GB

Operating instructions

Discharging power pack EN 9 Sine

Ident number: 01.7872.000, 01.7873.000

Keep for future use!

Static Line

Table of contents

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 discharging power pack is maintenance free and operationally safe when used as intended.

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

1.1 Symbols used in operating instructions

⚠ WARNING

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

NOTICE

Always observe this safety instruction to avoid damage to property.

NOTE:
Important notes and additional information.

Never dispose of with household garbage.

1.2 Symbols on the discharging power pack

WARNING!
High voltage

ATTENTION!
Only plug in/unplug the ionizing unit at the HV terminal when the discharging power pack is switched off.

2 Safety

Only the persons authorized by the operator may carry out tasks on the discharging power pack.

The installer must be a trained and qualified electrician and read the operating instructions in full.
The operator must read the operating instructions in full.

When working on the discharging power pack, switch off the voltage supply and secure against inadvertent switching on.

Hazards caused by manipulated or faulty discharging power pack
Unauthorized modifications, moisture or damage to the discharging power pack may result in electric shocks or fire hazards due to sparking.

- For reasons of safety, never open or modify the discharging power pack.
- In the event of visible damage or suspected electrical defects, take the discharging power pack out of operation immediately and secure against inadvertent reuse.
- Protect the discharging power pack from moisture.
- Never carry out any unauthorized repairs to the discharging power pack.
- Always switch off the discharging power pack after use.
- Do not keep any inflammable materials in the vicinity of the discharging power pack or its components.

2.1 Intended use

WARNING

Risk of explosion!

The discharging power pack may generate sparks which ignite gases, dust or similar substances.

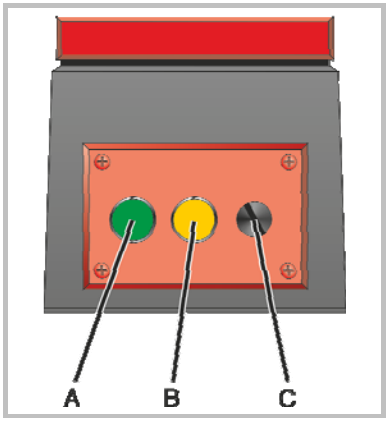
- Never install or use the discharging power pack in areas with potentially explosive atmospheres.

The discharging power pack is intended exclusively for the supply of alternating high voltage to HAUG ionizing units with X-2000 connector. In combination with an ionizing unit, electrostatic charges are neutralized in a production process.
Always observe the installation and operating conditions indicated in these operating instructions.
Warranty only covers products, accessories or spare parts of HAUG GmbH & Co. KG.

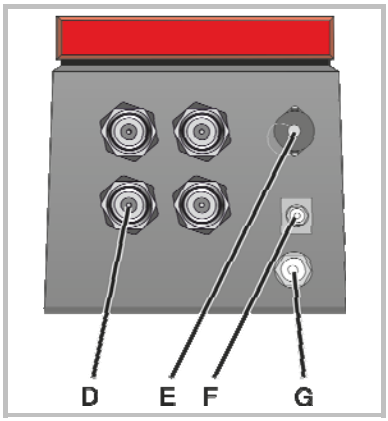
3 Product overview

EN 9 Sine

A Mains switch (lights up green when discharging power pack is switched on)
B Reset pushbutton (flashes yellow in the event of a defect)
C Fuse holder with fuse (**Replacing fuse**, refer page 18)



D 4 x HV terminal
E K1 signalling socket (external reset and pulse and monitoring)
F Ground connection (terminal)
G Mains supply



4 Install

⚠ WARNING

Risk of explosion!

The discharging power pack may generate sparks which ignite gases, dust or similar substances.

- Never install or use the discharging power pack in areas with potentially explosive atmospheres.

⚠ WARNING

Electric shock hazard!

An electric shock hazard results from a faulty connection of the discharging power pack to the power supply.

- The discharging power pack must only be installed by a trained and qualified electrician.

NOTICE

Damage to equipment!

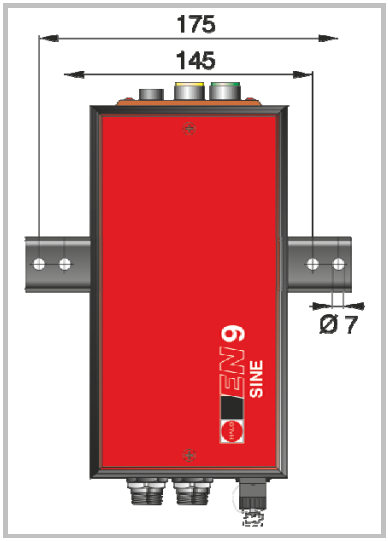
Continuous overloading of the discharging power pack may result in failures.

- Never exceed the permissible connected length.
- Never install the discharging power pack on a surface generating or radiating heat.
- Never install at a location subject to direct solar irradiation.

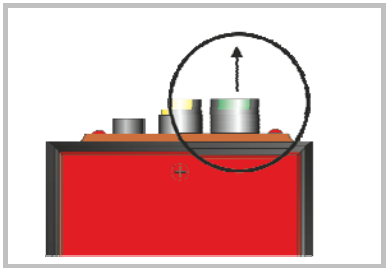
1. Check the model plate of the discharging power pack against the ordering data. In the event of damage to the discharging power pack, contact HAUG GmbH & Co. KG.

2. Before connecting, make sure that the correct supply voltage is available for the discharging power pack.
   - The model plate attached to the housing indicates the voltage.
   - If the supply voltage is incorrect, the discharging power pack may be damaged.

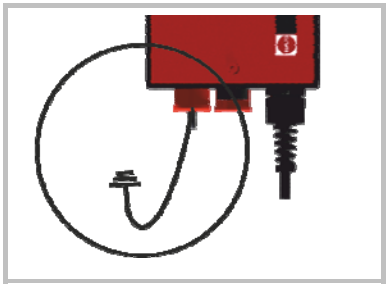
3. Place the discharging power pack at the desired location and attach with the enclosed retaining plate, if appropriate.
   - The operation of the discharging power pack is not affected by the position in which it is installed.
   - We recommend installing the discharging power pack with the HV terminals pointing downwards (to protect them from moisture, oil and dirt).



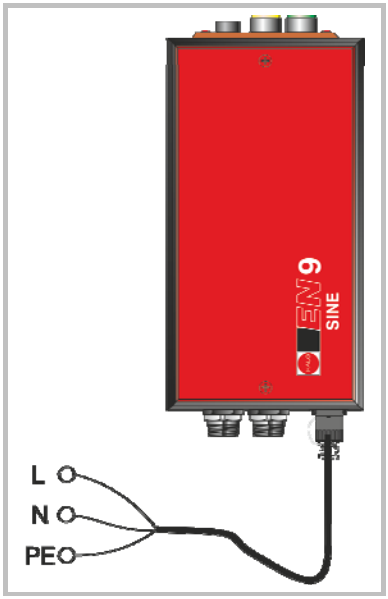
4. Ensure that the discharging power pack is switched off.



5. The ground socket of the discharging power pack must be connected to ground potential in line with applicable standards.
   - Grounding cables of at least 1,5 mm^2 must be used.



6. Connect the discharging power pack to the supply voltage. Always connect the protective earth conductor (green-yellow) with a functioning protective earth of the mains.
   - Connecting the PE conductor via parts of a machine body is insufficient.
   - L = brown conductor
   - N = blue conductor
   - PE = green/yellow conductor

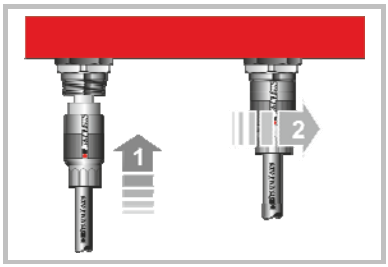


NOTICE Contact and separation spark-overs!

When the ionizing unit is plugged in or unplugged while the discharging power pack is switched on, spark-overs will occur at the HV connection. This may result in defects in the discharging power pack.

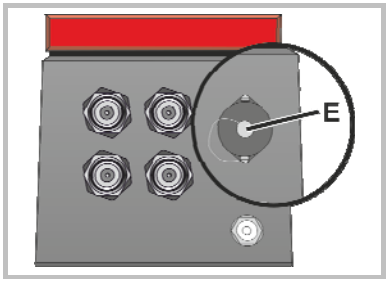
- Switch off discharging power pack before plugging in/unplugging ionizing unit.

7. 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.

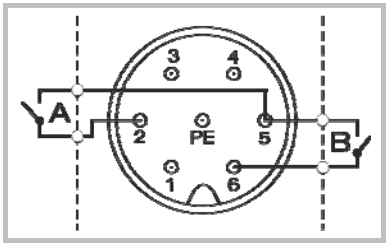


NOTE:
Also note the maximum connected length.
Protect unused HV terminals against the ingress of environmental substances using the red blind plugs.

8. If required, the signalling line K1 can be connected to the K1 signalling socket (E).
   - The signalling socket allows the discharging power pack to be reset externally.
   - The signalling socket allows to be pulse externally the discharging power pack.
   - The discharging power pack can be monitored by means of the output monitoring voltage of the signalling socket.
   - Contact load: max. 24 V~ / 35 V=, max. 50 mA



Configuration of signalling socket:
A External pulse
B External reset



NOTE:
The discharging power pack can also be reset by pressing the reset pushbutton or switching off/on (mains switch or mains voltage).

More information in chapter "**Operate over the K1 signalling socket**" on page 14.

9. The discharging power pack is ready for operation.

5 Operate

Preconditions:
The discharging power pack and the ionizing unit are connected and installed as specified in the operator instructions.

NOTE:
After a fault, the reset pushbutton will start to flash with a delay of 3 seconds. The discharging power pack switches off the high voltage. This can be triggered by:
- *a drop of the high voltage at the HV output to below 4.2 kV~.*
- *a sparkover in the ionization system.*
- *a short circuit in the ionization system.*
- *overheating of the discharging power pack.*

The discharging power pack can be reset by pressing the reset pushbutton, external reset or switching off/on (mains switch or mains voltage). If the error is caused by overheating (thermal circuit breaker), the unit must be allowed to cool down for approx. 15 minutes. If the defect persists, refer to the following chapter "Troubleshooting". Refer page 17.

5.1 Normal operation

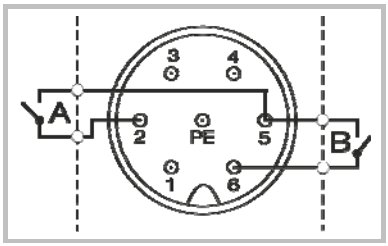
Operation of the discharging power pack without signalling line K1.

1. Switch on the discharging power pack using the mains switch (A).
   - The mains switch will illuminate green to confirm.
   - The discharging power pack is in operating mode.

NOTE:
Flashing of the reset button indicates an error. The discharging power pack can be reset by pressing the reset pushbutton or switching off/on (mains switch or mains voltage). If the error is caused by overheating (thermal circuit breaker), the unit must be allowed to cool down for approx. 15 minutes. If the defect persists, refer to the following chapter "Troubleshooting". Refer page 17.

5.2 Operate over the K1 signalling socket

Signalling socket pin assignment



A External pulse
B External reset

Pin 1 Not assigned
Pin 2 Pulse input:
For external pulsing, connect a potential-free normally open contact to Pin 2 and 5.
Pin 3 Monitor voltage 0 – 10 V=:
Connect monitoring of high voltage to Pin 3 and 5.
Pin 4 Signal output thermal protection:
Connect monitoring of thermal protection cut-off to Pin 4 and 5.
Pin 5 Signal ground (GND)
Pin 6 Reset signal input:
For external resetting, connect a potential-free normally open contact to Pin 5 and 6.
Pin PE Ground

Contact load max. 24 VAC/35 VDC, max. 50 mA

5.2.1 Pulsing high voltage

Precondition:
Connection of a potential-free normally open contact via signalling line K1 to Pin 2 and 5 of signalling socket K1.

During pulsing, the high voltage is switched off by closing the potential-free normally open contact, and switched on by opening it. The maximum pulse frequency for the high voltage is 2 Hz.

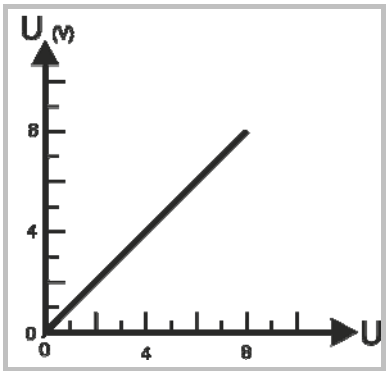
NOTE:
The external normally open contact must be a potential-free normally open contact.
The reset button will flash when the high voltage is switched off.

5.2.2 Monitoring of high voltage

Precondition:
Connection of high voltage monitoring via signalling line K1 to Pin 3 and 5 of K1 signalling socket.

The monitoring voltage follows the output high voltage.
Example:
A monitoring voltage of 7 V indicates a high voltage of 7 kV.
U (V) = Monitor voltage ±20 %
U (kV) = HV output

Internal resistance = 5 kΩ



5.2.3 Monitoring of thermal protection

Precondition:
Connection of thermal circuit breaker monitoring via signalling line K1 to Pin 4 and 5 of K1 signalling socket.

When the unit operates properly, a signal of >9 V= is present at Pin 4. The internal resistance is 10 kΩ, and the reference ground (GND) is at Pin 5. When the thermal circuit breaker has switched off, the signal will drop to 0 V. The high voltage is switched off, and the reset button flashes. Before a reset is carried out, the discharging power pack must be allowed to cool down first (approx. 15 minutes). After the reset, the high voltage is switched back on, and the signal (>9 V=) is present again.

5.2.4 External reset

Precondition:
Connection of a potential-free normally open contact via signalling line K1 to Pin 5 and 6 of signalling socket K1.

After the high voltage has been switched off as a result of an error, it can be switched back on again by means of the potential-free normally open contact. For an external reset, the potential-free normally open contact must be closed for approx. 1 second.

NOTE:
The external normally open contact must be a potential-free normally open contact.
For a reset, the potential-free normally open contact must be closed for approx. 1 second.

6 Troubleshooting

⚠ WARNING

Electric shock hazard!

The discharging power pack is operated electrically and generates a high electric voltage. In the event of any faults, there is a risk of an electric shock.

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

NOTE:

If the error cannot be removed in this way, return the discharging power pack and ionizing unit for checking to HAUG GmbH & Co. KG (for address, see reverse).

Error	Cause	Measure for removing fault
No ionization	Mains failure	Check mains fuse
	No HV	Check fuse in discharging power pack.
		Check connections in discharging power pack.
		Check HV output of discharging power pack using the Combicheck (**Accessories/spare parts**, refer page 20).
Reset pushbutton flashes	Discharging power pack is damaged	Shut the discharging power pack down immediately and secure against switching on.
	Ionizing unit is dirty	Clean ionizing unit
	Short circuit	Perform work steps according to the following flow chart. Refer page 19.
	Sparkover	Perform reset
	Overheating	Allow to cool down for 15 minutes and then perform a reset.

6.1 Replacing fuse

NOTICE

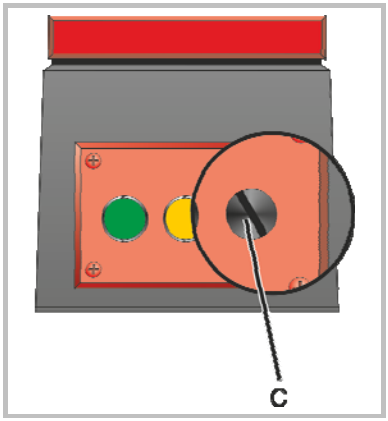
Damage to equipment!

An incorrect fuse in the discharging power pack may cause a defect. This may result in a cable fire.

- Only use fuses of the type indicated.
- Do not use repaired fuses.
- Do not bridge the fuse.

The unit type and the rated voltage are indicated on the nameplate.

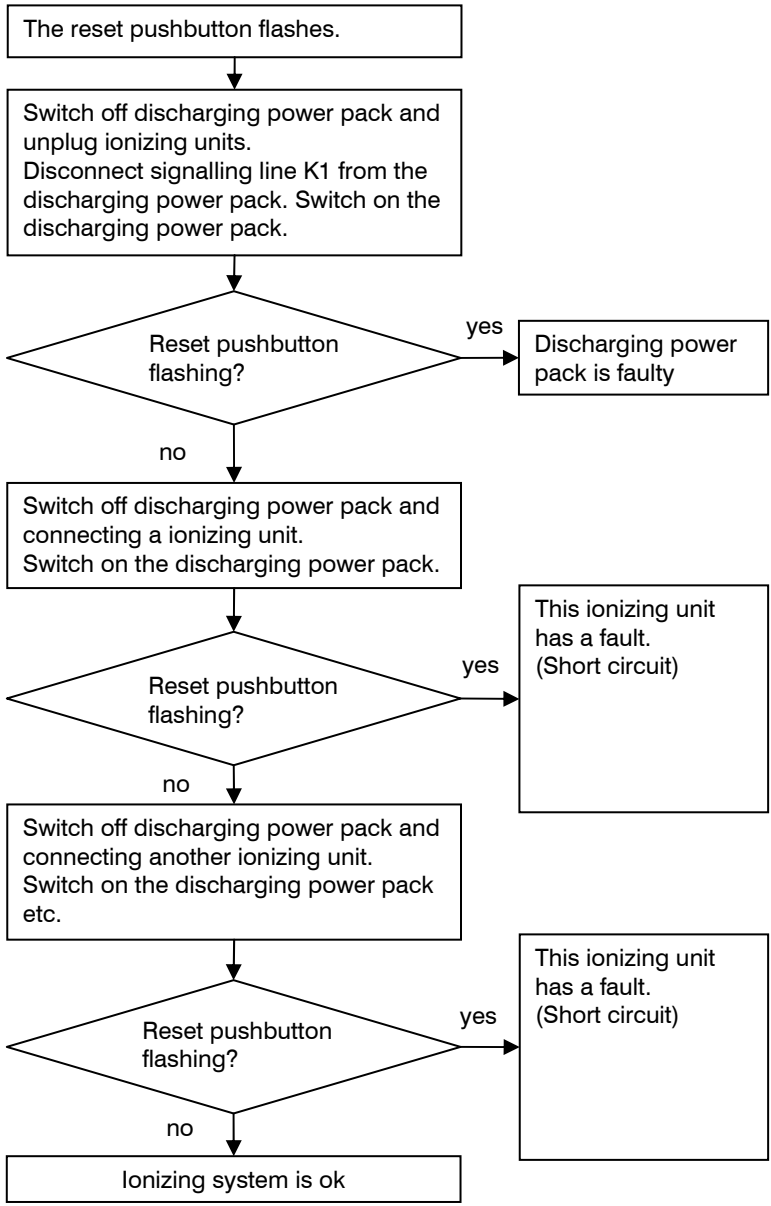
1. Disconnect discharging power pack from supply.
2. Determine and remove the cause for the blown fuse.
3. Detach the fuse holder (A) using a screwdriver and lift out.
4. Replace fuse and reattach fuse holder.



Use the following fuse only:

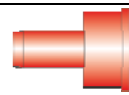
- 01.7872.000 = 0,25 A slow, 5 x 20 mm
- 01.7873.000 = 0,50 A slow, 5 x 20 mm

6.2 Flow chart



7 Accessories/spare parts

Accessories and spare parts can be sourced from your authorized sales partner or directly from HAUG GmbH & Co. KG (for address, refer to back cover).

Article	Illustrations	Order number
Circular plug (K1)		X – 0616
Right-angle plug (K1)		X – 5718
5 m shielded signalling line K1 with assembled plug		06.8941.000
10 m shielded signalling line K1 with assembled plug		06.8941.001
20 m shielded signalling line K1 with assembled plug		06.8941.002
Combicheck		12.7231.000
Blind plug for HV terminals		X – 1080

8 Technical data

8.1 Characteristics and specification

Reference temperature 23 °C

HV terminals	4
High-voltage	7 – 8 kV~
Short-circuit current	I_k < 5 mA
Contact load signalling socket	max. 24 V~/35 V=; max. 50 mA
Max. pulse frequency	2 Hz

8.2 Supply voltage

Unit type	**Nominal value**	**Frequency range**	**Power input**
01.7872.000	230 V~ ±10 %	50 – 60 Hz	P_{max} = 80 VA
01.7873.000	115 V~ ±10 %	50 – 60 Hz	P_{max} = 80 VA

8.3 Ambient conditions

Never use in areas with potentially explosive atmospheres.	
Only use in interior.	
Temperature:	
Rated application range	+5 °C to +45 °C
Extreme range for storage and transport	-15 °C to +60 °C
Humidity:	
Rated application range	20 % to 65 % RF
Extreme range for storage and transport	0 % to 85 % RF
Air pressure:	
Rated application range	800 mbar to 1060 mbar
Vibrations:	
Extreme range for storage and transport	max. 1.5 g (10 to 55 Hz), 1 h
Shock	max. 15 g in each direction
Recommended service position:	vertical, supply cable downwards

8.4 Connected lengths

Unit type	Permissible connected length	Maximum ionizing bar length Type A	Maximum ionizing bar length Type B
Discharging power pack	18 m	18 m	6 m

	Ionizing bar
Type A	EI RN, EI RNE, EI RA, EI RAE, EI RNOF, EI RAOF, EI HRN, EI HRA, EI HRE, EI HRAE, EI PS, EI PRX, EI PRV, EI SL, EIW
Type B	EI VS, EI VSE, EI VSA, EI VSAE, EI VC, EI VCA, EI VCE, EI VCAE, EI VSOF, EI VSAOF

Ionizing bar Type A:
The maximum cable length (KL) is the permissible connected length (AL) minus the connected ionizing bar length (SL).
KL = AL – SL

Ionizing bar Type B:
The maximum cable length (KL) is the permissible connected length (AL) minus 3 x the connected ionizing bar length (SL).
KL = AL – (3*SL)

8.5 Housing

Protection type	IP 54
Protection class	I
Mains supply	approx. 2,6 m fixed on unit
Dimensions:	
Height	245 mm
Width	128 mm
Depth	125 mm
Weight:	5 kg

9 Taking out of operation

⚠ WARNING

Electric shock hazard!

The discharging power pack is operated electrically and generates a high electric voltage. Improper decommissioning may result in electric shock.

- The unit must only be taken out of operation by a qualified and trained electrician.

1. Disconnect discharging power pack from supply.
2. Disconnect the mains line from the voltage supply.
3. Disconnect the ionizing unit from the HV terminal.
4. Disconnect the signalling line from the discharging power pack.
5. Remove the discharging power pack from the production 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. For address refer back cover.

NOTES:

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made by

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