# **Operator's Manual**





# Universal Cutting Machine FS 100

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

Description	Туре	
Universal Cutting Machine	FS 100	

### Edition: 03/2016 - Part No. 9009004

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4	1	Introduction	4				
1.1 Instructions							
		Important information and instructions in this documentation are designated as follows:					
	4	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.					
	1	Notice! Gives you tips. They make a working sequence easier or draw attention to important working processes.					
	A STA	Environment!					
	AD	Gives you tips on protecting the environment.					
		Handling instruction					
	$\triangleright$	Reference to section, position, illustration number or document.					
	*	Option (accessories, peripheral equipment, special fittings).					

### 1.2 Intended Use

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- 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 cutting flat band cables, tubings, ribbons, tapes and paper matching the specification  $\triangleright$  2.1 on page 5. 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.



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

### 1.3 Safety Instructions

- The device is configured for voltages of 115 or 230 V AC. It only has to be plugged into a grounded socket.
- Only connect the device to other devices which have a protective low voltage.
- Ensure that people's clothing, hair, jewelry etc. do not come into contact with the blades and the transport rollers.
- 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 interference with electronic modules or their software can cause malfunctions.
- · Other 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

### 1 Einleitung

may be injured.



### Danger!

Danger to life and limb from power supply.Do not open the device casing.

### 1.4 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.

### 2 Specification

The FS 100 is a fast and precise Cutting Machine. It is suitable for the processing of flat cable, foil, paper, cardboard, tubing, band etc.

As a result of the patented cutter system the highest quality of cut is attained. The upper blade can be swung out of the way by hand, therefore any blockage of material can be easily be cleared away. In the same way, the blade(s) can easily be removed for cleaning or replacement. The two blades in the cutter mechanism are identical, each one having two cutting edges. By exchanging the blades with one another, the life expectancy of the blades is doubled.

The two transport rollers are both power driven, protecting the material surface and ensuring a constant precise length of cut material.

Operation is simple and particularly user-friendly. Numerical values are entered using the control panel keys numbered 0-9, whilst control commands are entered using the 7 function keys. A two row LCD clearly displays (in a language chosen by the operator) all numerical values, conditions and fault-reports. The operator is led through the programme step-by-step. Following a test cut, the length of material cut can be altered if necessary.

Should it become necessary to add new material, the cutting process can be stopped and then restarted without re-programming.

In order to process larger rolls of material, cab offers as an accessory, an Unwinder unit which provides a virtually drag-free material supply. As a result, even under difficult conditions, precisely cut-lengths are maintained.

### 2.1 Materials Suitable for Cutting

Because of the almost unlimited range of materials available, it is not possible to provide strict limits as to which materials can be cut with the FS 100. Therefore the following list should be viewed only as a general guide.

- Flat Band Cable AWG 22 AWG 32
- Tubing up to 50 mm. dia. (sheath wall thickness 1.5 mm)
- Tubing up to 30 mm. dia. (sheath wall thickness 2.5 mm)
- Paper (cardboard) up to 250 g/m<sup>2</sup>
- Ribbon and Tape

Materials which considerably exceed the above tolerances may not be processed. Attempts to do so could cause damage to the FS 100. In the case of any material which is not listed above, send us samples of the material n question an we will carry out the necessary test cuts on your behalf.

# 6 2 Specification

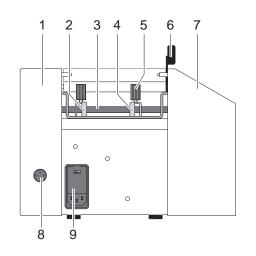
### 2.2 Technical Data

Material Width		1 - 100 mm (0.040" - 4.00")				
Maximum Material Thickness	rear 7 mm (0,28"), front 2.5 mm (0.1")					
Transport Speed	50 - 300 mm/s ( 2 - 12 "/s)					
Cutting Speed		max. 2 cuts/s				
Cutting Performance			Pieces	s / h at cut le	ngth of	
	Speed	25 mm	50 mm	100 mm	500 mm	1000 mm
	50 mm/s	3500	2300	1400	320	170
	150 mm/s	5300	4300	3000	900	500
	300 mm/s	6100	5300	4300	1600	900
Tractive Power	Speed	AWG 28	, 26 pole	AWG 28	3, 2 pole	
	50 mm/s	10.	0 N	5.0	) N	
	150 mm/s	7.0	) N	3.5	5 N	
	300 mm/s	4.(	) N	2.5	5 N	
Display Language	Gerr	man / Englis	sh / French	/ Spanish, of	thers on req	uest
Measuring Unit			mm	/ inch		
Acoustic Signal			ON /	OFF		
Material Sensor			ON	OFF		
Number of Cuts		1 - 100 000				
Cut Length		4 m	nm - 100 m (	0,16 " - 400	)0 ")	
Length Correction		in 1 mm steps				
Keyboard	Numerica	Numerical keys 09, START, STOP, Single cut, Material transport, ENTER, CLEAR, Cursor key				
Display		LED 2 x 20				
Sensors		End of material, Cutter blocked, Cover open, Transport rollers open, Finger guard				
Fault Reporting		via display and acoustic signal				
Operating Modes	Manu	al material	transport, S	ingle cut, Au	tomatic ope	ration
Mains Supply			230 V +6/-	10%, 50 Hz		
		115 V +10/-10%, 60 Hz				
Operating Temperature	10°C - 35°C ( 50°F - 95°F )					
Storage/Transport Temperature	-20°C - +50°C ( -16°F - 122°F )					
Humidity	30 - 85 % non-condensing					
Dimensions (WxDxH)	430 mm x 290 mm x 200 mm ( 17" x 12" x 8" )					
Weight		10.5 kg ( 23 lbs.)				
Noise Level			< 65	dB(A)		
Electrical Protection				ed acc. to D ection level II		
Optional Accessories	Reel Holder, Unwinder (motorized)					

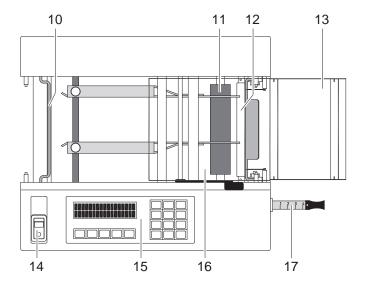
Table 1 Technical Data

### 3 Installation

### 3.1 **Device Overview**



- Rear Cover 1
- Rear Material Guide 2
- 3 Axle
- 4 Front Material Guide
- 5 Knurled Screw
- 6 Lifting Lever
- 7 Front Cover
- 8 Connection Socket for Unwinder
- 9 Power Input Module



18 19 Ľą  $\cap$  $\bigcirc$ 21 20

- 10 Material Sensor
- 11 Transport Rollers
- 12 Material Guide
- 13 Finger Guard
- 14 Mains Switch
- 15 Control Panel
- 16 Cutter Cover
- 17 Tape Measure

- 18 Blade Retainer
- 19 Upper Blade
- 20 Retractor Button for Tape Measure
- 21 Lower Blade

### 8 3 Installation

### 3.2 Unpacking and Setting-up

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

Contents of delivery:

- Universal Cutting Machine 100
- Power Cable
- 2 Fuses T 1,25 A for operation at 115 V
- Documentation

### Notice!

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

### Attention!

A

The device will be damaged by moisture and wetness.

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

### 3.3 Power Connection

- 1. Ensure that the device is switched off at the power switch.
- 2. Check the setting of the voltage selector.
- In order to alter the setting open the flap at the power input module.
- Remove the voltage selector and re-insert it so that the correct voltage is visible when module the flap is closed.
- Upon altering the setting, the fuses in the module must also be changed accordingly (T 630 mA for 230 V; T 1,25 A for 115 V).
- 3. Connect the power cable to the power input module and to an earthed socket.

### 4 Operation

### 4.1 Loading and Removing Material

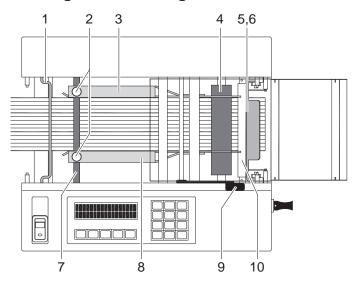


Fig. 2 Loading and Removing Material

- Check the blade position. In the event of the cutter blades being closed, switch the machine ON for a moment and then switch it OFF again. The upper blade is subjected to a synchronised movement which causes the blades to rest in the fully open position.
- 2. Swing the material sensor (1) upwards and rest on the two spigots provided.
- 3. Move the lifting lever (9) to the left, thereby raising the upper transport roller (4).
- 4. Loosen the two knurled locking screws (2).
- 5. Adjust the guides (3, 8) so that the material to be cut passes easily between them.

### Notice!

# The clearance between the blades reduces from 7 mm at the rear (furthest from the operator) to 2.5 mm at the front (nearest to the operator).

- 6. Secure the rear material guide by tightening the knurled locking screw.
- 7. Feed the material to be cut from the left, under the (raised) material sensor, the axle (7), the upper transport roller and the cutter guard (10) until the material protrudes through the (open) cutter blades (5, 6).
- 8. Slide the material to be cut against the rear material guide.
- 9. Slide the front material guide towards the rear, ensuring that the material to be cut can move easily between the two guides without jamming. Tighten the knurled locking screw.
- 10. Move lever fully to the right, thereby lowering the upper transport roller.
- 11. Swing material sensor (1) down until it rests on the material to be cut.
- 12. To remove uncut material from the machine, simply move the lever to the left, thereby raising the upper transport roller, and draw the material out to the left.

### 10 4 Operation

### 4.2 Control Panel

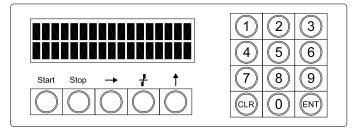


Fig. 3 Control Panel

LCD Display	Gives visual display of settings, system conditions and fault reports
Keys 09	Numerical input for the cutting parameters.
Key 🕇	Selection of non-numeric settings offered by the machine.
Key ENT	Enters previously chosen values or commands.
Key <b>CLR</b>	Cancels incorrectly entered values and/or enables a return to an earlier stage in the programming sequence.
Key Start	Starts the programmed cutting sequence.
Key Stop	Stops the programmed cutting sequence.
Key 🛶	Enables material advance without effecting the programmed sequence.
Key 🗜	Provides a single cut without effecting the programmed sequence.

Table 2 Function of the control panel elements

### 4.3 Setting the Basic Parameters

Press down both the Start and Stop keys simultaneously and switch on the device The device starts in a level, where the following parameters can be adjusted consecutively :

Parameter	Meaning	Default
LANGUAGE	Setting the display language Selection: German, English, French, Spanish	GERMAN
UNIT	Setting the unit of measurement Selection: mm, inch(")	MM
BELL	Activation of the acoustic signal Selection: On, Off	ON
MATERIAL SENSOR	Activation of the material sensor Selection: On, Off	ON

Table 3 Basic parameters

After setting the last parameter the display shows :

GOING ON : < CLR > INTO MEMORY: < ENT >

▶ To confirm the basic parameter settings press the ENT key.

► To cancel all previously entered alterations press the CLR key.

In both cases, the programming mode changes over to the entering of cutting parameters > 4.4 on page 11.

### 4 Operation

### 4.4 Setting the Cutting Parameters

### Switch on the device.

The device starts in a level, where the new cutting parameters can be entered step-by-step. First however, the parameters from the previous cutting job are displayed and can (if required) be altered. The display shows :



### Press the ENT key.

The following parameters can be adjusted consecutively :

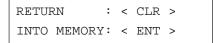
Parameter	Meaning	Selection
LENGTH [MM]	Setting the cut length	4 to 100 000 mm 0.16" to 4000"
AMOUNT	Setting the number of cuts	1 to 100 000
PARTITION	Setting batch quantities. Thereby, during continuous operation, the cutting procedure is interrupted each time the pre-selected batch quantity is reached. Batch quantity "0" enables a continuous cutting process without interruption.	0 to 100 000 (< Amount)
SPEED	Setting the transport speed Notice ! For short lengths the speed is limited as follows: Length 10 - 19 mm (0.4 - 0.79 ") 50 - 200 mm/s Length up to 9 mm (0.39 ") 50 mm/s	50, 150, 200, 250, 300 mm/s 2, 6, 8, 10, 12 "/s
	These limitations ensure exact lengths of cut material. In the event of a problem arising with an especially smooth material, or with lengths of more than 20 mm, it is advisable to select a lower speed setting.	

Table 4 Cutting parameters

Should an invalid entry be made, a short warning buzzer tone will sound and the statement "Incorrect Input" will appear in the display.

Pressing the ENT key returns the display to the original value, and the procedure can be repeated.

After setting the last parameter the display shows :



- ► To store the previously chosen parameters, press the ENT key. The cutting cycle can now be started. ▷ 4.4 on page 12.
- ▶ A press of the CLR key enables new parameters to be entered from the start of the procedure.

### 12 4 Operation

### 4.5 Programmed Cutting

After the relevant parameters are entered, the cutting cycle can begin.

### 4.5.1 Control Cut

The display shows :

CONTROL CUT	
<start></start>	<clr></clr>

Before carrying out the control cut, it is possible to return to the setting-up mode by pressing the CLR key.

- Press the Start key. The material is cut, advanced to the required length and cut again. A buzzer sounds when the cycle is complete. To stop the control cut cycle, press the Stop key. The cycle can be restarted if required.
- Check the length of the test material following the control cut.

For this purpose, a measuring tape is built in to the front cover of the machine. The tape is simply drawn out of the machine to the required length. When it is no longer required, a press of the button immediately next to the tape retracts it back into the housing.

In the event of the test material not being of the exact length required, a length correction can be carried out > 4.5.2 on page 12. In this case, discard the test piece to avoid it becoming mixed with material of the correct length.

### 4.5.2 Length Correction

After the control cut the display shows :

```
GOING ON : <START>
CORRECTION : < CLR >
```

- ▶ If the test piece is of the correct length, press the **Start** key to start the cutting cycle.
- Otherwise start the correction mode with the CLR key.

The display then shows the length selected and the offset value (if any).

```
LENGTH[MM]: 300
OFFSET: + 0
```

If the cut length has been altered the offset value is "0" Null, otherwise the offset value of the previous job is used :

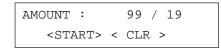
- Enter the new offset value with the keys 0..9.
- Press the ENT key.

If the offset value has been altered, the cutting cycle starts again with a control cut. Otherwise the continuous operation can be started.

### 4 Operation

### 4.5.3 Single Cut

The display shows the continually updated total number of cuts remaining, and in the event of a batch having been programmed - the amount remaining in the batch presently being cut.



If, before the cutting cycle commences the **CLR** key is pressed, then the procedure reverts to the setting of the cutting parameters.

- A short press of the Start key provides one cut. When the cut is completed, a warning buzzer sounds
- If necessary press the Stop key to stop the procedure. Press the Start key to resume, or the CLR key to return to the setting-up mode ≥ 4.4 on page 11.

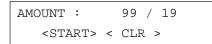
A

If the transport rollers have been opened in the "STOP" state or between single cuts, the next cutting cycle commences with a synchronization cut.

### 4.5.4 Continual Operation

Notice!

The display shows the continually updated total number of cuts remaining, and in the event of a batch having been programmed - the amount remaining in the batch presently being cut.



If, before the cutting cycle commences the **CLR** key is pressed, then the procedure reverts to the setting of the cutting parameters > 4.4 on page 11.

- Press the Start key longer (> 1 s) to start the continual operation.
- If necessary press the Stop key to stop the procedure. A renewed short press of the Start key enables the cut which has already been started, to be completed. A longer press resumes continual operation for the remainder of the previously entered job.

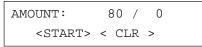
By pressing the CLR key the programme reverts to the Input Mode and the total sum still to be cut is cancelled.

### A

Notice!

If the transport rollers have been opened in the "STOP" state or between single cuts, the next cutting cycle commences with a synchronization cut.

If the batch parameter is set to 0, the continual operation will be carried out until the total number of cut material pieces required is reached. Otherwise following the completion of each batch the cutting cycle stops and a buzzer sounds.



Press again the **Start** key longer to start the next batch cutting cycle.

AMOUNT: 80 / 20 <START> < CLR >

### 14 4 Operation

### 4.5.5 New Job

Following completion of the cutting job, a buzzer sounds and the statement shown is displayed.

REPEAT: <START> INPUT MODE: < CLR >

- Press the Start key to start a new job with identical parameter settings. The cycle begins again, as before first with a control cut.
- Press the **CLR** key to input new cut parameters  $\triangleright$  4.4 on page 11.

### 4.6 Manually Operated Cutting

### 4.6.1 Material Feed

To provide a material feed which overrides the programmed parameters simply press the  $\rightarrow$  key. The material is then fed at a speed of 50 mm/s for so long as the key is pressed.

### 4.6.2 Single Cut

A press of the + key provides a cutting cycle without material feed. Thus a synchronization cut is possible after material loading.

By pressing the  $\rightarrow$  key and  $\frac{1}{4}$  key, a length, or lengths of material can be cut independent from any programming.

The  $\rightarrow$  key and the  $\frac{1}{2}$  key can be used in the following situations :

- before entering the cutting parameters
- · before and after completing the test cut
- before each programmed cutting assignment, with or without a batch quantity
- after each programmed single cut.

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## 5 Error Messages

Should a fault occur during operation this will cause a continual buzzer alarm to sound and the cutting cycle to stop.
Press the ENT key to cancel the alarm buzzer.

Error Message	Cause	Remedy
END OF MATERIAL	The material sensor recognize the end of material	The material remaining between the sensor bar and the cutters can be transported approx. 230 mm (9"). If it is possible the current cut will be completed.
		<ul> <li>For short lengths of cut material it is possible to lift the material sensor bar up, thereby disabling the sensor. (The display stops blinking).</li> <li>After pressing the ENT key, further single cutting cycles can be carried out as long as there is material available for the transport rollers.</li> </ul>
		Discard the final piece.
		Load new material and press the ENT key. The previous programmed automatic cutting cycle can be resumed.
CUTTER OPEN	The cutter cover has been opened during cutting cycle	<ul> <li>Close cover.</li> <li>Press the ENT key. If it occurs during a test cut, this cut will be repeated when the fault is cleared. If the error occurs during the continual operation the previous programmed automatic cutting cycle can be resumed immediately. The current cut will be completed.</li> </ul>
	The finger guard has been removed	<ul> <li>Re-mount finger guard.</li> </ul>
HEAD NOT CLOSED	The upper transport roller is lifted during material transport	<ul> <li>Close the transport system by lowering the upper roller.</li> <li>Press the ENT key. If the error occurs during the continual operation the previous programmed automatic cutting cycle can be resumed immediately.</li> <li>Discard the piece which was in operation while the error</li> </ul>
		occurred.
CUTTER FAULT	The cutter blades become jammed in the material Material too hard or too thick	<ul> <li>Check whether the material to be cut is within the limits shown in Technical Data. If the material exceeds the limits set, no further attempts should be made to cut the material as permanent damage could result.</li> <li>Open cutter cover.</li> </ul>
		Slide the material guides apart as far as possible.
		<ul> <li>Lift the upper transport roller.</li> </ul>
		<ul> <li>Swing upper cutter blade upwards.</li> </ul>
		<ul> <li>Remove jammed material.</li> </ul>
		<ul> <li>Swing upper cutter blade down.</li> </ul>
		Lower upper transport roller.
		Close cutter cover.
		Press ENT key.
		► Re-insert material.
		Resume cutting job.

# 16 5 Error Messages

Error Message	Cause	Remedy
SET-UP WRITE ERROR	Hardware error, the basic or cutting parameters cannot be saved in the memory.	<ul> <li>Press ENT key.</li> <li>The current job can be operated. However, upon completion of the programmed job, the programme cannot be repeated.</li> <li>Instead, the programme reverts to the Input Mode and will show values which are other than those previously entered.</li> </ul>
		If error recurs call service.
SET-UP READ ERROR	Hardware error, the basic or cutting parameters cannot be red from the memory.	Press ENT key. The programme jumps to the Input Mode. All parameters (including the display commands and measuring units) revert internally to the initial settings.
		If error recurs call service.

Table 5 Error Messages

### Blade Replacement



6

### Danger!

Unplug power cable before starting maintenance operation. 

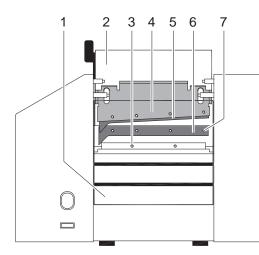


### Warning!

Risk of hand injury !



# Wear protective gloves while handling the blades.



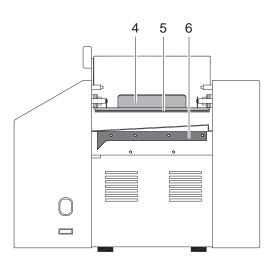


Fig. 4 Blade Replacement

- 1. Unplug power cable.
- 2. Unscrew the fixing screws (3) and remove the finger guard (1). In addition to the fixing screws (M3x10) shown in the diagram, the finger guard is also secured by two further screws (M3x5).
- 3. Slide the material guides to the their respective extreme front and rear positions.
- 4. Open the cutter cover (2).
- 5. Swing the upper blade (5) mounted upon the blade retainer (4) upwards.
- 6. Loosen each four screws (7) and remove the the upper and lower blades (5, 6). The screws for the upper blade are accessible from underneath.
- 7. Both blades have two cutting edges. In the event of just one edge of each blade having become blunt, simply move the lower blade to the upper position, and the upper blade to the lower position. Otherwise, replace with new blade(s). Re-affix using the screws (7).
- 8. Swing upper blade assembly down.
- 9. Close cover.
- 10. Re-mount finger guard.

### Notice!

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Any attempt to operate the machine without the finger guard being mounted will be prevented by the built-in safety mechanism. The error message "Cutter Open !!!" will appear in the display .

### 18 7 Maintenance



### Danger!

▶ Unplug power cable before starting maintenance operation.

### 7.1 Cleaning the Blades

- 1. Remove finger guard.
- 2. Open cutter cover.
- 3. Slide the material guides to their respective maximum front and rear positions.
- 4. Swing upper blade assembly upwards.
- 5. Using alcohol or similar and a non-fraying cloth, carefully clean each blade.



### Warning! Risk of hand injury !

### • Wear protective gloves while handling the blades.

- 6. Apply a thin film of silicon grease to each blade.
- 7. Swing upper blade assembly down.
- 8. Close cutter cover.
- 9. Re-mount finger guard.

### Notice!

Any attempt to operate the machine without the finger guard being mounted will be prevented by the built-in safety mechanism. The error message "Cutter Open !!!" will appear in the display .

### 7.2 Cleaning the Transport Rollers

- 1. Open cutter cover.
- 2. Raise upper transport roller.
- 3. Slowly turn the roller, clean it using alcohol or similar and a non-fraying cloth.
- 4. Lower upper transport roller.
- 5. Close cutter cover.

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cab Produkttechnik GmbH & Co KG Wilhelm-Schickard-Str. 14 D-76131 Karlsruhe Deutschland

### **EU Declaration of Conformity**

We declare herewith that the following device as a result of design, construction and the version put in circulation complies with the relevant fundamental regulations of the EU Rules for Safety and Health. In the event of any alteration which has not been approved by us being made to any device as designated below, this statement shall thereby be made invalid.

Description:	Universal Cutting Machine
Device:	FS 100
Applied EU-Directives and Standards :	
Directive 2006/42/EC on machinery	• EN ISO 12100:2010
	• EN ISO 13857:2008
	• EN 349:1993+A1:2008
	• EN ISO 13849-1:2008
	• EN 61029-1:2009+A11:2010
	• EN 61558-1:2005+A1:2009
Directive 2014/30/EU relating to electromagnetic compatibility	• EN 61000-3-2:2006+A1:2009+A2:2009
	• EN 61000-3-3:2008
	• EN 61000-6-2:2005
	• EN 61000-6-3:2007+A1:2011
Directive 2011/65/EU on the restriction of the use of certain	• EN 50581:2012
hazardous substances in electrical and electronic equipment	
Person authorised to compile the technical file :	Erwin Fascher
	Am Unterwege 18/20 99610 Sömmerda
Signature for the producer :	Sömmerda, 01.03.2016
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