



# ***Operating instructions***

***Type***

***TEKA-LFE-101***

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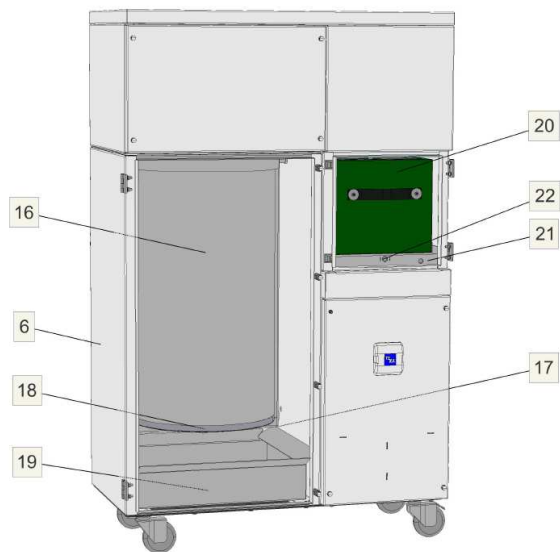
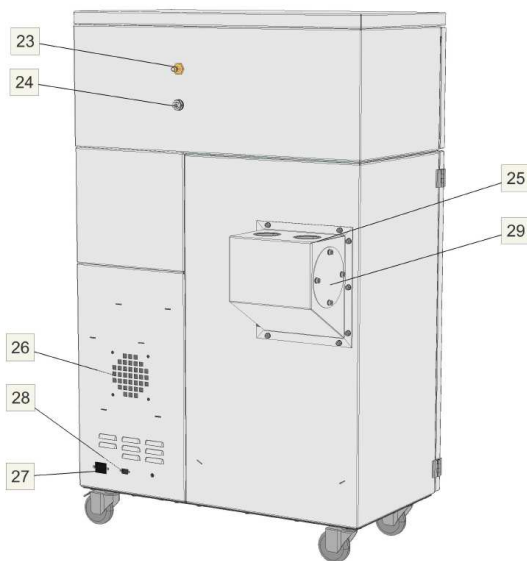
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## 1 Drawing/description of the elements



Pos.5	Housing cover	Pos.19	Dust container
Pos.6	Filter housing	Pos.20	Activated carbon cartridge
Pos.7	Filter door	Pos.21	Lifting device
Pos.8	Turbine housing	Pos.22	Locking screw for lifting device
Pos.9	Service door (only for technicians)	Pos.23	End piece nozzle (connection for compressed air)
Pos.10	Activated carbon cartridge	Pos.24	Drain cock
Pos.11	Dedusting housing	Pos.25	Suction housing with air intake connection
Pos.12	Maintenance door for pneumatics	Pos.26	Air outlet nozzle for purified air (hose adapter available on option)
Pos.13	Maintenance door activated carbon	Pos.27	Mains supply (mains cable included)
Pos.14	Swivel castor	Pos.28	Interface D SUB 9
Pos.15	Swivel castor with brake	Pos.29	Connection for metering device (optional)
Pos.16	Filter cartridge (with displacement-element)		
Pos.17	Cartridge bracket		
Pos.18	Locking screw for filter cartridges		



## **2 Preface**

Due to the thermal and photolytic charge of the applied material, the laser working procedure involves the development of specific emissions according to the chosen procedure. The type and quantity of the developed emissions depend heavily on the laser working procedure such as cutting, welding or ablation, as well as on the material used. Whereas working of metallic material only emits aerosol emissions that constitute the oxidation product of the base material or of the alloy components, the working of polymer materials emits aerosol emissions as well as varying quantities of gaseous decomposition products that partially present a very complex structure.

In case of an insufficient extraction at the work place, the emissions generated during the working process can lead to the exceedance of the obligatory limit values for immissions.

The successful application of the laser technology supposes besides the technological optimization of the working process especially measures in order to assure the protection of the environment and the occupational safety. In the context of a growing awareness and stricter regulations, the task is to evaluate the risk potential at an early stage and to reduce it if necessary.

The extraction unit TEKA-LFE-101 has been especially developed for the use in combination with a laser and to exhaust small quantities of dust, fumes and gases. It separates the pollutants and therefore contributes to the creation of better and healthier working conditions.



### **3 Mode of operation TEKA-LFE-101**

The intended use of the filter unit TEKA-LFE-101 is the application combined with laser devices and especially the extraction and filtration of dry dusts, fumes and gases.

Restrictions of application:

welding dusts containing oil mist, aluminium dusts, grinding dusts, metallic dusts and water. (If you have any questions, please contact the manufacturer)

The polluted air is taken in by the laser unit and is guided to the filter unit in passing by a suction hose and the air intake connection.(pos. 25) Within the filter unit, the pollutants in form of particles are separated at the surface of the integrated filter cartridge (pos. 16). In a consecutive filter stage, the activated carbon cartridge (pos. 20) adsorbs the gaseous pollutants. The purified air is taken in by the turbines and guided back to the working space via the air outlet gills located at the rear panel (pos.26) of the filter unit.

As soon as the resistance of the filter cartridge has reached a preset maximum value or after expiration of a certain time interval, the filter cartridges are automatically dedusted.

***Attention:***

The integrated pneumatic dedusting distributes the compressed air equally onto the filter surface releasing the accumulation of dust. (see chapter 7.1 *Dedusting the filter cartridges*)

The dust released by the compressed air blast is collected in the dust container (pos.9) and can be extracted from the container. (see chapter 7.3 *Emptying the dust container*)

### **4 Safety instructions**

When using electrical equipment, the following general safety measures have to be observed for the protection against electric shock, risk of injury and fire:

- Read and observe these instructions before using the device!
- Keep this operating and maintenance manual in a safe place!
- Do not use the device to extract easily inflammable or explosive gases!
- Do not use the device in explosive areas, such as zone 0, zone 1, zone 2, zone 20, zone 21, zone 22!
- Do not use the device to extract burning or glowing materials, such as cigarettes, matches, metallic dust or splinters, paper, cleaning cloths etc.!
- Do not use the device to extract burning or inflammable materials, e.g. oil or oil mist, grease, release agents (e.g. silicone spray), cleaning agents, etc.!
- Do not use the device to extract aggressive media!
- Do not use the device to extract burning or glowing materials!
- Do not use the device to extract liquids of all kind!
- Do not use the device to extract organic materials without a written permission of the manufacturer!
- Protect the connection plug from heat, humidity, oil and sharp edges!
- Pay attention to the permitted supply voltage!  
(Respect the indications on the name plate!)
- Only use TEKA spare parts!



- Do not use the device without filter elements!
- Disconnect the filter unit from the mains supply before opening the device!
- The air outlet opening must not be covered or blocked!
- Take care that the device is in a safe position and that the brakes are pulled!
- When cleaning and maintaining the device, when replacing parts or when changing to another function, disconnect the filter unit from the mains supply!
- The filter elements must not be reused!
- Dispose of the filters according to the legal regulations!
- The device must not be used if the ground cable is not in perfect condition!
- If you use an external filter control, check if the control cable is damaged every time before you use the unit!
- The device must not be used if the control cable is not in perfect condition!
- The mains cable of the device has to be regularly checked for signs of damage.
- The device must not be used if the mains cable is not in perfect condition!
- Do not use the filter unit if one or more parts of the unit are faulty, missing or damaged. In any of these cases, please contact the TEKA service department at the phone number +49 (0) 28 63 92 82 0.
- When extracting carcinogenic welding fume, e.g. materials containing nickel or chrome, the ventilation requirements of the TRGS 560 (Air return during handling of carcinogenic hazardous substances) have to be observed

For further information concerning TRGS 560, please contact the German Institute for Occupational Safety and Health (BIA) in 53754 Sankt Augustin.



## **5 Control**

**Attention:**

The display shows the operation status. For more information see operating instructions of the Software "ControlUnit2".

## **6 Commissioning**

- Only instructed personnel is authorized to handle the filter unit and the applied materials. To this end, every employee meant to handle the filter unit has to be instructed beforehand with the help of the instruction record (see form in the annex).
- Observe the indications on the name plate.
- The intake elements and if necessary other accessories must be connected or installed to the device before starting up the unit.
- Before commissioning, the filter cartridges must be coated with Precoat powder if they have not been coated yet ex works. The filter cartridges of all standard units are already coated by TEKA. Otherwise, the Precoat powder is included in the delivery in a separate bag. (If you have any questions, please contact the manufacturer!)
- Observe the indications of the manufacturer or contact the manufacturer!

### **6.1 Connecting the intake elements**

The engraving device must be connected to the suction nozzle (pos. 24) with the help of the suction hose.

### **6.2 Connecting the device**

- Put the mains cable into the mains plug (pos. 27).
- Connect the filter unit to the mains supply. (Observe the indications on the name plate!)

**Attention:**

As soon as the control unit of the dedusting device is connected to the mains supply, the dedusting is activated.

Only qualified personnel is authorized to carry out tasks in the electrical field!

Observe the indications on the name plate!



### **6.3 Coating the filter cartridges**

- Only coat the filter cartridges unless they have not been coated yet with Precoat powder ex works. (In case of doubt, please contact the manufacturer!)
- Only qualified personnel is allowed to execute the coating of the filter cartridges.
- Every person that is not needed for the coating of the filter cartridges has to leave the danger zone.

**Attention:**

The compressed air tank must not contain any compressed air.

- Switch the filter unit on without starting the operation of the laser unit.
- Insert the Precoat powder (10g per square meter of filter surface) via the closest intake point at the suction line in relation to the filter unit.
- Observe the indications of the manufacturer or contact the manufacturer.

### **6.4 Connecting the compressed air supply**

- An external supply may only be connected via an approved pressure hose!
- Only qualified staff is authorized to carry out the assembly.
- Every person that is not needed for the connection of the compressed air supply has to leave the danger zone.
- The compressed air must be dry and oil free.
- Connect the compressed air hose to the end piece nozzle (pos. 23) via a hose coupling.
- The supplied operating pressure must be of minimum 1 bar and maximum 4 bars and must be adjusted according to the process.
- The external compressed air supply must be constructed in a way that the compressed air tank achieves the operating pressure within the idle time of the valve (see operation manual of the steering).
- Observe the indications of the manufacturer or contact the manufacturer.

**Attention:**

Empty the compressed air tank, disconnect the filter unit from the mains supply and avoid it from being accidentally switched on before carrying out all kinds of maintenance and repairing measures!

If the pneumatic unit leaks, the filter unit must not be activated any more. Without compressed air supply, the filter cartridges pollute rapidly and the unit indicates a default (filter saturated)!





## 7 **Maintenance**

The filtration of the dust particles increases the saturation degree of the filter cartridge and reduces the extraction performance.

The mechanical filter element guarantees that more than 99 % of the extracted pollutants remain onto the filter surface. This also applies if the filter element is completely or partially saturated. However, if the saturation of the filter increases, the extraction performance of the filter unit is reduced.

The saturation degree of the filter cartridge is monitored electronically. In order to maintain the required extraction performance of the device, the filter cartridge is dedusted automatically. (see *chapter 7.1 Dedusting the filter cartridges*)

The dust particles are blown off inside out from the pure gas side. The accumulation of dust is released and falls into the dust collecting drawer (pos. 19). (see *chapter 7.2 Emptying the dust collecting drawer*)

The activated carbon cartridge (pos. 20) must be replaced as soon as the gases reappear on the pure gas side. At the latest when replacing the filter cartridge however, the activated carbon filter should be replaced as well (see *chapter 7.6 Replacing the activated carbon cartridge*)

The lifetime of the filter cartridges depends heavily on the individual conditions of application. Due to this, it cannot be determined in advance. If the stroboscope light and the red LED light up, the alarm value (basic setting = 30 millibar) has been achieved. If the stroboscope light and the red LED light up constantly even after a dedusting procedure has been carried out, the filters are saturated and have to be replaced (see *chapter 7.5: Replacing the filter cartridges*).

A visual inspection of the filters must be executed on a regular basis. If they are damaged, they have to be replaced. (see *chapter 7.5: Replacing the filter cartridges*).

### **Attention:**

When cleaning and maintaining the housing, exchanging parts or when changing to another function, disconnect the filter unit from the mains supply and avoid it from being accidentally switched on. The operation of the filter unit has to be interrupted when exchanging the filter cartridges. Empty the compressed air tank before carrying out any maintenance and repairing task.

Only change and dispose of the filter cartridges in sufficiently ventilated areas and wearing an appropriate respirator mask!

We recommend a respiration half mask according to DIN EN 141/143 protection level P3.

Only a sufficiently qualified worker is authorized to change the filter cartridges!

Dispose of the filters according to the legal regulations!

### 7.1 **Dedusting the filter cartridges**

The saturation degree of the filter cartridge is monitored electronically. In order to maintain the required extraction performance of the device, the filter cartridge is dedusted automatically

The filter unit remains in operational mode during the automatic dedusting.

Control via pressure: In order to maintain the required extraction performance of the device, the saturation degree of the filter cartridge (pos. 16) is monitored electronically. If the preset differential pressure is exceeded, the filter cartridges are dedusted automatically until the preset threshold value is achieved

Time control: In case of a time-controlled dedusting, the filter cartridge is dedusted within a set time interval regardless of the pressure



You can find more details concerning the settings and functions of the control „ControlUnit2“ in the separate manual.

**Attention:**

Without compressed air supply, the filter cartridges pollute rapidly and the unit indicates a default (filter saturated)!

## **7.2 Compressed air supply**

The proper operation of the device implies the flawless compressed air supply.

- Only qualified staff is authorized to control the compressed air supply.
- The compressed air must be dry and oil free.
- Empty regularly the condensate produced in the compressed air tank in opening the drain cock (pos. 24).
- Control regularly if the pneumatic parts of the unit seal tightly.
- The external compressed air supply has to be connected via an approved pressure hose that is connected to the end piece grommet (pos. 21).
- The supplied operating pressure must be of minimum 1 bar and maximum 4 bars and must be adjusted according to the process.
- A compressed air tank serving as reserve is integrated in the pneumatic housing. The content is sufficient for one dedusting procedure.
- The external compressed air supply must be constructed in a way that the compressed air tank achieves the operating point within the break time of the valve (see operation manual of the Pulse Control).

**Attention:**

Empty the compressed air tank before carrying out all kinds of maintenance and repairing measures. If the pneumatic unit leaks, the filter unit must not be activated any more. Without compressed air supply, the filter cartridges pollute rapidly and the unit indicates a default (filter saturated)!

## **7.3 Emptying the dust collecting drawer**

The dust collecting drawer (pos. 19) has to be emptied after a certain amount of operating hours have passed. This amount depends on the produced quantity of dust, but the dust collecting tank has to be emptied at least once per week. The dust collecting tank may only be filled up to 25%! (In case of doubt, please contact the manufacturer!)

- Only qualified staff is authorized to empty the dust collecting tank.
- Every person that is not needed for the execution of the task has to leave the danger zone or must wear additional protection equipment if necessary.
- Before separating the device from the external compressed air supply, first wait until the automatic dedusting takes place. If the consecutive dedusting is deactivated, activate it manually via the control.
- Disconnect the device from the mains supply and avoid it from being accidentally switched on.
- Disconnect the filter unit from the external compressed air supply.



- Empty the compressed air tank in opening the drain cock (pos.24). (When opening the drain cock, the release of condensate is possible.)
- Close the drain cock (pos.24) as soon as the compressed air tank is completely emptied.
- During maintenance, wear appropriate respiration and visual protection. We recommend a respiration half mask according to DIN EN 141/143 protection level P3.
- Open the maintenance door of the dust container (pos.11).
- Withdraw the dust collecting drawer (pos.19) and place it carefully on the floor without whirling up the dust.
- Empty the dust collecting drawer carefully into a dust bag and close it (e.g. with the help of a cable tie).
- Put the dust collecting bag containing the extracted dust in an appropriate container and store it or dispose of it according to the regulations.
- Push the dust collecting drawer (pos.19) into the dust collecting housing (pos.6).
- Close the maintenance door for the filter cartridges (pos. 7) and fix it with the help of the screw.
- Reconnect the unit to the compressed air supply and the mains supply

**Attention:**

Only empty the dust collecting tank in sufficiently ventilated areas and wearing an appropriate respirator mask. We recommend a respiration half mask according to DIN EN 141/143 protection level P3. Only a qualified worker is allowed to execute the working steps mentioned above! Dispose of the dust according to the regulations.

#### **7.4 Releasing the condensate**

The condensate produced in the compressed air tank has to be emptied on a regular basis, at least once per month.

- Only qualified personnel is authorized to empty the compressed air tank.
- Every person that is not needed for the execution of the task has to leave the danger zone or must wear additional protection equipment if necessary.
- Disconnect the device from the mains supply and avoid it from being accidentally switched on.
- Disconnect the compressed air tank from the external compressed air supply.
- Open the drain cock (pos.24) and release the condensate into an appropriate container. (When opening the drain cock, the compressed air stored in the compressed air tank escapes.)
- Close the drain cock (pos.24).
- Connect the compressed air tank to the external compressed air supply.
- Connect the fan and the control of the dedusting to the mains supply.

**Attention:**

Only a qualified employee is allowed to execute the working steps mentioned above! Dispose of the dust according to the regulations.  
Dispose of the condensate according to the legal regulations!



## 7.5 Replacing the filter cartridges

If the warning lamp (pos. 3) lights up (*confer the separate instruction manual of the Pulse Control*), the cartridges have to be replaced as follows.

- Only qualified personnel is authorized to replace the filter cartridges.
- Every person that is not needed for the execution of the task has to leave the danger zone or must wear additional protection equipment if necessary.
- Wait until the automatic consecutive dedusting takes place before disconnecting the unit from the mains supply. If the consecutive dedusting is deactivated, activate it manually via the control.
- Disconnect the unit from the mains supply and avoid it from being switched on accidentally.
- Disconnect the compressed air tank from the external compressed air supply.
- Empty the compressed air tank in opening the drain cock (pos.24). (When opening the drain cock, the condensate escapes.)
- Close the drain cock (pos.24) as soon as the compressed air tank is completely emptied.
- When opening the device, wear appropriate respiration and visual protection. We recommend a respiration half mask according to DIN EN 141/143 protection level P3.
- Open the maintenance door of the filter cartridges (pos.7).
- Release the locking screw (pos.18) of the cartridge bracket (pos.17).
- Unhook one upper side of the cartridge bracket (pos.17) and withdraw the filter cartridge (pos.16).
- Remove the displacer and insert the new filter cartridge.

**Attention:**

Only use TEKA spare filters!

- Hook in the upper part of the cartridge bracket (pos. 17). Take care that the filter cartridge (pos. 16) and the cartridge bracket (pos. 17) are positioned correctly!
- Fix the locking screw (pos. 18) of the cartridge bracket (pos. 17).
- Close the maintenance door of the filter cartridge (pos. 7) and screw it.
- Connect the compressed air tank to the external compressed air supply.
- Reconnect the device to the mains supply.
- Coat the filters with Precoat powder. (*see chapter 6.3 Coating the filter cartridges*)

**Attention:**

Only change and dispose of the filters in sufficiently ventilated area and in wearing an appropriate respirator mask.

The polluted filter cartridges have to be stored in an appropriate container (e.g. a PE bag), these bags are available as an option (cf. list of spare parts).

Empty the compressed air tank before carrying out any kind of maintenance or repairing task.

We recommend a respiration half mask according to DIN EN 141/143 protection level P3. Only a qualified worker is allowed to execute the working steps mentioned above! Dispose of the dust according to the regulations!



## **7.6 Replacing the activated carbon cartridge**

The activated carbon cartridge (pos. 20) has to be replaced as soon as gases appear on the clean air side. Proceed as follows:

- Only qualified personnel is authorized to replace the activated carbon cartridge.
- Disconnect the filter unit from the mains supply.
- Open the filter door (pos. 13) in releasing the cap nuts.
- Lower the lifting device (pos. 21) in turning the locking screw (pos. 21).
- Withdraw the activated carbon cartridge (pos. 20).
- Insert the new activated carbon cartridge all the way into the filter unit via the guide angles.

**Attention:**

Only use activated carbon cartridges made by TEKA!  
Dispose of the filter according to the legal regulations.

- Lift the lifting device (pos. 21) in turning the locking screw (pos. 22) so that the rubber grommet of the activated carbon cartridge seals tightly the cover of the activated carbon housing (pos. 10). In doing so, check if the rubber grommet is damaged.
- Close the filter door (pos. 13) and fix it with the help of the cap nuts.
- Reconnect the device to the mains supply.

## **8 Disposal**

In order to make sure the proper operation of your extraction unit TEKA-LFE 101 as well as an appropriate disposal of the separated dust, we offer you the following services:

- We help you to find a waste disposal company within your reach.
- On demand and free of charge, we provide you a list with all disposal companies in Germany.
- Conclusion of a maintenance and service contract
- A customer help line

For these options, please contact our service department that is at your disposal 24/7:

Phone: +49 (0) 28 63 92 82 0

Fax: +49 (0) 28 63 92 82 72



## 9 Technical data

**Attention:**

Observe the indications on the name plate!

Filter unit		TEKA – LFE 101
Supply voltage	V	115 / 230
Type of current	Ph	1
Frequency	Hz	50 / 60
Engine performance	kW	0,6
Volumetric air flow max.	m <sup>3</sup> /h	200
Depression max.	Pa	7500
IP rating		IP 54
ISO class		F
Control voltage	V	10
Duty cycle	%	100
Width x depth x height	mm	751 x 547 x 1215
Weight	kg	110
Filter element		filter cartridge, activated carbon
Extraction performance	%	>99

## 10 List of spare parts

Designation:	Article No.
Filter cartridge, filter surface 10m <sup>2</sup>	10025
Precoat for filter cartridges 100g	9510050001
Activated carbon cartridge 337 x 230 x 212 mm	97059
Turbine 0,6kW 230V, single stage	200421160060003
Magnetic valve	95014210



## **11 Declaration of conformity for TEKA-LFE-101**



TEKA  
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e-Mail: [sales@tekanet.de](mailto:sales@tekanet.de) Internet: <http://www.tekanet.de>

We hereby declare under our sole responsibility that the product mentioned above, from the serial number 110000000 on, conforms to the following directives:

<b>Machinery directive:</b>	98/37/EG
<b>Electromagnetic compatibility:</b>	2004/108/EG
<b>Pressure equipment device:</b>	97/23/EG
<b>Low voltage directive:</b>	2006/95/EG

### **applied harmonised standards:**

- DIN EN 12100 part 1
- DIN EN 12100 part 2
- DIN EN 294
- DIN EN 349
- DIN EN 983
- DIN EN 60204 part

### **plus further national standards and specifications:**

- DIN 45635 part 1
- DIN EN ISO 15012-1
- DIN EN ISO 14121
- TRGS 560

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

A handwritten signature in black ink, appearing to be 'Riggen' followed by a stylized flourish.

Velen, May 10, 2010

TEKA-Absaug- und Entsorgungstechnologie GmbH

