

## **Air gates**



---

### Types:

Air gate:	LS PLE, LS PLV,
Standard air gate:	LS RN, LS RNE, LS RA, LS RAE, LS VS, LS VSE, LS VSA, LS VSAE,
Standard medium pressure air gate:	LM RN, LM RNE, LM RA, LM RAE, LM VS, LM VSE, LM VSA, LM VSAE
Compact air gate:	KL RN, KL RNE, KL RA, KL RAE, KL VS, KL VSE, KL VSA, KL VSAE,
Compact medium pressure air gate:	KM RN, KM RNE, KM RA, KM RAE, KM VS, KM VSE, KM VSA, KM VSAE



*Keep in a safe place for future reference!*

## Table of contents

<b>1</b>	<b>Notes on operating instructions.....</b>	<b>4</b>
1.1	Pictorial markings used.....	4
<b>2</b>	<b>Safety.....</b>	<b>5</b>
2.1	Intended use.....	6
2.2	Danger sources.....	6
2.3	Operator qualifications.....	6
<b>3</b>	<b>Installation.....</b>	<b>7</b>
3.1	Important installation instructions.....	7
3.2	Ionizing units.....	8
<b>4</b>	<b>Application.....</b>	<b>10</b>
4.1	Putting into operation.....	10
<b>5</b>	<b>Remedy of defects.....</b>	<b>11</b>
5.1	Troubleshooting.....	11
<b>6</b>	<b>Maintenance and repairs.....</b>	<b>12</b>
6.1	Cleaning of ionizing units.....	12
6.1.1	Dry cleaning.....	13
6.1.2	Moist cleaning.....	13
6.2	Accessories.....	14
<b>7</b>	<b>Technical data.....</b>	<b>15</b>
7.1	Supply voltage.....	15
7.2	Compressed air.....	15
7.3	Ambient conditions.....	15
7.4	Dimensions.....	16
<b>8</b>	<b>Disposal.....</b>	<b>17</b>

# 1 Notes on operating instructions

In these operating instructions, the air gate is also referred to as "unit" or "ionizing unit".

## 1.1 Pictorial markings used



In these operating instructions



### **WARNING!**

Not for use by persons with pacemaker!



### **WARNING!**

High voltage!  
Danger of fatal accidents!



### **WARNING!**

Switch off the power pack before connecting  
or disconnecting the coaxial connectors!



### **CAUTION!**

**Important instructions!**



### **ATTENTION!**

**Important instructions!**



### **INFORMATION!**



On the unit



### **WARNING!**

High voltage!  
Danger of fatal accidents!

## 2

## Safety

---

**WARNING!**

**Persons wearing heart pacemakers must maintain a safety distance of more than 50 cm from the ionizing unit!**

The ionizing unit may interfere with the operation of heart pacemakers!  
For operators with heart pacemaker's special instructions should be requested from the manufacturer!

---

**CAUTION!**

**The units must be protected from humidity and moisture!**

Humidity and moisture may lead to spark-overs and short circuits making ionization impossible.  
Clean and dry the ionizing units.

**CAUTION!**

**The operator of the units must take care to ensure sufficient ventilation during operation!**

During operation of the units, small quantities of ozone will form.  
In order to ensure adherence to maximum permitted ozone concentrations at the workplace, make sure that the workplace is ventilated sufficiently during operation of the units.

The unit is operationally safe, provided that it is operated in accordance with its intended use.

Operating errors, misuse or defects will result in dangers:

- For life and limb of the operator.
- For the unit and other assets.

Also note Chapter 3.1 (refer to page 7 "Important installation notes").

## 2.1 Intended use



### ATTENTION!

**Do not install or use the units in areas subject to explosion hazards!**

Units connected to a matching HAUG power pack generate positive and negative ions. The units are intended to eliminate electrostatic charges and contamination (e.g. dust or similar) from paper, films and foils, textiles, glass, plastics etc., by assisting the air stream.

HAUG power packs only must be used for supplying the high voltage to the units.

## 2.2 Danger sources



### WARNING!

High voltage!  
Danger of fatal accidents!



### WARNING!

Switch off the power pack before connecting or disconnecting the coaxial connectors!



### CAUTION!

**Never use air-assisted ionizers without pressure reducers and compressed air filters** (refer to page 14 "Accessories")!

Never exceed the permitted maximum pressure (refer to page 15 "Technical data")!

Secure air hoses with suitable clamps!

Defective high-voltage plugs and cables may lead to danger of electric shocks. Shut down the unit immediately in case of visible damage and suspected electrical defects.

## 2.3 Operator qualifications

The unit may be installed and put into operation by trained electricians only and by authorized persons informed about the potential dangers. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice. The above mentioned persons must have been instructed in the installation and handling of compressed air appliances and the resulting dangers.

### 3 Installation

The unit may be installed by trained electricians only and by authorized persons informed about the potential dangers. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice. The above mentioned persons must have been instructed in the installation and handling of compressed air appliances and the resulting dangers.

1. Install unit (refer to page 8, Section 3.2).
2. Connect to air supply system.
3. Connect the unit to the high-voltage socket of the power pack.

#### 3.1 Important installation instructions



**WARNING!**

High voltage!  
Danger of fatal accidents!



**WARNING!**

Switch off the power pack before connecting or disconnecting the coaxial connectors!



**CAUTION!**

**Never use air-assisted ionizers without pressure reducers and compressed air filters** (refer to page 14 "Accessories")!

Never exceed the permitted maximum pressure (refer to page 15 "Technical data")!

Secure air hoses with suitable clamps!



**CAUTION!**

**Do not kink or bend the high-voltage cable ( $r < 50$  mm)!**

Kinking and bending ( $r < 50$  mm) may result in damage to the insulation of the high-voltage cable.

Defective insulation of the high-voltage cable may result in spark-over and failure of the ionizing unit.



**ATTENTION!**

**The standard/compact medium pressure air gate is supplied with compressed air by a side channel compressor!**

No compressor is therefore required.

**ATTENTION!**

**Do not connect the units to the power pack until installation is completed.**

Insert the ionizing unit's high-voltage plug in the high-voltage socket of the power pack and press the high-voltage cable until it reaches the stop. Screw the outlet nut onto the high-voltage socket and fasten securely.

The operation of the unit is not affected by the position in which it is installed.

**3.2****Ionizing units**

The paragraph numbers refer to the illustrations (serving as examples) included at the end of these operating instructions.

**1****Air gate:**

The units are not effective over their full length. The ratio of the effective length (l2) to the total length (l1) is indicated in the sketch.

Type LS PLE  $l_2 = l_1 - 50 \text{ mm}$

Type LS PLV  $l_2 = l_1 - 50 \text{ mm}$

**2****Standard air gate:**

The units are not effective over their full length. The ratio of the effective length (l2) to the total length (l1) is indicated in the sketch.

Type LS R...  $l_2 = l_1 - 100 \text{ mm}$

Type LS VS...  $l_2 = l_1 - 120 \text{ mm}$

**3****Standard medium pressure air gate:**

The units are not effective over their full length. The ratio of the effective length (l2) to the total length (l1) is indicated in the sketch.

Type LM RN...  $l_2 = l_1 - 100 \text{ mm}$

Type LM VS...  $l_2 = l_1 - 120 \text{ mm}$

**4****Kompakt Luftschleuse:**

The units are not effective over their full length. The ratio of the effective length (l2) to the total length (l1) is indicated in the sketch.

Type KL R...  $l_2 = l_1 - 100 \text{ mm}$

Type KL VS...  $l_2 = l_1 - 120 \text{ mm}$

**5****Compact medium pressure air gate:**

The units are not effective over their full length. The ratio of the effective length (l2) to the total length (l1) is indicated in the sketch.

Type KM R...  $l_2 = l_1 - 100 \text{ mm}$

Type KM VS...  $l_2 = l_1 - 120 \text{ mm}$



- 6** Most favourable distance ionizing unit - material approx. 20 - 300 mm, min. 10 mm, max. 500 mm.
- 7** Distance B to grounded machine part always greater than distance A.
- 8** Position ionizer in such a way that there is no earthed machine parts behind the material.
- 9** In case of materials with a particularly high dielectric resistance two units must be installed. Install the units above and below the material offset by 20 mm.
- 10** To improve the surface cleaning result, tilt the unit approx. 10 – 30° against the direction of travel.
- 11** Do not kink the high-voltage cable during routing.  
When routing around bends, the bending radius must not be smaller than 50 mm.

## 4 Application

The unit may be put into operation by trained electricians only or by persons instructed in the potential dangers. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice. The above mentioned persons must have been instructed in the installation and handling of compressed air appliances and the resulting dangers.



### **WARNING!**

**Persons wearing heart pacemakers must maintain a safety distance of more than 50 cm from the ionizing unit!**

The ionizing unit may interfere with the operation of heart pacemakers! For operators with heart pacemaker's special instructions should be requested from the manufacturer!



### **CAUTION!**

**The units must be protected from humidity and moisture!**

Humidity and moisture may result in spark-overs and short circuits. No ionization is possible.  
Clean and dry the ionizing units.



### **CAUTION!**

**The operator of the units must take care to ensure sufficient ventilation during operation!**

During operation of the units, small quantities of ozone will form. In order to ensure adherence to maximum permitted ozone concentrations at the workplace, make sure that the workplace is ventilated sufficiently during operation of the units.

The ionizing units are used together with compressed air and HAUG power packs to remove electrostatic charges and contamination (such as dust or similar) from paper, films and foils, textiles, glass, plastics etc.

### 4.1 Putting into operation

#### **Preconditions:**

The power pack, the ionizing unit and the compressed air supply must be installed and connected correctly.

1. Switch on compressed air supply.
2. Switch on power pack.

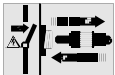
## 5 Remedy of defects

Any remedy of defects must be carried out by trained electricians only. The above mentioned person must have read the operating instructions and must follow the instructions, notes and safety advice. This person must have received instruction in the installation and handling of compressed air appliances and the resulting dangers.



**WARNING!**

High voltage!  
Danger of fatal accidents!



**WARNING!**

Switch off the power pack before connecting or disconnecting the coaxial connectors!

In case of defects regarding the power pack and the ionizing unit, please check for correct installation and implement the troubleshooting.

### 5.1 Troubleshooting

Faults	Measures
No ionization	Check power pack
	Check connection
	Clean ionizing unit
Sparks-over	Check ionizing unit for damages. If damaged, immediately shut down and secure against restarting.

If this does not remedy the defect, please return the unit and the power pack to HAUG GmbH & Co. KG (see address on back page) for examination.

## 6 Maintenance and repairs

---



**WARNING!**  
High voltage!  
Danger of fatal accidents!



**WARNING!**  
Switch off the power pack before connecting  
or disconnecting the coaxial connectors!

---

This unit does not include any parts which can be repaired by the operator.

Should the unit prove defective or if a defect is suspected, switch off unit immediately and secure against subsequent reuse.

12

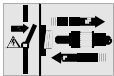
Clean at intervals of no more than 14 days using the special cleaning brush RB1 and special cleaning fluid SRM1 or the special cleaning system RS1 (refer to page 14 "Accessories").

### 6.1 Cleaning of ionizing units

---



**WARNING!**  
High voltage!  
Danger of fatal accidents!



**WARNING!**  
Switch off the power pack before connecting  
or disconnecting the coaxial connectors!

---



**ATTENTION!**  
For particular applications (e. g. food, pharmaceuticals and cosmetics) where the special cleaning agent SRM1 must not be used, please confer with Haug GmbH & Co. KG first!



**ATTENTION!**  
High-voltage plugs and sockets must be protected from moisture!  
Never use a high-pressure cleaner on any account!

## 6.1.1

**Dry cleaning**

1. Before cleaning, disconnect the unit properly from its power supply.
2. Use special cleaning brush RB1 for cleaning.
3. Brush off the ionizing pins using the special cleaning brush RB1 and then blow off with clean compressed air (max. 6 bar).
4. Reconnect the unit properly to its power supply.

## 6.1.2

**Moist cleaning****ATTENTION!**

**Only clean the unit moist – never wet!**

**Do not use water to clean the unit!**

**Only use cleaning agents recommended by Haug GmbH & Co. KG!**

1. Before cleaning, disconnect the unit properly from its power supply.
2. Use special cleaning brush RB1 and special cleaning agent SRM1 or special cleaning system RS1 for cleaning.
3. Moisten the special cleaning brush RB1 with the special cleaning agent SRM1 and brush the ionizing pins. Then blow off the unit with clean compressed air (max. 6 bar) and allow to dry.
4. Before connecting the unit to the voltage supply, check the high-voltage connections and high-voltage plugs. The connections must be clean and dry.
5. Reconnect the unit properly to its power supply.

**INFORMATION!**

Round ionizing bars can be protected from heavy soiling by using the Haug Tape-Roller!

## 6.2 Accessories

Article	Order number
Special cleaning fluid SRM1	10.7220.000
Special cleaning brush RB1	10.7218.000
Special cleaning system RS1	10.7218.001
Circular brush for special cleaning system TBR	X – 6822
HAUG Tape-Roller	10.0008.000
<b>Air gate:</b>	
Compressed air service station ¾“	11.7210.001
Compressed-air hose (Air gate < 0.5 m)	X – 6607
Compressed-air hose (Air gate > 0.5 m)	X – 6616
<b>Standard air gate:</b>	
Compressed air service station ¾“	11.7210.001
Compressed-air hose (Air gate < 1.5 m)	X – 6616
Compressed-air hose (Air gate > 1.5 m)	X – 6617
<b>Standard medium pressure air gate:</b>	
Side-channel compressor	on request
Air hose	on request
Holder	on request
<b>Compact air gate:</b>	
Compressed air service station ¾“	11.7210.001
Compressed-air hose (Air gate < 1.5 m)	X – 6616
Compressed-air hose (Air gate > 1.5 m)	X – 6617
<b>Compact medium pressure air gate:</b>	
Side-channel compressor	on request
Compressed-air hose	on request
Holder	on request

## 7 Technical data

### 7.1 Supply voltage

The ionizing units are provided with high voltage from HAUG power packs.

### 7.2 Compressed air

	<b>Max. Pressure</b>	<b>Air consumption per nozzle at 3 bar</b>	<b>Note</b>
Air gate	6 bar	35 NI/min	
Standard air gate	6 bar	39 NI/min	
Standard medium pressure air gate	-	-	Side-channel compressor
Compact air gate	6 bar	39 NI/min	
Compact medium pressure air gate	-	-	Side-channel compressor

The compressed air must be free of oil and aerosols.

### 7.3 Ambient conditions

<b>Ambient temperature:</b>	
Rated application range	+5 °C to +45 °C
Extreme range for storage and transport	-15 °C to +60 °C
<b>Humidity:</b>	
Rated application range	20 % to 65 % RH
Extreme range for storage and transport	0 % to 85 % RH

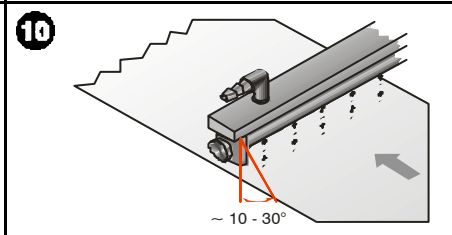
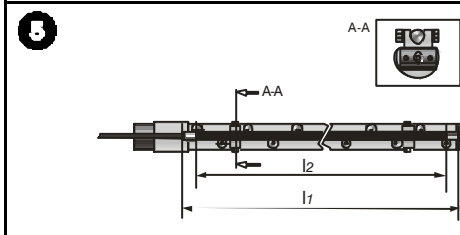
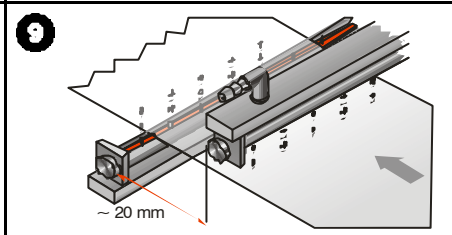
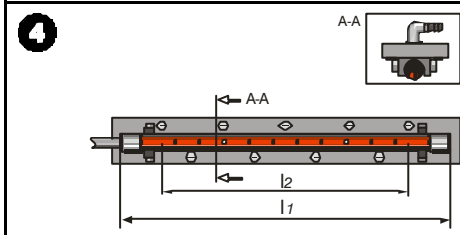
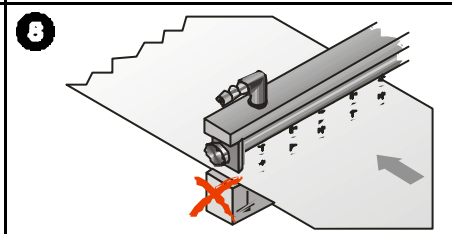
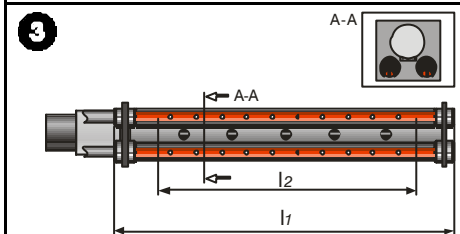
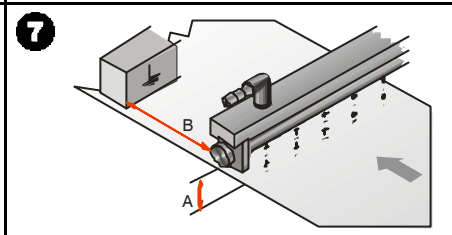
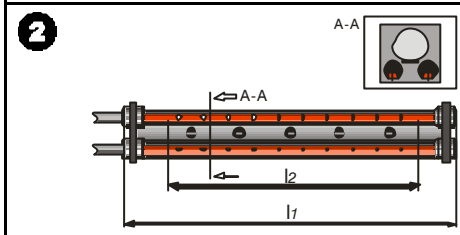
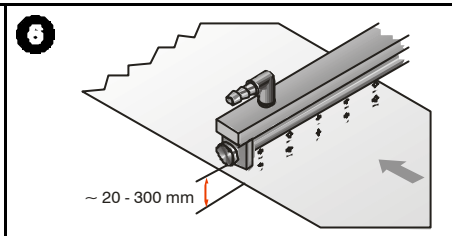
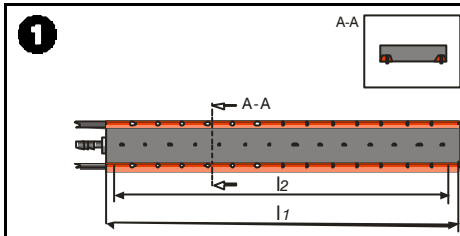
## 7.4 Dimensions

Type	Cross-section	Length
Air gate	approx. 18 x 50 mm	to 3 m
Standard air gate	approx. 80 x 80 mm	to 3 m
Standard medium pressure air gate	approx. 80 x 80 mm	to 3 m
Compact air gate	approx. 50 x 110 mm	to 3 m
Compact medium pressure air gate	approx. 50 x 70.5 mm	to 3 m
High tensions lead	-	Customer-specific
Compressed-air hose	-	Customer-specific



**8****Disposal**

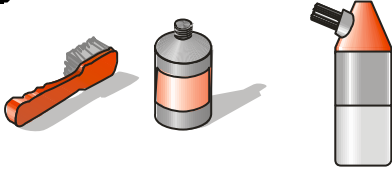
Observe and maintain national and regional waste disposal regulations for the disposal of the unit!



11



12



made by



## **HAUG GmbH & Co.KG**

Friedrich-List-Straße 18  
D-70771 Leinfelden-Echterdingen  
Telefon 07 11 / 94 98 - 0  
Telefax 07 11 / 94 98 - 298

**www.haug.de**  
E-Mail: [info@haug.de](mailto:info@haug.de)

## **HAUG Biel AG**

Postfach  
CH-2500 Biel/ Bienne 6  
Johann-Renfer-Strasse 60  
CH-2500 Biel/ Bienne 6  
Telefon 0 32 / 3 44 96 96  
Telefax 0 32 / 3 44 96 97

**www.haug.de**  
E-Mail: [info@haug-biel.ch](mailto:info@haug-biel.ch)