

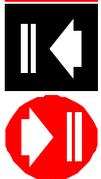
Operating instructions TR 30



Operating instructions TR 30



Charge Line





Types: TR 30 positive 115 V / 230 V
 TR 30 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 30 is also referred to as "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 30 is operationally safe, provided that it is operated in accordance with its intended use.

In case of maloperation, 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 30 is intended exclusively for the high-voltage supply of HAUG charging triodes. It generates an adjustable direct high voltage of 0...25 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 triodes connected to the charging generator conduct 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 triodes!**



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High voltage!
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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 person 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 instructed in 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

- a) Mains supply
- b) Fuse (for exchange, refer to "Maintenance and repairs")
- c) Pulse / Signalling terminal
- d) Ground connection
- e) High-voltage terminals (Triode)

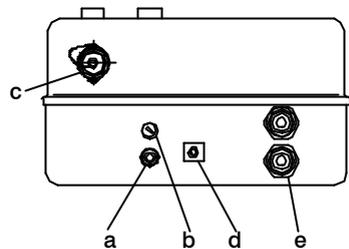


Figure 1

Figure 2

- f) On/Off switch; green lamp lights up when unit is switched on
- g) Toggle switch pulsed/permanent operation
- h) Voltage measuring instrument (kV)
- i) Current measuring instrument (mA)
- j) High-voltage potentiometer
- k) Current threshold potentiometer
- l) Reset pushbutton and indicator lamp; lights up yellow when the set current threshold is exceeded and flashes in case of defect

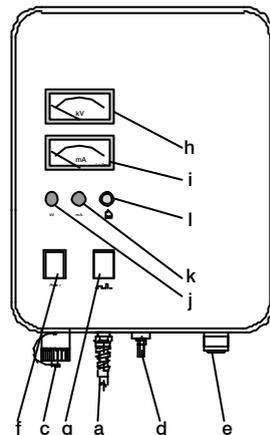


Figure 2

4 Installation

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

4.1 Important installation instructions

The charging triodes connected to the charging generator carry 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 triodes!**

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 triodes to the high-voltage terminals.
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. If required, connect pulse/signalling lead (for configuration, refer to Chapter 5).
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 electrode must be provided.

The unit may be put into operation by trained electricians only or by authorized 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 pulse and monitoring

1. Connect the connector in accordance with the following terminal assignment diagram.
2. Plug in connector.
3. The charging generator triggers a signal when the set current threshold is exceeded.
4. The charging generator can be pulsed via an external contact.

Figure 3

Terminal assignment of the circular connector

1. Joint relay terminal
2. Normally closed contact:
open when current threshold has been exceeded.
3. Switching contact:
closed when current threshold has been exceeded.

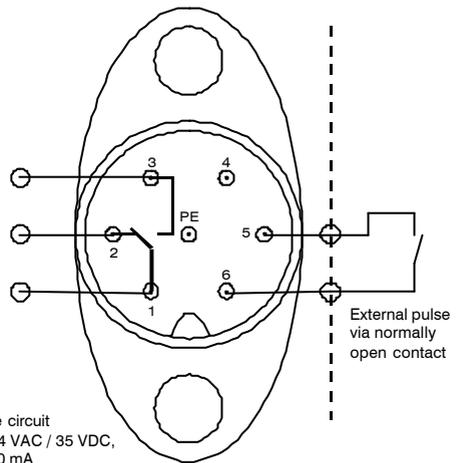


Figure 3



Note:

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

Before plugging in the reset/pulse/monitoring lead, please ensure that you discharge yourself by touching grounded machine parts.

5.2 Putting into operation

1. Put selector switch for pulsed/permanent operation into required position.
2. Turn high-voltage potentiometer to the extreme left (minimum).
3. Turn current threshold potentiometer to the extreme right (maximum).
4. Switch on unit at mains switch. The green control lamp in the switch lights up.
5. Set high-voltage potentiometer to desired value. The voltage measuring instrument (Fig. 2) will indicate the voltage set.
6. Once the process is running, turn the current threshold potentiometer towards the minimum until the signalling lamp lights up. Then turn it back slightly towards the maximum until the signalling lamp is extinguished. The current instrument (Fig. 2) will indicate the relevant current.



Note:

The setting under item 6 should be completed within 10 s, as otherwise a protective relay will switch off the high voltage. The signalling lamp flashes to indicate this status. Continue adjusting the setting according to item 6 after pressing the reset pushbutton.

5.3 Instructions for setting the high voltage

The output voltage depends on the current load. This is why the voltage increases if an existing counter-electrode is covered with insulating material.

If spark-over occurs, please set a lower voltage or increase the distance between the charging triode and the counter-electrode or the facing metal parts.

6 Troubleshooting

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

In case of malfunctions in connection with the charging generator, first check its correct installation and fusing (for replacement refer to Section 7.1). If this does not solve the problem, please return the charging generator and the charging triodes 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.	2.5 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

Pulse/signalling lead with round plug 5 m,	shielded	06.8941.000
Pulse/signalling lead with round plug 10 m,	shielded	06.8941.001
Pulse/signalling lead with round plug 20 m,	shielded	06.8941.002
Circular plug		X – 0616
Right-angle plug		X – 5718

8 Technical data

8.1 Characteristics and specifications

Reference temperature 23 °C

High-voltage terminals	2 HAUG high-voltage terminals (triode)
High voltage	$U = \text{approx. } 25 \text{ kVDC (no load), pos. or neg.}$
Short-circuit current	$I_k \leq 3,3 \text{ mA}$
Current threshold signalling contacts	Load carrying capacity 24 VAC/35 VDC, max. 50 mA
Max. pulse frequency	1 Hz

8.2 Supply voltage

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

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), 1h shock: max. 15 g in each direction
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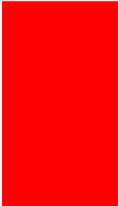
Recommended service position	vertical, supply cable downwards
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8.4 Housing

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

Dimensions:

Height	approx. 345 mm
Width	approx. 370 mm
Depth	approx. 162 mm
Weight	approx. 13 kg



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