

AUSTENCO

YJCS – 6 ULTRASONIC POLISHING MACHINE MANUAL



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CHAPTER 1. GENERAL DESCRIPTION

The YJCS-6 is a multi-function polishing machine. It has four functions which facilitate mold polishing process and reduce significant human labor.

YJCS-6 is the most powerful and intelligent model amongst the YJCS series polishing machines.

1. Four functions: VIBRATE, EDM ERODE, EDM ETCHING, EDM REVERSE.
2. Intelligent frequency tracking design, which ensures stable output.
3. Numerical control of precise EDM. It can produce Ra0.3 surface.
4. Revised vibration control circuit, which adapts the usage of ceramic fiber stone and files.

TECHNICAL DATA:

1. Application: ribs, slits, tapered holes of dies, different shaped holes and other areas that are hard to polish or finish by hand
2. Applicable Material: steel, carbide, glass, precious stones
3. EDM Fluid: kerosene or water
4. Input: single phase 110V \pm 10% 50Hz
5. Vibrate Output: 60W, 26-35KHz, 9 NC grades.
6. EDM Output: 160W, 5 NC grades.
7. Controller Dimensions: 340 \times 185 \times 140mm³.
8. Controller Weight: 6Kgs.

MAIN FUNCTIONS:

1. VIBRATE:

The machine produces high frequency power of 26-35KHz, which drives the polishing tips to vibrate. The stroke is within a few μ ms. The operator won't feel his hands trembling because of the vibration. The handpiece remains stable during the process, which is a significant advantage over traditional pneumatic or electric hand tools. It has nine numerical control grades.

2. EDM ERODE:

The machine discharges electric sparks to erode steel material. It is slower than traditional EDM process, but it produces a finer surface. Meanwhile, it is much faster and more economic than files, stones. It is a useful tool for stock removal. It has five numerical control grades.

3. EDM ETCH:

The machine can etch patterns similar to sand blast finish. This function is mainly used to patch for sand blast finish, when the finish is accidentally damaged. It saves great time of re-blast for the whole surface. It has ninety-nine numerical control grades.

4. EDM REVERSE:

The machine can discharge electrical sparks to erode the tip and divert the metal to the surface of the workpiece. It is roughly the reverse process of the EDM ERODE. The coating is about 0.01-0.05mm thick. Tungsten and brass are two types of frequently used coating tip metal.

CHAPTER II. PANEL ILLUSTRATION



1. EDM DISPLAY: This window shows the grade when using the EDM ERODE function. It goes from 1 to 5.

2. VIBRATION DISPLAY: This window shows the grade when using the VIBRATE function. It goes from 1-9.

These two windows combined together shows the grade when using EDM ETCH and EDM REVERSE function. It goes from 01-99.

3. EDM ADJUST: This button adjusts the grade of EDM ERODE, EDM ETCH and EDM REVERSE function.

4. VIBRATION ADJUST; This button adjusts the grade of VIBRATE function.

5. FUNCTION BUTTONS: Press the corresponding button when you want to use a certain function. You cannot use more than one function at the same time. Once you press one button, the red light above the button will be lighted, indicating the working function.

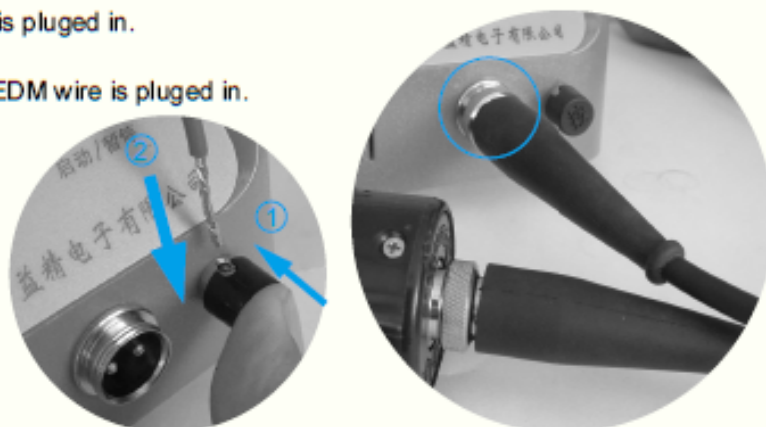
6. POWER SWITCH: It is used to shut off the whole electricity input of the machine. When it is on, it gives a red shining light.

7. VIBRATE LEVEL: These ten small lights indicates the vibrate level of the working tip. The more lights shining, the intenser the tip vibrates. Theses lights will first flash one or two seconds and then stablize.

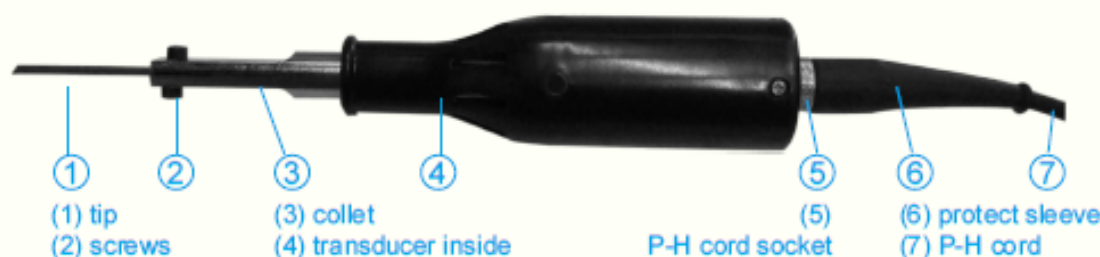
8. PAUSE/WORK BUTTON: This button will stop the output, but it won't cut the electricity of the whole machine. When the machine is paused, the red light about the button will be lightened.

9. P-H SOCKET: It is where the P-H cord is plugged in.

10. EDM WIRE SOCKET: It is where the EDM wire is plugged in.



CHAPTER III. HANDPIECE



The handpiece is an important part of a polishing machine. Inside the handpiece shell is a transducer (4), the function of which is to transform electrical signal into vibrating power. If the transducer breaks, the ultrasonic vibration will be dead. The transducer won't easily break, but please keep it away from water and dropping.

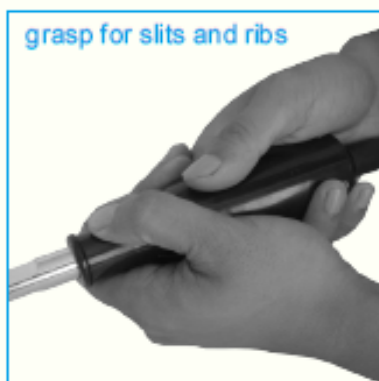
The collet (3) amplifies the vibrating power and transmits it to the tip. This transmission process directly influences machine performance. Bad or loose transmission leads to low output. After a long time use, the collet will crack and cannot amplify as efficiency as it should. It is time for a new collet.

The tip (1) is the actual working part that polishes the workpiece. The tip and the collet are fastened by screws (2).

The P-H cord (7) is fastened to the handpiece by the socket (5). To extend the life of the cord, we add a rubber protect sleeve (6). The cord will break after a period of usage, because you keep twisting it with various angles during work. The cord breaks faster if you use EDM function oftenly. Usually only the inner copper wires break while the rubber coat outside still looks good. You can test it by the 'test cord' we supply. Normally, the breaking area is around the sleeve end.



POSTURES FOR DIFFERENT WORKPIECES



CHAPTER IV. HOW TO OPERATE?

1. VIBRATE FUNCTION

Ultrasonic vibrate is a basic functions of this polishing machine.



The corresponding panel section is marked by the blue lines. We can adjust its grade from 1 to 9.

It is important to observe the groups of lights on the right part of the panel. Normally, all of the lights should be on when you choose 'vibrate 9 grade'. Similarly, eight lights for 'vibrate 8 grade'; five lights for 'vibrate 5 grade'. If the lights are always flashing without stabilizing, or the lights are always

fewer than the grade, you should check the collet, the working tip and their connection. The connection must be very tight.

Files, ceramic fiber stones, hard wood, soft wood, abrasive paper and brass rod can all be used with 'vibrate' function.

Files, ceramic stones and abrasive paper are tips with bonded abrasives. Hence, you can apply them directly onto the workpiece. They will polish the surface about 30,000 times per second.

Brass rod, hard wood and soft wood are tips without bonded abrasives. You need to add diamond compounds to aid the polishing process. These tips can be shaped by knives or files, to fit the size of the workpiece.

Brass rod + diamond compounds W40/W28: Only used when the surface is very rough.

Hard wood + diamond compounds W28/W14/W17: For OK finish.

Soft wood + diamond compounds W7/W3.5/W1: For high quality finish.

2. EDM ERODE FUNCTION

Using EDM, you must wear rubber gloves for insulation.



The corresponding panel section is marked by the blue lines. You can adjust its grade from 1 to 5. When using 'erode' function, you must plug the EDM wire and magnetized to the workpiece.

The workpiece should be immersed by water or kerosene. Kerosene is relatively expensive but it prevents rust. If the workpiece is too big to be fully immersed by water or kerosene, you can make a simple device that

drops a water or kerosene flow continuously.

'Erode' is a useful function for stock removal. Grade 5 is the fastest yet produces the roughest surface. Grade

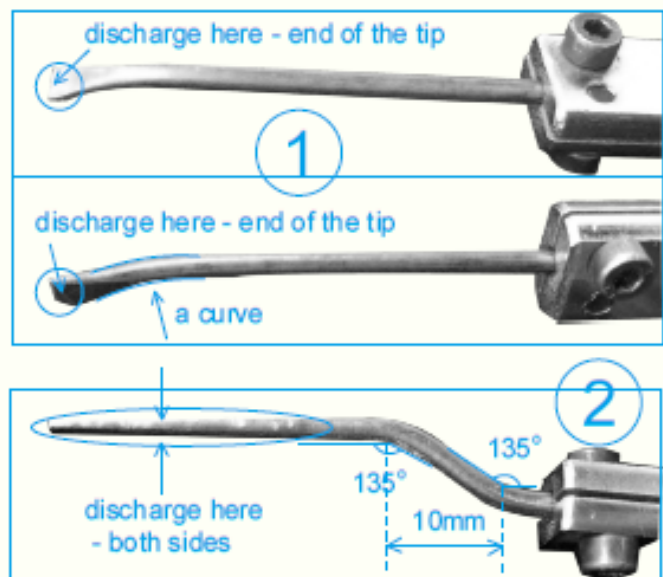
1 is the slowest yet produces an Ra0.3 finish.

Brass rod tip is used with 'erode' function. You can hammer, file or grind the tip to make it fit the shape of the workpiece.

There are mainly two types of erode tip.

Tip (1) is used for bottoms and corners. You can make a small curve at the end of the rod, to make it more comfortable.

Tip (2) is used for slits and ribs. You can bent the rod as shown in the picture.



3. EDM ETCH FUNCTION

Using EDM, you must wear rubber gloves for insulation.



The corresponding panel section is marked by the blue lines. You can adjust its grade from 1 to 99. When using 'etch' function, you must plug the EDM wire and magnetized to the workpiece.

Grade 10-30 are the most commonly used size.

The workpiece should be immersed by water or kerosene. There might be water or kerosene spitting because of the etching power. Therefore, eye protection and fire prevention are necessary.

Spring steel tip is used with 'etch' function.

4. EDM REVERSE FUNCTION

Using 'reverse', you must NOT touch the tip during or after work.



The corresponding panel section is marked by the blue lines. You can adjust its grade from 1 to 99. When using 'reverse' function, you must plug the EDM wire and magnetized to the workpiece. Don't put the workpiece in water or kerosene.

Tungsten rod and brass rod are two common tips. Do NOT touch the tips during or after work. The tips are very hot. IMPORTANT!

There might be melted metal spitting because of the reversing power. Therefore, eye protection and fire prevention are necessary.

CHAPTER V. ACCESSORIES



- | | |
|-------------------------------------|---|
| 1. handpiece | 12. abrasive paper tip |
| 2. P-H cord | 13. hard wood tip |
| 3. soft wood tip & its collet | 14. soft wood tip |
| 4. hard wood tip & its collet | 15. diamond compounds (W40-W3.5)
NOT INCLUDED IN AIR FREIGHT EXPORT PACKAGES |
| 5. brass rod tip & its collet | 16. knife |
| 6. spring steel tip & its collet | 17. spanner |
| 7. tungsten tip & its collet | 18. wrench |
| 8. file tip & its collet | 19. fuses (1.5A) |
| 9. ceramic fiber stone & its collet | 20. power cord |
| 10. files tips (sharp & flat) | 21. test P-H cord |
| 11. brass rod tip | 22. EDM wire |