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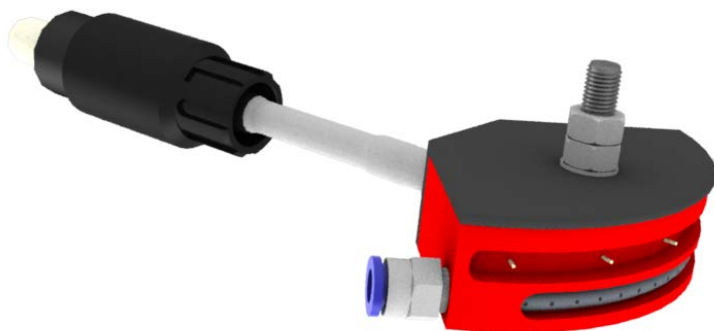


®

Operating instructions

Air-assisted ionizing unit DA TR

Ident number: 04.73XX.XXX



Air Line

Keep for future use!



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1 Operator instructions

Before installation and commissioning read these operating instruction in full. Always observe the safety instructions. These operating instruction is a part of the product; make sure you retain them for later use or subsequent owners.

The product is an air-assisted ionization unit and will be referred to in this Operating Instruction only as “ionizing unit”.

The ionizing unit is operationally safe when used as intended.

The term “high voltage” is abbreviated HV in these operating instructions (e.g. HV plug).

The illustrations in this document are a simplified representation of the product. They render only the technical facts and provide support for the text. Departures from the actual product may be noticeable. However, these deviations neither reduce the proper function nor mitigate the specifications of the product.

1.1 Symbols used in operating instructions



Always observe this safety instruction to avoid critical or fatal injuries.



Always observe this safety instruction to avoid slight injuries.



NOTICE

Always observe this safety instruction to avoid damage to property.

NOTE:

Important notes and additional information.



Never dispose of with household garbage.



Not for use by persons with pacemaker!



Ozone warning!
Device produces ozone!



Caution, danger due to electrical current!



Caution, danger spot warning!

1.2 Symbols on the ionizing unit



WARNING!
High voltage

2 Safety

Only persons authorised by the operating firm are permitted to proceed with tasks on the ionisation unit.

The installer must be an electrician and must be knowledgeable in the field of mechanical engineering. He must be an expert in handling and installing compressed air equipment and must wear personal protective equipment. The installer must read the operating manual in its entirety.

The operating and maintenance personnel must be instructed in the handling of compressed air equipment and the resulting dangers. Personnel must wear personal protective equipment and completely read the operating manual.

When working on the ionisation unit, switch off the voltage and compressed air supply and secure the unit to prevent unintentional restart. Depressurise the compressed air system.



Dangers due to compressed air equipment

Ruptured or broken compressed air hoses can move erratically and can injure persons or lead to consequential accidents. Compressed air can enter the bloodstream through the broken skin, resulting in an embolism that can lead to death.

- Always comply with the safety regulations provided by the operating company.
- Before proceeding with maintenance and/or installation tasks, ensure the entire system is de-pressurised.
- Never direct the jet of compressed air at people or yourself (for example, to blow dirt off clothes).
- Never run a compressed air hose across passageways (tripping hazard).
- Never use compressed air equipment without pressure reducer and compressed air filter.
- Never exceed the permissible operating pressure.
- Always use filtered ($< 20 \mu\text{m}$), dry and oil-free compressed air.
- Always use suitable hose clamps to secure compressed air hoses.
- Wearing personal protective equipment for compressed air-operated products is mandatory (e.g., safety goggles, ear protection, dust mask, etc.).



Interference with pacemaker

The high voltage in the ionizing unit generates an alternating electric field with 50 Hz. This may influence the function of pacemakers which may lead to ventricular fibrillation or cardiac arrest.

- Persons wearing heart pacemakers must maintain a safety distance of more than 50 cm from the ionizing unit!
- The operator must mark the danger zone around the ionizing unit by means of a warning sign.
- The accident prevention regulations according to BGV A8 must be observed.
- An expert study concerning the impact of an ionization system on implanted pacemakers is available from HAUG GmbH & Co. KG.



Hazards caused by manipulated or faulty ionizing unit

Unauthorized modifications, moisture or damage to the ionizing unit may result in electric shocks or fire hazards due to sparking.

- In the event of visible damage or suspected electrical defects, take the ionizing unit out of operation immediately and secure against inadvertent reuse.
- Protect the ionizing unit from moisture. Clean any wetness off the ionizing unit carefully and allow to dry.
- Never pull the HV cable.
- Never carry out any unauthorized repairs to the ionizing unit.
- Always switch off the discharging power pack when the ionizing unit is out of use.
- Never keep any inflammable materials in the vicinity of the discharging power pack or its components.



Danger of injury from ionizing pins

The ionizing pins are sharp, pointed and carry a high voltage when in operation. Contact can result in puncture or tear wounds, and the high voltage will also cause a tingling sensation. These factors can produce a shock reaction which could lead to accidents.

- Never touch the ionizing pins.
- During maintenance / repair work, disconnect the discharging power pack and wear protective gloves (EN 388 3122).



Physical complaints due to an excess of ozone

During operation, small amounts of ozone are created through the corona at the ionizing pins. A very high ozone concentration and prolonged continuous exposure times may result in headache, irritation to the eyes, circulatory problems etc.

- Always ensure adequate ventilation during operation in order not to exceed the statutory admissible ozone concentration limits at the workplace.
- An expert study concerning ozone emissions from a ionization system is available from HAUG GmbH & Co. KG.

2.1 Intended use

 **WARNING****Risk of explosion!**

The ionizing unit may generate sparks which ignite gases, dust or similar substances.

- Never install or use the ionizing unit in areas with potentially explosive atmospheres.
-

A power pack from HAUG is required for the HV supply of the ionisation unit. A compressed air supply must be available.

The ionisation unit is used for contactless surface cleaning in industrial production processes. It removes electrostatic charges as well as dust and similar particles.

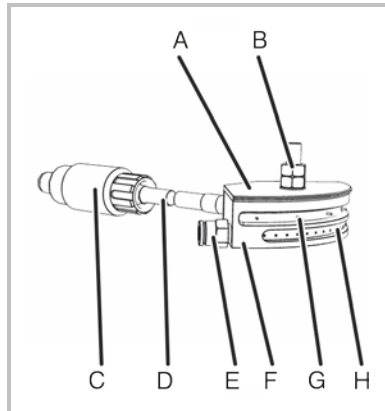
Due to its design, the ionisation unit is ideally suited for separating single sheets from stacks of paper and film.

Compliance with the installation and operating conditions specified in this operating manual is mandatory.

A guarantee can only be provided for equipment and accessories supplied by HAUG GmbH & Co. KG.

3 Product overview

- A Counter electrode
- B Mounting thread M6
- C HV plug
- D HV cable
- E Compressed air connection
- F Insulation profile
- G Ionisation tips
- H Nozzles



4 Install

WARNING

Risk of explosion!

The ionizing unit may generate sparks which ignite gases, dust or similar substances.

- Never install or use the ionizing unit in areas with potentially explosive atmospheres.
-

NOTICE

Damage to equipment!

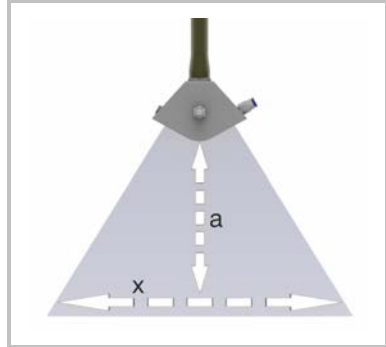
Kinking or bending may damage the HV cable and insulation. This may result in a short-circuit.

- Never kink the HV cable.
 - Never pull the HV cable.
 - When routing around bends, the bending radius not be smaller than 50 mm.
 - Check the HV cable for kinks, cuts etc.
-

1. Checking whether the ionizing unit corresponds to the ordering data. In the event of any damage to the ionizing unit, contact HAUG GmbH & Co. KG.

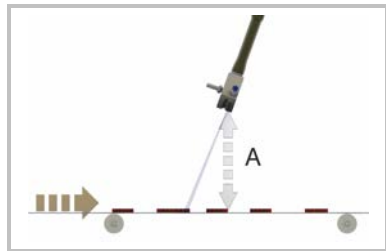
2. During installation, it must be ensured that the ionisation units have a limited effective range. The effective range is formed approximately as shown in the illustration on the right-hand side. The width (x) of the effective range depends on the distance (a) and can be approximated.

$$x = a * 1.8$$

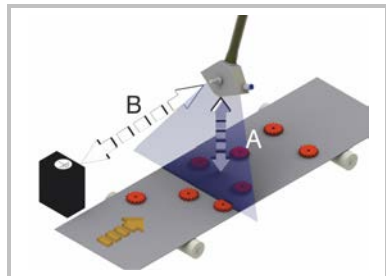


3. Prepare the selected mounting location in the production process with regard to the following parameters.

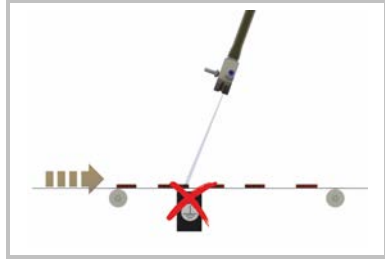
The most ideal distance (A) between the ionisation unit and the ionising material is approx. 20 - 300 mm. The limits of the ionisation effect are min. 10 mm and max. 500 mm.



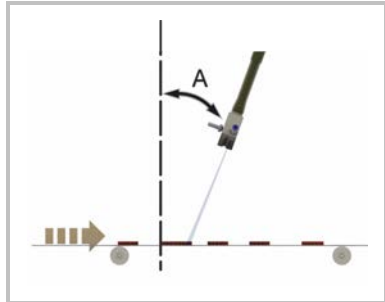
The clearance between the ionisation unit and an earthed machine part (B) must be greater than the distance to the ionising material (A).



Earthed machine parts behind the material to be ionised are not permitted.



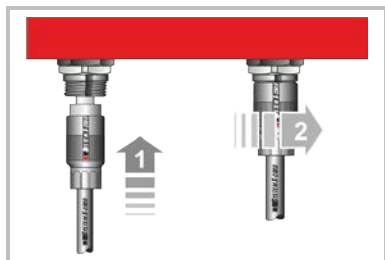
To improve surface cleaning, aim the air jet approx. 10 - 30° (A) against the direction of travel of the product that must be ionised.



4. Connect the compressed air connection to the compressed air supply.
 - Use compressed air hose $\text{Ø } 6 \times 4 \text{ mm}$.
5. Lay the HV cable in curves ($r = > 50 \text{ mm}$) as far as the discharging power pack. Observe the operating instructions of the discharging power pack.

6. Connect the ionizing unit to the HV terminal of the discharging power pack.

- Insert the ionizing unit's HV plug in the HV terminal of the discharging power pack and press the HV cable until it reaches the stop.
- Screw the screw cap onto the HV terminal and tighten by hand.



7. The ionizing unit is ready to operate.

5 Maintenance

CAUTION

Risk of injury!

The ionizing pins are sharp and pointed. During cleaning of the ionizing unit, there is a risk of injuries to the hand due to needle-pricks, tears or cuts.

- Always wear protective gloves (EN 388 3122) when carrying out maintenance and cleaning work on the ionizing unit.
-

NOTICE

Damage to equipment!

The ionizing unit can be damaged by using unsuitable brushes and cleaning agents.

- We recommend using our cleaning accessories. Refer page 19.
 - Use a brass wire brush (corrugated Ø 0.15 mm) or plastic fibre brush (hardness level soft).
 - Use pharmaceutical alcohol.
 - Never use a high-pressure cleaner.
 - Never use aggressive cleaning agents (e.g. acetone, cellulose thinner, toluene, xylene etc.).
-

Always switch off the ionisation unit prior to maintenance and cleaning work and de-pressurise the system.

5.1 Cleaning interval

Contamination reduces the ionizing effect of the ionizing units. It can be improved by cleaning.

- Clean the ionizing pins of the ionizing units **at least every 14 days**.
- The higher the degree of ambient contamination, the shorter the cleaning intervals.
- The duration of cleaning depends on the type and degree of contamination.

5.2 Dry cleaning

1. Switch off the power pack and secure it to prevent unintentional restart.
2. Disconnect the ionisation unit from the discharging power pack and the compressed air supply line.
3. Brush off the ionisation tips with a suitable brush.
4. Vacuum the ionisation unit or blow off with clean compressed air (max. 6 bar).

NOTICE

Damage to property and risk of fire!

Dirt in the HV connection and HV plug can cause short circuits. Short circuits cause malfunctions in the power pack and the HV plug.

Neglecting these instructions would damage the ionisation unit or the power pack and a fire could occur.

- Check and ensure the HV connections and plugs are clean.
- The HV connections and plugs must be clean, dry and free of grease.

-
5. Reconnect the ionisation unit to the power pack and the compressed air supply line.

NOTE:

If the result of the dry cleaning is not satisfactory, continue with a wet cleaning.

5.3 Wet cleaning

1. Switch off the power pack and secure it to prevent unintentional restart.
2. Disconnect the ionisation unit from the discharging power pack and the compressed air supply line.
3. Moisten a suitable brush with a suitable cleaning agent. As an optional, use the **RS2** special cleaning system for cleaning.
4. Use a brush to clean the ionisation tips.
5. Use compressed air (max. 6 bar) to clean the ionisation unit, and then let it dry.

NOTICE

Damage to property and risk of fire!

Dirt in the HV connection and HV plug can cause short circuits. Short circuits cause malfunctions in the power pack and the HV plug. Neglecting these instructions would damage the ionisation unit or the power pack and a fire could occur.

- Check and ensure the HV connections and plugs are clean.
 - The HV connections and plugs must be clean, dry and free of grease.
-
6. Reconnect the ionisation unit to the power pack and the compressed air supply line.

6 Troubleshooting

WARNING

Electric shock hazard!

The ionizing unit is operated with high electric voltage. In the event of any faults, there is a risk of an electric shock.

- Faults may only be eliminated by a trained and qualified electrician.

NOTE:




If the defect cannot be eliminated in this way, return the ionizing unit to HAUG GmbH & Co. KG for checking (see back cover for address).

Fault	Cause	Troubleshooting
Ionisation not available	The ionisation unit is contaminated.	Clean the ionisation unit.
	No high-voltage	Inspect the power pack.
	The ionisation unit is malfunctioning.	Use the "Combicheck" to inspect the ionisation unit.
No compressed air	Malfunction in the compressed air supply.	Check compressed air supply (hoses, lines, connections, compressor, etc.).

Fault	Cause	Troubleshooting
Flashover	The ionisation unit is malfunctioning.	Shut down the ionisation unit and replace it.
	The ionisation tips are too close to an electrically conductive material.	Increase the gap to object(s) that may cause the fault.
	The ionisation unit is tainted with electrically conductive impurity.	Clean the ionisation unit.

7 Accessories/spare parts

Accessories and spare parts can be sourced from your authorized sales partner or directly from HAUG GmbH & Co. KG (the address is provided on the back of the envelope).

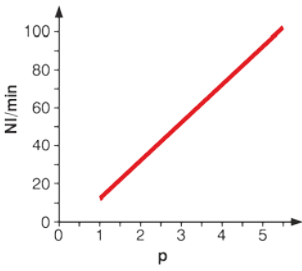
Item	Images	Order number
HAUG power pack	—	Upon request
Special cleaning agent SRM1		10.7220.000
Brass special cleaning brush RB1		10.7218.000
Special cleaning system RS2		10.7218.004
Disc brush for special cleaning system		X – 5677
Plastic fibre cleaning brush RB3		10.7218.003
Combicheck		12.7231.000
Compressed air service unit	—	11.7210.001
Compressed air hose Ø 6 x 4 mm	—	X – 6619

8 Technical data

8.1 Supply voltage

Supply voltage through HAUG discharging power pack	$6,7 \pm 1 \text{ kV}\sim$
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8.2 Compressed air supply

Compressed air	Filtered ($< 20 \mu\text{m}$), dry and oil-free												
Maximum pressure	5 bar												
Operating pressure	1 - 5 bar												
Compressed air consumption in NI/min $p = \text{bar}$	 <table border="1"> <caption>Data points from the compressed air consumption graph</caption> <thead> <tr> <th>Pressure (p) [bar]</th> <th>Consumption (NI/min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>15</td> </tr> <tr> <td>2</td> <td>30</td> </tr> <tr> <td>3</td> <td>45</td> </tr> <tr> <td>4</td> <td>60</td> </tr> <tr> <td>5</td> <td>100</td> </tr> </tbody> </table>	Pressure (p) [bar]	Consumption (NI/min)	1	15	2	30	3	45	4	60	5	100
Pressure (p) [bar]	Consumption (NI/min)												
1	15												
2	30												
3	45												
4	60												
5	100												

8.3 Ambient conditions

Never use in areas with potentially explosive atmospheres.	
Use in interior only.	
Temperature:	
Rated application range	+5 °C to +45 °C
Extreme range for storage and transport	-15 °C to +60 °C
Luftfeuchte:	
Rated application range	20 % to 65 % RF
Extreme range for storage and transport	0 % to 85 % RF

8.4 Dimensions

	Cross-section	Length
DA TR	53 x 84 x 23 mm	—
HV cable	Ø 7.5 mm	Customer-specific
Compressed air hose	Ø 6 mm	Customer-specific

9 Taking the unit out of service

WARNING

Risk of electric shock!

The ionisation unit is operated at a high electrical voltage. Improper shutdown can cause an electric shock.

- Only a certified electrician shall be permitted to shut down the device.
-

1. Disconnect the power supply of the ionisation unit.
2. Switch off the compressed air supply.
3. Disconnect the HV cable from the power pack.
4. Disconnect the compressed air hose from the compressed air supply line.
5. Remove the ionisation unit from the manufacturing process.

9.1 Storing

Always store our products in a dry and cool place.

9.2 Disposing



Never dispose of electrical appliances together with household garbage.

Always collect separately and dispose of in an environmentally responsible way. Always observe national and regional waste disposal regulations for the disposal of electrical appliances.

If proper disposal of our products is not possible, returning the units to us may be an option. We dispose of our products in an environmentally responsible way. The address is provided on the back of the envelope.



made by



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