



What it Is, and What it Isn't

The Pyramid Point Tool is a shear scraper. When it is presented more or less horizontal with one of the facets up, the cutting edges naturally assume a side-rake of about 45°.

It is not a skew. Well, you could use it as one, with one of the facets bevels almost rubbing, but it would be an awfully blunt (60°!) slow cutting skew.

It is not a roughing out tool. Any shear scraper is for finishing cuts.

This article will show you how to make and use two types of Pyramid Point Tools, as shown in Figure 1.



A standard Pyramid Point Tool on the right with a modified Shear Spear Pyramid Point Tool on the left.

Making and Sharpening

The geometry of a Pyramid Point Tool is very simple and there is no reason to buy one ready made. Indeed, if you make it yourself using jigs to determine the facets it will make it easier to sharpen.

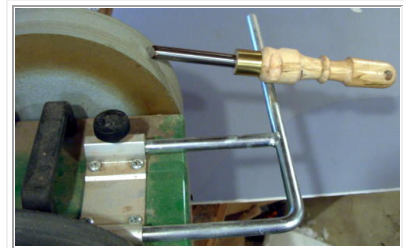
You can make a Pyramid Point Tool from drill rod or drill blanks. Drill blanks are High Speed Steel, and are already hardened. The edge holding advantages of High Speed Steel are particularly noticeable with a shear scraper, so I suggest you use a drill blank. Drill blanks are not expensive. The ½" size, which makes a good Pyramid Point Tool, is 6" long and costs \$6.48 (www.MSCDirect.com part number 01100320). Order several in a variety of sizes as long as you're paying shipping.

The first step in making the tool is to turn a handle. I strongly suggest you forgo inclinations to make it long and strong. You shouldn't be making heavy cuts and a long handle will only get in the way of your stomach. A 6" handle is a good place to start. Find a turning square about 1.5x1.5x6.5" and drill about 2" into one end with a drill that matches the size of your drill blank. Then mount the square between centers on your lathe with the tailstock centered in the drilled hole. Start by fitting a ferule, then turn the handle to whatever shape you prefer. I suggest you leave it fat just behind the ferule. Cutting a V-shaped recess in the end of the handle so you can identify what tool it is wouldn't be a bad idea either.

Once the handle is turned to shape, lock the indexing feature on your lathe and use a ½" round file (½" round file, 80758410, \$9.89 at www.msdirect.com if you don't have one) to cut a semi-circular groove in the handle. Rotate the spindle 120°; relock the index and cut another groove. Then rotate the spindle another 120°, relock the spindle, and cut the last groove. Apply the finish of your choice and remove the handle from the lathe.

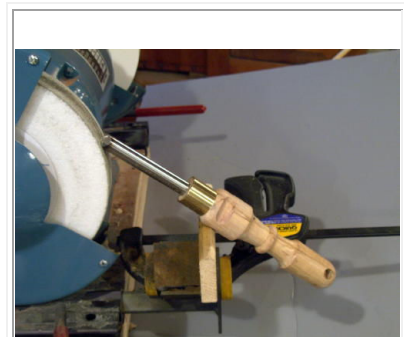
As you will use the handle as a jig for shaping and sharpening, it gets really annoying if the tool twists in the handle with use. To avoid this, put some polyurethane or CA glue in the handle, then insert the drill blank. Make sure the blank is well seated in the handle. You can bang the butt of the handle on the floor, or squeeze the blank in with a vise or bar clamp.

If you use a Tormek to sharpen your lathe tools you're now ready to shape the tool. Although you'll have to be patient. Rest one of the semi-circular grooves in the handle on the Tormek tool rest and adjust the rest until the tool is about 45° to the stone (see Figure 2). Grind, using each recess in turn, until all bevels are equal and meet at a sharp point.



Sharpening the Pyramid Point Tool on a Tormek.

If you use a bench grinder to sharpen your lathe tools you'll have to make a simple jig to adapt your V-block to register with the tool handle recesses. Cut a small square of wood that fits the V-block (1.5x1.5x1.5" or thereabouts). Then cut a rectangle about 1/2x3x4". Round over one of the long edges. Cut the other long edge away to match the bottom half of the square. Then screw the two together. You can now clamp the jig in the V-Block, rest one of the recesses in the handle on the jig, and adjust the V-block so that the tool is about 45° to the grinding wheel, as in Figure 3. Grind, using each recess in turn, until all three bevels are equal and meet at a sharp point.



Sharpening the Pyramid Point Tool on a Bench Grinder.

Shear Spear

One of the nice things about a pyramid point tool is that you can pretty much pick it up and stick it in the wood; all the edges are alike so you don't have to worry about which facet is up. One of the drawbacks is the point is rather blunt. If you're using it to make beads they end up a long way from being hemispheres. You can improve on the latter if you're willing to give up the former. By changing the grinding angle on

two of the facets you end up with a much more acute point.

Start making the Shear Spear the same as the regular pyramid point tool. When you start grinding, grind only one bevel at 45°, as in Figure 4, and keep going until the bevel extends about two thirds of the tool diameter. Then move the tool rest so that the tool makes an angle of about 15° to the stone and grind the remaining two bevels until the three facets meet at a point. You'll be removing a lot of metal so this will take a while.



Sharpening the Primary Bevel of a Shear Spear on a Bench Grinder.

If you would like to restore your handle sharpening jig to only needing one tool rest setting, move the tool rest so that the filed recess for the 45° bevel is on the rest and adjust so that the bevel contacts the stone. Now turn the handle 120°, and line up the tool so that the 15° bevel is on the stone. Mark the handle where it contacts the tool rest. Mount a drill chuck in the headstock of your lathe and chuck up the tool. Bring up the tailstock for support. Use your indexing head to lock the tool handle in position and file new recesses for the 15° facets. The first resharpening may require minor changes in the bevel angles unless you're very lucky, but after that you'll only have to set the tool rest once.

You can use the Shear Spear as it comes from the grinder or honed. Alternately, since the tool can only be presented with one facet up, you can use a Veritas Scraper Burnisher to raise a burr on the two edges of the 45° facet. I prefer the Shear Spear with a burr.

Uses

You can use both the Pyramid Point Tool and the Shear Spear for many cuts on the lathe when turning both spindle and face-plate work. The first thing that comes to mind is cutting beads. I do not really recommend either tool for beads on ordinary spindle work. The first problem is that you can only turn shallow beads if they are next to one another. See Figure 5 for an illustration of the beads that can be obtained with a Pyramid Point Tool, a Shear Spear, and a Skew. The Skew not only turns a more

attractive, nearly hemispherical bead, it does it in a quicker and more satisfying manner. Assuming you've done a little practice. If you have hacked up a bead with the skew on a piece you need to keep then the Shear Spear would be a nice, less white knuckled, tool to clean it up.



A comparison of beads. On the left are two beads turned with a standard Pyramid Point Tool. In the middle are two beads turned with a Shear Spear. On the right are two beads turned with a Skew.

Beads on face-plate work, or on large vessels are a good use of the Pyramid Tools. Just mark the limits of your beads, plunge the point in at the limits and then swing the handle to round the beads over. The exact sequence of the cut doesn't seem to matter much. Since the tools use a shear scrape, you should get a good surface on all but the softest woods.

You can also use the Pyramid Point Tool any time you need to do a refining cut on a straight or convex surface, where the tool rest can be positioned close to the work, especially if the work surface is at a relatively obtuse angle to the tool rest.

The author lives and turns in Hampstead Maryland. Right now he wishes his wife hadn't fallen asleep on the couch so he could attack some newly acquired Red Maple with his still new feeling Exocet (and the Shear Spear works nicely for beads on vessels). He welcomes comments and questions via email at David@DavidReedSmith.com. This article, with color pictures, can be viewed at www.DavidReedSmith.com