

THE NUANCES OF SMALL STAKES AND ANVILS

By William Fretz

Shaping a bezel on stakes is a process of forming the metal by stretching. First the metal is bent with pliers to fit the gem, forming a shape smaller than the stone while following its contour. The gauge of the sheet metal chosen is slightly thicker than the final result. As the process unfolds, the metal is planished (hammered) on small stakes, causing the metal to conform to the stake as it stretches. If the gemstone and the shape of the stake are the same, a very accurate bezel can be made with a minimum of time. The advantages of this technique become obvious to the craftsperson that uses creatively shaped stones or gems that do not conform to the bezel mandrels on hand.

Sheet metal formed on various anvils opens up a whole new vocabulary of shapes. The raising of small hollow forms is possible because of the variety of the available stakes. As the skill of the craftsperson increases, the nuances of the shapes and textures will allow for more personal expression.

Modifying Bezels from Mandrels and Stakes

Small stakes allow the craftsperson to make unusual bezels accurately. A bezel mandrel is used to get as close to the desired shape as possible. For example, the oval mandrel does not accurately fit a wide variety of oval stones.

The following steps will make it possible to modify the bezels obtained by simply shaping them over an oval mandrel. Many of the techniques used for one shape of stone will apply for all stones, which will be covered.

- The height of the bezel strip will be determined by the stone chosen. Measure the height of the stone for a free standing bezel and cut a strip of sheet on a bench shear or with tin snips. A 10 x 14 mm stone would use 24 gauge or .020” thick sheet. Then bend the bezel strip around the stone with the aid of round or oval pliers. The final oval should be slightly smaller than the stone.
- Solder the seam in a place that will be the least visible on the finished piece. It is important to clean up all excess solder on the inside and outside so the strip is one continuous gauge.
- Hammer over a mandrel, which will true up the bezel, even if the fit is not correct. The bezel must be slightly small at this stage, as the metal will be stretched into a correct fit.
- The choice of the stakes used is the trick to a good fit. The curves of the stone should match the curves of the stake chosen. Often, two stakes are used since the oval shape needs one for the side surfaces and one for the tighter end curves.
- Now hammer with the flat side of a polished plannishing hammer. Hammer the long opposing sides to match each other. The ends of the bezel will require a different stake which matches the curve of the stone. Use the largest stake that will fit. Plannish both ends of the bezel so they are the same. At this stage the bezel should be slightly small and not quite fit over the stone. Only hammer to stretch the sides that need to be longer.
- The hammer marks should be getting lighter and lighter in overlapping blows. At this point the metal will be getting work hardened. This is good. It slows the process down so great subtlety is possible.
- When the bezel fits the stone snugly, it is time to anneal. This relieves the tension so it won't warp when it is finally soldered in place. Readjust for fit without stretching the metal. A hard rubber hammer can be useful for this final hammering of the bezel on the stakes without fear of enlargement.

Making the Bearing or Inner Rims for Bezels

- A faceted stone needs a free standing bezel with an inner rim.
- The solution is to form the outer bezel with a strip which is tall enough to cover the stone from the culet (a round stone's bottom point) or keel (emerald cut's bottom) to above the girdle of the stone. Add a little for truing up. The second part is made from the same stock but telescopes inside the first part.
- Sliding the two parts back and forth with the stone fitting inside the outer bezel, and the inner rim acting as a cradle, it is easy to get the desired height of the metal, which will be pushed over the stone.
- The inner part can be filed to fit the taper of the stone. This eliminates the need for engraving complicated seams later.
- The inner rim extends slightly from the bottom of the mounting. This makes an ideal shelf from which to solder the two together.
- Add chips of solder until the solder shows on both ends of the inner tube as a smoothly filled seam. Cut off the bottom of the inner tube and all evidence of soldering will be removed.
- Capillary action will carry the solder into the seam. As solder follows the hottest spot, heat should always be applied to draw the solder to it.
- The bezel should be completely polished on the outside before it is soldered into place. The inside of a bezel is easier to polish after soldering, as the piece of jewelry acts as a handle for easier grasping.

Truing Bezels with Only Stakes

Many symmetrical stones with rounded edges just do not look like any of your bezel mandrels. An example would be an antique cushion stone.

- Shape the bezel strip with pliers as closely as possible, again making the shape slightly smaller than the stone.
- Solder the joint shut and clean up all solder traces.
- Find the stakes that match the curvature of the stone and plannish opposite sides evenly. If one side has been bent slightly short, it is okay to over hammer the short side to bring the bezel back to the sides being a relatively equal distance from each other.

- The rounded corners are worked on a stake's edge with a similar curve.
- After planishing on stakes for the correct shape, the stone should just slip into the bezel.
- As before, anneal and check for fit.

Bezels with Square Corners

- To make square corners, wrap the strip around the square or angular stone using pliers to form the corners. The final leg is left long.
- Solder on the long leg and cut flush. Only one solder seam is needed as the other corners will be hammered square.
- Pick a flat stake with 90-degree edges. Hammer first one side and then the other, tapping very softly until the edge becomes sharp. If two sides are short, hammer the middle sections until the sides lengthen. Sometimes the top and bottom of the bezel will stretch out. Simply rub flat on a piece of emery (320 grit usually works well) on a flat board or steel surface plate. A check for the far parallel can be done with calipers, and squareness with a small steel square.

Trillion Bezels with Curved Sides and Sharp Corners

- First shape the bezels on a trillion bezel mandrel.
- Use a stake with a curved top surface and side edges that are cut away. Make sure the top surface matches the curve of the girdle of the stone.
- The tapered edge will allow you to reverse the bezel as it is hammered on different sides slowly sharpening all three of the points to be formed.
- All the sides should get an even amount of hammering to keep the sides the same length. NOTE: It should be obvious by now that the more stakes you have, the greater the variety of curves that will be possible.
- There is a trick which works with even trillions if you don't have a large selection. If the sides are a little too flat, you can push the trillion bezel up a round mandrel and it will swell the sides slightly.

Uneven Trillions

- To bend the bezel strip it is helpful to have pliers with tapered edges. This allows for the bending of an acute angle. A bezel should be fashioned smaller than the stone.
- Put the solder seam on a corner and trim to a smooth angle. Stretch on the correct stake using the stone to see where the metal needs extra length. Go slowly and don't make a side too long. If this happens, it is easier to start over.

Free Form Stones

- As usual, bend a sheet metal strip around the stone, and then cut the strip a little shorter. The height of the strip should allow for the metal to be pushed over the stone, plus some extra that will allow the bezel to be trued on an emery board.
- The main advantage of the use of stakes is that the hammering will smooth all of the plier adjustments while the bezel is stretched to the correct shape.

Tapered Bezels

- Making a tapered bezel involves the same techniques only the starting stock is not a straight strip.
- Draw the tapered bezel profile. Then extend the lines of the taper until they intersect. At this point place a compass and swing two arcs, one on the top and the other on the bottom of the drawn bezel.
- For a round or nearly round oval, three diameters of the bezel plotted on the arc drawn will give the correct template. Transfer the arc with tracing paper and rubber cement to a piece of brass sheet to see if the bezel looks right after bending it to shape. Changing the spot where the compass swings will change the taper rather dramatically. When the shape is right in brass, transfer it to your final metal.