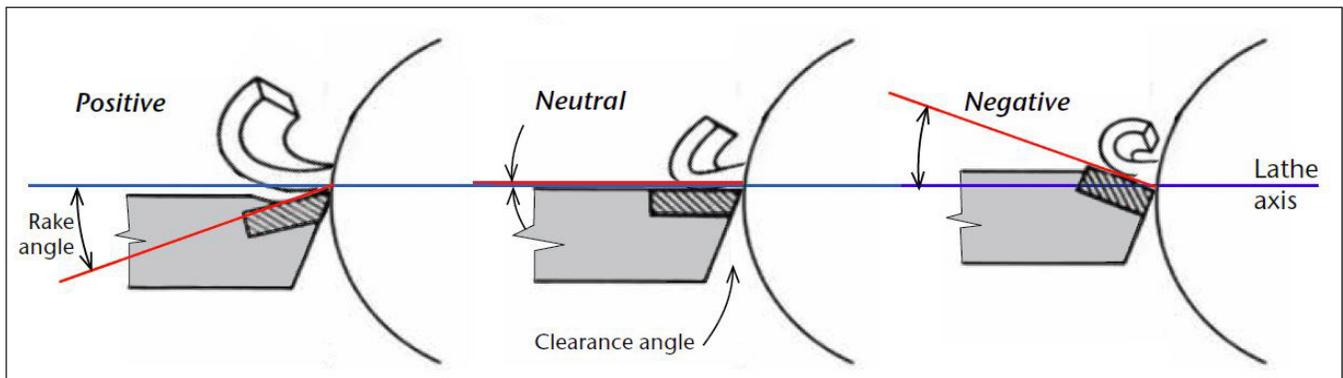




What is “Negative Rake”?



by Chris Caliendo & Nancy Napurski Grove

Rake describes the geometric orientation of the cutting angle at the tip of a tool in relation to the material being cut. Rake affects cutting force and power, cut thickness, and tip lifespan.

Scrapers cut best when held flat and level on the toolrest with the cutting edge at center height. This is the safest way to use the tool because it keeps the sharp edge from biting into the workpiece.

There are three types of rake: positive, neutral, and negative, typically with a variation of 15° to 20° +/- from 0 (neutral). There are advantages and disadvantages to each. In woodturning, positive and neutral rakes perform similarly; every turner should have neutral and negative-rake scraping tools in the shop.

POSITIVE/NEUTRAL RAKE: Standard steel scrapers, some gouges, and most carbide cutters have a neutral rake. Bevel-rubbing tools like gouges and skews cut at a positive rake angle. These tools cut aggressively and you can quickly remove a lot of material without a lot of force. Because the rake can be quite aggressive, it's easy to remove material too quickly, affecting finish and shape. When turning hard materials like acrylic or mesquite, the tool can bite and tear. Aggressive cutting also wears the edge quickly.

PROS:

- › Removes a lot of material quickly.
- › You don't need to apply a lot of muscle.
- › Good for starting a project.

CONS:

- › Mistakes are easy to make.
- › More chipping and blown-out walls.
- › Steel tools need frequent sharpening.
- › Carbide tips may wear prematurely.
- › Difficult to use for hollow forms.

NEGATIVE RAKE: A negative rake point or edge offers control, making it generally safe to use. The negative angle can't cut aggressively, so you have to go slowly. It greatly reduces the chance of a catch, so it's a good choice for hollow forms, manmade materials, and hardwoods.

PROS:

- › Safer to use than positive/neutral profiles.
- › Reduces the chance of a catch.
- › Doesn't require as much sharpening.
- › Easy to use for hollow forms.
- › Longer tool life.
- › Easy to control path of cut.
- › Produces a refined surface.

CONS:

- › Cannot cut aggressively.
- › Doesn't take off a lot of material at once.
- › Less effective on soft or wet woods.

The authors represent Easy Wood Tools.

