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X5 Single-Ply series Cutting Machine User's Manual

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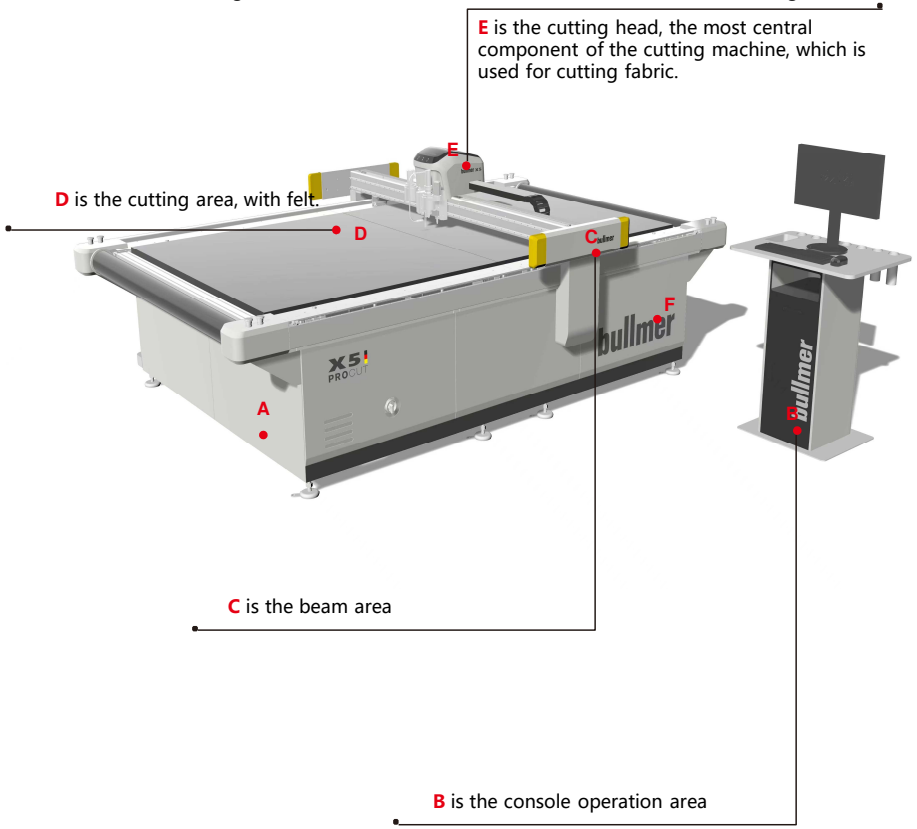
01 X5 Single-Ply cutting machine introduction

X5 Single-Ply series cutting machine

Equipment Introduction

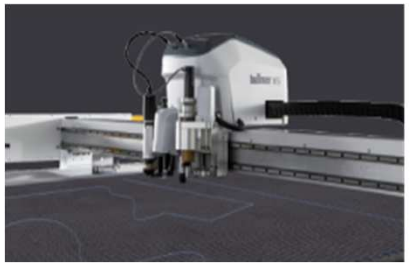
instructions:X5 single-ply series cutting machine is mainly composed of 3 main parts: bed, electric control (big electric control box and small electric control box) and cutting head.

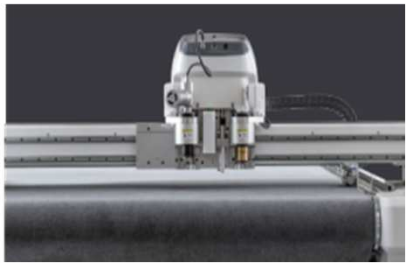


CORE TECHNOLOGY
核心技术

①德国技术，稳定高效，裁剪超高速

German technology, stable and efficient - ultra-high-speed cutting





特殊速度规划算法,最大裁剪速度可达每秒1800mm，最大加速度1.5G，是传统手工裁剪3-10倍

The product adopts a special speed planning algorithm, with a maximum cutting speed of 1800mm/s and a maximum acceleration of 1.5G, which is 3-10 times that of traditional manual cutting.

② 高强度床体结构，运行超高速

High-strength bed structure - ultra-high speed operation

1、采用高精度高强度航空级铝型材拼接， 加固设计，高效裁剪更稳定

Adopt high-precision and high-strength aviation grade aluminum profile splicing structure, reinforced design makes cutting more efficient and stable.

2、采用横梁X轴750W双电机独立同步驱动，高速运行更平稳

The gantry adopts a 750W dual motor independent synchronous drive design, which is more stable when moving at high speeds.

③ 德国刀具，数秒换刀，换刀超高速

German tools, tool change in seconds - ultra-high speed tool change

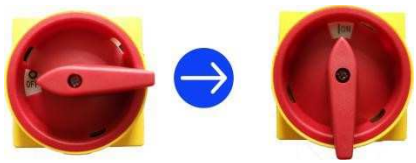
沿用德国模块化机头座设计，可在数秒内完成刀具更换

Modular head-part design,tool changes in seconds.

02 | Cutting machine training instruction

Cutting machine training instruction

Basic operation of cutting machine

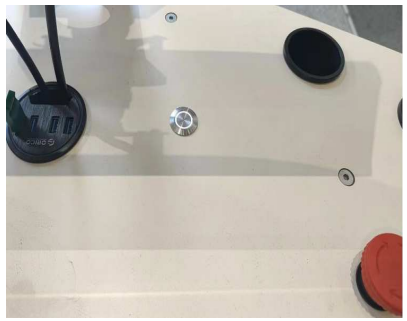


Main switch

1、First, turn on the red main power switch on the cutting machine. To do so, twist the red switch upwards in the direction indicated by the arrow in the image to turn on the main power.

2、It controls the machine's total 380V input voltage on or off.

3、As shown in the image on the right, the 'off' position indicates the machine is turned off. Turning the button clockwise will switch it to the 'on' position, open the machine.



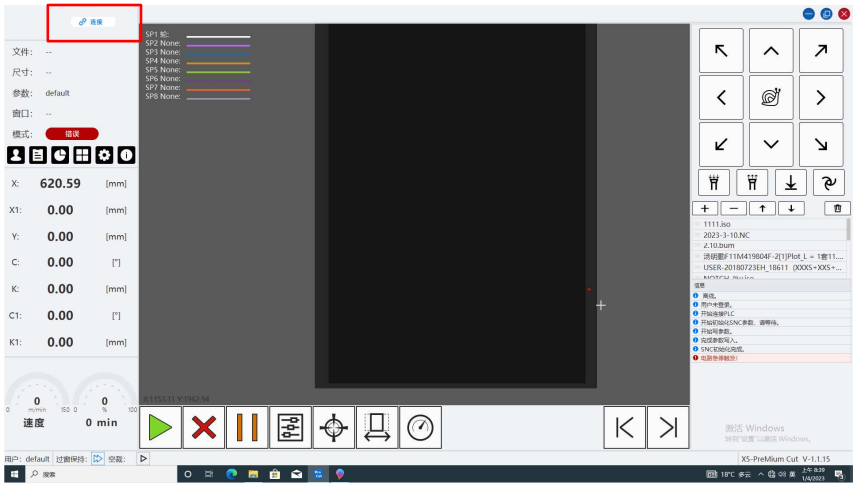
Emergency stop reset

1、Push the reset button

2、If the light does not on, check that the red emergency stop button is triggered.

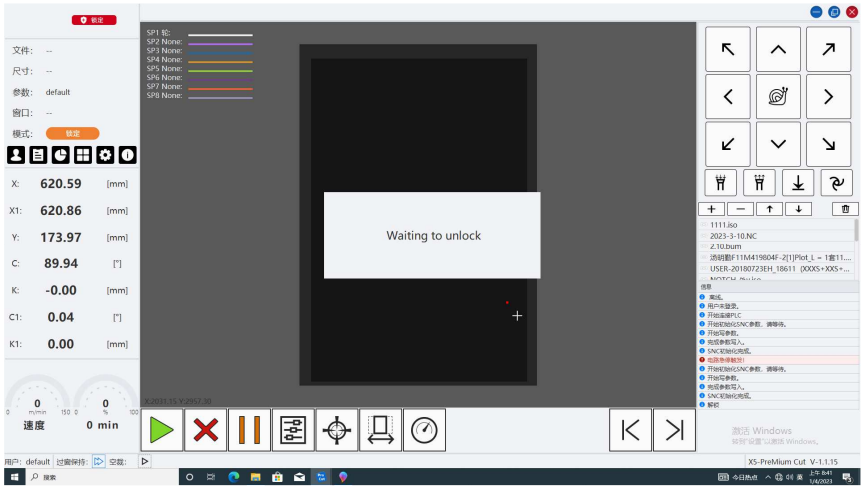
Open the software

1、Click on the computer desktop icon Procut（Cutting software) as shown in the image.



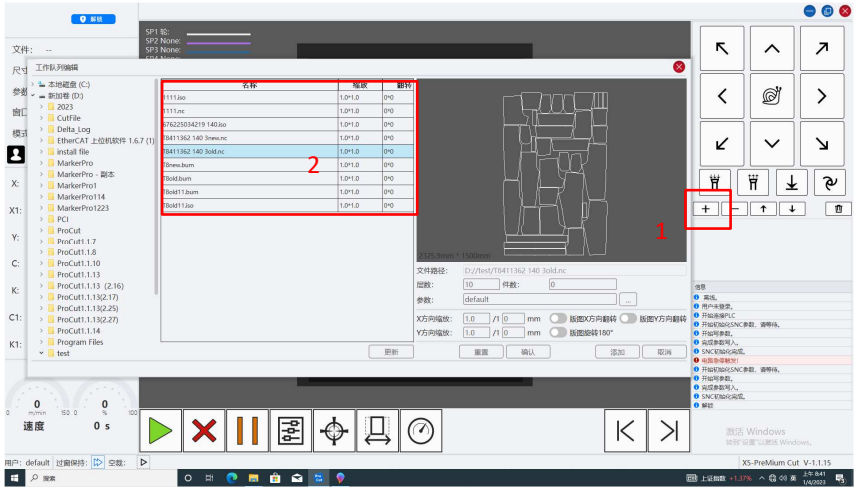
Unlocking software

1、Upon first open, click 'Connect'. Wait for the 'Device initialization complete' message in the lower right corner before clicking 'Connect' again



Unlocking software

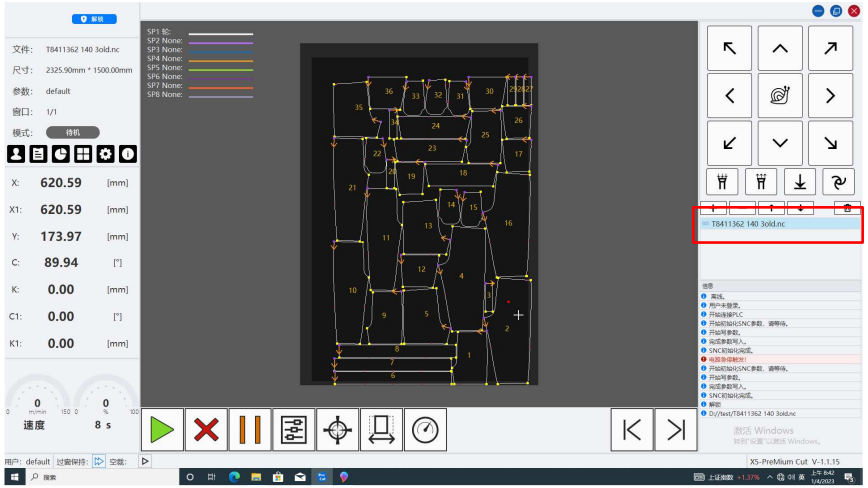
1、Click “Lock” again and wait for the machine to finish unlocking automatically.



Data loading

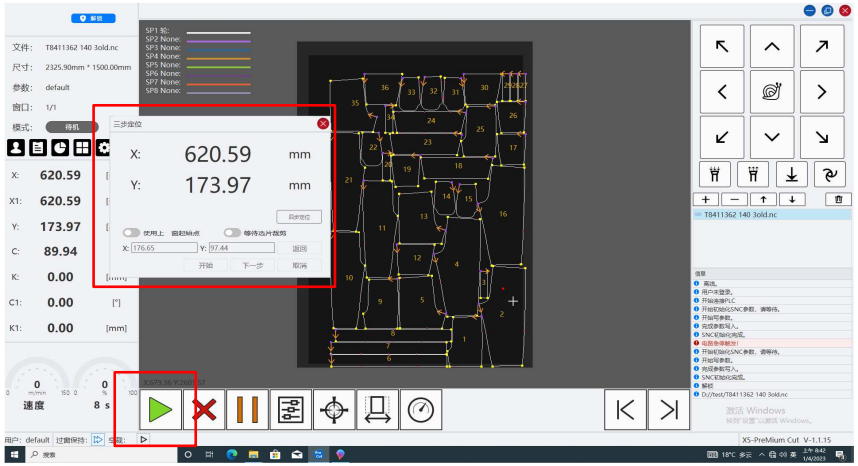
1、Click the (+) icon to add the file to be cut

2、Select the cutting file you want to add, then click 'Add' (Note: the cutting file must be placed inside a folder, not in the root directory of the disk).。



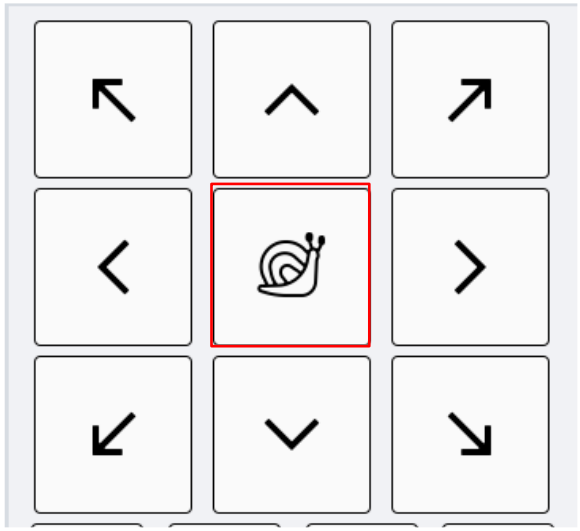
Layout loading

1、Double-click the cutting layout file name to read the layout information. The cutting layout information will be added.



Positioning cutting

1 、Click the green (start)icon to enter the three-step positioning interface to position the layout for cutting.



Cutting head movement

1、Move the cutting head by using the up, down, left and right arrow keys to the appropriate cutting start point on the marker paper or fabric.

2Click the four arrows to make the cutting head automatically move to the four corners

3、The snail icon indicates the switching of the speed between fast and slow for the red dot lighting up and positioning movement

Note：Laser light constant time can be set by parameter adjustment

Note：Air suction mode

Manual air suction: The air suction must be manually turned on before each cutting operation.

Automatic air suction: The air suction is automatically activated before the cutting starts

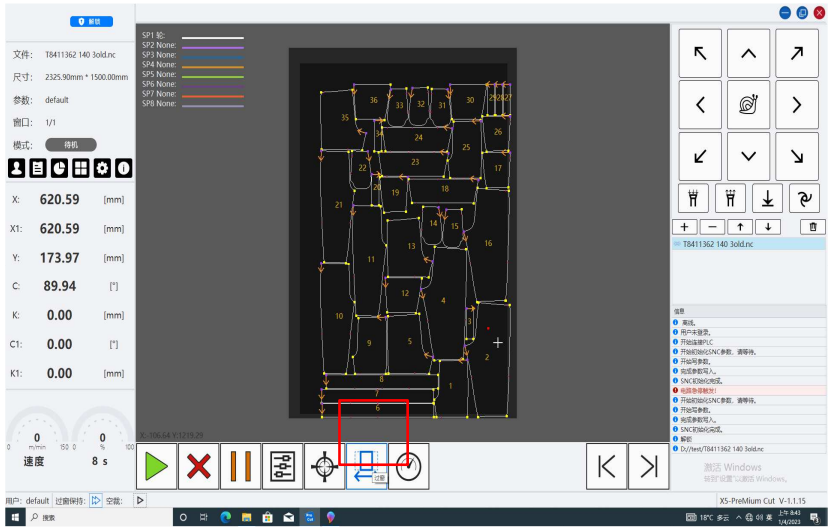
Keeping air suction: The air suction must be manually turned off after it is activated, regardless of when it is turned on.

Software positioning

First time click: Click 'Next' to confirm the fabric length and check whether the direction is tilted.

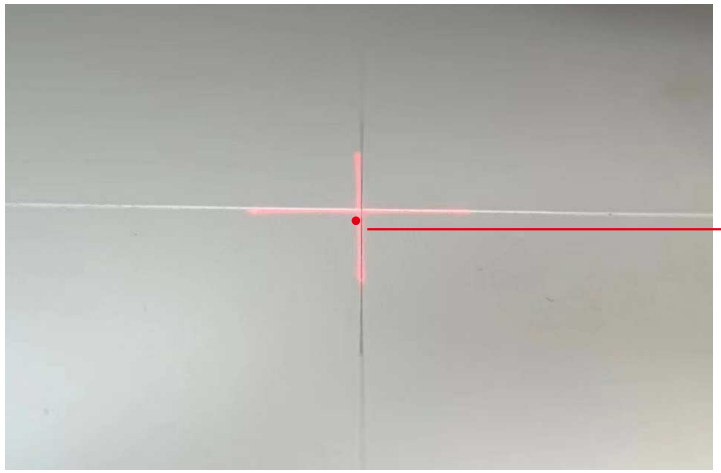
Second click: Click 'Next' to confirm whether the width is suitable for cutting.

After confirmation, click 'Start' to begin cutting. The vacuum will follow the air suction mode (which can be selected), and the vacuum strength is not adjustable



Window transition

1、After the cutting is complete, the machine will stay in the cutting area. After clicking the 'Window switch' button, the machine will automatically move to the next window (the window mode can be selected), or you can proceed with cutting directly.



After the window transition, if the red dot and the crosshair coincide, it indicates that the fabric has not shifted during the window transition

Window transition

After the former cutting window is completed, the device will perform the window transition and execute the automatic point alignment step. After the window transition, confirm that the red dot corresponds to the crosshair without any shift。In the new window prepared for cutting, the cutting head will automatically align the red dot with the crosshair. If they are not aligned, manually move the cutting head to align the points. Once aligned, you can proceed with the cutting work for that window (point alignment takes only a few seconds).

Introduction to the function keys on the control panel

Menu	Project	Effect
Left side of main interface	Lock /Unlock	Used to unlock or lock software
		Parameter Settings
		Statistical Reports
		Digital Quantity
		Setting
		About
	All Axises Parameter	Two X axis、Y axis, two tool holder height axis: K axis, two rotation axis: C axis
	Speed	Real time speed of layout cutting
	Estimated	The remaining time of cutting landscape

Middle of main interface		Execute the currently open file
		Cancel the crop and click ,Run to continue
		Pause the current cropping and press again to continue
		Quick Setting
		Position
		Feed
		Debugging
		Last Page
		Next Page
		Cutting without knife down
		Select part to cut
		Return to origin point
		Lateral cutting
		Measure
		Save the cutting part
Main Interface (move)		Let the machine head move up
		Let the machine head move down
		Move the machine head to the left
		Move the machine head to the right
		Move the machine head to the left and back
		Move the machine head to the right and back
		Move the machine head forward to the left
		Move the machine head forward to the right
		Make machine move slowly
Main interface (cutting)		Add landscape
		Delete landscape
		Turn landscape up
		Turn landscape down
		Clear the emtire landscape
Main Interface		Suction switch
		Blowing switch
		Press Feed switch
		Automatic Move switch

Emergency response procedures

1. Emergency stop during the cutting process (e.g.,when the emergency stop switch is triggered)

step1:After the emergency stop switch is reset, press the white button on the control panel to light it up;

step2：Press to unlock；

step3：Open the vacuum；

step4：Click on the software to continue cutting.

2、Power failure during the cutting process

step1：Power on and open the software;

step2：Press the white button on the control panel to light it up;

step3：Press to unlock;

step4：Open the vacuum；

step5：Click on the software to continue cutting.

3、Emergency stop during the window transition (e.g., when the emergency stop switch is triggered)

step1:After the emergency stop switch is reset, press the white button on the control panel to light it up;

step2：Press to unlock；

step3：Open the vacuum；

step4：Click on the software to continue cutting.

4、The cutter broke during the cutting process and was not detected in time

step1：First put on a new cutter；

step2：After locating the uncut pieces caused by the blade breakage, select the

pieces and regenerate a cutting layout for repositioning and cutting;

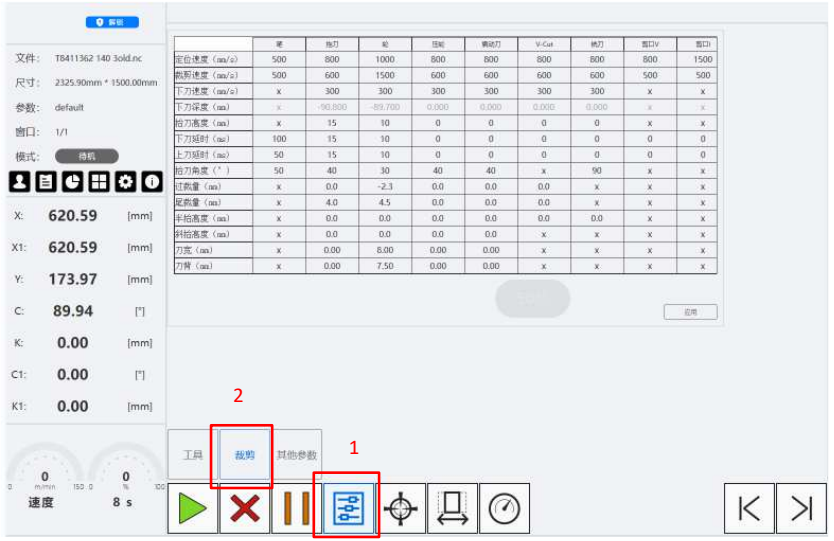
step3：Open the vacuum；

step4：Click on the software to continue cutting.

5、During the cutting process, when the fabric triggers the photoelectric emergency switch on the beam

Step 1: Click the pause button to resume cutting.

Common parameter settings



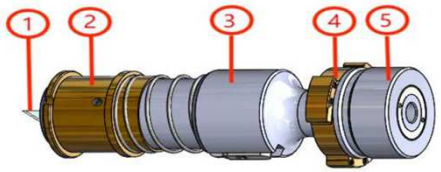
Parameter search

1、Click the quick parameter icon.

2、Click 'Cut' to view the common parameters.

	笔	拖刀	轮	
定位速度（mm/s）	1500	1500	1500	Movement speed of the next piece after the first piece is cut.
裁剪速度（mm/s）	100	1200	500	Speed of the cutting head beam movement
下刀速度（mm/s）	x	300	500	Speed of the tool descending
下刀深度（mm）	x	-94.000	-88.030	Tool descent height
抬刀高度（mm）	x	15	10	HHeight of tool lift
下刀延时（ms）	80	5	5	Tool descent delay
上刀延时（ms）	80	5	5	Tool rise delay.
抬刀角度（°）	40	15	30	Tool lift angle during contour cutting.
过裁量（mm）	x	1.0	0.0	Tool entry passes through the cutting beam during cutting
尾裁量（mm）	x	1.0	0.0	Tool retraction passes through the cutting beam during cutting
半抬高度（mm）	x	0.0	0.0	
斜抬高度（mm）	x	0.0	0.0	
刀宽（mm）	x	0.01	0.00	Width of the area damaged during tool descent
刀背（mm）	x	0.00	0.00	Half of the width of the area damaged during tool descent.

拖刀工具安装使用Installation and use of the drag knife tool



NO.	Name	Function
1	cutter	Cutting material
2	Guide bushing	Installation of the cutter plate
3	Rotate the knife handle	control direction
4	Guide locking block	Fixed to the knife holder
5	Bearing cover	Remove the drag knife

Introduction of drag knife

Drag knife tools are suitable for cutting softer, thinner materials.

Recommended Cutting Materials：

①Signage boards (PP, PET, banners, magnetic materials, etc.)

②Packaging (corrugated paper, cardboard, gray board, etc.) ③Composite materials (carbon fibers, etc.)

Note:

①Be sure to pay attention to the d on of installation of the blade, if the blade is not installed in the right direction, lead to knife breakage.

②When installing the blade, the b hould be fully inserted into the bottom of the knife groove, and there should be no debris in the knife groove.

③When the knife becomes dull, the material will no longer cut completely.

Drag knife tool blade replacement steps

(Tool required: #3 Allen wrench)

1.Use the Allen wrench to loosen the blade set screw and remove the blade from the knife groove.

2.Then insert the new knife into the groove of the knife groove, taking care to insert it to the bottom. Then fix the screws.

3.After each blade change, adjust and test the depth of the blade, if necessary, to avoid damage to the countertop due to the blade not being in place.

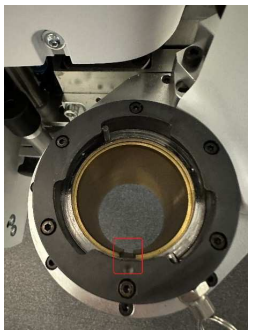


图1

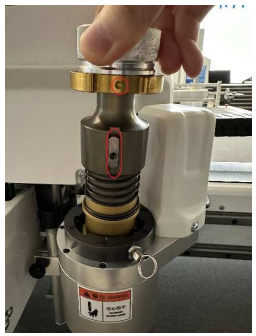


图2

图3

图4

图5

Note：

If the guide locking block cannot be rotated, the ball of the guide locking block may be protruding, use a #2 Allen wrench counterclockwise.

Drag knife tool installation steps

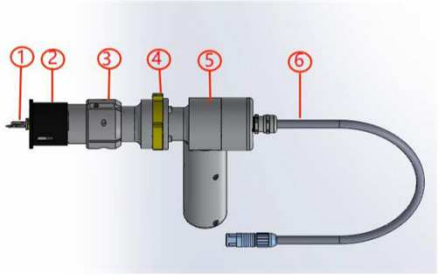
1.Align the tool locating key to the relative position of the tool holder ,insert, Fig. 1, 2

2.The corresponding guide locking block of the tool is aligned with the corresponding position of the tool holder, and the tool will be embedded in the tool holder ,Fig. 3

3.Pull out the pull ring and turn clockwise ,Fig 4 、 5.

4.Installation complete

电动震动刀工具安装使用Electric Vibrating Knife Tool Installation and Use



NO.	Name	Function
1	Blade	Cutting material
2	Fixed seat cover	installnate cutter plate
3	Lower bin fixed seat	Control direction
4	Blade Holder Connector	Fixing to the tool seat
5	Motor	Controlling the up and down movement of the tool linkage
6	Vibrating knife power cord	Motor power supply

Electric Vibrating Knife

Electric vibrating knife for cutting softer, multi-layer materials

Recommended cutting materials: ① signage board (PVC foam, foam board, etc.)

②Packaging (corrugated paper, gray board, etc.)

③Furniture, automotive industry (leather, PU, PU composite foam, etc.)

④Technical textiles (carbon fiber, glass fiber, arm fiber, etc.)

Vibrating Knife Blade Replacement Steps

(Tool required: #2 Allen wrench)

1.Use the Allen wrench to loosen the blade set screw and remove the blade from the knife groove.

2.Then insert the new knife into the groove of the knife groove, taking care to insert it to the bottom. Then fix the screws.

3.After each blade change, adjust and test the depth of the blade, if necessary, to avoid damage to the countertop due to the blade not being in place.

图1

图2

图3

图4

图5

图6

Vibrating Knife Blade Installation t Steps

1.Align the tool locating key to the relative position of the tool holder ,insert, Fig. 1

2.The corresponding guide locking block of the tool is aligned with the corresponding position of the tool holder, and the tool will be embedded in the tool holder ,Fig. 2

3.Pull out the pull ring and turn clockwise ,Fig 3

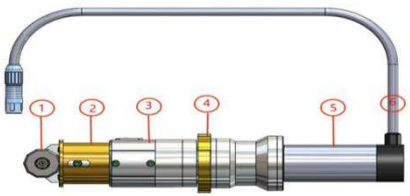
4.Plug in the vibrating knife power cord,Fig 4

5.Installation complete

Note:

When plugging in the power cord, the hand should hold the plug and the protrusion on the plug should correspond to the protrusion on the jack. The socket of the vibration knife is eight holes, and the socket of the round knife is four holes.

电动圆刀工具安装使用 Electric round cutter tools installation and use



NO.	Name	Function
1	Blades	Cutting material
2	Round Knife Cover	installnate cutter plate
3	Round knife main frame	Control direction
4	Rotary block	Fixing to the tool seat
5	Motor	Controlling the knife turn
6	Round Knife Power Cord	Motor power supply

Electric rotary cutter

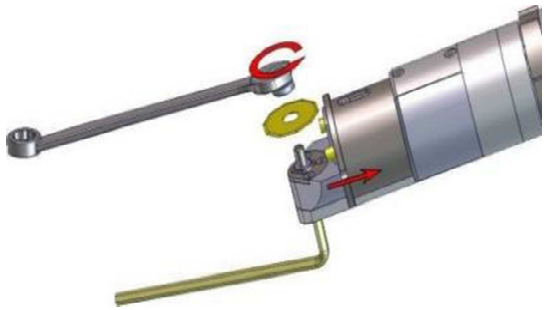
Recommended cutting materials:

①Clothing fabrics

② home textiles (upholstery, bedding, curtains, lampshades, etc.)

③ industrial fabrics (banners, awnings, etc.)

④ composite materials (carbon fiber, glass fiber, armored fibers, carbon fiber pile fabrics, etc.) ⑤ other (blankets, cushions, etc.)



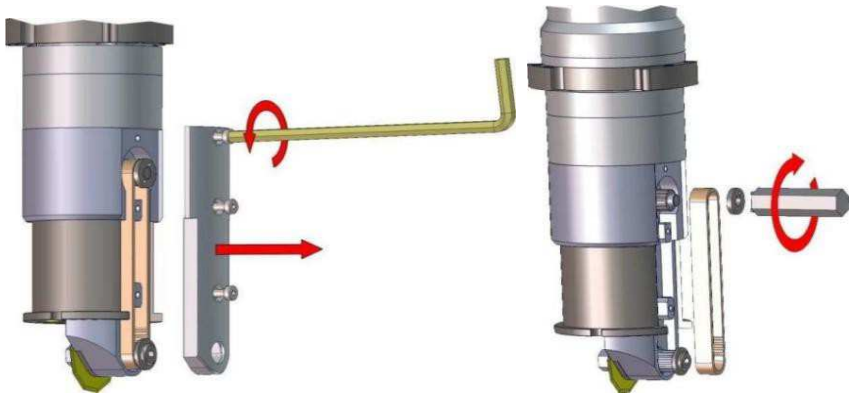
Round Knife Blade Replacement Steps

（(Tools required: #3 Allen wrench, #8 flat head/socket wrench)

1. Hold the cutter shaft with the Allen wrench. Use a flat head/socket wrench to loosen the cutter holder screws and remove them.

2. Push up on the spring loaded pad sleeve and remove the round blade.

3、After each blade change, adjust and test the depth of the blade, if necessary, to avoid damage to the countertop due to the blade not being in place



Steps for replacing the round cutter belt (Figure 2 and 3)

1. Open the three screws on the main frame and take down the locating nut through the special tool as shown in the picture. After replacing the belt, install the locating nut back with the special tool Note that the special tool can only be screwed by hand.

图1

图2

图3

图4

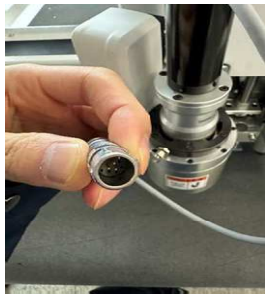


图5

图6

Round Knife Tool Installation Steps

1.Align the tool locating key to the relative position of the tool holder ,insert, Fig. 1

2.The corresponding guide locking block of the tool is aligned with the corresponding position of the tool holder, and the tool will be embedded in the tool holder ,Fig. 2

3.Pull out the pull ring and turn clockwise ,Fig 3、4

4.Plug in the round knife power cord,Fig 5

5.Installation complete

Note：
When plugging in the power cord, the hand should hold the plug and the protrusion on the plug should correspond to the protrusion on the jack. The socket of the vibration knife is eight holes, and the socket of the round knife is four holes.

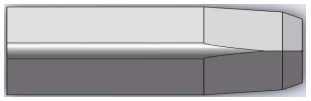
X5单层耗材表X5 Single ply Consumables Table

剪口刀片notch blades

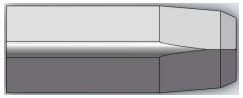
D-315(一字宽4mm加长)

D-312(一字刀宽4mm)

剪口刀片notch blade



D-325(V字刀宽4mm加长)



D-323(V字刀宽4mm)

圆刀刀片Round Knife Blades

D-550（十边刀22mm）

D-551（十边刀25mm）

D-553（十边刀28mm）

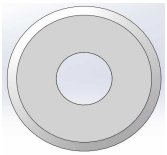
圆刀刀片Round Knife Blades

D-560（十六边22mm）

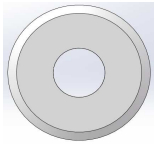
D-561（十六边25mm）

D-562（十六边28mm）

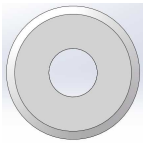
圆刀刀片Round Knife Blades



D-580（圆刀22mm）



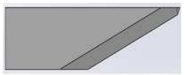
D-581（圆刀25m）



D-582（圆刀28mm）

震动刀刀片Vibrating knife blade

D-290(尖振动刀∠25°)



D-291(尖振动刀∠16°)

D-292(尖振动刀∠16°)

拖刀刀片Drag knife blades

D-118(拖刀-∠45）

D-116(拖刀-∠36）

D-117(拖刀-∠25）

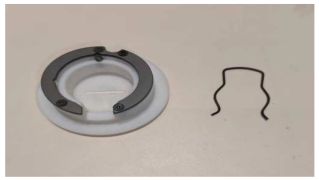
铣刀Milling cutter

铣刀D-410(ϕ6-20）

铣刀D-420(ϕ6-15）

铣刀D-430(ϕ6-12）

刀具刀盘 cutter plate



振动刀、拖刀通用 Vibratory knife, drag knife universal

圆刀刀盘Round cutter plate

润滑脂(170130347)Grease

圆刀同步带Round Knife Synchronous Belt

X5单层耗材表X5 Single ply Consumables Table

	代码	名称	一年用量
整机耗材	170601189	优质灰色4mm毛毡2516标准(1750×7200)	1
	170635027	进口灰色4mm毛毡2516标准(1750x7200)	1
	175023021	进口灰色4mm毛毡2516加收料台(1750x11000)	1
	170635024	优质灰色4mm毛毡2516加收料台(1750×11000)	1
	175035002	优质灰色4mm毛毡2518标准(1950x7200)	1
	175023010	进口灰色4mm毛毡2518标准(1950x7200)	1
	175023012	进口灰色4mm毛毡2518加收料台(1950x11000)	1
	175023003	优质灰色4mm毛毡2518加收料台(1950×11000)	1
	170601366	圆刀刀盘1弹簧（圆刀）	3
	170627001	拖刀 刀盘1弹簧（振动刀、拖刀通用）	3
	170635009、175035001	美国盖茨进口同步带(德国采购圆刀用)	2
	175023023	毛毡软胶水（6个月有效期）	1
	70130480 84530571	保险丝	5
	175023018	X5导轨黄油福斯LF2	2
	170130347	润滑脂OKS422（齿条用）	1
	70130479	熔心G20 2A	2
	70130480	熔心G20 6.3A	2
	84530571	熔心G20 4A	2

刀具	物料代码	名称	型号	一年用量
剪口刀	175019050	D-315(单-一字-宽4加长)	D-315	12
	170619087	D-312(单-一字-宽4)	D-312	12
	175019051	D-325(单-V字-宽4加长)	D-325	12
	170619091	D-323(单-V字-宽4)	D-323	12
圆刀	170619079	D-580（单-圆刀-φ22）	D-580	100
	170619080	D-581（单-圆刀-φ25）	D-581	100
	170619081	D-582（单-圆刀-φ28）	D-582	100
	170619083	D-550（单-十边-φ22）	D-550	100
	170619084	D-551（单-十边-φ25）	D-551	100
	170619086	D-553（单-十边-φ28）	D-553	100
	175019047	D-560（单-十六边-φ22）	D-560	100
	175019048	D-561（单-十六边-φ25）	D-561	100
	175019049	D-562（单-十六边-φ28）	D-562	100
拖刀	170619060	D-118(单-拖刀-∠45)	D-118	200
	170619061	D-116(单-拖刀-∠36)	D-116	200
	170619062	D-117(单-拖刀-∠25)	D-117	200
震动刀	170619068	D-290(单-尖振动刀-∠25°)	D-290	300
	170619069	D-291(单-尖振动刀-∠16°)	D-291	300
	170619070	D-292(单-平振动刀-∠16°)	D-292	300
铣刀	175019022	D-410(φ6-20)	D-410	100
	175019023	D-420(φ4-15)	D-420	100
	175019024	D-430(φ3-12)	D-430	100
斜刀	175019044	D-174(单-斜-1)	D-174	100
压轮	175001099	BMW-010-01-0524-1.5单压轮		
	175001100	BMW-010-01-0624-0.4双压轮		
	175001101	BMW-010-01-0724-0.7单压轮		
	175019014	BMW-010-02-0355-1.25单压轮		
	175019015	BMW-010-02-0455-3单压轮		
	170601330	BMW-010-02-02_Ø55-Ø0.5单压轮(606471)		

03 Cutting machine care and maintenance instructions

裁床保养维护说明_Cutting machine care and maintenance instructions

裁床保养Cutting machine maintenance

以“养”代“修”Maintenance instead of repair

延长寿命prolonging life

保证效率ensuring efficiency

Just like a working partner, a cutting machine needs to be well taken care of. Taking care of your cutting machine and regular maintenance is a direct guarantee of productivity.

The Importance of Cutting Machine Maintenance:

Firstly, maintenance of the cutting machine ensures that the cutting machine is in the best state of performance and can be used at any time without worrying about the technical condition of the cutting machine.

Secondly, it can effectively improve the efficiency of cutting and reduce the consumption of parts and operating machinery. For example, if the rack and pinion is maintained regularly, it will run stably and cutting will be easier.

Thirdly, to avoid the continuous occurrence of minor problems with the cutting machine, maintenance can make the overall performance of the cutting machine improved, and minor problems can be detected and dealt with in a timely manner.

Fourthly, it can minimize the vacuum pump heating and X and Y axis jamming. After the maintenance of the cutting machine, it will clean the filter pads, guide rails, wire molds, etc., which can effectively deal with the problems of insufficient vacuum suction and poor running of the beams.

Fifth, keep the appearance of the bed neat, tidy and clean, the fabric is not contaminated, and the working environment is pleasing to the eye.

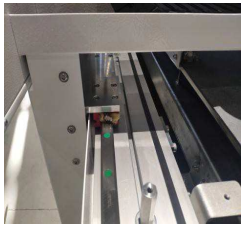
保养标准流程 Maintenance standard process

Maintenance reminders, phone appointments

Door-to-door service
Arrive on time

Cutting head maintenance Clean and inspect the entire structure of the cutting head mechanism, knives, shearing tools, etc.

Crossbeam cleaning Y-axis guides, rack and pinion, dust belt and drag chains are checked and cleaned.



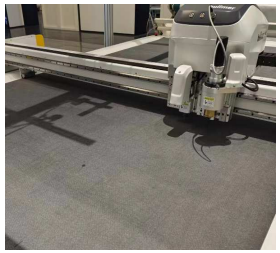
Bed cleaning X-axis linear bearings, rack and pinion, and other important parts of the comprehensive cleaning inspection

Electronic control inspection fan and all electronic control components cleaned and inspected

Completion of delivery and submission of inspection reports, acceptance scoring

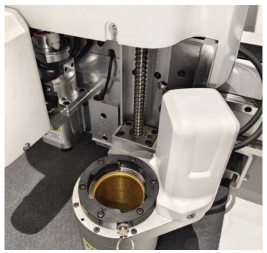
Follow-up visits
Satisfaction surveys

裁床保养之日保养 Cutting maintenance day care



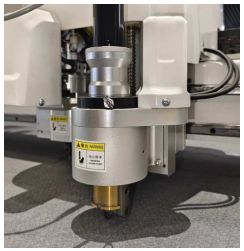
Felt

Blow the felt with an air gun before the end of each day to keep the bed clean.



Cutting head

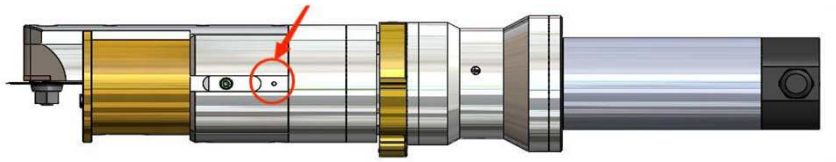
Check the silk rod and knife holder for foreign objects before the end of each day.



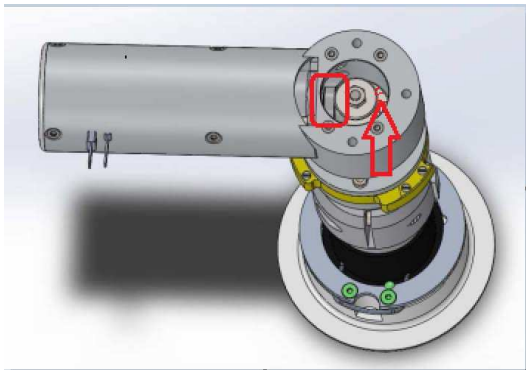
Knife Depth

Go to work every day and test the tool depth to see if it matches the tool drop depth.

裁床保养之月保养Monthly Maintenance of Cutting Machine



Motorized rotary round knives
Lubrication intervals: Quarterly or as appropriate (in case of wear, noise) Grease: Grease (BARCH L 1002), etc.

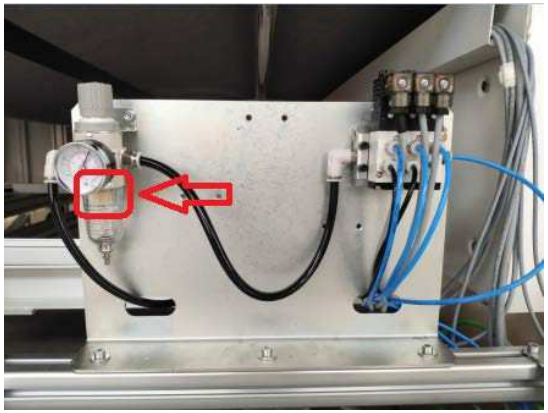


Electrodynamic Vibrating Knife

Lubrication interval: quarterly or depending on the situation (wear, noise) Grease: grease (BARCH L 1002), etc.

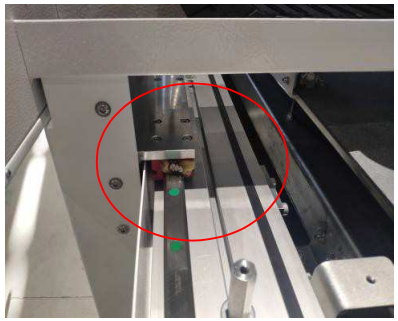
Lubrication amount: Adequate

Position: Left bearing and bottom flat surface



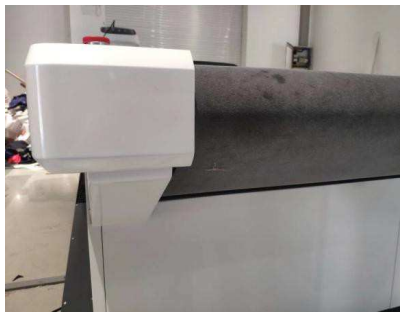
Compressed air processor

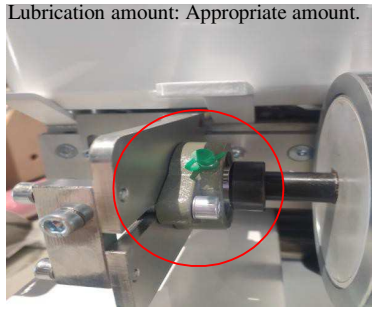
Maintenance intervals: observe the cartridge once a month, if the cartridge turns black, replace the entire compressed air processor Location.



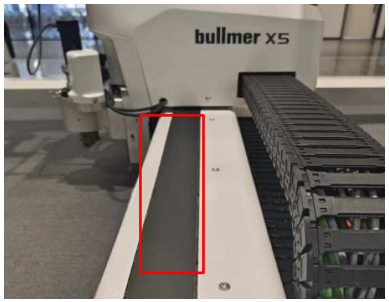
Y-axis linear bearing maintenance lubrication
Lubrication interval: once a month, (in case of wear and noise)
Grease: Grease (BARCH L 1002), etc.
Lubrication amount: Appropriate amount.

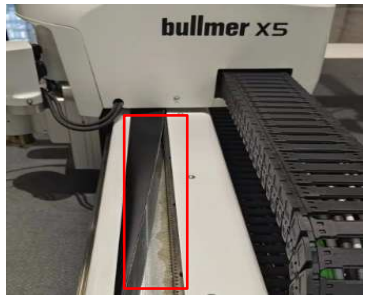
X-axis linear bearing maintenance lubrication
Lubrication interval: once a month, (in case of wear and noise)
Grease: Grease (BARCH L 1002), etc.
Lubrication amount: Appropriate amount.





Roller Bearing Flange
Lubrication interval: once a month, (in case of wear and noise)
Grease: Grease (BARCH L 1002), etc.
Lubrication amount: Appropriate amount.





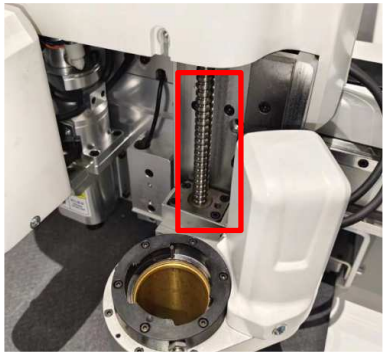
Y Rack
Lubrication interval: once a month, (in case of wear and noise)
Grease: Grease (BARCH L 1002), etc.
Lubrication amount: Appropriate amount.

X Rack

Lubrication interval: once a month, (in case of wear and noise)

Grease: Grease (BARCH L 1002), etc.

Lubrication amount: Appropriate amount.



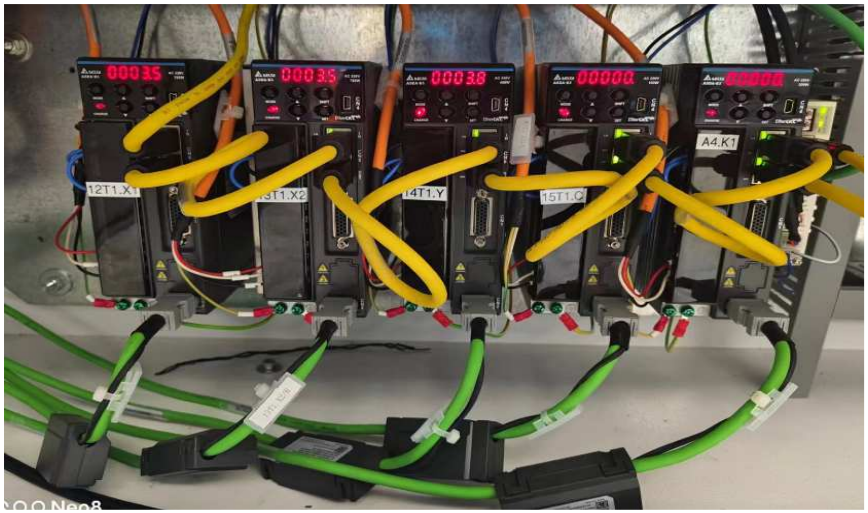
K-axis trapezoidal threaded spindle

Lubrication interval: once a month, (in case of wear and noise)

Grease: Grease (BARCH L 1002), etc.

Lubrication amount: Appropriate amount.

▶ 更换台达驱动器电池Replacement of Delta Drive Battery



Replacement of the battery process

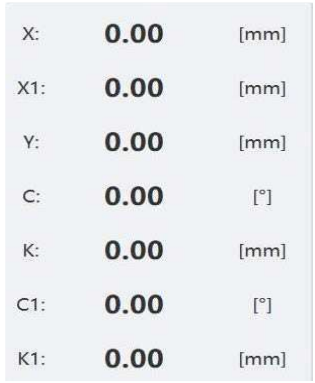
In case of zero point loss, consider the battery is dead and needs to be replaced Battery cycle: once every two years or slightly different depending on the actual use Battery model: ASD-MDBT0100

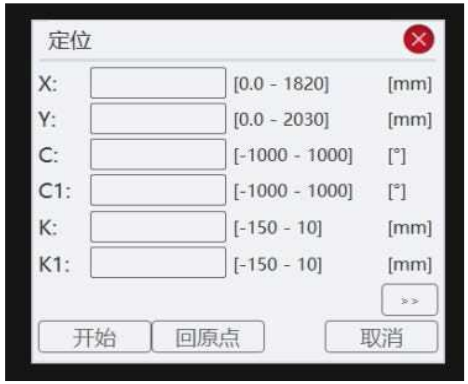
①Use a screwdriver to pry open both ends and open the battery cover.

②Pull out the terminals and replace the battery.

①Use a screwdriver to pry open both ends and open the battery cover.

②Pull out the terminals and replace the battery.





Note

1. Use Delta's original battery replacement, which needs to be completed within ten minutes
2. Ensure that all axes for which spare batteries are to be replaced are moved to the 0 position:

① Open the Status Window, where you can see the current position of each axis. To do this, click the right mouse button in the toolbar or in the information window. You will see a context menu listing all available windows and toolbars. Activate the "Status window".

② Open the dialog in "pos..." to get the "Positioning" dialog. Click "Home" to continue, placing the X-axis and Y-axis at zero position.

③You must use a separate positioning command to move the height axis to 0. This height axis is located on the last line of the positioning window. Enter 0 and press the "Start" button.

④ If the machine is equipped with a second height axis, it should be moved to the zero position.3. Press the Emergency button when all relevant axes are in the 0 position.4. The batteries are located in the black case, use the batteries to remove the cover.5. After replacing the batteries make sure that the positions of all affected axes are still at 0. If this is the case, you can use the machine as usual.

04 Safety Regulations for Cutting Machine

This Safety Operating Manual is specifically tailored for the 'Electrical Control System Safety Operations' of the Cutting Table Industry at BULLMER MECHANICAL AND ELECTRICAL TECHNOLOGY CO., LTD, providing guidance to operators on the correct operation of the electrical control system.

Purpose and Scope of Application

1、*Purpose*

To raise the awareness of operators regarding safe machine operation and improve their safety operation skills, to prevent violations, and ensure the safety and health of the operators as well as the "safety" — normal operation of the machines

2、*Scope of Application*

All employees who operate the machines

Safety Operating Guidelines for the Cutting Table

1、*General Principles*

All operators must adhere to the concept of "safety first, prevention first" and strictly follow the safety operation manual to operate the machines, to prevent safety accidents from occurring.

2、*Safety Operation Management*

1、Operating Permissions: Only authorized personnel may start, stop, or perform other operations on the machine. Unauthorized individuals are not allowed to perform these operations.

2、Do not run other software on the control system, and do not use the external interfaces of the control system (such as the USB ports on the cutting table).

3、During maintenance, the device must not be started or stopped (ensure the power is off during maintenance).

4、During system operation, never press the wrong button, input incorrect parameters, or reverse the start/stop sequence of the system.

Safety Operating Rules

1 Precautions during Operation

1Pneumatic System

a. Ensure that the air path is clear, and the air source processor pressure is correct. Do not adjust the pressure of the air source processor without authorization.

b. Do not randomly adjust the control pistons of the pneumatic cylinders' intake and exhaust pipes.

2Electrical System

a.Do not run other software unrelated to the cutting table on the machine.Do not use the external interfaces on the industrial computer.

b.Unless there is a special need, do not modify parameters in the control program without authorization.

c.If the safety switch is triggered and the software is locked, do not unlock or control the machine if other personnel are inspecting it.

3After cutting is completed, first close the control software, then disconnect the air supply, and finally turn off the main power switch (Q1).

2Handling Abnormal Situations

In the event of abnormal situations such as blade breakage, first turn off the power before addressing the issue.

Maintenance Precautions

1 Maintenance or replacement of electrical components in the control box:Shut down the software or turn off the power. Inform other personnel to refrain from starting the system to prevent electric shock.

2 Maintenance or replacement of the felt:Shut down the software or turn off the power. Inform other personnel to refrain from starting the system to prevent the motor from running and potentially causing hand injuries.

3 Maintenance or replacement of the X and Y axis rack:Shut down the software or turn off the power. Inform other personnel to refrain from starting the system. When lubricating the chain, use a brush to apply oil to avoid hand injury from the moving motor.

4 Maintenance or replacement of linear bearings:Shut down the software or turn off the power. Inform other personnel to refrain from starting the system. When lubricating the chain, use a brush to apply oil to avoid hand injury from the moving motor.

5 Maintenance or replacement of drum flanges:Shut down the software or turn off the power. Inform other personnel to refrain from starting the system. When lubricating the chain, use a brush to apply oil to avoid injury from the rotating parts.

6 Maintenance or replacement of the cutting tools:Shut down the software or turn off the power. Inform other personnel to refrain from starting the system to prevent injury from the tools.

7 Maintenance or replacement of the K-axis lead screw:Shut down the software or turn off the power. Inform other personnel to refrain from starting the system to avoid hand injury from the K-axis bearing or impact injuries.