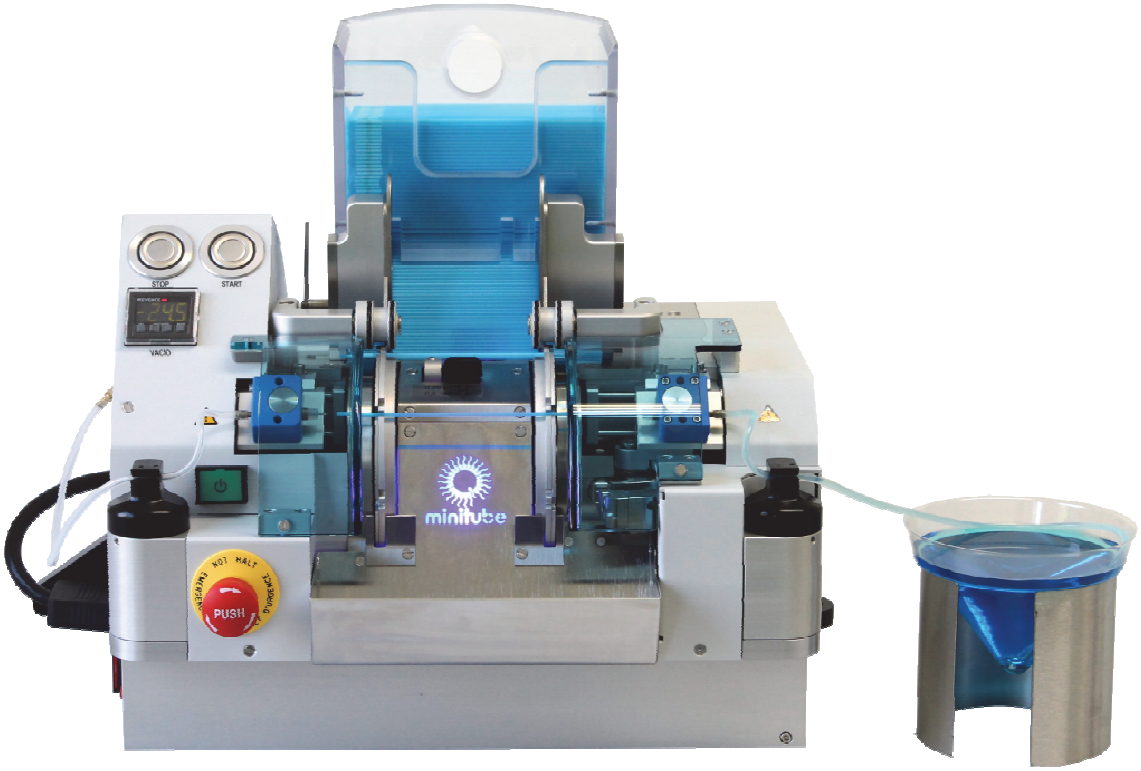
Manual

minitube

MPP Uno

EN



13017/0000

31301/7000

CONTENTS

Preface

The MPP Uno is a fully automatic filling and sealing machine for 0.25 ml or 0.5 ml straws of 133 mm (5.25 inch) in length. It is designed for processing 1 straw per cycle. As one cycle takes about one second, the filling capacity is approx. 4000 straws per hour. The MPP Uno is equipped with elaborate construction details that guarantee best observation ability, optimal machine operation and minimum maintenance. Changing from 0.25 ml to 0.5 ml straws and vice versa can be effected in only 1-2 minutes, without exchanging any components.

Manufacturer:
Minitüb GmbH
Hauptstrasse 41
84184 Tiefenbach
Germany

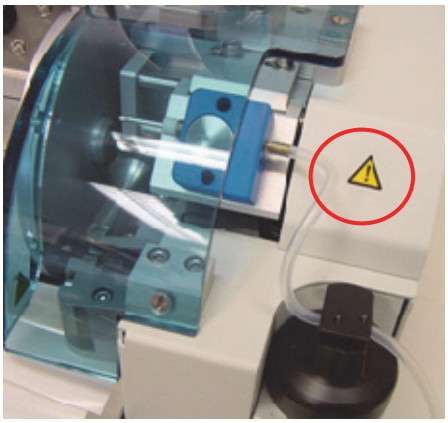
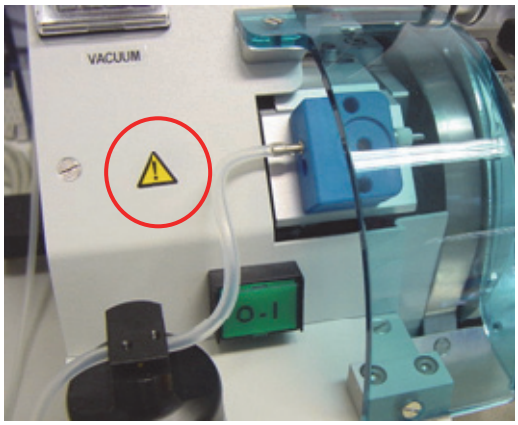
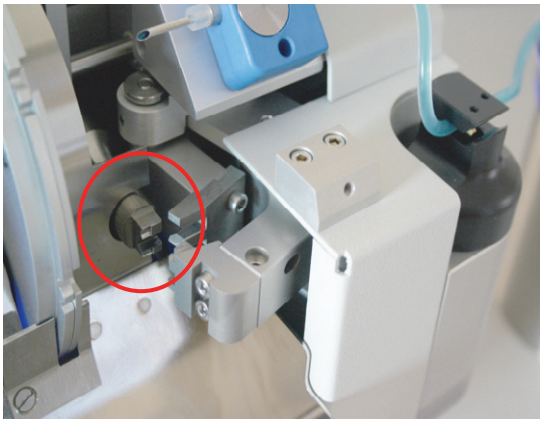
CE-marking:
A declaration of conformity has been issued for the MPP Uno.
It is labelled with the CE-mark.

Prior to the first operation, please read this manual and the safety instructions carefully and observe them, in order to guarantee a safe operation of the MPP Uno. This is to make sure not to damage the device and/or to endanger the operating staff.
Please keep this manual in a safe place, to have the information at hand any time.

1. Safety Instructions

- **The MPP Uno is manufactured for safe operation according to state-of-the-art. However this machine could be dangerous, if it is not operated by trained or at least instructed stuff. This also applies for unappropriate or unconventional use of the MPP Uno.**
- **The MPP Uno must only be connected to a voltage of 230 V/50 Hz – if not indicated otherwise.**
- **The MPP Uno must only be operated with a safety plug with intact earth conductor.**
- **The protection must not be reduced by using a flex without earth conductor. Any kind of interruption of the earth conductor inside or outside the machine is dangerous and not allowed.**
- **Pass the power supply cables in such a way, so that nobody can trip over it or get caught.**
- **Put the main switch to „Off“ (0) prior to cleaning the device.**
- **Never interfere during the automatic operation of the machine; risk of injury!**
- **Make sure to wear tight fitting clothes when operating the device. Long hair must be secured with a hair net if necessary.**
- **In case of emergency press the emergency stop button.**
- **Prior to trouble shooting, always wait for the machine to stop or stop the machine. In case of doubt, switch off the machine completely and unplug.**
- **Safety equipment must not be disassembled or put out of service. Especially putting the emergency off button out of service and removing protection covers is dangerous for the operator.**
- **Alterations are prohibited: for safety reasons any kind of retrofitting and alteration is prohibited.**
- **Only use original spare parts for repair works.**
- **Product liability: do not make any alterations on the machine respectively on the power pack with the ultrasonic generator. For any damages or hazards resulting from unauthorised alterations no liability is taken over.**

Please observe the warning labels on the machine. Especially in the area of the filling and suction head and the welding unit there is risk of injury and crushing hazard due to faulty intervention during the filling process! In the area around the sonotrode there is risk of burns during the welding process!

	 **Filling block side**
	 **Ultrasonic welding unit**
	 **Suction block side**
	 **Sonotrode**

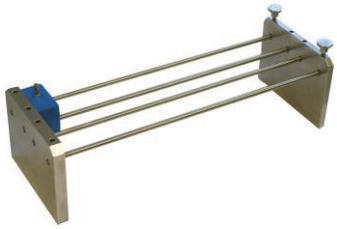
2. Delivery

Quantity	Name
1	MPP Uno
1	Power pack for the machine with integrated ultrasonic generator (Power Supply) and connection cable for the machine with special connector
1	Connection cable for the connection wall outlet to power pack
1	Hopper for MPP Uno and MPP Quattro
2	Vacuum bottle
1	Tool kit
1	Manual
1	List of replacement parts for MPP Uno
1	Support for semen cone
1	Dust cover
1	Suction head 0.25 ml
1	Suction head 0.5 ml
1	Filling head 0.25 ml
1	Filling head 0.5 ml
1	Package of tubings

1	Package of washers
1	Package of semen cones

3. Accessories and consumables

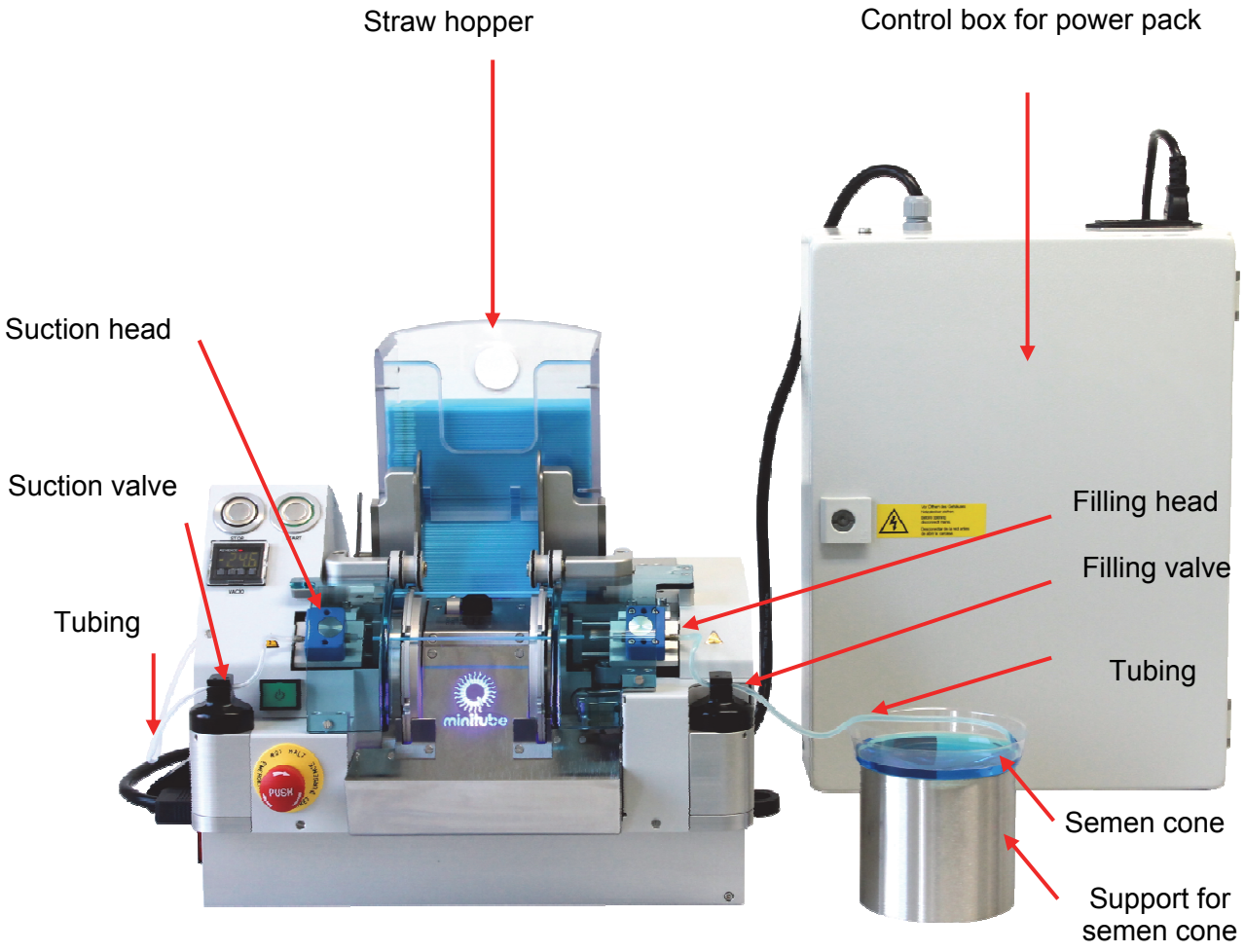
3.1. Accessories

Name	**Ref.**
Hopper for MPP Uno and MPP Quattro	13018/0006
Collection tray for straws, stackable	13012/0003
Fixing unit for max. 26 filling and suction heads 	13017/0050
Support for semen cones	5013018/0932
Vacuum bottle	5013018/1324
Dust cover	5013017/1601

3.2. Consumables

Name	**Ref.**
Filling head 0.25 ml	13017/0012
Filling head 0.5 ml	13017/0017
Suction head 0.25 ml	13017/0022
Suction head 0.5 ml	13017/0027
Tubing, 100/bag	13021/3800
Washer for suction and filling heads • 5000/bag • 2000/bag	 13021/3001 13021/3002
Semen cone, 100/bag	13018/0100

4. Overview Assembly



5. Description of the Device

5.1. General

The MPP Uno is a fully automatic filling and sealing machine for 0.25 ml or 0.5 ml straws of 133 mm (5.25 inch) in length. It is designed for processing 1 straw per cycle. As one cycle takes about one second, the filling capacity is approx. 4000 straws per hour. The MPP Uno is equipped with elaborate construction details that guarantee best observation ability, optimal machine operation and minimum maintenance. Changing from 0.25 ml to 0.5 ml straws takes 2 minutes maximum, without exchanging any components.

The most important features of the MPP Uno:

- 1 straw per cycle. Ideal for small quantities of valuable ejaculates.
- Total observation of the filling process, the most important processing step of the device. The straw to be filled is exactly in front of the operator and the filling process as well as the humidity penetration of the plugs can be observed perfectly.
- Fast exchange from one ejaculate to another. The filling nozzle is situated in a block with a magnetic holder. The tubing can easily be pulled out and can easily be reinserted into the valve by means of elongation and traction.
- Exchangeable straw hopper: removable and cost saving. Thus different straw sizes and straw colours can already be prepared in advance.
- Large background illuminated buttons for „Start“ and „Stop“. Error messages by acoustic signal with confirmation function through the „Stop“ button.
- Branson ultrasonic-system: worldwide service and parts availability due to robust and commonly used standard devices and components.
- The integrated vacuum pump, vacuum sensor and vacuum bottle with 500 ml vacuum buffer provide constant negative pressure without unnecessary noise. Adjustable vacuum regulation (Hysteresis) includes an actual pressure indicator on the sensor.
- During the filling process, the filling time can be adjusted between approx. 0.2 seconds and 0.7 seconds with the „+“ or „-“ buttons. This allows individual filling parameters for fast filling with high vacuum or gentle filling with low flow rates. Automatic storage of the adjusted filling times and availability when switching the device on again.
- Two variable filling times can be stored and recalled via switch setting. Ideal for example for varying extender viscosities at similar vacuum settings.
- Easy cleaning and maintenance.
- The complete filling process of the straws can be observed, from the hopper to the ejection. Easy access to each straw during the whole production cycle.
- Can be used as standalone device as well as a combined filling-/printing machine (option inkjet printer = MiniJet, can be ordered separately at Minitube).

5.2. Technical Data

Name plate:

Type	MPP Uno
Ref.	13017/0000
Serial number	(refer to name plate)
Prod. date	(refer to name plate)
VA	60
Power supply/Voltage	230 V AC

Production capacity:	approx. 4000 straws per hour
Operating voltage:	220-240 V~, 50-60 Hz

(available also in version 110-115 V~, 60 Hz. Please specify when placing your order.)

Power consumption

- (stand-by): approx. 0.1 VA
- non operative approx. 22 VA
- processing: approx. 30-60 VA

Fuses:

- power pack: 2 x T 3.15 A
- circuit board: 2 x T 0.16 A
- generator: 1 x T 3 A

Fuse size: 5 x 20 mm

Ambient temperature:

- machine: +5°C to +45°C
- Power pack +18°C to +45°C

Dimensions:

- machine: 460 x 350 x 410 mm (width x height x depth)
- power pack (with ultrasonic generator): 310 x 450 x 130 mm (width x height x depth)

Weight:

- machine: approx. 14.6 kg
- power pack: approx. 9.0 kg

Filling duration:	0.2 sec to 0.7 sec
Vacuum:	0 to -65 kPa (corresponds to approx. 0 to -650 mbar)

5.3. Intended use

The MPP Uno is constructed as a fully automatic filling and sealing machine for 0.25 ml or 0.5 ml straws of 133 mm length.

5.4. Function description

The MPP Uno separates the straws that were filled into the hopper by the operator and automatically transfers them to the filling station. By means of the integrated vacuum pump the prepared ejaculate is sucked from the semen cone into the straw via the filling head. The operator can vary the filling by means of the parameters filing duration and vacuum pressure. During the entire filling process the humidity penetration of the plug can be controlled. The filled straws are transferred to the welding unit by means of the transport wheel. The straw is sealed by means of ultra sound and is then collected in the collection tray.

6. Transport, Storage, Assembly and Installation

During the entire transport and storage the MPP Uno must be protected from incorrect wear (mechanical stress, temperature, humidity, aggressive atmosphere).
The MPP Uno should be installed and put into operation by a Minitube technician.

Place the MPP Uno on a stable level surface. You can put the power pack either beside it or underneath (at a distance of max. 3 m).

For the installation of the MPP Uno, please only use the provided tool kit. Use the tools in the intended way and in the correct size.

6.1. Transport

Please observe the following safety instructions for a safe transport:
The device might get damaged, when sliding or tilting; surrounding people might get injured.
Only transport the unit in its original packaging.

6.2. Storage

Temporary storage of the device in a closed and dry room:
Tolerable ambient temperature: -20°C to +60°C
Tolerable ambient humidity: 10 - 85% r.F., not condensing

Condensation might occur if the device is brought to the installation site for operation after being stored in cold conditions. Wait at least one hour until the device has reached room temperature and is absolutely dry.

6.3. Installation Site

Set up the device in a closed and dry room.
Tolerable ambient temperature:
for MPP Uno: +5°C to +45°C
for power pack: +18°C to +45°C
tolerable ambient humidity: 10 - 85% r.F., not condensing

The MPP Uno must only be set up on an even surface (required space: min. 600 x 400.x 450 mm (width x height x depth).
The power pack of the MPP Uno must only be set up on a level surface (required space min. 310 x 450 x 130 mm (width x height x depth).
Electrical cables, especially the connection cable between the power pack and the MPP Uno must be installed avoiding trip hazard.

The machine is operated from the front side, for this reason a minimum of 1 m space is required in front of the device.

6.4. Connections

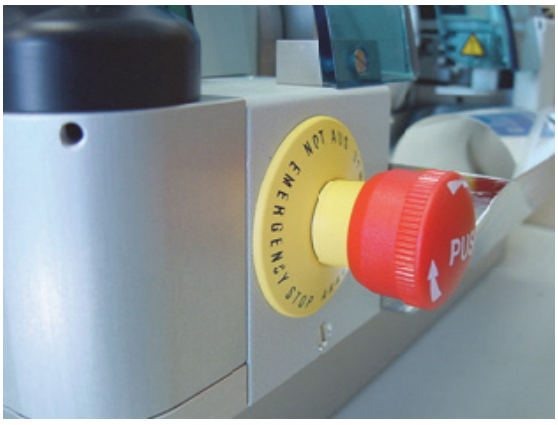
6.4.1. Power Connection

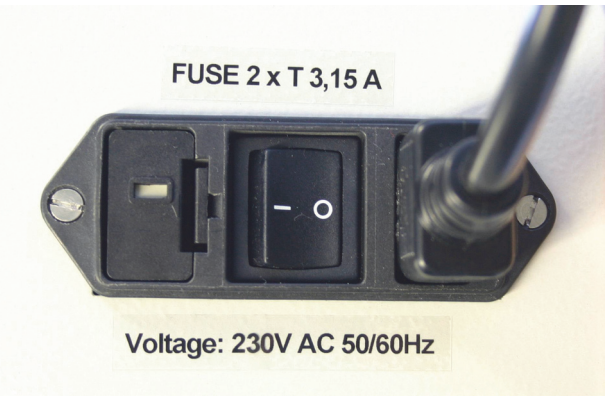
For the power connection an isolated grounded socket must be provided.
Voltage 230 V
Fuse 16 A
Earth leakage circuit breaker

The delivery of the MPP Uno includes a connection cable of 1.5 m and a special cable approx. 3 m long, for the connection between MPP Uno and power pack.
Prior to the first operation, please check the supply voltage and make sure that it corresponds with the one indicated on the name plate.

Wrong supply voltage will damage the device!

6.4.2. Installation

	➢ Connect the special connector of the power pack with the MPP Uno.
	➢ Secure the screws on the connector with a slotted screwdriver. It is necessary to avoid unintended loosening of the connector or mechanical damage due to bending.
	➢ Check the emergency stop button on the MPP Uno. ➢ To release the activated emergency stop button turn the red knob approx. 30° clockwise, as indicated on the knob with arrows. ➢ If necessary release the emergency stop button on the device.



- Check the power switch on the power pack.
- The switch must be in position „0“ („0“ pressed down).
- Connect the connection cable with the connector of the power pack.

- Check the supply voltage to which you would like to connect your device. You will find the data on the name plate.

Wrong supply voltage will damage the device!

- Connect the connecting cable to a power socket next to your device.
- Make sure to install the cables, avoiding trip hazard.

7. MPP Uno Operation

7.1. Control elements and indicators on the power pack

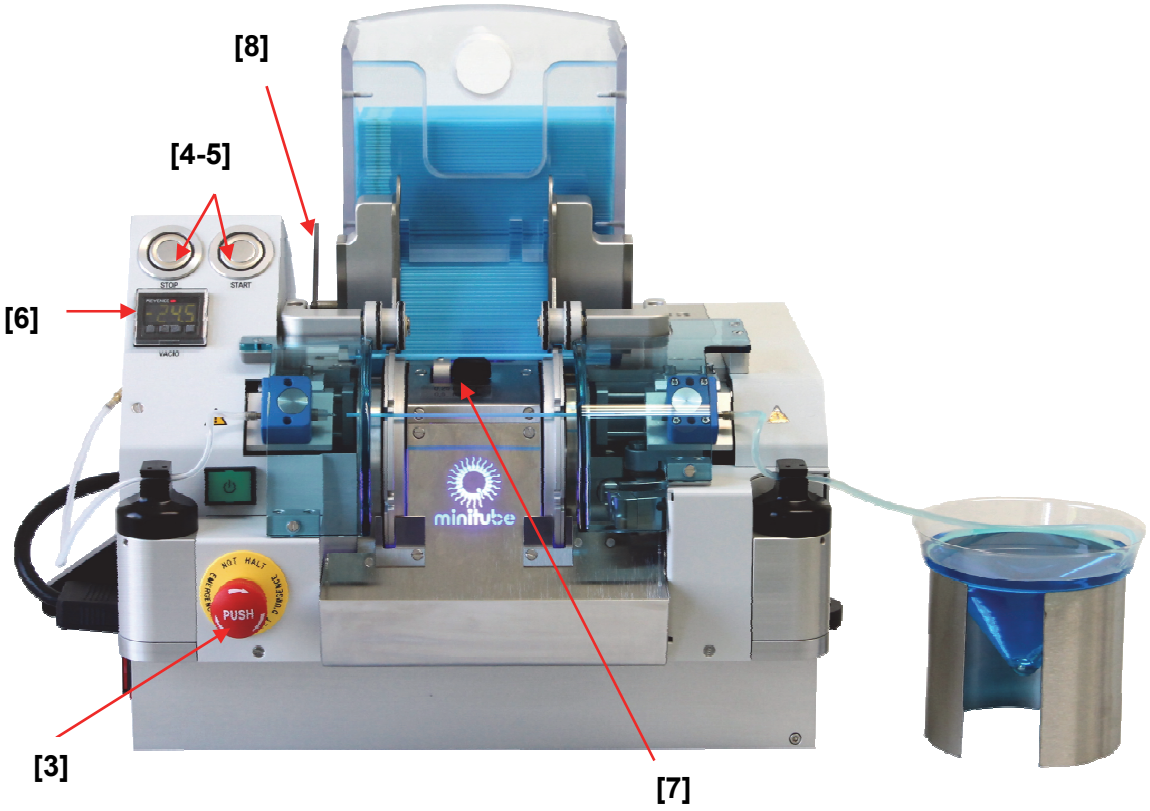
The control elements and the indicators of the power pack are located on the upper side of the device.

[1] Main switch „0 – I“

[2] Indicator “Supply voltage”

7.2. Control elements and indicators on the MPP Uno

Overview of the control elements and indicators on the front side of the MPP Uno.



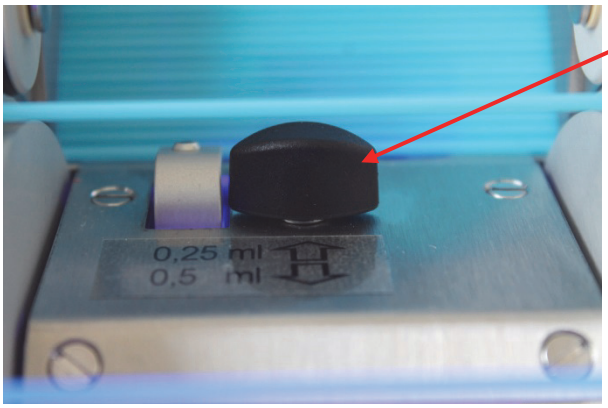
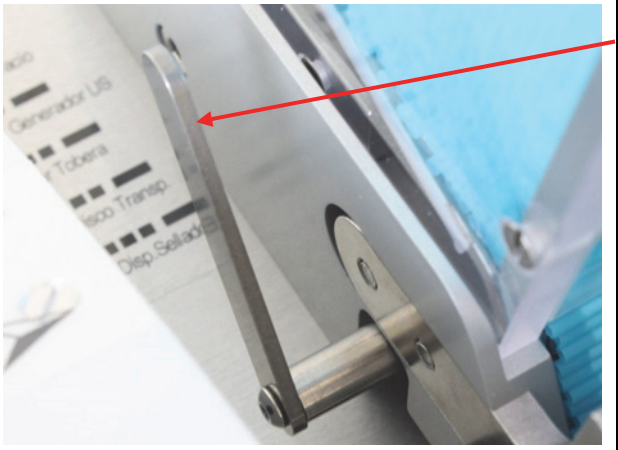
[3] Main switch „0 – I“

[4-5] Start/Stop button

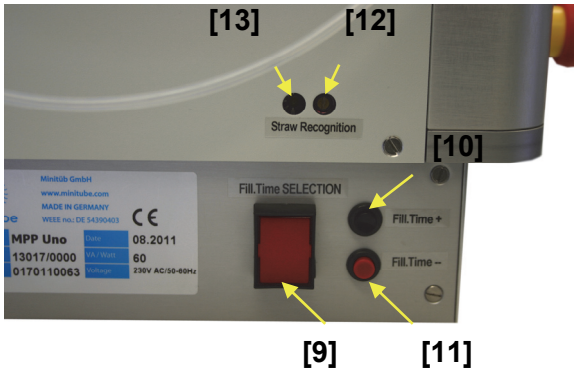
[6] Vacuum control

[7] Adjustment unit for straw selection

[8] Closing lever for straw hopper

	[4] START button [5] STOP button
	[6] Vacuum control
	[7] Adjustment unit for straw selection (0.25 ml/0.5 ml)
	[8] Closing lever for straw hopper

Control elements and indicators on the right side of the MPP Uno.



[9] Selection filling time

[10] Filling time prolongation (filling time+)

[11] Filling time reduction (filling time -)

[12] Signal lamp for straw recognition
Possible status:
LED on – straw recognised
LED off – no straw
LED blinking– status not permitted
(refer to chapter 9.1.1. Troubleshooting)

[13] Potentiometer for the straw recognition sensor

7.3. Preparation

Please only use the provided tools for preparing the MPP Uno. Use the tools as intended and in the correct size.

7.3.1. Straw size selection and adjustment

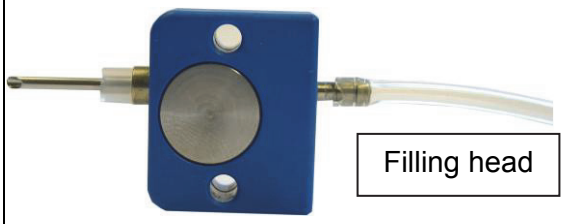
Prior to operation, please check the straw size you want to process.
With the MPP Uno 0.5 ml and 0.25 ml straws can be processed.
For changing the straw size, please refer to chapter 7.7. „Changing the straw size“.

7.3.2. Selection, mounting and inserting the filling and suction heads

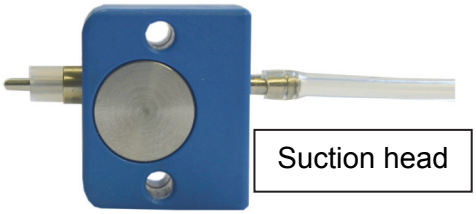
Selection, mounting and inserting the filling and suction heads

Prior to operation, please prepare a sufficient quantity of suction and filling heads appropriate for the straw size you want to process. Normally you can work the whole production day with one suction head per straw size. For the filling side however please prepare one filling head, one tubing and one washer for each ejaculate you want to process.

You will find the reference numbers in chapter 3. „Optional Accessories“.

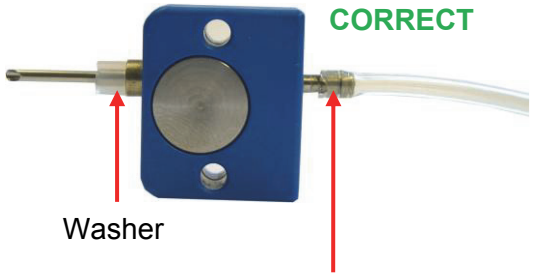


Filling head

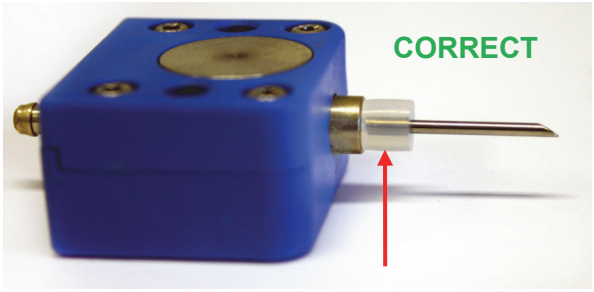


Suction head

Selection and mounting of the filling head



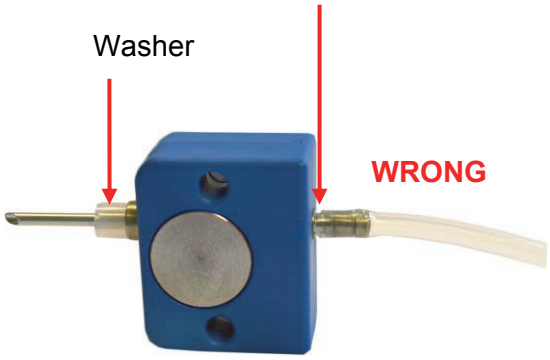
Tubing inserted correctly



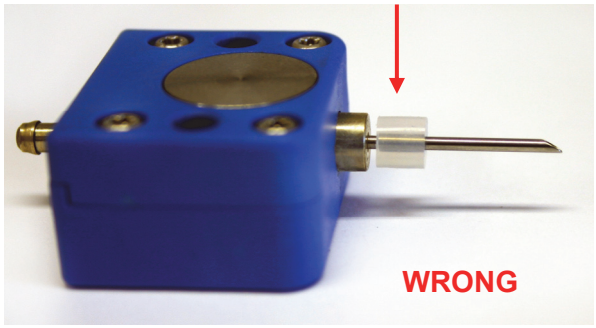
Washer inserted correctly

- Select the appropriate filling head for the straw size you want to process.
- Make sure that you only mount filling heads on the filling side.
  To see the difference compare the length of the nozzles. The nozzles of the filling heads are remarkably longer!
- Insert a washer onto the filling nozzle with a slight rotation.
- Make sure that the tip of the nozzle does not cut the material eccentrically so that the washer would not fit straight and thus would not seal tightly. Slightly roll the washer between your fingers while inserting it. The washer must fit straight and must be inserted up to the collar of the nozzle. Make sure there is no gap!
- Insert the silicone tubing onto the other end of the filling head. Make sure that the tubing is not inserted right up to the block.

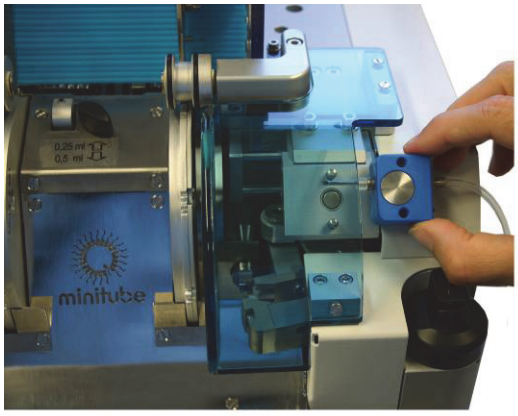
Tubing inserted too far

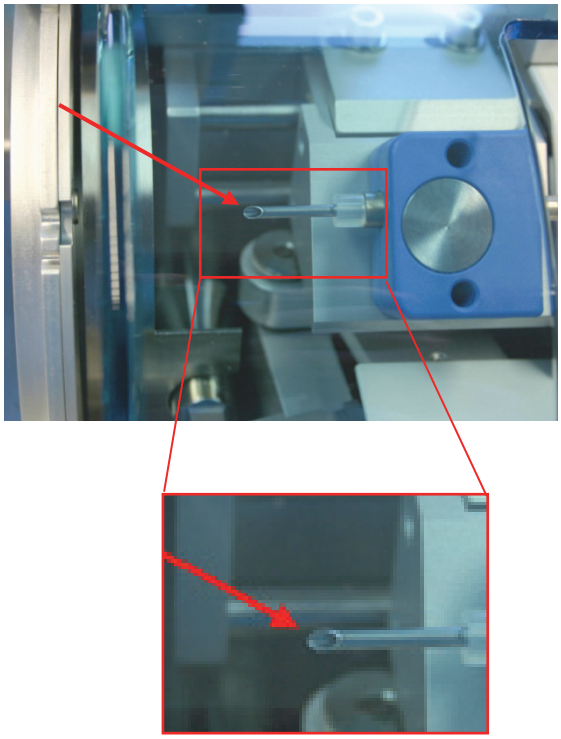


Washer inserted not correctly



Inserting the filling head

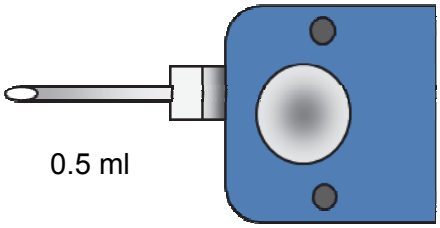




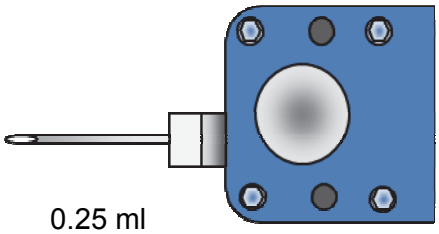
- Insert the filling head into the movable holder of the filling unit (on the right side of the supply wheel). The pins on the holder must snap into the bore holes of the filling head. The filling head is held magnetically.

  Make sure that the nozzle bevel points up to the operator.

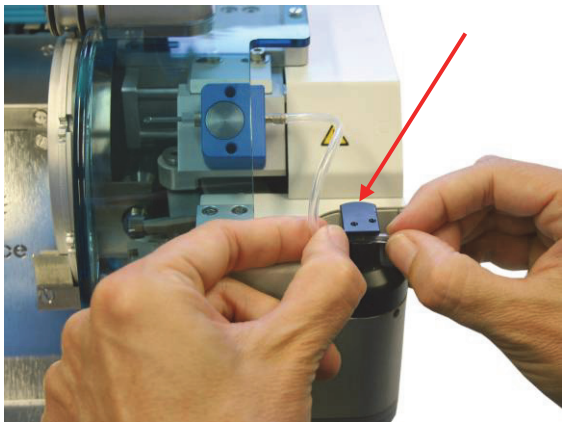
- In case that the nozzle bevel does not point upwards, turn the filling block by 180 degrees and then insert it into the holder.
- Watch the position of the nozzle bevel – the two filling heads are different (screws visible or not visible).



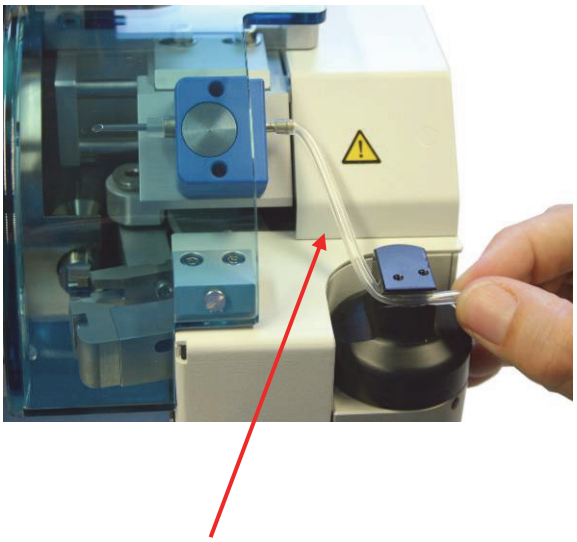
0.5 ml



0.25 ml

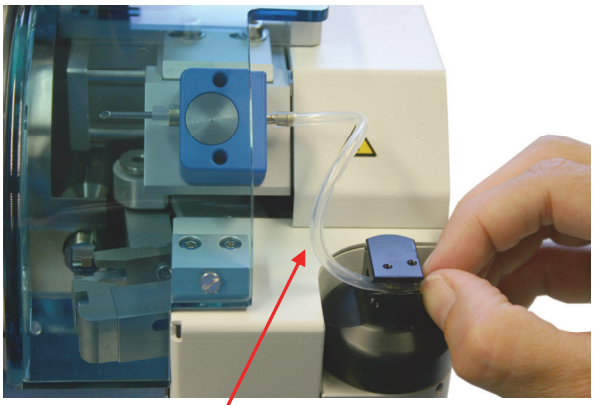


- Take the tubing at a distance of about 10 cm from the end of the nozzle between your thumb and forefinger of both hands. Pre-tear a little and then pull it into the clamping area of the filling valve.
- Put the end of the tubing into the semen cone.



WRONG

Make sure that the tubing between valve and filling head is long enough (shaped like an „S“), so that the tubing can function properly during the movement of the filling head and is not restricted in its movement. Due to its larger operation radius, the filling head needs a longer loop than the suction head. Roll the tubing between your fingers and insert it twisted and pre-stretched into the valve, thus buckling is avoided.

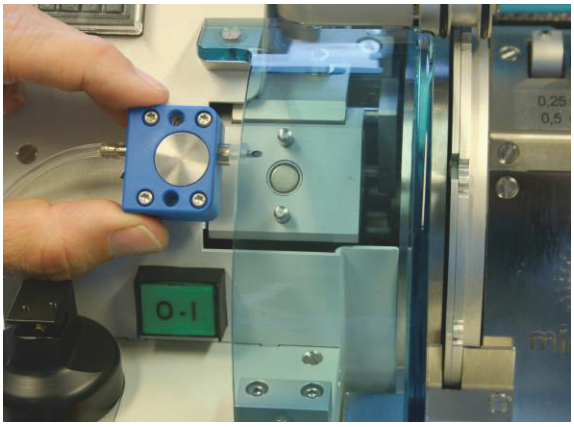


CORRECT

Selection and mounting of the suction head

- Select the appropriate suction head for the straw size you want to process.
- Make sure that you only mount suction heads on the suction side. To make the difference, compare the length of the nozzle. The nozzles of suction heads are remarkably shorter!
- Insert a washer onto the suction nozzle with a slight rotation.
- Make sure that the nozzle point does not cut the material eccentrically so that the washer would not fit straight and thus would not seal tightly. Slightly roll the washer between your fingers while inserting it. The washer must fit straight and must be inserted up to the collar of the nozzle. Make sure there is no gap!
- Insert the silicone tubing onto the other end of the suction block. Make sure that the tubing is not inserted right up to the block.

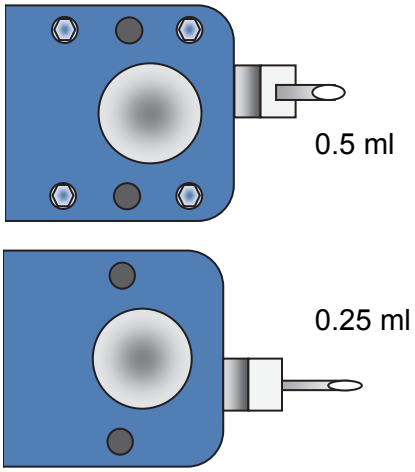
Inserting the suction head



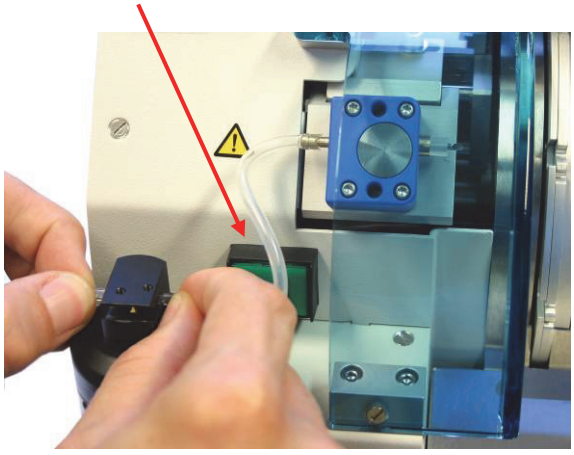
- Insert the suction head into the movable holder of the suction unit (on the left side of the supply wheel). The pins on the holder must snap into the bore holes of the suction head. The head is then held magnetically.

  Make sure that the nozzle bevel points up to the operator.

- Watch the position of the nozzle bevel – the two filling heads are different (screws visible or not visible).



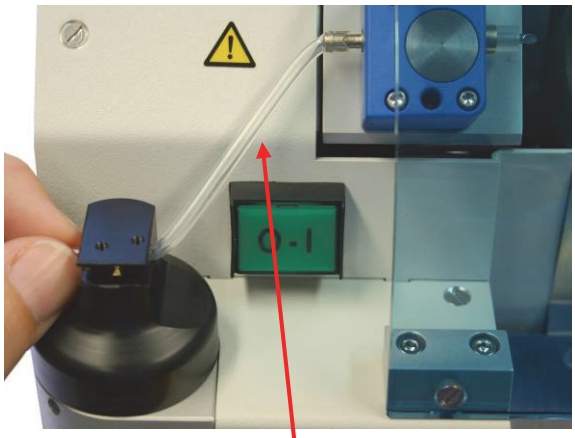
CORRECT



- If necessary turn the suction block by 180 degrees and then insert it into the holder.

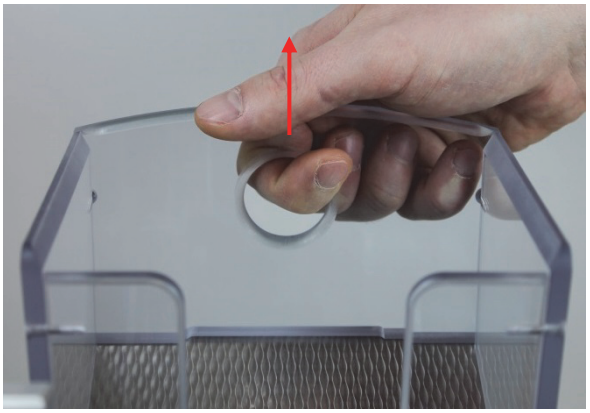
- Take the tubing at a distance of about 10 cm from the end of the suction nozzle between your thumb and forefinger of both hands. Pre-tear a little and then pull it into the clamping area of the suction valve.

- Connect the end of the tubing with the adapter piece on the left rear end of the machine.

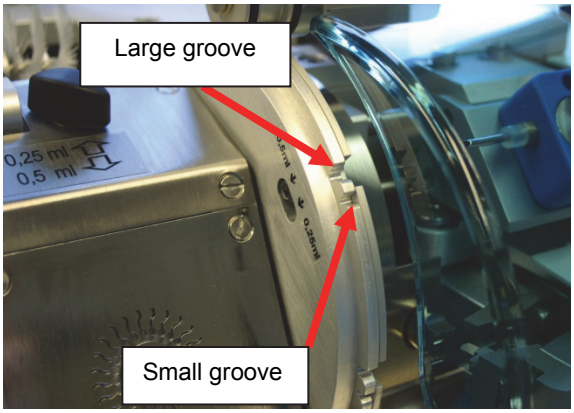


Make sure that the tubing between valve and suction head is long enough (shaped like an „S“), so that the tubing can function properly during the movement of the suction head and is not restricted in its movement. Due to its smaller operation radius, the suction head needs a shorter loop than the filling head. Roll the tubing between your fingers and insert it twisted and pre-stretched into the valve, thus buckling is avoided.

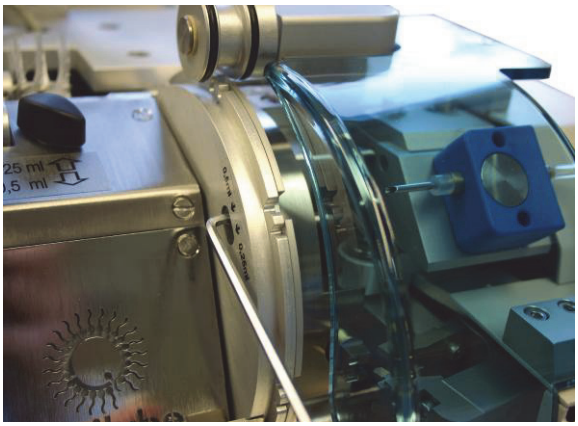
7.3.3. Adjusting the selection disc on the supply wheels to the required straw size



- Prior to the adjustment, remove the hopper.

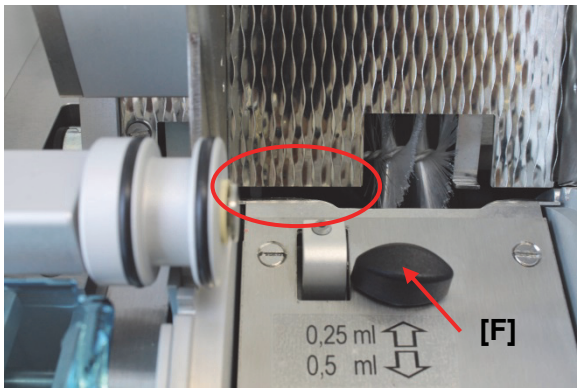


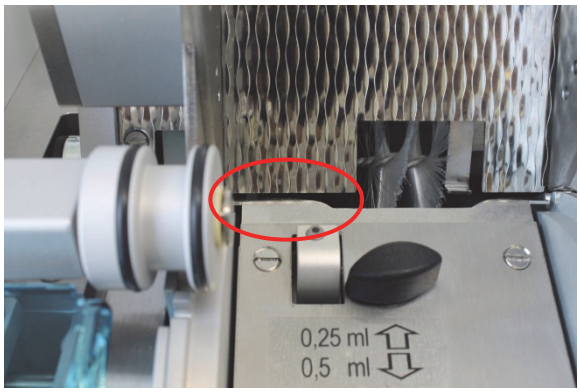
Example:
The free slot of the selection disc is located in the area of the large nut (0.5 ml). The small nut (0.25 ml) is closed.



- The supply wheels on both sides provide an adjustment unit clearly marked with the marking „0.25 ml – 0.5 ml“
- In case that these screws are inside the machine, please start the machine.
  Please make sure that the straw hopper is not yet inserted or that there aren't any straws in the hopper.
- Activate the main switch.
- Press the start button, observing all safety instructions (see chapter 1).
- The machine will make a few rotations of the supply wheel without inserted straws and will stop. Repeat this process until the adjustment unit is visible.
- Wait until the device has come to a complete stop before you put your hands inside.
- Take the 2.5 mm Allen key from the tool kit. Insert it into the screw head and turn it approx. 90° counter clockwise until the screw is loosened.
- Turn the outer wheel together with the screw into the position 0.5 ml, or respectively to 0.25 ml.
- Fix the screw again with a slight torque.
- Repeat this process on the other side.

7.3.4. Adjusting the straw selection sheet between the supply wheels to the required straw size



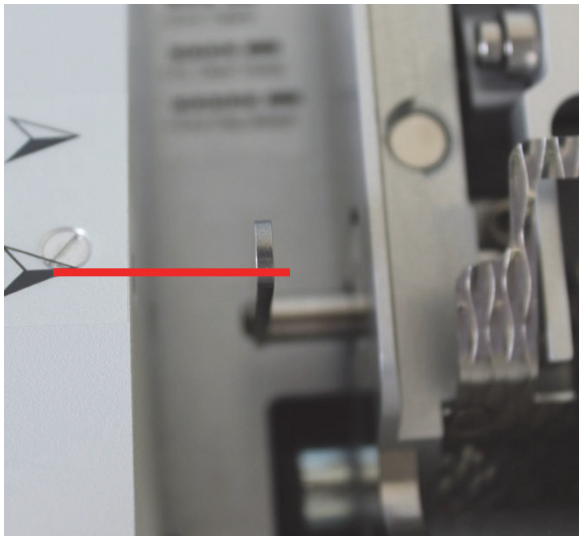


- Open the black wing nut [F] between the supply wheels.
- For 0.25 ml straws push the wing nut together with the sheet backwards.
- For 0.5 ml straws push the wing nut together with the sheet to the front.

Small gap:
0.25 ml straw

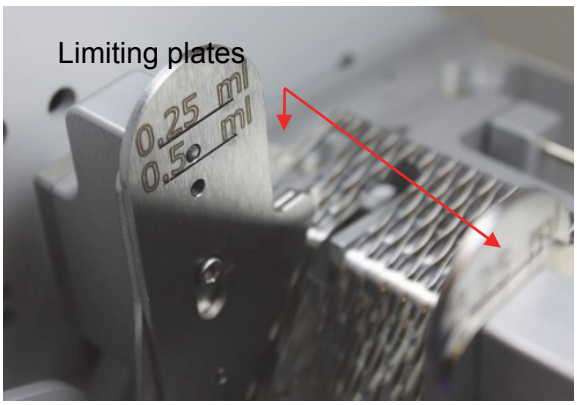
Large gap:
0.5 ml straw

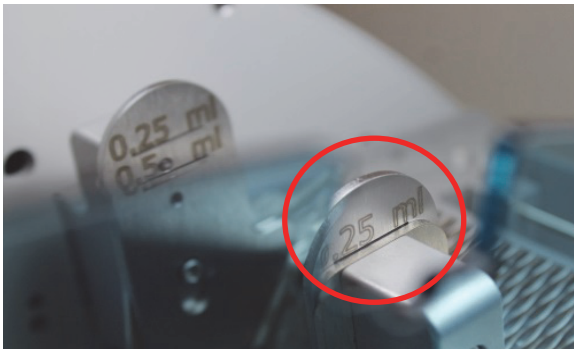
7.3.5. Close the hopper

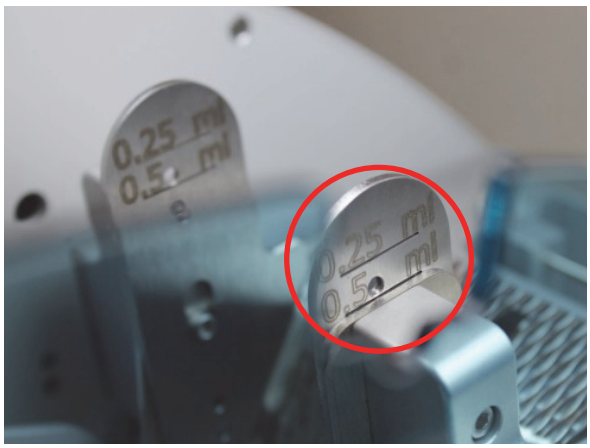


- Bring the hopper lever to the forward position („Hopper closed“).

7.3.6. Adjusting the limiting plates





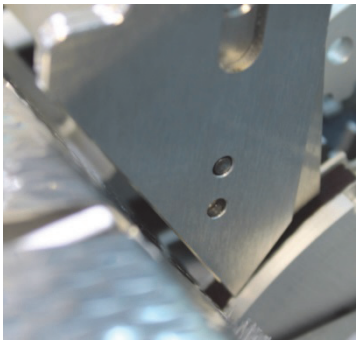


- Adjust the limiting plates on both sides to the required straw size.

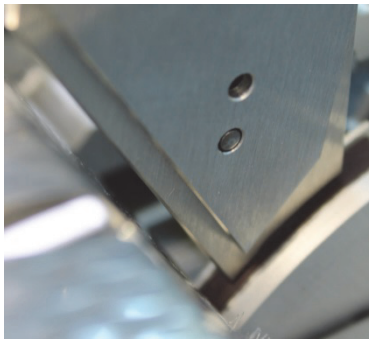
- For processing 0.25 ml straws insert the limiting plate in the direction of the ribbed sheet.

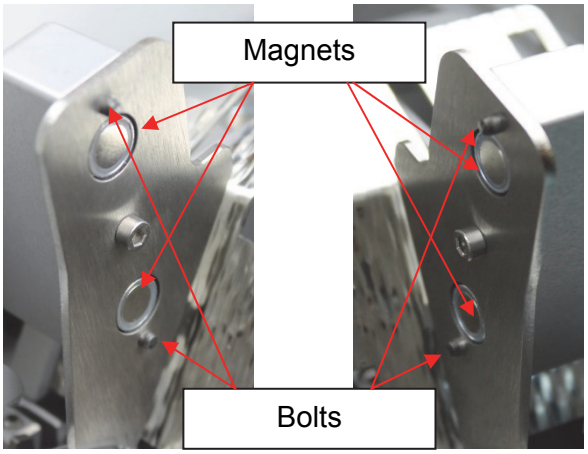
- For processing 0.5 ml straws insert the limiting plate away from the ribbed sheet.

Gap between limiting plate and ribbed sheet small (approx. 2 mm): 0.25 ml straws

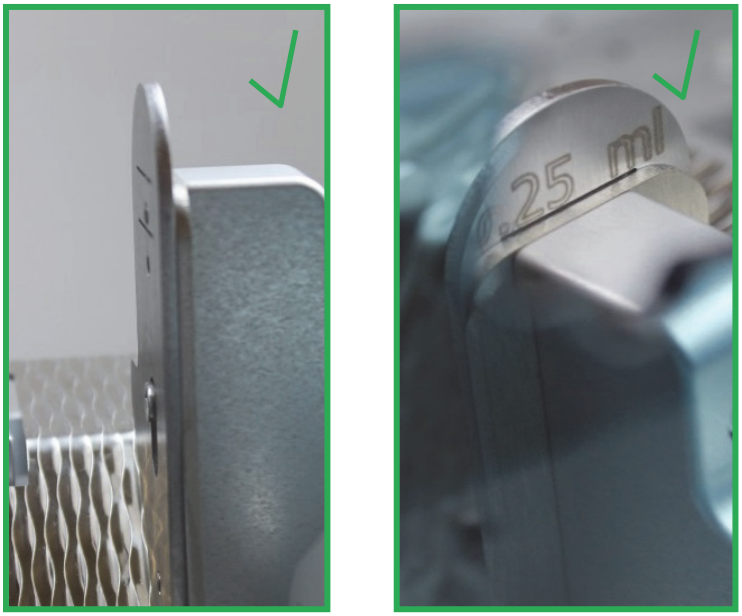


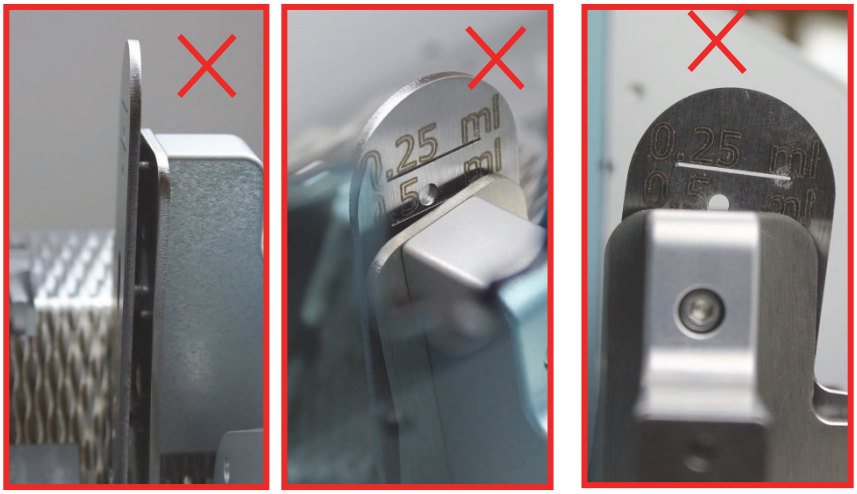
Gap between limiting plate and ribbed sheet large (approx. 3 mm): 0.5 ml straws



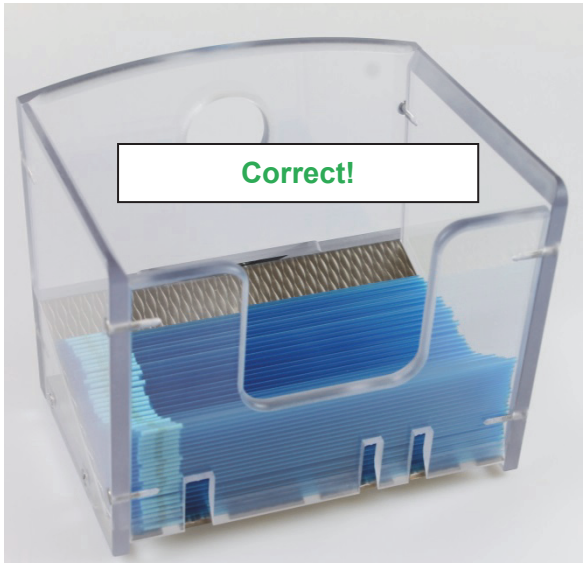


- The limiting plates are held with magnets.
- Make sure that the bolts lock into both holes of the limiting plates.
- Make sure that the limiting plates tightly fit on both sides.
- Repeat the process in the same way on the other side of the straw hopper.

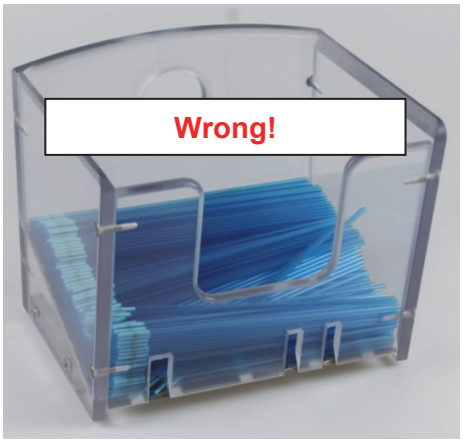




7.3.7. Filling the hopper

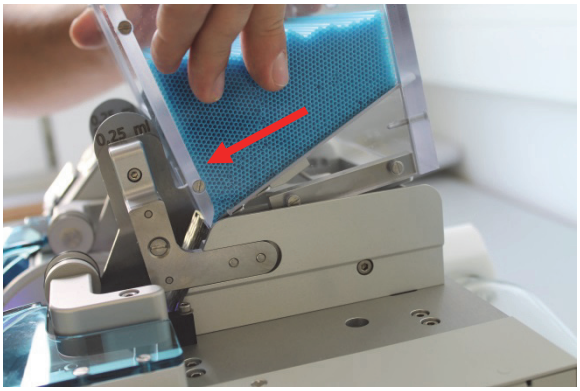


- Fill the straws into the hopper.
- Align the straws in such a way so that the plugs of the straws are positioned on the suction side.
- Make sure that all straws in the hopper are alignedparallel.

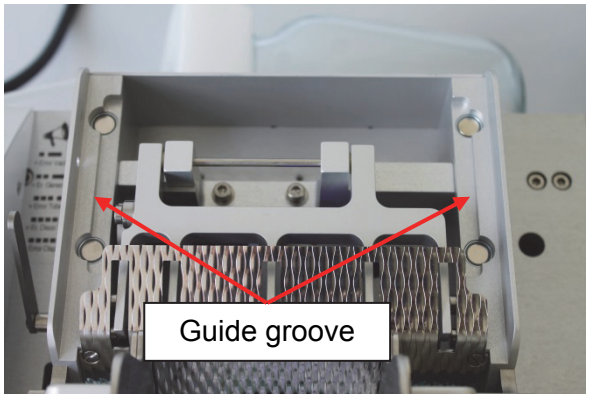


Hint:
If the hopper has not completely run out of straws during the production, straws can be refilled without removing the hopper from the device.
Please note: For this purpose the machine should always be stopped.

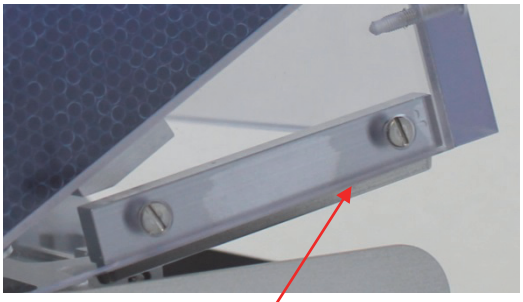
7.3.8. Attaching the hopper to the MPP Uno

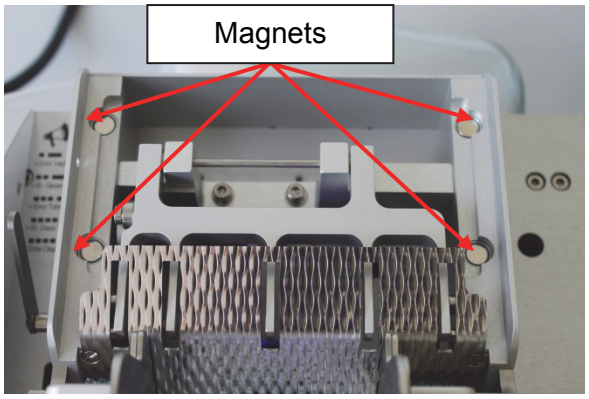


➢ Attach the hopper slightly tilted to the front.



➢ Make sure that the hopper with the hopper base slides into the guide groove.





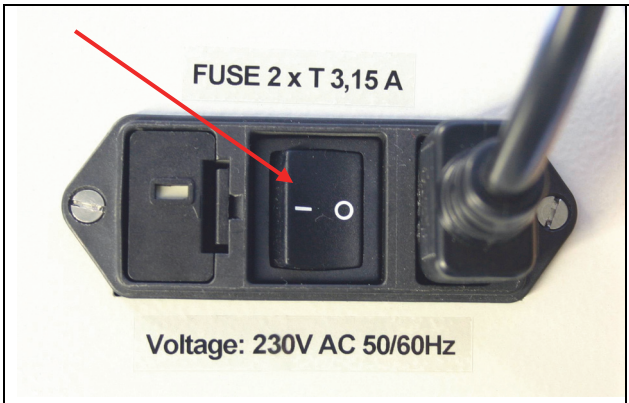
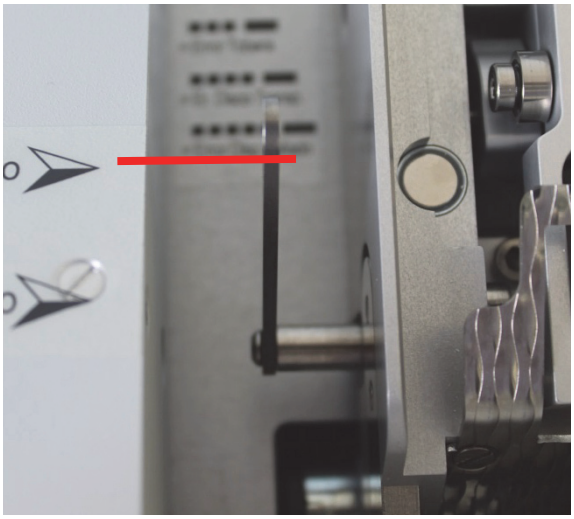
➢ The hopper is held with magnets.

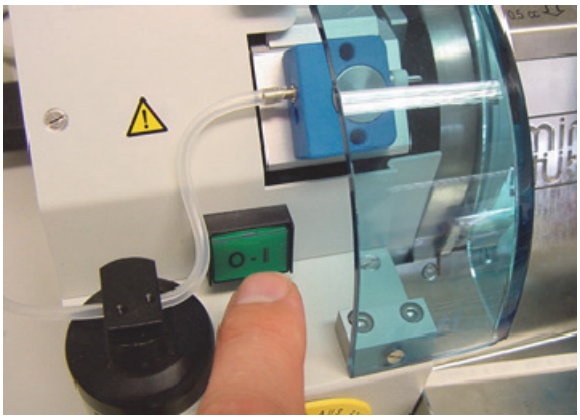
Prepare the semen solution and fill it into the semen cone.

7.4. Switching on the device

Observe the safety instructions in chapter 1 of this manual.

Safety instructions:
The emergency stop button is a protection for emergencies. Pressing this button the device immediately comes to a complete stop. All actuators in the device are switched off. Prior to releasing the emergency stop button, eliminate all circumstances that made the activation of the emergency stop button necessary. During normal operation switch off the machine with the green switch „I-O“ .

	➢ Activate the power switch on the power pack. The switch must be in position „I“ („I“ pressed down). The green LED is NOT illuminated.
	➢ Put the hopper lever to the rear position („Hopper open“).

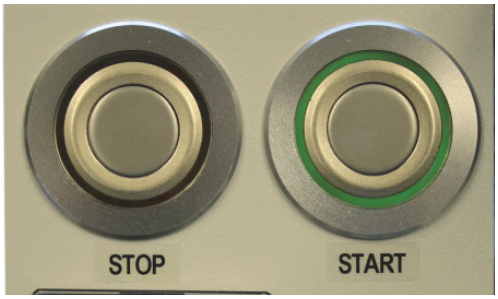


➢ Activate the green main switch **„O-1“**.

- Green light on the main switch and the blinking START button indicate that the device is ready for operation.
- The green LED on the power pack is on.

- Once the machine is switched on, the suction valve opens for a short time to evacuate eventually remaining vacuum from the vacuum bottle. Afterwards the vacuum pump starts building up the negative pressure value that was pre-set ex works.
- The increase of the negative pressure can be observed on the display of the vacuum control. The vacuum value is indicated in red, while the vacuum pump is active.
- When the pre-set negative value is reached, the value is indicated on the display in green.
- Please refer to chapter 7.5.2. „Adjusting the vacuum set value“ for pre -setting another set value.

If a vacuum leak occurs during the vacuum build-up, in the tubing or on the rear side of the vacuum bottle, the pump switches off automatically after 20 seconds. An error message is triggered with fast blinking red and green buttons and a warning beep tone with variable length is audible.
Activate the red „Stop“ button. Thus the error message is confirmed and quit.
For further information please read chapter 9.2. „Error messages“.

<table>
<tr>
<td> 
</td>
<td>➢ Push the green START button.
• The machine starts taking the straws from the hopper, and proceeds with filling and sealing.
• Filling of the first straw is prolonged because the empty filling tubing must first be filled up to the nozzle.
• During the filling process, the red STOP button is blinking.</td>
</tr>
<tr>
<td colspan="2">• The filling and sealing process is completely automatic.</td>
</tr>
<tr>
<td colspan="2">The filling and sealing process is completed when:

• All straws from the hopper are used up.
(The machine continues running empty for several cycles. Then the machine stops.)

or

• The straw supply is stopped by closing the hopper lever.
(The straws that are still in the machine are filled. Then the machine continues running empty for several cycles. Then the machine stops.)

or

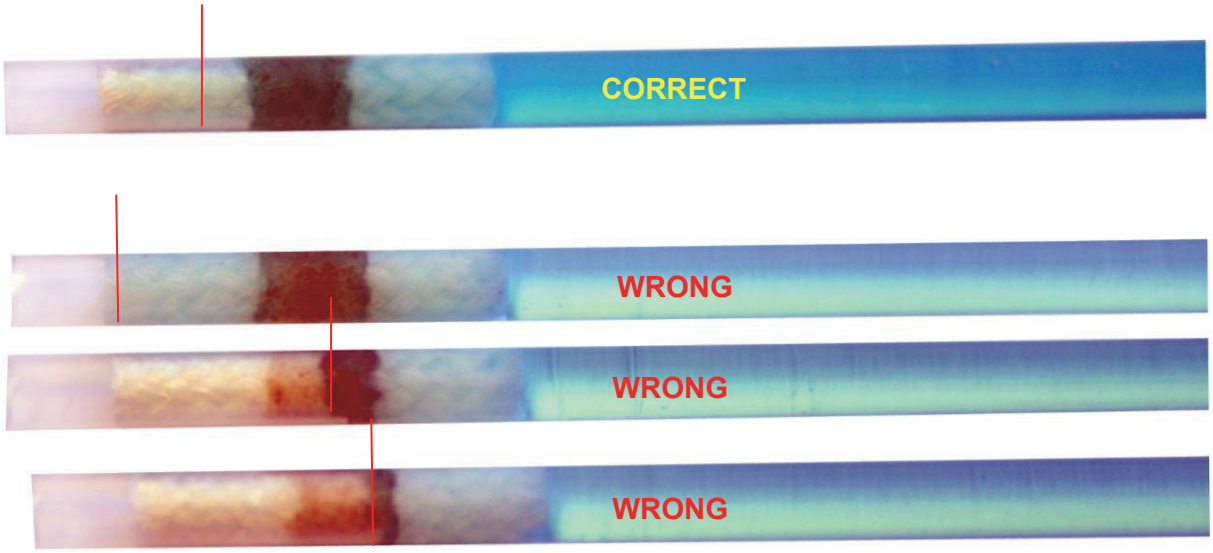
• the STOP button is pressed
(Immediate stop)</td>
</tr>
</table>

7.5. Parameter Settings

For settings on the MPP Uno only use the provided tools. Use the tools as intended and in the appropriate size.

Basic Information:

A basic criterion for the correct filling of the straws is the degree of moisture penetration in the plug.
In order not to waste semen a complete moisture penetration of the outer plug is not necessary. The powdery part of the plug package must be soaked completely. In addition a quarter to one third of the outer plug must also be soaked. If the straw is not filled correctly, the plug might be expelled during the freezing process.



Varying extender viscosities and different straw sizes lead to varying filling times and vacuum values. Make the settings for the filling time and the vacuum values using the extender of the ready to use extended ejaculate you want to process. Once all values are optimally set, you can start the filling process.

If necessary, change the parameter values for the filling time first. Only if the moisture penetration of the plug is still not optimal, change the vacuum values. Afterwards optimise the setting again by adjusting the filling time.

7.5.1. Adjusting the filling time

- The MPP Uno allows adjusting the filling time during the filling process from 0.2 to 0.7 seconds.
- Two values can be saved in memory.
- The saved settings are available when the device is switched on again.

➢ Start the MPP Uno.

➢ Observe the moisture penetration in the plug in the area of the suction nozzle.
➢ The machine automatically prolongs the filling time of the first straw for about 0.8 seconds, to have enough time for filling the tubing and the straw. When the filling tubing is already full the first straw might be overfilled. This is no problem. Adjust your settings, using the second and the following straws.
➢ If the moisture penetration in the plugs is too low, prolong the filling time pressing the **„Filling time +“** button.
➢ If the moisture penetration in the plugs is too much, reduce the filling time pressing the **„Filling time –“** button.

Each time the button is pressed, the filling time is changed by about 0.02 seconds.
Parameter values are stored automatically.

➢ You can store another parameter value activating the selection switch **„Filling time selection“**.
➢ As soon as the filling time is optimised, stop the machine.
➢ If necessary change the vacuum set value as described in the following chapter.
➢ Fill the semen cone with the ejaculate you want to process and start the filling process.

7.5.2. Adjusting the vacuum

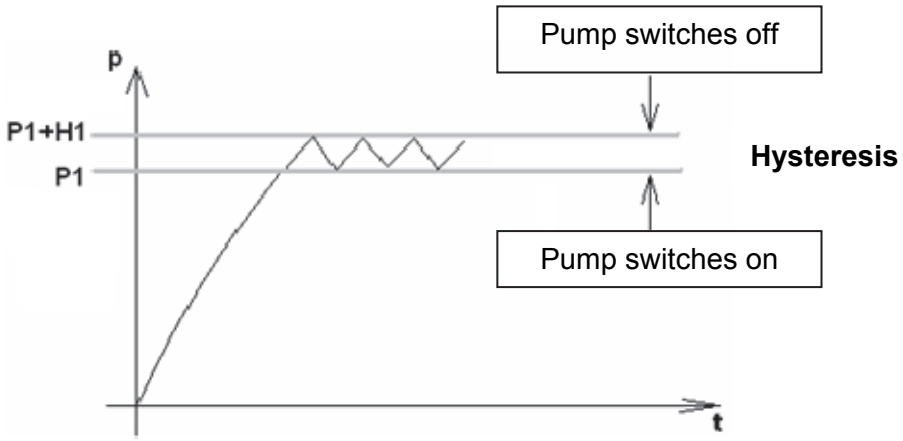
Basic Information:

The vacuum control of the MPP Uno allows holding the negative pressure constant in a defined range. The setting of this range is adjusted via the set value P and the hysteresis H.

- **Vacuum set value P1**: As soon as the actual measured negative pressure has reached this value, the vacuum pump switches off.

- **Hysteresis H1**: As soon as the actual measured negative pressure under-runs the set value P1 by this value „H1", the pump switches on.
- This is to avoid that the pump starts working already at slight variations of the actual value. The vacuum value can vary in this range, without changing the switching status.

- The default value for the hysteresis is „1.0" and is indicated in kPa (kilo Pascal).



- The actual vacuum value is indicated in kPa (kilo Pascal) during operation.
- Conversion: 1 kPA = 10 mbar

- Deviations of the actual value from the set value are indicated optically.
  - Digit indication „red": the deviation from the set value is above the hysteresis value, the pump switches on.
  - Digit indication „green": the actual value and the set value are in accordance in the range of the hysteresis.
  - Pump is off.

- A value can be stored.

- The settings are stored automatically; they are present when the machine is switched on again.

The vacuum values „P“ and „H“ of the MPP Uno are pre-set ex works. These values correspond to measured average values and must be changed depending on the ambient temperature, the type of straw and the material to be processed.

- Remove the transparent cover.

➢ Activate the „▲“ or „▼“ key.

One of the following displays is indicated: „P1“, „H1“, „P2“ or „H2“. Press the MODE key until „P1“ is indicated – alternately blinking with the actually adjusted negative pressure set value. The control is in the programming mode for 3 seconds.

➢ Adjust the required vacuum value with the „▲“ and „▼“ keys.

While pressing and holding the key, first the digit behind the decimal point starts changing. Then the first digits and then the decades of the set value change. Release the key when you are near the required value. For the exact adjustment only press the respective key shortly.

If none of the two keys is activated within 3 seconds, the control stores the adjusted value automatically.

Make sure to have a negative value when setting the vacuum „-„. A positive value causes machine malfunctions.

- If „P1“ is not indicated, activate an arrow key again in order to get into the programming mode. Then press the „MODE“ button until „P1“ is indicated. (Parameter sequence („P1“-„H1“-„P2“-„H2“)
- Do not press the „MODE“ button any longer, when P1 is indicated.
- If „P1“ and other parameters are not indicated, see chapter 9.1.6. „The vacuum set value cannot be adjusted“.

Do not press the „SET“ key!
The set values are stored automatically.

- Press the „▲“ or „▼“key.

  One of the following displays is indicated: „P1“, „H1“, „P2“ or „H2“. Press the MODE button until „H1“ is indicated – alternately blinking with the actually adjusted hysteresis set value. The regulator is in the programming mode for 3 seconds.

➢ Adjust the required hysteresis value using the „▲“ and „▼“ keys.

  While pressing and holding the key, first the digit behind the decimal point starts changing. Then the first digits and then the decades of the set value change. Release the key when you are near the required value. For the exact adjustment only press the respective key shortly.

  If none of the two keys is activated within 3 seconds, the control stores the adjusted value automatically.

- If „H1“ is not indicated, press an arrow key again in order to get into the programming mode. Then press the **„MODE“** key until „H1“ is indicated. (Parameter sequence („P1“-„H1“-„P2“-„H2“).
- Do not press the **„MODE“** button any more, when the parameter P1 is indicated.
- If „H1“ and other parameters are not indicated, refer to chapter 9.1.6. „The vacuum value cannot be adjusted“.

Do not press the „SET“ key! The set values are stored automatically.

➢ Reinsert the transparent cover again.

7.6. Changing the ejaculate

- Complete the current filling process:
  - by pressing the STOP button

  or
  - close the straw supply by means of the hopper lever.

- Remove the tubing from the filling valve.
- Remove the filling head.
- Put the filling head into a dishwashing detergent (see chapter 8.2.1. „Cleaning“)
- Insert a new filling head with new filling tubing.
- Put the end of the filling tubing into the semen cone.
- Fill new straws with the corresponding printing into the hopper.
- Open the straw supply by means of the hopper lever.
- Start processing with the START button.

See chapter 7.3. „Preparing the equipment“

In particular cases, e.g. when the suction head is dirty, it might also be necessary to change the suction head.

- Press the STOP button for at least 3 seconds.
  - The red background lighting of the STOP button is on.
  - The device is in the mode for changing the suction head:
  - Filling and suction valves are opened simultaneously.

  and
  - The vacuum control is deactivated.

- Now change the suction head as described in chapter 7.3. „Preparing the equipment“
- Shortly press the STOP button.
  - The valves are closed.
  - The background lighting of the STOP button goes off.
  - The background lighting of the START button is off.

- Start a new filling process with the START button.

As the valves are opened electrically, a slight warming occurs there. In order to avoid an influence on eventually present semen in the filling tubing, the machine closes the valve automatically after approx. one minute. If the exchange cannot be completed within this minute, the valves must be opened again.

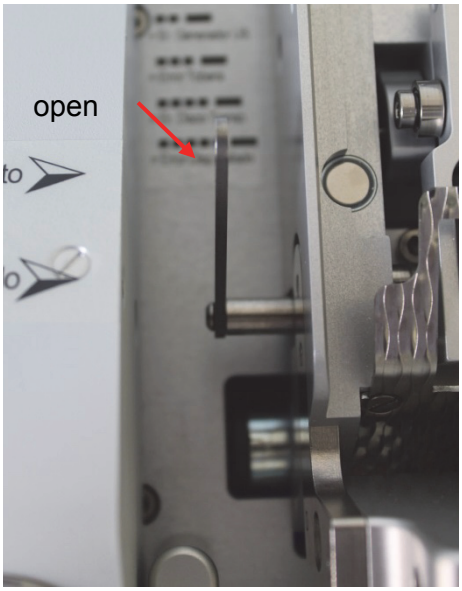
7.7. Changing the straw size

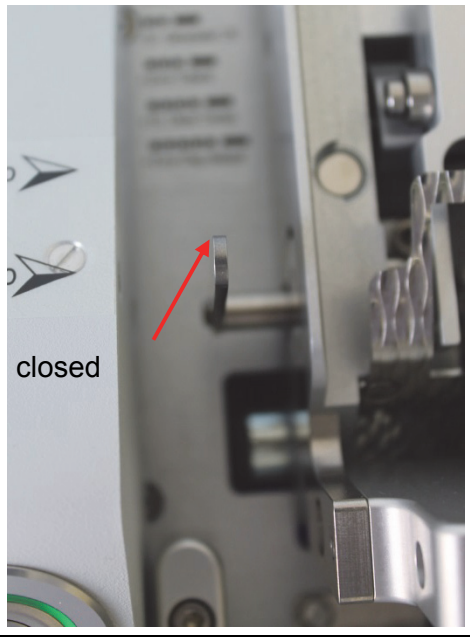
Also see the chapters 7.3. „Preparing the equipment“, 7.4. „Switching on the device“ and 7.5. „Parameter settings“.

- Remove the hopper from the machine.
- Remove the filling and suction heads.
- Empty the semen cone as necessary and discard it.
- Change the settings for the straw size on the limiting plates of the hopper..
- Select the corresponding position on the supply wheels of the machine.
- Insert the filling and suction blocks corresponding to the selected straw size.
- Fill the hopper with printed straws of the adjusted size.
- Fill a new semen cone with the liquid to be processed.
- Start the machine.
- Adjust an optimal moisture penetration of the plug.

7.8. Opening and closing the straw supply

- Between the left side of the hopper and the casing with the START-STOP buttons a lever is located for opening and closing the straw supply from the hopper.





- ➢ Close the straw supply as soon as the liquid to be filled has run dry but several straws still remain in the hopper.
- The supply wheels are emptied; the machine continues several cycles and then stops automatically.
- A label on the casing indicates the position of the lever with corresponding arrows.

7.9. Notice when not in use for a longer period of time

Remove all tubings from the valve clamps during periods when the machine is not in use. This prevents the tubings from agglutinating, thus causing problems when starting the next filling process.

7.10. Switching off the MPP Uno

➢ Activate the main switch „0-I“.

The green light goes off.

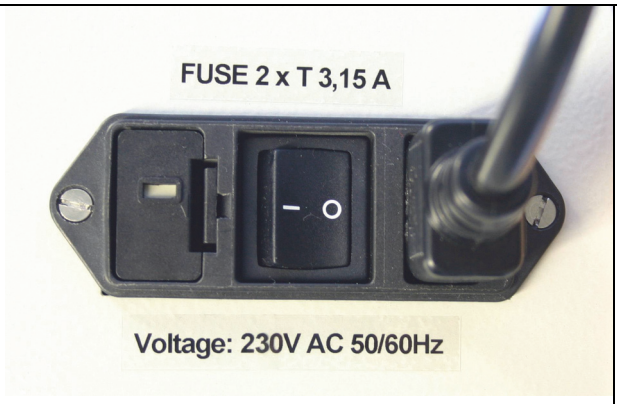
➢ Remove the tubings from the valve blocks.

The tubings might agglutinate due to the constant pressure of the valves, thus causing problems when starting the machine again (see chapter 7.9. „Notice when not in use for a longer period of time“).

➢ Check the vacuum bottle.

- At optimal moisture penetration in the plug, there should not be any liquid in the vacuum bottle.
- If necessary, clean the vacuum bottle (see chapter 8.2.3.).

- The MPP Uno is now switched off.
- The power pack is in the power saving mode. When the machine is not in use for a longer period of time, e.g. holidays we recommend switching off the power pack as well.



➢ Activate the power switch of the power pack (position „0“).

8. Cleaning and Maintenance

Generally make sure to provide an optimal working environment for the operation.
Maintain and clean the machine if necessary (e.g. spilled material) observing the following instructions and cycles.

8.1. General cleaning

In order to keep the machine in a good condition, and to maintain optimal hygiene conditions, it is recommended cleaning the machine thoroughly once a week or once a month, depending on the operating time.
This concerns visible surfaces and areas typical for soiling, like the collection tray for example. For antibacterial cleaning you may use a mixture of isopropyl alcohol and water or disinfectants.

Set the main switch to „Off “ for all kind of cleaning.
In case of non-observance there is electric shock hazard, respectively hazard due to unintended functions.

Do not use any aggressive cleaning agents!
Aggressive cleaning agents might damage the materials of the MPP Uno.

Never pour water onto the MPP Uno or the power pack of the MPP Uno. There is electric shock hazard. Only clean the surfaces with a damp cloth.

8.2. Daily cleaning

8.2.1. Cleaning when changing the ejaculate

- Prepare a mild solution with water and customary washing-up liquid. Never use disinfectants or soaps with additives such as cream, balm, etc.
- Remove the filling head.
- Remove the washer and the tubing and discard them with the domestic waste.
- Put the filling head immediately into the washing-up liquid, as otherwise extender remains might dry inside.
  When processing several ejaculates, collect the used filling heads in the detergent. Carry out the following instructions only after having completed all filling processes.
- After processing the last ejaculate clean the filling and suction heads, as described in chapter 8.2.2.

8.2.2. Cleaning after the last ejaculate

- Prepare a mild solution with distilled water and customary washing-up liquid, if not yet prepared for the cleaning after changing the ejaculate. Do not use any disinfectants or soap with additives, such as cream, balm etc.
- Remove the filling and suction heads.
- Remove the washers and tubings and discard them with the domestic waste.
- Put the filling heads into the washing-up solution immediately, as otherwise extender remains could dry on them.
- When processing several ejaculates, collect the already used filling heads in the washing up solution.
- Control the nozzle of the suction head for soiling caused by moist powder remains from the plugs of the straws.
- If necessary use the provided piece of wire from the tool kit and pass it through the nozzle (0.25 ml straw – thinner piece of wire, 0.5 ml straw - thicker piece of wire).
- Put the suction heads into the washing up solution.
- Rinse the collected filling and suction heads with demineralised water.
- Dry the filling and suction heads by shaking them and put them on clean towels.
- Blow through the filling and suction heads with oil free compressed air.
- Sterilise the filling and suction heads by boiling them (time: min. 15 minutes) in demineralised water or by means of hot air (temperature: max. +140°C).
- The cleaning of the filling heads can also be done in an ultrasonic cleaning bath (for example Minitube ultrasonic bath Ref. 14400/8849). Sterilize as described above.

Make sure that the temperature does not exceed + 140°C during the hot air sterilisation. Higher temperatures lead to deformation of the plastic parts thus causing malfunctions of the filling machine.

Make sure that the needle shafts and the needle points do not get damaged. Deformed needles lead to malfunctioning of the filling machine. In order to avoid damages we recommend using fixing units (see chapter 3. „Optional Accessories“).

8.2.3 Cleaning the vacuum bottle

Never start the machine when there is liquid in the vacuum bottle!

- Check if there is any liquid in the vacuum bottle.

  At optimal moisture penetration of the straw plugs there rarely collects any liquid in the vacuum bottle.

- Control the vacuum settings or the filling time if such a situation occurs frequently.

A too high liquid level in the vacuum bottle might lead to irreparable damage of the vacuum pump!

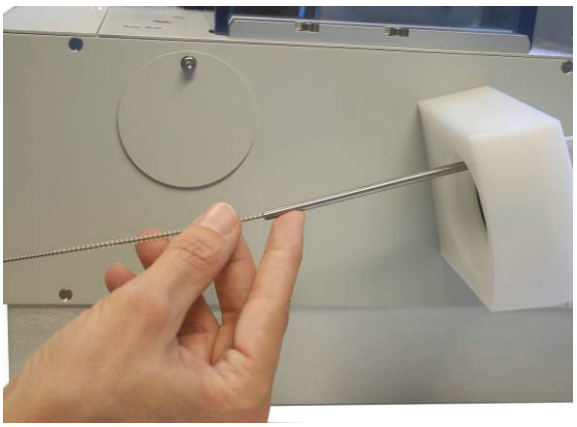
- Switch off the machine

or

- Press the „STOP“ button for min. 3 seconds.

  The vacuum regulation is now switched off.

- Turn the vacuum bottle counter-clockwise (seen from the right side of the machine) to remove it and clean it.



- You can clean a dirty supply tube by removing the tubings and passing a piece of wire through the metal tube. Reattach the bottle turning it clockwise.
- Make sure that the bottle is securely screwed up to the seal.

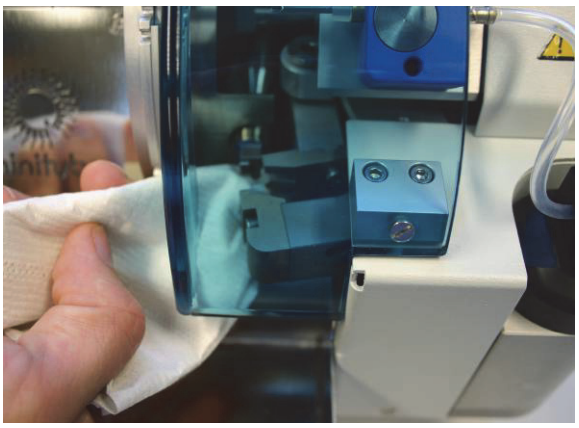
8.2.4. Cleaning the sealing area

The machine must not be operated, when the protection cover is removed. Risk of injury!

Only clean the sealing area, when the machine is switched off! Risk of injury!

The ultrasonic welding unit is a supersensitive high-precision component! All parameters were optimised ex works thus making an interference of the operator unnecessary! Do not manipulate the welding unit! This concerns especially converter and sonotrode! For cleaning only use the described, respectively the provided tools! Do not use any pointed or hard tools!

- Switch off the machine.



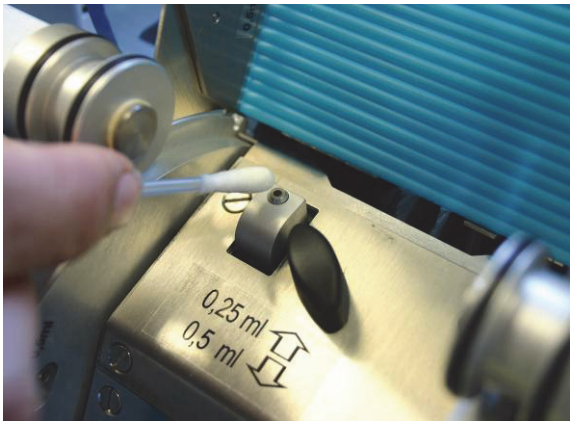
- Clean the welding unit under the protection cover with a clean paper towel. If necessary moisture the towel with water and some dishwashing detergent.

  Make sure that no paper remains in the welding unit.

- In case of persistent soiling proceed as described in chapter 8.3.2. “Cleaning the welding unit” (weekly cycle).

8.3. Cleaning works (weekly cycle)

8.3.1. Cleaning the straw recognition sensor

	➢ Switch off the machine.
	➢ Carefully clean the optical sensor for the straw recognition with a cotton bud drenched in a mixture of alcohol and water (or ethyl alcohol).

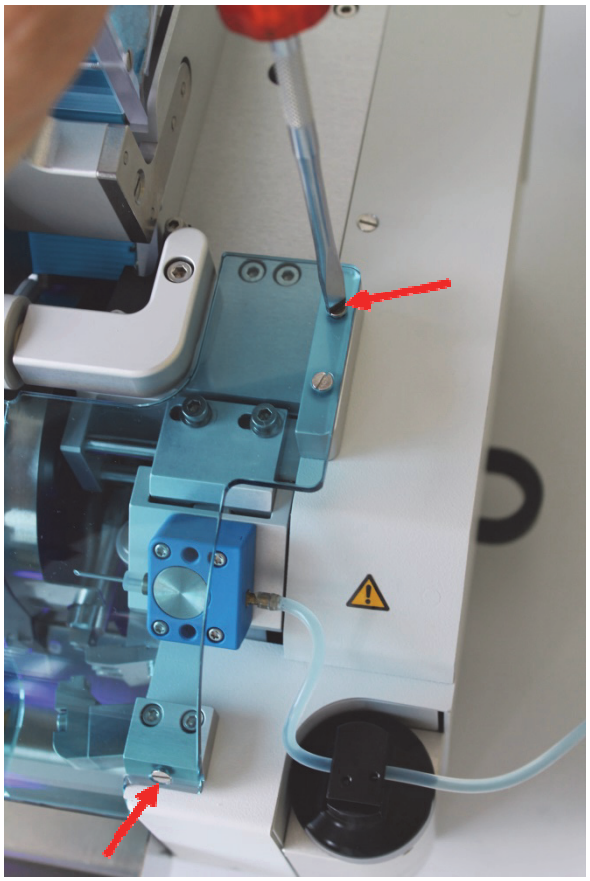
8.3.2. Cleaning the welding unit

The machine must not be operated, when the protection cover is removed. Risk of injury!

Only clean the sealing area, when the machine is switched off! Risk of injury!

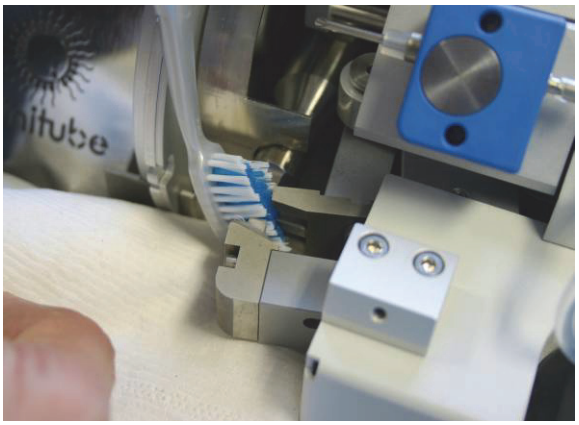
The ultrasonic welding unit is a highly sensitive precision component! All parameters were optimised ex works thus making an interference of the operator unnecessary! Do not manipulate the welding unit! This concerns especially the converter and the sonotrode! For cleaning use only the described, respectively the provided tools! Do not use any pointed or hard tools!

➢ Switch off the machine and disconnect the power plug.



➢ Take the larger screw driver from the toolkit and remove the two screws that fix the Plexiglas cover on the right side.

It is not necessary to loosen the third screw in the middle, which fixes an aluminium part that can be removed with the cover.



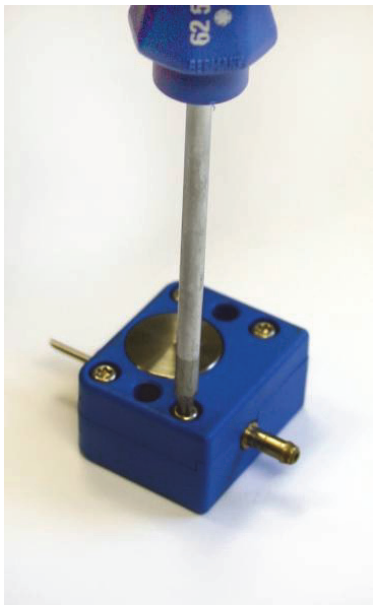
- Introduce a paper towel in the gap between the welding unit and the collection tray.
- Prepare a soap solution or a solution with washing-up liquid.
  Clean the teeth in the welding area with the washing-up liquid, using the provided brush.

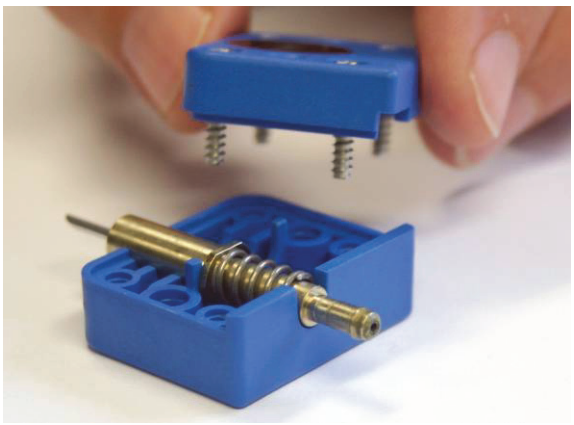
Do not dismount any parts from the welding unit.

- Remove the paper towel and dry the welding area a little.
- Mount the protection cover.

8.4. Cleaning works as required

Cleaning the nozzle heads





- Take the Torx-screw driver (TX 8) from the toolkit. Unscrew the screws on the nozzle head.
- Remove the upper plastic shell.
- Clean the soiling on the mechanic.
- Use a soft cloth dampened with a washing up solution, or put the nozzle head into a washing-up solution.
- Put the plastic shells together again.
- First turn the screws counter-clockwise until the screw is inserted in the thread.
- Only then turn the screw clockwise and tighten it carefully.

Make sure that the screws do not cut a new thread into the plastic.
This would damage the nozzle head.

- Sterilise the nozzle head as described in chapter 8.2.1 and 8.2.2.

8.5. Maintenance

In order to keep the device in a good condition and to achieve optimal production results, it is recommended to check the machine optically for visible damages, regularly.
When used as intended, the MPP Uno is nearly maintenance free. Depending on the mechanical stress, a control of the ultrasonic welding unit in regular intervals is recommended.
In case of repeatedly obtaining unsealed straws despite of optimial operation parameters, please contact a Minitube service technician.

9. Trouble Shooting

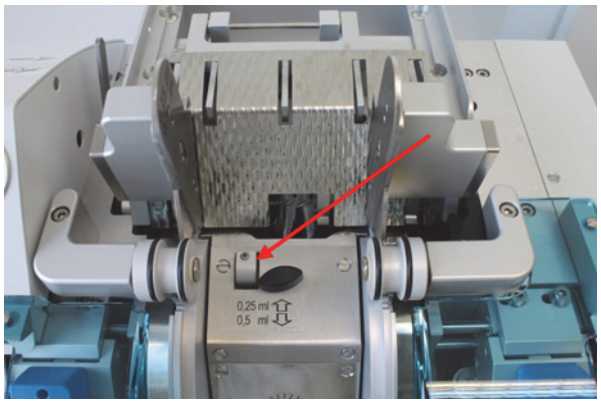
9.1. Failure

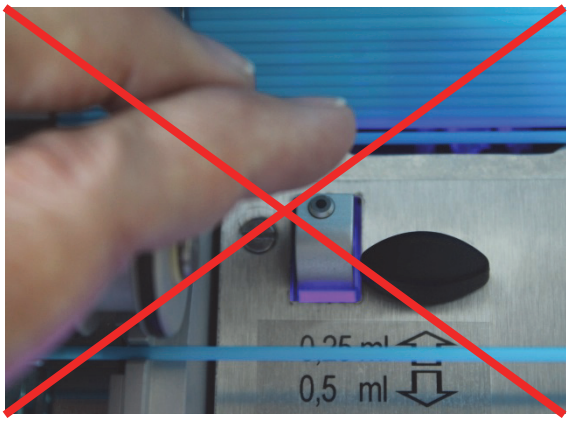
Incorrect machine settings might lead to incorrect operation of the machine respectively to faulty straw fillings. The errors mentioned in the following chapter can be solved by the operator himself. In case that the problem cannot be solved, please contact Minitüb.

Observe the safety instuctions!

Never put your fingers into areas of the device with moving parts during operation. Risk of injury!

9.1.1. Straws are not recognised

Error description: The machine does not switch off automatically, even though all straws have been processed. or Machine does not fill straws, even though straws are available or Machine stops with straws in the supply wheel.	**Trouble shooting:** Control the straw sensor!
	**Basic Information:** The machine is equipped with a photo electronic sensor that informs the control, if a straw was supplied or if all straws are used up.

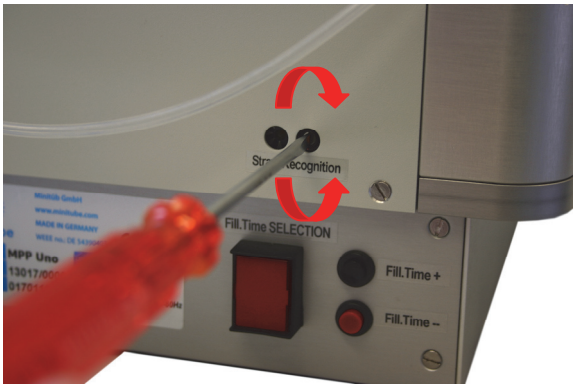


Do not put your fingers in the recognition area of the photo sensor, while the machine is in the operation mode. This leads to an irritation of the control, so that some straws do not get filled or that the machine stops.

- If this sensor is not adjusted correctly, the machine may not switch off automatically, even though all straws have already been processed or present straws do not get filled.

➢ If cleaning the sensor does not improve the situation, please adjust the sensor sensitivity as follows:

- On the left hand side of the machine two bore holes are located that release the signal light and the potentiometer for the straw recognition sensor.



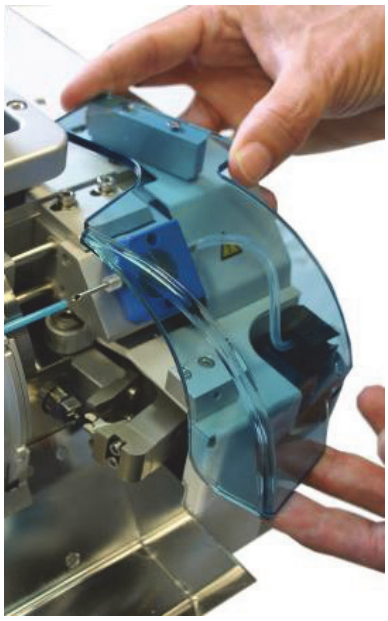
➢ If too many straws pass without being filled, turn the potentiometer a little bit (approx. 10°) clockwise.
➢ If the machine does not stop, even though no more straws are available, turn the potentiometer a little bit (approx. 10°) counter-clockwise.

9.1.2. The filling or suction nozzle is not in line with the straw

<table>
<tr><td>Error description:
The filling respectively the suction heads are not in line with the straws during operation.

or

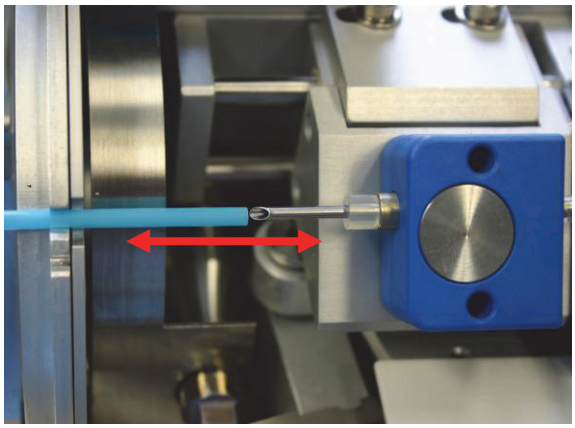
After maintenance works, the position of the filling and suction nozzles must be newly adjusted.</td><td>Trouble shooting:
Optimise the filling respectively suction head position.</td></tr>
<tr><td colspan="2">Procedure after maintenance works:
➢ Put several straws into the hopper of the machine.
➢ Start the machine and let one straw be transported to the filling position.
➢ Mount the filling and suction heads.

Procedure during the filling operation:
• The previous points are not necessary!</td></tr>
<tr><td colspan="2">➢ Switch off the machine and unplug.</td></tr>
<tr><td>  </td><td>➢ Loosen the two screws that fix the right Plexiglas cover.
➢ For this purpose use the larger screwdriver in the provided toolkit.

It is not necessary to loosen the third screw in the middle, which fixes an aluminium part that can be removed with the cover.

 
Please make sure not to touch the straw in the filling position.</td></tr>
</table>

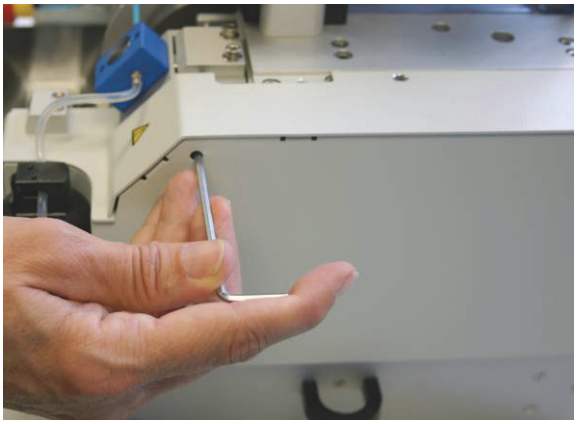
- Turn the cover on the rear side of the machine aside.
- Reach though the oval opening and move the tooth belt located there.



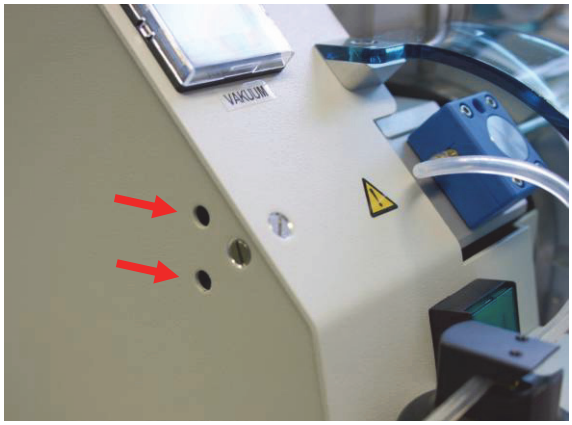
The nozzle of the filling head approaches the end of the straw.

Observe the nozzle point and the straw from above. The nozzle point must be aligned exactly to the middle of the straw.

Observe the nozzle point and the straw from the front. Vertical alignment of the nozzle point must be adjusted to approx. 1/3 of the straw diameter height.



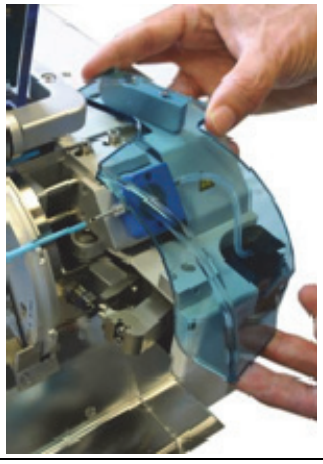
- Take the 3 mm Allen key from the tool kit.
- Pass it from the side through the protection cover and then first open the upper and then in the same way the lower screw of the nozzle holder. Loosen the screws only as far, so that the nozzle holder can be moved manually.
- Push the nozzle head in a position so that the nozzle aligns with the straw as described above.
- Hold the nozzle head with one hand, while fixing the screws of the nozzle holder with the Allen key.

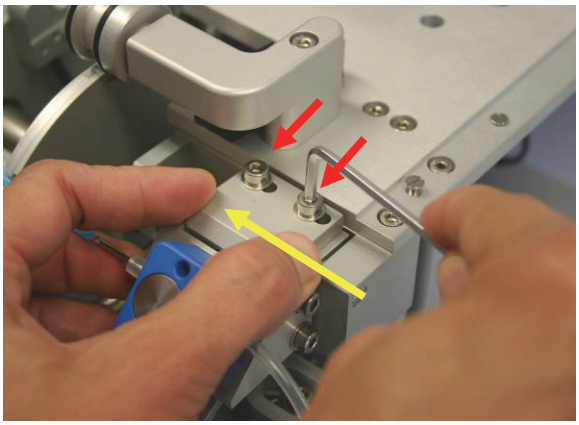


- For the suction side please proceed in the same way.

  The bore holes for the Allen key are on the left hand side of the machine casing.

9.1.3. Straw filling with bubbles

<table>
<tr><td>Error description:
There are bubbles in the straws.</td><td>Trouble shooting:
Increase the pressure of the filling and suction heads.</td></tr>
<tr><td colspan="2">➢ Switch off the machine and unplug.</td></tr>
<tr><td>  </td><td>➢ Loosen the two screws that fix the right Plexiglas cover.
➢ For this purpose use the larger screwdriver in the provided toolkit.

It is not necessary to loosen the third screw in the middle, which fixes an aluminium part that can be removed with the cover.</td></tr>
<tr><td>  </td><td>➢ Loosen the two screws above the filling head.
➢ Push the filling head in the direction of the straw.

  Make sure that the filling nozzle and the straw are aligned in a parallel way! No angular misalignment!

➢ Fasten the two screws again.

Make sure that both screws are fastened.</td></tr>
<tr><td colspan="2">➢ Mount the protective cover.</td></tr>
<tr><td colspan="2">➢ For the suction side please proceed in the same way, if necessary.</td></tr>
</table>

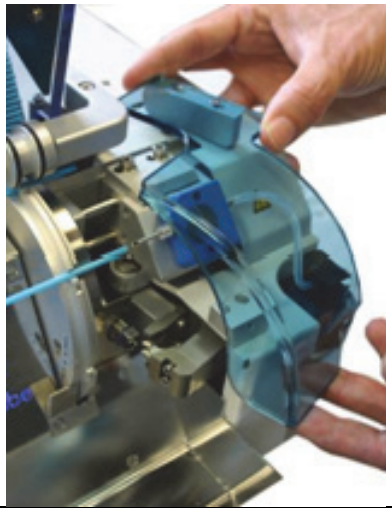
<table>
<tr><td colspan="2">In rare cases dirt inside the mechanics of the filling and suction heads might be the reason for the malfunctioning.</td></tr>
<tr><td colspan="2">➢ Remove the filling or suction head from the holder.
➢ Check if the nozzle can be moved against a slight spring pressure.

The nozzle must be movable and must return to its basic position automatically.</td></tr>
<tr><td>The nozzle is movable and returns to its basic position:

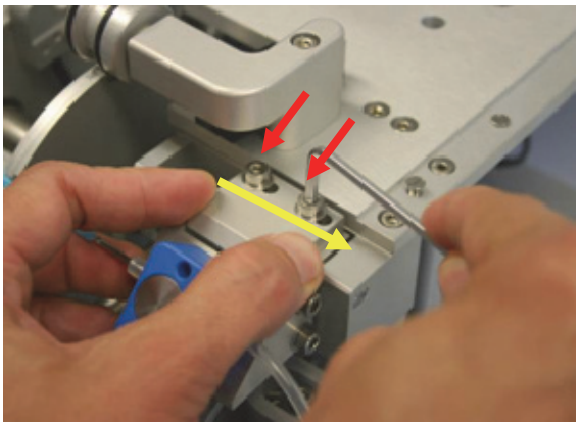
➢ Insert the nozzle into the holder again.</td><td>The nozzle cannot be moved or does not return to its basic position:

➢ Clean the nozzle head (see chapter 8.4. “Cleaning as required”).</td></tr>
</table>

9.1.4. Straw bending during the filling process

<table>
<tr><td>Error description:
Straws get bent too much during the filling process.</td><td>Trouble shooting:
Reduce the pressure of the filling and suction heads.</td></tr>
<tr><td colspan="2">➢ Switch off the machine and unplug.</td></tr>
<tr><td>  </td><td>➢ Loosen the two screws that fix the right Plexiglas cover.

Use the larger slotted screwdriver in the provided tool kit.

It is not necessary to loosen the third screw in the middle, which fixes an aluminium part that can be removed for cleaning with the cover.</td></tr>
<tr><td>  </td><td>➢ Loosen the two screws above the filling head.
➢ Push the filling head away from the straw.

  Make sure that the filling nozzle and the straw are aligned in a parallel way! No angular misalignment!

➢ Fasten the two screws again.

Make sure that both screws are fastened.</td></tr>
<tr><td colspan="2">➢ Mount the protective cover.</td></tr>
<tr><td colspan="2">➢ For the suction side please proceed in the same way, if necessary.</td></tr>
</table>

In rare cases dirt inside the mechanics of the filling and suction heads might be the reason for the malfunctioning.

- Remove the filling or suction head from the holder.
- Check if the nozzle can be moved against a slight spring pressure.

  The nozzle must be movable and must return to its basic position automatically.

The nozzle is movable and returns to its basic position:

- Insert the nozzle into the holder again.

The nozzle cannot be moved or does not return to its basic position:

- Clean the nozzle head (see chapter 8.4. “Cleaning as required”).

9.1.5. Straw blockage

Error description:	**Trouble shooting:**
Straws are not transported in the area of the hopper or the supply wheels or they are jammed.	Solve the problem of the straw blockage. Check the following possibilities:

- The machine was not or only partly adjusted to the straw size to be processed. (Chapter 7.7. „Changing the straw size“).
- The straws are defective (defective form or wrong size).
- The straw brush does not rotate. Remove the hopper and check if the brush is blocked. For further trouble shooting, please contact a Minitüb technician.
- The channel sheet adjustments on the hopper are misadjusted. Please let the device check by a Minitüb technician.

9.1.6. The vacuum set value cannot be adjusted

Error description:	**Trouble shooting:**
The vacuum value cannot be adjusted on the controller. The parameters P1 and H1 are not indicated on the vacuum controller even after activating the **„MODE“** key. or The vacuum controller indicates an error message	The vacuum controller is not configured correctly. Configure the controller.

- Activate the „MODE“ key for 3 seconds.
- Adjust the display with the keys „▲“ and „▼“ :
- Then only activate the „MODE“ key shortly in order to proceed to the next parameter.
- Adjust the following values with the keys „▲“ and „▼“.

Pa	F-2	Std	Noo	In	5	rGr	nor

- Adjust the following values for the parameters P and H.

P1 = 35.	H1 2.0	P2 50.0	H2 = 2.0

- If necessary optimize the values P1 and H1 for optimal moist penetration of the plugs.

9.1.7. Ultrasonic welding is defective, brittle, untight

Error description: Straws are not tightly sealed.	**Trouble shooting:** Check the welding gap and the amplitude if necessary.

Basic principle:

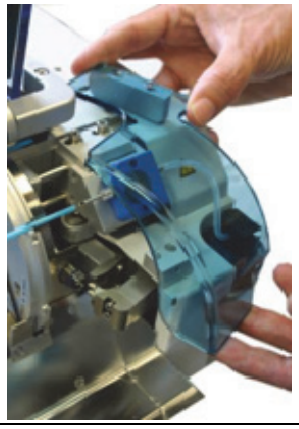
The machine is equipped with an ultrasonic welding unit. As soon as the straws are to be sealed, they are clamped between the so called sonotrode and the anvil. By means of the controller and the ultrasonic generator an ultrasonic vibration of 40 kHz with an amplitude of approx. 17 µm is triggered. Due to the pressure and the vibration, the plastic particles in the straw are rubbed against each other and the material heats up. After a defined period of time, the vibration is switched off and the heat in the welding area immediately merges into the metal of the anvil and the sonotrode. The plastic cools down and the welding is completed. The lateral chamber limitation influences the shape of the welding.

If there is not enough heat capacity applied to the plastic, the welding gap must be reduced or the vibration amplitude must be increased. A reason might be abrasion of the metal surfaces or the use of a different sort of plastic which requires higher melting temperatures. An indicator for insufficient heat or a too large welding gap is, when liquid leaks from the middle of the sealed tip of the straw, when a slight pressure is applied from behind.
Indicators for a too small welding gap or a too large amplitude are:

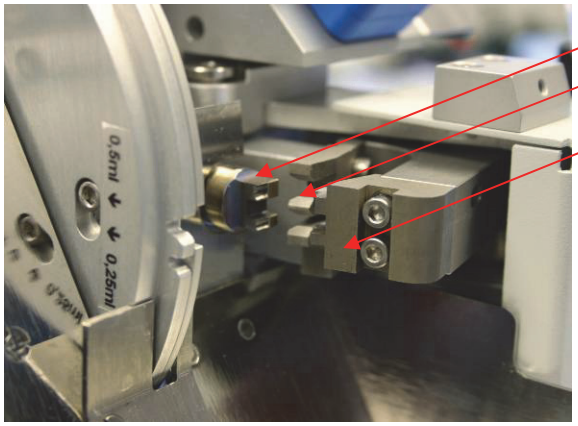
- Liquid leaks from the base of the welding
- The welded tip can very easily be bent (like a plastic foil)
- The welded tip easily brakes when frozen

While working with ultrasound, risk of skin burns on contact with the sonotrode. Do not touch the welding unit when the ultrasound is switched on!

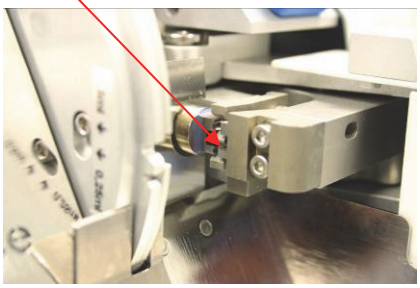
➢ Switch off the machine.

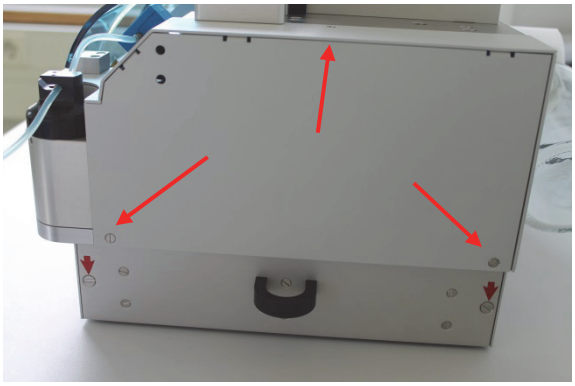


➢ Remove the protection cover on the filling side above the welding unit.

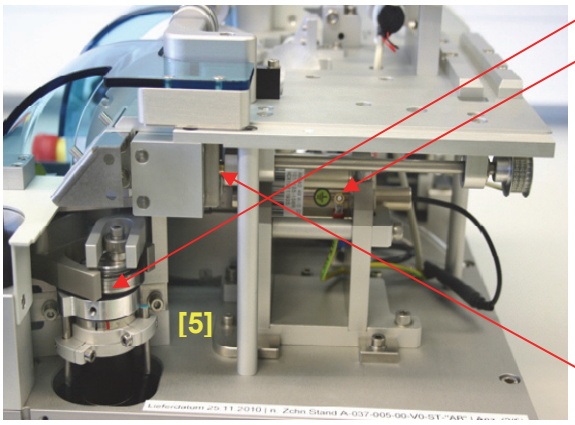


[1] Sonotrode
[2] Chamber limitation
[3] Welding gap
[4] Anvil

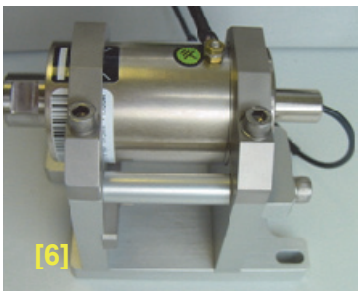




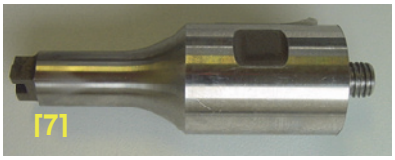
➢ Remove the cover on the right side of the device. For this purpose loosen the marked screws.

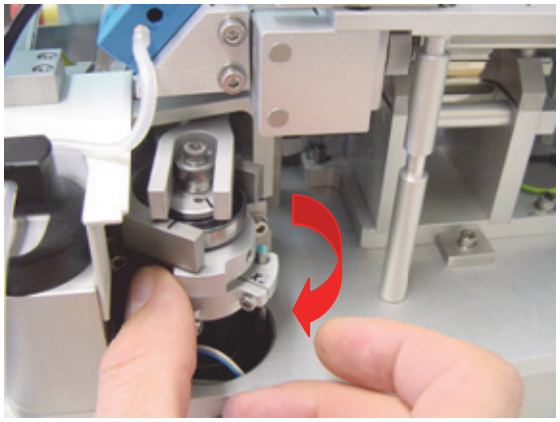


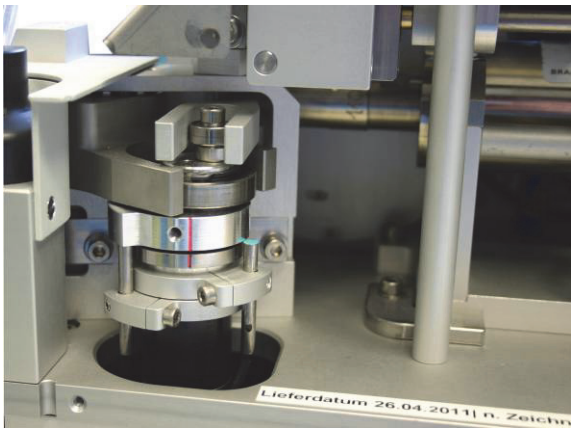
[5] Eccentric
[6] Converter



[7] Sonotrode





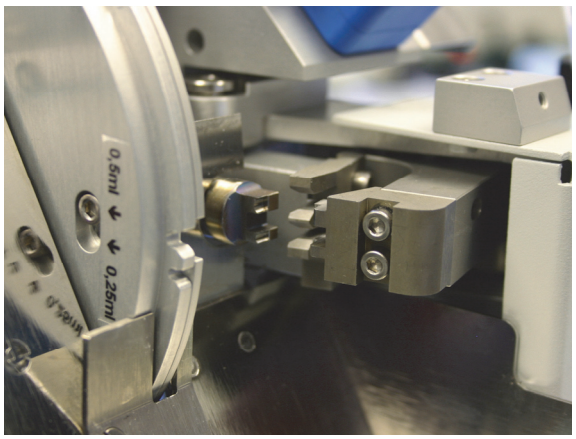


- Check the ease-of-movement of the welding unit by turning the eccentric of the motor drive for a complete rotation preferably clockwise.

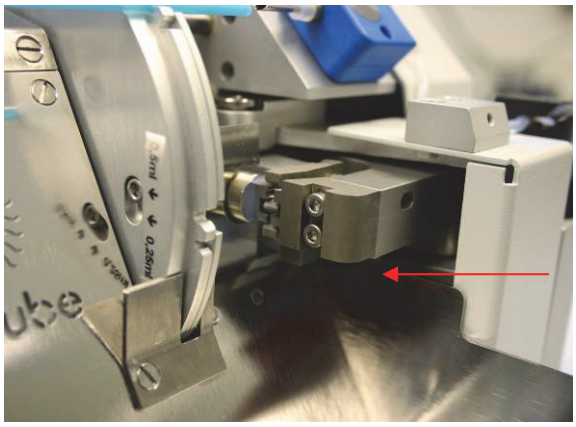
There are red markings on the eccentric.

- Align the markings by turning the eccentric.

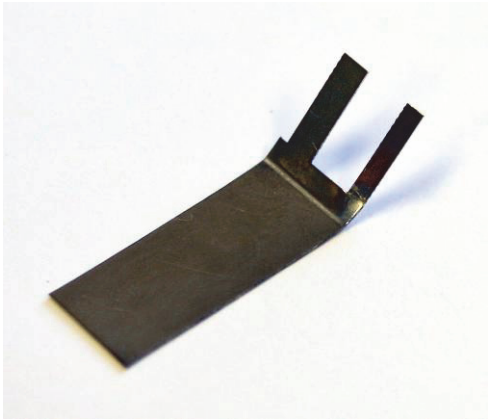
- Two positions are possible.

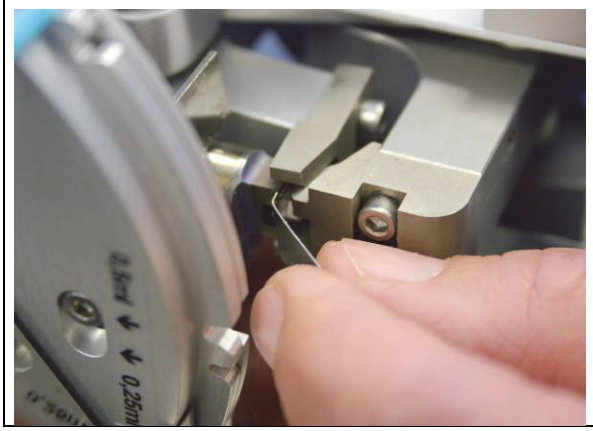


- Position „open“:
  The chamber limitation is on the right sight and the anvil is in front.



- .Position „closed/welding position“.
  The chamber limitation is on the left side and the anvil is in the back.





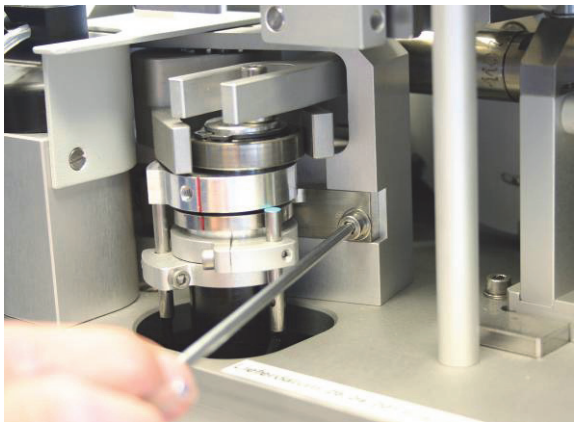
- ➢ Turn the eccentric to the position „closed/welding position“.
- ➢ Take the welding gap gauge from the tool kit.

  The material of the gauge is 0.25 mm thick. This corresponds to the optimal welding gap.

- ➢ Push the gauge between anvil and sonotrode.

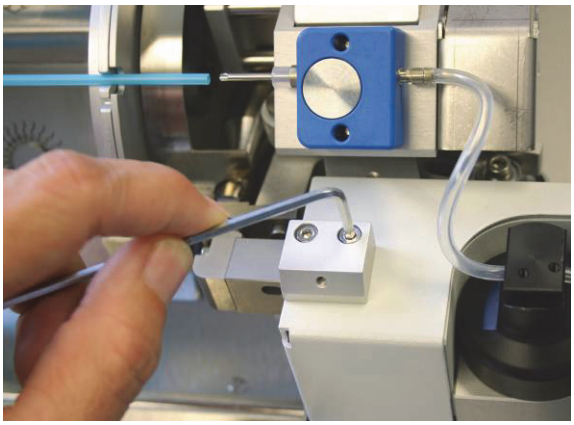
  The gauge must be movable within the gap with a slight resistance.

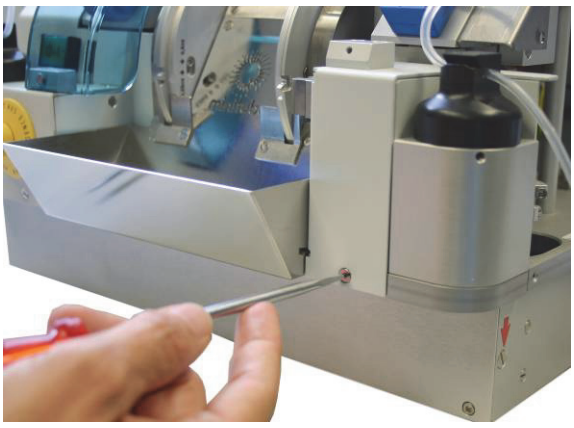
➢ For the adjustment of the welding gap please proceed as follows:



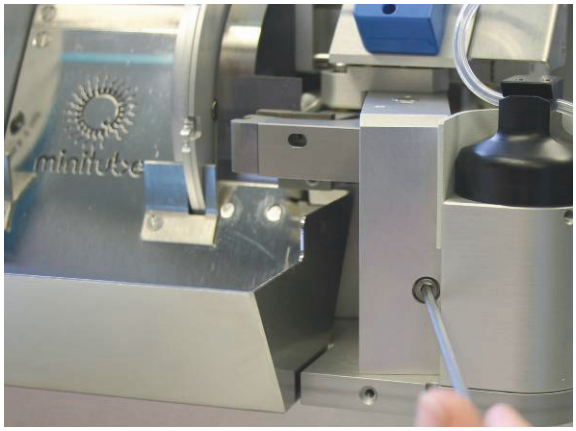
➢ Take the Allen key from the tool kit.
➢ Loosen the two screws on the eccentric.

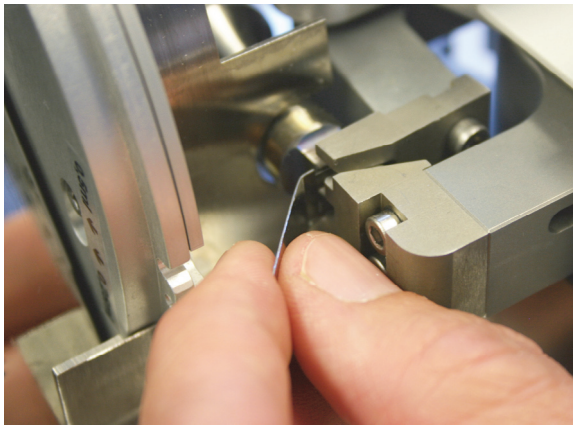
Do not loosen any other connections on the sonotrode and the converter. This leads to serious malfunction of the machine and high costs in consequence.

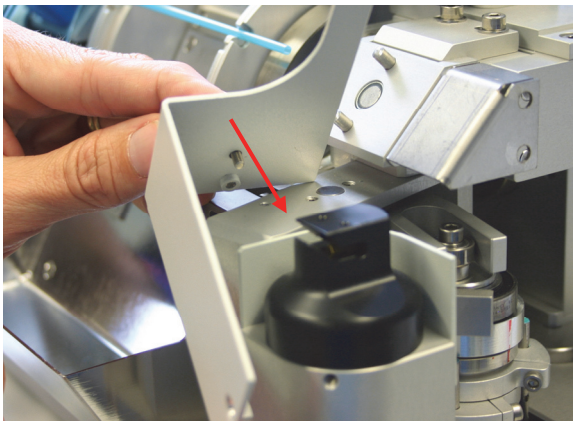




➢ Remove the cover above the eccentric screw.
➢ Only loosen the upper screw on the right hand side and the screw on the front side.







The positioning of the eccentric is effected by means of the screw on the front side of the welding-unit.

- Adjust the welding gap with the welding gauge:
  - A clockwise rotation reduces the welding gap.
  - A counter clockwise rotation enlarges the welding gap.
- Tighten the screws on the eccentric again.

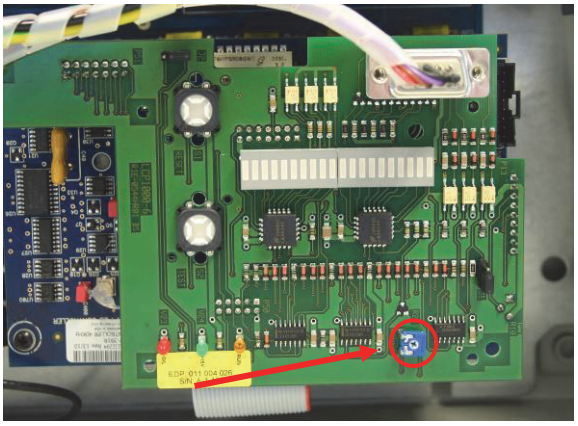
- Reinsert the cover again.

<u>Always</u> use the welding gauge. Make sure never to install direct contact between sonotode and anvil (metal on metal). This leads to the wear of the welding unit.

In rare cases it might be necessary to alter the welding amplitude. The following operational steps can only be carried out according to the advice of a Minitüb service technician. **The pictures and information only serve as visualization and assistance**.

The following tests are carried out on the power pack ready for operation.
When the casing is open, current and voltage carrying parts are freely accessible.
This is unavoidable for the tests.
Please observe the safety instructions!
Only touch the described positions!
Ask an electrical specialist for assistance!

- Open the lid of the power pack with the provided cabinet key.



A blue potentiometer is located on the ultrasonic circuit board.

- Mark the original adjustment with a text marker:
  - Turning clockwise increases the welding amplitude (power).
  - Turning counter-clockwise reduces the welding amplitude (power).

Note that the max. rotation range is only 270°.

9.1.8. Error on the ultrasonic welding unit

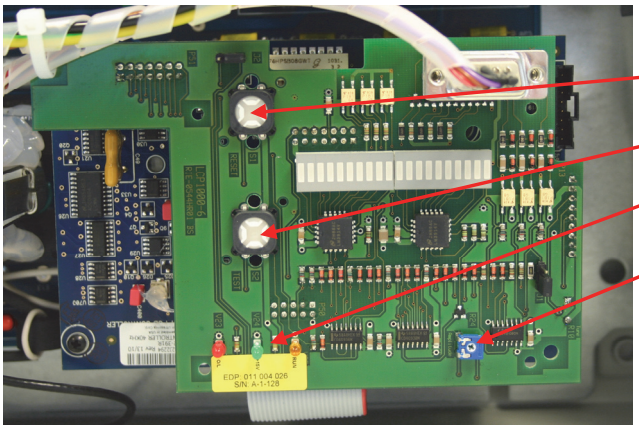
- In case of an error on the ultrasonic welding unit, first switch off the machine shortly and then on again.

  This resolves a possible overload situation.

- Please proceed as follows if the problem still exists:

Basic principle:

On the circuit board of the ultrasonic welding unit, diodes, buttons and potentiometers are located.

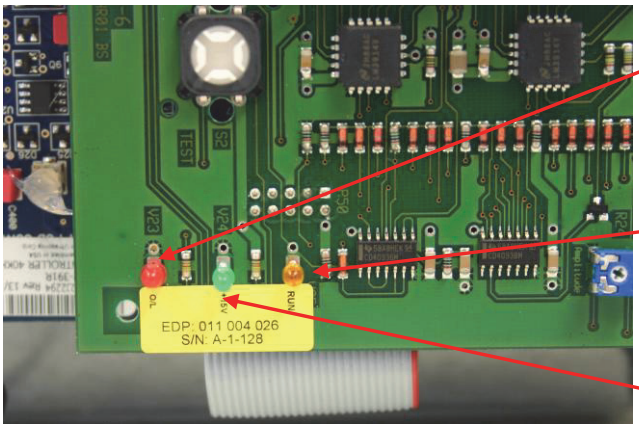


„RESET“ button

„TEST“ button

LEDs

Potentiometer for the welding amplitude



red LED „OL“ (overload)

orange LED „run“ (welding)

green LED „+15V“ (ready for operation)

- Check the LEDs.

Possibility 1: No LED is on

- ➢ Check if the machine is switched on.
- ➢ Check the fuses on the circuit board (see chapter 9.1.9. „Replacing the fuses“). Contact a Minitube technician.

Possibility 2: The green LED „ready for operation “ is on

- ➢ Activate the **„TEST“** button**.**
- ➢ Check the LEDs.

• The red LED is on: Error on the welding unit! ➢ Contact a Minitüb technician.	• The green and orange LEDs are on: The operating status is ok. ➢ Press a test straw against the sonotrode. A deformation will take place.  **Watch the temperature on the sonotrode. Risk of burns!**

- When you carry out this test function, the machine will trigger an error message.

- ➢ Activate the **„RESET“** button on the circuit board.

- ➢ Activate the STOP button on the machine.

Possibility 3: The green LED is on (=ready for operation), and the red LED (=overload) is on

- ➢ There are foreign particles or remains in the welding gap (see chapter 8.3.2. „Cleaning the welding unit“).

or

- ➢ Check the welding gap. Enlarge the welding gap if necessary (see chapter 9.1.7. „Ultrasonic welding is faulty“).

or

- ➢ Contact a Minitube technician.

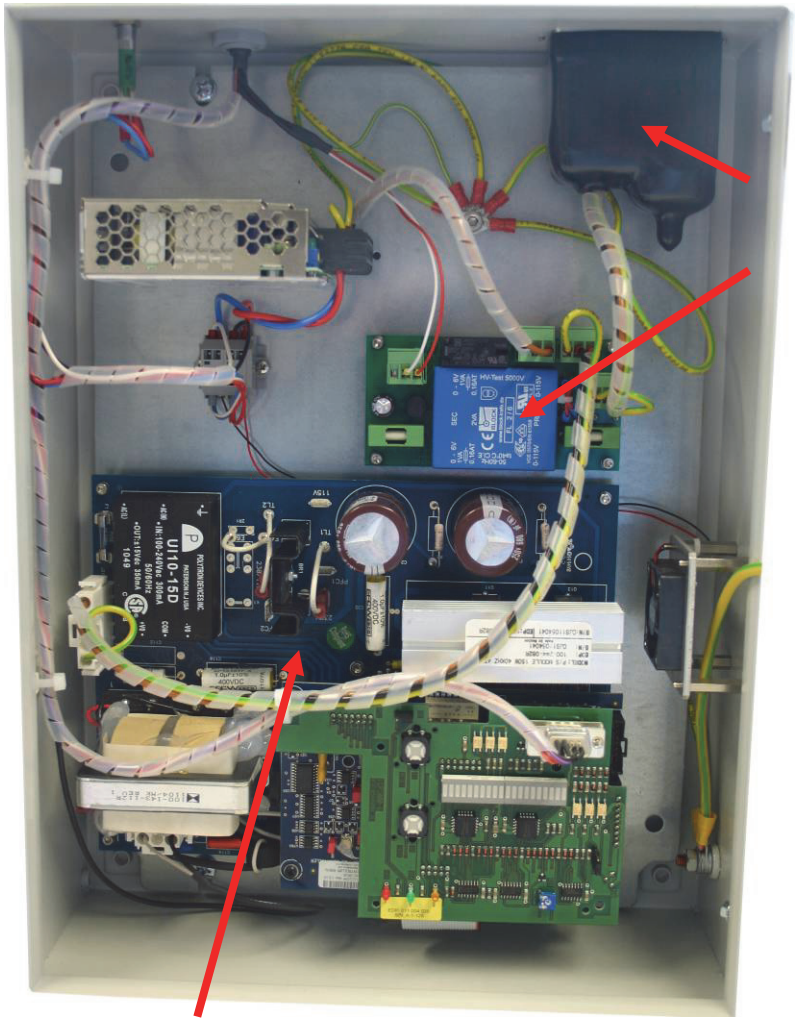
- ➢ Activate the **„RESET“** button on the circuit board.

- ➢ Activate the STOP button on the machine.

9.1.9. Replacing the fuses

A blown fuse is a reason for the non-functioning of a group of components.
Keep in mind that the blowing of a fuse might have an individual reason or a fuse might blow due to temporary reasons. In this case it is sufficient to replace the fuse. If the fuse blows again, after having been replaced, it is necessary to find out the reason.
For checking and replacing the fuses an intervention of the power pack sometimes is necessary. This can only be performed by an electrical technician.

Disconnect prior to opening the casing!

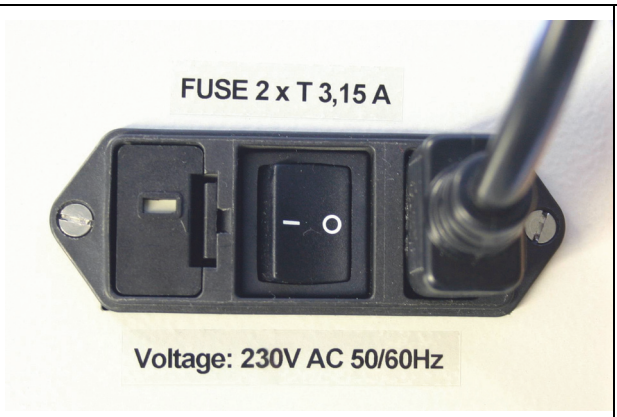


Power pack with switch

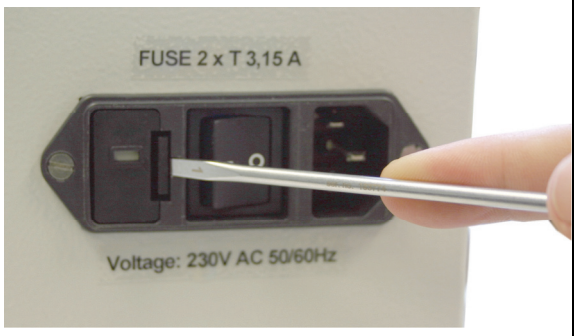
Stand-by-circuit board

Ultrasonic generator circuit board

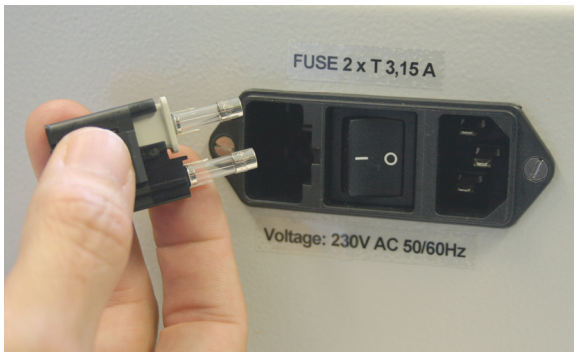
There are several points with electrical fuses on the power pack.



Main fuses are located on the mains plug of the power pack.



- Use the small slotted screwdriver for the replacement. You can remove the fuse holder by releasing the latch.



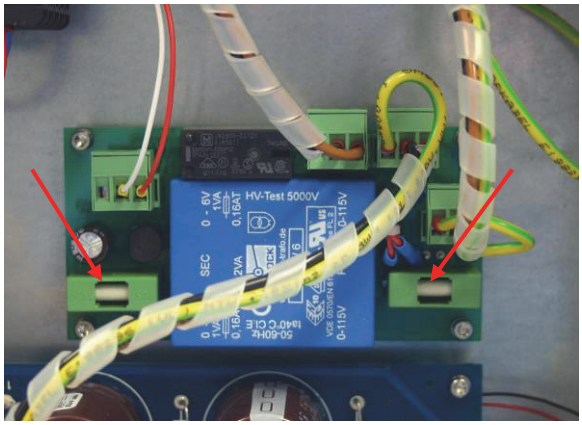
Fuse: 2 pieces micro fuses
5 x 20 mm, slow-blow 3.15 A

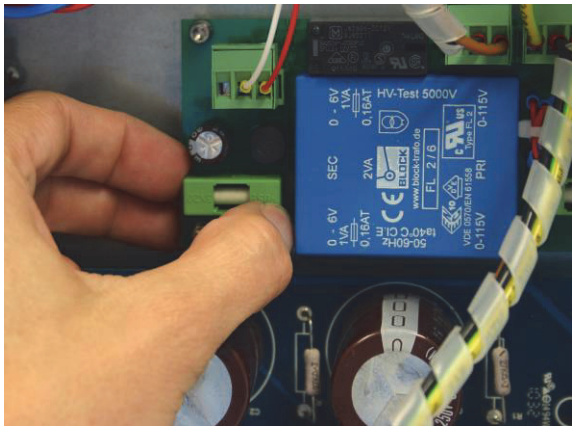
- Replace both fuses, as in most cases both fuses are defective.

- Switch off the machine and unplug.

  Make sure that your body is not loaded electro statically. For this first touch any metal part of the casing.

- Open the lid of the power pack (using the provided cabinet key).

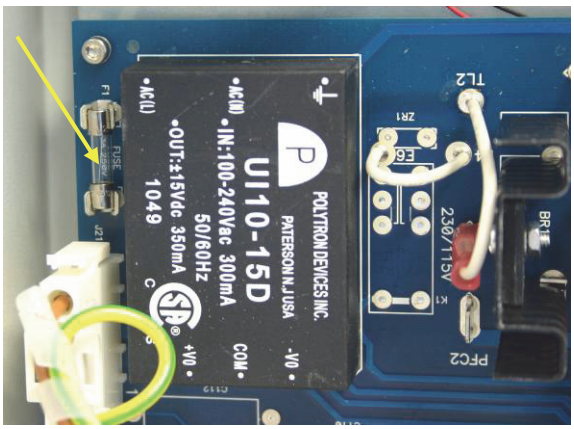




Micro fuses on the stand-by circuit board.

Fuse: 2 pieces micro fuses
5 x 20 mm, slow-blowing 0.16 A

- Remove the fuses from the fuse holder upwards.



Fuse on the ultrasonic generator circuit board.

Fuse: 1 piece micro fuse 5 x 20 mm, slow-blowing 3.0 A

- Remove the fuses from the fuse holder upwards.

9.2. Error messages

Errors during operation are signalled by the machine optically and acoustically. If an error occurs in a unit, the machine stops automatically and gives the following signals:

The red and green illuminated rings around the START and STOP button are blinking fast and alternating.
The machine sends an acoustic signal in a sort of “Morse code”. A label, where all codes are listed is located in the area between the left side of the hopper and the key enclosure.

Meaning of the codes (pause = 5 sec.):

Error on the vacuum unit	1x short [pause] 1x long	Cause: The pump operated for more than 20 seconds: ➢ Check if any tubings are missing, check if the vacuum bottle is fixed properly.
Error on the ultrasonic welding unit	2x short [pause] 1x long	Cause: See chapter 9.1.8. „ Error on the ultrasonic welding unit“
Error on the filling head movement	3x short [pause] 1x long	Cause: The motor operated for more than 2 seconds. ➢ Check for a blockage. ➢ Check the sensor for the Stop position (see chapter 9.3.2. „Input and Output of the machine PLC “). „X0-filling nozzle CLOSED“ lights up.
Error on the supply wheels	4x short [pause] 1x long	Cause: The motor operated for more than 2 seconds. ➢ Check for a blockage. ➢ Check the sensor for the Stop position (See chapter 9.3.2. „Input and Output of the machine PLC.“). „X5 – Malteser Signal Basic position.“ lights up

Error on the motor drive of the welding unit	5x short [pause] 1x long 	Cause: The motor operated for more than 2 seconds. ➢ Check for a blockage of the anvil and the chamber limitation. ➢ In order to clear the blockage on the eccentric drive, remove the right side cover if necessary. ➢ Check the sensor for the Stop-position (see chapter 9.3.2. „Input and Output of the machine PLC.“). „X2 – Welding unit Basic position “ lights up.
➢ Solve the problem. ➢ Shortly activate the STOP button to confirm the error.		

If an error occurs on the welding unit, it might be necessary to open the power pack to disable the error status. See chapter 9.1.8. „Error on the ultrasonic welding unit“. It might also be necessary to remove the side cover from the machine (see chapter 9.1.7. „Ultrasonic welding is defective“).
Observe the safety instructions!
Contact an electrical technician!

9.3. Instructions for Service Technicians

The following chapter provides assistance for the user, after or while he is in contact with a Minitube technician.
Never carry out any modifications, settings or tests as described below on your own, without contacting a Minitube service technician.

9.3.1. Test Mode

In the test mode you can control and test individual components and motor drives of the machine.

For this operation the safety switches and the safety programming is disabled!
Make sure that during the functional test of individual groups of components, other components do not get damaged. (Risk of collision!)
Watch the parts of your body operating in the range of movement of the components! (Risk of injury!)
Take care of people present who are not familiar with the machine!
During operation, never put your hands into areas of the machine where motion takes place. (Risk of injury! Crushing hazard!)

- Switch on the machine.
- Activate the STOP button.
- Keep the STOP BUTTON pressed down and activate the START button in addition for approx. 3 seconds.
  - Both key illuminations are on.
  - The machine is in the test mode.
  - In intervals of 5 seconds a kind of Morse signal is audible. The Morse code indicates which group of actuators can be operated.

- Activating the black button **„Filling time +“**. The selected actuators carry out their function.
- Activating the black button **„Filling time +“** again. The actuators stop their function.
- Activate the red **„Filling time –“ button**. The next actuators are selected.
- Complete the test mode by switching the machine off and on again.

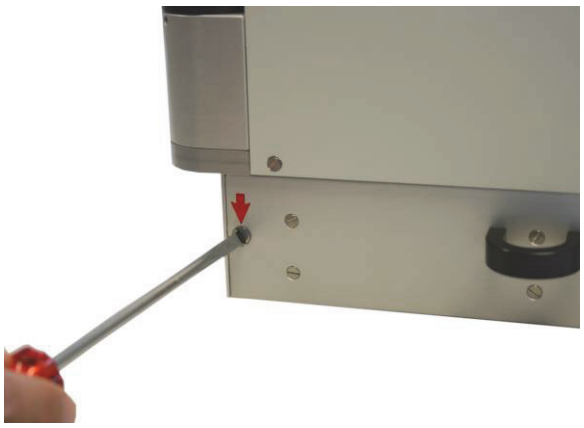
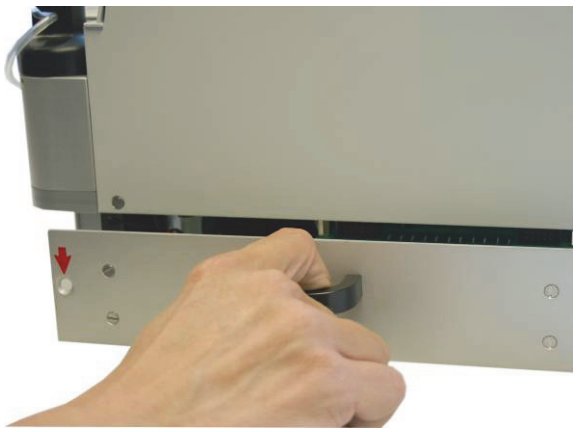
Meaning of the Codes (pause = 5 sec.):

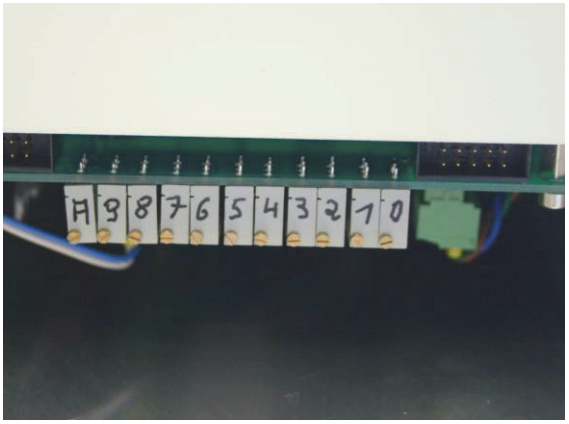
Vacuum pump	0x short [pause] 1x long 	Starting and stopping the vacuum pump.
Valves	1x short [pause] 1x long 	Opening and closing the suction and filling valves.
Supply wheels	2x short [pause] 1x long 	The supply wheels carry out one step. ➢ First empty the hopper or remove it. alternatively: ➢ Simulate a regular transport of the straw via test mode of the group 6 (brush and shaker). ➢ Start the supply wheels.
Filling and suction head drive motor	3x short [pause] 1x long 	Opening and closing the suction and filling heads
Welding drive motor	4x short [pause] 1x long 	Start a welding step. ➢ Insert a straw into the supply wheel in the position of the welding process. ➢ Start welding. • The straw is welded. (this test is also possible without a straw).
Brush and shaker in the hopper	5x short [pause] 1x long 	Starting and stopping brush and shaker.
Six groups of components can be actuated. By activating the red button **„Filling time -“** again, the test mode starts again with group number 1.		

9.3.2. Adjustment of the motor speed / measuring points for the motor voltage!

The machine is equipped with an electronic compartment located on the bottom side of the machine. The main plate with the speed regulators and the switching transistors for the drive motors is located here. Also the vacuum pump is located there.

The following adjustments, respectively measurements are carried out on the machine when ready for operation.
When the casing is open, current and voltage carrying parts are freely accessible.
This is unavoidable for the measurement and adjustment works!
Please observe the safety instructions!

	➢ Open the two screws on the right side of the device, using the slotted screw driver.
	➢ Remove the „drawer“ to the right.



Now you can see the right edge of the main plate.

Potentiometers with the inscription 0-9 and A are located on the main plate.

Potentiometer	**Motor or Consumer**
0	Filling and suction head
1	Welding unit
2	Supply wheels
3	Shaker hopper
4	Not used
5	Brush for straws
6	Not used
7	Not used
8	Not used
9	Not used
A	LED Logo

In addition a label is fixed on the base plate, showing the allocation of the potentiometers to the motors.

Alterations and adjustments must only be made after contacting a Minitube service technician.

- Turn the potentiometer counter-clockwise, in order to increase the motor speed.

- Turn the potentiometer clockwise in order to reduce the motor speed.

Above the potentiometers soldering points are located, where you can measure the adjusted voltage. Each rightmost soldering point carries the voltage to be measured.

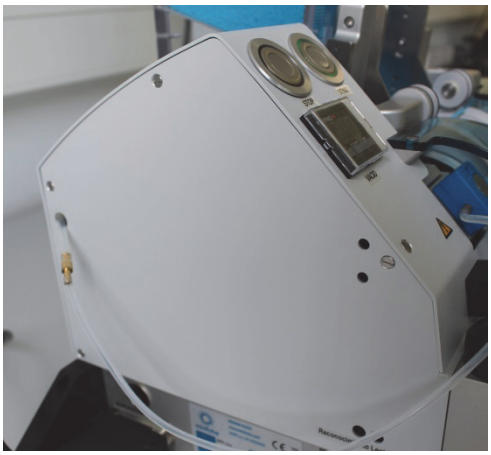
- For this use a multimeter with a measuring range of e.g. 0-40V DC.

Potentiometer	Voltage	Motor or Consumer
0	19.7V	Filling and suction head
1	17.8V	Welding unit
2	20.1V	Supply wheels
3	16.1V	Shaker hopper
4		Not used
5	14.7V	Brush for straws
7		Not used
8		Not used
9		Not used
A	1.74V	LED Logo

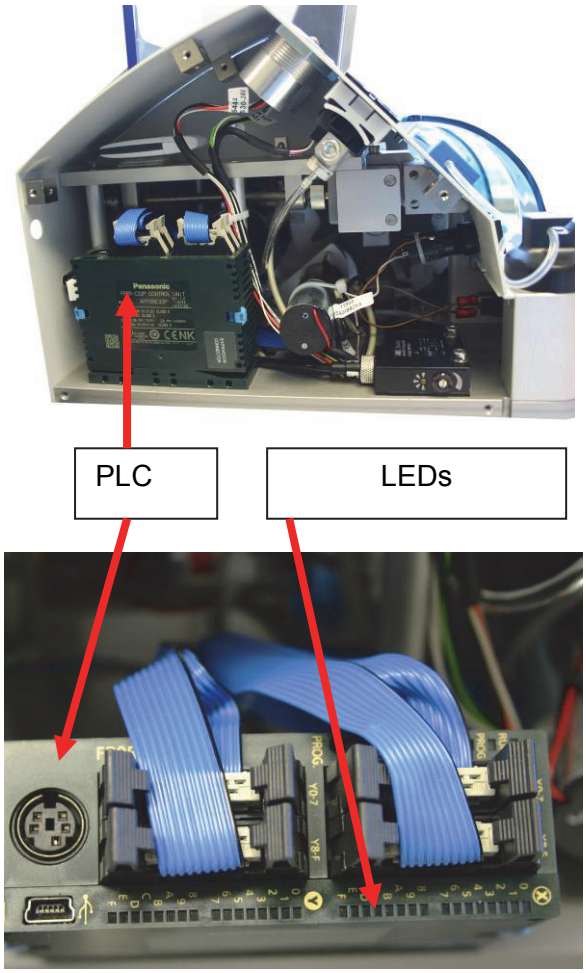
9.3.2. Input and Output on the Machine Control

The machine is equipped with a programmable logic control (PLC), which detects the status of the sensors and the positions of the actuators. It proceeds logically according to the program and then activates the corresponding actuators (drives) and signals. The input and output of the PLC are indicated by means of LEDs. They allow checking the input and output signals.

The following tests are carried out on the machine when ready for operation.
When the casing is open, current and voltage carrying parts are freely accessible.
This is unavoidable for the tests.
Please observe the safety instructions!



- Using the slotted screwdriver loosen the left side panel of the machine and remove it.



On the upper side of the control two rows with LEDs are located. They are named X (for input signals, sensors) and Y (for output signals, actuators).

The LEDs are only illuminated when the machine is switched on and when the sensors (activating a sensor respectively a key) should send a signal.

Marking Input	**Input No.**
Filling nozzle CLOSED	X 0
Filling nozzle OPEN	X 1
Welding unit basic position	X 2
Start welding	X 3
Cycle supply segment	X 4
Malteser signal basic position	X 5
Straw recognition	X 6
Vacuum sensor	X 7
START button	X 8
STOP button	X 9
Malteser rotation ready	X A
Switch filling time	X B
Ultrasonic generator active	X C
Ultrasonic generator OK	X D
Filling time prolongation	X E
Filling time reduction	X F

Marking Output	**Output No.**
Motor filling nozzle	Y 0
Motor welding unit	Y 1
Motor Malteser	Y 2
Shaker hopper	Y 3
Reserve	Y 4
Straw brush	Y 5
Reserve	Y 6
Reserve	Y 7
Suction valve	Y 8
Filling valve	Y 9
Vacuum pump	Y A
LED green START button	Y B
LED red STOP button	Y C
Ultrasound start	Y D
Piezo alarm signal	Y E

10. Replacement Parts

In addition you will find a detailed list of replacement parts annexed.

Replacement parts:	**Ref.**
Vacuum replacement bottle, wide neck, glass 500 ml	5013018/1324
Toolkit	5013018/1600
Anvil	5013017/0812
Welding chamber limitation	5013017/0816
Ultrasonic sonotrode	5013017/0856
Protection cover right for filling head made of Plexiglas	5013017/1071
Protection cover left above suction head made of Plexiglas	5013017/1072
4 mm proximity switch	5013020/0025

11. Disposal

11.1. Shut down

- Switch off the device on the main switch.
- Disconnect the device from the mains supply.

11.2. Equipment disposal in EU states

Minitube devices are classified according to the EC Directive 2012/19/EU of the Europian Parliament and of the Council on Waste Electrical and Electronical Equipment (WEEE) for exclusively commercial use and MUST NOT be disposed of with unsorted municipial waste. The device is labeled with the symbol of the crossed-out wheeled bin for marking electrical and electronical equipment that have to be disposed of separately according to the EU Directive 2012/19/EU (WEEE).

When the device is no longer in use, inform the dealer where you bought the device to take it back for disposal, according to the EU Directive 2012/19/EU of 04.July 2012 for waste of electric and electronic equipment.

Waste devices are recycled according to the EU Directive 2012/19/EU and decomposed in mono-fraction materials by certified companies. In order to avoid health hazards for the staff of the recycling companies, the devices must be free of poisonous, infectious, or radioactive materials.

11.3. Equipment disposal in non-EU states

Observe the relevant national regulations for waste disposal for the protection of the environment.

12. EC-Declaration of Conformity

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EG-Konformitätserklärung

Im Sinne der EG-Richtlinien

Maschinen 2006/42/EG vom 17. Mai 2006 (ABl. L 157 vom 9.6.2006)

Niederspannung 2006/95/EG vom 12. Dezember 2006 (ABl. L 374 vom 27.12.2006)

EMV 2004/108/EG vom 15. Dezember 2004 (ABl. L 390 vom 31.12.2004)

Hiermit erklären wir, dass nachstehend beschriebene Maschine

Hersteller:	**Minitüb**
Maschinenbezeichnung:	**MPP Uno**
Maschinentyp:	**Abfüllmaschine**
Referenz-Nr.:	**13017/0000**

in der gelieferten Ausführung den Bestimmungen der oben genannten Richtlinien entspricht.

Folgende harmonisierte Normen wurden angewendet:

Maschinenrichtlinie:	EN ISO 12100:2010 (ABl. C 54 vom 13.2.2015)
Niederspannungsrichtlinie:	EN 60204-1:2006 + AC:2010 (ABl. C 149 vom 16.5.2014)
EMV-Richtlinie:	EN 55011:2009 + A1:2010 (ABl. C 14 vom 16.1.2015)
	EN 61000-3-2:2006 + A1:2009 + A2:2009 (ABl. C 14 vom 16.1.2015)
	EN 61000-3-3:2008 (ABl. C 14 vom 16.1.2015)
	EN 61000-6-2:2005 + AC:2005 (ABl. C 14 vom 16.1.2015)

Diese EG-Konformitätserklärung verliert ihre Gültigkeit, wenn die Maschine ohne unsere Zustimmung umgebaut oder verändert wird.

Dokumentationsbevollmächtigter:
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Anschrift: Hauptstrasse 41, 84184 Tiefenbach

Tiefenbach, 21.10.2015
Ort, Datum

Unterschrift

Dr. Christian Simmet
Geschäftsführer
(Angaben zum Unterzeichner)

4.2.-VW-Fo-23-V09 EG-Konformitätserklärung De

3. Auflage/Edition/Edición/Издание 2016

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