

PK User's Manual



Hangzhou IECHO Science & Technology Co.,LTD.

FOREWORD

PK automatic intelligent cutting system adopts fully automatic vacuum chuck, automatic lifting and feeding platform. Equipped with various of tools, it can quickly and precisely make through cutting, half cutting and creasing. It is suitable for sample making and short-run customized production for Signs, Printing and Packaging industries. It is a cost-effective smart equipment that meets all your creative processing.

Features

1. Combine intelligent cutting/creasing function-meet all your creative processing demands

Cutting labels of any shape

Cutting/creasing cardboard and carton

2. Precise automatic positing system

With high-definition CCD camera, it realizes automatic and precise positing of various materials, automatic contour cutting, solving problems such as manual positing and printing deformation, so as to achieve simple and precise cutting purposes.

3. Barcode management system

Scanning barcodes allows quick reading of cutting tasks.

4. Automatic feeder

Fully automatic feeding system for more efficient production.

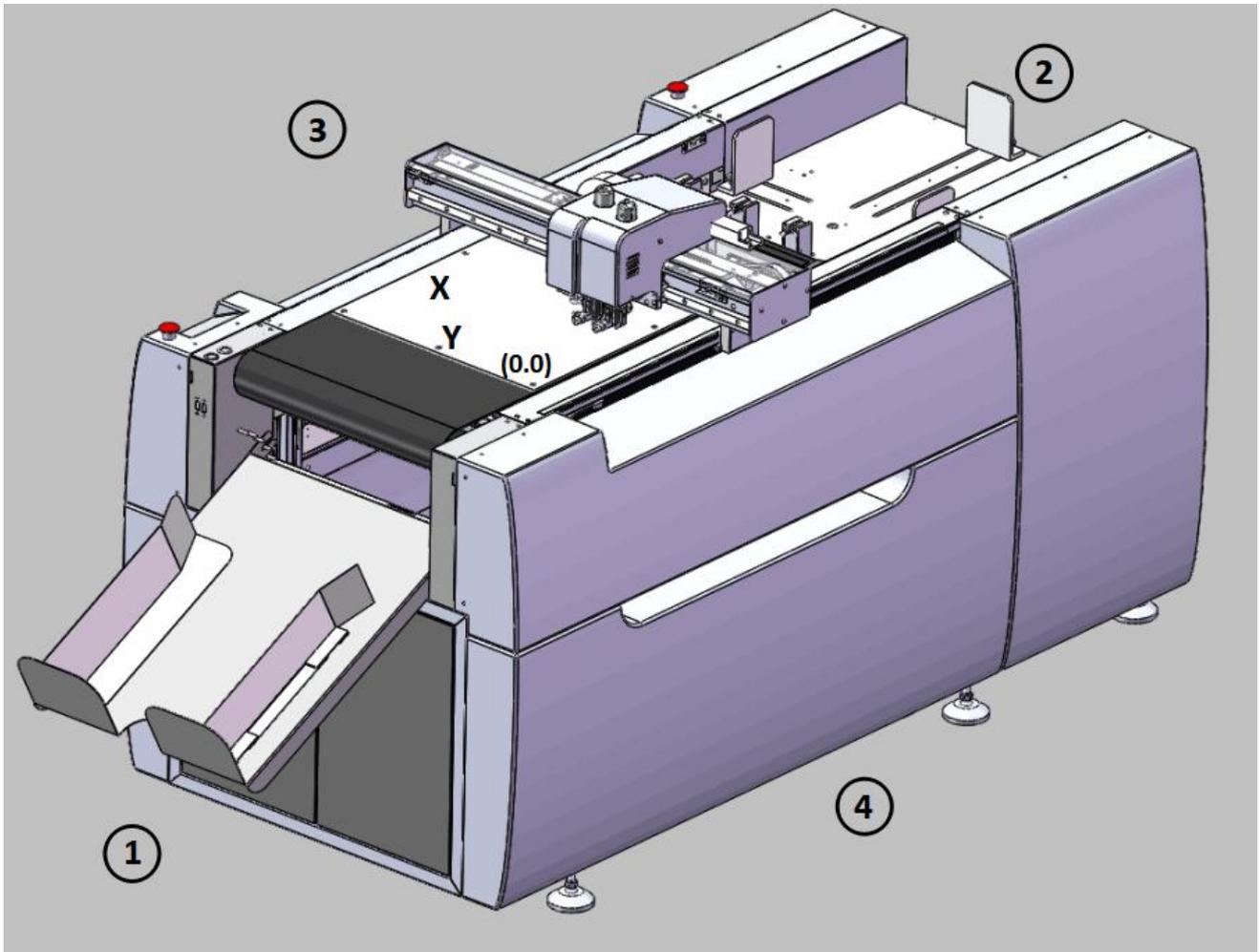
5. Working Principles

Import the files by IBrightCut, the user can process the files and send the processed cutting files to CutterServer. According to the cutting files, the controlling system will create motion control signals. With the signals, servo motors execute the tools to go up/down and control modules movement. Thereby, the machine achieves the high-speed and high-precision cutting.

1. Technical Parameters

Machine model	PK-0604
Conveyor system	Vacuum chuck
Material dimension	600mm x 400mm
Tools	Universal Cutting Tool, Creasing Tool, Kiss-cut Tool, Oscillating Tool
Max cutting speed	1000mm/s
Cutting thickness	≤6mm
Accuracy	0.1mm
File format	DXF、PLT、PDF、HPG、HPGL、TSK、BRG、XML、CUT、OXF、ISO、AI、 PS、EPS
Interface	USB Port
Voltage	220v±10%50HZ
Total power	4KW
Dimension	2350mm x 900mm x 1150mm
Air pressure requirement	0.6MPa, Dry compressed air
Operating environment	Temperature: 0°C-40°C ; Humidity: 20%-80%RH
Storage temperature	- 20 to + 55°C

1.1 PK Direction Information



- 1 front
- 2 back
- 3 left

- 4 right
- X X-axis
- Y Y-axis

1.2 List of tools

Image	Description	Activity
	<p>Various Allen keys (SW 1.5 to 8)</p>	
	<p>Various open-ended spanners (SW 5.5-19.2x10)</p>	
	<p>Various Phillips and slotted screwdrivers</p>	
	<p>Precision spirit level</p>	<p>To level the machine foot</p>
	<p>Electric drill</p>	
	<p>Side cutters</p>	<p>To open the transport locking devices</p>
	<p>Measuring tape</p>	

2. Preconditions

2.1 Installation location

Make sure that the following requirements are met:

- The installation location is level and can withstand the floor loads.
- The shipping crates can be deposited close to the installation location and their presence does not prevent the machine from being assembled.
- The aisle width from the unloading location to the installation location is at least larger than the dimensions of the packing crates.
- The electrical and air connections meet the requirements listed in the technical data.
- The installation location is well-lit.
- At least 1 meter of space is available all around the cutting system for service and daily operation.

2.2 Personnel

Make sure that the following requirements are met:

- The support personnel wear safety clothing and work gloves.
- The support personnel are familiar with the hazards associated during machine installation and have read and understood the mounting instructions.

2.3 Environmental conditions

	Value	Unit
Operating temperature	+ 10 to + 35	°C
Storage temperature	- 20 to + 55	°C
Relative humidity	10 - 80, non- condensing	%

2.4 Basic device compressed air

Conveyor feeding clamps	Value	Units
Operating pressure	0.6	MPA
Min. air flow	0.4	m ³ /min

3. Installation

3.1 Opening and inspecting packing crates



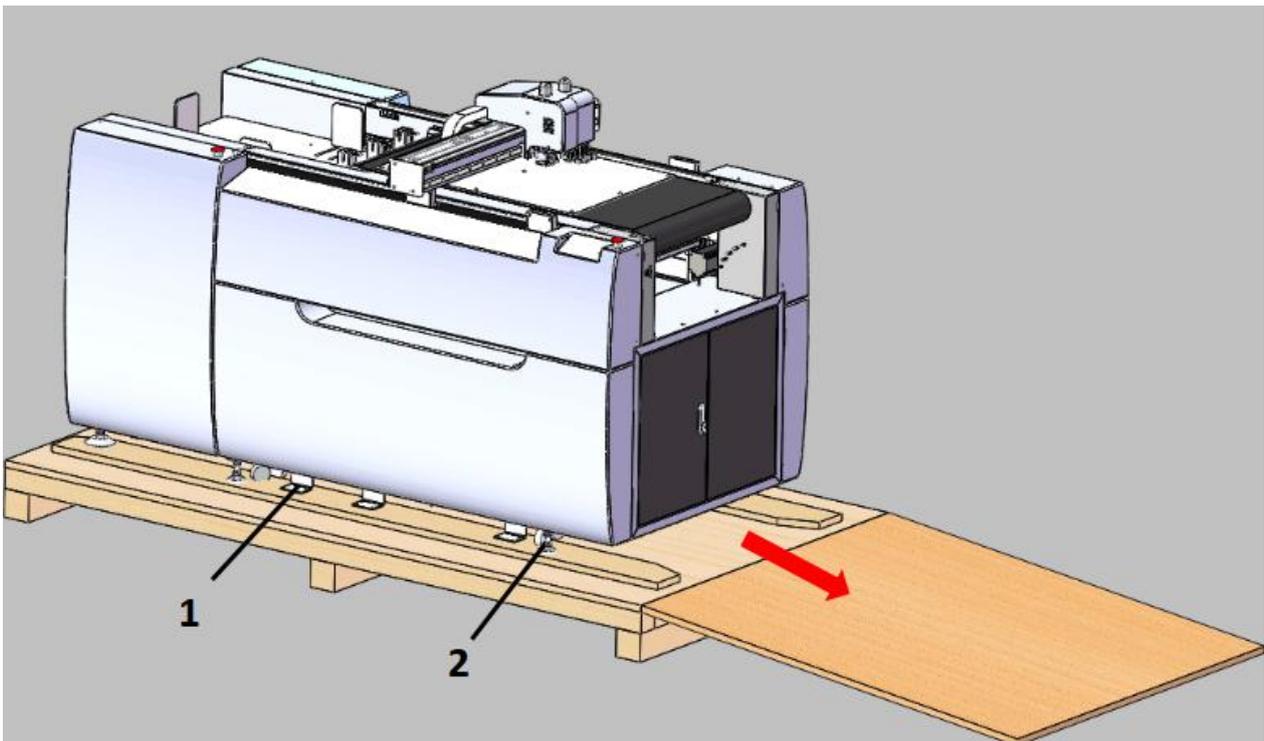
Note:

Prevent the crate cover from warping when placed at an angle. Place the packing crate level.



Note:

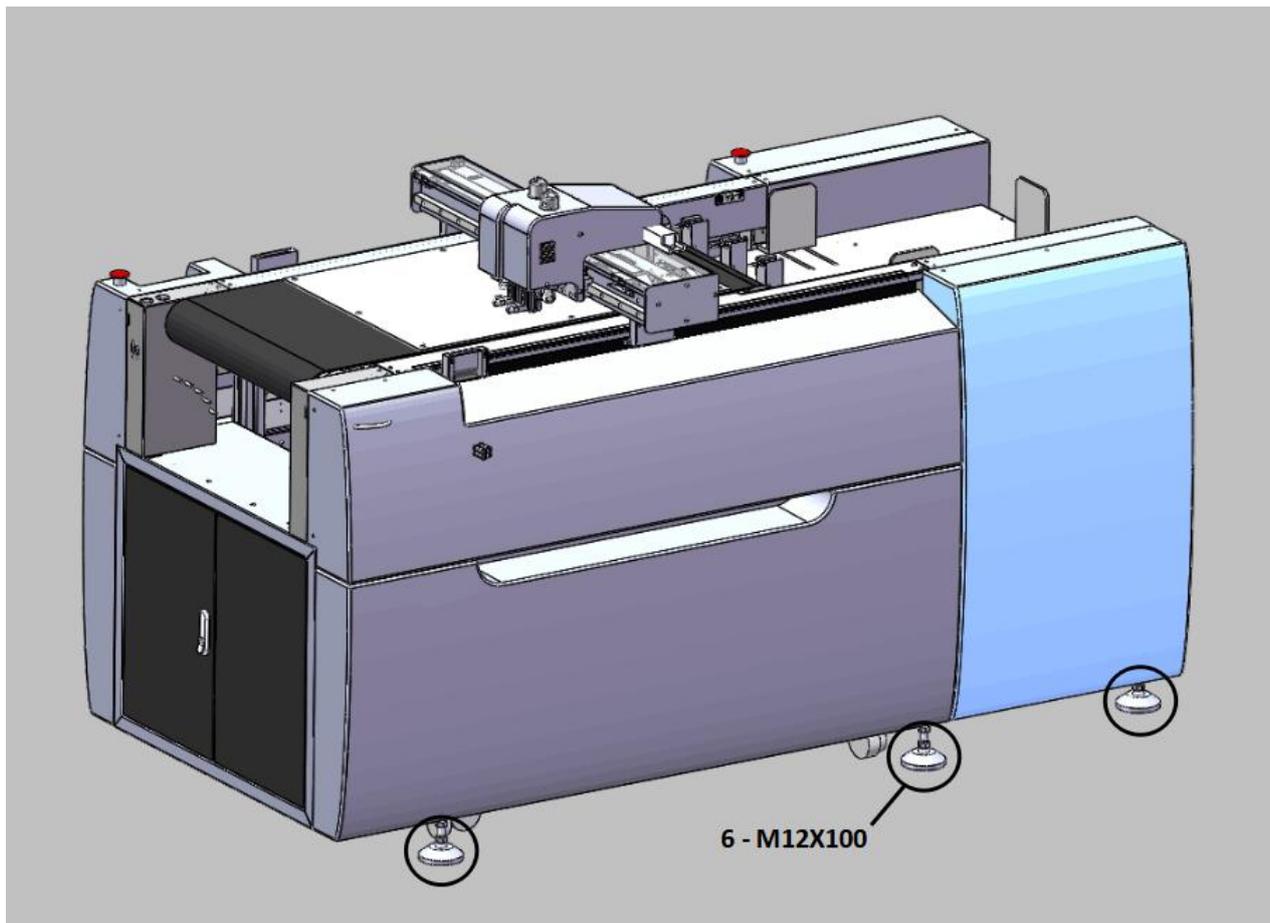
- Only complete the installation when all parts are present and undamaged.
- Inform IECHO customer service if any parts are missing or damaged.
- Replenish or replace missing or damaged parts.



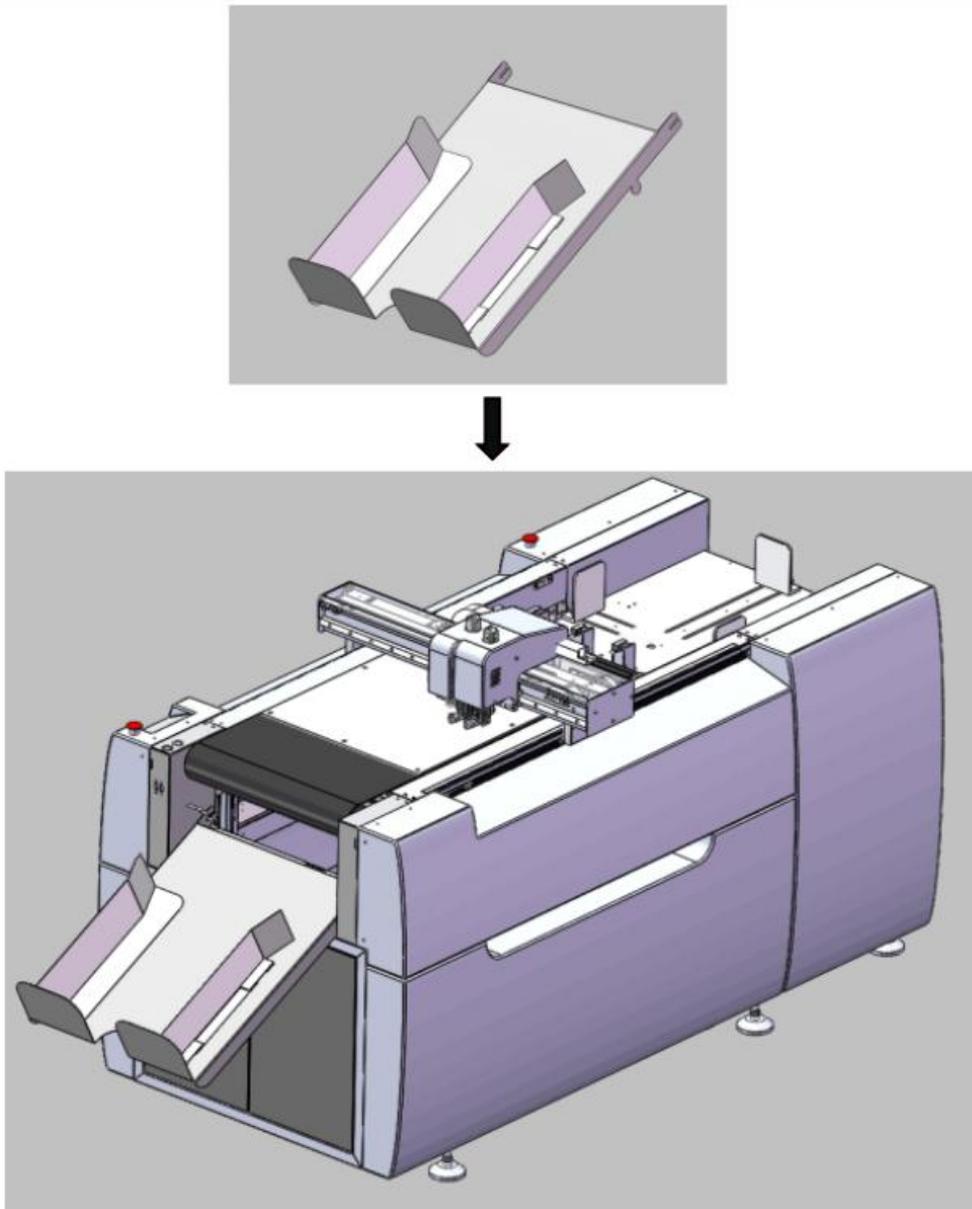
- A** Remove all screws on the upper side of the packing crate.
- B** Remove all the fixed support (1).
- C** Lifting all the machine feet (2), and then push machine down slowly from packing crate.

3.2 Initial leveling of the base frame

- A** Lift each side support end to keep the balance by precision spirit level.
- B** Determine the basic position of one foot and adjust the height of other machine feet according to the basic position. Finally, to make all feet are at the same level.



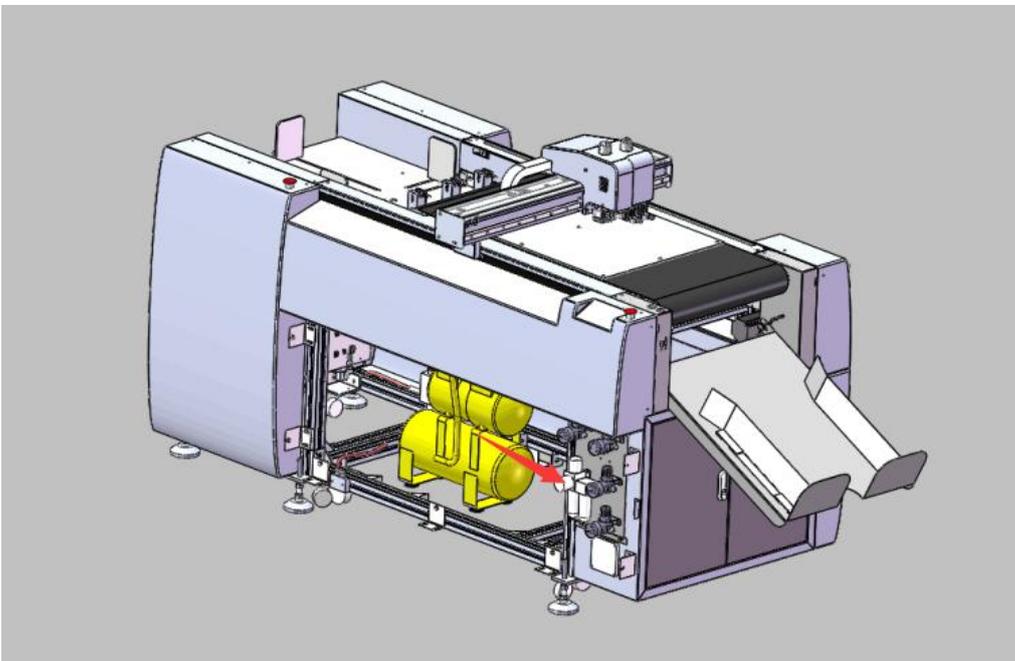
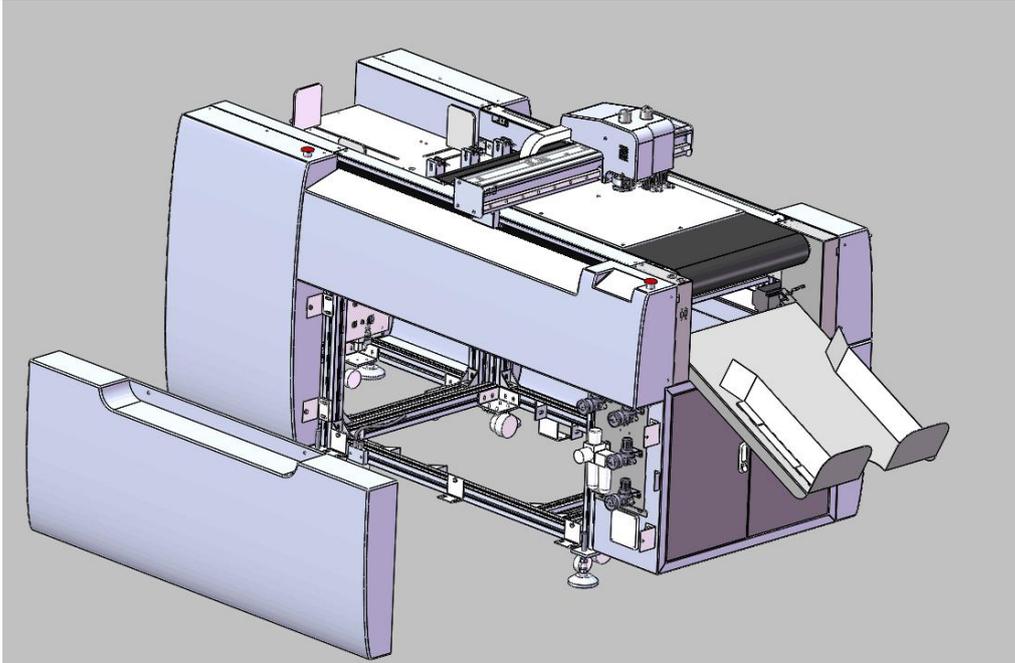
3.3 Installing collection device



- A** Install the collection device at the specified location.
- B** The angle of collection device can be adjusted depending on the size of the material.

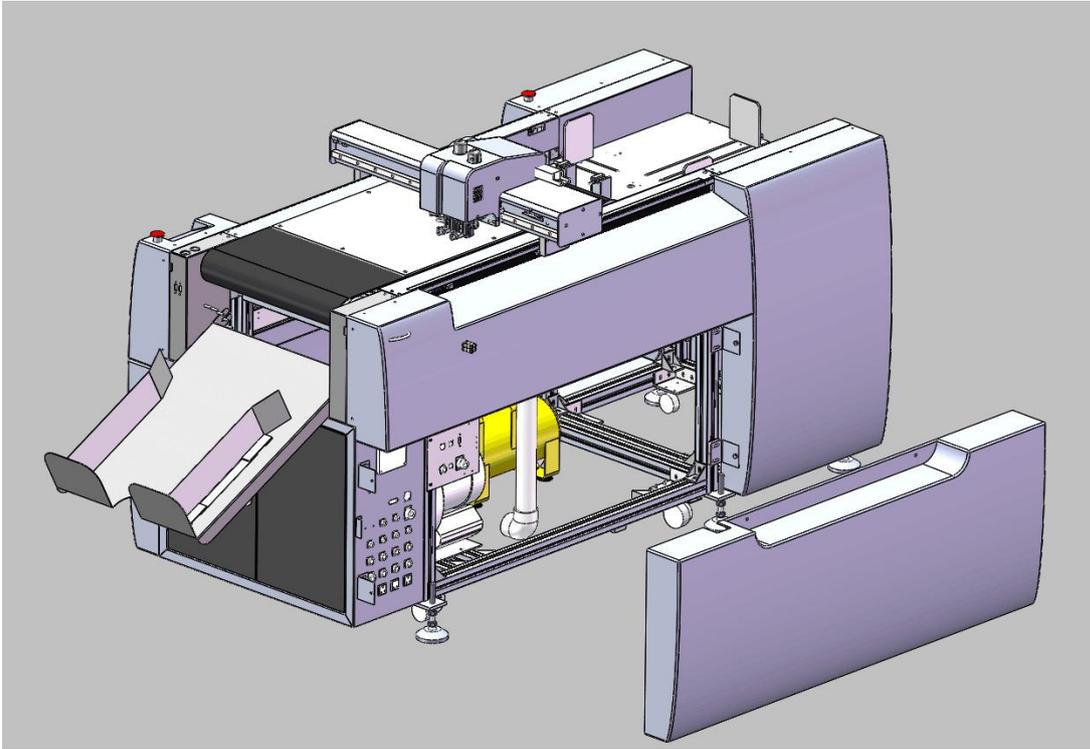
3.4 Air supply connection.

Open the cover, and the air compressor is placed under the table.
The diameter of air tube is 8mm.



3.5 Power installation

Vacuum pump, machine and PC : all come with single-phase three-wires electronic control system.

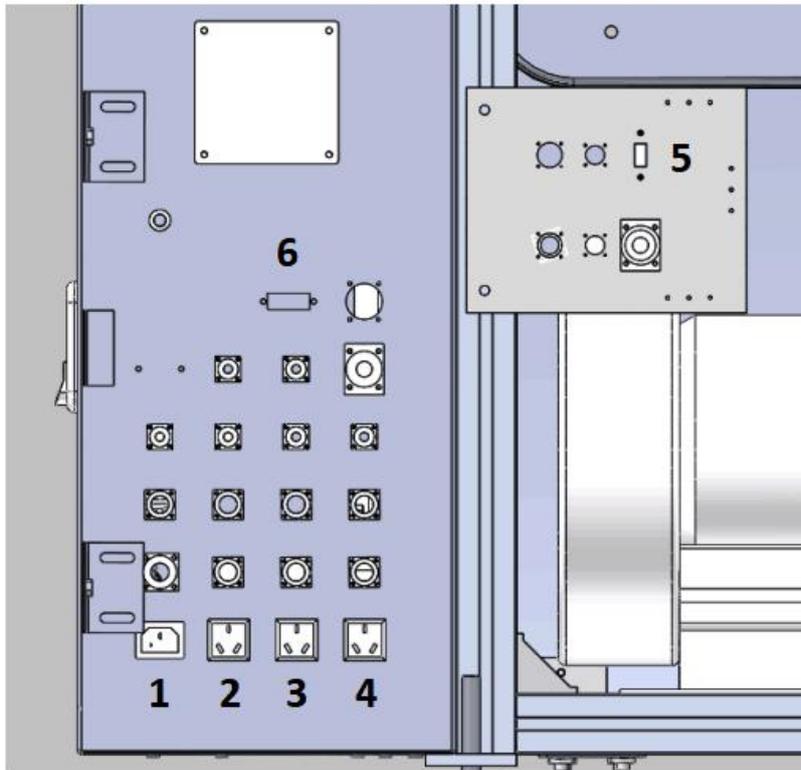


3.5.1 Connect the static device



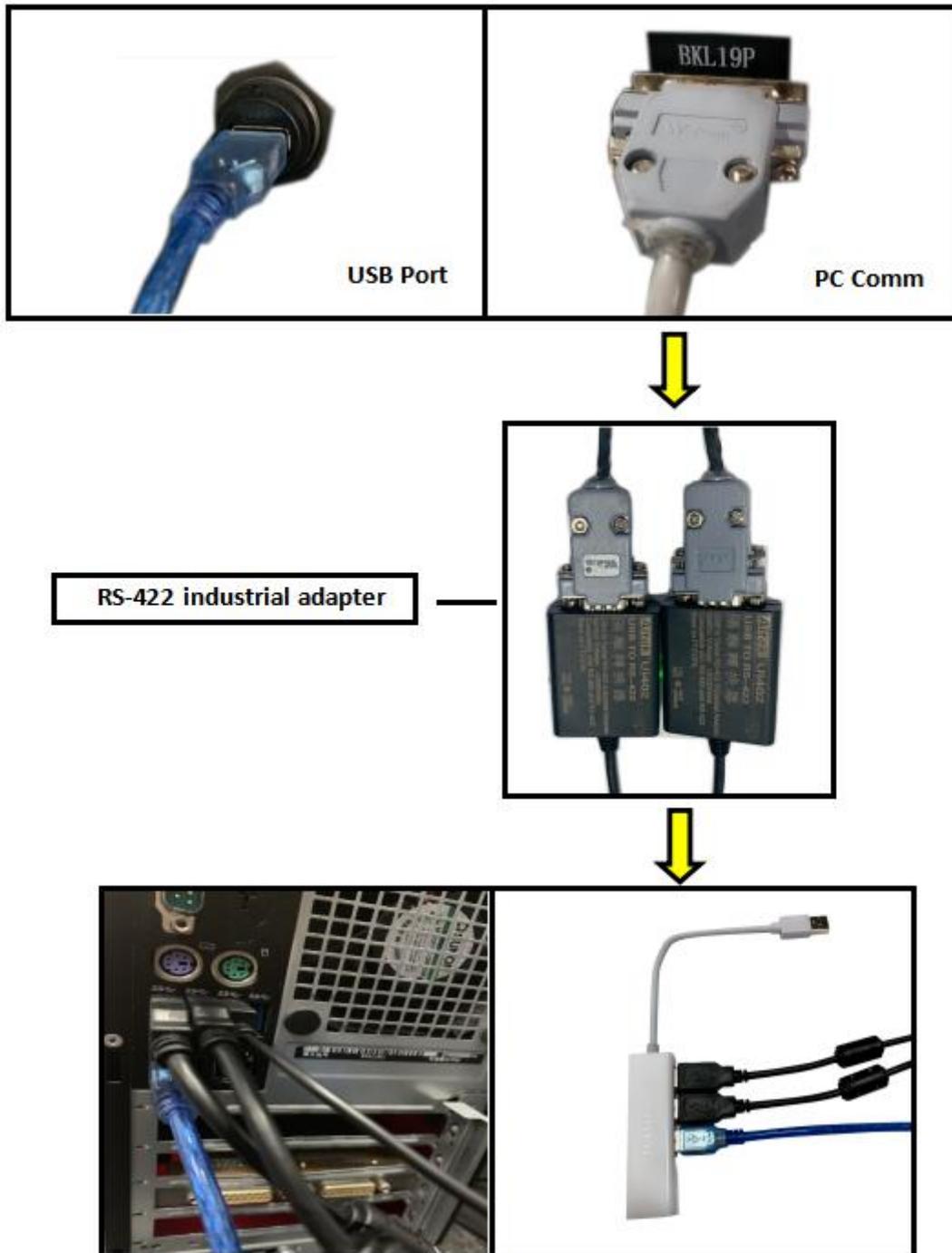
1. Connecting the cable and G wire .
2. Install to work on a static with automatic device .

3.5.2 Power input and other connector information

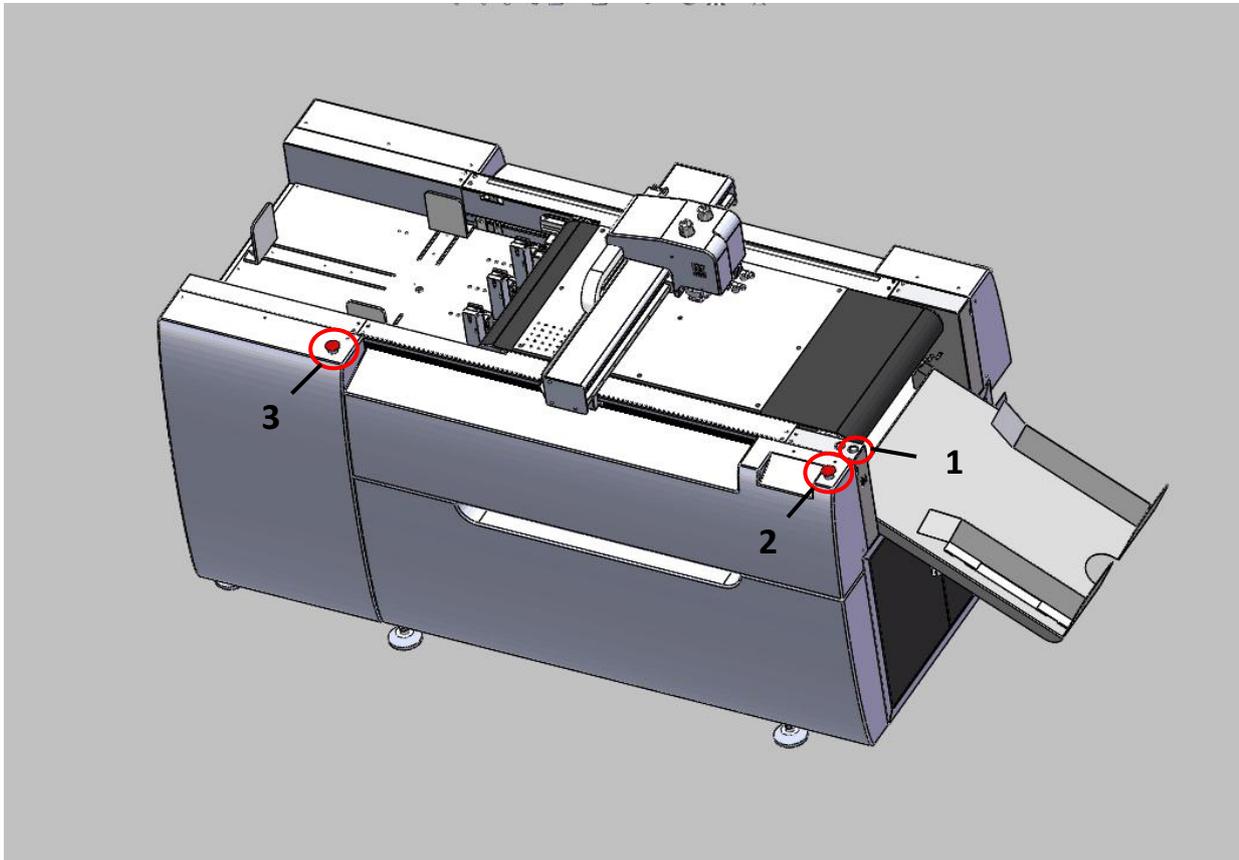


- | | | | |
|---|-----------------------------|---|----------------------------|
| 1 | AC220V Input | 4 | Connector of static device |
| 2 | Connector of power strip | 5 | USB port for CCD camera |
| 3 | Connector of air compressor | 6 | PC Comm |

3.5.3 Connect the PC or laptop to the cutter



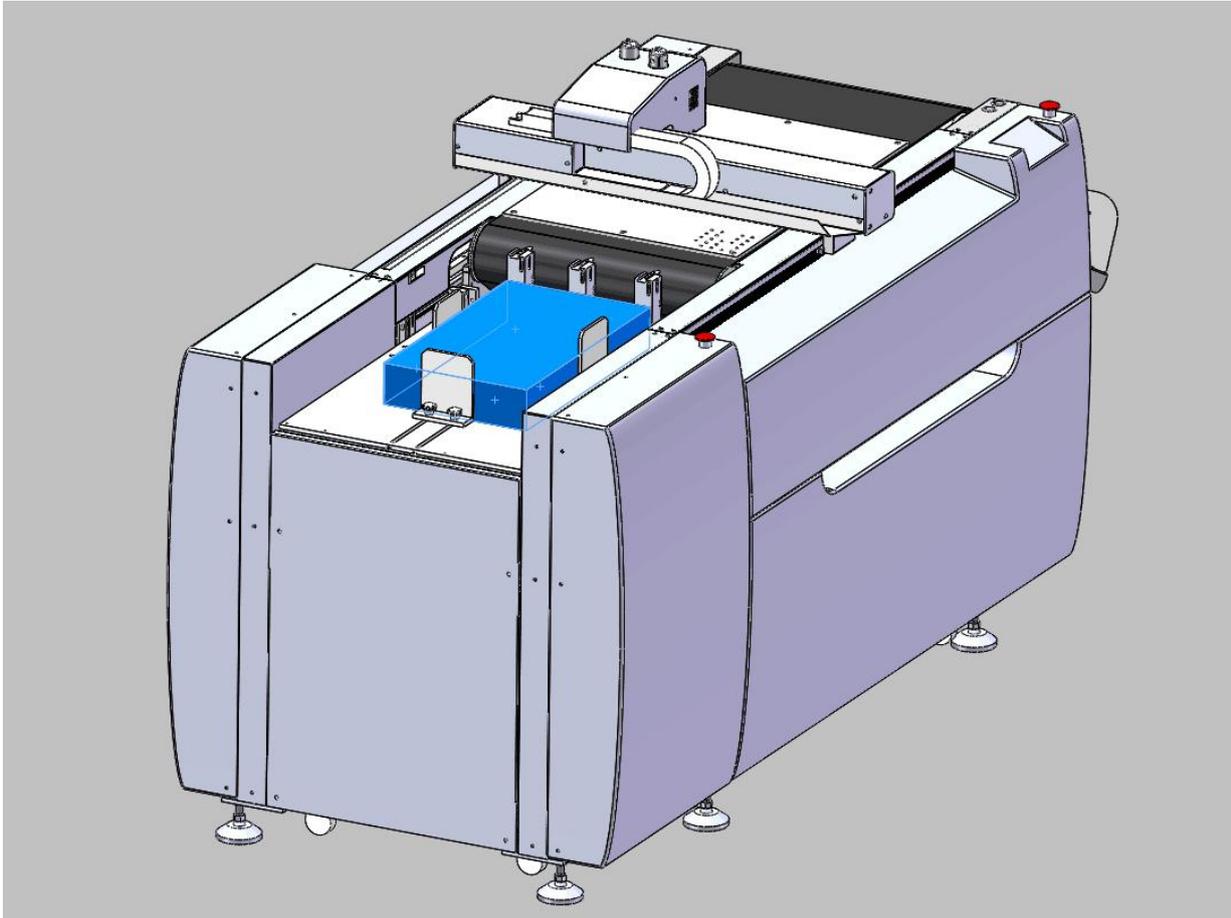
4. Safety device on the machine and main switches



- | | | | |
|---|--------------|---|-----------------------|
| 1 | Main switch | 3 | Emergency stop switch |
| 2 | Pause switch | | |

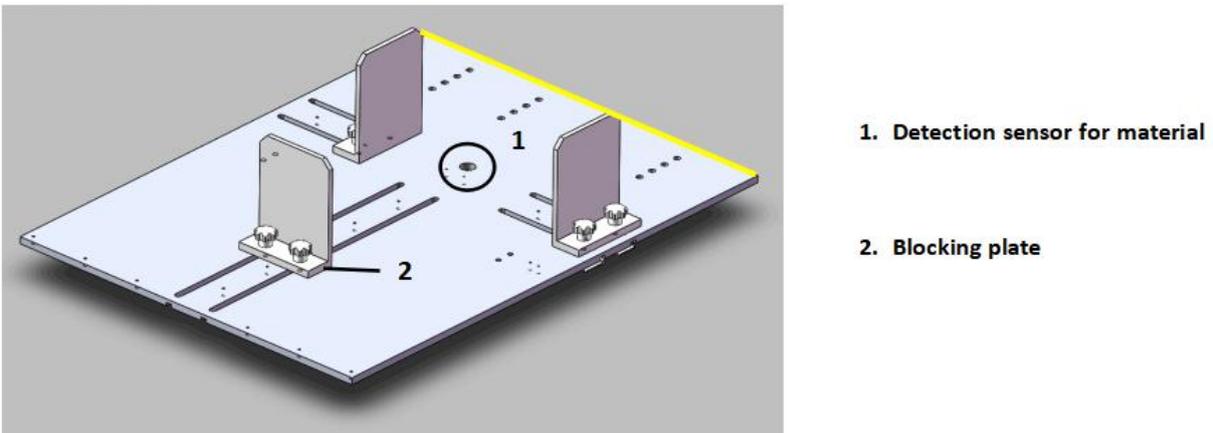
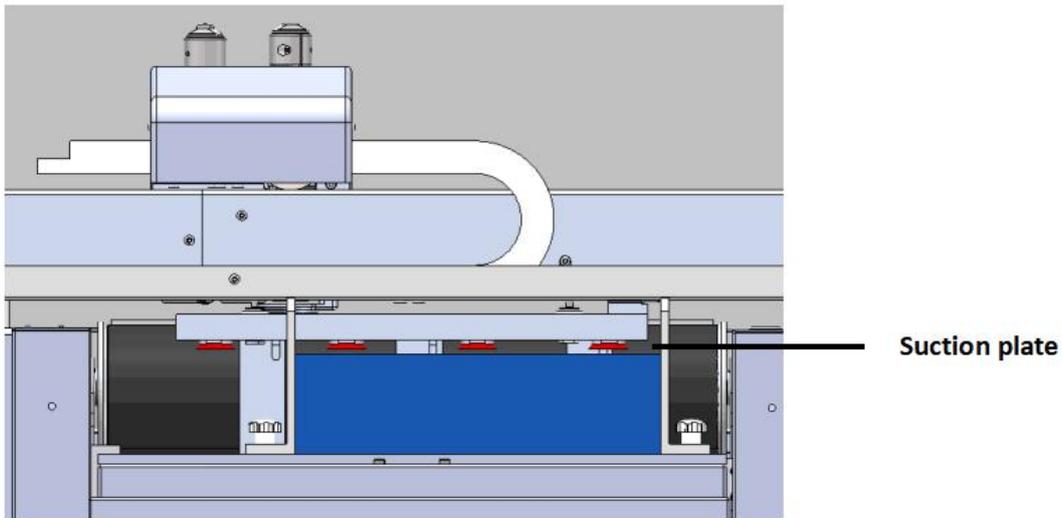
5. Feeding system for sheet materials

5.1 Put the materials on the specified position, and then adjust blocking plates.



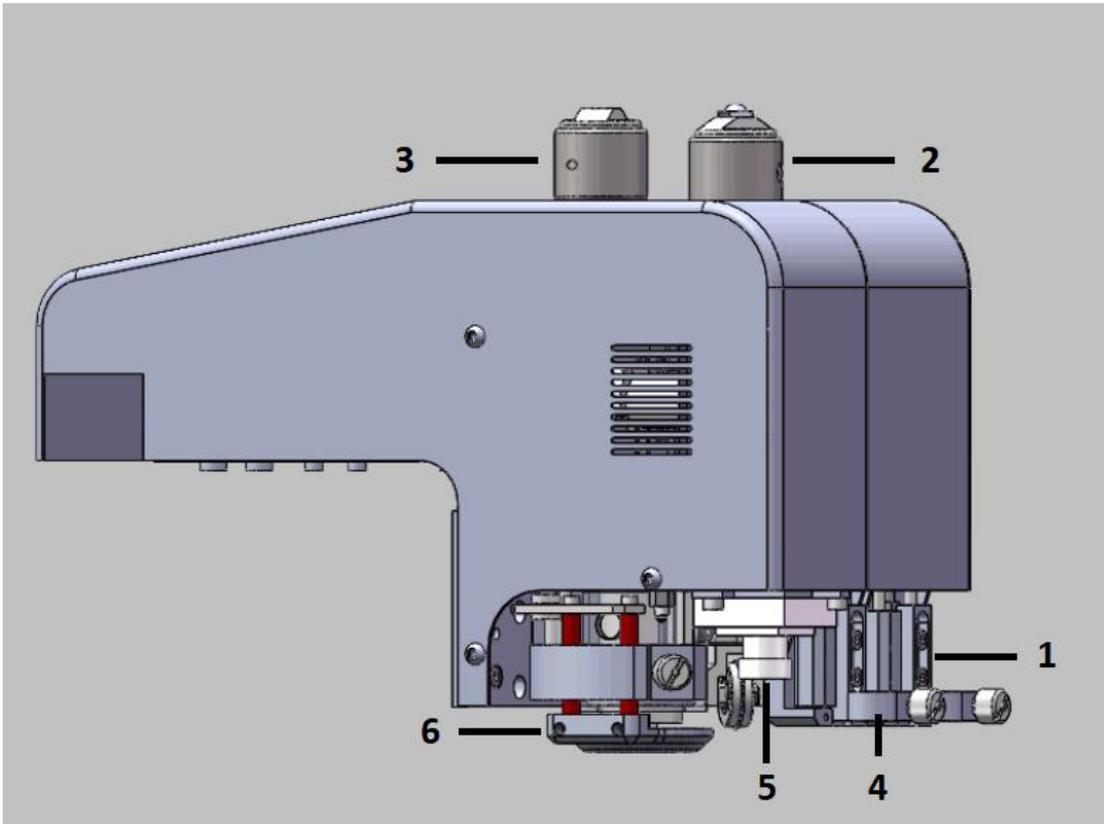
5.2 Adjust the placement of material meet the following requirements:

- 1. According to the position of the suction plate, adjust the position of materials to achieve the best adsorption effect.**
- 2. The edge of materials should be aligned with the edge of the loader.**



6. Module information

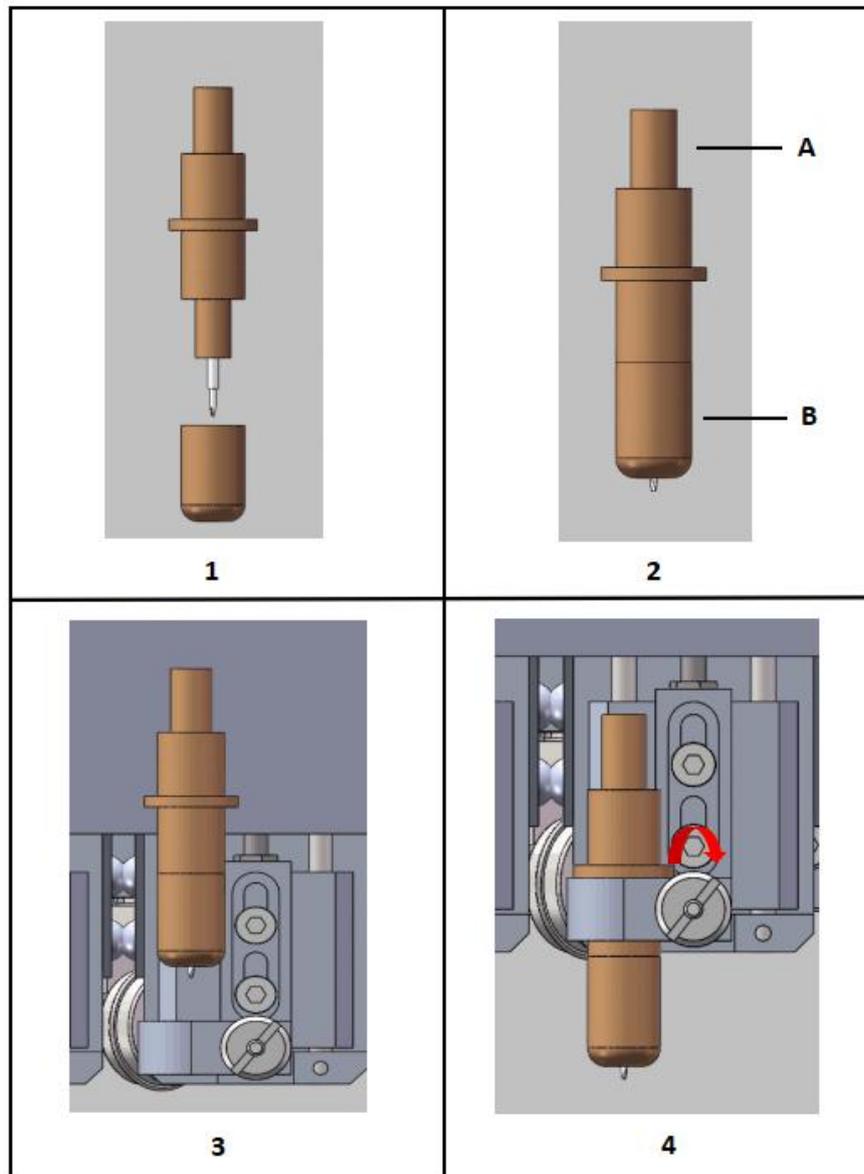
PK digital cutter including 4 type tools : TW1, TW2, Crease, EOT (optional)



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|---|--------|---|----------------------------|
| 1 | TW 1 | 4 | TW 2 |
| 2 | Crease | 5 | CCD Camera |
| 3 | EOT | 6 | EOT Material Pressing Tray |

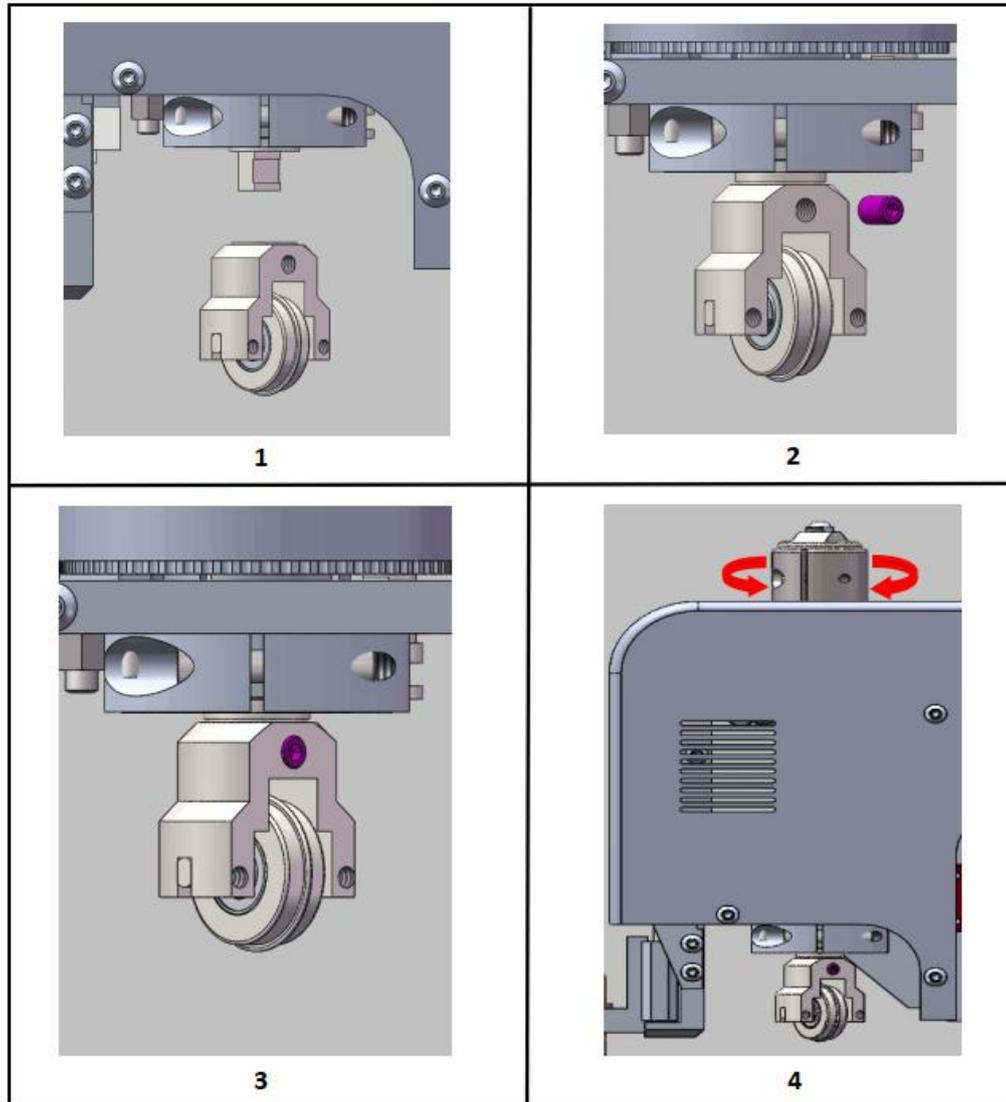
6.1 Tools installation

6.1.1 TW1 / TW2 tool



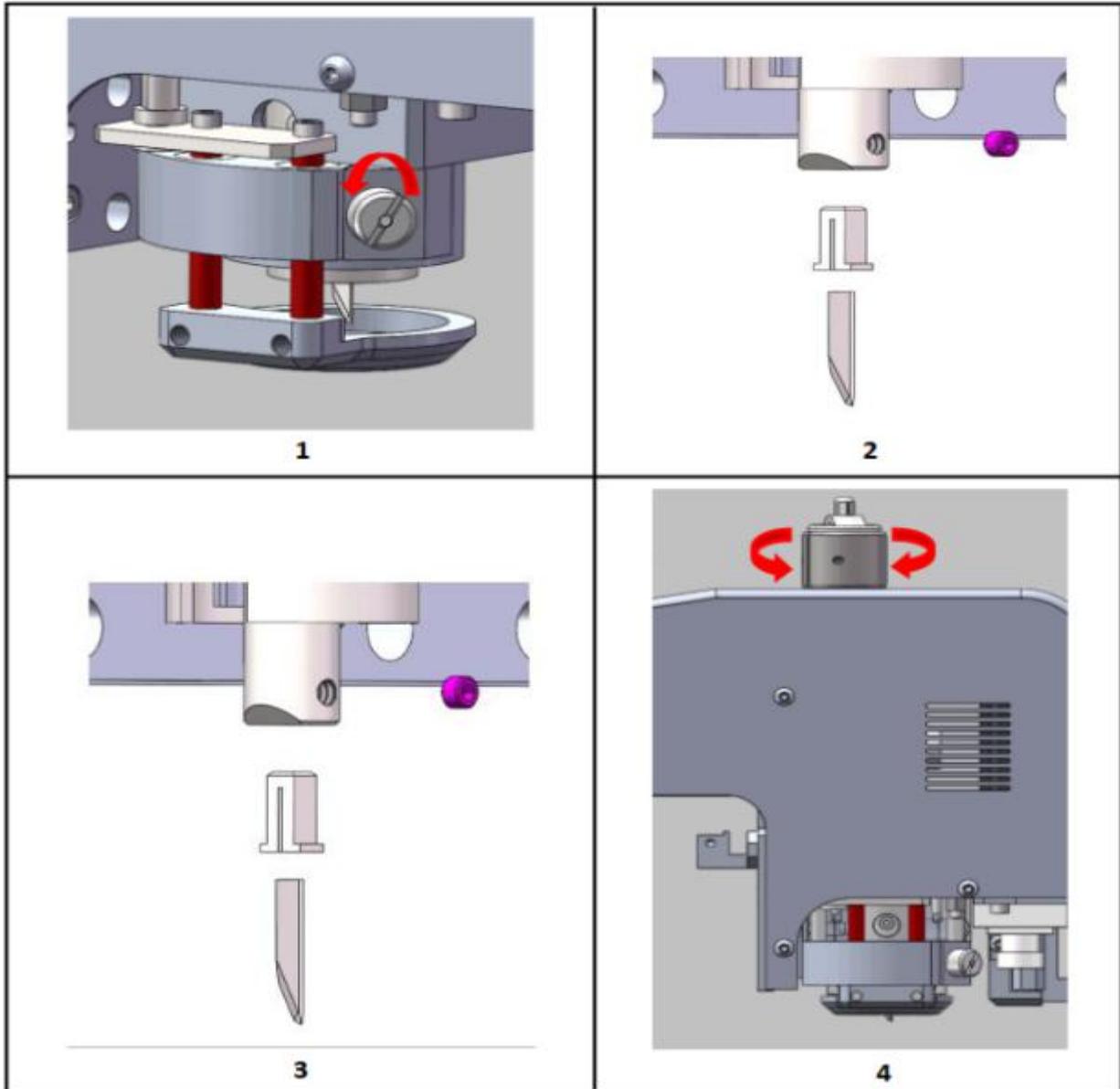
- Install the blade to the TW1/TW2 (Picture 1.2).
- Insert the TW1/TW2 into the module, rotate the clamp clockwise to tight(Picture 3.4).
- Adjust the knife height by screwing A or B. When the knife point touches the felt surface, finish the manual knife adjustment.

6.1.2 Crease tool



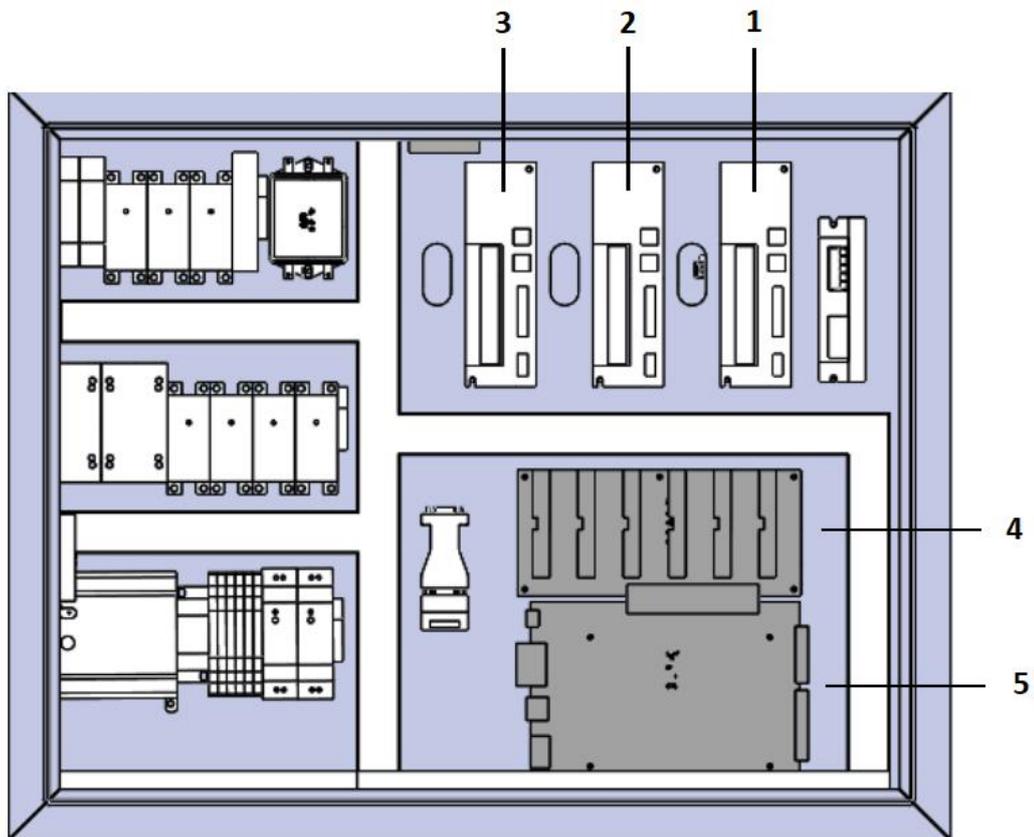
- Put the wheel part in the slot of holder (Picture 1.2).
- Confirm the crease tool is in proper place of holder, then tighten the screw (Picture 3).
- Rotate the retaining ring for adjusting the crease tool height. Anti-clockwise rotate, the crease tool goes down, clockwise rotate, the crease tool goes up (Picture 4).

6.1.3 EOT tool



- Remove the EOT material pressing tray, anti-clockwise screw from the module (Picture 1).
- Insert the blade into the shim, and confirm the blade part is into proper position of holder, and then tighten the screw (Picture 2. 3).
 - Rotate the retaining ring for adjust the EOT tool height. Anti-clockwise rotate, the EOT tool goes down, clockwise rotate, the EOT tool goes up (Picture 4).

7. Circuit board and motor driver



- | | | | |
|---|----------|---|------------|
| 1 | X driver | 4 | EPOS board |
| 2 | Y driver | 5 | DSP board |
| 3 | Z driver | | |

8. Operating

8.1 Preparation

- Before starting, ensure there is nobody on the working area.
- Be sure to finish the platform before starting, ensure no sundry in the X/Y chain during the process.
- Check whether there is lubricating oil in Y guide.
- Check whether the air pressure reaches 0.6Mpa.
- Check whether it is correct with tools and installation.

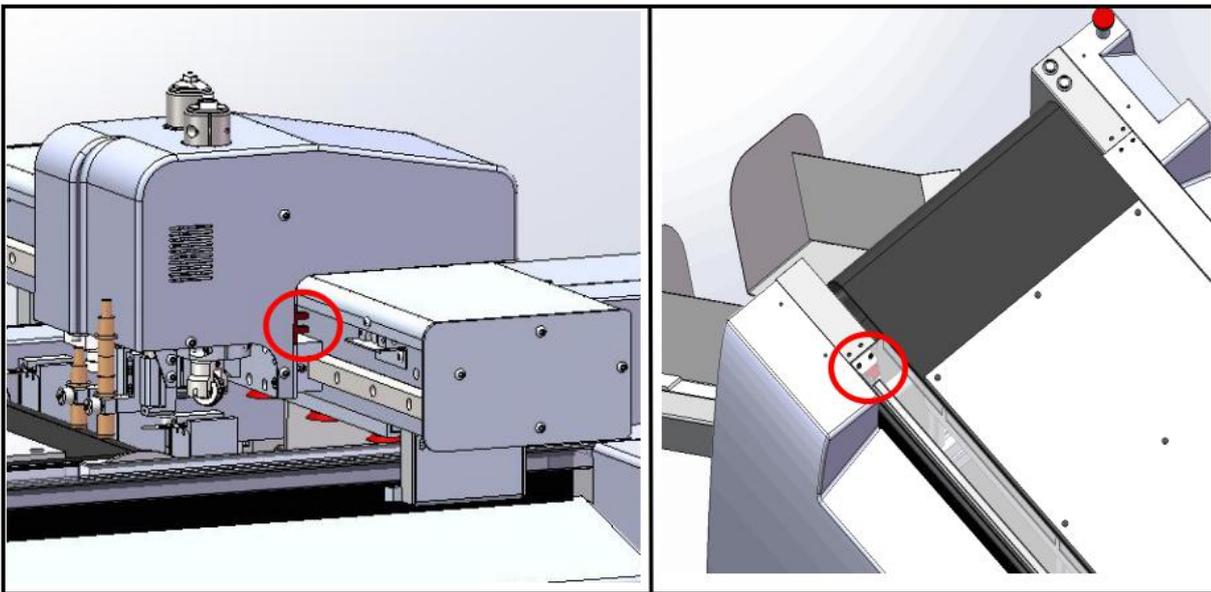
8.2 Operating

- Power on.
- The machine starts re-set. Re-setting procedures: X/Y direction re-setting, cutting head rotation re-setting, cutting head move to the original place.
- In order to avoid cutting the felt, please adjust the depth of knives.
- Put the materials on the table, start the vacuum pump, which make the materials to be adsorbed on the table.
- Open “IECHO Digital cutting system”, import the files (DXF or PLT). The system will process the analysis of outline, definition the cutting tool and definition the cutting type.
- Start the vacuum pump, move the cutting head, select infrared ray point in CutterServer, review the cutting area. If the material is not in the reviewing area or exceeds, please adjust the material.
- Click cutting icon after confirming, the machine will start to cut.
- After finishing cutting, please turn off machine and other relevant switch.

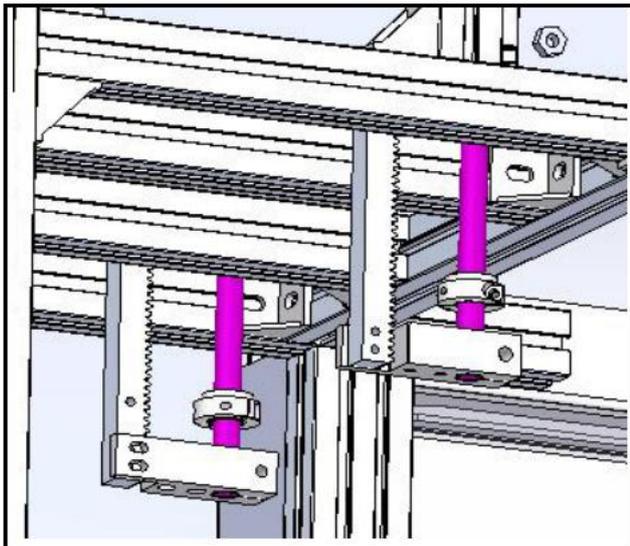
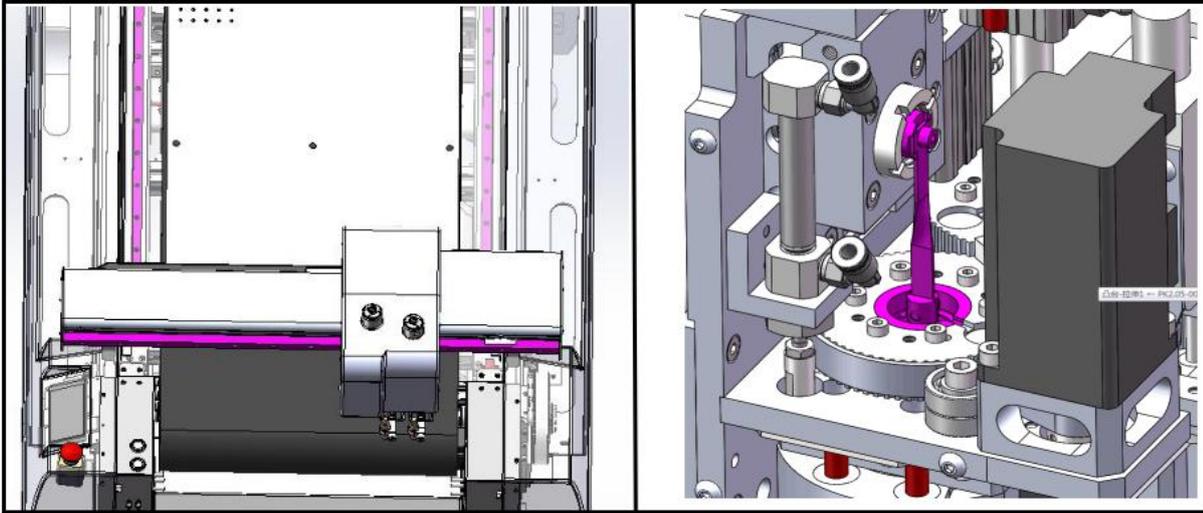
9. Maintenance

- Check all the sockets of power, as well as the connector of serial cable.
- Before cutting, make X/Y running slower, then check whether has abnormal sound.
Without cutting, start the tools, check whether the tools are workable.
- Clean everything after finishing the jobs.
- Do the dust work, clean up the dust and add oil in Y rail monthly..
- Clean up the water in the regulating valve of air compressors and equipment.
- Do not put the machine in the wet conditions.

Check the original point sensor of X.Y rail if the necessary.



Clean both side of X, Y rail and EOT transmission. Add lubricating oil to feeding system.



10. Safety Attentions

GND electrical wire connected to the ground.

Use the required specification wires for electric power connection, as per the big cutter power.

Check the synchronous belt before switch on the machine, in case it's blocked by materials fragments

Press the Emergency stop button or switch off the power in case of emergency.

Operators and staffs shall not reach into the danger area when the cutter is working.

In principle, any troubleshooting work or inspection on the cutter is to be carried out only when the power is off.

Cutting heads adjustment and tools changes shall be carried out only when it is stopped.

11. Statement

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