

The Standard Sharpening Method of Lathe Tools

How to select the grinding wheel?

Rough grinding lathe tool should be selected the grinding wheel with smaller abrasive grains, on the contrary, fine grinding lathe tool should be selected the grinding wheel with bigger abrasive grains. When sharpening lathe tool of HHS, it should be used the granularity between 46 and 60, or soft aluminum oxide grinding wheel. When sharpening carbide-tipped lathe tool, it should be used the granularity between 60 and 80, or soft Sic grinding wheel. Tips: Do not confuse the two different grinding wheels.

The Notes of Lathe Sharpening

1. Please note that operator should stand on the side of the lathe tool grinder, to prevent hurtful from debris if the grinding wheel is broken.
2. Keeping enough distance to hold the shank of lathe tool between hands, to tighten the waist with two elbows to reduce the shaking of the lathe tool sharpening.
3. During sharpening lathe tool, please place the lathe tool on the horizontal center of the grinding wheel, and the tip of the lathe tool is slightly upward about 3° - 8° , when the lathe tool touches the grinding wheel that the lathe tool should be moved around horizontally.
4. During sharpening major flank face, the lathe tool shank should be shifted an angle to the left as major cutting edge angle; during sharpening minor flank face, the lathe tool shank should be shifted an angle to the right as minor cutting edge angle.
5. During sharpening arc of the tip, generally, holding the tip of lathe tool with left hand as a fulcrum, and at the same time, moving the shank of lathe tool with right hand.

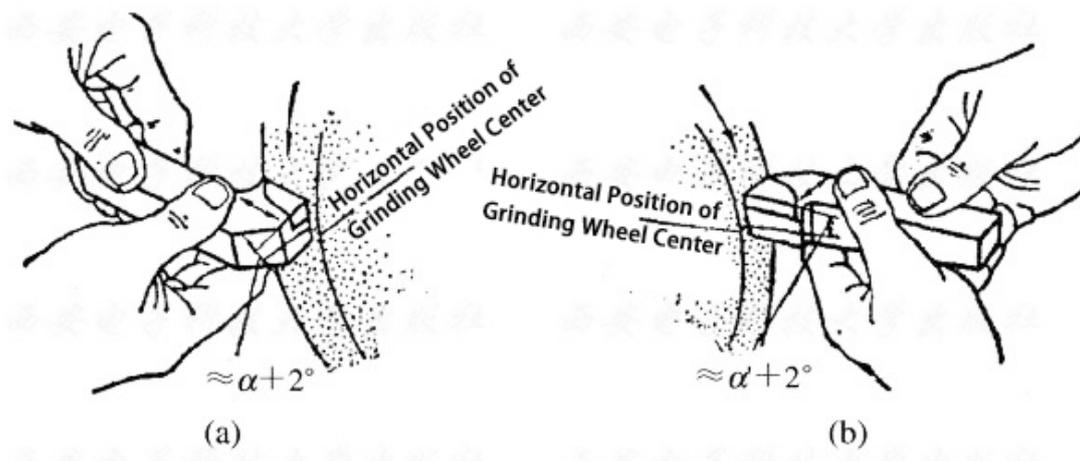
The Steps of Sharpening Lathe Tool

- **Step 1:** Sharpening the major flank face, at the same time, sharpening lip relief angle;
- **Step 2:** Sharpening the minor flank face, at the same time, sharpening end relief angle;
- **Step 3:** Sharpening the rake face, at the same time, sharpening point angle;
- **Step 4:** Sharpening remained faces and the tip;

The Methods of Sharpening Lathe Tool

Now, PURROS Machinery takes the rough grinding carbide alloy cutter as an example, to illustrate the method of cutting tool sharpening.

- (1) **Rough sharpening the major flank face and the minor flank face**, at the same time, major angle of declination, major lip relief angle, minor angle of declination, and minor lip relief angle also has sharpened. The angle of major lip relief angle and minor lip relief angle by rough sharpening should be bigger than requested. View Figure:

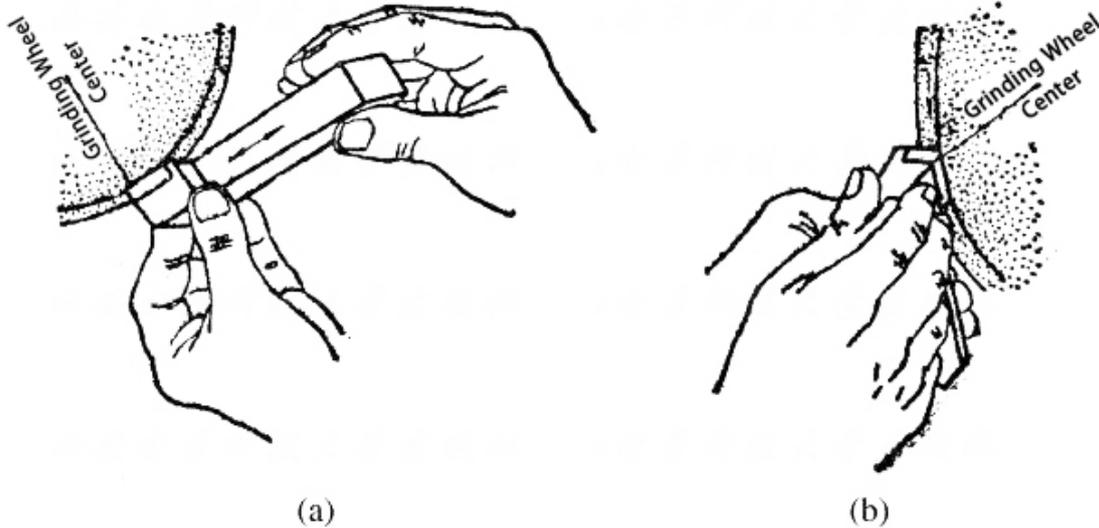


Lip Relief Angle of Shank

(a) Lip Relief Angle, behind the major flank face of shank

(b) Lip Relief Angle, behind the minor flank face of shank

- (2) **Rough Sharpening Rake Face:** Rake Face and Flute are sharpened at the same time, before flute is sharpened, used the end face of grinding wheel to rough sharpen, to obtain the necessary angle and surface roughness.
- (3) **Sharpening Flute:** Flute can be sharpened by edge of flat grinding wheel, as Figure shows the sharpening method. Generally, the position of rough sharpening should be began half of between flute and drill bit tip.



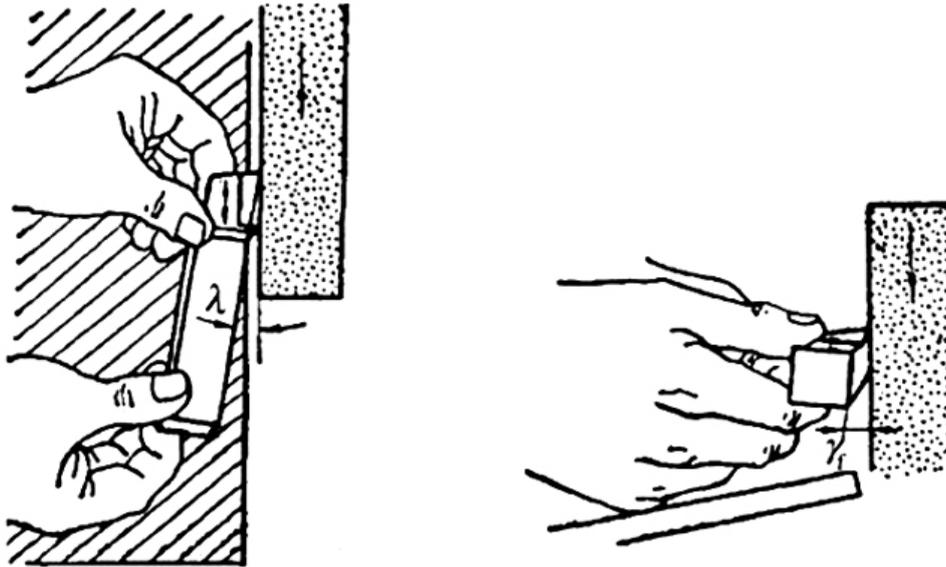
Rough Sharpening Flute

(a) Sharpening Down

(b) Sharpening Up

Fine Sharpening Lathe Tool

- (1) **Fine Sharpening Flute:** In order to make the shape of flute more precision, and surface roughness is finer than before, so flute should be fine sharpened after rough sharpening. The sharpening method is the same as rough sharpening.
- (2) **Sharpening Negative Chamfering:** Negative Chamfering is commonly sharpened by end of grinding wheel, the granularity between 100# to 200#. The sharpening method as follow the figure :

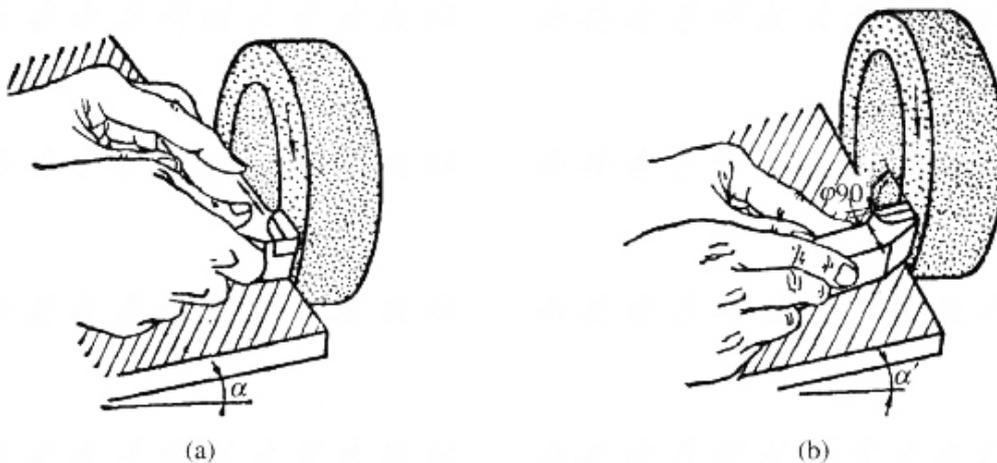


Negative Chamfering

(a) Sharpening position is that along the edge of the blade direction.

(b) Sharpening position is that along the edge of the blade vertical direction.

(3) **Fine Sharpening Major Flank Face and Minor Flank Face:** The sharpening method as follow the figure, selected grinding wheel is the same as Negative Chamfering. It should be stopped when major cutting lip is finished and the negative chamfering width meets the requirements.

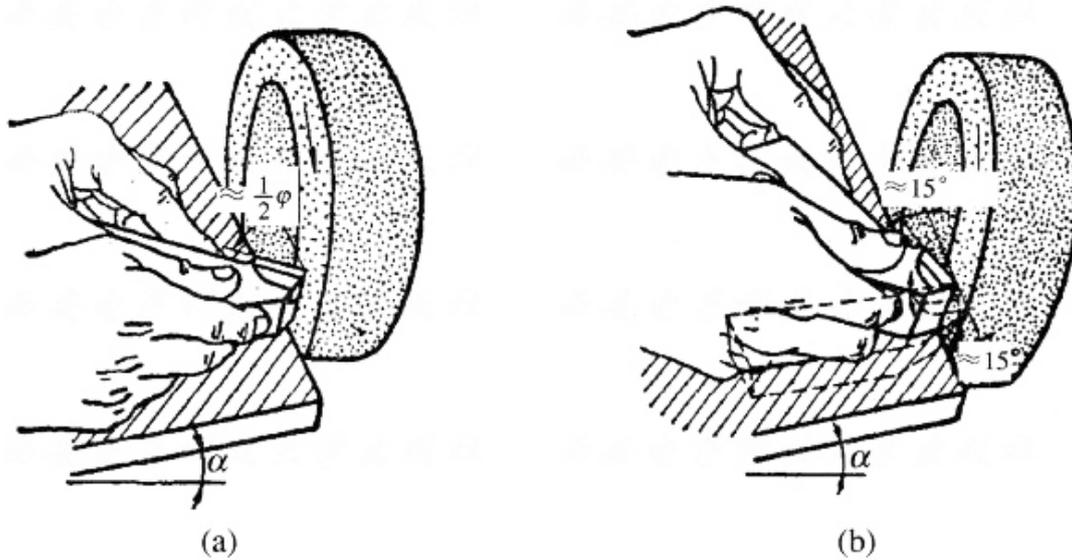


Fine Sharpening Major Flank Face and Minor Flank Face

(a) Fine Sharpening Major Flank Face

(b) Fine Sharpening Minor Flank Face

(4) **Sharpening Transition Blade:** The method of sharpening transition edge as follow the figure:



Sharpening Transition Blade

(a) Sharpening Linear Transition Blade

(b) Sharpening Circular Curved Transition Blade

(5) **Sharpening Top Blade:** The method of sharpening top blade as follow figure:

