



Operating Instructions

TEKA–LMD 501

with Airfilter Controlling

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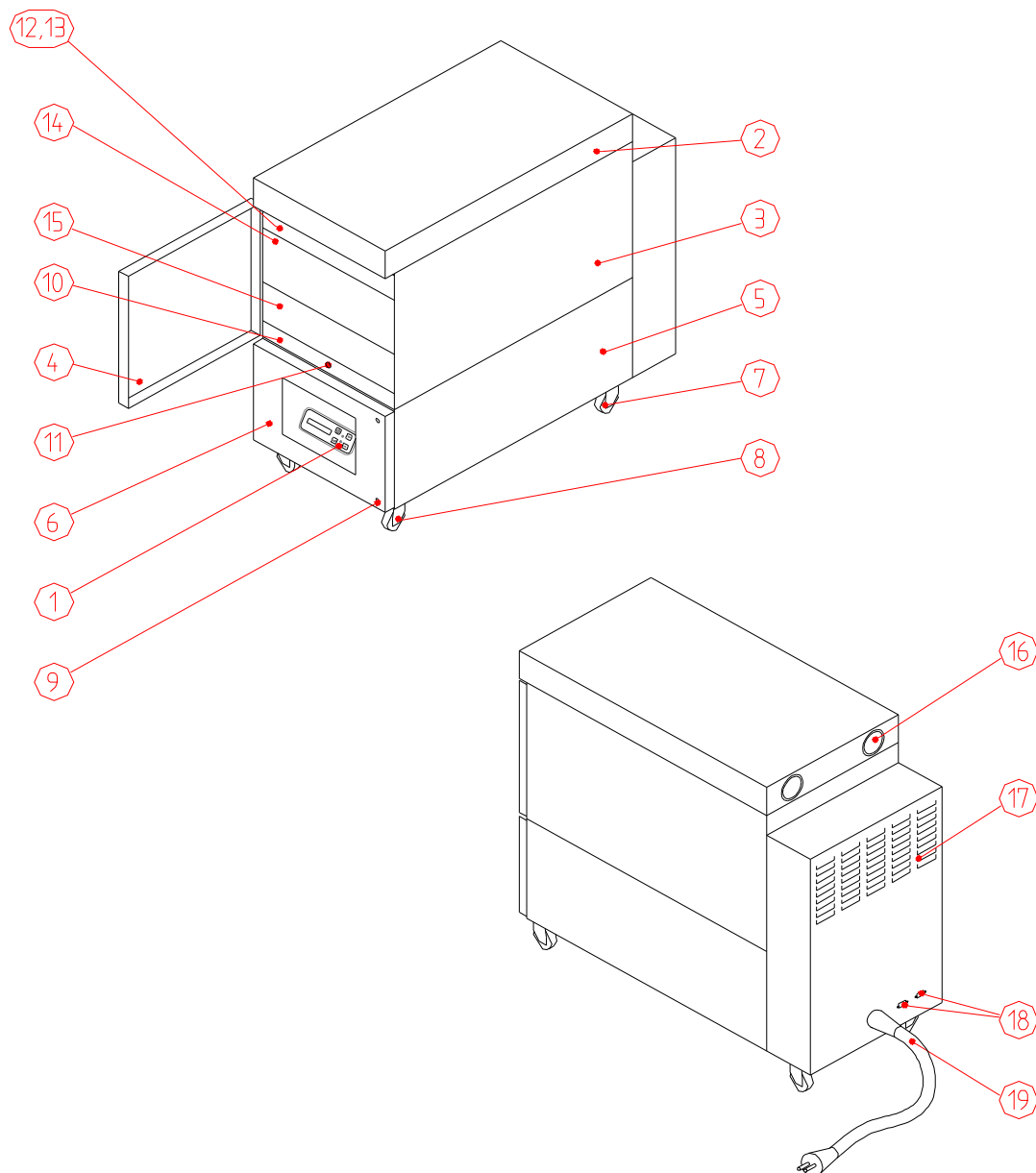
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Contents

1	Diagram/description of the components.....	3
2	Preface	4
3	Function of the TEKA - LMD 501	5
4	Safety instructions.....	5
5	Commissioning	7
5.1	Attaching the extractor fittings	7
5.2	Electrical connection of the unit	7
6	Operation.....	8
7	Maintenance	10
7.1	Replacing the prefilter matting	11
7.2	Replacing the particle filter	11
7.3	Replacing the activated-carbon cassette	12
8	Disposal.....	13
9	Technical data.....	14
10	Parts list.....	15
11	Declaration of conformity TEKA-LMD 501.....	16

1 Diagram/description of the components



Pos.1 Airfilter controlling
 Pos.2 Instrument cover
 Pos.3 Filter housing
 Pos.4 Filter door
 Pos.5 Ventilator housing
 Pos.6 Ventilator door
 Pos.7 Castor
 Pos.8 Castor with brake
 Pos.9 Cap nut and washer
 Pos.10 Lifting mechanism

Pos.11 Locking screw for the lifting mechanism
 Pos.12 Prefilter insert
 Pos.13 Prefilter mat
 Pos.14 Particle filter
 Pos.15 Activated-carbon cassette
 Pos.16 Air intake fittings
 Pos.17 Sound absorption module
 Pos.18 Cover plate, or Harting/Sub-D 9-pin socket
 Pos.19 Mains supply cable with mains plug



2 Preface

One sector of extraction equipment has become very significant in recent years. The filtering of extracted pollutants and the recycling of filtered air to the working area.

This is a surely a sign that the environmental consciousness of each one of us has altered very strongly in favour of our environment. For a long time now, no-one has denied that pollution occurs during production. However, the pollutants depend on the process that is used. One can basically distinguish between gases and smoke. Smoke could also really be described as dust. If you examine this dust under a microscope, you will find that it consists of very fine particles, often with a size of 0.001 mm or smaller, that can enter the lungs.

The classical method of trying to improve the working conditions of polluted workplaces is general ventilation. In this case, the general rule is a multiple change of air in the workshop, i.e. the complete volume of air in the workshop is replaced. However, this method only achieves a small reduction in the level of pollution within the breathing space of the user.

The same applies to the so-called "overhead extraction", i.e. the installation of large extractor hoods above the workplaces. With this, the worst air flow imaginable, the pollutants first pass through the breathing space of the user, and only afterwards are they contained and extracted. This is surely not the point of the exercise. A much more effective method than overhead/wide-area extraction is the removal of pollutants directly at their source, with localised extraction. Both the investment and the operating costs are very much lower if localised extraction is used.

The environmental and workplace-safety measures are especially important requirements for successful application of a technology, in addition to the technological optimisation of the processing method. In a time of increasing sensitivity and tougher legislation, the task therefore lies in making an early assessment of the potential hazards for the workplace and the environment, and reducing them as appropriate.



3 Function of the TEKA - LMD 501

The TEKA-LMD 501 filter equipment is primarily used for localised extraction of dust, smoke particles and gases. For this purpose, the unit is equipped with two flexible extractor hoses, or an extractor fitting that is appropriate to the application.

Limits of application:

welding fumes with oil mist, aluminium dust, grinding dust, extraction of metallic dust, water etc.
(If you are uncertain, please contact the manufacturer!)

The polluted air is gathered in by the extractor fitting and transported to the filter equipment through the extractor hose. Coarse dust particles are then filtered out in the prefilter matting (Pos.17). The following particle filter (fine filter, Pos.18) extracts the extremely fine smoke particles with an efficiency of better than 99%. In a further filter stage, the activated-carbon cassette (Pos.19) adsorbs the gaseous pollutants. The filtered air is then sucked in by the turbines and returned to the air in the environment through the exhaust mesh on the bottom of the unit.

The LMD 501 filter unit can be connected to an external filter monitoring through the Harting or Sub-D 9-pin socket (Pos.21) (available as an option).

Warning:

As soon as the airflow resistance of the filter has increased to the point where the suction force decreases, the filter must be replaced, because it is clogged with the extracted dust and smoke particles.

(see Section 7.1: "Replacing the prefilter matting", Section 7.2: "Replacing the particle filter" and Section 7.3: "Replacing the activated-carbon cassette")

4 Safety instructions

When using electrical equipment, the following basic safety rules must be observed, for protection against electric shock, injury, or fire hazards.

- Before using the equipment, read and observe these instructions!
- Keep the operating and maintenance instructions in a safe place!
- Never use the equipment to extract easily inflammable or explosive gases!
- Do not employ the unit for setting it in explosive zones, e.g. zone 0, zone 1, zone 2, zone 20, zone 21, zone 22!
- Do not employ the unit for sucking off burning or glowing materials, e.g. cigarettes, matches, metallic types of dust and/or splinters, paper, cleaning cloths, etc.!
- Do not employ the unit for sucking off burning and/or inflammatory materials, e.g. oils and/or oil mist, fats, parting agent (e.g. silicone spray), cleaning agent, etc.!
- Never use the equipment for the extraction of corrosive substances!
- Never use the equipment for the extraction of burning or glowing material!
- Never use the equipment to suck up any kind of liquid!



- Do not use the equipment for the extraction of organic substances without written approval from the manufacturer!
- Protect the connectors from heat, moisture, oil, and sharp edges!
- Keep to the permitted supply voltage! (Observe the data on the nameplate!)
- Use only TEKA replacement parts!
- Do not operate the equipment without a filter insert!
- Disconnect the equipment from the supply voltage before opening the filter unit!
- The exhaust vent must not be covered up or blocked!
- Always take care that the unit is standing in a stable position, and that the brakes on the castors are on!
- The filter unit must be disconnected from the mains supply voltage before cleaning or maintenance, replacing parts, or a functional conversion!
- The filter inserts cannot be regenerated!
- Dispose of the filter inserts in accordance with the legal regulations!
- If an energy-saving automatic start/stop is being used, the earthing cable must be checked for possible damage before every welding session.
- The unit must not be used if the earthing cable is not in perfect condition.
- If external filter controls are used, the control cable must be checked for possible damage before every operating session.
- The unit must not be used if the control cable is not in perfect condition!
- The mains supply cable for the unit must be checked regularly for possible damage!
- The unit must not be used if the mains supply cable is not in perfect condition!
- Do not use the filter unit if one or more of its components are faulty, missing, or damaged. In any of these cases, please call the TEKA service department on +49 (0)2863 92820, or your local representative.
- When extracting carcinogenic welding fumes, such as from materials containing nickel or chrome, the ventilation requirements of TRGS 560 „Luftrückführung beim Umgang mit krebserzeugenden Gefahrstoffen“ (Air recycling when using substances with a carcinogenic hazard) or the equivalent national regulations must be fulfilled!

Further information on TRGS 560 can be obtained from the BfA-Berufsgenossenschaftliches Institut für Arbeitssicherheit, in D-53754 Sankt Augustin, Germany.

5 Commissioning

The filter unit is supplied with all connections.

The extractor fittings and any other accessory equipment, must be installed or mounted on the unit before commissioning.

5.1 Attaching the extractor fittings

- The extractor hose must be pushed into the extractor spout (Pos.16) right up to the stop. If a second hose is used, this is done as follows:
- Remove the blanking plug from the extractor spout (Pos.16).
- Push the extractor hose into the extractor spout (Pos.16) right up to the stop.

5.2 Electrical connection of the unit

- The LMD is either switched on or controlled at the membrane keyboard or through an external control (e. g. of the machine to be sucked out) (remote switch automatic).
- The connection of the remote switch automatic to the LMD is carried out via a nine-pole cable with Sub-D9 plugs.

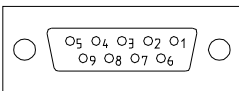
Figure	Pin	Designation	Explanation
 <p>Connector socket Sub-D9, on the side of the unit</p>	1	Start contact	A voltage of + 24 VCC (Pin 2) must be connected to switch on the LMD. Switch off by separating the voltage. Important: LMD only switches off after preset time (follow-up time approx. 20 s).
	2	24 V DC/ +VCC	Internal control voltage e. g. for starting the system.
	3, 4	"Filter full"	Potential-free outlet (closing contact) for evaluating a warning signal "filter full"
	5, 6	Operating control	Potential-free outlet (closing contact) for evaluating an operating control. The signal at this outlet is always applied, when the LED "RUN" is lit up.
	7	Increase turbine output	A voltage of + 24 VCC (Pin 2) must be connected in order to increase the output of the turbine. When the voltage is connected the turbine output increases up to maximum output.
	8	Reduction of turbine output	A voltage of + 24 VCC (Pin 2) must be connected in order to reduce the output of the turbine. When the voltage is connected the turbine output is reduced right down to minimum output.
	9	GND	Ground internal (ground, mass)

Table 1: Connection of an external control (arrangement of the plug contact/ terminal assignment of

Figure	Pin	Designation	Explanation
connection)			

6 Operation

The Airfilter is controlled via its membrane control panel with transparent display. All the functions of the Airfilter will be set here.

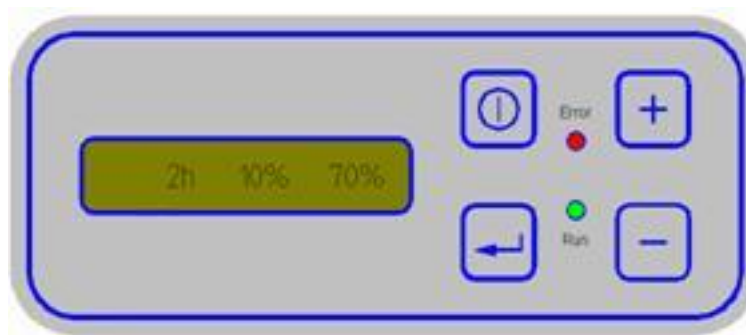


Figure 1: membrane control panel with transparent display

The basic setting will be displayed in the transparent display when the machine is switched on:

On the left the actual filter contamination given as a percentage,

In the middle the hours of operation so far,

On the right the actual set number of revolutions of the turbine(s) as a percentage of the maximum number of revolutions. The minimum value is set to 20 %.

You will find the following control elements on the membrane control panel of the Airfilter:



ON/OFF button

The *ON/OFF* button is used for switching the Airfilter on and off. When switched on you can hear the turbine start and the gases / the fumes will begin to be extracted.

If you change the values (e. g. the number of revolutions of the turbines), then these settings will be saved when the unit is switched off. When it is switched on again the Airfilter will continue to operate with these settings.



ENTER button

This button is only to be used by your service technician for control work and adjustments to the electronic control of the Airfilter.

Important information: Do not attempt to make any unauthorized adjustments, unless you are expressly authorized to do so by TEKA GmbH.

If nothing is entered/changed for several seconds, the display automatically returns to the basic setting.



Button +

This button is used for *increasing* the number of revolutions of the turbine(s) in %-steps. You can notice the increase in the number of revolutions by the increase in the level of noise. The changed value will be taken over directly.



Button -

This button is used for *reducing* the number of revolutions (s) in %-steps. You can notice the reduction in the number of revolutions by the reduction in the level of noise. The changed value will be taken over directly.

Error



LED Error (red)

If the LED Error lights up red, the combifilter is full and must be replaced, as the cleaning performance of the Airfilter is reduced.



LED Run (green)

Run

Shows that the Airfilter is switched on.



7 Maintenance

The filtering out of dust particles means that the prefilter (coarse) and the particle filter (fine) become increasingly dirty, and the suction power decreases.

The mechanical filter insert ensures that more than 90% of the pollutants that are sucked in are trapped in the filter. This is still so, even if the filter insert is partially or completely saturated. But the suction power of the filter unit drops as the saturation level increases.

The saturation level of the filter is electronically monitored. In order to maintain the rated suction power of the unit, the filters must be replaced when the red flow volume indicator lamp (Pos.5) lights up.

The prefilter matting (Pos.17) must be replaced at regular intervals. (see Section 7.1: "Replacing the prefilter matting")

As soon as the airflow resistance of the filter has increased to the point where the suction force decreases, the particle filter (Pos.18) must be replaced, because it is clogged with the extracted dust and smoke particles. (see Section 7.2: "Replacing the particle filter")

The activated-carbon cassette (Pos.19) must be replaced if gas starts to come through to the clean-air side. At the very latest, the activated-carbon cassette must be replaced when the particle filter is replaced. (see Section 7.3: "Replacing the activated-carbon cassette")

The working lives of the prefilter matting, the particle filter, and the activated-carbon cassette are strongly dependent on the specific conditions of use. So they cannot be determined in advance.

The filter equipment includes a maintenance-free DC-operated turbine.

Warning:

The operation of the filter unit must be stopped while the filter insert is being replaced.

Filter replacement and disposal must only be carried out in well-ventilated rooms, and a proper respiratory mask must be worn.

We recommend: a respiratory half-mask to DIN EN 141/143 protective level P3 or equivalent national standard.

The filters should only be replaced by a member of staff who has been properly trained!

Dispose of the filter inserts in accordance with the legal regulations!

If the filter is manually tapped out, washed, or blown out, then the filter material will be damaged. The pollutants will spread into the air of the room.



7.1 Replacing the prefilter matting

The prefilter matting (Pos.13) must be replaced after a certain number of operating hours. The time depends on the amount of dust that is taken in. At the very latest, the prefilter matting (Pos.17) must be replaced when the particle filter (Pos.14) is replaced.

This is done as follows:

- Disconnect the filter unit from the mains supply.
- Open the filter door (Pos.4).
- Use the fixing screw (Pos.11) to lower the lifting mechanism (Pos.14).
- Pull out the prefilter insert (Pos.12)
- Take out the prefilter matting (Pos.13).
- Lay down the new prefilter matting.

Warning:

Use only TEKA prefilter matting!

- Push in the prefilter insert (Pos.12).
- Use the fixing screw (Pos.11) to raise the lifting mechanism (Pos.10), so that the prefilter insert (Pos.12) fits tightly underneath the equipment cover (Pos.2). (Check the seal underneath the cover of the unit (Pos.2) for possible damage.)
- Close the filter door (Pos.4).
- Connect the filter unit to the mains supply. (Observe the data on the nameplate!)

7.2 Replacing the particle filter

If the suction power is falling off, then the particle filter (Pos.14) must be replaced, as follows:

- Disconnect the filter unit from the mains supply.
- Open the filter door (Pos.4).
- Use the fixing screw (Pos.11) to lower the lifting mechanism (Pos.10).
- Pull out the particle filter (Pos.14)
- Push in the new particle filter.

Warning:

Use only TEKA particle filters!



- Use the fixing screw (Pos.11) to raise the lifting mechanism (Pos.10), so that the prefilter insert (Pos.16) fits tightly underneath the equipment cover (Pos.2). (Check the seal underneath the cover of the unit (Pos.6) for possible damage.)
- Close the filter door (Pos.4).
- Connect the filter unit to the mains supply. (Observe the data on the nameplate!)

7.3 Replacing the activated-carbon cassette

If gas escapes on the clean-air side, or the particle filter (Pos.14) is replaced, then the activated-carbon cassette (Pos.15) must be replaced, as follows:

- Disconnect the filter unit from the mains supply.
- Open the filter door (Pos.4).
- Use the fixing screw (Pos.11) to lower the lifting mechanism (Pos.10).
- Pull out the activated-carbon cassette (Pos.15)
- Push in the new activated-carbon cassette.

Warning:

Use only TEKA activated-carbon cassettes!

- Use the fixing screw (Pos.11) to raise the lifting mechanism (Pos.10), so that the prefilter insert (Pos.12) fits tightly underneath the equipment cover (Pos.2). (Check the seal underneath the cover of the unit (Pos.2) for possible damage.)
- Close the filter door (Pos.4).
- Connect the filter unit to the mains supply. (Observe the data on the nameplate!)



8 Disposal

To ensure perfect operation of your TEKA - LMD 501 extractor unit, and proper disposal of the dust that has been extracted, we offer the following services:

- Help with finding a waste disposal company in your vicinity.
- On request, we can supply a list of all waste disposal companies in Germany, free of charge.
- A service and maintenance contract.
- A customer help line.

Call our service department for these options: they are at your service – round the clock.

Telephone: +49 (0) 28 63 / 92 82 - 0

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



9 Technical data

Warning:
(Observe the data on the nameplate!)

Filter unit		TEKA – LMD 501
Supply voltage	V	230
Current type	Ph	1
Frequency	Hz	50
Motor power	kW	2,4
Max. airflow volume	m ³ /h	500
Max. partial vacuum	Pa	20000
Enclosure type		IP 54
ISO class		F
Operating voltage	V	230
Duty cycle	%	100
Width x depth x height	mm	365 x 681 x 737
Weight	kg	65
Filter insert		prefilter matting, particle filter, activated-carbon
Filter area of the particle filter	m ²	2.2
Extraction performance	%	>99



10 Parts list

Designation:	Article no.
Prefilter matting Pos.13	10056
Particle filter Pos.14	10035
Activated-carbon cassette Pos.15	97052
Activated carbon pouring	100197501
Turbine 1,2kW with elektronik	200421160
Castor Pos.11	10326
Castor with brake Pos.12	103261
Suction hose, length 2,5m, NW45, with air intake	9631925
Suction hose, length 5m, NW45, with air intake	9631950



11 Declaration of conformity TEKA-LMD 501



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We herewith declare in sole responsibility that the before mentioned product, starting from machine No.: 110000000, conforms to the following standards:

Directives on machine building:	2006/42/EG
Electromagnetic compatibility:	2004/108/EG
Directives on printing device:	97/23/EG
Directives on low voltage:	2006/95/EG

Applied harmonised standards:

- DIN EN 349
- DIN EN 983
- DIN EN 12100 Part 1 and Part 2
- DIN EN 60204 Part 1
- DIN EN ISO 13857
- DIN EN ISO 14121

plus further national standards and specifications:

- DIN 45635 Teil 1

This declaration will become void if changes are effected to the suction and filter systems which were not agreed upon in writing by the manufacturer.

A handwritten signature in black ink, appearing to be "R. J. ...", written over a light blue rectangular background.

Velen, the 16.December 2009

TEKA
Absaug- und Entsorgungstechnologie GmbH
(Extraction and Waste Handling Technology)