designation of the device: EcoCube

(This form can be used by the operator to document the training of the employees. Training should be performed by authorized personnel only. Refer to the instructions in Chapter "Safety Instructions")

By his signature, the employee confirms that he has been instructed regarding the following items:

Instruction	**completed**
Description of the device	
Operation and application of the device	
Explanation of the safety instructions	
Behavior in case of fire	
Explanation of the operation elements	
Change and dedusting of the filter elements	
Emptying of the dust collecting tank	
Appropriate disposal	
Maintenance works / Maintenance intervals	

Name of the employee (legible)	**Signature**

Introduction through (legible):	
Signature:	

15. Maintenance intervals

15.1. Usage-related maintenance

The described maintenances become necessary through the demands of the system operations. The maintenance intervals are recommendations. Depending on the application (multi-shift operation, dust generation, ...) it may make sense for the operator to change the intervals of maintenance, replacing and cleaning.

Maintenance work must always be documented by means of a protocol.

The approach of the maintenance measures is described in chapter "Maintenance".

Maintenance work	**Chapter**	**Maintenance interval**	
		recommended by TEKA	determined by the operator
Cleaning the filter cartridges	**7.2.**	The cleaning of the filter cartridges is automatically carried out by the filter unit and thus is not subject to a maintenance interval.	
Replacing the filter cartridges	**7.3.**	The saturation of the filter cartridges is automatically monitored by the filter unit and thus is not subject to a maintenance interval. The filter unit triggers an alarm when a replacement of the filter cartridges is necessary.	
Emptying the dust collecting tank (or check of fill level)	**7.4.**	weekly	
Draining the condensate	**7.5.**	monthly	
Check / Replacing the filter mat for the air outlet grille	**7.6.**	semi-annually	

15.2. General maintenance

The described maintenances are independent from the demands of the system operations.

The operator is obliged to carry out repeated inspections and functional tests according to national regulations. If not otherwise covered by national regulations, the described maintenance intervals must be respected.

Maintenance work must always be documented by means of a protocol.

NOTICE

When using a CO2-extinguishing installation the CO^2 bottle must be checked for proper operation and if necessary refilled or replaced at predefined intervals by a skilled person. The operator must determine the intervals for the applied CO^2 bottle.

Maintenance work	Chapter	Maintenance interval
Visual inspection of the device	**15.2.1.**	weekly
Visual inspection of the pipelines for dust deposits	**15.2.2.**	monthly
Visual inspection of the pneumatic pipes	**15.2.3.**	monthly
Functional test of the device	**15.2.4.**	monthly
Electrical test of the electrical lines and earthing connections	**15.2.5.**	annually
Test of **fixing** of the mounted unit elements	**15.2.6.**	annually

15.2.1. Visual inspection of the device

Visual inspection: Observation that there are no visible safety-related defects.

	**WARNING** **Danger arising from the ready to operate condition of the device.** Follow the procedure as described in the chapter “Set to maintenance state”.

The following steps must be carried out in the course of the visual inspection:

- Check if all required pipeline elements, cable connections and hoses are connected to the filter unit
- Check all electrical earthing connections and cables for visible damages.
- Ensure that all parts are firmly connected.
- Check all connection points of the filter unit for escaping dust.
- Check all metal parts for corrosion or damages / changes of the coating.
- Check the inner filter area and the filter housing.
- Visual inspection of the control and operating elements as well as the outside running cables for damages.
- Check the dust collecting tank for tightness, check the sealing rubber of the tank.

15.2.2. Visual inspection of the pipelines for dust deposits

Visual inspection: Observation that there are no visible safety-related defects.

	**WARNING** **Danger arising from the ready to operate condition of the device.** Follow the procedure as described in the chapter “Set to maintenance state”.

The following steps must be carried out in the course of the visual inspection:

- Open the inspection flaps of the pipeline and check the pipeline for dust deposits. Dust deposits must be eliminated.
- Open the service flap (see chapter 2.1.) to check the spark labyrinth. Dust deposits must be eliminated.

15.2.3. Visual inspection of the pneumatic pipes

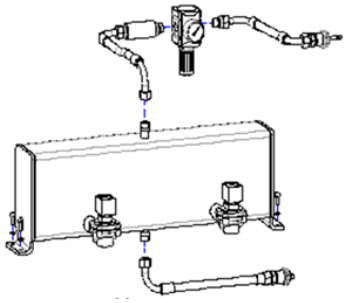
Visual inspection: Observation that there are no visible safety-related defects.

WARNING

Danger arising from the ready to operate condition of the device.
Follow the procedure as described in the chapter “Set to maintenance state”.

The following steps must be carried out in the course of the visual inspection:

- Open the service door of the cleaning housing .
- Carry out a visual inspection of the pneumatic parts.



15.2.4. Functional test of the device

NOTICE

Possible material damage due to faulty condition of the unit.
Carry out a visual inspection before the functional test of the device as described in the previous chapters.
The work as described in the chapter “Commissioning” must be finished.

The following steps must be carried out in the course of the functional test:

- Switch on the device.
- Pay attention to failures or error messages of the control unit. Also refer the separated operating manual of the control unit.
- Pay attention to extraneous noises or vibrations during the device´s operation.
- Carry out a manual dedusting of the filter cartridges. Also refer to the separated operating manual of the control unit.
- Check if within one interval of the filter dedusting the number of dedusting shocks is equal to the number of filter cartridges (in each interval successively every filter cartridge becomes dedusted once).
- Check if dust is escaping from the unit during the dedusting cycle.
- A functional test should always be carried out with a connected / producing machine tool. Check if the collection of the fume or dust is sufficient. (Visual inspection).

15.2.5. Electrical test of the electrical lines and earthing connections

WARNING

Danger arising from electricity.
The operator is responsible for ensuring that all work on electric components is carried out by authorised and qualified personnel.

The device is subject to regular electrical checks by the operator of the device, and are subject to national standards of the different countries.

The here recommended maintenance interval complies with the in Germany applying "Regulation 3 of the German Social Accident Insurance - Electrical plants and equipment" (formerly known as BGV-A3).

The check must only be carried out by a qualified electrician or a person trained in electrics using suitable measuring and test devices. The scope of testing and the methods must be in line with the respective national standard. All contacts in the control cabinet must be checked for tight fit, and must be readjusted if necessary.

15.2.6. Test of fixing of the mounted unit elements

The following steps must be carried out in the course of the inspection:

- Make sure that all elements that are connected at or with the unit are firmly fixed in place and have not come undone or loose. These also include all air-carrying lines, all extraction elements, bearing structures and frames.
- In the case of unit elements which are subject to vibrations and/or movements, the operator may need to define a shorter maintenance interval.