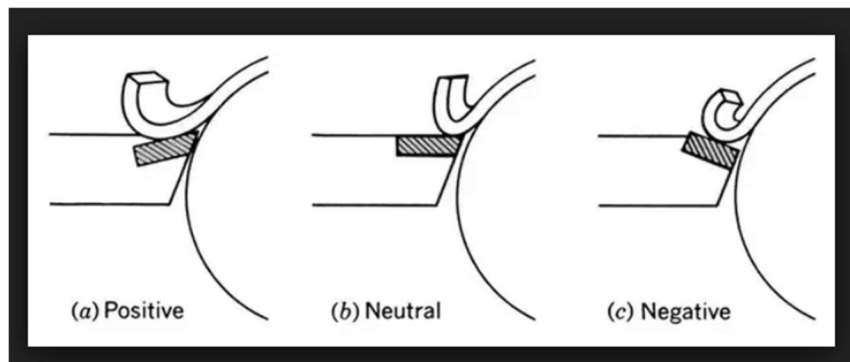




What is rake and why is it important in woodturning tools?

Essentially, *rake* is a geometry term that describes the angle orientation of the cutting surface located at the tip of a turning tool in relation to the material being cut, and to the relief angle of the tool. Rake affects cutting force and power, cut thickness, and tip lifespan.

There are three types of rake: positive, neutral, and negative, typically with a variation of 15° +/- from 0 (neutral). There are advantages and disadvantages to using each; for our purposes, positive and neutral rakes perform similarly, with similar pros and cons. Every turner should have at least neutral and negative rake tools in their shop.



POSITIVE/NEUTRAL: Most turning tools (steel) and cutters (carbide) have a neutral rake. The angle of the cutting surface makes an aggressive cut. This means it can remove a lot of material very quickly. You don't need to apply a lot of force, either, to make your cut. Because the rake can be so aggressive, it's easy to remove material too quickly, affecting finish and shape, and when turning very hard materials like acrylic or mesquite, they can bite and cause blowouts and chips, even when the tool is tipped up at an angle. The force they apply also makes the tip wear down more quickly.

PROS:

Removes a lot of material in a short amount of time.

You don't need to apply a lot of muscle.

Good for starting a project.

CONS:

Mistakes are easy to make.

More chipping and blowouts.

Conventional tools require sharpening more often.

Difficult to use for hollow forms.

NEGATIVE: A negative rake point offers more finesse, which makes it generally safer to use. The increased angle between the top of the cutter and the relief below the cutting edge makes the cuts less aggressive, so you have to go more slowly to remove the amount of material you want to take off. It doesn't catch—it actually **can't** catch—so it's a good choice when turning hollow forms, manmade materials, and super hard woods.

PROS:

Generally safer to use.

Eliminates catches and blowouts.

Doesn't require as much sharpening.

Easy to use for hollow forms.

Longer tool life.

Easy to control path of cut.

CONS:

Much less aggressive cut.

Doesn't take off a lot of material at once.

Not effective on soft / wet woods.

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