

PaofongG.[®]

***Fast End Mill . Drill
Re-Sharpening Machine***



<http://paofong.com.tw>

CE

FAST END MILL RE-SHARPENING MACHINE

EASY

ACCURACY

FAST



1

4 flutes

3 flutes

2 flutes



Patent : M321829

Unit: cm

Model	PF-313	PF-1225	Motor	450W	1000W
Capacity	Ø4mm~Ø13mm	Ø12mm~Ø25mm	Speed	6000RPM	4500RPM
Axial angles	Third angle 6° Primary angle 20° Second angle 30°		Weight	17kgs	30kgs
Power	DC110V / DC220V 50/60HZ		Packing dimension	31x26x29	36x29x34

STANDARD ACCESSORIES

Cable	1 SET
Fuse	2 PCS
Hex. key wrench	1 PCS 4mm
Daimond wheel	PF-313 SDC300# (Ø4mm~Ø5mm, for carbide end mill) PF-1225 CBN150# (Ø12mm~Ø25mm, for HSS end mill)
Grinding wheel	PF-313 SDC300# (Ø6mm~Ø13mm, for carbide end mill) PF-1225 SDC150# (Ø12mm~Ø25mm, for carbide end mill)
ER chuck	2, 4 flutes chuck *1 set 3 flutes chuck *1 set
ER collet	PF-313 Ø4 ~ Ø13mm(10pcs) / PF-1225 Ø12,16,18,20,22,25mm

OPTION ACCESSORIES

Daimond wheel	PF-313 CBN300# (Ø4mm~Ø5mm, for HSS end mill)
Daimond wheel	PF-313 CBN270# (Ø6mm~Ø13mm, for HSS end mill)
Daimond wheel	PF-313 CBN270# (Ø4mm~Ø13mm, for HSS end mill) 2 fultes
Daimond wheel	PF-313 SDC300# (Ø4mm~Ø13mm, for carbide end mill) 2 fultes
Daimond wheel	PF-1225-2 fultes CBN150# (Ø12mm~Ø25mm, for HSS end mill)
Daimond wheel	PF-1225-2 fultes SDC150# (Ø12mm~Ø25mm, for carbide end mill)

PRECISION END MILL GRINDER



Magnified Part

Fixed Block (Harden treatment to protect the alignment base)



for 2 and 4 flute End Mill

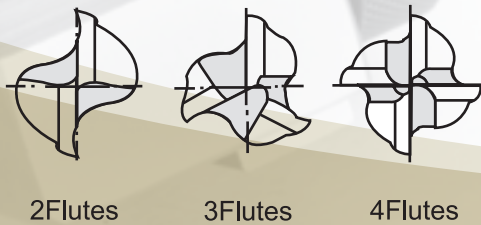
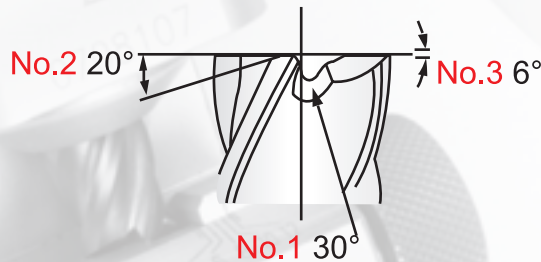
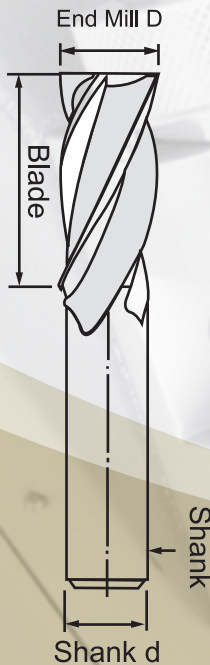


for 3 flute End Mill



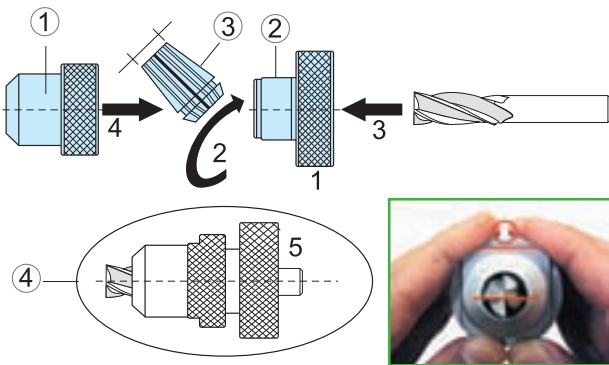
For End Mill Re-sharpening, 2,3 And 4 Flute Precision, Efficient, Easy operation, Short Processing time, Grinding Diameter from PF313- 4-13mm,PF1225-12-25mm.

1. High Efficiency, High Quality Grinding Slip, Good Grinding Results.
2. Quality Assurance: $\pm 0.02\text{mm}$.
3. Easy Operation, For Urgent convenience. fast.



OPERATIONS

A Set up the end mill to the ER collet holder



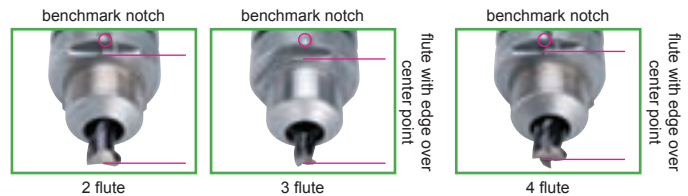
★Please follow up steps 1.2.3.4. to set up the end mill to the collet holder.(without tightening)

1. Determine diameter and flute of your end mill, and then select the proper collet and collet holder.
2. Insert collet into collet holder and tighten nut slightly.
3. Insert end mill into collet holder and juts out 35mm or so from the collet holder.
4. Find out the flute with edge over center point and have it to be parallel with the benchmark notch.

B Align end mill-NO.1



★Set alignment knob to the proper number according to the diameter of the end mill. (e.g. End mill dia. 10mm, set the scale to 10.)



★The flute with edge over center point should be parallel with the benchmark line.

C Align end mill-NO.2



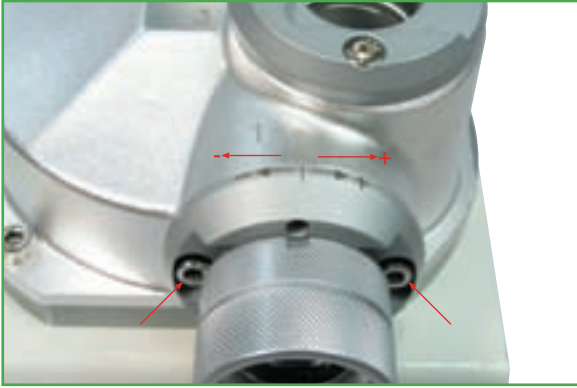
1. Pointing holder's benchmark notch at triangle mark of alignment base and insert it to the base.
2. Loosen holder, lower the holder to the base, and screw the nut clockwise. At the same time, rotate the flute with edge over center point clockwise until it touches the alignment block.
3. Tighten the ER nut until the end mill is supported but free to turn. Pull out the holder counterclockwise, tighten up the holder after confirmed the flute is parallel with the notch. If it's not parallel, please repeat the alignment steps.the benchmark notch.

D Primary edge re-sharpening



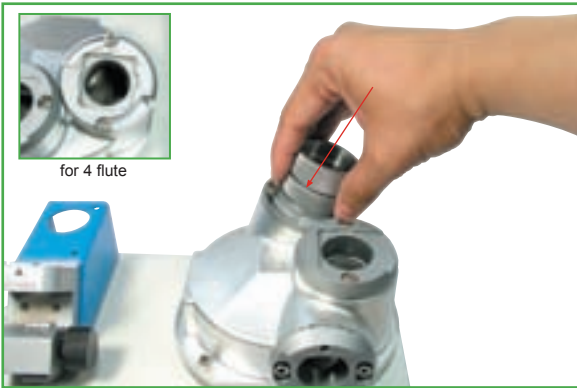
1. Switch on machine.
2. Pointing ER holder at the notch of primary edge re-sharpening port NO.1.
3. Insert the holder into the port NO.1 with a slight push motion for grinding.
4. Change to another flute, repeat the above steps until the sharpening for all flutes' edges is complete.

E Relief settings



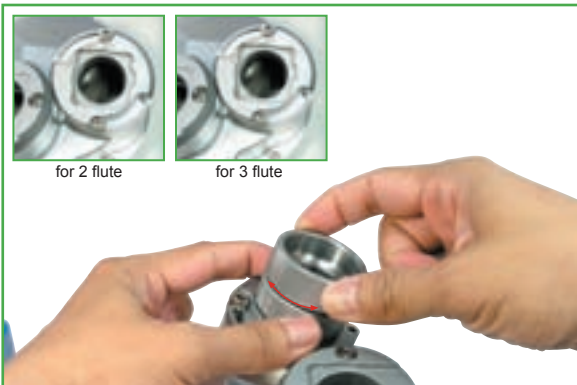
1. If the relief needs to be adjust, please use provided 4mm hex wrench to loosen the screws in the sharpening NO.1.
2. Rotate clockwise (+) to increase, rotate counterclockwise (-) to decrease. Tighten after relief setting.

F Secondary clearance angle sharpening-1 (for 4 flute)



1. Pointing ER holder at screw secondary clearance angle sharpening port NO.2, insert it into the port with a slight push motion to sharpen until grinding noise disappear.
2. Change to another flute, repeat the above step until the above steps until the sharpening for all flutes' edges is complete.

G Secondary clearance angle sharpening-2 (for 2 and 3 flute)



1. If you need to sharpen the secondary clearnce angle completely, loosen the screws in the screws in the secondary clearance angle port, and then rotate left and right repeatedly for clearance.
Attn: the rotate ranges for 2 flute and 3 flute are different. For 2 flute, rotate the holder left and right in whole rotation; for 3 flute, on the sharpeening port NO.2, and rotate the benchmark notch only.
2. To sum up, the grinding should start from the flute pointed at the benchmark notch.

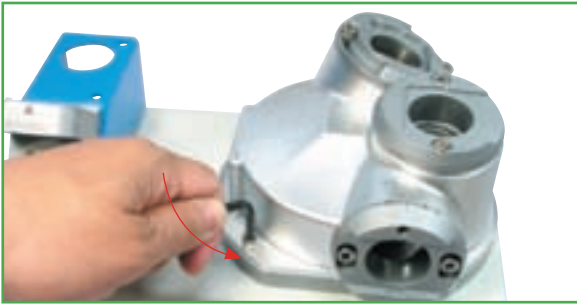
H End gash sharpening



1. Pointing ER holder at upper screw of end gash sharpening port NO.3, insert it into the port with a slight push motion. For precise and average grinding, hold tight the upper part of the ER holder with one hand and move the lower port at both sides with another hand to sharpen until grinding noise disappear.
2. Take out the holder with end mill and change to another flute, repeat the above steps until the sharpening for all flutes' end gashes is complete.
3. Take out the end mill from the holder and inspect it.

REPLACING THE WHEEL

A Removing the wheel cover



1. Unplug the machine.
2. Loosen the three screws in the wheel cover counterclockwise with 4mm Allen key.

B Cleaning the grinding dust



1. Make sure the temperature of the wheel goes down to normal temperature.
2. Open the upper cover, clean the grinding dust with pressurized air and wipe outside with dry cloth.

C Removing the washer



1. Hold the wheel with left hand and loosen the screw counterclockwise with 4mm Allen key with right hand.
2. Take out the black washer.
3. Take out the wheel from the motor hub slightly.

D Replacing the wheel



1. Take a new proper wheel.
2. To re-install the wheel, reverse steps taken to remove wheel.
- ★ The motor hub is very precise, it will be damaged by excessive force and affect the position of wheel accordingly.

Caution

1. Determine the material of end mill before grinding. Please use SDC diamond wheel for carbide end mill ; please use CBN diamond wheel for HSS end mill.
2. Determine the flute of the end mill and use the proper collet holder; PF-313 / 1225 is suitable for 2, 3, and 4 flute end mill.
3. Aligning end mill is the most important among the steps, make sure to complete this step before grinding.
4. This machine is guaranteed for one year under normal operating (expendable parts and wheels are exceptions), please inform the serial no. when the machine need to be repaired.
5. For end mill 4~6mm, be sure with very slight push motion while grinding the primary edge due the outer diameter of wheel is smaller.
6. The motor cannot run continuously over 1 hour.



changing the grinding wheel

1. Loose the side knob (B1) and open the side cover (B2).
2. Use a 4mm hexagon wrench to loose the screw (B3), unscrew it counter-clockwise.
3. Replace with a new diamond grinding wheel and tighten the screw after the wheel is installed.
4. Be sure to close the side cover (B2) properly and to fasten the side knob (B1).

Attention:

Please DO NOT switch on the machine BEFORE

- (1) the diamond wheel screw (B3) is tightly screwed.
- (2) the side cover (B2) is properly closed.
- (3) the right knob (B1) is fully fastened.

1. In case of any hazard from occurring, please make sure that the above measures are followed strictly.
2. The machine has an automatic “power-off” device to ensure operator’s safety. Power supply will be cut-off immediately when the cover is opened.

Patented Features

1. Double-bearing grinding unit (reduce wear).
2. Drill tightened design with bearing devise.
3. Adjustable trimming angle.

Standard Accessories

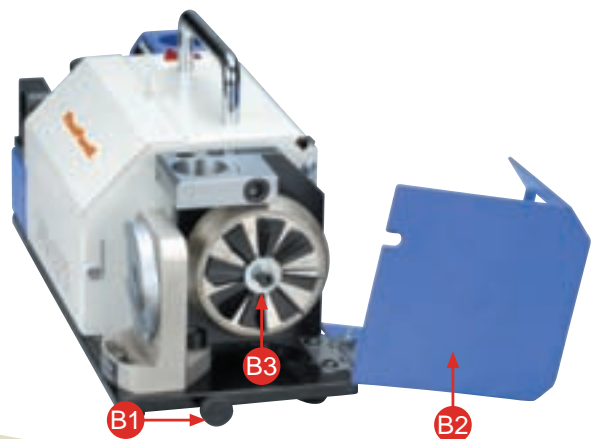
PF-213FG

1. ER Collets, ranged from 2.5mm-13mm (12pcs).
2. CBN Dimand wheel #200x1 PCS (for High Speed drill).
3. 3mm and 4mm Hexagon (Hex.) wrench x 1 pc each.

Optional Accessories

1. SDC #400 Diamond wheel (For carbide drill).
2. CBN #400 Diamond wheel (for < 4mm, High Speed drill).
3. ER Collets, include 3.5~12.5mm (10pcs).

Model	PF-213FG
Drill Diameter	Ø2mm - Ø13mm
Point Angle	85° ~ 140°
Power Supply	DC110 / DC220 50/60HZ
Motor	90W
R.P.M	6000RPM
Weight	10 kg



FAST DRILL RE-SHARPENING MACHINE



Procedures for changing the grinding wheel

1. Loose the side knob (B1) and open the side cover (B2).
2. Use a 4mm hexagon wrench to loose the screw (B3), unscrew it counter-clockwise.
3. Replace with a new diamond grinding wheel and tighten the screw after the wheel is installed.
4. Be sure to close the side cover (B2) properly and to fasten the side knob (B1).

Attention:

Please DO NOT switch on the machine BEFORE

- (1) the diamond wheel screw (B3) is tightly screwed.
- (2) the side cover (B2) is properly closed.
- (3) the right knob (B1) is fully fastened.

1. In case of any hazard from occurring, please make sure that the above measures are followed strictly.
2. The machine has an automatic "power-off" device to ensure operator's safety. Power supply will be cut-off immediately when the cover is opened.



Patented Features

1. Double-bearing grinding unit (reduce wear).
2. Drill tightened design with bearing devise.
3. Adjustable trimming angle.

Standard Accessories

PF-1226

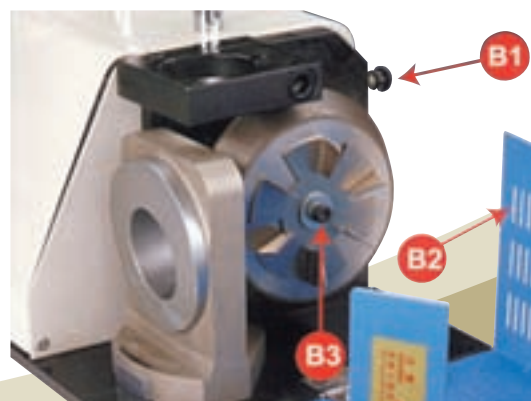
1. ER Collets, ranged from 12mm-26mm (15pcs).
2. CBN Diamond wheel #150x1 PCS (for High Speed drill).
3. 4mm and 6mm Hexagon (Hex.) wrench x 1 pc each.

Optional Accessories

PF-1226

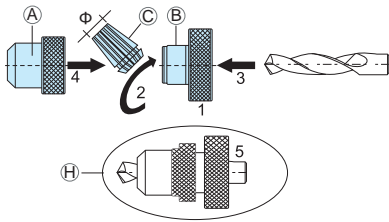
1. SDC #200 Diamond wheel (For carbide drill).
2. ER Collets, include 3.5~12.5mm (10pcs).

Model	PF-1226
Drill Diameter	Ø8mm - Ø30mm
Point Angle	85° ~ 140°
Power Supply	DC110 / DC220 50/60HZ
Motor	450W
R.P.M	4000RPM
Weight	25 kg



A Procedures for changing the grinding wheel

1. Choose the collect accordingly to the drill diameter.
2. Slot the chosen collet Holder (B) at an appropriate angle.
3. Insert the drill into the connected collet and collet holder set, leave a 35mm extension of the drill's original body length, but do not tightened the drill too tight.
4. Connect the Collet Nut (A) to the unit of Collet (C) which is locked to the Collet holder (B), and tighten the set, yet make sure the drill is not firmly tightened, but still able to be turned.
5. Complete the above steps, so the Collet Chuck Set (H) is ready for drilling.



B Setting the drill length and position its movement for drilling

1. Reset the Scale Ring (C1): turn the ring all the way clockwise, and then turn it anti-clockwise to the required drilling size indicated on C1.
2. Insert Collet Chuck Set (see 1) into Preset Length Bracket (C2) and make sure the pin is locked to the slot.
3. Turn the Collet Chuck Set clockwise until it touches against the pin (see 2), and turn the drill clockwise till it touches against the drill cutting edge.
4. Screw the ER Collet Holder (see 3) clockwise to tighten the drill.
5. Take out the Collet Chuck Set to check if the drill cutting edge is parallel to the slot of ER clamping nut. If it's not parallel, please repeat the above steps.
6. **Attention:** For used drill, with less than 3/4 (three quarters) of its original length left, it is advisable to adjust the 1~2mm scale up on the Scale Ring.



C Point Angle Grinding for Drill

1. Insert the Collet Chuck Set into Point Angle Bracket (see 1), and set the slot into the pin.
2. Make the Collet Chuck Set touching the wheel lightly (see 2), turn clockwise and reverse until the grinding sound disappears.
3. Take out the Collet Chuck Set, rotate it 180 degree, and repeat Step 1 and 2 to finish the grinding for the two drill chisel edge angles.



D Center Point Trimming Grinding for Drill

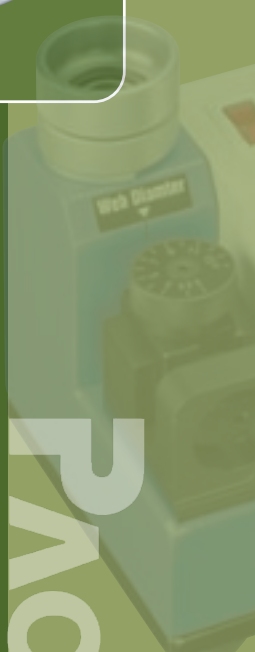
1. Insert Collet Chuck Set (see 1) into the grinding unit and insert the slot into the pin (see 2).
2. Place Collet Chuck Set (see 1) upright and insert it into the top bracket to lightly touch the wheel. Turn it clockwise and reverse until grinding noise disappears.
3. Take out Collet Chuck Set, rotate it 180 degree and repeat Step 1 and 2 to finish up the grinding.



E Adjustment for Trimming Angle

1. To obtain a larger trimming angle-turn the F1 Screw anti-clockwise (+),(-).





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