



Sonosystems®

# Minic-III

## Training Manual

# Content

Safety informations

Operation

Tool Setup

Splice teaching

Welding mode

Changing tools

Maintenance

Data sheet



Sonosystems®

# Safety informations

- Be careful when removing the cutter. Cutting injuries possible.



- Don't touch sonotrode, converter and tools directly after welding. They may reach high temperatures. Risk of burns.



- Only special trained and authorized persons may carry out tool changes.





Sonosystems®

# Operation

1. Buttons for generator operation
2. Main switch with emergency stop function
3. Key switch
4. Button „Control ON“
5. Button „Control OFF“



## Key Switch – Operating modes

1. Tool setup
2. Welding mode
3. Splice teaching



## How to start the machine:

1. Turn on the main switch (controller slide-in and generator are supplied with energy).

1. Press  button

1. Control Outputs are activated
2. Welding module supplied with power
3. Machine supplied with compressed air
4. Sutwin is starting



Sonosystems®

## Password protection

### Password protection

1902 – Saving splices and sequences, entering the diagnosis

4711 – Entering the I/O test, entering the software

1875 – reset a started sequence

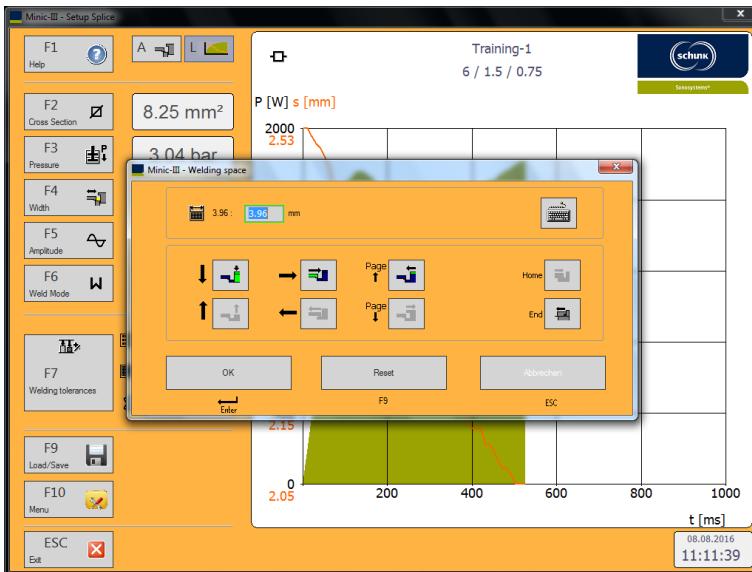


Sonosystems®

# Tool setup



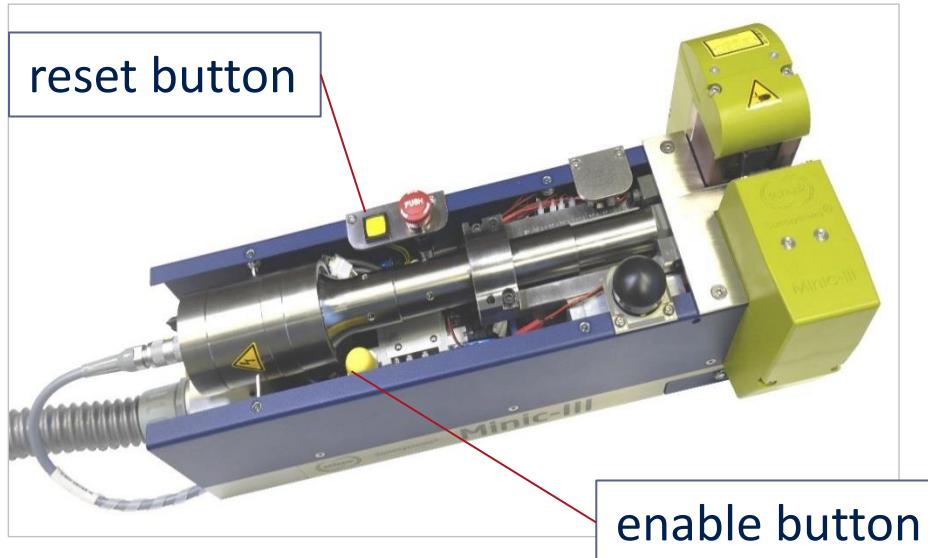
- Press **Home** button to close sound insulation
- Now all functions can be performed



Action	Function	Explanation
	Welding space	
	Tool open/ close	Anvil DOWN
		Anvil UP
	Move sliding unit	Sliding unit forward Sliding unit back
	Anvil forward/ back	Anvil forward
		Anvil back
	Move cutter (Option)	Cutting (cutter up)
		Cutter down
	Control sound insulation	Close sound insulation
		Open sound insulation



- Without the sound and finger guard you have to press the „enable“  button to use the functions of the „welding space“ menu
- After pressing the „reset“  button the welding module returns to home position



Converter under high voltage



Sonosystems®

# Splice teaching



## Splice teaching

**Minic-III - Setup Splice**

test-03  
Test 03

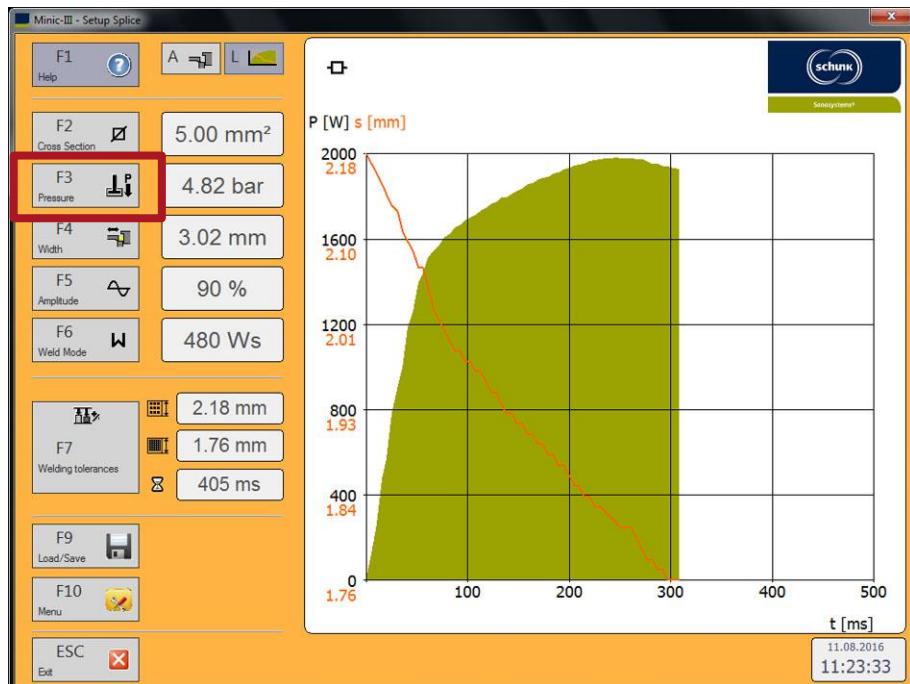
F1 Help	A	L
F2 Cross Section	4.50 mm <sup>2</sup>	Target value for <b>cross-sectional area</b>
F3 Pressure	4.59 bar	Target value for <b>welding pressure</b> displays the number of pressure cylinders for this weld operation
F4 Width	2.84 mm	Target value for <b>splice width</b>
F5 Amplitude	90 %	Target value for <b>welding amplitude</b> (a 3-kW generator corresponds to "100 %")
F6 Weld Mode	435 Ws	Dependency on selected welding mode: Target value for <b>energy</b>
F7 Welding tolerances	2.12 mm 1.56 mm 357 ms	Target value for <b>height difference</b>
F9 Load/Save		
F10 Menu		
ESC		

ABC 1 **1.50** — **1.50** ABC 2  
                  |  
                  **1.50** ABC 3

31.05.2016  
11:45:09



## Double cylinder technology



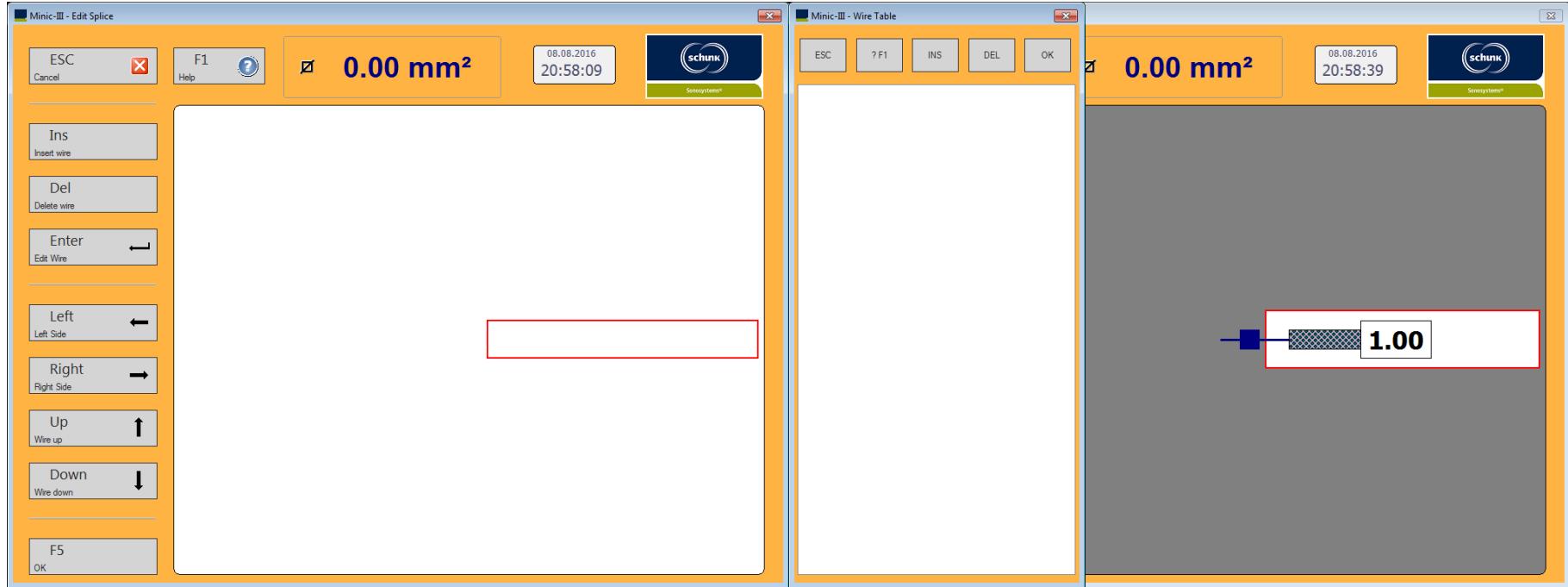
**Single cylinder:**  
small cross sections  $\leq 5\text{mm}^2$



**Double cylinder:**  
big cross sections  $> 5\text{ mm}^2$



## Splice teaching / adding a new wire



Step 1:

Insert a new wire

Ins  
Insert Wire

Step 2:  
Press INS again to create  
a wire



## Splice teaching / new wire

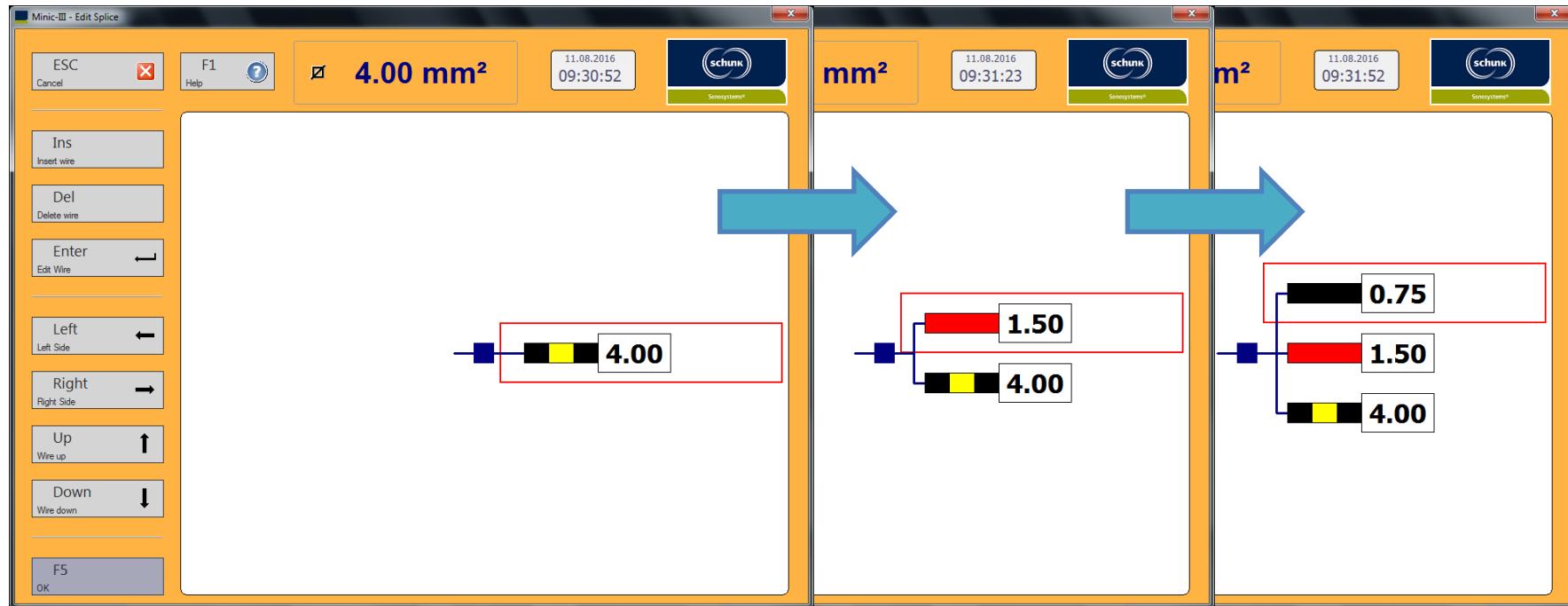


Step 3:  
Select cross section &  
wire colors

Step 4:  
Press **OK**



## Splice teaching / adding a new splice



New wire  
added

Quit the editor

F5

OK

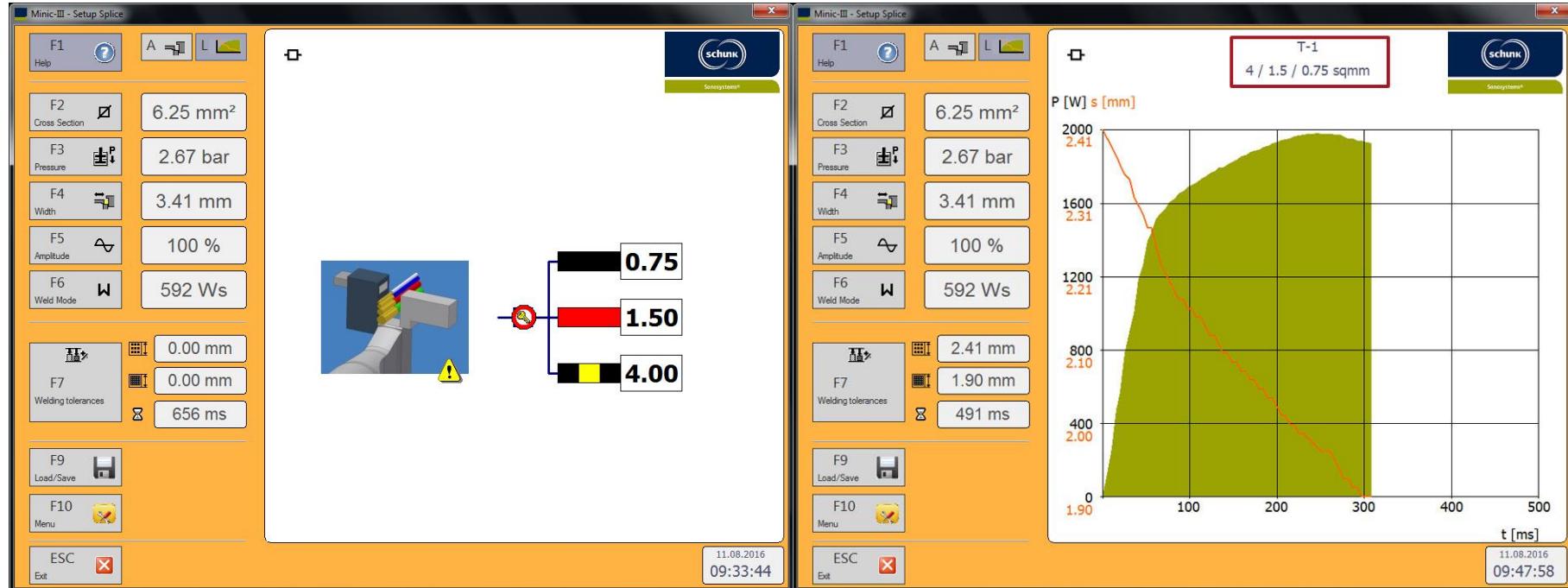
Repeat steps 1-4



Sonosystems®



## Splice teaching / adding a new splice



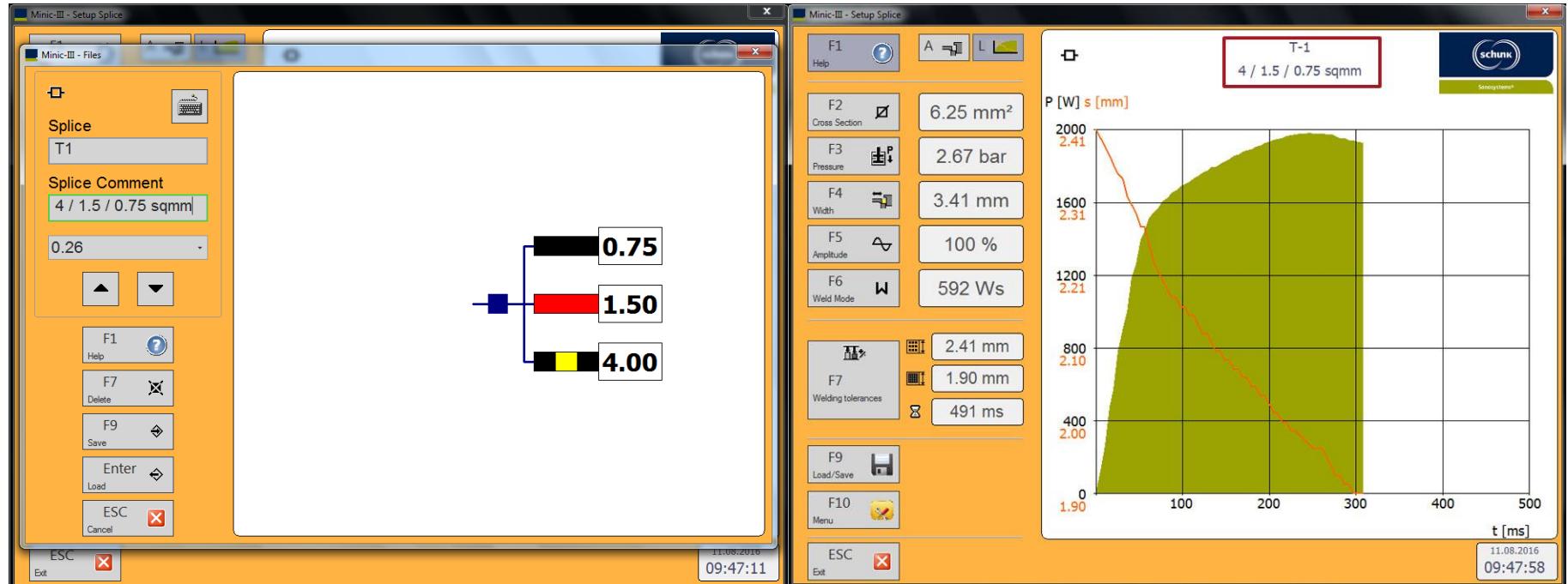
Weld the displayed splice

Save the splice

F9  
Load/Save



## Splice teaching / adding a new splice



Add splice name and  
comment.

Save splice

**F9**  
Save

Splice teached!



## Splice teaching / adding a new splice

After welding the quality characteristics of the splice have to be compared with the company internal /customer requirements / specifications.

e.g.:

- CMK
- Width – Height relation
- Compression ratio





### Steps for splice optimization:

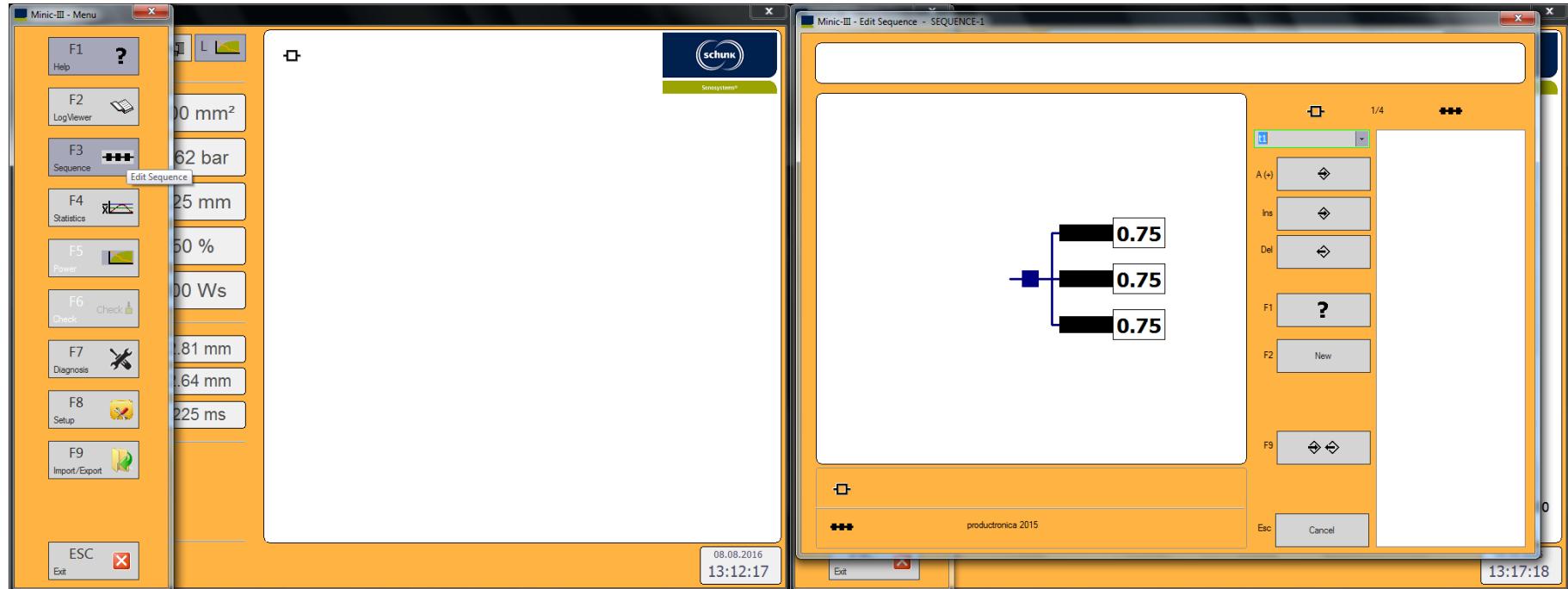
	Energy [Ws]	Pressure [bar]	Amplitude
			Amplitude + 10 %
		Pressure + 10 %	
	Energy + 10 %		
		Pressure + 10 %	
	Energy + 10 %		
		Pressure + 10 %	
	Energy + 10 %		
100%		Start value	



Sonosystems®



## Adding a new sequence

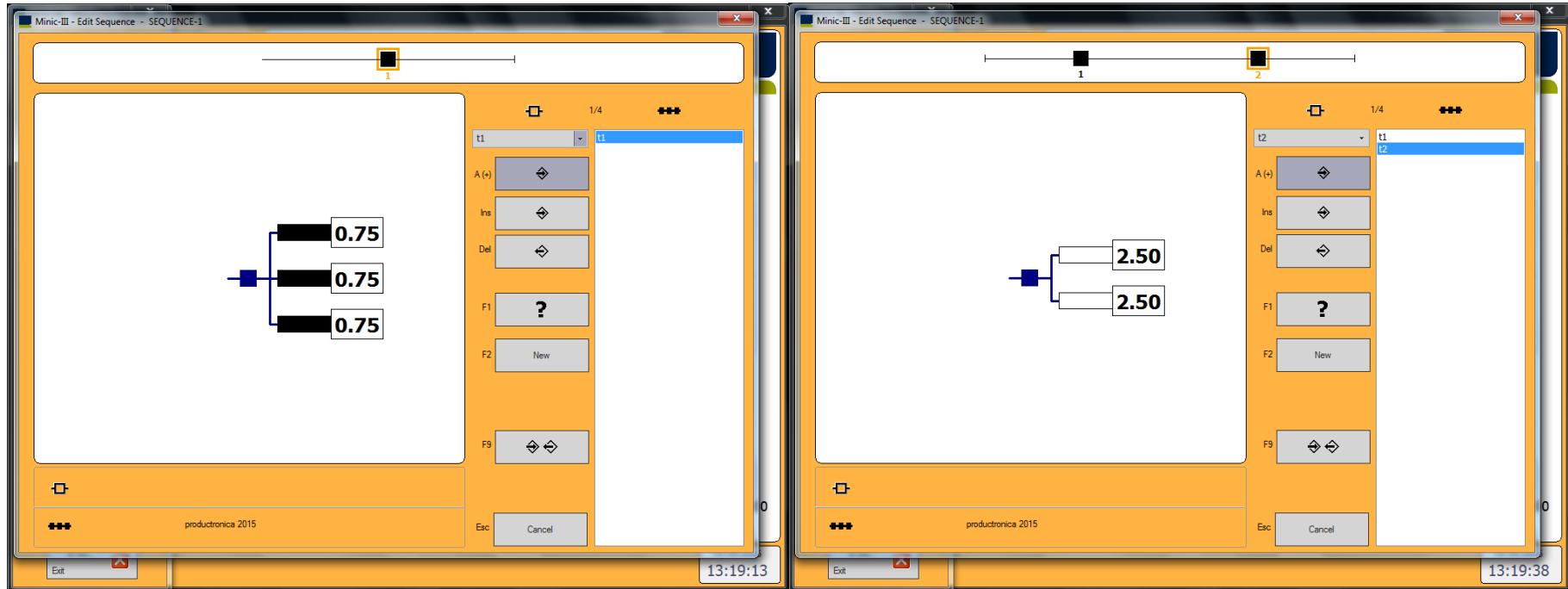


Open sequence window

Choose splice

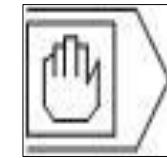


## Adding a new sequence

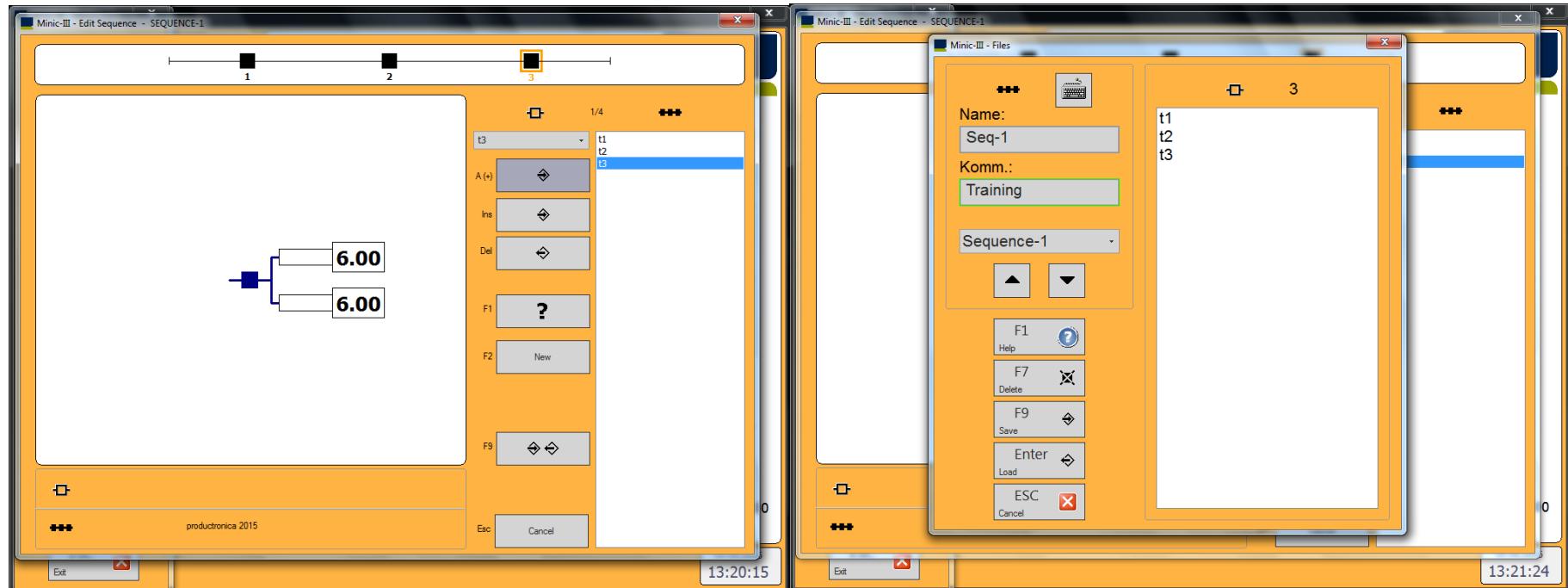


Add splice

Add splices



# Operation Adding a new sequence



Name sequence

Save sequence



Sonosystems®

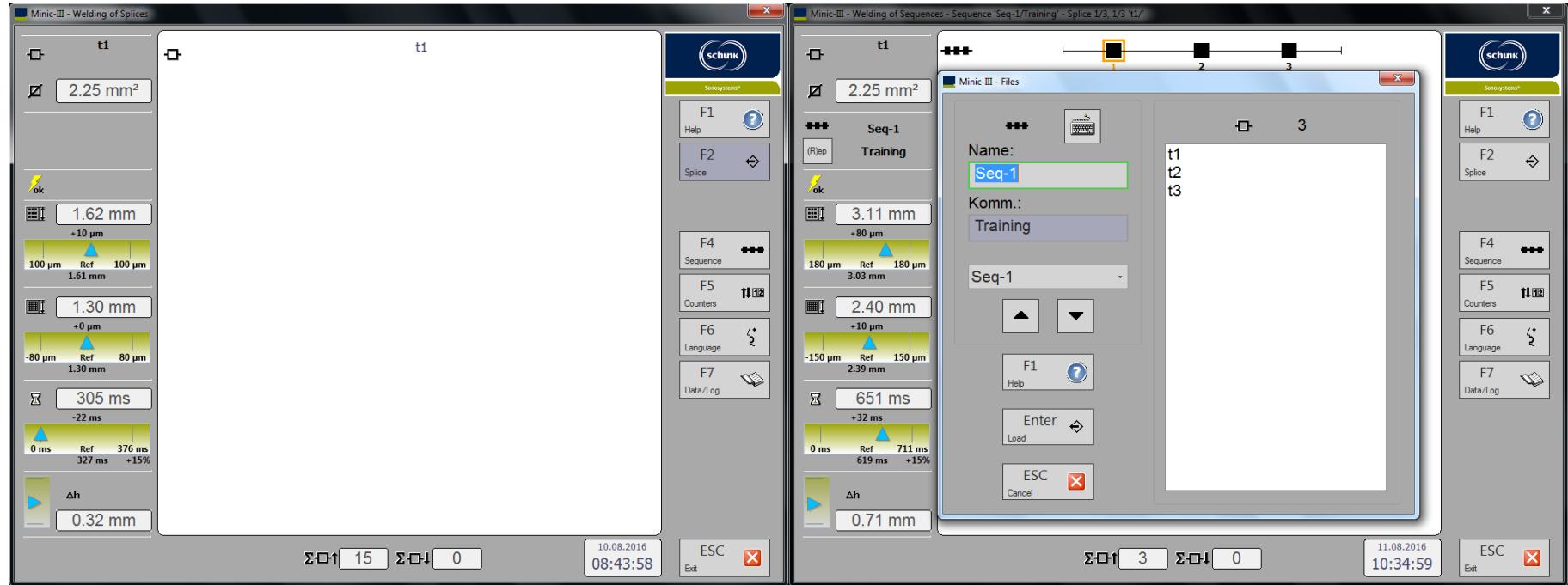
# Welding mode



Sonosystems®



## Load sequence in welding mode



Choose sequence

F4

Load sequence

Enter

Load



Sonosystems®

# Changing tools

The following actions are necessary to provide the safety of user and machine:

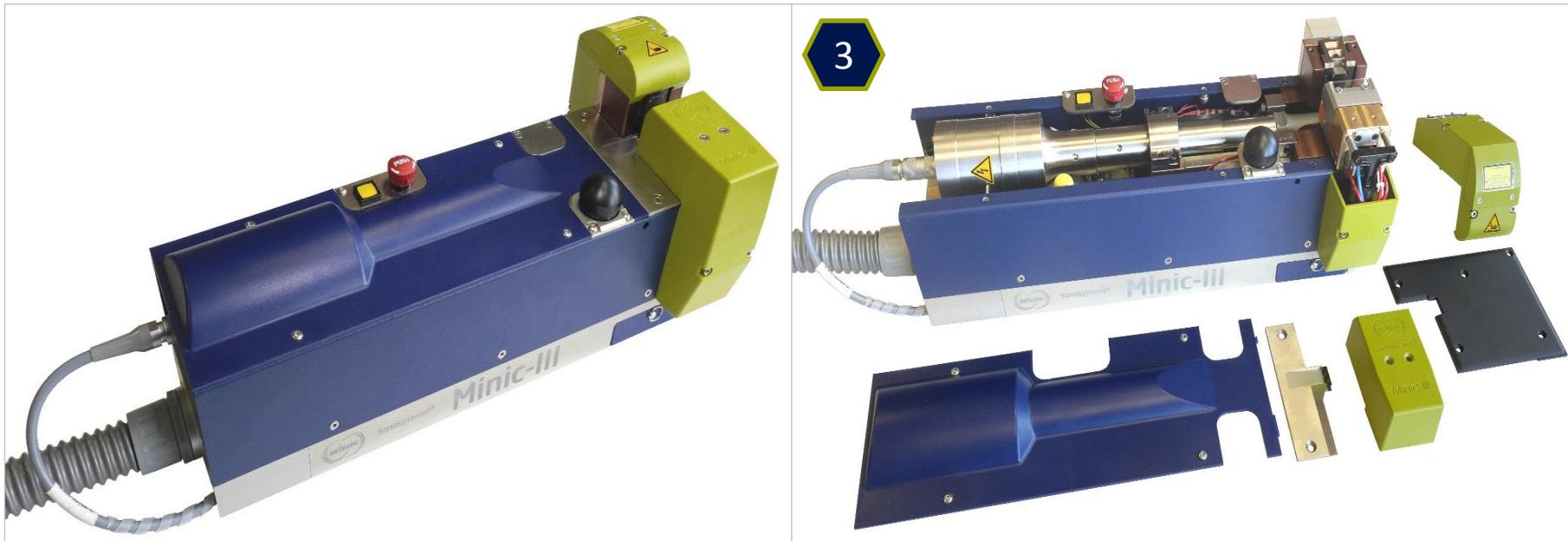


1. Press the OFF button to depressurize the system.



2. Pull out the HF-cable and cooling hose at the converter.

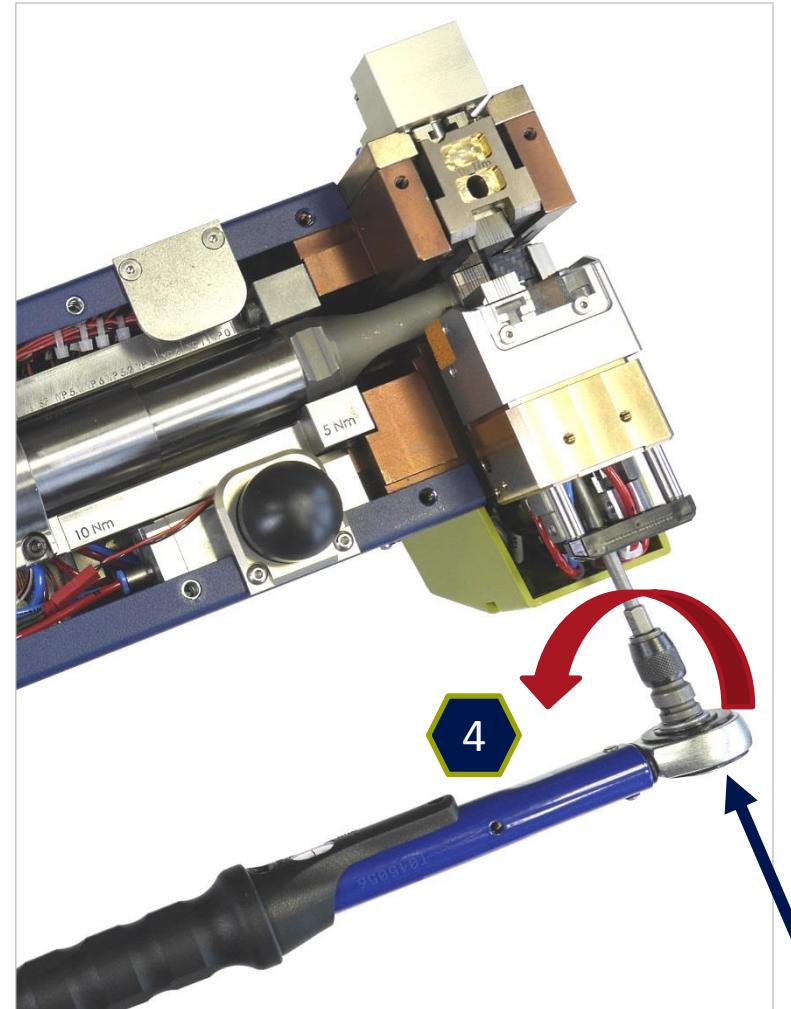
- Remove all covers
- All cover screws can be removed with an Allen key size 3



## Removal of sliding unit head

The removal of the gliding jaw head is only possible in forward position of the sliding system.

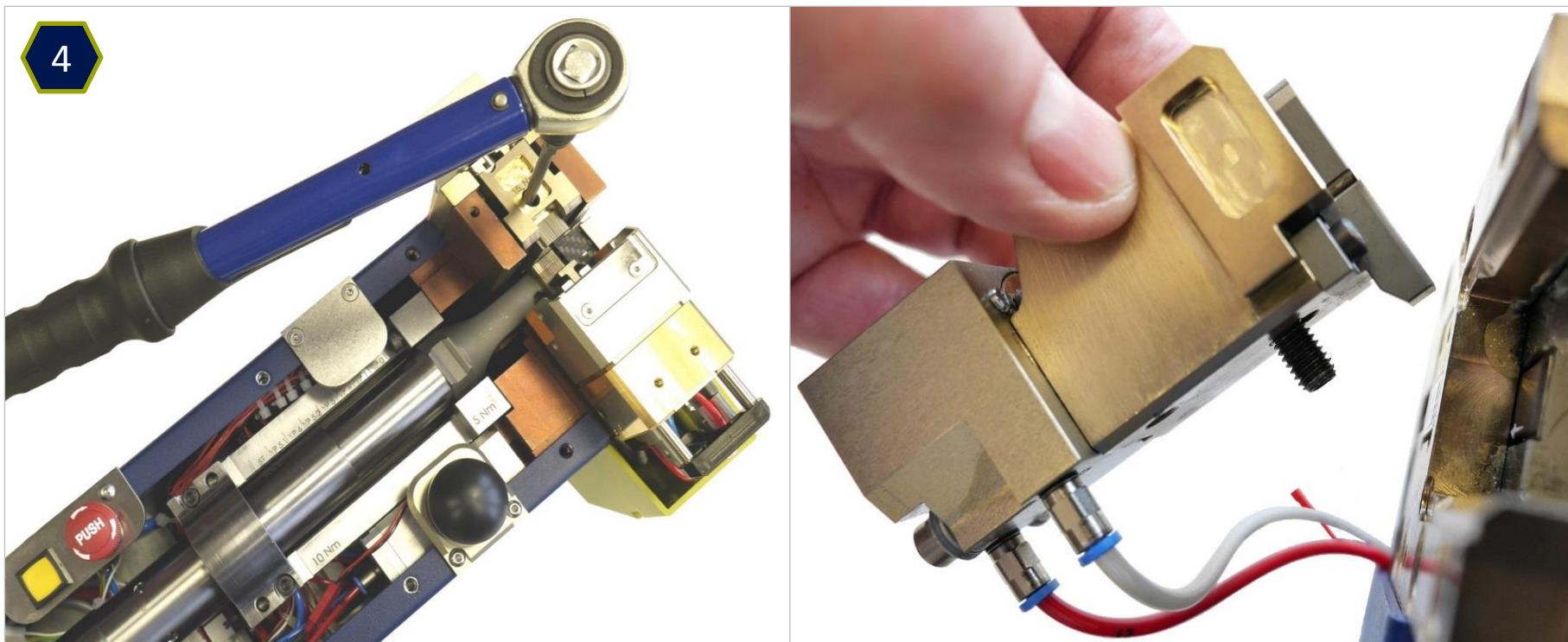
1. If necessary push the system forward by using an Allen key size 4.  4
  
2. Loosen the screw with an Allen key size 4 and remove sliding unit head.  4



## Removal of anvil unit

Loosen fastening screw of anvil support  
(Allen key size 4)

Remove anvil unit



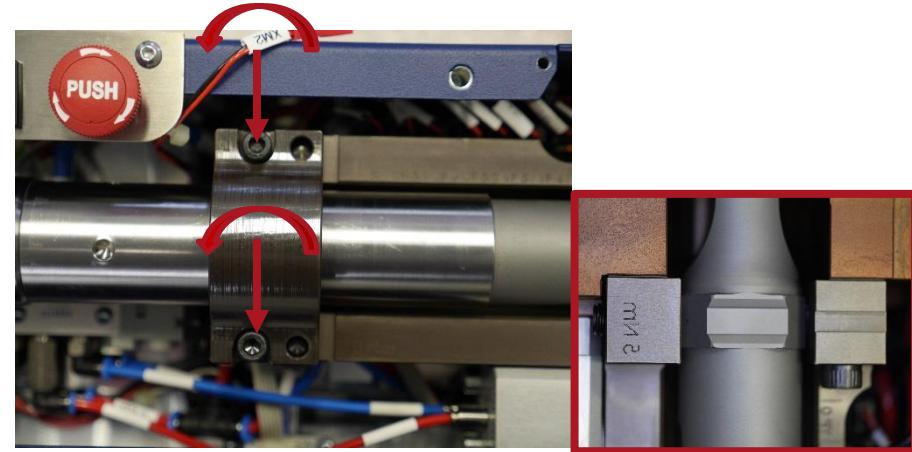
## Dismantling anvil unit:

- Detach anvil cylinder from anvil support
- Pull the anvil out of the anvil support
- Loosen and remove two screws at the surface plate

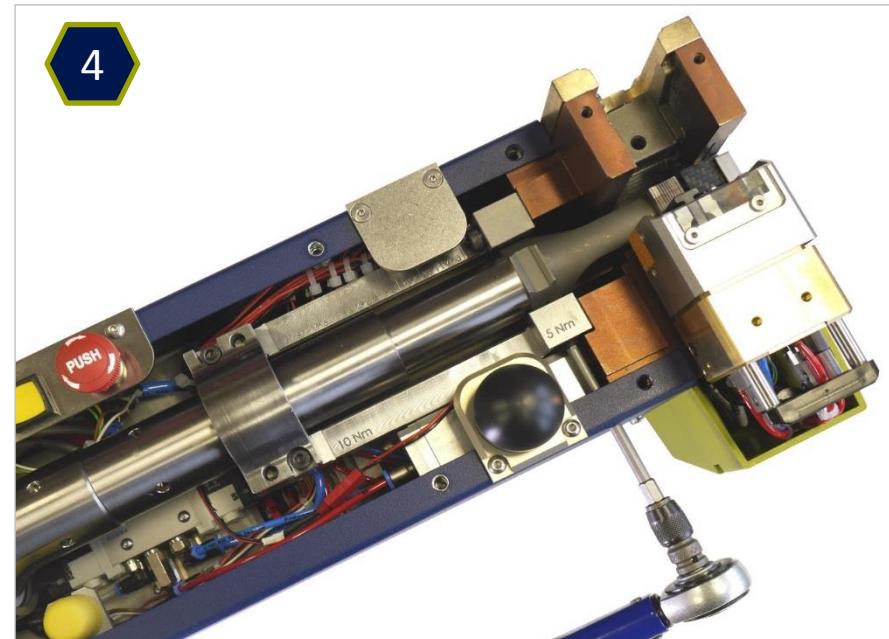


## Removal of oscillator system

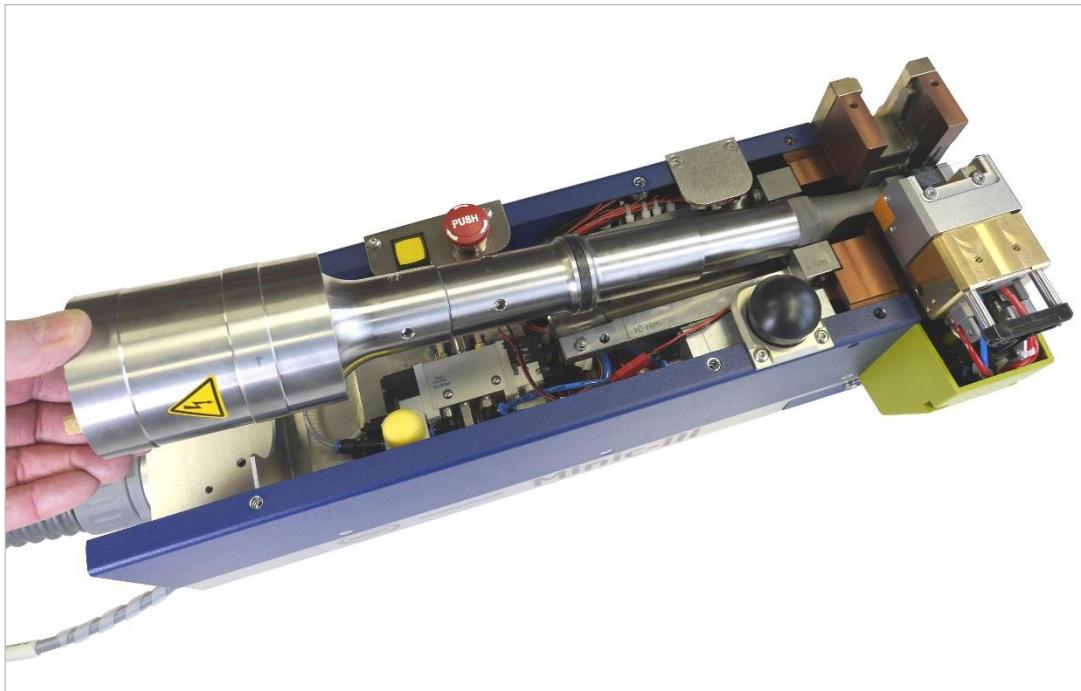
1. Remove booster support cover  
(Allen key size 4)



2. Loosening of clamping screw  
till it disappears in the thread



Lift up the oscillation system at the converter and remove it.



## Disassembling of oscillation system

Clamp the oscillation system at the sonotrode by using a vice.

If only the sonotrode should be changed attach two hook spanners to the booster and turn it anticlockwise



If you want to dismantle the converter from the booster, attach one hook spanner to the booster to counter the torque.

Then attach a second hook spanner to the converter and loosen it from the booster by turning it anticlockwise.

Finally screw apart the loosened components of the oscillator system by hand.

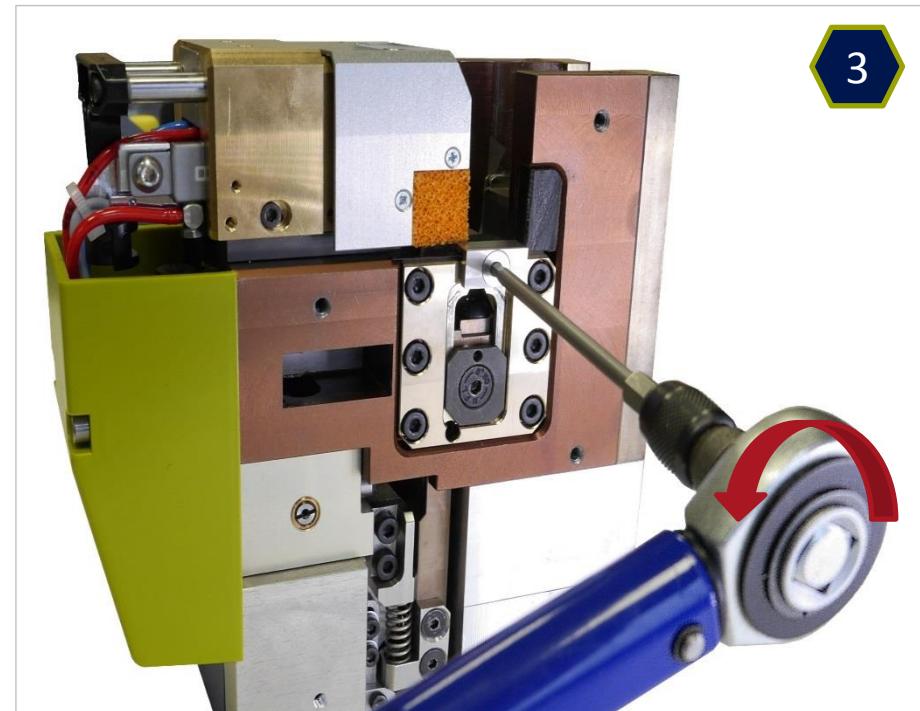


Unscrew fastening screw of clamping clip  
(use Allen key size 3). 

Remove clamping- and cover clip.



DANGER!  
Injuries by cutting



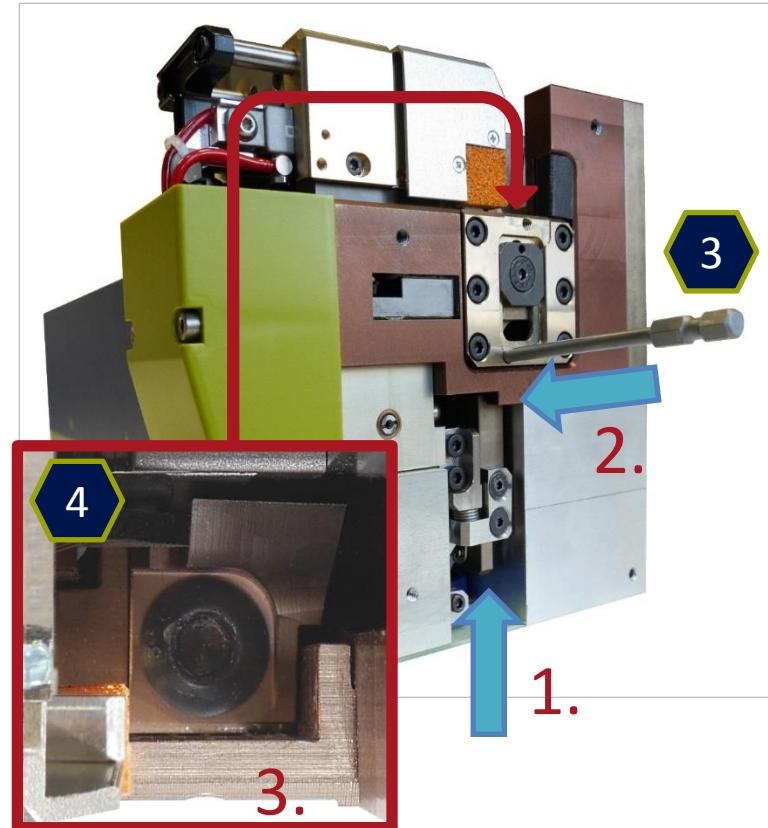
Fix cutting unit in upper position.

1. Push cutting unit upwards by hand.
2. Fix position of cutting unit by inserting a Allen key size 3 in the hole.
3. Remove cutter by removing the screw (Allen key size 4)



DANGER!

Injuries by cutting



## Assembling the oscillating system

Clean and light coat the coupling surfaces between sonotrode and booster and between booster and converter with silicone paste.

Pay attention to the marks!



A correct positioning of the booster  
is essential



## Assembling the oscillating system

Apply a tightening torque of 100 Nm clockwise,  
using a hook spanner.

Torque wrench: 20 - 200 Nm  
SAP no.: 103 546 37



Sickle spanner: Ø 38 mm  
SAP no.: 103 776 41



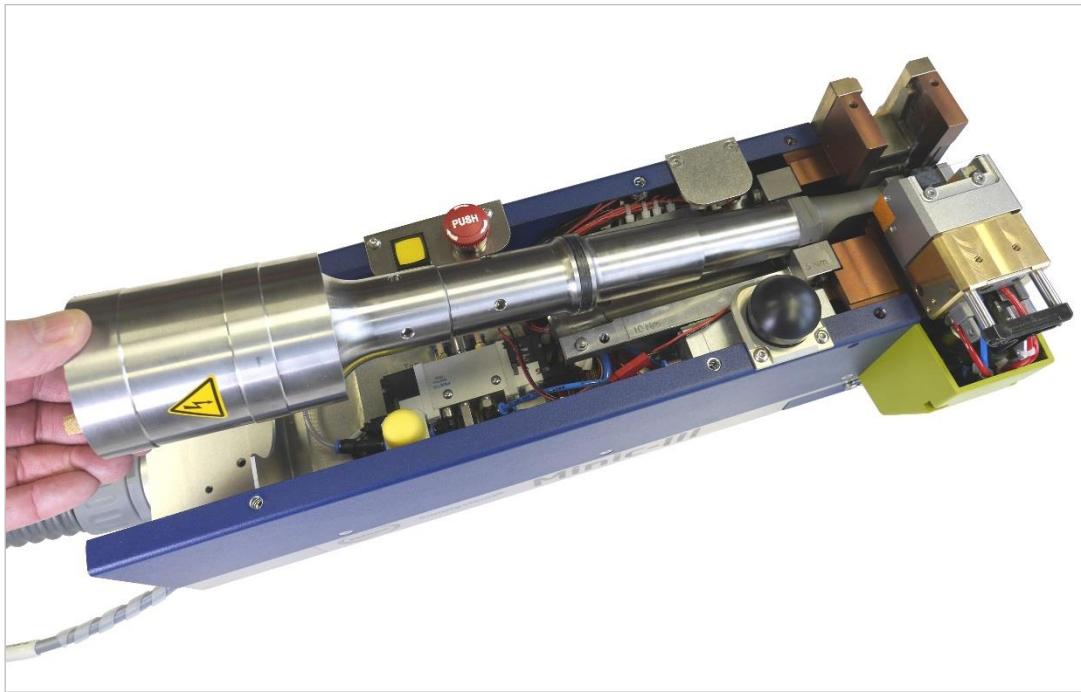
1. Clean support surfaces A and B
2. Coat support surface B with a thin film of paste ( order no. 10737171)



## Installing the oscillating system

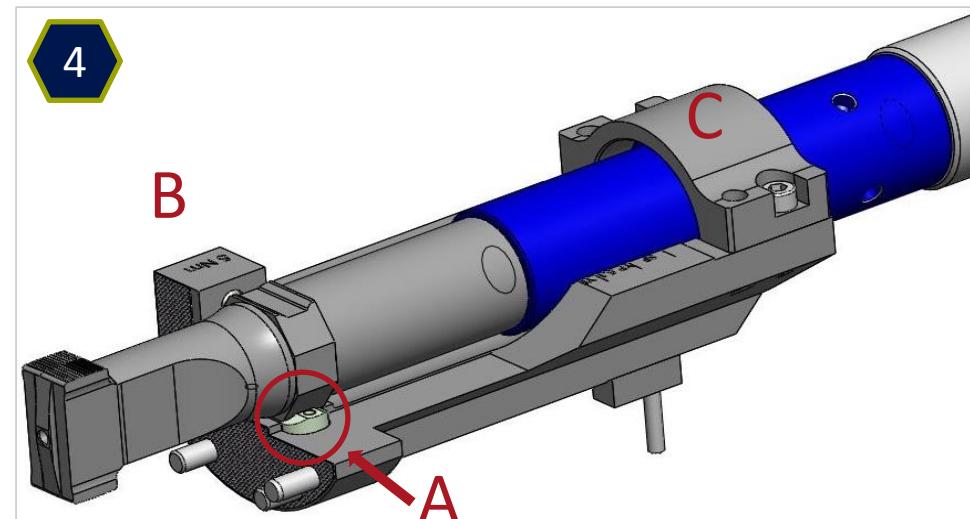
Insert the oscillator system at a slight angle.

Make sure that the sonotrode is the first part to be inserted!



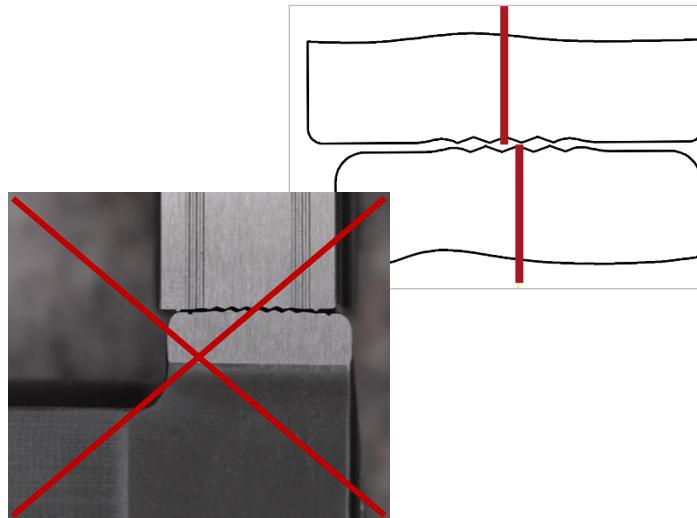
## Installing the oscillating system

1. The sonotrode must be positioned correctly on the bearing (A)!
2. Slightly tighten sonotrode clamping screw (B)!
3. Place the booster-support cover and insert the screws (C).
4. Fully tighten the sonotrode clamping screw with 5 Nm torque.
5. Tighten screws of the booster clamping with 10 Nm.

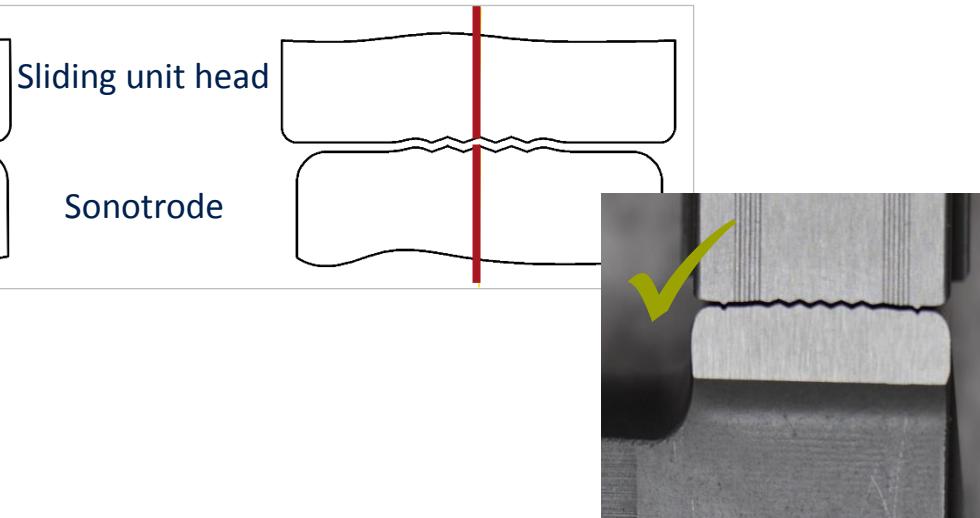


- Press the sliding unit head lightly on the sonotrode
- Check that the profiles are properly aligned for a correct fit
- Check if sliding unit head can be moved easily

Incorrect



Correct

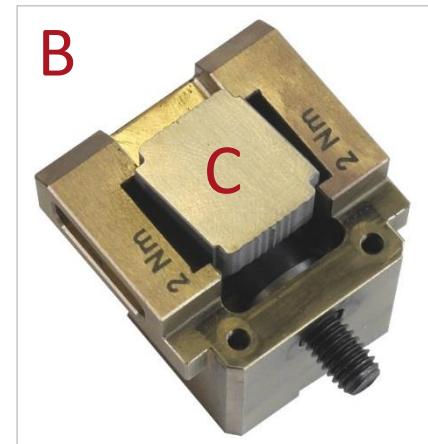
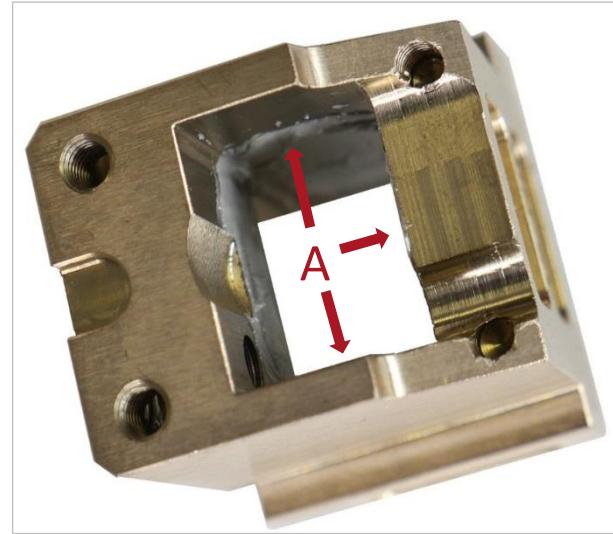


## Installing the anvil unit

- All parts must be cleaned!
- Fill the lubrication grooves with grease (MOLYKOTE®)(A).
- Insert fastening screw (B) with washer!
- Insert anvil in anvil-support (C).



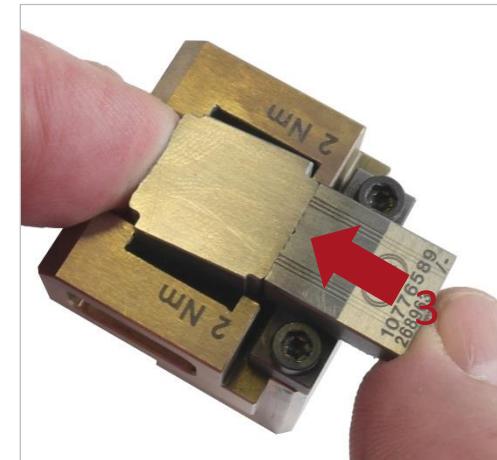
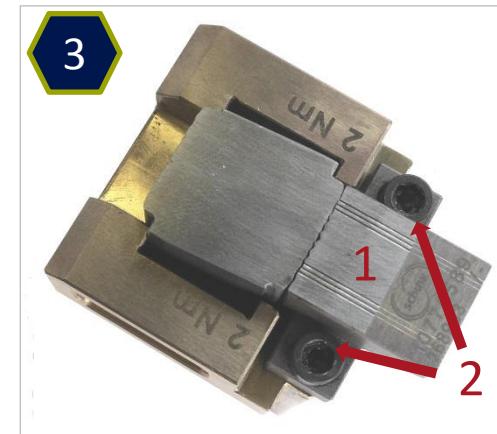
It is essential to ensure that the correct type of washer is used!



SAP no. washer: 10679829

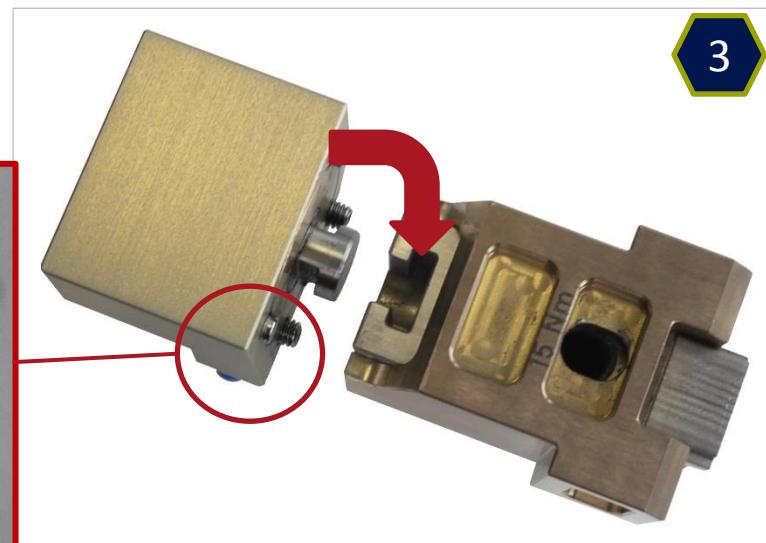
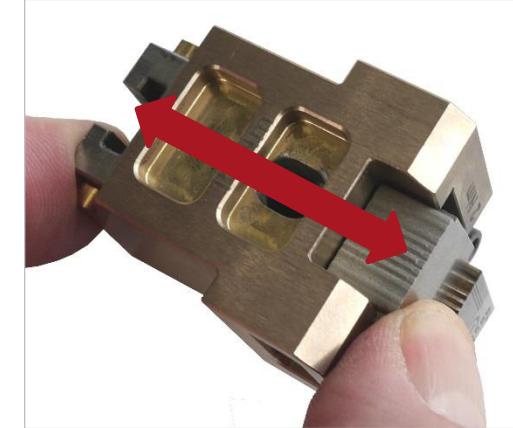
## Installing the anvil unit

1. Place anvil plate in position
2. Slightly tighten the two screws of the anvil plate
3. Lightly press the anvil plate against the anvil and firmly tighten the two anvil plate screws (Torque of 2 Nm – Allen key size 3)

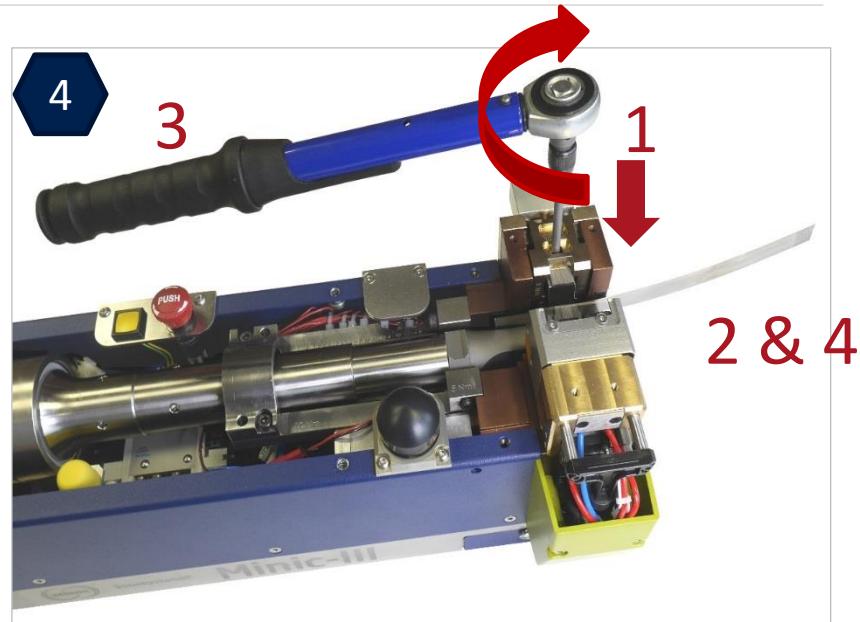


## Installing the anvil unit

1. Check easy anvil movement
2. Wipe away any leaking grease
3. Install the anvil cylinder by inserting the piston rod of the anvil cylinder in the T-groove of the anvil support. Fasten it with a torque of 1.5 Nm
4. Check again if the anvil can be moved easily by hand



1. Press the anvil downwards
2. Use a piece of foil (0,04mm) to adjust the gap dimension between anvil and sonotrode.
3. Fix the anvil unit with a torque of 15 Nm
4. Check the gap dimensions on the top and bottom position of the Anvil with 0,04 mm foil
5. Check the gap dimensions also under pressure (using tool setup mode)



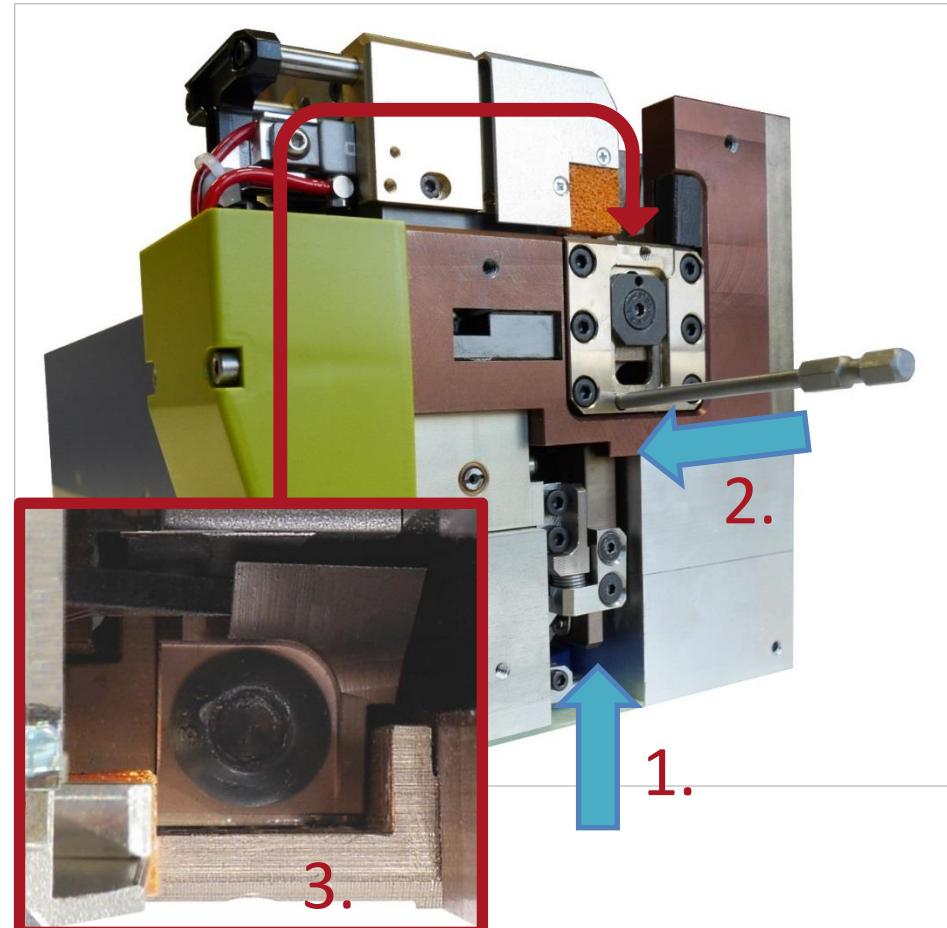
Torque wrench 1 - 25 Nm  
SAP no.: 10774222

1. Pull the anvil unit up and in front position
2. Carefully insert the cutter and attach it loosely
3. Use a 0,2 mm foil to adjust a distance between the anvil cutting edge and the cutter
4. Fix the cutter with a torque of 10 Nm

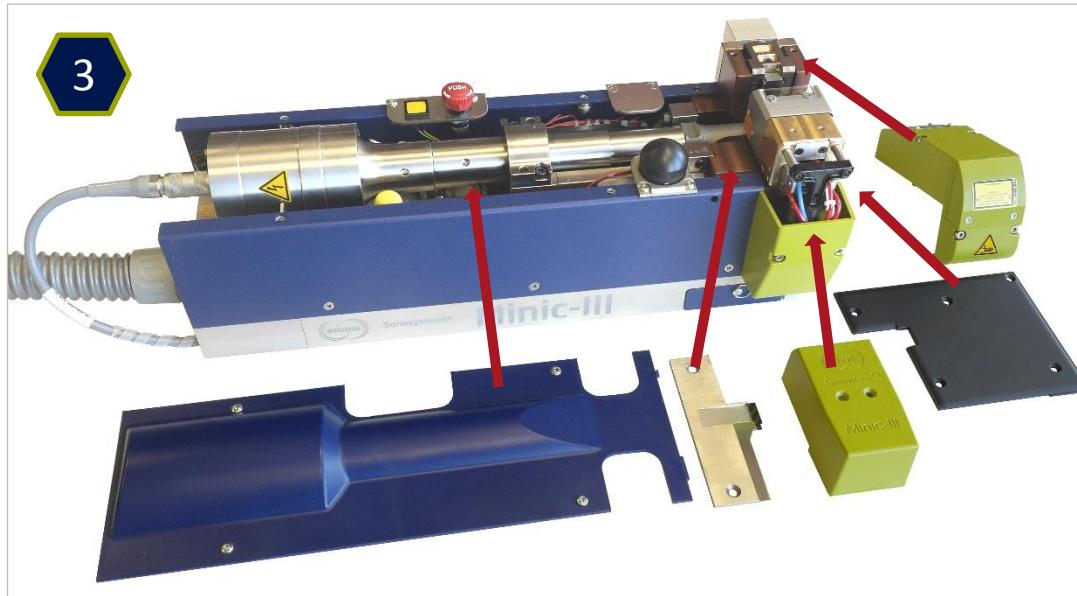


DANGER!

Injuries by cutting



Reassemble all covers with a Allen key size 3.



After adjustment of welding tools, a new diagnosis has to be carried out!



Sonosystems®

# Maintenance

weekly

Clean welding module

monthly

Condensate in maintenance unit

monthly

Filter mat at the fan

When  
occursSonotrode, anvil, sliding unit &  
surface plateRegular  
intervalsMaintenance message on the  
monitor



Sonosystems®

## Clean welding module

weekly

Clean the welding module with a brush provided with the toolbox or use a vacuum cleaner.

Clean the lighting system and laser positioning aid with a vacuum cleaner



monthly



Absolute dry and clean air  
is necessary!

Check filter of the maintenance unit for condensate

Picture beneath shows how the maintenance unit should look like.

Open the screw to drain the liquid.



monthly

Check filter every week for fouling

- Replace or clean if necessary
- Fleece surface with smaller thickness must face outside

SAP Nr. filter mat: 104 165 09



Polluted filter

regular  
intervals

### Check at regular intervals

- If there is wear replace by new parts
- Fleece surface with smaller thickness must face outside

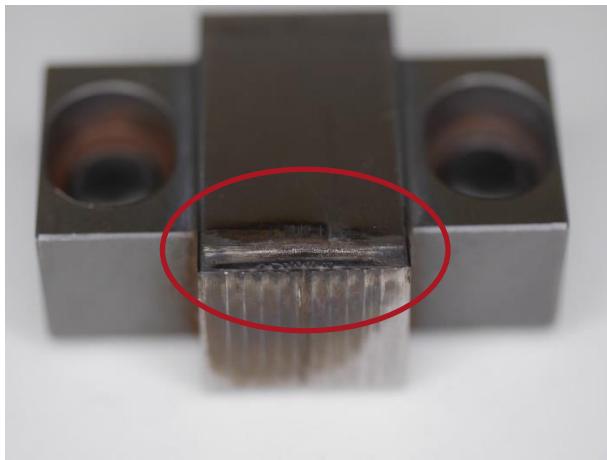


Please note that rework and manufacturing of the sonotrodes must be executed by Schunk Sonosystems.  
Use only original tools!

## Examples for worn tools



Worn sonotrode



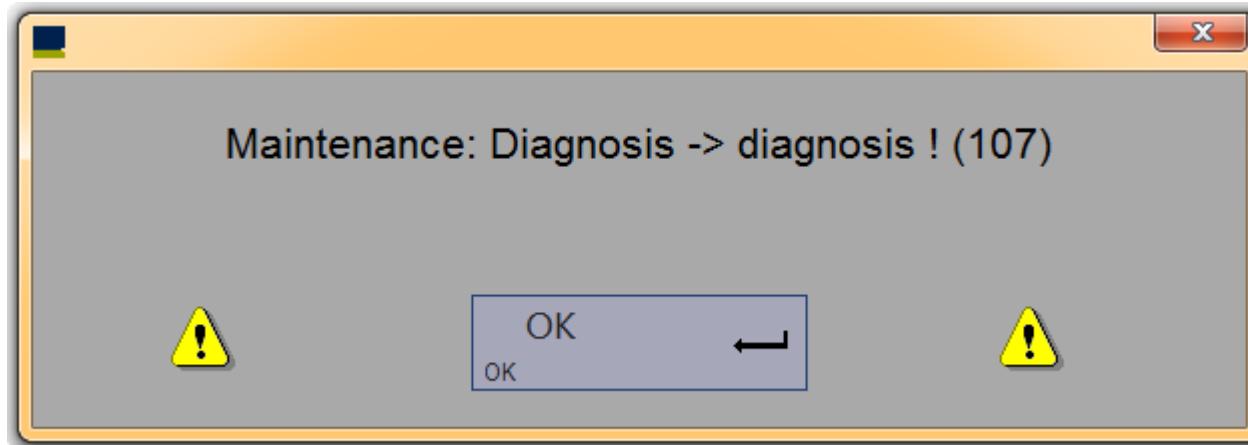
Worn anvil



Worn gliding jaw

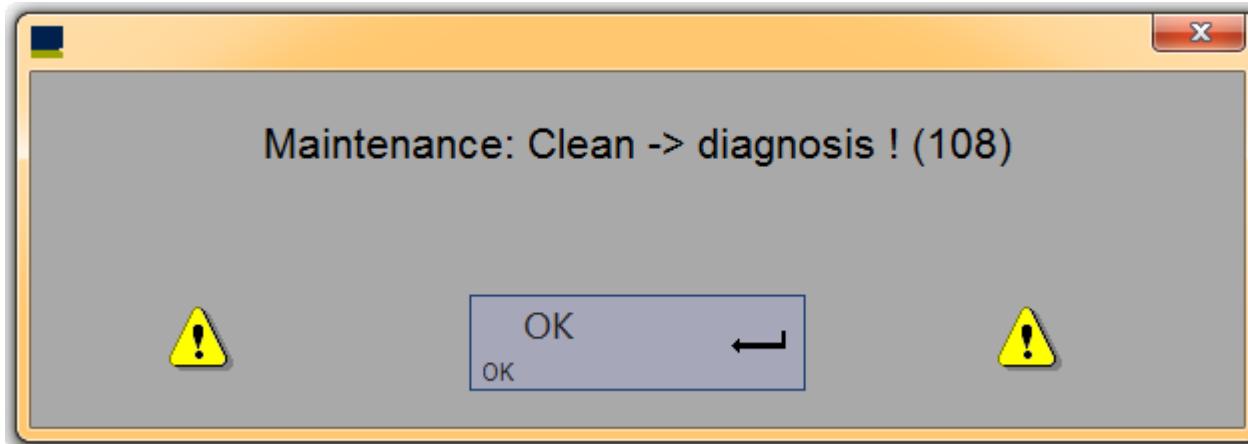
## Maintenance: DIAGNOSIS

- Carry out a diagnosis, then press Ok



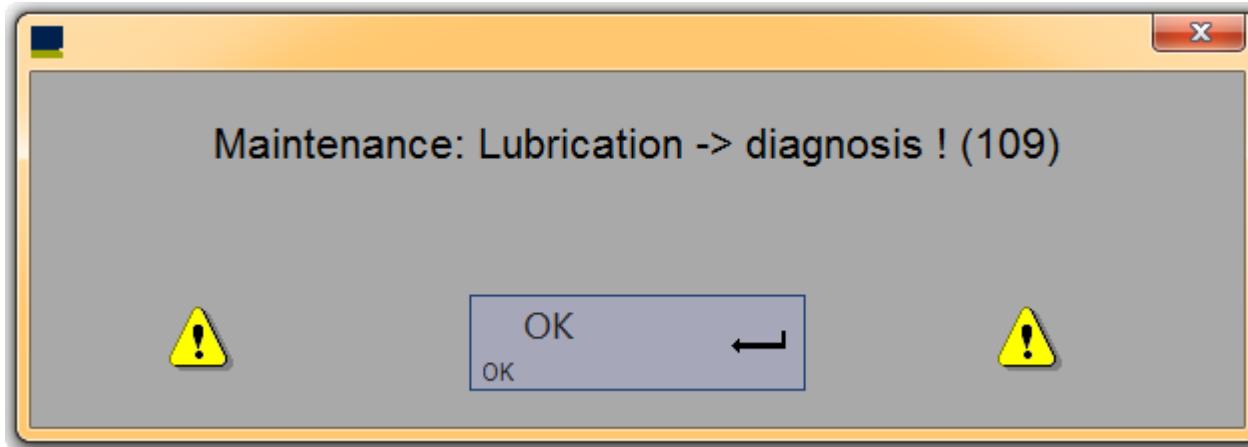
## Maintenance: CLEANING

- The machine should be cleaned
- Afterwards carry out diagnosis



## Maintenance: LUBRICATING

- Sliding unit and anvil must be lubricated with grease
- Use grease ( MOLYKOTE ®) provided with toolbox
- Afterwards carry out diagnosis





Sonosystems®

# Data Sheet



Cross-section	0.26 – 30 mm <sup>2</sup> (cycle time under full load: 10 s)
Generator power	3000 W
Frequency:	20 kHz
Welding applications:	Cu, Al, Cascade (mixed)
Machine dimensions (L x H x D):	467 x 185 x 205.5 mm
Total weight of module:	13.6 kg (incl. cutting and pneumatic system)
Special features:	<ul style="list-style-type: none"><li>- Network capability</li><li>- sound protection</li><li>- lighted welding area</li><li>- trashbox</li><li>- cutting system</li><li>- wire insertion aids (ASSK, LPS)</li><li>- various table versions</li></ul>
Main power supply:	3x400V, N,PE ( $\pm 10\%$ ) or 3x200V, PE / 3x220V, PE ( $\pm 10\%$ )
Compressed air (system pressure):	6 bar



Sonosystems®

**Schunk Sonosystems GmbH**  
Hauptstraße 95  
35435 Wettenberg – Deutschland  
Tel +49 641 803 0  
[sonosystems@schunk-group.com](mailto:sonosystems@schunk-group.com)  
[www.schunk-group.com](http://www.schunk-group.com)