Operating manual

Atmos Cube

8401

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Translated manual

Trotec Laser GmbH

Linzer Straße 156
4600 Wels, Austria

Trotec Laser GmbH

Freilingerstraße 99
4614 Marchtrenk, Austria

Tel.: +43-(0)7242-239-0

trotec@troteclaser.com
www.troteclaser.com

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CONTENT

1 Introduction

The operating instructions are a substantial assistance for the successful and safe operation of the Atmos Cube.

The operating instructions contain important notes, in order to operate the Atmos Cube safely, properly and economically. Their attention helps to avoid dangers, to decrease repair costs and down-times and to increase the reliability and the life span of the Atmos Cube.

The operating instructions must be constantly available at the Atmos Cube and has to be read and used from each person, who is assigned to work with/and on the Atmos Cube.

For example:

- Operation
- Disturbance recovery in the work routine
- Disposal of operating and auxiliary materials
- Maintenance
- Transport

2 General information

2.1 Explanation of symbols

Important technical safety notes and instructions in this manual are marked with symbols. These instructions for workplace safety must be complied with and followed. Please pay special attention to avoid accidents, injuries to persons or material damage.

Danger
This symbol indicates information on a hazardous situation which, if not avoided, will result in death or serious injury.

Warning
This symbol indicates information on a hazardous situation which, if not avoided, could result in death or serious injury.

Warning Current
This symbol warns of potentially dangerous situations related to the electric voltage. Failure to observe the safety instructions leads to risk of serious injury or death. Particular care should be taken during maintenance and repair work.

Warning Laser
This symbol warns of potentially dangerous situations related to the laser beam. Failure to observe the safety instructions leads to risk of serious injury.

Caution

Caution
Personal injury (material damage)
This signal word indicates information related to a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury or lead to damage, malfunction or breakdown of the machine.

Notice

Notice
This signal word marks tips and information which should be observed to ensure efficient and failure-free operation of the machine. In addition, possible situations are indicated that cause slight damage to products, machine or plant.

2.2 Liability and warranty

The Trotec Laser GmbH is endeavored to work on your questions and order as fast as possible. We ask you to indicate your names as acknowledging address as well before each inquiry.

The warranty of the manufacturing firm for the Atmos Cube extends within the implied warranty period to damage, which can be proved on construction – to lead back material or production defects.

The time of warranty begins with the delivery e.g. start-up time of the Atmos Cube.

A warranty is transferred only in its entirety if:

- The distribution inspection, the delivery and the instructions are implemented correctly.
- The Atmos Cube is used in the intended way.
- The maintenance and servicing instructions have to be strictly obeyed (with dirty turbine no warranty claim exists).

In the case of a warranty the manufacturing firm takes on the material costs, which result directly from the remedy at the Atmos Cube.

Only spare part prices and the fee of the current price list are valid.

We refer to the regulations as well as the general trading conditions of the Trotec Laser GmbH.

2.3 Scope of supply

Examine with the delivery of the Atmos Cube the scope of supply in every detail and announce immediately if parts are missing or damaged. Later complaints are not accepted.

To the regular scope of supply belong:

- Atmos Cube mains cable (cold equipment cable)
- Inserted filter with Atmos Combi-filterbox and activated carbon.
- 0,45 m suction hose Ø 80 mm
- 1,5 m hose-set Ø 45 mm with brush
- Operating Instructions on CD

Please note that the scope of supply can deviate in individual cases from this list. In this case the list in the delivery document is binding.

3 Safety

3.1 General

These operating instructions are a substantial component of the Atmos Cube.
The operator ensures that the operating personnel acknowledges these guidelines to the knowledge.

Since the operating instruction is presumably exposed to a strong demand at the place of work of the Atmos Cube, it is incumbent on the operator:

- Keep the original safe.
- Make sure that a copy of the operating instructions is constantly available at the Atmos Cube.
- Read the operating instructions attentively and follow all instructions.

The operating instructions are to be supplemented around operating instructions due to the existing national regulations for accident prevention and to the environmental protection, including the information of the duty to supervision and obligations to register, the consideration of operational characteristics e.g. regarding working particularity relating to the work sequences and assigned personnel by the operator.

Beside the operating instructions and the in the user country and at the employment place valid obligatory regulations for accident prevention, also the recognized specialized technical rules for security and professional working are to be considered.

After one year at the latest the examination of the Atmos Cube is to be made by experts. The test report is to be documented in writing.

The operator/user may not make changes at the Atmos Cube, which could impair security, without permission of the manufacturing firm! This applies in particular to the installation and the attitude of safety devices.

Spare parts must correspond to the technical requirements specified by the manufacturing firm. This is always ensured with original spare parts.

Only trained or instructed personnel may work on/with the Atmos Cube. Specify the competencies of the personnel for serving, controlling and repairing clearly.

Operating stuff to be trained may become active only under constant supervision of an experienced person at the Atmos Cube.

The maintenance of the Atmos Cube may take place only via particularly trained personnel of the Trotec Laser GmbH and/or a service company authorized in addition.

3.2 Instructions and training

As operator of the Atmos Cube you are obliged to inform and/or to instruct the operating/maintenance staff about existing rules for the prevention of accidents and on the rights as well as about existing safety devices to and around the Atmos Cube. Different technical qualifications of the personnel are to be considered.

The operating/maintenance staff must have understood the instructions and it must be guaranteed that the instruction is considered.
Only in such a way you can achieve security and the danger-conscious working of your staff. Each co-worker should confirm the participation in the training course and instructions in writing.

Notice **Notice**
For your security
Operator of the filter system Atmos Cube please, absolutely consider the data given in the CE manufacturer explanation, CE - declaration of conformity, the data and information in the user manual and in particular the operating and safety instructions.

Residual risk:
Filter systems and suction units contain inflammable construction parts (filter material, seals, plastic parts, etc.). Consider in your work place evaluation after the employee protection framework guidelines the residual risk of a case of fire. It is necessary to have our written approval for changes in the use of the filter system.

CE – Conformity Declaration:
As a rule we deliver the filter system with a CE – Conformity Declaration. When assembled with other parts it becomes a higher - ranking filter system for which you, as operator, have the duty to make a danger analysis and you must provide a CE - Conformity Declaration for the whole filter system.

Notice **Notice**
Sparks, cigarette stubs or similar may not be sucked into the filtering device.

Our plants may be used only as described and as intended in the operating manual. Changes in the use require our written permission.

Each use going beyond it is not considered as intended, the manufacturer / supplier can´t be made liable for developing damages which result from it. The risk carries the operator.

Intended use of the filter system Atmos Cube:
It is not allowed to suck off dust, smoke, gases and media which do not correspond with the chapter “Intended Use” in this operating instruction. The media exhausted may be classified in no dust explosion class (St-Class).

Start-up, maintenance work and service:
Refer to the maintenance and safety instructions in the operating manual.
All repair and maintenance work may only be carried out with complete standing still of the machine/plant (separate all poles by switching off from the mains; pull the plug out of the socket).
Only trained and authorized personnel may operate, make maintenance work service at the machine/plant. Work within the electrical range may be implemented by authorized specialists only.

3.2.1 Intended use

Possible combinations:

Operate the suction device "Atmos Cube Rayjet" only with the lasersystem "Rayjet 50".
The other variant "Atmos Cube Speedy" may only be combined with the lasersystem device "Speedy 300".

The Atmos Cube of the Trotec Laser GmbH exclusively serves for sucking off gases and smoke with pollutants.

No statements can be made for other fields of activity than in this operating instructions specified regarding the endangerment of humans and environment. No overall statement can be made to the suitability of the Atmos Cube, if loaded gases and smoke with pollutants in another than here mentioned purposes are sucked off. In this case the Trotec Laser GmbH is to be addressed; otherwise any warranty claim is void.

While handling dangerous material the also consider rules for the prevention of accidents and here in particular the safety rules for extractoion equipment for air pollution control on the job.
The Atmos Cube may be operated only with accessory/with the equipment which are intended and approved from the Trotec Laser GmbH. The data in chapter “technical data” are to be considered and kept.

Notice **Notice**
To the intended use also belongs keeping the references, for safety operation, maintenance and servicing which are described in this operating instruction.

3.2.2 Not intended use

- Damp, liquid or vaporous materials.
- Explosive or inflammable gas/material/material air mixtures.
- In air-impermeable layers crystallizing materials.
- Sticky or statically responsible materials.
- Incandescent or burning substances.

Another or beyond it going use, e.g. as an industrial extractor is considered as not intended.

Danger
Danger from emissions of toxic gases, vapours or dusts.
Don´t use the Atmos Cube in the processing of carcinogenic substances according.
The operator of the extraction alone is liable for the damage resulting from improper use.

Imperfect construction unit/spare parts are to be exchanged immediately. Use only original spare parts. In particular with non-original filter devices it is not ensured that they filter the pollutants from the extracted gas/smoke completely.

3.2.3 Hazards

Also with attention to all safety regulations a residual risk remains with the operating of the Atmos Cube.

All persons, who work on and with the Atmos Cube, must know these residual risks and must obey the instructions, which prevent, that these residual risks lead to accidents or damage.

Warning
Toxic gases and dusts.
By the inhalation of poisonous gases and types of dust poisoning damage can occur. Likewise long-term damage can occur to internal organs by repeated inhalation, sips and contact with gases and dust contained in the filter-unit and suction hose itself.

Before all work on the inside of the Atmos Cube, in particular at the filter devices as well as on the dust extraction hose the personal protect equipment has to be put on.

Part of the complete protection equipment are:

- Protection gloves (one-way gloves from polyethylene, long version).
- Protection mask (purifying dust respirator with examination of the protection stage 3).
- Eye protector

3.2.4 References for the operation of the Atmos Cube

The Atmos Cube may be used only in technically perfect condition and as intended. Safety and danger-conscious consideration of this operating instruction is supposed! All disturbances in particular such, which can impair security, are to be eliminated immediately.

Each person, who is assigned to assemble, start-up, maintain or repair the Atmos Cube, must have completely read and understood this operating instruction, in particular the chapter “security” before beginning with the operation. During the work it is too late.

This applies in particular to personnel working only occasionally at the Atmos Cube.

Each person, who is assigned to work on the Atmos Cube, must confirm by signature that he/she read and understood the operating instructions before first handling the Atmos Cube.

Work on the Atmos Cube may be working only by reliable personnel.

The legal permissible minimum age must be considered! Use only trained or instructed personnel.
Personnel in training or in the context of general training, personnel who is to be trained may work at the Atmos Cube only under constant supervision of an experienced person.
The operating instructions must be at hand constantly at the Atmos Cube.
For damage and accident by neglecting the instructions no responsibility will be taken over.
The relevant rules for the prevention of accidents as well as the other general recognized safety-relevant rules according to industrial medicine are to be kept.

The competencies for the different activities in the context of the operation, the maintenance of the Atmos Cube must be clearly fixed and kept. Only then miss-actions in particular danger situations can be avoided.

The operator has to obligate the serving and maintenance staff to carry personal protection equipment. In addition protection gloves and, purifying dust respirator masks. This affects in particular the change of the filter.
Are there safety-relevant changes at the operational behavior or disturbances at the Atmos Cube so it has to be stopped immediately and announced to the competent authority.

Keep first aid facilities (first aid box, eye rinsing bottles etc.) within reach.
Make known the location and operation of fire extinguishers and the possibilities of fire reporting and firefighting.

During inspection, maintenance and repair, always follow the instructions for maintenance work and maintenance.
For all work which concerning, Operation, Inspection, Maintenance, Repair.
The Atmos Cube may only be operated, if all protection and safety devices e.g. solvable protection devices, housing bolts etc. are on its place and functional.

Before starting up, the personnel has to make itself familiar with the Atmos Cube.
The Atmos Cube may never remain unsupervised during the operation.

At least once per shift the Atmos Cube must be examined for outwardly recognisable damage.
Changes (including that of the operational behavior) have to be announced immediately to the responsible shift leader and/or the plant manager.

Stop and secure the Atmos Cube immediately if malfunctions occur.
Disturbances are to be eliminated immediately through trained specialists.

3.2.5 References to the maintenance

- Before beginning inform the operating personnel about the execution of special- and maintenance work.
- Keep the periods for tests/inspections prescribed in these operating instructions.
- For the execution of maintenance work appropriate workshop equipment is absolutely necessary.
- Illuminate maintenance ranges, to the extent necessary, additionally with hand or stand lamps.
- For Maintenance or repair the Atmos Cube must be switched off and secured against unexpected restarting.
    1. Switch off at the circuit breaker and afterwards a disconnecting the device from the mains by pulling out the plug of the mains cable.
    2. After switching off/stopping the Atmos Cube wait for the stop of the turbine.

Caution **Caution**
To avoid current impacts do not open electrical construction units as well as housings and covers. Work on electrical equipment may be made only by trained specialists.

Notice Do not touch damaged or torn life (voltage) parts.

- Make no program modifications at programmable control systems. Modifications at programmable control systems may only be made after consultation and with the permission of the Trotec Laser GmbH.
- Work on electrical equipment may be made only by trained specialists or by personnel who is to be trained under constant supervision of a trained specialist.
- Check regularly for damage on cable and hose connections, particularly such at mobile construction units, and if necessary exchange.

- Exchange the filter in the indicated and/or in appropriate time/intervals, even if no safety relevant lack is recognizable.
- Always re-lighten solved screwed joints with maintenance and repairs.
- If the disassembly of safety devices is necessary with servicing or repairing, the assembly and examination of safety devices must take place immediately after conclusion of maintenance and repair work.
- At the beginning of maintenance/repair/care the Atmos Cube, and here in particular connections and screw connections are to be cleaned of all contamination and residues, e.g. dust, fuels or preservative agents.

Cleaning:

- Do not use aggressive cleaning agents containing solvent.
- Use lint free cleaning cloths.
- Use only mild cleaning agents on water basis.
- Consider the data of the manufacturers.

Caution **Caution**
Do not use organic solvents, since fire and danger of explosion exists.

- Take care of a safe and environmental careful disposal of operating and auxiliary materials as well as replacement parts.

3.2.6 Special kinds of danger

Electricity:
Work on the electrical equipment of the Atmos Cube may be conducted only by an electrical specialist or personnel instructed by/under line and supervision of an electrical specialist, in accordance with the electrical rules.

After switching off wait five minutes, for the inserted condenser in the control board to unload themselves. Opening of the housing is only permissible at the end of this time.
Do not use the Atmos Cube when the mains cable is damaged, replace it immediately (see: spare part list).

Use only original fuse/original safety devices with prescribed amperages.

Never accomplish work on live parts.

With repairs pay attention to the fact that constructional characteristics are not to be changed safety, reducing changed in particular: allowed air creeping and air clearance as well as distances are not to be made smaller by isolations.

The perfect grounding of the electrical system must be ensured by a protective grounding system.

If there are any problems with the electrical power supply, immediately disconnect the device from the mains.
Proceed as follows:

1. Switch off the on-/off-switch.
2. Remove the plug of the mains cable.

3.2.7 Types of dust and other chemical substances

With the Atmos Cube partial toxic types of dust from contaminated air are filtered. Depending upon the kind of the assigned materials these types of dust can be health-endangering and/or carcinogenic.

While handling toxic types of dust special caution is required.

Consider and keep valid regulations and safety data sheets of the manufacturers concerning storage, handling, employment and disposal, while handling chemical substances.

With eye or skin contact with the types of dust in the filters or the suction hose the part concerned must be flushed immediately with much water. Suitable mechanisms (eye wash bottle, wash basin, shower) must be available at hand.

By cleaning and disinfectants loaded skin should be maintained after washing. Irritation can be avoided by the preventing use of skin protection means and a suitable skin care.

The preservative agent who can be used is to be selected as a function of the pollution impact and the individual condition of the skin. Containing fat preservative agents are predominantly applicable.

Eating, drinking, smoking and keeping food in areas, in which chemicals are, is forbidden.
Keep dangerous materials never in bottles or containers for food. Mark always clearly. For the respective material use certified containers.

Depending upon pollution impact particle and gas filters are subjects to the
National Waste Law regulation and are to be disposed accordingly.

Warning
harmful substances
Health risk
- The inappropriate exchange of the pollutant-loaded filter-units represents a health risk for the implementing persons and their environment. Consider therefore the chapter “exchange of the filter parts” maintenance in this operating instruction.

3.2.8 Noise

The A-weighted one equivalent continuous sound pressure level (measured with a sound-level measuring device in 1 meter distance) on the operation job of the Atmos Cube lies during normal operation below 68 dB(A), depending upon type of device.

Depending on the local conditions, a higher sound pressure level in the surrounding field of the Atmos Cube can prevail.

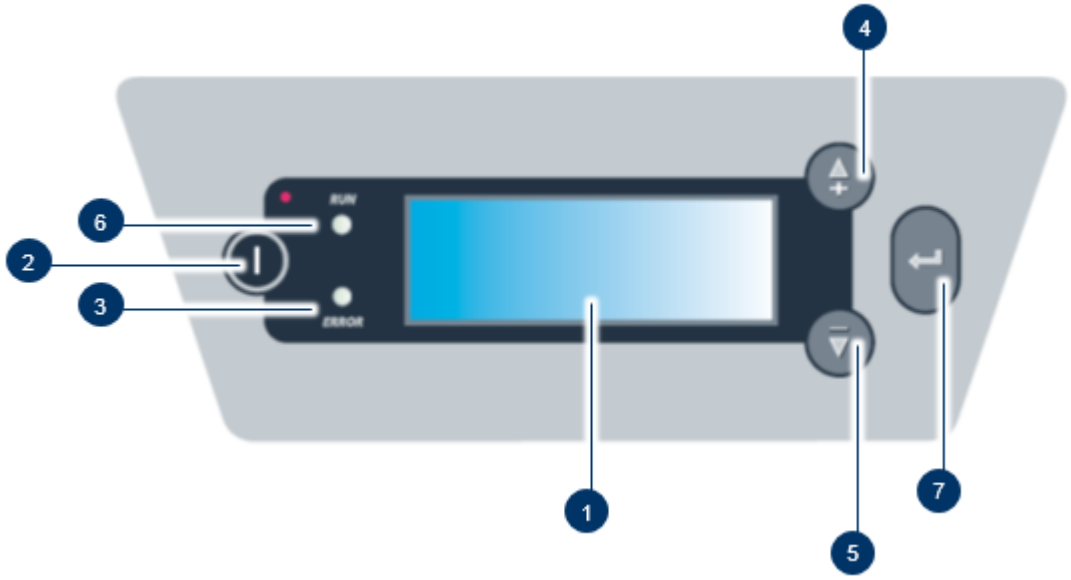
Danger
Amblyacousia
- This increased sound pressure level can be caused by neighboring machines and may cause deafness.

4 Product description Atmos Cube

No.	Description	No.	Description
1	Housing: Filter unit	**7**	Safety pressure switch
2	Housing: Turbine unit	**8**	Extraction tube NW 80
3	Display	**9**	Clamp
4	Guiding roller	**10**	Type plate
5	Power socket	**11**	Outlet grille
6	Sub-D-9 connector	**12**	Suction hose

5 Operation

5.1 Description display



No.	Description	No.	Description
1	**Display**	5	**Down-button** Adjusting (decrease) of the suction volume in steps of 5 m³/h.
2	**On/Off-button** The key ON/OFF serves for switching the Atmos Cube on and/or off. When switching on push the key for about 0,5 seconds, the turbine starts audibly and the sucking of the gas/or of the smoke begins	6	**Run-LED display (green)** LED run indicates that the Atmos Cube is switched on.
3	**Error-LED display (red)** If the LED error shines red, a problem report is given see chapter “Status Announcement”.	7	**Enter-button** With this key you arrive the Setup menu which shows the system-parameter, consider chapter “Sub-menu for Language Selection”.
4	**Up-button** Adjusting (increase) of the suction volume in steps of 5 m³/h.		

5.1.1 How to switch the Atmos Cube On/Off

1. **Hand control:** With the key ON / OFF the Atmos Cube is switched ON manually.
2. **External Control:** The Atmos Cube is switched on and off only by the laser interface.

Attach the external control console with a shielded cable at the Sub-D9-plug at the turbine case of the Atmos Cube.

Notice

Notice

If the Atmos Cube will be switched off externally via the remote control, the turbine runs the pre-set time and switches off only then.
This delay ensures that a majority of the gas/smoke are sucked off.

5.1.2 Suction volume (nominal value)

”+“ Key – Press to increase suction volume
”-“ Key – Press to decrease suction volume
When the Mistal is restarted the turbine runs at the last adjusted volume.

5.1.3 Flow-Control – Adjustment suction volume

(Definition see chapter “Announcing and Adjusting the System Parameter”).

The volume-flow rate (suction volume) is kept constant automatically. The control adjusts the turning speed of the turbine and accommodates itself to changing conditions e.g. filter pollution automatically.
The max. volume-flow rate is preset and not to exceed and will be displayed with “Max Vol”.
We recommend: Select the smallest possible setting to extend the filter life.
It is possible to change the “Max Vol” setting in the set-up menu (see Chapter “Setup for Menu with code”).
This adjustment is stored even after turning off. The Atmos Cube runs with the same volume-flow rate when restarted.

5.2 Program

LANGUAGES:
German, English, France

TYPES OF LASER
Select according to your lasertype.

TYPES OF SUCKTION UNIT
Select according to your suction unit

5.2.1 Keypad

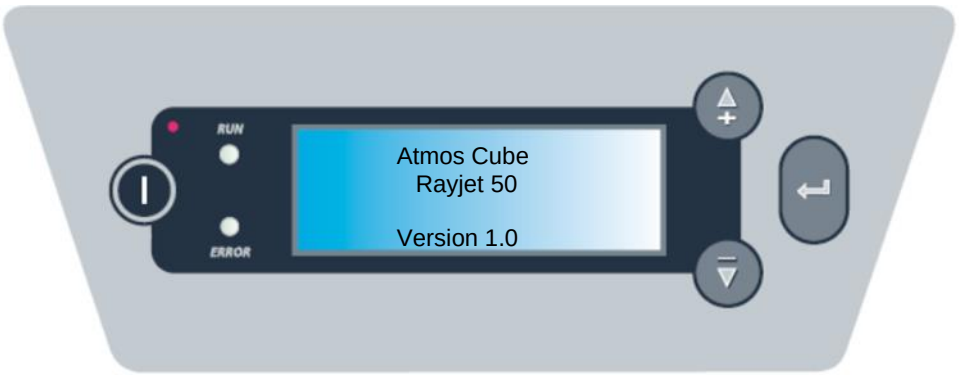
E.g.: Version 1.0

Operating button:	ON / OFF
Confirmation button:	Enter
Turning speed button:	”+“ and “-“

5.2.2 Display

With the first operation the Setup assistant appears.
Key all information concerning the type of the connected machine(s) in.
This data may be changed later (see chapter “Starting Announcement”).
With each further starting the starting announcement will appears first, than the standard announcement will be displayed.

5.2.3 Starting announcement

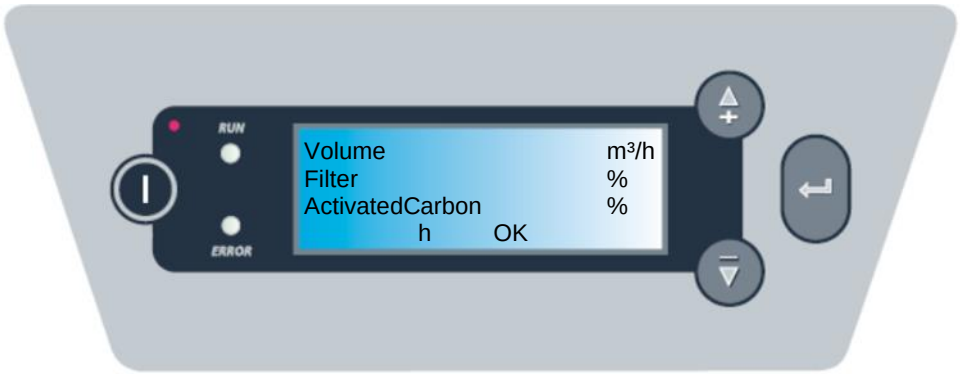


Announcement after starting in sequence:

- Type aspirator (e.g. Atmos Cube)
- Type of laser (e.g. Rayjet 50)
- No. of version

The announcement switches automatically into the standard announcement after 5 seconds:

5.2.4 Standard announcement

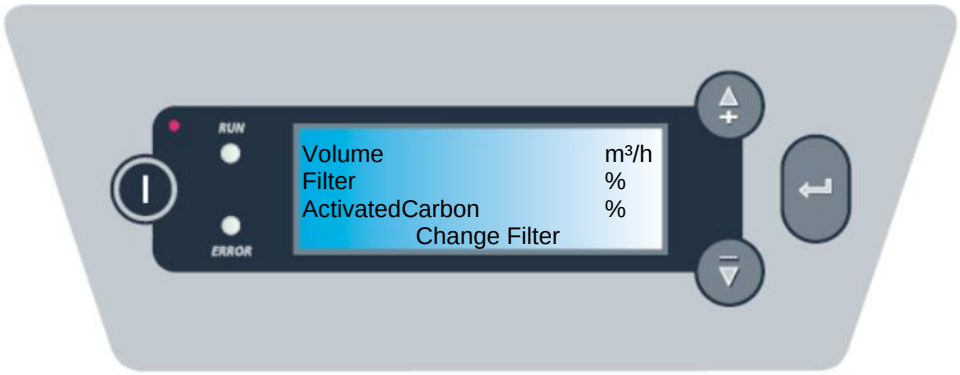


- Volume (nominal value) in % from the voltage
- Filter in % and the expired operating hours so far, from 0 h to 999999 h (The system counts operating hours as long as the turbine receives a control-system signal.).
- Activated carbon 0% to 100% (hours of activated carbon in percent).
- Operating hours so far, from 0 h to 999999 h (The system counts operating hours as long as the turbine receives a control-system signal.). Status “OK” or failure announcement.

5.2.5 Status announcement

The announcement “OK “ (LED green: “RUN”) is the operating announcement at the same time if an adjustable minimum pressure is achieved and no further failure announcement exist.
The “RUN” LED expires if a lower air volume e.g. 110m³/h is adjusted because the differential pressure is too low (standard setting of the differential pressure 200 Pa).
If there is a low air volume required the adjustment in the Setup menue for code 2 has to be changed. In this case the Trotec Laser Automation GmbH is to be addressed.

Failure announcement “change filter”:



- Acoustic announcement: buzzer
- LED error: red

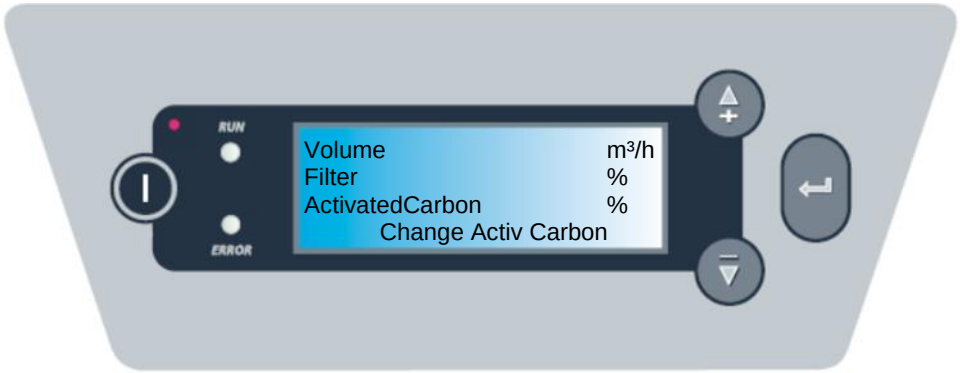
The error announcement is displayed at 100%.

Failure announcement “change filter” Atmos Cube with Prefilter:
On reaching the maximum turning-speed and “Min Vol” (minimum volume) the announcement “MIN VOL CHECK PRE” and “CHANGE FILTER” are displayed by turns.
Clean and check respectively the Prefilter first. Does the announcement not disappear change the filter of the Atmos Cube.

MAX VOL:
The announcement “MAX VOL” is displayed if the nominal value is manipulated and the programmed maximum volume-flow rate is reached.
We recommend: Do not change this adjustment, the filter life is optimized with this setting. It is possible to change the “Max Vol” setting in the set-up menu with code.

Max Speed:
The announcement “MAX SPEED“ is displayed if the maximum turning-speed of the turbine is reached.
Please, check the spare part filter at hand: This announcement might be a reference to a full filter in a little while.

Service interval activated carbon:



- Acoustic announcement: buzzer
- LED error: red

If the indicator light turns red and the audible message has activated.
If the activated carbon has been replaced, the operating hours are set to 0 by the next "+" and "-" buttons for three seconds. The message "OK" appears on the display instead of "Activated charcoal change"

5.3 Announcing and adjusting the system parameter

Access to the setup menu is gained direct after the first operation of the Atmos Cube or by pushing the key Enter.

Setup menu
Language
Laser type
Exhaust type
Prefilter
Reset coal
Code
Exit

The key “+“/“-“ moves the cursor (“<“) up and down, “Enter“ selects the data.

- If there is a sub-menu (marked by ……) you get into the sub-menu.
- If the parameter is changeable, the cursor switches to “#“. Afterwards the data may be modified by pressing “+ “/“-“. By pressing the key “Enter“ the selection will be stored. The cursor switches to (“<“).
- If there are only two data available (e. g. yes/no, on/off, selected/not selected) by pushing the key “Enter“ the selection changes. A checkmark shows yes/on/selected.
- Within a submenu the selection is performed by pressing the key “Enter“ (instead of the cursor) and returns into the previous menu

5.3.1 Sub-menu for language selection

Language selection
Language: German
Language: English
Language: French

“+“/“-” Key move the cursor (“<“), “Enter“ key accepts the selection. Than the setup menu will be displayed. With more than four languages the announcement scrolls.

5.3.2 Sub-menu for lasertype selection

Lasertype selection
Speedy 100
Speedy 300
Rayjet 50

“+“/“-„ key move the cursor (“<“), with more than four types the announcement scrolls. “Enter“ key accepts the selection. By pushing the exit key the standard menu will be displayed.

5.4 Diagnosis display

After consulting a support-technician different data may be displayed on the diagnosis display.
Push the key “Enter“ for three seconds. Information of your Atmos Cube will be announced.
Inform a technician if necessary.
With the key “+“ you reach the next announcement and with the key “-“ respectively the previous.
Push to quit the diagnosis display the key “Enter” for three seconds or push the key “+” twice.

5.5 Remote control

Apart from the operation with the transparency keyboard there is still additionally the possibility to control the Atmos Cube over a lead to an external control console (e.g. at the machine which can be exhausted).
Depending upon execution of the remote control all or only one part of the functions described in the previous section can be implemented.
Attach the external control console with a shielded cable at the Sub-D9-plug at the turbine case of the Atmos Cube. Consider the references in the section “Connection of an External Control”.

Notice **Notice**
If you switch off the Atmos Cube externally via the remote control, the turbine runs the pre-set time and switches off only then. This delay ensures that a majority of the gas/smoke are sucked off.

5.6 Test operation

1. Examine first all connections at the Atmos Cube for correctness and a firm seat.
2. Connect the Atmos Cube to the mains supply.
3. Switch on the Atmos Cube at the transparency keyboard with the On/Off-button.

Notice **Notice**
Accomplish the test operation, if you have acquired the Atmos Cube and want to know/learn the functions.

Accomplish the test operation in addition, if you attached the Atmos Cube to a (new) remote control or disturbances at the Atmos Cube have been repaired before. When switching on at the keypad press ON-/OFF key for about. 0,5 sec.
Alternatively switch the machine on which will be exhausted. The Atmos Cube will be turned on automatically.

- Increase the number of revolutions of the turbine, by touching lightly the Up-button and keep pressed. You can notice the increase of the number of revolutions at the noise increase. In addition in the display increases the flow announcement (m^3/h) on the display.
- Increase the number of revolutions of the turbine to 100 %. The flow (m^3/h) announcement or the flow % must rise.

  Reduce afterwards the number of revolutions of the turbine, by touching the Down-button and keep the button pressed. You can notice the reduction of the number of revolutions at the noise acceptance. In addition the flow (m^3/h) announcement or flow in % will be reduced.
- If you operate the Atmos Cube at a remote control, examine now also all existing functions.

  These can be:
  - direct OFF/and again switching ON of the Atmos Cube,
  - increasing the number of revolutions,
  - reducing the number of revolutions,
  - automatic switching OFF of the Atmos Cube, if the machine will be switched off,
  - automatic switching ON of the Atmos Cube, if the machine will be switched on.
  - Afterwards switch the Atmos Cube off at the transparency keyboard with the On/Off-button.
  - Alternatively switch off the machine which will be exhausted. The Atmos Cube is switched off automatically after the adjusted time.

If the test operation ran off to your satisfaction and without malfunctions the Atmos Cube is now ready for operation.

6 Description of function

The Atmos Cube serves for extraction of gases and smoke loaded with pollutants with a connected suction hose between the machine, which can be exhausted, and the Atmos Cube.

The Atmos Cube is switched on and/or headed for either at its transparency keyboard or by the controlling of the machine which can be exhausted (remote switching mechanism).
The gas/smoke is sucked in by the suction hose into the filter housing with the assigned filter-unit.

The Atmos Cube consists of the following filter stages:

- Atmos Combi-filterbox or Atmos Comfort Bag
- Activated carbon 1 Bag with 9 kg.

The contaminated air is sucked in through the filter by the turbine. The cleaned air is blown out through the exit grille, attached on the side, into the ambient air.

6.1.1 Protective device

The Atmos Cube is equipped with protection device, in order to prevent dangers for security and health of the operator and/or third.

The entire Atmos Cube is designed and manufactured according to the current state-of-the-art and the recognized safety-relevant rules. In order to ensure the safe operation for personnel and environment, the precautions/safety devices described in the following were taken and/or installed. Unauthorized removing or bridging (go around) of protection device represents a punishable action. In the case of loss each liability claim expires.
The turbine is secured by a door, which can be opened only with tool. All elements of the control systems place themselves with power failure into a safe condition for operators, Atmos Cube and environment.

All live construction units are secured against contact (isolated) and with sufficient estimate distance installed. Live building groups are built in the turbine case, which can be opened only with tool.
All electrical construction units carry the CE characteristic for low-voltage and/or EMV.
For the grounding of the Atmos Cube a potential equalization (Ø > 1.5 mm²) of all leading components is installed.
The Atmos Cube is implemented according to the type of protection IP40.

7 Atmos Cube variants

The Atmos Cube differs in the variants, Atmos Cube Rayjet and Atmos Cube Speedy.

7.1 Atmos Cube Rayjet

This device forms a single unit with the “Rayjet 50” lasersystem device and at the same time acts as a base for applications with low dust generation.

Dimensions:

Width: 675 mm

Height: 595 mm

Depth: 605 mm

7.2 Atmos Cube Speedy

Here is the same application. This extraction is suitable for the lasersystem device "Speedy 100". The difference arises in size.

For this variant, there is an expansion angle which is suitable for the "Speedy 300".

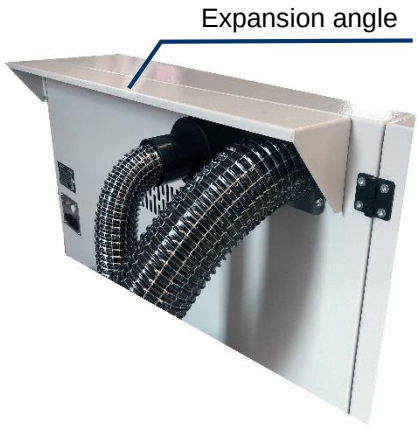
This essay can be ordered separately.

Dimensions:

Width: 955 mm

Height: 595 mm

Depth: 605 mm



Dimensions with expansion angle:

Width: 955 mm

Height: 595 mm

Depth: 650 mm

8 Technical data Atmos Cube

8.1 Atmos Cube Rayjet

Atmos Cube Rayjet	
Housing	Width: 675 mm Height: 595 mm Depth: 605 mm
Mode of operation	Surrounding temperature, perm. + 5 °C to + 35 °C Relative air humidity 45 - 65%
Motor related data 115 V	Max. air-flow 320 m³/h Power of the motor 0,8 kW Max. negative pressure 5.800 Pa
Current 115 V	Connection Voltage 120 V / 50/60 Hz Type of current 1 Ph Control voltage 24 V Type of protection IP 40 ISO-Class F
Motor related data 230 V	Max. air-flow 320 m³/h Power of the motor 1,2 kW Max. negative pressure 8.500 Pa
Current 230 V	Connection Voltage 240 V / 50/60 Hz Type of current 1 Ph Control voltage 24 V Type of protection IP 40 ISO-Class F
Kind of filter	Atmos Combi-filterbox Atmos Comfort Bag
Activated carbon	About 9 kg
Filter before and behind activated carbon	Filter mats
Changeover damper	Control voltage 24 V DC

8.2 Atmos Cube Speedy

Atmos Cube Rayjet	
Housing	Width: 955 mm Height: 595 mm Depth: 605 mm
Mode of operation	Surrounding temperature, perm. + 5 °C to + 35 °C Relative air humidity 45 - 65%
Motor related data 115 V	Max. air-flow 320 m³/h Power of the motor 0,8 kW Max. negative pressure 5.800 Pa
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Current 230 V	Connection Voltage 240 V / 50/60 Hz Type of current 1 Ph Control voltage 24 V Type of protection IP 40 ISO-Class F
Kind of filter	Atmos Combi-filterbox Atmos Comfort Bag
Activated carbon	About 9 kg
Filter before and behind activated carbon	Filter mats
Changeover damper	Control voltage 24 V DC

9 Transport, unloading and packing

9.1 Transport

The Atmos Cube is transported in a wooden – carrier box. The following corridor promotion vehicles are permissible:

- Fork lift
- Fork truck

Hard impacts of the device (e.g. on the loading area of a transport vehicle) must be avoided when setting off.
In case of transportion, secure the wooden with the Atmos against tilting.
Consider the valid accident prevention and industrial safety regulations.
Consider danger warnings and information on the packing.
The wooden – carrier box with the Atmos Cube is to be secured on the transport vehicle against slipping and tilting.

Notice **Notice**
Unpack the device only at the place of assembly.
Do not set up the exhaust in direct proximity of heating/heating elements.

Consider sufficient area for the exchange of the filter when setting up.
Proceed when unpacking and setting up the Atmos Cube as follows:

4. Unpack the device
5. Lift the exhaust off the wooden – carrier box and/or from the transportation packing only at the place of assembly. Remove the packing carefully.
6. Examine the completeness of the supply on the basis of the packing list. If parts should be missing or supplied wrongly, immediately contact the Trotec Laser GmbH. The same applies to transport damages.
7. In addition examine the complete supply for outside damage, which may have developed e.g. in the case of transport.
8. Transport the Atmos Cube afterwards attentively and prudently on its guiding rollers up to the place of assembly.
9. Set up on even, firm underground.
10. Always check that the device is secured and that the guiding roller’s brakes are set.
11. Set up the exhaust in such a way, that the attached suction hoses between the Atmos Cube and machine which can be exhausted do not lie in through ways and/or generally do not have to be exceeded.

9.1.1 Storage conditions

The Atmos Cube must be stored at vibration-less, dry and a dust free place. It may not be stored outside of closed areas.

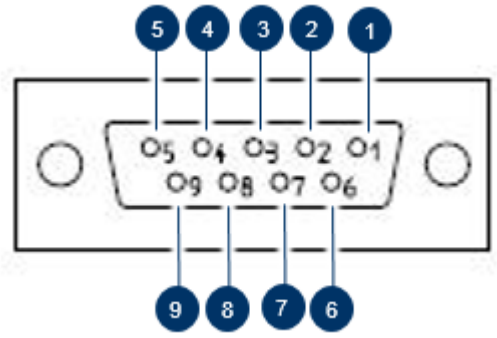
Mode of operation	
Operating temperature:	+5 °C to +35 °C
Relative air humidity:	45 – 65 %

10 Start up of the Atmos Cube

10.1 Connection of an external control

The Atmos Cube is switched on and headed by an external control (laser-interface).

At the Atmos Cube the connection of the remote control is made by a nine-pole cable with Sub-D9-plugs.



No.	Description	No.	Description
1	**Start-/stop contact 24 V DC:** Input signal for Start-/Stop contact from the external machine: High: Start contact (24 V DC) Low: Stop contact (0 V DC)	6	**24 V DC:** Output signal with permanently 24 V DC
2	**Operational status indicator:** Output signal for operation of the filter unit: High: Filter unit is in operation (24 V DC) Low: Filter unit is out of operation (0 V DC)	7	Not occupied
3	**“Filter full”:** Output signal for failure alarm from the filter unit: High: Pocket-filter, activated carbon are correct (24 V DC) Low: Filter, Pocket-filter, activated carbon must be changed (0 V DC)	8	Not occupied
4	Not occupied	9	Common masse for PIN 1 to PIN 6
5	Not occupied		

10.2 Connecting the Atmos Cube with the lasersystem

1. Connect the mains cable of the Atmos Cube with the power supply.
2. If an external control of the Atmos Cube is intended, connect the external control with the Sub-D9-connector at the side.
3. Slide the suction hose over the intake manifold (on the back side).
4. Examine all connections for a correct and firm seat. After connecting the hose and the examination of the connections, the Atmos Cube can be taken into operation.

11 Maintenance

11.1 General

The chapter “maintenance” covers the ranges servicing, visual inspection (inspection) and maintenance by the operating personnel as well as those of the service of the Atmos Cube by particularly trained maintenance personnel.

The arrangement of these ranges into different maintenance intervals is to facilitate the planning of each necessary maintenance for you.
The instructions described in this chapter are to be understood as minimum recommendations. Depending upon operating conditions expansions can become necessary, in order to remain the high quality of the Atmos Cube.

The indicated time intervals refer to the operation hours of the Atmos Cube indicated at the display.

Warning
Endangerment of humans and real values possible.
Due to inappropriate inspection, maintenance or repair damages to property and person may occur directly or in the future.

- All maintenance and repair at the Atmos Cube may be implemented only by qualified technical personnel (consider chapter “security”).

Notice **Notice**
For the preservation of the warranty claim the regular work for the maintenance must be proven by maintenance and operating personnel by record.

- Use only approved original spare parts.
- With the use of unapproved spare or replacement parts and operational funds the Trotec Laser GmbH does not take over warranty.
- Provide for careful and safe environmental disposal.

Notice **Notice**
To avoid damages at the Atmos Cube pay attention to a normal disassembly and assembly of construction units.

With all dismantle and disassembling applies therefore in principle:

1. Mark parts.
2. Note the installation position and place.
3. Disassemble, clean and keep building groups separately.

After repairs applies in principle, control all bolt connections for tightness and all hose and fittings as well as connections for tightness.

If the disassembly of the protection device is necessary for maintenance, the reattachment and the examination of the protection device has to take place immediately after conclusion of the work.

Notice **Notice**
Consider also the safety references, safety references to the maintenance as well as the reference to special danger kinds.

11.1.1 Operating conditions

Depending upon kind and range of the maintenance the Atmos Cube must be stopped and/or switched completely dead.

For execution of cleaning and repair the Atmos Cube is to be separated in principle from mains supply.

Warning Current
High voltage
Risk of death
Causes death or lethal injuries.

- With cleaning and maintenance work disconnect the Atmos Cube from the power supply.

11.1.2 Care and visual inspections

Task of the operating personnel is to check the accessible ranges of the Atmos Cube daily for contamination and damages. Contamination should, if accessible, be removed and damages announced to the responsible maintenance personnel.

Notice

Notice

By unavoidable dirt deposits the inscription of control elements or warning references can become illegible. Thus it can come to faulty operations, which can cause damages.

- Always control the Atmos Cube at the beginning of work.
- Remove dust and other impurity from all control elements, announcements and warning sticker once a week by wiping off with a damp cloth.

With the selection of the cleaning agent it is to be made certain that no surfaces, keyboards, plastics or seals are attacked. All aqueous industrial cleaner are usable without restriction.

11.1.3 Visual inspection

Kind of Control	Measures	✓
Control of the operation behavior	Pay particular attention to: • Operation noise • Heating up • Smell development Stop immediately with irregular operational behavior if necessary and inform maintenance personnel.	
Control for residue	Check the Atmos Cube and surrounding for residues of material and fuels and if necessary remove it.	
Remove contamination	Corridor, work surfaces and descriptions	
Wear control	• Mobile supplying and extraction pipes • Outward recognizable sealing etc. • Renew construction units if necessary	
Control for damage	Outwardly recognizable damages on all construction units.	
Examine for leakage	Hoses for supplying and extraction of the Atmos Cube.	

11.1.4 General maintenance instructions

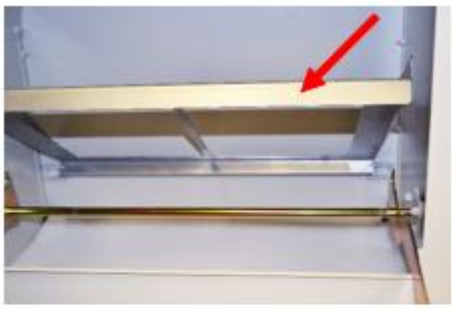
All service work must be accomplished in the indicated period and with the appropriate care. The life span and good quality of the Atmos Cube can be preserved by the maintenance of the components.

Apart from the regular cleaning the precautionary exchange of wearing parts is recommended urgently.

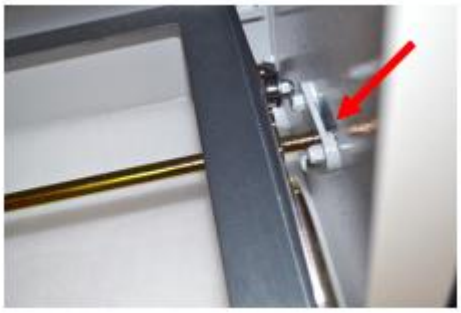
11.1.5 Insert the filter

The Atmos Cube is available with an optional Atmos Comfort Bag and an Atmos Combi-filterbox. Inserting and changing the filter is equally possible.

1. Insert the sealing device into the notches provided.



2. Snap in the filter holder.



3. Fold the filter carrier downwards, the sealing device must be between the housing and the holder (dark gray).

11.1.6 Exchange of the filter

Check the filter daily.
If the suction power is too low, please change the Atmos Combi-filterbox or the Atmos Comfort Bag (See step-by-step instructions below).

Overview Atmos Cube opened with Atmos Combi-Filterbox.

Overview Atmos Cube opened with Atmos Comfort Bag.

Warning
Destruction of the filter unit and/or turbine
If the turbine is dirty no warranty claim is given.

Warning
Damage to the filter-unit.
Not cheching the filters daily can lead to tearing of the Atmos Combi-filterbox or Atmos Comfort Bag in the housing of the filter-unit. Also the activated carbon is polluted, which can lead to odor development.

- Avoid direct skin contact or inhalation of filter dusts.
- Replace the filter cartridge immediately.

Caution **Poisonous types of dust.**
When working with/on the filter the danger of inhaling or coming into contact with whirling up types of dust exist.

- Therefore always put on a purifying dust respirator of the protection stage 3 and one-way gloves from polyethylene (long execution) before beginning the work.

The Atmos Cube is available with an optional Atmos Comfort Bag and an Atmos Combi-Filterbox, the filter exchange is the same.

1. Switch off the lasersystem which will be exhausted, the Atmos Cube is switched off automatically after the adjusted follow-up time.
2. Secure the Atmos Cube against unexpected restarting by, disconnecting the mains cable from the power supply.
3. Open the fastener on the left door

4. Unlock the Atmos filter box by pushing the lever downwards.
5. Now you can grasp the fabric and take out the Atmos filter box.
6. Place the Atmos filter box completely into a tight sealed plastic bag and lock it.
7. Put the Atmos filter box immediately to the disposal.

Insert a new filterbox:

8. Unpack the new Atmos filter box and enter them in reverse order back into the housing and lock it again.
9. Close the door and connect the Atmos Cube to the mains.

11.1.7 Atmos Cube cleaning

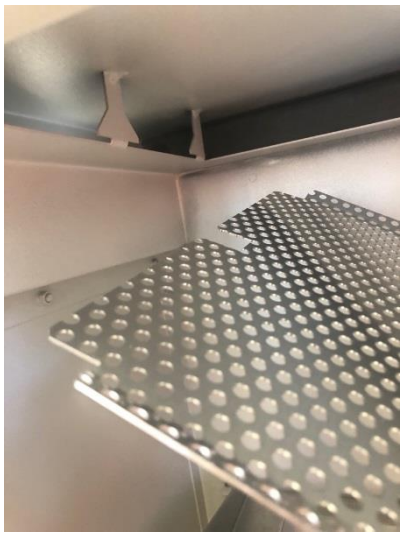
By sucking off dust larger amounts of dirt accumulate.

When cleaning proceed as follows:

1. Remove the filter from the device (see in chapter: "Exchange Atmos Combi-filterbox or Atmos Comfort Bag).

2. Take out the two screws that are on the right side of the grid.

3. Lift the grid over the filter box and slide it to the side, then remove downwards.



4. Remove the grille to clean it.

5. After cleaning, put everything back together (see chapter: "Insert the filter").

11.1.8 Exchange of the Atmos Comfort carbon

The activated carbon has to be replaced, if rubber or laminate smell would be noticeable.

Warning
Poisonous types of dust.
When working with/on the filter the danger of inhaling or coming into contact with whirling up types of dust exist.
Therefore put on a purifying dust respirator of the protection stage 3 and one-way gloves from polyethylene (long execution) before beginning the work.

Proceed with the activated carbon exchange as follows:

1. Switch off the lasersystem which will be exhausted, the Atmos Cube is switched off automatically after the adjusted follow-up time.
2. Secure the Atmos Cube against unexpected restarting by disconnecting the mains cable from the power supply.
3. Open the fastener on the left door.
4. Unlock the Atmos Filterbox and take it out.
5. Lift out the activated carbon completely with the synthetic net into the tight sealed plastic bag.
6. Remove the second filter mat and dispose it in the tight sealed plastic bag and lock it.
7. Supply the activated carbon and filter mats immediately to the disposal.

Insert the new Atmos Comfort carbon:

8. Unpack the new activated carbon with the synthetic net and the filter mats.
9. Place one filter mat into the housing (clean gas side – blue imprint must direct down).
10. Insert the activated carbon completely with the synthetic net above the filter mat.
11. Make sure that the activated carbon is distributed evenly and also goes to the corners.

12. Place the second filter mat on top of the activated carbon (rude gas side – blue imprint directs down).
13. Push the Atmos Combi-filterbox over the Atmos Comfort Bag into the housing and look it again.
14. Close the door and connect the Atmos Cube to the mains.

12 Error tracing and break-down search

Error	Cause	Elimination
No suction power. (Smoke/gas are not sucked off).	Suction hose not attached to the Atmos Cube.	Attach the suction hose to the Atmos Cube.
	Suction hose not attached to the Atmos Cube.	Attach the suction hose at the lasersystem.
	Damage of the suction hose.	Attach the suction hose at the industrial laser.
Attach the suction hose at the lasersystem.	Inlet clogs.	Examine inlet. If necessary repair disturbance.
	Clean gas way clogs.	Examine clean gas way. If necessary repair disturbance
	Suction air way too long.	Test the Atmos Cube with a short length of hose. If necessary, use only a hose no longer than 2,5 m.
Suction power too small. (Smoke/gases are hardly sucked off).	Atmos Combi-filterbox is full.	Exchange filter, deposit old filter-unit duly.
	Damage of the suction hose.	Exchange the suction hose.
	The suction hose is not attached correctly to the Atmos Cube.	Examine the fitting of the suction hose on the Atmos Cube; if necessary attach the suction hose again.
	Clean gas way narrows.	Examine clean gas way, if necessary repair disturbance.
	Inlet narrows.	Examine inlet, if necessary repair disturbance.

Error	Cause	Elimination
Suction power too small; (Smoke/gases are hardly sucked off) the turbine does not reach the necessary speed.	Overheating through huge filter pollution.	Turn off the Atmos Cube, exchange the pocket filter. Switch on the Atmos Cube only after the turbine has cooled itself.
	Failure on the Atmos Cube.	Contact the Trotec Laser GmbH. If necessary send the Atmos Cube to Trotec.
The Atmos Cube does not start.	Plug connection of the current supply is not or wrongly put in.	Examine the connection of the current supply, if necessary connect correctly.
	No current on plug socket.	Examine current mains, if necessary repair disturbance.
	Connecting cable for external control not or wrongly plugged in.	Examine the connecting cable for the external control, if necessary plug in correctly.
	No control signal for remote control of the machine.	According to the manual eliminate disturbance.
	Failure on the Atmos Cube.	Contact the Trotec Laser GmbH.
Motor stops within operation.	Overheating through huge filter pollution. The thermal protection of the turbine is released.	Turn off the Atmos Cube, exchange the pocket filter. Switch on the Atmos Cube only after the turbine has cooled itself.
	The turbine is stalled through tearing of the pocket filter.	No warranty claim is given. The exchange of the turbine is necessary. The pocket filter and the activated carbon must be exchanged also. It is absolutely necessary that all parts of the Atmos Cube have to be cleaned, in particular the housing inside.

13 Disposal

By the operation of the Atmos Cube waste material and replacement parts result, which have to be deposed of according to the laws and environmental protection.

13.1 Environmental protection

Warning
Recycling
With all work on and with the Atmos Cube the legal obligations for waste avoidance and duly utilization/removal are to be kept in particular with repair and maintenance work.
In particular, during repair and maintenance work, substances hazardous to water may not enter the sewage system.

- lubricating oils and fats as well as
- solvent containing cleaning agents

These material must be caught, kept and transported in suitable containers and disposed of.

13.2 Filter and types of filter dust

Warning
Poisonous dust.
While handling toxic types of dust special caution is required. When working with/on the filter exists the danger that you inhale or come into contact with whirling up types of dust.

- Therefore put on a purifying dust respirator of the protection stage 3 and one-way gloves from polyethylene (long execution) before.

Depending upon pollution impact particle and gas filters are subjects to the special refuse regulation and are accordingly to dispose.

13.3 Final putting out of operation

If the Atmos Cube is taken out of operation completely, the disposal of the construction unit and filter have to be kept according to the regulation, at this time valid, laws and regulations for disposal, valid at this time.