

Operating Instructions

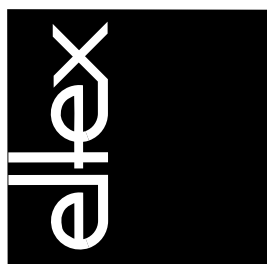


F00022y

Series R44LS Discharge Bars

for AC Voltage Operation

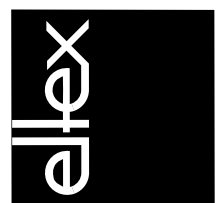
BA-e-2003-0302





List of contents

1	Outline of Series R44LS discharge bar for AC voltage operation	4
2	Safety	7
2.1	Proper use	7
2.2	Identification of risks and hazards	7
2.3	Work and operational safety	8
2.4	Contact protection	9
2.5	Technical advance	9
3	Installations and assembly	10
3.1	Length of the high voltage cable	10
3.2	Assembly of the discharge bar	10
3.3	Distance between discharge bar and material surface	12
3.4	Impact of temperature radiation	12
3.5	Connecting oil and waterfree compressed air supply	13
3.6	Position of the air connections	14
4	Operation	15
4.1	Selecting the operating voltage	15
4.2	Function control	15
5	Maintenance	16
6	Troubleshooting	17
7	Warranty	18
8	Technical specifications R44LS	19
9	Dimensions	20
10	Spare parts and accessories	21



1. Outline of Series R44LS discharge bar for AC voltage operation

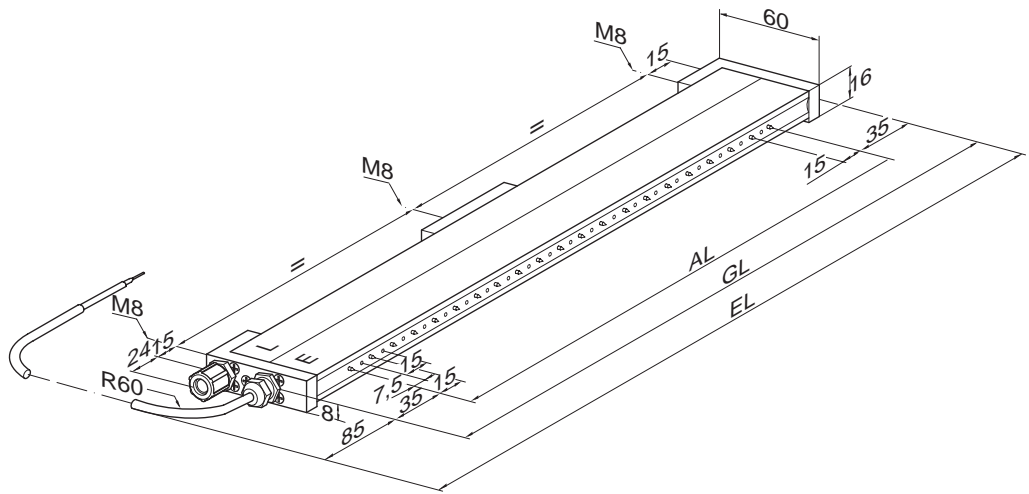
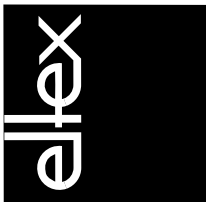


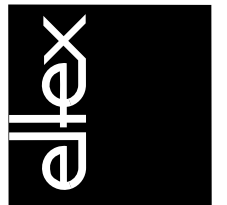
Fig. 1:
Series R44LS
discharge bar

Z00192Y

- L* = Airchannel
- E* = Electrode
- EL* = Installation length
- AL* = Active length
- GL* = Total length

single-row discharge bar,
air knife with air circulation of gas discharge,
emission tip spacing: 15 mm,
active lengths: 15...1995 mm in increments of 15 mm





Dear customer,

The Series R44LS discharge bars have been designed for the active removal of disruptive static charges during production processes.

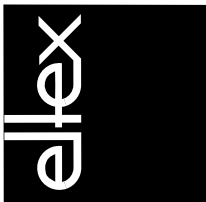
The bars are operated with an alternating voltage of 4.8...5.5 kV at 50...60 Hz and are suitable for eliminating static charges on surfaces with medium to high speeds.

Due to the differences in the surface charge profiles of the various materials, charges of both polarities are supplied by the discharge bars. The geometric configuration of the corona segment guarantees an ultimate discharge effect.

The R44LS discharging bars operate with air support and generate an adequate discharging effect even at larger distance. They improve the sheet separation from the pile to the copy stream, hold the copy stream in place at the 90° deviation station and help to improve pile formation.

The air flow ventilation on the inside of the bar allows the unit to be used under high ambient temperatures of max. 80° with thermal screening and blast air.

The optimum discharging effect is achieved in combination with Eltex high voltage supply units with 5 kV AC output voltage.



2. Safety

The Series R44LS discharge bars have been designed, built and tested using state-of-the-art engineering, and they have left the factory in a technically and operationally safe condition. If used improperly, the bars may nevertheless be hazardous to personnel and may cause injury or damage. Read the operating instructions carefully and observe the safety instructions.



Warning!

Do not touch the emission tips of the discharge bar if the supply voltage of the power supply is switched on. Before cleaning or servicing the bar, always disconnect the bar from the supply voltage of the power supply unit.

The manufacturers will not assume any liability and warranty if the bar is used improperly or used outside the intended purpose.

2.1 Proper use

The Series R44LS discharge bars may only be used for eliminating static charges on material surfaces. Other uses are not permitted.

The R44LS discharge bars must be operated only in connection with the dedicated Eltex high voltage supply units with 5 kV AC output voltage. This will ensure the proper adaptation to the required operating specifications of the various active bar lengths. Safe operation of the electrode bars is guaranteed only when using the Eltex high voltage supply units with 5 kV AC output voltage.

Modifications and changes to the discharge bars are not permitted.

Use only original Eltex spare parts and accessories.

2.2 Identification of risks and hazards

Possible risks and hazards resulting from the use of the discharging bars are referred to in these operating instructions by the following symbols:



Warning!

This symbol appearing in the operating instructions refers to operations which, if carried out improperly, may result in serious personal injuries.





Caution!

This symbol appearing in the operating instructions refers to operations which, if carried out improperly, may result in damage to property.

2.3 Work and operational safety



Warning!

Carefully observe the following notes!

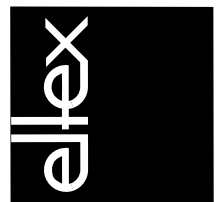
- Check the discharge bars and the high voltage cables at regular intervals for any damage. Any damaged components must be repaired or replaced before continuing to operate the bar, or the appropriate bar or cable must be disabled.
Make sure that the electrode bars are clean at all times.
- Before carrying out repairs, cleaning or maintenance work, switch off the power supply unit and disconnect the supply voltage.
- Do not touch the emission tips if the high voltage supply is connected. Reflex responses to electrical irritation may increase the risk of secondary accidents, especially in the vicinity of unguarded rotating assemblies.
Persons with cardiac pacemakers are always at risk from high voltage and should take extreme care.
- Mechanical or electrical modifications of the discharge bars are not permitted. Shortening the screened high voltage cable on the connecting side to the power supply unit is permissible. Lengthening the cable is only permitted via a suitable terminal box, an original high voltage cable and suitable cable glands.
- The discharge bars must be repaired, serviced and tested by qualified personnel only.
- The operation of the electrodes can generate ozone. The ozone concentration levels developing near the electrodes depend on many different factors such as site of installation, electrode stream and voltage, air circulation, etc., and can therefore not be specified in general terms. If the maximum allowable concentration (MAC) of ozone must be observed at the site of installation of the electrode, the concentration must be measured on site.

2.4 Contact protection

As the installation site or eventual location of the discharge bars is outside the control of Eltex, a contact protection screen may have to be provided as specified in the regulations of the employers' liability insurance associations (e.g. VBG 4 in Germany).

2.5 Technical advance

The manufacturer reserves the right to make changes to the technical specifications without prior notice in order to adapt the units to state-of-the-art engineering. Eltex will provide the latest information on any changes or modifications in the operating instructions on request.



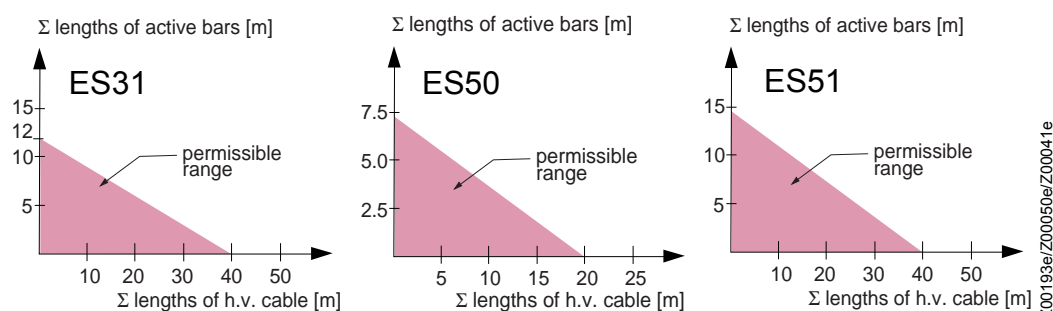
3. Installations and assembly

3.1 Length of the high voltage cable

The high voltage cable is supplied in the following standard lengths: 2.5 / 5 / 7.5 and 10 meters, preassembled. Special lengths are available on request.

The total length of the discharge bar and of the high voltage cable is limited as the transformer of the power supply unit is under capacitance load by the cable length. The maximum load capacity is therefore defined as a function of active bar length and the length of the high voltage cable. The relationship is shown in Fig. 2.

*Fig. 2:
Load capacity of
the power supply
units as factor of
active bar length
and length of the
high voltage cable*



3.2 Assembly of the discharge bar

The Series R44LS discharge bars must be connected to the machine via a metal bolted joint. For more convenient installation we recommend using the assembly and installation material supplied by Eltex (see Fig. 4). The assembly steps are shown in Fig. 3.



Caution!

The discharge bars must be grounded via the machine potential through the metal assembly brackets.

The size M8 assembly bolts for attaching the discharge bar to the bracket must not exceed 12 mm in length. Longer bolts may damage the discharge bar.

Discharge bars with a total length >1500 mm are equipped on the back with an M8 support plate; three M8 support plates are glued to bars with lengths >3000 mm. During installation the discharge bars must be supported with these support plates to prevent the bars from sagging.

Failure to observe this mode of attachment may result in mechanical damage to the bars.

Damage of this description is not covered by the warranty.





Caution!

Depending on site of use or location, the discharge bar must be protected against inadvertent contact by personnel. (Contact protection as specified in the regulations of the employers' liability insurance associations.

Please observe all national regulations according this item.

The contact protection device should be made of insulating material such as GRP or similar material. Contact protection devices made of conductive material must be grounded

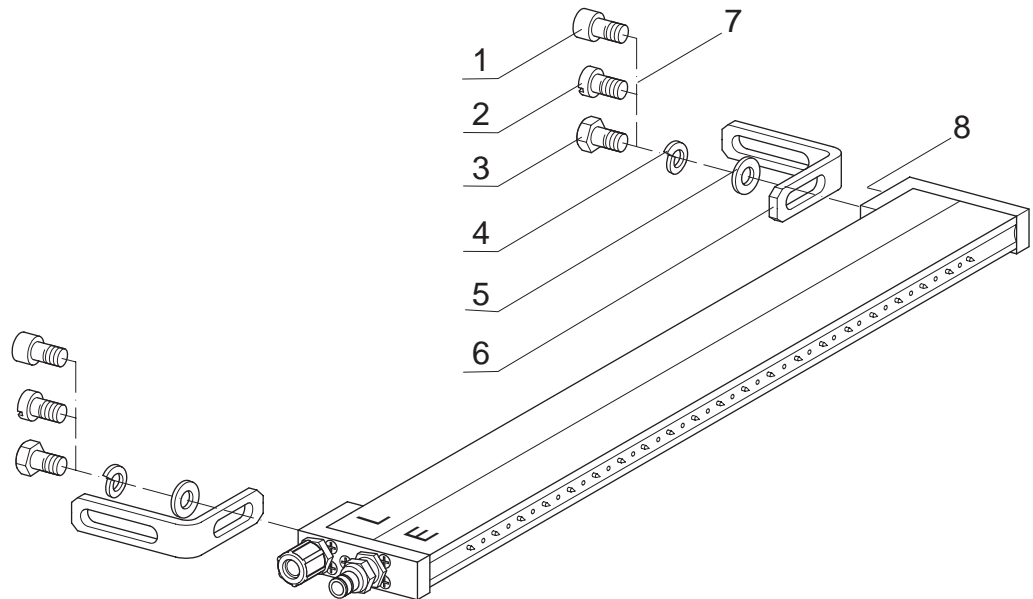
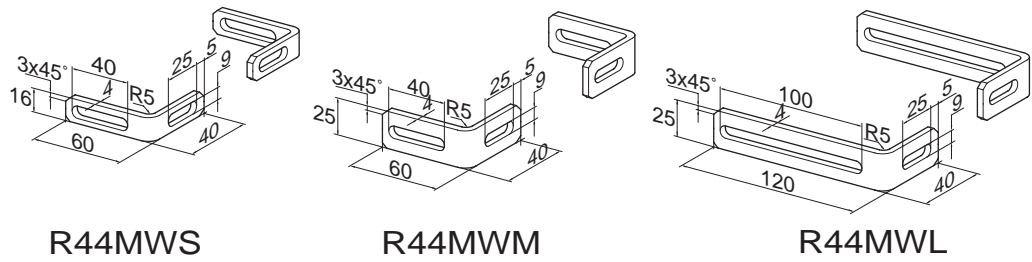


Fig. 3:
Assembly of the
discharge bar with
steel bracket

- L Airchannel
- E Electrode
- 1 Cylinder bolt DIN 912-M8x12-St
- 2 Cylinder bolt DIN 84-M8x12-St
- 3 Hexagonal nut DIN 933-M8x12-St
- 4 Spring washer DIN 127-A8-St
- 5 Washer DIN 125-A 8.4-St
- 6 Attachment bracket R44 with 2 x longitudinal holes
- 7 Max. torque 4 NM, secure with Loctite 243
- 8 Max. screw-in depth 4.5 mm

Z00194y

Fig. 4:
Attachment
accessories



R44MWS: Assembly bracket, small, with a total length of below 1500 mm

R44MWM: Assembly bracket, medium, with a total length of below 1500 mm.

R44MWL: Assembly bracket, large, with a total length of above 1500 mm

3.3 Distance between discharge bar and material surface

The distance between the discharge bar and the material surface must be selected between 15 and 30 mm.

Discharge bars with air support are used in cases where static charges impair the separation of piles to feed the copy stream or vice versa. The distance of the discharge bar from the edge of the pile is 5...20 mm in this application.

The distance may be ≥ 20 mm in any other application.

3.4 Impact of temperature radiation

The discharge bar must not be exposed to direct heat radiation which might lead to an excess of the maximum rated operating temperature of 80 °C. In the event of heat exposure caused by heated moulds and blowing tools, a temperature shield (e.g. a metal plate, approx. 3 mm thickness or a special plastic material) is required. The metal plate must not be allowed to rest on the discharge bar and must be grounded.

Discharge bars with air support may also be operated with intermittent air blasts to prevent the tools from cooling down. The air blast is activated only, for instance, when the tool opens to discharge the moulding.

3.5 Connecting oil and waterfree compressed air supply

The number of air connections depends on the length of the discharge bar (see Fig. 5). An internal hose diameter of 9 mm (NW 9) is required to connect the air hose to the air hose joint. The operating pressure must not exceed 3 bar and must be measured near the air distributor. The distributor crosssection must be dimensioned to match the number of hose connections or in compliance with the consumption volume.

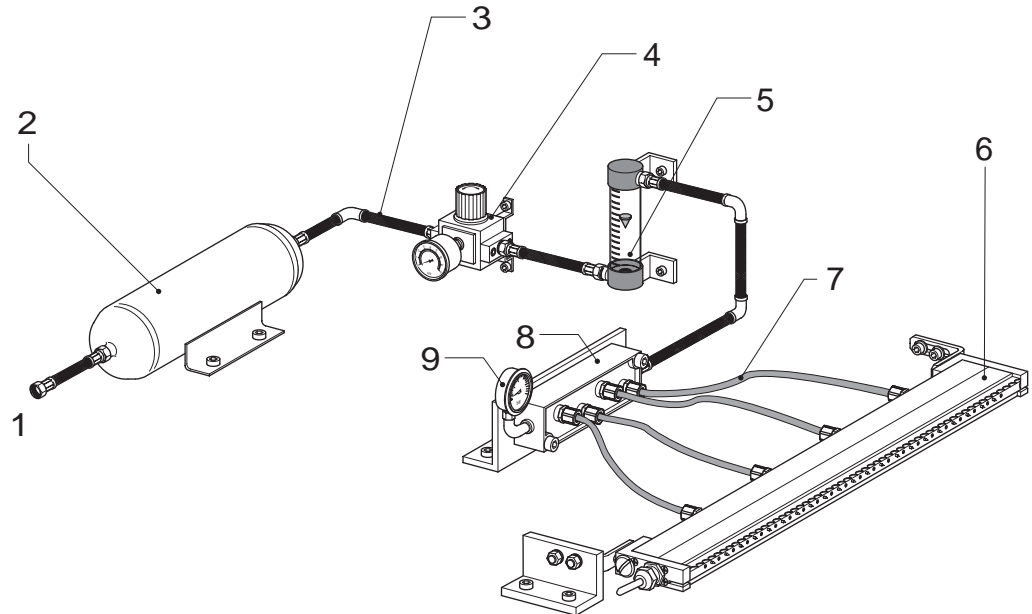


Fig. 5:
Installation of the
compressed air
supply

- 1 Pressure gauge
- 2 Pressure source
- 3 NW 20 hose
- 4 Throttle valve
- 5 Rota flowmeter
- 6 R44LS discharge bar
- 7 NW 9 hose (e.g. 4 x 2.5 m)
- 8 Distributor
- 9 Manometer

Fig. 5 shows the installation diagram for the air supply.

The air distributor is not included with the delivery.



Caution!

If the discharge bar is fitted with several air connections, all hoses from the distributor to the connecting points must have the same length (identical pressure conditions).

3.6 Position of the air connections

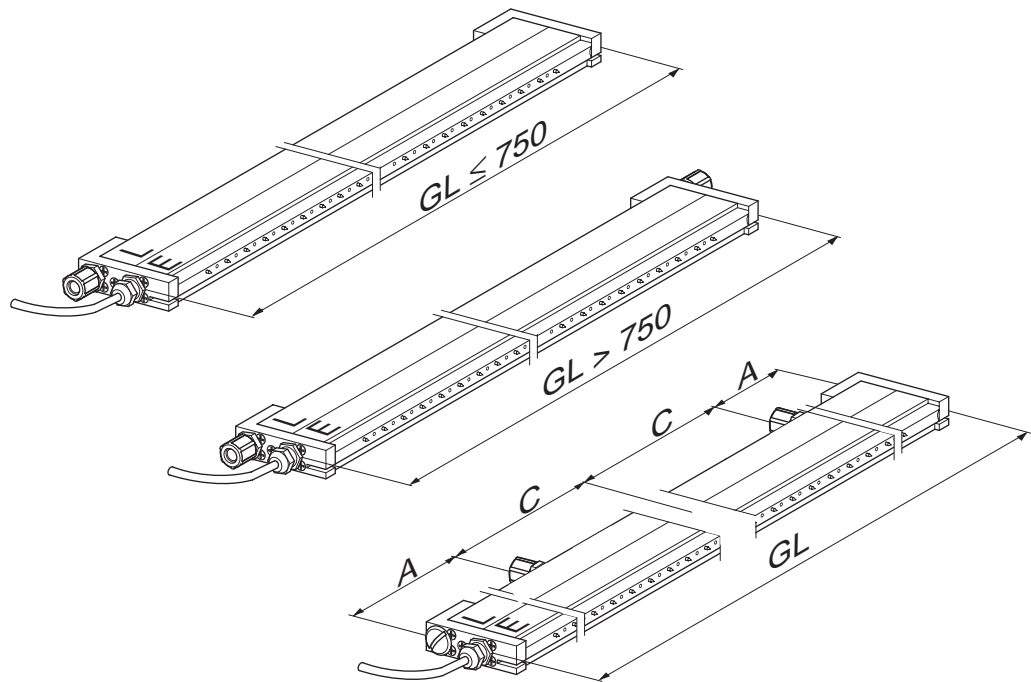


Fig. 6:
Dimensions and
position of the air
connections as
factor of total
length GL

Z00197y

GL [mm]	A [mm]	C [mm]	Number of air connections
$GL \leq 750$	$GL/2$		1
$750 < GL \leq 1500$	125...500	250	2
$1500 < GL \leq 2065$	250...500	500	2

The air connections may also be led outside sideways.

4. Operation

4.1 Selecting the operating voltage

ES50/ES51:

Use the toggle switch to switch on the power supply. In the ON position the switch lights up green. High voltage is now supplied to the discharge bars.

The output voltage is now a constant 5 kV AC.

ES31:

If the ES31 power supply is equipped with a potentiometer for setting the operating voltage (version ES31 VO and ES31 PO), adjust the potentiometer with the power supply switched on until the green signal lamp "Operating Voltage" lights up.

The discharge bar will now be working with the optimum operating voltage of 5 kV at 50 Hz.

4.2 Function control

ES50/ES51

In general, proper operation is indicated by the illuminated switch in all units.

ES31

With the ES31 power supply switched on and the discharge bar connected, the signal lamp "Operating Voltage" (ES31 VO and ES31 PO only) on the power supply lights up.



5. Maintenance



Warning!

Before carrying out any repair, maintenance or service work on the discharge bars and the power supply, switch off the power supply and disconnect the supply voltage. The machine on which the discharge bars are installed must not be in operation. Repair and maintenance work must be carried out by qualified personnel only.

In order to ensure the proper function of the discharge bars, clean the bars at least once per week using compressed air free of oil and water (6 bar, standard compressed air pistol) and a non-metal brush.

Dirt deposits such as grease, ink, glue, paper dust, etc. must be removed using a suitable solvent (e.g. cleaning gasoline). Do not soak discharge bars and high voltage cable in solvent!

When cleaning the discharge bars, switch on the compressed air supply (1...2 bar) to prevent the air outlet nozzles from clogging up. Allow solvent to evaporate before resuming operations.



Caution!

Do not damage the emission tips of the discharge bars.

6. Troubleshooting



Warning!

Electric shock hazard!

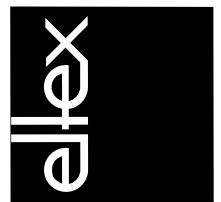
Before carrying out any repair, maintenance or service work, disconnect the supply voltage to the power supply.

No high voltage must be applied on the discharge bars.

Repair and maintenance work must be carried out by qualified personnel only.

Fault	Cause	Remedy
Effectiveness of application declines	Dirt settled on bars	Use compressed air and brush to clean bar. Dirt deposits such as grease, ink, oil etc. must be removed using a suitable solvent (e.g. cleaning gasoline). Caution! Do not soak discharge bars in solvent! Allow solvent to evaporate before resuming operations.
Operating voltage lamp fails to light up	Defective discharge bar. Check bar for any defects which may be caused by creep currents.	If more than one discharge bar is connected to the power supply, disconnect one after the other to localize the defective bar. Replace defective bar.

Refer to the Power Supplies Operating Instructions for further malfunctions.



7. Warranty

The units are warranted for a period of 12 months provided that the operating conditions have been maintained, that the units have not been tampered with and that the units show no mechanical damage.

The warranty applies only if the operating and assembly instructions specified by Eltex have been observed. The warranty period begins on the date of delivery.

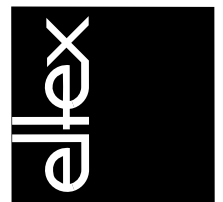
In the event of defects occurring during the warranty period, the units or defective components will be repaired at Eltex. Defective components will be replaced and installed free of charge.

If repairs are required at the customer's premises, the costs for sending a technician (travel, travel time, expenses) will be charged to the customer.



8. Technical specifications R44LS

Electrode element	fibre-glass-reinforced polyester GFK UL-94 V-0
Encapsulation compound	epoxy resin with filler or PU with filler
Assembly material	steel brackets (see Fig. 4)
Creepage resistance	EN 50019 Grade A600
Disruptive strength	60 °C, EN 50028 DIN 53481
Specific volume resistance	60 °C DIN 53482, $3 \times 10^{15} \Omega \times \text{cm}$
Flammability	V-0 in compliance with UL 94 (1.6 mm) or ISO/R 1210 5...10 sec
Operating ambient temperature	0...+80 °C (+32...+176° F) (only if blast is in operation, otherwise 0...+60 °C, (+32...+140 °F))
Ambient humidity	max. 70% relative, no dewing permissible
Emission tips	stainless steel, encapsulated and electrically isolated; low capacitance and non-sparking
Dimensions	see Fig. 7
Operating voltage	5 kV AC 50/60 Hz
High voltage supply	via Eltex power supplies with 5 kV AC output voltage
Short-circuit current per tip	approx. 0.055 mA
Contact protection	in compliance with EN 60335, Part 1
Air supply	integrated air profile, air outlet apertures \varnothing 1mm, spacing 15 mm, air outlet apertures in special applications \varnothing 1.5 mm
Air connections	NW 9 mm hose, apparatus air free of oil and water, up to 40 meters in max. length (see Fig. 6)
Air pressure	max. 3 bar
Air consumption	150...600 l/min per 1 meter of active bar length at 0.1...1 bar air pressure



9. Dimensions

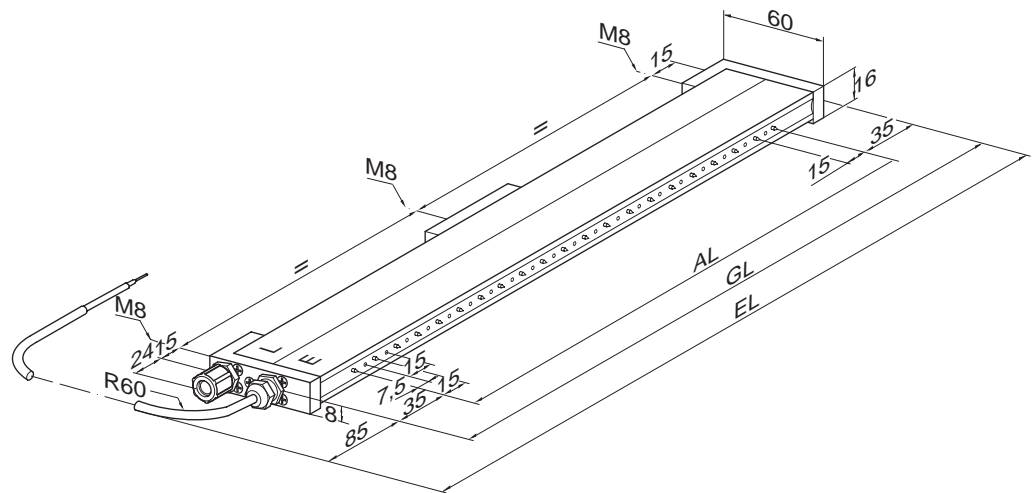


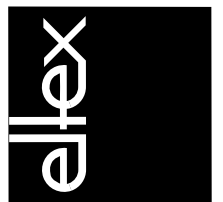
Fig. 7:
Series R44LS
discharge bar

- L = Airchannel*
- E = Electrode*
- EL = Installation length*
- AL = Active length (15...1995 mm in increments of 15 mm)*
- GL = Total length*

Z00192y

10. Spare parts and accessories

Article	Article number
Assembly bracket R44MWS	MCH00011
Assembly bracket R44MWM	MCH00002
Assembly bracket R44MWL	MCH00009



Eltex offices and agencies

The addresses of all
Eltex agencies can be
found on our website at
www.eltex.com



201007y



Eltex-Elektrostatik-Gesellschaft mbH
Blauenstraße 67, D-79576 Weil am Rhein
Phone +49 (0) 76 21/ 79 05 - 0
Fax +49 (0) 76 21/ 79 05 - 310
eMail info@eltex.com
Internet www.eltex.com