



## PCB Separator MAESTRO 2

## 2 Operator's Manual - Translation of the Original Version for the following products

2

Description	Type
PCB Separator	MAESTRO 2

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## 1.1 Instructions

Important information and instructions in this documentation are designated as follows:



### **Danger!**

**Draws your attention to an exceptionally grave, impending danger to your health or life.**



### **Warning!**

**Indicates a hazardous situation that could lead to injuries or material damage.**



### **Attention!**

**Draws attention to possible dangers, material damage or loss of quality.**



### **Notice!**

**Gives you tips. They make a working sequence easier or draw attention to important working processes.**



### **Environment!**

Gives you tips on protecting the environment.



Handling instruction



Reference to section, position, illustration number or document.



Option (accessories, peripheral equipment, special fittings).

## 1.2 Intended Use

- The device is manufactured in accordance with the current technological status and the recognized safety rules. However, danger to the life and limb of the user or third parties and/or damage to the device and other tangible assets can arise during use.
- The device may only be used for its intended purpose and if it is in perfect working order, and it must be used with regard to safety and dangers as stated in the operating manual.
- The device is intended exclusively for separating pre-scored PCB's. Any other use or use going beyond this shall be regarded as improper use. The manufacturer/supplier shall not be liable for damage resulting from unauthorized use; the user shall bear the risk alone.
- Usage for the intended purpose also includes complying with the operating manual, including the manufacturer's maintenance recommendations and specifications.



### **Notice!**

**The complete documentation can also currently be found in the Internet.**

## 1.3 Safety Instructions

- Hazard by electrical charge. Provide an earthing connection via press stud.
- Risk of hand injury. Wear protective gloves while PCB separating.
- Ensure that people's clothing, hair, jewelry etc. do not come into contact with the exposed rotating blade.
- The device may only be used in a dry environment, do not expose it to moisture (sprays of water, mists, etc.).
- Do not use the device in an explosive atmosphere.
- Do not use the device close to high-voltage power lines.
- Work going beyond this may only be performed by trained personnel or service technicians.
- Unauthorized work on or modifications to the device can also endanger operational safety.

- Always have service work done in a qualified workshop, where the personnel have the technical knowledge and tools required to do the necessary work.
- There are various warning stickers on the device. They draw your attention to dangers. Warning stickers must therefore not be removed, as then you and other people cannot be aware of dangers and may be injured.

### 1.4 Safety Marking

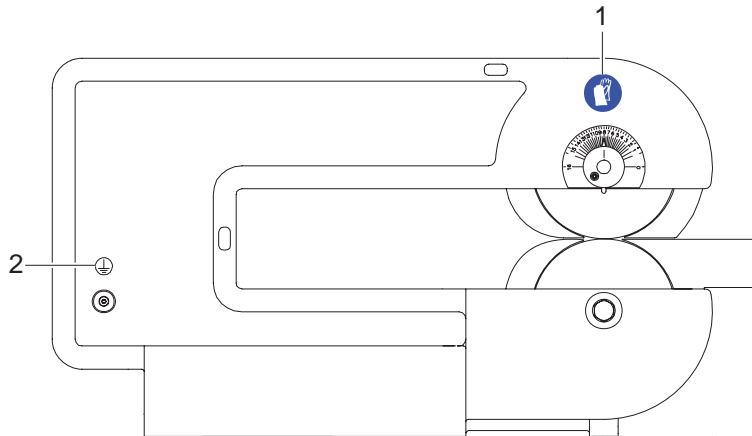


Fig. 1 Safety marking



1		<b>Risk of hand injury !</b> ► Wear protective gloves while PCB separating.
2		<b>Hazard by electrical charge !</b> ► Provide an earthing connection via press stud.

Table 1 Safety marking

### 1.5 Environment



Obsolete devices contain valuable recyclable materials that should be sent for recycling.

- Send to suitable collection points, separately from residual waste.

The modular construction of the printer enables it to be easily disassembled into its component parts.

- Send the parts for recycling.

By using the MAESTRO 2 PCB Separator, pre-scored PCB's are cleanly and economically separated.

The MAESTRO 2 requires neither electricity nor compressed air, and can therefore be used immediately, wherever and whenever required.

Wear resistant blades and guides made from special steel ensure a long working life without adjustment. Adjustment of the guides can be quickly and easily carried out.

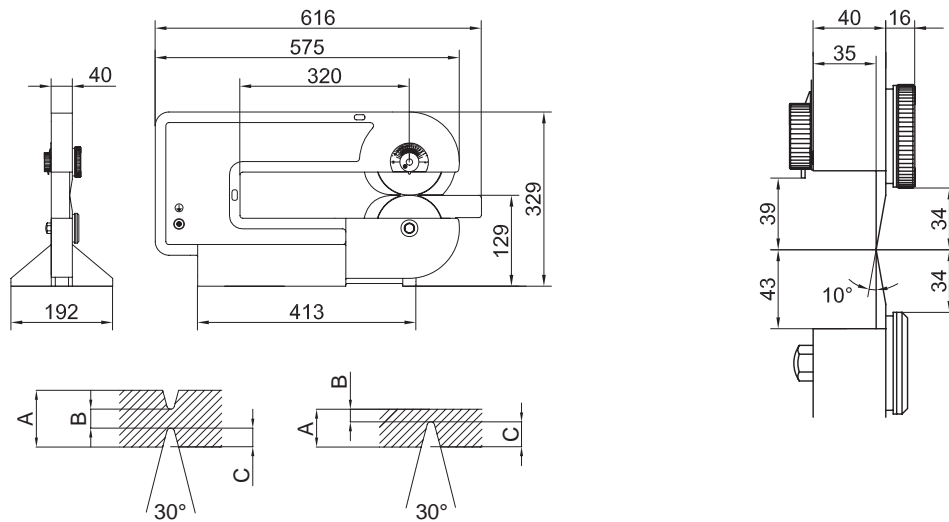


Fig. 2 Device and PCB dimensions

Separation Length in mm	up to 300
Weight in kg	16
Separation Principle	Circular Blades
PCB Thickness A in mm	0,8 - 3,2
Material Thickness B after pre-scoring in mm	A/3, min. 0,25, max. 0,8
Slot Depth C in mm	> 0,25
Increase of External Dimensions following Separation in mm	0,1 - 0,2
Earthing	Press Stud $\varnothing$ 10 mm
Operating Temperature	10 - 35 °C
Storage and Transport Temperature	-20 - +50 °C
Humidity	10 - 85%, non-condensing

Table 2 Technical Data

#### 3.1 Unpacking and Setting-up the Device

- ▶ Lift the device out of the box.
- ▶ Check device for damage which may have occurred during transport.
- ▶ Set up device on a level surface.
- ▶ Check delivery for completeness.

Contents of delivery:

- PCB Separator
- Documentation
- Allen key 2 mm

#### Notice!



- ▶ Please keep the original packaging in case the device must be returned.

#### Attention!



The device and printing materials will be damaged by moisture and wetness.

- ▶ Set up the device only in dry locations protected from splash water.

#### 3.2 Earthing Connection

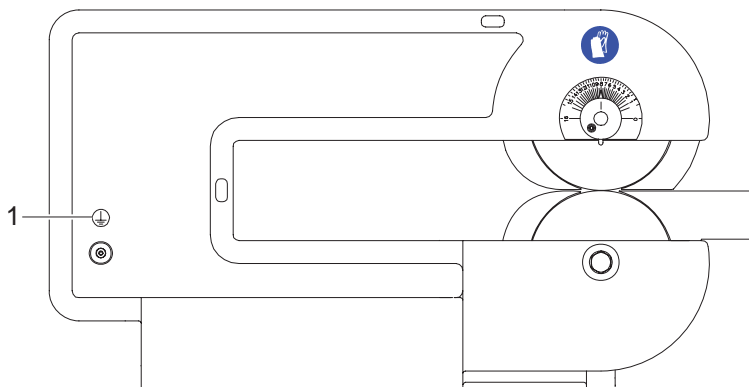


Fig. 3 Earthing Connection

#### Attention!



Hazard by electrical charge !

- ▶ Provide an earthing connection via press stud (1).

### 3.3 Height Adjustment of the Upper Blade

#### Notice!



To avoid possible damage on the blades during transport the upper blade (4) is fixed in the "Park position" so that there is a maximum distance to the lower blade.

► Set the upper blade into the working position before using the machine.

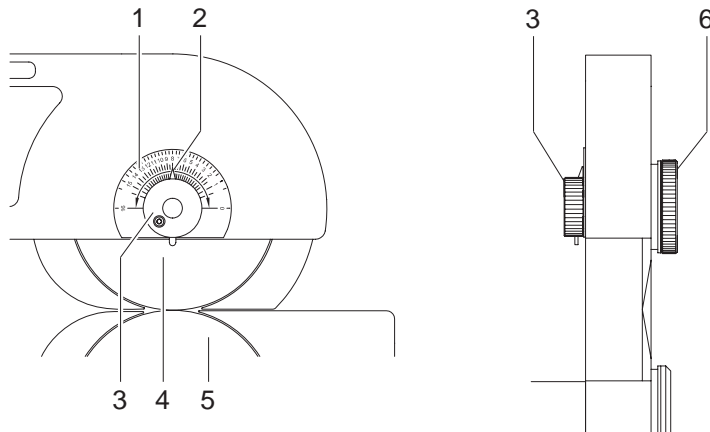


Fig. 4 Height adjustment of the upper blade

There is a scale (1) on the frame where you can see the height adjustment in steps of 1/10 mm. When you receive the machine, the pointer (2) of the scale is in position "16".

1. Hold the knob (3) and loosen the knurled knob (6).
2. Rotate the knob (3) clockwise until stop.  
Through that the upper blade (4) move down to the lower blade (5) until both blades are just touching one another (lower end position). Make a notice of the position of the pointer (2) to use it for all further adjustments. This lower end position locks the upper blade in place to prevent it from moving out of adjustment.
3. Move the knob (3) anti-clockwise until the pointer is in the middle position between the lower end position and the position "16".
4. Tighten the knurled knob (6).
5. Run some test-cuts to check if it is possible to separate the PCB's. If it is not possible reduce the distance between the blades in small steps.

#### Notice!



The described adjustment helps to reduce the separation forces. This is important when sensitive components are very close to the groove.

#### Attention!



► Before moving the machine to a new location, set the upper blade to the Park position.



### 3.4 Adjustment of the Stop of the Upper Blade

**Notice!**

The lower stop of the upper blade adjustment is already adjusted by delivery.



- ▶ After a long operation time, while working at strongly varying temperatures or else after replacing a blade, it is recommended to re-adjust the lower stop.

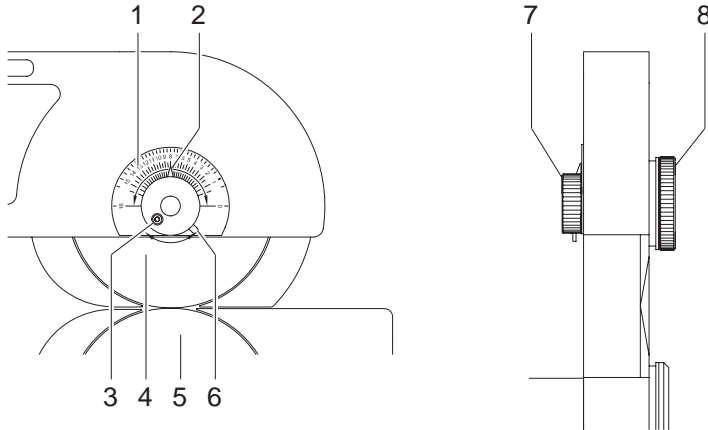


Fig. 5 Adjustment of the stop of the upper blade

1. Hold the knob (7) and loosen the knurled knob (8).
2. Rotate the pointer (2) with the knob (7) anti-clockwise into position "16".
3. Loosen the cylinder screw (3).
4. Move the knob (7) clockwise until the upper and lower blades gently touch without overlapping.
5. Hold tight the knob (7) and tighten the knurled knob (8).
6. Swing the strut (6) clockwise until you reach the stop and tighten the cylinder screw (3). This adjustment locks the upper blade in place to prevent it from moving out of adjustment.
7. Re-adjust the upper blade position ▷ 3.3 on page 8.

### 3.5 Upper Guide Adjustment

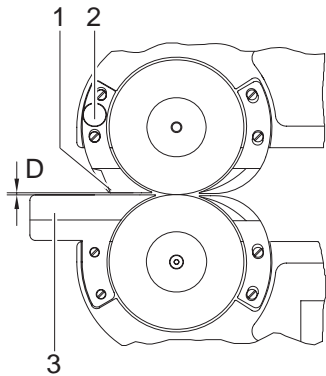


Fig. 6 Upper guide adjustment

1. Using a pre-scored PCB, check the clearance D between the guides (1,3). The clearance should be set so that the edge of the upper guide is located correctly into the pre-scored groove of the PCB. The PCB can be smoothly moved backwards and forwards but cannot move sideways. The upper guide (1) prevent the PCB from slipping to the side and therefore ensures that it is not separated other than at the pre-scored groove.
2. As required, the clearance D should be adjusted as described above by turning the eccentric adjusters (2).



**Warning!**  
Risk of hand injury !



► Wear protective gloves while PCB separating.



**Notice!**  
When using the machine for the first time, degrease the blades with a soft cloth.

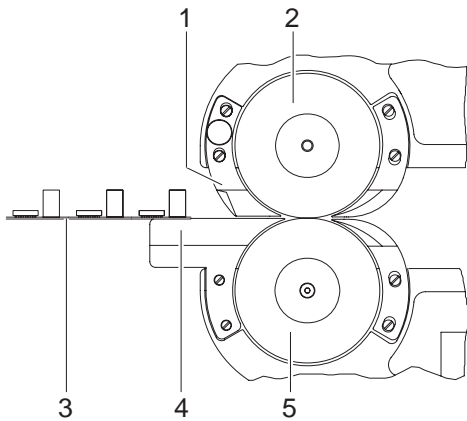


Fig. 7 Separation of the PCB's

- Insert the PCB (3) onto the lower guide (4) ensuring that the scored groove in the PCB locates onto the edge of the guide. If the PCB is scored on one side only, this side must face downwards.
- Slide the PCB forwards between the upper guide (4) and lower guide (1).
- Slide the PCB with firm, constant pressure between the blades (2,5). Thereby the PCB will be separated.



### Attention!

In order to ensure that the machine functions correctly, it is important that the surfaces of all parts shown in the figure, ie. lower guide (4), upper guide (1), and the upper and lower blade covers (6,7) are exactly in line with the blades (2,5). This setting is achieved ex-works by placing washers between the machine frame and the parts listed.

- Only dismantle the above parts when absolutely necessary.
- In such an event (eg. as a result of a very narrow side-strip removed from a PCB becoming jammed), it is important that all washers removed are carefully put to one side. Upon reassembling the machine, mount all parts with the concerning washers at the correct positions.

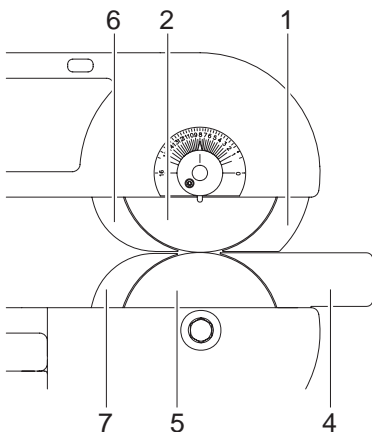


Fig. 8 Alignment of blades and guides



**Warning!**  
Risk of hand injury !



► Wear protective gloves while handling the blades.

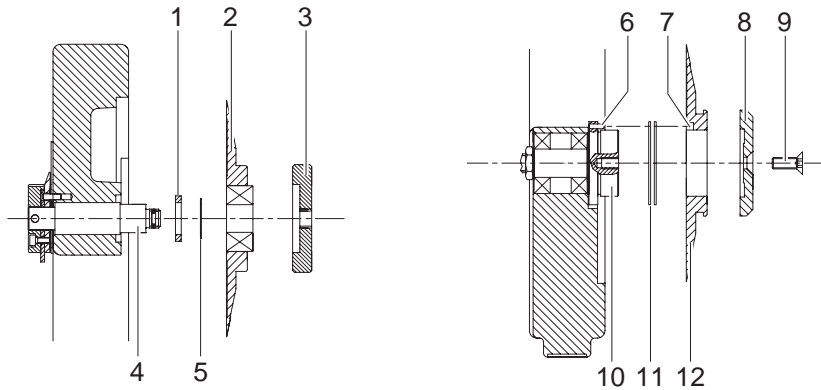


Fig. 9 Blade replacement

### 5.1 Replacement of the Upper Blade

**Spare Part: 8930509.001 Circular Blade**

1. Raise the upper blade to the Park position.
2. Loosen the knurled knob (7) completely from the blade shaft (4).
3. Remove the circular blade (2) from the blade shaft (4).  
Do not lose the spacers (1,5) located on the blade shaft (4), between the blade (2) and the frame. Replace the spacers (1,5) if necessary.
4. Slide the replacement blade (2) onto the blade shaft as far as possible.
5. Put the knurled knob (3) onto the blade shaft.
6. Adjust the upper blade position ► 3.3 on page 8.
7. Adjust the stop of the upper blade ► 3.4 on page 9.

### 5.2 Replacement of the Lower Blade

**Spare Part: 8933661.001 Circular Blade**

1. Raise the upper blade to the Park position.
2. Unscrew the screw (9) from the shaft (10) and remove the clamping plate (8).
3. Remove the circular blade (12) from the shaft.  
It will be found that between the blade and the housing, spacing washers (11) are located on the shaft. These should be left on the shaft, or replaced as necessary.
4. Slide the replacement blade (12) onto the blade shaft as far as possible. Ensuring that the cut-out (7) in the blade locates onto the key (6) on the blade shaft, slide the blade onto the shaft as far as possible.
5. Insert the screw (9) through the clamping plate (8) into the shaft.
6. Hold the blade (12) tight and tighten the screw (9).
7. Adjust the upper blade position ► 3.3 on page 8.
8. Adjust the stop of the upper blade ► 3.4 on page 9.

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