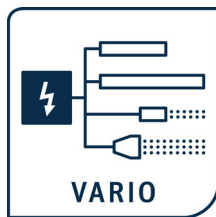


# Operating Instructions



F01039y



## Charging Bars

**xxR130A / R131A / R130A3L / EXR130**

**BA-en-3020-2504**





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## Dear customer

The xxR130A / R131A / R130A3L / EXR130 charging bar is a universal bar for charging surfaces for the purpose of tacking, adhering or locking. The variable active lengths of the charging bars allow them to be adapted to your specific in-process conditions and requirements.

The charging bar is mainly used where production processes and cycles run faster and with less interference if the materials used (such as films, foils, papers, etc.) adhere to each other.

The charging bar EXR130 is available for use in the Ex zone.

The bars are operated with the appropriate high voltage generators supplied by Eltex. These can be adjusted to match the different active lengths of the bars and so allow optimized operation.

Please read these instructions carefully before starting the unit. This will help you prevent personal injuries and damage to property.

Simply give us a call if you have any suggestions, proposals or ideas for improvements. We greatly appreciate the feedback from the users of our appliances.

# 1. Overview charging bars

The variety of charging bars available differs essentially in their installation lengths and in their connection of the high voltage cable. Both the installation length and the variable active length of a charging bar allow the units to be adapted to the most varied applications.

The parallel configuration of two or more bars allows surface-covering charging or operating the unit at high web speeds.

The maximum total length of the charging bar is 3985 mm.

## 1.1 xxR130A / R131A / EXR130 charging bars

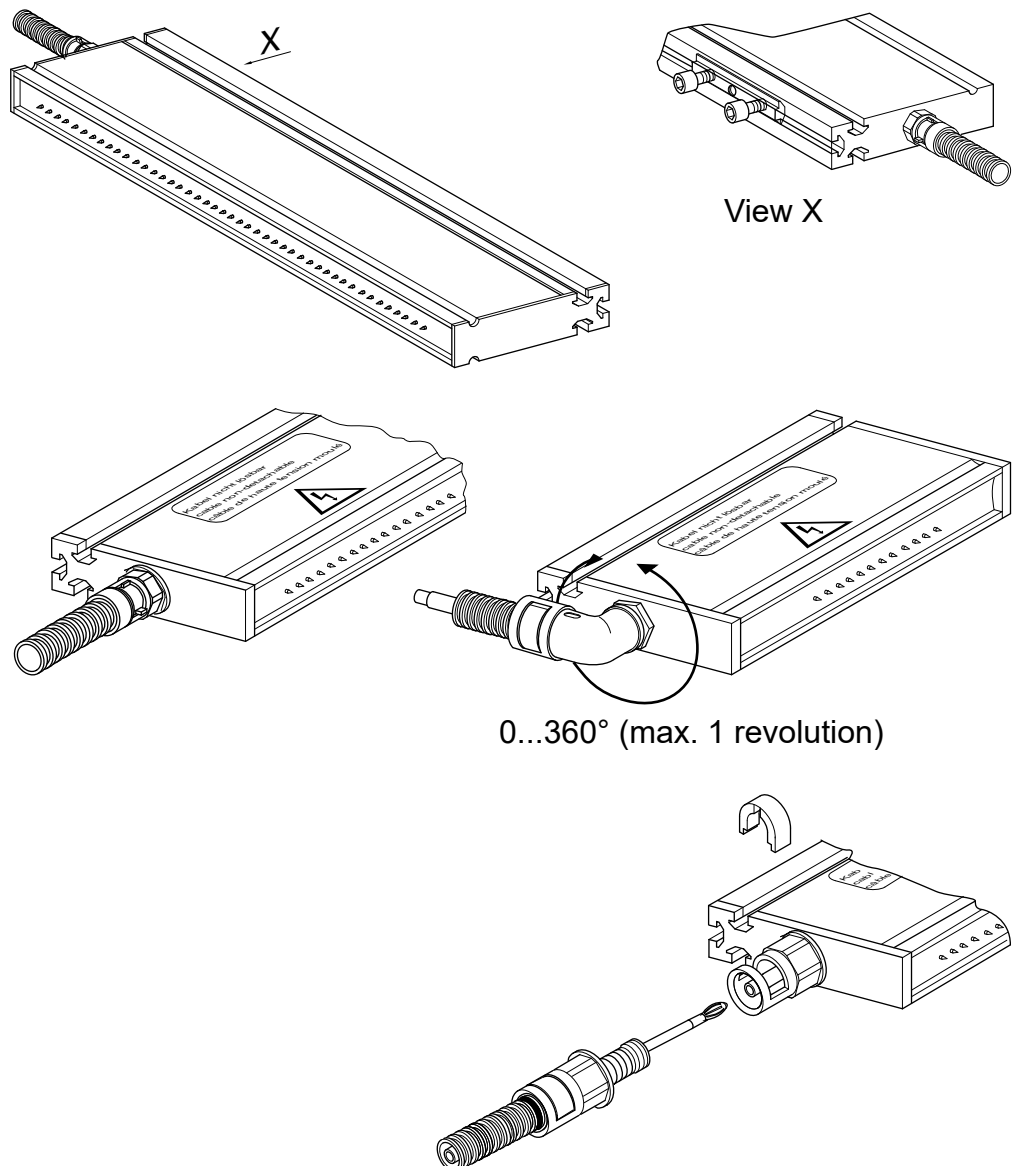


Fig. 1:  
xxR130A / R131A  
/ EXR130  
charging bars

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### **xxR130A / EXR130 bar**

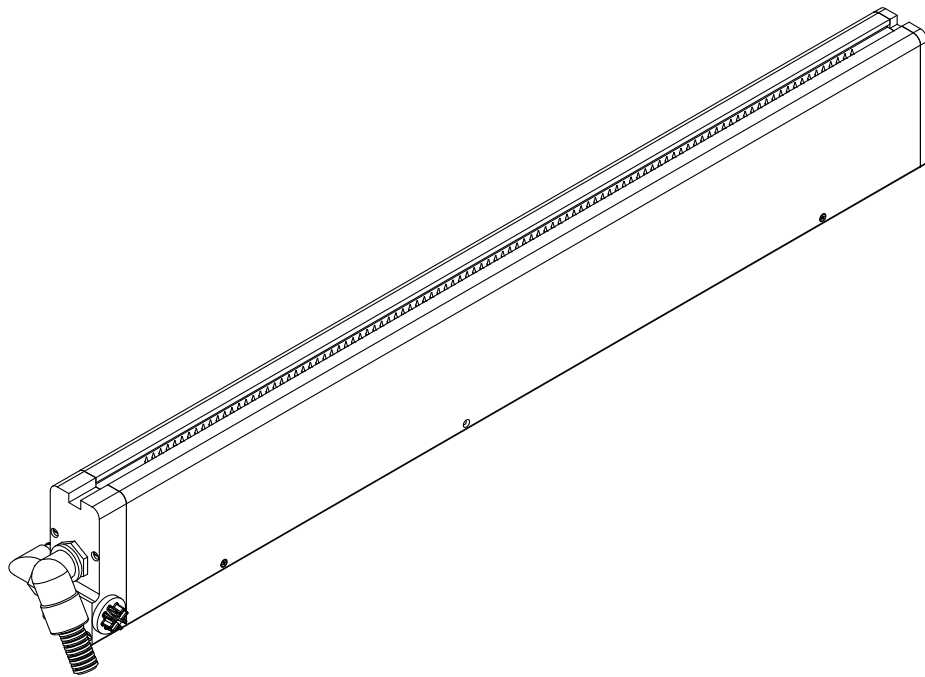
The connection of the high voltage cable can be axial or at a right angle to the bar.

### **R131A bar**

The connection of the high voltage cable is detachable and is led axially out of the bar.

The connection of the high voltage cable is detachable and only available axial to the bar.

## **1.2 R130A3L charging bar**



*Fig. 2:  
R130A3L  
charging bar  
with air connection*

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## 2. Safety

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

For warranty conditions, please refer to the General Terms and Conditions (GTC), see [www.eltex.de](http://www.eltex.de).

### 2.1 Proper Use

The charging bars of the series xxR130A / R131A / R130A3L / EXR130 must only be used for applying static electrical charges onto paper, fabrics, foils, plastics, etc. for the purpose of creating a static adhesion effect.

The xxR130A / R131A / R130A3L / EXR130 charging bars may only be operated with the accompanying Eltex high voltage generators (see Chapter 7 "Technical specifications"). These allow the flexible adaptation to the required high voltages and currents for different active bar lengths. The safe operation of the charging bars is only guaranteed by using these Eltex generators.



#### Caution!

**When using the EXR130 charging bar, please note the operating instructions for the appropriate system and/or generator.**

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

Modifications or changes made to the devices are not permitted.

Use only original Eltex spare parts and equipment.

### 2.2 Identification of risks and hazards

Possible risks and hazards resulting from the use of the units 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.



#### Ex Warning!

For units with EX approval only.

This symbol denotes the special conditions which must be observed when operating the system in explosion hazard areas as specified in the EX approvals.



## 2.3 Work and operational safety



### Warning!

Electric shock hazard!

Carefully observe the following notes and the complete [chapter 2 "Safety", page 8!](#)

- Before carrying out repairs, cleaning or maintenance work and before resetting the unit after malfunctions, switch off the power supply and disconnect the supply voltage (see [chapter 5 "Maintenance", page 23](#), [chapter 6 "Troubleshooting", page 24](#)).
- Before carrying out any work involving the units, the machine which has the units fitted must not be in operation (see [chapter 5 "Maintenance", page 23](#), [chapter 6 "Troubleshooting", page 24](#)).
- Any work involving the units must be carried out by qualified electricians (see [chapter 5 "Maintenance", page 23](#), [chapter 6 "Troubleshooting", page 24](#)).
- The unit may only be used by qualified personnel trained for explosion hazard areas.
- The bars passively absorb energy from the moving substrate web. The high voltage cable must be plugged in or grounded to the power supply. If the high voltage cable is disconnected, the plug is live (high voltage) and applies with full power on the plug; this may cause a spark discharge and may lead to a risk of injury. Disconnected high voltage plugs are not permitted or have to be grounded (see [chapter 5 "Maintenance", page 23](#)).
- Install the bar such that no creepage currents develop through the bars and the attachment fittings during subsequent operation. Observe minimum installation distances and the bold depth (see [chapter 3.4 "Installation of the charging bar", page 14](#)).
- When routing the cable, select the attachment points such that mechanical damage to the cable (e.g. chafing against rotating machine parts) is ruled out (see [chapter 3.5 "Installation of the high voltage cables", page 18](#)).
- In applications with movable charging bars, attach the high voltage cables such that there is no cable movement in the connecting zones (see [chapter 3.5 "Installation of the high voltage cables", page 18](#)).
- Do not route the cable over sharp edges (bending radius <5 mm), see [chapter 3.5 "Installation of the high voltage cables", page 18](#).
- A minimum bending radius of 10 times the external diameter must be maintained when routing the high voltage cable (see [chapter 3.5 "Installation of the high voltage cables", page 18](#)).
- The high voltage cables must not be attached with metal clips (see [chapter 3.5 "Installation of the high voltage cables", page 18](#)).

- Keep a minimum spacing of 50 mm between low voltage and high voltage cables; if this cannot be done, shield the low voltage cable (see [chapter 3.5 "Installation of the high voltage cables", page 18](#)).
- If the high voltage cables are led through bores in conductive, grounded materials, the minimum bore diameter D is calculated as follows from the wall thickness of the material:  
Bore hole diameter D (mm) =  $60 \text{ mm}^2 / \text{wall thickness (mm)}$   
E.g. wall thickness 2 mm:  $D = 60 \text{ mm}^2 / 2 \text{ mm} = 30 \text{ mm}$   
Allow the biggest possible radius for the edges of the bore hole. Use an insulating grommet to centre the cable (see [chapter 3.5 "Installation of the high voltage cables", page 18](#)).
- If ungrounded and conductive objects are placed near ( $\leq 2\text{m}$ ) the high voltage cable, influenced charges and sparking must be expected. Proper ground connection is therefore important (see [chapter 3.5 "Installation of the high voltage cables", page 18](#)).
- The high voltage cable must be pushed up to the stop (90 mm for KNH18 / KNH35 and 120 mm for KNH65) into the cable inlet! The connecting area of the high voltage cable must be kept clean (see [chapter 3.6 "Connecting the high voltage cable to the generators KNH18, KNH34 / KNH35, KNH64 / KNH65, HSG61, to the distributor box KNHV3 / KNHV6 and to the charging bar R131A", page 19](#)).
- The high voltage cable must be pushed up to the stop (150 mm) into the cable inlet! The connecting area of the high voltage cable must be kept clean (see [chapter 3.7 "Connecting the high voltage cable of the charging bar to the high voltage generator PC and the distributor PCV / PCV6", page 20](#)).
- The operating voltages of the charging bars are different. Make sure that the correct distance between the charging bar and the material surface is maintained (see [chapter 4 "Operation", page 21](#)).
- The minimum operating current for any stable-current working point must be  $>0.5 \text{ mA}$ . If process-related operating currents of more than 1 mA per meter of active bar length are required, the bar must be protected against pollution or cleaned regularly (see [chapter 4.2 "Operating modes", page 21](#)).
- When cleaning the bars do not soak the bars and the high voltage cable in solvent and do not damage the emission tips; allow the solvent to evaporate completely before restarting the unit. No continuous sparking (electric arc) must be visible on the bar tips (see [chapter 5 "Maintenance", page 23](#)).
- Check the units and the high voltage cables at regular intervals and before startup for any damage. Any damaged components must be repaired or replaced professionally before continuing to operate the unit, or the units must be disabled.

- Make sure that the units are clean at all times.  
Dirt results in malfunctions and in premature wear of the units.
- Do not touch the emission tips - risk of injury.  
If the high voltage supply is connected, reflex responses to electrical irritation can lead to secondary accidents; the charging bar as such is safe to touch. If contact is made, the energy transferred is so low ( $\leq 20$  tips) that there is no risk of injury.
- Potential dangers for persons with cardiac pacemakers  
The contact of several emission tips with the hand can trigger or suppress a single impulse. Such a single influence is irrelevant. A repeated contact during a short period can be excluded because the electrical irritation causes a warning effect. The charging bar as such is safe to touch. If contact is made, the energy transferred is so low that there is no risk of injury.
- If electrically conductive substrates or substrates coated with conductive material (e.g. metal foil or metal composites) are used (e. g. in the printing process), the charging voltage must be disabled (in these printing units), if applicable the supply voltage of the generator must also be disabled.
- During operation of the devices, small amounts of ozone ( $O_3$ ) may be produced at the emission tips depending on a variety of boundary conditions such as site of installation, bar voltage and current, air circulation, etc.  
If the maximum allowable concentration of ozone must be observed at the site of installation of the bar, the concentration must be measured on site.
- Static on personnel  
Static charges on personnel are unlikely if the bars are installed properly. Personnel must wear conductive footwear.  
Please note all national regulations regarding electrostatic charge (e.g. TRGS 727 in Germany).



### **Caution!**

**Please observe the safety notices in the operating instructions of the systems or generator used with the EXR130 charging bar, and the notices on Ex approvals in the Technical Specifications.**

## **2.4 Contact protection**

The site of installation and/or use of the units is outside the control of Eltex, contact protection against inadvertent contact of the bars and of live components by personnel as specified by the employer's liability insurance association may have to be provided (e.g. DGUV V3 in Germany). Contact protection devices made of conductive material must be grounded.

## **2.5 Inspection of the protective resistors - contact protection**

The function and the appearance of the protective resistors must be inspected at regular intervals. The inspection intervals are specified in the accident prevention regulations, as amended (e.g. in Germany DGUV V3).

The function of the series resistors must be checked using a suitable measuring device. The test voltage must be 1,000V. The measured resistance between the high-voltage connection and the individual emission tip must not fall below 320 MOhm and not exceed 480 MOhm.

## **2.6 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. Installation and assembly

### 3.1 Length of the charging bar

Depending on intended use, the total length of the xxR130A / R131A and EXR130 charging bar may be selected within the range from 15 mm to 3,985 mm in steps of 20 mm each. The total length is made up of active length plus 70 mm.

The total length of the R130A3L charging bar can be designed, also in steps of 20 mm, from 15 mm to 2,086 mm. The active length is the total length minus 91 mm.

For operating voltages >30 kV add 120 mm or 220 mm instead of 70 mm . Another 100 mm (approx.) must be provided for plugs and bending radius of the cable.

### 3.2 Length of the high voltage cable

The standard length of the high voltage cable feeding the charging bar is 5 meters. Special lengths on request. For cable extension use high voltage distributor box (connection of high voltage plug see Chapter 3.6).

### 3.3 Adjust the angle coupling

If the bar has a angle coupling, then it is aligned towards the tips during ex factory delivery.

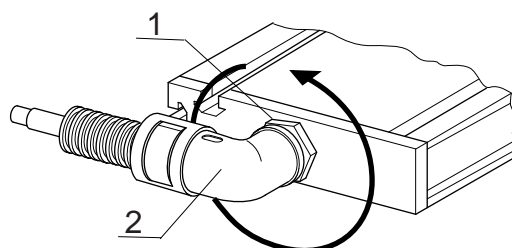


Fig. 3:  
Angle coupling

- 1 Lock nut
- 2 Angle coupling

0...360°(max. 1 revolution)

To turn the angle connection, proceed as follows:

- loosen the lock nut.
- turn the angle coupling in its desired position.
- re-tighten the lock nut.

The maximum permissible angle of turn of the angle coupling is 360°.

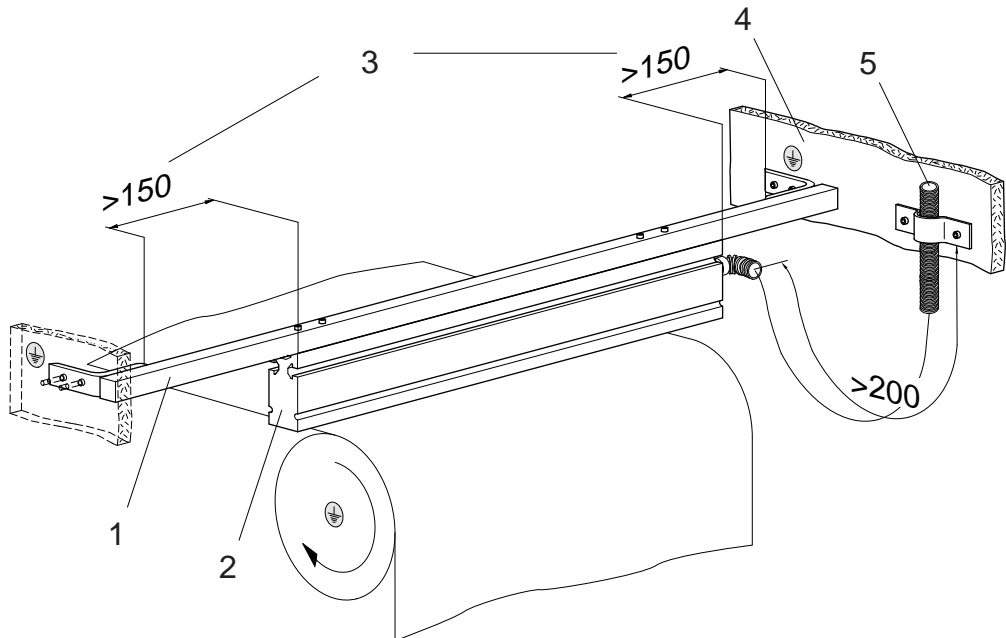
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### 3.4 Installation of the charging bar

Use flame-retardant GRP assembly material (rods and isolators) to attach the charging bar to the machine. Examples for installation and notes are given in Fig. 4, Fig. 5 and Fig. 6. The charging bar is bolted to the GRP holders via sliding nuts pushed into one of the three profile flutings. Normally, the GRP rod is attached to the machine via a metal angle piece.

Fig. 4:  
Installation  
example showing  
charging bar with  
GRP holder,  
charging against  
earth (roller)

- 1 GRP rod
- 2 Bar
- 3 Creepage distance
- 4 Machine wall
- 5 High voltage cable with protection tube



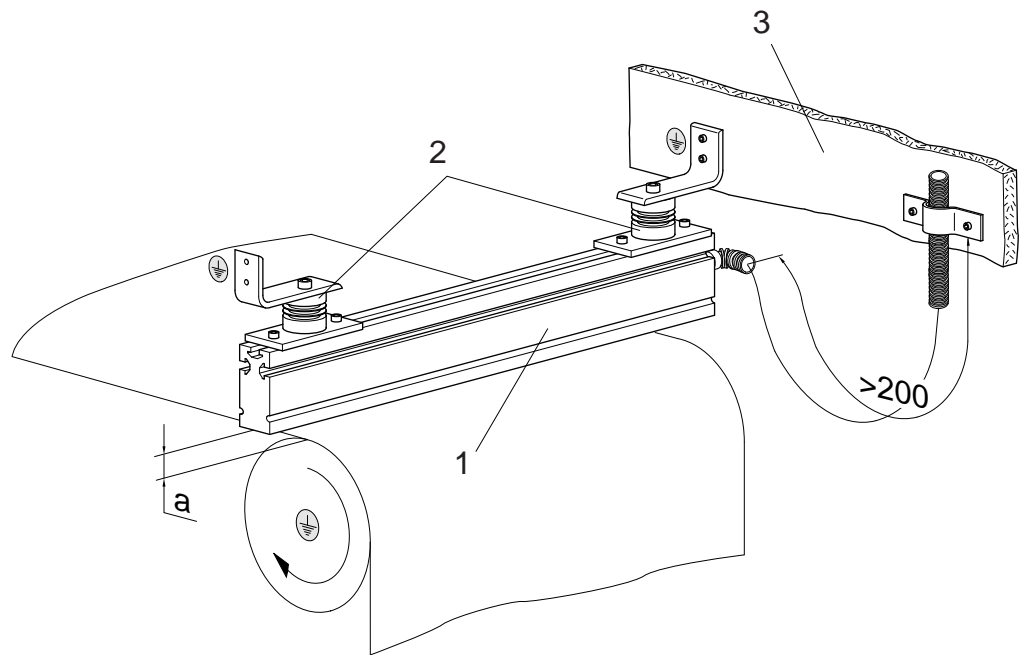
The charging bar is attached with the GRP holder to the machine wall. The GRP holder is bolted with sliding nuts in the fluting of the charging bar. Any of the three flutings may be used for installation. Possible applications: Stabilizing material webs, reducing the air gap, improving heat transfer.

The installation may also be carried out using fitting material supplied by Eltex. The material consists of two insulators with GRP base plate plus four sliding nuts with bolts. The insulators maintain the 150 mm creepage distance.

Order No. for the Eltex assembly kit: BMO08613.

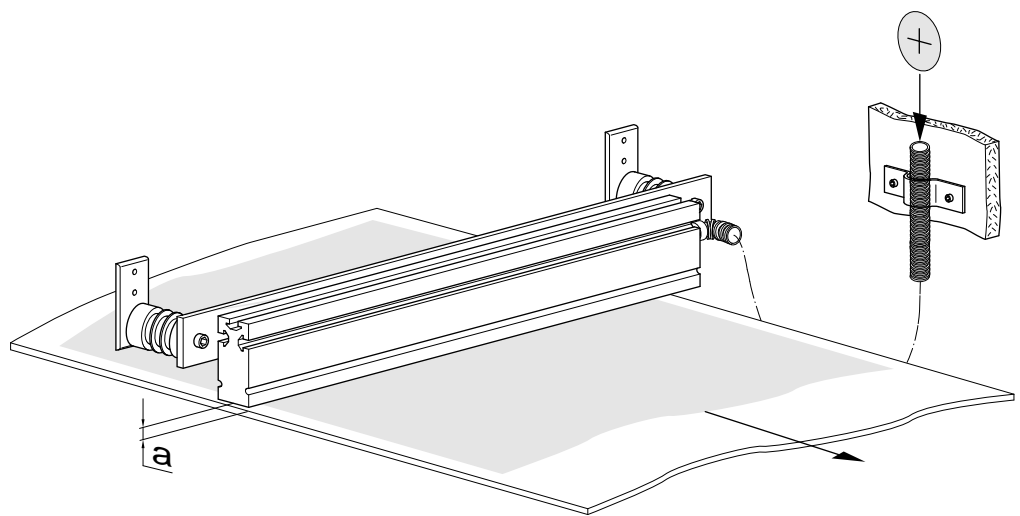
**Fig. 5:**  
*Installation  
 example using  
 Eltex fitting  
 material*

- 1 Charging bar
- 2 Eltex fitting material
- 3 Machine wall



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**Fig. 6:**  
*Installation  
 example using  
 Eltex fitting  
 material,  
 charging a foil  
 against earth with  
 positive high  
 voltage*



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*Possible applications: tacking protective foil, laminating decorative material etc.*



Install the bar such that no creepage currents develop through the bars and the attachment fittings during subsequent operation. Creepage currents can cause irreparable damage to the bar and the attachment fittings. Minimum installation distances:

- No conductive material to be fitted at a distance of 40 mm around the charging bar
- Maintain a creepage distance of >150 mm between the charging bar and earth potential.
- High voltage cable to be mounted with a minimum clearance in air of 200 mm before attaching it to the machine wall.
- Depending on intended use, the spacing distance (a) between the charging bar and the material web may be selected between 8 and 40 mm. The required operating voltage and the operating current are specified in Chapter 4.



**Caution!**

The specifications given above apply to a maximum operating voltage of 30 kV for xxR130A3 / R130A3L / R131A.

For higher voltages (special versions) increase the values: up to 60 kV with factor 2.



The installation profile of the charging bar has 3 flutings. Any of these three flutings may be used for installation. The sliding nuts are pushed into these flutings, and the charging bar is bolted to these sliding nuts.



**Caution!**  
Observe the bolt depth!

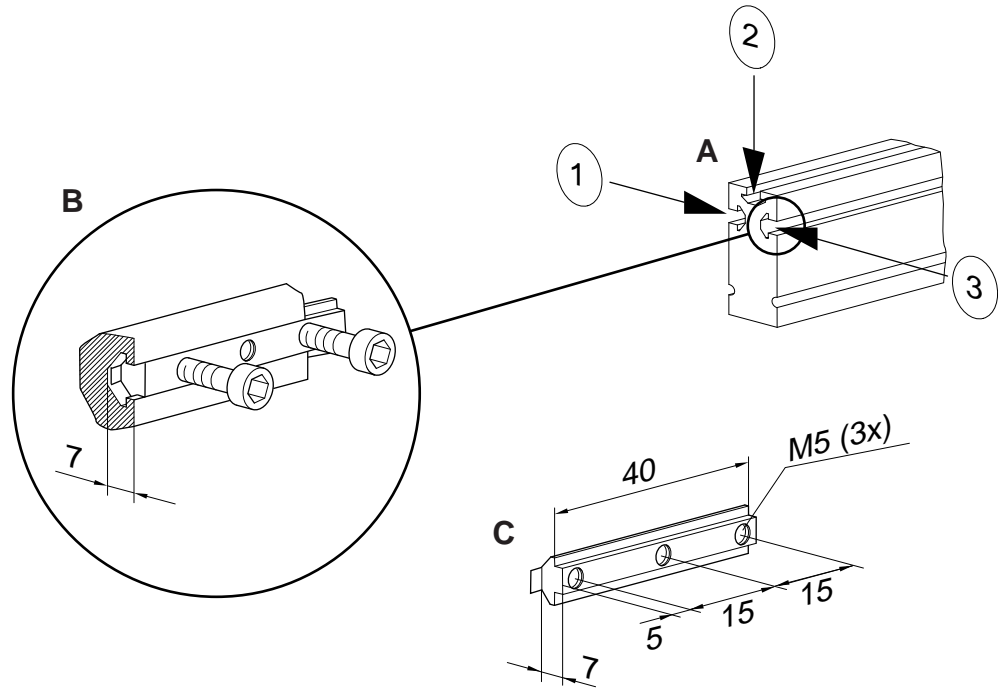


Fig. 7:  
Assembly details

**A** Charging bar profile with 3 flutings

**B** Profil section

Max. bolt depth 6.5 mm

Torque:

- 4 Nm metallic screw and sliding nut
- 0.4 Nm plastic screw and sliding nut

Secure bolts against working loose (e.g. Loctite 243)

**C** Sliding nut

Total length below 1 meter = 2 off

Total length below 2 meters = 3 off

Total length below 3 meters = 4 off

Total length below 4 meters = 5 off

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### 3.5 Installation of the high voltage cables

- When routing the cable, select the attachment points such that mechanical damage to the cable (e.g. chafing against rotating machine parts) is ruled out.
- In applications with movable charging bars, attach the high voltage cables such that there is no cable movement in the connecting zones.
- Do not route the cable over sharp edges (bending radius <5 mm).
- A minimum bending radius of 10 times the external diameter must be maintained when routing the high voltage cable.
- The high voltage cables must not be attached with metal clips.
- Keep a minimum spacing of 50 mm between low voltage and high voltage cables; if this cannot be done, shield the low voltage cable.
- If the high voltage cables are led through bores in conductive, grounded materials, the minimum bore diameter D is calculated as follows from the wall thickness of the material:  
Bore hole diameter D (mm) =  $60 \text{ mm}^2 / \text{wall thickness (mm)}$   
E.g. wall thickness 2 mm:  $D = 60 \text{ mm}^2 / 2 \text{ mm} = 30 \text{ mm}$   
Allow the biggest possible radius for the edges of the bore hole. Use an insulating grommet to centre the cable.
- If ungrounded and conductive objects are placed near ( $\leq 2 \text{ m}$ ) the high voltage cable, influenced charges and sparking must be expected. Proper ground connection is therefore important.

### 3.6 Connecting the high voltage cable to the generators KNH18, KNH34 / KNH35, KNH64 / KNH65, HSG61, to the distributor box KNHV3 / KNHV6 and to the charging bar R131A

The connection of the high voltage cable of the charging bar with max. 25 kV, max. 30 kV and max. 60 kV to the KNH18, KNH34 / KNH35, HSG61, KNH64 / KNH65 high voltage generators is described in the operating instructions of the respective generators.



#### Warning!

Electric shock hazard!

Work may be carried out only if:

- the supply voltage to the generator has been disconnected,
- the machine is at a standstill because the bars pick up charges if the material web is running.

#### Method:

Connect the bars via the prefabricated high voltage cable. Push the high voltage cables up to the stop into the socket connection. Finally, secure the adapter inside the socket with the clip provided (see Fig. 8).

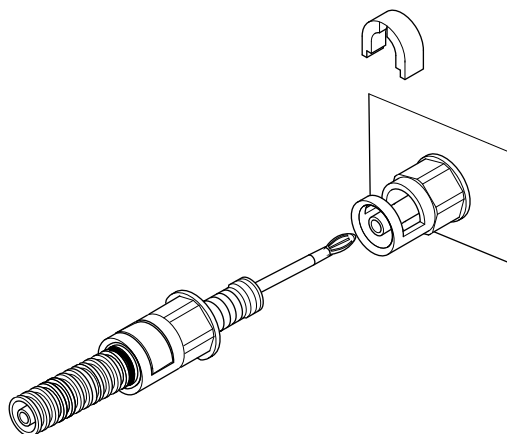


Fig. 8:  
Connecting the  
high voltage cable

**Note:** The clip must be fully inserted.

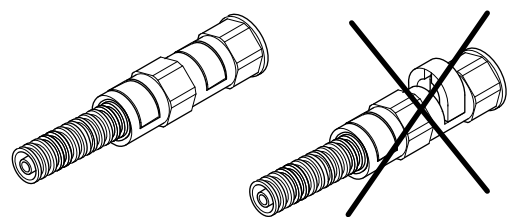


Fig. 9:  
Inserting the clip

**correct**

**incorrect**



#### Caution!

The high voltage cable must be pushed up to the stop (90 mm for KNH18, KNH34 / KNH35, HSG61 and 120 mm for KNH64 / KNH65) into the cable inlet! The connecting area of the high voltage cable must be kept clean!

### 3.7 Connecting the high voltage cable of the charging bar to the high voltage generator PC\_\_ and the distributor PCV / PCV6



#### Warning!

Electric shock hazard!

Work may be carried out only if:

- the supply voltage to the generator has been disconnected,
- the machine is at a standstill because the bars pick up charges if the material web is running.

#### Method:

Connect the bars via the prefabricated high voltage cable. Push the high voltage cables up to the stop into the socket connection. Finally, the crew connection is tightened.

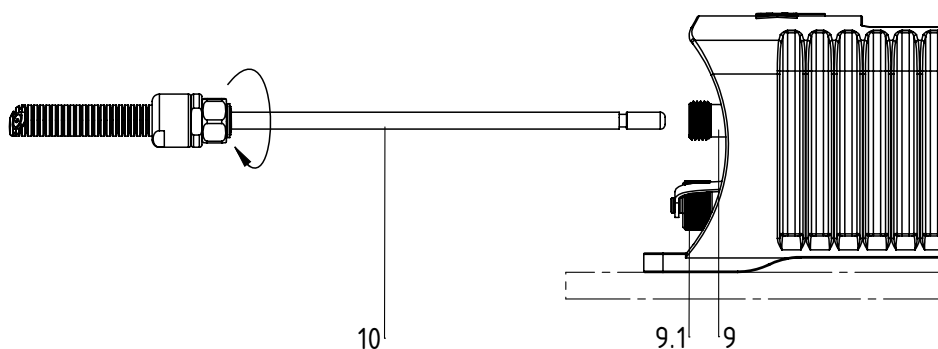
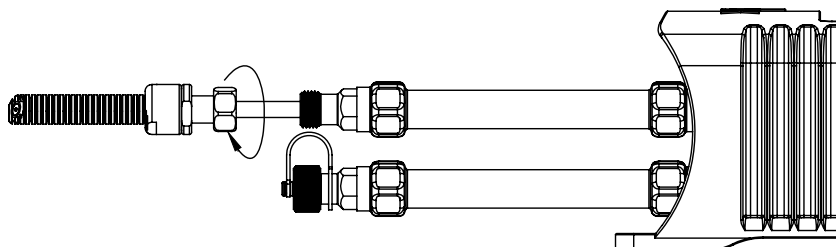


Fig. 10:  
Connecting the  
high voltage cable

9 / 9.1 High voltage outputs                      10 High voltage cable  
9.1 High voltage output shown with sealing cap

Z-116035cy\_4

Fig. 11:  
Connecting the  
high voltage cable  
with 60 kV



9.1 High voltage cable connections with 60 kV

Z-116035dy\_7

#### Note:

The screw connection must be fastened with a torque of 3 Nm.



#### Caution!

The high voltage cable must be pushed up to the stop (150 mm) into the cable inlet! The connecting area of the high voltage cable must be kept clean!

### 3.8 Disconnecting the high voltage cable



#### **Warning!**

Electric shock hazard!

Work may be carried out only if:

- the supply voltage to the generator has been disconnected,
- the machine is at a standstill because the bars pick up charges if the material web is running.

Take off the clip at the KNH\_ \_\_, HSG61 generators, the KNHV\_ distributor boxes and/or the R131 bar, using a 3 mm screw driver. Then pull out the cable.

Disconnect the union nut (SW18) at the PC\_ \_\_ generators and the distributors PCV\_. Then pull out the cable.

## 4. Operation



### 4.1 Operating voltage for the xxR130A / R131A / R130A3L / EXR130 charging bars

xxR130A, R131A, R130A3L charging bars:  
10...30 kV DC

EXR130 charging bars:  
max. -30 kV DC / +20 kV DC

Make sure that the correct distance between the charging bar and the material surface is maintained. The distance at an operating voltage of 10 kV is 8...12 mm, and 27...40 mm at 30 kV. The working range is shown in Fig. 12.

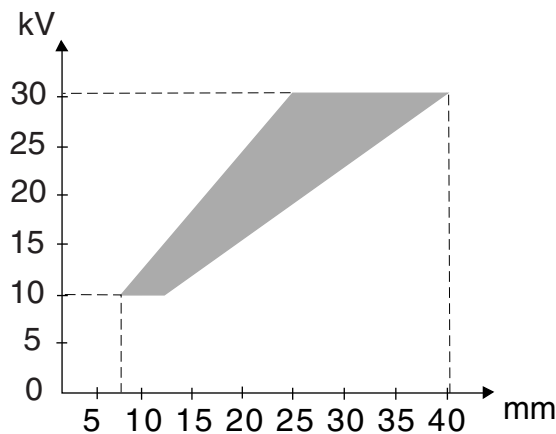
### 4.2 Operating modes

The charging bars are usually operated with constant voltage, i.e. the high voltage generated by the generator is non-adjustable. This operating mode is recommended for all applications in which the material to be charged has a high intrinsic resistance and where no creepage currents caused by pollution is expected.



Typically, this results in a current of up to 1 mA per meter of active bar length.

Fig. 12:  
Working range of  
the charging bar  
as factor of voltage  
and distance



*Example:*  
The active bar length is  
515 mm.  
  
*Current:*  
 $1 \text{ mA/metre} \times 0.515 \text{ metre} =$   
0.515 mA

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If the charging bar is used in applications where strong pollution must be expected, the operating mode Current Constant ought to be selected on the generator. This will prevent energy being drawn off in an uncontrolled manner through creepage currents and damage to charging bars and installation material.



The minimum operating current for any stable-current working point must be >0.5 mA.

If process-related operating currents of more than 1 mA per meter of active bar length are required, the bar must be protected against pollution or cleaned regularly. High working currents lead to increased wear of the emission points and disproportionate self-heating of the bar ( $T_{\text{max, permissible}} = 80 \text{ }^\circ\text{C}$ ). During installation, sufficient heat dissipation must be ensured and cooling provided if necessary.

#### 4.3 Startup

Once all the connections have been correctly made, the system is operational and the supply voltage can be switched on at the generator.

#### 4.4 Function control

Use the Eltex Volt Stick or a glow-lamp voltage tester to check the proper function of the emission tips. Quote Article No. 109136 when ordering the Volt Stick from Eltex.

## 5. Maintenance



### Warning!

Electric shock hazard!

- Do not carry out any maintenance or repair work without first switching off the high voltage generator and disconnecting the supply voltage.
- The bars passively absorb energy from the moving substrate web. The high voltage cable must be plugged in or grounded to the power supply. If the high voltage cable is disconnected, the plug is live (high voltage) and applies with full power on the plug; this may cause a spark discharge and may lead to a risk of injury. Disconnected high voltage plugs are not permitted or have to be grounded.
- The machine which has the units fitted must not be in operation.
- Maintenance work must be carried out by qualified electricians only.

To ensure the proper function of the charging bars, clean the bars regularly depending on pollution using compressed air free of oil and water (max.  $6 \times 10^5$  Pa, commercial compressed air pistol) and a brush with soft plastic bristles (see chapter 9 "Spare parts and accessories", page 29).

Clean grease, ink, glue, paper dust, etc. off the discharging bar using a suitable solvent (e.g. cleaning gasoline). Do not soak the bars and the high voltage cable in solvent!

In order to obtain the required insulation, insulating fixing material must be cleaned regularly.



### Warning!

Risk of deflagration!

Wait until the solvent has evaporated before restarting the generator.



### Caution!

Do not damage the emission tips of the charging bars.

No continuous sparking (electric arc) must be visible on the bar tips.

### Inspection of the protective resistors - contact protection

The function and the appearance of the protective resistors must be inspected at regular intervals. The inspection intervals are specified in the accident prevention regulations, as amended (e.g. in Germany DGUV V3).

The function of the series resistors must be checked using a suitable measuring device. The test voltage must be 1,000V. The measured resistance between the high-voltage connection and the individual emission tip must not fall below 320 MOhm and not exceed 480 MOhm.

## 6. Troubleshooting



### Warning!

Electric shock hazard!

- Do not carry out any maintenance or repair work without first switching off the high voltage generator and disconnecting the supply voltage.
- The machine which has the units fitted must not be in operation.
- Maintenance work must be carried out by qualified electricians only.

### Malfunction: Decrease in efficiency

Cause	Remedy
Dirty charging bar	Clean the bars using compressed air free of oil and water and a brush with soft plastic bristles. Use a suitable solvent to remove dirt or grease: see Chapter 5 "Maintenance". No continuous sparking (electric arc) must be visible on the bar tips. <b>Caution!</b> Do not immerse the charging bar in solvent.
Defective charging bar	Check the charging bar for any defects which may be caused by creepage currents. Replace the charging bar and install it to make sure that creepage currents can not develop. See Chapter 3 "Installation and assembly".
Worn charging bar	Depending on application, the emission tips are subject to more or less wear and tear. If the tips have burnt down to a distance of 1 mm from the encapsulating compound, replace the charging bar.



## 7. Technical specifications

### xxR130A / R130A3L / R131A

as shown on  
appliance  
marking:



Bar element	glass-fibre-reinforced synthetic GRP
Encapsulating compound	PU
Emission tips	special alloy
Ambient operating temperature	0...+60 °C (+32...+140 °F)
Ambient humidity	max. 60 % relative humidity non-dewing
Operating voltage	max. 30 kV DC (xxR130A3 / R131A3 / R130A3L) max. 60 kV DC (R130A6) depending on the isolation
Operating current	typically 1 mA per meter of active bar length
High voltage power supply	via Eltex high voltage generators series KNH18, KNH34 / KNH35, KNH64 /KNH65, HSG61 and PC_ _
High voltage cable	prefabricated high voltage cable in plastic tube with plug for the high voltage generator, length 1...35 m (standard length 5 m)
Dimensions	see Fig. 13 and Fig. 14
Bar total length	xxR130A / R131A: max. 3,985 mm R130A3L: max. 2,086 mm
Weight	2,1 kg/m
UL approval	File No. E227156

### Air connection and air consumption R130A3L

Air connection	NW12 mm, G 3/8" on one or both sides, depending on active length
Compressed air	max. $2 \times 10^5$ Pa oil-, water- and dust free
Air pressure [ $10^5$ Pa]	0.5    1.0    1.5
Air consumption per active bar length [ $\text{Nm}^3/\text{h}$ ]	29.6    54.6    76.4

## EXR130 / EXR130US

Bar element	glass-fibre-reinforced synthetic GRP
Encapsulating compound	PU
Emission tips	special alloy / epoxy
Ambient operating temperature	0...+40 °C (+32...+104 °F)
Ambient humidity	max. 60 % relative humidity non-dewing
Operating voltage	max. -30 kV DC / +20 kV DC
Operating current	typically 1 mA per meter of active bar length
High voltage power supply	via Eltex high voltage generators series HSG61 and PC__
High voltage cable	prefabricated high voltage cable in plastic tube with plug for the high voltage generator, length 1...35 m (standard length 5 m)
Dimensions	see Fig. 13 and Fig. 16
Bar total length	EXR130: max. 3,985 mm EXR130US: max. 2,785 mm
Weight	2,1 kg/m
EX Approval (EXR130)	BAS97ATEX2218X ⊕ II 2G IIB T6 ⊕ II 3D IIIB T100°C provided that the tips of the bar point downwards and that the flash power of the dust is >0.4 mJ.
UL Approval (EXR130US)	Class I, Group D; Class II, Group G; Class III; File No. E81984
When used with ESA Electrostatic Printing Assist:	
<ul style="list-style-type: none"> <li>• The maximum spacing between bar tips and impression roller must be 15 mm.</li> <li>• The protective circuit for charging must be interconnected to the web break, the impression roller switch and the web speed monitor.</li> <li>• The design of the protective circuit must comply with the requirements of 2014/34/EU Annex II, Section 1.5.</li> </ul>	

as shown on  
appliance  
marking:



## 8. Dimensions

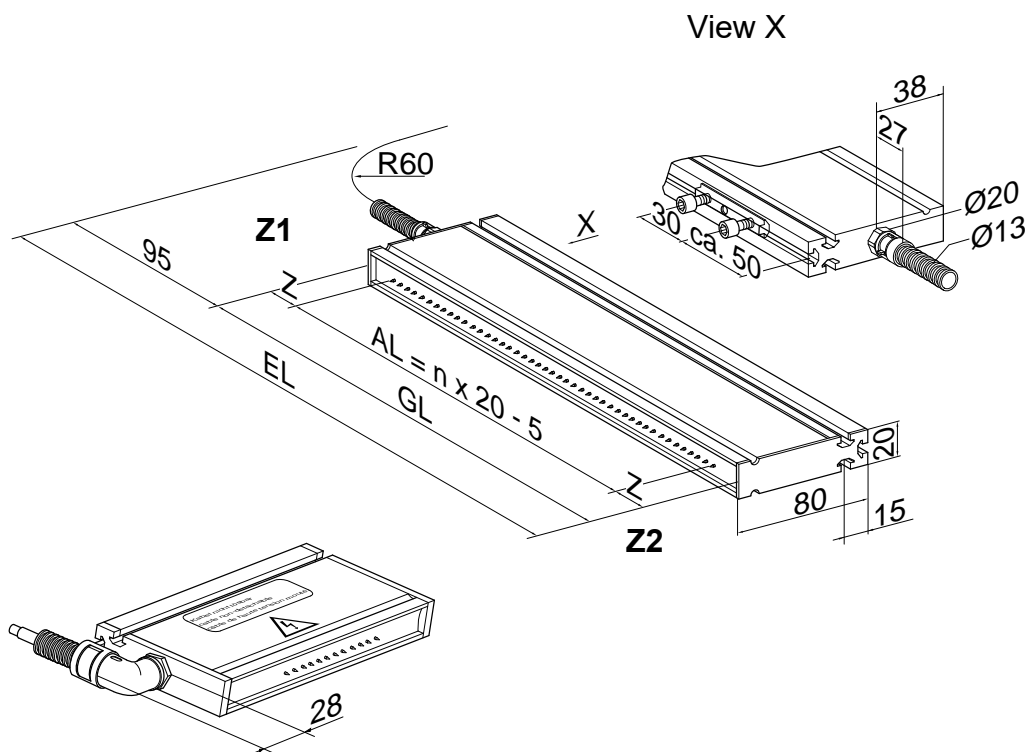


Fig. 13:  
Dimensions of the  
R130A / R131A /  
EXR130  
charging bar

Z00074y

Examples for calculating the active length

$n$  = any number between 1 and 196, e.g.  $n = 150$

The active length is therefore  $AL = 150 \times 20 - 5 = 2995$  mm

AL = Active length

GL = Total length

EL = Installation length

$n$  = Whole number, depending on active length

Z = for operating voltage below 30 kV:

xxR130A3 / R131A3: / EXR130A3: Z1 = Z2 = 35 mm

EXR130US: Z1 = 50 mm, Z2 = 35 mm

R130A3L: Z1 = 55 mm, Z2 = 36 mm

for operating voltage below 60 kV:

R130A6: Z1 = Z2 = 60 mm

R131A6: Z1 = 80 mm; Z2 = 60 mm

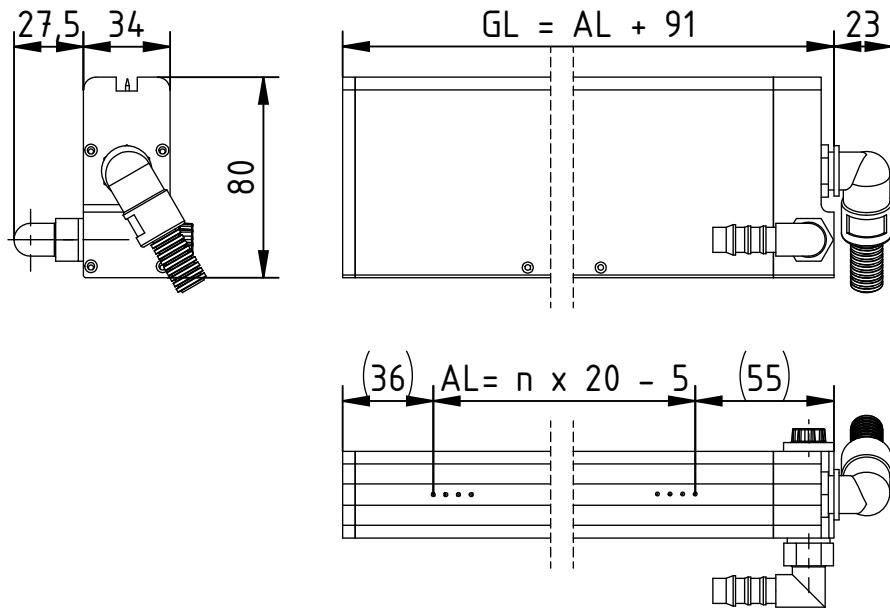


Fig. 14:  
Dimensions of the  
R130A3L  
charging bar

Z-111886dy\_1

## 9. Spare parts and accessories

Article	Article number
Sliding nut steel	MMU00034
Sliding nut metal with stud 20 mm and self-locking nuts	104187
Sliding nut metal with stud 30 mm and self-locking nuts	104186
Sliding nut synthetic	100876
Bolt synthetic M5x25	KSR00015
Bar bracket with perforated plates	HA02/_
Bar bracket with clamp piece	HA01/_
Bar bracket with aluminium profile section	HA06/_
GRP round rod Ø 20 mm	HAGFK/_
Eltex installation kit (insulators, GRP base plate, sliding nuts, bolts)	BMO08613
Insulators	MCH02147
Mounting material for bars: sliding nut with screws and washers	105826
Flexible corrugated polyamide tubing	MCH02184
Plug R Kit for cutting the high voltage cable to size with flexible tube for 30 kV charging bars, for connection to the generators KNH__	104165
Plug Q Kit for cutting the high voltage cable to size with flexible tube for 30 kV charging bars, bar side (for R131A only)	104170
Plug U Kit for cutting the high voltage cable to size with flexible tube for 60 kV charging bars, for connection to the generators KNH__	109501
Plug M Quick plug-in connection, generator side	102992
Plug Y Kit for cutting the high voltage cable to size with flexible tube for 30 kV charging bars for connection of the generator PC__ (external diameter of the cable min. 6.55 mm) resp. modification set for charging plug Y	117985

Article	Article number
Plug X Kit for cutting the high voltage cable to size with flexible tube for 60 kV charging bars for connection of the generator PC__ (external diameter of the cable min. 6.55 mm) resp. modification set for charging plug X	117986
High voltage cable with flexible tube from the generator PC_/ or distributor PCV/ to the charging bar (max. 30 kV), specify cable length	KA/YY_
High voltage distributor 30 kV (specify number of connections and cable length)	PCV/_
High voltage distributor 60 kV (specify number of connections and cable length)	PCV6/_
Coaxial crimping ratchet, hexagonal 5.41 mm	102952
Segmented plug	ELM08600
Arresting lock (U-clip) for screw connection	102475
Cleaning brush with handle	RBR22
Volt Stick	109136
Operating Instructions (specify language)	BA-xx-3020

Please specify the article number when ordering.

## 10. Decommissioning / Disposal

The disposal of the bar can be carried out by the methods of general waste disposal (electronic waste).

## A. ANNEX

### A.1 Quick plug-in connection for charging components for plug variants M (only in connection with the generators KNH18, KNH34, KNH35)



#### Warning!

Connect only to the generator side! Make sure that no high voltage applies at the end of the cable after disconnecting the plug!

Before connecting or disconnecting the plug, deactivate the supply voltage of the high voltage generator manually. If bars are mounted above fast-running material webs, the machine must be stopped to avoid passive charges being picked by the bars. Ignoring this safety notice may result in damage to machinery and personal injury!

#### Preparing the connection

The quick plug-in connection consists of two sections: the actual plug (1) and the coupling adapter (2). When delivered, the plug and the coupling adapter are connected. Separate the sections by pulling back the plug interlock (3).

To prepare the connection, push the coupling adapter into the high voltage connection (4) of the generator or distributor and secure with the clip (5).

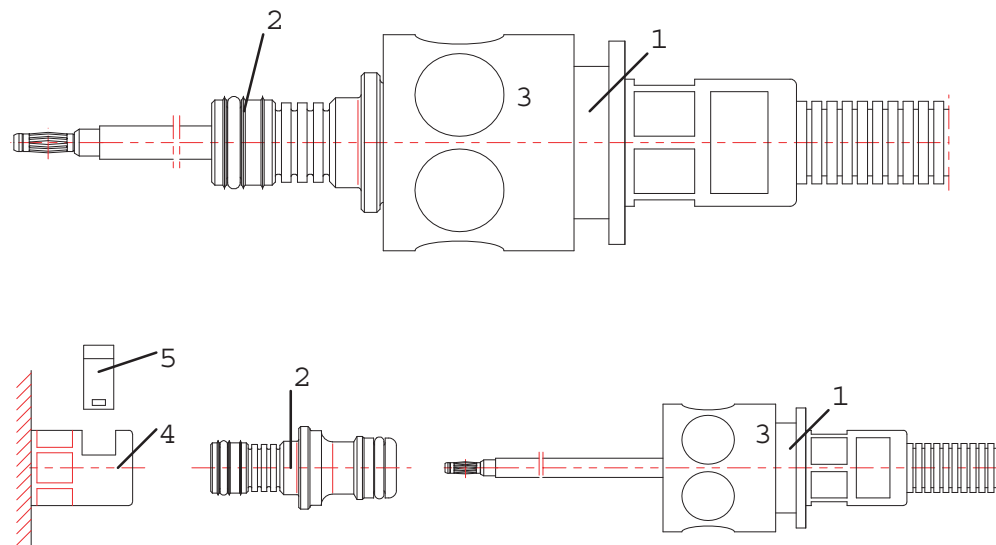


Fig. 15:  
Quick plug-in connection for charging components

#### Connecting:

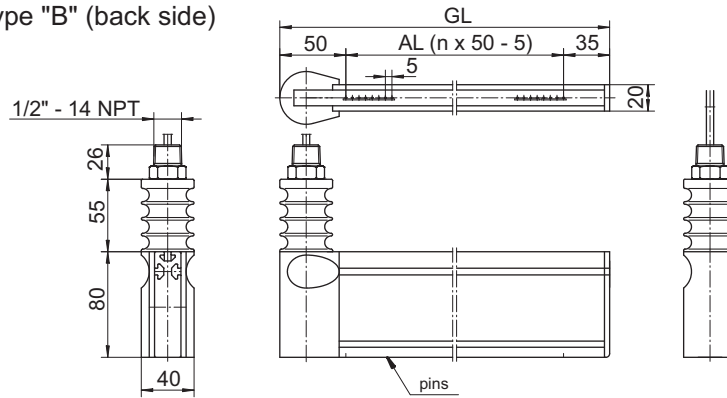
Insert the plug into the prepared high voltage connection until the lock engages audibly.

#### Disconnecting:

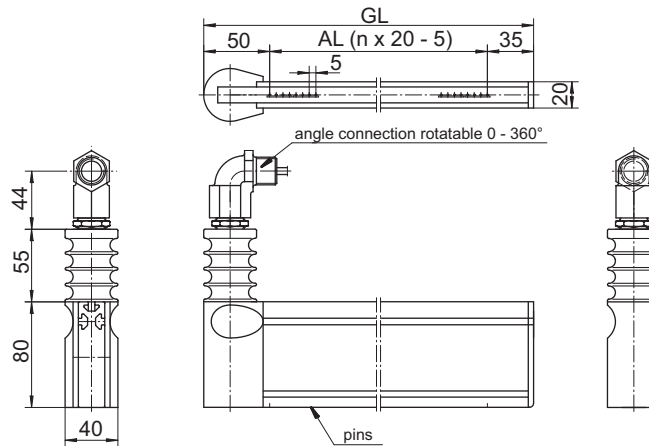
Pull back the interlock and pull out the plug.

## A.2 Installation NEC

Type "B" (back side)

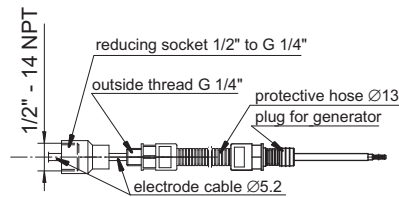


Type "W" (back side with angle)



AL = active length  
GL = total length

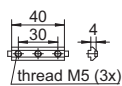
Delivery condition: reducing socket and protective hose connected to the thread 1/2" - 14 NPT of the bar (all types).



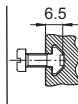
Protective hose connection dependent on the electrode bracket and the US or Canadian regulations by installations!

The installation must be in accordance with the National Electrical Code ANSI/NFPA 70, Article 504 and ANSI/ISA RP12.6. In Canada, the installation must be in accordance with Canadian Electrical Code, CEC Part 1.

**Attention: Observe separate mounting instructions!**



Sliding nuts  
Item no. 100876  
1m GL and below = 2 off  
2m GL and below = 3 off  
3m GL and below = 4 off  
4m GL and below = 5 off



Plastic bolts  
e.g. Item no. KSR 00015  
Max. bolt depth 6.5 mm  
Torque 0.4 Nm; Secure  
bolts against working  
loose (e.g. Loctite 243)

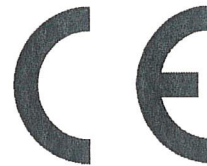
**Fig 16:**  
**EXR130US**  
**charging bar**



# EU-Declaration of Conformity

CE-3020-en-2411

Eltex-Elektrostatik-Gesellschaft mbH  
Blauenstraße 67 - 69  
D-79576 Weil am Rhein



declares in its sole responsibility that the product

**Charging Bar xxR130xx / xxR131Axx // xxR130A3L** (according to Eltex reference code)

complies with the following directives and standards.

Relevant EU-Directive:

**2014/35/EU**

Low Voltage Directive

Harmonized standard applied:

EN 60204-1:2018

Safety of machinery – Electrical equipment of machines –  
General requirements

Relevant EU-Directive:

**2014/30/EU**

EMC Directive

Harmonized standards applied:

EN IEC 61000-6-2:2019

Electromagnetic compatibility (EMC)  
Generic standards – Immunity for industrial environments

EN 55011:2016 + A1:2017  
+ A11:2020 + A2: 2021

Industrial scientific and medical equipment –  
Radio-frequency disturbance characteristics – limits and methods  
of measurement

Relevant EU-Directives:

**2011/65/EU**

RoHS Directive

**(EU) 2015/863**

RoHS Delegated Directive

in the version effective at the time of delivery.

Eltex-Elektrostatik-Gesellschaft mbH keep the following documents for inspection:

- proper operating instructions
- plans
- other technical documentation

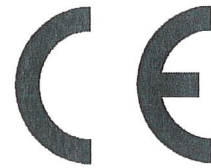
Weil am Rhein, 05.11.2024  
Place/Date

  
Lukas Hahne, Managing Director

# EU-Declaration of Conformity


CE-3020-en-2411

Eltex-Elektrostatik-Gesellschaft mbH  
Blauenstraße 67 - 69  
D-79576 Weil am Rhein



declares in its sole responsibility that the product

## Charging Bar EXR130 (according to Eltex reference code)

Identification:  II 2G IIB T6; II 3D IIIB T100°C  
Certification-no.: BAS 97 ATEX 2218 X  
Notified body: SGS Fimko Oy, Takomotie 8, FI-00380 Helsinki, NB No. 0598

complies with the following directives and standards.

Relevant EU-Directive:

**2014/34/EU**

Directive: Equipment or Protective System intended for use in potentially explosive Atmospheres

Relevant EU-Directive:

**2014/35/EU**

Low Voltage Directive

Harmonized standard applied:

EN 60204-1:2018

Safety of machinery – Electrical equipment of machines – General requirements

Relevant EU-Directive:

**2014/30/EU**

EMC Directive

Harmonized standards applied:

EN IEC 61000-6-2:2019

Electromagnetic compatibility (EMC)  
Generic standards – Immunity for industrial environments

EN 55011:2016 + A1:2017  
+ A11:2020 + A2:2021

Industrial scientific and medical equipment – Radio-frequency disturbance characteristics – limits and methods of measurement

Relevant EU-Directives:

**2011/65/EU**

RoHS Directive

**(EU) 2015/863**

RoHS Delegated Directive

in the version effective at the time of delivery.

Eltex-Elektrostatik-Gesellschaft mbH keep the following documents for inspection:

- proper operating instructions
- plans
- other technical documentation

Weil am Rhein, 05.11.2024  
Place/Date



Lukas Hahne, Managing Director

# UKCA Declaration of Conformity

CA-3020-en-2402

Eltex-Elektrostatik-Gesellschaft mbH  
Blauenstraße 67 - 69  
D-79576 Weil am Rhein



declares in its sole responsibility that the product

**Charging Bar Type xxR130xx / xxR131Axx / R130A3L** (according to Eltex reference code)

complies with the following directives and standards.

Applicable Regulation:

**S.I. 2016 No. 1101**

Electrical Equipment (Safety) Regulations

Used Designated Standard:

BS EN 60204-1:2018

Applicable Regulation:

**S.I. 2016 No. 1091**

Electromagnetic Compatibility Regulations

Used Designated Standard:

BS EN IEC 61000-6-2:2019

BS EN 55011:2016+A2:2021

Applicable Regulation:

**S.I. 2012 No. 3032**

RoHS Regulations

in the version effective at the time of delivery.

Eltex-Elektrostatik-Gesellschaft mbH keep the following documents for inspection:

- proper operating instructions
- plans
- other technical documentation

Weil am Rhein, 15.02.2024  
Place/Date



Lukas Hahne, Managing Director

# Eltex offices and agencies

The addresses of all  
Eltex agencies can be  
found on our website at  
[www.eltex.de](http://www.eltex.de)



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