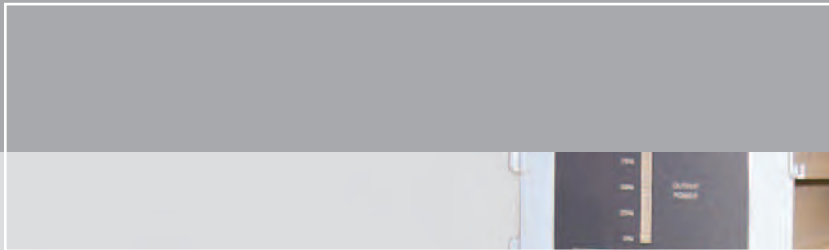


# Operating Manual



## Hand Welding Unit HW35-3

with generator SL35





#### Disclaimer

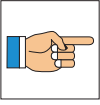
The information in this brochure corresponds to our current state of knowledge. However, it is not to be understood as a warranty for certain characteristics or for suitability of the products for certain applications.

Our general contractual terms apply in this regard, and reference should also be made to these terms with regard to liability. No industrial property rights of any kind are granted to the user along with this brochure, nor are any assurances made with regard to a licence. Corresponding separate agreements would be necessary for this purpose. The suitability of the products for particular applications may only be checked with our own specialists. The German version of the brochure is binding with regard to accuracy of the information given.

Copyright by RINCO ULTRASONICS AG, Switzerland

Version 2.0, gb, Art.-No. 35551

## Note



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

**The unit 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.**

## Unit-specific information

Adhesive hand unit

Adhesive generator

## Agency

## Table of contents

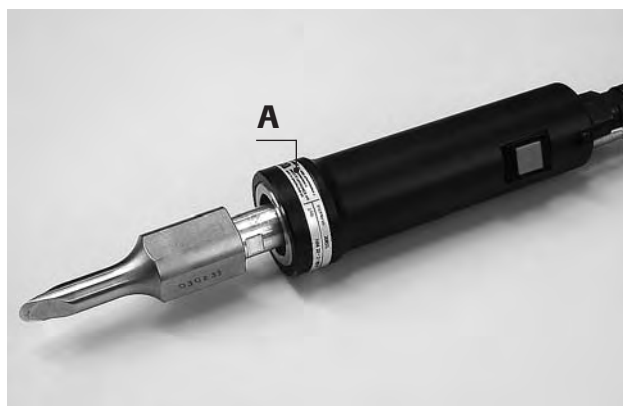
<b>1</b>	<b>Explanation of symbols and signs</b>	<b>6</b>	<b>8</b>	<b>Cleaning and service</b>	<b>18</b>
			8.1	General service work	18
			8.2	Hand welding unit	18
			8.3	Generator	18
			8.4	Oscillator system	19
			8.5	Screw connection	19
<b>2</b>	<b>Safety information</b>	<b>7</b>	<b>9</b>	<b>Internal unit service</b>	<b>20</b>
2.1	General information	7	9.1	Fuses for generator SL35	20
2.2	Intended use	7	9.2	List of fuses for generator SL35	20
2.3	Improper use	7	9.2.1	Fuses 230 Volt	20
2.4	Important instructions	7	9.2.2	Fuses 110 Volt	20
2.5	Personnel qualifications	7			
2.6	Installation of unit	7			
2.7	Operation	7			
2.8	Noise emissions	8			
2.9	Warranty statement	8			
<b>3</b>	<b>Transportation</b>	<b>9</b>	<b>10</b>	<b>Error messages and troubleshooting</b>	<b>21</b>
3.1	Acceptance of delivery	9	10.1	Error messages and troubleshooting during start	21
3.2	Damage during transit	9	10.2	Error messages from the generator during operation	22
3.3	Positioning of the unit	9			
<b>4</b>	<b>Product information</b>	<b>10</b>	<b>11</b>	<b>Service addresses</b>	<b>23</b>
4.1	Product overview/technical data	10			
4.1.1	Hand welding unit	10			
4.1.2	Ultrasonic generator SL35	11			
4.1.3	Available generator modules	11			
4.1.4	Connected loads	11			
4.1.5	Cooling (accessories)	11			
<b>5</b>	<b>Control and display elements</b>	<b>12</b>			
5.1	Hand welding unit	12			
5.2	Valve box (optional)	12			
5.3	Ultrasonic generator SL35	13			
<b>6</b>	<b>Initial operation</b>	<b>15</b>			
6.1	Choice of location	15			
6.2	Assemble and connect unit	15			
6.3	First welding	15			
<b>7</b>	<b>Retooling</b>	<b>16</b>			
7.1	Basic setting of the generator for manual unit	16			
7.2	Changing the horn	16			
7.3	Selection of amplitude	17			
7.4	Amplitude values of the generator module series GM	17			
7.5	Amplitudes of 35 kHz SL generators	17			

## 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.

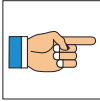
The purpose of this manual is to provide the buyer and user all necessary information for handling, assembly, operation and care of the unit.

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, Leq 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)

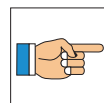
(details according to SUVA information no. 86048 d 4.94)

## **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

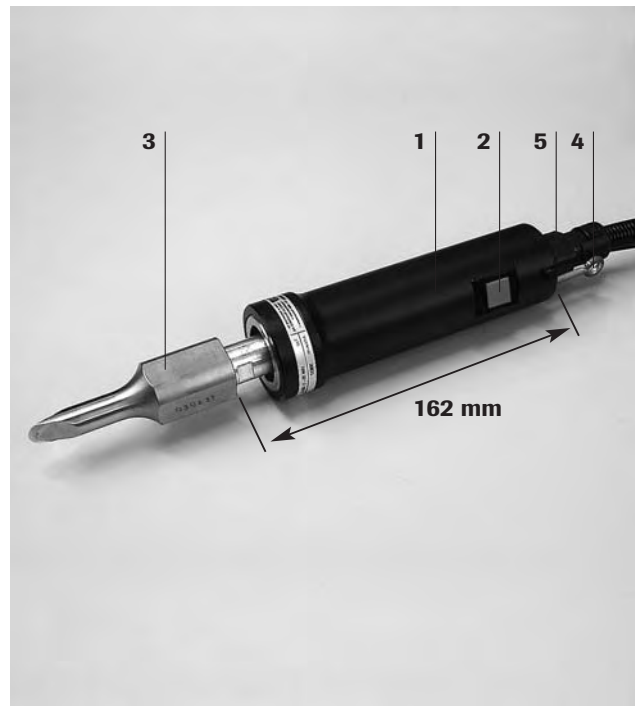
#### 4.1.1 Hand welding unit

##### HW35-3

- 1 Housing
- 2 Trigger key
- 3 Horn (customer-specific)
- 4 Hanging clip
- 5 Cooling air connection nipple

Dimensions in mm

Weight 0.7 kg (without horn)



#### 4.1.2 Ultrasonic generator SL35

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

Dimensions in mm

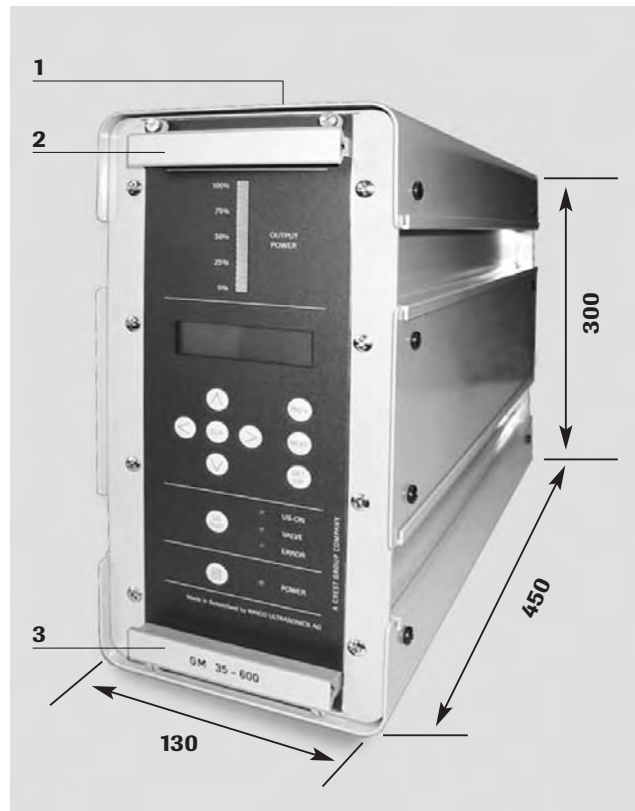
Weight: 7 kg

#### 4.1.3 Available generator modules

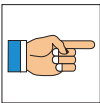
Type maximum	power output
GM 35-400	400 W
GM 35-600	600 W

#### 4.1.4 Connected loads

- 230 V 50 – 60 Hz
- option 110 V (to 600 W)
- Maximum current consumption 5 A



#### 4.1.5 Cooling (accessory)

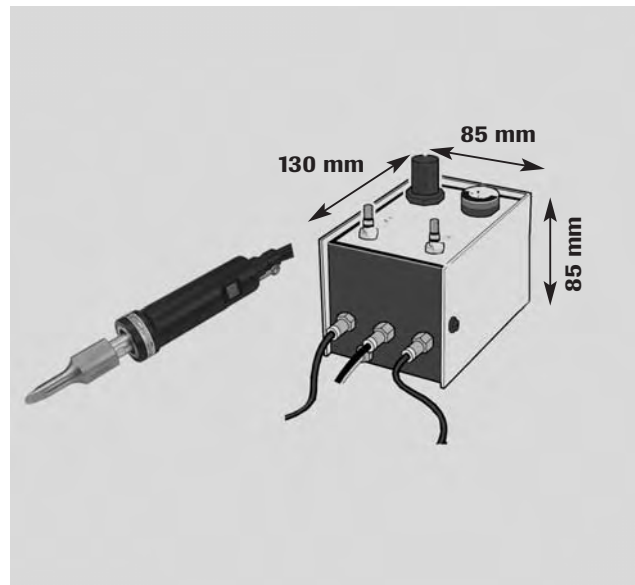


**During high-power applications the torch must be cooled.**

**The illustrated cooling system can be installed later.**

#### Valve box for the specific cooling air duct

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



## 5 Control and display elements

### 5.1 Hand welding unit

#### 1 Trigger key

Key for activating the ultrasonic.

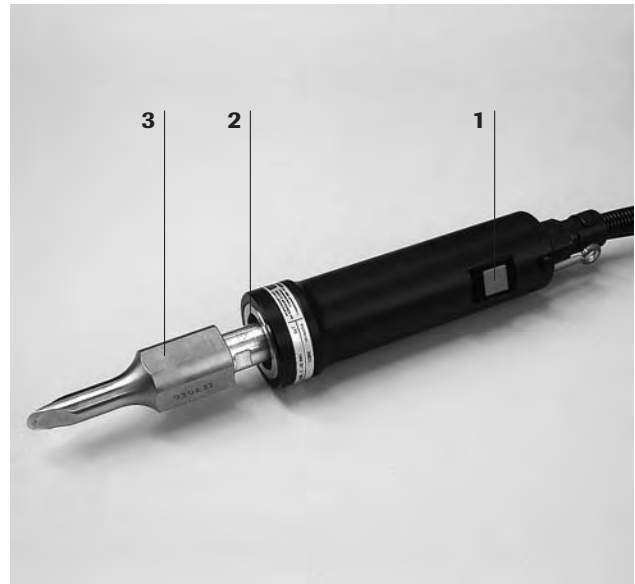
Do not touch the horn when ultrasonic is emitted!

#### 2 Transducer

#### 3 Horn (customer-specific)



**Never alter the tuned horn by making mechanical changes. This can cause damage to the oscillator system and the generator!**



### 5.2 Valve box (optional)



**During use, the temperature on the transducer and on the horn may not exceed 50° C.**

**Otherwise they are to be cooled with compressed air.**

#### 18 System pressure controller

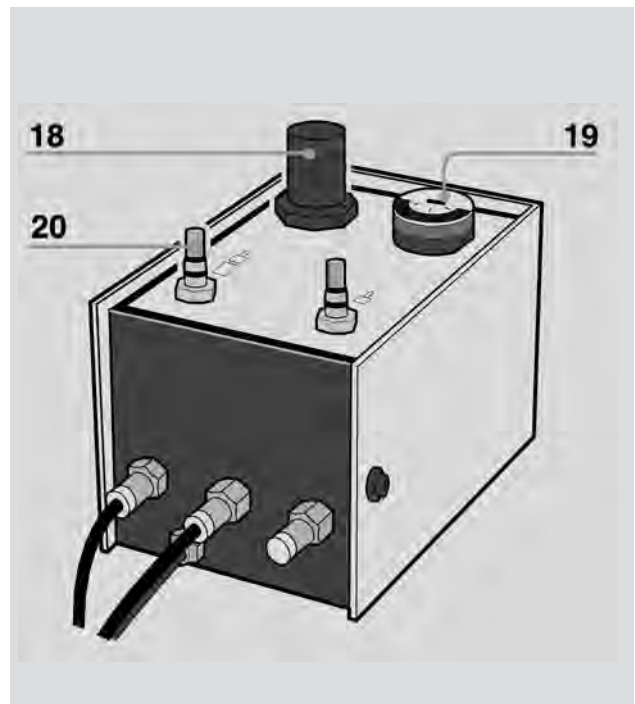
The system pressure controller serves to set the air pressure. To specify the default value, pull out the setting adjustment knob. The setting adjustment knob can be adjusted to the desired setting by pressing on it. Maximum connected loads: 7 bar

#### 19 System pressure controller

The pressure manometer displays the setting for the maximum cooling air pressure.

#### 20 Cooling air throttle “transducer”

With the help of this regulator, the amount of cooling air emitted by the transducer can be set. The cooling air flowing out of the transducer can be lead to the horn with an appropriate tube. The second throttle serves equipment with separate cooling air ducts.



## 5.3 Ultrasonic generator SL35

### 26 Generator module plate

The generator module can be removed onto these plates if necessary. The fixing screws (34) for opening the generator module are located above and below the plates.



**Never remove or replace the generator module when it is plugged in (high voltage)!**

**Do not touch the conductor board, condensers charged with high voltage!**

### 27 LED bar

This display shows the power output during the welding sequence.

When the horn is not under a load, i.e. swinging freely in the air, the display should not exceed the 10% mark.

If the 100% mark is exceeded an error message occurs.

After the welding sequence, the peak power output is marked with a blinking LED.

### 28 LCD display, 2-line

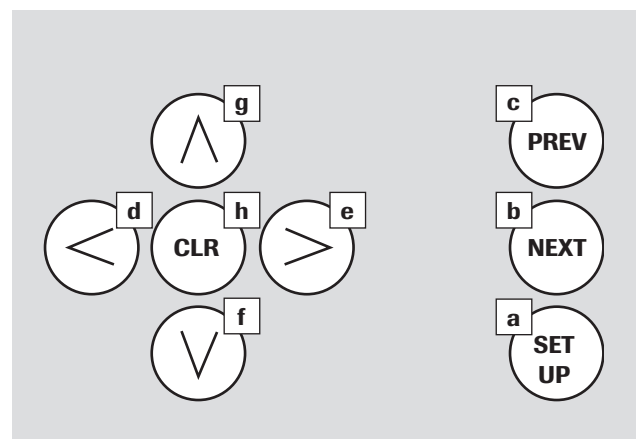
The LCD display serves to show:

- weld parameters
- error messages
- operating conditions

### 29 Input keyboard

Using this keyboard

- generator functions can be activated
  - weld parameters can be changed
- a** Change programming/weld operation  
**b** One programme line forward  
**c** One programme line back  
**d** Number selection left  
**e** Number selection right  
**f** Reduce numeric value  
**g** Increase numeric value  
**h** Set value to zero



### 30 "US-Test" key

Key for activating the ultrasound test.

The current oscillator frequency is displayed. If the key is pressed for more than 5 seconds, an error message appears. Do not touch the horn!

### 31 LED

- "US ON" ultrasound enabled
- "VALVE" magnetic valve enabled
- "ERROR" error output enabled

### 32 "ON/OFF" key

### 33 "POWER" LED

Operation display

### 34 Fixing screws

The fixing screws must be tight during operation!



## 6 Initial operation

### 6.1 Choice of location

Select an operating location for the equipment according to the following criteria:

- Clean surroundings
- Vibration-free resting place for the electronic equipment
- Environmental temperature during operation:  
10° C – 50° C  
when making settings: 20° C

### 6.2 Assemble and connect unit

Take the following steps to put the equipment in operating condition:

1. Connect the cables between the hand welding unit and the generator.



**Only use a grounded electrical connection!**

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

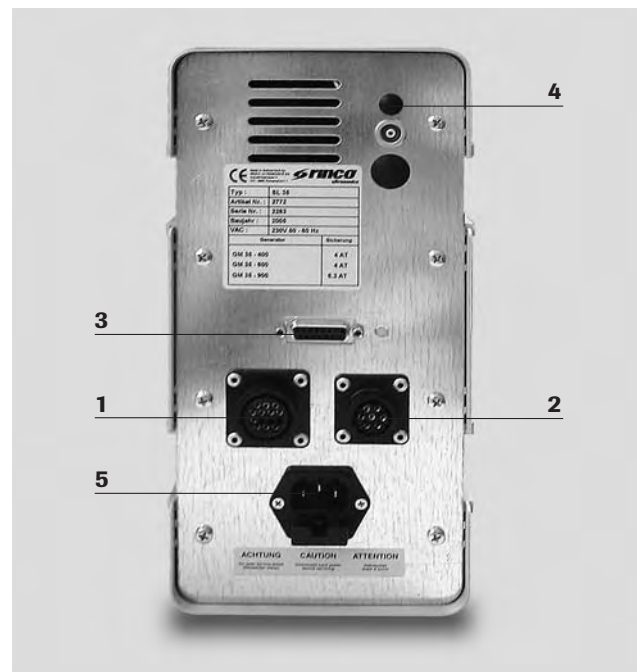
- 1 STO1 no function for hand-held units
- 2 STO2 trigger socket
- 3 STO3 no function for hand-held units
- 4 STO4 RF-cable socket
- 5 STO5 Power cord socket

3. Weld tool (horn)

In general, the horn is factory-installed on new equipment. If this is not the case, please follow the installation instructions in chapter 7, “Retooling”.

### 6.3 First welding

Normally, the generator is factory-set for the appropriate welding device. Should, however, changes be necessary, please consult chapter 7 “Retooling”.



## 7 Retooling

### 7.1 Basic setting of the generator for manual unit

If you hold down the “SET UP” key during start up (boot up of the LED bar), you are asked for the code. Use the cursor keys **d** through **g** to input the code 472 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
Soft start:	7
Amplitude:	Internal
SDF:	Off
Power limit:	Off

\*) Timer; for setting a constant weld time.



**Before unplugging the RF-cable, make absolutely sure that the power switch on the generator is turned off!**

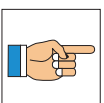
### 7.2 Changing the horn

1. The horn (**4**) and the transducer (**3**) can be detached from each other by using the open-ended spanner (**G, Accessories**).

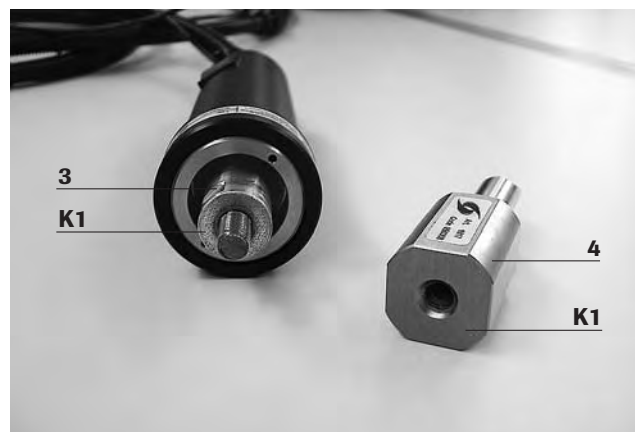
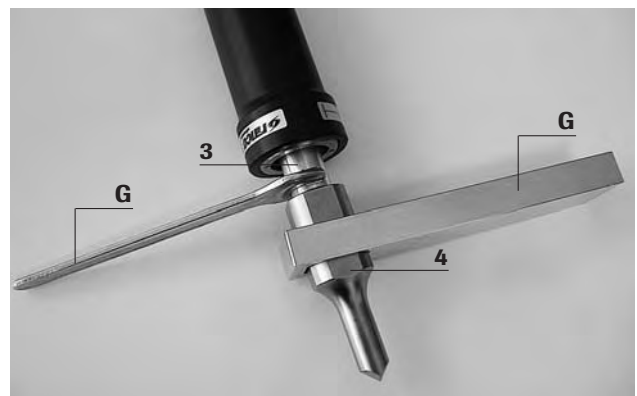


**Never tighten the parts in a vice or similar clamping device!**

2. Before mounting, clean the contact area K1 with a clean rag. Should grooves have developed on both surfaces, please contact the appropriate RINCO service location. Screw the horn on and tighten.



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





### 7.3 Selection of amplitude

The amplitude A (half an oscillation amplitude) can be changed if necessary using "SET UP" and the cursor "vertical".

### 7.4 Amplitude values of the generator module series GM

The different generator powers result in different amplitudes. The amplitude values given in the following table refer to the appropriate converter/transducer/horn configuration.

For HW35-3 without booster, the amplitude can be read off in the area of "Booster 1:1:5" due to direct converter gain.

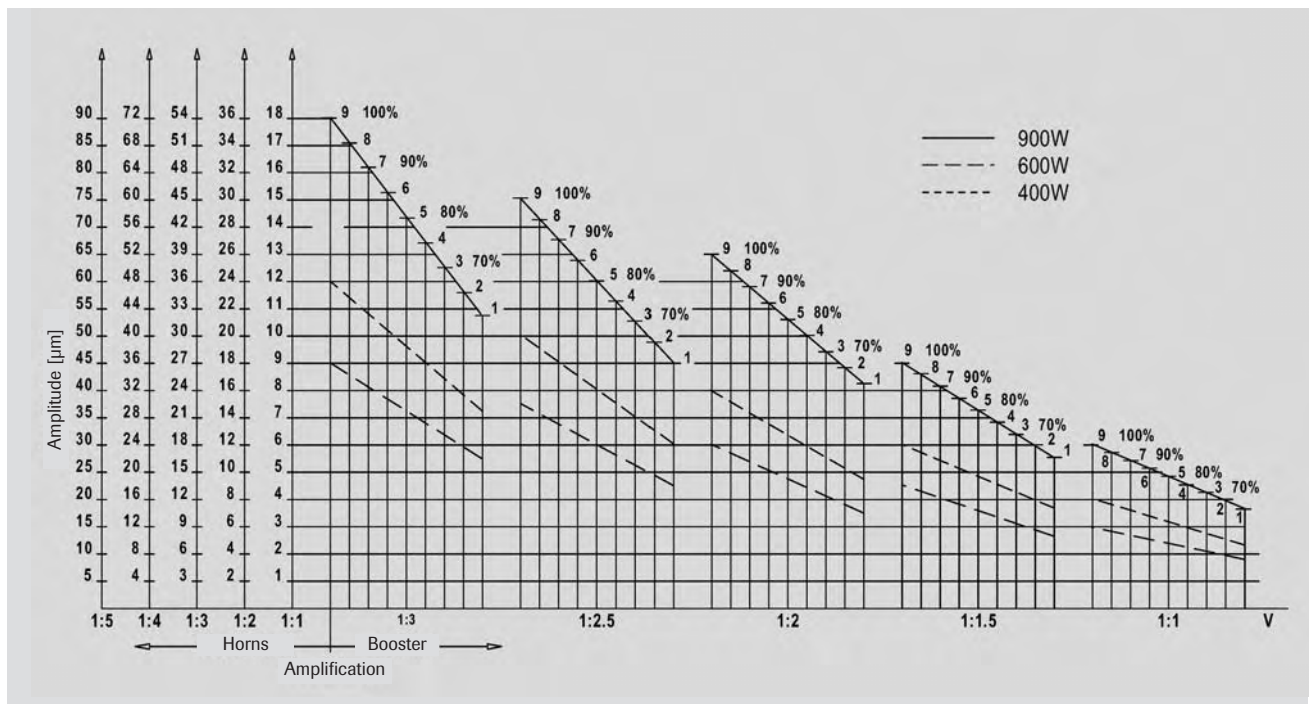
The amplitude appears in the display as a number ranging from 1 to 9 and can be read off in various diagrams in [ $\mu\text{m}$ ].



**Never set it directly to the highest level of 9. This can lead to damage to the horn.**



### 7.5 Amplitudes of 35 kHz SL generators



## 8 Cleaning and service

### 8.1 General service work



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

Before beginning the maintenance work, make sure that all power sources, such as electrical power, are disconnected.

**Attention:** Never clean the keyboard or foil of the generator with acidic cleaners.

### 8.2 Hand welding unit

The hand welding unit requires no special maintenance.

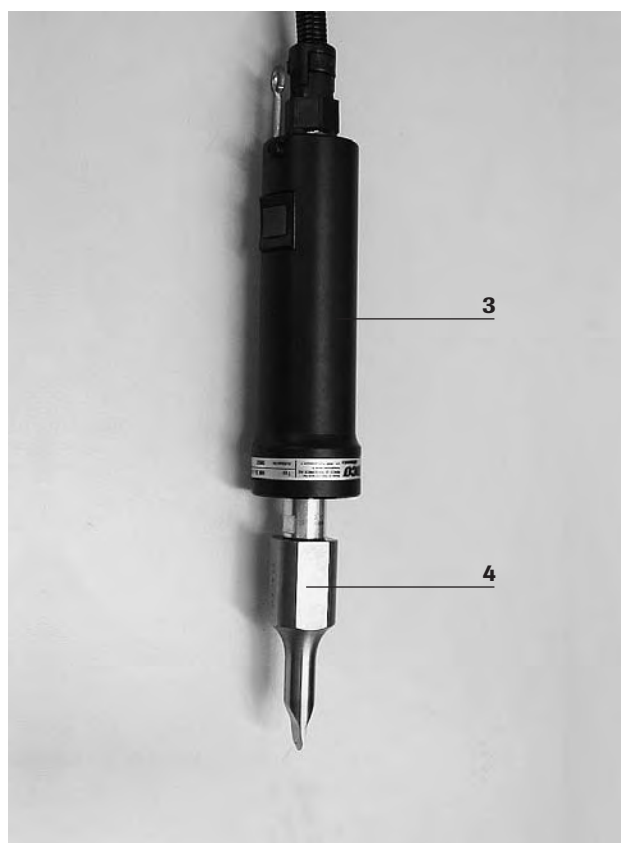
However, regularly cleaning the

- housing **(3)**,
- horn **(4)**,

guarantees a long and problem-free operation of the unit.

### 8.3 Generator

The generator is maintenance-free.



## 8.4 Oscillator system



Work on the oscillator system (S1) only if the supply voltage is switched off! High-voltage!

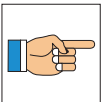
Avoid contact with the RF socket (RF1) of the hand welding unit.

Do not connect any measuring device to the RF socket of the hand welding unit!

The built-in transducer contains an electrical charge even after the generator has been switched off!

## 8.5 Screw connection

After the horn has been in operation for a longer period of time, disconnect it according to the instructions in chapter 7 “Retooling” and check it for cleanliness.



**Tightening torque: 30 – 40 Nm**

Black spots on the interface **K1** can be cleaned as follows:

1. Clean with an oil-free cleaning agent and a cotton or paper cloth.
2. If the surface is uneven or has grooves, please contact the appropriate service location.

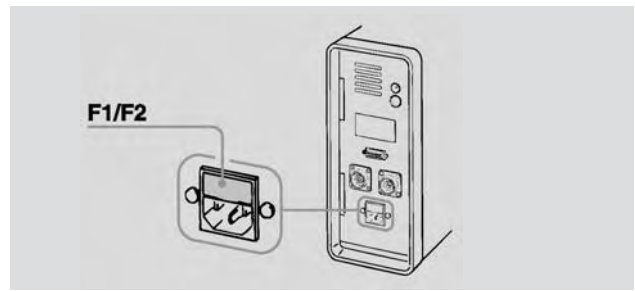


## 9 Internal unit service

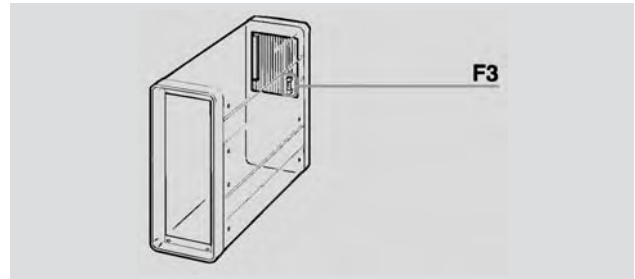
### 9.1 Fuses for generator SL35

Fuses are located in the following component groups:

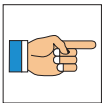
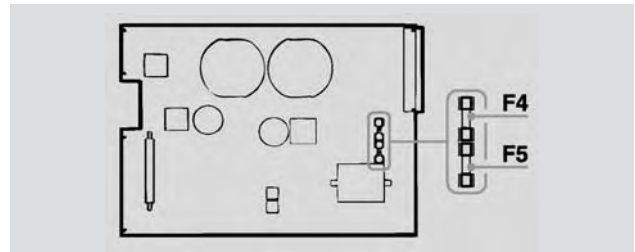
**Power socket**



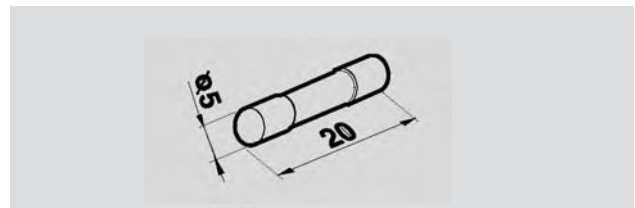
**Print bus**



**Generator module**



All fuse dimensions: 5 x 20 mm.



### 9.2 List of the fuses for generator SL35

#### 9.2.1 Fuses 230 Volt

Generator	Power socket		Generator module		
	F1	F2	F3	F4	F5
GM35-400	4A/T	4A/T	400mA/T	4A/T	100mA/T
GM35-600	4A/T	4A/T	400mA/T	4A/T	100mA/T

#### 9.2.2 Fuses 110 Volt

Generator	Power socket		Generator module		
	F1	F2	F3	F4	F5
GM35-400	8A/T	8A/T	400mA/T	8A/T	160mA/T
GM35-600	8A/T	8A/T	400mA/T	8A/T	160mA/T

## 10 Error messages and troubleshooting



Troubleshooting can only be performed by specially trained personnel. If there are uncertainties, contact the service location or the producer directly. (see appendix)

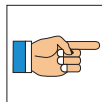
### 10.1 Error messages and troubleshooting during start

Error	possible causes	Trouble shooting
Generator does not switch on	<ul style="list-style-type: none"> <li>- no power supply</li> <li>- control line HW to generator (STO2) not plugged in</li> <li>- fuse defect</li> <li>- module not in the housing</li> </ul>	<ul style="list-style-type: none"> <li>- Check mains connection</li> <li>- Check cable connection</li> <li>- Check fuses F1-F5</li> <li>- Insert and screw in module</li> </ul>
After the unit is switched on the following appears in the display: ERROR FREQUENCY	<ul style="list-style-type: none"> <li>- Oscillator system not inserted</li> <li>- RF cable not plugged in with oscillator system or generator</li> <li>- Error on the oscillator system:               <ul style="list-style-type: none"> <li>- a) not screwed tight enough</li> <li>- b) horn defect or outside of the frequency</li> <li>- c) booster defect</li> <li>- d) transducer defect</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Check oscillator system</li> <li>- Check RF cable</li> <li>- Tighten screws (30 – 40 Nm)</li> <li>- Replace horn</li> <li>- Replace booster</li> <li>- Send in manual welding unit for repair</li> </ul>

## 10.2 Error messages from the generator during operation

Error	Possible cause
<p>“OVERLOAD 1” The generator was loaded more than 100% of the nominal power.</p>	<ul style="list-style-type: none"> <li>- Pressing strength too high</li> <li>- Too low generator power for desired application</li> <li>- Defect oscillator system</li> </ul>
<p>“OVERLOAD 2” The generator had to use the power reserves of the end level to a maximum extent</p>	<ul style="list-style-type: none"> <li>- Amplitude too low</li> <li>- Supply voltage below the nominal tolerance</li> </ul>
<p>“FREQUENCY” The oscillator system is outside of the frequency range of the generator.</p>	<ul style="list-style-type: none"> <li>- Defect or non-adjusted horn</li> <li>- Defect booster</li> <li>- Defect transducer</li> <li>- Defect or not plugged-in RF cable</li> <li>- Defect generator</li> <li>- Change in frequency by touching with the anvil</li> </ul>
<p>“TIME EXCEEDED” The stipulated operation time was exceeded.</p>	<ul style="list-style-type: none"> <li>- The button US TEST was pressed for longer than 5 seconds</li> <li>- The control time was exceeded. With an application with contact switch off.</li> </ul>
<p>“HARDWARE 1”</p>	<ul style="list-style-type: none"> <li>- Defect in the generator</li> <li>- Trigger button defect</li> </ul>

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:**

RINCO ULTRASONICS AG  
Industriestrasse 4  
CH-8590 Romanshorn 1  
Switzerland

### *Switzerland*

Tel. 071 466 41 00

Fax 071 466 41 01

### *International*

Tel. ++41 71 466 41 00

Fax ++ 41 71 466 41 01

[www.rincoultrasonics.com](http://www.rincoultrasonics.com)

[info@rincoultrasonics.com](mailto:info@rincoultrasonics.com)





**RINCO ULTRASONICS AG**  
Industriestrasse 4  
CH-8590 Romanshorn 1  
Switzerland

Tel. +41 71 466 41 00  
Fax +41 71 466 41 01

[info@rincoultrasonics.com](mailto:info@rincoultrasonics.com)  
[www.rincoultrasonics.com](http://www.rincoultrasonics.com)