

GB



®

# Operating instructions

## Discharging power pack EN 1 DC / BASIC

Ident number: 01.7868.000, 01.7869.000



DC 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 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



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

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**NOTICE**

Always observe this safety instruction to avoid damage to property.

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**NOTE:**

*Important notes and additional information.*



Never dispose of with household garbage.

## 1.2 Symbols on the discharging power pack



**WARNING!**  
High voltage

## 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.

### **Electric shocks due to connected ionizing unit carry high voltage.**

When the connected ionizing unit are touched, an unpleasant electric shock may result. This may cause a psychological shock reaction resulting in further accidents. Due to the limited short-circuit current of the discharging power pack, there is no risk to life.

- Never touch the connected ionizing unit during operation.
- The operator must ensure that no person touches the ionizing unit during operation (e.g. protective equipment).

## 2.1 Intended use

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 **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.
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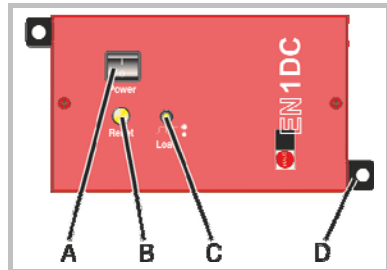
The discharging power pack is intended exclusively for the supply of direct high voltage to HAUG ionizing units of the DC Line series. In combination with an ionizing unit, electrostatic charges are neutralized in a production process.

Always observe the installation and operating conditions indicated in these operating instructions.

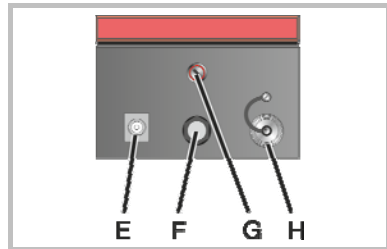
Warranty only covers products, accessories or spare parts of HAUG GmbH & Co. KG.

### 3 Product overview

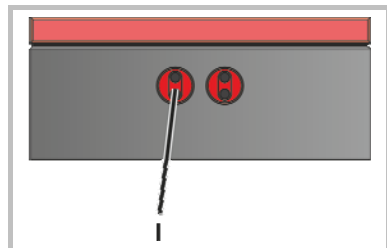
- A ON/OFF switch
- B Reset pushbutton with error indicator lamp (flashes yellow in the event of a defect)
- C LED load indicator
- D Mounting tab (2x)



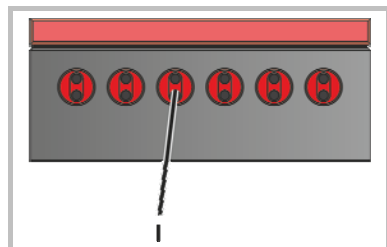
- E Ground connection (terminal)
- F Supply cable for supply voltage
- G Fuse holder with fuse (replacing fuse, refer to page 18)
- H K6 signalling socket



- I 2 x HV terminal
  - EN 1 DC BASIC



- 6 x HV terminal
  - EN 1 DC



## 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!

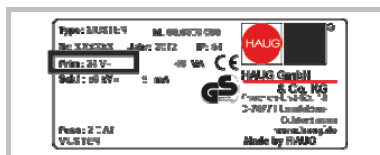
Continuous overloading of the discharging power pack may result in failures.

- 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.

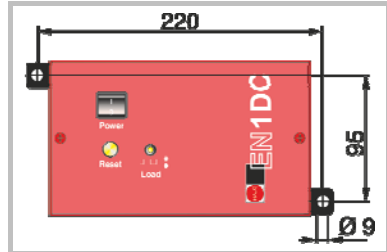
- The model plate attached to the housing indicates the voltage.
- If the supply voltage is incorrect, the discharging power pack may be damaged.





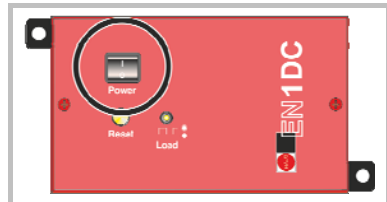
3. Mount the discharging power pack at the desired location using the two mounting tabs.

- The operation of the discharging power pack is not affected by the position in which it is installed.



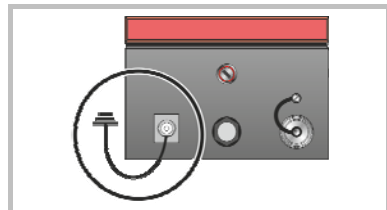
- We recommend installing the discharging power pack with the HV terminals pointing downwards (to protect them from moisture, oil and dirt).

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



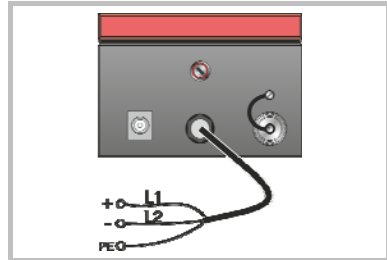
5. The ground socket of the discharging power pack must be connected to ground potential in line with applicable standards.

- Grounding cables of at least 1,5 mm<sup>2</sup> must be used.
- Required for reliable ionization.



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.
- Plus = conductor 1
- Minus = conductor 2
- PE = green/yellow conductor

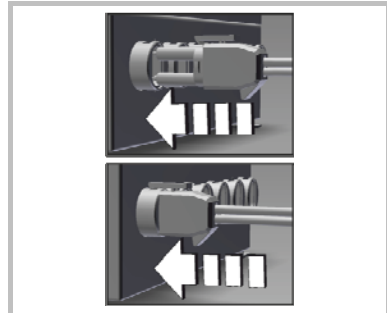


**NOTICE** Contact and separation spark-overs!

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.
- Push the HV connector of the ionizing unit fully into the HV socket of the discharging power pack until the latch clicks.



**NOTE:**

*Protect unused HV terminals against the ingress of environmental substances using the blind plugs.*

8. If required, the signalling line K6 can be connected to the K6 signalling socket.

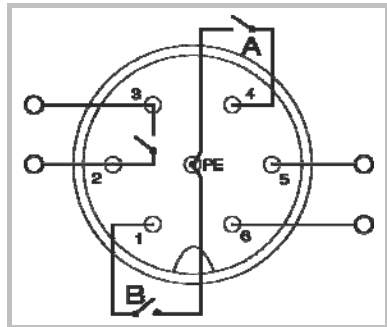
- The K6 signalling socket can be used to monitor the HV output current at the HV terminal of the discharging power pack.
- The K6 signalling socket allows the discharging power pack to be reset externally.
- The K6 signalling socket allows to be pulse externally the discharging power pack.



**Configuration of K6 signalling socket:**

- A External pulse switch  
B External reset pushbutton

- Pin 1: Reset signal input  
Pin 2: Potential-free contacts for HV monitoring  
Pin 3: Potential-free contacts for HV monitoring  
Pin 4: Pulse input  
Pin 5: Signal output current monitoring for negative high voltage  
Pin 6: Signal output current monitoring for positive high voltage  
PE: Shield ground / signal ground



**Switching status table for K6 signalling socket**

	<b>Operating conditions</b>		<b>Potential-free contacts</b>
Normal operation	Supply voltage present	HV present	2 and 3 closed
Malfunction	Supply voltage present	HV failure	2 and 3 open
Malfunction	Supply voltage failure	Not defined	2 and 3 open

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 error indicator lamp will start to flash.*

*This can be triggered by:*

- *a drop of the HV at the HV output to below 2 kVDC.*
- *a sparkover in the ionization system.*
- *a short circuit in the ionization system.*

*The discharging power pack can be reset by pressing the reset pushbutton or external reset. If the defect persists, refer to the following chapter "Troubleshooting". Refer to page 16.*

### 5.1 Normal operation

1. Switch on the discharging power pack using the ON/OFF switch.
2. The error indicator lamp flashes.
  - The HV will be switched on automatically with a delay (approx. 5 s).
3. The error indicator lamp will cease to flash, and the LED load display will start to flash green.
  - The flash duration of the LED load display depends on the connected load.
  - If the load is excessive, the colour of the LED will change from green to yellow (e.g. when the connected length is exceeded or the ionizing units are heavily contaminated).
4. The discharging power pack is in operating mode.

## 5.2 Normal operate on the signalling line K6

To precondition, connect the signalling line K6 (accessory) to the signalling socket K6.

1. Switch on the discharging power pack using the ON/OFF switch.
2. The error indicator lamp flashes until the contact of pin 2 and 3 closes.
  - The HV will be switched on automatically with a delay (approx. 5 s).
3. The HV output current can be monitored at pins 5 and 6.
  - See chapter "Current monitoring" on page 15 below.
4. The discharging power pack is in operating mode.
5. The HV can be pulsed by means of the external pulse switch.
  - When the pulse switch is open, the HV is switched on, and the LED load display flashes green (contact of pin 2 and 3 closed).
  - When the pulse switch is closed, the HV is switched off and the error indicator lamp flashes (contact of pin 2 and 3 open).
6. In the case of an error the potential-free contact of pin 2 and 3 opens.
  - The error indicator lamp will start to flash.
  - Troubleshooting refer page 16.

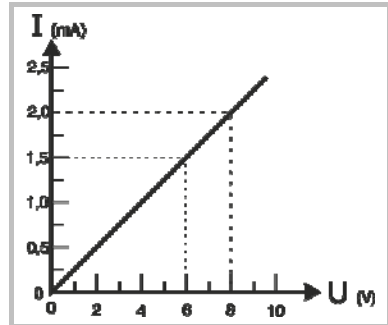
**NOTE:**

*It is important to note that the error indicator lamp will flash when the pulse switch is closed and in the case of an error. Before troubleshooting, check therefore whether the error indicator lamp also flashes when the pulse switch is open.*

### 5.3 Current monitoring

The HV output current can be monitored at pins 5 and 6. The output voltage is between 0 and 10 V.

- At pin 5 against ground, the voltage is output analog to the HV output current value for the negative HV.
- At pin 6 against ground, the voltage is output analog to the HV output current value for the positive HV.



The HV output current depends on the total connected length of the ionizing units and their discharging output.

The maximum HV output current is 1.8 mA. When the maximum LED output current is exceeded, the flashing LED load display will switch from green to yellow.

- From 2,0 mA, a current limiter is activated reducing the output voltage.
- Refer to section "Troubleshooting" on page 16.

## 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	No HV	Check fuse in discharging power pack.
		Check all connections.
		Is an external pulse switch connected? Contact must be open.
	Excessive load at the HV connections. The LED load display flashes yellow.	Check connected lengths. For permissible connected lengths, refer to page 21. Clean ionizing unit
	The discharging power pack is damaged.	Shut the discharging power pack down immediately and secure against switching on.



<b>Error</b>	<b>Cause</b>	<b>Measure for removing fault</b>
Error indicator lamp flashes	The supply voltage is too low (< 21,6 VDC).	Check supply voltage
	Sparkover to ground.	Sparkover from the ionizing pins to ground? Increase distance to ground. Activate reset.
		Sparkover from ionizing unit / HV cable to ground? The ionizing unit has a fault and needs to be replaced.
The ionizing unit has a fault or short circuit in ionization system.	Perform work steps according to the following flow chart (refer page 19).	

## 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.

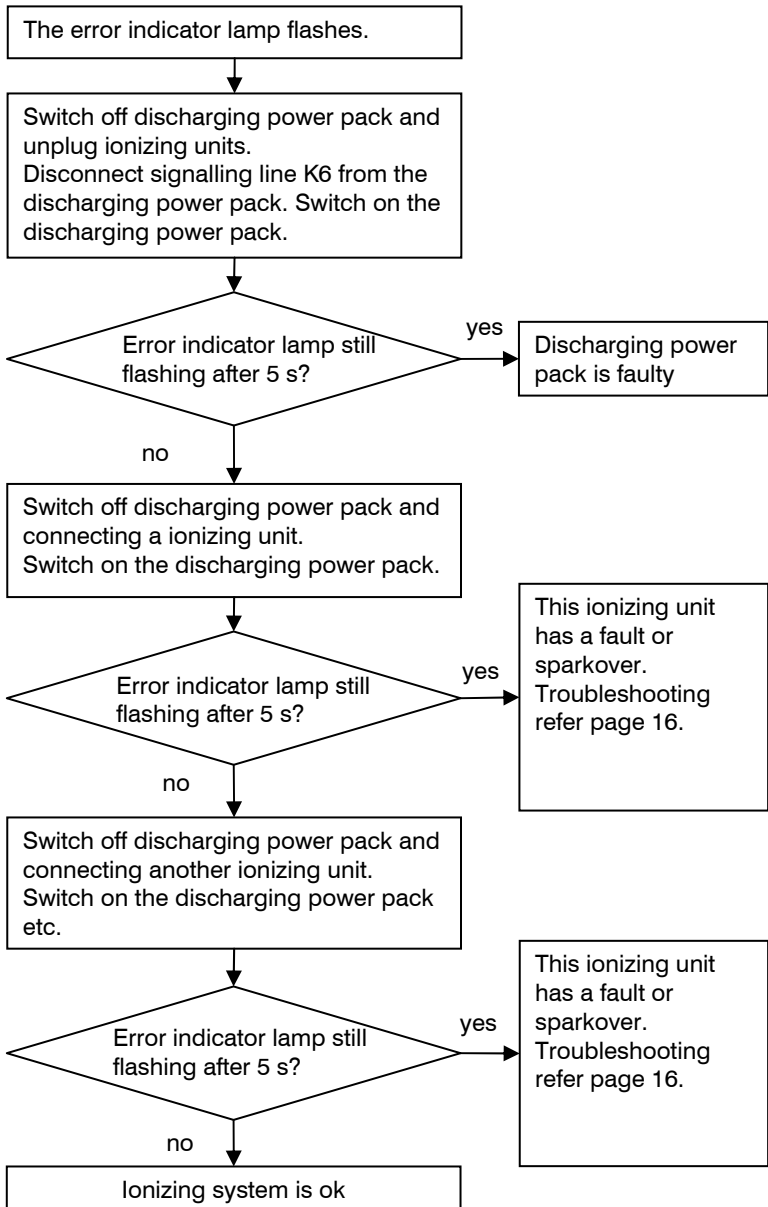
1. Disconnect discharging power pack from supply.
2. Determine and remove the cause for the blown fuse.
3. Detach the fuse holder using a screwdriver and lift out.
4. Replace fuse and reattach fuse holder.



#### Use the following fuse only:




- 2,0 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
Control plug (K6)		X – 7807
5 m shielded signalling line K6 with assembled plug		06.8976.000
10 m shielded signalling line K6 with assembled plug		06.8976.001
20 m shielded signalling line K6 with assembled plug		06.8976.002
Blind plug for HV terminals		X – 8243

## 8 Technical data

### 8.1 Characteristics and specification

Reference temperature 23 °C

HV terminals EN 1 DC BASIC	2
HV terminals EN 1 DC	6
Connectable HAUG ionizing units	EI DC
Max. connected length ionizing bar EI DC	8 m
Max. connected length HV cable	50 m
Contact load K6 signalling socket	max. 24 V~/35 V=; max. 50 mA
High-voltage	U = approx. $\pm 5$ kVDC
Max. pulse frequency	0,3 Hz
Max. permissible load current	I = 1,8 mA
Max. current	$I_k = 2,0$ mA
Unit fuse	2,0 AT

### 8.2 Supply voltage

Unit type	Nominal value	Power input
EN 1 DC BASIC	24 VDC $\pm 10$ %	$P_{\max} = 40$ VA
EN 1 DC	24 VDC $\pm 10$ %	$P_{\max} = 40$ VA

### 8.3 Ambient conditions

Never use in areas with potentially explosive atmospheres.	
Only use in interior.	
<b>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 % RF
Extreme range for storage and transport	0 % to 85 % RF
<b>Air pressure:</b>	
Rated application range	800 mbar to 1060 mbar
<b>Vibrations:</b>	
Extreme range for storage and transport	max. 1.5 g (10 to 55 Hz), 1 h
Shock	max. 15 g in each direction
<b>Recommended service position:</b>	HV connections facing downwards

### 8.4 Housing

Protection type	IP 54
Supply cable for supply voltage	approx. 2,6 m fixed on unit
<b>Dimensions:</b>	
Height	125 mm
Width	200 mm
Depth	75 mm
<b>Weight:</b>	2,2 kg

## 9 Taking out of operation

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### 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 supply cable 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.











made by



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