

Operating Manual



Hand Welding Unit HG 20-1

with generator SL20





Disclaimer

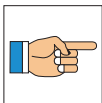
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Note



This operating manual must be read and observed before unpacking and initial operation of the device.

The device may exclusively be operated and serviced by persons who know the operating manual and the applicable regulations with regard to industrial safety and prevention of accidents. Repairs may only be carried out through official and certified RINCO departments.

Device-specific information

Adhesive hand device

Adhesive generator

Agency



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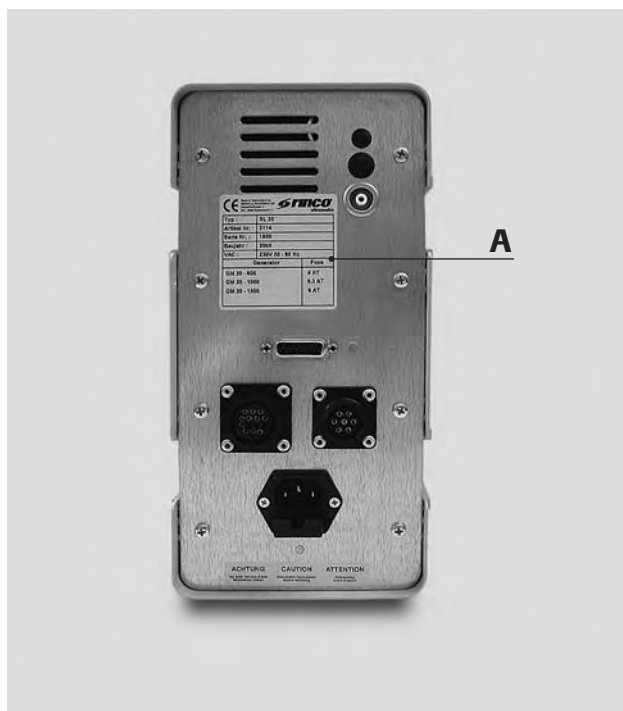
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Important!

In case of enquiries concerning your unit please state the exact type designation and the unit serial number.

You will find these on the type plates (A) and on the inside of the cover page of this operating manual.

The construction and switching mechanism of the unit are consistently further developed and improved and conform with state-of-the-art technology.



Foreword

We are pleased that you have decided to purchase a RINCO product.

We are convinced that you will achieve a maximum of economic efficiency and product quality when using this unit.

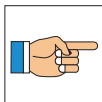
The purpose of this manual is to provide the buyer and user all necessary information for handling, assembly, operation and care of the unit.

It is essential that the information and instructions in this manual are observed in order to ensure that the unit is constantly ready for operation.

1 Explanation of symbols and signs

Special attention must be paid to text sections with the following symbols:

Set-up of the warnings



Note!

Information or operating instructions which are especially important for interference-free operation.



Caution!

Describes warnings, the non-observance of which can result in serious injuries or the risk of damage to apparatus parts.



Danger!

Describes warnings, the non-observance of which can result in death or very serious injuries.

2 Safety information

2.1 General information

The construction of this unit corresponds with state-of-the-art technology and is safe to operate. The individual modules and the complete unit were tested by our quality control before delivery.

2.2 Intended use



This unit is exclusively determined for welding suitable materials. Any other use or use beyond this is deemed as improper use.

The manufacturer shall not be liable for damages caused by improper use. The risk shall be borne solely by the user.

This unit is intended for industrial use!

2.3 Improper use

- Operation of the unit with insufficient knowledge regarding operation, service and supervision of the system.
- Carrying out changes and extensions and conversions to the manual unit and generator, which could impair the safety, without the approval of RINCO ULTRASONICS.
- Undertaking changes to the control software!
- Use of unsuitable materials.
- Opening of the generator housing during operation.
- Access to live areas when the unit is switched on.

2.4 Important instructions

This operating manual is to be read carefully before initial operation of the unit.

The operating manual is to be kept within reach of the place of use of the unit!

2.5 Personnel qualifications

Work with the unit may only be carried out by trained and instructed personnel. The responsibilities of the personnel for operation, equipment, service and repair are to be clearly stipulated by the operator!

The operator must ensure that only commissioned personnel work on the unit.

Work on electrical equipment of the unit may only be carried out by a skilled electrical worker according to the rules of electrical technology. Only trained personnel with knowledge and experience in handling pneumatics may work on pneumatic facilities!

2.6 Installation of unit



Danger!

Only carry out connection work to the unit when the mains cable is disconnected! It is essential that the mains connection be fitted with an earth connection! Country-specific, statutory safety measures must be observed! In case these regulations are not observed the manufacturer refuses all liability for physical injuries or damages to materials.

The unit must be in a closed and safe condition before any initial operation.

Only use dry compressed air for operation.

If necessary an upstream air service unit has to be connected.

2.7 Operation



Caution!

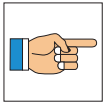
Do not open the generator or the converter housing during operation.



Danger!

There is high voltage in the interior of the unit – risk of injury!

- Refrain from all methods of working which could pose a risk to safety!
- Only operate the system when all protective facilities and facilities due to safety e.g. detachable protective facilities, sound insulation are available and in good working order.
- Before switching the unit on ensure that no one can be endangered through the unit which is starting.



Skilled operation, careful handling of unit and relevant tools during operation

- maintain the readiness for operation
- increase the service life and
- reduce downtimes to a minimum.

2.8 Noise emissions



Caution!

Threshold values: Ultrasonic causes no damage according to the present status of knowledge if the maximum level is below 140 dB and the average level, based on an 8 h/day is below linear 110 dB.

Attention is to be paid to the sub-harmonic, i.e. audible oscillations, which fluctuate sharply depending on the use, and can be disturbing and harmful. Decisive is the continuous sound pressure level, equivalent to energy, L_{eq} based on a representative work period (min. 8 h/day max. 2000 h/year) from 85–87 dB as threshold.



The noise level may exceed 70 dB when welding special materials.

Counter-measures:

- Wear hearing protection
- Mount sound protection hood (option)

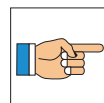
(details according to SUVA information no. 86048 d 4.94)

2.9 Warranty statement

With the delivery of the unit RINCO ULTRASONICS has entered into a guarantee obligation according to VSM (Association of Swiss machine industrial companies).

The pre-requisite for satisfying the warranty conditions by RINCO ULTRASONICS are among others:

- The user must have knowledge of the contents of this operating manual.
- The instructions and warnings contained in this operating manual are to be observed.
- Autonomous conversions or changes to parts of the unit, the oscillator system and the generator are not permitted.



RINCO ULTRASONICS shall be very pleased to explain any points which may be unclear by telephone or provide instructions by skilled workers.

3 Transportation



It is essential to observe transportation instructions on the packaging.

3.1 Acceptance of delivery

The despatch container for machines and unit can withstand normal strain during transportation by road, rail and air.

After receipt of the consignment you should check whether all parts correspond with the packing list and that there are no visible damages. In case damages are determined, please advise the transport company immediately and store the packaging as evidence.

3.2 Damage during transit

The transportation company is responsible for damages suffered during transportation. A full report, with an exact description of the damages, must be submitted to the transportation company and serves as a basis for the claim for damages. Damages or loss of the goods delivered by us are to be reported to us immediately and confirmed by a copy of the afore-mentioned report. Insofar as delivery is carried out by RINCO ULTRASONICS carriage paid or CIF, the damaged consignment will if applicable be replaced and claims asserted towards the responsible transport insurance.

3.3 Positioning of the unit

The location of the unit is significant. In order to guarantee a long service life the unit should be operated in a clean environment. Attention is to be paid that the electronic appliances are stored vibration-free.

The settings by the plant are carried out at 20° C. The environment temperature can be between 10° to 50° C during use.

4 Product information

4.1 Product overview/technical data

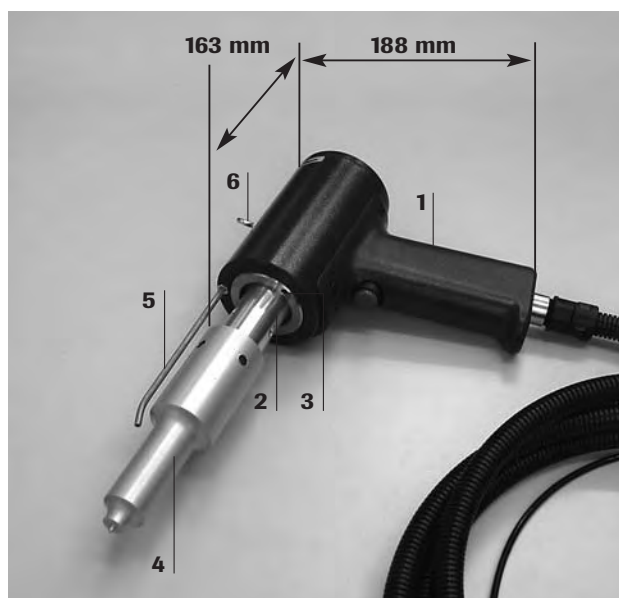
4.1.1 Manual welding unit

HG 20-1

- 1 Handle
- 2 Transducer TR20-F2, amplification factor 1:1.5
- 3 Front screw
- 4 Horn (customer-specific)
- 5 Cooling air supply horn
- 6 Hanging loop

Dimension in mm

Weight 1.8 kg (without horn)



4.1.2 Ultrasonic generator SL20

- 1 Housing
- 2 Generator plug-in module
- 3 Type designation of the plug-in module

Dimension in mm

Weight: 7 kg

4.1.3 Available generator modules

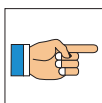
Type	maximum output power
GM 20-600	600 W
GM 20-1000	1000 W

4.1.4 Connected loads

- 230 V 50-60 Hz
- Maximum current consumption
 - SL20-600 3.5 A
 - SL20-1000 5.7 A



4.1.5 Cooling (accessories)

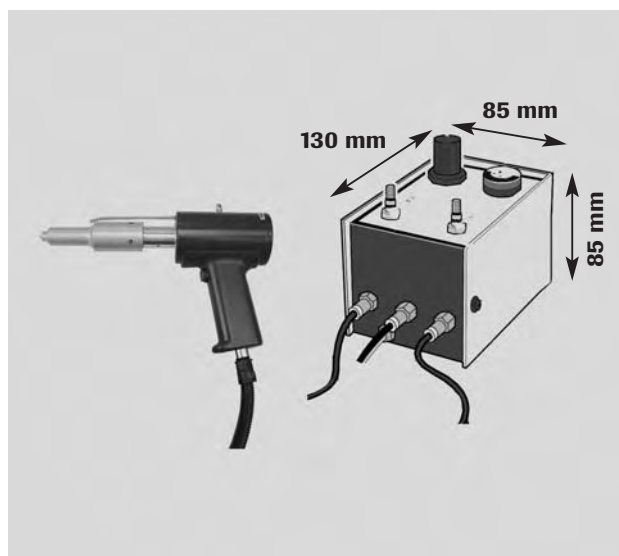


In case of high-performance applications the unit must be cooled.

The presented cooling system can be upgraded.

Valve box for specific cooling air supply

Compressed air connection: Dry, filtered compressed air max. 7 bar or 105 psi



5 Control and display elements

5.1 Manual welding unit

1 Trigger button

Button for activating the ultrasonic. Do not touch the horn when active!

2 Front screw

3 Horn (customer-specific)



In no way must tuned horns be changed by mechanic processing. This can result in damages to the oscillator system and generator!



5.2 Valve box (optional)



During use the temperature on the transducer and on the horn must not exceed 50° C. Otherwise they must be cooled using compressed air.

18 System pressure regulator

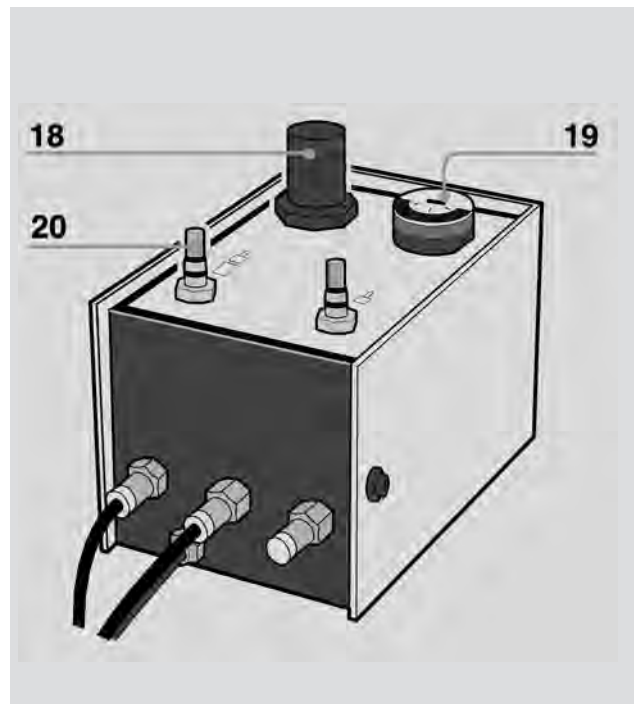
The system pressure regulator serves to set the air pressure. The control button is to be pulled out to stipulate the nominal value. The control button is to be adjusted to the requested setting by pressing. Maximum connected pressure: 7 bar

19 System pressure gauge

The pressure manometer displays the set maximum cooling air pressure.

20 Cooling air quantity regulator "Transducer"

The cooling air quantity of the transducer can be set using this regulator. The cooling air flowing out from the transducer can be guided to the horn with a corresponding pipe. The second quantity regulator serves appliances with separate cooling air supply.



5.3 Ultrasonic generator SL20

26 Generator module handles

If required the generator module is pulled out by these handles. The mounting screws (34) for opening the generator module are located above and below the handles.



Never pull out or push in generator module when the unit is connected to the mains (high voltage)! Do not touch circuit board, high voltage of charged capacitors!

27 LED beams

This indicator shows the power supplied during the welding process.

The indicator should not exceed the 10% mark if the horn is not loaded (swinging free in the air)

An error message will appear if the 100% mark is exceeded.

The maximum power output (Peak) is displayed after the welding process by means of a flashing LED.

28 LCD display, 2-lines

The LCD display serves to show:

- Weld parameters
- Error messages
- Operating status

29 Input keyboard

Via this keyboard the

- Generator functions can be activated
 - Weld parameters can be changed
- a** Change programming/welding operation

b One program line forwards

c One program line backwards

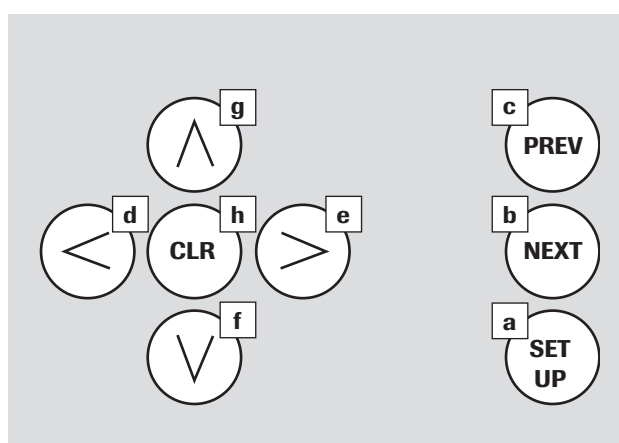
d Select number to the left

e Select number to the right

f Reduce number value

g Increase number value

h Set value to zero



30 Button "US TEST"

Button for activating the ultrasonic test.

The actual oscillator frequency is shown in the display. If the button is activated for longer than 5s, an error message appears. Do not touch the horn!

31 LED

- "US ON" ultrasonic active
- "VALVE" magnetic valve active
- "ERROR" error output active

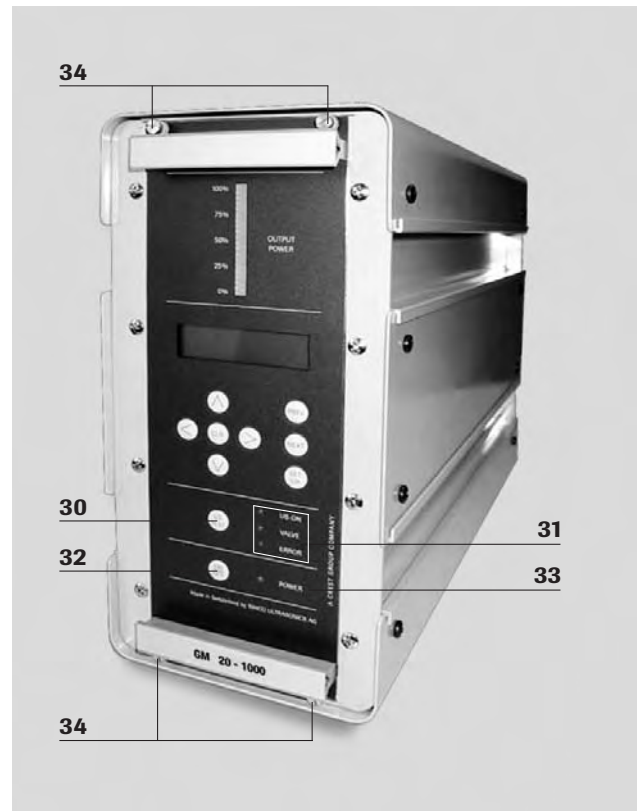
32 Button "ON/OFF"

33 LED "POWER"

Operating display

34 Mounting screws

The mounting screws must be screwed tightly during operation!



6 Initial operation

6.1 Choice of location

Choose location for the unit according to the following criteria:

- Clean environment
- Vibration-free stand for the electronic appliances
- Environment temperature during operation:
10° C – 50° C
with settings: 20°C

6.2 Assemble and connect unit

Execute the following steps to ensure that the unit is ready for operation:

1. Establish cable connections between the hand welding unit and generator.



Only use earthed mains connection!

2. Plug the unit into the sockets on the generator:

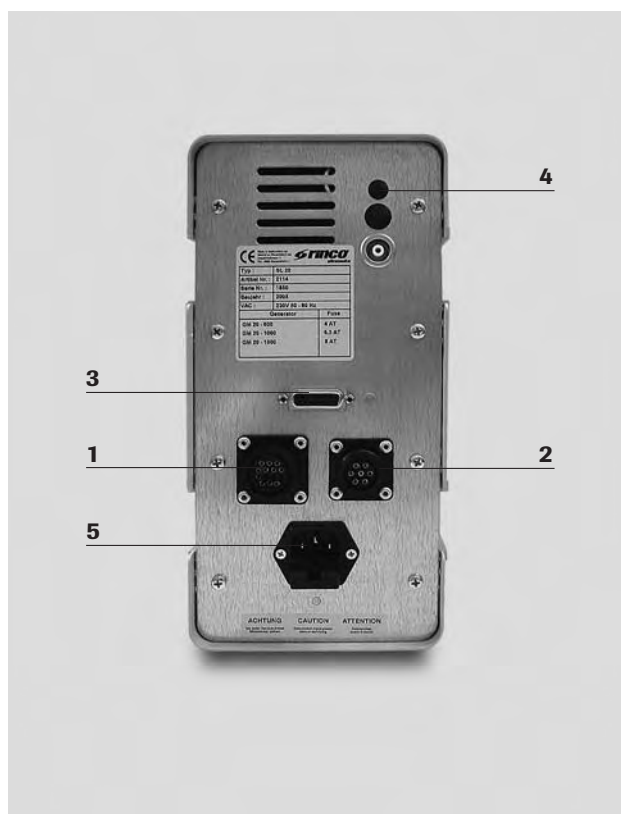
- 1 STO1 no function with hand unit
- 2 STO2 trigger connection
- 3 STO3 no function with hand unit
- 4 STO4 RF cable socket
- 5 STO5 mains connection

3. Welding tool (horn)

As a rule the horn is mounted by the supplying plant for a new unit. If this is not the case, please observe the assembly instructions in Chapter 7 “retooling”.

6.3 First welding

Normally the generator is preset by the supplying plant for the welding unit concerned. In case changes are still necessary, please refer to Chapter 7, “retooling”.



7 Retooling

7.1 Basic setting of the generator for manual unit

By holding the button “SET UP” when starting (starting of the LED beam) you can go to the query of the code.

Enter the code 472 using the cursor keys **d** to **g** and press SET UP again.

The initialisation which appears should be set as follows:

Start:	Automatic
Trigger:	Off
Welding:	External/timer *)
Valve:	Off
After-pulse:	Off
Softstart:	7
Amplitude:	Internal
SDF:	Off
Power limit:	Off

*) Timer; for welding time which can be set constant.



Before unplugging the RF cable it is essential to ensure that the mains switch on the generator is switched off!

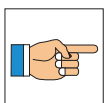
7.2 Replacement of horn

1. Detach horn **(4)** and Transducer **(3)** from each other using open-ended spanner **(G, accessories)**.

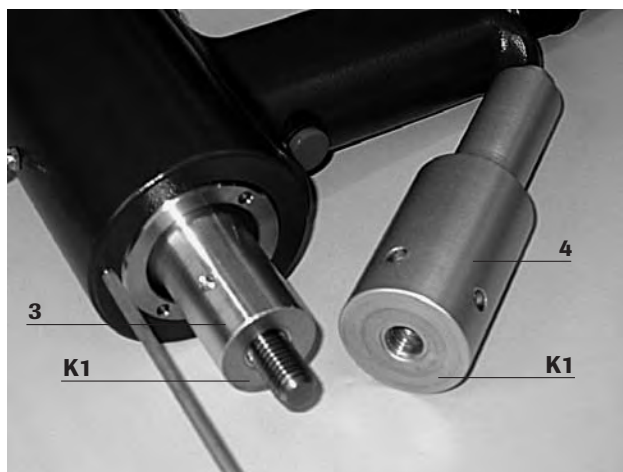
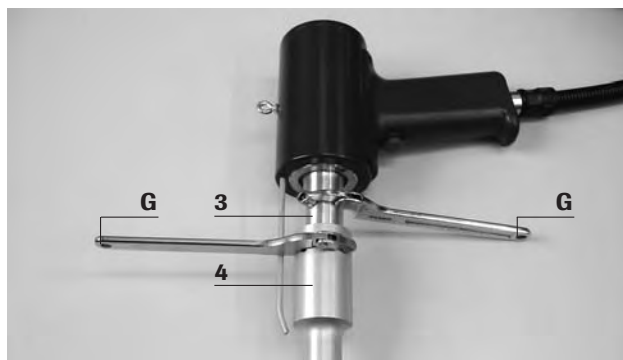


Never clamp the parts in a vice or similar clamping units!

2. Before assembly clean the contact surfaces **K1** with a clean cloth. Should one of the two surfaces have grooves, please contact the responsible RINCO service center. Screw on horn and tighten.



The horn must be tightened with a torque from 30 – 40 Nm.



7.3 Selection of amplitude

The amplitude A (half oscillating width) can be changed using “SET UP” and cursor “vertical” if required.

7.4 Amplitude values of the generator module series GM

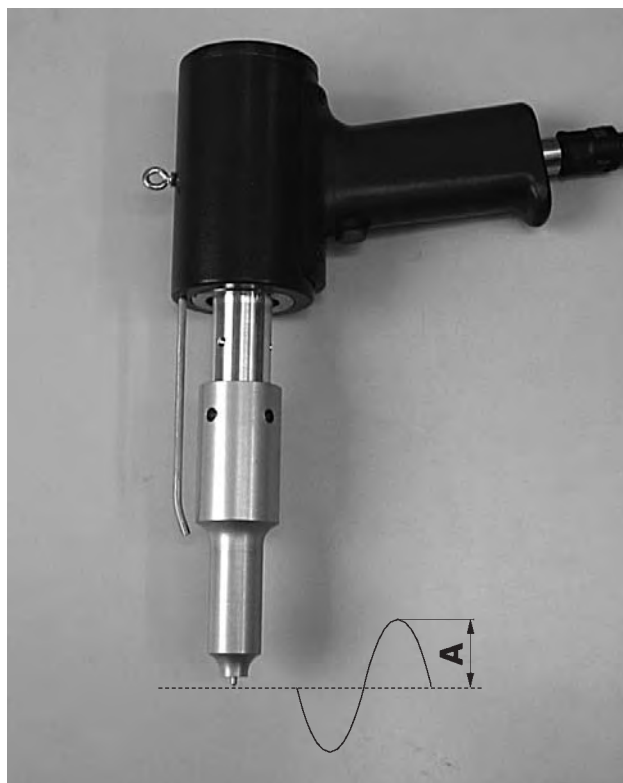
The various generator powers produce different amplitudes. The amplitude value described in the following table refers to the corresponding converter/transducer/horn configuration.

The amplitude for HG20-1 without booster can be read in the range 1:1.5 (analog booster 1:1.5) as a result of direct amplification of the transducer.

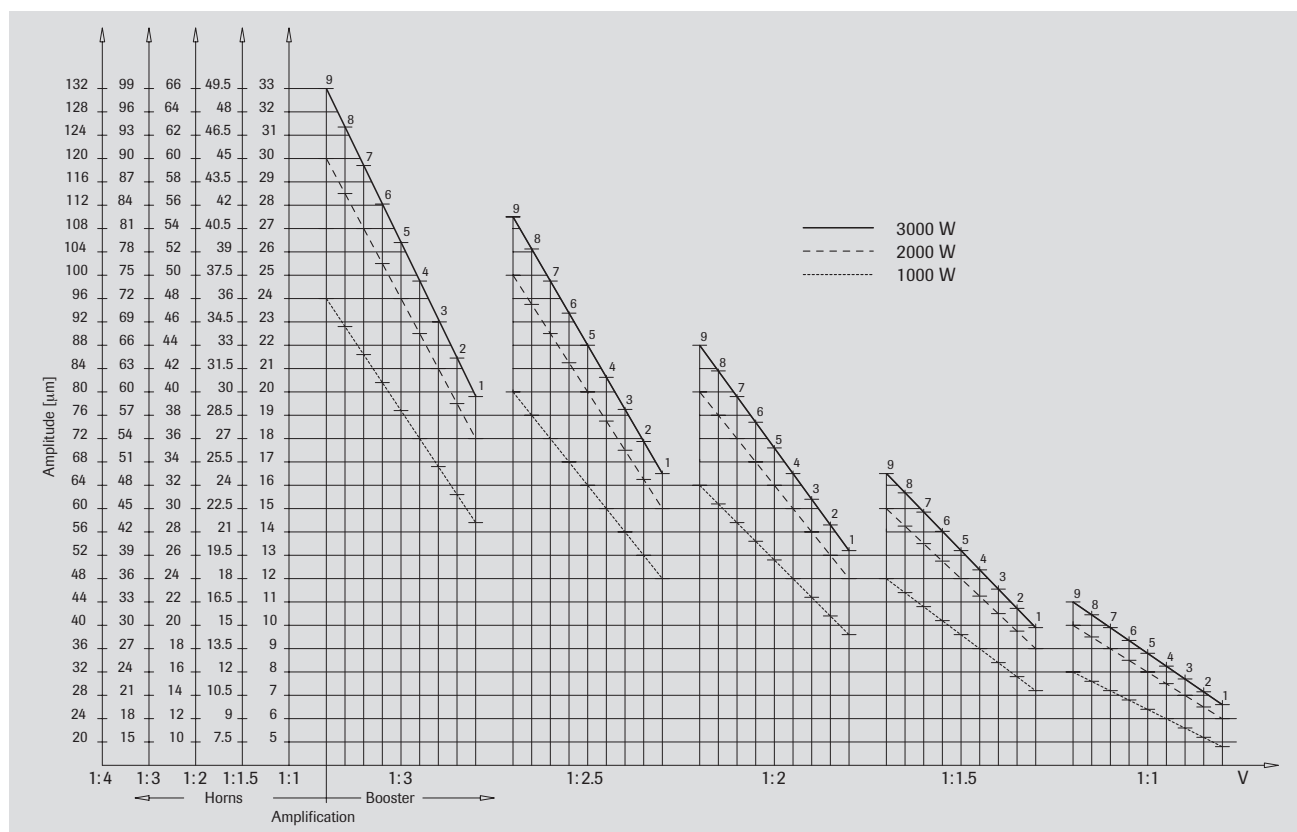
The amplitude appears in the display as number 1 to 9 and can be read in the diagram below in [Im].



Never set directly to the maximum level 9.
This can lead to destruction of the horn.



7.5 Amplitudes of 20 kHz SL generators



8 Cleaning and service

8.1 General service work



Cleaning and service work may only be carried out by specially trained personnel.

Before beginning service work it is to be ensured that all sources of energy such as power supply are interrupted.

Attention: Never use corrosive agents to clean the keyboard or foil of the generator.

8.2 Hand welding unit

The hand welding unit requires no special maintenance.

However regular cleaning of

- Transducer **(3)**
- Horn **(4)**

Guarantee a long and interference-free operation of the unit.

8.3 Generator

The generator is maintenance-free.



8.4 Oscillator system



Only carry out work on oscillator system (S1) when the supply voltage is switched off! High voltage!

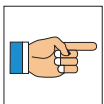
Avoid contact with the RF socket (RF1) of the manual welding unit.

Do not connect any measuring units to the RF socket of the manual welding unit!

The transducer is also electrically charged after the generator has been switched off.

8.5 Screw connection

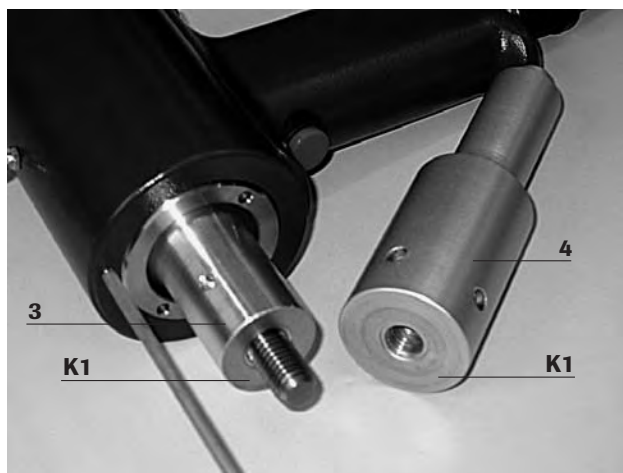
Unscrew horn after a longer period of operation according to the regulations in Chapter 7 “retooling” and check that it is clean.



Fastening torque: 30 – 40 Nm

The black areas on the coupling point **K1** can be cleaned as follows:

1. Clean using oil-free cleaning agent and woollen cloth or paper.
2. Please contact the responsible service center in case of uneven surfaces or grooves.

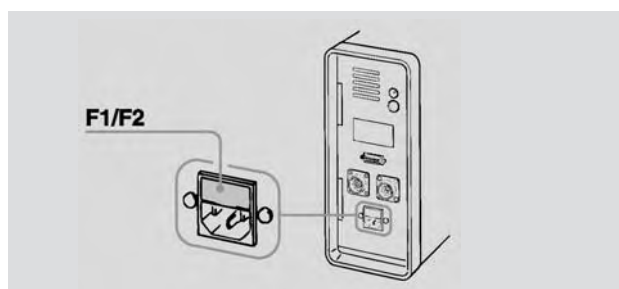


9 Internal unit service

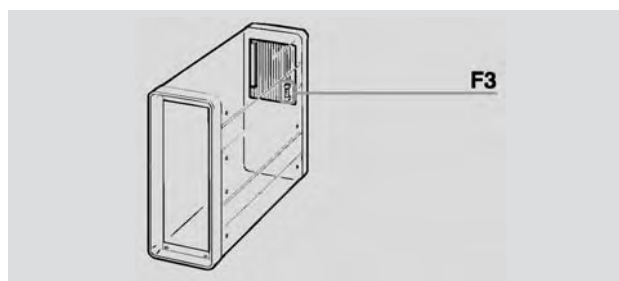
9.1 Fuses generator SL20

Fuses are located on the following component groups:

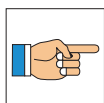
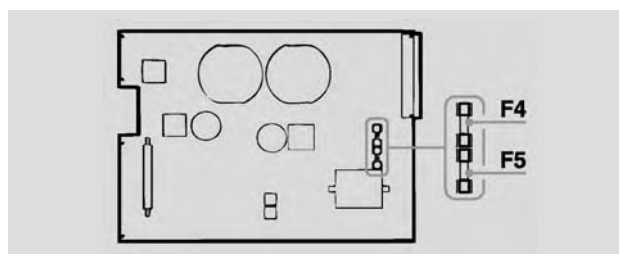
Power socket



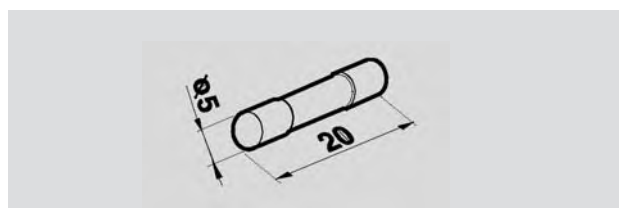
Busprint



Generator module



All fuse dimensions: 5 x 20 mm.



9.2 List of fuses generator SL20

9.2.1 Fuses 230 Volt

Generator	Power socket		Generator module		
	F1	F2	F3	F4	F5
GM20-600	4A/T	4A/T	400mA/T	4A/T	100mA/T
GM20-1000	6.3A/T	6.3A/T	400mA/T	4A/T	100mA/T

10 Error messages and troubleshooting



Errors may only be corrected by specially trained personnel. In case of uncertainty please contact the service center or the manufacturer directly. (see Annex)

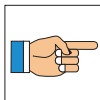
10.1 Error messages and troubleshooting when switching the unit on

Error	possible causes	Trouble shooting
Generator does not switch on	– no power supply – control line HG to generator (STO2) not plugged in – fuse defect – module not in the housing	– Check mains connection – Check cable connection – Check fuses F1-F5 – Insert and screw in module
After the unit is switched on the following appears in the display: ERROR FREQUENCY	– Oscillator system not inserted – RF cable not plugged in with oscillator system or generator – Error on the oscillator system: – a) not screwed tight enough – b) horn defect or outside of the frequency – c) booster defect – d) transducer defect	– Check oscillator system – Check RF cable – Tighten screws (30 – 40 Nm) – Replace horn – Replace booster – Send in manual welding unit for repair

10.2 Error messages from the generator during operation

Error	Possible cause
"OVERLOAD 1" The generator was loaded more than 100% of the nominal power.	- Pressing strength too high - Too low generator power for desired application - Defect oscillator system
"OVERLOAD 2" The generator had to use the power reserves of the end level to a maximum extent	- Amplitude too low - Supply voltage below the nominal tolerance
"FREQUENCY" The oscillator system is outside of the frequency range of the generator.	- Defect or non-adjusted horn - Defect booster - Defect transducer - Defect or not plugged-in RF cable - Defect generator - Change in frequency by touching with the anvil
"TIME EXCEEDED" The stipulated operation time was exceeded.	- The button US TEST was pressed for longer than 5 seconds - The control time was exceeded. With an application with contact switch off.
"HARDWARE 1"	- Defect in the generator - Trigger button defect

An error is quitted with the button **CLR**.



The error hardware 1 can only be quitted by switching the unit off.

11 Service addresses

The technical customer service of RINCO ULTRASONICS will be pleased to be of assistance in case of technical interferences and welding problems which may occur.

Our customer service requires an exact description of the technical interference or the welding problem to be able to provide serious consultancy.

Our Address:

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