

EQ-SYJ-200

Automatic Section Saw

User Manual

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Introduction

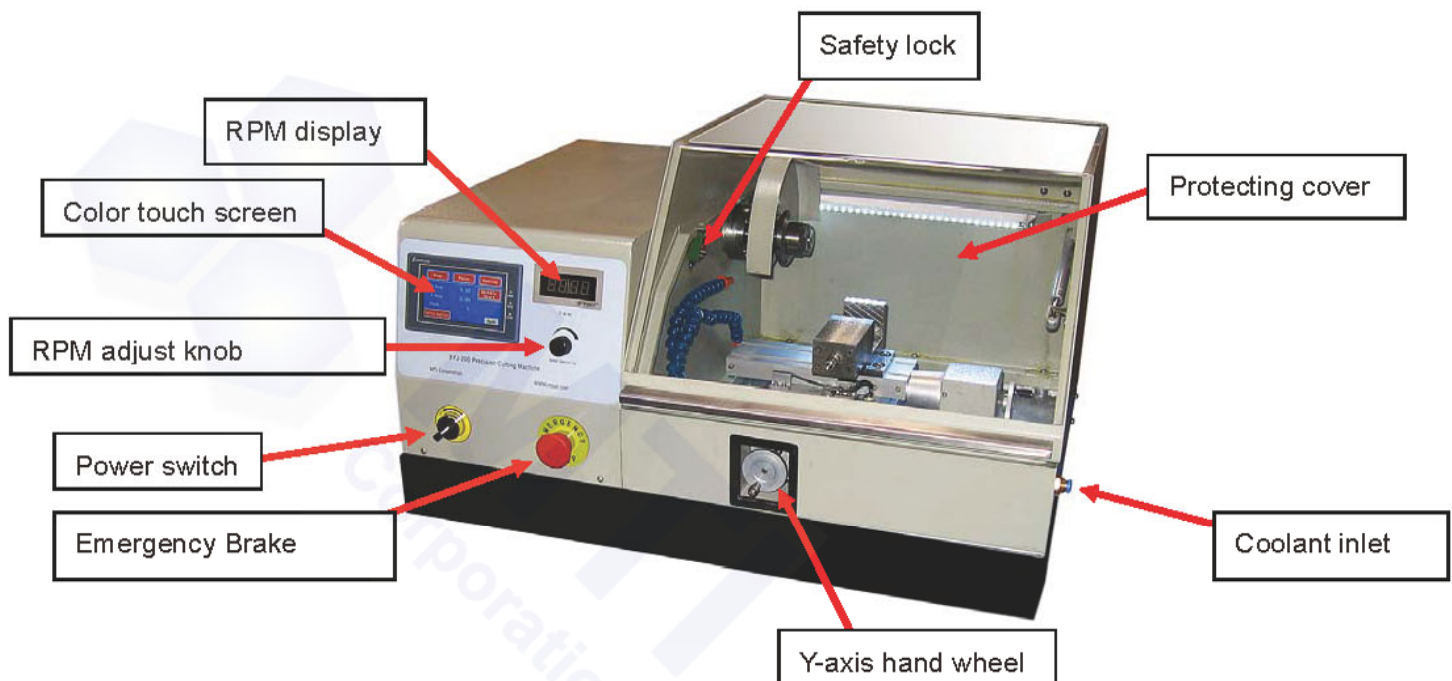
SYJ-200 precision cutting machine is designed for processing most kinds of materials in the world in the research institution, university lab and manufacture. The control part of this machine consists of a 4.3" color touch screen and PLC, making easier operation and beautiful appearance. The cooling system built in the machine can skillfully minimize the parts deformation. The special vise in the machine fully guarantees the cutting performance relying on steadily sample holding and precise measurement.

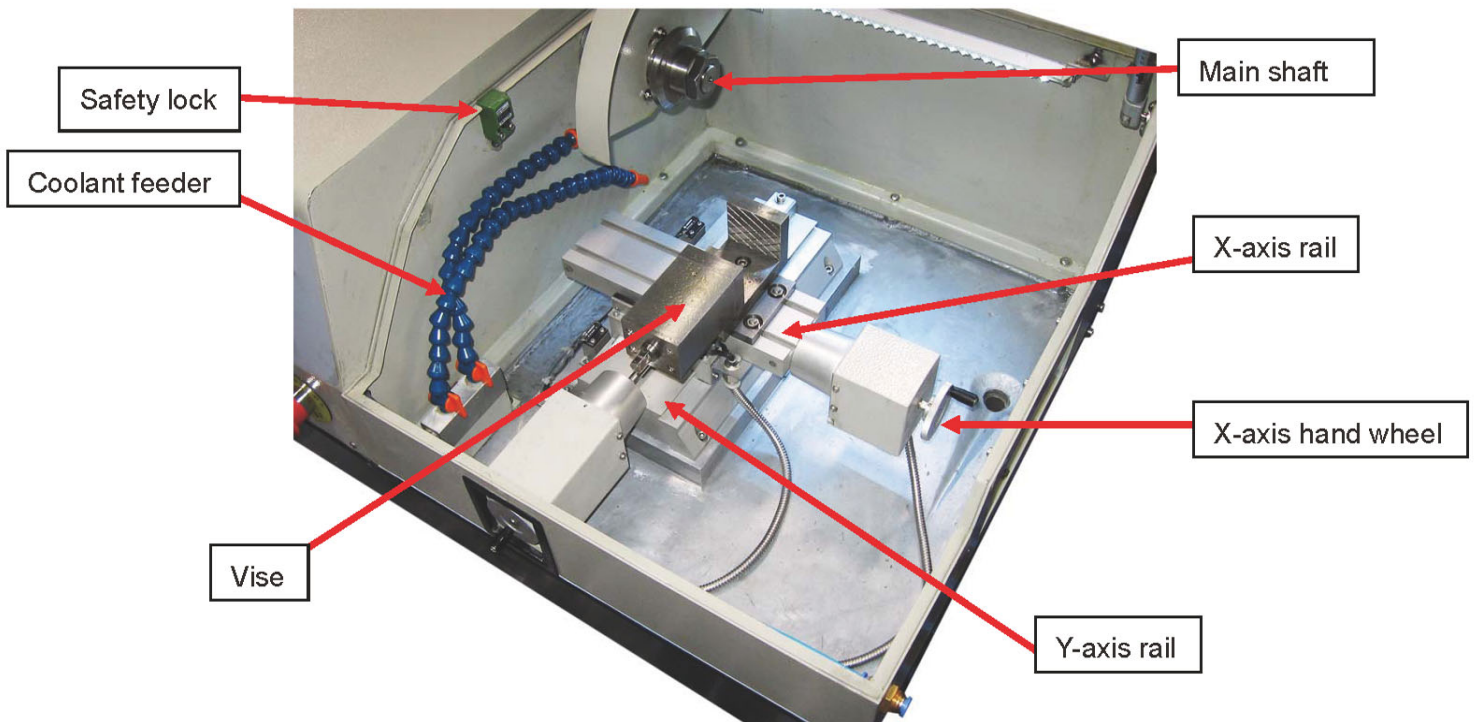
This machine has a protecting cover which is on duty to prevent the coolant from splashing away anywhere and also to connect with the safety lock that only when the cover is closed the machine cannot cut. On the front panel there is an emergency brake which is prepared for cutting off the power of machine if any unexpected or unpredictable thing happens in order to protect the operators.

Technical specification

Term	Index	unit
Main shaft speed	300-3500	rpm
Y-axis travel length	100	mm
X-axis travel length	80	mm
Blade Size	O.D: $\Phi 200$ I.D: $\Phi 25.4$ or $\Phi 32$	mm
Vise open width	60	mm
Power	600	w
Input voltage	AC220	v
Overall dimension	734×540×475	mm
Weight	72	kg

Structure





Principle

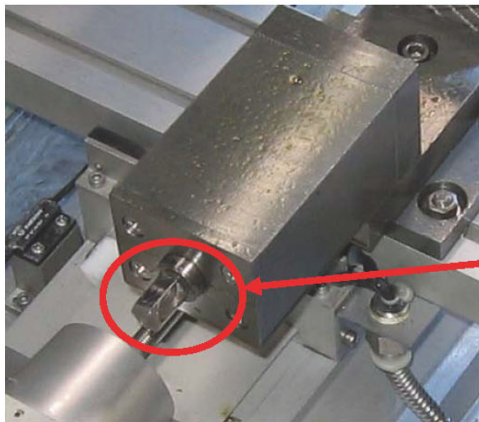
- This machine uses pulse circuit to control the speed of a permanent magnet DC motor which is permanent magnet excitation and closed self cooling. It has the advanced short circuit protector and high stability voltage. Ensure to work normally at low speed (no self-induced vibration or abrupt speedup). The blade is installed on the main shaft and spins with it to implement cutting.
- The coolant feeder is installed left below the blade. It can be moved at any angle to change the coolant flowing direction. Connecting the coolant inlet to a circulating pump and the coolant outlet to a tank which the pump placed inside will build a circulating coolant system.
- The sample will be clamped tightly by the vise. And the machine will cut the sample orderly following the program which is defined by user including such as the width, length, the quantity, the cutting speed and etc.

Preparation before installation

- Place the machine on a clean, flat and shake-proof table.
- Check the power source if it meets the requirement (single phase 220V) before turn on the power.
- Check the grounded line. Make sure the machine is grounded well.
- Clean the main shaft, vise and fasten nut.
- Check the volume of the coolant to ensure the level of the coolant is more than 4/5 of the capacity of the coolant tank. If lower, please add;
- Make sure the knob to adjust the motor speed on the front board is at the end of lowest speed when the machine begins to operate. Never start the machine with high speed, or the motor or other electric parts could be burned;
- Make sure the safety lock of the protecting cover is at good working condition;

Operation

1. Clamp the sample in the vise. Use the wrench to rotate the fasten bolt of the vise to tighten the sample.

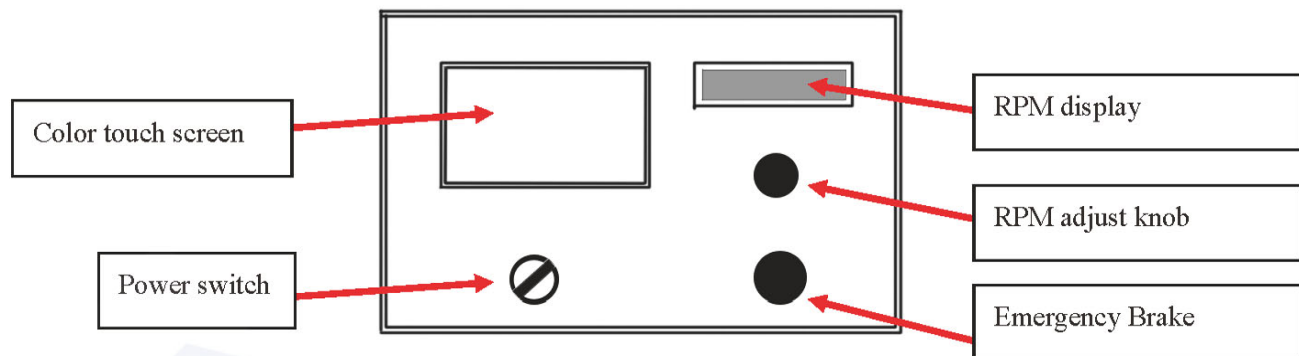


Fasten bolt of the vise

2. Set the initial cutting position for the sample. Use the touch screen to move the Y-axis and X-axis in order to locate the sample at the right position.

3 Set the program (cutting index), such as width, length, speed and etc. (Details of the program setting is in next chapter “control panel”).

Control panel



Emergency brake:

Push the switch to cut off the power immediately if there is something wrong with the machine.

Power switch:

Turn on/off the power of the machine.

Touch screen:

Program and parameters setting, cutting and error message indicating.

RPM adjust knob:

Adjust the rotating speed of the main shaft (the rotating speed of the blade).

RPM display:

Display the rotating speed of the main shaft. (The actual speed= 10 x the number displayed on the meter).

Main menu



Manual:

Press this button to enter the manually control mode.

Auto:

Press this button to enter the auto-control mode.

Manual Mode

Manual control	Travel Unit(mm)	Speed Unit(mm/min)	
X-Speed	40	X-Left	X-Right
Y-Speed	40	Y-Feed	Y-Back
X Axis	0.00		
Y Axis	0.00		Back

X-Speed 40:

The number “40” means the moving speed of the X-axis. Press this button to modify. The value automatically saves as the last time setting.

X-Left:

X-axis moves left when pressing.

X-Right:

X-axis moves right when pressing.

X Axis 0.00:

The number “0.00” indicates the travel length of the X-axis. When quit this mode the number will be clear.

Auto Mode

Auto Setup	Travel Unit(mm)	Speed Unit(mm/min)	
Cutting width	5.00	Y move	5
Back speed	40	Slice	5
Low Speed	0.01	High Speed	15
Speed Choose	High	Back	Next

Cutting width “5.00”:

The number “5.00” means the width between two adjacent cut along the X-axis. Press the number to modify. The value automatically saves as the last time setting.

Y move “5”:

The number “5” means the total cutting length along the Y-axis. The value will be determined by the size of the sample. E.g. If the mission is to cut wafers from a cylinder shaped sample with the diameter of 50mm, So the value of the Y move will be set to “50mm”. Press the number to modify. The value automatically saves as the last time setting.

Back speed “40”:

The number “40” means the speed at which the blade is moving back to the original position after each cut. Press the number to modify. The value automatically saves as the last time setting.

Slice “5”:

The number “5” means cut five times. Press the number to modify. The value automatically saves as the last time setting.

Low Speed “0.01”:

Low speed cutting mode: Available setting value: 0.01~0.99mm/min. Press the number to modify. The value automatically saves as the last time setting.

High Speed “15”:

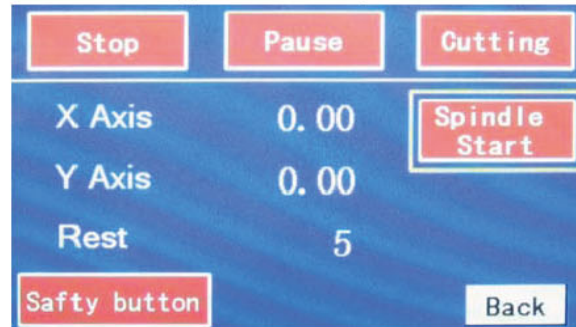
High speed cutting mode: Available setting value: 1~40mm/min. The value automatically saves as the last time setting.

Speed Choose “High”:

Select the cutting speed mode. (High speed or Low speed)

The cutting speed will be determined by the property of the sample such as the hardness, brittleness, viscosity and etc. If you don't know the suitable cutting speed, please first select “Low speed” and observing the performance during cutting and then make correct adjustment.

Cutting monitoring interface



Safty button (safety button):

Safety button is using to prevent the accidental running. For example, if someone touches the screen by accident and the motor will be running, the blade will be spinning. That would be dangerous. But with the function of safety button, it will minimize the risk of accident. Because to start motor, first need to press the safety button and the button will turn to yellow color. At this moment, you have only two seconds to start the motor by pressing the “spindle start” button. If you didn’t press the “spindle start” button or Press this button to o late (after two second) the motor will not be activated. Then you need to redo this step.

Spindle Start:

Press this button to turn on the motor. The blade will be spinning. Press again the motor will be stop.

Cutting:

Press this button to start the cutting program. X-axis and Y-axis will be moving according to the program user defined.

Pause:

Press this button one time to pause. Press again to continue. When the cutting is pause, all the real time data of current cut will be reserved and displayed on the screen. When pressing the “pause” button, the motor will begin to spin down after 8 seconds. By then you can open the protecting cover, observe the cutting performance.

Warning:

Never open the protecting cover while the blade is still spinning. When you press the “pause” button, you must be waiting until the blade is stop spinning and then open the protecting cover.

Stop:

Press this button to stop the cutting program. X-axis and Y-axis will be stop moving. The motor will begin to spin down after 8 second. And the all the real time data of last time cut will clear.

Warning:

Never open the protecting cover while the blade is still spinning. When you press the “Stop” button, you must be waiting until the blade is stop spinning and then open the protecting cover.

Maintenance:

Warning:

This machine must use oil-base coolant. Never use water-base coolant or it will rust the machine.

1. Apply a little amount of 30[#] machine oil between the thread male and female of both X-axis and Y-axis every 8 hours.
2. Apply a little amount of 30[#] machine oil between the surfaces of the coattail guiding rails every 8 hours.
3. Clean all parts after the job is done.

Safety Notices:

1. The power plug should have grounding line and creepage-protection switch.
2. Never open the transparent protection cover when working. The power will be cut when opening the transparent protection cover. Check the assembled magnetic controlled safety switches both before and after working to ensure the cleanness and sensitivity.
3. Check the blade carefully before installation. No crack is permitted. Tighten the nuts with special wrench.
4. Never let the coolant or other liquid into the inside of the machine.
5. Adjust the speed knob to the lowest end for the next running when the main motor is stopped. Never start the main motor at high speed or may damage the motor.
6. Never run the main motor overloading.
7. **Pay attention specially:** Please stop the machine immediately when the working table reaches limit position. In this case, the step motor is running but the working table is not moving. The coupling joint will be vibrating and making abnormal noise. When re-starting the machine, the working table must move to opposite direction to leave the limit position.

MTI Support

- MTI Corporation provides one year limited warranty from date that we shipped the goods. If you find any defective part caused by manufacturer please feel free to contact us. We will replace defective part and instruct you how to change the part by yourselves during warranty period. However, MTI Corp is not responsible for any damage or consequence damage caused by misuse. After warranty, MTI will continue to provide technical support and spare parts at a reasonable cost.
- If you have any question, please contact us at info@mticrystal.com or call us at 1-888-5253070. MTI Engineers will instruct you how to use and maintain the machine.