

FORMAX[®]

Cut-True 29H Hydraulic Guillotine Cutter

1. UNPACKING AND ASSEMBLY

The Cut-True 29H is shipped partially assembled and ready to use (Figure 1a).

The cutter's optional side-tables will need to be installed on-site, according to Figure 1b.

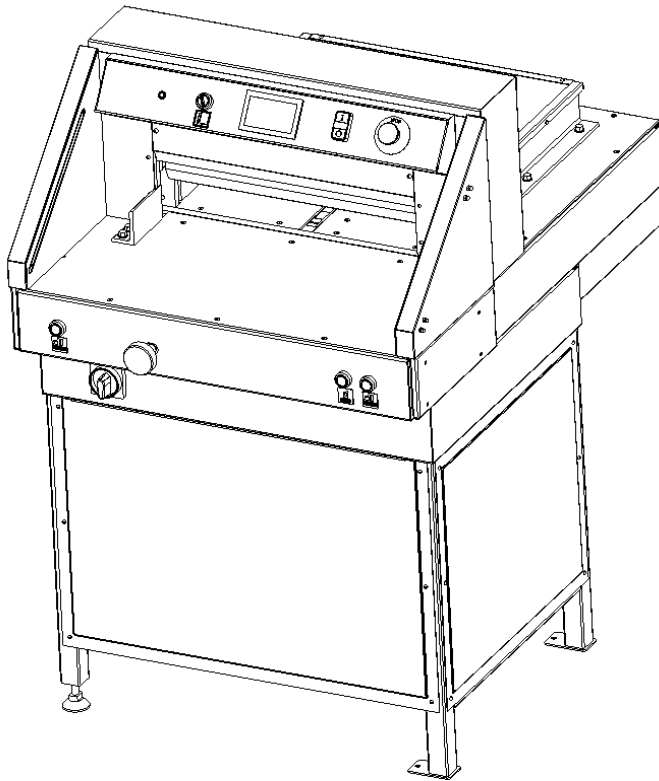


Figure 1a. Cut-True 29H without side tables

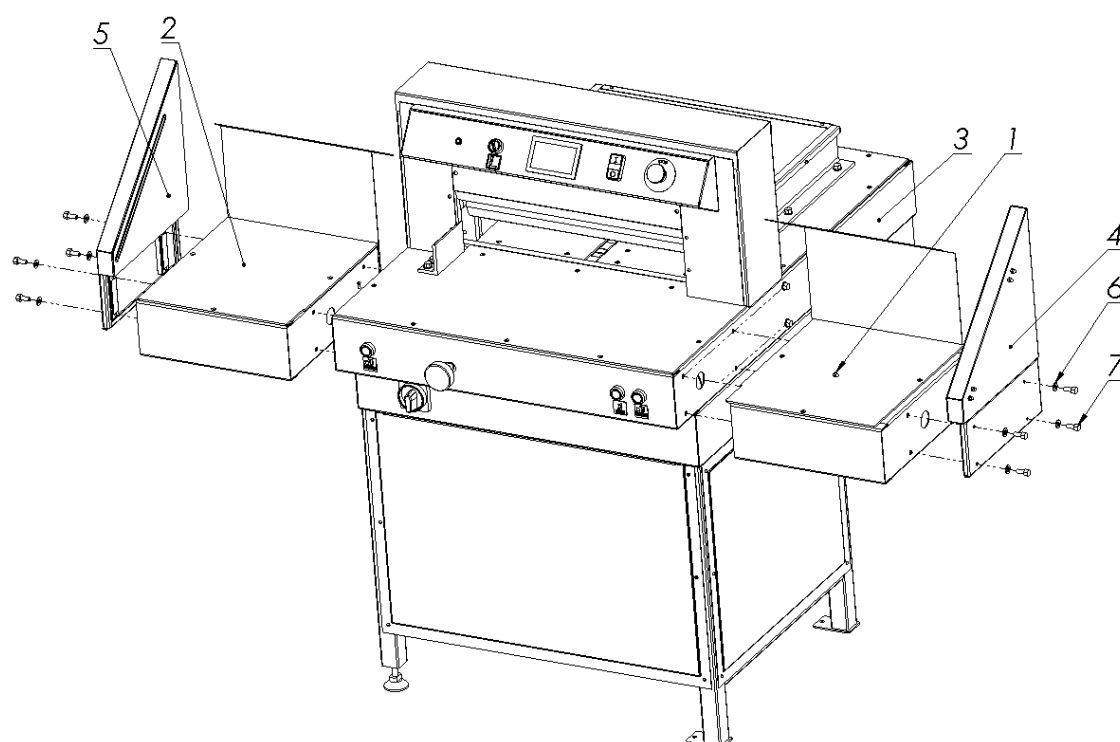


Figure 1b. Installation of side tables

1. Right side table
2. Left side table
3. Cutter body
4. LED safety curtain cover right
5. LED safety curtain cover left
6. Washers (4 per side)
7. Fixing screws M8 (4 per side)

Cutter positioning

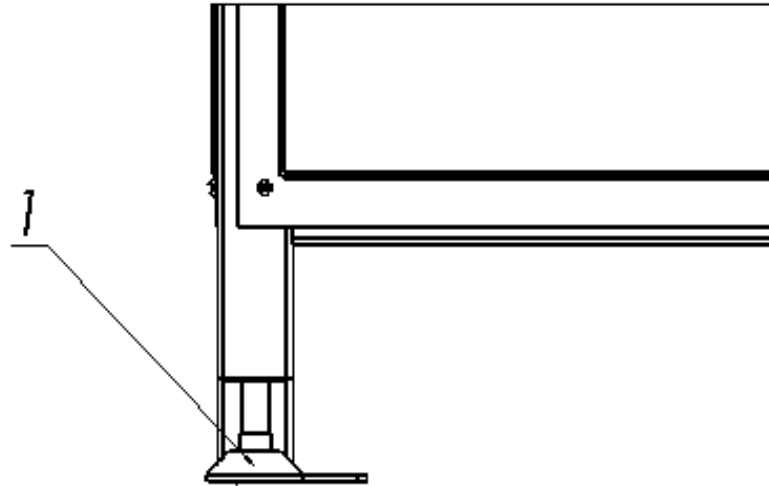


Figure 2. Leg adjustment

To position the cutter safely, adjust the leveling foot as shown in Figure 2.

Be sure to place the cutter on a solid, level surface. Keep the power cable away from walkways, to prevent a tripping hazard. Position the cutter so it's easy to operate safely, without requiring the user to reach an excessive distance or be in an uncomfortable position.

2. SPECIFICATIONS

The Cut-True 29H is designed to cut stacks of paper, cardboard and other materials - including plastic, foil, laminate, rubber etc - primarily in printing houses, bookbinding workshops and offices.

Chart 1.

		CUT-TRUE 29H
Maximum paper stack width (inch/mm)		20.5 / 520
Maximum paper stack height (inch/mm)		3 / 80
Functional depth of back part of pile (inch/mm)		20.5 / 520
Minimum cut (inch/mm)	With false clamp	2.4 / 60
	Without false clamp	1 / 30
Power of knife motor drive- hydraulic unit (kW)		1.5
Power of back gauge motor drive (kW)		0.18
Hydraulic unit capacity (l)		10.5
Net weight (pounds/kg)		1,014 / 60

External dimensions

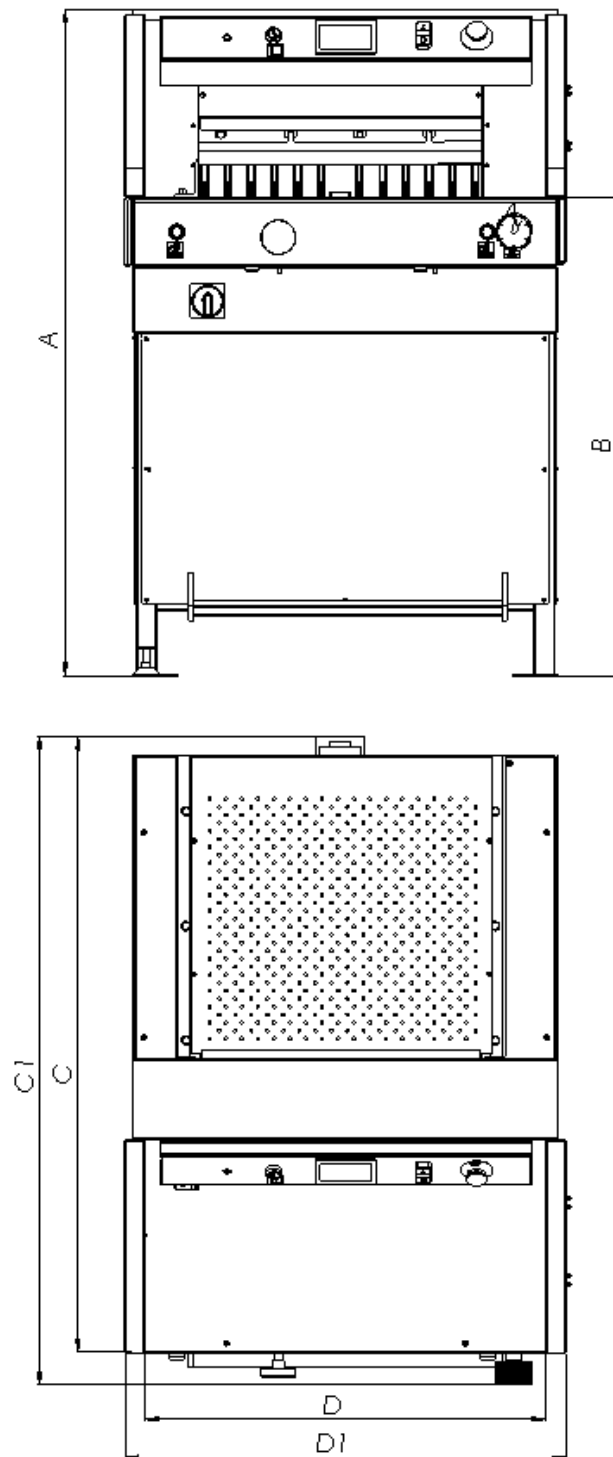


Figure 3a. External dimensions

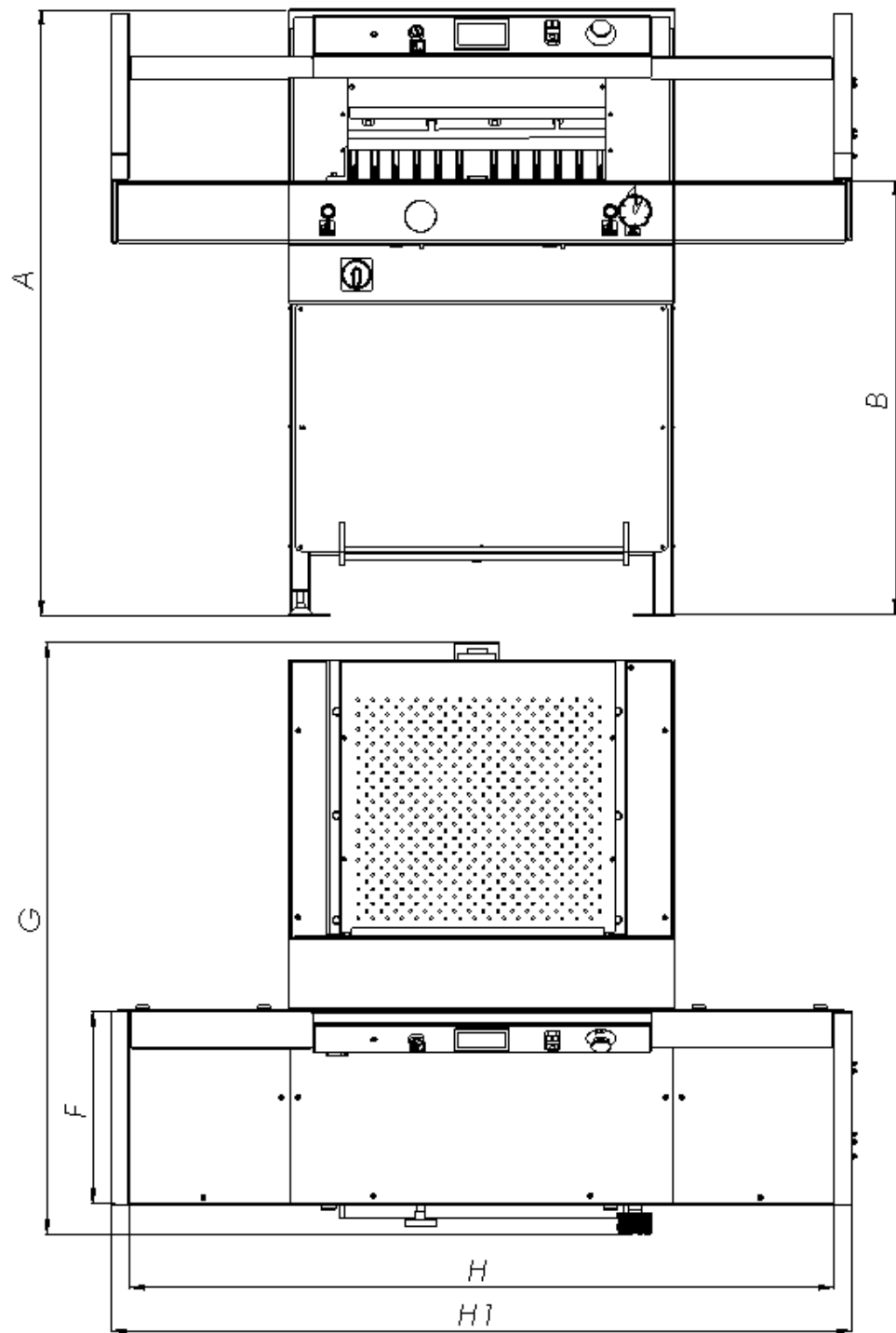


Figure 3b.

Chart 2.

DIMENSION	Value (inch/mm)
A	49.6 / 1260
B	35.5 / 900
C	51 / 1300
C1	54 / 1365
D	32 / 805
D1	34 / 865
F	16 / 400
H	59.25 / 1505
H1	62 / 1565

2.3 Construction

The cutter consists of 3 basic mechanisms: knife drive, clamping beam mechanism, and back gauge mechanism, plus other additional devices.

KNIFE DRIVE

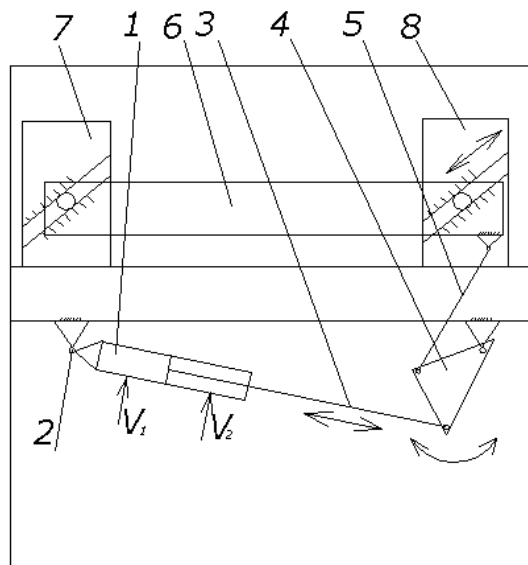


Figure 4. Kinematic mechanism of knife drive

The driving mechanism for the knife is shown in Figure 4. Hydraulic Double-acting Cylinder/Actuator (1) is fixed on the Knuckle (2). Piston Rod (3) is connected with the Levers (4), which are connected with Connecting Rod (5), which pull Knife Beam (6) together with the knife.

The Knife Beam (6) moves between the Slide Ways (7 and 8), in perpendicular plane to the work table's plane. Inclination of the slide ways at different angles allows inclination of the knife bottom edge at the same angle, when the knife moves down. It decreases the force required for cutting, improving cutting accuracy.

The knife is guided that in the bottom position the blade is parallel to the cutting stick and penetrates it up to 0.5 mm depth. Admission of the cylinder with the entry V1 causes the Piston Rod (3) to move and through the Lever (4), Knife Beam (6) lowers. After cutting material, admission of the cylinder with the entry V2 causes the Piston Rod (3) to return as Knife Beam (6) raises and stops in the top position.

CLAMPING BEAM DRIVE MECHANISM

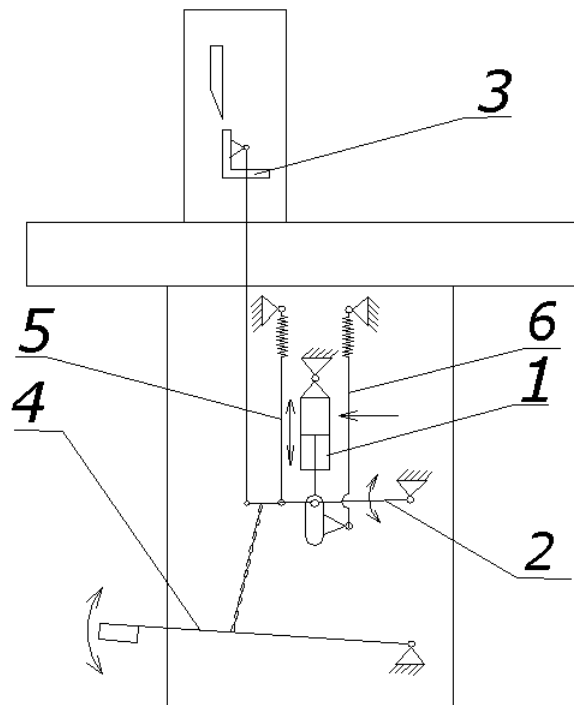


Figure 5. Kinematic mechanism of clamping beam drive

The driving mechanism for the clamping bar is shown in Figure 5. Hydraulic double-acting Cylinder/Actuator (1) through the Levers (2), pulls down the Clamping Bar (3). Clamping Bar is shifted in the slideways (not shown in Figure 5), which guarantees it's parallel to the cutting line.

Lowering the Clamp Bar (3) is possible also by pressing the Foot Pedal (4). Pushing the pedal moves the Beam into the lower position. Spring (5) causes the Clamping Bar to return to the original position. Spring (6) returns the Cylinder (1) to the start position.

BACK GAUGE DRIVE MECHANISM

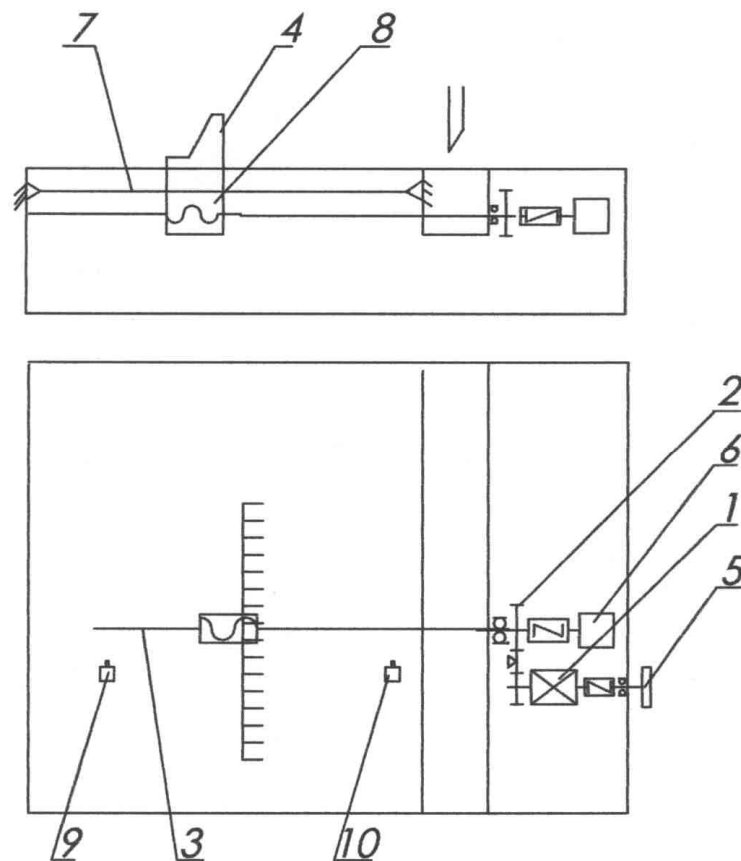


Figure 6. Kinematic mechanism of back gauge drive

Electric Motor (1) drives through Belt Gear Box (2) Lead Screw which, through the nut, moves the Backgauge Base (8). The base, with the Backgauge (4) attached to it, is moved on a Leading Shaft (7).

The Measuring Scale (6) is fixed to the Backgauge Base (8,) which makes it possible to

measure and check the position of the Backgauge with the use of the LED Cut Line (7). Two switches (9 and 10) stop the Backgauge in extreme positions. Precise setting of Backgauge is possible by using the Manual Crank (5). The Rotary Encoder (6) is connected with the Lead Screw (3) and allows for the measurement and display of the Backgauge position.

CONTROL SYSTEM

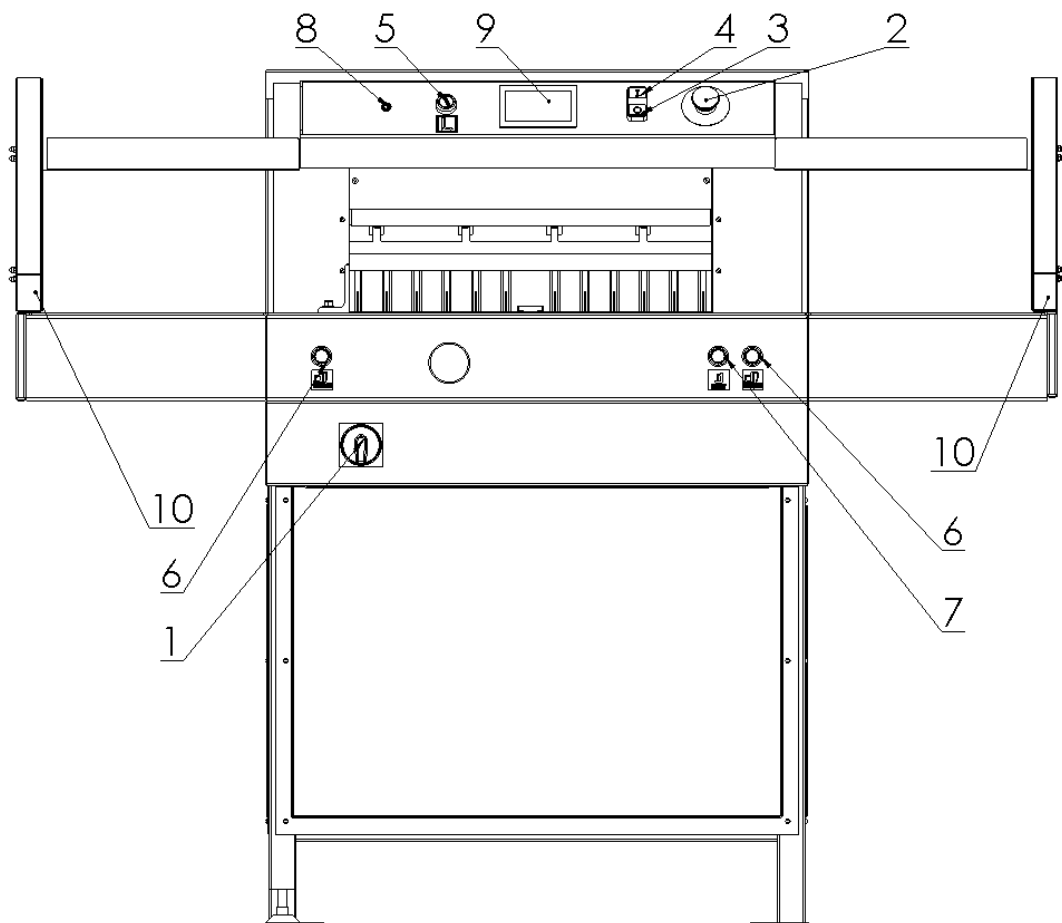
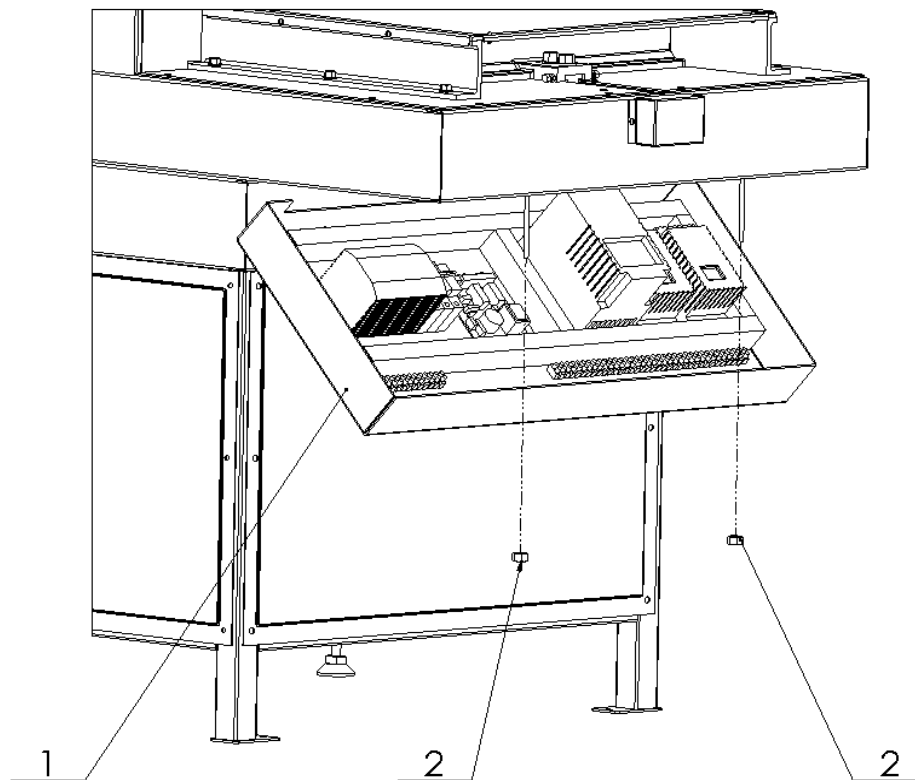


Figure 7.

1. The Main Power Supply Switch (1) has two possible positions and is used to disconnect the system from the power supply.
2. The Emergency Off Button (2) is used to lock the machine, which immobilizes the control system and inverts to disable the machine from running.

-
3. The Red Stop Button (3) locks the machine, which immobilizes the control system
 4. The Green Power Button (4) engages the control system.
 5. Blade Change Button (5) has 2 positions:
 - position "0" - normal work cycle (cutting)
 - position "1" - blade change
 6. Two-Hand Control Buttons (6) engage the cutting process
 7. Clamp Pressure Adjustment (7). Clockwise increases pressure, counterclockwise decreases pressure
 8. 2-Color LED Indicators (8):
 - Red color – the control system power supply is switched off
 - Green color – the control system power supply is switched on.
 9. LCD Control Panel
 10. Safety Light Curtain (photocells)

Electronic equipment is located in Casing (1) at the back of machine as shown in Figure 8. The casing is secured in the closed position by screws (2).



Drawing 8. Control system location

The settings of encoders are input by the manufacturer and should not be changed.

3. PROTECTION AGAINST SAFETY HAZARDS

3.1. Safety Hazards

Potential hazards which result from the machine construction and usage as well as safety solutions used to eliminate these hazards are shown in chart 3. Its location is shown on the drawing 9.

The cutter is one of the machines where the user's recurrent access to a dangerous clamp and cut zone is necessary.

To ensure the safety the machine has been equipped with both hands safe control and additionally with touch less protecting equipment – electro-sensitive, optoelectronic device (light barrier). Moreover the correctness of the knife stop in the

4.	Motor, lever system of the knife drive mechanism	- stable shield - front table	3,4 1 9 2	01.01.00 03.00.00 10.00.00 08.00.00
5.	Movement of the clamping beam	- stable shield - light barrier	1 7	03.00.00 14.00.00 16.00.00
6.	Movement of the backgauge	- stable chart	6	00.00.30
7.	Cutting zone	- both hands protecting device - light barrier - cam mechanism, controlling the knife stop in the top position	5 7 10	00.00.14 00.00.16
8.	Knife manipulation during its change	- transport holders - special protecting package		
9.	Sharp edges and corners of the cutter elements	- dulls and rounding		
10.	Rough, unequal surfaces	3. precise processing of details 4. varnish coat		
II ELECTRICAL				
1.	Direct touching of electrical elements	1. basic protection 2. electric equipment in housing	8	12.00.00
2.	Indirect touching	- additional protection - continuity of protecting wire		

3.2.Work safety rules

Safety using of guillotine depends on fulfilling at least some basic rules:

a) operator training – user has to be aware of potential danger, which he can meet during the work on the cutter

b) use of the machine is prohibited if:

- machine is used contrary to the use or/and cutting dimensions set in manual guide are exceeded

- the machine is broken

- at least one of the shields has been removed

- correct working of safety devices (two-hand steering device and photocells) has not been checked every time before using

c) clear description of the activities, which belong to machine's user in a factory do not belong and are reserved for skilled staff especially machine maintenance including electrical installation

d) conduction of the machine maintenance and repair only when the power supply is cut off

e) requirements mentioned above (b-d) should be mentioned during training and included in the working stand instruction

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4. PREPARATION FOR USE

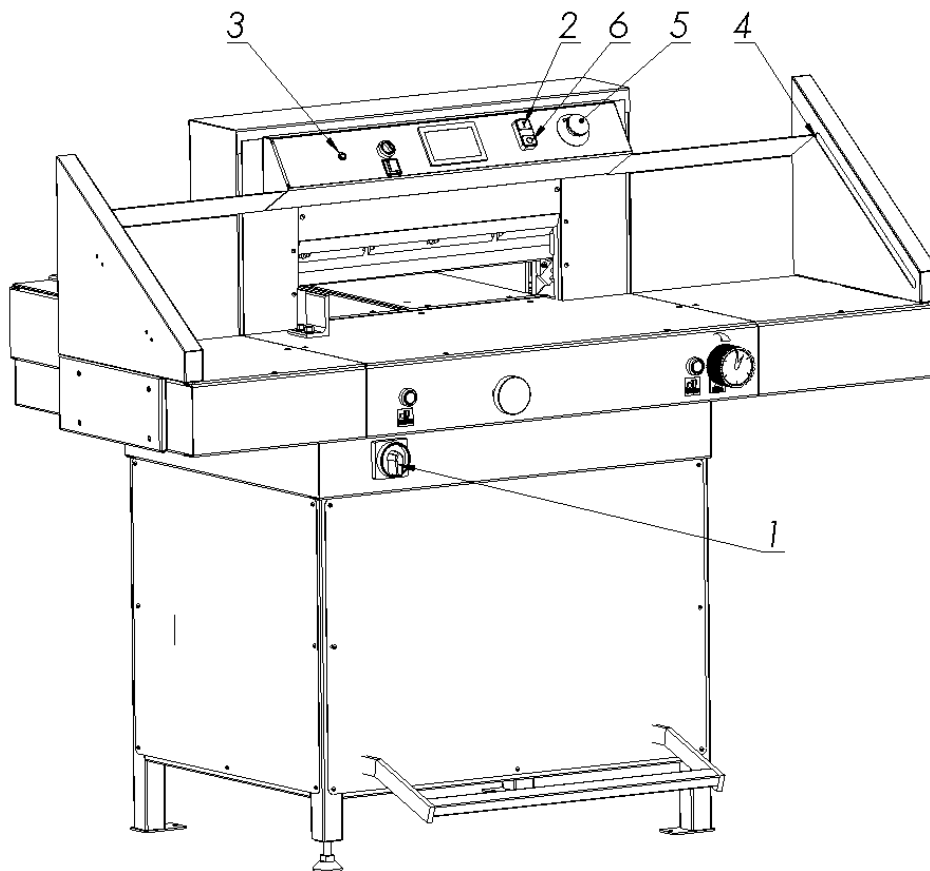
The operator is obligated to create on the machine working stand the conditions, which will eliminate the possibility of stumbling, sliding, falling down as a result of bad condition of background, the way the cables were lead or uncomfortable access to the machine.

4.1 Connection to the 230 V power supply

The cutter is delivered with 3-cable conductor copper with cable conductors 3 x 2,5 mm² cut finished with plug.

The user has a duty to install the machine to the power supply with 20A protection with the copper wire with cable conductor cut 2,5 mm² or more.

5. USING THE CUTTER



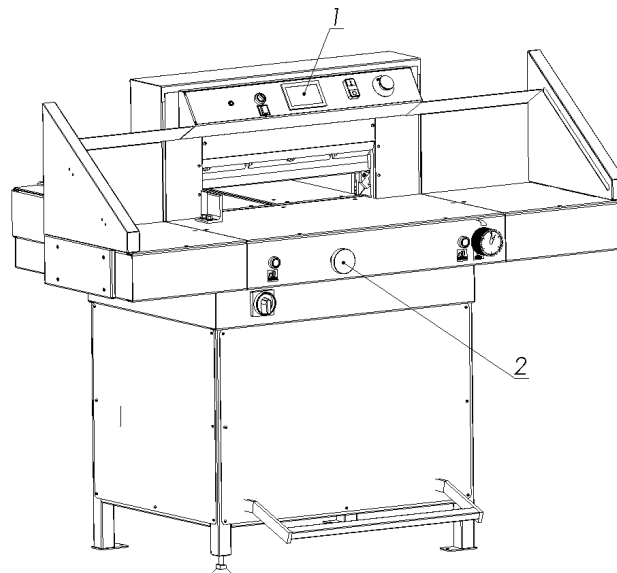
Drawing 10. Location of the elements used during switching the machine on

In order to switch the machine on, put main switch (1) into position 1. Then press the green button (2), which starts control system (green diode 3 will start to flash). If there is no object in the working area of the light barrier, green diode (4) will flash. If there is any object in the working area of light barrier, red diode (5) will flash. If the machine was previously stopped with red hand emergency button (6) (the button is pressed), in order to back the machine to work, turn the button (6) to unlock it and press the green button (2) "I". If the control system was switched off with the button (7) "O", it can be switched again on with the button "I"

5.1. Choose of the backgauge position

Backgauge position can be chosen by the control panel (1) or hand wheel (2) from the drawing 11. Please check separate program module manual to see how to choose the position and how to use the control panel.

In order to choose the back gauge position with the hand wheel (2), press the wheel and start to turn pressed wheel to move the backgauge. Current backgauge position will be displayed on the control panel screen.

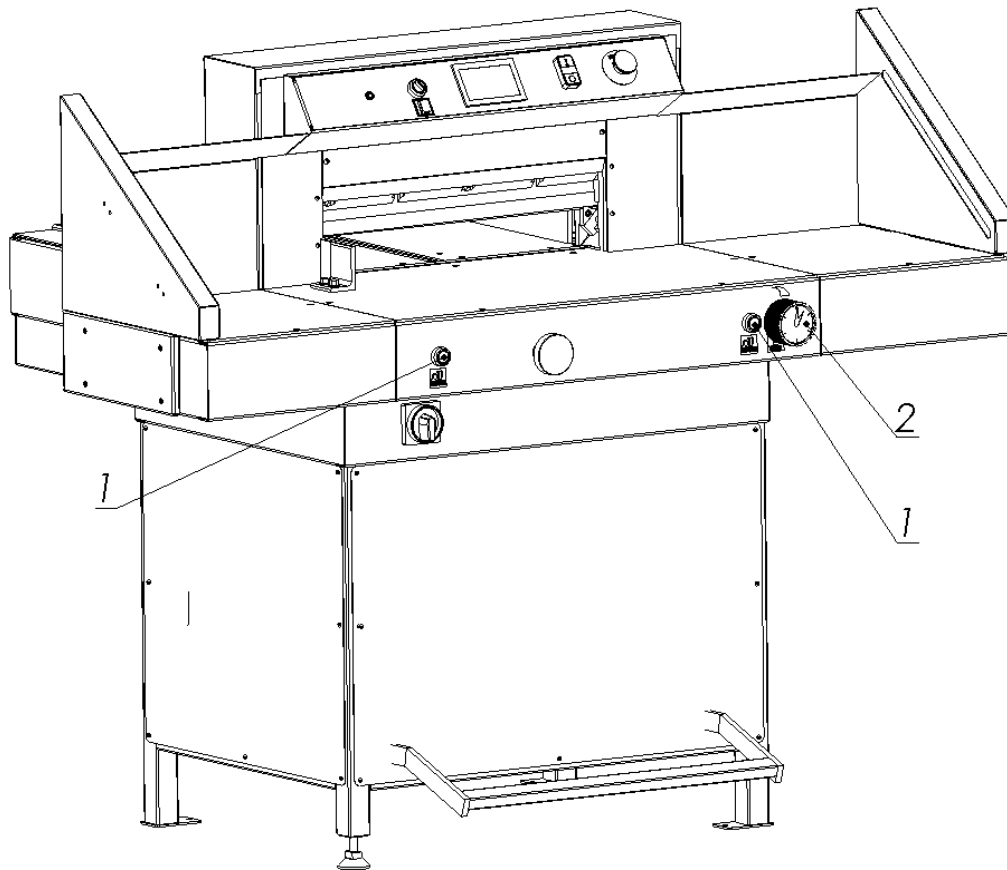


Drawing 11. Location of the elements for the backgauge position adjustment.

5.2 Clamping

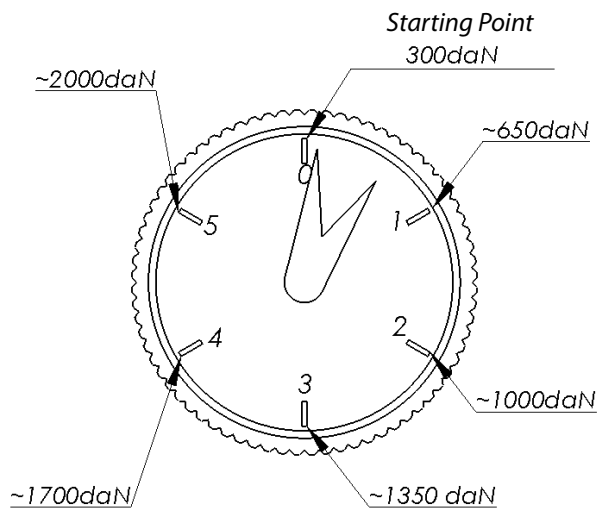
The cut material is being clamped automatically after pressing cut cycle buttons 1(drawing 12). Clamping pressure can be adjusted by crank 2 (d.12).

Rotating clockwise cause pressure increase and anticlockwise decrease.



Drawing 12. Location of the clamp pressure indicator

A value of this force is evaluated experimentally, relating to the sort, width and the height of the cut material.

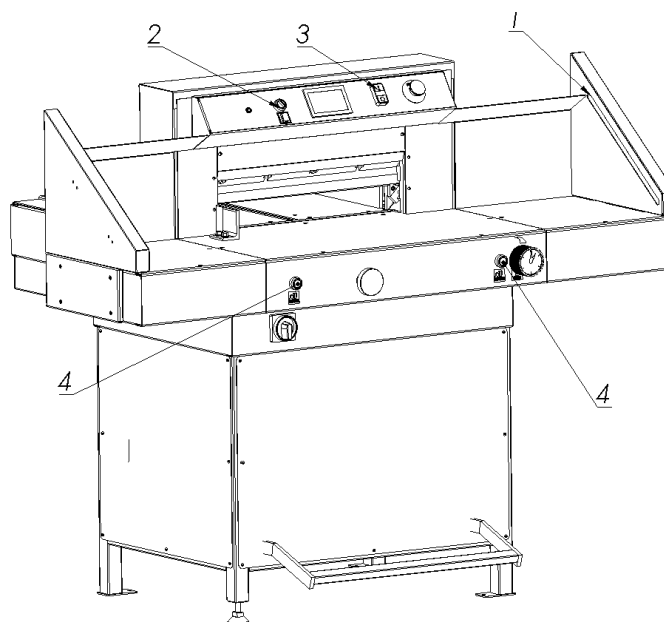


Drawing 12a.

Following rules should be respected:

- the taller the pile, the greater the clamping force
- the wider the cutting width, the greater the clamping force
- the harder the material, the greater the clamping force

5.3 Cutting



Drawing 13. Elements of handling and signalization used during cutting

Before cut, check if there is any object in the working area of light barrier, green diode (1) flashes, main switch (2) is in position “O” and the green button (3) is switched on. If yes, cutting cycle will start after pressing at the same moment both buttons (4). Before cutting, clamping beam will go down to clamp the material. Both buttons should be kept pressed till the moment the material will be cut. The knife as well as clamping beam will automatically go back to its top position.

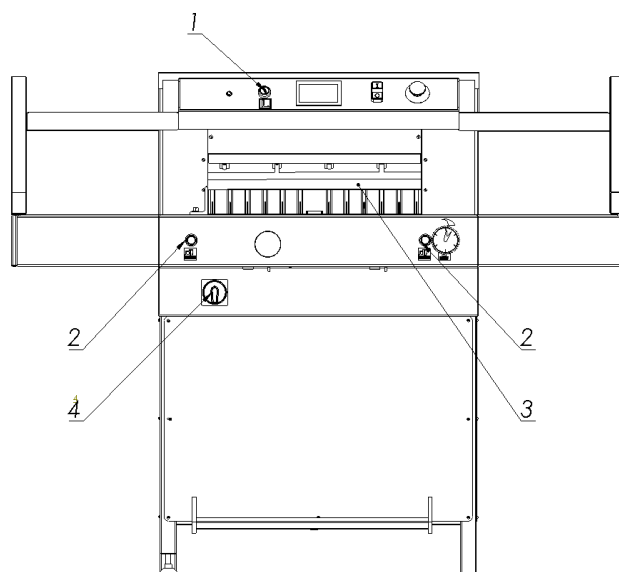
If both buttons 4 are released during the down move of the clamping beam and the knife, the blade carrier will stop. If the LED curtain beam is disrupted during the cut the clamp and knife movement will be stopped. In order to continue the cut, remove the object from the side light barrier working area and restart the cut.

6. OPERATING ACTIVITIES

6.1 Knife change

It is recommended to change or sharpen the knife after about 8 hours of use,

6.1.1 Removing the knife



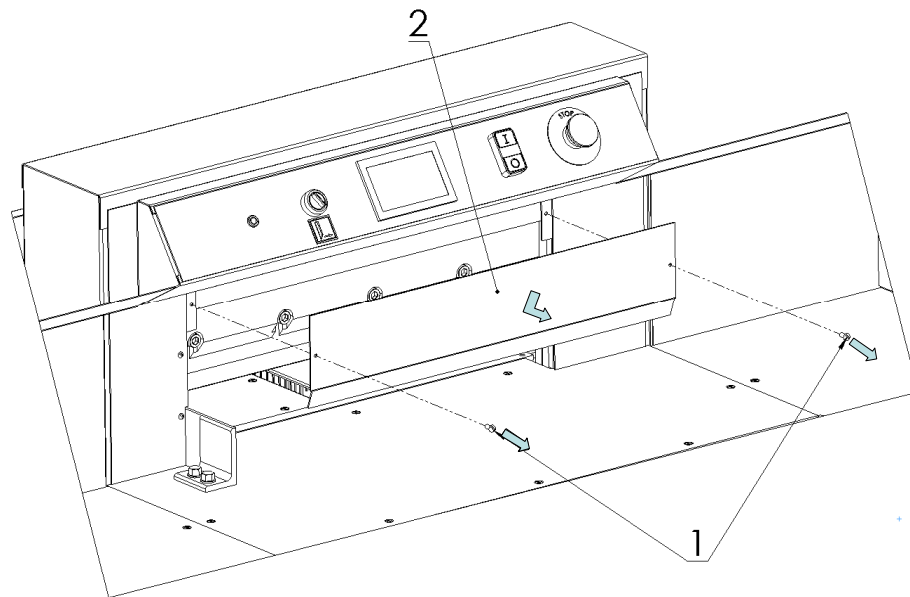
Drawing 14.

6.1.1.1 Rotary switch of the knife change cycle 1 (drawing 14) should be switched -

turned to “I” position.

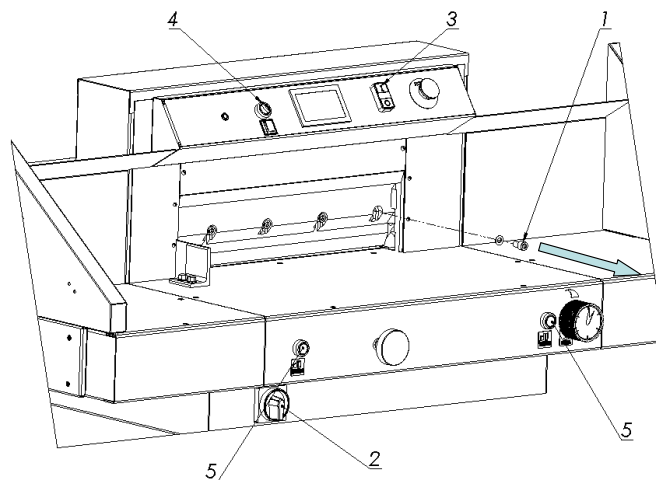
6.1.1.2 Press simultaneously both push-buttons 2 (drawing 14), starting the cutting cycle. The knife will stop in the lower position.

6.1.1.3 Switch-off the electric supply by rotating the main switch 4 (drawing 14) to “O” position.



Drawing.15

6.1.1.4 Unscrew screws 1 (drawing 15) mounting the cover 2 and remove the cover 2.



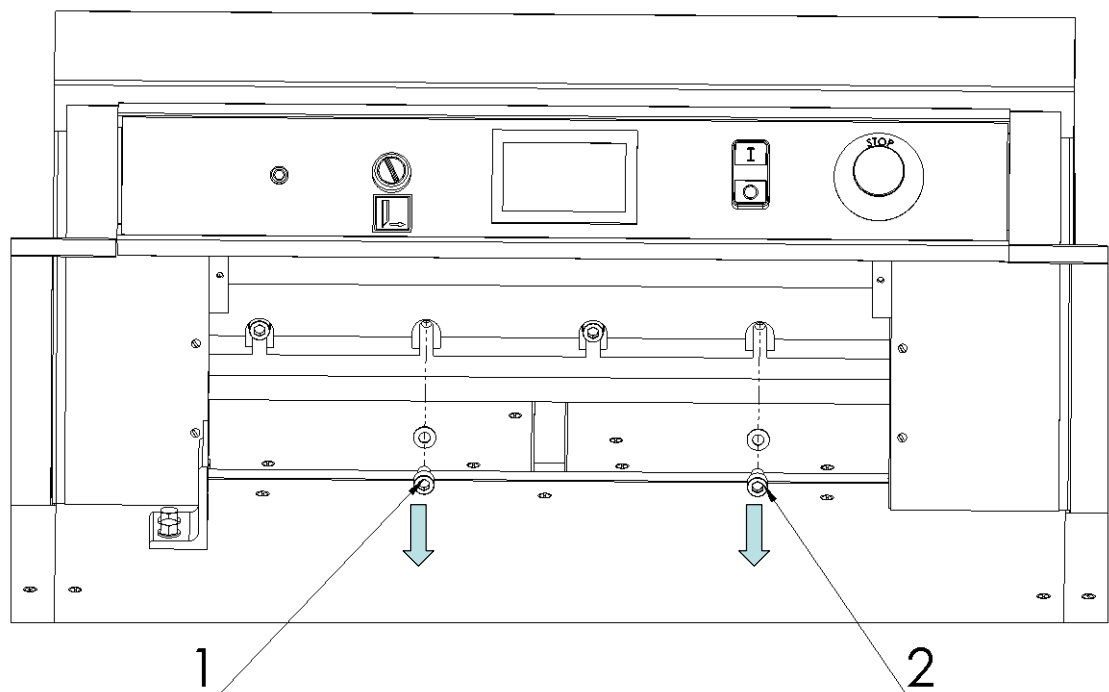
Drawing.16

6.1.1.5 Unscrew and remove the screw 1, the first one to right side of the knife bar (drawing 16).

6.1.1.6 Turn on electric system by rotating the main switch 2 (drawing 16) into position I. Turn on cutter system by pressing the green button 3.

6.1.1.7 Rotary switch of knife change 4 (drawing 16) put into O position.

6.1.1.8 Press simultaneously buttons 5. Knife move to its upper position.

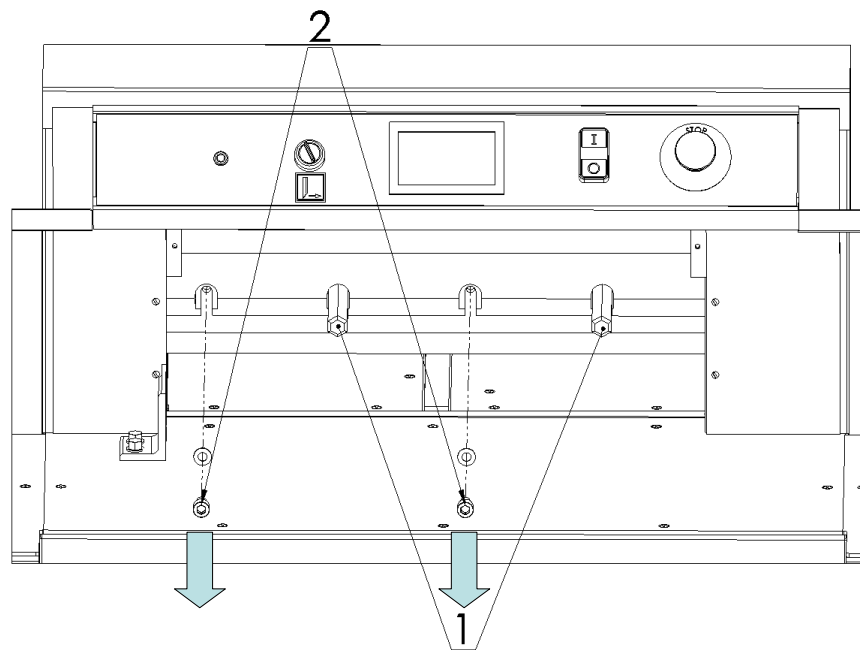


Drawing 17.

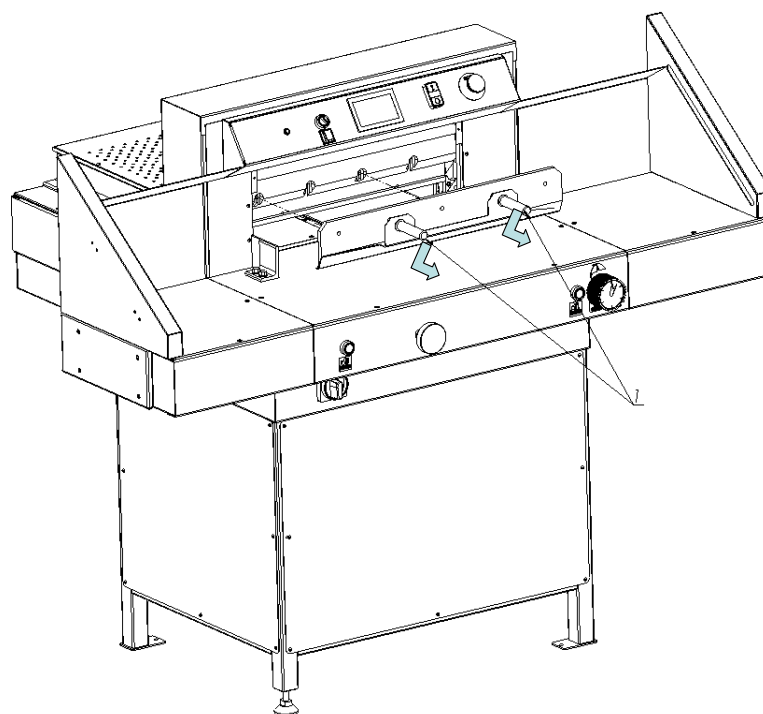
6.1.1.11 Unscrew and remove screws 1,2 (drawing.17).

6.1.1.10 Into the holes from which the screws 1 and 2 were unscrewed, 1 and 2, screw the transporting clamps 1 (drawing 18) which are an equipment of the cutter, so as to fix the knife to the knife

6.1.1.11 Unscrew and remove the remaining clamping screws 2 of the knife bar. (drawing 18).



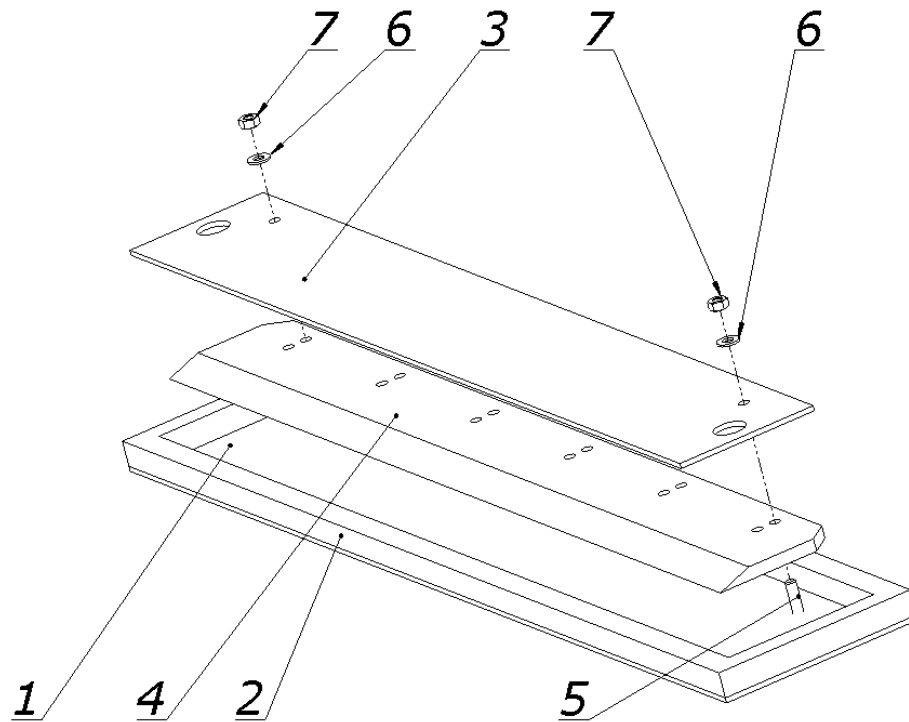
Drawing 18.



Drawing 19.

Holding with the transporting clamps 1, release a clip, by rotating them by $\frac{1}{2}$ turn to

left simultaneously, and put out the knife down with care. Place the removed knife into the special protective package (drawing 20), with the cutting edge to the inside, fix with two bolts, and unscrew the transporting clamps 1. For unscrewing the clamping screws of the knife to the knife bar, use Allen key (an accessory of the cutter)



Drawing 20. Knife package

1. Board
2. Frame
3. cover
4. knife
5. screws
6. washer
7. nut

6.1.2. Knife installation

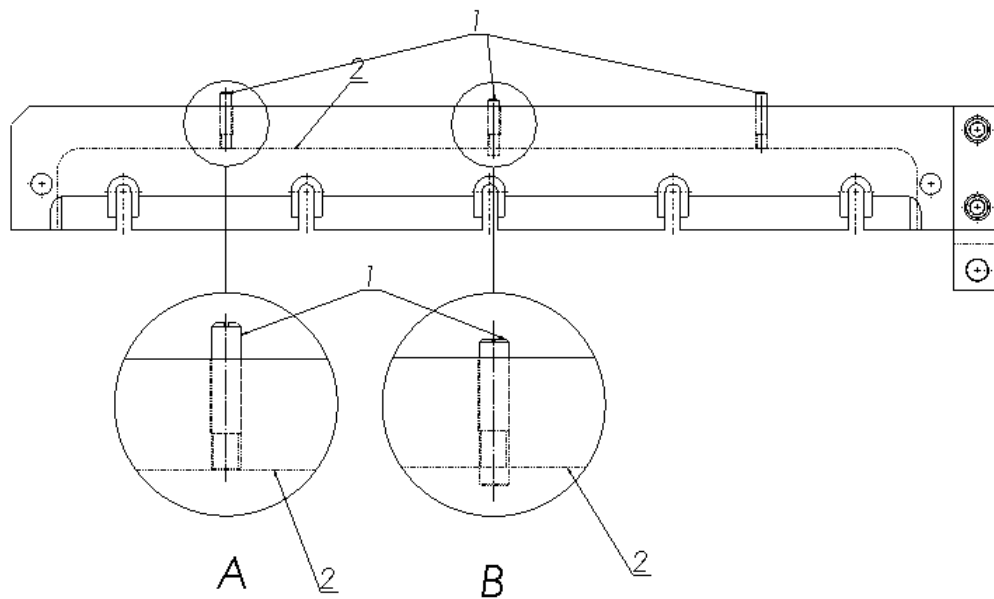
6.1.2.1. Unscrew all adjusting screws 1 /Drawing 21/, so that their faces are hidden into the knife bar body.

Drawing 21A – adjusting screw 1 is lower than knife bar lobe 2 – **correct position**

Drawing 21B- adjusting screw 1 is higher than knife bar lobe 2 – **incorrect position, screw must be unscrewed.**

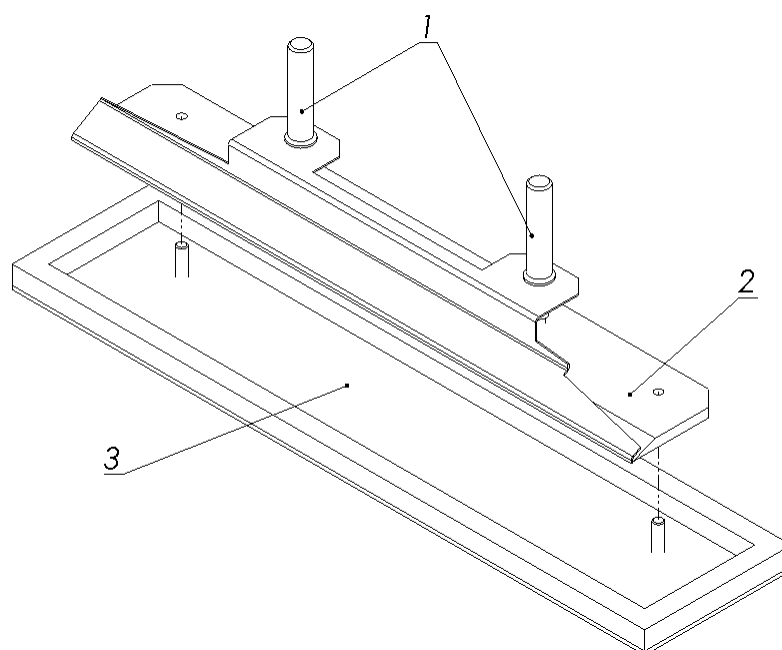
WARNING: The new knife must be supported by its upper edge on the knife bar.
Not obeying this rule may cause machine overload and possible damage if new knife is higher than the old one.

Note: to avoid the knife cutting edge dent by the table surface, put a strips of cardboard or similar.



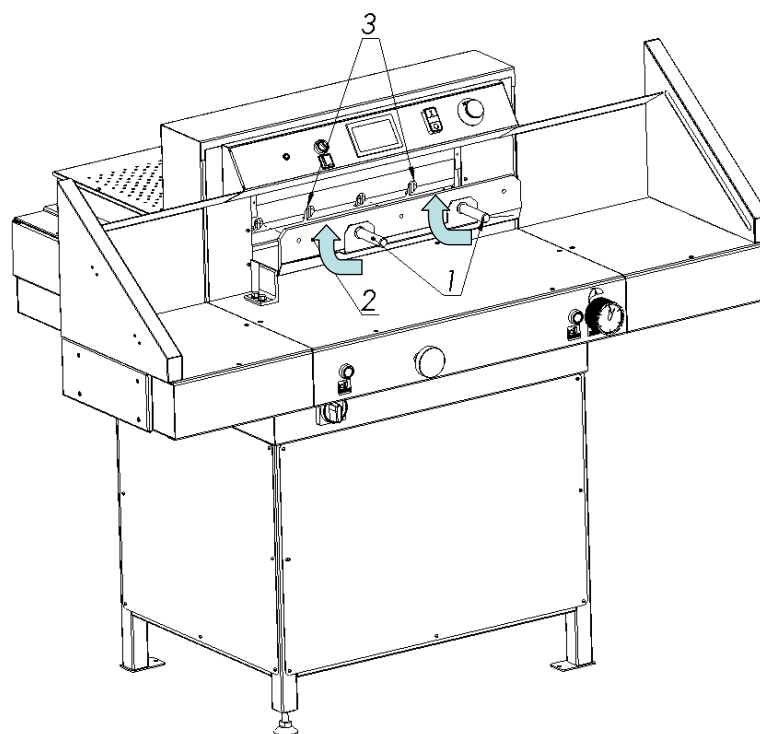
Drawing 21. Adjusting screws position.

6.1.2.2. Screw the screws (1) into holes of knife (2), second from left and second from right side. Take the knife from the package 3 (drawing 22).



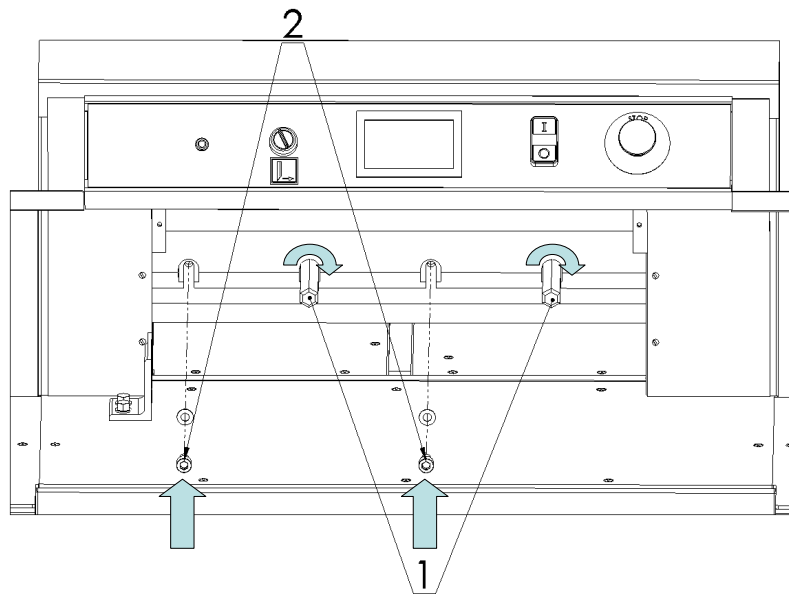
Drawing 22.

6.1.2.3. Holding the screws 1 put the knife 2 into the cutter, and match the transporting screws into the knife bar gaps 3. (drawing 23)



Drawing 23.

Put the knife to Upper position until its up edge touches the bar lobe 2 (drawing 21).

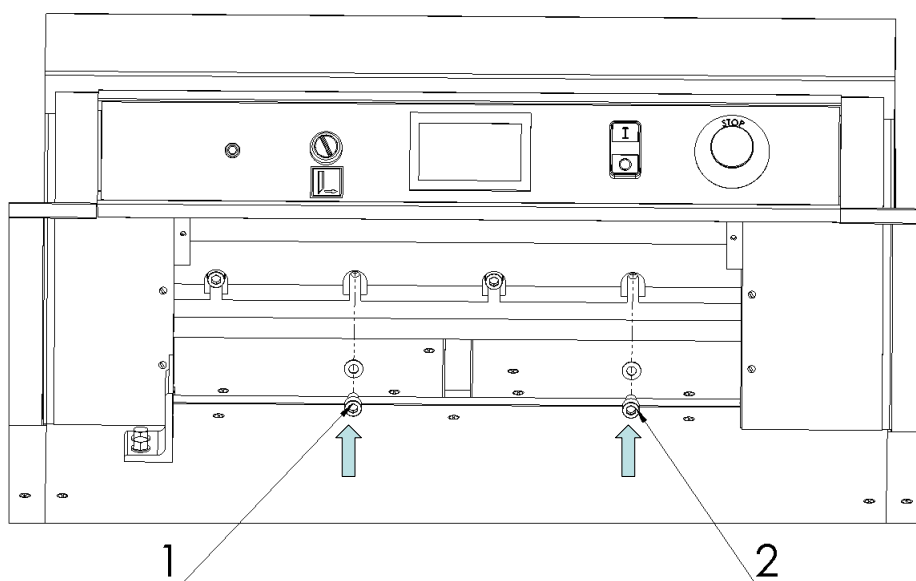


Drawing 24.

6.1.2.4 Mount the knife in the beam by rotating with force both screws 1 to the right (drawing 24)

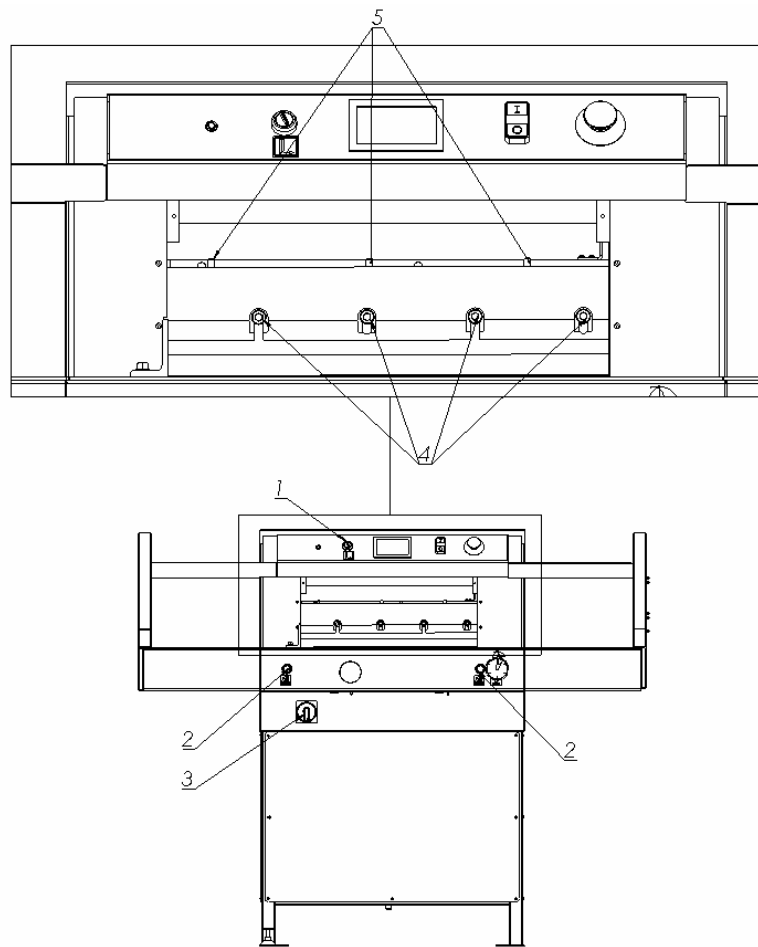
6.1.2.5 Input the mounting screws 2 (drawing 24)

6.1.2.6 Unscrew both screws 1 (drawing 24) and put into its position mounting screws 1,2 (drawing 25)



Drawing 25.

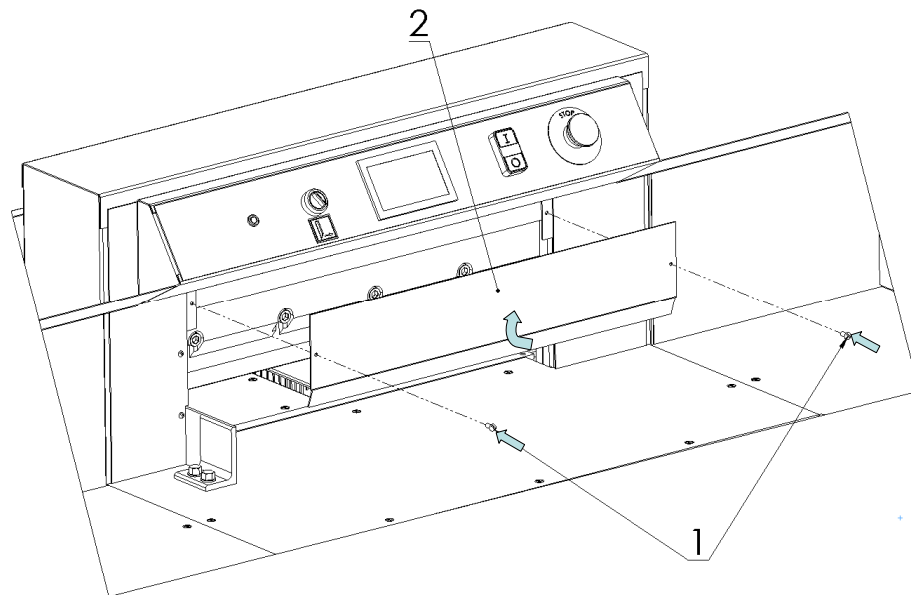
-
- 6.1.2.7 Carefully unscrew first screw (2) from the left (drawing 24) paying attention that the head of screw does not stick out the knife bar slide.
- 6.1.2.8 Rotate the knife change button (1, drawing 26) into "I" position.
- 6.1.2.9 Press simultaneously cutting buttons 2 (drawing 26) to start cut. Knife will stop in lower position.
- 6.1.2.10. Turn off the Power supply by rotating the main switch 3 (drawing 26) to O position.



Drawing 26.

- 6.1.2.11. Loose screws 4 (drawing 26) so the knife drops down with its weight into the cutting stick of full length.
- 6.1.2.12. Mount the screws 5 (drawing 26) to maximum, until the knife blade cuts the stick by 0.3 mm.
- 6.1.2.13. Fasten the screws 4 (drawing 26)

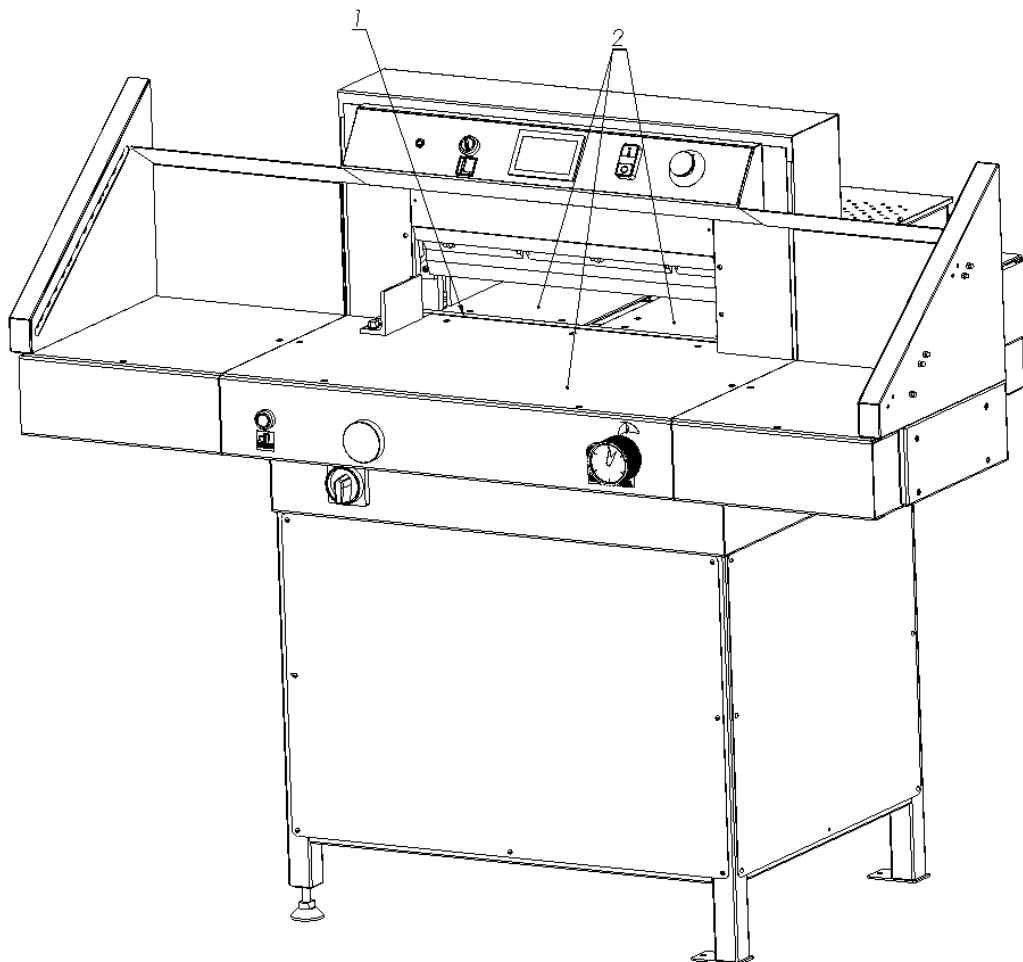
-
- 6.1.2.14. Turn on power supply by rotating button 3 into position „I”
- 6.1.2.15. Knife change button 1 rotate into O position.
- 6.1.2.16. Press simultaneously buttons 2. Knife will move into its upper position.
- 6.1.2.17. Turn off Power supply by rotating button 5 into O
- 6.1.2.18. Strongly fasten the first screw from the left side 2 (drawing 24)
- 6.1.2.19. Turn on Power supply by rotating button 3 into position I
- 6.1.2.20. Turn on electric system by pressing Green button 3 (drawing 16)
- 6.1.2.21. Make trial cut.
- If knife does not correctly cut the last page of paper pile repeat point 6.1.2.7.
- 6.1.2.22 Mount cover 2, screws 1 (drawing. 27)



Drawing 27

6.2 Cutting stick change.

The cutting quality of the bottom sheets and the rate at which the knife dulls depends greatly on the cutting stick. Changing or rotating the stick is recommended after each change of the knife, or when bottom sheets are not completely cut.

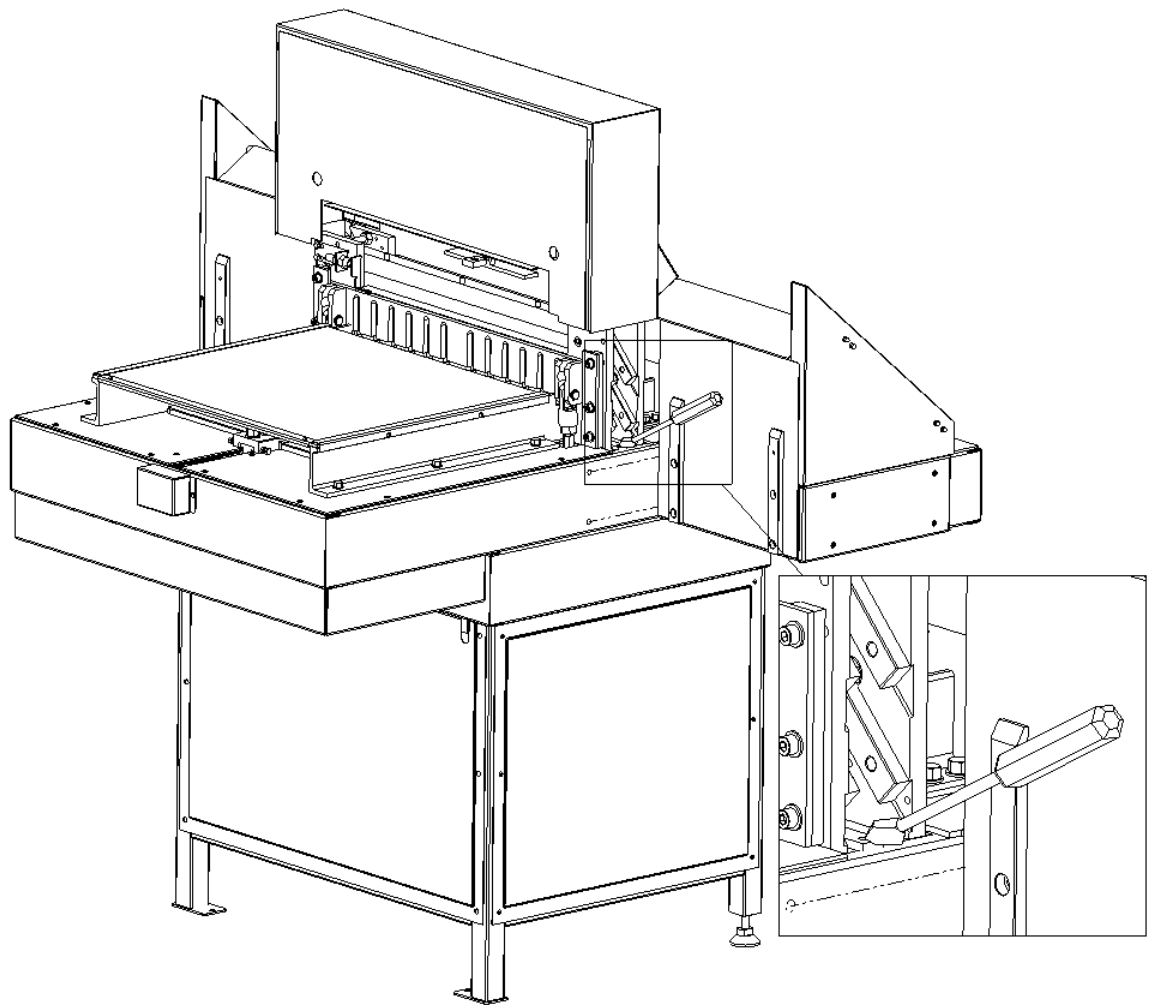


Drawing 28. Cutting stick change

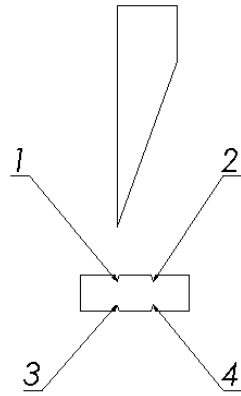
Cutting stick (1) is introduced to a rectangular channel between the cutter tables (2) (drawing 28) and locked by pin (drawing 29). To have an access to the die, cover (2) (drawing 29) should be removed.

To make the stick (1) change easier, please use screwdriver 3 (drawing 29).

The stick (1) should be placed with its hole 3 on the pin in the underknife bar to prevent sliding.



Drawing 29. Cutting stick removal



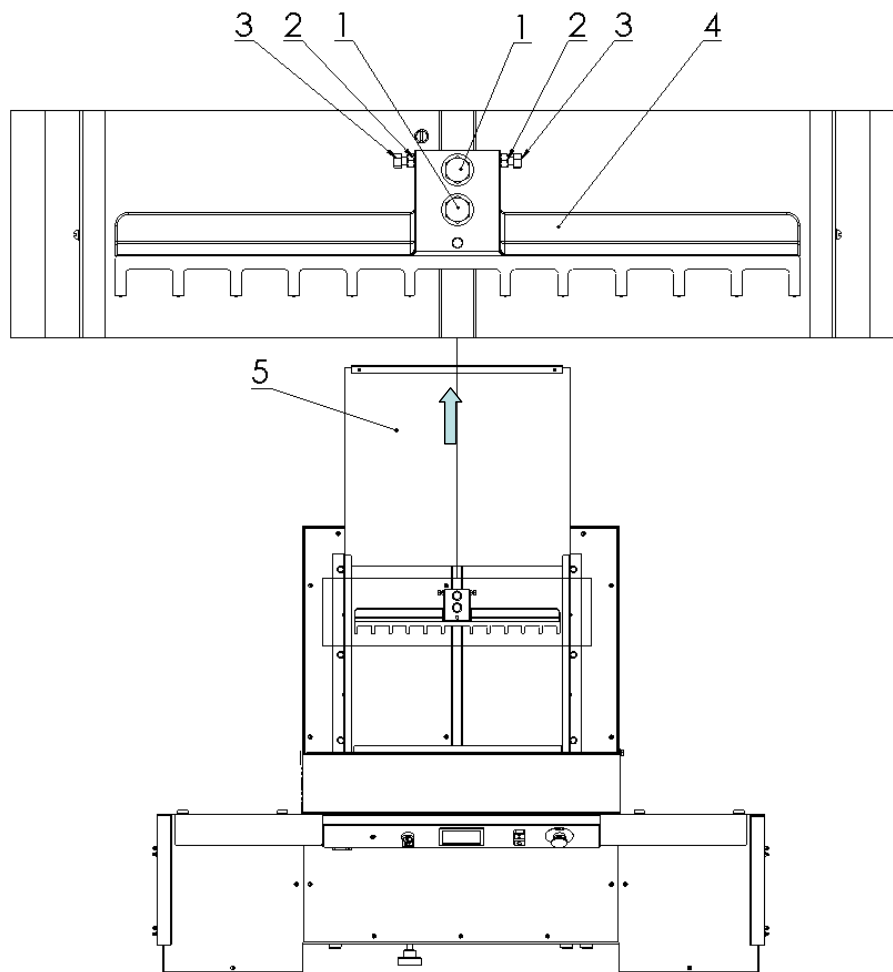
Drawing 30. Stick usage

The stick can be rotated 4 times In both planes to achieve 4 lines 1,2,3,4.(drawing 30)

Note: Gap between the tables, where the stick is put, must be always clean.

6.3 Parallelism of backgauge

If the backgauge is out of square (1), it is necessary to perform the adjustments shown on drawing 31.



Drawing 31 Backgauge parallelism adjustment

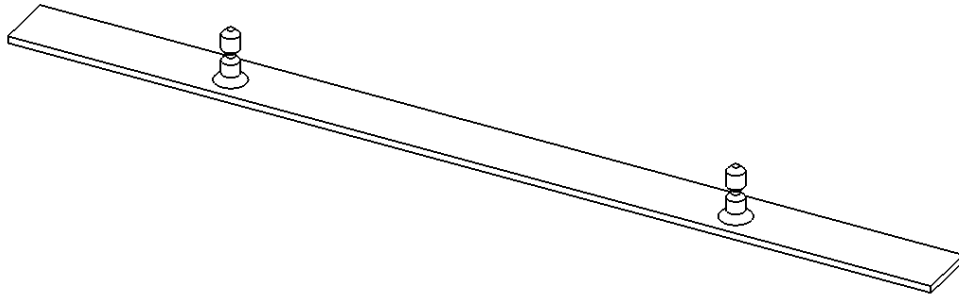
To adjust the bar, it is necessary:

- to loosen both screws (1), fastening the pushing bar (4) to a slide;
- to loosen nuts (2)
- to set the pushing bar at appropriate angle, turning with adjusting screws (3)
- to lock the adjusting screws (3) with nuts (2);
- to tighten strongly screws (1).

After a trial cutting, repeat adjusting, if it is necessary, till the cutting parallelism is obtained.

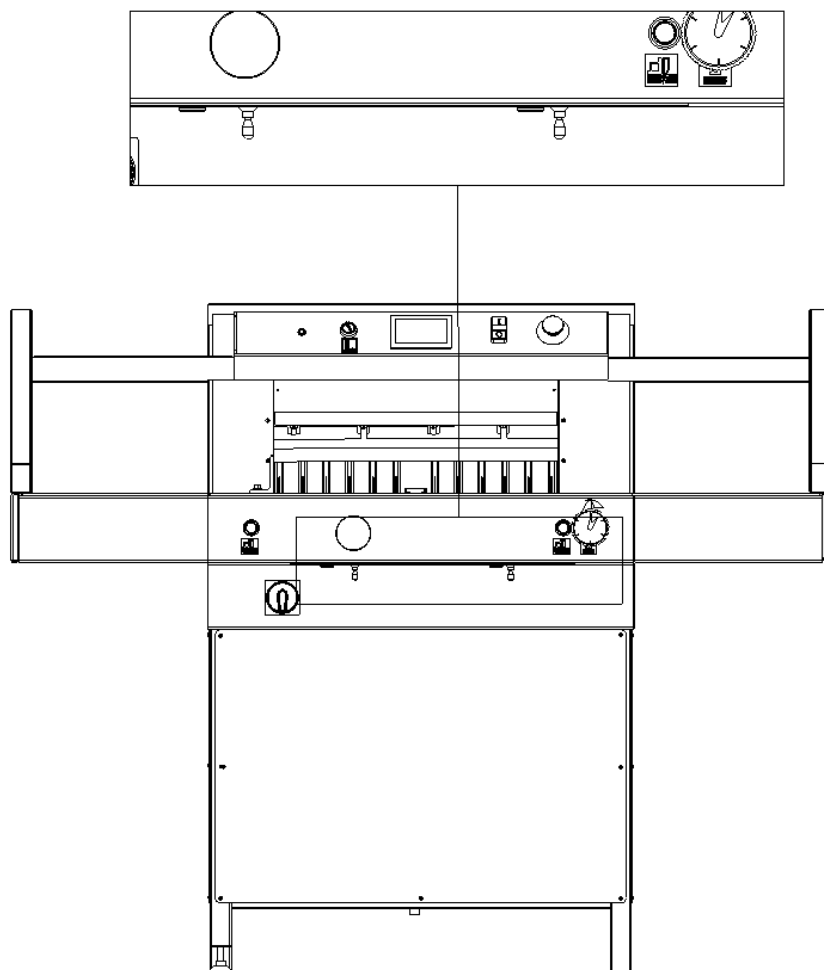
6.4 False clamp

The false clamp can be installed in order to avoid creating marks by the clamp beam on the cut material.



Drawing 32. False clamp

False clamp is fixed under the front table (drawing 33).



Drawing 33. False clamp location (when it is not installed in the clamping beam)

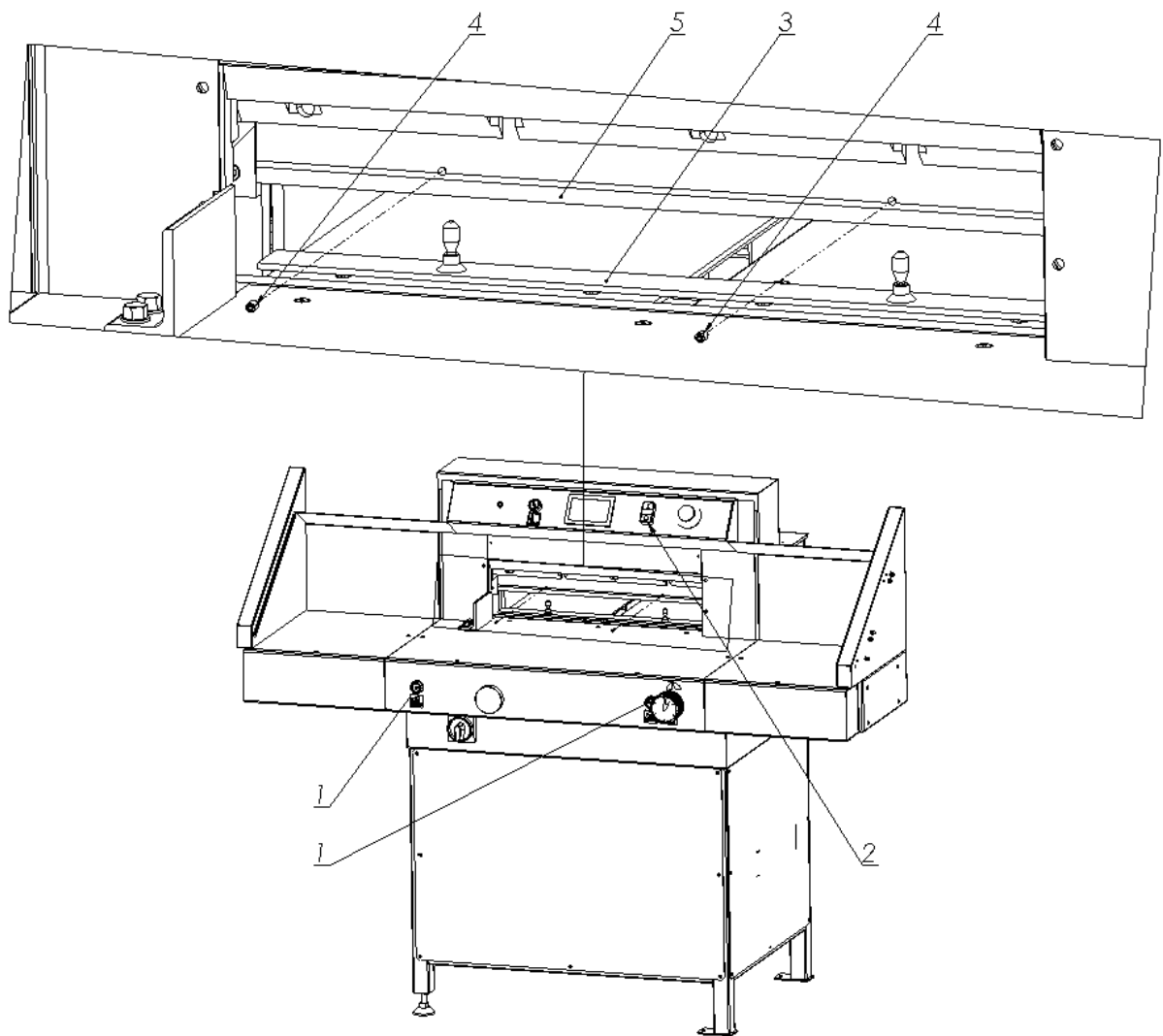
In order to install the false clamp in the clamping beam:

- press the buttons 1 (drawing 34) to move clamping beam 5 down
- when the clamping beam will go down about 2 cm and uncover the holes for screws 4, release right button 1 (left button 1 should be still pressed)
- press the button 2 "O", to turn off control system
- put the false clamp into the clamping bar – the rods of the false clamp should be inserted into the holes on the bar, the false clamp should fit tightly to the bottom surface of the bar
- strongly screw the screws 4 into tapped holes in the beam using allen key to block the false clamp in the clamping beam
- press the button 2 "I" to switch on the control system
- press the button 1 to move clamping beam up again

When the false clamp is installed, minimum cut will be bigger than during the cut without the false clamp – it will be 30 mm (20 mm without the false clamp). Also the maximum pile height will be smaller (56 mm with the false clamp, 60 mm without the false clamp).

If the false clamp is not installed in the clamping beam, it should be installed under the front table (drawing 33).

If the false clamp is not installed under the front table, the control panel works automatically as if the false clamp was installed in the clamping beam – the minimum cut will be bigger (30 mm).



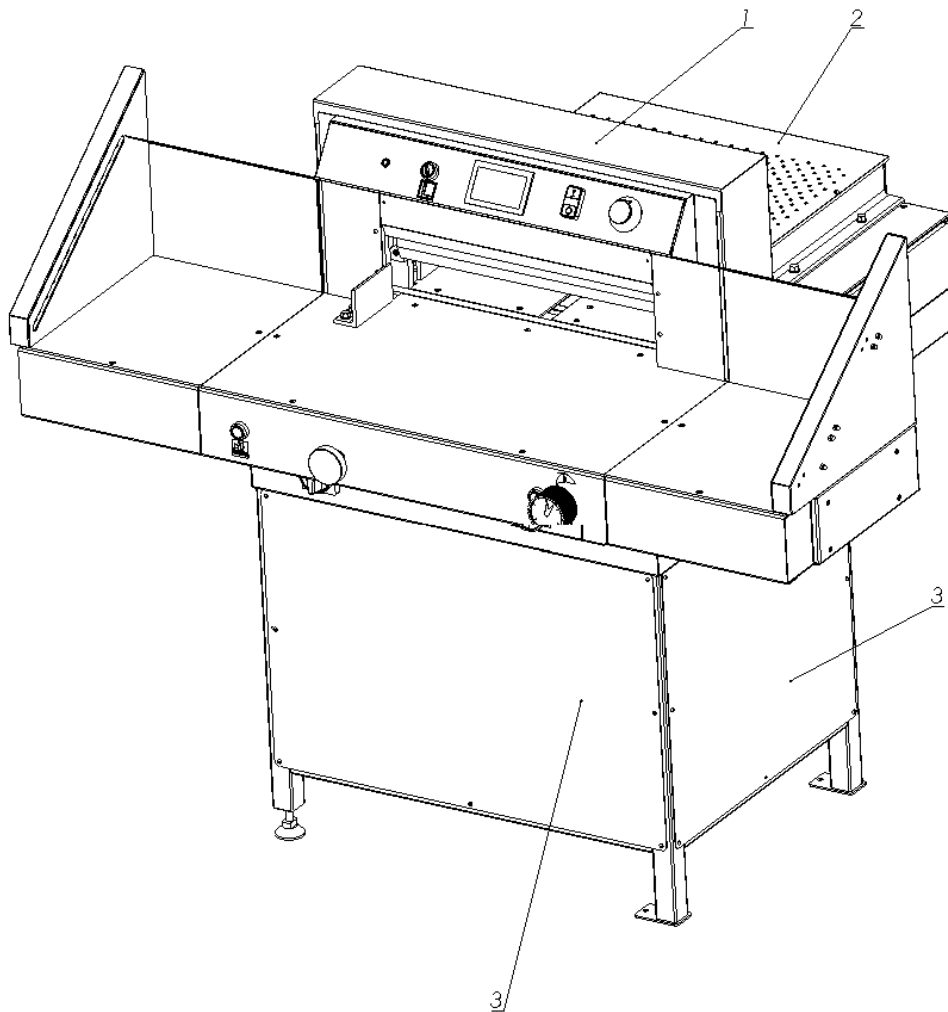
Drawing 34. Installing the false clamp in the clamping beam

7.MAINTANCE

7.1 Lubrication

Location of lubrication points to be greased **every week** is shown on drawings 36,37,38. Access to the stated lubrication points is possible after disassembling the shield shown on the drawing 35

1. Knife cover
2. Backgauge cover
3. Stand cover



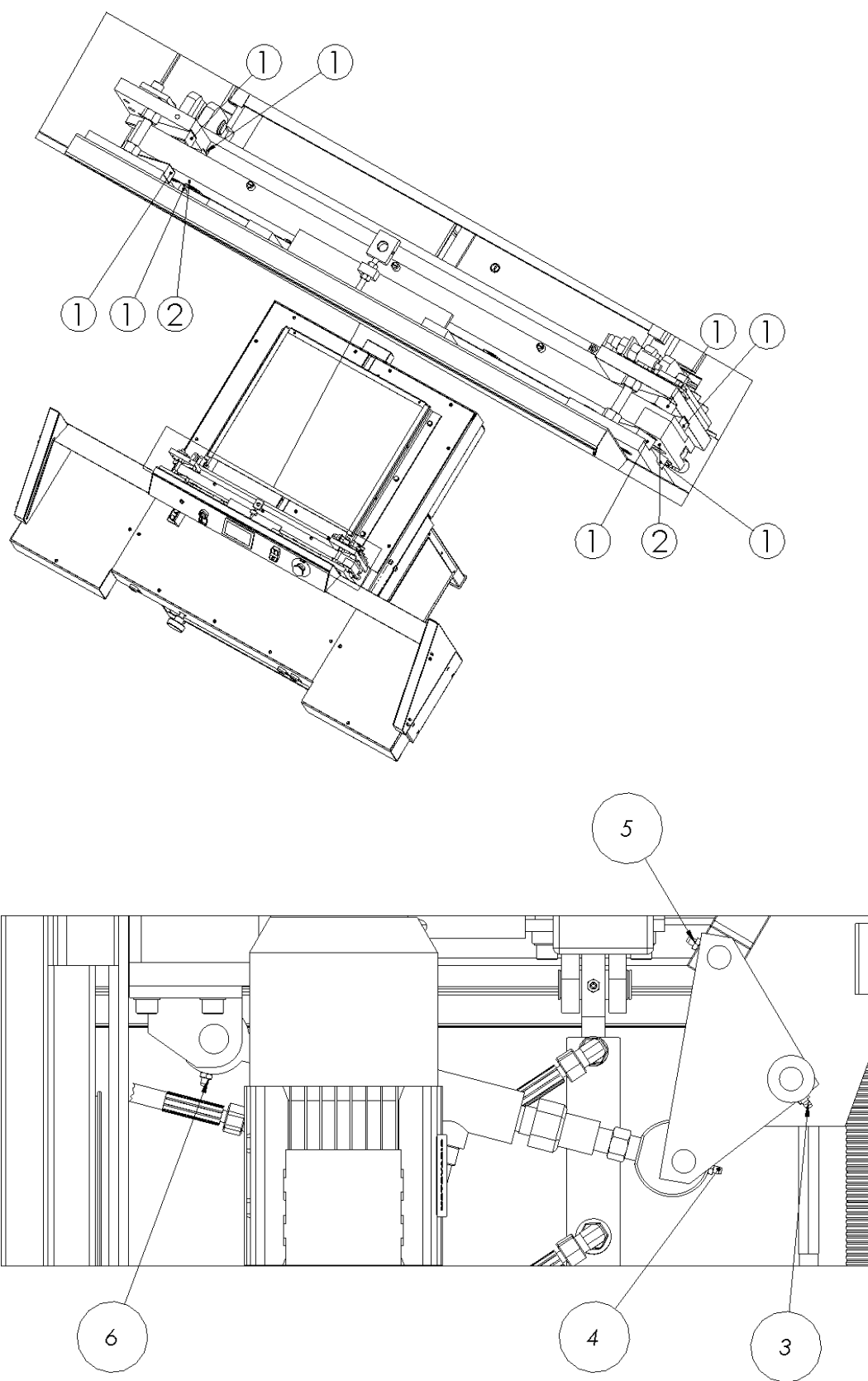
Drawing 35 Covers arrangements

7.1.1 Knife unit lubrication

For the knife unit lubrication non-liquid grease have to be used.

The following parts should be lubricated on the both parts of the cutter:

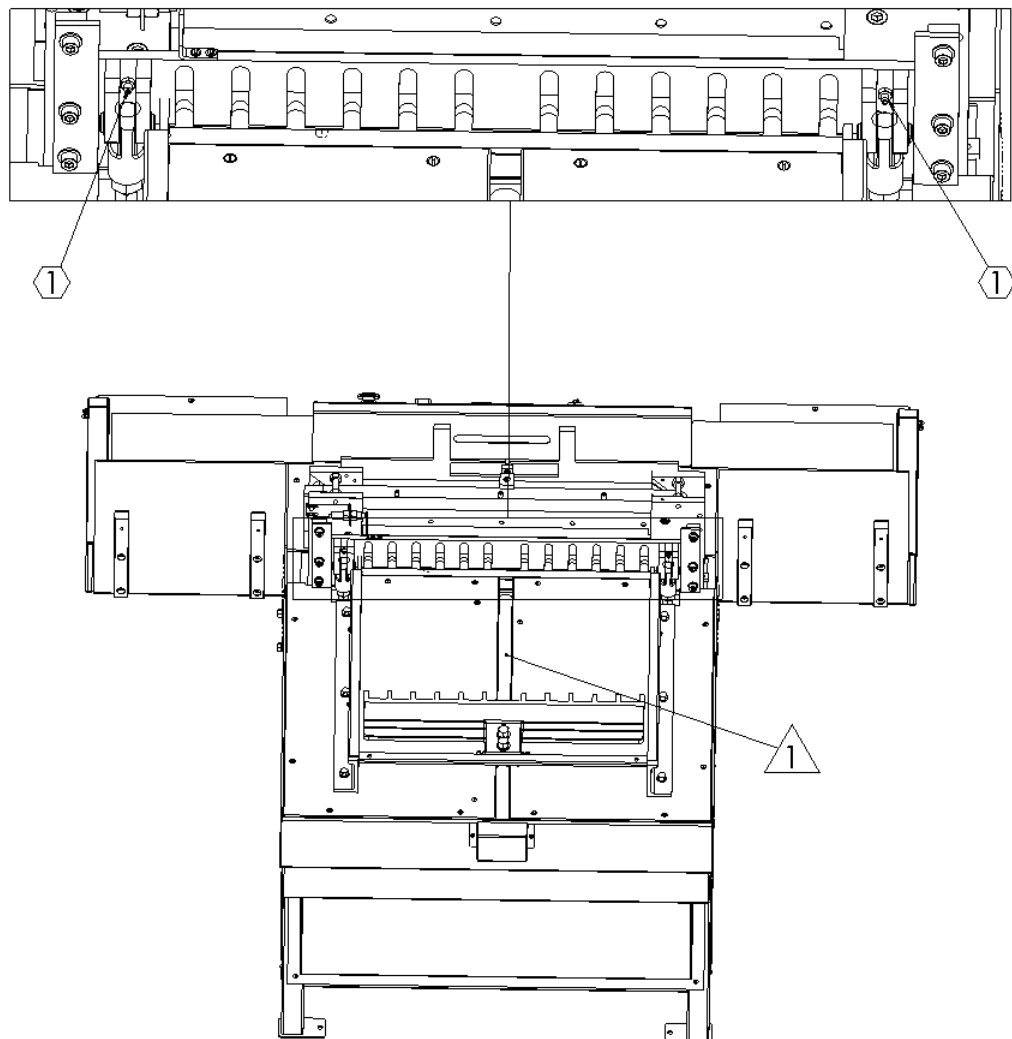
1. Side surfaces of the guides (contacted with the knife body)
2. Side surfaces of the knife body



Drawing 36 Location of the knife lubrication points.

7.1.2 Backgauge lubrication

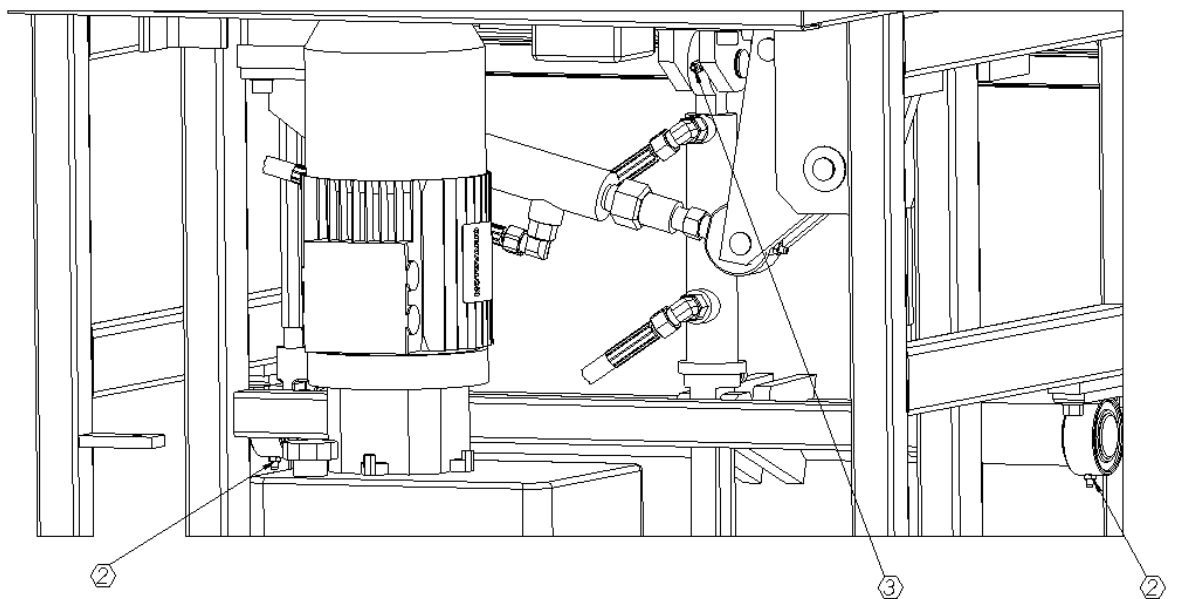
In the backgauge mechanism the following parts must be lubricated: guiding roller (drawing 37 indicated with a triangle) and located under the roller lead screw (not marked on the drawing). This screw should be lubricated with the non-liquid grease, on the guiding roller, apply a thin coat of the grease.



Drawing 37 Back gauge (triangle) and clamping (hexagon) lubrication points location

7.1.3 Clamping mechanism lubrication

The parts of the clamping mechanism have to be lubricated with non-liquid grease. In the clamping mechanism the following parts should be lubricated: clamp bar runners (1) (drawing 37, signed with hexagon), roller bearing (2) (drawing 38), mounting point of hydraulic cylinder (drawing 38) .



Drawing 38 Clamping lubrication points

7.1.4 Hydraulic system

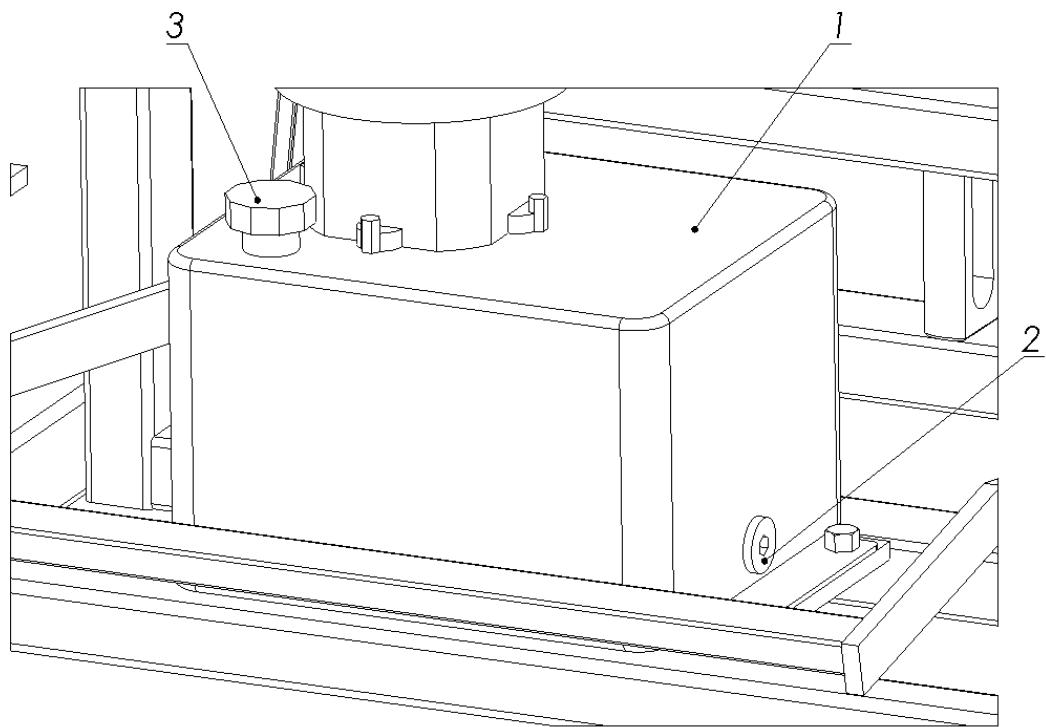
Overflow valve is set in factory to value 170 bar and sealed. The value can be controlled by manometer (included in unit) by connecting it to manometer slot.

WARNING: Changes to pressure values by operator will void manufacturer's warranty.

7.1.4.1 Working conditions

- temperature in the room 5 °C- 30 °C,
- hydraulic oil HL 46,
- Dust-free air

-
- air circulation for cooling
 - temperature of hydraulic oil should not exceed values given by supplier
 - the unit is designed to work in a closed room, protected from any environmental conditions: direct sun, rain etc.
 - unit is designed to work in horizontal position
 - it should be used according to health and safety rules
 - unit should be maintained by qualified staff



Drawing 39. Oil change in the hydraulic unit

Hydraulic unit producer recommends to change the oil after one year of intensive use. In order to change the oil, remove drain plug 2 located on the bottom of the tank 1. Oil should be let out when it is still warm. New oil should be filled after screwing the drain plug 2 through the hole in the filter 3.

7.2. Inspections

7.2.1. General recommendations

- Clean carefully machine after each work-shift /paper dust.
- Pay attention to cleanness of the control element contacts /contractors, switches.
- Check correctness of the cutter screw connections, and tighten them, if necessary.

7.3. Regeneration of knife

Quality and accuracy of the cutting depends on the knife sharpness and the correct choice of the cutting edge angle.

7.3.1 The features of blunt knife:

- rough and uneven plane of stack to be cut;
- edges seizing of material to be cut;
- inaccurate cutting;
 - increased accumulation of the paper dust;

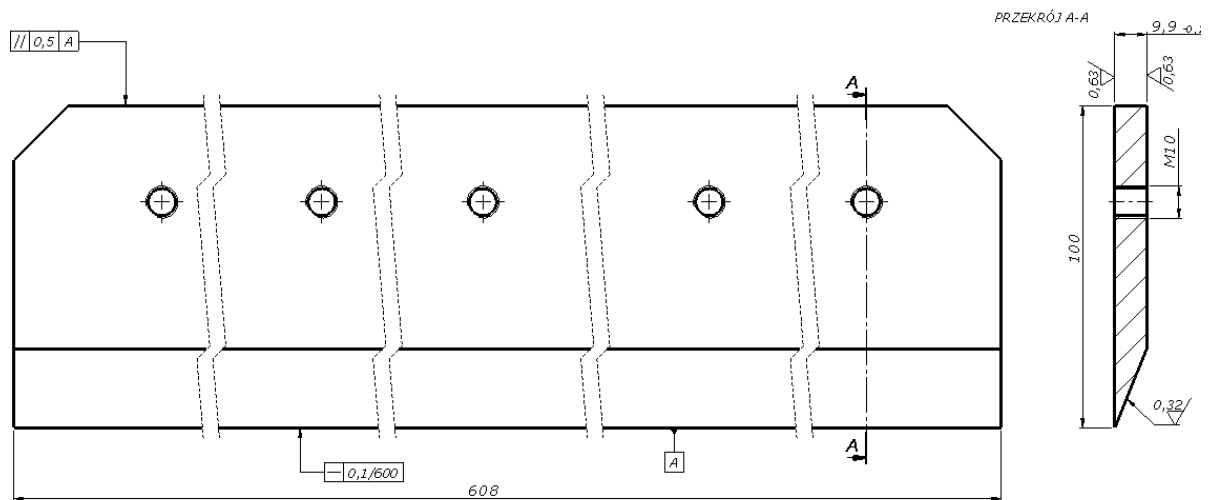
7.3.2. Grinding conditions of the cutter knife:

- grinding machine of correct operation;
- appropriate chosen grinding wheel
- clean and sharp grinding wheel /"sparked out"/
- appropriate coolant
- correct chosen grinding parameters
- even fixing of the knife

The manufacturer of knives used in the cutter recommend the cup-type grinding wheel or grinding segments, "J" hardness, 60-80 grain size, with keeping:

- 500 m/min grinding peripheral speed;
- 8-10 m/min traveling speed;
- max. Grinding Wheel stroke per 1 feed: 0,005 mm;
- cooling with water-oil emulsion, 60 l/min., at least;

The correct sharpen knife is shown on drawing 40

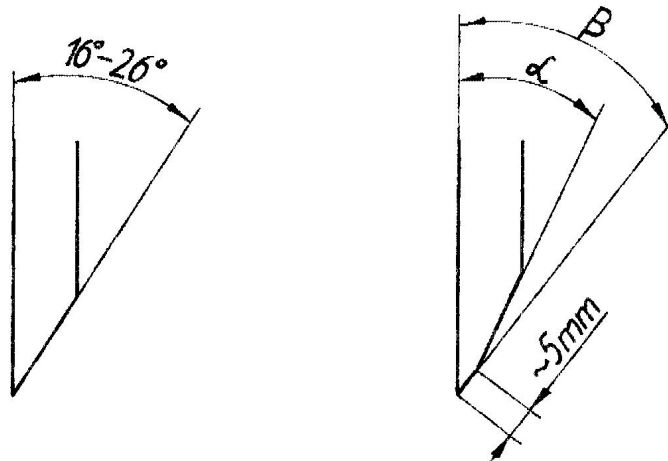


Drawing 40 Deviations and roughness of the knife.

7.3.3. Selection of the grinding angle

Depending on the cut down material, a ground off angles are between 16° and 26° . Soft material needs a smaller grinding angle, whereas a hard material, a larger grinding angle.

If the cut materials are of different hardness, a larger grinding angle is preferable.



Drawing 41. The cutting edge angles.

The double-chamfered cutting angle /Drawing 41 right side/, for example $20/24^\circ$, in an auxiliary mean and advantages the better material discharge after cutting.

8. ELECTRIC DOCUMENTATION 1 phase 230V

8.1 Electrical equipment

8.2 Electric table

Nr	Symbol	Quantity	Name	Type	Manufacturer
01	K7 K9	2	Contactor	S-N12CX AC24V	MITSUBISHI
02	T1	1	Transformer	Tma 100VA 220/24V	BREVE – TUFVASSO NS
03	F1 F3	2	Fuse	2A 3,15A	PL
04	F2 F7	2	Overload switch	S301 B4A S301 B6A	Schneider / Legrand
05	F5	1	Hydraulic motor overload switch	S301 B16A	Legrand
06	ZF-13z	1	Photocell controller	ZF-13z	KRONOS PL
07	FX3G	1	PLC	FX3G-40MR/ES	MITSUBISHI
08	INV3	1	Inverter	FR-D720S-025-EC	MITSUBISHI
09	K1 K2 K10 K11 K12 K13	6	Relay	24VAC R4 55.34.8.024.0040	Finder
		6	Relay base	94.84.3SPA	

8.3 Cutter

Nr	Symbol	Qty	Name	Type	Manufacturer
01	Q1	1	Cam 25A	4G25-10-US25	Apator
02	S1F S2F	1	Button START-STOP	L61QA21 Adapter Z33E Zestyk zw. 33E01 Zestyk Roz.33E10	BACO
03	S3B S4B	2	Button switch	L21AA03 Adapter 33E01 Zestyk Roz. 33E10 – 2szt.	BACO
04	S7M	1	Rotary switch	LZ1KA03 Adapter 333E Zestyk Roz. 33E10 – 1szt	BACO
05	SP	1	Limit switch	XCKP2102G11	Schneider
06	S16N S18N	2	Limit switch	MAC6C	Hartmann
07	CZ1	6	Inductive sensor	PCID – 4ZP	SELS

	CZ2 CZ4 CZ5 CZ6 CZ7				
08	M2	1	Motor 1X230V 50-60Hz 1,5kW/1400 r/min	HKK 207 FCSP	SIEMENS
09	M3	1	Motor 3X400V 50-60Hz 0,18kW/1400 r/min	Sg63 – 4B	Tamel
10	SG1F SG2F	1	Emergency switch	LWE16-300 Adapter Z33E Zestyk zw. 33E01 -2szt	BACO
11					
12	ENCODER	1	Rotary encoder	HTR-W-360-23-PP-SA20	HONTKO CO.
13	H1	1	Red LED		PL
14	H3	1	Green LED		PL
15	LS	1	Cutting Line indicator	LLM635003-D11L32AM20	PL
16	GOT 1000	1	Display	GT 1020-LBLW	MITSUBISHI
17	A0 A1 A2 A3 A5	5	Valve	24VDC	HANSA FLEX
18	PA5	1	Pressure transmitter	TS3-18-0-K1	ARGO-HYTOS
19	DRP240-24 (S8VK)	1	Smps	DRP240-24 (S8VK-24024)	.MEAN WELL (OMRON)

8. ELECTRIC DOCUMENTATION 52H-2 phase 220V

8.1 Electrical equipment

8.2 Electric table

Nr	Symbol	Quantity	Name	Type	Manufacturer
01	K7 K8	2	Contactor	S-N12CX AC24V	MITSUBISHI
02	T1	1	Transformer	Tma 100VA 220/24V	BREVE – TUFVASSO NS
03	F1 F2 F3 F4 F6	5	Overload switch	iC60N 2P B25A iC60N 2P B16A iC60N 2P B10A iC60N 2P C4A iC60N 2P C4A	Schneider / Legrand
04	S8VK	1	Smps	S8VK-24024	OMRON
05	PNOZs3	1	Photocell controller	PNOZs3	PILZ
06	FX 5U	1	PLC	FX5U-32MR/ES	MITSUBISHI
07	INV 1	1	Inverter	FR-D720S-070-EC	MITSUBISHI
08	INV 3	1	Inverter	FR-D720S-025-EC	MITSUBISHI
09	K1 K2 K9 K10 K12 K13	6	Relay	24VAC R4 55.34.8.024.0040	Finder
		6	Relay base	94.84.3SPA	

8.3 Cutter

Nr	Symbol	Qty	Name	Type	Manufacturer
1	Q1	1	Cam 25A	0172001	BACO
2	S1F S2F	1	Button START-STOP	L61QA21 Adapter Z33E Zestyk zw. 33E01 Zestyk Roz.33E10	BACO
3	S3B S4B	2	Button switch	L21AA03 Adapter 33E01 Zestyk Roz. 33E10 – 2szt.	BACO
4	S7M	1	Rotary switch	LZ1KA03 Adapter 333E Zestyk Roz. 33E10 – 1szt	BACO
5	S16N S18N	2	Limit switch	MAC6C	Hartmann
6	CZ1 CZ4 CZ5 CZ6	5	Inductive sensor	IME12-04NPSZW2S	SICK

	CZ7				
7	M1	1	Motor 3X230V 50-60Hz 1,5kW/1400 r/min	HK K 407A 90LB4	SIEMENS
8	M2	1	Motor 3X230V 50-60Hz 0,18kW/1400 r/min	Sg63 – 4B	Tamel
9	M4	1	Blower 1x230V 50-60Hz	UNI JET 40	ESAM
10	SG1F SG2F	1	Emergency switch	LWE16-300 Adapter Z33E Zestyk zw. 33E01 -2szt	BACO
11	ENCODER	1	Rotary encoder	DBS36E-S3EK00600	SICK
12	H1	1	Red LED		PL
13	H3	1	Green LED		PL
14	LS	1	Cutting Line indicator	LLM635003- D11L32AM20	PL
15	GOT 2000	1	Display	GT 2103-PMBD	MITSUBISHI
16	A0 A1 A2 A3 A5	5	Valve	24VDC	HANSA FLEX
17	PA5	1	Pressure transmitter	TS3-18-0-K1	ARGO- HYTOS
18	LED	2	Led module	3 led 12V	PL