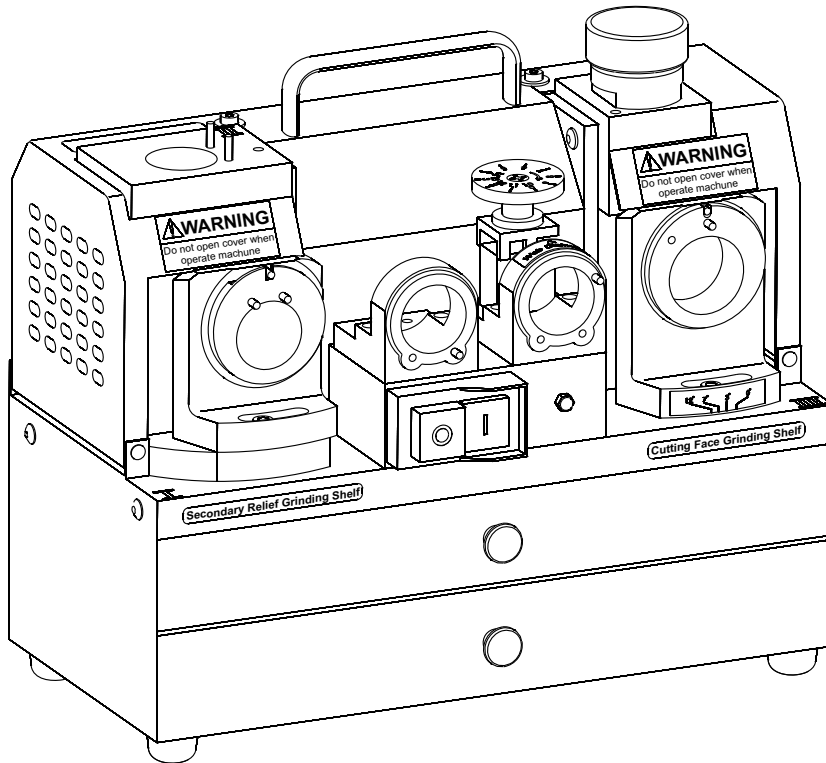


Operation Manual



RECYCLING



Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.

Contact your local government for information regarding the collection systems available.

If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.

When replacing old appliances with new ones, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.

Ground, cord-connected tools intended for use on a supply circuit having a nominal rating less than 150 volts:

Warning:

"WARNING ! When using electric tools basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury including the following. Read all these instructions before attempting to operate this product and save these instructions."

1. - Keep work area clear
 - Cluttered areas and benches invite injuries.
2. - Consider work area environment
 - Do not expose tools to rain.
 - Do not use tools in damp or wet locations.
 - Keep work area well lit.
 - Do not use tools in the presence of flammable liquids or gases.
3. - Guard against electric shock
 - Avoid body contact with earthed or grounded surfaces (e.g. pipes; radiators, ranges, refrigerators)
4. - Keep other persons away
 - Do not let persons, especially children, not involved in the work touch the tool or the extension cord and keep them away from the work area.
5. - Store idle tools
 - When not in use, tools should be stored in a dry locked-up place, out of reach of children.
6. - Do not force the tool
 - It will do the job better and safer at the rate for which it was intended.
7. - Use the right tool
 - Do not force small tools to do the job of a heavy duty tool.
 - Do not use tools for purposes not intended; for example do not use circular saws to cut tree limbs or logs.

8. - Dress properly
 - Do not wear loose clothing or jewellery, they can be caught in moving parts.
 - Non-skid footwear is recommended when working outdoors.
 - Wear protective hair covering to contain long hair.
9. - Use protective equipment - Use safety glasses.
 - Use face or dust mask if working operations create dust.
10. - Connect dust extraction equipment
 - If the tool is provided for the connection of dust extraction and collecting equipment, ensure these are connected and properly used.
11. - Do not abuse the cord
 - Never yank the cord to disconnect it from the socket. Keep the cord away from heat, oil and sharp edges.
12. - Secure work
 - Where possible use clamps or a vice to hold the work. It is safer than using your hand.
13. - Do not overreach
 - Keep proper footing and balance at all times.
14. - Maintain Tools with care .
 - Keep cutting tools sharp and clean for better and safer performance.
 - Follow instruction for lubricating and changing accessories.
 - Inspect tools cords periodically and if damaged have them repaired by an authorized service facility.
 - Inspect extension cords periodically and replace if damaged.
 - Keep handles dry, clean and free from oil and grease.
15. - Disconnect tools
 - When not in use, before servicing and when changing accessories such as blades, bits and cutters, disconnect tools from the power supply.
16. - Remove adjusting keys and wrenches
 - Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.
17. - Avoid unintentional starting
 - Ensure switch is in "off" position when plugging in.

Warning:

1. KEEP GUARDS IN PLACE and In working order.
2. REMOVE ADJUSTING KEYS AND WRENCHES. Form habit of checking to see that keys and adjusting wrenches are removed from 1001 before turning it on.
3. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.
4. DON'T USE IN DANGEROUS ENVIRONMENT. Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.
5. KEEP CHILDREN AWAY. All visitors should be kept safe distance from work area.
6. MAKE WORKSHOP KID PROOF with padlocks, master switches, or by removing starter keys.
7. DON'T FORCE TOOL. It will do the job better and safer at the rate for which it was designed.
8. USE RIGHT TOOL. Don't force tool or attachment to do a job for which it was not designed.
9. USE PROPER EXTENSION CORD. Make sure your extension cord is In good.
10. WEAR PROPER APPAREL. Do not wear loose clothing, gloves, neckties, lings, bracelets, or other jewelry which may get caught in moving parts, Nonslip footwear is recommended. Wear protective hair covering to contain long hair.

Exception: The reference to gloves may be omitted from the instructions for a grinder.

11. ALWAYS USE SAFETY GLASSES. Also use lace or dust mask ~ cutting operation is dusty. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.
12. SECURE WORK. Use clamps or a vise to hold work when practical. It's safer than using your hand and it frees both hands to operate tool.
13. DON'T OVERREACH. Keep proper footing and balance at all times.
14. MAINTAIN TOOLS WITH CARE. Keep tools sharp and clean for best and safest performance. Follow Instructions for lubricating and changing accessories.
15. DISCONNECT TOOLS before servicing; when changing accessories, such as blades, bits, cutters, and the like.
16. REDUCE THE RISK OF UNINTENTIONAL STARTING. Make sure switch is in off position before plugging in.
17. USE RECOMMENDED ACCESSORIES. Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to persons.
18. NEVER STAND ON TOOL. Serious injury could occur if the tool is tipped or if the cutting tool is unintentionally contacted.

19. CHECK DAMAGED PARTS. Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function - check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
20. DIRECTION OF FEED. Feed work into a blade or cutter against the direction of rotation of the blade or culler only.
21. NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF. Don't leave tool until it comes to a complete stop.

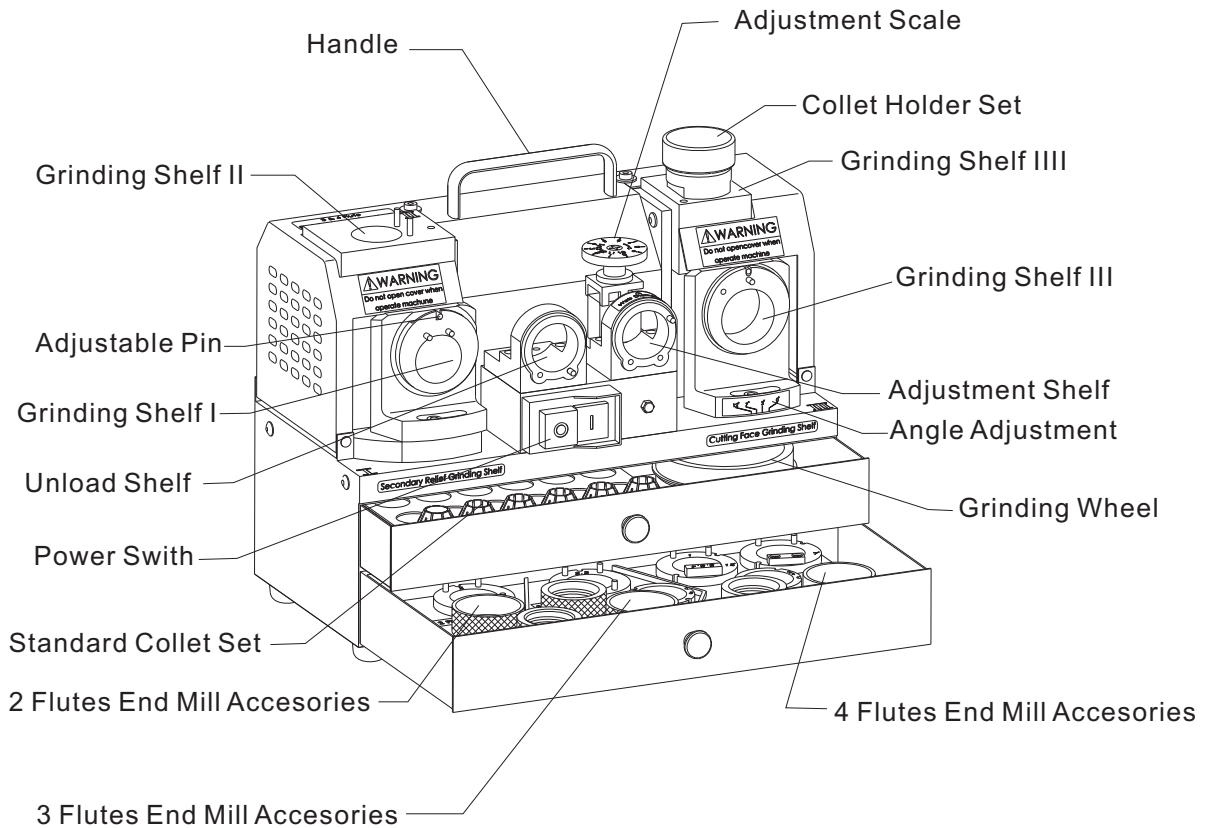
INDOOR USED!!!

WARNING: DO NOT EXPOSE TO RAIN OR USE IN DAMP LOCATIONS and
AVERTISSEMENT: NE PAS EXPOSER A LA PLUIE ET NE PAS UTILISER DANS
LES EMPLACEMENTS HUMIDES

Menu

Devices and components name of the End Mill Regrinding Machine.....	7
Application of Grinding Wheel & Accessories.....	8
Application of collets.....	8
2 Flute End Mill Operational Steps of Web Adjustment.....	9
2 Flute End Mill Grinding Process: Grinding Steps: Shell I,III,III.....	9
2 Flute Secondary Relief Grinding Process	10
2 Flute Cutting Face Grinding.....	10
2 Flute End Gash Grinding.....	10
3 Flute End Mill Operational Steps of Web Adjustment Shelf.....	11
3 Flute End Mill Grinding Process: Grinding Steps: Shell I,II,III.....	11
3 Flute Secondary Relief Grinding Process	12
3 Flute Cutting Face Grinding.....	12
3 Flute End Gash Grinding.....	12
4 Flute End Mill Operational Steps of Web Adjustment Shelf.....	13
4 Flute End Mill Grinding Process: Grinding Steps: Shell I,II,III.....	13
4 Flute Secondary Relief Grinding Process	14
4 Flute Cutting Face Grinding.....	14
4 Flute End Gash Grinding.....	14
Machine Maintenance and Clearance.....	15
Chuck disassembling shelf	15
Cleaning process.....	15

Devices and components name of the End Mill Regrinding Machine



Application of Grinding Wheel & Accessories

1. Please unplug the power line before changing grinding wheel.
2. Determine the material of the End mill and choose the proper grinding wheel :

- CBN grinding wheel for HSS material End mill
- SD grinding wheel for Carbide / Tungsten material End mill

3. Determine the cutting face diameter of the End mill and choose proper size of grinding wheel.

* The standard grinding wheel for grinding Shelf (III) and (IIII) can be applied to diameter of the End mill from 3.0mm ~ 12.0mm.

* For grinding Shelf (I) and (II), there are three different sizes of grinding wheel for different diameter of End mill.

- Grinding Wheel A is for grinding the diameter of the End mill from $\Phi 3.0\text{mm} \sim \Phi 5.0\text{mm}$
- Grinding Wheel B is for grinding the diameter of the End mill from $\Phi 5.1\text{mm} \sim \Phi 8.0\text{mm}$
- Grinding Wheel C is for grinding the diameter of the End mill from $\Phi 8.1\text{mm} \sim \Phi 12.0\text{mm}$

4. Determine the number of flute and choose the proper accessories (Collet, Bushing and Chuck)

Application of Collet

1. Web Scale Adjustment :

Set to Zero : 1. Turn the web diameter to “zero” by clockwise. (Diagram 1)

2. Determine Shank Diameter: Choose the collet according to the shank diameter of the End mill.

1. Make sure that there have no scraps or dust inside the collet and collet holder
2. Insert the collet into collet holder by 45° degree (Diagram 2)
3. Long Cutting Flute End Mill need to use optional P-S Collet Set

Assembling Steps:

Step A: Connect collet with collet holder and assembles with collet nut. (Diagram 2 and 3)

Step B: Inserting the End Mill from the shank side into the nut via collet holder (Chuck Set) and protrude the cutting face of the End mill out of the nut about 5mm. (Diagram 3)

Step C: Turn the Slot no.1 of the chuck set upward and move the cutting face of End mill to be parallel with Slot no.1 (For 3 and 4 flute of End mill, turn the longer cutting face to be parallel with Slot no.1)

* The Chuck set should not be completely tightened before the setting into the adjustment shelf.

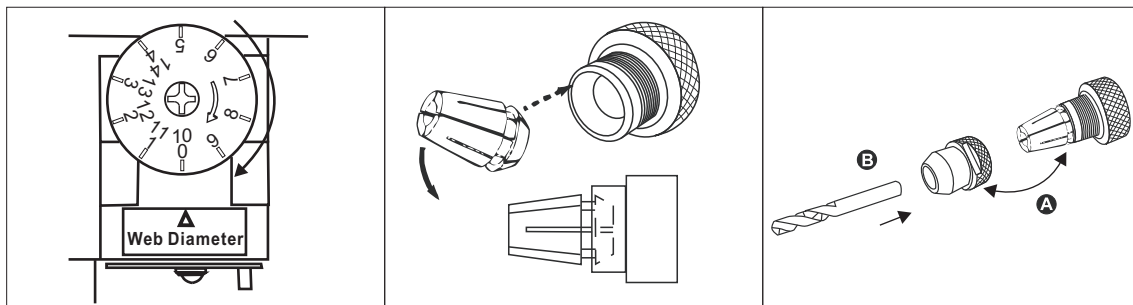


Diagram 1

Diagram 2

Diagram 3

2 Flute End Mill Operational Steps of Web Adjustment Shelf

Web Scale Adjustment:

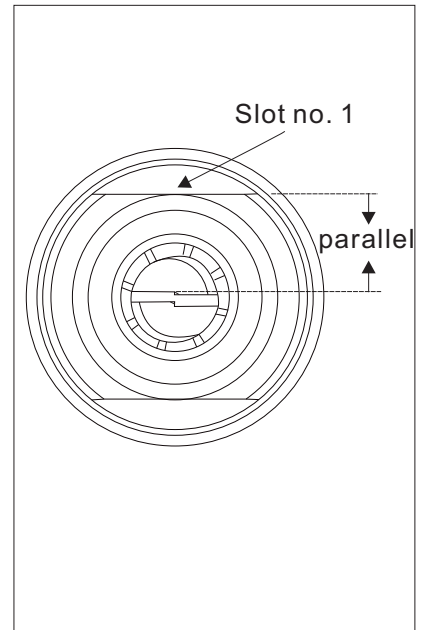
- A. Adjust the scale of adjustment shelf according the cutting flute diameter.
(The first round of web scale is from 3.0mm ~ 9.0mm, the second round is from 10.0mm ~ 12.0mm)

End Mill Positioning :

- C. Insert the chuck set into the Adjustment Shelf.
(connecting closely without any interval).
Make sure the Slot no.1 fit with the pin on grinding shelf then turn the chuck set clockwise to the end.
- D. Push the End mill into the end and turn it clockwise until it stops by the positioning block.
(Please note: for positioning 3 and 4 flute of end mills, must use the longer cutting face for positioning)
- E. Turn the collet holder clockwise and tighten lightly the chuck set.

Important: Please tighten completely in the Chuck disassembling device, the peak of the End mill flute maybe broken if tighten hard in the adjustment shelf.

- F. Rotate the chuck set counter clockwise and take it out gently.



2 Flute End Mill Grinding Process

Grinding Steps : Shelf I 、 III 、 IIII

1. Adjust the Point Angle Device on the Shelf (III) to 3 degree.
2. Insert the Cutting Face Bushing for 2 flute End mills into Shelf (III) , make sure
 - green mark in the bushing aligns with the
 - green mark on the shelf then push it into the end. **(Diagram C)**
3. Trigger up the adjustable pin on Shelf (I) from the bottom to top. **(Diagram D)**

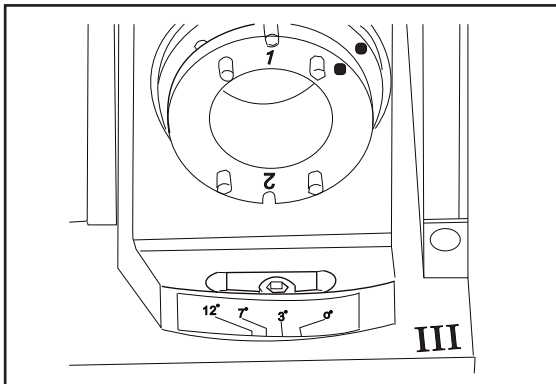


Diagram C

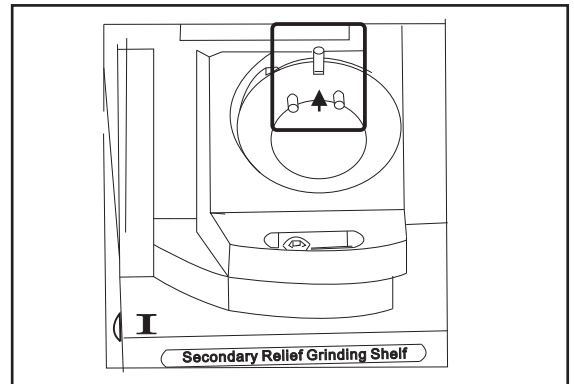
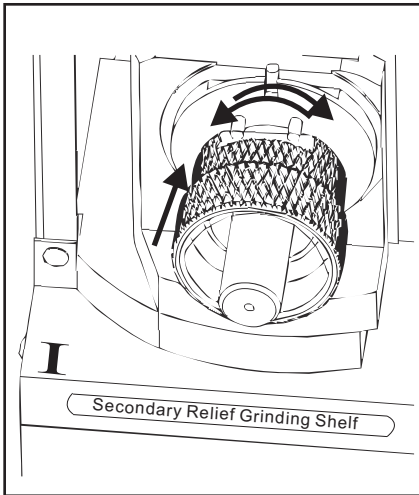


Diagram D



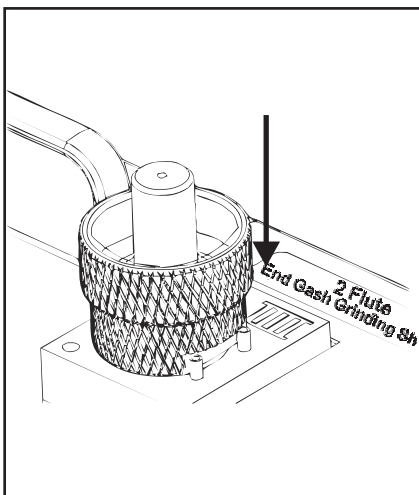
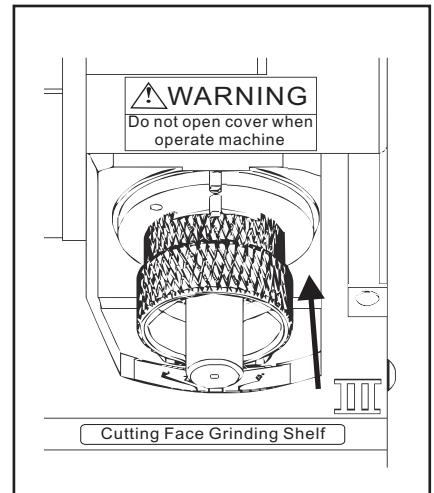
2 Flute Secondary Relief Grinding Process

4. Turn the power switch on and wait about 10 seconds until the motor rotation is stable.
5. Insert the chuck set into Shelf (I)
Align Slot no.1 with the two pins on grinding shelf.
Gently push the chuck set into grinding shelf until the grinding noise stops, then turn the chuck set to the right end and turn it back by counter clockwise.
6. Take the chuck set out; turn it by 180 degree to Slot no.2.
Align Slot no.2 with the two pins on grinding shelf then gently push the chuck set into grinding shelf until the grinding noise stops, turn the chuck set to the right end and turn it back by counter clockwise.

2 Flute Cutting Face Grinding Process

Insert the chuck set into Shelf (III).

7. Align Slot no.1 of chuck set to **bushing** where marked as No.1.
Gently push the chuck set into grinding shelf until the grinding noise stops.
8. Take out the chuck set and turn the **bushing** where marked as No.2 to fit with the single pin.
9. Align Slot no.2 of chuck set to **bushing** marked as No.2.
Gently push the chuck set into grinding shelf until the grinding noise stops.



2 Flute End Gash Grinding Process

Insert the chuck set into Shelf (III).

10. The Slot no.1 must fit with the two pins on grinding shelf.
Insert the chuck set into grinding shelf gently until reach the grinding slip, take the chuck set out after the grinding noise stops.
11. Turn the chuck set by 180 degree to Slot no.2.
Make sure Slot no.2 fit with two pins on grinding shelf and grind until noise stops.

3 Flute End Mill Operational Steps of Web Adjustment Shelf

Web Scale Adjustment:

- A. Adjust the scale of adjustment shelf according to the diameter of cutting flute of the End mill.
- B. The first round of web scale is from 3.0mm ~ 9.0mm, the second round is from 10.0mm ~ 12.0mm.

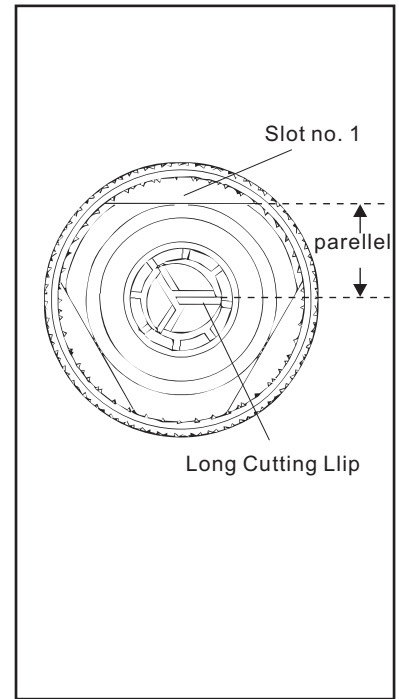
End Mill Positioning :

- C. Insert the chuck set into the Web Adjustment Shelf.
(connecting closely without any interval).
Align Slot no.1 with the pin on the adjustment shelf then turn the chuck set clockwise to the end.
- D. Push the End mill to the end and turn it clockwise until blocked by the positioning block. (Please note: for positioning 3 and 4 flute of End mills, must use the longest cutting face for positioning)
- E. Turn the collet holder clockwise to tighten the chuck set.

Important: Please tighten completely in the Chuck disassembling device, the peak of the End mill flute maybe broken if tighten hard in the adjustment shelf.

- F. Rotate the chuck set counter clockwise and take it out gently.

* Please make sure the long cutting lip of the End mill is parallel with the slot of nut, if it is not parallel, please re-adjust it again.



3 Flute End Mill Grinding Process

Grinding Steps : Shelf I 、 II 、 III

1. Adjust the point angle of Shelf (III) to 3 degree.
2. Turn The Cutting Face Bushing for 3 flute End mill where marked as
 - green color aligns with the ● green mark on the shelf then insert into Shelf (III). **(Diagram E)**
3. Turn The End Gash Bushing for 3 flute End mill where marked as ● pink color aligns with the ● pink mark on the shelf then insert into Shelf (II). **(Diagram F)**
4. Trigger up the adjustable pin on Shelf (I) from the bottom to top. **(Diagram G)**

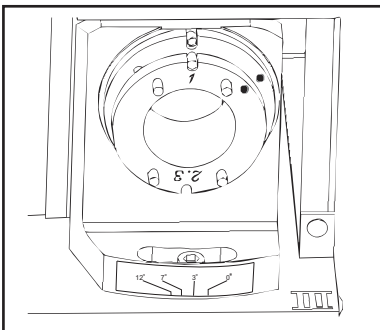


Diagram E

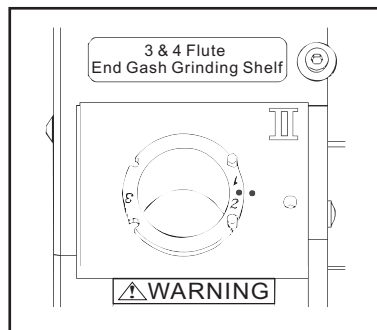
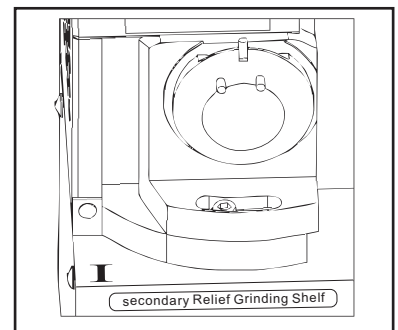
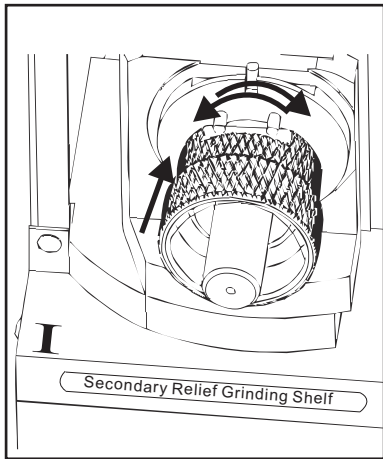


Diagram F



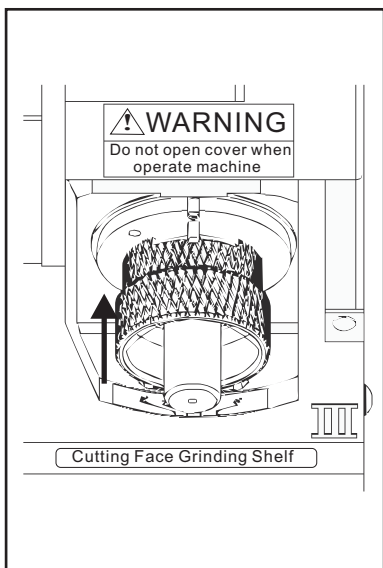
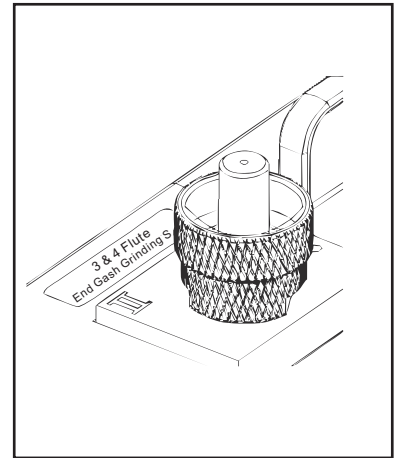


3 Flute Secondary Relief Grinding Process

5. Turn the power switch on and wait about 10 seconds until the motor rotation is stable.
6. Insert the chuck set into Shelf (I)
The Slot no.1 align with the two pins on grinding shelf.
Gently push the chuck set into grinding shelf until the grinding noise stops then turn chuck set clockwise to the end and turn it back by counterclockwise.
7. Take the chuck set out; turn it counter clockwise to grind the Slot no.2 and Slot no.3 with the same procedure.

3 Flute End Gash Grinding Process

8. Align Slot no.1 of the chuck set to bushing where marked as No.1,2. Gently insert the chuck set into Shelf (II) until reach the grinding slip. Take the chuck set out after the grinding noise stops.
9. Take the chuck set out and turns it to Slot no.2. The Slot no.2 aligns to bushing where marked as No.1,2 and grinding it until noise stops.
10. Take the chuck set out and turns the **End Gash Bushing** by 180 degree, aligns **bushing** where marked as No.3 to the ●pink mark on the grinding shelf.
11. Turn the chuck set to Slot no.3, aligns it with **bushing** where marked as No.3 , gently insert chuck set to the end, grinding it until noise stops.



3 Flute Cutting Face Grinding Process

Insert the chuck set into Shelf (III)

12. Align Slot no.1 of chuck set to **bushing** where marked as No.1.
Gently push the chuck set into grinding shelf, grinding it until the grinding noise stops.
13. Take the chuck set out, turn the **bushing** by 180 degree, align mark No.2,3 of the **bushing** with the pin.
14. Turn the chuck set to Slot no.2 and align to **bushing** where marked as No.2,3, then insert the chuck set gently into the grinding shelf until noise stops.
15. Take the chuck set out and turn to Slot no.3, align with **bushing** where marked as No.2,3 then insert the chuck set gently into the grinding shelf until noise stops.

* Please grind each cutting face of the End mill completely before conducting next grinding process.

4 Flute End Mill Operational Steps of Web Adjustment Shelf

Web Scale Adjustment:

- A. Adjust the scale of web diameter according to the End mill diameter.
- B. (The first round of web scale is from 3.0mm ~ 9.0mm, the second round is from 10.0mm ~ 12.0mm)

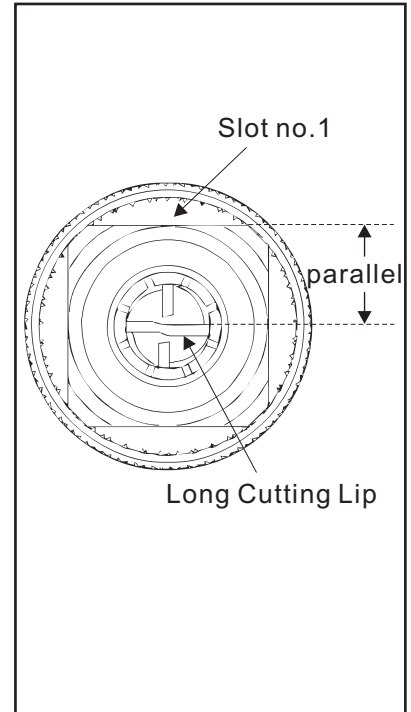
End Mill Positioning:

- C. Insert the chuck set into the Web Adjustment Shelf.
(connecting closely without any interval). Align Slot no.1 with the pin on the adjustment shelf, then turn the chuck set to the end by clockwise.
- D. Push the End mill to the end and turn it by clockwise until stops by the positioning block. (Please note: for positioning 3 and 4 flute of end mills, must use the longest cutting face f or positioning)
- E. Turn the collet holder clockwise to tighten the chuck set.

Important: Please tighten completely in the Chuck disassembling device, the peak of the End mill flute maybe broken if tighten hard in the adjustment shelf.

- F. Rotate the chuck set counter clockwise and take it out gently.

* Please make sure the long cutting lip of the End mill is parallel with the slot of nut, if it is not parallel, please re-adjust it again.



4 Flute End Mill Grinding Process

Grinding Steps : Shelf I 、 II 、 III

1. The cutting face diameter of 4 flute End mills from $\Phi 3.0\text{mm} \sim \Phi 8.0\text{mm}$, adjust the point angle device on Shelf (III) to 12 degree. The diameter from $\Phi 8.1\text{mm} \sim \Phi 12.0\text{mm}$, adjust it to 7 degree.
2. Insert the Cutting Face Bushing for 4 flute into Shelf (III) » (There are two cutting face bushings for 4 flutes, please choose the bushing marked as 7 while the point angle is 7 degree. If the point angle is 12 degree, choose the bushing marked as 12) turn the bushing where marked as ● green color to align with the ● green mark on the shelf, then insert it to the end. **(Diagram H)**
3. Align the End Gash Bushing where marked as ● pink color with the ● pink mark on Shelf (II) and insert it into Shelf (II). **(Diagram I)**
4. Move the adjustable pin on Shelf (I) from the top to bottom. **(Diagram J)**

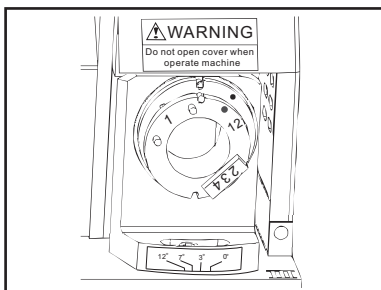


Diagram H

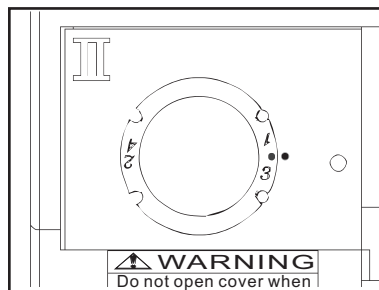


Diagram I

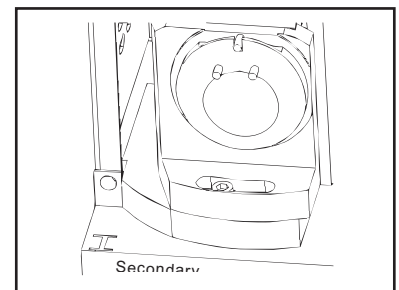
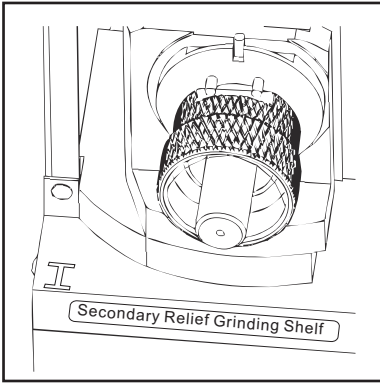


Diagram J



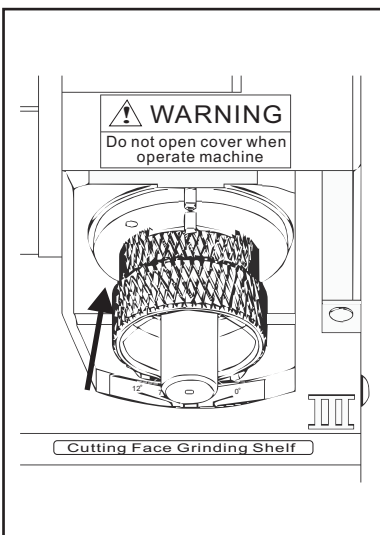
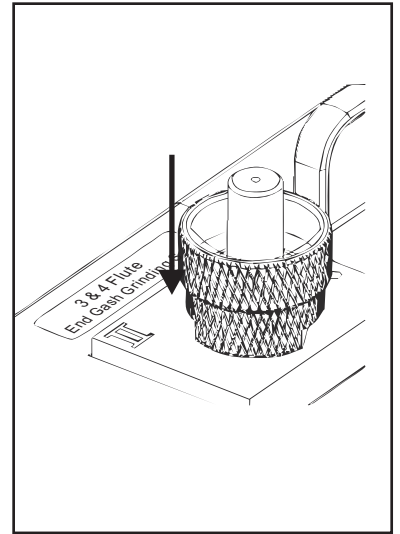
4 Flute Secondary Relief Grinding Process

1. Turn the power switch on and wait about 10 seconds until the motor rotation is stable.
2. Insert the chuck set into Shelf (I)
Align Slot no.1 of the chuck set with the two pins on Shelf (I)
Gently push the chuck set into grinding shelf until the grinding noise stops, then turn the chuck set by counter clockwise to grind the Slot no.2, Slot no.3 and Slot no.4 with the same procedure.

4 Flute End Gash Grinding Process

Insert the chuck set into Shelf (II)

1. Align Slot no.1 of the chuck set to **bushing** where marked as No.1.3. Gently insert the chuck set into Shelf (II) until reach the grinding slip. Take the chuck set out after the grinding noise stops.
2. Turn the chuck set 180 degree to Slot no.3, align to **bushing** where marked as No.1.3, grinding it until noise stops then take the chuck set out.
3. Turn the **End Gash Bushing** by 180 degree, align **bushing** where marked as No.2.4 with the ● pink mark on the grinding shelf. Turn the chuck set to Slot no.2, align to **bushing** where marked as No.2.4, grind it until the noise stops. Take chuck set out and turn 180 degree to Slot no.4, grinding it with the same procedure.



4 Flute Cutting Face Grinding Process

Insert the chuck set into Shelf (III)

1. Align Slot no.1 of chuck set to **bushing** where marked as No.1, gently push the chuck set into grinding shelf until the grinding noise stops.
2. Take out the chuck set and turn the **bushing** by 180 degree.
Align the **bushing** where marked as No.2,3,4 with the pin and insert it into the Shelf (III).
3. Turn the chuck set to Slot no.2, align to the **bushing** where marked as No.2,3,4, slowly push it to the end until noise stops. Take chuck set out and align Slot no.3 with the **bushing** where marked as No.2,3,4, slowly push the chuck set to the end and grinding it until noise stops, then finish the grinding of Slot no.4 with the same procedure.

* **Each cutting face must be sharpened completely before grinding next cutting face of the end mill.**

Machine Maintenance and Clearance

Chuck Disassembling Shelf

After finished the grinding job, insert the chuck set into chuck disassembling shelf and turn it by counter clockwise to the end to loose the chuck set then take the end mill out.

Clean and Maintenance

A : Unplug the power line

B : Open the grinding wheel protection cover on both sides.

C : Using air compressor to clean the scraps on the following items:
Cutting Face Bushing/ End Gash Bushing / Collet / Collet Holder / Nuts

D : Clean the scraps away from the machine and tighten the grinding wheel protection cover by fixing screw.

E : Using the wiper to clean the accessories and install them back to the original position.

The order of cleaning steps is:

- (1) Chuck Disassembling Shelf
- (2) Web Scale Adjustment Shelf
- (3) End Gash Grinding Shelf (II)(III)
- (4) Cutting Face Grinding Shelf (III)
- (5) Secondary Relief Grinding Shelf (I)

