



PO-314/320/313A

End Mill grinder

Operation Manual

DIRECTORY

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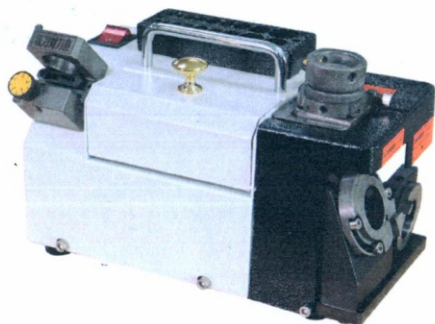
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PO-314 End Mill Grinder

Operating Procedure



Features

1. The machine can quickly grind 2 end, 3 blade, 4 blade, 6 edge cemented carbide and high speed steel universal end milling cutter.
2. Suitable for straight shank milling cutter, accurate and quick grinding, simple operation, easy grinding without skill.
3. The milling cutter part can finish milling with different cutting edges and different diameters for the blade edge, the front bevel angle and the back slope angle, and a grinding wheel.

Technical parameter

Model : PO-314

Grinding edges : 2刃、3刃、4刃、6刃

Voltage/Power : 220v

Net/Gross : 9/12.5kg

Grinding range : $\phi 3$ - $\phi 14$ mm

Tip angle : 0° - 5°

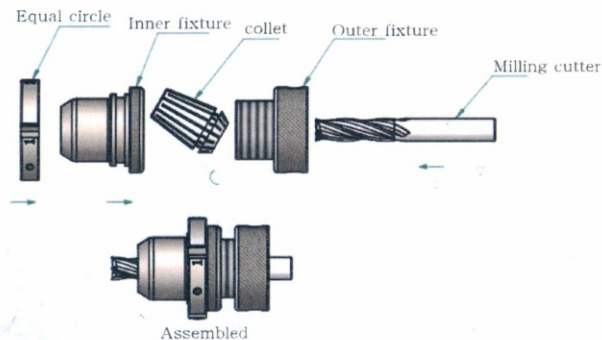
Motor speed : 4500rpm

Package Size : 330*190*225mm

The standard configuration

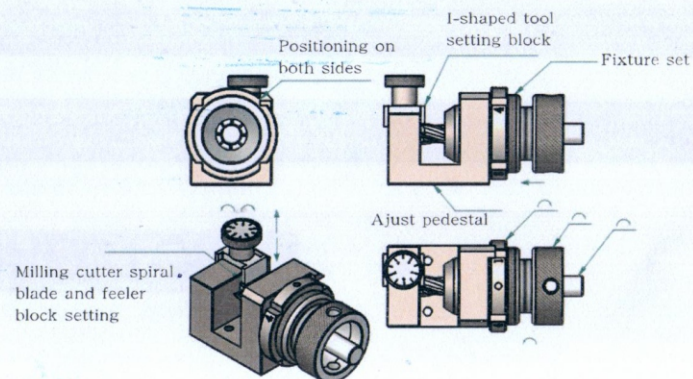
- Model : PO-314
- Power cord 1 Piece
- SDC grinding wheel 1 Piece
- tools 1set
- Collets 6 Piece $\phi 4/\phi 6/\phi 8/\phi 10/\phi 12/\phi 14$

Assembly of milling cutter set



1. First determine the diameter of the milling cutter shank and select a suitable collet. Determine the number of milling cutter blades, and select the corresponding equally divided circle.
2. Insert the collet into the outer fixture at a 45° angle. Insert the milling cutter into the collet, rotate the thread, and do not tighten it temporarily.
3. Select the equal circle of the fixture, choose 4 equal circles for 2 and 4-blade milling cutters, and choose 6 equal circles for 3 and 6-blade milling cutters, set them on the inner fixture and lock them with machine screws.

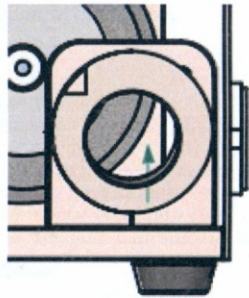
Milling cutter pair length and angle of milling cutter fixture set



Gire el bloque de configuración de herramientas en forma de I en la imagen hacia arriba, empuje el grupo de accesorios a lo largo del orificio del asiento de calibración hacia abajo y gire el bloque de configuración de herramientas en forma de I y el borde en espiral de la fresa hacia abajo para ajustar la configuración adecuada de la herramienta. Altura, gire la fresa hacia la derecha, fije el borde helicoidal lateral de la fresa a la superficie del bloque de configuración de herramientas en forma de I, y coloque la herramienta en la superficie del bloque de configuración de herramientas en forma de I, y luego gire la posición de sujeción del anillo igual en el dispositivo y la posición de sujeción en la cara del extremo del asiento de calibración hacia la derecha para mantener la posición. Gire la abrazadera exterior hacia la derecha hasta el fondo y bloquee ella. Al sacarla, sostenga la abrazadera interior y gírela ligeramente hacia la izquierda para sacarla.

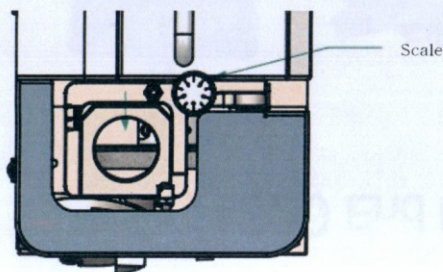
2, 3, 4, 6 blade first end angle grinding

Push the jig of the aligned knife inward along the clamping position, grind it until there is no sound, then change the angle, and grind it in turn until it is completed (Note: Because the grinding of 2 blades and 4 blades, 3 blades and 6 blades is the same jig set, grinding Do not grind the 2 blades and 3 blades without corresponding positions.

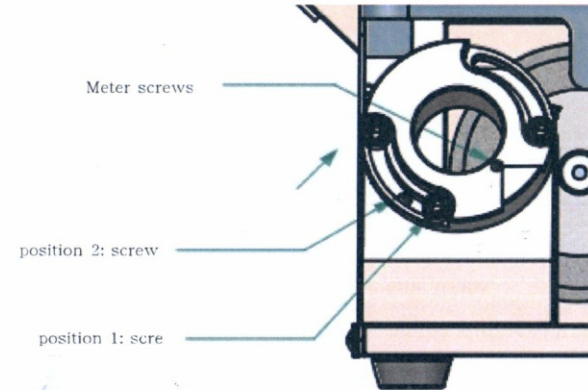


Grinding of 2, 3, 4, 6 flute escape angle slotting

Push down the jig set of the aligned knife along the clamping position, rotate and grind until there is no sound, then change the angle, and grind until it is finished in sequence (Note: because 2 blades and 4 blades, 3 blades and 6 blades are ground by the same jig set, do not grind the 2-flute and 3-flute without corresponding blade position when grinding), if you need to grind the continuous blade, turn the scale to the end for the 2-flute milling cutter, and turn the scale to the end for the 4-flute milling cutter first, grind the two symmetrical blades, and turn the scale back 3 -5 small grids, grind the other two symmetrical blades.



2, 3, 4 flute back angle grinding



① 4 blade back angle grinding

Push the clamp of the good knife along the card position, rotate it to no sound, then change the angle and grind it to completion. To adjust the back angle, rotate the M4 machine screw above to adjust.

② 2 blade back angle grinding

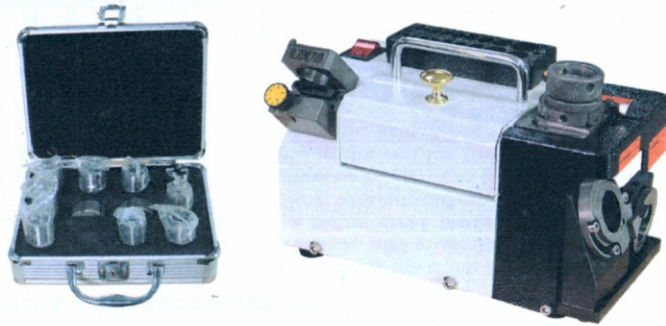
Remove the screw at position 1, push the clamp of the good knife inward along the card position, rotate it to no sound, then change the angle and grind it to completion. To adjust the back angle, rotate the M4 machine screw above to adjust. (Note: Since the 2nd and 4th edges are the same fixture set, do not grind the 2nd edge without corresponding edge position when grinding)

③ 3 blade back angle grinding

Lock the screw to position 2, without locking. Push the clamp of the good knife along the card position, rotate it to no sound, then change the angle and grind it to completion. To adjust the back angle, rotate the M4 machine screw above to adjust. (Note: Since the 3 and 6 blades are the same fixture group, do not grind the 3 blades without the corresponding edge when grinding)

PO-320 End Mill Grinder

Operating Procedure



Features

1. The machine can quickly grind 2 end, 3 blade, 4 blade, 6 edge cemented carbide and high speed steel universal end milling cutter.
2. Suitable for straight shank milling cutter, accurate and quick grinding, simple operation, easy grinding without skill.
3. The milling cutter part can finish milling with different cutting edges and different diameters for the blade edge, the front bevel angle and the back slope angle, and a grinding wheel.

Technical parameter

Model : PO-320

Grinding edges : 2刃、3刃、4刃、6刃

Voltage/Power : 220v

Net/Gross : 11/15kg

Grinding range : $\phi 3-\phi 20\text{mm}$

Tip angle : $0^{\circ}-5^{\circ}$

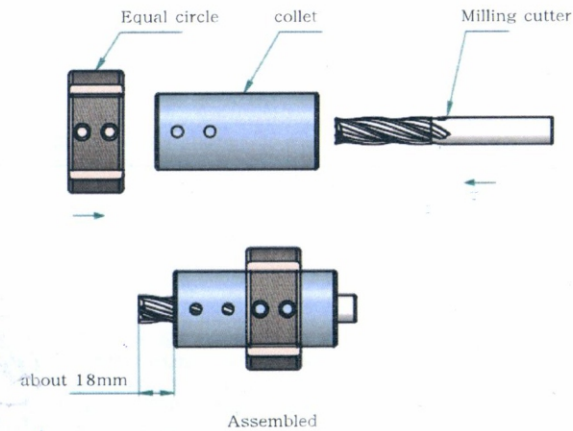
Motor speed : 4500rpm

Package Size : 360*220*230mm

The standard configuration

- Model : PO-320
- Power cord 1 Piece
- SDC grinding wheel 2 Piece
- tools 1set
- Collets 9 Piece $\phi 4/\phi 6/\phi 8/\phi 10/\phi 12/\phi 14/\phi 16/\phi 18/\phi 20$

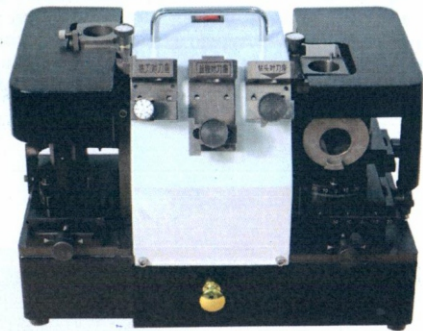
Assembly of milling cutter set



The operation procedure of PO-320 is the same as that of PO-314, except that the assembly of the milling cutter holder is different.

1. First, confirm the diameter of the milling cutter shank to select the appropriate collet chuck. And confirm the number of cutting edges of the milling cutter and select the corresponding equal circle.
2. Select 4 equal circles for double and four blades milling cutter, 6 equal circles for three and six blades milling cutter.
3. Insert the milling cutter into the collet chuck, and the surface with cutter points is about 18 mm away from the collet chuck, and lock with set screw. Set the equal circle on the collet chuck, and do not tighten it for the time being.

PO-313A Compound Grinder



Features

1. multi-purpose, precise and fast grinding, simple operation, easy grinding without skills.
2. It can quickly grind 2/3/4/6 blade and other general-purpose end mills; it can also quickly grind 3-13mm twist drill bits.
3. The replacement cutting disc at the bit end can be used for bar cutting to realize the cutting function.
4. Can quickly grind 3, 4 flute straight flute and spiral flute taps (requires wheel replacement).
5. Can quickly grind R0.5-1-1.5-2 round nose knife (need to replace grinding wheel).

Technical parameter

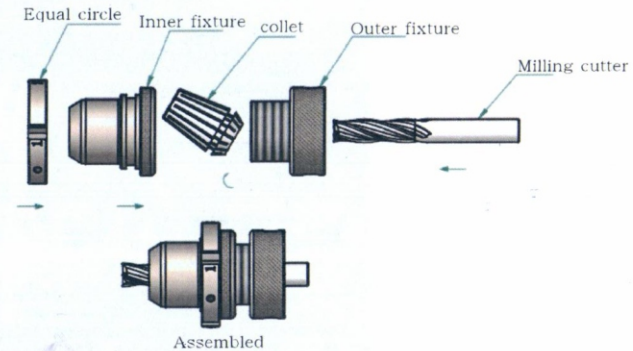
Model : PO-313A
 Grinding range(milling cutter, round nose cutter, drill bit) : $\phi 3-\phi 14\text{mm}$
 Tap grinding range : M5-M20 Grinding edges : 2刃、3刃、4刃、6刃
 Voltage/Power : 220v/500W Motor speed : 4500rpm
 Net/Gross : 25/27kg Package Size : 380*245*250mm

The standard configuration

- Model : PO-313A
- Power cord 1 Piece
- Grinding wheel 2 Piece
- tools 1set
- ER20 collets 12 Piece $\phi 3/\phi 4/\phi 5/\phi 6/\phi 7/\phi 8/\phi 9/\phi 10/\phi 11/\phi 12/\phi 13/\phi 14$

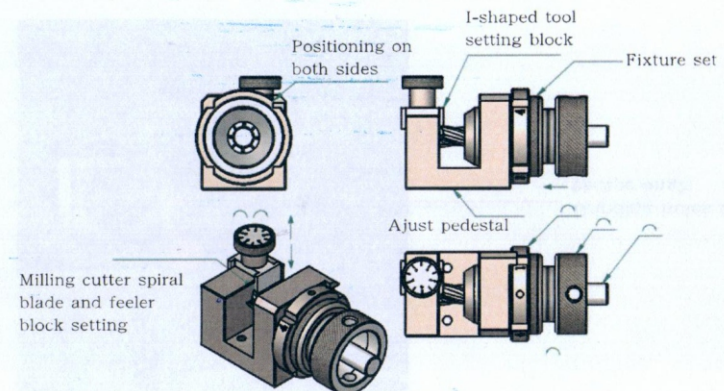
Milling cutter operating procedure

Assembly of milling cutter set



1. First determine the diameter of the milling cutter shank and select a suitable collet. Determine the number of milling cutter blades, and select the corresponding equally divided circle.
2. Insert the collet into the outer fixture at a 45° angle. Insert the milling cutter into the collet, rotate the thread, and do not tighten it temporarily.
3. Select the equal circle of the fixture, choose 4 equal circles for 2 and 4-blade milling cutters, and choose 6 equal circles for 3 and 6-blade milling cutters, set them on the inner fixture and lock them with machine screws.

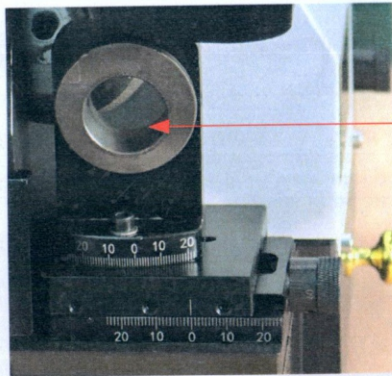
Milling cutter pair length and angle of milling cutter fixture set



Gire el bloque de configuración de herramientas en forma de I en la imagen hacia arriba, empuje el grupo de accesorios a lo largo del orificio del asiento de calibración hacia abajo y gire el bloque de configuración de herramientas en forma de I y el borde en espiral de la fresa hacia abajo para ajustar la configuración adecuada de la herramienta. Altura, gire la fresa hacia la derecha, fije el borde helicoidal lateral de la fresa a la superficie del bloque de configuración de herramientas en forma de I, y coloque la herramienta en la superficie del bloque de configuración de herramientas en forma de I, y luego gire la posición de sujeción del anillo igual en el dispositivo y la posición de sujeción en la cara del extremo del asiento de calibración hacia la derecha para mantener la posición. Gire la abrazadera exterior hacia la derecha hasta el fondo y bloquéela. Al sacarla, sostenga la abrazadera interior y gírela ligeramente hacia la izquierda para sacarla.

2, 3, 4, 6 edge grinding

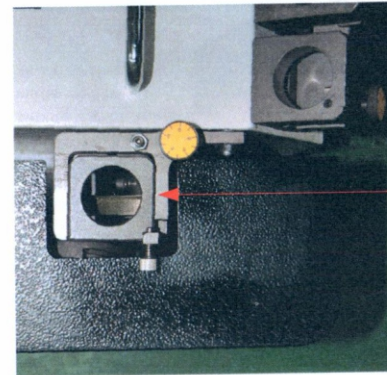
Push the jig of the aligned knife inward along the clamping position, grind until there is no sound, then change the angle, and grind in turn until complete (Note: Because the grinding of 2 blades and 4 blades, 3 blades and 6 blades is the same jig set, grinding Do not grind the 2-edge 3-edge without corresponding edge positions.



Front grinding hole

Grinding of 2, 3, 4, 6 flute escape angle slotting

Push the jig set of the aligned knife down along the clamping position, grind until there is no sound, then change the angle, and grind in turn until it is completed (Note: because the grinding of 2 blades and 4 blades, 3 blades and 6 blades is the same jig set. When grinding, do not grind the 2-blade and 3-blade without the corresponding blade position.) If you need to grind the continuous blade, turn the scale to the bottom of the 2-blade milling cutter. For a 4-blade milling cutter, first rotate the scale to the end, grind two of the symmetrical blades, move the scale back 3-5 small divisions, and grind the other two symmetrical blades.

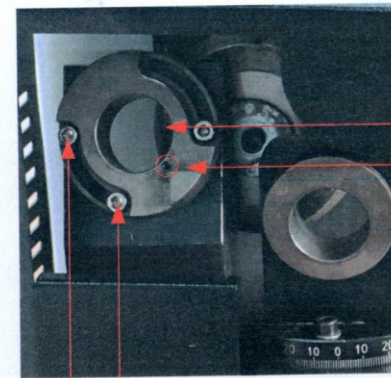


Grinding holes for escape angle

2, 3, 4 edge grinding

① Grinding of the back corner of 4 blades

Push the jig of the aligned knife in along the clamping position, rotate and grind until there is no sound, then change the angle, and grind in turn until complete. If you need to adjust the grinding size of the back angle, turn the M4 machine screw on the top to adjust.



Back grinding hole

M4 machine meter

2 1



② Grinding of the back corner of 2 blades

Remove the screw at 1 place, push the jig of the aligned knife in along the clamping position, rotate and grind until there is no sound, then change the angle, and grind in sequence until complete. If you need to adjust the grinding size of the back angle, turn the M4 machine screw on the top to adjust. (Note: Since the 2nd blade and 4th blade are the same fixture set, do not grind the 2nd blade without the corresponding edge position when grinding.)

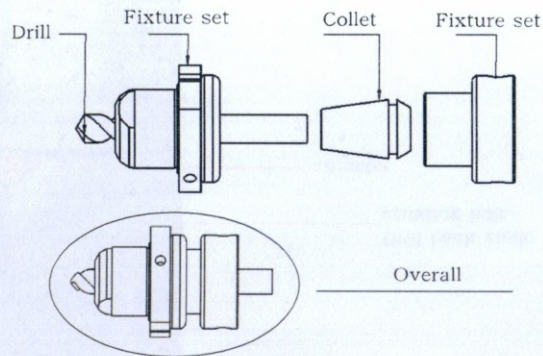
③ Grinding of the back corner of 3 blades

Lock the screw at 1 place to 2 places without locking, push the clamp of the aligned knife in along the clamping position, rotate and grind until there is no sound, then change the angle, and grind in sequence until complete. If you need to adjust the grinding size of the back angle, turn the M4 machine screw on the top to adjust. (Note: Since the 3-blade and 6-blade are the same fixture set, do not grind the 3-blade without the corresponding edge when grinding.)

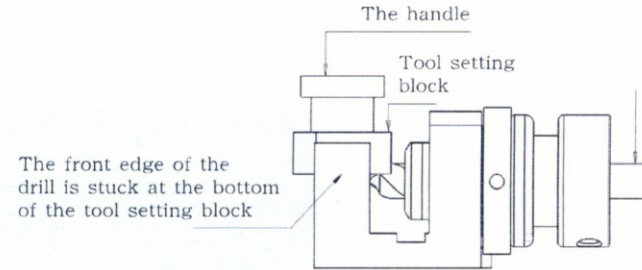
Drill operation procedure

Drill to tool

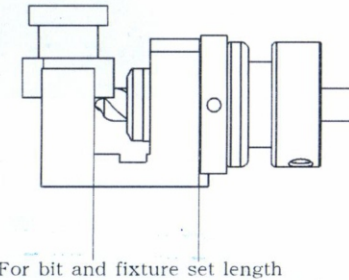
① Install the drill on the fixture. As shown in the figure below: the collet is installed on the fixture set, the drill bit is clamped, and the fixture set is slightly locked so that the drill bit is not loose or shaken inside, and the drill bit can just rotate.



② The angle of the drill bit. Rotate the handle to the end, and then reverse the scale corresponding to the diameter of the drill bit on the knob; turn the drill bit clockwise to make the bit stuck at the bottom of the tool setting block.

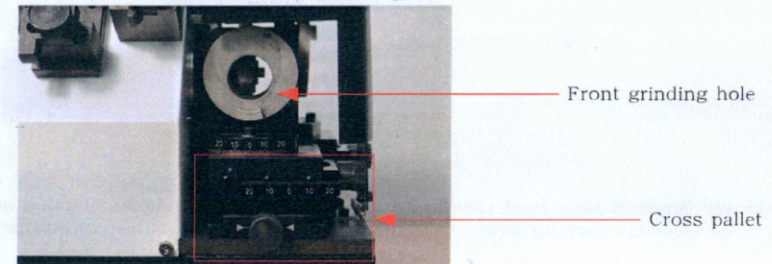


③ The length of the drill bit, the jig set and the drill bit are pushed to the bottom along the hole and the clamping position to limit the position of the drill bit and the jig set. Lock the clamp set and clamp the drill bit.



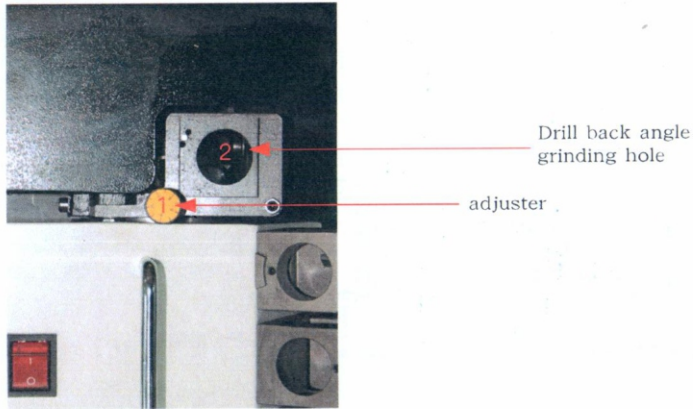
Grinding of the leading edge of the drill bit

Adjust the cross support plate in the picture to 0 position, then rotate the fixture group along the hole position for grinding, and then change to the opposite side for grinding.



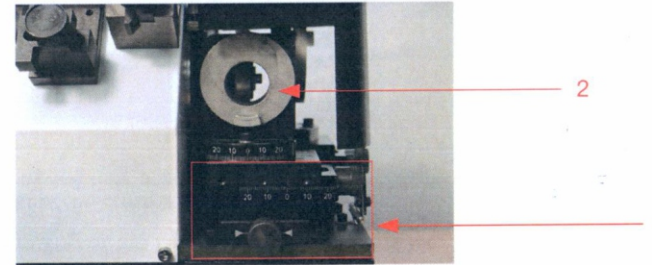
Grinding of the back corner of the drill bit

Push the jig set into the hole of 2 for grinding, and grind the other opposite side after completion. 1 is to adjust the size of the rear angle grinding.



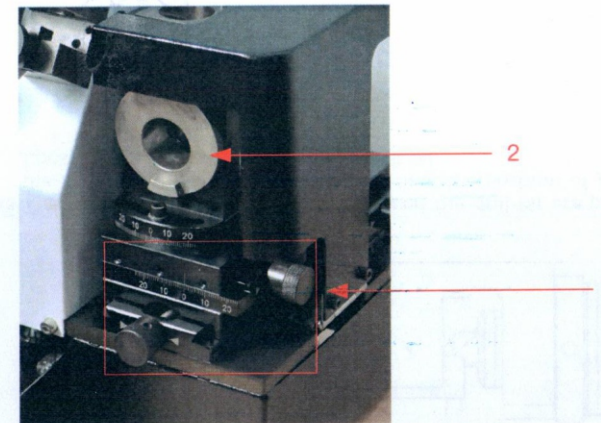
Grinding of the leading edge of the tap

Push the fixture group to the hole position of 2, adjust the cross support plate, adjust the grinding amount, do not move the cross support plate after grinding, and change to other positions for grinding.



Grinding of tap end faces

Push the fixture group to the hole position of 2, adjust the cross plate, adjust the amount of grinding, and the grinding is completed.



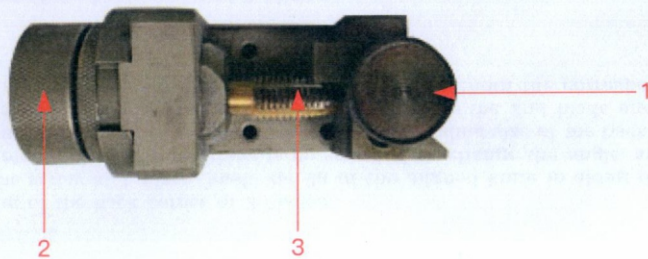
Tap operation procedure

Assembly of Tap Fixture Set

The tap holder set is assembled in the same way as the drill. The tap grinding wheel needs to be replaced before grinding the tap.

Tool setting for tap fixture set

Loosen the knob in Figure 1, move the tool setting block to the upper part of the tap, and lock the knob. 2 The fixture is pushed to the end along the hole. 3 Rotate the tap clockwise so that the cutting edge of the tap catches the tool setting block and locks the fixture set.



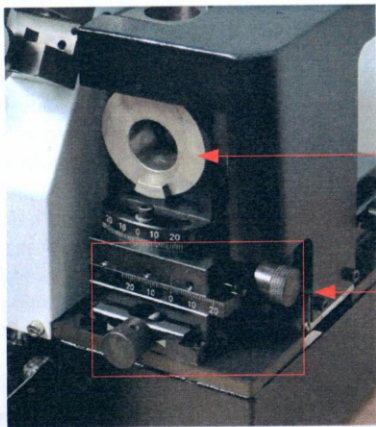
Round nose knife operating procedure

Grinding of the End Face of Round Nose Knives

The grinding of the end face is the same as the operation procedure of the milling cutter, please refer to the operation procedure of the milling cutter. Before grinding the round nose knife, it is necessary to replace the upper round nose knife grinding wheel.

Grinding of R Angle of Round Nose Knife

Push the fixture group along the 2 holes to the bottom, lock it in place clockwise, adjust the supporting plate of 1, so that the sharp corner of the milling cutter is ground at the R angle of the corresponding grinding wheel, do not move the supporting plate, and then change to other sharp corners for grinding.



Safety Precautions

1. Before starting up, check whether the voltage and frequency of the machine are consistent with the power supply.
2. The tentacles on the power plug and socket of the machine should be fastened and reliable without loosening or poor contact.
3. When a fault occurs or there is an abnormal sound, the plug should be unplugged immediately, and then checked and repaired.
4. Don't let the machine run without anyone, be sure to shut down and stop running before leaving. When the power supply of the machine is cut off due to external factors, the switch should be pressed, otherwise the machine may run without people after the power is turned on.
5. Do not operate the machine when you are tired or taking alcohol or narcotics.
6. When the parts and accessories on the machine are damaged, please do not substitute them arbitrarily, and use corresponding parts and accessories with the same performance, such as Take the best from this unit.



PORTEK
CNC MACHINE TOOL