

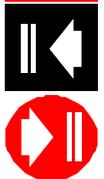
Operating instructions TR 150 A



Operating instructions TR 150 A



Charge Line





Types: TR 150 A positive 115 V / 230 V
 TR 150 A negative 115 V / 230 V

Keep in a safe place for future reference!

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1 Notes on operating instructions

In these operating instructions, the TR 150 A is also referred to as "the unit".

1.1 Pictorial markings used

In these operating instructions



Caution!
Important instructions!



Danger!
High voltage!
Danger of fatal accidents!
Do not open unit!



**Only plug in/unplug coaxial connector
 when the unit is switched off!**

In the operating instructions and on the unit



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**Only plug in/unplug coaxial connector
 when the unit is switched off!**

2 Safety

The charging generator TR 150 A is operationally safe, provided that it is operated in accordance with its intended use.

In case of misuse, dangers may result:

- for life and limb of the operator,
- for the unit and other assets.

Also note Chapter 4.1 (Important installation notes).

2.1 Intended use

The charging generator TR 150 A is intended exclusively for the high-voltage supply of HAUG-charging triodes. It generates an adjustable direct high voltage of 0...15 kV, with positive or negative polarity, depending on the unit type.

The direct high voltage is intended for charging material webs in industrial production processes.



The charging generator must not be installed or used in areas subject to explosion hazards.

For reasons of safety, unauthorized conversions and modifications of the unit are not permitted. The installation and operating conditions indicated in these Operating Instructions must be adhered to.

2.2 Danger sources

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

The charging triode connected to the charging generator conducts high voltage during operation. Any contact may lead to injury and consequential accidents.

The operator must provide protective equipment against direct contact when installing the charging triode!



***Danger!
High voltage!
Danger of fatal accidents!
Do not open unit!***



***Only plug in/unplug coaxial connector
when the unit is switched off!***

2.3 Installer qualifications

The unit may be installed by trained electricians only. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice.

2.4 Operator qualifications

The unit may be maintained and put into operation by trained electricians only or 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.

3 Design, operating elements

Figure 1

1. Fuse (for replacement refer to Section 7.1)
2. Mains cable
3. Ground connection (terminal)
4. High-voltage terminal (charging triode)
5. Signalling socket for signal line K1
6. Reset / Pulse / Monitoring socket for signal line K2

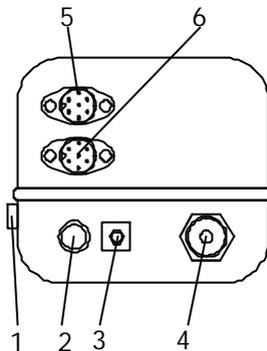


Figure 1

Figure 2

7. Digital display high voltage kV
8. Digital display current mA
9. Operating potentiometer kV
10. Reset pushbutton
11. Mains switch (on/off)
Switch lights up green when unit is switched on.
12. Toggle switch (pulse on/off)

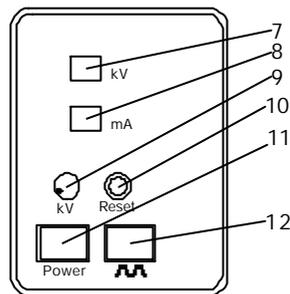


Figure 2

The output voltage of the charging generator TR 150 A is set by means of the operating potentiometer kV.

4 Installation

The charging electrode may be installed by trained electricians only. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice.

4.1 Important installation instructions

The charging triode connected to the charging generator conducts high voltage during operation. Any contact may lead to injury and consequential accidents.

The operator must provide protective equipment against direct contact when installing the charging triode!

The operation of the charging generator is not affected by the position in which it is installed. However, we recommend installing the unit so that the high-voltage terminal points downwards (to protect it from humidity, oil and dirt).

Do not place the charging generator on a surface generating or radiating heat. Avoid installation positions exposed to direct sunlight.

4.2 Setting up, connecting

1. Before connecting always check that the unit is suitable for the local mains voltage (the voltage is indicated on the name plate). The unit will be destroyed if used with wrong mains voltage.
2. Attach unit at the desired location using the enclosed retaining plates.
3. Ensure that the charging generator is switched off (mains switch).
4. Connect the charging triode to the high-voltage terminal.
5. Connect the PE conductor (green-yellow) with the protective earth of the mains. Connecting the PE conductor via parts of a machine body is insufficient.
6. Connect signal lines K1 and K2 (for configuration, refer to Section 5.1).
7. Connect the charging generator to the mains.
8. Put unit into operation.

Please note in general:



***Only plug in/unplug coaxial connector
when the unit is switched off!***

5 Application

Preconditions:

The charging generator and the charging triode must be connected correctly.

Protective equipment against direct contact with the charging triode must be provided.

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.

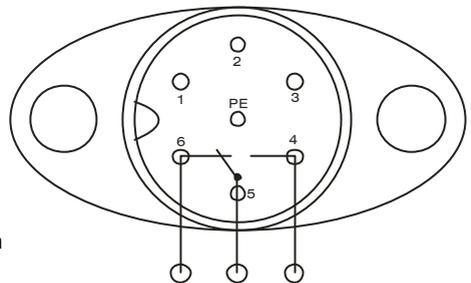
5.1 Connection of signal voltage and monitoring

1. Plug in the connectors in accordance with the following pin assignment diagram (refer to Figs. 3 and 4).
2. Plug in the connector.
3. Switch on the unit.

Figure 3: Pin assignment of the Signalling socket

Pin

- 1: Not assigned
- 2: Not assigned
- 3: Not assigned
- 4: Normally open contact (closed when overload cut off active)
- 5: Joint connection relay
- 6: Normally closed contact (open, when overload cut off active)



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

Figure 3



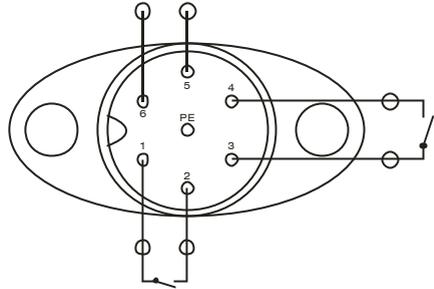
The signal ground of the signalling socket must not be connected with the mains PE conductor or with the shield ground of the cable.

No destructive electrical loads may be applied to the signalling contacts (to protect the electronic system of the unit).

Before plugging in the signal line K1, please self-discharge by touching grounded machine parts.

Figure 4: Pin assignment of the Reset / Pulse / Monitoring socket

- Pin
- 1 and 2: Reset signal: Connection of a floating normally open contact
- 3 and 4: Pulse signal: Connection of a floating normally open contact
- 5: Monitoring output 0 - 10 VDC
- 6: 0 V



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

Figure 4


The signal ground of the reset/pulse/monitor socket must not be connected with the mains PE conductor or with shield ground of the cable.

No destructive electrical loads may be applied to the signalling contacts (to protect the electronic system of the unit).

Before plugging in the signal line K2, please self-discharge by touching grounded machine parts.

5.2 Putting into operation

1. Put selector switch for pulsed/permanent operation into required position.
2. Switch on the unit using the power switch. The green lamp in the switch will light up to confirm.
3. Use the operating potentiometer kV to set the external control voltage to the desired value. The output voltage (0 – 10 VDC) can be picked off at the monitor output (refer to Fig. 4).

5.3 Instructions for setting the high voltage

When the working current for the high voltage is larger than 300 μA , the overload cutoff will activate and the unit will switch off. This status is stored by the unit and is indicated visually by the flashing reset button (refer to Fig. 2) and electrically by the signalling socket (refer to Figs. 1 and 3). In this event, set a lower voltage or increase the distance between the charging triode and the counter electrode or the opposite metal parts. Reset the overload cutoff using the reset pushbutton or the reset signal (refer to Fig. 4).

6 Remedy of defects

Any remedy of defects must be carried out by trained electricians only.

In case of malfunction in connection with the charging generator, first check its correct installation and fusing (for replacement refers to Section 7.1). If this does not solve the problem, please return the charging generator and the charging triode for a check-up.

7 Maintenance and repairs



Danger!
High voltage!
Danger of fatal accidents!
Do not open unit!

This unit does not include any parts which can be maintained or repaired by the operator. HAUG only is authorized to repair or calibrate the unit.

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

7.1 Changing the fuse

1. Switch off unit.
2. Determine and remove the cause of the blown fuse.
3. Detach the fuse holder using a screwdriver and lift out.
4. Replace fuse and reattach fuse holder.

Use the following fuses only:

Unit type	Fuse
115 V pos./neg.	1,25 A slow; 5 x 20 mm
230 V pos./neg.	0,63 A slow; 5 x 20 mm

The unit type and the rated voltage are indicated on the nameplate.
 Only use fuses of the type indicated.

7.2 Accessories

Circular plug		X – 0616
Right-angle plug		X – 5718
Signal line K1 (incl. plug, assembled)	5 m, shielded	06.8941.000
Signal line K1 (incl. plug, assembled)	10 m, shielded	06.8941.001
Signal line K1 (incl. plug, assembled)	20 m, shielded	06.8941.002
Cable connector		X – 6198
Right-angle cable connector		X – 6236
Signal line K2 (incl. plug, assembled)	5 m, shielded	06.6198.000
Signal line K2 (incl. plug, assembled)	10 m, shielded	06.6198.001
Signal line K2 (incl. plug, assembled)	20 m, shielded	06.6198.002

8 Technical data

8.1 Characteristics and specification

(Reference temperature 23 °C)

High-voltage terminals	1 HAUG-High-voltage terminal (ALT)
Max. output voltage	$U_{\max} = 15 \text{ kV} \pm 10 \%$
Max. output current	$I_{\max} = 300 \text{ } \mu\text{A} \pm 15 \%$
Monitoring voltage	0 – 10 VDC; max. 2 mA (> 3 kV $\pm 10 \%$)
Signalling contacts monitoring	Contact load max.24 VAC / 35 VDC; max. 50 mA
Max. pulse frequency via pulse input	1 Hz (max. 10 ⁶ Zyklen)
Recovery period after overload cut-off	< 10 s

8.2 Supply voltage

Type	Nominal value	Operating range	Frequency range	Power input
TR 150 A	115 V	$\pm 10 \%$	50 - 60 Hz	$P_{\max} = 30 \text{ VA}$
TR 150 A	230 V	$\pm 10 \%$	50 - 60 Hz	$P_{\max} = 30 \text{ VA}$

8.3 Ambient conditions

Ambient 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 % RH
Extreme range for storage and transport	0 % to 85 % RH

Air pressure:

Rated application range	800 mbar to 1060 mbar
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Vibrations:

Extreme range for storage and transport	Max. 1,5 g (10 to 55 Hz), 1 h Shock: max. 15 g in each direction
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Recommended service position	Vertical, supply cable downwards
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8.4 Housing

Degree of protection	IP 54
Protection class	I
Connection to supply voltage	approx. 2 m fixed on unit

Dimensions:

Height	approx. 270 mm
Width	approx. 170 mm
Depth	approx. 150 mm
Weight	approx. 7 kg



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