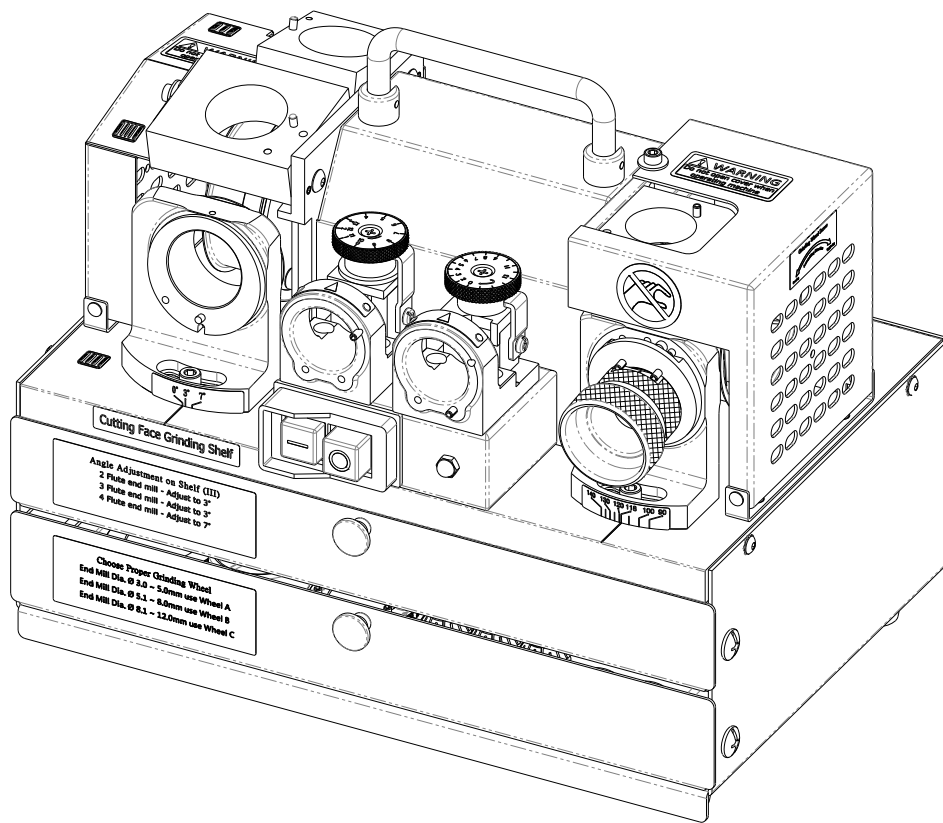


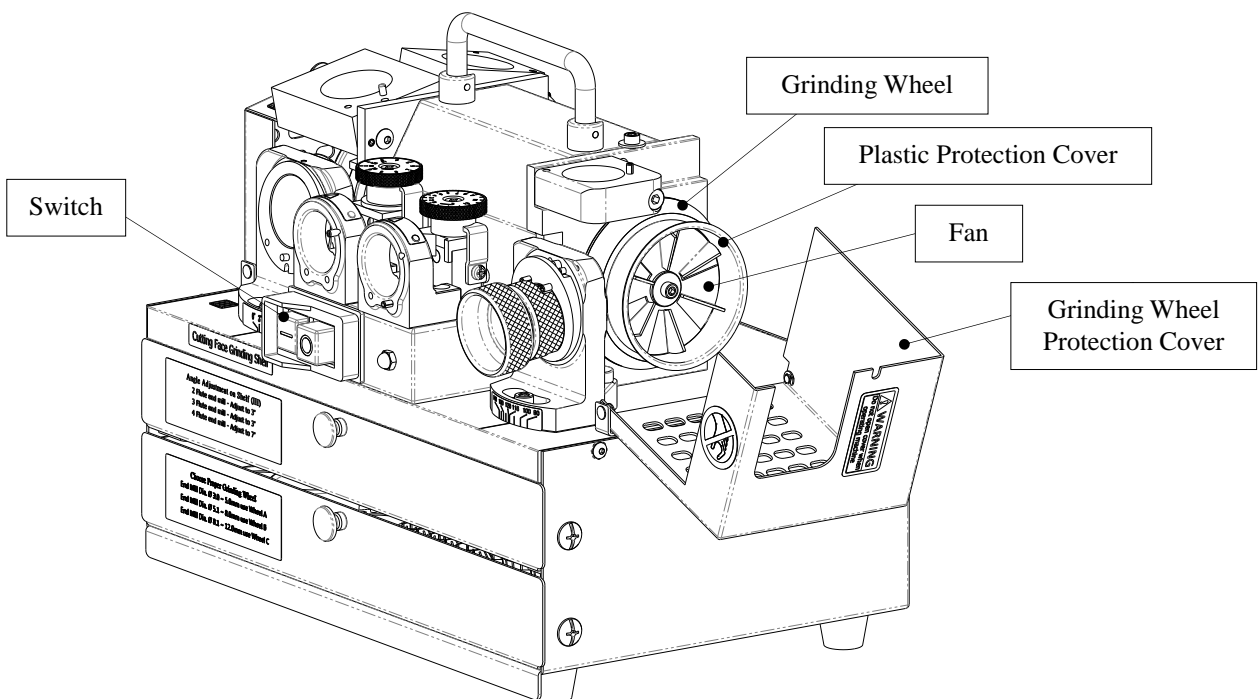
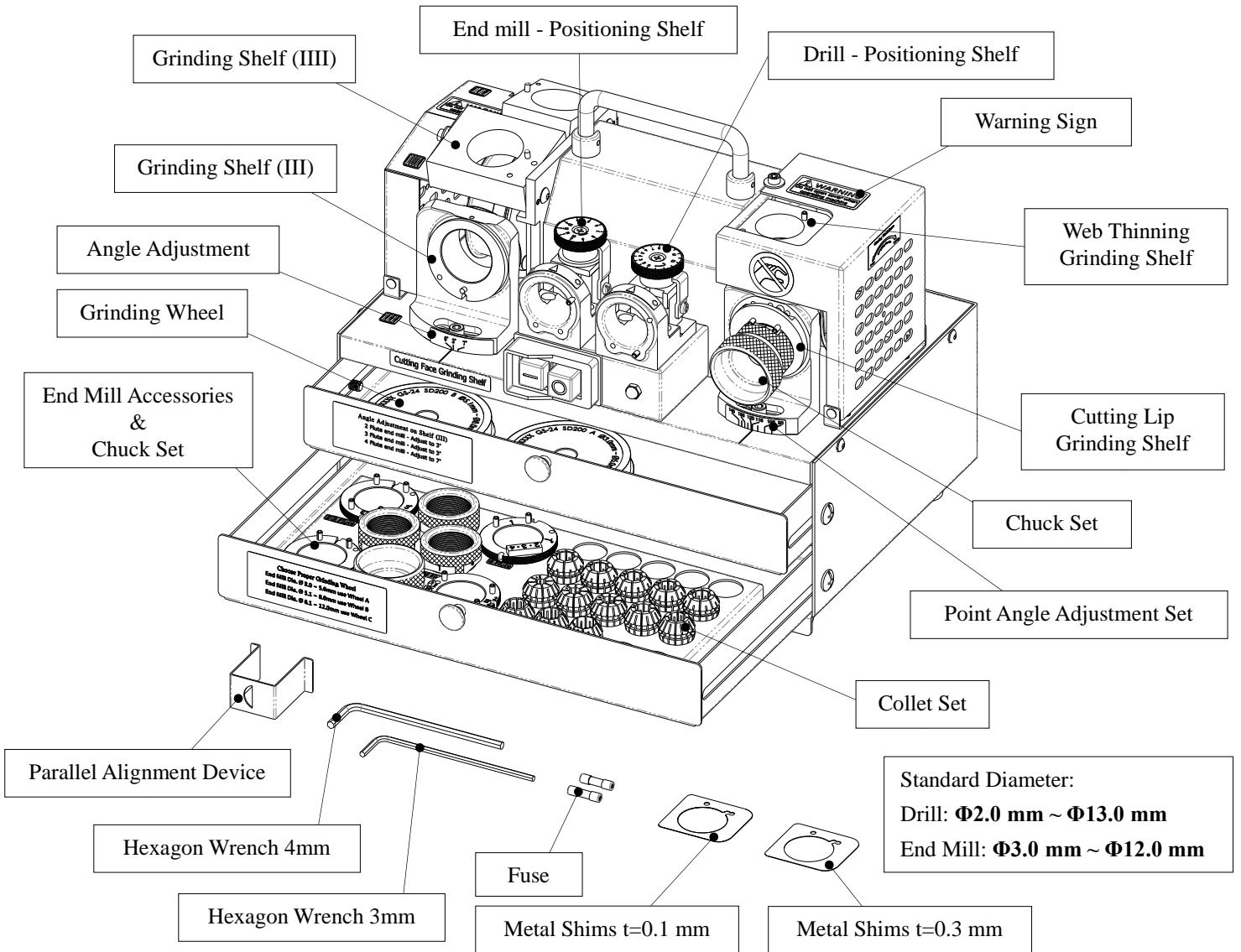
GS-24 Operation manual

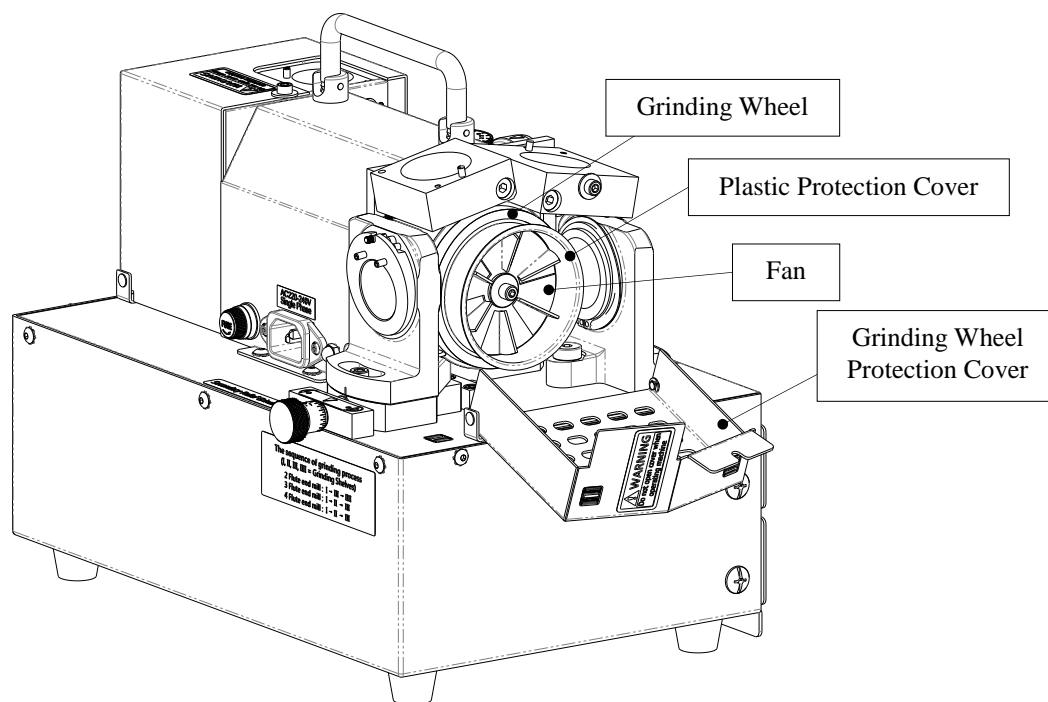
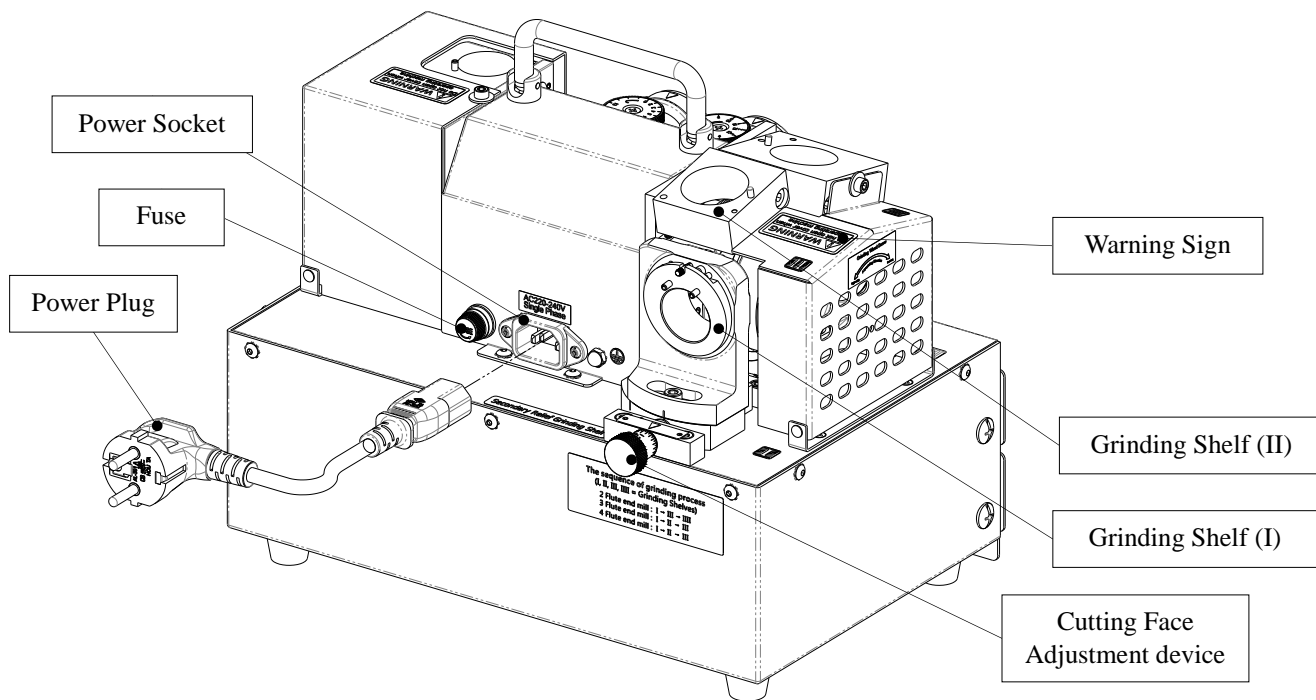


Index:

I.	Machine Devices Introduction	1
II.	Machine Installation Instruction	3
III.	Drill – Type of Drill for Sharpening	3
IV.	Drill – Choose of Grinding Wheel and the Collet	4
V.	Drill – Chuck Set Assembly Steps	4
VI.	Drill – The use of the Positioning Shelf.....	5
VII.	Drill – Grinding Process.....	7
VIII.	Drill – The use of Metal Shims	8
IX.	Drill – The use of the Parallel Alignment Devise.....	8
X.	End Mill – Choose of Grinding Wheel & Accessories & Collet.....	9
XI.	End Mill – Chuck Set Assembly Steps	9
XII.	End Mill – The use of the Positioning Shelf.....	10
XIII.	End Mill – The use of the Cutting Face Adjustment Device	11
XIV.	End Mill – 2 Flute End Mill Grinding Preparations	12
XV.	End Mill – 2 Flute End Mill Grinding Process	13
XVI.	End Mill – 3 Flute End Mill Grinding Preparations	14
XVII.	End Mill – 3 Flute End Mill Grinding Process	15
XVIII.	End Mill – 4 Flute End Mill Grinding Preparations	17
XIX.	End Mill – 4 Flute End Mill Grinding Process	18
XX.	Machine Maintenance and Clean	20

I. Machine Devices Introduction





II. Machine Installation Instruction

1. Environment Selection

- ① Please place the machine on the “flat” working table high at 1m.
- ② Dry Environment, away from any liquid.
- ③ Make sure power plug and power line are installed in proper location.

2. Power Supply

Make sure the power supply is 220V or 110V according to your region.

Please check the switch is in off position before plug into socket set.

3. Motor Rotary Testing

- ① Plug the power line into power socket.
- ② Check the grinding wheel protection cover is fastened by the screw.
- ③ Turn the switch on and quickly turn off the switch to check the grinding wheel rotary-counter clockwise.
- ④ Turn on the switch and listen the machine running.

(Machine equipped with DC Current Carbon Motor, Slightly grinding sound is normal.)

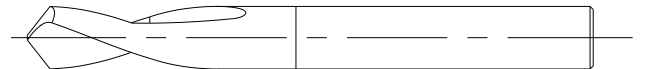
III. Drill – Type of Drill for Sharpening

This machine is design for General HSS / Carbide Twist Drill sharpening.

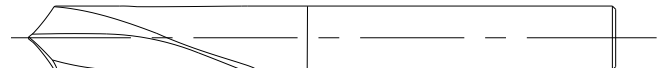
Universal Twist Drills



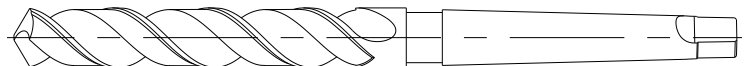
CNC Spotting Drills 120°



CNC Spotting Drills 90°



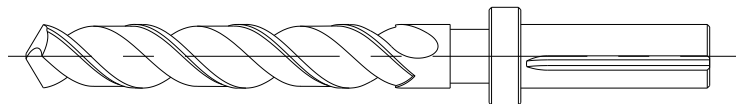
Taper Shank Twist Drills



Deep-Hole Drills and Coating



Noss Drills



IV. Drill – Choose of Grinding Wheel and the Collet

1. Determine the drill material to choose grinding wheel.
 - ① HSS material drill use CBN grinding wheel (Standard).
 - ② Carbide / Tungsten material use SDC grinding wheel (Optional).
2. According to the drill diameter and choose the same size of collet.
Eg: 5 mm drill, use 5 mm collet; 5.5 mm drill, use 6 mm collet.

V. Drill – Chuck Set Assembly Steps

1. Make sure there are no dusts or scraps inside the collet and the collet holder.
2. Insert the collet into collet holder by 45°. (Fig. 5-1)
3. Drill (B) insert collet into collet holder and assemble them with the clamping nut. (Fig. 5-2)

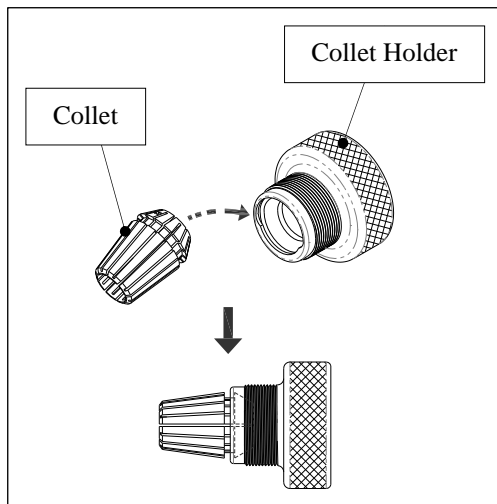


Fig. 5-1

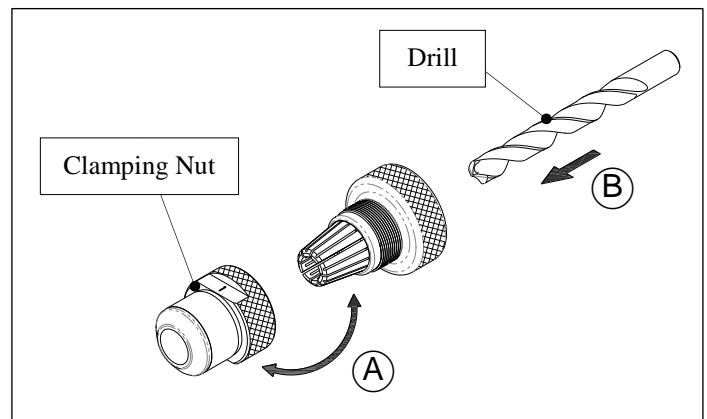


Fig. 5-2

※ Fasten the chuck set until the drill is grabbed by the holder, do not fasten Chuck Set too tightly, please leave some space for the later positioning adjustment of the drill.

VI. Drill—The use of the Positioning Shelf

1. Preset the scale of the Positioning Shelf.
Turn it by clockwise to the end and then turn counterclockwise at “0”. (Fig. 6-1)
2. Adjust the scale according to the drill diameter.

Eg: 5 mm drill, set at 5.

Eg: 5.6 mm drill, set at 6.

Eg: 5.2 mm drill, set at 6.

✘ *If the length of a drill is shorter than original length after re-sharpening many times, the web scale should be increased until the cutting edge is parallel with slot of clamping nut.*

✘ *For grinding **High Spiral Drill Bit**, please increase the web scale more than its original diameter.*

✘ *For grinding **Deep Hole Drills**, increase the adjustments on the Web Diameter scale (Diameter x2).
Eg: Deep Hole Drill, diameter at 5 mm, the Web Diameter scale should adjust above 10.*

3. Drill Positioning (Fig. 6-2)

- ① Inserting the Chuck set into the Positioning shelf (connecting closely without any interval) and turn it clockwise to the end.
- ② Push the drill to the end and turn slowly the drill by clockwise until it is blocked by the position block.
- ③ Turn the collet holder clockwise and tighten lightly the Chuck set.
- ④ Rotate the Chuck set counter clockwise and take it out gently.

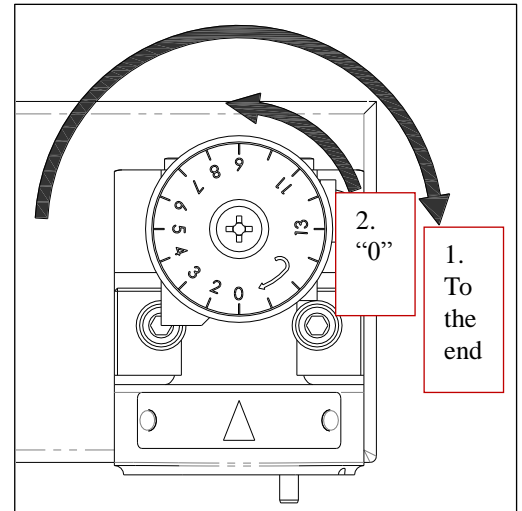


Fig. 6-1

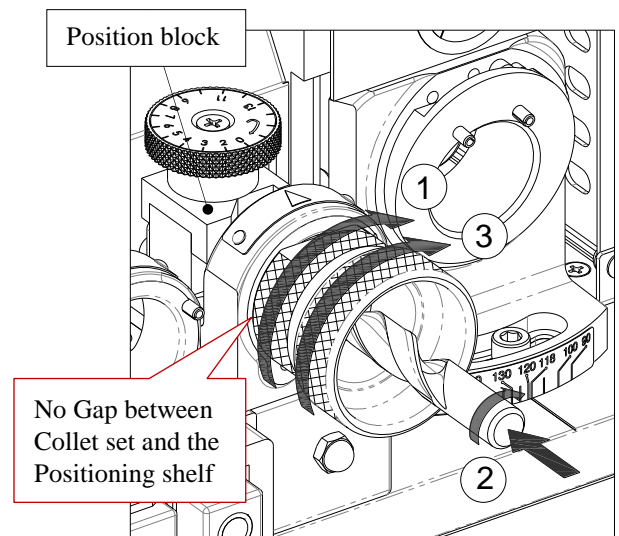


Fig. 6-2

continued from previous page...

Note: After taking the chuck set out, please make sure the cutting edge of the drill is parallel with the slot of clamping nut (Fig. 6-3), if it is not parallel, please re-adjust it. (Fig. 6-4)

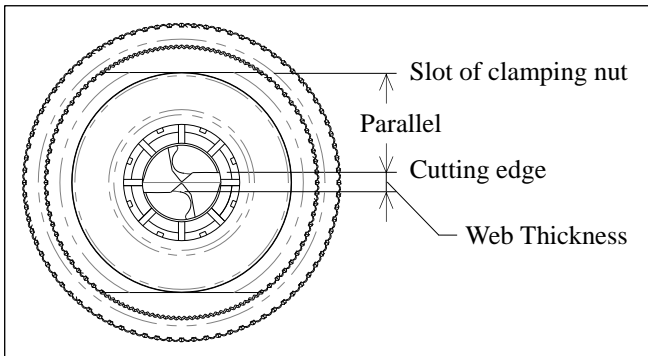


Fig. 6-3

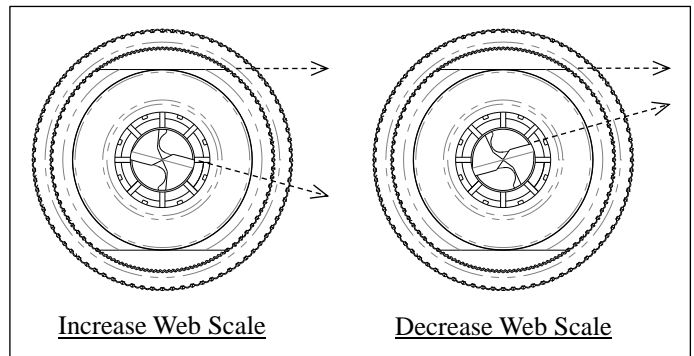


Fig. 6-4

You could also choose to use the parallel alignment device to check the parallelism. (See page 8 “IX. Drill – The use of the Parallel Alignment Device”)

✘ Always keep the parallelism before starting the grinding procedure. (Fig. 6-3)

VII. Drill – Grinding Process

! Please verify the Point Angle of the Drill before starting the grinding procedure.
(90°~140°)

Turn on the switch, when the motor rotation is stable (about 10 seconds).

1. Cutting Lip Grinding (Fig. 7-1)

- ① Put the chuck set into the grinding shelf and connected them closely.
 - ② The slot of the fixed clamping nut must be fitted with the two pins on the grinding shelf.
 - ③ Grind the drill by moving left and right until the noise stops.
 - ④ Take out the chuck set, turn the chuck set to the other side and grind the drill by the same way.
- ✘ While grinding, please do not hold the drill shank, it may influence the drill position and caused the missing of accuracy.

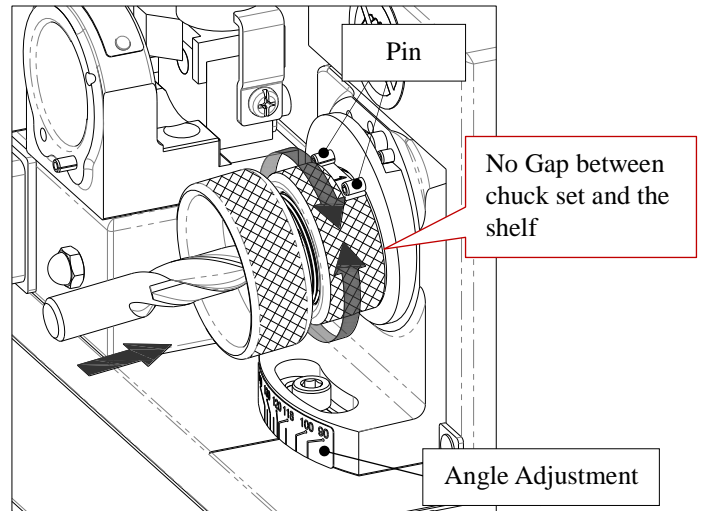


Fig. 7-1

2. Web / Center Thinning (Fig. 7-2)

! Please make sure the center part of clamping nut slot aligns to the pin, when putting in or taking out the chuck set.

- ① Insert gently the chuck set into web thinning Shelf until reach the grinding slip.
 - ② Grind the drill by moving left and right until the noise stops.
 - ③ Take out chuck set, turn the chuck set to the other side and grind the drill by the same way.
- ✘ There are 0.1mm shim and 0.3mm shim for adjusting the size of web thickness. (See page 8 “VIII. Drill – The Use of Metal Shims”)

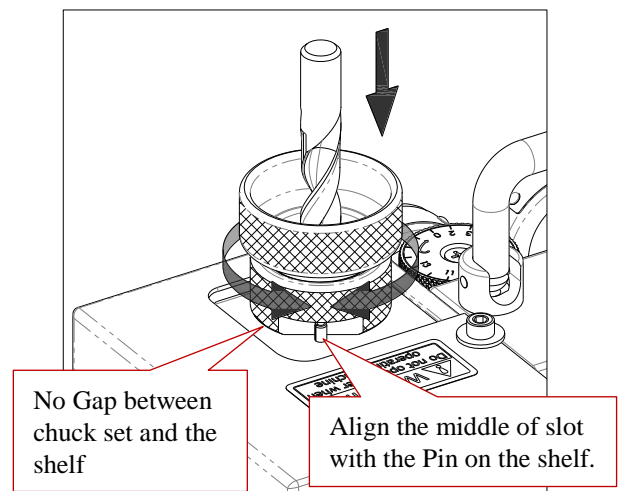
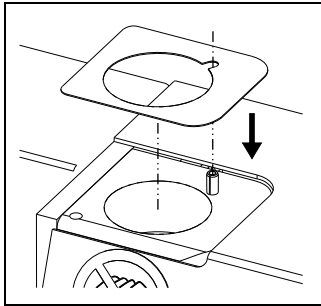


Fig. 7-2

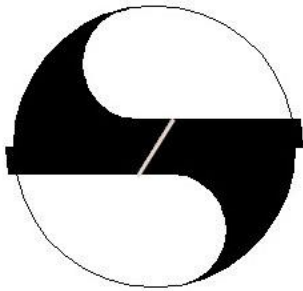
VIII. Drill – The use of Metal Shims



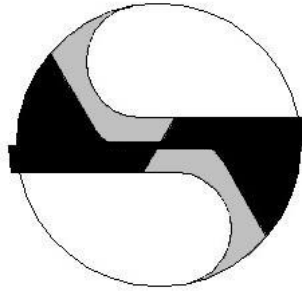
There are 3 Metal Shims as standard accessories in the machine.

2 pcs of 0.1mm and 1 pcs of 0.3mm.

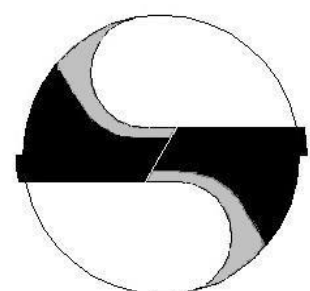
Adding one shim of 0.1mm will expand 0.2mm of the point size, adding 0.3mm shim will expand 0.6mm of the point size and so on.



Tip of drill without thinning, use only the Cutting Lip Grinding Shelf to sharpen this form.

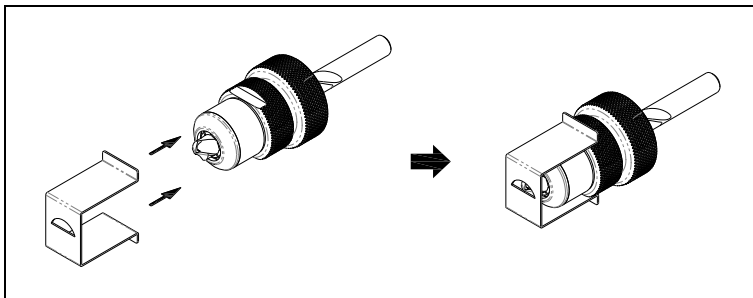


Web Thinning made by normal grinding procedure without adding metal shims.
Point size: 0.2mm – 0.4mm



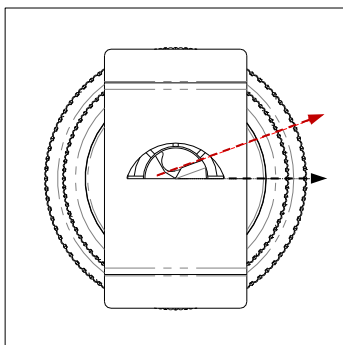
Web thinning result with metal shims.
Point size: 0.4mm or bigger depend the shims added

IX. Drill – The use of the Parallel Alignment Devise

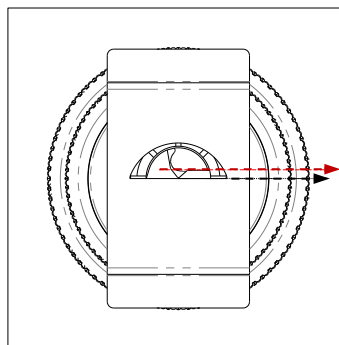


Align the Parallel Devise with the two slots of on the Clamping Nut, then connect them as shown in the left picture.

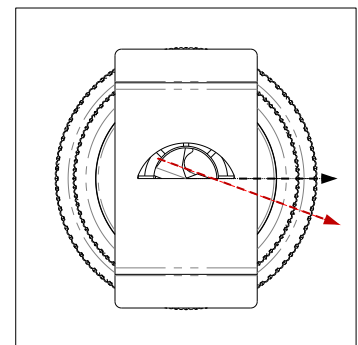
Verify the parallelism of the Drill's Cutting Lip with the flat figure of the hole on the Parallel Devise.



Incorrect - Please decrease scale



Correct - Cutting lip parallel



Incorrect - Please increase scale

X. End Mill— Choose of Grinding Wheel & Accessories & Collet

1. Please unplug the power line before changing grinding wheel.
2. Determine the material of the End mill and choose the proper grinding wheel.
 - ① Carbide / Tungsten material End mill use SD grinding wheel (Standard).
 - ② HSS material End mill use CBN grinding wheel (Optional).
3. Determine the cutting face diameter of the End mill and choose proper size of grinding wheel.
 - ① Grinding Wheel A is for grinding the diameter of the End mill from $\Phi 3.0$ mm ~ $\Phi 5.0$ mm.
 - ② Grinding Wheel B is for grinding the diameter of the End mill from $\Phi 5.1$ mm ~ $\Phi 8.0$ mm.
 - ③ Grinding Wheel C is for grinding the diameter of the End mill from $\Phi 8.1$ mm ~ $\Phi 12.0$ mm.
4. Determine the number of flute and choose the proper accessories (Bushing and Chuck).
5. Confirm the size of the End mill shank then choose the proper collet.
Eg: 5 mm drill, use 5 mm collet; 6.5 mm drill, use 7 mm collet.

XI. End Mill— Chuck Set Assembly Steps

1. Make sure there are no dusts or scraps inside the collet and the collet holder.
2. Insert the collet into collet holder by 45°. (Fig. 11-1)
3. Connect collet and clamping nut with collet holder, then insert the End mill shank into the clamp nut until the end mill is protruded around 5 mm out of the clamping nut. (Fig. 11-2) (Fig. 11-3)

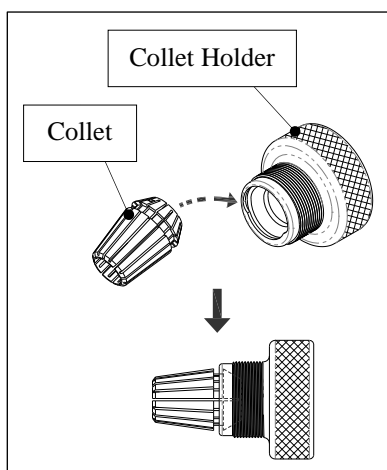


Fig. 11-1

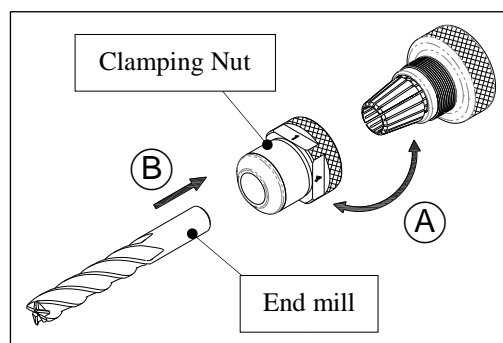


Fig. 11-2

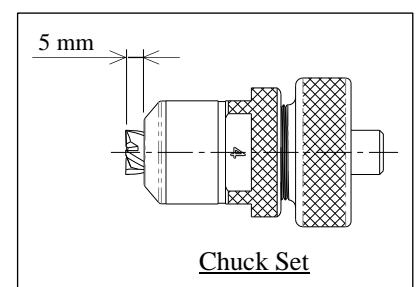


Fig. 11-3

✘ Please do not fully tighten and maintain the end mill able to be adjusted.

4. Face up the Slot No.1 of the Chuck set, the cutting face of the End mill must be parallel with the Slot No.1 of the Chuck set. (3 flute and 4 flute End mill's long flute must be parallel with Slot No.1)

XII. End Mill – The use of the Positioning Shelf

1. **Preset the scale of the Positioning Shelf.**
Turn it by clockwise to the end and then turn counterclockwise at "3". (Fig. 12-1)
2. **Adjustment for Carbide material End mill.**
Adjust the scale according to the diameter of the end mill.
Eg: 10.0 mm End mill, set at 10.
3. **Adjustment for HSS material End mill.**
Need to decrease 1-3 scales according to the diameter of the end mill.
Eg: 8.0 mm End mill, set at 5-7.

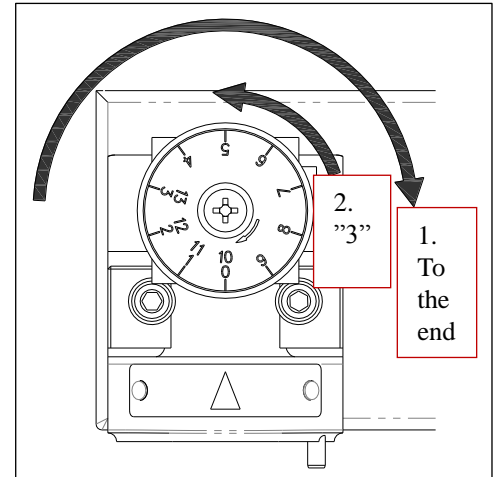


Fig. 12-1

4. **End mill Positioning**
 - ① Inserting the Chuck set into the Positioning shelf (connecting closely without any interval), Slot No.1 of the Chuck set align with the Pin on the Positioning Shelf then turn it clockwise to the end. (Fig. 12-2)
 - ② Push the End mill to the end and turn it clockwise until the long flute of the End mill stops by the Positioning block. (Fig. 12-3)
 - ③ Turn the collet holder clockwise and tighten lightly the Chuck set. (Fig. 12-3)
 - ④ Rotate the Chuck set counter clockwise and take it out gently, make sure the long flute must be parallel with Slot No.1 of the Chuck set, if not please operate again the entire positioning procedure. (Fig. 12-4)

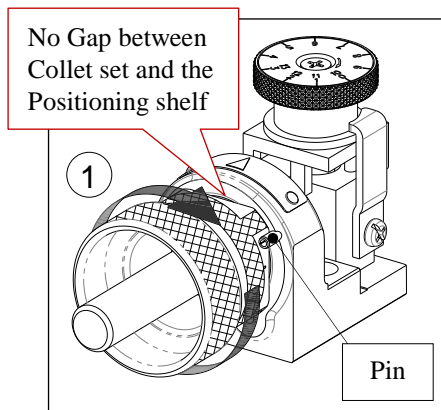


Fig. 12-2

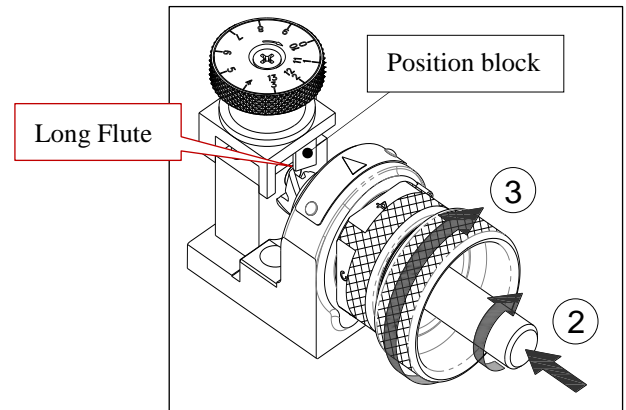


Fig. 12-3

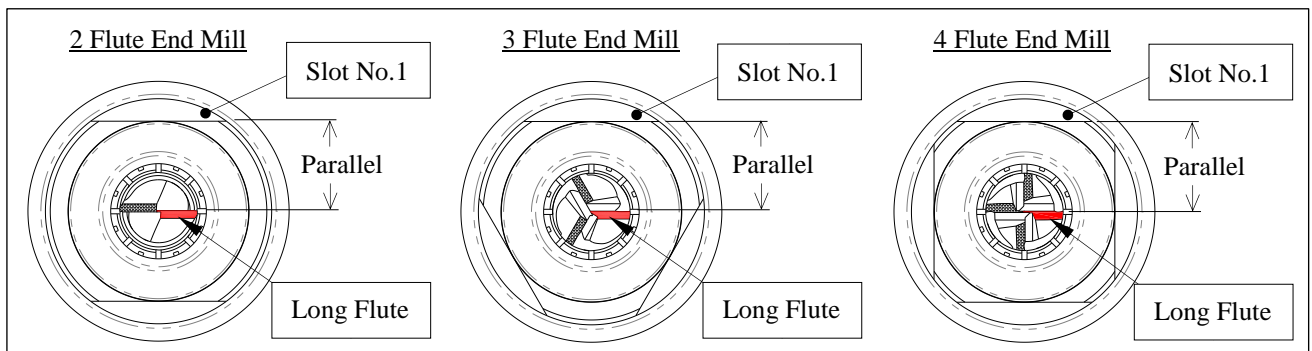
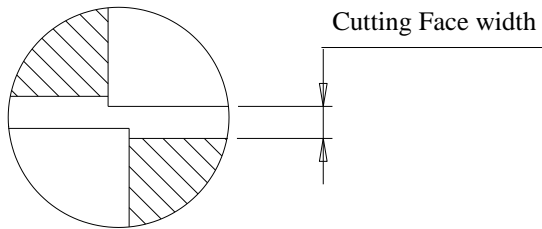


Fig. 12-4

XIII. End Mill – The use of the Cutting Face Adjustment Device

This device is to adjust the Shelf (I) location back and forward to adjust the width of the cutting face. (Fig. 13-1)



1. Please turn it to “-” direction to the end then set to “0”.
2. Turn to “+” direction to decrease the cutting face width.
Turn to “-” direction to increase the cutting face width.

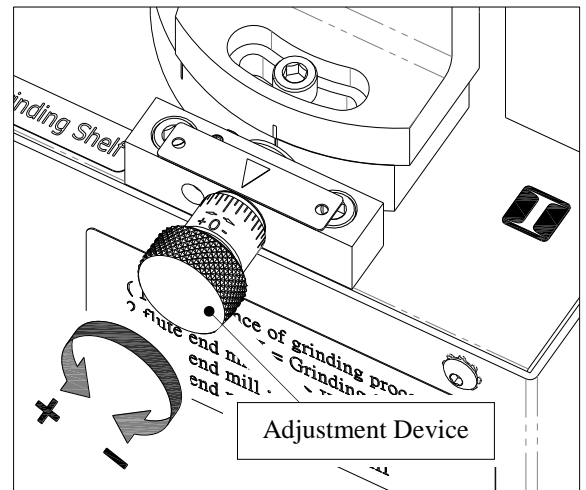


Fig. 13-1

XIV. End Mill – 2 Flute End Mill Grinding Preparations

1. Shelf (I) (Fig. 14-1)

- ① Trigger up the adjustable pin on Shelf (I) from the bottom to top.
- ② Adjust the Cutting face adjustment device to “0”, after finishing the whole sharpening procedure, then adjust this device according to your needs. (See page 11 “XIII. End Mill – The use of the Cutting Face Adjustment Device”)

2. Shelf (III) (Fig. 14-2)

- ① Adjust Shelf (III) to 3°.
- ② Insert 2&3 Flute Cutting Face Bushing to Shelf (III), align the Green mark ● of the Bushing with the Green mark ● on the shelf, then insert the bushing gently and align No.1 of the Bushing with the Pin on the shelf.

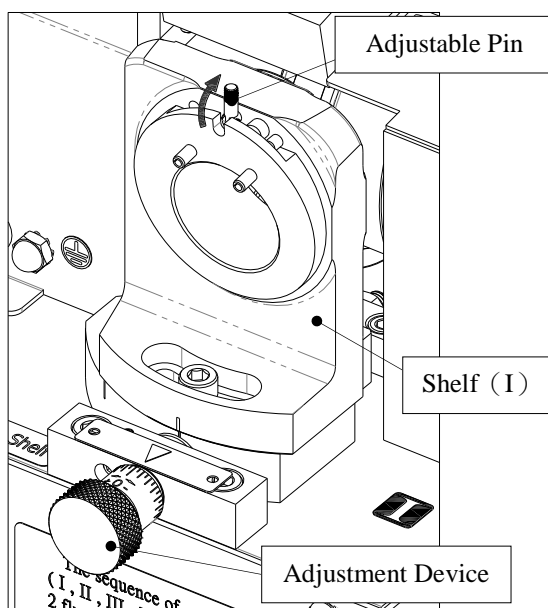


Fig. 14-1

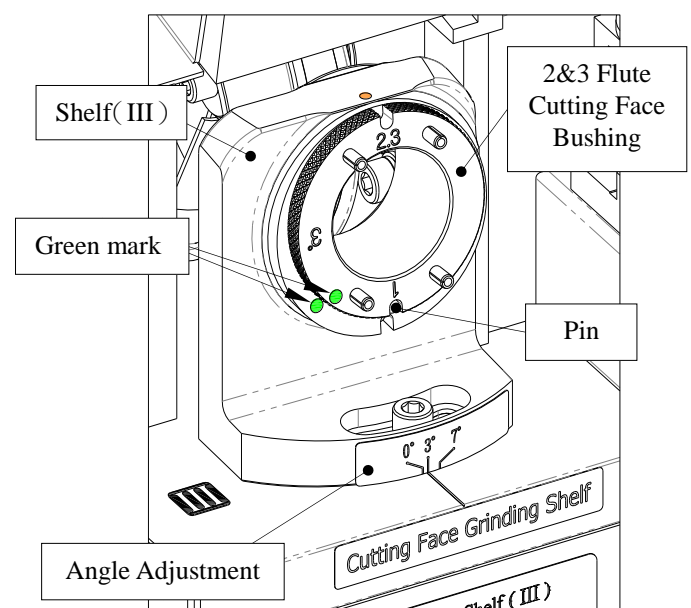


Fig. 14-2

3. Shelf (IIII) (Fig. 14-3)

Insert 2 Flute End Gash Bushing to Shelf (IIII) , align the White mark ○ of the Bushing with the White mark ○ on the shelf, then insert the bushing gently and align No.1 of the Bushing with the Pin on the shelf.

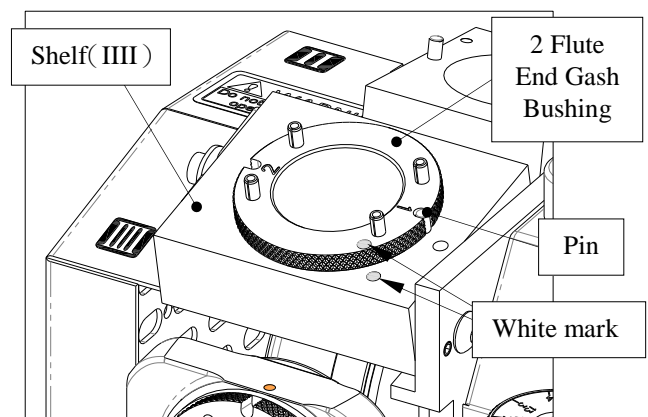


Fig. 14-3

XV. End Mill—2 Flute End Mill Grinding Process

Grinding procedure: I, III, III.

Turn on the switch, when the motor rotation is stable (about 10 seconds).

1. 2 Flute Secondary Relief Grinding (I) (Fig. 15-1)

- ① Insert the Chuck set into Shelf (I), align Slot No.1 of the Chuck set with the two pins on the shelf, gently push the Chuck set into the shelf until the grinding noise stops, turn the Chuck set clockwise to the end and turn it back by counter clockwise.
- ② Take out the Chuck set; turn it by 180° to Slot No.2, align Slot No.2 of the Chuck set with the two pins on the shelf, gently push the Chuck set into the shelf until the grinding noise stops, turn the Chuck set clockwise to the end and turn it back by counter clockwise, then take out the Chuck set.

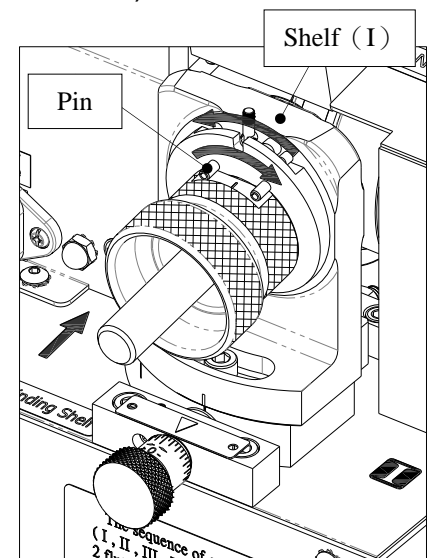


Fig. 15-1

2. 2 Flute Cutting Face Grinding (III) (Fig. 15-2)

- ① Insert the Chuck set into the bushing on Shelf (III), align Slot No.1 of the Chuck set with the two pins where marked as No.1, gently push the Chuck set into the shelf until the grinding noise stops, then take out the Chuck set.
- ② Take out the bushing; turn it by 180° to No.(2 · 3), align No.(2 · 3) of the bushing with the Pin on the shelf, then insert the bushing into the shelf.
- ③ Insert the Chuck set into the bushing on Shelf (III), align Slot No.2 of the Chuck set with the two pins where marked as No.(2 · 3), gently push the Chuck set into the shelf until the grinding noise stops, then take out the Chuck set.

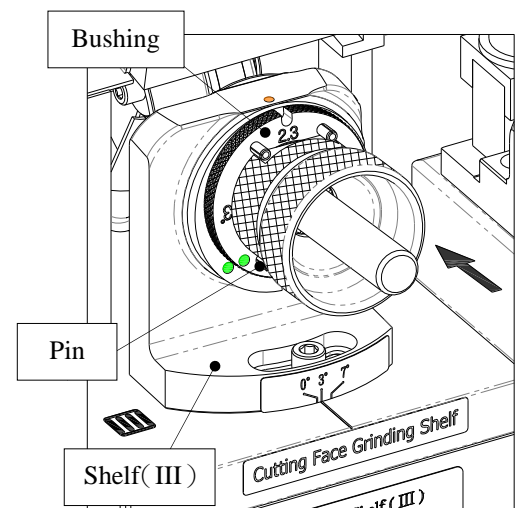


Fig. 15-2

3. 2 Flute End Gash Grinding (III) (Fig. 15-3)

- ① Insert the Chuck set into the bushing on Shelf (III), align Slot No.1 of the Chuck set with the two pins where marked as No.1, gently push the Chuck set into the shelf until the grinding noise stops, then take out the Chuck set.
- ② Take out the bushing; turn it by 180° to No.2, align No.2 of the bushing with the Pin on the shelf, then insert the bushing into the shelf.
- ③ Insert the Chuck set into the bushing on Shelf (III), align Slot No.2 of the Chuck set with the two pins where marked as No.2, gently push the Chuck set into the shelf until the grinding noise stops.

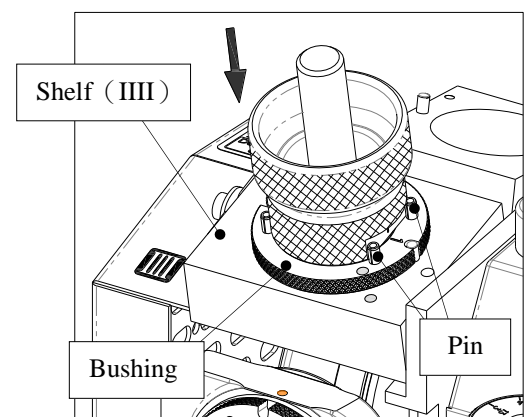


Fig. 15-3

XVI. End Mill—3 Flute End Mill Grinding Preparations

1. Shelf (I) (Fig. 16-1)

- ① Trigger up the adjustable pin on Shelf (I) from the bottom to top.
- ② Adjust the Cutting face adjustment device to “0”, after finishing the whole sharpening procedure, then adjust this device according to your needs. (See page 11 “XIII. End Mill—The use of the Cutting Face Adjustment Device”)

2. Shelf (II) (Fig. 16-2)

Insert 3&4 Flute End Gash Bushing to Shelf (II), align the Pink mark ● of the Bushing with the Pink mark ● on the shelf, then insert the bushing gently and align No.(I · II) of the Bushing with the Pin on the shelf.

3. Shelf (III) (Fig. 16-3)

- ① Adjust Shelf (III) to 3°.
- ② Insert 2&3 Flute Cutting Face Bushing to Shelf (III), align the Green mark ● of the Bushing with the Green mark ● on the shelf, then insert the bushing gently and align No.1 of the Bushing with the Pin on the shelf.

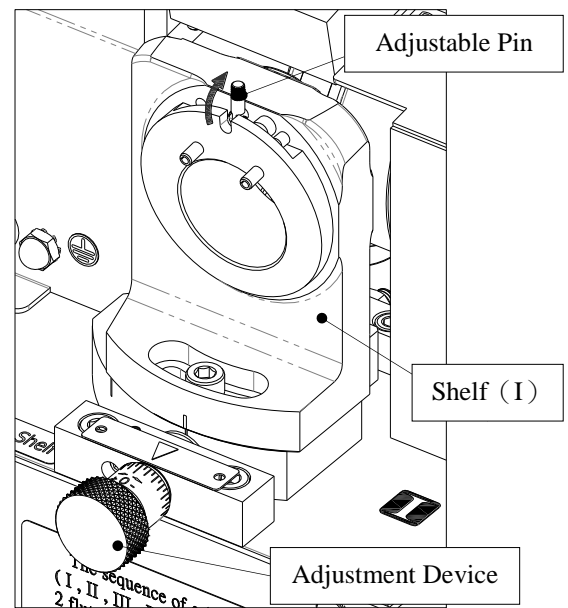


Fig. 16-1

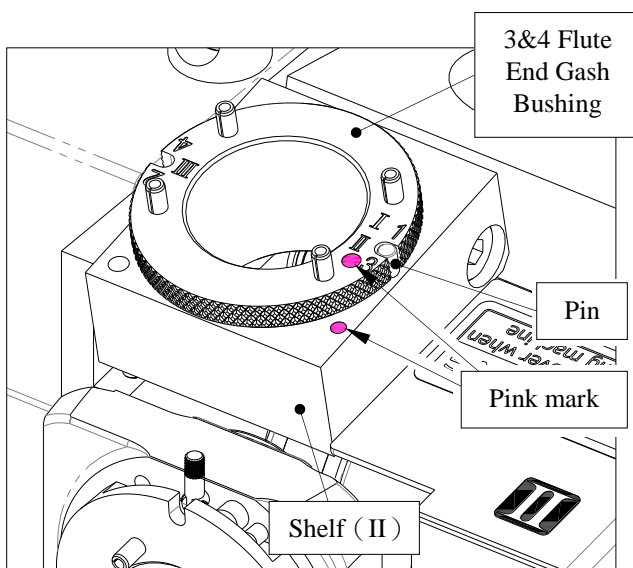


Fig. 16-2

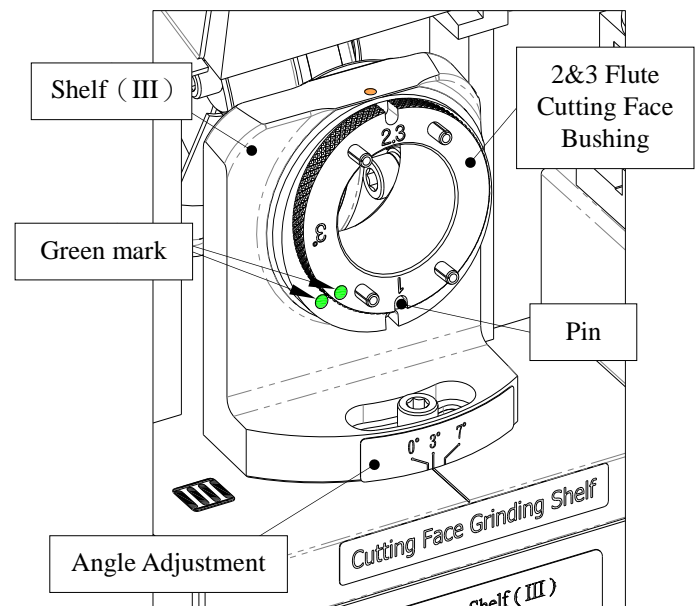


Fig. 16-3

XVII. End Mill—3 Flute End Mill Grinding Process

Grinding procedure: I, II, III.

Turn on the switch, when the motor rotation is stable (about 10 seconds).

1. 3 Flute Secondary Relief Grinding (I) (Fig. 17-1)

- ① Insert the Chuck set into Shelf (I), align Slot No.1 of the Chuck set with the two pins on the shelf, gently push the Chuck set into the shelf until the grinding noise stops, turn the Chuck set clockwise to the end and turn it back by counter clockwise.
- ② Take out the Chuck set; turn it to Slot No.2, align Slot No.2 of the Chuck set with the two pins on the shelf, gently push the Chuck set into the shelf until the grinding noise stops, turn the Chuck set clockwise to the end and turn it back by counter clockwise.
- ③ Take out the Chuck set; turn it to grind the Slot No.3 with the same procedure.

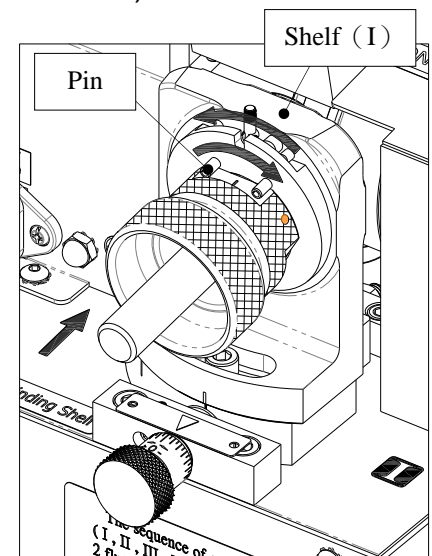


Fig. 17-1

2. 3 Flute End Gash Grinding (II) (Fig. 17-2)

- ① Insert the Chuck set into the bushing on Shelf (II), align Slot No.1 of the Chuck set with the two pins where marked as No.(I · II), gently push the Chuck set into the shelf until the grinding noise stops.
- ② Take out the Chuck set; turn it to Slot No.2, align Slot No.2 of the Chuck set with the two pins on the bushing where marked as No.(I · II), gently push the Chuck set into the shelf until the grinding noise stops, then take out the Chuck set.
- ③ Take out the bushing; turn it by 180° to No.(III), align No.(III) of the bushing with the Pin on the shelf, then insert the bushing into the shelf.
- ④ Insert the Chuck set into the bushing on Shelf (II), align Slot No.3 of the Chuck set with the two pins where marked as No.(III), gently push the Chuck set into the shelf until the grinding noise stops.

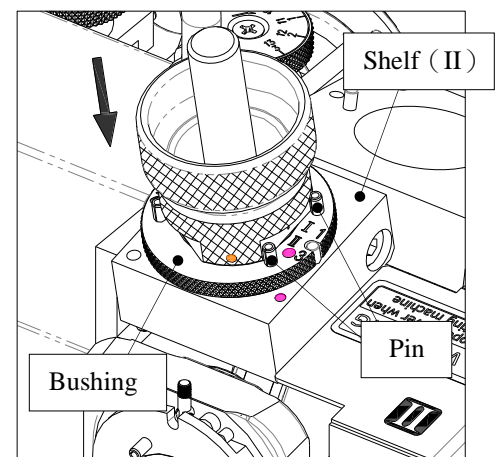


Fig. 17-2

continued from previous page...

3. 3 Flute Cutting Face Grinding Process (III) (Fig. 17-3)

- ① Insert the Chuck set into the bushing on Shelf (III) , align Slot No.1 of the Chuck set with the two pins where marked as No.1 (Align the Orange mark ● of the Chuck set with the Orange mark ● of the shelf), gently push the Chuck set into the shelf until the grinding noise stops, then take out the Chuck set.
- ② Take out the bushing; turn it by 180° to No.(2 · 3), align No.(2 · 3) of the bushing with the Pin on the shelf, then insert the bushing into the shelf.
- ③ Insert the Chuck set into the bushing on Shelf (III) , align Slot No.2 of the Chuck set with the two pins where marked as No.(2 · 3) (Align the Orange mark ● of the Chuck set with the Orange mark ● of the shelf), gently push the Chuck set into the shelf until the grinding noise stops.
- ④ Take out the Chuck set; turn it to Slot No.3, align Slot No.3 of the Chuck set with the two pins on the bushing where marked as No.(2 · 3) (Align the Orange mark ● of the Chuck set with the Orange mark ● of the shelf), gently push the Chuck set into the shelf until the grinding noise stops.

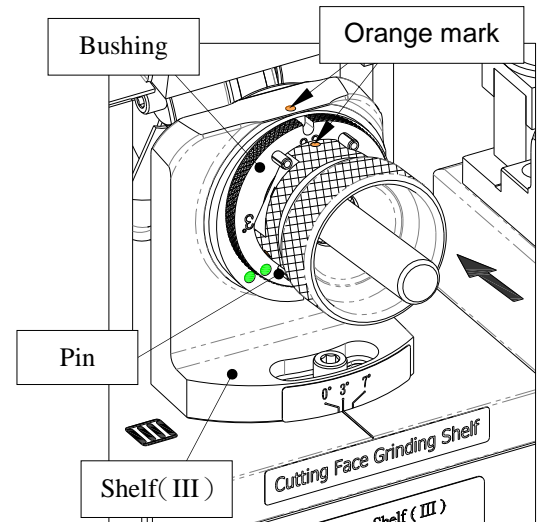


Fig. 17-3

※ **Make sure each End mill flute is fully grinded before continuing for the grinding of the next flute.**

XVIII. End Mill—4 Flute End Mill Grinding Preparations

1. Shelf (I) (Fig. 18-1)

- ① Move the adjustable pin on Shelf (I) from the top to bottom.
- ② Adjust the Cutting face adjustment device to “0”, after finishing the whole sharpening procedure, then adjust this device according to your needs. (See page 11 “XIII. End Mill—The use of the Cutting Face Adjustment Device”)

2. Shelf (II) (Fig. 18-2)

Insert 3&4 Flute End Gash Bushing to Shelf (II) , align the Pink mark ● of the Bushing with the Pink mark ● on the shelf, then insert the bushing gently and align No.(1 · 3) of the Bushing with the Pin on the shelf.

3. Shelf (III) (Fig. 18-3)

- ① Adjust Shelf (III) to 7°.
- ② Insert 4 Flute Cutting Face Bushing to Shelf (III) ,align the Green mark ● of the Bushing with the Green mark ● on the shelf, then insert the bushing gently and align No.1 of the Bushing with the Pin on the shelf.

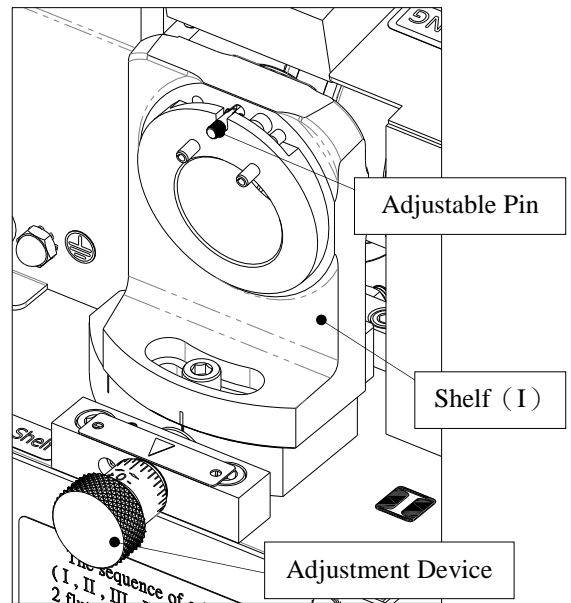


Fig. 18-1

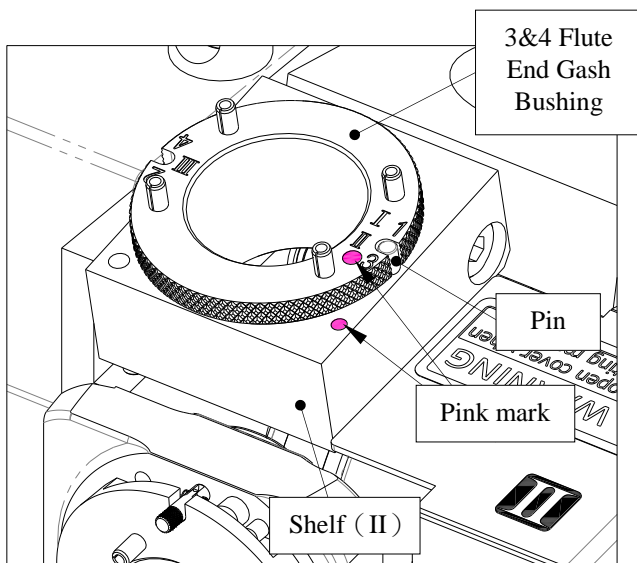


Fig. 18-2

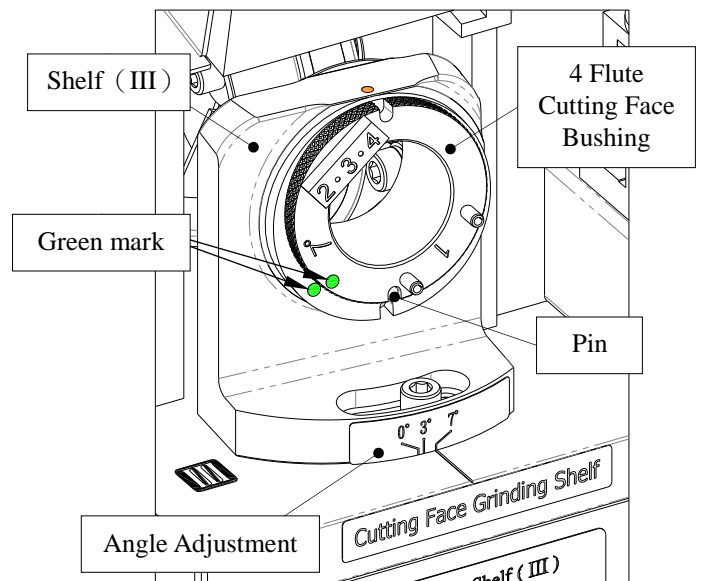


Fig. 18-3

XIX. End Mill—4 Flute End Mill Grinding Process

Grinding procedure: I, II, III.

Turn on the switch, when the motor rotation is stable (about 10 seconds).

1. 4 Flute Secondary Relief Grinding (I) (Fig. 19-1)

- ① Insert the Chuck set into Shelf (I), align Slot No.1 of the Chuck set with the two pins on the shelf, gently push the Chuck set into the shelf until the grinding noise stops.
- ② Take out the Chuck set; turn it to Slot No.2, align Slot No.2 of the Chuck set with the two pins on the shelf, gently push the Chuck set into the shelf until the grinding noise stops.
- ③ Take out the Chuck set; turn it to grind the Slot No.3 and Slot No.4 with the same procedure.

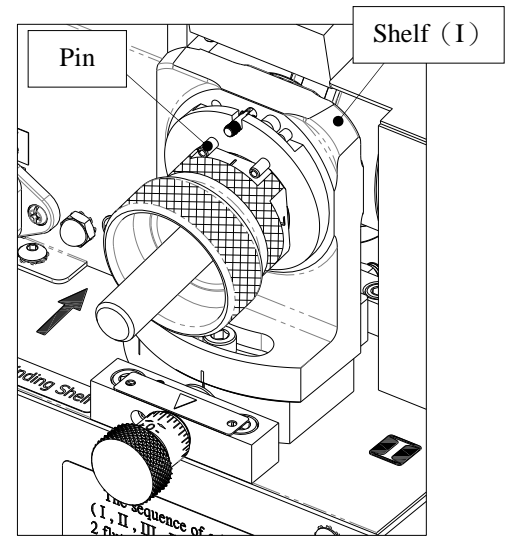


Fig. 19-1

2. 4 Flute End Gash Grinding (II) (Fig. 19-2)

- ① Insert the Chuck set into the bushing on Shelf (II), align Slot No.1 of the Chuck set with the two pins where marked as No.(1 · 3), gently push the Chuck set into the shelf until the grinding noise stops.
- ② Take out the Chuck set; turn it to Slot No.3, align Slot No.3 of the Chuck set with the two pins on the bushing where marked as No.(1 · 3), gently push the Chuck set into the shelf until the grinding noise stops, then take out the Chuck set.
- ③ Take out the bushing; turn it by 180° to No.(2 · 4), align No.(2 · 4) of the bushing with the Pin on the shelf, then insert the bushing into the shelf.
- ④ Insert the Chuck set into the bushing on Shelf (II), align Slot No.2 of the Chuck set with the two pins where marked as No.(2 · 4), gently push the Chuck set into the shelf until the grinding noise stops.
- ⑤ Take out the Chuck set; turn it to Slot No.4, align Slot No.4 of the Chuck set with the two pins on the bushing where marked as No.(2 · 4), gently push the Chuck set into the shelf until the grinding noise stops.

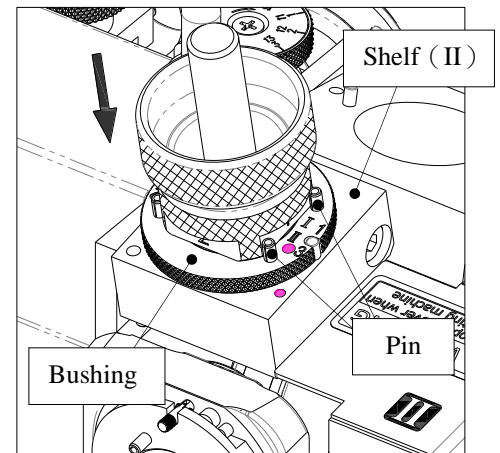


Fig. 19-2

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3. 4 Flute Cutting Face Grinding Process (III)

- ① Insert the Chuck set into the bushing on Shelf (III) , align Slot No.1 of the Chuck set with the two pins where marked as No.1, gently push the Chuck set into the shelf until the grinding noise stops, then take out the Chuck set. (Fig. 19-3)
- ② Take out the bushing; turn it by 180° to No.(2 · 3 · 4), align No.(2 · 3 · 4) of the bushing with the Pin on the shelf, then insert the bushing into the shelf.
- ③ Insert the Chuck set into the bushing on Shelf (III) , align Slot No.2 of the Chuck set with the bushing where marked as No.(2 · 3 · 4), gently push the Chuck set into the shelf until the grinding noise stops. (Fig. 19-4)
- ④ Take out the Chuck set; turn it to Slot No.3, align Slot No.3 of the Chuck set with the bushing where marked as No.(2 · 3 · 4), gently push the Chuck set into the shelf until the grinding noise stops. (Fig. 19-4)
- ⑤ Take out the Chuck set; turn it to Slot No.4, align Slot No.4 of the Chuck set with the bushing where marked as No.(2 · 3 · 4), gently push the Chuck set into the shelf until the grinding noise stops. (Fig. 19-4)

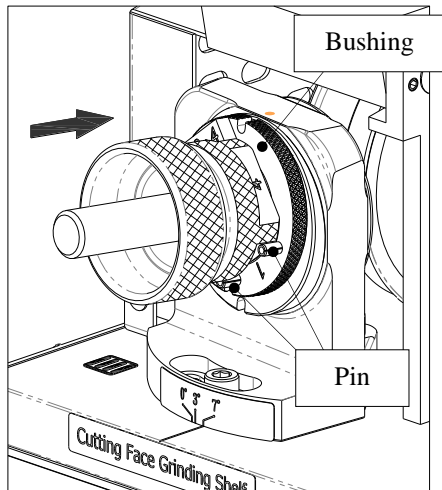


Fig. 19-3

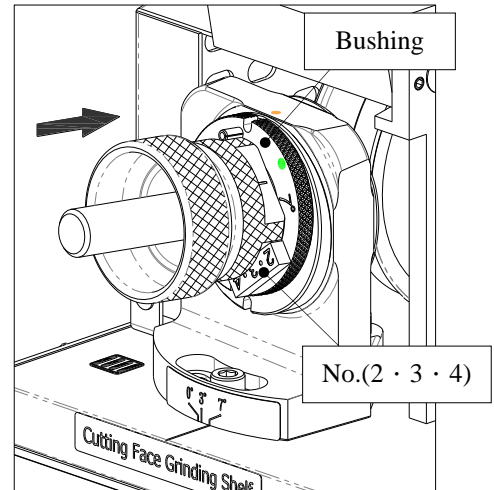


Fig. 19-4

❌ ***Make sure each End mill flute is fully grinded before continuing for the grinding of the nest flute.***

XX. Machine Maintenance and Clean

1. Replacement of Grinding Wheel

- ① Please unplug the power cord.
 - ② Please confirm the screw direction on the grinding wheel cover before the change of grinding wheel. (Fig. 20-1)
 - ③ Loosen the screw on the grinding wheel cover to open the cover. (Fig. 20-2)
 - ④ Use hexagon wrench to loosen the screw on the fan and take out the grinding wheel. (Fig. 20-3)
 - ⑤ Use wiper to clean the scraps on flange and washer before replacing new grinding wheel.
 - ⑥ Assembling the grinding wheel, plastic protection cover, fan, washer with screw. (Fig. 20-3)
- ※ When fastening the screw, do not over push, tighten it until the fan can't be moved only.

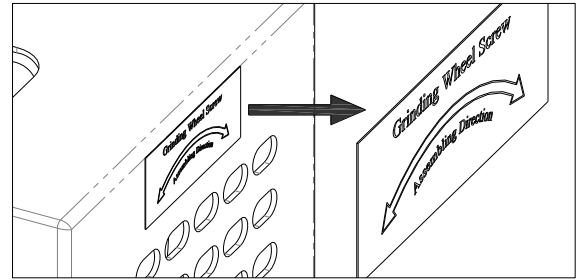


Fig. 20-1

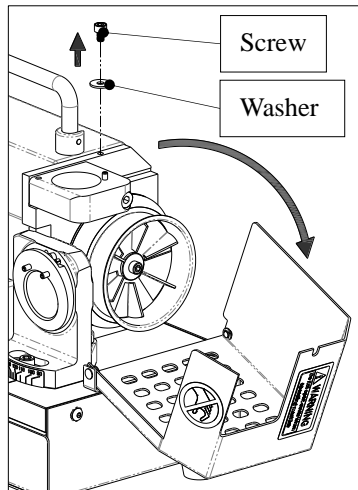


Fig. 20-2

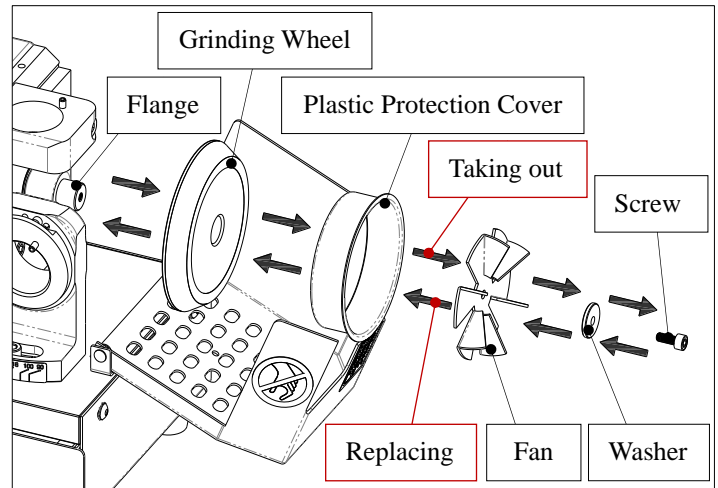


Fig. 20-3

2. Cleaning(Fig. 20-4) (Fig. 20-5)

- ① Please unplug the power cord.
 - ② Open the grinding wheel protection cover on both sides.
 - ③ Take out all bushing and disassemble the Chuck set.
 - ④ Use air press gun to clean all the used accessories, clean all sharpened dusts from the machine.
 - ⑤ Clean all accessories with cloth, then put them back to the original position.
 - ⑥ Close both sides wheel cover and tighten the cover by fixing screw.
- ※ Please wear protection glass while using the air gun.

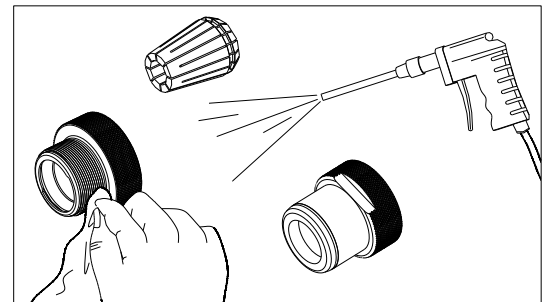


Fig. 20-4

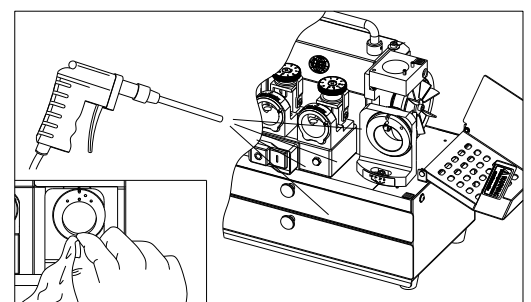


Fig. 20-5