

ASK THE EXPERT

Help! I've got a question for the expert.

Q ■ How to make and use a negative rake scraper?

I hear a lot about negative-rake scrapers and it gets confusing how to make one and when to use it.

~John Berger, California

A ■ Using Negative-Rake Scrapers

Being such a proponent of negative-rake scrapers, this is a question I am asked quite often. I started using negative-rake scrapers when I first began turning after meeting Stuart Batty and seeing the work he was doing on his wing bowls and deep vases. I do a lot of thin wing type pieces and platters and found they worked superbly and safely. I feel it is a very worthwhile change to make on a scraper, but first there are some things you should be aware of regarding negative-rake scrapers.

A negative-rake scraper is not meant to be a wood removal tool, but more of a finishing tool for smoothing out ridges or transition marks and small uneven areas left by a gouge or hollowing tool.

Negative-rake scrapers were designed primarily for and work best on hard, dense, dry woods.

Some turners say that they do not work on softer woods or green wood. I personally have tried them on all types of woods and I have often been surprised how well they

worked. Regarding green wood, negative-rake scrapers most often will “fuzz up” the surface, but if you do not get a smooth finish with your bowl gouge, I believe it is easier to sand out fuzz on an even surface than tool marks or ridges on an uneven surface.

Negative-rake scrapers cut with the burr, which is produced during the grinding process. Since the burr is produced on the opposite side from the one that is being ground, it is important to grind the bottom bevel last. The burr does not last very long, only about 30 – 60 seconds for M2 high speed steel and maybe 2-3 times longer with the harder “10V powdered metal” tools such as provided by Thompson Tools and others.

It is essential that a burr can be felt on the cutting edge for it to work. Once the burr is worn away, the scraper will not cut efficiently, which causes you to apply more pressure and this will begin tearing grain and causing thin walled pieces to flex. Neither is good.

Negative-rake scrapers should be used in a level, horizontal position on the centerline and not tilted downward in a trailing position or on edge at an angle in a shear scraping position. Used correctly, I find them to be virtually catch-free.



So if you are currently using your scrapers to hollow end grain boxes and such, you should probably preserve those as they are and purchase others to be ground as negative-rake scrapers.

The recommended included angle (as measured across both bevels) is generally between 45° to 75°. A negative-rake scraper with a 45° angle will cut a bit quicker, but the burr will not last as long as one at 60°. I have always ground mine with equilateral angles on both sides and have settled on the included angle measuring about 55° (it's really not that critical). Some people refer to these angles as being 30°/30°. That would be 30° down from both sides giving an included angle of 60°. By grinding the scraper in this manner it can be used in either a right hand or left hand position on different curves of a bowl or on either side of a wing or platter by simply flipping it over and regrinding the scraper to raise the burr on the top side.

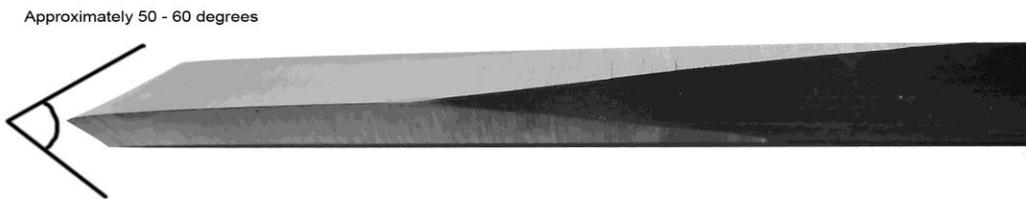
There are many different methods of setting the platform angle to the grinding wheel. I am of the opinion of keeping it simple.

Having said that, rather than try to explain how to set the angles, I have come up with a jig that makes it quick, simple and easily repeatable.

I have a handout on my website (<http://www.rudolphlopez.com/>) that has

information on the negative-rake scraper and includes a full-sized template for making a small jig to set the angle of the grinder platform. This will get you very close to 50° or 60°. You can then vary the angle if you wish.

Just remember when re-sharpening the scraper, if you have changed the platform angle for sharpening something else, it is of utmost importance that you re-set the platform precisely back to the correct angle to ensure that you are grinding the entire bevel to produce a burr on the scraper edge. You must be able to feel a rough burr on the top of the scraper edge. Without a burr, the negative-rake scraper will not function properly.



~Rudolph Lopez, Tampa Florida
Woodturning has given me another way to bring out the sometimes hidden beauty of wood for others to enjoy and the opportunity to share my enthusiasm for turning through

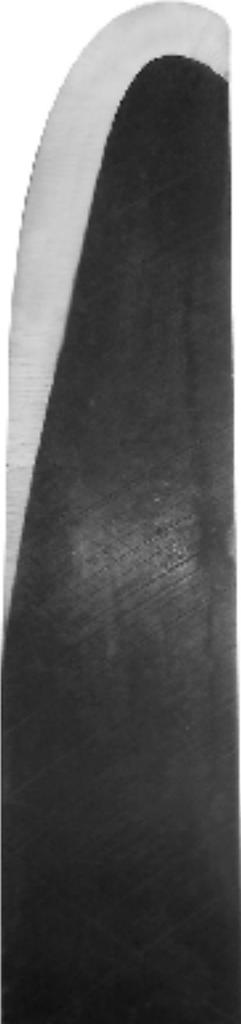
demonstrating and teaching at many clubs across the country, regional symposiums, and the John C. Campbell Folk School. My travels have allowed me to meet an endless number of wonderful people and many outstanding Woodturners.

A few Notes on Negative Rake Scrapers:

- 1 Negative Rake Scrapers are not meant to be wood removal tools used for hollowing or shaping. They are used as a light finishing out tool designed to level out tool marks and give a smooth final finish. They were designed primarily for and work best on hard dense woods but will work relatively well on soft woods but do not work well on punky woods.

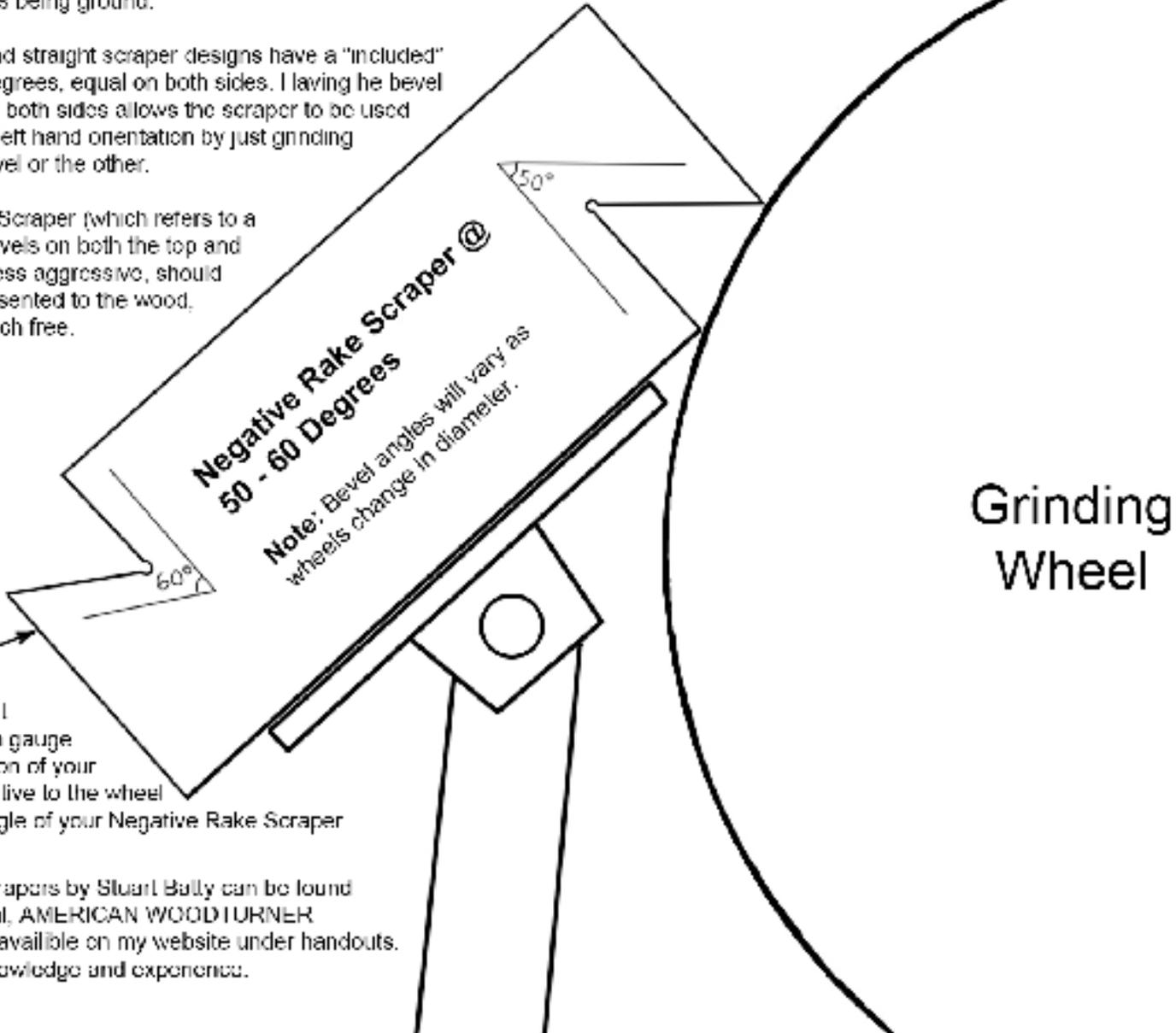


2. Negative Rake Scrapers only cut with the burr that is developed during the grinding process. The burr does not last long, about 30 to 60 seconds for M2 HSS and 2 to 3 times longer with the harder "powdered metal" steel tools, i.e. Thompson tools and others. The burr is produced on the opposite edge that is being ground.



3. Both my curved and straight scraper designs have a "included" angle of 50 - 60 degrees, equal on both sides. Having the bevel angle the same on both sides allows the scraper to be used in either a right or left hand orientation by just grinding one side of the bevel or the other.

4. A Negative Rake Scraper (which refers to a scraper having bevels on both the top and bottom) is much less aggressive, should be level when presented to the wood, and is virtually catch free.



Cut this template out and use it to make a gauge for setting the position of your grinder tool rest relative to the wheel and to check the angle of your Negative Rake Scraper

Additional information on Negative Rake Scrapers by Stuart Bally can be found in the Spring 2006 issue of the AAW Journal, AMERICAN WOODTURNER Vol. 21, No. 1, pg 24-27. The article is also available on my website under handouts. Many thanks to Stuart for passing on his knowledge and experience.