

## Bezel Setting Square Stones

by Peter Keep

Quite often one of the first pieces of jewellery a student will make is a simple bezel setting with an inner sleeve soldered inside for a cabochon stone to sit on. It is then a simple matter of pushing the bezel onto the stone; generally, no burring is required. Commercial bezel settings requires a seating or bearing to be cut into the setting wall.

The JTS bezel setting course will show you how to bezel set various shaped faceted stones starting with a standard round stone setting. This tutorial demonstrates how to set a square stone.



### Step 1:

The JTS bezel setting blanks have round and square shaped settings and the correct size stones for the job, but for commission setting work you should always begin with a thorough examination of the stone and the setting.

Check the profile of the stone; this shape needs to be cut into the bezel setting. Check to see if the setting is the correct size for the stone. The walls of the setting in this case are 1.1mm thick. Ensure that the stone sits on top of the setting covering approximately one third of the bezel thickness. You are now good to go.



### Step 2:

Preparation markings should be applied before any cut work is performed. If the stone is set too high there will be less metal securing the stone. If set too deep, too much of the crown of the stone will be covered and it will appear to be sunken into the setting. So, I suggest that you set your precision dividers to the stones girdle to table measurement and scribe a guide line around the inside of the setting. It is a good idea to coat the inside top of the setting with a permanent marker pen before scribing; this will help to highlight the scribe line.



### Step 3:

The initial cut work is performed with a 1.5mm hart bur. Cut as far into the setting as you can until the bur shaft contacts the metal. If you use a larger bur, do not cut all the way as over cutting the seat will cause the stone to rattle in the setting later.

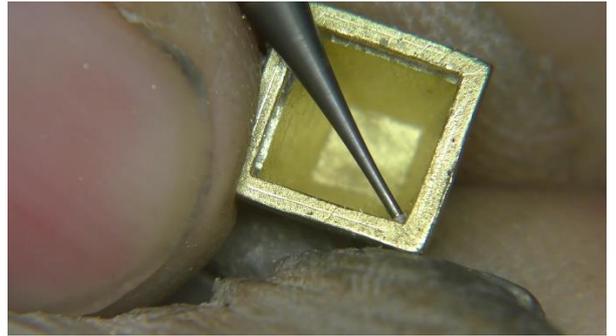
Bur along the scribe lines from corner to corner keeping the tool square to the setting. Check that the cut is straight and neat. Now bur into the corners as far as you can.



## Step 4:

All stones with points are vulnerable; even diamonds, and any undue pressure can cause them to chip or cleave. So, you will need to create a little extra space in the corners of the setting to minimise the chance of breakage.

Rest a 0.5mm – 0.7mm ball bur on top of the setting at the corner and make a judgement of how far to bur in to leave adequate clearance. Drive the bur in on the same line as the previous cut until it creates the clearance pocket. Now bur from the pocket downward to clear a channel for the keel of the stone.



## Step 5:

The first stage of the seating cut is done for now, but it will no doubt need to be adjusted later.

Use a 1.2mm - 1.5mm ball bur to remove metal just below the seating cut. This will allow the stone pavilion to rest into the setting without rocking. If you are setting a deeper cut stone, adjust this cut to match the stone profile. (Diamonds generally have a more rounded pavilion) Unlike claw setting you will not be able to see if the cut matches the stone, so practice and experience is required.



## Step 6:

The stone needs to fit snugly into the setting with minimal gaps. Place the stone onto the setting but do not try to forcefully push the stone in; it's not ready for placing until the inner lip has been opened out. Remove the stone and trim the inside top of the seating cut, firstly with the 1.2mm - 1.5mm ball bur until the setting is opened to the stone's dimensions, and then finish off with a flat graver. Scrape along the inside upper lip to remove any lumps and cut into the corners. Tilt one side of the stone in and test if the lifted end has clearance to fit.



## Step 7:

Further cut will no doubt be necessary. Take your time and trim away the contact points until the stone begins to fit. Finish preparing the inner setting lip with a flat graver

If you are working on a project or a commission, ensure the setting is prepared for a final polish before the final fitting. Push the stone in place with your finger nail or a piece of wooden dowel. Do not be too forceful. Make sure the stone is level in its seat. The square setting should complement the stone by having sharp crisp lines and angles. So, file a 45° bevelled edge around the setting.



## Step 8:

There are a few options for pushing the setting lip onto the crown of the stone. Squeezing the setting with soft jaw pliers is a good way to start the process, and it is a safe option, as long as the pressure is not directed onto the corners. You can then use either a hammering tool, punch and hammer or in this case a setting roller. The roller tool is something that you can make yourself (instructions included in the course) The pressure should only be applied to the sides of the setting and never directly onto the corners.



## Step 9:

Work on opposite sides and make sure the stone is level as you tighten it.

The metal is tougher to move towards the corners, so it requires a lot of impact force that can be risky. Some setters cut into the corners with a fine saw blade to allow the metal to move more easily into position. I prefer not to do this as it can be evident later. An electric or pneumatic hammer tool impacting at a 45° angle will help to move the metal further onto the stone.



## Step 10:

Now check if the stone has any movement. Hold the setting to your ear and tap it to see if it rattles. It probably will be a little loose as there has been no tightening with downward pressure. Use a brass pusher with a notch filed in to rub around the inside setting lip. This will not only tighten the stone further, but it will also apply a burnished bright cut finish.

Steel tools should not rub aggressively against soft stones. Brass tools are ideal for working safely around most gemstones.



## Step 11:

Use a flat graver with a highly polished belly to perform the final bright cutting and finishing. Tilt the graver inwards and glide over the inner lip to remove any lumps. When you get to the corners, angle the blade into the corner and cut it in to make a defined impression, and then flick the metal away.

The finished setting should look like an extension of the stone's facets; so carefully finish the setting by filing and sanding the edges perfectly straight and at the correct angle.



## Step 12:

Check the quality of your work. Assess your work as if you are a customer. Keep practicing until you can tick off the following check list:  
The height of the bezel rim ranges between 70% and 90% of the distance between the girdle and table, and the stone is level.  
The seating is cut correctly, and the stone does not rattle or move.  
The inner rim of the bezel is smooth tidy and bright cut correctly.  
All tool marks from the setting procedures have been removed.



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