

# FORMAX<sup>®</sup>

---

Cut-True 31H  
Hydraulic Guillotine Paper Cutter

## CONTENTS

1. GENERAL INFORMATION .....	1
1.1 Identification .....	1
1.2 Purpose of use .....	2
1.3 Documentation .....	2
1.4. Organizational measures / receipt of operating instructions.....	2
2. SAFETY OF USE.....	3
2.1 Symbols: meaning and application .....	4
2.2 Employee qualifications .....	5
2.3 Requirements for the operator's workplace. ....	5
2.3.1 Personal protection equipment .....	5
2.3.2 Permissible environmental and operational conditions .....	5
2.4 Expected risks when operating the cutter .....	6
2.5 Description and evaluation of residual risk .....	7
2.6 Safety systems used in the cutter .....	8
2.7 Ways to prevent threats .....	8-10
2.8 Safe working rules .....	11
2.9 Safety control .....	12
3. TRANSPORT AND STORAGE .....	12
3.1. Packaging .....	12
3.1.1. Characteristics of the packaging .....	12
3.1.2 Removing the packaging .....	12
3.2 Transport .....	13
3.3 Delivery status.....	15
3.4 Setting the cutter .....	16
3.5 Work area .....	17
4. TECHNICAL CHARACTERISTIC OF THE CUTTER.....	18
4.1 Purpose .....	18
4.2 Main parameters .....	19
4.2.1 Technical data.....	19
4.2.2 Technical data- electronics scheme .....	19
4.2.3 Technical data- hydraulic system .....	19
4.2.4 External dimensions .....	20
5. OPERATION.....	21
5.1 Operating safety .....	21
5.1.1 Safety instructions .....	21
5.1.2 Warning about special hazards .....	21
5.2 Control system .....	21-24

5.3 Electrical apparatus .....	25
6. POWER SUPPLY.....	26
7. USING OF THE CUTTER .....	27
7.1 Work area for operational staff .....	27
7.2 Danger zones in the cutter .....	27
7.3 Starting up the cutter .....	27
7.3.1 Starting the cutter .....	27
7.3.2 Indications (diagnostics) of the safety curtain after switching on the power supply. ....	29
7.3.3 Emergency stop of the cutter .....	29
7.3.4 Starting the cutter after emergency stop .....	29
7.4 Determining the position of the backgauge .....	29
7.4.1 Changing the position of the backgauge with the switch .....	30
7.5 Clamping the material .....	31
7.5.1 Manual clamping of cut material (mechanical cutting line) .....	31
7.5.2 Changing the clamping force .....	33
7.5.3 Rules for selecting the clamping force. ....	33
7.6 Cutting line indicator (optical) .....	33
7.7 Cutting (clamping and cutting) .....	33
7.8 Air table .....	35
8. Operational activities .....	35
8.1 Replacement of the knife in the cutter .....	35
8.1.1 Removing the knife .....	36
8.1.2 Installing a knife .....	41
8.2 Reversing or replacing the cutting sticks .....	47
8.3 False clamp .....	48
8.4 Adjusting the parallelism of the backgauge beam .....	52
9. MAINTENANCE .....	54
9.1 Daily maintenance .....	54
9.2 Treatments that should be performed cyclically .....	54
9.3 Lubrication .....	54
9.4 Hydraulic power supply .....	60
9.4.1 Working conditions of the hydraulic power supply.....	60
9.5 Service .....	62
9.5.1 General recommendations .....	62
9.5.2 Checking hydraulic hoses .....	62
9.5.3 Knife regeneration .....	62
10. Failures .....	62
10.1 Determination of the causes of the fault .....	63
10.2 Basic procedures for removing various types of defects .....	63

# 1. GENERAL INFORMATION

This operator manual introduces the machine for the user and shows what the machine was designed for to enable safe and comfortable work.

Please take note of the special safety requirements necessary to use the cutter.

The manual should be stored near the cutter and be easily accessible.

All operators should read the manual before using the cutter, with a special focus on the chapter "Safety Rules"

Operators should be fully trained before using the cutter.

I. Installation and Operation

II. Troubleshooting

III. Maintenance and transportation

## 1.1 Purpose of use

The Cut-True 31H Guillotine Cutter is designed for cutting paper, cardboard and other materials like plastic and laminated films. It is mainly used by printing houses, print finishing specialists, copy shops and offices.

In the case of some materials (like plastics) it is recommended to cut a smaller stack than maximum specified.

### **Danger of damage in case of incorrect use!**

**operator is fully responsible for any damages caused by incorrect use of the machine!**

**the machine is designed only for purposes given in this manual.**

## 1.2 Documentation

- This instruction manual is part of the product.
- The operating instructions are not a manual for repairing the machine.
- Only use original spare parts.
- The illustrations in the operating instructions may differ from the actual state of the machine.
- The types of auxiliaries indicated in the operating instructions, such as oils, lubricants, etc. refer to those available on the market at the time of publication.
- Always keep the complete technical documentation close to the machine.
- We recommend that you carefully read this user manual before using the cutter

## 1.3 Organizational measures / receipt of operating instructions

The manual contains special information about the cutter's safety devices. Keep the operating instructions close to the work space and secure them against loss or damage. In addition to the instructions, you must also follow the generally accepted standards and applicable regulations for occupational safety and accident prevention. The employer is also obliged to adequately train staff in accordance with the instructions. Each operator must confirm the receipt of the operating instructions, and follow the guidance provided.

## 2. SAFETY OF USE

The mechanical, electrical and electronic cutter assemblies were made according to state-of-the-art solutions and generally accepted technical rules that ensure safety in the event of a failure. Appropriate safeguards provide the operator with the highest level of security.

The use of accessories or accessories that have not been mounted, delivered or manufactured by the cutter manufacturer requires a special permission from the manufacturer. Otherwise, the warranty becomes void and the manufacturer is not responsible for any damage or injury.

This requirement also applies to spare parts used during the necessary repairs!

Repairs may only be carried out by employees who have been appropriately trained by the cutter's manufacturer. In the event of repairs carried out by unauthorized personnel, the warranty granted to the device expires and exempts the manufacturer from any liability for injuries or damage.

- The machine warranty expires if the machine is modified by the user.
- Modification of the device by the user releases the supplier and the manufacturer from any liability

Despite the measures taken, operating the machine by insufficiently trained staff or trained in the wrong way can pose a danger.

Every person involved in the assembly, installation, operation, maintenance and servicing of the machine must read the operating instructions, in particular the chapter "Safety of Use".








**Despite the obligation to read and understand the safety rules at the time of installation of the new cutter, these rules should be reviewed periodically.**

### **Possible consequences of improper handling:**

- **Danger to life**
- **Danger of injury**
- **Danger of damage to the machine**
- **Deterioration of the technical condition of the machine causing production stoppages**

## 2.1 Symbols: meaning and application

Table 1. Symbols meaning

	<p>Read operator manual Respect operator manual <b>INFORMATION</b></p>
	<p><b>WARNING!</b> Risk of machine damage  Risk of deterioration of technical condition of machine</p>
	<p><b>CAUTION! DANGER!</b> Danger to life Danger of body damage Dangerous electrical voltage!</p>
	<p>Children must not operate the device!</p>
	<p>Do not put hands underneath the knife!</p>
	<p>Do not leave knives unattended Do not remove or transport knives without covers! Risk of injury!</p>
	<p>• Do not cut hard materials or materials, which may be splattered</p>

## 2.2 Employee qualifications

The guillotine can only be operated by qualified employees who have been properly trained. **Such employees must be of legal age.**

Every employee assigned to work during assembly, disassembly, reassembly, commissioning, servicing and maintenance (technical inspection, servicing, repairs) of the cutter must read the entire operating manual, in particular the chapter "Safety of use". The manufacturer recommends that the buyer of the machine, transferring it for use, obtained a written confirmation of the contents of the instructions.

Every employee authorized to perform assembly, start-up, operation and maintenance and repair of the cutter must read the entire operating manual, in particular the chapter "Safety rules".

## 2.3 Requirements for the operator's workplace.

**The employer is obliged to create working conditions at the cutter workplace that preclude the operator from slipping, slipping or falling due to poor ground conditions, the way of routing the wires or the lack of convenient access!**

### 2.3.1 Personal protection equipment

If necessary or if it results from the regulations in force, use the following personal protective equipment:

Wear safety shoes

Wear safety goggles, especially when cutting fragile material

Use hearing protection, especially when cutting hard material

### 2.3.2 Permissible environmental and operational conditions

Operation of the machine is permitted in closed rooms

Humidity: 35% - 95% (non-condensed)

Ambient air temperature: 41° F - 86° F



## 2.4 Expected risks when operating the cutter



**DANGER!**

**The operator must operate the machine in good technical condition.**

At the beginning of each work shift and after each knife replacement, check the operation of the safety devices. By not checking them, there is an increased chance of bodily injury or damage to the cutter.

**The cutter should be used by one operator at a time.**

The cutter should only be used by fully trained operators.

Table 2. Potential Safety Hazards When Operating the Cutter

	<b>Mechanical hazards</b>	<b>Type of threat</b>
1	Motor, belt transmission of the mechanism of backgauge	Catching, crushing
2	The lever system of the knife drive mechanism	Catching, crushing
3	Pressing movement of the pressure beam	Crushing
4	The approaching movement of the backgauge	Crushing
5	Cutting zone	Cut off, cut
6	Manipulation with a knife during change	Cut off, cut
7	The edges and corners of the cutter elements	Cut
8	Surfaces	Abrasion
<b>II</b>	<b>Hydraulics hazards</b>	
1	Hydraulic system	Danger of chemical burns, burns represent hot oil with a temperature of approx. 80 °C!
<b>III</b>	<b>Electrical hazards</b>	
1	Direct touching	Electric shock

## 2.5 Description and evaluation of residual risk

The manufacturer takes responsibility for the construction of the cutter in order to eliminate the danger, although some risk elements during the cutting machine operation are possible. Residual risk may result from incorrect behavior of the cutter operator.

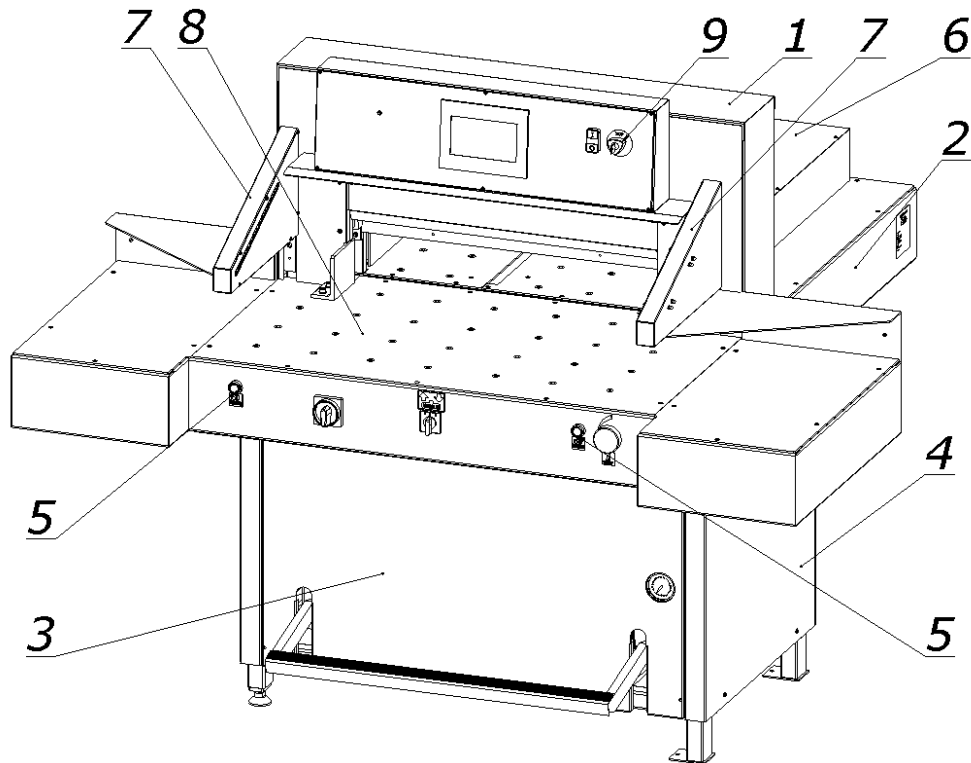
- Failure to follow the safety rules described in the operating instructions
- Using the cutter for other purposes than those described in the user's manual
- Unauthorized persons, especially children, using the cutter
  
- Unauthorized alterations to the cutter
- Cleaning and lubrication of the cutter during operation
- Working with dismantled or defective safety covers/systems
- Manipulation within the drive units and moving parts of the cutter during operation
- Checking the cutter's technical condition and performing servicing or repairs with the cutting machine
- Checking transmission gears during operation

**When presenting the residual risk, the cutter is treated as a device that was designed and manufactured according to the state of the art in the year of its manufacture, 2020.**

## 2.6 Safety systems used in the cutter

- **Two-button engagement** - the cutter is operated using the two-handed cut start system
- **LED Safety Curtain** - an optoelectronic device that creates a safety curtain
- **Control system** - position control at the upper turning point of the knife and the pressure beam.

## 2.7 Ways to prevent safety threats



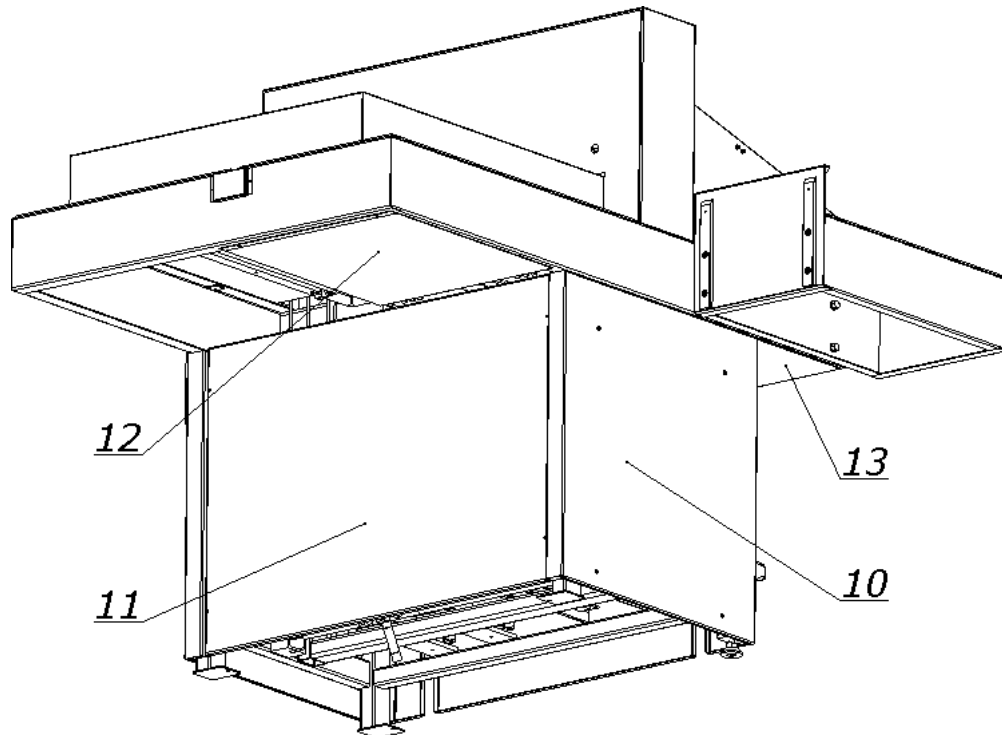


Figure 3. Arrangement of covers and protective elements

Table 3. Safety measures used to eliminate hazards (according to Figure 3)

	Factors and/or dangerous areas	Security measures	Identification
I			
1.	The lever assembly mechanism of the pressure beam drive	<ul style="list-style-type: none"> <li>- fixed cover</li> <li>- machine body</li> <li>- emergency stop</li> </ul>	1,3,4,10,1 1 2 9
2.	Hydraulic system	<ul style="list-style-type: none"> <li>- machine body</li> <li>- fixed cover</li> <li>- front table</li> <li>- emergency stop</li> </ul>	2, 3,4,10,11 8 9
3.	The belt drive for the drive mechanism of the backgauge beam	<ul style="list-style-type: none"> <li>- machine body</li> <li>- front table</li> <li>- emergency stop</li> </ul>	2 8 9

4.	The screw mechanism of the backgauge drive	<ul style="list-style-type: none"> <li>- machine body</li> <li>- fixed cover</li> </ul>	<p style="text-align: center;">2 6,12</p>
5.	Motor, lever mechanism of the knife drive mechanism	<ul style="list-style-type: none"> <li>- fixed cover</li> <li>- machine body</li> <li>- front table</li> <li>- emergency stop</li> </ul>	<p style="text-align: center;">1,3,4,10,1 1 2 8 9</p>
6.	Approach move of the knife beam	<ul style="list-style-type: none"> <li>- fixed cover</li> <li>- safety curtain</li> <li>- two-handed device</li> <li>- emergency stop</li> </ul>	<p style="text-align: center;">1 7 5 9</p>
7.	Approach move of clamp	<ul style="list-style-type: none"> <li>- fixed cover</li> <li>- safety curtain</li> <li>- two-handed device</li> <li>- emergency stop</li> </ul>	<p style="text-align: center;">1 7 5 9</p>
8.	Approach move of backgauge	<ul style="list-style-type: none"> <li>- fixed cover</li> <li>- emergency stop</li> </ul>	<p style="text-align: center;">1,6 9</p>
9	Manipulation with a knife during its replacement	<ul style="list-style-type: none"> <li>- transport handles</li> <li>- special protective packaging</li> </ul>	
10.	Sharp edges and corners of the cutter elements	<ul style="list-style-type: none"> <li>- refraction, dullness, rounding</li> </ul>	
11.	Uneven or rough surfaces	<ul style="list-style-type: none"> <li>- precise workpiece machining</li> <li>- paint coatings</li> </ul>	
<b>II</b>	<b>ELECTRICAL</b>		

1.	Direct contact of active elements	- closed housing - partially reduced voltage supply to the control system up to 24V AC/DC.	2,13
2	Indirect touch	- protection against indirect contact according to PN-EN 60204-1 - continuity of the protective conductor	

## 2.8 Safe working rules

### 1. Operator(s) should be trained

- Be aware of the potential hazards that may occur when operating the cutter
- Clearly define activities which, under the conditions of a given plant, are or are not the responsibility of the cutter operator and are reserved for designated authorized persons, in particular as regards the removal of defects and repairs - including electrical installations.

### 2. Cutter should not be used if:

- It is used contrary to its intended use and/or the cutting parameters specified in the operating instructions would be exceeded
- The cutter is visibly inefficient
- Any covers of moving parts have been removed from the cutter

### 3. Checking Safety Devices:

- Checking the correctness of the protection devices:
  - two-button operation (each time before starting work)
  - LED Safety Curtain protective device (each time before starting work)

**The above-mentioned requirements should be the subject of training and the content of the station instructions!**

## 2.9 Safety control

Periodic security check should be carried out in accordance with the law. These provisions concern:

- accident prevention
- guarantee of efficient work and precision of operation
- eliminating production stoppages.



**INFO**

**Following a maximum of 5 years of use, the following functions should be carried out and the results should be documented.**

- operation of the control function
- check the correct position of the knife
- control of the power supply of the cutter linear indicator
- operation of the safety curtain
- operation of the two-hand control function
- protection against continuous knife movement.

**The above mentioned service should be ordered by the cutter manufacturer's technical service.**

## 3. TRANSPORT AND STORAGE

### 3.1 Packaging

#### 3.1.1 Characteristics of the packaging

The transport packaging used is a disposable packaging.

The transport platform is made of wood, and the outer packaging is made of cardboard. Inside the box the cutter and accessories are packed in anti-corrosion covers made of plastic and oiled paper.

#### 3.1.2 Removing the packaging

Used packaging should be removed in accordance with legal regulations applicable in the country of the user.

## 3.2 Transport

The box with the machine should be transported in accordance with the markings on it (fig.4). When using a forklift (Fig. 5a), make sure that the fork length is suitable so that you can grasp the entire depth of the box.

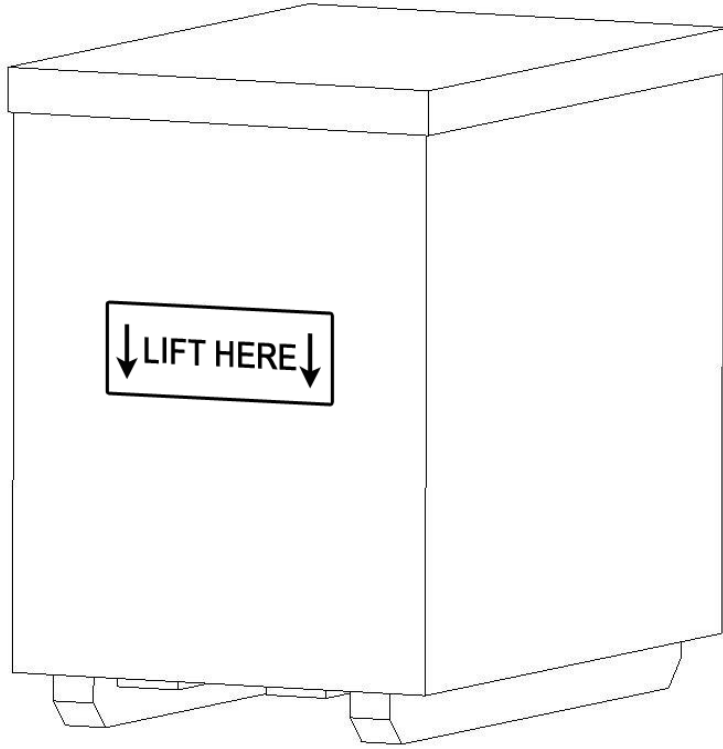


Figure.4 Cutter in transport package



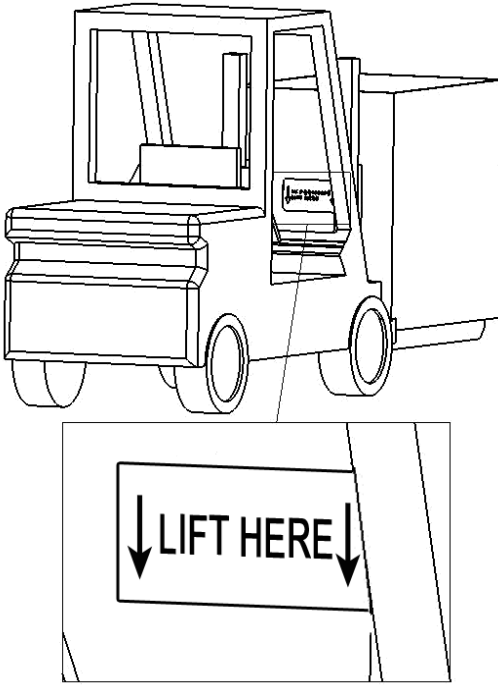


Figure 5a. Transporting the cutter in the shipping case using a forklift.

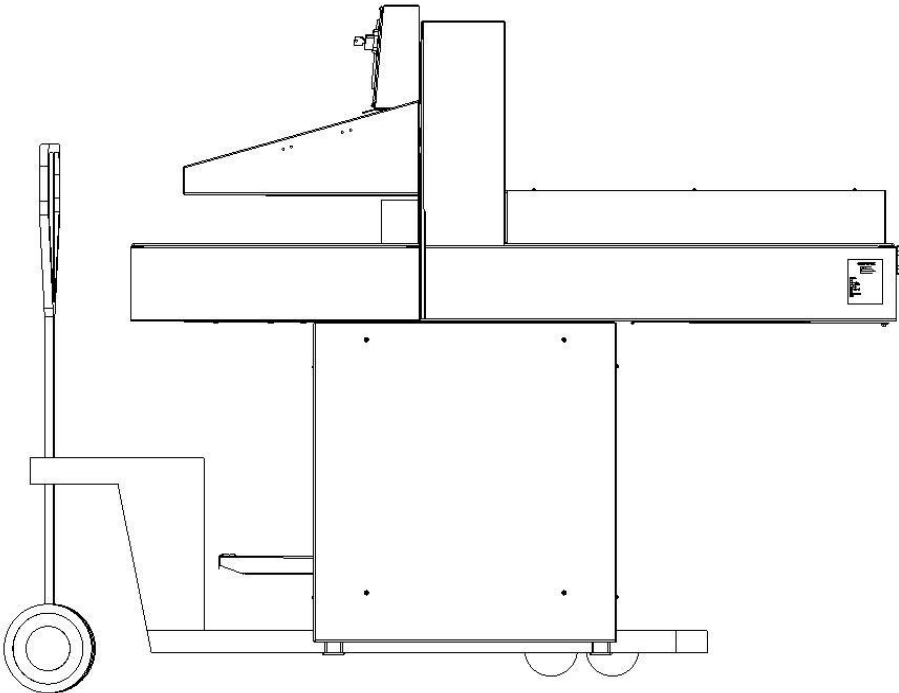


Figure 5b. Transporting the cutter outside the shipping case using a pallet truck

### 3.3 Delivery status

The cutter is shipped with the side tables unassembled.

Assemble the tables according to Figure 6 below.

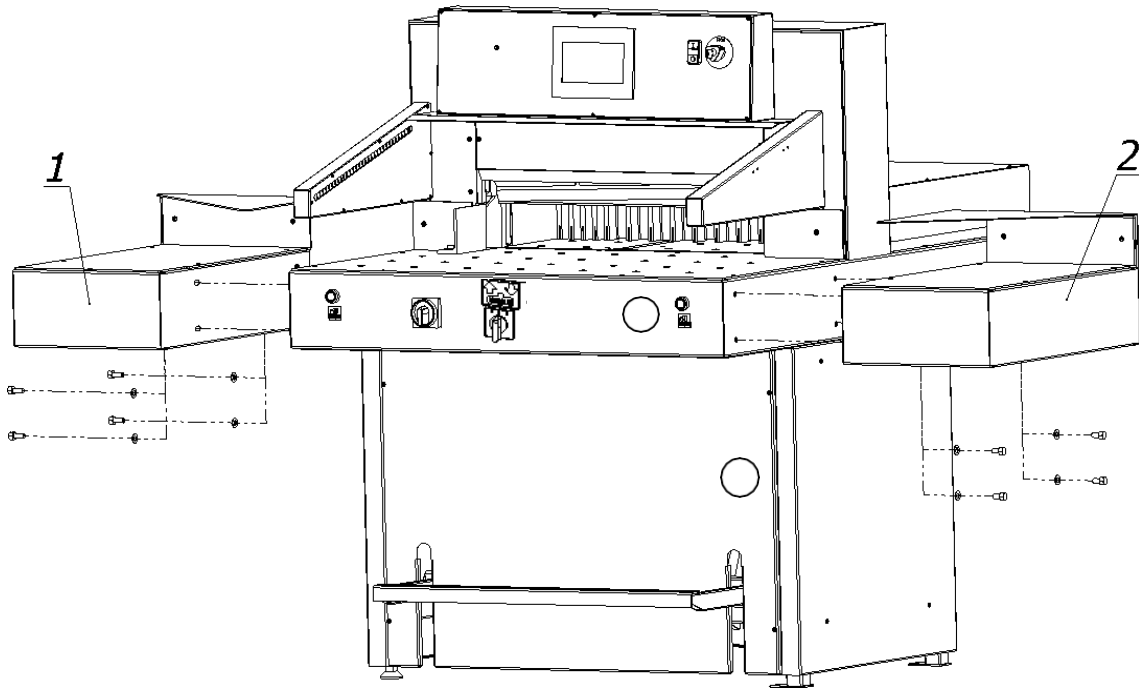


Fig 6. Tightening of side tables

1. Left side table + screw M10x20 (4 pcs) + washer 8 (4 pcs.)
2. Right side table + screw M10x20 (4 pcs) + washer 8 (4 pcs)



**Danger!**

**Protect the power cable from sharp tools, high temperature and oil.**

### 3.4 Setting and leveling the cutter

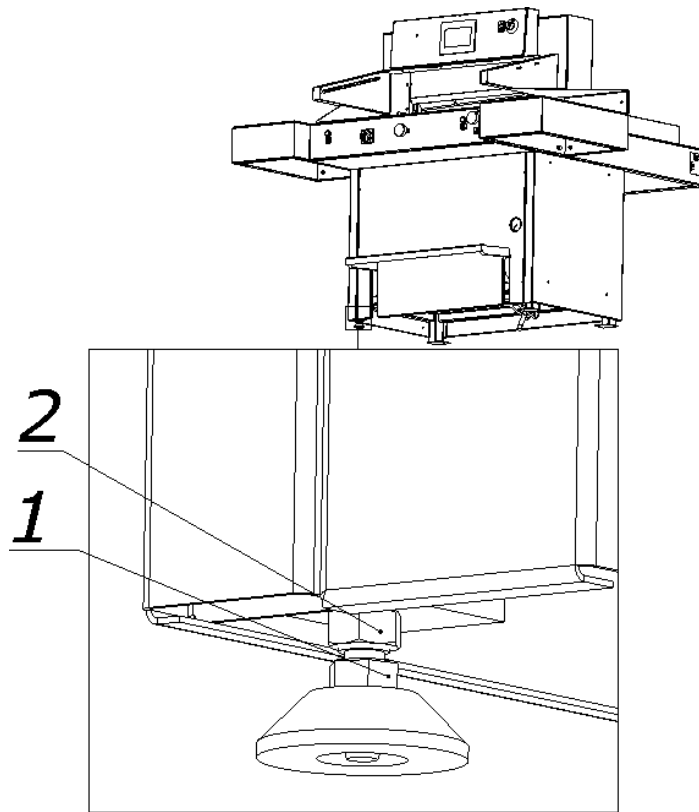


Figure 7. Adjusting the cutter leveling foot.

The cutter does not need to be attached to the ground. The correct and safe setting of the machine is achieved by turning the leveling foot (1), and locking its position with the nut (2), as shown in Figure 7.

### 3.5 Work area

In order to easily access the cutter's mechanisms during adjustment, maintenance or service activities, it is recommended to maintain a free space of about 0.5m/1.5 feet around the device. (Fig.8)

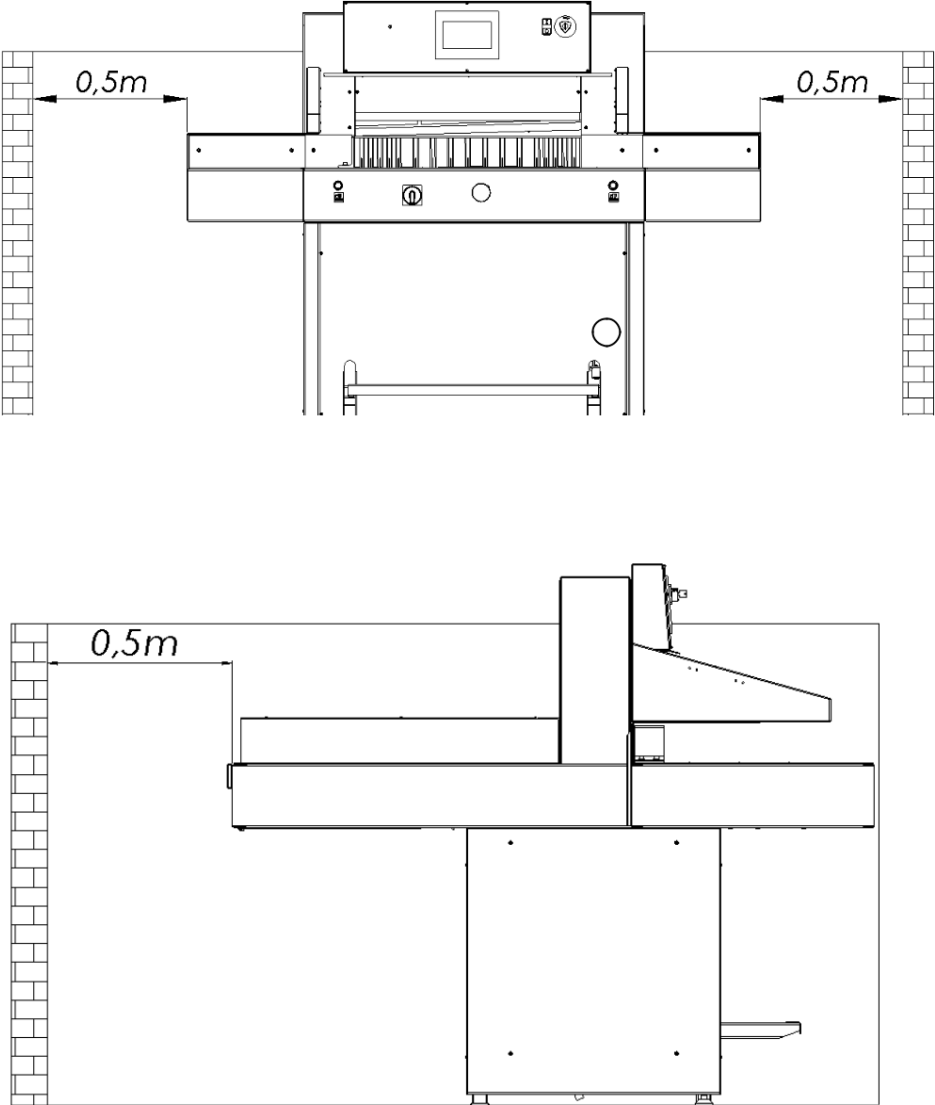


Figure. 8

## 4. TECHNICAL CHARACTERISTIC OF THE CUTTER

### 4.1 Purpose

The cutter is intended for trimming the required size of paper, cardboard and other materials: plastics, fibers, metal foil, laminate, rubber, etc. It is mainly used in printing houses, bookbinding shops and offices.

### 4.2 Main parameters

#### 4.2.1 Technical data

**Table 4.**

Cutting Action:	Dual-button hydraulic
Maximum Cutting Width:	28.7" (730mm)
Maximum Paper Stack Height:	3.94" (100mm)
Programmable Jobs:	Up to 100 programs with up to 100 steps each
Length Behind Blade:	26.5" (673mm)
Length in Front of Blade:	25" (635mm)
Minimum Cut w/False Clamp:	2.36" (60mm)
Minimum Cut w/o False Clamp:	1.18" (30mm)
Table Size:	72.75" W x 25.125" D (1848 x 638mm) with standard side tables 43.12" W x 21.125" D (1095 x 537mm) without standard side tables
Clamp Style:	Automatic, hydraulic
Hydraulic Clamp Pressure:	700 - 4,500 psi (49 - 316 kg/cm <sup>2</sup> )
Back Gauge Adjustment:	Fully programmable using touchscreen, accurate to 0.1mm
Blade Change Safety Tool:	Included
Dimensions:	73" W x 69" D x 56.9" H (1857mm W x 1754mm D x 1445mm H)
Weight:	1,323lbs. (600kg)
Power Supply:	208V, 60Hz, 30A dedicated line, NEMA L6-30P

#### 4.2.2 Technical data- electronics scheme

**Table 5.**

<b>Parameter</b>	
Maximum power (kW)	<b>3</b>
Voltage / frequency (V/Hz)	<b>400/50 - 60</b>
Fuse (A)	<b>3x20</b>
	<b>3x30</b>

#### 4.2.3 Technical data- hydraulic system

##### 4.2.3.1 Technical data- hydraulic apparatus

**Table 6.**

<b>Parameter</b>	
Motor power (kW)	<b>2,2</b>
Voltage / frequency (V/Hz)	<b>3x400/50</b>
	<b>2x220/60</b>
Control of executive elements (VDC)	<b>24</b>
Tank capacity (l)	<b>12</b>

##### 4.2.3.2 Technical data- oil for hydraulics

**Table 7.**

<b>Parameter</b>	
Oil type	<b>HV 46</b>
Quality	<b>ISO 11158 - HV</b>
Viscosity	<b>ISO VG 46</b>
Norm DIN	<b>51524, 46 mm<sup>2</sup> (cST).</b>
Kinematic viscosity in temperature (40°C)	<b>47.2 mm<sup>2</sup></b>

The hydraulic system does not require de-aeration, it takes place automatically after several cuts.

#### 4.2.4 External dimensions

The dimensions of the cutter are shown in Figure 9 and Table 6.

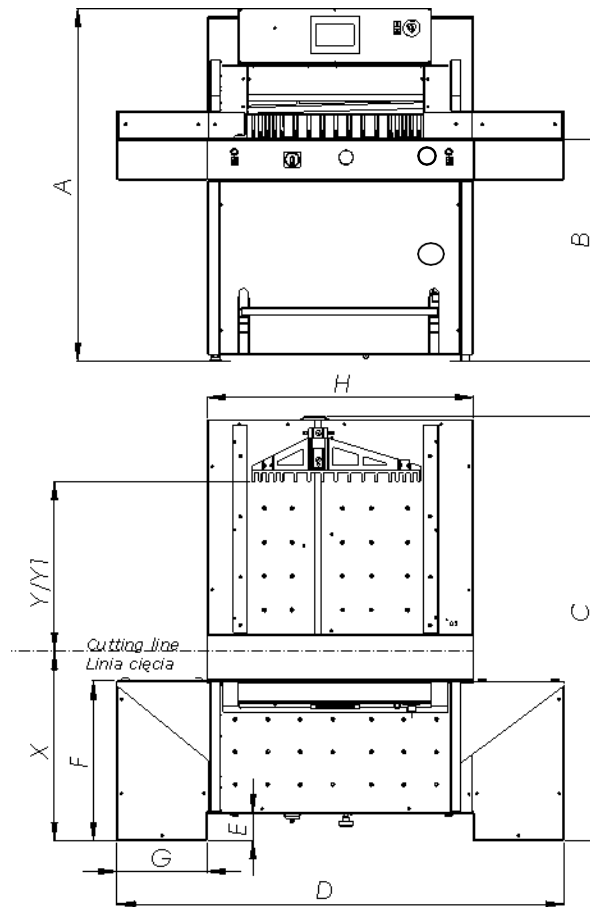


Figure 9. Dimensions of the cutter

Table 6.

DIMENSION	VALUE (mm)
<b>A</b>	<b>1445</b>
B	924
<b>C</b>	<b>1754</b>
D	1857
<b>E</b>	<b>114</b>
F	658
<b>G</b>	<b>376</b>
H	1105
<b>X</b>	<b>640</b>
Y program	710
<b>Y1 manual</b>	<b>730</b>

## 5. OPERATION

### 5.1 Operating safety

#### 5.1.1 Safety instructions

- Before each start-up or start-up on the cutter, the next change should be made to ensure that the safety components are complete and work properly.
- The cutter can only be operated if all safety components and safeguards such as detachable covers, emergency stop switches are installed and fully functional.
- In case of a malfunction, stop the cutter immediately and block it.
- All defects must be eliminated immediately.

#### 5.1.2 Warning about special hazards

You should refrain from performing any actions that violate safety in the machine.

- DO NOT put your hands into the field of knife and clamp.
- DO NOT put your hands into the field between the clamping and infeed bars.
- DO exercise extreme caution when handling the knife! Use the blade change safety tool when installing / removing / carrying the knife.
- DO use only undamaged and sharp knives!
- DO ensure that the knife is changed only by trained personnel.
- DO ensure the work table has no extraneous items on it (keys, tools, etc.)

### 5.2 Control system



**Danger!**

**The cutter cannot be operated with defective photocells forming the safety curtain!**



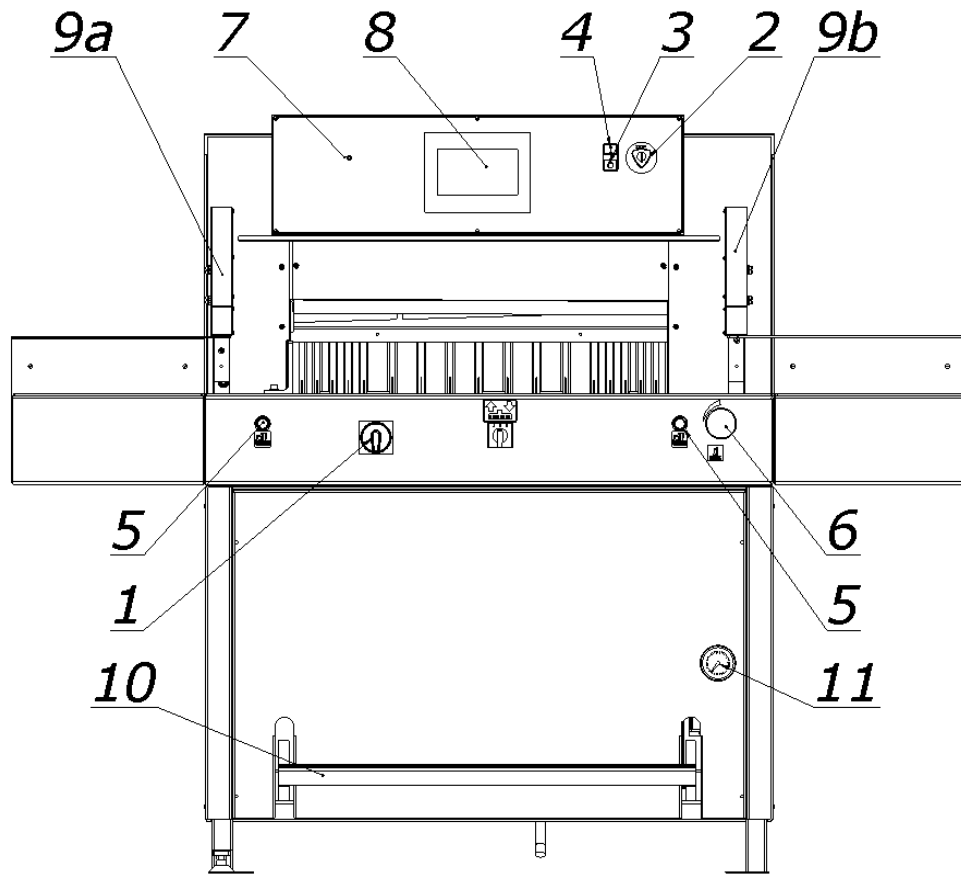


Figure 10. Control and signaling elements of the Cut-True 31H cutter

1. Main switch
2. Palm button, (emergency stop)
3. Locking button of the control system
4. Button that activates the control system.
5. Buttons enabling the cutting cycle (two-handed cutting start-up system)
6. Hydraulic pressure adjustment crank
  - turn right - pressure increase
  - turn left - pressure decrease
7. Two-color signal lamp.
  - red, signals the power supply to the control system
  - green, signals the activation of the control system
8. touchscreen control panel
9. LED Light Safety Curtain (non-contact protection device)
  - 9a. Transmitter
  - 9b. Receiver
10. Foot pedal (pre-clamp mechanical determination of the cutting line)

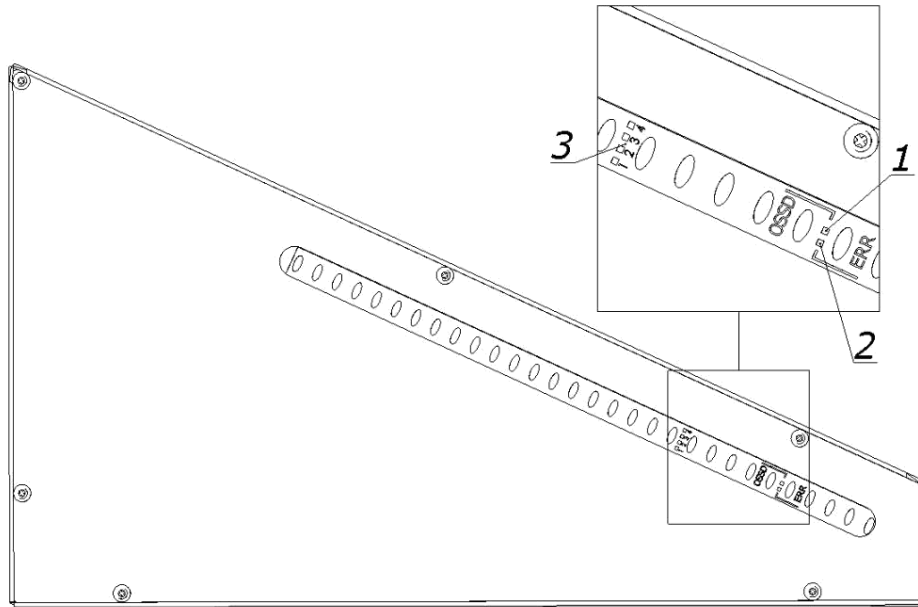


Figure 11. Receiver indicators

The receiver is equipped with six LEDs informing about the operating status:

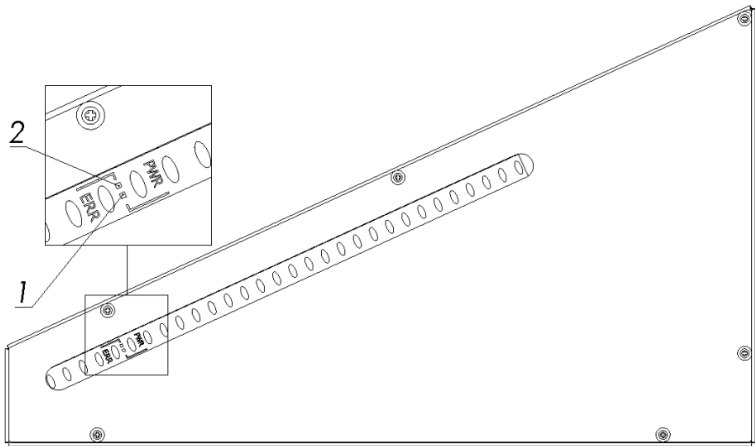
**Table 7.**

Position	LED colour	Indication	Text
1	Red/green	Status OSSD	OSSD
2	Red	Error indication	ERR
3	Blue	Quality of signal	1234

Blue LEDs informing about the quality of the settings, in conjunction with a flashing red color LED ERR, also indicate errors.

**Table 8. Blue LEDs informing about the quality of the settings**

LEDs informing about quality settings	Diode LED OSSD	Meaning
It does not light up no LED	red	The setting is insufficient or the protective field is interrupted at least partially. The receiver can not synchronize with the transmitter.
It lights up 1 led	red	The setting is insufficient or the protective field is interrupted at least partially.
It lights up 2 led	red	The setting is insufficient or the protective field is interrupted at least partially.
It lights up 2 led	green	The setting is not yet sufficient to ensure stable availability.
It lights up 3 Led	green	The setting is good, stable availability.
It lights up 4 led	green	The setting is very good.



**Figure 12. Transmitter indicators**  
The transmitter is equipped with two LEDs informing about the operating status:

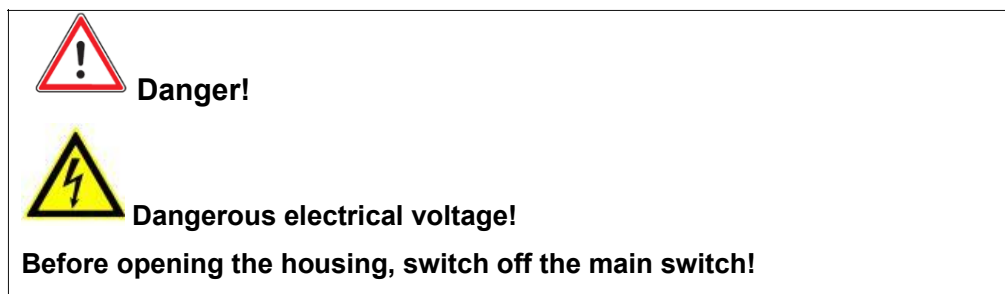
**Table 9.**

Position	LED diode colour	Indication	Text
1	yellow	Work status indicator	PWR
2	red	Error indication	ERR

### 5.3 Electrical apparatus

The cutter is supplied with a five-core copper wire with 2.5 mm<sup>2</sup> wire cross-section. The user's duty is to install the cutter to the electrical network with 20 A safeguards. For connecting, use a copper wire with a cross-sectional area of 2.5 mm<sup>2</sup> or more. Voltage fluctuations should be in the range of 90-110% of the rated voltage, and frequency fluctuations in the range of 50 Hz ± 2%.

The cutter can be connected to a five-core, L1, L2, L3, N, PE electric network.



1. Hinged housing of electrical apparatus (Fig. 13)

2. Nuts fixing the housing (Fig. 13)

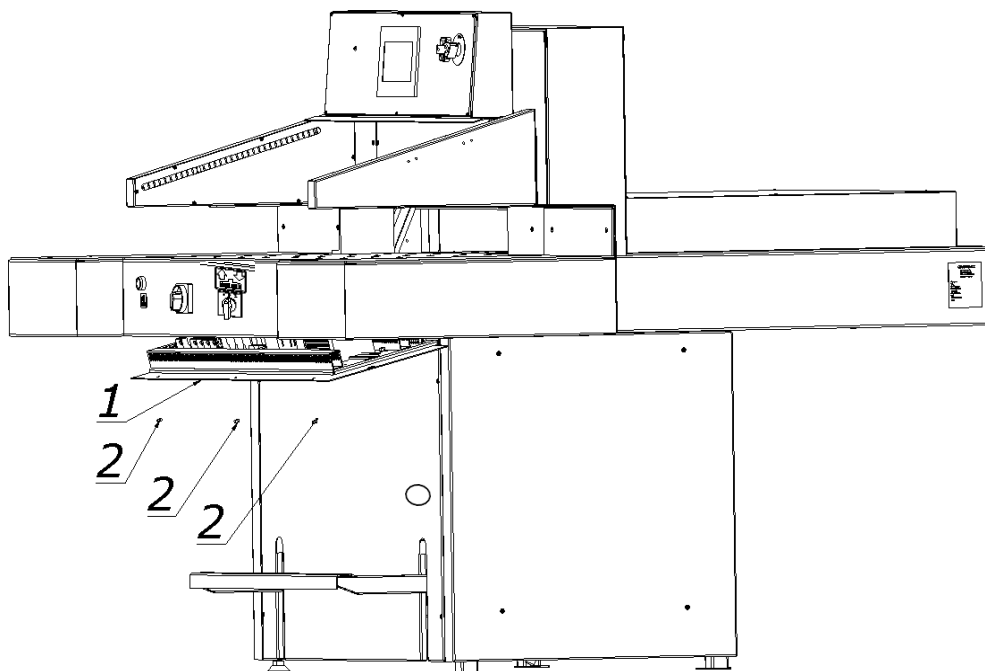


Figure 13. Location of electrical apparatus

## 6. POWER SUPPLY

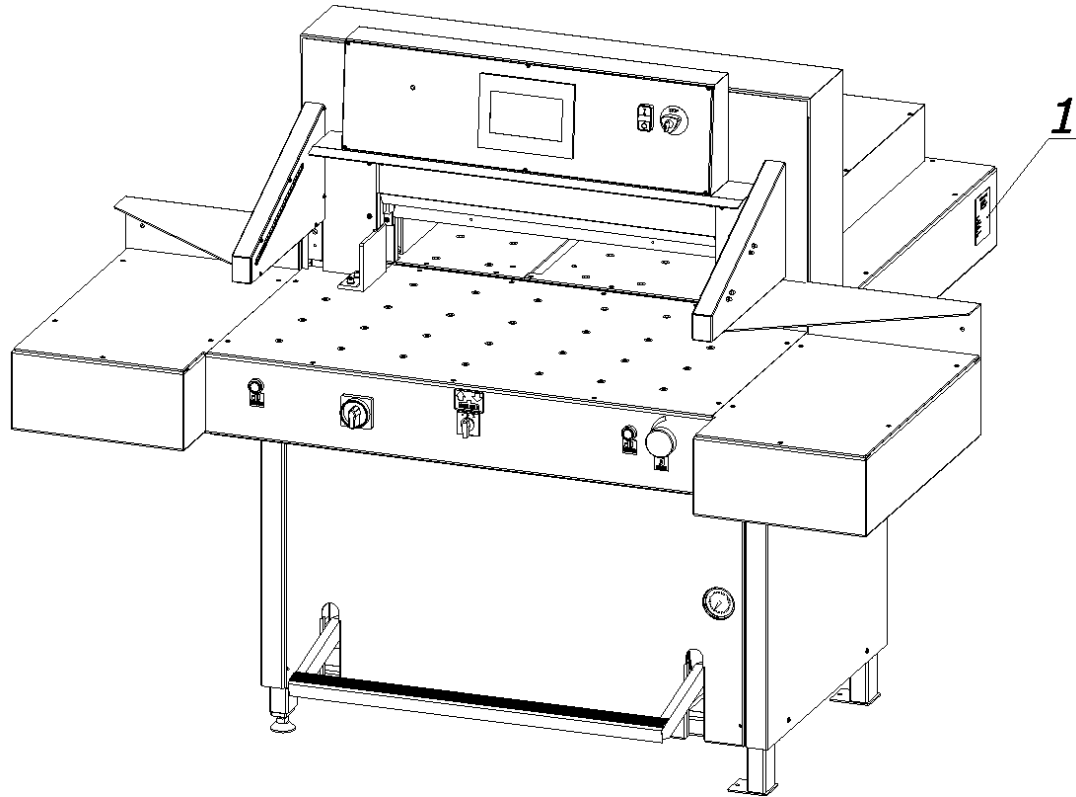


Figure 14. Location of the nameplate

Data on the plate:

- 400V power supply
- 50-60 Hz frequency
- 3 kW power
- 20 A protection

### **WARNING**

The data on the plate must correspond to the current parameters in the mains!

**Parameters of frequency converters (inverters) are set by the cutter manufacturer and can not be changed!**

**Cutter should be grounded!**

## 7. USING THE CUTTER

The cutter must be located in a place which will avoid the possibilities for operator injury. This includes slipping or falling due to poor grounding conditions, cable routing, or inconvenient access to the operating areas of the machine.

### 7.1 Work area for operational staff

The working area is the front side of the cutter

### 7.2 Danger zones in the cutter

- knife and clamp zone
- back side of the cutter frame (access to clamp zone and knife)
- back side of the cutter (access to the backgauge)
- bottom side of the rear table access to the backgauge zone (spindle and slider)

### 7.3 Starting up the cutter

During the first start-up, pay attention to the correct connection of the cutter

to the network.



#### 7.3.1 Starting the cutter

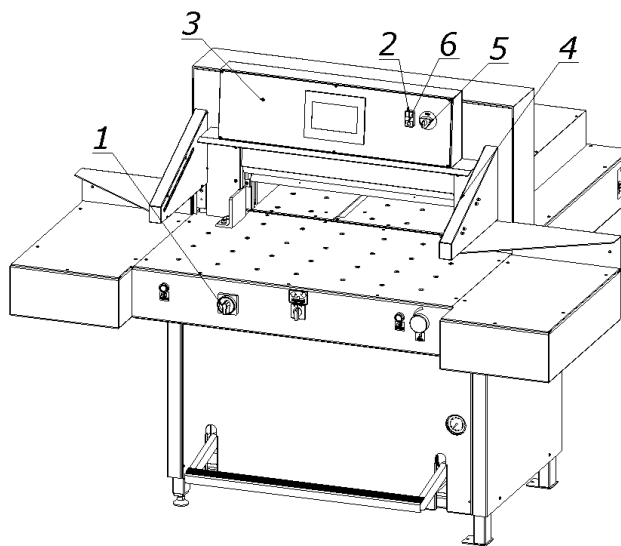


Figure 15. Arrangement of the elements used when switching on the cutter.

1. Set the main switch 1 (Fig. 15) to "ON" 1
2. Press the green 2 (Fig. 15) "I" button
  - LED 3 (Fig. 15) lights up green
  - the green OSSD 1 LED lights up (Fig.11) in the receiver 4 (Fig.15)



**After turning on the power supply with the main switch 1 (Fig. 15) and pressing the green button 2, if the LED 3 is green, the connection is correct (correct direction of rotation). If the LED is red, the connection is not correct and should be replaced in the plug two of three phase conductors.**

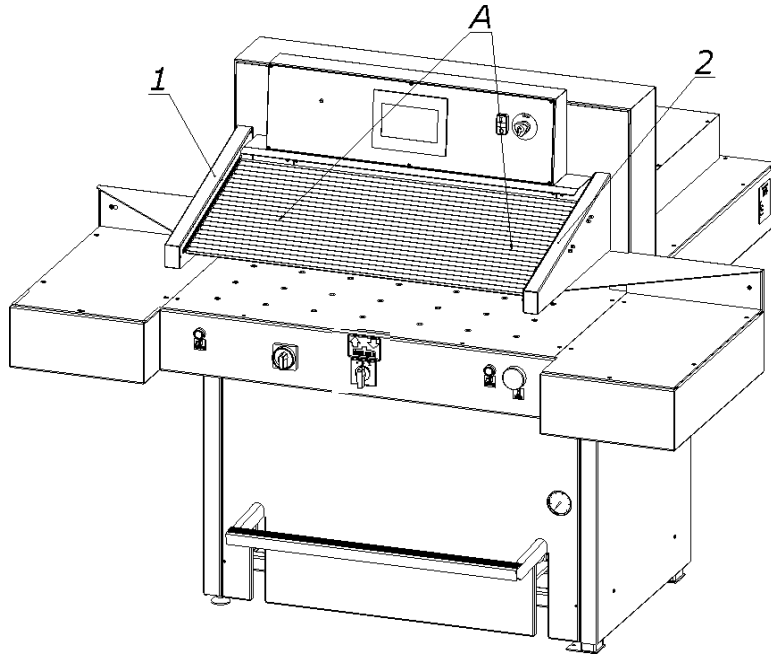


Figure 16. Light curtain

1. Transmitter
  2. Receiver
- A - field of the light curtain

### 7.3.2 Indications (diagnostics) of the safety curtain after switching on the power supply.

When the cutter is switched on, the transmitter 1 and receiver 2 are initialized (fig. 16). All transmitter and receiver LEDs will light for a moment. After initialization the receiver indicates the quality of the setting using four blue LEDs 3 (Fig.11). Table 8. The setting indicator extinguishes after a suitable time when the safety light curtain is set (the LED of the device switching the output signal: green item 1 figure 11) and only the PWR LED of transmitter 1 (fig.12) and LED 1 (fig. 11) device for switching the receiver's output signal. In the event of an error on the device, the red LED will light. On the side receiver red error LED - in combination with blue LEDs - indicates the cause of the error.



**Danger!**

**In case of malfunction of photocells, immediately contact the service!**

### 7.3.3 Emergency stop of the cutter

1. Press the button 5 (Fig. 15)

The switch is used for emergency stopping of the machine.

After pressing it, the message "Disable safety button" will appear on the programmer.

The pressure bar and knife will stop.

### 7.3.4 Starting the cutter after emergency stop

1. Unlock button 5 (turn it around) (Fig.15)

2. Press the green 2 "I" button

When the stop has been made during the cutting cycle, pressing the cutting buttons again will result in returning to the upper position of the clamping beam and the knife

## 7.4 Determining the position of the backgauge



**Danger!**



**Do not put your hands into the cutting area when backgauge moves!**



The position of the backgauge is changed using the touchscreen control panel and the backgauge switch, figure 17.



The method of determining the position of the backgauge and operating the touchscreen is described in the Touchscreen Operations section.

### 7.4.1 Changing the position of the backgauge using the backgauge switch

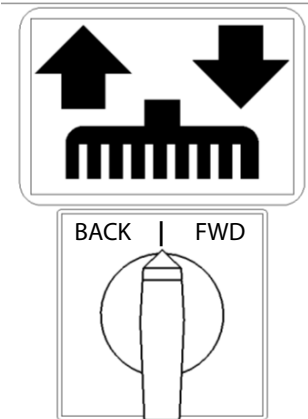


Figure 17 Switch in center "|" position - backgauge is inactive

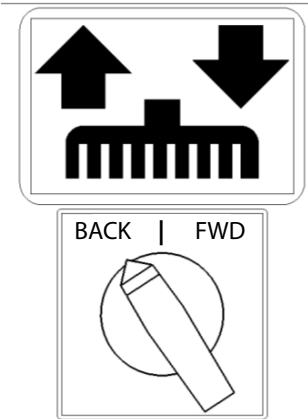
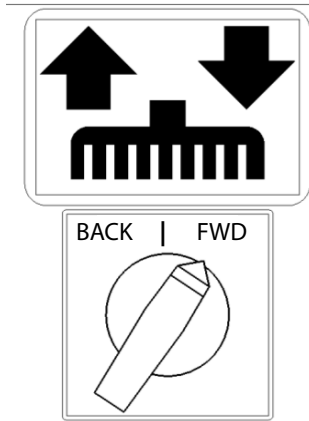


Figure 17b Switch in "BACK" position - backgauge moves away from the knife - in the direction of the arrow.



Switch in "FWD" position - backgauge toward the knife - in the direction of the arrow.

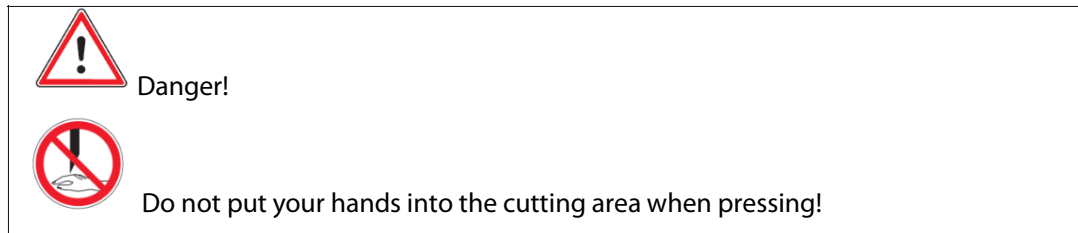
Turning the switch for a short time causes the backgauge to move by 0.01 mm in the selected direction.

Turning and holding the switch in the selected position causes the continuous movement of the backgauge.

The speed of the backgauge increases the longer the the switch is turned.

## 7.5 Clamping the material

The paper clamp automaticall engages once the dual operation cutting buttons are pressed to start the cutting cycle 1 (fig. 18).



### 7.5.1 Manual clamping of cut material (mechanical cutting line determination, i.e. foot pedal pre-clamp)

Lower the paper clamp onto the stack by pressing the foot pedal (3, Fig.18). The front edge of the clamping bar is the same as the cutting line. Therefore, it can be used as an indicator of the cutting line. The clamp can be stopped in any position.

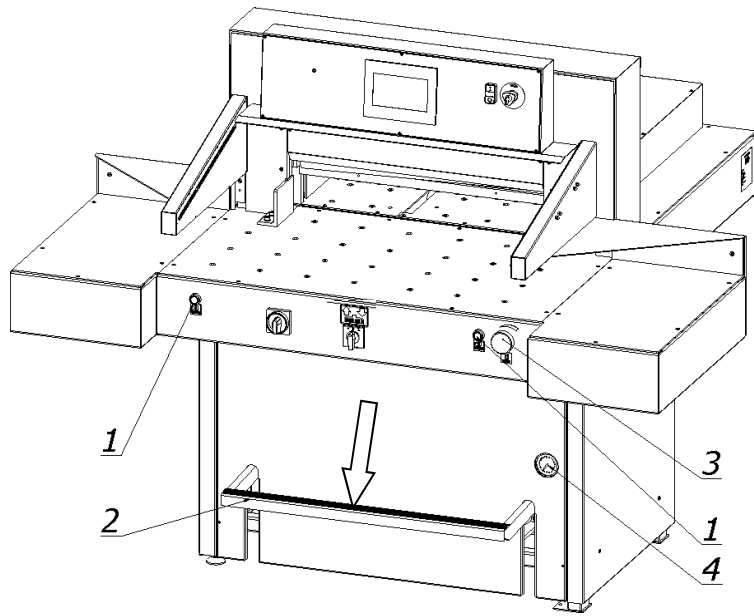


Figure 18. Operating elements when used during clamping.

## 7.5.2 Changing the clamping force

The change of clamping force can be done by manual crank rotation (3, fig. 18) and reading the value of pressure on manometer (4, fig. 18)

- turning right - clamp pressure increases
- turning left- clamp pressure decreases

### Approximate values of the clamping force depending on the pressure value read on the pressure gauge (manometer) 4

- 25 bar ~ 300 daN
- 40 bar ~ 650 daN
- 55 bar ~ 1000 daN
- 70 bar ~ 1350 daN
- 90 bar ~ 1700 daN
- 110 bar ~ 2000 daN

## 7.5.3 Rules for selecting the clamping force.

The value of the pressing force is selected experimentally, in relation to the type, width and height of the material to be cut.

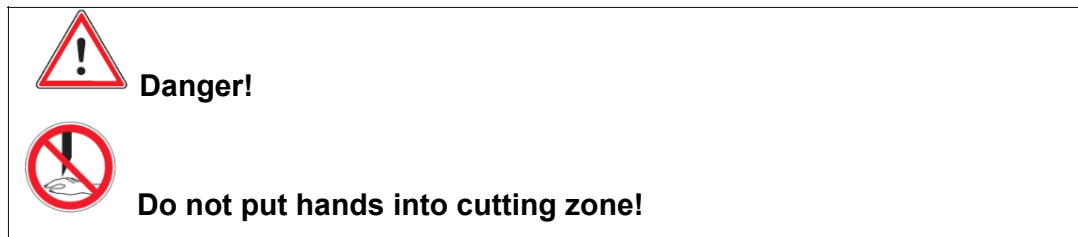
The following rules must be observed:

- the higher the pile, the greater the downforce
- the greater the cutting width, the greater the downforce
- the harder the material, the greater the downforce

## 7.6 LED Cutting Line Indicator (optical)

The cutter is equipped with an optical cutting line indicator. A thin light line indicates the cutting line on the material to be cut.

## 7.7 Cutting (clamping and cutting)



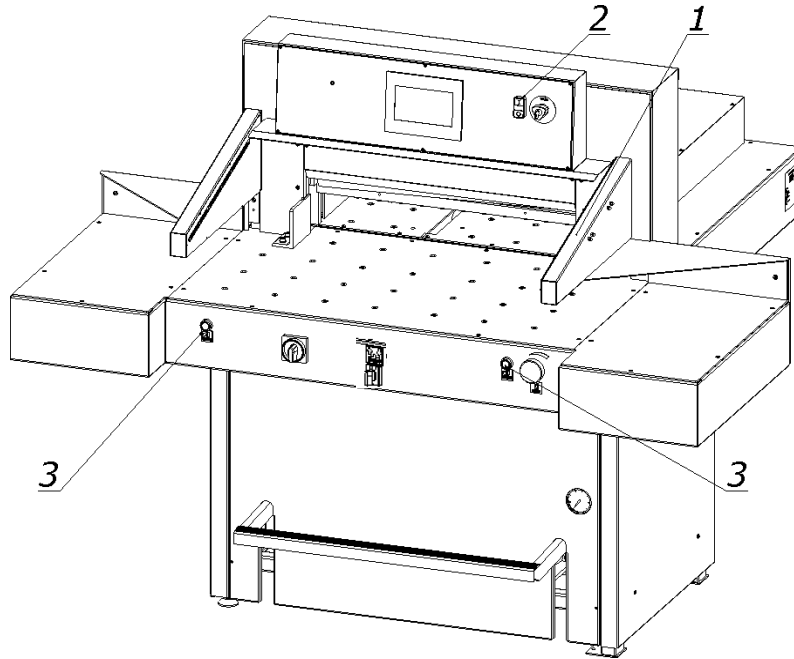


Fig. 19. Operating and signaling elements used during cutting.

Cutting can be done if:

1. there is no object in the work area of the light barrier - the green OSSD (1) LED lights up (fig.11) on the receiver 1 (fig. 19).
2. the green push button (2) is pressed.
3. the operation buttons (3) were pressed simultaneously.

Keep both buttons (3) pressed until the material is cut.

The knife and the paper clamp will automatically return to its stop in the upper return position.

Releasing the buttons (3) during the movement of the paper clamp and the knife downwards interrupts this movement. If an object gets caught in the light barrier working area, the paper clamp and the knife will stop moving. To continue cutting, remove the unauthorized item and simultaneously restart both buttons (3).

**NOTE: Paper clips or other hard objects can damage the blade.**

## 7.8 Air table

The surface of the cutter table is equipped with air nozzles (1) (Figure 20).

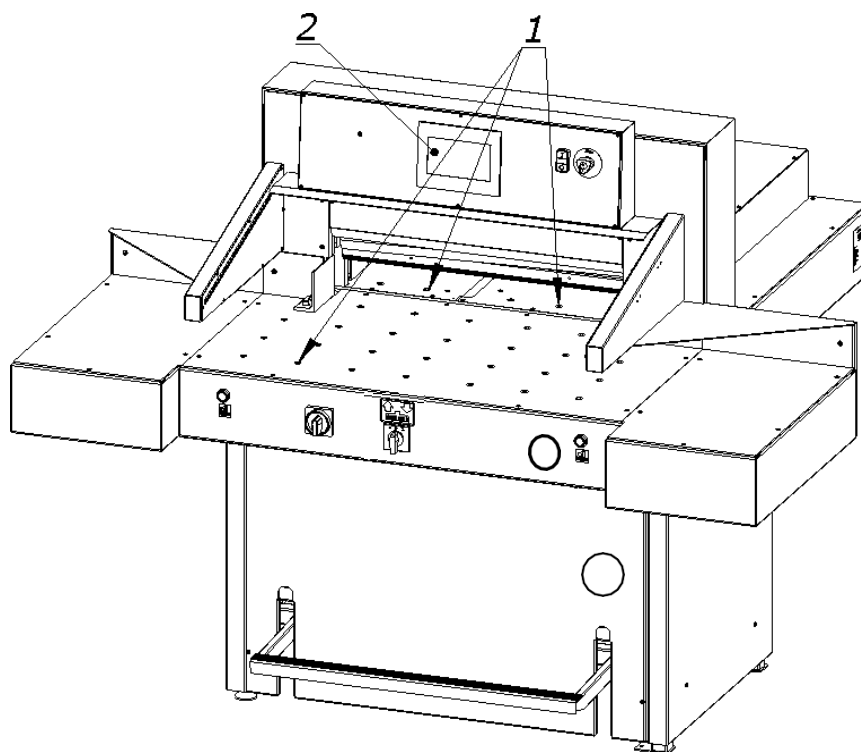


Figure 20.

To turn on the air supply press the blower button on the touchscreen (2) (Figure



After switching on the air supply, moving the pile becomes easier. During the cutting, clamping or manual clamping (testing), the air supply is switched off automatically.

## 8. Operational activities

### 8.1 Replacement of the knife

The cutting blade/knife should generally be replaced after about 8 cumulative hours of cutting, depending on the materials being cut.



**Danger!**



**Do not put hands into cutting zone!**

- Danger of injury to the operator and auxiliary personnel
- Danger of injury to hands and hands in the knife area through cutting
- The edge of the knife is sharp - do not touch
- Do not handle the knife without the blade change safety tool handles
- The blade may only be changed when the tools for replacing it are undamaged
- Blunt knives should be put in cassettes immediately
- Knives intended for scrapping must be deliberately blunted
- Worn and blunt knives should be taken to the scrap yard

### 8.1.1 Removing the knife

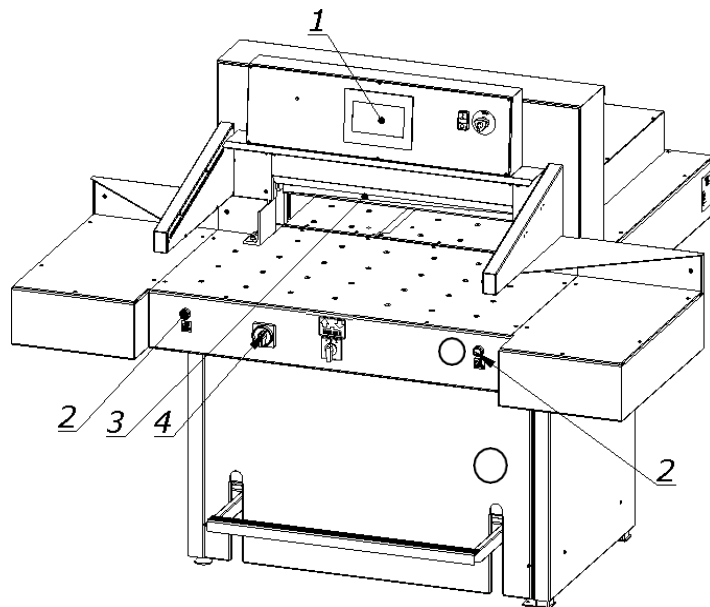


Figure 21.

8.1.1.1 Select the "knife change" function on the touchscreen control panel (1, fig. 21) ("programming manual").



8.1.1.2 Pressing the push buttons (2, fig. 21) at the same time, start the cutting cycle. The knife (3) is held in the lower position

8.1.1.3 Switch off the power supply of the electrical system by turning the main switch knob (4, fig. 21) to the "0" position

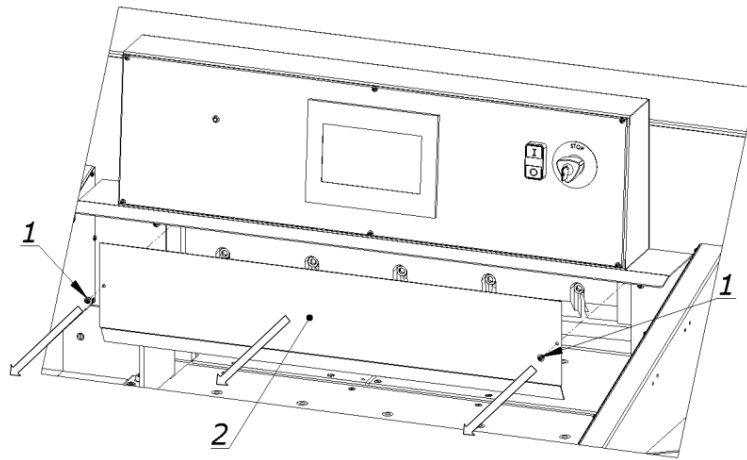


Figure.22

8.1.1.4 Remove the two screws (1, fig. 22) securing the cover (2) and remove the cover.

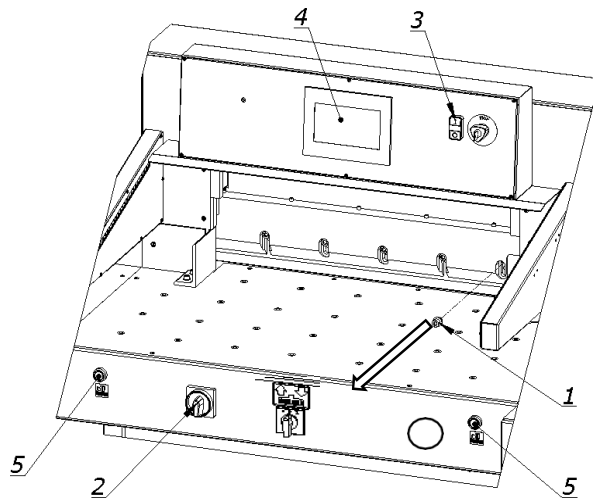


Figure.23

8.1.1.3 Unscrew and remove the first fastening screw (1) from the right side of the cutter bar (Fig. 23).

8.1.1.4 Switch on the power supply of the electrical system by turning the main switch knob (2) to the "I" position

8.1.1.5 Turn on the power to the control system by pressing the green push button (3).

8.1.1.6 On the touchscreen (4), deactivate the "knife change" function

8.1.1.7 Press simultaneously on the push buttons (5). The blade will return to its upper position.



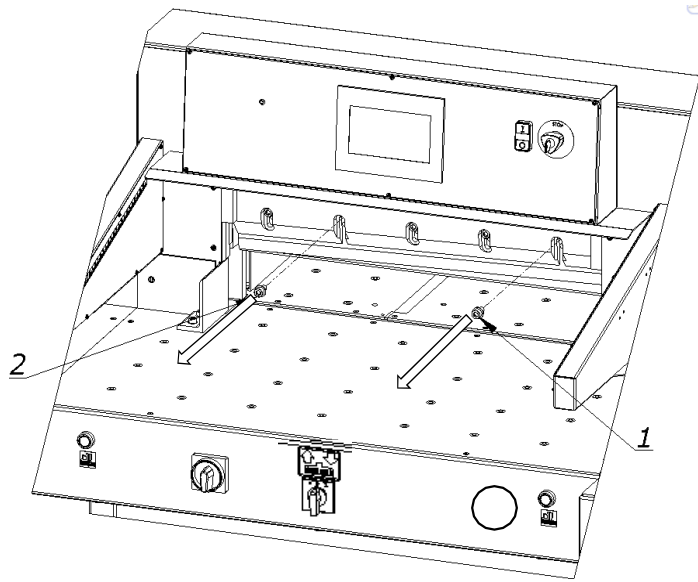


Figure 24.

8.1.1.8. Unscrew and remove the mounting screws (1) and (2) (Fig. 24).

8.1.1.9. In place of the screws removed, screw in the blade change safety tool handle (1, fig. 25) so that it secures the knife to the cutter bar.

8.1.1.10 Unscrew and remove the screws (2, fig. 26)

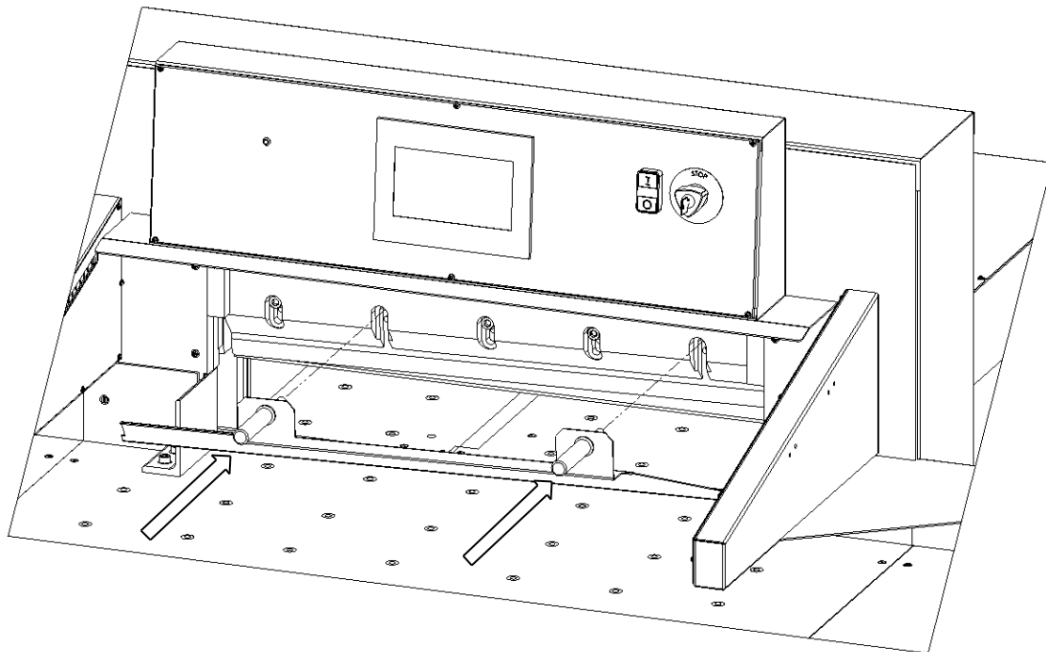


Figure. 25.

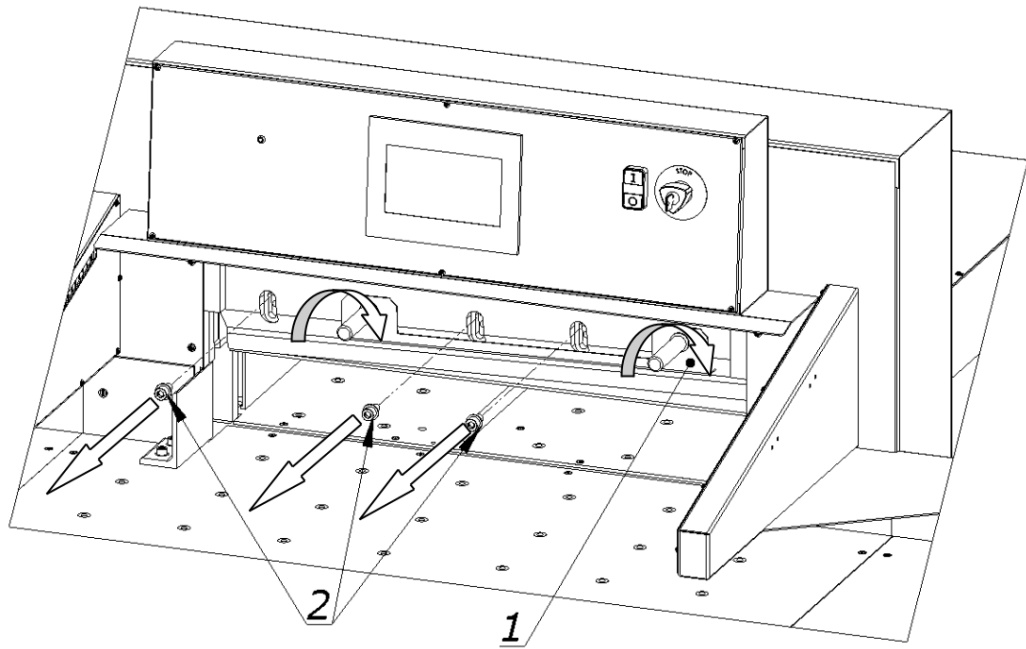


Figure 26.

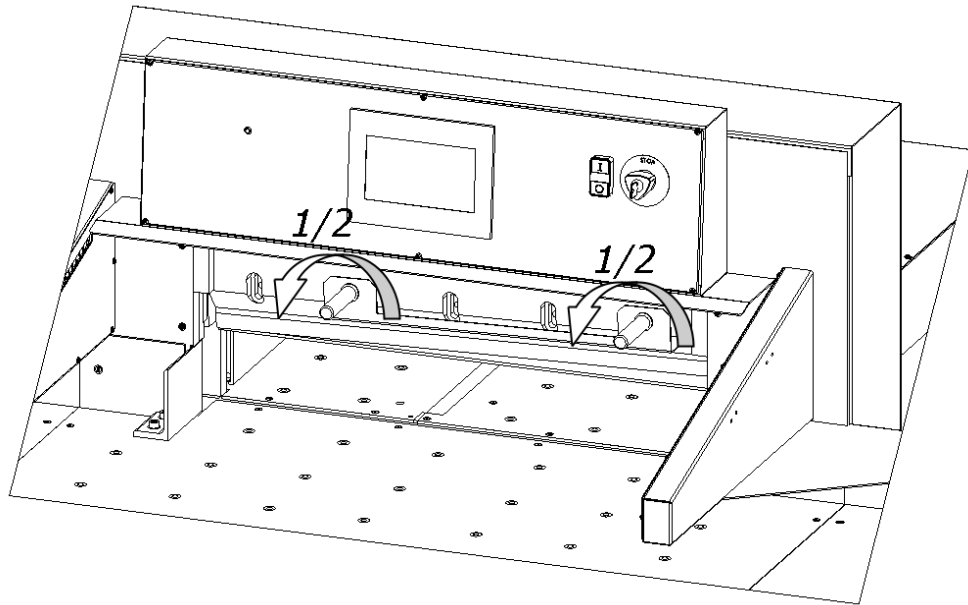


Figure 27.

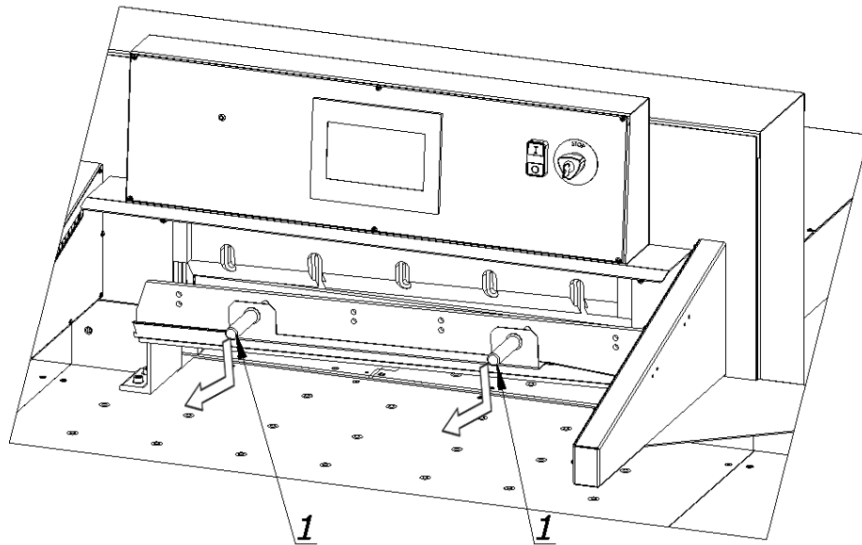


Figure 28.

8.1.1.12 holding the blade change tool handles release the clamp by turning them 1/2 turn at a time to the left (fig. 27) and carefully pull the knife down (fig. 28). Place the removed knife into the special protective packaging (Fig. 29a - 29d) with the blade inwards and fasten it with two screws. Use the Allen key (8) wrench provided to unscrew the bolts that fix the knife to the cutter bar.

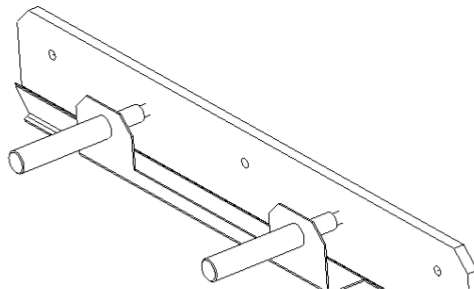


Figure. 29a. Knife in the transport handle

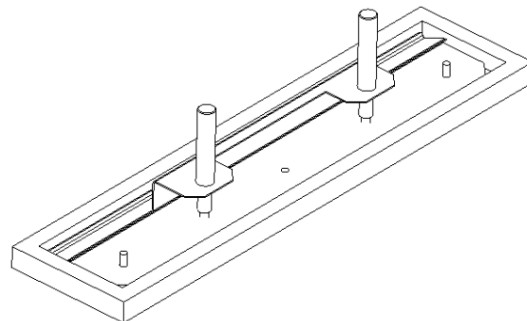


Figure 29b. Knife in the package

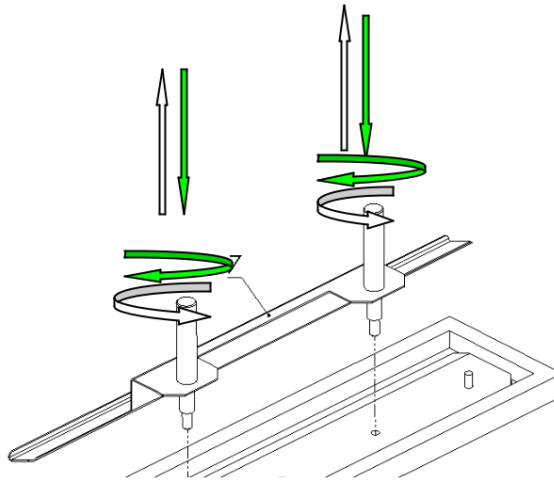


Figure 29 c. Unscrewing / securing the transport handles

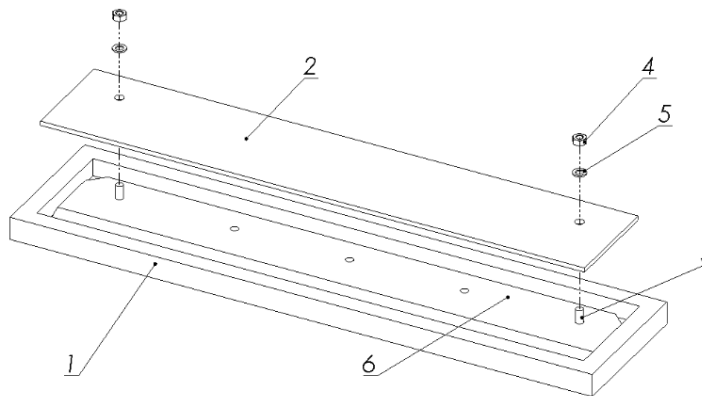


Figure 29d. Fixing the knife in the packaging

1. Packaging
2. cover
3. screw
4. nut
5. Washer
6. Knife
7. Knife change holder

### 8.1.2 Installing a knife

8.1.2.1. Remove all adjusting screws (1, fig. 30) so that their faces are hidden in the knife bar body.

Figure 30 B CORRECT POSITION - the adjustment screw does not protrude below the protrusion (2) in the cutter bar

Figure 30 A - INCORRECT POTITION - the adjusting screw protrudes below the projection (2) in the cutter bar - unscrew the screw.

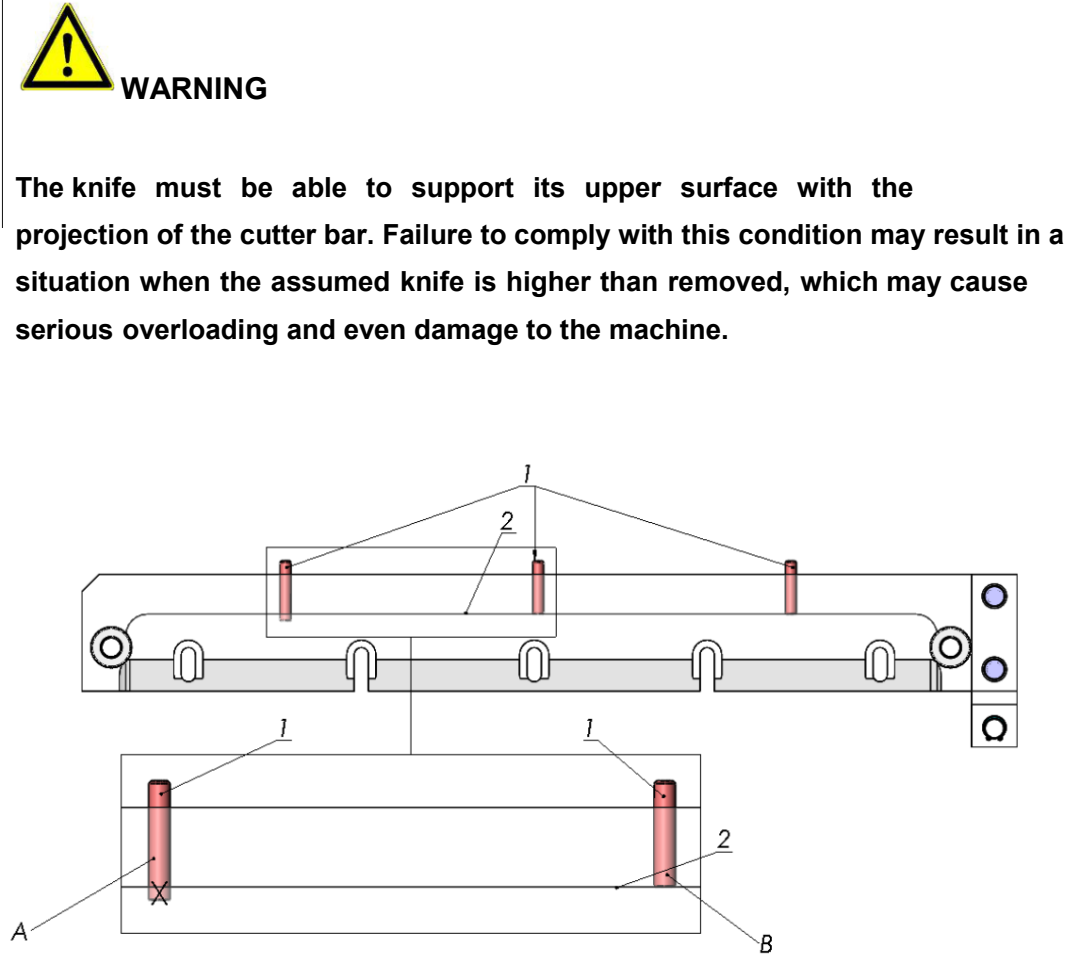


Figure 30. Position of adjustment screws.

8.1.2.2. Remove the knife from the packaging (Figs. 29a to 29d)

8.1.2.3. Holding the transport handles (1), insert the knife 2 into the cutter so that the transport handles screwed into the knife hit the cutouts in the cutter bar (3, Fig. 31)

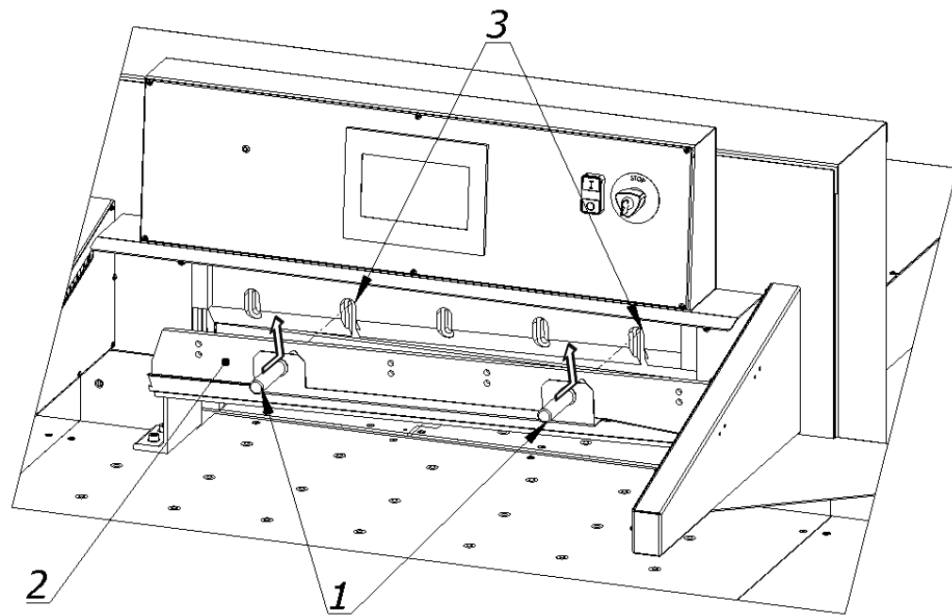


Figure 31.

Insert the knife so high that its upper surface will rest against the protrusion in the cutter bar (2, fig. 30).

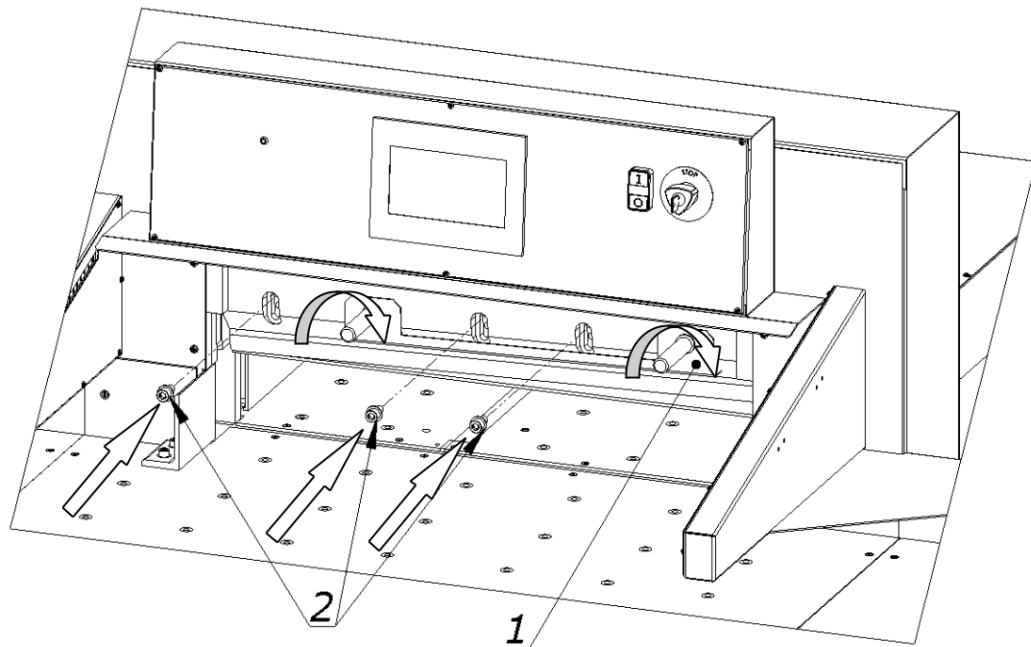


Figure 32.

8.1.2.4 Pre-attach the knife to the cutter bar by turning both transporting handles (1) to the right (fig. 32).

8.1.2.5 Install the fastening screws (2, fig. 32).

8.1.2.6 Unscrew both transport lugs (1, fig. 33) and replace them with the mounting screws (1 and 2, fig.33).

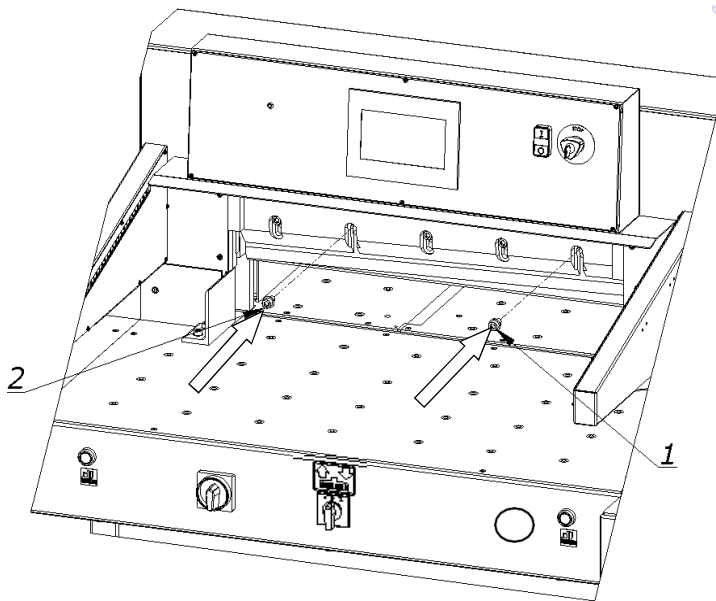


Figure 33.

8.1.2.7 Slightly unscrew the first screw on the left side of the clamping screw (2, fig.32), taking care that the screw head does not protrude above the knife beam sliding plane.

8.1.2.8 Press the "knife change" function on the touchscreen control (3, fig.23)

8.1.2.9 Pressing the push buttons (2, fig. 35) at the same time, start the cutting cycle.  
The knife will stop in the lower position.



8.1.2.10. Switch off the power supply of the electrical system by turning the main switch knob (1, fig. 34) to the "0" position.

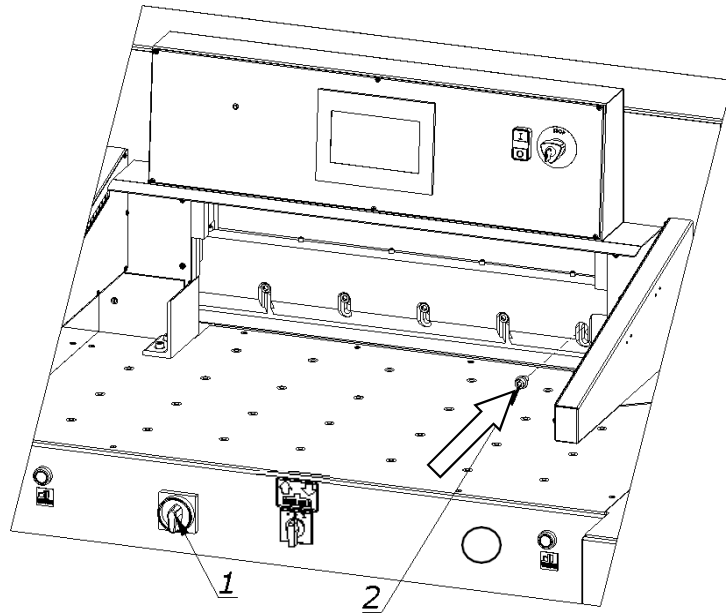


Figure 34.

8.1.2.11. Screw in the bolt (2) lightly (Fig. 34)

8.1.2.12. Unscrew the fixing screws (4, fig.35) so that the knife falls under its own weight on the base bar with its entire length.

8.1.2.13. Tighten the adjustment screws (5, fig. 35) as far as they will go, so that the blade of the knife is cut into the slat, approx. 0.3 mm.

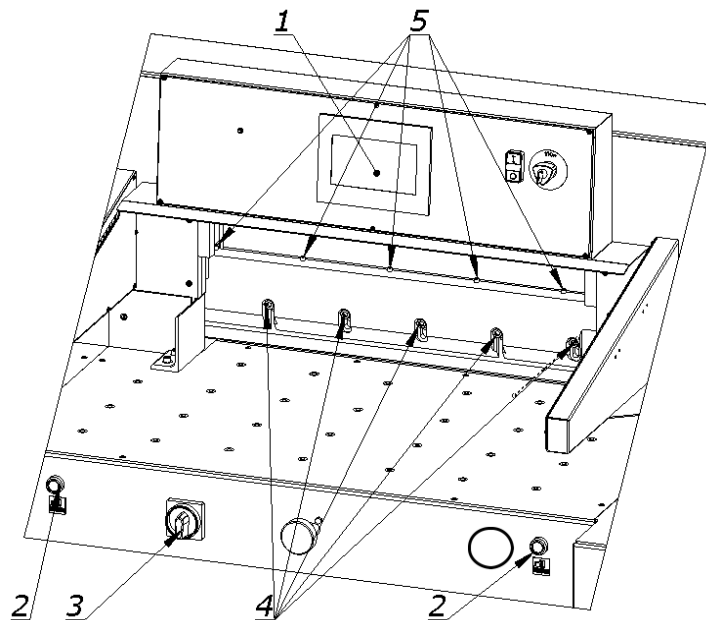


Figure 35.






## WARNING

**Performing cuts too deeply may result in shortened blade life!**

8.1.2.14. Tighten the mounting screws (4, fig. 35)

8.1.2.15 Switch on the power supply of the electrical system by turning the main switch knob (3, fig. 35) to position "I".

8.1.2.16. Switch off the "knife change" function on the touchscreen (1, fig.35)

8.1.2.17. Press simultaneously the push buttons (2).  The knife will return to its upper position.

8.1.2.18. Turn off the power supply of the electrical system by turning the main switch knob (3, fig. 35) to the "0" position

8.1.2.19. Firmly tighten the first screw on the left side of the knife (2, Fig. 32).

8.1.2.20. Turn on the power supply of the electrical system by turning the knob of the main switch (3, fig.35) to position "I"

8.1.2.21 Turn on the power supply to the control system by pressing the green push button (3, fig.23).

8.1.2.22 Carry out a cutting test.

If the knife does not cut the pile to the last sheet, repeat steps 8.1.2.7.

8.1.2.23 Fix the cover (2) with the screws (1, fig. 36)

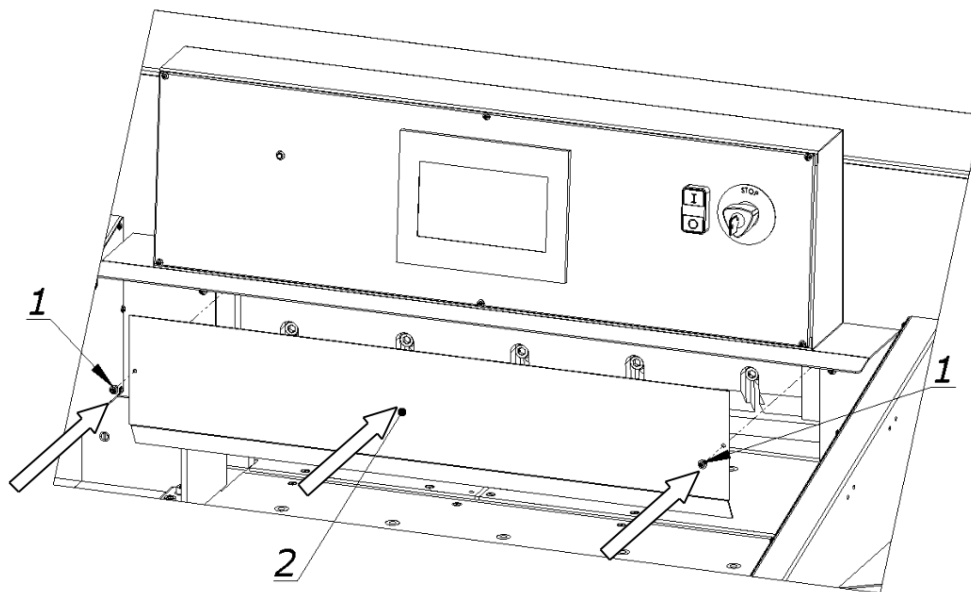


Figure 36.

## 8.2 Reversing or replacing the cutting sticks

**Danger!**

**Risk of injury!**

The cutting quality of the bottom sheets in a stack and the speed of blunting of the knife depend to a large extent on cutting stick. Replacing or reversing the cutter stick (bar) is recommended after each knife change or in the event of breaking (not cutting) the lower sheets.



**WARNING**

**The channel between the tables into which the cutting stick is inserted must always be clean.**

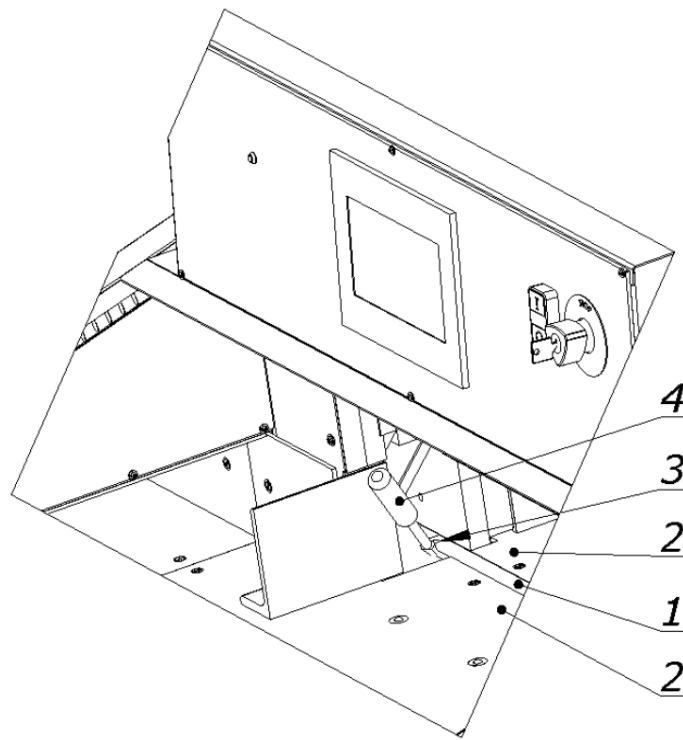


Figure 37. The method of removing cutting stick

1. Cutting stick (1)

2. Table (2)

3. Fixing pin

4. Screwdriver

8.2.1 Lift the stick (1) with a screwdriver (4, fig. 37)

8.2.2 Rotate or replace stick

8.2.3. Introduce the replaced stick into the channel between the tables (2) and place it on the dowel (3, Fig.37)

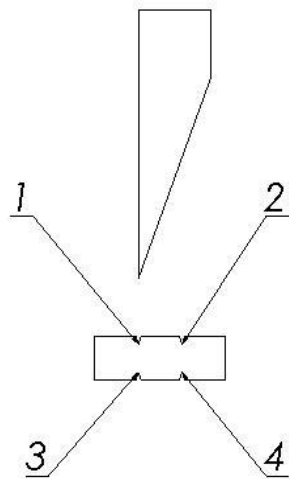


Figure 38. Diagram of the use of the cutting stick

Rotation of the cutting stick in both planes gives the possibility of obtaining four lines of contact with the knife, marked in Figure 38 as 1, 2, 3, 4.

### 8.3 False clamp

Using the False Clamp insert under the clamp pressure bar prevents the appearance of unsightly impressions of the clamp on the material to be cut.

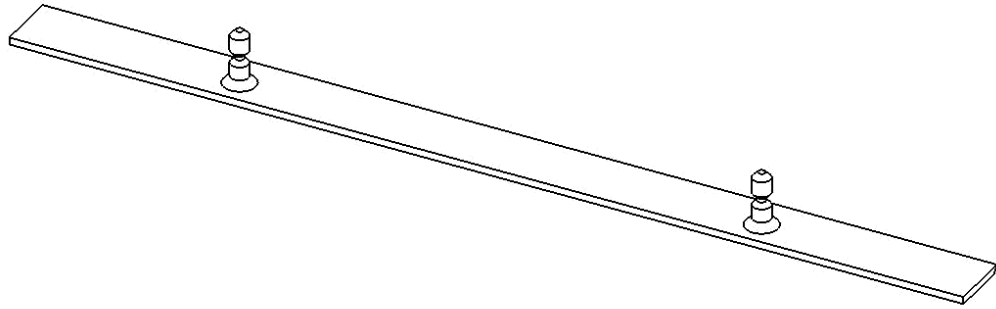


Figure 39. False clamp (pressure bar)

The False Clamp (Fig. 39) is stored under the front table in the place shown in Figure 40.

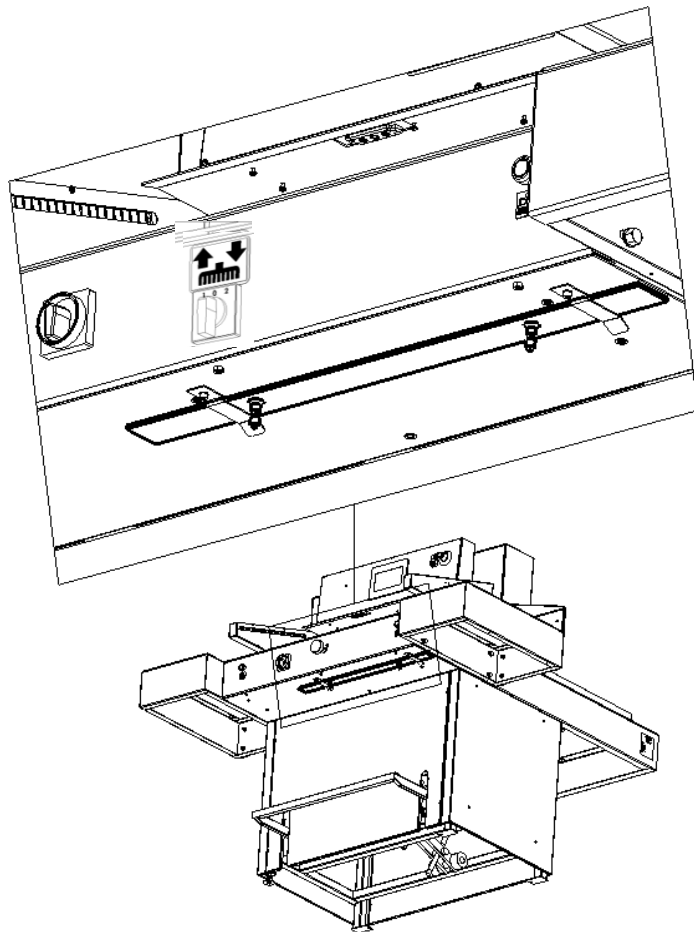


Figure 40. Storage location of the False Clamp when not in use.



**Danger!**



**Risk of injury!**

**In order to mount the insert in the pressure bar:**

8.3.1 Put the insert (1, Fig. 41) under the clamp/pressure beam so that the insert pins are under the holes in the pressure beam.

8.3.2 Pressing pedal (2, Fig. 41), bring the clamp/pressure beam down so that the insert pins hit the holes in the beam and the insert adheres the entire surface to the bottom surface of the beam.

8.3.3 Use a 3-mm hexagonal key with 3 mm to firmly attach the screws (3, Fig. 41) into the threaded holes in the clamp/pressure bar, causing the insert to be locked in the clamping beam.

8.3.4 Release the pressure on the pedal (2, Fig. 41) - the clamp/beam with the installed insert returns to the upper position

**The removable insert must be re attached under the front table! (Fig. 40).**



**If the False Clamp is not stored in its designated location, the cutter will act as if it was mounted in the clamp/pressure bar and will affect the waste paper dimensions (it will be greater). There is a sensor in the clamp storage location. Mounting the False Clamp insert into the pressure bar causes; the minimum cutting width is 40mm (22mm without insert), maximum stack height is 76mm (80mm without insert).**

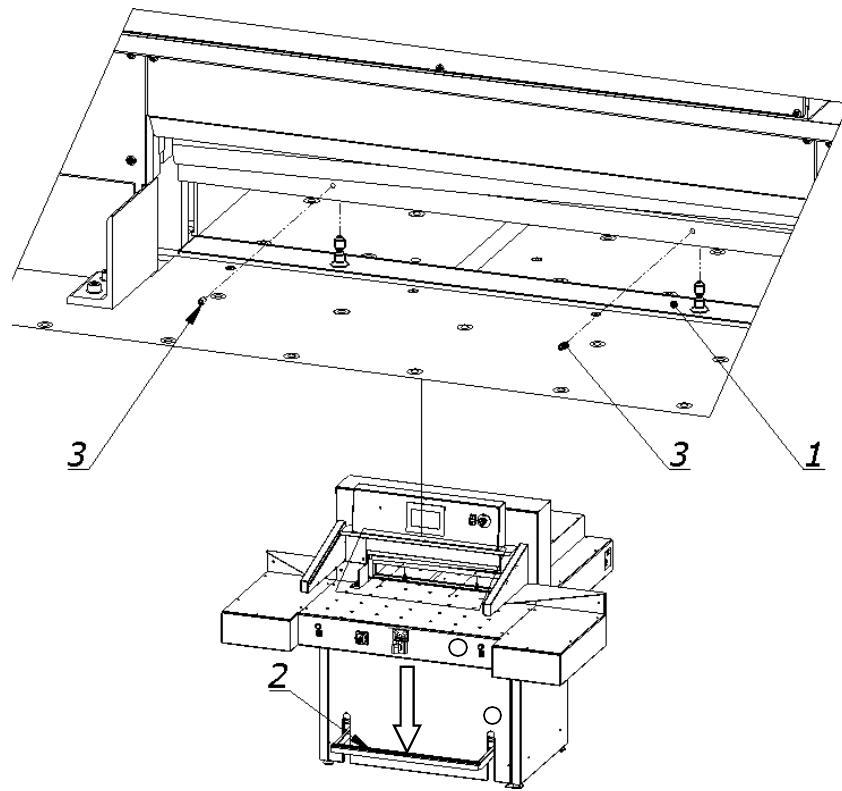


Figure 41. Operating elements used when mounting the False Clamp insert in the pressure bar.

## 8.4 Adjusting the parallelism of the backgauge beam

Depending on the required inclination of the backgauge beam, it must be adjusted using drawings 42 and 43.

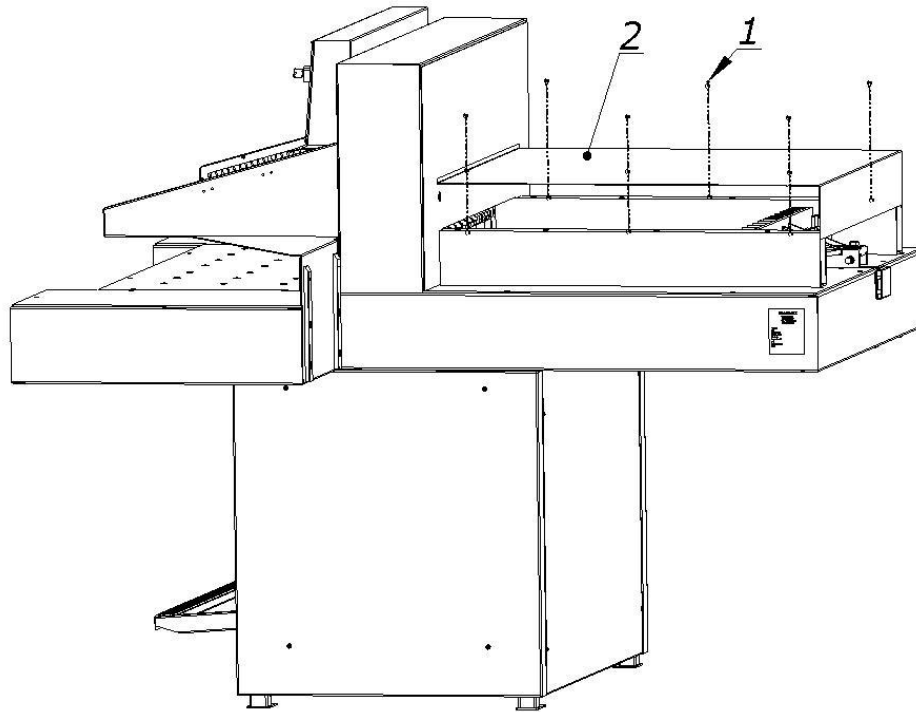


Figure. 42 How to remove the cover

To adjust with the backgauge:

8.4.1 unscrew the screws (1, fig.42)

8.4.2 remove the cover (2, fig.42)

8.4.3 loosen the screws (1, Fig. 43)

8.4.4 loosen the nuts (2, fig.43)

8.4.5 by turning the screws (3), place the backgauge (4, fig. 43) at the right angle

8.4.6 lock the adjustment screws with (3) nuts (2, fig. 43)

8.4.7 firmly tighten the screws (1, fig.43)

After ttesting the cutter, repeat the adjustment until parallel cutting is achieved.

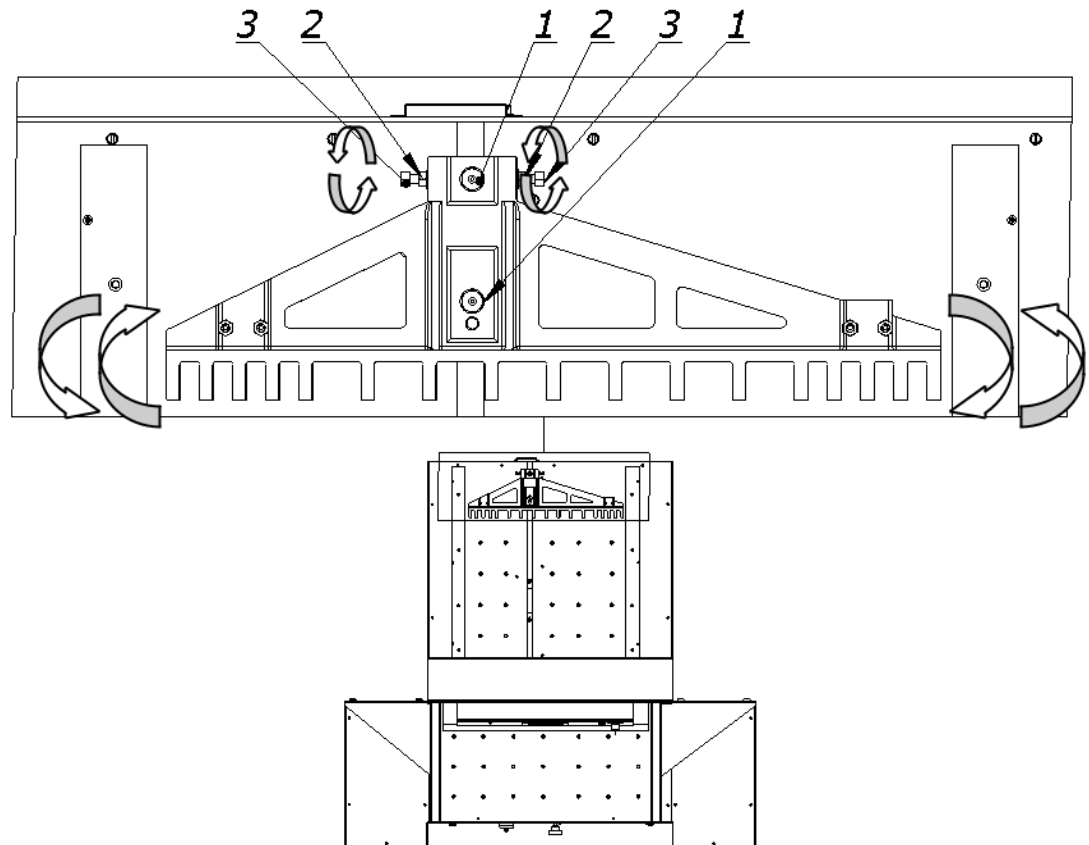


Figure 43. Elements of the backgauge



## 9. MAINTENANCE



**Danger**

**Maintenance and lubrication work should be carried out after turning off the machine (main switch in position "0")**

### 9.1 Daily maintenance

Every day, remove all waste from the cutter and the operator's working space.

### 9.2 Maintenance that should be performed periodically

At regular intervals, waste and dirt should be removed from hard to reach machine and surrounding areas:

- Regularly remove paper waste from the clamp and knife drive holes
- Air intakes for motors must be kept free of dust and debris.



**Danger**

**Caution- fire hazard with insufficient ventilation.**

**The machine guards must be put back into place immediately after maintenance work has been completed!**

### 9.3 Lubrication

The list of lubrication points is shown in Figures, 46, 47, 48,49, 50 and described in table 10.

Access to lubrication points is possible after removing the covers shown in Figs. 44, 45, 48, 50

When lubricating the knife assembly, use the controls as when changing the knife (chapter 8.1)

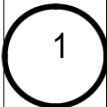
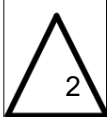
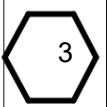
Lubrication of the side surfaces of the guides as well as the surface of the knife body

in contact with the guides should be carried out in the upper (Fig. 46a) and lower position of the knife body (Fig. 46b). Lubricate recommended places on both sides of the cutter.

In places requiring lubrication with a grease, apply grease with a grease gun. It is enough to press the trigger of the lubricator 2-3 times.

**The indicated places should be lubricated once a week!**

Table 10. List of lubrication points of the cutter mechanisms

Sign	Cutter mechanism	Lubricant type	Lubrication spot	Fig.
	Knife mechanism	Grease	<ul style="list-style-type: none"> <li>• Side surfaces of the guides (in contact with the knife body)</li> <li>• Internal surfaces of guides (in contact with rollers)</li> <li>• Side surfaces of the knife body</li> </ul>	46a, 46b
	Backgauge mechanism	Oil	<ul style="list-style-type: none"> <li>• guide roller (apply a thin layer of oil.)</li> <li>• lead screw (apply a thin layer of grease)</li> </ul>	47 48
	Clamp mechanism	Grease	<ul style="list-style-type: none"> <li>• shoe beam slides</li> <li>• shaft bearings</li> <li>• surface of the lead screw</li> <li>• sliding bushes of the pressure mechanism</li> </ul>	47 49 49 49

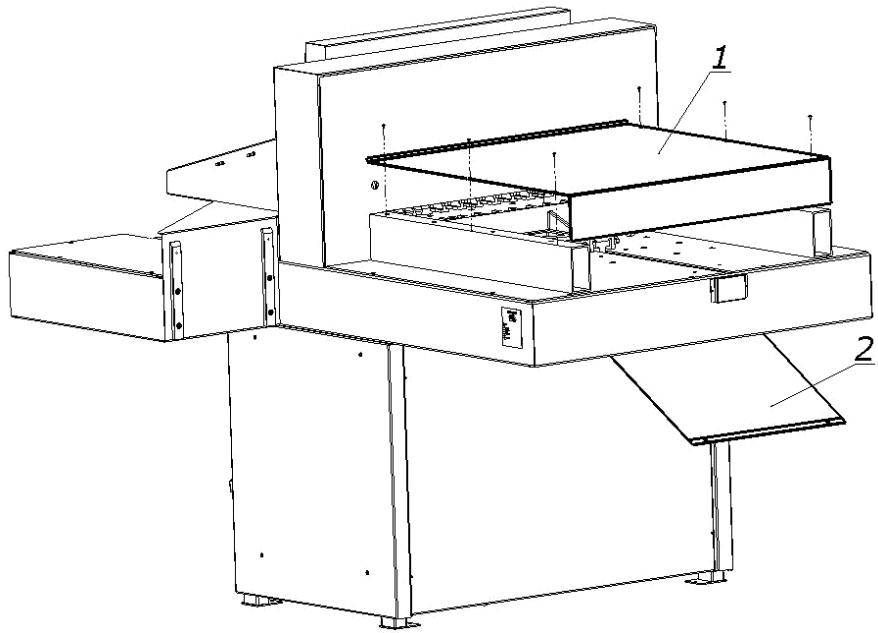


Figure 44. Cover for the backgauge (1) and lead screw (2)

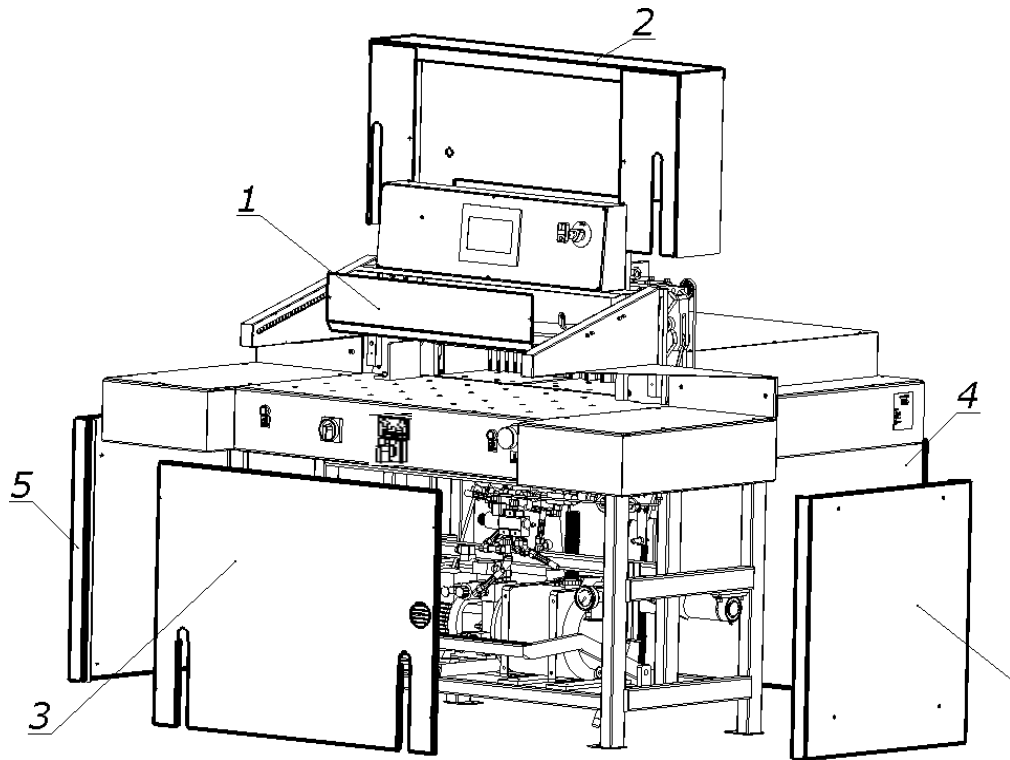


Figure 45. Base frame covers

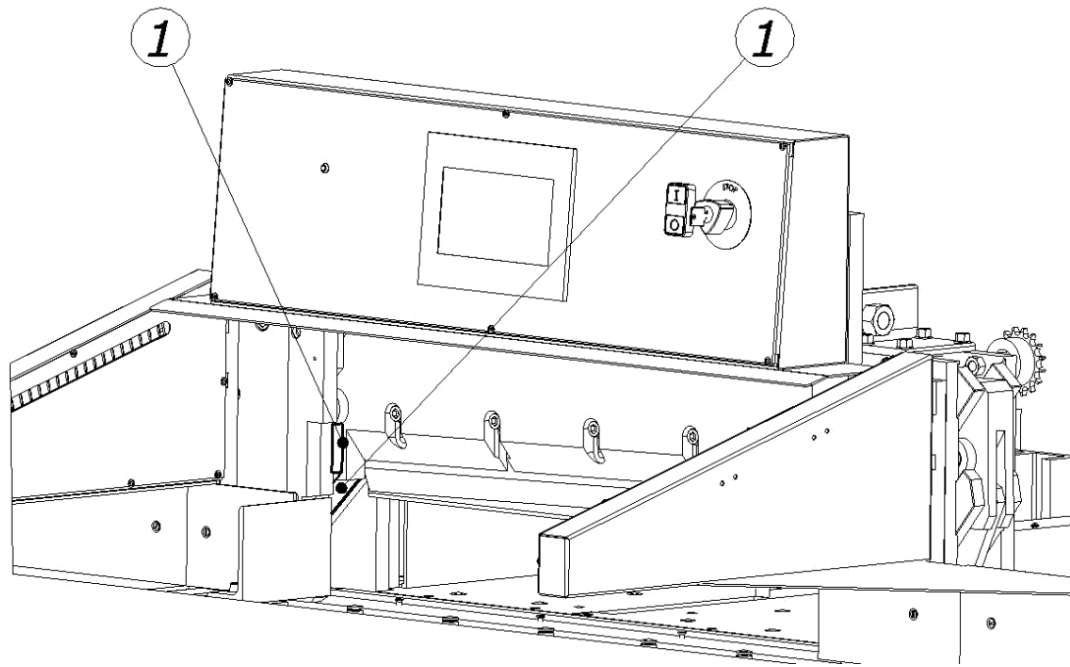


Figure 46a. Space for lubrication of the knife assembly in its upper position.

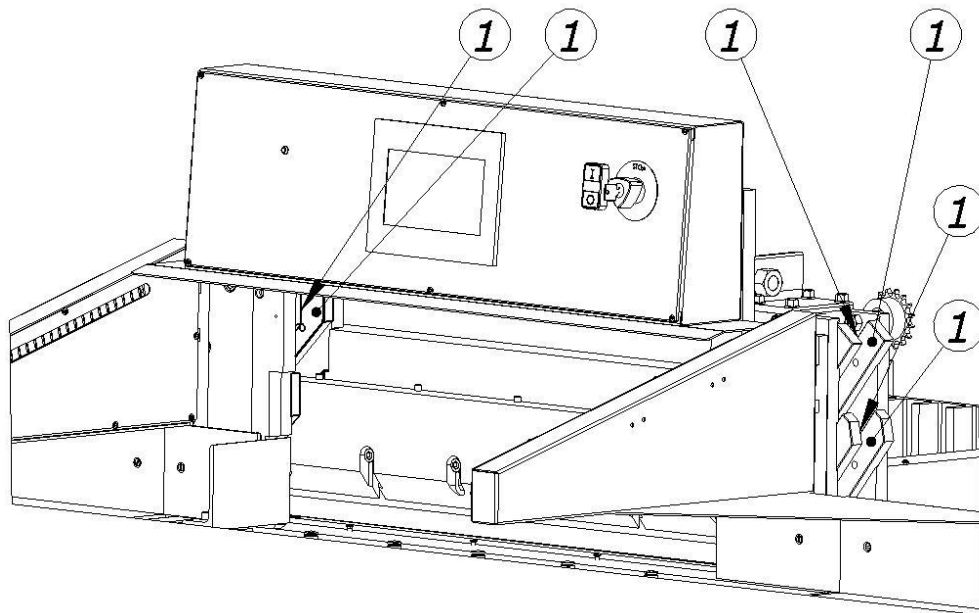


Figure 46b. Space for lubrication of the knife assembly in its lower position.

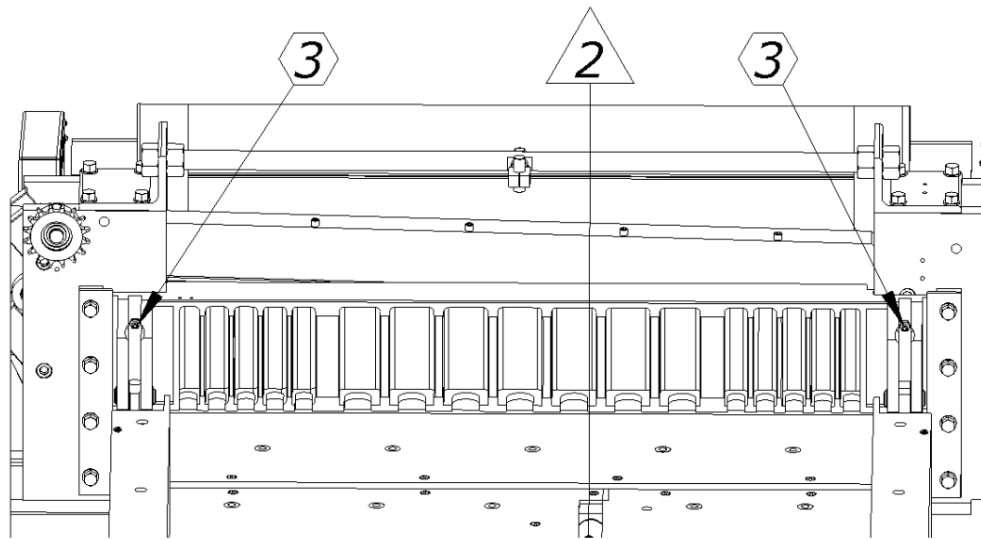


Figure 47. Lubrication space of the pressure beam (3), guide shaft of the backgauge mechanism (2)

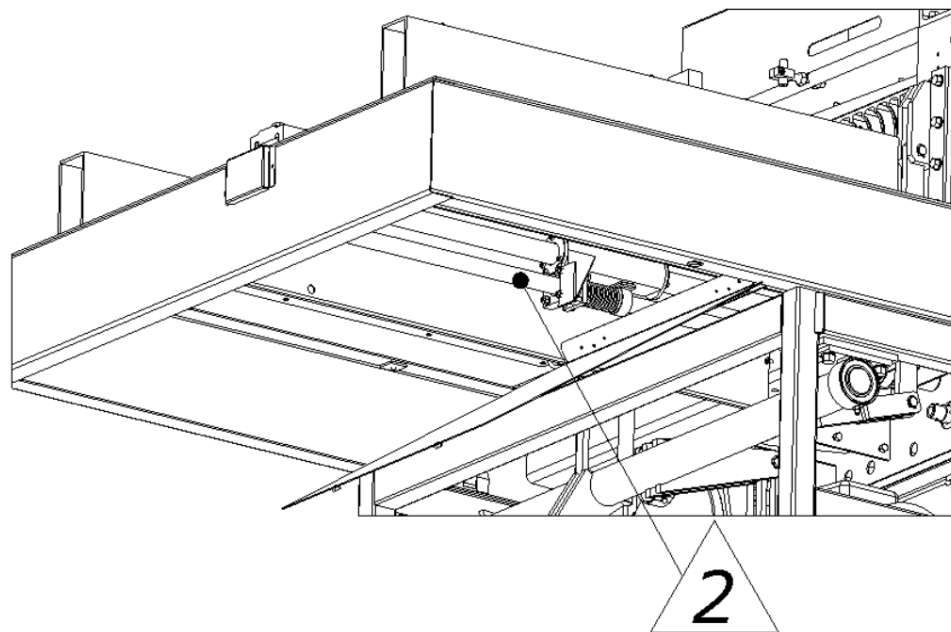


Figure 48. Lubricating point of the lead screw.

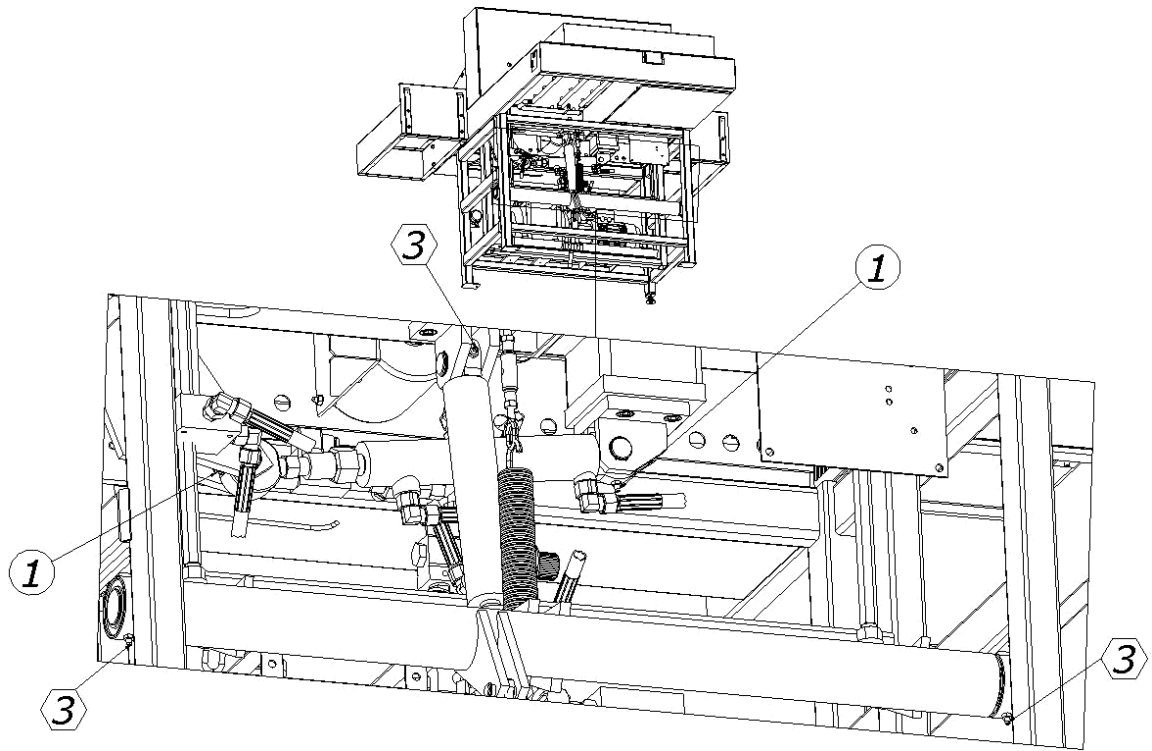


Figure 49. Lubrication point of the knife actuator (1), pressure cylinder and shaft actuator (3)

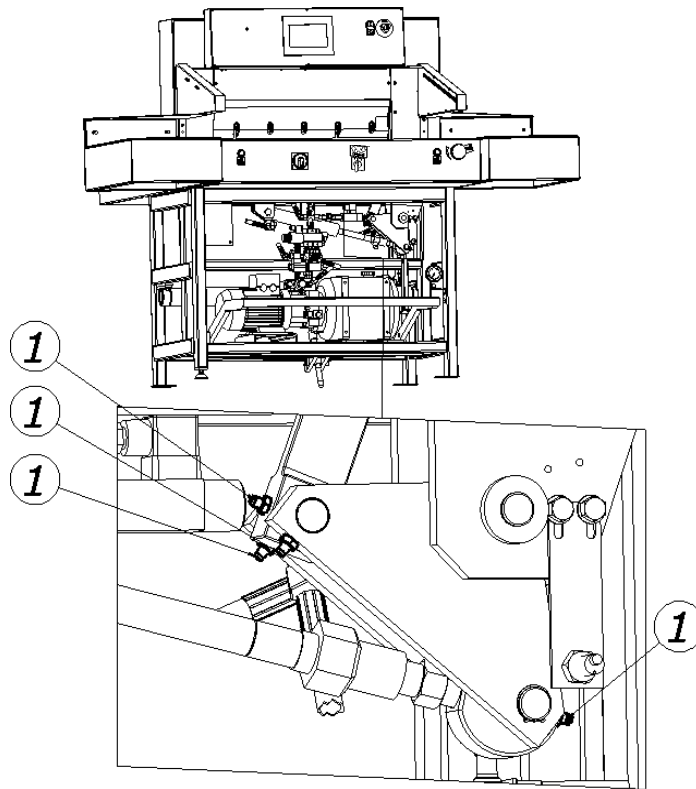


Figure 50. Lubrication point of the knife assembly lever.

## **9.4 Hydraulic power supply**

The overflow valve was set to 110 bar and sealed.

This setting can be checked using a manometer (included) by connecting it to the manometric connection.

Unauthorized change of the pressure value is unacceptable and causes the warranty for the aggregate to be lost!

### **9.4.1 Working conditions of Hydraulic power supply**

- ambient temperature of the unit from 5°C- 30°C,
- HV 46 hydraulic oil,
- dust free air,
- free air exchange for cooling,
- the hydraulic oil temperature must not exceed the specified value by the manufacturer of hydraulic oil,
- the aggregate is designed to work in a closed room, shielded against environmental influences, i.e. direct exposure to radiation solar, atmospheric precipitation,
- use in accordance with the principles of health and safety at work and fire regulations,
- the unit must be operated by a qualified and trained person staff

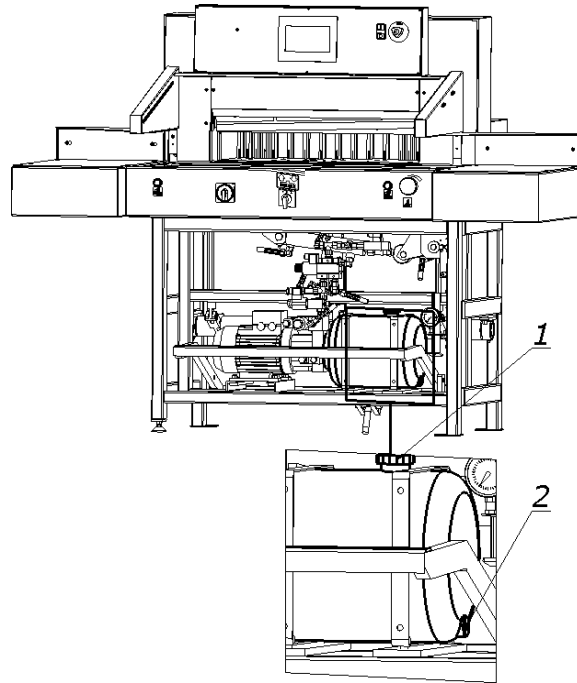


Figure 51. Oil change in the hydraulic system.

**Danger!**

**Danger of burns due to hot oil!**

**Danger of hydraulic oil splash!**

According to the recommendations of the hydraulic power supply manufacturer, the oil in it should be replaced after a year of intensive work.

To change the oil, unscrew the drain plug (2, fig.48) located in the bottom of the tank.

Old oil should be drained when it is still warm.

Fresh oil should be poured after first screwing in the drain plug (2) through the filling hole (1, fig. 51)



**Danger!**



**Risk of injury!**



After lubrication: Using a cloth, completely remove any excess lubricant (grease, oil), especially from surfaces which come into contact with media to be cut, this includes the work table surface, the knife body and the clamp/pressure bar.

## **9.5 Service**

### **9.5.1 General recommendations**

- After each shift change, clean the machine (mainly from paper dust)
- Pay attention to the cleanliness of contacts of control elements (contactors, connectors)
- Check the correctness of screw connections of the cutter elements and tighten the screws if necessary.

### **9.5.2 Checking hydraulic hoses**

Check regularly that the hose is not damaged or frayed, and check the oil level.

Recommended test criteria for hydraulic hoses:

- Damage to the inner layer (scratches, cuts, cracks)
- Snake deformation
- Leaks (on the surface of the hose, fixing)

The condition of the hoses should be checked at least every 12 months.

Replacement of hoses is recommended at least every 6 years.

### **9.5.3 Knife regeneration**

The quality and accuracy of cutting depends mainly on the sharpness of the knife and the right angle of its blade.

#### **Features of a blunt knife**

- rough and uneven surface of the sliced stack
- ticking the edge of the cut material
- inaccurate cutting
- increased formation of paper dust.

## **10. Failures**



**Danger!**

- Each fault carries a risk of injury to the operator or his assistant.
- If the cutter knife jams in the cut material during cutting, do not attempt to pull the material out from under the knife.
- Defects can be eliminated only by personnel with appropriate training.
- After completing the fault rectification, fit all covers and check that the individual protection devices are working properly.
- Performing repairs by persons who do not have the proper qualifications and proper training results in an immediate loss of the cutter warranty, and also releases the manufacturer and the machine supplier from liability for damage caused.

## **10.1 Determination of the causes of the fault**

Specify whether the vulnerability affects elements:

- electric
- mechanical
- touchscreen control panel

## **10.2 Basic procedures for removing various types of defects**

Electrical faults:

- check the compatibility of the direction the motor is turning
- check the fuses in the machine
- measure the voltage
- check that all connectors are tightened securely
- check if there are any failures at the same time in other machines in the plant

Mechanical faults:

- look closely at all moving parts
- check if abnormal noises occur during operation of the machine
- check if the machine has been damaged, no cracks or iron filings appeared on it